

CITY OF SAN FERNANDO
CALIFORNIA

**CONTRACT DOCUMENTS,
SPECIFICATIONS AND STANDARD DRAWINGS
FOR
ANNUAL STREET RESURFACING PROJECT
FISCAL YEAR 2018-2019
JOB NO. 7597, PLAN NO. P-726**



Prepared by:



1880 E. AMAR RD., SUITE B13
IRWINDALE, CALIFORNIA 91706
(626) 667-8675



Prepared Under the Supervision of: _____ Date: May 17, 2019
Joaquin Cervantes, P.E



Approved by: _____ Date: May 21, 2019
Ying Kwan, P.E., City Engineer

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NOTICE INVITING BIDS

SEALED PROPOSALS will be received at the Office of the City Clerk, City Hall, 117 Macneil Street, San Fernando, California until **11:00 AM on Wednesday, June 19, 2019**, and said bids will be publicly opened and declared for performing work on the following project:

ANNUAL STREET RESURFACING PROJECT FISCAL YEAR 2018-2019 JOB NO. 7597, PLAN NO. P-726

The project consists of roadway resurfacing and concrete replacement. The work includes replacement of concrete curb, gutter, sidewalk, cross gutter, spandrel, and access ramp; rehabilitation of AC pavement section, cold milling of AC pavement; construction of ARHM overlay; adjustment to grade of water valve and sewer manhole frame and cover; installation of traffic striping and pavement marking; and miscellaneous appurtenant work. The bid items, corresponding estimated quantities, and time allowed to complete the work are listed in the Contractor's Proposal. The definitions of bid items are described in the Technical Provisions. The construction cost is estimated at \$1,750,000.

There is no pre-bid meeting for the project.

The contract time for the project is ninety (90) working days.

It is the policy of the City, as directed by City Council, to encourage the use of local area businesses in construction contracts including vendors, suppliers, labor, etc.

The City reserves the right to reject any and all bids and to waive any minor irregularities in the bid documents. Bidders may not withdraw their bid for a period of sixty (60) days after date set for opening thereof.

The Contractor must follow the procedures as set forth in the Instructions to Bidders for acceptance of bids. Bids will be accepted only if submitted on a proposal form furnished by the City. Each bid must be accompanied by cash, certified check, cashier's check, or bidder's bond made payable to the City of San Fernando or issued by a surety admitted to do business in California, for an amount equal to at least ten percent (10%) of the amount bid. Such guaranty to be forfeited to the City should the bidder to whom the contract is awarded fail to enter into the contract.

Bids will be accepted only from contractors licensed in accordance with the provisions of the Business and Professional Code of the State of California. Prior to contract execution, the contractor and his/her subcontractors shall obtain a City business license. Prior to beginning work, the contractor must possess a valid California **Class A** Contractor's License.

AB44 EFFECTIVE JULY 1, 2014. If a bidder submits a bid that includes a subcontractor who would be performing work in amount in excess of ½ of 1% of the bidder's total bid or in the case of bids for the construction of streets or highways, including bridges, in excess of ½ of 1% of the bidder's total bid or \$10,000, whichever is greater, then in addition to the subcontractor's name and business address, the subcontractor's State contractor's license number must be included as part of the information submitted for that proposed subcontractor. Failure to provide the subcontractor's license number shall render the bid non-responsive.

SB854 EFFECTIVE MARCH 1, 2015. Contractors and Subcontractors wishing to work on a

public works project must be registered with the State of California, Department of Industrial Relations. All public works projects with bids submitted after March 1, 2015, or awarded on or after April 1, 2015, shall use only registered contractors and subcontractors. No bid will be accepted nor any contract entered into without proof of the Bidder's and its subcontractors' current registration with the Department of Industrial Relations. If awarded a contract, the Bidder and its subcontractors of every tier shall maintain active registration with the Department of Industrial Relations for the duration of the Project.

The State General Prevailing Wage Rate Determination as established by the California Department of Industrial Relations is available at <http://www.dir.ca.gov/DLSR/PWD/index.htm> and in the Public Works Department at City Hall.

At the request and expense of the Contractor, securities equivalent to the five percent (5%) to be withheld from progress payments pursuant to the City's Standard General Conditions shall be deposited with the City Clerk or a state or federally chartered bank as the escrow agent, who shall pay such monies to the contractor upon satisfactory completion of the contract. Securities eligible for investment shall include those listed in Section 16430 of the Government Code or bank or savings and loan certificates of deposit. The contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereof.

Copies of the plans and specifications, including the approved proposal form, are available on the City website, www.sfcity.org, for downloading at no charge. **In order to be eligible to submit a bid for the project, you MUST contact Manuel Fabian, Civil Engineering Assistant II, via e-mail at mfabian@sfcity.org to be placed on the plan holders list.** Compact disk (CD) of the plans and specifications may be obtained for a non-refundable fee of **\$5.00** each at the Public Works Department, City Hall, 117 Macneil Street, San Fernando, California, 91340. If mailing is requested, an additional fee of **\$5.00** is required to cover postage and handling.

Addenda, if any, will NOT be distributed to the planholders, and will ONLY be posted on the City website. **It shall be the Bidder's responsibility to check the City website for any addenda.**

City of San Fernando

Date: May 23, 2019

By: Ying Kwan, P.E.
City Engineer

Sun
05/23/19
05/30/19

INSTRUCTIONS TO BIDDERS

1. GENERAL Proposals under these Contract Documents shall be submitted on the blank forms furnished herewith. When presented, the proposal forms must be completely made out in the manner and form indicated therein, and must be properly signed by the bidder. The bidder's address, telephone number, and California State Contractor's License number must be included. To be eligible to perform work, the bidder must be a state licensed contractor in good standing prior to beginning work. The City Council reserves the right to reject any bid if all the above information is not furnished.

Each proposal submitted must be presented in a sealed cover, and must be filed prior to the time and at the place designated in the Notice Inviting Bids. All proposals submitted as prescribed will be publicly opened and read at the time and place designated in the Notice Inviting Bids.

Bid Quotes and Unit Price Extensions – The unit prices and the lump sum prices quoted by the bidder must be entered in the spaces provided on the Contractor's Proposal form. In case there is a discrepancy between the unit price and the item total, the unit price shall govern and will be considered as representing the Bidder's intention. The bid total will be corrected to conform to the specified unit price.

Bid Retention and Award – The City reserves the right to retain all bids for a period of sixty (60) days for examination and comparison. The City also reserves the right to waive non-substantial irregularities in any bid, to reject any and all proposals, to reject or delete one part of a proposal and accept the other, except to the extent that the bids are qualified by specific limitations, and to make award to the lowest responsible bidder as the interest of the City may require.

Communications Regarding Bid – All timely requests for information submitted in writing will receive a written response from the City. Telephone communications with City staff are not encouraged, but will be permitted. However, any such oral communication shall not be binding on the City.

2. EXAMINATION OF PLANS, CONTRACT DOCUMENTS, AND WORK SITE The Contract Documents and plans, if any, are on file and available for inspection in City Hall.

The Bidders are required to carefully examine the site and the proposal, plans, Contract Documents, and contract forms. The Bidders must satisfy themselves as to the requirements of the Contract Documents and the contract; as to the location of the proposed work and by such other means as they may prefer; and as to the actual conditions and requirements of the work, and shall not, at any time after submission of the bid, dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done. It is mutually agreed that submission of a proposal shall be considered prima facie evidence that the bidder has made such examinations.

3. DISQUALIFICATION OF BIDDERS AND PROPOSALS More than one proposal for the same work from any individual, firm, partnership, corporation or association under the same or different names will not be accepted and reasonable grounds for believing that any bidder is interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidders are interested.

Proposals which show obviously unbalanced prices, and those which are incomplete or show any alteration of form, or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. Proposals that do not bear the Bidder's signature will be

rejected.

4. AWARD AND EXECUTION OF CONTRACT The award of the contract, if awarded, will be made to the lowest responsive bidder whose proposal complies with all the prescribed requirements. The right is reserved, however, to reject any or all bids and to waive technical errors or discrepancies if it is deemed to best serve the interests of the City. An award will be made only until all necessary investigations are made as to the responsiveness of the low bidder.

Failure to execute a contract and file acceptable bonds as provided herein within the above timeline, not including Sundays, shall be just cause for the annulment of the award and the forfeiture of the proposal guaranty.

The Contractor will be required to obtain a City Business License prior to award of the contract.

5. SIGNATURE OF CONTRACTOR

- a. Corporation Any bids submitted by a corporation must include the name of the corporation, and must be signed by the President and Secretary or Assistant Secretary, and the corporate seal must be affixed. Other persons may sign for the corporation in lieu of the above if a certified copy of a resolution of the corporate board of directors so authorizing them to do so is on file in the City Clerk's Office.
- b. Partnerships Any bids submitted by a partnership must contain the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a certificate of partnership acknowledging the signer to be a general partner is presented to the City Clerk.
- c. Joint Ventures Any bids submitted by a joint venture must so state that and must be signed by each joint venturer.
- d. Individuals Any bids submitted by an individual must be signed by that individual unless an up-to-date power of attorney is on file in the City Clerk's Office, in which case the person indicated in the power of attorney may sign for the individual.

The above rules also apply in the case of a fictitious firm name. In addition, however, where the fictitious name is used, it must be so indicated where the signature appears.

6. BONDS

- a. Bid Bonds Bid must be accompanied by cash, cashier's check, certified check, or surety bond in an amount equal to ten percent (10%) of the total amount in the Contractor's Proposal. Checks and bonds shall be made payable to the City of San Fernando.
- b. Contract Bonds The Contractor simultaneously with execution of the Agreement shall furnish a surety bond in an amount equal to one hundred percent (100%) of the contract price as security for the faithful performance of this contract and a separate surety bond in an equal to one hundred percent (100%) of the contract price as security for the payment of all persons performing labor and furnishing materials in connection with this contract, as required by the terms of an Act entitled:

"An Act to secure the payment of the claim of persons employed by Contractors upon Public Works, and the claims of persons who furnish materials, supplies, teams,

implements; or machinery used or consumed by such Contractors in the performance of such works, and prescribing the duties of certain public officers with respect thereto," approved May 10, 1919, as amended.

Bond Forms required are included in these specifications. Copies will be furnished to prospective bidders upon request.

Whenever any Surety or Sureties on any such bonds, or any bonds required by Law for the protection of the claims of laborers and material men become insufficient or the City Engineer has cause to believe that such Surety or Sureties have become insufficient, a demand in writing may be made of the Contractor for each further bond or bonds or additional surety, not exceeding that originally required, as is considered necessary, considering the extent of the work remaining to be done. Thereafter, no payment shall be made upon such contract to the Contractor or any assignee of the Contractor until such further bond or bonds or additional surety has been furnished.

7. RETURN OF BIDDER'S GUARANTIES Within ten (10) days after the award of the contract, the City will return the proposal guaranties accompanying those proposals which are not to be considered in making award. All other proposals which are to be held until the contract has been finally executed, will be returned to the respective bidders after award of contract.
8. CONFLICT OF INTEREST In the procurement of supplies, equipment, construction, and services by sub-recipients, the conflict of interest provisions in 24 CFR 85.36, OMB Circular A-110, and 24 CFR 570.611, respectively, shall apply. No employee, officer or agent of the sub-recipient shall participate in selection, or award or administration of a contract supported by Federal funds if a conflict of interest, real or apparent, would be involved.

The following documents in the PROPOSAL section of these Contract Documents must be completed and submitted with the bid package:

Contractor's Proposal
Bidder's Bond
Contractor Information
List of References
List of Subcontractors
Certificate of Secretary of Adoption of Resolution
List of Subcontractors, Suppliers, & Vendors Contacted to Receive Prices in Preparation of Bid Proposal
Non-Collusion Affidavit

CONTRACTOR'S PROPOSAL

CITY OF SAN FERNANDO
117 MACNEIL STREET
SAN FERNANDO, CALIFORNIA 91340

HONORABLE MAYOR AND
MEMBERS OF THE CITY COUNCIL:

The undersigned declares that this proposal was prepared by carefully examining the location of the proposed work, the Plans, the Specifications, and the Contract Documents entitled:

**ANNUAL STREET RESURFACING PROJECT
FISCAL YEAR 2018-2019
JOB NO. 7597, PLAN NO. P-726**

The undersigned hereby proposes to furnish all labor, materials, equipment, tools, transportation, and services to perform all work required and to complete said work within **ninety (90)** working days after the commencement date stated in the Notice to Proceed. All work shall be performed in accordance with the Plans, Specifications, and Contract Documents, including the Special Provisions and Technical Provisions, for the prices set forth in the bid schedule.

Dated

Bidder

Signature

Name (Print/Type)

Title

BID SCHEDULE

ANNUAL STREET RESURFACING PROJECT FISCAL YEAR 2018-2019 JOB NO. 7597, PLAN NO. P-726

STREET IMPROVEMENTS					
ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
1.	Provide traffic control.	LS	1	\$	\$
2.	Remove and construct curb ramp approach and install cast-in-place truncated domes per SPPWC Std. Plan No. 111-5.	EA	36	\$	\$
3.	Remove and construct 4-inch thick PCC sidewalk over compacted native per SPPWC Standard Plan 113-2.	SF	15,000	\$	\$
4.	Remove and construct 4-inch thick PCC Residential driveway approach over compacted native STD. Plan 113-2.	SF	7,500	\$	\$
5.	Remove and construct 8-inch thick PCC curb and gutter per SPPWC Standard Plan 120-2 or match existing.	LF	3,200	\$	\$
6.	Remove and construct longitudinal gutter per SPPWC Standard Plan 122-2.	SF	2,300	\$	\$
7.	Cold Mill 1.5-inch existing AC Pavement.	SF	226,000	\$	\$
8.	Construct 1.5-inch AC pavement ARHM-GG-C (PG64-16).	TONS	2,100	\$	\$
9.	Adjust existing water and irrigation valve box and cover to grade.	EA	8	\$	\$
10.	Adjust existing utility valve (water and gas) to grade.	EA	28	\$	\$
11.	Adjust manhole frame and cover to grade per SPPWC Std. Plan No. 205-2.	EA	18	\$	\$
12.	Furnish and Install signing, striping and paint all house numbers within project limits.	LS	1	\$	\$
13.	Construct slurry seal.	SF	35,000	\$	\$
14.	Re-establish survey monumentation.	EA	5	\$	\$
SUBTOTAL ITEMS 1-14					\$

WATER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
15.	Provide traffic control.	LS	1	\$	\$
16.	Furnish and install new 1" water service connection (City furnished meter) & meter box, including connection to the existing building water supply, potholing, pavement replacement, tunneling, removal of existing facilities, as necessary and all appurtenant work complete per San Fernando Water Construction Standard Plate No. 19 and Specifications.	EA	154	\$	\$
17.	Furnish and install new 8" diameter D.I.P. (Class 350) Water Pipeline, including potholing, connection to the existing water main, fittings, pavement replacement, tunneling, removal of existing facilities, as necessary and appurtenant complete.	LF	2,000	\$	\$
18.	Furnish and install 6" resilient wedge gate valve, fittings, removal of existing facilities, as necessary, and all appurtenant work complete.	EA	1	\$	\$
19.	Furnish and install 8" resilient wedge gate valve, fittings, removal of existing facilities, as necessary, and all appurtenant work complete.	EA	9	\$	\$
20.	Connect existing fire hydrant line to main.	EA	1	\$	\$
21.	Furnish and install 6" fire hydrant, including ductile iron bury, valves, fittings, potholing, pavement replacement, removal of existing facilities, as necessary, and all appurtenant work complete.	EA	9	\$	\$
SUBTOTAL ITEMS 15-20					\$

SEWER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
22.	Provide traffic control	LS	1	\$	\$
23.	Provide pre-construction closed circuit television (CCTV) inspection.	LS	1	\$	\$
24.	Provide post-construction closed circuit television (CCTV) inspection.	LS	1	\$	\$

SEWER IMPROVEMENTS					
ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
25.	Provide clearing of sewer line, as necessary and appurtenant complete.	LS	1	\$	\$
26.	Furnish and install pipe sleeve for the existing 8-inch VCP sewer main, including potholing, fittings, pavement replacement, flow diversion, removal of existing facilities, as necessary and appurtenant complete.	LF	220	\$	\$
27.	Furnish and install CIPP sewer Lining for the existing 8-inch VCP sewer main, including potholing, fittings, flow diversion, removal of existing facilities, as necessary and appurtenant complete.	LF	2,300	\$	\$
SUBTOTAL ITEMS 21-26					\$
TOTAL BID AMOUNT 1-26					\$

The bidder acknowledges receipt of the following addendum issued for the above project. If no addendum has been received, write "None".

List of Addendum Received:_____

The City does not expressly or by implication agree that the actual amount of work will correspond with the foregoing quantities, but reserves the right to increase or decrease the amount of any class or portion of the work or to omit portions of the work as may be deemed necessary or advisable by the Engineer

The bidder further agrees that in case of not executing the required contract with necessary bonds within ten (10) days, not including Sundays, after having received notice that the contract is ready for signature, the proceeds of the check or bond accompanying his bid shall become the property of the City of San Fernando.

By submission of the Contractor's Proposal, the bidder also certifies that the bid is a balanced bid.

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS:

that we, _____ as Principal,
and _____ as Surety,
are held and firmly bound unto the City of San Fernando in the sum of _____
(\$ _____)
to be paid to the said City of its certain Attorney, its successors and assigns; for the payment of
which sum well and truly made, we bind ourselves, our heirs, executors and administrators,
successors or assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain proposal of the above
bounden _____
to construct _____
(insert names of streets and limits to be improved) dated _____ is accepted by
the City of San Fernando, and if the above bounden his heirs, executors, administrators, successors
and assigns, shall duly enter into and execute a contract for such construction, and shall execute
and deliver the two bonds described within ten (10) days (not including Sunday) from the date of
the mailing of a notice to the above bounden _____
by and from the said City of San Fernando that said contract is ready for execution, then this
obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of
_____, 2019.

Principal

Surety

By _____

By _____

Its _____

Its _____

By _____

By _____

Its _____

Its _____

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently
power of attorney must be attached to the bond to verify the authority of any party signing on
behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

CONTRACTOR INFORMATION

Company Name _____

Address _____

Telephone _____ Fax _____ E-mail _____

Type of Firm: Individual () Partnership () Corporation ()

Corporation organized under the laws of the State of _____

Contractor's License Number _____ State ____ Classification _____ Expiration Date _____

DIR Registration Number _____ Expiration Date _____

Names and titles of all officers of the firm

LIST OF REFERENCES

(To be submitted by contractors who have not worked with the City of San Fernando.)

1. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
2. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
3. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
4. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
5. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
6. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____

LIST OF SUBCONTRACTORS

The bidder is required to fill in the following blanks in accordance with the provisions of Section 4100 to 4108, inclusive, of the Government Code of the State of California.

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

**CERTIFICATE OF SECRETARY
OF ADOPTION OF RESOLUTION**

I, _____ (insert name of Secretary), do hereby certify that I am the Secretary of _____ (insert name of corporation) a California corporation, and do hereby certify that the following resolution is a full, true and correct copy of a resolution passed by the Board of Directors of said corporation at a meeting thereof held on the _____ day of _____, 2019 (insert proper date), in accordance with the bylaws of said corporation, and that said resolution has not to the date of this certificate been in any manner amended, modified, revoked, rescinded or annulled, and the same is now in full force and effect.

"RESOLVED, that any of the following officers of this corporation, _____, _____ President
_____, Vice President and
_____, secretary
(insert names of officers and capacity where not shown), (any two acting together) (any one acting alone) (strike out inapplicable portion), be and they are hereby authorized to execute and deliver in the name of and for and on behalf of this corporation, any and all bids, authorizations, contracts, bonds and agreements of any nature or sort whatsoever.

BE IT FURTHER RESOLVED, that any and all persons, firms, corporations and other entities, including public entities, shall be entitled to rely on the authority of (any one of such officers) (any two of such officers acting together) (strike out inapplicable portion), above named, to bind this corporation by the execution and delivery of any such bids, authorizations, contracts, bonds and agreements.

BE IT FURTHER RESOLVED, that the authority herein contained shall remain effective until the person, corporation, or public entity relying upon the authority herein contained, receives written notice to the contrary signed by duly authorized officers of this corporation, that all previous authorizations theretofore given with respect to the matters herein contained are revoked. That the revocation of the authority herein contained shall not affect the validity of any instrument herein referred to signed by any person or persons at the time authorized to act."

IN WITNESS WHEREOF, the undersigned has hereunto set (his/her) hand as Secretary and affixed the seal of this corporation this _____ day of _____, 2019.

Secretary

Affix Seal

**LIST OF SUBCONTRACTORS, SUPPLIERS, & VENDORS CONTACTED TO
RECEIVE PRICES IN PREPARATION OF BID PROPOSAL**

1. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
2. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
3. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
4. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
5. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
6. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____

NON-COLLUSION AFFIDAVIT

Annual Street Resurfacing Project FY 2018-2019
JOB NO. 7597, PLAN NO. P-726

STATE OF CALIFORNIA)
) SS
COUNTY OF _____)

_____, being first duly sworn, deposes and
says that he is _____
(Sole owner, partner, president, secretary, etc.)

of _____
the party making the foregoing bid; that such bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation; that such bid is genuine and not collusive or sham; that such bidder has not directly or indirectly colluded, conspired, connived or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the bid price of said bidder or of any other bidder, or to fix any overhead, profit or cost element of such bid price, or of that of any other bidder, or to secure an advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid price or of that of any other bidder, or to secure an advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid are true; and, further, that said bidder has not, directly or indirectly, submitted his bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said bidder in his general business.

Date

Bidder

Authorized Signature

STATE OF CALIFORNIA)
) SS
COUNTY OF _____)

Name (Print/Type)

Title

On _____, 2019 before me, _____

Personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledge to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument, the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

(Notary Seal)

Signature of Notary Public



CONSTRUCTION CONTRACT/AGREEMENT

ANNUAL STREET RESURFACING PROJECT FY 2018-2019 JOB NO. 7597, PLAN NO. P-726

THIS AGREEMENT, made and entered into this ____ day of _____, 2019, by and between CITY OF SAN FERNANDO, a municipal corporation of the State of California, hereinafter referred to as "CITY" and _____ "CONTRACTOR."

WITNESSETH:

That the CITY and the CONTRACTOR, for the consideration hereinafter named, mutually agree as follows:

1. The complete contract consists of the Contract Documents which includes all of the following documents incorporated herein by this reference: Approved **ANNUAL STREET RESURFACING PROJECT FY 2018-2019 JOB NO. 7597, PLAN NO. P-726**, Notice Inviting Bids, Instructions to Bidders, Contractor's Proposal, Contract/Agreement, Special Provisions, Technical Provisions, and all modifications and amendments thereto.

2. CONTRACTOR shall perform everything required to be performed, shall provide and furnish all the labor, materials, necessary tools, expendable equipment, and all utility and transportation services required for the following work of improvement: **ANNUAL STREET RESURFACING PROJECT FY 2018-2019 JOB NO. 7597, PLAN NO. P-726** (the "Work of Improvement") all in accordance with the Contract Documents and Contractor's Proposal dated _____, 2019.

CONTRACTOR agrees to perform all the work and furnish all the materials at his own cost and expense necessary to construct and complete in a good and workman-like manner and to the satisfaction of the City Engineer of the CITY, the Work of Improvement in accordance with the plans, specifications, and Contract Documents (the "Specifications") therefore prepared by City's Engineering Department and adopted by the City Council.

3. CITY agrees to pay and CONTRACTOR agrees to accept in full payment for this Work of Improvement the stipulated sum of _____ (\$_____).

CITY agrees to make monthly payments and final payment in accordance with the method set forth in the Specifications.

4. CONTRACTOR agrees to commence construction of the Work of Improvement within ten (10) days after issuance of a Notice To Proceed, and to continue in a diligent and workman-like manner without interruption, and to complete the construction thereof within ninety (90) working

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Annual Street Resurfacing Project FY 2018-2019, JOB NO. 7597, PLAN NO. P-726

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days.

5. Time is of essence of this Contract, and it is agreed that it would be impracticable or extremely difficult to ascertain the extent of actual loss or damage which the CITY will sustain by reason of any delay in the performance of this Agreement. It is, therefore, agreed that CONTRACTOR will pay as liquidated damages to the CITY the following sum: One Thousand Dollars (\$1000.00) for each day's delay beyond the time herein prescribed for finishing work. If liquidated damages are not paid, as designated by the CITY, the CITY may deduct the amount thereof from any money due or that may become due the CONTRACTOR under this Agreement in addition to any other remedy available to CITY. The CONTRACTOR shall not be assessed liquidated damages for any delay caused by the failure of a public utility to relocate or remove an existing utility required for the performance of this Contract.

6. The CONTRACTOR will pay, and will require all subcontractors to pay, all employees on the work of improvement a salary or wage at least equal to the prevailing salary or wage established for such work as set forth in the wage determinations for this work. Travel and subsistence pay shall be paid in accordance with Labor Code Section 1773.8. The CONTRACTOR shall forfeit to the CITY, as penalty, Fifty Dollars (\$50.00) for each calendar day or portion thereof for each worker paid (either by him or any subcontractors under him) less than the prevailing rate described above on the work provided for in this Agreement, all in accordance with Section 1775 of the Labor Code of the State of California.

7. In the performance of this Contract, not more than eight (8) hours shall constitute a day's work, and the CONTRACTOR shall not require more than eight (8) hours in a day from any person employed by him hereunder, except as provided in the Labor Code of the State of California. The CONTRACTOR shall adhere to Article 3, Chapter 1, Part 7 (Sections 1810, et seq.) of the Labor Code of the State of California, and it is agreed that the CONTRACTOR shall forfeit to the CITY as a penalty the sum of Twenty-five Dollars (\$25.00) for each worker employed in the execution of this Contract by the CONTRACTOR or any subcontractor for each calendar day during which any worker is required or permitted to labor more than eight (8) hours in violation of that article.

8. CONTRACTOR, by executing this Agreement hereby certifies:
"I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract."

9. CONTRACTOR shall, prior to the execution of this Contract, furnish two bonds approved by the CITY, one in the amount of One Hundred Percent (100%) of the Contract price, to guarantee the faithful performance of the work, and one in the amount of One Hundred Percent (100%) of the Contract price to guarantee payment of all claims for labor and materials furnished. This Contract shall not become effective until such bonds are supplied to and approved by the CITY. CONTRACTOR shall, prior to the release of the performance and payment bonds or the retention payment, furnish a warranty performance and payment bond equal to at least ten percent of the final contract price or \$1,000, whichever is greater.

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IN WITNESS WHEREOF, the said CONTRACTOR and the CITY ADMINISTRATOR and CITY CLERK of the CITY have caused the names of said parties to be affixed hereto, each in triplicate, the day and year first above written.

CONTRACTOR

BY _____

Title

BY _____

Title

CITY OF SAN FERNANDO
A Municipal Corporation

NICK KIMBALL

CITY MANAGER

ATTEST:

ELENA G. CHAVEZ
CITY CLERK

APPROVED AS TO FORM:

RICK R. OLIVAREZ
CITY ATTORNEY
OLIVAREZ MADRUGA, P.C.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that we, _____
as Principal, and _____ as Surety,
are held and firmly bound unto the CITY OF SAN FERNANDO, hereinafter called the Owner,
in the sum of _____ (\$_____)
for the payment of which sum well and truly to be made, we bind ourselves, our heirs,
executors, administrators and successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the Principal entered into a
contract, attached hereto, with the Owner dated _____ for _____
_____.

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the
undertakings, covenants, terms, conditions and agreements of said contract during the
original term thereof, and any extensions thereof that may be granted by the Owner with
or without notice of the Surety, and during the life of any guaranty required under the
contract, and shall also well and truly perform and fulfill all the undertakings, covenants,
terms, conditions and agreements of any and all duly authorized modifications of said
contract that may hereafter be made, then this obligation shall be void; otherwise this
obligation shall remain in full force and virtue.

Further, the said Surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration or modification of the contract documents or of the work to be
performed thereunder shall in any way affect its obligations on this bond; and it hereby
waives notice of any and all such changes, extensions of time; and alterations or
modifications of the contract documents and/or of the work to be performed thereunder.
IN WITNESS WHEREOF, the above bounden parties have executed this instrument under
their several seals the _____ day of _____, 2019, the name and
corporate seal of each corporate party being hereto affixed and these presents duly signed
by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

(Title)

(Surety)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$_____ per thousand.

Total amount of premium charge is \$_____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

PAYMENT (LABOR AND MATERIAL) BOND

KNOW ALL MEN BY THESE PRESENTS: that we, _____
as Principal, and _____ as Surety,
are held and firmly bound unto the CITY OF SAN FERNANDO, hereinafter called the Owner,
in the sum of _____ (\$ _____)
for the payment of which sum well and truly to be made, we bind ourselves, our heirs,
executors, administrators and successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the Principal entered into a
contract, attached hereto, with the Owner dated _____ for _____
_____.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons supplying
labor and material in the prosecution of the work provided for in said contract, and any and
all duly authorized modifications of each contract that may hereafter be made, then this
obligation shall be void, otherwise this obligation shall remain in full force and virtue.

The condition of this obligation is such that, if said Principal or his or its subcontractors, or
the heirs, executors, administrators, successors or assigns thereof, shall fail to pay any of
the persons named in Section 3181 of the Civil Code of the State of California for any
materials, provisions, provender or other supplies used in, upon, for or about the
performance of the work or labor performed by any such claimant or any amounts required
to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of
employees of the contractor and his subcontractors pursuant to Section 18806 of the
Revenue and Taxation Code, with respect to such work and labor, then said Surety will pay
for the same, in the amount not exceeding the sum set forth hereinabove and also, in case
suit is brought upon the bond, will pay a reasonable attorney's fee to be fixed by the court.

This bond shall insure to the benefit of any and all persons named in the aforesaid Civil
Code Section 3131 so as to give a right of action to them or their assigns in any suit
brought upon the bond.

Further, the said Surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration or modification of the contract documents or of the work to be
performed thereunder shall in any way affect its obligations on this bond; and it hereby
waives notice of any and all such changes, extensions of time; and alterations or
modifications of the contract documents and/or of the work to be performed thereunder.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals the _____ day of _____, 2019, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

(Title)

(Surety)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$_____ per thousand.

Total amount of premium charge is \$_____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

WARRANTY PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that _____ as Principal, hereinafter called Contractor, and _____, licensed and domiciled in the state of California as Surety, hereinafter called Surety, are held and firmly bound unto CITY OF SAN FERNANDO as Obligee, hereinafter called Owner, in the amount of _____ (\$_____)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, _____ as Contractor, has by written agreement dated _____, 2019, entered into a contract with Owner for ANNUAL STREET RESURFACING PROJECT FY 2018-2019 JOB NO. 7597, PLAN NO. P-726 in accordance with Drawings and Specifications contained in a written and executed contract, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

WHEREAS, said contract provides that the Principal shall furnish a bond which shall remain in force for a period of **one** year after the date of the notice of completion and which shall be conditioned to guarantee against all defects in workmanship and materials which shall become apparent during said period.

NOW THEREFORE, the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notices of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) Complete the Contract in accordance with its terms and conditions, or;
- (2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

The transaction of insurance as evidenced by this bond is agreed by all parties to have taken place in the State of California in conformance with the laws therein, the Surety hereby accepts jurisdiction for adjudication of all claims in the state wherein the claims have occurred.

This bond is for the protection of the owner and gives no protection to any claimant other than those provided for by statute in the state wherein the claim occurs. The owner hereby agrees that no payments shall be made in excess or advance of any work specifically performed under the contract without the express written consent of the Surety.

For claims regarding non-payment for services provided or materials supplied under the contract, a claimant is defined herein as one having a direct contract with the Principal and/or subcontractor of the Principal. No suit or action shall be commenced hereunder by any claimant unless claimant shall:

1. Notify the Surety of the direct contract with the Principal or Subcontractor of the Principal within 30 days of entering into such contract and;

2. Notify the Surety of any demands for payment under such direct contracts concurrently with the Principal and/or Subcontractor of the Principal and;
3. Notify the Surety by certified mail within 15 days of any payment not made when due, or within 30 days of demand.

As the purpose of this bond is to warrant work previously performed by the Principal in the contract specified herein, the Owner shall notify Surety immediately by certified mail upon demand for work to be performed under this bond.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals the _____ day of _____, 2019, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

(Title)

(Surety)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$ _____ per thousand.

Total amount of premium charge is \$ _____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

GENERAL PROVISIONS

PART I

The documents that control construction, work performed, and materials furnished hereunder are the Contract Documents. The Contract Documents include the Notice Inviting Bids, Contractor's Proposal, Contract/Agreement, Bonds, Specifications, and the documents in the Appendix, if any, all of which are hereby incorporated and made a part of these Contract Documents. The Specifications include the Standard Specifications, these Special Provisions which supplement or modify the Standard Specifications, Plans, Standard Plans, and the Technical Specifications.

The Standard Specifications is the latest edition of the Standard Specifications for Public Works Construction, including supplements, written and promulgated by the Southern California Chapter of the American Public Works Association and the Southern California Districts of the Associated General Contractors of California, and the American Water Works Association (AWWA) Standards.

In case of conflict between documents, the precedence of documents shall follow Subsection 2-5.2 of the Standard Specifications, except that the Technical Provisions precede the Special Provisions. However, for any other precedence of documents, the Technical Provisions shall be considered part of the Special Provisions.

For the convenience of the Contractor, the section and subsection numbering system used in these Special Provisions corresponds to that used in the Standard Specifications.

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, AND SYMBOLS

Subsection 1-2 Definitions

Add the following to the provisions of Subsection 1-2, "Definitions":

The Standard Specifications, Standard Plans, and Manual of Traffic Controls, latest edition of each, of the State of California, Department of Transportation, and the Los Angeles County Department of Public Works Standard Plans, the City of San Fernando Standard Plans, and the American Water Works Association (AWWA) are incorporated herein by reference and are hereby accepted as Reference Specifications. These Reference Specifications are intended to govern certain construction materials, methods, and details except as modified herein or are inconsistent with the provisions herein. In case of conflict between the Reference Specifications and the Technical Provisions, the Technical Provisions shall govern. In case of a conflict between drawings and Technical Provisions, Technical Provisions shall prevail.

SECTION 2 - SCOPE AND CONTROL OF THE WORK

Subsection 2-1 Award and Execution of the Contract

Add the following to the provisions of Subsection 2-1, "Award and Execution of the Contract":

By mutual consent in writing of the parties signatory to the contract, alterations or deviations, increase or decreases, additions or omissions, in the plans and specifications may be made and the same shall in no way affect or make void the contract.

Subsection 2-4 Contract Bonds

Add the following to the provisions of Subsection 2-4, "Contract Bonds":

The performance bond shall remain in effect at least until the date of substantial completion/notice of completion, except as otherwise provided. The contractor warrants and guarantees to the City that all work will not be defective. The contractor shall furnish a warranty performance and payment bond equal to at least one hundred percent of the final contract price or \$1,000, whichever is greater, before the contract performance and payment bonds can be released or the retention payment paid. The warranty performance and payment bond shall be in effect until at least one year after the date of the notice of completion, except that utility work shall require it to be in effect for three years.

Subsection 2-5 Plans and Specifications

Add the following to the provisions of Subsection 2-5, "Plans and Specifications":

All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made of any plan or drawing after the same has been approved by the Engineer, except by written direction of the Engineer. Should it appear that the work to be done, or any matter relative thereto is not sufficiently detailed or explained in these Specifications, Special Provisions, Technical Provisions, or Plans, the contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to such explanation or interpretation as part of the original specifications. In the event of doubt or questions relative to the true meaning of the specifications, reference shall be made to the City Council, whose decision thereon shall be final.

Record Drawings:

All corrections on record drawings shall be done in red ink. Record drawings shall be a control set of the construction plans kept on the site for daily recording of "as built" conditions. Show dimensioned location of all buried facilities, such as drains, sumps, pipe, valves, electrical conduit, and irrigation wire.

Dimensions must be taken from above ground permanent, architectural objects, not plants or irrigation heads. All dimensions, notes, etc., shall be legible.

Record drawing shall be reviewed prior to all progress payment requests, and submitted prior to final inspection.

Subsection 2-9 Surveying

Add the following:

The Contractor shall preserve all benchmarks, monuments, survey marks, centerline ties and stakes and, in case of their impending removal or destruction by his/her operations he/she shall be responsible for notifying the City Engineer **prior** to their removal. Failure to provide such notification will result in the Contractor being liable for all costs associated with their replacement.

2-9.1 Permanent Survey Markers. Subsection 2-9.1 is hereby deleted and replaced with the following:

The Contractor shall retain a Licensed Land Surveyor or a Registered Civil Engineer authorized to practice land surveying within the State to Reset Survey Monuments. The Contractor is responsible for the filing and recording of the Survey Monuments.

2-9.2 Survey Service. Subsection 2-9.2 is hereby deleted and replaced with the following:

The Contractor shall retain a Licensed Land Surveyor or a Registered Civil Engineer authorized to practice land surveying within the State to provide construction staking. The Contractor is responsible for the accuracy of surveying adequate for construction.

2-9.4 Measurement and Payment. The following section is hereby added:

Full compensation for Construction Survey, including furnishing all labor, materials, tools, equipment, surveyor, supervision, and incidentals for doing all the work involved shall be considered as included in the other items of work.

Payment for monumentation restoration shall be paid at the contract unit price bid per intersection, including furnishing all labor, materials, tools, equipment, surveyor supervision, filing and recordation and other incidental for doing all the work involved and no separate payment shall be made thereof.

Subsection 2-10 Authority of Board and Engineer

Add the following to the provisions of Subsection 2-10, "Authority of Board and Engineer":

The Engineer shall retain all written protests filed, and, upon completion of the work, shall submit all such protests to the City Council, together with a copy of the Engineer's prior written decisions for consideration by the City Council at the time of final acceptance of the work. The Contractor or its representative may appear and be heard by the City Council concerning any such protests. In connection with acceptance of the work and final payment under the Contract, the City Council shall make its determination with respect to each protest filed with the Engineer. The decision of the City Council shall be final.

Subsection 2-11 Inspection

Add the following to the provisions of Subsection 2-11, "Inspection":

Inspection work requested by the contractor outside of the prescribed working hours shall be paid by the contractor at the City's overtime rate.

SECTION 3 - CHANGES IN WORK

Subsection 3-3 Extra Work

Add the following to the provisions of Subsection 3-3.1, "General":

The contractor shall proceed with extra work only upon written order from the Engineer. For such extra work the contractor shall receive payment as agreed upon in writing, or he shall be paid on force account. The contractor shall not exceed any of the quantities in the proposal unless prior authorization from the engineer is obtained in writing.

Add the following to the provisions of Subsection 3-3.2.3, "Markup":

Work by Contractor. The following percentages shall be added to the contractor's costs and shall constitute the markup for all supervision and management (direct or indirect); home office and field overhead and all profits, which shall be deemed to include all items of expense not specifically designated as materials or tool and equipment rental as in sections 3-3.2.2, "Materials", and 3-3.2.2.3, "Tool and Equipment Rental".

Labor	20%
Materials	15%
Equipment Rental	15%
Other Items and Expenditures	15%

To the sum of the costs and markups provided for in this subsection, a maximum of one percent (1%) shall be added as compensation for bonding upon proof of actual payment to the suret(ies).

Add the following to the provisions of Subsection 3-3.2.3.2, "Work by a Subcontractor":

When all or any part of the extra work is performed by a subcontractor, the markup established in subsection 3-3.2.3 shall be applied to the subcontractor's actual cost of such work, to which a markup of 10 percent on the first \$2,000 of the subcontracted portion of the extra work and a markup of 5 percent on work in excess of \$2,000 of the subcontracted portion of the extra work may be added by the contractor.

Subsection 3-4 Changed Conditions

The Contractor's failure to provide written notice of changed conditions within 48 hours upon their discovery to the Engineer and before they are disturbed shall constitute a waiver of compensation and claims in connection therewith.

The contractor shall proceed with extra work only upon written order from the Engineer. For such extra work the contractor shall receive payment as agreed upon in writing, or he shall be paid on force account. The contractor shall not exceed any of the quantities in the proposal unless prior authorization from the engineer is obtained in writing.

Subsection 3-5 Disputed Work

Add the following to the provisions of Subsection 3-5, "Disputed Work":

- A. In accordance with Public Contract Code Section 20104, and for the purposes of Paragraphs B only, the term "Defined Claim" shall mean a separate demand by the Contractor to the Owner of a value of \$375,000 or less, for any of the following: (a) a time extension, (b) payment of money or damages arising from work done by the Contractor pursuant to the Contract Documents and payment of which is not otherwise expressly provided for or the Contractor is not otherwise entitled to, or (c) an amount of payment which is disputed by the Owner.
- B. RESOLUTION OF DEFINED CLAIMS Pursuant to Sections 20104 et seq., of the Public Contracts Code, the provisions of this Paragraph B shall apply to all "Defined Claims," as such term is defined in Paragraph A (i.e., claims that are in the amount of \$375,000 or less).

Filing and Response to Defined Claim

The Defined Claim shall be in writing, include the documents necessary to substantiate the Defined Claim, and be filed with the Owner on or before the date of the final payment for the work.

If the Defined Claim is less than \$50,000, the new Owner shall respond in writing to the Defined Claim within 45 days of its receipt; or the Owner may request in writing within 30 days of receipt of the Defined Claim any additional documentation supporting the Defined Claim or relating to defenses or claims the Owner may have against the Contractor, and in such event the Owner's response shall be submitted to the Contractor within the later of 15 days after the receipt of the further documentation, or the time taken by the Contractor in producing the additional information.

If the Defined Claim is over \$50,000, the Owner shall respond in writing to the Defined Claim within 60 days of its receipt, or the Owner may request in writing within 30 days of receipt of the Defined Claim any additional documentation supporting the Defined Claim or relating to defenses or claims the Owner may have against the Contractor, and in such event the Owner's response shall be submitted to the Contractor within the later of 30 days after the receipt of the further documentation, or the time taken by the Contractor in producing the additional information or requested documentation.

Meet and Confer Regarding Defined Claim

If the Contractor disputes the Owner's written response, or if the Owner fails to respond within the prescribed time, to the Defined Claim, the Contractor may notify the Owner in writing within 15 days, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of the demand, the Owner shall schedule a meet and confer conference within 30 days. If the claim or any portion thereof remains in dispute following the meet and confer conference, the Contractor may file a claim pursuant to Government Code Section 900, et seq. For purposes of this Paragraph B, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits the Defined Claim until the time such Defined Claim is denied, including any period of time utilized by the meet and confer conference.

Procedures for Civil Actions Filed to Resolve Defined Claims

The following procedures shall apply to any civil action filed pursuant to this Paragraph B:

Non-Binding Mediation Within 60 days, but no earlier than 30 days, following the filing of responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, and shall be commenced within 30 days of the submittal and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

Judicial Arbitration If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Section 1141.10, et seq., of the Code of Civil Procedure, notwithstanding Code of Civil Procedure Section 1141.11. The civil discovery procedures of Code of Civil Procedure Section 2016, et seq., shall apply, consistent with the rules

pertaining to judicial arbitration. In addition to the provisions of Code of Civil Procedure Section 1141.10, et seq., (a) arbitrators shall, upon stipulation of the parties, be experienced in construction law, and (b) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees, also pay the attorneys fees on appeal of the other party.

Interest on Award of Judgment In any suit filed pursuant to Paragraph (G)3.2, the Owner shall pay interest at the legal rate on any arbitration award or judgment, which interest shall begin to accrue on the date the suit is filed in a court of law.

- C. RESOLUTION OF CLAIMS OTHER THAN DEFINED CLAIMS The provisions of this Paragraph C shall apply to all claims that are not "Defined Claims," as such term is defined in Paragraph A (i.e., claims that are in excess of \$375,000.00).

Written Claim

If the Contractor is not satisfied with any action by the City Council to resolve the protest of any claim other than a Defined Claim, it shall file with the City Council, within fifteen (15) days after such determination, a written claim which shall comply with the requirements for a claim under Division 3.6 of Title 1 (commencing with Section 810) of the California Government Code. The City Council shall take action with respect to any such claim as provided in Division 3.6 of Title 1 of the Government Code. Denial of such claim by the City Council shall be a prerequisite to the institution of any legal proceeding challenging the action of the City Council. If the Contractor fails to file a claim within the time specified herein, it shall be deemed satisfied with the action of the City Council with respect to its protests, and such failure to file a claim shall be deemed to be a waiver of all claims and demands arising out of or relating to this Contract.

Limitation Period

Demand for Arbitration of any claim other than a Defined Claim shall be served upon the Owner within the time limits set forth in Division 3.6 of the California Government Code for commencement of legal proceedings against a local public agency.

Arbitration

Except as provided to the contrary herein, arbitration of any claim other than a Defined Claim may be initiated by the Contractor and shall be conducted in accordance with the provisions of California Code of Civil Procedure Sections 1280, et seq. The parties hereto agree that there shall be a single neutral Arbitrator who shall be selected in the following manner: (1) The Demand for Arbitration shall include a list of five names of persons acceptable to the Contractor to be appointed as Arbitrator. The Owner shall determine if any of the names submitted by Contractor are acceptable and, if so, such person will be designated as Arbitrator; (2) In the event that none of the names submitted by Contractor are acceptable to Owner or if for any reasons the Arbitrator selected in Step (1) is unable to serve, the Owner shall submit to Contractor a list of the five names of persons acceptable to Owner for appointment as Arbitrator to Contractor who shall in turn have 10 days in which to determine if one such person is acceptable; (3) If after Steps (1) and (2) the parties are unable to mutually agree upon a neutral Arbitrator, the matter of selection of an Arbitrator shall be submitted to the Los Angeles County Superior Court pursuant to Code of Civil Procedure Section 1281.6.

SECTION 4 - CONTROL OF MATERIALS

Subsection 4-1.3 Inspection Requirements

Add the following to the provisions of Subsection 4-1.3, "Inspection Requirements":

At the option of the Engineer, the source of supply of each of the materials shall be approved by the Engineer before delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the contractor or producer of material to be used in the work, for testing or examination as desired by the Engineer. All tests of industry materials furnished by the contractor shall be made in accordance with commonly recognized industry standards or special methods and tests as prescribed in these specifications.

The Contractor shall furnish such samples of materials as are requested by the Engineer, without charge. No material shall be used until it has been approved by the Engineer. Samples will be secured and tested whenever necessary to determine the quality of material.

SECTION 5 - UTILITIES

Subsection 5-1 Location

Add the following to the provisions of Subsection 5-1, "Location":

Utilities for the purpose of these Special Provisions shall be considered as including but not limited to; pipelines; conduits; transmission lines; appurtenance of both public utilities and private industries, business, or individual; storm drains; sanitary sewers; and street lighting conduits.

The City has endeavored to locate and indicate on the drawings all underground utilities, facilities, and obstructions within the limit of the work under this contract or so nearly adjacent thereto as to interfere with the execution of the work. However, the accuracy and completeness of the utilities location indicated on the plans is not guaranteed. Sewer service lines, gas service connections, and street lights and traffic signal conduits may not be shown on the plans.

The contractor is responsible to determine the exact location of utilities and its service connections during construction. The contractor shall notify the City of the exact location of any utility or service connection which is not shown or incorrectly shown on the plans.

The contractor shall be expected to maintain liaison with the affected utility company representatives, and shall notify them prior to beginning of the job and each time the particular utility is or could possibly be affected at least 24 hours in advance:

1.	Frontier Communications	800-483-1000
2.	Southern California Edison Company	800-611-1911
3.	Southern California Gas Company	800-427-2200
4.	San Fernando Water Department	818-898-1293
5.	L.A. City Municipal Services	800-342-5397
6.	L.A. Metropolitan Water Dist.	626-844-5610
7.	Spectrum Cable	818-700-6500
8.	Plains All America Pipeline	800-708-5071

SECTION 6 - PROSECUTION, PROGRESS, AND ACCEPTANCE OF THE WORK

Subsection 6-1 Construction Schedule and Commencement of Work

Add the following to the provisions of Subsection 6-1, "Construction Schedule and Commencement of Work":

The Contractor shall begin work within three (3) days of the commencement date stated in the Notice to Proceed and shall diligently prosecute the same to completion before the time required to complete the work stated in the Contractor's Proposal expires.

Construction work is limited to normal working hours unless prior written approval is obtained from the Engineer. Normal working hours for construction are between 7 a.m. and 3 p.m.

Subsection 6-6 Delays and Extensions of Time

Add the following to the provisions of Subsection 6-6, "Delays and Extensions of Time":

The Contractor shall not be assessed with liquidated damages nor the cost of engineering and inspection during any delay in the completion of the work caused by Acts of God or of war, acts of the City, fire, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather or delays of subcontractors due to such causes, provided that the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineer in writing of the cause of delay, who shall ascertain the facts and the extent of the delay, and his findings of the facts thereon shall be final and conclusive.

Subsection 6-7 Time of Completion

Add the following to the provisions of Subsection 6-7, "Time of Completion":

Where a single shift is worked, eight (8) consecutive hours between 7 a.m. and 5 p.m. shall constitute a day's work at straight time for all workers. Forty (40) hours between Monday, 7 a.m., and Friday, 5 p.m. shall constitute a week's work at straight time. Holidays as herein referred to shall be deemed to be:

- | | |
|---------------------------|--------------------------|
| ▶ New Year's Day | ▶ Labor Day |
| ▶ Martin Luther King Day | ▶ Veterans Day |
| ▶ President's Day | ▶ Thanksgiving Day |
| ▶ Cesar Chavez's Birthday | ▶ Day after Thanksgiving |
| ▶ Memorial Day | ▶ Christmas |
| ▶ Independence Day | |

Subsection 6-8 Completion and Acceptance

Add the following to the provisions of Subsection 6-8, "Completion and Acceptance":

Final inspection and recommendation of completion by the Engineer does not constitute acceptance of the project. The contractor remains responsible for the project until acceptance of the work by the City Council.

Subsection 6-9 Liquidated Damages

Add the following to the provisions of Subsection 6-9, "Liquidated Damages":

It is agreed by the parties to the contract that liquidated damages for work under this contract is the sum of Five Hundred Dollars (\$500.00) per day for each and every day's delay beyond the time prescribed to complete the work. Contractor agrees to pay such liquidated damages as herein provided, and in case the same are not paid, Contractor agrees that the City of San Fernando may deduct the amount thereof from any money due or that may become due the Contractor under the contract.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the time specified, the City Council shall have the right to extend the time for completion or not, as may seem best to serve the interest of the City; and if it decides to extend the time limit for the completion of the contract, it shall further have the right to charge to the Contractor, his heirs, assigns or sureties; and to deduct from the final payment for the work, all or any part, as it may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the contract, and which accrue during the period of such extension, except that the cost of final surveys and preparation of final estimates shall not be included in such charges.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

Subsection 7-2 Labor

Add the following to the provisions of Subsection 7-2, "Labor":

Attention is directed to the provisions in Sections 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the Labor Code concerning the employment of apprentices by the contractor or any subcontractor under him.

Section 1777.5, as amended, requires the contractor or subcontractor employing tradesmen in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. The ratio of apprentices to journeymen in such cases shall not be less than one to five except:

1. When unemployment in the area of coverage by the joint apprenticeship committee has exceeded an average of 15 percent in the 90 days prior to the request for certificate, or
2. When the number of apprentices in training in the area exceeds a ratio of one to five, or
3. When the trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally, or
4. When the contractor provides evidence that he employs registered apprentices on all of his contracts on an annual average of not less than one apprentice to eight journeymen.

The contractor is required to make contributions to funds established for the administration of apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such

contributions.

The contractor and any subcontractor under him shall apply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

Subsection 7-2.2 Laws

Add the following to the provisions of Subsection 7-2.2, "Laws":

Eight hours constitutes a legal days' work. The contractor shall forfeit, as a penalty to the City of San Fernando, \$50.00 for each workman employed in the execution of the contract by the contractor is required or permitted to work more than eight hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Sections 1810 to 1815, thereof, inclusive, except that work performed by employees of contractors in excess of eight hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one-and-one-half times the basic rate of pay as provided in said Section 1815.

The contractor shall comply with Labor Code Section 1775 in accordance with said Section 1775, the contractor shall forfeit as a penalty to the City of San Fernando, \$50.00 for each calendar day or portion thereof, for each workman paid less than the stipulated prevailing rates for such work or craft in which such workman is employed for any work under the contract by him or by any subcontractor under him in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each workman for each calendar day or portion thereof for which each workman was paid less than the stipulated prevailing wage rate shall be paid to each workman by the contractor.

In accordance with the provisions of Section 1770 to 1777 inclusive, of the Labor Code of the State of California, the City Council of San Fernando has adopted the general prevailing rates of per diem wages applicable to the work to be done as have been determined by the Director of the Department of Industrial Relations for the State of California.

Subsection 7-3 Liability Insurance

Add the following to the provisions of Subsection 7-3, "Liability Insurance":

The public liability insurance shall include protection from claims caused by automobiles, trucks, or other vehicles of the contractor or any subcontractor while in use both within and outside the contract premises. The property damage insurance shall cover damage or destruction of any and all property other than that which is owned, leased, or in the care, custody or control of the Contractor or any subcontractor, with the liability limit applying to any one (1) accident, disaster or claim. All coverage provided by Contractor shall be considered primary and shall be completely exhausted before City coverage, if any and to be considered secondary, is exercised.

By appropriate endorsement, such policies of insurance required shall name the City of San Fernando as additionally insured with the Contractor with respect to the construction project

described in these specifications and shall provide that such insurance coverage shall not be canceled or reduced without thirty (30) days prior written notice to the City of San Fernando. Said endorsement shall be a separate document. Certificates of the insurance carried evidencing such insurance coverage shall be delivered to the City of San Fernando concurrently with the execution of the contract by the Contractor.

Subsection 7-5 Permits and Registrations

Add the following to the provisions of Subsection 7-5, "Permits and Registrations":

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work

Pursuant to State Bill 854, the following new requirements apply to all public works projects:

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded. The website for contractor registration with the Department of Industrial Relations (DIR) is <https://efiling.dir.ca.gov/PWCR>; the annual non-refundable fee, valid July 1 through June 30 (state fiscal year), is \$300.

Contractors who are awarded a public works project must submit electronic payroll records to the DIR's Compliance Monitoring Unit (CMU) in addition to providing wet-ink original copies to the City or its designated labor compliance enforcement officer.

Subsection 7-8.1 Cleanup and Dust Control

Add the following to the provisions of Subsection 7-8.1, "Cleanup and Dust Control":

All excess dirt and construction debris shall be hauled away from job site each day.

Subsection 7-9 Protection and Restoration of Existing Improvements

Add the following to the provisions of Subsection 7-9, "Protection and Restoration of Existing Improvements":

Existing improvements damaged or removed without written authorization shall be replaced by the contractor at no cost to the City. The contractor shall leave the work area in the same or better condition as compared to before beginning contract work.

Subsection 7-10 Public Convenience and Safety

Add the following to the provisions of Subsection 7-10, "Public Convenience and Safety":

In the event that the Contractor fails to adequately provide for the public safety during the course of construction under this contract, and the City is required to provide for said public safety, the Contractor shall pay the City the cost of each service call, which will include all direct labor and material costs including fringe benefits, overhead, and applicable rental rates for the various pieces

of equipment. Any and all costs incurred by the City as a result of the failure of the Contractor to provide for the public safety will be deducted from the amount due to the Contractor for the work done under this contract.

Subsection 7-10.2 Storage of Equipment and Materials in Public Streets

Add the following to the provisions of Subsection 7-10.2, "Storage of Equipment and Materials in Public Streets":

Overnight stockpiling of construction debris or excavated materials is not allowed. Contractor must obtain written approval from the Engineer prior to storage of construction materials and equipment on the street where improvements are planned. Adequate flashing barricades shall be provided.

Subsection 7-10.3 Street Closures, Detours, Barricades

Add the following to the provisions of Subsection 7-10.3, "Street Closures, Detours, Barricades":

In the event that any street must be closed, request must be received by the Engineer for approval and the following parties shall be notified at least 48 hours in advance.

- | | | |
|----|-------------------------|--------------|
| a. | Public Works Department | 818-898-1293 |
| b. | Police Department | 818-898-1267 |
| c. | Fire Department | 818-989-8561 |
| d. | Mauran Ambulance | 818-365-3182 |

The Contractor may choose to comply with the requirements of W.A.T.C.H. (Work Area Traffic Control Handbook) in providing devices and signage for pedestrian and vehicular traffic. The Contractor shall provide flagmen as necessary.

Overnight parking of construction equipment in the project site shall comply with the City parking restriction/regulations. Contractor shall provide adequate flashing barricades.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

No field offices for AGENCY personnel shall be required; however, the AGENCY's personnel shall have the right to enter upon the project at all times and shall be admitted to the offices of the Contractor if so provided by the Contractor for his own personnel.

SECTION 9 - MEASUREMENT AND PAYMENT

Subsection 9-3 Payment

Add the following to the provisions of Subsection 9-3, "Payment":

It is mutually agreed between the parties to the contract that no certificate given or payments made under the contract, except the final project acceptance, shall be conclusive evidence of the performance of the contract, either wholly or in part, against any claim of the party of the first part, and no payment shall be construed to be an acceptance of any defective work or improper materials.

The Contractor further agrees that the payment of the final amount due under the contract, and the adjustment and payment for any work done in accordance with any alterations of the same, shall

release the City of San Fernando, City Council, and the Engineer from any and all claims of liability on account of work performed under the contract or any alteration thereof.

Subsection 9-3.2 Partial and Final Payment

Add the following to the provisions of Subsection 9-3.2, "Partial and Final Payment":

The City shall, once in each month, cause an estimate in writing to be made by the Engineer of the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and not used, at the time of such estimate; and the value thereof. The City of San Fernando shall retain five percent (5%) of such estimated value of the work done and fifty percent (50%) of the value of the materials so estimated to have been furnished and delivered and unused as aforesaid as part security for the fulfillment of the contract by the Contractor, and shall monthly pay the Contractor, while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the contract. No such estimate or payment shall be required to be made, when, in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the contract, or when in his judgment, the total value of the work done since the last estimate amounts to less than Three Hundred Dollars (\$300.00).

The Contractor may be required to submit updated work schedules and current record drawings (as-built) with requests for progress payments.

SPECIAL PROVISIONS
PART 2
CONSTRUCTION MATERIALS

SECTION 200 – ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS

200-2.1 General. Untreated base shall be crushed aggregate base.

200-2.2 Crushed Aggregate Base.

200-2.2.3 Quality Requirements. The minimum R-value requirement will not be waived.

SECTION 201 - CONCRETE, MORTAR, AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE

201-1.1 Requirements

201-1.1.1 General. The same brand type, source of cement, and aggregate shall be used for all portland cement concrete.

Fly ash shall not be used.

SECTION 203 - BITUMINOUS MATERIALS

203-6 ASPHALT CONCRETE

203-6.1 General. Asphalt concrete material used for remove and replace repairs within the roadway shall be Class and Grade C2-PG 64-10.

203-6.4 Asphalt Concrete Mixtures

203-6.4.1 General. Acceptance as used in this Subsection 203-6.4 shall mean acceptance of material after spreading only. Acceptance of material in production shall be subject to all quality requirements based on sampling and testing as specified.

203-11 ASPHALT-RUBBER HOT MIX (ARHM) WET PROCESS.

203-11.1 General.

The following paragraph is hereby added to the end of Subsection 203-11.1.

Contractor shall complete and submit the Reliable Contractor Declaration (CalRecycle 168) and the RAC Certification (CalRecycle 739-TRP) forms required for the Agency's CalRecycle RAC Grant, CalRecycle 168 shall be submitted by the Contractor prior to commencement of work and CalRecycle 739-TRP shall be submitted by the Contractor prior to acceptance of the project. Current versions of these forms can be downloaded at <http://www.calrecycle.ca.gov/Grants/Forms/>.

203-11.2 Materials. Contractor shall maintain a minimum quality control plans as follows:

- a) Perform sieve analysis test Caltrans Test 202 on a sample taken immediately after 300 tons of production and every 500 tons thereafter.
- b) Perform binder content test Caltrans Test 382 on a sample taken immediately after 300 tons production and every 1,000 tons thereafter.

Tests shall be performed and completed without interruption directly after samples are procured at the production plant laboratory.

Contractor shall provide the correction factor for Caltrans Test 382 for ARHM material at least 5 working days prior to paving.

A copy of test results shall be provided to the Engineer immediately upon completion of each test or upon request thereafter if Engineer is not present at time of the test. Adjustments shall be made immediately if test results indicate a need for adjustment.

203-11.2.3 Crumb Rubber Modifier (CRM).

The first paragraph of Subsection 203-11.2.3 is hereby deleted and replaced with the following:

The material shall consist of a combination of scrap tire CRM and high natural CRM meeting the requirements of this subsection. Scrap tire CRM shall consist of ground or granulated rubber derived from any combination of automobile tires, truck tires or tire buffing. Whole scrap tire rubber shall be derived from scrap tires generated entirely within the State of California, and the certification of compliance shall so certify.

The high natural rubber shall be a single source material and not a blend of more than one source.

The high natural CRM and CRM rubber components shall not be pre-mixed prior to mixing with paving asphalt.

The 5th paragraph of Subsection 203-11. 2.3 is hereby deleted and replaced with the following:

The percentage of high natural CRM shall be equal to 1000 divided by the

percentage of natural rubber in the high natural CRM (using whole number percentages), e.g., 1000/40% equals 25 percent. The remainder of CRM shall be scrap tires.

The binder material must contain a minimum of 300 pounds (equivalent to 15% by weight) of tire-derived crumb rubber per ton of rubberized binder.

The maximum value for Natural Rubber Content in Table 203-11.2.3(B) is hereby deleted.

An acceptable source of natural rubber scrap is available from TRF Industries (330) 688-1583 (Bruce Bowers), though any other source of natural rubber meeting specifications is acceptable. A grinding/granulating company is BAS, Harach Sarkis (310) 429-3546, for whatever material is supplied, though any other grinding/granulating company is acceptable.

The sixth (last) paragraph of Subsection 203-11.2.3 is hereby deleted.

203-11.3 Composition and Grading.

Optimum binder content shall be based on Caltrans 367 procedure without modification using air voids of 4%. Once full compliance with specifications is established at 4% air voids, the binder content shall thereafter be increased to provide 3.5% voids to conform to the residential traffic in the project, all other factors being within specification.

Variations of percent air voids below the minimum specified will be cause to terminate paving operations until changes to conform to the specified percent air voids are demonstrated and approved by the Engineer.

The gradation ranges shown in Table 203-11.3(A), including the $\frac{3}{4}$ " sieve range added herein, shall be considered the Contract Compliance Range. The Operating Range for the $\frac{1}{2}$ " sieve shall be 94% to 99%. The Operating Range for all other sieves, except the 200 sieve, shall be 2 percentage points inside the Contract Compliance Range. If gradation test results do not meet the Operating Range requirements but meet the Contract Compliance Range, placement of ARHM may be continued for the remainder of the day. However, another day's work shall not be started until tests, or other information, indicate to the satisfaction of the Engineer that the next material to be used in the work will comply with the requirements specified for Operating Range.

ARHM shall be Class GG-C or OG-C.

203-11.4 Mixing.

The first sentence of the third paragraph of Subsection 203-11.4 is hereby deleted and replaced with the following:

The proportions of the materials, by total weight of asphalt-rubber binder, shall be 80

percent combined paving asphalt and asphalt modifier, and 20 percent CRM, except that the percentage of CRM should be reduced by 20 percent of the difference between total rubber hydrocarbon percentage in the natural CRM and the value 50 percent, but no less than 18%. (For example, for total rubber hydrocarbon in the high natural CRM of 56%, reduce the total CRM by 20% of 56% minus 50%, which equals 1% reduction, and yields the formulation 19% CRM and 81% asphalt and modifier, in lieu of 20% and 80%. Lack of proper adjustment will cause excessively long reaction times.) Complete documentation shall be provided to the Engineer to approve the formulation.

The required mixing/reaction time is hereby modified to 75 minutes minimum. The minimum reaction period shall be the time from complete incorporation of materials into the mix to the time that the asphalt-rubber meets all specifications for reacted material. Reaction shall be considered complete only after the second of two viscosity readings taken 15 minutes apart is less than the first. The Engineer's decision shall be final for determination of the minimum reaction period.

The maximum value for Haake Field Viscosity @191 degrees C (375 degrees Fahrenheit), (Centipoise) in Table 203-11.4(A) is hereby changed to 2600.

All material shall be tested for viscosity and verified as to complete reaction prior to transfer to any storage tank or use of the reaction tank for feed to the hot mix plant.

Material reacted lower than specified temperature, but above 185 degrees C (365 F), or transferred to a storage tank prior to completion of reaction as specified, shall be reacted for a total period of 3 hours prior to use. Any such transfer shall be described in the comments column of the Asphalt Rubber Batch Log.

Each batch of binder shall be tested for viscosity after the minimum reaction time has passed and the following information shall be recorded:

1. Temperature of stored asphalt cement material at time of loading
2. Time at which the reaction tank is fully loaded
3. Tons of asphalt rubber added to the tank for the batch
4. Total asphalt rubber in the tank after loading
5. The beginning time of reaction (Fully loaded and above 375° F)
6. Binder temperature at time of sampling
7. Temperature of tested material
8. Viscosity reading
9. Time of viscosity test (All test results must be completed prior to use.)

A copy of the Asphalt Rubber Batch Log shall be provided to the Engineer upon request. A copy of the batch log sheet and all circle charts for the day shall be faxed to the Engineer within 12 hours of ending production of ARHM for the day.

(A log sheet form will be provided at the preconstruction meeting.)

Construction shall be considered unauthorized until Contractor has faxed the log to the Engineer as arranged at the preconstruction meeting and has in his possession a

fax confirmation sheet with a time and date conforming to specification. Under any circumstances, Engineer must be contacted for clearance to pave.

203-11.4.1 Hand Held Viscometer Test

Modify Subsection 203-11.4.1 Test Procedure as follows:

Delete the last two sentences of Step 4 and replace with the following:

Stop stirring the binder. While the spindle is rotating, move the spindle in and out of the binder slowly three times at a location close to the edge of the container (do not disturb the central area).

Delete the first three sentences of Step 5 and replace with the following:

Determine the viscosity of the binder at 190C +/- 3C (375F+-5F) as follows. In one continuous operation, turn off the spindle rotation, remove the spindle vertically from the binder, and immediately insert the spindle back into the center of the binder. Wait 5 seconds to fill the spindle. While holding the viscometer level, turn the spindle on, watch the needle on the viscometer dial and record the maximum value obtained on the dial.

203-11.5 Equipment for Production of Asphalt-Rubber.

Add the following to Item 3) of 203-11.5:

A) Reaction Tank. The asphalt-rubber material shall be held in a reaction tank separate from the storage tank feeding the ARHM plant, until the reaction is complete. The reaction tank shall have agitation sufficient to increase the viscosity of the mixture to a peak viscosity reading at least 20 percent higher than the viscosity reading of the material measured at a time that the material otherwise meets specifications for reacted material. The time of reaction may be extended as needed to produce this result. It shall be the responsibility of the Contractor to demonstrate to the Engineer through viscosity readings at appropriate times that the equipment conforms to these requirements. If this cannot be demonstrated, the reaction time shall be 3 hours. Once established, the reaction time shall be the minimum time for reaction unless there are changes in materials or equipment, in which case a new reaction time shall be established per specifications. The Engineer's decision shall be final.

B) Storage Tank. After a complete reaction is verified by viscosity readings acceptable to the Engineer, the material shall be held in a storage tank that is fully isolated from material that is not fully reacted. This tank shall be the only tank feeding the ARHM plant.

SPECIAL PROVISIONS

PART 3

CONSTRUCTION METHODS

SECTION 300 - EARTHWORK

300-1 CLEARING AND GRUBBING

300-1.1 General.

The last paragraph of Subsection 300-1.1 is hereby deleted and replaced with the following:

Tree branches which hang within 13.5 feet above finished roadway grade or within 9 feet above finished sidewalk or parkway grade shall be removed to the branch collar in accordance with the current pruning standards of the International Society of Arboriculture (ISA). The Contractor shall remove additional tree branches, under the direction of the Engineer, in such a manner that the tree will present a balanced appearance. No paint or tree sealant shall be applied to the resulting scars. All pruning shall be done under the supervision of an ISA Certified Arborist in the City's employ.

The following is hereby added to Subsection 300-1.1:

All the root pruning required to place or replace walks, curbs, curbs and gutters, or other permanent facilities shall be limited to the minimum amount necessary to set forms.

All roots two (2) inches and larger shall be cut with sharp tool such as axe or chainsaw. No roots shall be broken off by trenching or other heavy equipment.

No root shall be removed within five (5) diameters of the tree trunk measured at 4 feet, 9 inches above grade without the express written permission of the AGENCY. Any such root removed without the AGENCY's written permission may create a hazardous condition for which the Contractor shall be liable.

Should the Contractor create a hazardous condition in the sole judgment of the Engineer, the Contractor shall remove the tree and replace it with a specimen of the same species and value at the Contractor's expense.

All significant root pruning (3 inch diameter and larger) shall be performed under the direct supervision of an ISA Certified Arborist in the Contractor's employ.

300-1.3 Removal and Disposal of Materials

300-1.3.2 Requirements. The text of Subsection 300-1.3.2(a), (b) and (c) of the Standard Specifications is hereby deleted.

300-2 UNCLASSIFIED EXCAVATION

300-2.1 General. Unclassified excavation shall consist of all excavation, including roadways, bituminous pavement, and concrete pavement, curb, walk, gutters, cross gutters, driveways, and access ramps.

300-2.1.1 Requirements. Subsection 300-2.1.1 is hereby added to Section 300 of the Standard Specifications as follows:

1. Bituminous Pavement. Bituminous pavement shall be removed to neatly sawed edges. Saw cuts shall be to a minimum depth of 3 inches. Where only the surface of existing bituminous pavement is to be removed, the method of removal shall be approved by the Engineer, and a minimum laying depth of 1 inch of new pavement material shall be provided at the join line. Where bituminous pavement adjoins a trench, the edges adjacent to the trench shall be saw cut to neat straight lines before resurfacing to ensure that all areas to be resurfaced are accessible to the rollers used to compact the subgrade or paving materials.

Bituminous pavement on curb and gutter, sidewalk or drive approaches shall be removed by heating with a torch to soften the pavement without creating smoke. Softening shall be performed until the bituminous material can be easily scraped away down to the underlying PCC surface. The blade used for scraping shall be maintained straight along its edge and clean. Bituminous material shall be scraped in this manner until it is completely removed.

2. Concrete Curb, Walk, Gutter, Cross Gutters, Driveways, and Access Ramps. Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of 1½-inches. Concrete sidewalk, or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30 inches in either length or width. If the saw cut in sidewalk, access ramp, or driveway would fall within 30 inches of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within 12 inches of a score mark, the saw cut shall be made in and along the score mark. Curb and gutter shall be sawed to a depth of 1½-inches on a neat line at right angles to the curb face.

300-2.7 Selected Material. The text of Subsection 300-2.7 of the Standard Specifications is hereby deleted and replaced with the following:

Selected materials encountered in the excavations within the project limits that meet the specifications for base material, trench bedding or backfill, topsoil, or other specified materials shall be used as shown on the Plans, in the Specifications, or as directed by the Engineer. Topsoil excavated may be considered only for the purpose of backfilling areas to be planted.

300-2.9 Payment.

The first sentence of Subsection 300-2.9 of the Standard Specifications is hereby deleted and replaced with the following:

Payment for unclassified excavation performed as part of the work for "remove and construct" bid items, including removal of extra AC thickness shall be paid for as part of the work for that item, and no additional compensation will be allowed.

300-4 UNCLASSIFIED FILL

300-4.9 Measurement and Payment. The text of Subsection 300-4.9 of the Standard Specifications is hereby deleted and replaced with the following:

Full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in unclassified fill construction shall be considered as included in the price paid for "remove and construct" bid item and shall include full compensation for the cost of all grading, shaping, compacting or consolidating and extra fill, if required, or other work that is required under this subsection. No additional payment will be made for unclassified fill.

SECTION 301 - TREATED SOIL, SUBGRADE PREPARATION, AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION

301-1.3 Relative Compaction. The first paragraph of Subsection 301-1.3 of the Standard Specifications is hereby deleted and replaced with the following:

When pavement is to be placed directly on subgrade material or when base or subbase material, curb, gutter, alley pavement, driveways, or sidewalks are to be placed on the subgrade material, the top 6 inches of such subgrade material shall be compacted to a relative compaction of 90 percent.

301-1.6 Adjustment of Manhole Frame and Cover Sets to Grade.

Class C or D ARHM shall be used to patch around all frame and cover sets.

Subsections 301-1.6.1, 301-1.6.2, and 301-1.6.3 are hereby added to Section 301 of the Standard Specifications as follows:

301-1.6.1 Adjustment of Los Angeles County Flood Control District Manhole Frame and Cover Sets to Grade.

Adjustments to grade of Los Angeles County Flood Control District Manhole Frame and Cover sets do not require a District permit. However, the Contractor shall notify the Inspection Department at (818) 458-3129, 24 hours in advance of any work in the area of the manhole.

301-1.6.2 Adjustment of Los Angeles County Sanitation District Manhole Frame and Cover Sets to Grade.

Los Angeles County Sanitation District manhole frames and covers shall be set to finish grade as follows:

1. Contractor shall notify the District's Superintendent of Maintenance, (310) 638-1161 or (310) 774-7272, 48 hours prior to commencement of any work in the area of the manhole.
2. If grade over manhole is to be lowered:
 - a. Contractor shall furnish and deliver a temporary steel cover plate of thickness and size approved by the District for said manhole.
 - b. Contractor shall excavate around the manholes to a depth and distance outside of the manhole as required by the District for said manhole.
 - c. District shall remove the existing manhole frame and cover, and any interfering portion of the manhole shaft, and shall place the steel cover plate over the manhole.
 - d. Contractor shall store and protect frame and cover for later installation by the District and shall fill and/or pave over the steel plate to final grade.
 - e. Contractor shall remove paving and/or fill as necessary to permit the District to raise manhole to final grade. (Removal of paving and/or fill shall be to a minimum of 2 inches outside of the manhole if the steel plate is less than 6 inches below final grade and 12 inches outside of the manhole if the steel plate is more than 6 inches below final grade.)
 - f. District personnel shall raise manhole and set frame and cover to grade.

- g. Contractor shall place and compact the backfill and pavement as necessary to complete the work.
- 3. If grade over manhole is to be raised:
 - a. Contractor shall fill and/or pave directly over frame and cover to final grade.
 - b. Steps (e) through (g) of 2 above shall be followed, except that if grade is to be raised more than 2 feet, the Contractor shall excavate around the manhole shaft under step (2) to a depth and diameter as necessary, for the District to remove and reconstruct manhole shaft with required taper and as specified by the District.

301-1.6.3 Adjustment of Water Valve Box Frame and Cover.

Water valve box frame and cover within the area to be paved or graded shall be set to finish grade by the Contractor as required by the Plans and Specifications. In the case of portland cement concrete, water valve box frame and cover shall be set to finish grade by the Contractor before paving.

301-1.7 Payment. The second and third paragraphs of Subsection 301-1.7 of the Standard Specifications is hereby deleted and replaced with the following:

Full compensation for adjusting manhole to grade will be made in the price paid for adjusting manhole to grade, and no additional payment will be made therefore.

Adjustment of water valve and gas valve slip can type frame and covers to grade shall be the responsibility of the Contractor. Utility companies will be responsible for checking and ensuring that such frame and covers do slip properly, such that the Contractor can slip them to grade at time of paving. The exact number of such frames and covers may vary from the number shown on the plan, but it is the responsibility of the Contractor to survey the project. Contractor shall notify the Engineer at the earliest possible time after discovery if a frame and cover does not slip, but in no case less than 10 days prior to paving.

Payment for slipping water or gas valve covers to grade shall be included in the other item of work and no additional payment will be made thereof.

SECTION 302 - ROADWAY SURFACING

302-1 COLD MILLING ASPHALT OF EXISTING PAVEMENT

302-1.1 General. The following is hereby added to the first paragraph of Subsection 302-1.1:

Such straight edge grade along the edge of the cold plane area shall not deviate more than 1/4 inch below nor 1/8 inch above the grade specified in the Plans or Specifications.

302.1.7 Work Site Maintenance. Add the following paragraph:

Cold milling will not be considered complete until all loosened material is removed from the project site. Paving shall not commence until the day after cold milling is complete.

Cold milled streets shall be approved by the Engineer as completed for cold milling prior to paving. Sweepers used for cold mill sweeping shall not enter on streets approved as completed for cold milling.

302-5 ASPHALT CONCRETE PAVEMENT

302-5.1 General. The last sentence of Subsection 302-5.1 of the Standard Specifications is hereby deleted and replaced with the following:

Cracks, joints, and holes to be filled shall be cleaned after cold milling.

AC for AC pavement repairs and for PCC pavement repairs shall be placed the same day as removals are performed.

302-5.4 Tack Coat.

Tack coat for overlay shall be Thermoplastic Polymer Modified High Performance Seal (TPMS) manufactured by Paramount Petroleum Corporation (562-531-2060), for overlay, or an approval equal. The Engineer shall approve the exact rate and number of applications.

The tack coat shall be applied as specified in Subsection 302-5.4 of the Standard specifications and these Special Provisions. The Engineer will determine if the pavement is sufficiently dry for the application of the tack coat. Tack coat shall not be applied when the temperature of the surface to be tacked is below 50° F in the shade. Whenever pavement surface temperatures exceed 120, a small test section shall be applied approximately 30 feet in length to gauge setup time for the tack to not stick to truck tires. The setup time shall be recorded. Paving, material delivery and tack coat placement must be coordinated and scheduled to provide that tack is setup before placing trucks on the tacked area. Pavement surface temperatures shall be monitored and additional test sections shall be performed to revise the paving operation as conditions change. Upon occurrence of tracking of tack coat, paving shall cease, except remaining material in the hopper shall be used, and the tack shall be allowed time to setup.

On all vertical joins of AC patching, apply SS-1H tack coat uniformly in two coats of .20 gallons per square yard each with full "break" in between, or .20 gallons per square yard PG 64-10 uniformly in one coat. Tack coat shall not be applied when the temperature of the surface to be backed is below 60° F in the shade.

The TPMS shall be heated slowly to 350-425 F. At no time TPMS shall be heated above 450 F. The product shall be applied through a distributor truck equipped with a heating unit capable of raising temperature at least 3 F per hour, and shall maintain tack coat temperature at or above 350 F. It shall be equipped with a full circulating spreader bar and pumping system capable of applying TPMS material within a +0.01 gallons per square yard tolerance of specified application rate and give uniform covering of the surface to be treated. The distributor shall also include a tachometer, pressure gauge, and volume measuring device and thermometer. The application rates shall be 0.15 gallons per square yard for all ARHM overlay or as otherwise directed by the Engineer.

Tack coat shall not be applied until preparation of the existing surface has been completed and thoroughly cleaned, and then only so far in advance of placing the overlay as permitted by the Engineer. Tack coat shall not be left exposed overnight. Immediately in advance of placing the overlay, additional tack coat shall be applied as directed by the Engineer, to areas where the tack coat has been destroyed or otherwise rendered ineffective, and no additional compensation will be allowed for such work.

Paving of overlay shall not proceed until the tack coat has stiffened sufficiently to not stick to truck tires.

Existing concrete curb faces and all concrete not to be overlaid shall be protected against disfigurement from the tack coat. Residue of tack coat material shall be removed from curb faces by sandblasting to return the concrete to its original condition unless otherwise directed by the Engineer.

Excessive tracking of tack coat onto adjacent pavements will require immediate clean-up. If significant amounts of paving asphalt are traced onto existing adjacent pavements, the contractor shall clean it off to the satisfaction of the Engineer or provide a slurry seal to restore the pavement at their own expense.

302-5.5 Distribution and Spreading. Contractor shall provide 20-foot long automatic screed control on both sides of the paving machine for all paving with paving machine, as directed by Engineer.

The asphalt concrete as delivered shall be deposited directly into the hopper of the spreading and finishing machine. Truck transfer and bottom-dump trucks are not allowed.

Each paving machine used will require a paving foreman for each machine along with a full set of rollers as specified and two rakers and one shoveler laborer at a minimum.

302-5.6 Rolling. Rolling along a joint shall be such that the widest part of the roller is on the hot side of the joint.

Rubber tire rollers shall be used on any leveling course.

Three rollers shall be provided for installation of AC greater than 200 tons per hour, regardless of thickness.

302-5.7 Joints. Join lines between successive runs shall be within 6 inches of lane lines or center of street or a minimum of 14 feet outside of the outer most lane line or center of street, or 5 to 6 feet from a lane line or center of street and within a lane. The joint pattern for all pavement layers shall be submitted in writing to the Engineer for review and approval 2 weeks in advance of the first lift of pavement to be placed. No exceptions to the specified requirements for joints shall be anticipated, and the Engineer's decision shall be final.

302-5.8 Manholes (and Other Structures). Asphalt-rubber hot mix (ARHM) Class C or D, shall be used as final cap around adjusted manholes.

302-5.9 Measurement and Payment.

Compensation to provide all of the equipment to the site and operated as specified, including all rollers specified regardless of rolling pattern elected by Contractor, shall be considered included in the bid item price for AC or ARHM material.

302-9 ASPHALT-RUBBER HOT MIX (ARHM).

302-9.1 General.

Contractor's attention is directed to Subsection 302-5.8, Manholes, for requirements for patching manholes and miscellaneous, frames and covers in ARHM pavements.

All PCC surfaces, to be crossed by trucks used to haul ARHM, that are within 500 feet of the work limits shall be covered with sand or other durable covering prior to applying tack coat.

Contractor shall have sufficient power brooms on site during all periods of distribution and spreading to provide for cleanup of haul routes and work areas. Power broom shall provide miscellaneous cleanup of ARHM spoils as directed by the Engineer.

Power brooms used ahead of paving operations after acceptance of cold milling shall only sweep areas that are accepted as completed for cold milling. Power brooms shall not be operated more than 80 percent full of sweepings. Power brooms that have swept areas not accepted as completed for cold milling shall not enter into areas that are accepted as completed for cold milling.

302-9.2 Mixing Binder with Aggregate.

Proportioning shall be performed using an automatic batching system, and the proportioning device shall be automatic to the extent that the only manual operation required for proportioning all materials shall be a single operation of a switch or starter.

For drum plants, the system shall run fully automatic with the only input to the AC plant computer being information transmitted automatically from a Corealis mass flow meter on the line of the asphalt-rubber feed to the AC plant. All automatic shutdown features of the AC plant shall be fully functional.

302-9.4 Distribution and Spreading.

The ARHM as delivered shall be deposited directly into the hopper of the spreading and finishing machine. Truck transfer and bottom-dump truck are not allowed except as authorized by the City Engineer.

The temperature of ARHM shall be high enough upon delivery that pavement temperature after two passes with the breakdown roller exceeds 240 degrees Fahrenheit.

To avoid picking up loose rock in the overlay area, the tires of all trucks must be lightly oiled with linseed oil or soybean oil or approved equal. Diesel fuel will not be allowed on the project at all for oil down of any equipment.

Raking of ARHM shall be eliminated as much as possible. ARHM material shall not be cast across the mat under any circumstance. Raking shall be just enough to set up edges for uniform joints without casting material. Screed controls shall be the predominant means of controlling material at joints. In areas where paving machines cannot be used due to space constraints, material shall not be thrown by shovels. Material shall be removed directly from the paving machine hopper and shall be placed directly in its final location, to be distributed with minimal raking. Material may be dumped directly from a truck, but further material distribution shall be by shovel directly to its final location with minimal raking. A small rubber tire tractor with a screed type attachment may be used to spread a pile dumped from a truck, but raking shall be minimized after spreading.

The paving machine screed shall not be pulled across an area already paved with ARHM, even adjacent to narrow areas to be paved. Such narrow areas shall have ARHM distributed by methods specified by shovel or rubber tire tractor, unless the adjacent area has hardened enough and will not be significantly marred by passing the screed over it. Even if hardened adequately, Contractor shall spread rock dust by hand tools to avoid cohesion of the ARHM in the screed to the existing surface of such areas of freshly cured ARHM.

Contractor shall maintain a functioning infrared heat measurement device in close proximity to each paving machine at all times. The infrared device shall be correlated by thermometer to the actual mat temperature prior to use. The correlation difference shall be applied to all readings thereafter. Contractor shall provide a pavement temperature reading, with an infrared heat measurement instrument, when requested by the Engineer. Inaccessibility of a heat measurement shall be cause for termination of paving operations.

Transverse cold joints shall be provided such that longitudinal joints are not left exposed at the end of the workday.

302-9.5 Rolling.

Initial breakdown rolling shall be vibratory. Rolling in vibratory mode shall not be performed after ARHM material temperature falls below 240 degrees F, due to disturbance of the bonds beginning to set up in the binder at lower temperatures.

An intermediate roller of the same or greater width than the breakdown roller shall be rolling directly behind the breakdown roller at all times, and paving shall cease if intermediate rolling is terminated for any reason. Additional intermediate rollers may be necessary depending on production rates.

Once a rolling pattern is elected by Contractor, the rolling pattern shall remain consistent, unless conditions change and/or a modified rolling pattern is needed to conform to specification.

All finish rolling shall be performed by a separate finish roller.

To ensure optimum quality control, the use of more than one paver will require notification 3 days in advance to the Engineer, and will generally require one foreman, one sweeper, and a full complement of rollers per Subsection 302-5 of the Standard Specifications and this Subsection 302-9.5 for each paving machine.

An extra breakdown roller shall be on site at all times, free of defects.

302-9.5.1 Density and Smoothness. Density and smoothness shall conform to Subsection 302-5.6.2, except the second and third paragraph of Subsection 302-5.6.2 shall not apply to ARHM.

The compaction after rolling shall be 95 percent of density obtained with the California Kneading Compactor, California Test 304 as modified and measured in conformance to this Subsection 302-9.5.1.

The field density of compacted ARHM shall be determined by:

- 1) A nuclear asphalt testing device, calibrated in conformance with California Test 375, except as modified in this Subsection 302-9.5.1, in the field designed to measure the density of pavement of the thickness being constructed; or
- 2) Core with density determined as follows:
 - a) Saw the ARHM lift of pavement from the top of the core approximately perpendicular to the axis of the core, just above any underlying pavement or as necessary to obtain a clean flat surface at the bottom of the sample.
 - b) Clean and dry the sample as described in ASTM 1188.
 - c) Perform California DOT Test 308 Method A step a.
 - d) Prior to proceeding to steps 308A b., 308A c., 308A d. and 308A e., place the core, top surface down, firmly into a flat

pan of hot liquid paraffin approximately 1/4 inches deep. Allow the sample and paraffin to cool to firm solid state and remove the sample from the pan by cutting around the perimeter. Trim the edges of paraffin parallel to the side of the sample cylinder, and weigh the cylinder to obtain:

G = Mass in grams of level sealed paraffin-treated specimen in air.

- e) Perform 308A b., 308A c., and 308A d on the sample from D) above.
- f) Complete the remainder of Test 308A, except replace the formula in 308A e. with the following: Bulk Specific Gravity

$$= \frac{A}{(D - E) - (D - G) / F}$$

In case of dispute, 1) shall be used, except Contractor may elect to use 2), but all costs for such procedures shall be borne by the Contractor to provide the full set of coring, tests and documentation in conformance with the Standard Specifications, except all test methods shall be modified as specified in these Special Provisions. Also, Contractor shall notify the Engineer at least 3 days in advance of coring operations, and immediately after core testing is complete Contractor shall deliver cores to the Agency for verification.

Nuclear test procedures, including correlation with core densities, shall be in conformance with California Test 375, except as follows:

If a test section is placed and compacted for that purpose, rolling shall be provided as follows: 1) 2 passes with a vibratory breakdown roller above 240 degrees F; and 2) 4 passes with a static roller above 200 degrees F. Core locations for correlation with cores shall be selected based on appearance of relatively tight surface texture, and the test strip shall be selected on this basis. If a test location is determined to have a significantly open texture relative to other areas within the test strip, the location shall not be used. This selection criteria is not to be considered significant to the outcome of, but only as a guideline towards obtaining samples that are relatively well compacted to yield results with minimum standard deviation. The locations shall be well clear of grade breaks and joints. One core centered on the gauge will be used instead of two at each location. Use method 2) in this Subsection 302-9.5.1 to determine density of cores. Surface voids shall not be filled with sand.

Contractor will be notified in writing at least 5 days in advance of such correlation testing and will be invited to have a nuclear gauge onsite to correlate a second gauge. If not independently calibrating at that time, Contractor shall bear the full expense of performing correlation for his nuclear gauge under the specified procedures, but shall notify the City 5 days in advance of such correlation testing, such that the City can correlate with the Contractor's gauge, if Contractor disagrees with City's test results.

TABLE 302-9.5.1A REDUCED COMPENSATION FACTORS			
Relative Compaction (Percent)	Reduced Compensation Factor	Relative Compaction (Percent)	Reduced Compensation Factor
95.0	0.000	93.4	0.062
94.9	0.002	93.3	0.068
94.8	0.004	93.2	0.075
94.7	0.006	93.1	0.082
94.6	0.009	93.0	0.090
94.5	0.012	92.9	0.098
94.4	0.015	92.8	0.108
94.3	0.018	92.7	0.118
94.2	0.022	92.6	0.129
94.1	0.026	92.5	0.142
94.0	0.030	92.4	0.157
93.9	0.034	92.3	0.175
93.8	0.039	92.2	0.196
93.7	0.044	92.1	0.225
93.6	0.050	92.0	0.300
93.5	0.056		

302-9.5.2 Compaction Payment Reductions. Based on laboratory tests on AC pavements revealing a highly significant loss of life span for each 1 percent reduction of compaction, and the well-known catastrophic effect of oxidation and stripping of asphalt products due to interconnected voids that develop below 95 percent compaction, and the extreme expense of removing and replacing pavement not compacted to the specified minimum, a nominal deduction of payment will be applied for under-compacted ARHM pavement. The bidder in submitting a bid fully accepts the provisions in this Subsection 302-9.5.2 and agrees that the nominal payment deduction is acceptable and reasonable for these purposes.

Payment reductions will be applied to ARHM compacted less than 95 percent of maximum density, the specified minimum, and greater than 91.9 percent of the maximum density based on nuclear testing with Part 3 Test Site Selection of California Test 375 modified as follows:

A lot will be one day's production or other lesser area of paving as determined by the Agency to be deficient in terms of compaction, and a pull will be the width between joints or edge of pavement as the lot is placed.

Test site selection will conform to California Test 375 Part 3, except the number of tests shall be the area of the lot in square feet divided by 400 and any test site within .5m of a grade break or pavement joint shall be relocated laterally towards the center of the pull to .5m from such joint or grade break.

The mathematical mean average of percent of maximum density represented by all these tests shall be calculated, except any test results outside of this mean plus two

standard deviations based on all tests, shall be rejected. The mean average shall be calculated directly from the remaining values. A compensation reduction in conformance with Table 302-9.5.1A will be applied to the contract unit price for ARHM for material within any lot determined to be below minimum relative compaction, except any lot with tests indicating compaction 91.9 percent or less shall be removed and replaced at Contractor's expense.

302-9.6 Rock Dust Blotter. Lack of uniformity of application of rock dust shall be cause to terminate paving operations. Rock dust blotter shall not be applied until intermediate rolling is complete, except as approved by the Engineer based on a fine uniform layer of rock dust, or at major intersections and access points.

SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, AND CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS

303-5.1 Requirements.

303-5.1.1 General. All concrete flatwork areas behind sidewalks, driveways and right-of-way shall be considered as walks.

Detectable warning surface (truncated domes) for curb ramps shall be Cast-in-Place System per Armor Tile Part No. ADA-C-3648 or approved equal. Color shall be yellow or City select.

303-5.9 Measurement and Payment. Add:

Payment for detectable warning surface for newly constructed curb ramp or modification of existing curb ramp approach shall be included in the unit price bid for the removal and construction of new curb ramps or modification of existing curb ramp approach per SPPWC Std. Plan No. 111-5.

Modification of existing curb ramp shall include the removal and replacement of existing PCC ramp approach including the chevron area, and installation of detectable warning surface.

SPECIAL PROVISIONS

PART 6

WATER WORK SPECIFICATIONS

PLANS AND TECHNICAL SPECIFICATIONS

The plans to be utilized in conjunction with these specifications are the approved City of San Fernando Plan No. 718.

All construction shall be done in accordance with the requirements of the American Water Works Association (AWWA) Standards, the Standard Specifications, and these Technical Provisions which include City of San Fernando Water Works Specifications and Water Works Construction Standards.

For convenience and cross-reference ease, the section numbering system used in these Technical Provisions corresponds to that used in the Standard Specifications.

Section 1-2.1 Definitions

Add the following to the provisions of Section 1-2, "Definitions":

City	City of San Fernando.
Superintendent	City Maintenance and Operations Manager.
Water Works Standard	City Standard Water Works Specification and/or Detail.

Section 2-5 Plans and Specification

Add the following to the provisions of Section 2-5 "Plans and Specification":

The American Water Works Association (AWWA) Standards are incorporated herein by reference and are hereby accepted as Reference Specifications. These Reference Specifications are intended to govern certain construction materials, methods, and details except as modified herein or as are inconsistent with the provisions herein.

Section 2-9.3 Survey Service

The following supersedes the provisions of Section 2-9.3 "Survey Service":

Lines and grades for construction shall be the responsibility of the Contractor. All work under this contract shall be built in accordance with the lines and grades shown on the plans or specified herein. Field survey for establishing lines and grades and for the control of construction shall be the responsibility of the Contractor. All such surveys, including construction staking, shall be under the supervision of a California Licensed Land Surveyor or Civil Engineer. Staking shall be performed on

all items ordinarily requiring grade and alignment at intervals normally accepted by the agencies and trade involved.

The Contractor shall provide a copy of the office calculations and grade sheets to the Owner's Inspector. The Contractor shall be responsible for any error in the finished work, and shall notify the Engineer within 24 hours of any discrepancies or design errors discovered during staking.

The Contractor is responsible for locating and tying existing survey monuments and centerline points prior to construction, reestablishing such monuments or points after construction, and filing a Corner Record with the County Surveyor.

2-9.5 Measurement and Payment. The following section is hereby added:

Full compensation for Construction Survey and staking, including furnishing all labor, materials, tools, equipment, surveyor, supervision, and incidentals for doing all the work involved shall be included in the other items of work and no separate payment will be allowed thereof.

Payment for construction survey and staking shall be included in the other item of work

Section 3-2.2.1 Contract Unit Prices

The provisions of Section 3-2.2.1 "Contract Unit Prices" shall apply except as modified and supplemented below:

Adjustment of payments shall cover quantity increases or decreases in Major and Minor Bid Items, as further described in Section 3-2.2.1 "Contract Unit Prices."

Section 300-1.3 Removal and Disposal of Materials

The provisions of Section 300-1.3 "Removal and Disposal of Materials" shall apply except as modified and supplemented below:

Excavated and removed material shall be disposed of in a manner that adheres to all applicable federal, state, and local laws shall be the sole responsibility of the Contractor. Material removed from the site shall become the property of the Contractor and shall be disposed of outside the work site and at the expense of the Contractor.

Section 300-1.3.2(a) Bituminous Pavement

The provisions of Section 300-1.3.2(a) "Bituminous Pavement" shall apply except as modified and supplemented below:

Pavement shall be sawcut a minimum depth of six inches along the excavated edge where new improvements will join existing asphalt concrete pavement. This edge shall be preserved during intermediate operations so that a straight, firm, and unyielding edge against which new pavement may be subsequently joined and compacted. If the edge is not preserved, the Contractor shall make corrections by additional sawcutting, removing, and paving as directed by the Engineer at Contractor's expense.

DEFINITION AND PAYMENT OF BID ITEMS

The unit prices paid for the items listed in the Contractor's Proposal as defined herein shall be considered full compensation for furnishing all labor, materials, tools, and equipment, and doing all work involved in furnishing and installing the materials, complete and in place, in accordance with the details shown on the plans, as specified herein, and as directed by the Engineer.

All incidental work which is neither shown on the plans nor otherwise specified, and which is necessary to complete the construction of improvements as shown on the plans and as specified herein, shall be furnished and installed as though such work were shown on the plans or specified herein, and no additional compensation will be allowed therefor.

- **Construction Safety Plan, Traffic Control, and Daily Cleanup:**

The work under this item consists of developing, submitting for approval, and carrying out a construction safety plan which shall include traffic control per WATCH, pedestrian safety, construction notification to businesses and residents, work area fencing and dust control, and daily work area cleanup as specified in the Special Provisions.

Payment for construction safety plan, traffic control, and daily cleanup shall be included in the other items of work and no additional or separate compensation will be allowed therefor.

- **Furnish and Install 8" OR 6" ID Class 350 Ductile Iron Pipe:**

Payment for furnishing and installing new 8-inch or 6-inch diameter ductile iron pipe (DIP) water main shall be paid at the contract unit price bid as shown in the bid schedule and shall include providing and installing main fittings/connections, tees, crosses and bends, abandoning and plugging the existing water main; constructing new concrete thrust blocks; performing hydrostatic testing; disinfecting water mains and service connections; potholing existing water main backfilling and compacting the excavated trench (30-inch minimum) restoration and replacement of asphalt concrete. The main installation shall be in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards, and AWWA C-600 standards.

DUCTILE IRON PIPE

All ductile iron pipe shall be the diameter and class indicated on the plans and shall conform to AWWA C151. Pipe is to be of the push-on joint type, bituminous coated, cement mortar lined, per AWWA C104. All ductile iron pipe fittings shall conform to ANSI A21.10. Each length of pipe shall be marked with the size and class of pipe, name of manufacturer or trademark, and the date of manufacture.

FITTINGS

Flange fittings shall be ductile iron class 350. Mechanical joint (ML) fittings shall be ductile iron C153 SSB class 350 and shall conform to City of San Fernando Construction Standard.

Unless otherwise shown on the plans or as approved by the Engineer, all connections between cast iron or steel fittings and ductile iron pipe shall be made with rubber gasket joints, and all completed joints between fittings and ductile iron pipe shall meet AWWA C110 or AWWA C153.

CONCRETE THRUST BLOCKS

All thrust blocks shall be pour-in-place concrete, and shall be constructed at bends, crosses, tees, and other locations shown on the plans or as designated by the Engineer. Thrust blocks shall solidly rest against firm, undisturbed soil and shall be concrete class 520-C-2500.

CURVES AND BENDS

Changes in alignment and grade shall be by deflecting the pipe units at joints as provided herein, and pipe units shorter than standard length may be required. The maximum deflection angle between adjacent pipe units shall not exceed 5 degrees for 4-inch to 12-inch diameter pipe, 4 degrees for 12-inch to 16-inch diameter pipe, and 3 degrees for diameters greater than 16-inches.

The ends of each pipe unit shall be laid on the theoretical centerline of the pipe and to the grade shown on the drawings with the laying tolerance prescribed therein.

HYDROSTATIC TEST

Hydrostatic testing shall be performed on all newly laid and partially backfilled pipes and services in accordance to the requirement of C600, AWWA standards. All pumps used for hydrostatic testing shall be equipped with gallon or volumetric meters. New lines shall be filled with water and the pressure brought to 200 PSI +/- 5 PSI and maintained for a period of a minimum two hours. The test shall be made on all sections of the water main between valves in order that all pipe, valves, fittings, fire hydrants, connections, and water services may receive the test. If leakage occurs, the Contractor shall correct the deficiencies at his own expense.

DISINFECTION OF WATER MAINS AND SERVICES

All new water mains shall be disinfected with chlorine or hypochlorite before acceptance for domestic use. Chlorine shall be applied to the water in sufficient quantity to produce a dosage of not less than 50 ppm in all sections of the line, services and appurtenances. Treated water shall be retained in the system for a period of 24 hours minimum and shall produce not less than 10 ppm in all sections being disinfected at the end of the 24-hour period. However, the Contractor has the option to use other methods, provided it complies with the requirements of C-651, AWWA standards. Services shall be connected from corporation stops to meter stops before disinfecting and random testing by City for residual at service ends. All services shall be flushed prior to connection to residents' plumbing. See Water Works Standards regarding connection detail. The contractor shall provide bacteria samples and the City shall provide and pay bacteria testing. The Contractor and a City representative [a state certified drinking water testing laboratory] shall be present at the time and place the sample is collected. Thereafter, a state certified drinking water testing laboratory shall take custody of the water sample and perform the bacteria testing. If bacteria testing is positive (fail[s]), the laboratory fees for re- testing shall be paid by the Contractor.

EXCAVATION, REMOVAL, COMPACTION AND RESTORATION OF SURFACE

- All excavation operations and restoration of surfaces shall conform to the requirements of Section 306 of the Standard Specifications and Section 3, C-600 AWWA standards.
- The minimum trench width shall be based on 6 inches of buffer space each side of the proposed main.
 - 8 inch main requires minimum 20-inch wide trench.
 - 12 inch main requires 24-inch wide trench.
- Bedding and backfill shall be as shown on the plans, standard plans, and plan details. Native soil backfill, if used, shall be compacted to 95 % relative compaction. Sand shall be consolidated by jetting; the upper portions shall be compacted by mechanical means.

1 ½ sack cement-sand slurry is required in all intersections. Rocks and boulders 6 inches and larger shall be removed from backfill. Compaction testing shall be provided by the City upon 24-hour notification. If compaction tests fail in any specific location, one (1) re-test by the City at that location shall be provided. Compaction tests that exceed two (2) in any specific location shall be paid by the Contractor at the rate of \$100 per test.

- The joining of pipe sections shall be such as to produce watertight lines. The pipe trenches shall be kept free of water which might impair pipe joining operations. The bottom of the trench shall be carefully graded as to provide uniform support along the full length of the bottom of the pipe. Pipe trench shall conform to Type 2, AWWA C151.
- Trenches more than 5 feet deep shall be shored as set forth in the rules and regulations of the Division of Industrial Safety of the State of California and OSHA.
- Trenches through AC pavement: The pavement shall be sawcut. The pavement shall be replaced in kind as shown on Standard Drawing Plate No. 3 as follows:
 - 1) Base course B2-PG-64-10
 - 2) Surface course C2-PG-64-10
- Trenches through PCC pavement: Pavement shall be sawcut completely through, removed, and replaced with existing thickness plus one inch, but no less than 5 inches.
- Trenches through a combination of AC and PCC pavement: the contractor shall either separately sawcut and remove AC pavement and proceed to sawcut and remove PCC pavement as above described or sawcut completely through the entire pavement section. The pavement shall be replaced with AC as shown on Standard Drawing Plate No. 3.
- The Contractor shall notify the residents and/or business occupants in the project area at least 48 hours prior to performing any work that will affect parking and access to driveways. In paved streets where immediate backfill is required to provide access for the public at private driveways, the contractor shall place and maintain, until the permanent surfacing has been placed, a 2-inch road mixed surfacing. The temporary surfacing shall be placed at all locations which are not barricaded and are open to traffic.

ABANDONMENT OF EXISTING LINE

The contractor shall cut away a part of the existing pipe or cut a hole in the top of the pipe to place concrete plug(s) every 200 feet.

Payment at the price bid per linear foot shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

MATERIALS

GENERAL REQUIREMENTS

This section discusses the materials involved in water pipeline systems and associated construction activities. The materials selected have been chosen for their strength, durability, and ease of maintenance. All materials, unless specifically approved otherwise, shall be domestic manufactured, new and unused.

Where applicable, American Water Works Association (AWWA) or other standards have been referenced and it shall be the responsibility of the developer/engineer/contractor to be familiar with

those standards to insure compliance. Titles corresponding to the specific numbers are given in the reference section of the standards.

In some instances, particular manufacturers and product names have been mentioned as being approved. Other products may also have been mentioned as being approved. Other products may also meet the requirements, but must be first approved in writing by the Water Department. One factor that may be considered by the Water Department in utilizing any other products is the need for some degree of standardization.

If at any time the Water Department believes that the use of a specific product must either be halted or changed, the Water Superintendent has the authority to make the change providing the decision is based upon an engineering, performance, or maintenance evaluation.

TESTING AND FINAL ACCEPTABILITY OF MATERIAL

The Water Department shall require such tests and Certifications as deemed necessary to show that the specified materials have been employed. Notwithstanding prior factory or yard inspections, the Director of Public Works/City Engineer shall have the right to reject any damaged or defective materials found on the job which will affect the durability or performance of the installation and order its removal from the site.

MAIN LINE PIPE MATERIALS

Generally accepted pipeline materials for the City of San Fernando consist of either ductile iron pipe (DIP) or ML & C steel and copper services as described in this section.

The hydrostatic proof test for every piece of pipe shall be as follows:

<i>Class</i>	Sustained PSI
DR = 18 or Class 150	600
DR = 25 or Class 200	800

A. Ductile Iron Pipe

1. Pipe.
The pipe shall conform to AWWA C151 for both quality and strength. Each pipe shall include the letters "DI" or word "Ductile" to indicate the pipe material.
2. Joints.
These shall be of the rubber gasket push-on joint type conforming to the requirements of AWWA C111 and being of the "Tyton" type.
3. Fittings.
Flange fittings shall conform to AWWA C110. Mechanical joint and push-on (Tyton Joint) fittings shall conform to AWWA C153.

4. Lining and Coating.
Unless otherwise approved, the internal surfaces shall be lined with a uniform thickness of cement mortar and then sealed with a bituminous coating in accordance with AWWA C104.

The outside surface shall be protected with a polyethylene encasement furnished and installed in accordance with AWWA C105.

B. Steel Pipe

1. Pipe.
Steel pipe shall conform to the quality and strength requirements of AWWA C200 or as specified below. That standard pertains to electrically butt-welded straight-seam or spiral- seam pipe and to seamless pipe 6 inches (150mm) in diameter or larger. The steel shall conform to one of the following:

Table 3-1

Specification	Grade	Minimum Yield Point (PSI)
ASTM A238	Grade C	30,000
	Grade D	33,000
ASTM A570	Grade 30	30,000
	Grade 36	36,000
	Grade 40	40,000
	Grade 45	45,000

The stress in the steel pipe shall not exceed the higher of 15,000 psi or one-half the designated working pressure except that the following minimum thicknesses shall be used:

Table 3-2

Normal Inside Diameter Inches (mm)	Min. Thickness Inches	Max. Pressure* for Thickness Specified
8" (200 mm)	0.105 (12 gage)	394
10" (250 mm)	0.135 (10 gage)	405
12" (300 mm)	0.135 (10 gage)	338
14" (350 mm)	0.135 (10 gage)	289
16" (400 mm)	0.135 (10 gage)	253
18" (450 mm)	0.179 (8 gage)	298

*Assuming 15,000 psi stress and the formula below:

$$P = 2ST / D$$

where:

P = Pressure (maximum working)

S = Allowable stress (15,000 psi or one-half yield) T = Pipe wall thickness (inches)

D = Outside diameter (inches)

The gages specified above consider the thicknesses required for welding as well as that required for external loads and a corrosion allowance.

Another factor for consideration in some steel lines is earth loads. AWWA Manual M-11 and Section 2.14 of those standards should be consulted in this regard.

The pipe shall be essentially round. The outside circumference shall not vary more than (plus/minus) 1.0 percent from the nominal outside circumference based upon the diameter specified (except for the ends that are discussed below).

The pipe shall not deviate by more than 1/8 inch from a 10ft. long straight edge held against the pipe.

The pipe lengths, generally 40 feet long, shall be furnished with a tolerance of (plus/minus) 2 inches. Random lengths shall be furnished in lengths averaging 29 feet or more, with a minimum length of 20 feet.

2. Pipe Ends.

Various end treatments can be supplied as discussed in AWWA C400 and briefly listed below:

- Ends for mechanical coupled field joints - These are either plain, grooved, or banded.
- Ends for lap joints for field welding - These shall have a bell end pressed or rolled without hammering. The surfaces shall be ground smooth. Joints shall permit a lap when the joint is assembled if at least 1½ inches.
- Plain end pipe - These shall have a plain end right angle cut.
- Beveled ends for field butt welding - These, where specified, shall have a bevel that is 30 degrees (+5 degrees – 0 degrees) when measured from the pipe axis.
- Ends fitted with butt straps for field welding - The butt straps may be made in halves or as complete cylinders.
- Bell-and-spigot ends with rubber gaskets - These shall have bell ends which are made without hammering. Spigot ends shall be formed or fabricated to the

required shape to retain the gasket. The gasket shall be designed and fitted as the sole element dependent upon to make the joint watertight. The gasket shall meet the requirements of AWWA C 400.

- Plain ends fitted with flanges.

The allowable tolerance at pipe ends is discussed in AWWA C400 and summarized below.

- For bell and spigot - Clearance between O.D. of spigot and I.D. of bell shall be between 0.2 and 0.06 inches.
- For lap joint - I.D. of bell shall be 1/32 to 3/16 inches greater than O.D. of spigot.
- For plain ends (including beveled or butt straps or flanges) - O.D. within 4 inches of end shall be - 1/16 inch or +1/8 inch from specified O.D.

3. Hydrostatic tests.

Each pipe shall be tested by the manufacturer to a pressure greater than:

$$P = 2ST/D$$

Where S = 0.75 times the minimum yield strength of the steel and the other items are as discussed earlier.

4. Mortar Lining and Coating (ML & C).

Unless otherwise approved or as revised below, all steel pipe shall be mortar lined and coated in accordance with AWWA C205 which covers shop applied lining and coating. Cement shall be Type II, ASTM C150.

Mortar Lining

Cement mortar lining shall be uniform in thickness except at joints or other discontinuities. Ends of lining hold back shall be as specified for the particular type of joint.

Table 3-3

CEMENT MORTAR LINING THICKNESS

Normal Pipe Size Inche	Lining Thickness Inches	Toleranc e Inche
6" – 10"	5/16	-1/16 + 1/8
12" – 16"	3/8	-1/16 + 1/8
18"	1/2	-1/16 + 1/8

It should be noted that the City requirements for thickness exceed those of the AWWA standard. Also, it should be noted that no wire fabric reinforcement is required for any

lining of specials less than 24 inches in diameter.

Mortar Coating

Cement mortar coating shall be a reinforced coating over all outside surfaces of the pipe and specials. The coating shall be of a uniform thickness except at joints or other discontinuities in the pipe. Ends of coatings shall be left square and uniform and the coating holdback shall be as specifies for the particular type of joint.

Table 3-4

CEMENT MORTAR COATING THICKNESS

Normal Pipe Size Inche	Cement Thickness	Toleranc e Inche
6" – 10"	1/2	-0 + 1/8
12" – 16"	3/4	-0 + 1/8
18"	1	-0 + 1/8

It should be noted that the City requirements exceed those of the AWWA standard. Reinforcement for the coating of pipe section shall be one of the following as specified by the supplier:

- Spiral wire – 15 gage @ max. 1 1/4 inch spacing with wire meeting ASTM A82.
- Wire fabric – 2 x 4 steel wire mesh, 13 gage each way meeting ASTM A185.
- Ribbon mesh – 1 x 1 mesh of 18 gauge wire or 1 1/2 x 1 1/2 mesh of 17 gauge wire, all meeting ASTM A82.

Field Joints

The materials and construction methods for field joints shall be as discussed in Section 7.

5. Electrically Bonded Connections.

Two metal jumper rods are required to form an electrically bonded connection between all steel pipe joints that are not welded, except at insulation couplings called for on the plans.

The jumper rods shall be either 3/8" diameter rods or 1/4" x 1/2" bars. They shall be at least 7 inches long with an offset of 1/4 inch in the middle 3 inches. No welding shall take place in the middle 3-inch section.

6. Factory Tests and Inspection.

All materials shall be inspected and tested in a normal air-dry condition by the manufacturer prior to shipment for conformance to the stated requirements. The Water Department shall at all times have the right to inspect the work and materials

in the course of manufacture and to make or witness such tests as required in these specifications, or as deemed advisable. In lieu of the preceding, the manufacturer shall upon request submit a certificate certifying that the materials meet the requirements of this specification. All testing will be done in recognized testing laboratories within the State of California approved by the Director.

7. Welded Joints.

One of each section shall be swaged out to form a female or bell end which shall permit the male or spigot end to enter approximately one inch with a clearance of approximately 1/32 inch. The spigot end shall be "sized" to permit it to enter the bell end of the adjacent distance it is to enter the bell end.

8. Butt Strap Closures.

The butt straps shall be the same thickness as the pipe wall but not less than 10 gauge, at least 10 inches wide and rolled to fit the outside cylinder diameter, and shall be centered over the ends of the pipe sections they are to join. A standard 5-inch pipe half coupling shall be shop welded to the top section of the butt strap to permit access for mortar lining the inside of the joint. The coupling shall be sealed with a standard 5-inch plug field welded to the coupling.

MAIN LINE FITTINGS

- A. Ductile Iron Flange Fittings. These fittings shall meet the requirement of AWWA C110. All fittings shall be rated for 250 psi.

Ductile Iron Mechanical Joint and Push on Fittings. These fittings shall meet the requirement of AWWA C153. All fittings shall be rated for 350 psi.

The fitting types are as follows:

90 degree bend, 45 degree bend, 22 ½ degree bend, 11 ¼ bend

Tees & crosses, reducers, caps & plugs, connecting pieces, flanged bends, flanged tees & crosses, flanged reducers.

Ductile-iron compact fittings, per AWWA C153, are allowed.

It should be understood that care must be exercised to not mix mechanical and flange joint ends since they will not mate. Section B discusses flange requirements.

- B. Flanges, Bolts & Gaskets. They shall be flat-faced and meet the requirements of AWWA C207 and should be AWWA standard steel hub flanges, Class E (275 psi) (these flanges meet ANSI B-16.5). The flanges shall be marked with the size, name or trademark of manufacturer and with the AWWA class, i.e., "E".

Bolts and nuts shall be stainless steel type 316.

Gaskets shall be of the drop-in gasket type, 1/8" thick.

Table 3-5

Pipe Size	Bolt Hole Diameter	Bolt Dia. & Length Inche	No. of Bolts
4"	$\frac{3}{4}"$	$\frac{5}{8}" \times 3"$	8
6"	$\frac{7}{8}"$	$\frac{3}{4}" \times 3 \frac{1}{2}"$	8
8"	$\frac{7}{8}"$	$\frac{3}{4}" \times 3 \frac{1}{2}"$	8
10"	1"	$\frac{7}{8}" \times 4"$	12
12"	1"	$\frac{7}{8}" \times 4"$	12
14"	$1\text{-}\frac{1}{8}"$	$1" \times 4 \frac{1}{2}"$	12
16"	$1\text{-}\frac{1}{8}"$	$1" \times 4 \frac{1}{2}"$	16
18"	$1\text{-}\frac{1}{4}"$	$1\text{-}\frac{1}{8}" \times 5"$	16

The inherent problem with flanges is that they are rigid and do not provide flexibility. Two keys to their installation are 1) uniform tightening of the bolts, and 2) prevention of bending or torsional strains. Proper anchorage is important to meet the latter objective.

- C. Mechanical Joint Fittings. This is a bolted joint of the stuffing box type. Each joint has a bell provided with an exterior flange having bolt holes or slots, and a socket with gaskets to receive the plain end of the pipe or fitting. Instead of the standard mechanical joint accessories, a 1400 Ford/Uni-Flange wedge action retainer gland for Ductile Iron Pipe shall be used.

The mechanical joints shall meet AWWA C111. That standard covers the joint as well as gaskets and bolts.

Table 3-6

Pipe Size	No. of Bolts	Bolt Diameter & Length
4"	4	$\frac{3}{4}" \times 3 \frac{1}{2}"$
6"	6	$\frac{3}{4}" \times 3 \frac{1}{2}"$
8"	6	$\frac{3}{4}" \times 4"$
10"	8	$\frac{3}{4}" \times 4"$
12"	8	$\frac{3}{4}" \times 4"$
14"	10	$\frac{3}{4}" \times 4 \frac{1}{2}"$
16"	12	$\frac{3}{4}" \times 4 \frac{1}{2}"$
18"	12	$\frac{3}{4}" \times 4 \frac{1}{2}"$

- D. Flexible Couplings. These are designed to connect plain end pipes with a mechanical compression joint to provide a stress relieving, flexible, leak proof joint. They can be ordered in steel or cast iron pipe sizes. The couplings shall either be Ford FC2A or Romac 501.
- E. Transition Couplings. These are used to connect pipes of the same nominal size but

different materials. AC steel and PVC pipes can be connected to one another. Approved are the Ford FC2A and Romac 501.

- F. Flanged Coupling Adapters. These are used to connect plain end pipe to flanged valves, pumps, meters, etc. They eliminate the need for both a flanged spool and coupling. Generally, they are available in sizes through 12 inches. Approved are Ford FFCA cast iron, Romac FCA501 cast iron or 913 steel flanged coupling adapters.
- G. Insulating Couplings. These are used to stop the flow of electric current across the joint by means of an insulating boot. Approved are the Ford FC2A/F1B and the Romac IC501 insulating couplings.
- H. Special Steel Pipe Fittings. AWWA C208 covers special fittings such as elbows, tees, crosses, reducers, etc., and should be consulted for a specific application.

SERVICE LINE MATERIALS AND FITTINGS

The materials covered in this section include the service line pipe, corp stop and saddles as well as the valves inside the meter box. Where specific manufacturers' products are listed, it should be understood that other products that are equivalent may be used if approved in writing by the Water Superintendent. Also, see Plate Nos. 19 through 22 for typical installations. This section is written as if the minimum service line size is 1 inch.

- A. Copper Pipe. Copper pipe material is approved for all service lines from 1 inch through 2 inches. The pipe shall be Type K soft copper tubing. Solder fittings shall be soldered with solder containing no lead; instead, it shall be a blend of copper phosphorous and silver.
- B. Service Saddles. These shall be double strap type made of bronze with bronze nuts. The thread will be corporation. They shall be Ford 202B or equal.
- C. Corporation Stops. These will be bronze with corporation thread on inlet side. 2-inch corporation stops shall be of the ball valve type.

Table 3-7

Service Pipe	Corporation Stop Outlet	Corporation
1" copper	Compression	Ford FB1000-4
2" copper	Compression / Copper Tubing	Ford FB1000-7

- D. Angle Meter Stop. These shall be bronze and in the 1-inch size they shall be an angle ball meter stop with lock wing. In a 2-inch size they shall be a flanged angle meter stop. Refer to the table below.

Table 3-8

Service Line	Angle Meter	Inlet	Outlet	Type
--------------	-------------	-------	--------	------

1" copper	Angle Ball	Compression	Meter coupling nut	Ford BA43-342W Ford BA43-444W
2" copper	Angle Ball	Compression	Flanged	Ford BFA43-777W

*For a 5/8 x 3/4" meter use a 1 x 3/4" angle meter stop and for a 1" meter use a 1" angle ball meter stop.

**For a 2" service and 1 1/2" meter, a 2" meter stop is used with a bronze adapter.

- E. Customer Hand Valve. These are to be bronze ball valves with a customer handle. The outlets are always female iron pipe threads. Refer to the table below.

Table 3-9

Meter Size	Inlet	Outlet Size	Type
5/8" x 3/4"	3/4" meter coupling nut	1"	Ford B13-432W-HB34S
1"	1" meter coupling nut	1"	Ford B13-444W-HB34S
1 1/2"	Flanged	1 1/2"	Ford B13-666W-HS4
2"	Flanged	2"	Ford BF13-777W-HS4

METER BOXES AND VALVES

The meter boxes for 5/8" x 3/4", 1", 1 1/2" and 2" meters shall be concrete with a concrete cover and rectangular concrete reading lid according to the following:

Table 3-10

Meter Size	Box (Inside)	Model Numbers
3/4"	10" x 17"	Brooks Products 37s
1"	12 1/2" x 22"	Brooks Products 38
1 1/2" or 2"	17" x 30"	Brooks Products 66s

In the above, the Brooks designation "S" refers to the concrete cover and reading lid. The same requirement applies to Quickset meter boxes.

Traffic lids are not generally approved since the meter boxes should be placed outside the traveled right-of-way, including driveways. Where no other alternative is available and the meter box will be used in the traveled right-of-way, then a steel traffic lid shall be used. Again it must be emphasized that the engineer is expected to place the meter boxes so that they are outside of driveways.

The angle meter stops and customer hand valves that are placed inside the valve box are discussed in the previous section of service lines.

The Water Department crews will install the meter. A temporary jumper of either PVC or galvanized iron pipe shall be installed pending installation of the meter.

WATER METERS

Water meter types and manufacturers shall be selected by the Water Superintendent and installation shall be by the Water Department. Section 12 herein discusses general meter types.

MAIN LINE VALVES

A. Butterfly Valves.

1. General. Butterfly valves shall be tightly closing, rubber-seated valves conforming to AWWA C504. Valves must be Class 150-B designed for tight shut-off up to 150 psi. Valve disc shall rotate 90 degrees from fully open to tightly closed position.
2. Valve body shall be cast iron with integrally cast mechanical joints, ends for the pipe or flanged ends.
3. Valve operators shall be of the manual traveling nut type. Operators shall be equipped with a 2" AWWA square operating nut. They shall be sealed and gasketed and lubricated for underground service. The operator shall be capable of withstanding an input torque of 450 ft.-lbs. at extreme operator position without damage.
4. Painting. See section 15 herein. All interior metal surfaces shall be epoxy coated.
5. Marking. The manufacturer shall show on the valve the valve size, manufacturer, class and year of manufacture.
6. Approved valves shall be Pratt Groundhog.
7. Number of turns to open or close is as follows:

Table 3-11

Valve Size	Pratt Groundhog Number of turns
6"	27
8"	27
10" & 12"	32
14" & 16"	30
18" & 20"	40

B. Gate Valves.

- Valves shall conform to AWWA C509-80, standard for resilient seated gate valves.
- Wedge shall be constructed of ductile iron, fully encapsulated in synthetic rubber except for guide and wedge nut areas.

- Wedge rubber shall be molded in place and bonded to the ductile iron portion, and shall not be mechanically attached with screws, rivets, or similar fasteners.
- Wedge shall seat against seating surfaces arranged symmetrically about the centerline of the operating stem, so that the seating is equally effective regardless of the direction of pressure unbalance across the wedge.
- All seating surfaces in body shall be inclined to the vertical at a minimum angle of 32 degrees (when stem is in a vertical position) to eliminate abrasive wear of rubber sealing surfaces.
- Stem shall be sealed by at least two O-rings; all stem seals shall be replaceable with valve wide open and while subjected to full rated pressure.
- Waterway shall be smooth and shall have no depressions or cavities in seat area where foreign material can lodge and prevent closure or sealing.
- Valve body and bonnet shall be epoxy coated, inside and out.
- Current approved valves are manufactured by American Flow Control / AFC.
- Full 10-year money back manufacturer's guarantee.

C. Plug Valves.

1. General. Plug valves are to be used where the water main pressures are expected to exceed 150 psi or where required by the Water Superintendent. They shall be pressure lubricated, venturi pattern type with flanged ends.
2. Valve operators. When located below ground, they shall be spur gear operated with watertight gear housings, lubricant pipe and road box. When located above ground or in vaults, they shall be worm gear operated. Outside locations shall include watertight gear housings.
3. Painting. See section 15 herein.
4. Marking. The manufacturer shall show the manufacturer's name or mark, the year of manufacture, valve size and the designation of working pressure.

D. Tapping Sleeves and Valves.

1. Tapping valve. These shall meet all of the requirements under resilient seated gate valves in the preceding section with the exception of items such as oversized seat rings to allow entry of the tapping machine cutter.
2. Painting and Coating. See section 15 herein.

- E. Valve Stacks and Covers. The valve stack shall be Schedule 40 PVC pipe 8-inches in diameter (See Plate 8).

The valve box cap shall be of the heavy duty, long body type. Approved is:

- Alhambra Foundry A-29608 (8 inches). The valve caps shall be painted blue.

COMBINATION AIR RELEASE ASSEMBLIES (PLATE NOS. 14 & 15)

- A. Mechanical Assembly. As discussed in Section 2.8, the combination air release assembly has both the features of an air release valve and an air and vacuum valve. Both units shall be housed in a cast iron body and all internal parts such as the float, bushings, level pins, seat and baffle shall be either stainless steel or brass as furnished by the manufacturer. All assemblies shall be rated at 300 psi maximum operating pressure.

Approved assemblies are as follows:

Size	APCO Valve No.	Height	Cla-Val Design	Crispen Model Design
1"	143C	10"	361-CAV564.3	U10
2"	143C	12"	362-CAV332.3	U20
3"	147C	15"	363-CAV332.3	U30
4"	149C	17"	364-CAV332.3	U40

*Used only where working pressure under 125 psi for 1" and 165 psi for large sizes. The inlet threads shall be iron pipe threads of the same size as the valve.

- B. Metal Housing or "Can". Shall be per Plate Nos. 14 and 15.
- C. Service Lines. Type K soft copper per Section 3.5. There shall be a corp stop at the main per Section 3.5.
- D. Ball Valves. Ford B11-777 with a female iron pipe thread on each end and tee head. E. Guard Posts. See section 17 herein.

BLOW-OFF ASSEMBLIES (Plate Nos. 12 & 13)

- A. 2-Inch Blow-Off. Reference Plate No. 12. Materials shall be as follows:
1. Service Line – Type K copper Section 3.5 with a corp stop and saddle at main per section 5 herein.
 2. 2" Ball Valve – Ford B41-777 with female iron pipe thread on each end and tee head PJCTS x FIP
 3. Vault – The same as for a meter installation up to 1". See section 5 herein.
 4. Plastic Plug - This shall protect top of ball valve.

B. 4-Inch Blow-Off. Reference Plate No. 13. Materials shall be as follows:

1. 4" Valve – Butterfly valve per section 8 herein.
2. Flanged Spool – Made of ductile iron per Section 3.4.
3. 4" Brass Nipple
4. 4" Angle Hydrant Valve – Approved is Jones J344-HP all bronze wharf hydrant with 4" iron pipe thread inlet and one 2 ½" outlet.
5. Vault – concrete box with cast iron cover. Approved are Brooks 72 PB which is 17" x 41" or Quickset W44 which is 16" x 44". Both shall have cast iron covers.
6. Guard Posts – Required where an above ground blow-off is located in undeveloped areas.

FIRE HYDRANT ASSEMBLIES (Plate No. 11)

Approved fire hydrants are the Clow Ranger, 950, 960.

- Hydrant flanges shall contain six equally spaced bolt holes of ¾ inch diameter on a 9-3/8 inch diameter.
 - All hydrants shall be permanently marked with the manufacturer's name and the year of manufacture.
 - Caps shall be metal-type.
- A. Hydrant Lateral. Thrust block sizes are covered in Plates 17 and 18. Where the fire hydrant also serves as a blow-off, the tee in the line shall be a "bottom outlet tee" specially made so that the flow will scour the bottom of the main line.
- B. Hydrant Valve. Shall be a 6-inch resilient wedge gate valve. C. Painting. See section 15 herein.
- D. Spools and Bury. As shown on Plate No. 8, a 6 x 6 flanged extension spool shall be used between the bury and fire hydrant. The spool shall be made of cast or ductile iron. It shall also be painted in accordance with that Section.

Hydrant burys shall be a 6-inch inside diameter and made of cast iron conforming to ASTM A-126. The burys shall be one piece with the top having a flange drilled with 6 holes to receive the extension spool or hydrant. The bottom shall have a 90 degree bend. In the event the hydrant lateral is PVC then the bury end shall be a push joint or mechanical joint fitting. Burys are generally available in 30", 36", 42", and 48" lengths. An approved product is "Clow Hydrant Burys."

- E. Bolts. Alloy steel break-off bolts shall be used to attach the fire hydrant to the extension spool.
- F. Bottom Outlet Tee. Where fire hydrants are at low spots in the pipeline and essentially are also performing as a blow-off, a bottom outlet tee shall be substituted for the regular tee to facilitate flushing.
- G. Mains to Fire Hydrants. Separate lines used only for fire hydrants shall be a minimum of 8 inches in diameter. Actual size to be determined by Water Superintendent.

PIPE TRENCH MATERIALS

Refer to Plate No. 3 for trench cross-section terminology.

- A. Within Pipe Zone. The pipe zone extends from the bottom of the trench to 12 inches above the top of the pipe. The material with this zone shall be a clean, well graded imported sand and shall be saturated with water for compaction. The sand sizes will be in the following ranges:

Sieve Size	Percent Passing
No. 4	100
No. 8	80 - 95
No. 200	0 - 10

- B. Above Pipe Zone. The materials shall conform to the requirements of the City's Public Works Department or the State of California Division of Highways, requirements. In the absence of stricter requirements, the material above the pipe zone shall be native material that does not contain rocks larger than 6 inches and shall be made so graded that at least 40 percent of the material passes the No. 4 sieve.
- C. Special Slurry Backfill. The Engineer may require no less than one sack cement per cubic yard trench backfill slurry above the pipe zone for pipelines laid in paved streets. However, where the new water main location is within 10 feet of a sewer main, two sack cement per cubic yard shall be used.

13. CONCRETE MATERIAL

Approved concrete material shall be based on the 28-day compressive design strength and shall be chosen according to the following chart showing its intended use:

Class	Application	28 day Compress Strength	Maximum Aggregat e Size	Slump Min. (inches)	Slump Max. (inches)
A	Walls, structures and reinforced structural encasement	3,500	1½"	3	6

B	Thrust blocks, non-reinforced pipe encasement, non-structural use	3,000	1½"	2	6
C	Pump mix for abandoning lines	1,000	3/8"	Adequate for pumping	

REINFORCING STEEL

- A. Bar Reinforcement. Shall be Grade 40 minimum deformed bars conforming to ASTM A615, accurately placed securely in position. Where bars are spliced they shall be lapped at least twenty (20) diameters or butt welded, except where otherwise shown on the plans.
- B. Mesh reinforcement. Mesh reinforcement shall conform to the requirements of ASTM A185; wire gauge and mesh dimension will be shown on the plans.

PAINTING

- A. General. All paint colors shall be as specified by the Water Superintendent. Paints shall be delivered to the job site in original, unopened cans or packages bearing the brand name and manufacturer's name. Paints specified shall be used unless specific written approval is obtained in advance to use other products.
- B. Specific Material Requirements
 1. Fire Hydrants. Use paint as called in Plate 11 or Rustoleum enamel. If hydrants are bronze, the first etch with Kopper's 40 passavator and coat with Kopper's PUG primer. The procedure is to first degrease metal surfaces with Kopper's thinner 2000. Then Kipper's 622 rust-penetrating primer or Kopper's PUG primer should be used before the finish coats. Two finish coats are required.

Combination Air Release Cans. These shall be painted as follows: Use Kopper's 30 metal conditioner (1 coat), Kopper's PUG primer (1 coat) and Hy-Lux Balboa Beige, Baja Beige #1105A or as approved for the particular installation.
 3. Cast Iron Valves, Fitting & Miscellaneous Metal (except bronze). Exterior surface to receive 2 coats of Kopper's bitumastic No. 50 (15 mil each).

In addition to the bitumastic coating, encapsulate all exterior surfaces including nut and bolts with a 10 mil layer of plastic film wrap described in "C" below.

The interior of valves with the exception of bronze and working parts (see exceptions below) shall be coated with 100 percent solids, catalytically setting epoxy which is manufactured for use in the interior of potable water systems. The fusion method of coating 100 percent solid epoxy is acceptable. The two components shall be of different colors to aid in complete mixing. The epoxy lining shall be factory applied and field applications will not be allowed.

Exceptions to the above policy for interior coating require written approval in advance of delivery to the jobsite.

Fittings shall all be cement mortar lined or epoxy lined.

4. Steel Surfaces. Use one shop coat of rust penetrating Kopper's #622 and one field coat of PUG primer. Finish coats for inside locations to be 2 coats of Kopper's Ponkote 300 (epoxy ester). Finish coats for outside locations to be 2 coats of Kopper's Glamortex #501 enamel (alkyd).

Cast iron and other bitumen coated metals located above ground and/or in vaults shall receive two coats of Kopper's Inertol Tar Stop (synthetic resin with 48 hours drying time between coats). Finish coats in pressure regulating station vaults and other inside locations except meter vaults shall be two coats of Kopper's Ponkote 300 (epoxy ester). Finish coats for outside locations shall be two coats of Kopper's Glamortex #501 enamel (alkyd).

5. Concrete and Masonry. Exterior surfaces shall receive one coat of Kopper's block sealer, or Dutch Boy block coater No. 30W01; one coat of Dutch Boy Nalprep No 019; and one coat of Dutch Boy Nalcrete, or two coats Kopper's #600 exterior (acrylic emulsion).

Exterior surfaces below ground shall receive two coats of Kopper's Bitumastic Super Service Black, 12 mils/coat, or approved equivalent.

Interior above ground surfaces shall receive one coat of Dutch Boy Masonry Vinyl Speed Primer No. 30W10 or Kopper's surfacers, and one coat of Dutch Boy Masonry Vinyl No. 32W11, or Kopper's 601 Interior.

Interior below ground surfaces, such as in pressure reducing stations and lift stations, shall receive a cementitious seal coat of Kopper's Inertol Patching compound. After at least three days, two coats of Kopper's #600 Exterior (acrylic emulsion) shall be applied.

6. Wood. Exterior locations shall receive one primer coat and two finish coats. Primer shall be one coat of Kopper's Glamortex #501 Enamel (alkyd) thinned 20%. Finish shall be two coats of Kopper's Glamortex #501 Enamel (alkyd).

Interior wood surfaces shall receive one primer coat and two finish coats. Primer shall be one coat of Kopper's #625 Undercoater. Finish coat shall be two coats of Kopper's Glamortex #501 Enamel (alkyd).

- C. Plastic Film Wrap. This wrap shall be used around all buried valves, bolted flanges and other fittings. The polyethylene film shall be of virgin polyethylene as produced from DuPont Alathon resin and shall meet the requirements of ASTM Designation D 1248 for Type 1, Class A, Grade E-1, and shall have a flow rate or nominal melt index of 0.4 g/min. maximum.

The polyethylene film shall be 6 mils in thickness. The length shall be sufficient to firmly attach the film to the pipe on either side of the valve, flange or fitting. The following minimum flat sheet widths shall be used for the specified valve sizes:

Nominal Valve or Flange Size	Minimum Flat Sheet Width
4"	24"
6"	24"
8"	24"
10"	30"
12"	36"
16"	48"
18"	48"

At the contractor's option, tubular material may be purchased and cut with one side to fold out to the required width.

Tape for securing the polyethylene wrap shall be 2 inch wide adhesive tape such as Polyken No. 900 (Polyethylene), Scotchrap No. 5 (Polyvinyl), or approved equal. The tape shall be such that the adhesive will bond securely to both metal surfaces and polyethylene film.

MARKER POSTS

In easements or where required on the plans, marker or guard posts shall be installed per the requirements of the Water Department. Where no vehicular traffic could be anticipated, the posts shall be 4" x 4" x 5' x 6" dense structural grade redwood surfaced on all four sides and chamfered on the top. They shall be set into the ground 2'-6".

Where vehicular traffic could disturb the post or where its primary function is as a guard post, the material shall be 4" diameter, standard weight galvanized steel pipe, 5'-6" in length. Set the post 2'-6" below ground in a concrete base of not less than 18" in diameter.

Unless otherwise approved, marker posts shall be painted "school bus yellow with blue top" per section 15 herein.

SPECIAL PROVISIONS

PART 7

SEWER SPECIFICATIONS

PLANS AND TECHNICAL SPECIFICATIONS

The plans to be utilized in conjunction with these specifications are the approved City of San Fernando.

All construction shall be done in accordance with the requirements of the Los Angeles County Department of Public Works Sewer Design Manual, the Standard Specifications, and these Technical Provisions which include The Cured-In-Place Pipe (CIPP) standards.

For convenience and cross-reference ease, the section numbering system used in these Technical Provisions corresponds to that used in the Standard Specifications.

Section 1-2.1 Definitions

Add the following to the provisions of Section 1-2, "Definitions":

City	City of San Fernando.
Superintendent	City Maintenance and Operations Manager.
CIPP	Cured-In-Place Pipe standards.

Section 2-9.3 Survey Service

The following supersedes the provisions of Section 2-9.3 "Survey Service":

Lines and grades for construction shall be the responsibility of the Contractor. All work under this contract shall be built in accordance with the lines and grades shown on the plans or specified herein. Field survey for establishing lines and grades and for the control of construction shall be the responsibility of the Contractor. All such surveys, including construction staking, shall be under the supervision of a California Licensed Land Surveyor or Civil Engineer. Staking shall be performed on all items ordinarily requiring grade and alignment at intervals normally accepted by the agencies and trade involved.

The Contractor shall provide a copy of the office calculations and grade sheets to the Owner's Inspector. The Contractor shall be responsible for any error in the finished work, and shall notify the Engineer within 24 hours of any discrepancies or design errors discovered during staking.

2-9.5 Measurement and Payment. The following section is hereby added:

Full compensation for Construction Survey and staking, including furnishing all labor, materials, tools, equipment, surveyor, supervision, and incidentals for doing all the work involved shall be included in the other items of work and no separate payment will be allowed thereof.

Payment for construction survey and staking shall be included in the other item of work

Section 3-2.2.1 Contract Unit Prices

The provisions of Section 3-2.2.1 "Contract Unit Prices" shall apply except as modified and supplemented below:

Adjustment of payments shall cover quantity increases or decreases in Major and Minor Bid Items, as further described in Section 3-2.2.1 "Contract Unit Prices."

Section 300-1.3 Removal and Disposal of Materials

The provisions of Section 300-1.3 "Removal and Disposal of Materials" shall apply except as modified and supplemented below:

Excavated and removed material shall be disposed of in a manner that adheres to all applicable federal, state, and local laws shall be the sole responsibility of the Contractor. Material removed from the site shall become the property of the Contractor and shall be disposed of outside the work site and at the expense of the Contractor.

DEFINITION AND PAYMENT OF BID ITEMS

The unit prices paid for the items listed in the Contractor's Proposal as defined herein shall be considered full compensation for furnishing all labor, materials, tools, and equipment, and doing all work involved in furnishing and installing the materials, complete and in place, in accordance with the details shown on the plans, as specified herein, and as directed by the Engineer.

All incidental work which is neither shown on the plans nor otherwise specified, and which is necessary to complete the construction of improvements as shown on the plans and as specified herein, shall be furnished and installed as though such work were shown on the plans or specified herein, and no additional compensation will be allowed therefor.

- **Construction Safety Plan, Traffic Control, and Daily Cleanup:**

The work under this item consists of developing, submitting for approval, and carrying out a construction safety plan which shall include traffic control per WATCH, pedestrian safety, construction notification to businesses and residents, work area fencing and dust control, and daily work area cleanup as specified in the Special Provisions.

Payment for construction safety plan, traffic control, and daily cleanup shall be included in the other items of work and no additional or separate compensation will be allowed therefor.

SPECIFICATIONS FOR REHABILITATION OF SANITARY SEWER MAINS USING CURED-IN-PLACE PIPE (CIPP)

GENERAL

- A. These Specifications include the minimum requirements for the rehabilitation of sanitary sewer main pipelines by the installation of Cured-In-Place Pipe (CIPP) within the existing, deteriorated pipe.
- B. The rehabilitation of pipelines shall be done by the installation of a resin-impregnated flexible tube which, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe. The CIPP shall extend the full length of the original pipe and provide a structurally sound, jointless and water-tight new pipe within a pipe.
- C. The Contractor is responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor.
- D. Neither the CIPP system, nor its installation, shall cause adverse effects to any of the **City of San Fernando Sewer Department** (hereinafter referred to as the "CITY") processes or facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products to the sewer system.
- E. This specification is intended to primarily address the rehabilitation of sewer mains. Related rehabilitation needs, including problems at the service lateral connection to the main, and problems with the service lateral beyond the main, will be discussed as they relate to the primary subject of this section.

SCOPE

- A. These Specifications cover all work necessary to furnish and install, the Cured-In-Place-Pipe (CIPP). The Contractor shall provide all materials, labor, equipment, and services necessary for traffic control, bypass pumping and/or diversion of sewage flows, cleaning and television inspection of sewers to be lined, liner installation, reconnection of service connections, all quality controls, provide samples for performance of required material tests, final television inspection, testing of lined pipe system and warranty work, all as specified herein.
- B. The CITY shall locate and designate all manhole access points open and accessible for the work, and shall provide rights-of-access to these locations. If street must be closed to traffic because of the orientation of the sewer, the Contractor shall be responsible for obtaining all encroachment or other permits from the governing agency.
- C. Cleaning of Sewer Lines -The Contractor, shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP, including roots and debris,

and shall be responsible for proper disposal of all material removed. Unless stated otherwise, it is assumed that "proper disposal" will be the delivery of this material to the wastewater treatment plant designated by the CITY. Any hazardous waste material encountered during this project will be considered as a changed condition.

- D. By-passing Existing Sewage Flows -The Contractor shall provide for the flow of existing mainline and service connection effluent around the section or sections of pipe designated for CIPP installation. Service connection effluent may be temporarily plugged as provided below. The Contractor shall coordinate sewer bypass and flow interruptions with the CITY at least 14 days in advance and with the property owners and businesses at least 3 business days in advance. Compensation for by-pass pumping and all associated plans and approvals shall be included in the bid for the various items of work.
- E. Public Notification -The Contractor shall make every effort to maintain sewer service usage throughout the duration of the project. In the event that a service connection will be out of service, the longest period of "no service" shall be 8 hours. Otherwise, the bypass requirements given above shall apply. The CITY shall oversee a public notification program which shall, as a minimum, require that each home or business connected to the sanitary sewer be contacted and informed of the work to be conducted, and when the sewer will be off-line.
- H. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP. If, after the successful installation of the CIPP and the reinstatement of the sewer service lateral connections, it is determined that a problem exists at the connection of the service lateral to the main, the CITY may direct the Contractor to repair this problem. If performed by the Contractor, the cost for correcting problems with service connections shall be compensated at the unit price bid for Repair of Defective Service Lateral Connections.
- I. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses, and property owners or tenants.

DESIGN CRITERIA

- A. The CIPP shall be designed for a life of 50 years or greater in accordance with ASTM F1216, Appendix X.1, for "fully deteriorated gravity pipe conditions". The minimum installed cured liner thickness shall be as follows:
 - 1) 8" sewer: 6.0 mm (0' to 17' deep)
7.5 mm (17' to 25' deep)
 - 2) 10" sewer: 6.0 mm (0' to 11' deep)

7.5 mm (11' to 18' deep)
9.0 mm (18' to 25' deep)

- 3) 12" sewer: 7.5 mm (0' to 12' deep)
9.0 mm (12' to 18' deep)
10.5 mm (18' to 25' deep)
- 4) Hydraulic Capacity -Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

B. REFERENCE STANDARDS:

ASTM F1216 Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

ASTM F1743 Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

ASTM D5813 Cured-in-Place Thermosetting Resin Sewer Pipe

ASTM D790 Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials,

ASTM D2990 Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

PRODUCTS

A. CURED-IN-PLACE-PIPE LINING

- 1) CIPP lining shall be one of the following products or approved equal. The products below shall adhere to all requirements specified herein and shall be modified as necessary to meet these requirements.
 - a. Invert-A-Pipe by Improved Technologies Grout
 - b. National Liner by National EnviroTech Group, LLC
 - c. Inliner by Inliner Technologies, Inc.
 - d. Insituform by Insituform Technologies, Inc.
 - e. Diamond Lining Systems by Daystar Composites, LLC
 - f. Premier-Pipe USA by J.W.M. Environmental, Inc.
- 2) The liner shall be composed of tubing material consisting of one or more layers of flexible non-woven polyester felt, with or without other additives

such as fiberglass or other reinforcing additives. The felt tubing shall be impregnated with a thermosetting isothalic polyester resin and catalyst or vinyl ester and catalyst. The liner material and resin shall be completely compatible. The inside and/or outside layer of the tube shall be coated with an impermeable material compatible with the resin and fabric. The liner shall cure in the presence of water at the required temperature for the resin system. Steam-cure shall not be allowed.

- 3) Resin -The resin system shall be a corrosion resistant polyester or vinyl ester system including all required catalysts, initiators that when cured within the tube create a composite that satisfies the requirements of ASTM F1216, ASTM D5813 and ASTM F1743, the physical properties herein, and those which are to be utilized in the submitted and approved design of the CIPP for this project. The resin shall produce a CIPP that will comply with the structural and chemical resistance requirements of this specification.

B. RELATED PRODUCTS

There are a variety of products which may be used as part of the work performed at the ends of the CIPP where they penetrate manholes and where they are penetrated by service lines. These products may include cement mortar grouts, hydraulic cement, and other specialized chemical grouts for stopping infiltration. It is beyond the scope of this section to specify the particular product or material to be used in a particular application. However, only products which are specifically manufactured for use in sanitary sewer manholes are approved. Regardless of the material used, the Contractor shall be responsible for the repair of all failures during the warranty period, whether or not they are related to a product or workmanship issue.

SUBMITTALS

A. Contractors Qualifications:

- 1) The Contractor shall have a minimum of three (3) years of continuous experience installing CIPP liners in pipe of a similar size, length and configuration as contained in this project.
- 2) The Contractor's personnel shall have the following experience with the process and installation method to be used on this project:
 - a. Project Manager – Shall have a minimum of 3 years managing CIPP projects for wastewater collection systems.
 - b. Superintendent -Shall have a minimum of 2 years managing CIPP projects for wastewater collection systems.

c. The lead personnel including the superintendent, the foreman and the lead crew personnel for the CCTV inspection, resin wet-out, the CIPP liner installation, liner curing and the robotic service reconnections must have a minimum of three (3) years of total experience with the CIPP technology proposed for this project and must have demonstrated competency and experience to perform the scope of work contained in this project.

3) The name and experience of each lead individual performing work on this contract shall be submitted with the bid documents.

B. Design: Engineering design calculations, in accordance with the Appendix of ASTM F-1216, for each length of liner to be installed including the thickness of each proposed CIPP. It will be acceptable for the Contractor to submit a design for the most severe line condition and apply that design to all of the line sections. These calculations shall be performed and certified by a qualified Professional Engineer. All calculations shall include data that conforms to the requirements of these specifications.

C. Performance Work Statement (PWS): The Contractor shall submit, to the CITY, a Performance Work Statement (PWS) at the Pre-Construction Conference, which clearly defines the CIPP product delivery in conformance with the requirements of these contract documents. The PWS shall at a minimum contain the following:

1) Clearly indicate that the CIPP will conform to the project requirements as outlined in these specifications.

2) Where the scope of work is specifically delineated in the contract documents, a detailed installation plan describing all preparation work, cleaning operations, pre-CCTV inspections, by-pass pumping, traffic control, installation procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warranties furnished and all else necessary and appropriate for a complete CIPP liner installation. A detailed installation schedule shall be prepared, submitted and conform to the requirements of this contract.

3) Contractor's description of the proposed CIPP lining technology, including a detailed plan for identifying all active service connections maintaining service during mainline installation to each home connected to the section of pipe being lined.

4) A description of the CIPP materials to be furnished for the project. Materials shall be fully detailed in the submittals and conform to these specifications and/or shall conform to the pre-approved product submission.

5) Proposed manufacturers technology data shall be submitted for all CIPP products and all associated technologies to be furnished. Submittals shall include information on the cured-in-place pipe intended for installation and all tools and equipment required for a complete installation. The PWS shall identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. All equipment, to be furnished for the project, including proposed back-up equipment, shall be clearly described.

- 6) The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.
- 7) A detailed description of the Contractor's proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning process.
- 8) CIPP REPAIR/REPLACEMENT: Occasionally, unforeseeable problems with installation will result in the need to repair or replace a defective CIPP.
 - a. The Contractor shall outline specific repair or replacement procedures for potential defects that may occur in the installed CIPP. Repair/replacement procedures shall be as recommended by the CIPP system manufacturer and shall be submitted as part of the PWS.
 - b. Defects in the installed CIPP that will not affect the operation and long term life of the product shall be identified and defined.
 - c. Repairable defects that may occur in the installed CIPP shall be specifically defined by the Contractor based on manufacturer's recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the requirements of the Contract.
 - d. Un-repairable defects that may occur to the CIPP shall be clearly defined by the Contractor based on the manufacturer's recommendations, including a recommended procedure for the removal and replacement of the CIPP.

D. PRODUCT SUBMITTALS

- 1) Fabric Tube – including the manufacturer and description of product components.
- 2) Flexible membrane (coating) material – including recommended repair (patching) procedure if applicable.
- 3) Raw Resin Data -including the manufacturer and description of product components.
- 4) Manufacturers' shipping, storage and handling recommendations for all components of the CIPP System.
- 5) All MSDS sheets for all materials to be furnished for the project.
- 6) Tube wet-out & cure method including:
 - a. A complete description of the proposed wet-out procedure for the proposed technology.
 - b. The Manufacturer's recommended cure method -for each diameter and thickness of CIPP liner to be installed. The PWS shall contain a detailed curing procedure detailing the curing medium and the method of application.

- E. SAFETY: The Contractor shall submit a proposed Safety Plan to the Owner, prior to beginning any work, identifying all competent persons. The plan shall include a

description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.

- 1) The Contractor shall conform to all work safety requirements of pertinent regulatory agencies, and shall secure the site for the working conditions in compliance with the same. The Contractor shall erect such signs and other devices as are necessary for the safety of the work site.
- 2) The Contractor shall perform all of the Work in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe renewal.

EXECUTION

Prior to beginning any work, the Confirmation CCTV shall be submitted to and approved by the CITY, along with the PWS which will outline any preparatory work (reduction of protruding service connections, repair of offset joints, pipe bellies, etc) needed on a given section of sewer main.

- A. The Contractor shall perform and provide all necessary traffic control measures to complete the work and shall be required to obtain all applicable encroachment permits. Warning signs, barricades, and flagmen must be provided in accordance with the Manual on Uniform Traffic Control Devices, or other permitting requirements.
- B. The Contractor shall clean and televise each length of pipe to be lined as specified in Paragraph 6-02 E. above. Only personnel trained and certified in locating breaks, obstacles and service connections by closed circuit television shall perform the inspection. The Pipeline Assessment Certification Program (PACP) administered by the National Association of Sewer Service Companies (NASSCO) or similar program shall be considered the minimum qualification for the CCTV technician. The Contractor shall provide the CITY a copy of the pre-cleaning and post-cleaning video and suitable log in digital format for review prior to installation of the CIPP.
- C. Line Obstructions -It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the CIPP.
 - 1) If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work (Preliminary CCTV) and will prohibit proper installation of the CIPP, the Contractor may be directed by the CITY to correct the problem(s) prior to lining by utilizing open cut repair methods. The Contractor shall be compensated for this work under a contingency pay item designated for open cut point repairs. Removal of any previously unknown obstructions shall be considered as a changed condition.

- 2) The cost of removal of obstructions that appeared on the Preliminary CCTV documentation and made available to the Contractor, prior to the bid opening, shall be compensated for on a unit price basis in accordance with the contract documents.
- D. Service Connections: The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP.
- 1) The Contract Documents may require that each service connection be dye tested to determine whether the connection is live or abandoned. Such dye testing may be performed by CITY personnel as part of the Preliminary CCTV work. If performed by the Contractor, the cost for dye testing of existing service connections shall be compensated at the unit price bid in the Proposal for Dye Testing of Existing Service Connections.
 - 2) In the event the status of a service connection cannot be adequately defined, the CITY will make the final decision, prior to installation and curing of the liner, as to the status. Unless specifically directed otherwise by the CITY, all service connections should be assumed to be active and shall be reopened by the Contractor.
- E. Prior to lining the main sewer, protruding service lateral connections shall be internally cut or ground down flush with the pipe wall with a robotic cutter specifically designed for this purpose, and all required point repairs shall be completed. The internal cutter shall be capable of cutting cast iron, PVC, VCP, DIP, and Orangeburg Pipe.
- F. The Contractor shall bypass pump sewer flows around the lining work while it is being performed. Refer to SECTION 14 of this document for bypass pumping guidelines and requirements.
- G. INSTALLATION OF LINER -The CIPP Liner shall be installed and cured in the host pipe per the manufacturer's specifications as described and submitted in the PWS. CIPP installation shall be in accordance with the applicable ASTM standards with the following modification:
- 1) The wet-out tube shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the tube as a result of installation.
 - 2) The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point
- H. Water shall be used to invert CIPP installed via ASTM F1216 or to invert the calibration hose through CIPP installed via ASTM F1743.
- 1) Air shall not be used to invert the CIPP or calibration hoses under any circumstances, unless combined with water being used with an installation vessel.
 - 2) The water inversion of the CIPP and calibration hoses shall be accomplished by using natural water pressure (head) achieved by erecting platforms or scaffolding to an elevation determined by the Contractor, or by using a CIPP installation vessel that creates water pressure.

- 3) The Contractor shall determine the necessary inversion heads (pressure) for each line segment. If an installation vessel is used, a pressure relief valve shall be installed on the vessel so that the necessary pressure/inversion heads are not exceeded at any time during the inversions.
- 4) The Contractor shall submit required inversion heads for each installation as a shop drawing without delay or claim to confidentiality or product/installation privacy.
- 5) Prior to installation and as recommended by the manufacturer remote temperature gauges or sensors shall be placed inside the host pipe to monitor the temperatures during the cure cycle. Liner and/or host pipe interface temperature shall be monitored and logged during curing of the liner.
- 4) Curing shall be accomplished by utilizing the appropriate medium in accordance with the manufacturer's recommended cure schedule. The curing source or in and output temperatures shall be monitored and logged during the cure cycles. The manufacturer's recommended cure schedule shall be used for each line segment installed, and the liner wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity of soil, per ASTM as applicable, shall be taken into account by the Contractor.

I. COOL DOWN

- 1) The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer's recommendations as described and outlined in the PWS.
- 2) Temperatures and curing data shall be monitored and recorded by the Contractor throughout the installation process to ensure that each phase of the process is achieved as approved in accordance with the CIPP System manufacturer's recommendations.

J. FINISH

- 1) The installed CIPP shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles and de-lamination. The lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the lined pipe.
- 2) Any defect, which will or could affect the structural integrity or strength of the linings, shall be repaired at the Contractor's expense, in accordance with the procedures submitted under Paragraph 6-05 C. 9) above.
- 3) The beginning and end of the CIPP shall be sealed to the existing host pipe. The sealing material shall be compatible with the pipe end and shall provide a watertight seal.
- 4) If, after the successful installation of the CIPP and the reinstatement of the sewer service lateral connections, it is determined that a problem exists at the connection of the service lateral to the main, the CITY may direct the Contractor to repair this problem. If performed by the Contractor, the cost for correcting problems with service

connections shall be compensated at the unit price bid for Repair of Defective Service Lateral Connections.

- 5) If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacture of the CIPP system.
- 6) Compensation shall be at the actual length of cured-in-place pipe installed. The length shall be measured from center of manhole to center of manhole. The unit price per linear foot installed shall include all materials, labor, equipment and supplies necessary for the complete CIPP liner installation. Compensation for service connection sealing shall be at the unit price bid.

K. MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES

- 1) A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP shall be applied at manhole walls in accordance with the CIPP System manufacturer's recommendations.
- 2) Reconnections of existing services shall be made after the CIPP has been installed, fully cured, and cooled down. It is the Contractor's responsibility to make sure that all active service connections are reconnected.
- 3) External reconnections are to be made with a tee fitting in accordance with CIPP System manufacturer's recommendations. Saddle connections shall be seated and sealed to the new CIPP using grout or resin compatible with the CIPP.
- 4) A CCTV camera and remote cutting tool shall be used for internal reconnections. The machined opening shall be at least 95 percent of the service connection opening and the bottom of both openings must match. The opening shall not be more than 100 percent of the service connection opening. The edges of the opening shall not have pipe fragments or liner fragments, which may obstruct flow or snag debris.
- 5) In the event that service reinstatements result in openings that are greater than 100 percent of the service connection opening, the Contractor shall install a CIPP type repair, sufficiently in size to completely cover the over-cut service connection. No additional compensation will be paid for the repair of over-cut service connections.
- 6) Coupons of pipe material resulting from service tap cutting shall be collected at the next manhole downstream of the pipe rehabilitation operation prior to leaving the site. Coupons may not be allowed to pass through the system.

FINAL INSPECTION AND REPORTS

- A. Following installation of the CIPP and reinstating all active service lateral connections, and completion of all manhole rehabilitation (including vacuum testing, see Section 12 of

this Document), the Contractor shall conduct a final, Post-Rehabilitation CCTV inspection of the completed work. No cleaning equipment shall be in the sewers during the Post-rehabilitation CCTV inspections. There shall be no water flowing in the pipe, so that the entire CIPP can be seen.

- B. Installation Reports shall be generated for each segment of liner installed, and shall be submitted along with the Post-Rehabilitation CCTV video.
- C. The Installation Report shall document the installation including manhole numbers, street names/sewer location, project number, date, time, temperature, curing temperature, curing time, liner thickness, etc. A sample report shall be submitted to the CITY for approval prior to installing any lining.

WARRANTY

- A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the liner and all supplied materials to be free from defects in raw materials for one (1) year from the date of installation and acceptance by the CITY.
- B. The Contractor shall warrant the liner installation for a period of one (1) year. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with procedures included in Paragraph 6-05 C. 9) above.
- C. After a pipe section has been lined and for a period of time up to one (1) year following completion of the project, the CITY may inspect all or portions of the lined system. The specific locations will be selected at random by the Owner and will include all sizes of CIPP from this project. If it is found that any of the CIPP has developed abnormalities since the time of " Post-Rehabilitation CCTV Inspection," the abnormalities shall be repaired and/or replaced as defined in Paragraph 6-05 C. 9). If, after inspection of a portion of the lined system under the contract, problems are found, the Owner may televise all the CIPP installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Paragraph 6-05 C. 9) above and per the original specifications, all at no additional cost to the CITY.

PAYMENT

Payment for the work included in this section will be in accordance with the prices set forth in the proposal for the quantity of work performed. Progress payments will be made monthly based on the work performed during that period.

CLEANING AND CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF SEWER PIPE

GENERAL

WORK INCLUDED

- A. This section covers the initial and final cleaning, and the initial and final closed circuit TV (video) inspection of sewer pipelines. The word "clean" in this section is defined as the removal of all accumulations including sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material in the pipe.
- B. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification:
- B. Standard Specifications for Public Works Construction latest Edition, (refer as the Green Book herein) Section 500-1.1.4 - Cleaning and Preliminary Inspection.
- C. Standard Specifications for Public Works Construction latest Edition (refer as the Green Book herein) Section 500-1.1.5 - Television Inspection.

JOB CONDITIONS

- A. The Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

SUBMITTALS

- A. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the engineer and shall be acknowledged as acceptable before any work is started.
- B. For each of the initial and final inspection, Contractor shall submit to a compact disc containing all the videos with audio of all sewer reaches inspected, images, and inspection reports. Work will not be considered complete until the following items have been received and approved by the City.
 - 1. Initial and final video inspection shall be in digital format. At the beginning of the inspection, the information of the inspection shall be displayed in the following PACP format:

- A. Surveyed by
- B. Street
- C. Locations Code
- D. Direction of inspection
- E. Pipe material
- F. Pipe diameter
- G. Length of reach to be televised
- H. Manhole number from which the camera is traveling
- I. Manhole number to which the camera is traveling
- J. Pipe ID
- K. Inspection Time/Date

In addition, each recording shall continuously display the following information:

- A. City
 - B. Number of the manhole from which the camera is traveling
 - C. Number of the manhole to which the camera is traveling
 - D. Direction of flow (indicated by arrow)
 - E. Date of recording
 - F. Pipe diameter
 - G. Pipe material
 - H. Footage
2. The video shall be labeled with the Contractor's name, date televised, street name, identification of the sewer reach(es) inspected, and run number. The audio portion of the CCTV inspection shall be in English and intelligible in its entirety. If the CCTV inspection are of such poor quality that the Engineer is unable to evaluate the condition of the sewer, locate sewer service connections, or verify cleaning, the Contractor shall re-televiser the sanitary sewer and provide a new CCTV inspection of good quality at no cost to the City. No payment will be made for CCTV inspection that does not meet the requirements of these specifications.

PRODUCT - NOT APPLICABLE

EXECUTION

INITIAL AND FINAL CLEANING OF SEWER PIPE

- A. The Contractor shall clean sewer pipe of any obstruction and debris including roots in accordance with the "Standard Specifications for Public Works Construction latest Edition," (refer as the Green Book herein) Section 500-1.1.4 - Cleaning and Preliminary Inspection - and the following additions and added subsections.
- B. Add the following to paragraph (b) of Section 500-1.1.4 of the Green Book to read:

High velocity hydrocleaning equipment shall have the following:

- 1. A minimum of 700 feet of high pressure hose.

2. A 1,000-gallon minimum water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.
3. Equipment operating controls located above ground.
4. Minimum working pressure of 1,000 pounds per square inch at a 50 gpm rate.

C. Add the following subsections to Section 500-1.1.4 of the Green Book to read:

1. Cleaning Precautions

During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools which depend upon water pressure to provide their cleaning force, or tools which retard the flow in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. Care shall be exercised to avoid pipe damage.

2. Root Removal

Videotapes and TV log of existing sewers, if available, will be provided upon request for general guidance only. The Contractor is responsible for all interpretations made from these logs. The omission of noting on the Drawings of the existence of roots within a sewer line shall not relieve the Contractor of the responsibility of removal of roots as part on the cleaning of the sewer at bid cost. Roots shall be removed where shown on Video Tape or revealed by the Contractor's television inspection. Special attention shall be used during the cleaning operations to assure removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines and bucket machines using root cutters and porcupines, and equipment such as high-velocity jet cleaners. Chemical root treatment shall not be used by the Contractor.

3. Material Removal

All sludge, dirt, sand, rocks, grease and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.

4. Material Disposal

All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of at a suitable sanitary landfill site as defined by the Titles 22 and 23 of the California Administrative Code. All Materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond a

single workday, except in totally enclosed containers and as approved by the Engineer.

5. Sewer Flow Control

a. General

When depth of flow in the pipe upstream of the manhole section being worked is above the maximum allowable for television inspection, joint testing and/or sealing; or when necessary to accomplish the specified sewer line replacement; the flow shall be reduced to the required level by plugging or blocking of the flow, and by pumping the flow around the section being worked.

Depth of flow shall not exceed that shown below for the respective pipe sizes as measured in the manhole when performing television inspection, joint testing and/or sealing.

Maximum Depth of Flow in Inches

Pipe Sizes in Inches	Television Inspection	Joint Testing / Sealing
6	1.20	1.50
8	1.60	2.00
10	2.00	2.50
12	3.00	3.00
15	3.75	4.50
18	4.50	5.40
21	5.25	6.30
24	6.00	7.20
27	8.10	9.45
30	9.00	10.50
33 and up	30% of Pipe Diameter	35% of Pipe Diameter

Amount of the flow allowed in sewer line shall be in accordance with the manufacturer's recommendations and as approved by the Engineer.

Plugging, Blocking, and Pumping

When sewer flow control is required, the Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The plug shall be provided with a tag line. The pumping system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be provided as required. Pumping shall be done by the Contractor in such manner as will not damage public or private property or create a nuisance or health menace. The pumped

sewage shall be in an enclosed hose or pipe and shall be reinserted into the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, streets or over sidewalks, etc. Nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

D. Additional Requirement for Final Cleaning of Sewer Pipe:

The Project is ready for cleaning when the following work has been completed:

- a. All sewer mains and laterals are rehabilitated/installed, backfilled, and compacted.
- b. All structures are in place, all channeling is complete, and pipelines are accessible from structures.
- c. All other underground facilities, utility piping, and conduits are installed.
- d. Placement of aggregate base has been completed.
- e. Final air test has been completed.

Acceptance of the cleaning shall be based upon the subsequent video inspection of the line.

INITIAL AND FINAL CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF SEWER LINE

- A.** Prior to rehabilitation of each sewer section, the Contractor shall be required to conduct a manhole to manhole Closed Circuit Television (CCTV) survey of the lines to determine the general condition of the sewer, to determine defective pipe sections for point repairs, to log the location of all house laterals and to verify location of active house laterals.
- B.** The Contractor will abide by the requirements of the "Standard Specifications for Public Works Construction latest Edition," (refer as the Green Book herein) Section 500-1.1.5- Television Inspection - and the following additions and added subsections.
- C.** Add the following to Section 500-1.1.5 of the Green Book to read:
 1. When sewer line depth of flow at the upstream manhole of the section being televised is above the maximum allowable for television inspection, the Contractor shall reduce the flow in accordance with Subsection 500 - 1.1.4 of the Sewer Line Cleaning Specification above to permit proceeding with the television inspection.
 2. Television inspection shall be done one sewer section at a time. The section being inspected shall be isolated from the remainder of the sewer

with upstream sewage flow by-passed. The camera shall be moved through the sewer section in either direction at a uniformly slow rate of means of power cable winches at each manhole, stopping at each defect to allow adequate evaluation

3. Should the camera get stuck in the sewer, the Contractor shall be responsible for all costs involved in extracting it. Costs related to difficulties encountered during internal television inspection are incidental to the Contract and claims, therefore, will not be considered.

D. Add the following subsections to Section 500-1.1.5 of the Green Book to read:

1. Initial CCTV Inspection

- a. The Contractor is required to clean the sewers and manholes per Section 500-1.1.4 and television inspect all proposed rehabilitative pipes shown on plans.
- b. No construction work shall be started on a particular sewer unless the Engineer has had five working days to review the inspection documentation for the sewer. The method of rehabilitation/replacement of each sewer will be re-evaluated by the Engineer on the basis of the television inspection information furnished by the Contractor and the replacement/rehabilitation method will be changed if it is determined necessary or advisable. Such changes in the method replacement/rehabilitation shall not be considered substantial changes in the character of the work.
- c. As directed by the Engineer and at locations where CCTV inspection or pipe installation work is hampered by an obstruction which cannot be removed by conventional sewer cleaning equipment or by other approved internal means, spot excavations shall be performed to expose and remove the obstruction. Spot excavations shall be performed as specified elsewhere in this contract document.

E. Additional Requirement for performing Closed Circuit Television (CCTV) inspection of sewer line.

1. Contractor shall take at least one picture of all mid-to-major defects in pipe that will be in JPEG format. Each JPEG file will be named in accordance with the line and footage. One photograph shall also be taken of each lateral connection looking up into the lateral.
2. Contractor shall setup at the upstream manhole whenever possible to video inspect with the flow. The camera will move at a uniform rate at a speed no greater than 30 feet per minute. Distance of the line will be measured and recorded from the center of manhole to the center of the next manhole. The

distance will be accurate within 2 feet of every 1000 linear feet inspected. If more than one manhole reach is inspected in a single run, the footage counter shall be reset to zero at the center of all intermediate manholes. The camera shall pause for a sufficient amount of time to adequately document and provide accurate distance measurements of all defects in pipe and the connections observed in the line. The camera shall rotate and look directly at each defect and look into each connection to thoroughly document the conditions and determine if the lateral is in service.

Contractor shall capture photos of any moderate and above damages or abnormal conditions.

3. The recording shall include an audio portion describing the condition of the lines with the video image. The audio portion will be sufficiently free of background noise to produce an oral report that clear and easily discernible. At the beginning of each inspection run, the audio shall identify Contractor's name, the crew member, date, time, street location, name of line, pipe size, pipe material, direction of inspection, and the pipe numbers at the beginning and end of the reach. The audio shall note during the inspection the location and condition of the pipe defects, including all cracks, breaks, cracked or misaligned joints, root intrusion, infiltration, missing pieces of pipe, corrosion, deposits, obstructions, and any other items which reflect the condition of the sewer line. The audio shall also note the location of the connections, and whether the connection is in service. All observations shall be included on the inspection report.
4. Continuous digital recordings of the inspection view as it appears on the monitor shall be stored. A digital recording will be made of the entire inspection. The video will be recorded in MPEG 4 unless prior arrangements are made between the City and Contractor.
5. In case the camera cannot pass from upstream to downstream, a reverse setup shall be attempted. In case of this type of setup, a separate MPEG file will be stored. Once all inspections are complete, Contractor shall give the City of San Fernando a hard drive that details all of the captured information.

F. Additional Requirement for Final CCTV Inspection of sewer line:

The project is ready for final video inspection when pipelines and structures have been cleaned a maximum of thirty (30) minutes before the inspection is to take place.

The following observations from television inspections shall be considered defects in the construction of new sewer pipelines and shall require correction prior to project completion:

- a. Sags greater than fifteen percent (15%) of the inside pipe diameter.
- b. Open or offset joints.

- c. Cracked or damaged pipe.
 - d. Out of round pipe.
 - e. Joint infiltration.
 - f. Debris or other foreign objects.
 - g. Other obvious deficiencies.
- G.** Traffic Control requirement in performing Closed Circuit TV (CCTV) inspection.
1. CONTRACTOR shall adhere to the WATCH Manual for traffic control. All Contractor's trucks shall have an arrow board and beacons as well as a full set of cones, candle sticks, and "Men at Work" signs and tripods that shall be used to provide safety for both employees and the general public.

POINT REPAIR

GENERAL

WORK INCLUDED

- A. Point repairs (spot repairs) are work required to prepare defective sections of existing sewer lines for rehabilitation. Excavation from the surface is required to accomplish the necessary repairs. Generally, the work will require repair of existing sags, offset joints, cracks, protruding laterals, removal and replacement of short sections of damaged pipe, and any other defects deemed necessary after the initial and/or final video inspection.
- B. Flow control, if required to accomplish the repair, shall be performed as described in Section 02732, Part 3, Subsection 3.01, Paragraph C.5.
- C. The CONTRACTOR shall repair the point repairs after determining that it is necessary and approved by the Engineer. The work shall include verifying the location of the point repair, locating all interfering utilities, temporary flow bypassing, excavation, shoring, dewatering, pipe repairs or replacement, backfilling, and surface restoration.
- D. All point repairs discovered through subsequent investigations, and/or directed by the Engineer, shall be completed prior to rehabilitating the pipe by grouting or lining or other method of repair. The exact location of the point repairs will be determined by the Contractor and approved by the Engineer after the pipe is exposed. All work to expose and correct the defects, and the materials and methods used shall conform to the applicable specifications, including excavation and backfill, surface restorations, pipe installation, and sewer flow control.
- E. All point repairs shall be visually inspected and measured by the Engineer prior to backfilling.
- F. Supplying all labor, materials, equipment and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

JOB CONDITIONS

- A. The Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians and to adjacent property owners or tenants.

SUBMITTALS

A. The Contractor shall submit to the Engineer for approval, a detailed plan including the location, method, and lineal footage or each location of spot repairs prior to the actual work.

B. The Contractor shall submit a plan for bypassing sewage around the work area and facilities where sewage flows must be interrupted to carry the work. The plan shall be reviewed by the engineer and shall be acknowledged as acceptable before any work is started.

PRODUCT - NOT APPLICABLE

EXECUTION

Notification

A. The Contractor shall notify the Engineer not less than 48 hours in advance of the time he plans to begin repair work at a particular location within the project.

B. After the point repair is located and exposed, the Engineer will inspect the damaged pipe and confirm the required repair and methods proposed by the Contractor.

Repair Methods

A. One or a combination of the following methods could be used. Method selected from below or recommended by the Contractor, shall be subject to approval by the Engineer prior to its installation.

1. **Repair Clamp:** Install full circle repair clamps as recommended by the manufacturer and approved by the Engineer. All metallic hardware shall be 316 stainless steel.
2. **Heat-Shrink Sleeve:** Install in accordance with manufacturer's recommendations.
3. **Remove and Replace Pipe and Fittings:** Remove defective pipe or fittings to the nearest joint or by cutting perpendicular to the pipe axis to leave a plain end. Prepare a replacement section of like pipe material or as otherwise approved by the Engineer or shown on the drawings. Make connections using standard joints, repair clamps, couplings, or heat-shrink sleeves.

Backfill

1. Backfill, including pipe bedding, shall be placed and compacted as specified in Section 217, "Bedding and Backfill", of the Standard Specifications for Public Works Construction, latest version.

2. Flow shall be returned into the repaired section prior to placement of backfill.
3. The Contractor shall correct any settlement of backfill which may occur within the guaranty period at no cost to the Agency.

WARRANTY

GENERAL WARRANTY FOR ONE YEAR AFTER COMPLETION:

- 1) For a period of at least one year after the Sanitary Sewer CITY's final inspection, the Contractor shall warrant the fitness and soundness of all work done and materials and equipment put in place under the contract and neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties of responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified.
- 2) A second CITY inspection will be conducted 10 months after the date of acceptance of the project or the date of the Final Construction Approval if applicable. The Owner or Contractor will be notified of observed defects after the "10-month" inspection is conducted. The Contractor will correct any defects prior to the expiration of the one-year warranty.
- 3) If in fulfilling the requirements of the contract or of any guarantee embraced therein or required thereby, the Contractor disturbs any work guaranteed under another contract, he shall restore such disturbed work to a condition satisfactory to the Engineer, and shall guarantee such restored work to the same extent as it was guaranteed under such other contract.
- 4) If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Owner may have the defects corrected and the Contractor and his Surety shall be liable for all expenses incurred.
- 5) All special guarantees applicable to definite parts of the work that may be stipulated in the specifications or other papers forming a part of the Contract shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

MAINTENANCE

In addition to the guarantee stipulated in the Contract, each Contractor shall fully maintain all work performed under his contract for sixty (60) days after final completion and acceptance of the work. The retained percentage of contract payments shall not be due until after the 60 days maintenance period, except that the Owner may at his discretion release such retainer earlier.

SPECIAL PROVISIONS

PART 8

SIGNING, STRIPING, AND PAVEMENT MARKERS

All equipment, materials, and components for signing and striping, and the installation thereof, shall conform to the 2010 Caltrans Standard Plans, and Standard Specifications, Section 56, "Signs," Section 84, "Traffic Stripes and Pavement Markings," and Section 85, "Pavement Markers," unless otherwise noted in these Special Provisions and on the Plans. These Plans and Specifications are hereinafter referred to as State Standard Plans and State Standard Specifications. Copies of these documents are available from Caltrans, District 7 office at 100 South Main Street, Los Angeles, California 90012 or from Caltrans, 6002 Folsom Boulevard, Sacramento, California 95819, (916) 445-3520.

All materials required for the completion of work as shown on the Plans shall be provided by the Contractor.

SECTION 56 - SIGNS

56-4 ROADSIDE SIGNS

56-4.03 Construction. Relocated signs shall be installed using existing posts at new locations and shall be set at a minimum 30-inch depth and at a minimum 12-inch square portland cement concrete (PCC). The post depth of the concrete footing shall be sufficient to extend at least 6-inches below the bottom of the posts. 1/4-inch expansion paper shall be placed between the sign foundation and sidewalk.

New signs shall be installed using metal posts set at a minimum of 30-inch depth in a minimum 12-inch square PCC, except as specified otherwise, the metal post shall be a 2-inch square, galvanized steel "Quick Punch" post. The length of the metal post shall be sufficient to extend from the top of the sign to 30-inches below the top of the concrete footing and provide a 7-foot clearance between the finished grade and the bottom of the sign. The depth of the concrete footings shall be sufficient to extend at least 6-inches below the bottom of the posts. 1/4-inch expansion paper shall be placed between the sign foundation and sidewalk.

Marker and delineators shall conform to the provision in Section 82, "Markers and Delineators."

56-4.04 Payment. Payment for signing shall be included in the bid price for signing and striping, and no additional compensation will be allowed therefor.

SECTION 84 - TRAFFIC STRIPES AND PAVEMENT MARKINGS

84-1 GENERAL

84-1.02 Materials. Traffic stripes, pavement markings, crosswalks, and arrows shall be thermoplastic unless otherwise shown on the Plans. Curb markings shall be paint, 2 coats. Contractor shall repaint all curb markings within the project limits.

84-1.03A Tolerances and Appearance. The Contractor shall furnish the necessary control points for all striping and markings, and shall be responsible for the completeness and accuracy thereof to the satisfaction of the Engineer.

The Contractor shall establish all traffic striping between these points by stringline or other method to provide striping that will vary less than 1/2-inch in 50-feet from the specified alignment.

When no previously applied figures, markings, or traffic striping are available to serve as a guide, suitable layouts shall be spotted in advance of the permanent paint application. Traffic lines may be spotted by using a rope as a guide for marking spots every 5-feet, by using a marking wheel mounted on a vehicle, or by any other means satisfactory to the Engineer.

The Contractor shall mark or otherwise delineate the traffic lanes in the new roadway or portion of roadway, or detour before opening it to traffic.

The Contractor shall provide an experienced technician to supervise the location, alignment, layout, dimensions, and application of the paint.

Spotting shall be completed prior to the removal of any existing stripes. Existing stripes and markings shall be removed prior to painting new stripes and markings, but in no case shall any section of street be left without the proper striping for more than 24 hours, or over weekends or holidays.

Existing traffic stripes (including raised pavement markers), pavement legends, and markings that do not conform to the plans shall be removed by wet sandblasting per Section 15-2.02C, "Remove Traffic Stripes and Pavement Markings," and Section 15-2.02D, "Remove Pavement Markers," of the State Standard Specifications.

84-2 THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS

84-2.02 Materials. Traffic striping shall be thermoplastic including crosswalks, arrows and other pavement legends.

The installation of traffic stripes includes placement of raised pavement markers when called for on the plans.

Adhesive for raised pavement markers shall be per Section 85, "Pavement Markers." Epoxy shall be the Rapid Set type.

84-2.04 Payment. Payment for striping details, pavement markings, and curb marking shall be included in the price bid for signing and striping, and no additional compensation will be allowed.

84-3 PAINTED TRAFFIC STRIPES AND PAVEMENT MARKINGS

84-3.02 Materials. Paint for curb markings shall be ready-mixed rapid dry type.

84-3.03 Construction. Paint shall be applied in two coats.

The second coat of paint shall be applied no less than 24 hours from application of the first coat.

84-3.07 Payment. Payment for striping details, pavement markings, and curb marking and repainting existing painted curb shall be included in the price bid for signing and striping, and no additional compensation will be allowed.

SECTION 85 – PAVEMENT MARKERS

85-1.03C Epoxy Adhesive. Adhesive for raised pavement markers shall be rapid set type epoxy.

Removal of pavement markers shall be per Section 15-2.02D, "Remove Pavement Markers."

85-1.04 Payment. Payment for pavement markers shall be included in the lump-sum price bid for signing and striping, and no additional compensation will be allowed therefor.

TECHNICAL SPECIFICATIONS

1.1 GENERAL REQUIREMENTS

All Conditions of the Contract apply to work of this Section.

In case of a conflicting statement between this section and other sections in the specifications or SSPWC, the terms in this Technical Specification shall prevail.

1.2 SCOPE OF WORK

1.2.1 This work includes furnishing labor, materials, tools, equipment, transportation and services required for complete and satisfactory construction of:

**ANNUAL STREET RESURFACING PROJECT
FISCAL YEAR 2018-2019
JOB NO. 7597, PLAN NO. P-726**

in accordance with the improvement Plans and Specifications prepared therefore by the City of San Fernando.

A. GENERAL NATURE OF WORK

The project consists of roadway resurfacing and concrete replacement. The work includes replacement of concrete curb, gutter, sidewalk, cross gutter, spandrel, and access ramp; rehabilitation of AC pavement section, cold milling of AC pavement; construction of ARHM overlay; adjustment to grade of water valve and manhole frame and cover; installation of traffic striping, signage and pavement marking including painting of house numbers; and miscellaneous appurtenant work.

B. PRE-CONSTRUCTION MEETING AND MISCELLANEOUS REQUIREMENTS

Prior to commencing work, there will be a pre-construction meeting to be attended by the Engineer, Inspector, Street Superintendent, and Contractor, and at which time the Contractor shall be informed of specific construction and administrative procedures. The Contractor shall submit a detailed construction schedule, traffic control plan, and materials specifications proposed for use on the project during this meeting.

The Contractor shall secure approval of the traffic control plan prior to beginning any work.

C. SWPPP BEST MANAGEMENT PRACTICES (BMPs)

General

The City of San Fernando is a co-permittee with 85 other cities in Los Angeles County under the National Pollutant Discharge Elimination System (NPDES) General Permit Number CA0061654 (CI 6948) issued by the Los Angeles Regional Water Quality Control Board. This section of the specifications contains recommended practices, called Storm Water Pollution Prevention (SWPP)

BMP. All contractors for the City of San Fernando must follow these practices.

Best Management Practices

Measures to retain all sediments, construction-related wastes, spills, and residues on the construction site and keep them from entering any storm drains that lead, untreated, to the ocean must be employed. These measures are required to comply with federally mandated NPDES policy.

As a minimum requirement under the permit, a list of BMPs must be utilized which include sediment control, site management and material and waste management. BMPs, however, will differ from one project to the next. It is our best opinion that the BMPs in **bold** highlight in the following table will apply to this project. These BMPs are included in the following pages.

Detailed Best Management Practices

1. Dewatering Operations.....	4-3
2. Paving Operations.....	4-5
3. Material Delivery and Storage	4-9
4. Hazardous Waste Management	4-17
5. Contaminated Soil Management	4-19
6. Concrete Waste Management.....	4-21
7. Seeding and Planting.....	5-10
8. Mulching	5-16
9. Geotextiles and Mats	5-19
10. Dust Controls	5-25
11. Construction Road Stabilization	5-35
12. Stabilized Construction Entrance.....	5-37
13. Sand Bag Barrier.....	5-71
14. Storm Drain Inlet Protection.....	5-79
15. Sediment Trap.....	5-87
16. Sediment Basin.....	5-90

(1) All of the Best Management Practices are taken from the California Storm Water Best Management Practice Handbooks.

1.3 SPECIFICATIONS AND APPENDICES

- 1.3.1 Improvement plans, which form a part of the Contract Documents, are included separately from these specifications.
- 1.3.2 Specifications which form a part of the Contract Documents consist of sections listed in the Table of Contents of these specifications.
- 1.3.3 Qualification of Standard Specifications: Wherever references are made in the Specifications to Standard Specifications or methods, reference shall be made to the Standard Specifications for Public Works Construction, 2018 Edition, as amended.

1.4 COORDINATION

The Contractors shall coordinate the work of the various trades and crafts to avoid possible interferences, duplication of work, or unfinished gaps and conflicts between operations. The

various trades and crafts shall agree that, due to field conditions, minor departures from the improvement plans are bound to occur, and that such departures are self compensating so far as cost of additions or deductions are concerned. No claims for extras or time extensions will be allowed in connection with such minor changes due solely to field conditions.

1.5 CONSTRUCTION FORCE

It shall be construed that each subcontract is an integral part of the General Contract and the Contractor shall provide and maintain, in full operation, at all times during the performance of the contract, a sufficient crew of laborers, mechanics, and foremen to execute the work with dispatch. All construction related efforts and operations shall be continuous and sustained.

1.6 BID ITEM DESCRIPTIONS

STREET IMPROVEMENTS

BID ITEM NO. 1 – PROVIDE TRAFFIC CONTROL.

Traffic control shall conform to provisions set forth by the California Manual on Uniform Traffic Control Devices (MUTCD) and Work Area Traffic Control Handbook (WATCH) Manual. Traffic control plan shall be signed and stamped by a Registered Traffic Engineer and shall be provided to the City at least ten (10) days before work commences.

Payment for BID ITEM NO. 1 – PROVIDE TRAFFIC CONTROL shall be at the contract bid item price per lump sum (LS) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 2 – CONSTRUCT PCC ACCESS RAMP WITH CAST-IN-PLACE TRUNCATED DOMES.

Remove existing and construct PCC Access Ramp shall conform to the provisions of Section 303-5 of the Standard Specifications, SPPWC Standard Plan 111-2, and the Plans. Concrete shall be Class 520-C-2500. Truncated dome (detectable/tactile warning surface truncated domes) shall be yellow and manufactured by Armor-Tile or equivalent and cast-in-place.

Payment for BID ITEM NO. 2 – CONSTRUCT PCC ACCESS RAMP WITH CAST-IN-PLACE TRUNCATED DOME shall be at the contract bid item per each (EA) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted including curb and gutter and one (1) foot wide pavement cut.

BID ITEM NO. 3 – REMOVE AND CONSTRUCT 4" PCC SIDEWALK.

PCC sidewalk or residential driveway portion shall conform to the provisions of Section 303-5 of the Standard Specifications. PCC sidewalk shall be removed and reconstructed in accordance with SPPWC Standard Plan 113-1, and to the dimensions given on the typical section of the Plans. All removals shall be to the nearest existing score lines. Concrete shall be Class 520-C-2500.

Payment for BID ITEM NO. 3 – REMOVE AND CONSTRUCT 4-INCH THICK PCC SIDEWALK shall be at the contract bid item price per square foot (SF) and shall include full compensation for all labor, materials, removal and disposal, tools, equipment, and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 4 – REMOVE AND REPLACE 4-INCH THICK PCC RESIDENTIAL DRIVEWAY APPROACH.

Removal of existing drive approach and replacing with 6" thick PCC drive approach shall conform to the provisions of Section 303-5 of the Standard Specifications, SPPWC Standard Plan 110-2, the Plans and these Specifications.

Concrete shall be Class 520-C-2500.

Payment for BID ITEM NO. 4 – REMOVE AND REPLACE 4-INCH THICK PCC RESIDENTIAL DRIVEWAY APPROACH shall be at the contract bid item price per square foot (SF) and shall include full compensation for all labor, materials, tools, equipment, and incidentals necessary to do all the work involved thereof, complete in place, and accepted, including additional one (1) foot wide AC pavement cut to allow space for forms and two (2) sack slurry backfill of the resultant pavement slot.

BID ITEM NO. 5 – REMOVE AND REPLACE PCC CURB AND GUTTER.

Removal of existing curb and gutter and replacing with PCC curb and gutter, shall conform to the provisions of Section 303-5 of the Standard Specifications, SPPWC Standard Plan 120-2, Type A2-8, and the Plans. Concrete shall be Class 520-C-2500.

Payment for BID ITEM NO. 5 – REMOVE AND REPLACE CURB AND GUTTER shall be at the contract bid item price per linear foot (LF) and shall include full compensation for all labor, materials, tools, equipment, and incidentals necessary to do all the work involved thereof, complete in place, and accepted, including additional one (1) foot wide AC pavement cut to allow space for forms and two (2) sack slurry backfill of the resultant pavement slot.

BID ITEM NO. 6 – REMOVE AND CONSTRUCT LONGITUDINAL GUTTER.

Removal of existing longitudinal gutter and replacing with PCC longitudinal gutter shall conform to the provisions of Section 303-5 of the Standard Specifications, SPPWC Standard Plan 122-2, the Plans and these Specifications.

Concrete shall be Class 520-C-2500.

Payment for BID ITEM NO. 6 – REMOVE AND CONSTRUCT LONGITUDINAL GUTTER shall be at the contract bid item price per square foot (SF) and shall include full compensation for all labor, materials, tools, equipment, and incidentals necessary to do all the work involved thereof, complete in place, and accepted, including additional one (1) foot wide AC pavement cut to allow space for forms and two (2) sack slurry backfill of the resultant pavement slot.

BID ITEM NO. 7 – COLD MILL 1.5" DEPTH AC PAVEMENT.

Cold milling shall conform to the provisions of Section 302-5.2 of the Standard Specifications and shall be performed at locations and to depths indicated on the Plans. Cold milling shall be from outer edge of gutter to outer edge of gutter and shall extend from curb-return to curb-return of the designated areas. Transverse joint lines at the curb returns shall be sawcut as specified in Subsection 300-1.3.2 of the Standard Specifications.

Existing AC on top of existing PCC gutter shall be removed and disposed of and no additional compensation will be made therefore.

All materials to be removed as indicated on the Plans shall be disposed of outside of right-of-way as specified in Subsections 300-1.3.1 of the Standard Specifications.

Payment for BID ITEM NO. 7 – COLD MILL 1.5" DEPTH AC PAVEMENT shall be at the contract bid item price per square foot (SF) from outer edge of gutter to outer edge of gutter and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 8 – CONSTRUCT 1.5" ARHM OVERLAY.

The work under this item consists of placing Asphalt Rubber Hot-Mix (ARHM) as shown on the Plans in accordance with the provisions of Section 302, "Asphalt Concrete Pavement," of the Standard Specifications.

Prior to placement of ARHM, the Contractor shall seal all cracks 3/8 inch and larger. Cracks shall be cleaned out with power router type equipment. The routed cracks shall then be filled with a latex emulsified asphalt sealant.

Paving shall be spread with a self-propelled mechanical spreading and finishing machine equipped with an automatic screed control 30 feet minimum in length.

Where asphalt concrete pavement is being constructed directly upon or against an existing hard pavement surface, or vertical asphalt concrete, or Portland Cement Concrete surface, a binder consisting of asphalt emulsion SS-1H diluted 50 percent with water shall be applied at a rate of 0.10 gallon per square yard. The Contractor shall furnish water for the rolling operation.

Payment for BID ITEM NO. 8 – CONSTRUCT 1.5" ARHM OVERLAY shall be at the contract bid item price per ton (TON) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted, including crack sealing.

BID ITEM NO. 9 - ADJUST WATER VALVE BOX FRAME AND COVER TO GRADE.

Adjust utility valve frame and cover to grade shall conform with Sections 301-1.6, 302-5, and 302-5.8 of the Standard Specifications.

Payment for BID ITEM NO. 9 - ADJUST WATER BOX VALVE FRAME AND COVER TO GRADE shall be at the contract bid item per each (EA) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 10 – ADJUST UTILITY PULL BOX TO GRADE

Adjust utility valve frame and cover to grade shall conform with Sections 301-1.6, 302-5, and 302-5.8 of the Standard Specifications.

Payment for BID ITEM NO. 10 - ADJUST UTILITY PULL BOX TO GRADE shall be at the contract bid item per each (EA) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 11 - ADJUST MANHOLE FRAME AND COVER TO GRADE.

Adjust manhole frame and cover to grade shall conform with Sections 301-1.6, 302-5, and 302-5.8 of the Standard Specifications.

Payment for BID ITEM NO. 10 - ADJUST MANHOLE FRAME AND COVER TO GRADE shall be at the contract bid item per each (EA) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 12 – FURNISH AND INSTALL TRAFFIC STRIPING, SIGNAGE, PAVEMENT MARKING, AND PAINT HOUSE NUMBERS.

The work under this item consists of painting temporary traffic stripe and marking or placing temporary overlay marker (TOM); repainting traffic striping, pavement marking and legend; and replacing raised pavement marker per State of California Department of Transportation Standard Plans and Standard Specifications.

All work shall be performed in accordance with Sections 84 and 85 of the Caltrans Standard Specifications and Standard Plans, except as modified and supplemented below:

Paint for traffic striping, pavement marking, and legend shall be "Thermoplastic" per Section 84-2 of Caltrans Standard Specifications.

The same day of construction, after any resurfacing operation and before opening the travel way to the public, the Contractor shall either paint temporary traffic striping and marking or apply reflective

TOM. If the Contractor elects to use TOM, the Contractor shall paint and complete traffic striping, marking, and legend within five (5) calendar days after completion of resurfacing operations on that street. No street shall be without the proper striping over a weekend.

If TOM is used, it shall be applied every 24 feet for lane line. Four (4) inch wide Type Y amber TOM's shall be applied to delineate centerlines and painted medians. Four (4) inch wide white TOM shall be applied to delineate lanes and stop bars. TOM shall not be applied through an intersection.

The provisions of Caltrans' Standard Specifications Section 84-1.02 "Control of Alignment and Layout" shall apply except as modified and supplemented below:

The Contractor shall perform all layout, alignment and spotting, which will consist of striping or control points spaced at 200 feet on tangents and 50-foot curves. The Contractor shall be responsible for the completeness and accuracy of all layout alignment and spotting. Traffic striping shall not vary more than 2 inch in 50 feet from the alignment shown in the Plans.

The provisions of Caltrans Standard Specifications Section 84-1.03 "Tolerances and Appearance" shall apply except as modified and supplemented below:

Drips, overspray, improper markings and paint material tracked by traffic shall be immediately removed from the pavement surface by methods approved by the Engineer.

The provisions of Caltrans Standard Specifications Section 84-1.04 "Protection from Damage" shall apply except as modified and supplemented below:

The Contractor shall protect his work until the paint is thoroughly dried. Painted traffic striping and pavement marking done under this Contract which are damaged or darkened as a result of wheel markings by public traffic and/or construction equipment, shall be repainted as specified by the Engineer at the sole expense of the Contractor and no additional compensation will be allowed therefor.

Where Fire Hydrants exist, the provisions of Caltrans Standard Specifications Section 85-1.02 "Type of Markers" shall apply except as modified and supplemented below:

Pavement marker shall conform to Type DB - Two-Way Blue Reflective Markers - and shall be installed whether or not shown on the Plans and as shown on Caltrans Standard Plan, Drawing A20A, Detail 9.

Contractor shall repaint all house numbers within the project. House Numbers shall match existing height and font. Numbers shall be in black paint with a white background. Contractor shall submit sample template before commencing work.

Payment for BID ITEM NO. 12 – FURNISH AND INSTALL TRAFFIC STRIPING, SIGNAGE, PAVEMENT MARKING, AND PAINT HOUSE NUMBERS shall be at the contract bid item per lump sum (LS) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 13 – CONSTRUCT SLURRY SEAL

The work under this item consists of performing all work involved in the application of Type II slurry mixture, complete in place, as shown on the plans, including, removing pavement markings by wet sand blasting, cleaning and dampening the existing pavement, barricading, opening, cleaning and sealing the cracks up to 2 inch wide, skin patching of cracks wider than 2 inch up to 5 inch, grinding of shovelled asphalt area prior to slurring, protecting the seal coat until it has set, maintaining and controlling vehicular and pedestrian traffic, repainting of the curbs and re-striping of the streets including stop bars and markings, project signs and public notification, preparation and implementation of local water prevention plan, and all incidentals, as directed by the Engineer.

Payment for BID ITEM NO. 13 – CONSTRUCT SLURRY SEAL shall be at the contract bid item per square foot (SF) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted

BID ITEM NO. 14 – RE-ESTABLISH SURVEY MONUMENTATION

Prior to any construction activities, all monuments, centerline ties, and any other survey markers within the project limits shall be located and recorded by a State of California Licensed Land Surveyor. No work will be authorized until the Contractor submits the required documentation to the City. Upon completion of construction, conflicting monuments, centerline ties, and other survey markers obliterated during construction shall be replaced in-kind per section 309 of the SSPWC and per the California Professional Land Surveyor's Act, latest edition. Corner records for all applicable intersections shall be filed with the County of Los Angeles prior to and after construction activities with copies of recordings provided to the City. All work involved shall conform to the California Professional Land Surveyor's Act, latest edition.

Payment for BID ITEM NO. 14 – RE-ESTABLISH SURVEY MONUMENTATION shall be at the contract bid item per each (EA) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to perform all operations involved with resetting obliterated monuments, centerline ties, and other survey markers. Work shall also include all work involved with filing corner records prior to and after construction in conformance with the California Professional Land Surveyor's Act, latest edition and County of Los Angeles requirements, and providing documentation of same to the City.

WATER IMPROVEMENTS

BID ITEM NO. 15 – PROVIDE TRAFFIC CONTROL

Traffic control shall conform to provisions set forth by the California Manual on Uniform Traffic Control Devices (MUTCD) and Work Area Traffic Control Handbook (WATCH) Manual. Traffic control plan shall be signed and stamped by a Registered Traffic Engineer and shall be provided to the City at least ten (10) days before work commences.

Payment for BID ITEM NO. 15 – PROVIDE TRAFFIC CONTROL shall be at the contract bid item price per lump sum (LS) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 16 – FURNISH AND INSTALL NEW 1" COPPER WATER SERVICES

The work under this item consists of installing new water services in a consistent and orderly manner, as applicable, from the main to water meters; relocating meters as required or as shown on the plans; replacing all meter boxes; connecting services to water meters; installation of all customer hand valves as indicated on plate 19 and 20, reconnection of all private side water services, abandoning existing water service connections; excavating and backfilling trenches; removing and replacing concrete sidewalk at score lines as shown on the plans, as specified herein, and in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards (Plate Nos. 19 and 20), and applicable AWWA standards.

The Contractor shall furnish and replace meter boxes and provide connections to new water meters. The City shall furnish new water meters if required. All hookups to customer side of the meter will be made with copper. The Contractor and the City Inspector shall walk the job site and mark out new meter locations prior to main installation.

Payment for BID ITEM NO. 16 - Furnish and Install New 1" Copper Water Services shall be at the contract bid item per each (EA) and shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 17 – ABANDON EXISTING 6" C.I. WATER MAIN AND INSTALL 8" ID CLASS 350 DUCTILE IRON PIPE

The work under this item consists of providing, constructing, and installing new 8-inch diameter ductile iron pipe (DIP) water mains. The bid item shall include providing and installing main fittings/connections, tees, crosses and bends, abandoning and plugging the existing water main; constructing new concrete thrust blocks; performing hydrostatic testing; disinfecting water mains and service connections; backfilling and compacting the excavated trench (30-inch minimum). The main installation shall be in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards, and AWWA C-600 standards.

DUCTILE IRON PIPE

All ductile iron pipe shall be the diameter and class indicated on the plans and shall conform to AWWA C151. Pipe is to be of the push-on joint type, bituminous coated, cement mortar lined, per AWWA C104. All ductile iron pipe fittings shall conform to ANSI A21.10. Each length of pipe shall be marked with the size and class of pipe, name of manufacturer or trademark, and the date of manufacture.

FITTINGS

Flange fittings shall be ductile iron class 350. Mechanical joint (ML) fittings shall be ductile iron C153 SSB class 350 and shall conform to City of San Fernando Construction Standard.

Unless otherwise shown on the plans or as approved by the Engineer, all connections between cast iron or steel fittings and ductile iron pipe shall be made with rubber gasket joints, and all completed joints between fittings and ductile iron pipe shall meet AWWA C110 or AWWA C153.

CONCRETE THRUST BLOCKS

All thrust blocks shall be pour-in-place concrete, and shall be constructed at bends, crosses, tees, and other locations shown on the plans or as designated by the Engineer. Thrust blocks shall solidly rest against firm, undisturbed soil and shall be concrete class 420-C-2000.

CURVES AND BENDS

Changes in alignment and grade shall be by deflecting the pipe units at joints as provided herein, and pipe units shorter than standard length may be required. The maximum deflection angle between adjacent pipe units shall not exceed 5 degrees for 4-inch to 12-inch diameter pipe, 4 degrees for 12-inch to 16-inch diameter pipe, and 3 degrees for diameters greater than 16-inches. The ends of each pipe unit shall be laid on the theoretical centerline of the pipe and to the grade shown on the drawings with the laying tolerance prescribed therein.

HYDROSTATIC TEST

Hydrostatic testing shall be performed on all newly laid and partially backfilled pipes and services in accordance to the requirement of C600, AWWA standards. All pumps used for hydrostatic testing shall be equipped with gallon or volumetric meters. New lines shall be filled with water and the pressure brought to 200 PSI +/- 5 PSI and maintained for a period of a minimum two hours. The test shall be made on all sections of the water main between valves in order that all pipe, valves, fittings, fire hydrants, connections, and water services may receive the test. If leakage occurs, the Contractor shall correct the deficiencies at his own expense.

DISINFECTION OF WATER MAINS AND SERVICES

All new water mains shall be disinfected with chlorine or hypochlorite before acceptance for domestic use. Chlorine shall be applied to the water in sufficient quantity to produce a dosage of not less than 50 ppm in all sections of the line, services and appurtenances. Treated water shall be retained in the system for a period of 24 hours' minimum and shall produce not less than 10 ppm in all sections being disinfected at the end of the 24-hour period. However, the Contractor has the option to use other methods, provided it complies with the requirements of C-651, AWWA standards. Services shall be connected from corporation stops to meter stops before disinfecting and random testing by City for residual at service ends. All services shall be flushed prior to connection to residents' plumbing. See Water Works Standards regarding connection detail. The contractor shall provide bacteria samples and the City shall provide and pay bacteria testing. **The Contractor and a City representative [a state certified drinking water testing laboratory] shall be present at the time and place the sample is collected. Thereafter, a state certified drinking water testing laboratory shall take custody of the water sample and perform the bacteria testing.** If bacteria testing is positive (fail[s]), the laboratory fees for re-testing shall be paid by the Contractor.

EXCAVATION, REMOVAL, COMPACTION AND RESTORATION OF SURFACE

- All excavation operations and restoration of surfaces shall conform to the requirements of Section 306 of the Standard Specifications and Section 3, C-600 AWWA standards.
- The minimum trench width shall be based on 6 inches of buffer space each side of the proposed main.
 - 8 inch main requires minimum 20-inch wide trench.
 - 12 inch main requires 24-inch wide trench.
- Bedding and backfill shall be as shown on the plans, standard plans, and plan details. Native soil backfill, if used, shall be compacted to 95 % relative compaction. Sand shall be

consolidated by jetting; the upper portions shall be compacted by mechanical means. 1 ½ sack cement-sand slurry is required in all intersections. Rocks and boulders 6 inches and larger shall be removed from backfill. Compaction testing shall be provided by the City upon 24 hour notification. If compaction tests fail in any specific location, one (1) re-test by the City at that location shall be provided. Compaction tests that exceed two (2) in any specific location shall be paid by the Contractor at the rate of \$100 per test.

- The joining of pipe sections shall be such as to produce watertight lines. The pipe trenches shall be kept free of water which might impair pipe joining operations. The bottom of the trench shall be carefully graded as to provide uniform support along the full length of the bottom of the pipe. Pipe trench shall conform to Type 2, AWWA C151.
- Trenches more than 5 feet deep shall be shored as set forth in the rules and regulations of the Division of Industrial Safety of the State of California and OSHA.
- Trenches through AC pavement: The pavement shall be sawcut. The pavement shall be replaced in kind as shown on Standard Drawing Plate No. 3 as follows:

1)	Base course	B2-AR-4000
2)	Surface course	C2-AR-4000
- Trenches through PCC pavement: Pavement shall be sawcut completely through, removed, and replaced with the same thickness (Typ. 5 inches).
Trenches through a combination of AC and PCC pavement: the contractor shall either separately sawcut and remove AC pavement and proceed to sawcut and remove PCC pavement as above described or sawcut completely through the entire pavement section. The pavement shall be replaced with AC as shown on Standard Drawing Plate No. 3.
- The Contractor shall notify the residents and/or business occupants in the project area at least 48 hours prior to performing any work that will affect parking and access to driveways. In paved streets where immediate backfill is required to provide access for the public at private driveways, the contractor shall place and maintain, until the permanent surfacing has been placed, a 2-inch road mixed surfacing. The temporary surfacing shall be placed at all locations which are not barricaded and are open to traffic.

ABANDONMENT OF EXISTING LINE

The contractor shall cut away a part of the existing pipe or cut a hole in the top of the pipe to place concrete plug(s) every 200 feet.

Payment for BID ITEM NO. 17 – ABANDON EXISTING 6” C.I. WATER MAIN AND INSTALL 8” ID CLASS 350 DUCTILE IRON PIPE shall be at the contract bid item per linear feet (LF) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 18 – REMOVE EXISTING AND INSTALL 6” RESILIENT WEDGE GATE VALVE

The work under this item consists of providing and installing a new 6” resilient wedge gate valve. The bid item shall include providing and installing fittings/connections, constructing new concrete thrust blocks, abandoning existing gate valves, removal of valve box, excavation and slurry backfill, and custom valve box covers. Valve pressure ratings shall equal the class of pipe unless otherwise indicated on the plans. The installation shall be in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards, and AWWA C-500 standards. All compression resilient seated gate valves shall conform to AWWA C509.

Resilient wedge valves shall incorporate a high strength cast iron wedge fully encapsulated with urethane rubber permanently bonded to the wedge. Wedge design shall incorporate two seating surfaces. Unless otherwise specified on the plans, all valve ends shall be flanged with drillings and flanges equal to the pressure rating of the pipe.

Unless otherwise shown on the plans or as approved by the Engineer, all connections shall be made with rubber gasket joints in accordance with AWWA C110 or AWWA C153.

Valve box covers shall read "SFWD" and are required to be approved by the Engineer.

Payment for BID ITEM NO. 18 – REMOVE EXISTING AND INSTALL 6" RESILIENT WEDGE GATE VALVE shall be at the contract bid item per each (EA) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 19 – REMOVE EXISTING AND INSTALL 8" RESILIENT WEDGE GATE VALVE

The work under this item consists of providing and installing a new 8" resilient wedge gate valve. The bid item shall include providing and installing fittings/connections, constructing new concrete thrust blocks, abandoning existing gate valves, removal of valve box, excavation and slurry backfill, and custom valve box covers. Valve pressure ratings shall equal the class of pipe unless otherwise indicated on the plans. The installation shall be in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards, and AWWA C-500 standards. All compression resilient seated gate valves shall conform to AWWA C509.

Resilient wedge valves shall incorporate a high strength cast iron wedge fully encapsulated with urethane rubber permanently bonded to the wedge. Wedge design shall incorporate two seating surfaces. Unless otherwise specified on the plans, all valve ends shall be flanged with drillings and flanges equal to the pressure rating of the pipe.

Unless otherwise shown on the plans or as approved by the Engineer, all connections shall be made with rubber gasket joints in accordance with AWWA C110 or AWWA C153.

Valve box covers shall read "SFWD" and are required to be approved by the Engineer.

Payment for BID ITEM NO. 19 – REMOVE EXISTING AND INSTALL 8" RESILIENT WEDGE GATE VALVE shall be at the contract bid item per each (EA) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 20 – CONNECT EXISTING FIRE HYDRANT LINE TO MAIN

The work under this item consists of connecting an existing 6-inch wet barrel hydrant, including connections; providing and installing main valves and fittings; repairing concrete; excavating and backfilling trenches; providing temporary and permanent pavement; and removing and replacing concrete sidewalk at score lines as shown on the plans, as specified herein, and in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction

Standards (Plate No. 11), and applicable AWWA standards. All hydrants require 1- $\frac{3}{4}$ " operating nuts and caps. Salvaged parts shall be taken and deposited to the City yard.

Payment for BID ITEM NO. 20 – Connect Existing Fire Hydrant Line To Main shall be at the contract bid item per each (EA) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 21 – REMOVE EXISTING AND INSTALL NEW WET BARREL HYDRANT ASSEMBLY

The work under this item consists of providing, constructing, and installing a new 6-inch wet barrel hydrant, including connections; providing and installing main valves and fittings; abandoning gate valves; repairing concrete; excavating and backfilling trenches; providing temporary and permanent pavement; and removing and replacing concrete sidewalk at score lines as shown on the plans, as specified herein, and in accordance with the Standard Specifications, City of San Fernando Water Works Specifications and Construction Standards (Plate No. 11), and applicable AWWA standards. All hydrants require 1- $\frac{3}{4}$ " operating nuts and caps. Salvaged parts shall be taken and deposited to the City yard.

Payment for BID ITEM NO. 21 – Remove Existing and Install New Wet Barrel Hydrant Assembly shall be at the contract bid item per each (EA) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

SEWER IMPROVEMENTS

BID ITEM NO. 22 – PROVIDE TRAFFIC CONTROL

Traffic control shall conform to provisions set forth by the California Manual on Uniform Traffic Control Devices (MUTCD) and Work Area Traffic Control Handbook (WATCH) Manual. Traffic control plan shall be signed and stamped by a Registered Traffic Engineer and shall be provided to the City at least ten (10) days before work commences.

Payment for BID ITEM NO. 22 – PROVIDE TRAFFIC CONTROL shall be at the contract bid item price per lump sum (LS) and shall include full compensation for all labor, materials, tools, equipment and incidentals necessary to do all the work involved thereof, complete in place, and accepted.

BID ITEM NO. 23 - PRE-CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION

This item shall include coordination with and notification of the public; locating, identifying, marking and recording all active laterals; and documenting the pre-construction condition of existing sewer pipes. This item shall include labor, materials, utility marking devices, CCTV equipment, videos devices, and other CCTV related materials for clear documentation of deficiencies in the existing sewer pipes and location of laterals. Flow control, diversion and/or bypass pumping required in order to facilitate the pre-construction CCTV shall be included.

Documentation shall follow the National Association of Sewer Service Companies (NASSCO) pipeline

assessment certification program (PACP) coding standards for all defects and consist of a color, DVD-format video, log sheets, and a written report detailing the preconstruction condition of the pipeline and lateral connection/openings. The report shall note the time and date of video inspection, street name, upstream and downstream manhole, direction of view, direction of flow, surface material, pipe size, pipe material, lateral connections, video tape number, counter number, and a detailed logging of defects encountered. The report shall be prepared by an operator or worker who holds current PACP certification and shall be done using POSM format.

The camera shall be lowered into the upstream manhole (or access point) and placed into the pipe. The camera cable shall be retracted to remove slack to ensure an accurate distance reading. The cable distance-counter shall be reset to the distance between the centerline of the manhole and the front lens of the camera. The camera shall provide a view of the inside of the insertion manhole, then move through the pipeline in a downstream direction whenever possible, stopping at the center of the next manhole and provide a view of the inside of the end structure. The cable distance counter shall measure the distance between each inspection segment – centerline to centerline. The camera shall stop at all significant observations to ensure a clear and focused view of the pipe condition. Observations shall include, but not be limited to: Laterals – Standard, Laterals – Protruding, Cracks, Offset Joints, Open Joints, Sags, Line Deviations, Siphons, Missing Sections, Mortar, Infiltration, Debris, Grease, and Roots. If the quality of the video is deemed unacceptable by the Engineer, the pipeline shall be re-televised at no additional cost to the City.

Contractor shall identify all defects in the existing pipe requiring corrective action prior to pipe rehabilitation and identify any areas that require additional corrective actions that are above and beyond allowance for point repairs included in the bid items for pipe rehabilitation. Any areas that may require additional corrective actions shall be documented and provided to the Engineer for immediate review and direction. CCTV shall be provided to the City's Engineer within 2 weeks of notice to proceed.

Payment for BID ITEM NO. 23 - PRE-CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION shall be at the contract bid item per lump sum (LS) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 24 - POST- CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION

Post-construction CCTV inspection shall be performed to determine if the construction of the new pipe is in compliance with the plans and specifications. This item shall include labor, CCTV equipment, videos and other CCTV related materials for proper documentation of the newly installed sewer pipes.

Documentation shall follow the National Association of Sewer Service Companies (NASSCO) pipeline assessment certification program (PACP) coding standards for all defects and consist of a color, DVD-format video, log sheets, and a written report detailing the preconstruction condition of the pipeline and lateral connection/openings. The report shall note the time and date of video inspection, street name, upstream and downstream manhole, direction of view, direction of flow, surface material, pipe size, pipe material, lateral connections, video tape number, counter number,

and a detailed logging of defects encountered. The report shall be prepared by an operator or worker who holds current PACP certification and shall be done using POSM format.

The camera shall be lowered into the upstream manhole (or access point) and placed into the pipe. The camera cable shall be retracted to remove slack to ensure an accurate distance reading. The cable distance-counter shall be reset to the distance between the centerline of the manhole and the front lens of the camera. The camera shall provide a view of the inside of the insertion manhole, then move through the pipeline in a downstream direction whenever possible, stopping at the center of the next manhole and provide a view of the inside of the end structure. The cable distance counter shall measure the distance between each inspection segment – centerline to centerline. The camera shall stop at all significant observations to ensure a clear and focused view of the pipe condition. Observations shall include, but not be limited to: Laterals – Standard, Laterals – Protruding, Cracks, Offset Joints, Open Joints, Sags, Line Deviations, Siphons, Missing Sections, Mortar, Infiltration, Debris, Grease, and Roots. If the quality of the video is deemed unacceptable by the Engineer, the pipeline shall be re-televised at no additional cost to the City.

Payment for BID ITEM NO. 24 - POST- CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION shall be at the contract bid item per lump sum (LS) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 25 – PROVIDE CLEARING OF SEWER LINE

Contractor shall flush and clean all sewer mains by means of pneumatic, sewer cleaning balls. The balls shall be of the appropriate size to fit the sewer pipe being cleaned. "Sewer Balling" operations shall be conducted by experienced personnel under the observation of the Engineer. The ball shall be introduced at the uppermost manhole and passed from manhole to manhole by means of a line with sufficient head of water to carry the ball along. The movement of the ball shall be controlled by a rope; care shall be exercised not to feed the ball too rapidly in order that all debris can be removed at each manhole.

Each section of the sewer line shall be thoroughly cleaned before proceeding to the next section. Where sewer balls will not pass, flexible sewer rods with approved spears or cutters may be used to clear the obstruction. Where obstructions cannot be cleared by sewer rodding, the obstructions shall be removed by excavation at the Contractor's expense. The Contractor shall remove all debris from sewer lines using approved methods. Installation cost shall include cost for water for sanitary sewer flushing and cleaning operations.

Payment for BID ITEM NO. 25 – PROVIDE CLEARING OF SEWER LINE shall be at the contract bid item per linear feet (LF) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 26 – FURNISH AND INSTALL PIPE SLEEVE FOR EXISTING 8-INCH VCP SEWER MAIN

Pipeline construction items of work will be paid at the contract unit price per foot installed of the pipe specified, and shall include full compensation for furnishing all labor, materials, tools,

equipment and back up equipment necessary for pipe bursting, pipe placement; transportation and technical competence, saw cutting, excavation, shoring and backfilling per the manufacturers' instructions and/or per the Contract Documents; replacement of any pavement markers and striping; temporary by-passing of other utility services; cleanup, off-site disposal of all refuse and excess material; de-watering as necessary, shoring, temporary and permanent restoration of surfaces and pavement and all appurtenant work.

Pipe shall be measured along the longitudinal axis between the ends as laid, shall include the actual pipe in place and shall exclude the inside dimensions of the Manholes.

Payment for BID ITEM NO. 26 – FURNISH AND INSTALL PIPE SLEEVE FOR EXISTING 8-INCH VCP SEWER MAIN shall be at the contract bid item per linear feet (LF) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

BID ITEM NO. 27 – FURNISH AND INSTALL CIPP SEWER LINING FOR EXISTING 8-INCH VCP SEWER MAIN

This method of sewer rehabilitation involves the insertion of an approved epoxy or epoxyvinyl ester-resin-impregnated flexible fabric tube. The material shall be compatible with and capable of carrying epoxy or epoxy-vinyl-ester resin, be able to withstand installation pressures and curing temperatures. The approved epoxy shall be compatible with the application and be able to cure in the presence of hot water or steam. Refer to Section 500-1.4 of the "Greenbook" 2018 Edition and Part D – Technical Provisions for material composition, testing and other requirements for the installation of CIPP liner. Refer to Section 500-1.2 of the "Greenbook" 2018 Edition and Part D – Technical Provisions for Pipeline Point Repair/Replacement. PVC Pipe Liner is not allowed for this project.

If specified on the plans, this method can also include the use of an approved ultraviolet (UV) light-cured resin-impregnated fiberglass tube liner. The Project Engineer reserves the right to change the design from UV CIPP to flexible fabric (felt) CIPP.

This item shall include all labor, materials, and equipment necessary for the execution and completion of this rehabilitation method, including, but not limited to surface removal and restoration including reconstruction of pavement on any street disturbed by the sewer work dewatering, flow control, diversion or bypass pumping, point repairs, removal of protruding laterals, excavation, backfill including imported backfill, sewer cleaning, insertion and curing of fabric tube, reinstatement of lateral connections, and testing. Obtaining construction access from property owners for work on private property shall be included in the unit bid price.

Payment for BID ITEM NO. 27 – FURNISH AND INSTALL CIPP SEWER LINING FOR EXISTING 8-INCH VCP SEWER MAIN shall be at the contract bid item per linear feet (LF) shall be considered as full compensation for doing all work as specified above and no additional or separate compensation will be allowed therefor.

APPENDIX A

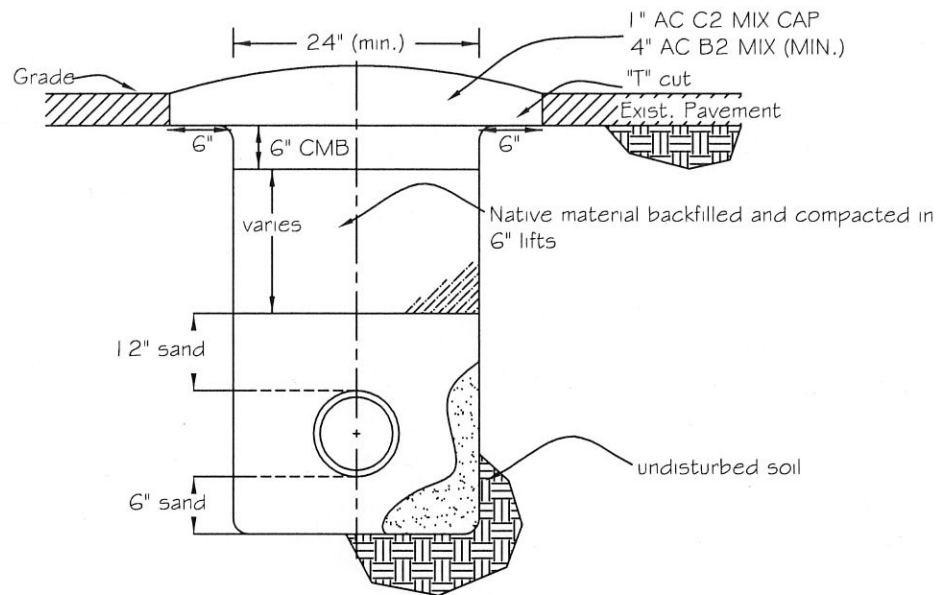
STANDARD DRAWINGS

STANDARD PLANS

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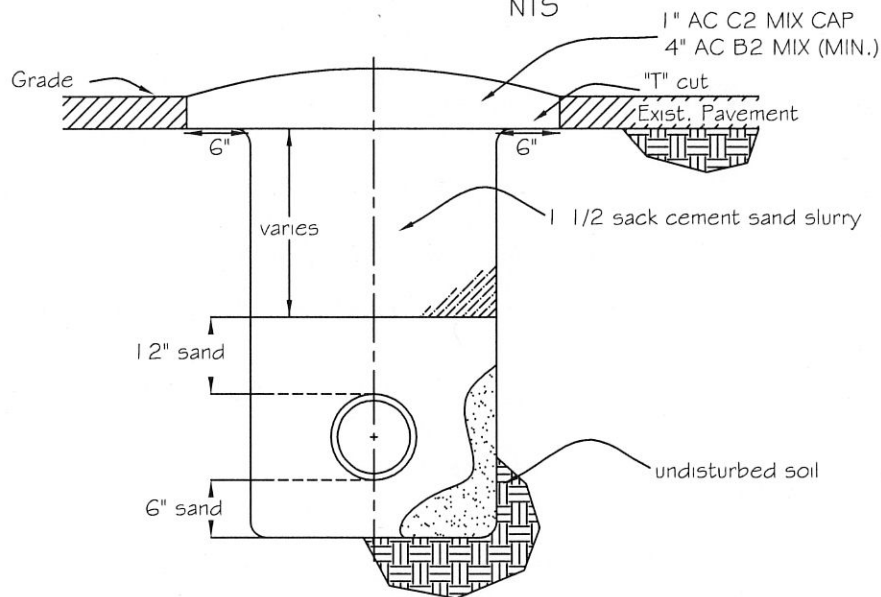
WATER CONSTRUCTION DRAWINGS

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Plate No. 2B	Blank
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Plate No. 4B	Separation Requirements for Water and Wastewater Lines
Plate No. 4C	Blank
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TYP. NATIVE TRENCH DETAIL

NTS



TYP. INTERSECTION TRENCH DETAIL

NTS

NOTES:

1. NO BACKFILLING WILL OCCUR UNTIL INSPECTED BY THE CITY.
2. STANDARD DEPTH OF COVER IS 36-INCHES MINIMUM TO TOP OF PIPE FOR NORMAL 6-INCH AND 8-INCH DIAMETER PIPE AND 42 INCHES MINIMUM FOR 10-INCH AND LARGER DIAMETER PIPE.
3. EXCAVATED TRENCHES SHALL BE OF MINIMUM WIDTH FOR PROPER PIPE LAYING.
4. SAND MUST BE CONSOLIDATED BY JETTING.

CITY OF SAN FERNANDO

SUBMITTED

DATE

CONSTRUCTION STANDARDS

APPROVED

DATE

TYPICAL TRENCH SECTION

BASIC SEPARATION STANDARDS

The "California Waterworks Standards" sets forth the minimum separation requirements for water mains and sewer lines. These standards, contained in Section 64630, Title 22, California Administrative Code, specify:
Parallel Construction: The horizontal distance between pressure water mains and sewer lines shall be at least 10 feet.

Perpendicular Construction: Pressure water mains shall be at least 1 foot above sewer lines where these lines must cross.

Water Mains and sewer lines must not be installed in the same trench.

SPECIAL PROVISIONS

Sewer lines shall not be installed within 25 feet horizontally of a low head (5 psi) water main.

New water mains and sewer mains shall be pressure tested where the conduits are located 10 feet apart or less.

In the installation of water mains or sewer lines, measures should be taken to minimize disturbances of the existing line. Disturbances of the supporting base of this line could eventually result in failure of the existing pipeline.

EXCEPTIONS TO BASIC SEPARATION STANDARDS

Construction criteria for sewer lines or water mains where the "Basic Separation Standards" cannot be attained. There are basically two situations encountered:

CASE 1 -- New sewer line - new or existing water main.

CASE 2 -- New water main - existing sewer line.

CASE 1	
ZONE	SPECIAL CONSTRUCTION REQUIRED FOR SEWER
A	Sewer lines parallel to water mains shall not be permitted in this zone without approval from the responsible health agency and water supplier.
B	A sewer line placed parallel to a water main shall be constructed of : <ol style="list-style-type: none">1. Class 4000, Type II, asbestos-cement pipe with rubber gasket joints.2. Plastic sewer pipe with rubber ring joints (per ASTM D3034) or equivalent.3. Ductile iron pipe with compression joints.4. Reinforced concrete pressure pipe with compressive joints (per AWWA C302-74).
C	A sewer line crossing a water main shall be constructed of : <ol style="list-style-type: none">1. Ductile iron pipe with hot dip bituminous coating and mechanical joints.2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe, or equivalent, centered over the pipe being crossed.3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-74) centered over the pipe being crossed.4. Any sewer pipe within a continuous sleeve.
D	A sewer line crossing a water main shall be constructed of : <ol style="list-style-type: none">1. A continuous section of ductile iron pipe with hot dip bituminous coating.2. A continuous section of Class 200 (DR 14 per AWWA C900) plastic pipe or equivalent, centered over the pipe being crossed.3. A continuous section of reinforced concrete pressure pipe (per AWWA C302-74) centered over the pipe being crossed.4. Any sewer pipe within a continuous sleeve.5. Any sewer pipe separated by a 10 foot by 10 foot, 4 inch thick reinforced concrete slab.

CASE 2	
ZONE	SPECIAL CONSTRUCTION REQUIRED FOR WATER
A	No water mains parallel to sewer shall be constructed without approval from the health agency.
B	A sewer line placed parallel to a water main shall be constructed of : <ol style="list-style-type: none">1. Ductile iron pipe with hot dip bituminous coating.
C	If the sewer crossing the water main does not meet the Case 1, Zone C requirements, the water main shall have no joints in Zone C and be constructed of ductile iron pipe with hot dip bituminous coating.
D	If the sewer crossing the water main does not meet the Case 1, Zone D requirements, the water main shall have no joints within 4 feet from either side of the sewer and shall be constructed of ductile iron pipe with hot dip bituminous coating.

CITY OF SAN FERNANDO

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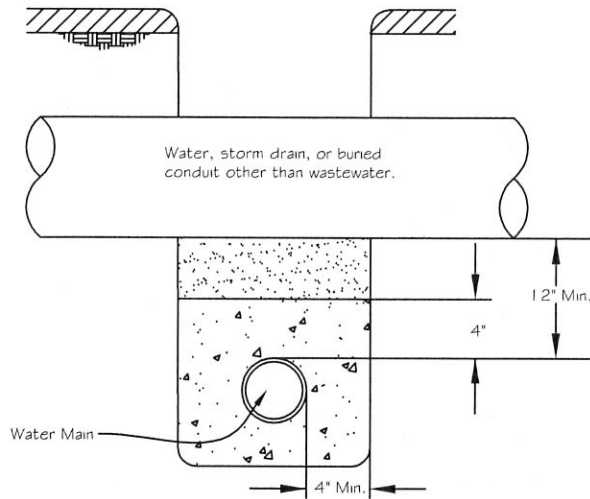
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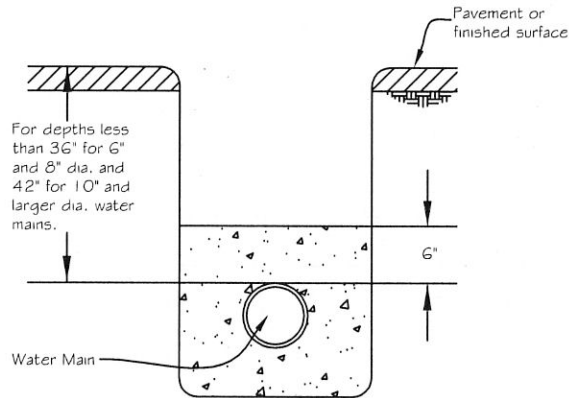
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DATE

Separation Requirements for Water and
Sewer Lines



ENCASEMENT NEAR OBSTRUCTIONS
NTS



ENCASEMENT FOR COVER LESS THAN MINIMUM
NTS

NOTES:

1. SEE PLATE 3 FOR TYPICAL TRENCH SECTION.
2. SEE PLATE 4 FOR SPECIAL CONSIDERATION IN DEALING WITH WASTEWATER LINES CROSSING.
3. CONCRETE STRENGTH SHALL BE 3000 PSI.
4. ENCASEMENT SHALL EXTEND BEYOND THE EDGE OF OBSTRUCTION IN BOTH DIRECTIONS A DISTANCE EQUAL TO THE SEPARATION DISTANCE BETWEEN THE WATER MAIN AND THE OBSTRUCTION.
5. PROVIDE ONE LAYER OF 15# FELT AS A BOND BREAKER AROUND PIPE AND COUPLINGS ALONG THE FULL LENGTH OF THE CONCRETE ENCASEMENT.

CITY OF SAN FERNANDO

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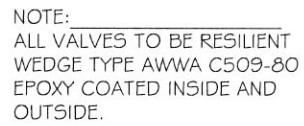
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CONSTRUCTION STANDARDS

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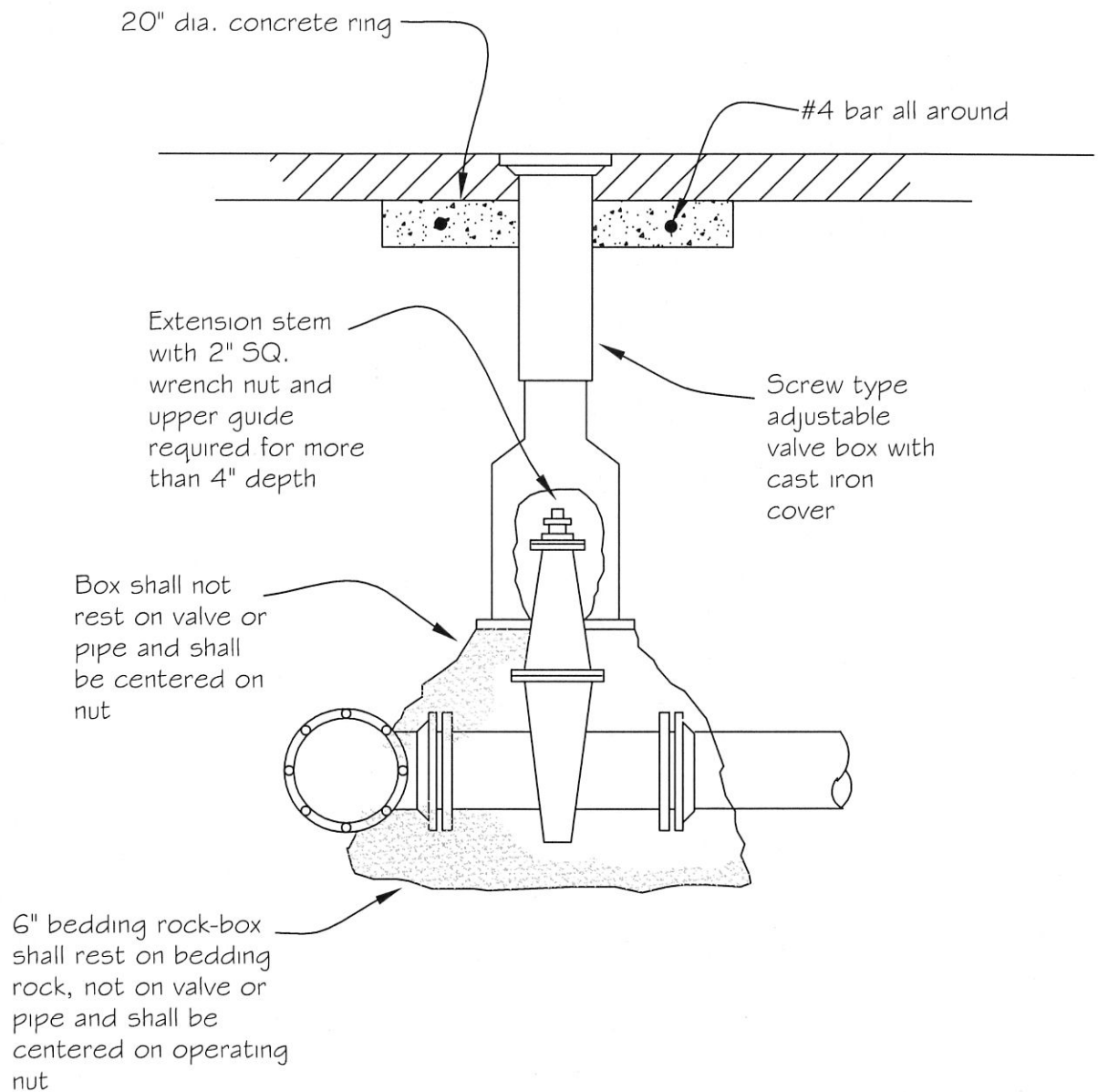
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ENCASEMENTS PIPELINE



CONSTRUCTION STANDARDS

TYPICAL INTERSECTION CONNECTIONS



CITY OF SAN FERNANDO

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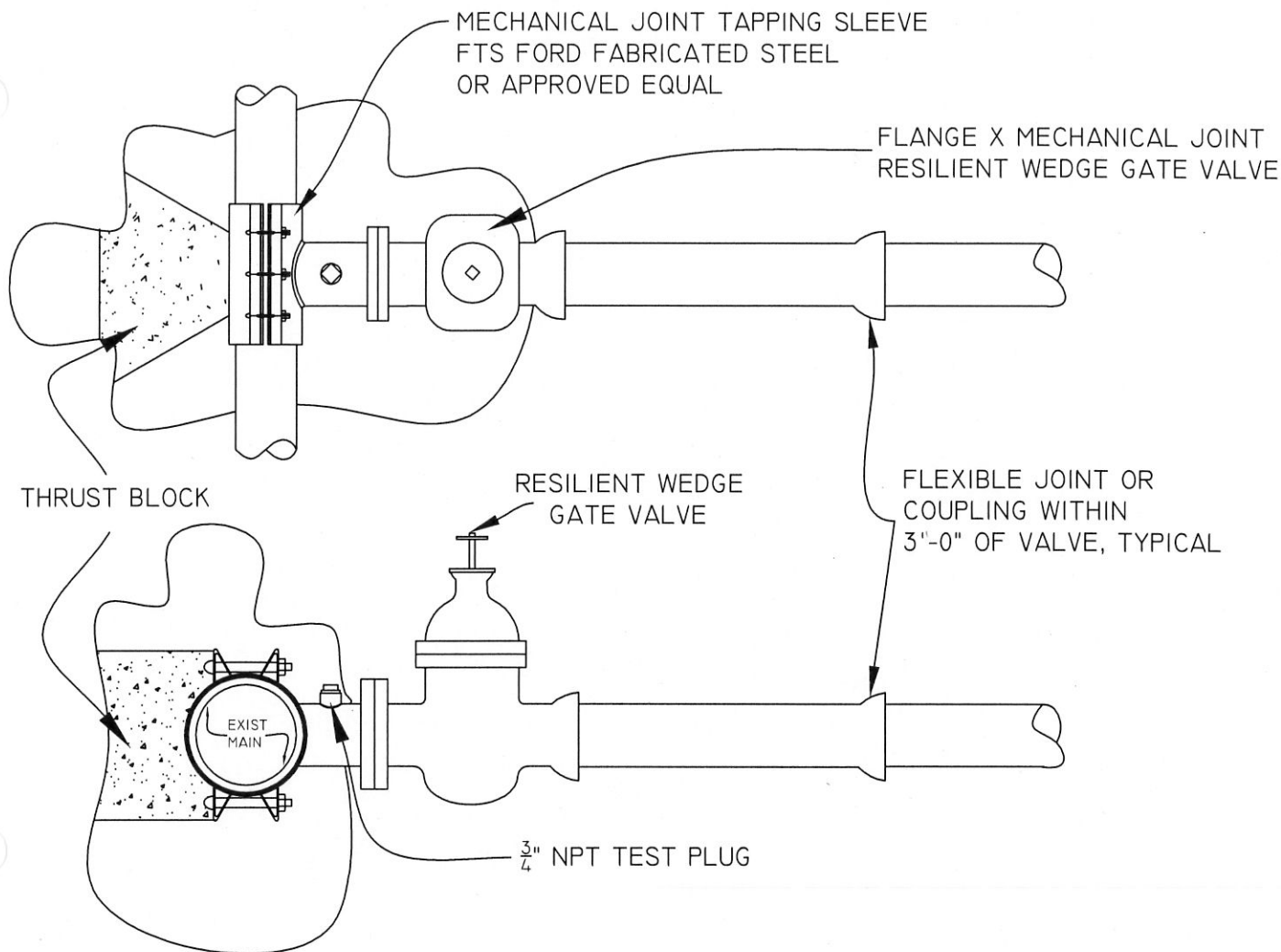
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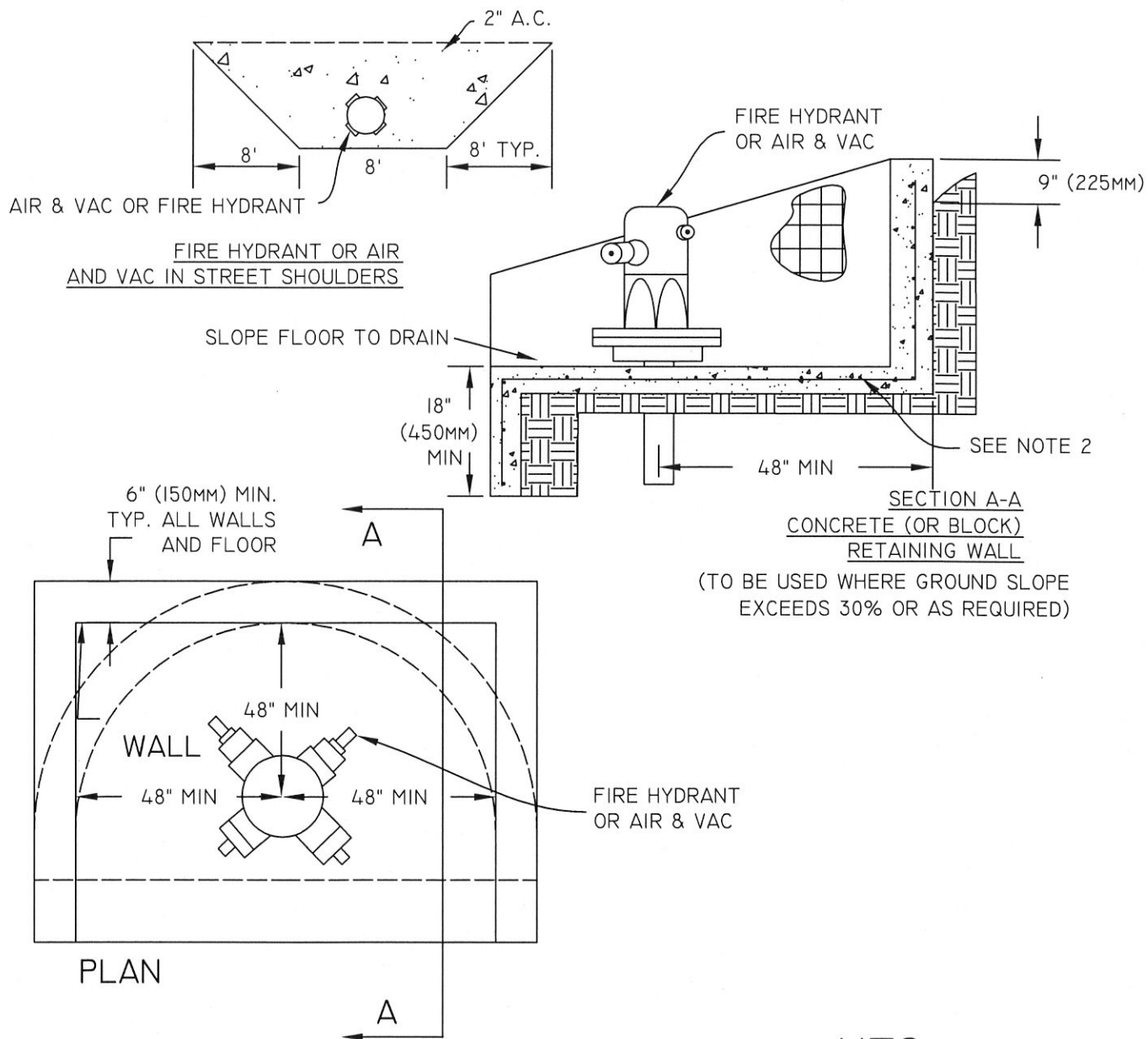
VALVE BOX INSTALLATION



NOTES:

1. REFER TO SECTION 3.8 "MAIN LINE VALVES" FOR TAPPING SLEEVE AND VALVE REQUIREMENTS, AND SECTION 7.9 "HOT TAPPING FOR INSTALLATION INSTRUCTIONS.
2. SEE SECTION 3.4 " MAIN LINE FITTING" AND SECTION 7.11 "INSTALLATION OF VALVES AND FITTINGS FOR INSTALLATION AND WRAPPING REQUIREMENTS FOR BOLTED CONNECTIONS.

RECOMMENDED		MANUFACTURER	
TAPPING SLEEVE		ROMAC FTS 420 OR APPROVED EQUAL	
CITY OF SAN FERNANDO			
SUBMITTED		DATE	
APPROVED		DATE	
		CONSTRUCTION STANDARDS	
		MECHANICAL JOINT TAPPING SLEEVE	



NOTES:

1. PLANNED DEVELOPEMENT (I.E. RPD, HPD, DP,ETC.)PROJECTS MAY REQUIRE USE OF SPECIAL COLOR AND TEXTURE OF MATERIALS.
2. ALL REBAR #4 ON 12" CENTER.
3. CONCRETE BLOCK MAY BE SUBSTITUTED FORE WALL SECTIONS.
4. ALL WALLS EXCEEDING 30" IN HEIGHT REQUIRE BUILDING DEPT. PERMIT.
5. THREE (3) FEET MINIMUM CLEAR SPACE AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS SHALL BE MAINTAINED.

CITY OF SAN FERNANDO

SUBMITTED

DATE

CONSTRUCTION STANDARDS

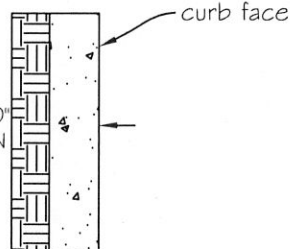
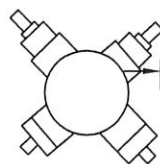
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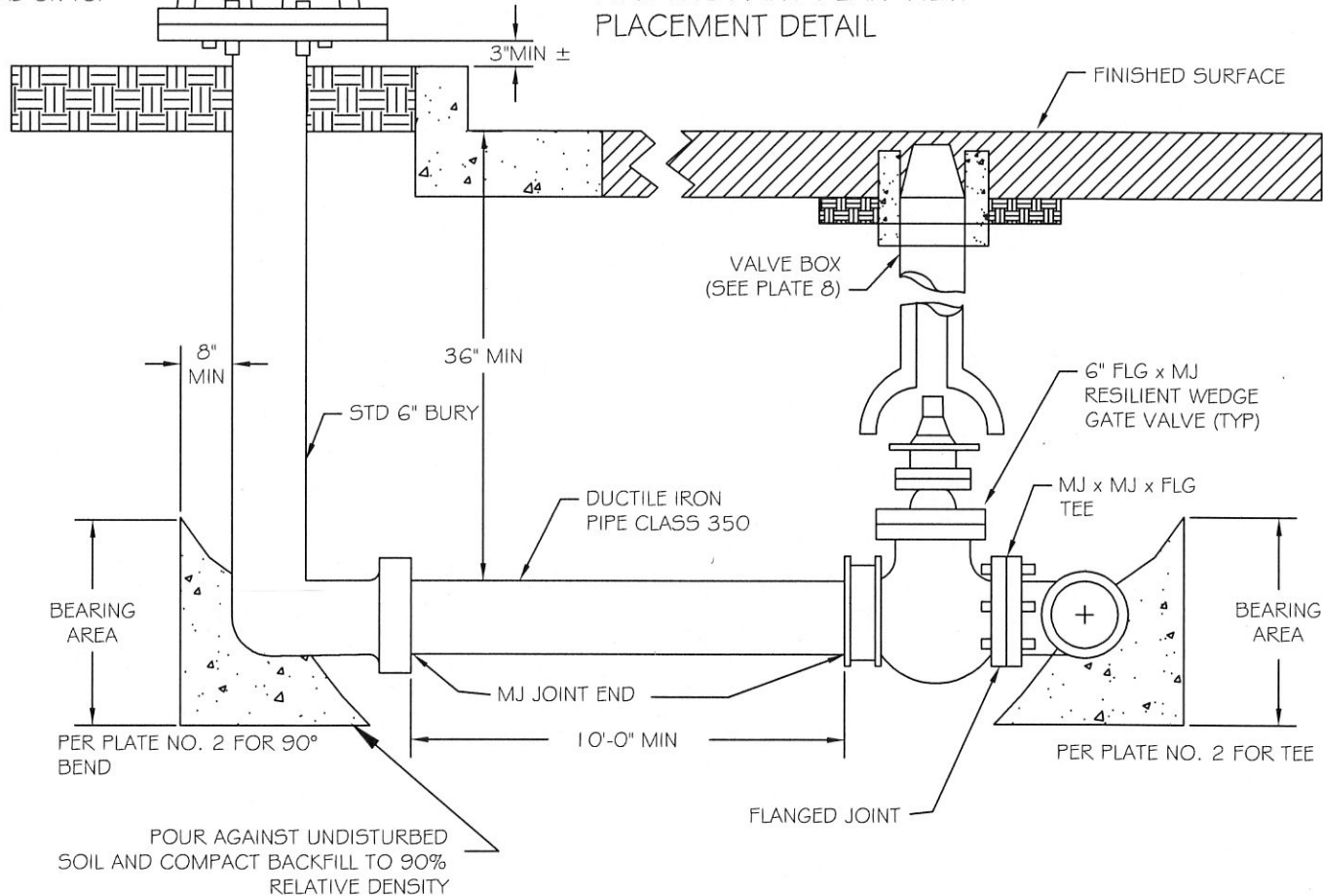
MISCELLANEOUS DETAILS
FIRE HYDRANT AND AIR 8 VACUUM

CLOW MODEL
950 (TYPICAL)

STEEL ALLOY
SHEAR BOLTS
HEAD ON TOP



FIRE HYDRANT PLAN VIEW
PLACEMENT DETAIL



NOTES

1. CENTERLINE OF RISER SHALL BE 2 FEET BEHIND CURB FACE
2. USE 2000 PSI MINIMUM CONCRETE FOR THRUST BLOCKS AND HYDRANT PAD. PLACE CONCRETE ON UNDISTURBED OR COMPACTED SOIL
3. SEE PLATE 18 AND 18A FOR THE THRUST BLOCK REQUIREMENTS
4. IF ANY SPOOL EXTENSIONS ARE NEEDED SEE INSPECTOR BEFORE INSTALLATION
5. IF ANY OFFSETS ARE NEEDED TO BYPASS OBSTRUCTIONS SEE INSPECTOR
6. PAINTINGS- ALL NEWLY INSTALLED HYDRANTS MUST BE WIRE BRUSH PREPARED, CLEAN AND DRY. PAINT 1-COAT RUST INHIBITIVE OIL BASE PRIMER. FINAL COLOR SHALL BE YELLOW OIL BASE ENAMEL OR APPROVED EQUAL. 1 COAT, OR TO COVER. (DUNN EDWARD SYN-LUSTRO GLOSS 10 SERIES INDUSTRIAL MAINT. # 10-14 HI VIS)

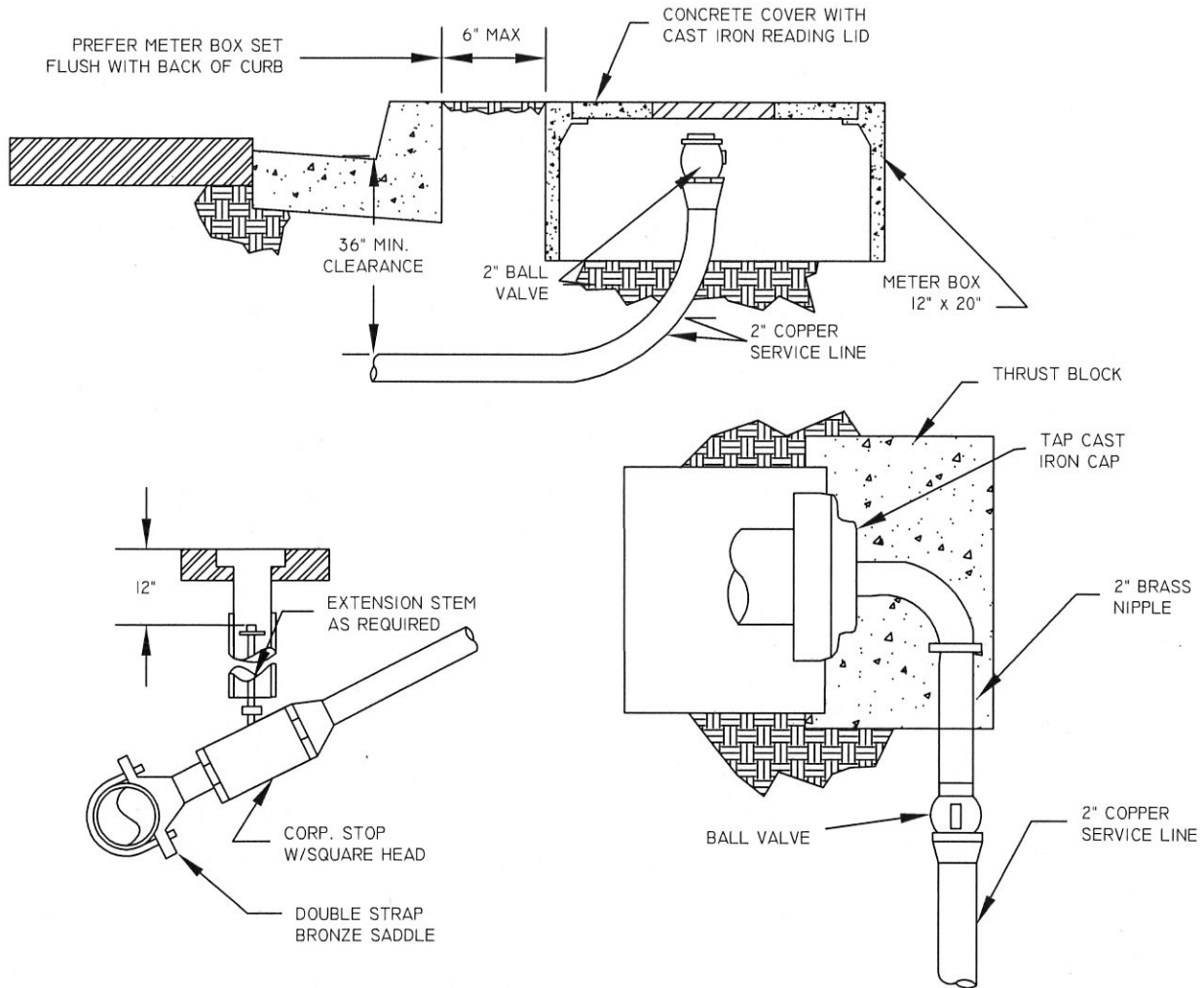
CITY OF SAN FERNANDO

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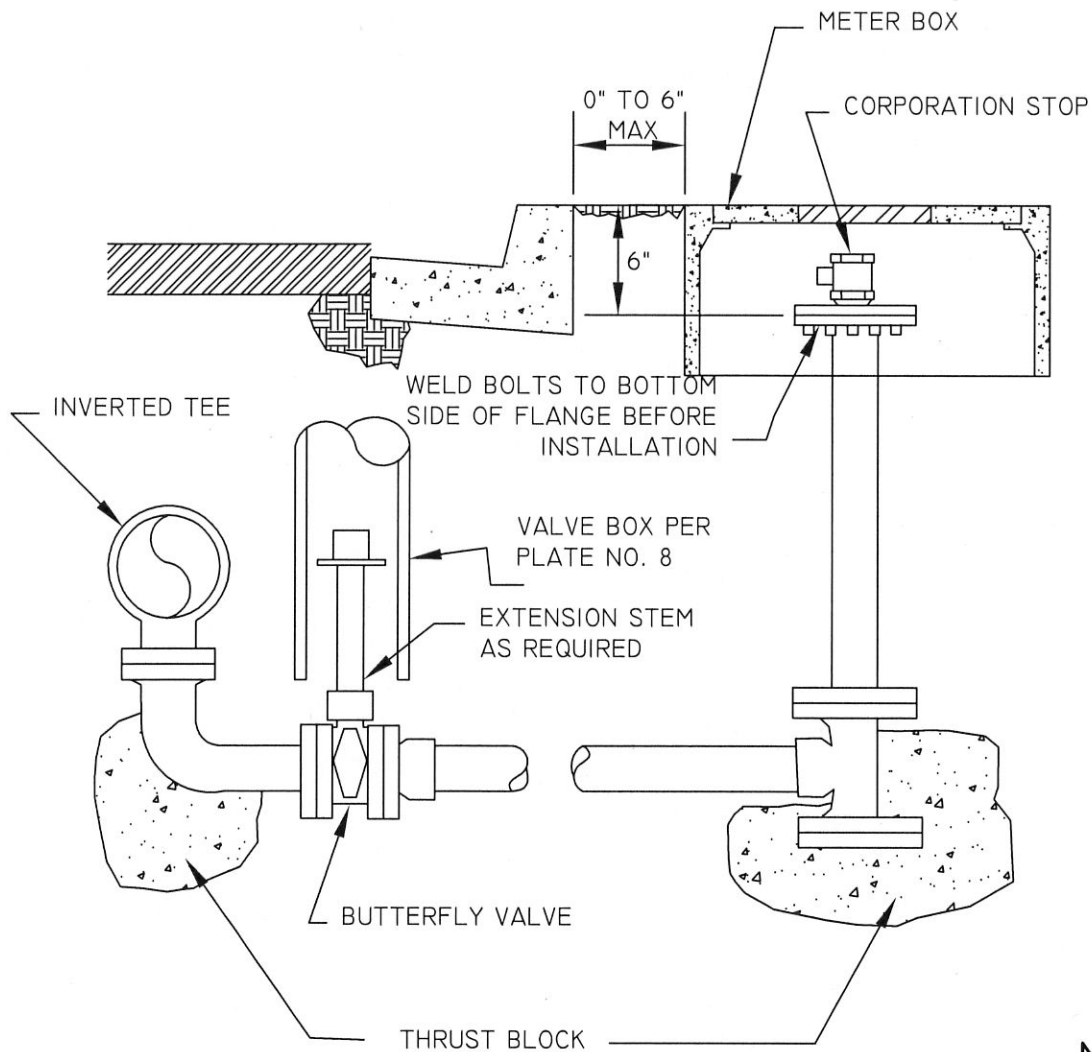
CONSTRUCTION STANDARDS

APPROVED DATE

FIRE HYDRANT ASSEMBLY



RECOMMENDED MATERIALS		MANUFACTURER
CORPARATION STOP	2"	FORD FB 1000-7-TAB7-QT 67 CSxPJ CTS FORD B4I-777 PJ CTS x FIP BROOKS 37S OR QUIKSET W20
BALL VALVE	2"	
METER BOX	12" x 20"	
CITY OF SAN FERNANDO		
SUBMITTED	DATE	CONSTRUCTION STANDARDS
APPROVED	DATE	2" BLOW-OFF INSTALLATION

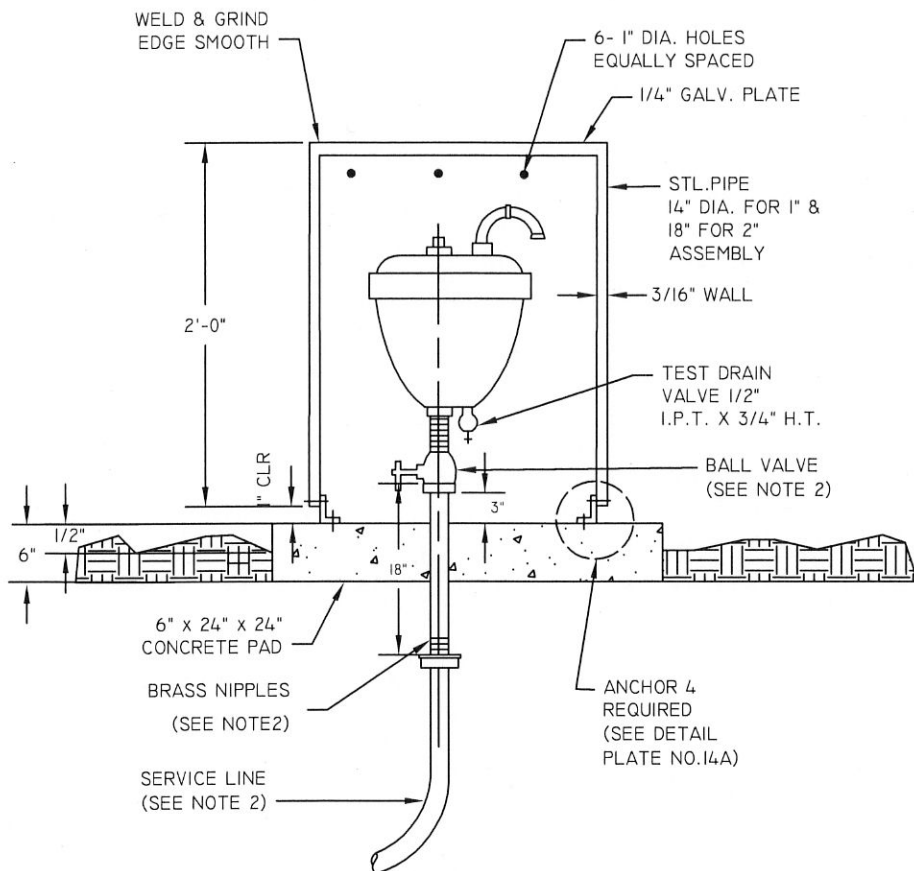


NTS

NOTES:

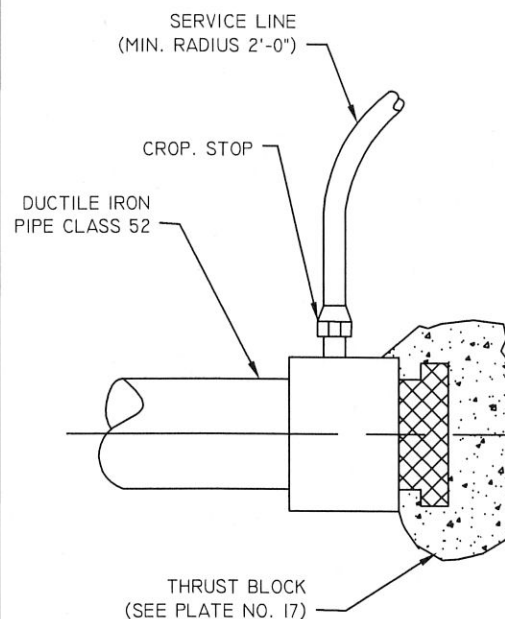
1. POSITION BLOWOFF ASSEMBLIES IN ACCORDANCE WITH PLATE 10.
2. REFER TO SECTION 3.8 OR 3.4 "MAIN LINE FITTINGS" AND SECTION 7.11 "INSTALLATION OF VALVES AND FITTINGS" FOR INFORMATION CONCERNING THE INSTALLATION AND PROTECTION OF BOLTED CONNECTIONS
3. SEE PLATE 16 FOR ANCHOR BLOCK AND PLATE 17 FOR THRUST BLOCK DETAILS.

RECOMMENDED MATERIALS		MANUFACTURER
GATE VALVE		500 FIM AFC R/W F x MJ
CORPORATION STOP	1 1/2"	FB 1700-6 FORD BALL W20 MIP x FIB
METER BOX	12" x 20"	BROOKS 37S OR QUIKSET
CITY OF SAN FERNANDO		
SUBMITTED	DATE	CONSTRUCTION STANDARDS
APPROVED	DATE	TYPICAL TRENCH SECTION



ELEVATION

NTS



CONNECTION AT MAIN LINE
FOR TEMPORARY INSTALLATION
(FOR PERMANENT INSTALLATIONS
SEE PLATE NO. 14A)

NTS

NOTES:

1. 1" ASSEMBLIES TO BE APCO 143C, 2" ASSEMBLIES TO BE APCO 125C OR APPROVED EQUALS.
2. SERVICE LINE, BRASS NIPPLE, AND BALL VALVE TO BE 1" FOR 1" ASSEMBLIES AND 2" FOR 2" ASSEMBLIES.
3. ASSEMBLIES INSTALLED AT EASEMENTS, ROADS, AND STREETS WITHOUT CURBS SHALL BE PROTECTED WITH GUARD POSTS.
4. POST CONSISTS OF 6' LENGTH OF 4" DIA. STD. WT. PIPE FILLED WITH GROUT AND SET 3' BELOW GRADE IN 16" O.D. CONC. BASE POSITION POST 2' IN FRONT OF AND 2.5' EACH SIDE OF ASSEMBLIES. CROWN CONC. BASE AT TOP TO SHED WATER.

CITY OF SAN FERNANDO

SUBMITTED

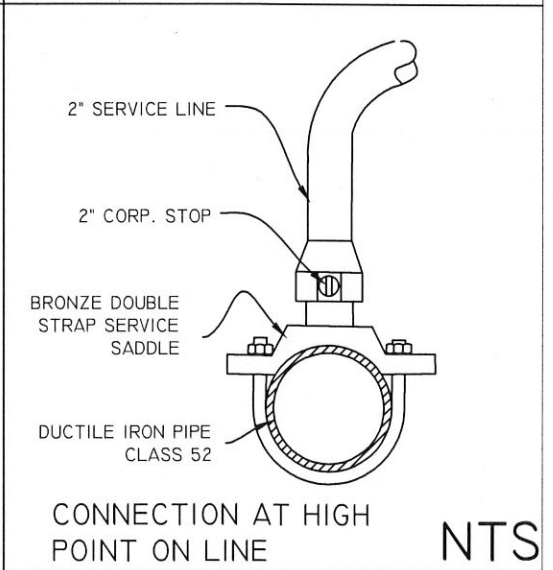
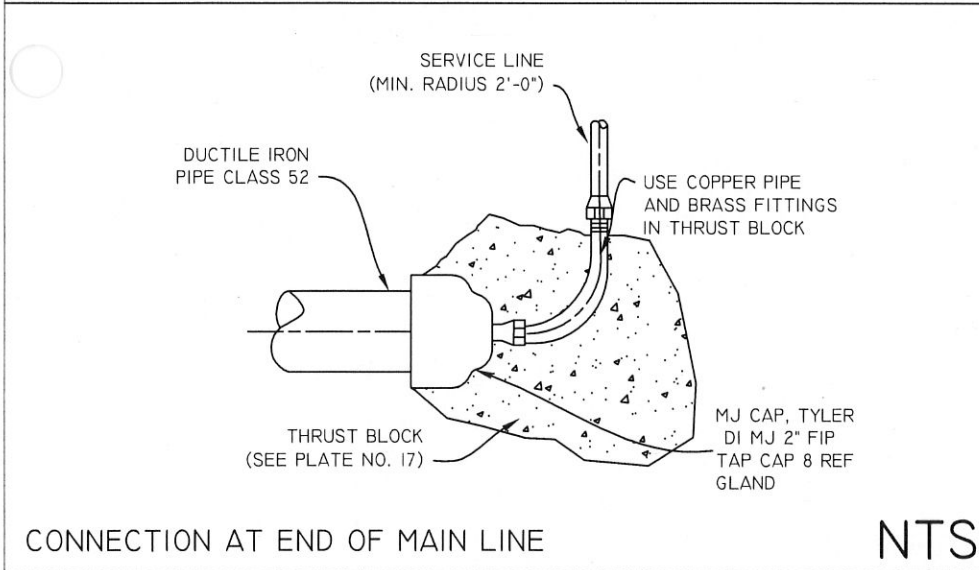
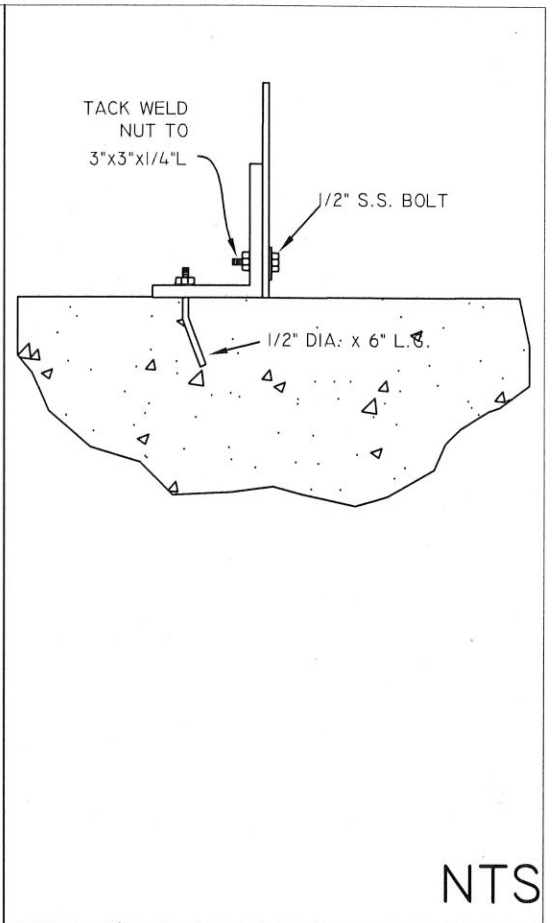
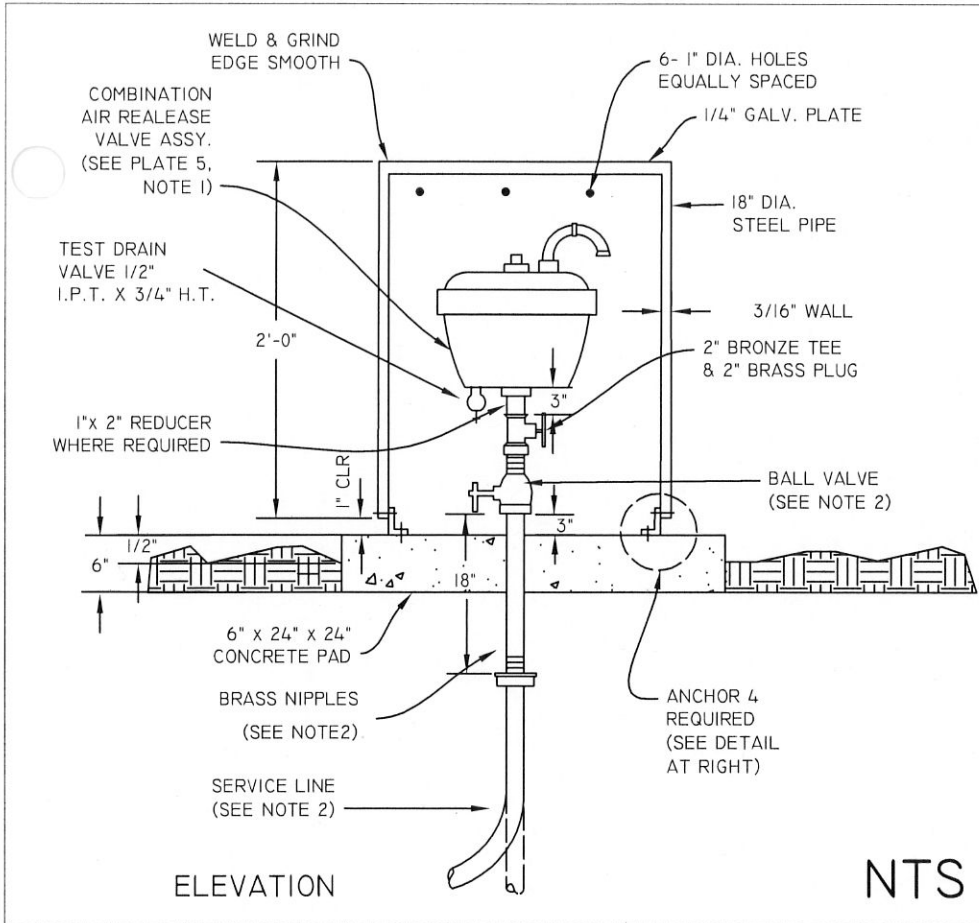
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CONSTRUCTION STANDARDS

APPROVED

DATE

COMBINATION AIR AND VACCUM
RELEASE VALVE ASSEMBLY



NOTES:

1. ASSEMBLIES INSTALLED AT EASEMENTS, ROADS, AND STREETS WITHOUT CURBS SHALL BE PROTECTED WITH GUARD POSTS.
2. POST CONSISTS OF 6' LENGTH OF 4" DIA. STD. PIPE FILLED WITH GROUT, AND SET 3' BELOW GRADE IN 16" O.D. CONC. BASE POSITION POSTS 2' IN FRONT OF AND 2.5' EACH SIDE OF ASSEMBLIES. CROWN CONC. BASE AT TOP TO SHED WATER.

CITY OF SAN FERNANDO

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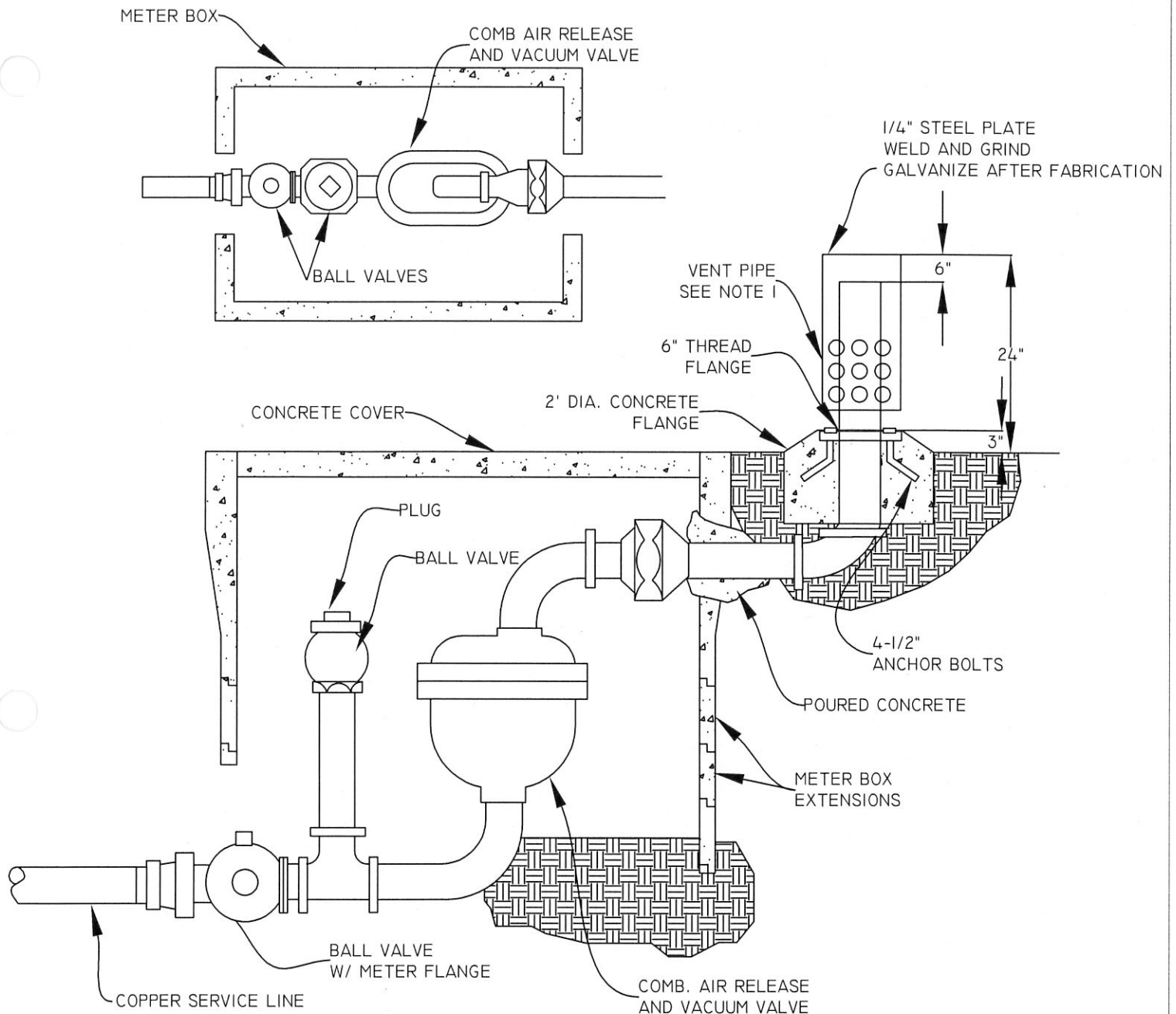
DATE

CONSTRUCTION STANDARDS

APPROVED

DATE

COMBINATION AIR AND VACUUM
RELEASE VALVE ASSEMBLY
AND BLOW-OFF



NOTES:

1. 6"DIA. STD. STEEL PIPE VENT, 24" LONG. DRILL 3 ROWS, 6-1/2" DIA. HOLES PER ROW. THREAD BOTTOM OF PIPE, GALV. AFTER FABRICATION.
2. ALL PIPING TO BE BRASS, SIZE TO ACCOMODATE AIR AND VAC. VALVE.
3. SERVICE LINE FROM MAIN TO ASSEMBLY TO BE LAID UPHILL AT 2% SLOPE OR GREATER.
4. THIS INSTALLATION REQUIRES SPECIAL APPROVAL.

CITY OF SAN FERNANDO

SUBMITTED

DATE

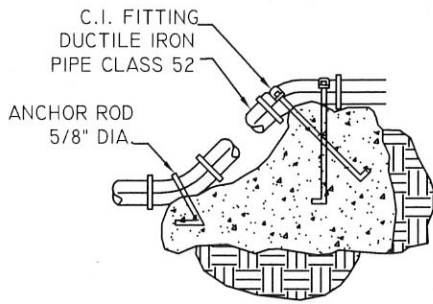
CONSTRUCTION STANDARDS

APPROVED

DATE

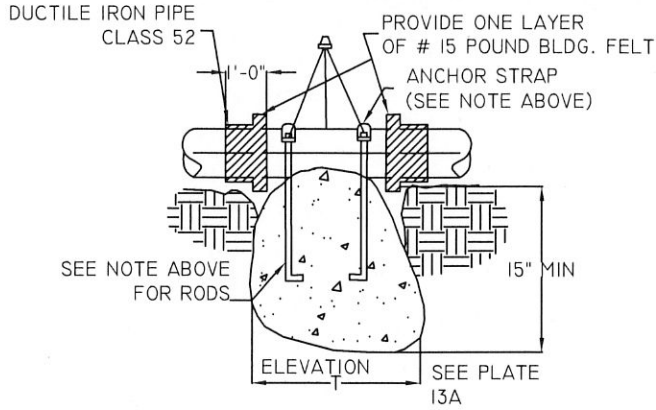
COMBINATION
AIR RELEASE AND VACUUM VALVE
FOR UNDERGROUND VAULT

VERTICAL ANCHORS

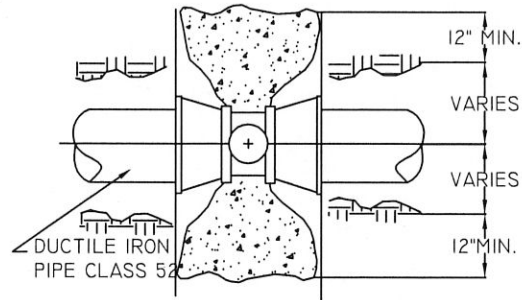


NOTE:

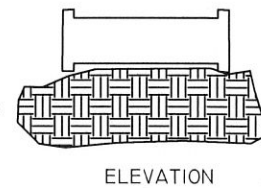
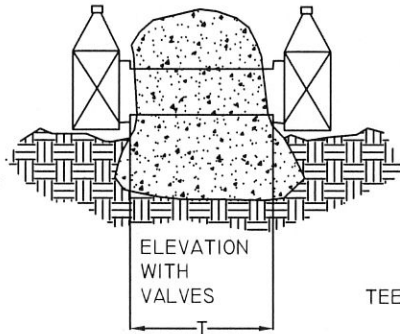
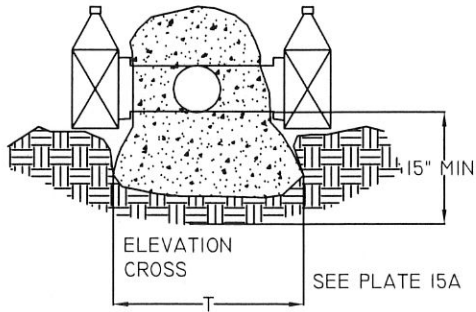
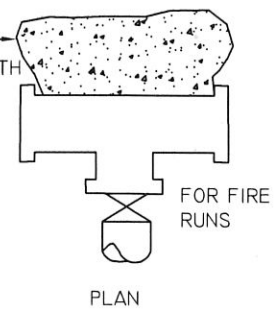
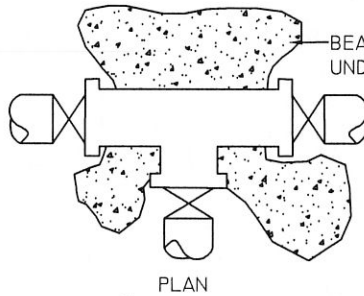
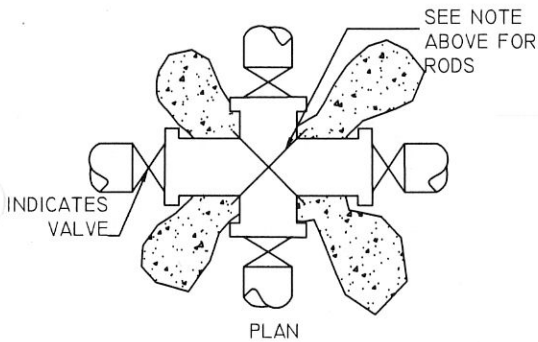
5/8" REBAR OR ANCHOR STRAPS TO BE 3/8" DIA.
ANCHOR BOLTS. BOLTS TO EXTEND DEPTH OF BLOCK.
COAT EXPOSED METAL WITH CONCRETE MORTAR
AFTER INSTALLATION. SPECIAL DESIGN IN FIELD MAY
BE REQUIRED.



IN-LINE VALVE ANCHORS



FLANGE VALVE ANCHORS



CITY OF SAN FERNANDO

SUBMITTED

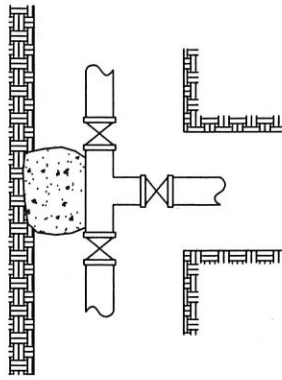
DATE

CONSTRUCTION STANDARDS

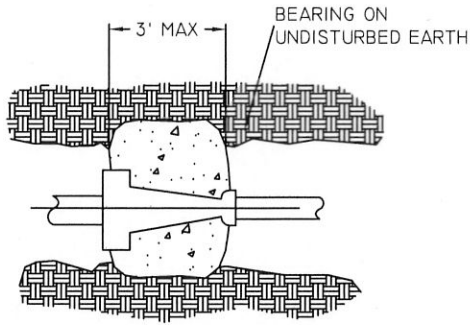
APPROVED

DATE

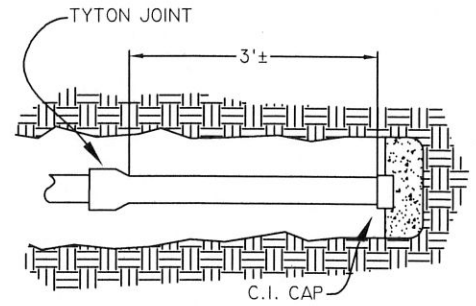
VALVE ANCHOR DETAILS



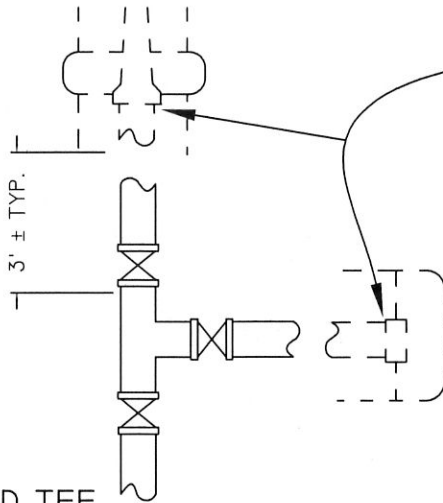
FLANGED TEE REDUCING
IN LINE



PLAN VIEW: REDUCER

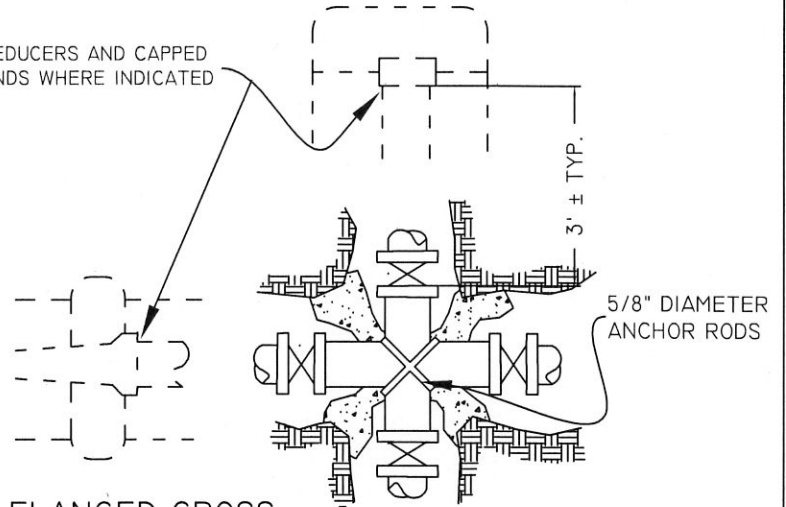


CAPPED END



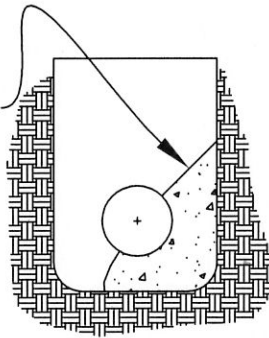
FLANGED TEE

REDUCERS AND CAPPED
ENDS WHERE INDICATED

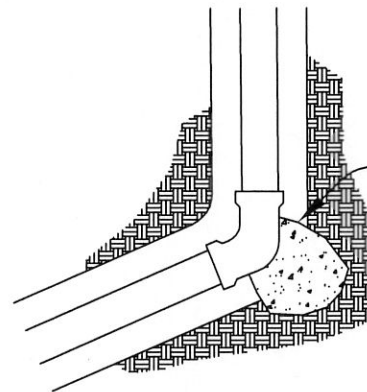


FLANGED CROSS

45° MAX SLOPE TOP AND
ENDS OF CONC. BLOCK



SECTION OF THRUST BLOCK



HORIZONTAL ELBOW

NOTES:

1. CONCRETE BLOCKS SHALL BEAR ON UNDISTURBED EARTH
2. FOR SIZES OF CONCRETE BLOCKS SEE PLATE No. 18 A

CITY OF SAN FERNANDO

SUBMITTED

DATE

CONSTRUCTION STANDARDS

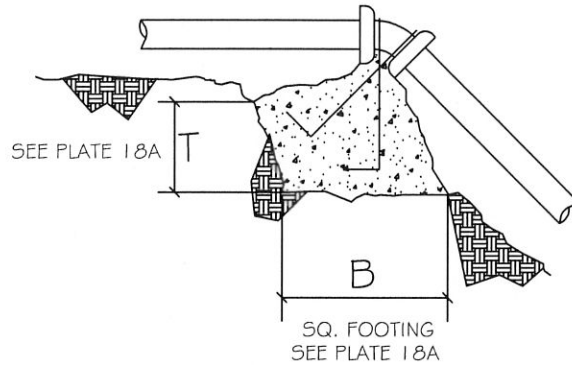
APPROVED

DATE

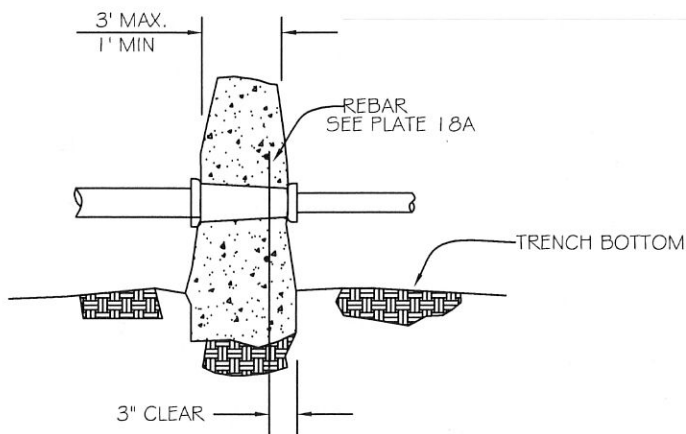
C. I. FITTINGS IN DIP PIPE
AND THRUST BLOCK LAYOUT

ANCHOR BLOCK FOR VERTICAL ELBOWS

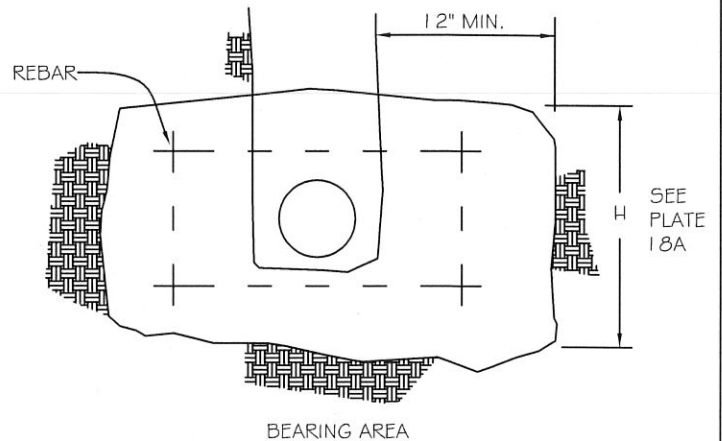
NOTE: SPECIAL DESIGN REQUIRED FOR VERTICAL ANGLES EXCEEDING 45°



REDUCER THRUST BLOCK



PROFILE VIEW



END VIEW

SEE PLATE 17 FOR PLAN VIEW

CITY OF SAN FERNANDO

SUBMITTED DATE

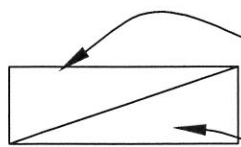
CONSTRUCTION STANDARDS

APPROVED DATE

THRUST AND ANCHOR BLOCK DETAILS

PLATE NO. 17-A

PIPE DIA	PIPE CLASS	PRESS PSI	A R E A				SQ.		FT			
			TEE	CAP	LINE VALVE	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND			
4												
	150	125	3 2	3 2	3 2	4 3	2 2	1 1	1 1			
	150	150	3 3	3 3	3 3	4 3	3 2	2 1	2 1			
	200	175	4 3	4 3	4 3	5 4	3 2	2 1	2 1			
	200	200	4 3	4 3	4 3	6 4	3 3	2 2	2 2			
6												
	150	125	5 4	5 4	5 4	7 6	4 4	2 2	2 2			
	150	150	6 4	6 4	6 4	9 7	5 4	3 2	3 2			
	200	175	7 6	7 6	7 6	10 8	6 4	3 3	3 3			
	200	200	8 6	8 6	8 6	11 9	6 5	3 3	3 3			
8												
	150	125	9 7	9 7	9 7	12 9	7 5	4 3	4 3			
	150	150	10 8	10 8	10 8	14 11	8 6	4 3	4 3			
	200	175	12 9	12 9	12 9	17 13	9 7	5 4	5 4			
	200	200	14 10	14 10	14 10	19 14	11 8	6 4	6 4			
10												
	150	125	14 10	14 10	14 10	19 15	11 8	6 4	6 4			
	150	150	17 13	17 13	17 13	23 18	13 10	7 5	7 5			
	200	175	19 15	19 15	19 15	27 20	15 11	8 6	8 6			
	200	200	22 17	22 17	22 17	31 23	17 13	9 7	9 7			
12												
	150	125	20 15	20 15	20 15	27 21	15 11	8 6	8 6			
	150	150	23 18	23 18	23 18	33 25	18 14	9 7	9 7			
	200	175	27 20	27 20	27 20	38 29	21 16	11 8	11 8			
	200	200	31 23	31 23	31 23	44 33	24 18	12 9	12 9			



SIZE FOR 1500 LBS. PER SQUARE FOOT OF BEARING SOIL.
 SIZE FOR 2000 LBS. PER SQUARE FOOT OF BEARING SOIL.

NOTE: USE SIZES FOR 1500 LBS. PER SQUARE FOOT OF BEARING SOIL UNLESS
 HIGHER VALUE IS SUBSTANTIATED BY APPROVED SOILS REPORT.

CITY OF SAN FERNANDO

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DATE

CONSTRUCTION STANDARDS

APPROVED

DATE

THRUST BLOCK SIZES
 FOR HORIZONTAL PRESSURES

THRUST BLOCK SIZES

(MINIMUM BEARING AREA IN SQUARE FEET)

LOCATIONS

PIPE SIZE	ELBOWS				CAPPED END OR TEE	REDUCER	REBAR
	90°	45°	22-1/2°	11-1/4°		H	
6	9	5	3	3	6	2'-0"	No. 4
	12	6	3	3	8	2'-0"	
	21	11	6	6	15	2'-6"	
8	15	8	4	4	11	2'-0"	No. 4
	21	11	6	6	15	2'-6"	
	35	20	10	10	26	3'-0"	
10	23	13	7	7	17	2'-6"	No. 5
	31	17	9	9	22	3'-0"	
	54	29	15	15	38	3'-0"	
12	33	18	9	9	23	3'-0"	No. 5
	44	24	12	12	31	3'-0"	
	77	42	21	21	54	3'-6"	

FOR CLASS 150 PIPE
 FOR CLASS 200 PIPE
 FOR CLASS 350 PIPE

ANCHOR BLOCK SIZES

DIMENSIONS/LOCATIONS-FLANGED VALVE

PIPE SIZE	IN-LINE VALVES		CONNECTIONS		ELBOWS		
	T	REBAR	T	REBAR	B	T	REBAR
6	12"	No. 5	12"	No. 5	3'-6"	18"	No. 5
8	18"	No. 5	18"	No. 5	4'-0"	24"	No. 5
10	24"	No. 6	24"	No. 6	5'-0"	30"	No. 6
12	24"	No. 6	24"	No. 6	6'-0"	30"	No. 7

- NOTES:
- SIZES BASED ON 1500 PSF BEARING SOIL. SPECIAL DESIGN REQUIRED FOR SOILS OF LOWER BEARING STRENGTH.

CITY OF SAN FERNANDO

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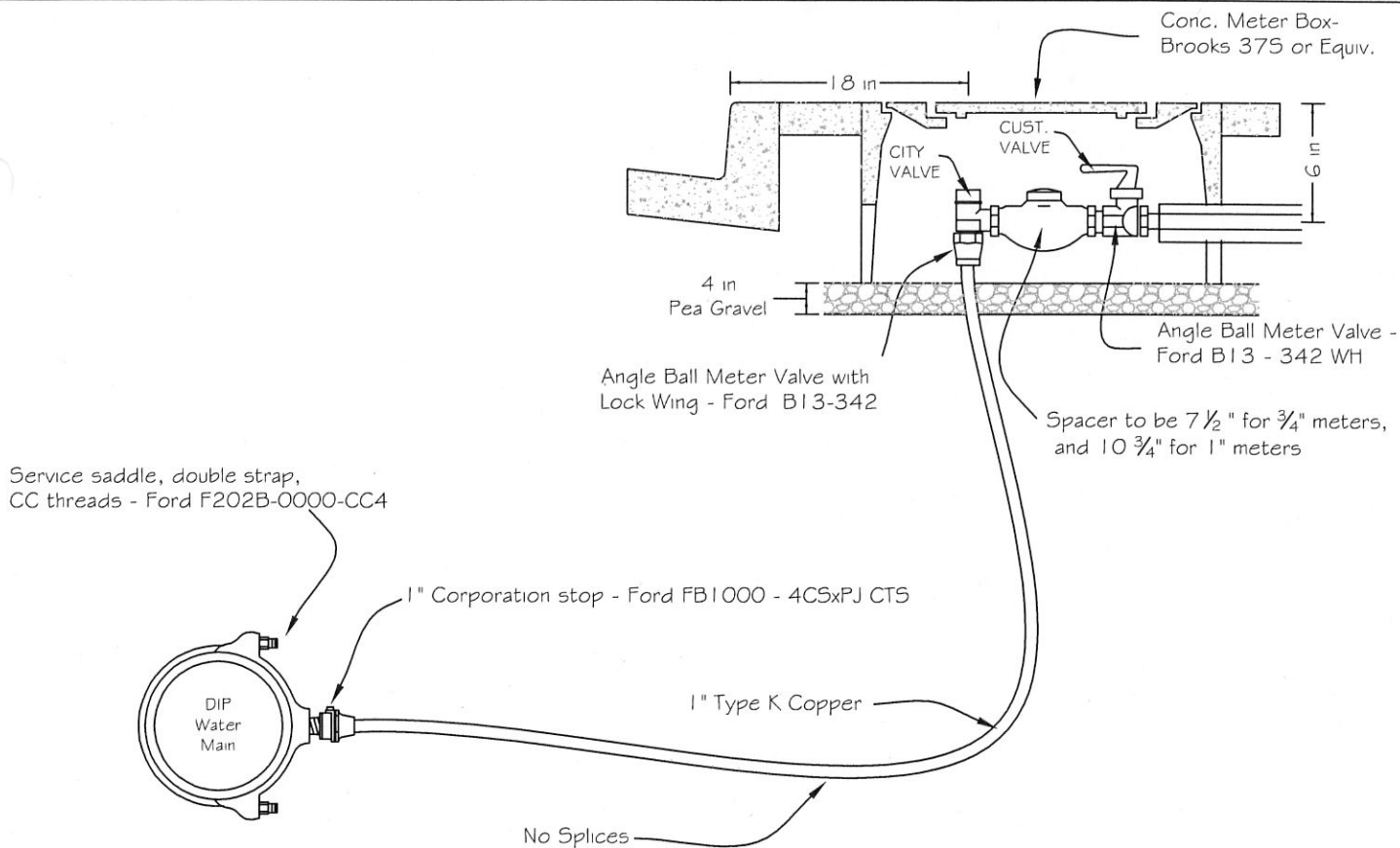
DATE

CONSTRUCTION STANDARDS

APPROVED

DATE

THRUST AND ANCHOR BLOCK SIZES



GENERAL NOTES

1. Meters will be furnished & installed by the city.
2. If the service line is lead or galvanized steel the entire service shall be replaced from main to meter with copper.
3. All customer tie-ins will be with sch. pvc, galv., or copper
4. Households shall be notified at least one hour prior to water shut off to make a connection.
5. All new services shall be 1" (min.).
6. If service replacement includes the tap at the main, the new connection shall be made 1' from the old connection. The old corp stop shall be closed and a threaded brass plug or cap installed.
7. Any boxes which do not meet the current standards listed shall be upgraded.

RECOMMENDED MATERIALS	MANUFACTURER
Corporation Stop 1"	FORD FB1000 - 4CS x PJ CT5
Angle Meter Stop 1" x $\frac{3}{4}$ "	FORD BA43-342W
Customer Hand Valve 1" x $\frac{3}{4}$ "	FORD B13-342HW
Meter Box 12" x 20"	BROOKS 375 or QUICKSET W20 (375)
Double Strap Service Saddle Bronze	FORD 202B-0000-CC4

CITY OF SAN FERNANDO

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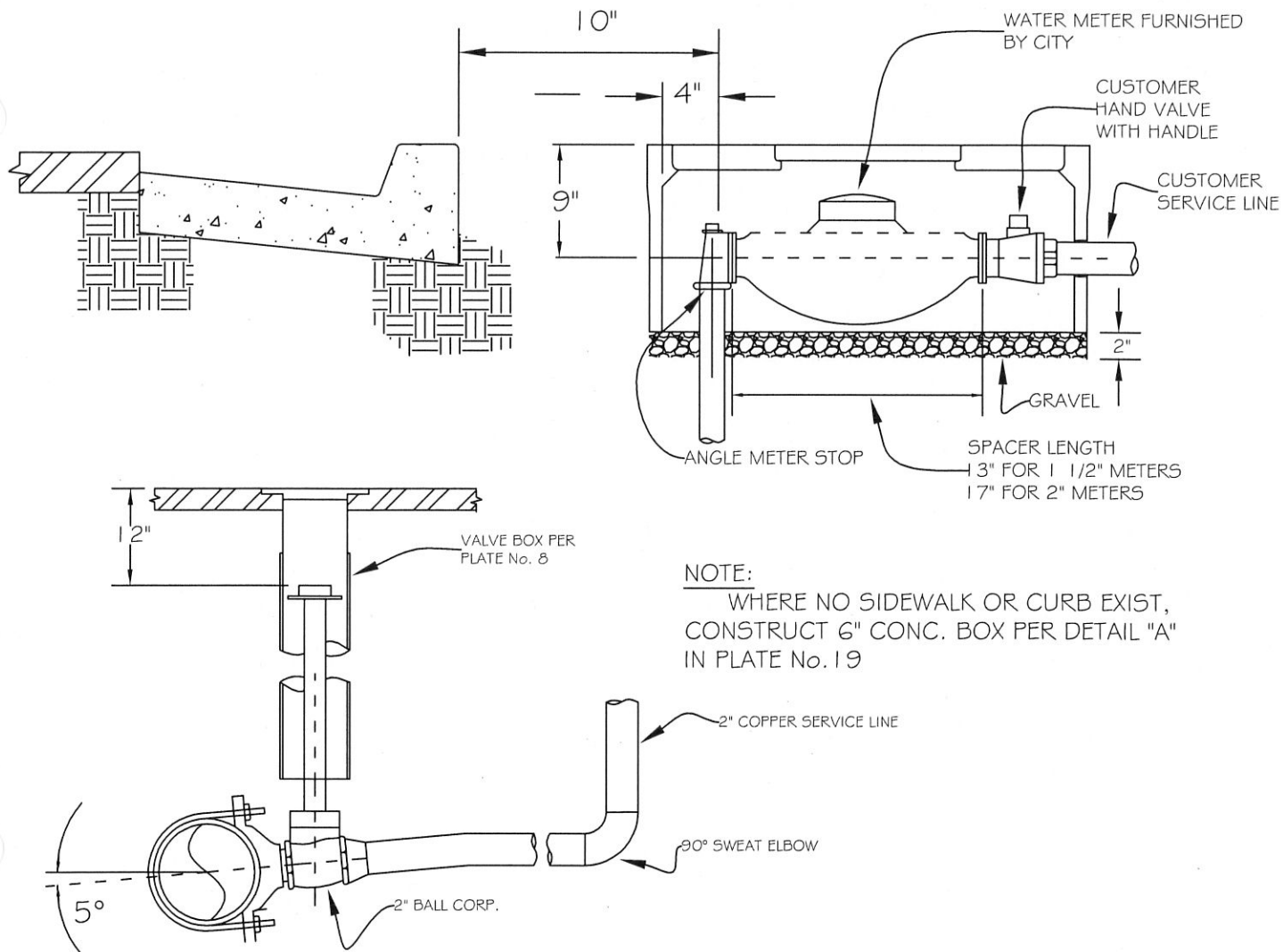
DATE

CONSTRUCTION STANDARDS

APPROVED

DATE

$\frac{3}{4}$ " and 1" Meter Installation



NOTES:

1. THE CONTRACTOR SHALL INSTALL A SPACER OR JUMPER PIPE BETWEEN THE ANGLE METER STOP AND CUSTOMER HAND VALVE UNTIL THE WATER METER IS INSTALLED. THE SPACER MATERIAL WILL BE RETURNED TO THE CONTRACTOR.
2. SERVICE LINE SHALL BE 2-INCH SIZE FOR BOTH 1-1/2" AND 2" SIZE METER INSTALLATIONS.
3. SERVICE LINES TO RECEIVE BACKFILL OF IMPORTED SAND WITHIN PIPE ZONE. (SEE PLATE 3)

RECOMMENDED MATERIALS

CORPARATION STOP 2"
ANGLE METER STOP 2"
CUSTOMER HAND VALVE 2"
METER BOX 12" x 30"
DOUBLE STRAP SERVICE SADDLE

MANUFACTURER

FORD FB 1000 SQUARE HEAD
FORD BFA 43-777 W
FORD BF 13-777 W-H54
BROOKS 665 METER BOX W/CONC. OR C.I. LID
FORD 202B-0000-CC7 FOR 8" MAIN

CITY OF SAN FERNANDO

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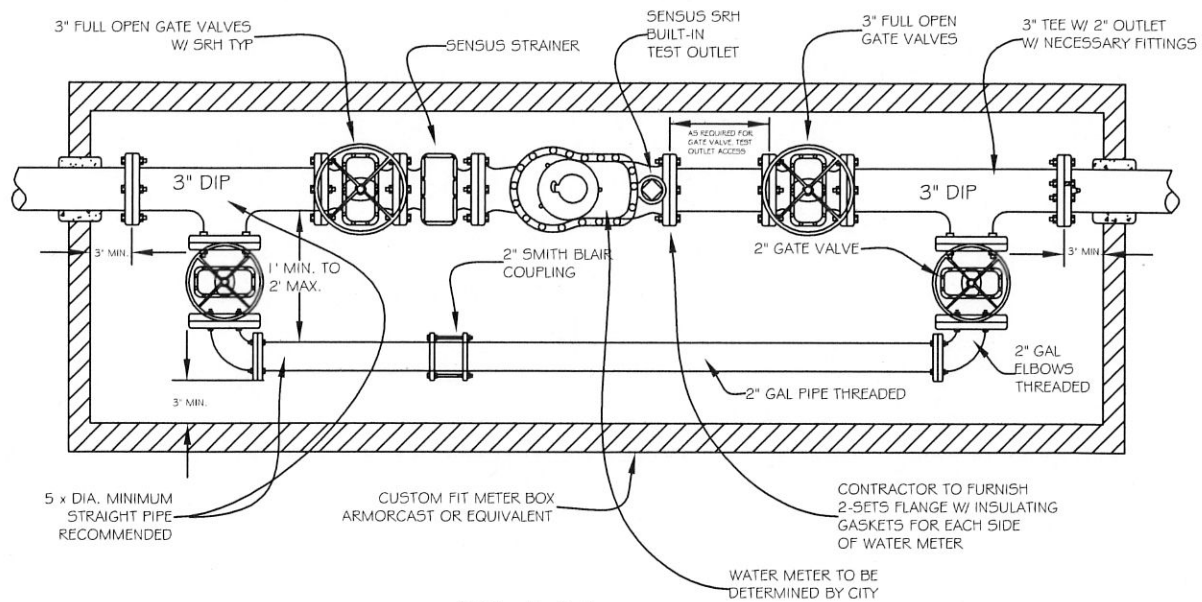
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CONSTRUCTION STANDARDS

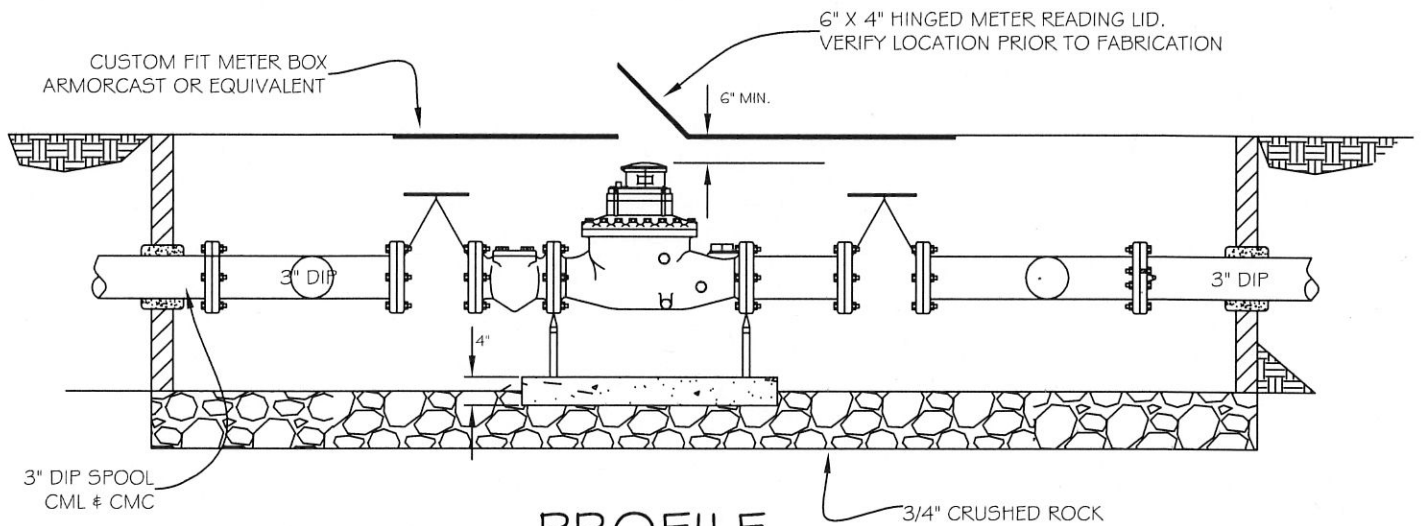
APPROVED

DATE

1 1/2" AND 2" WATER METER SERVICE
INSTALLATION



PLAN



PROFILE

RECOMMENDED MATERIALS

1. 3" WATER METER
2. 3" GATE VALVE
3. 3" COUPLING ADAPTER
4. VAULT

MANUFACTURER

FURNISHED BY CITY

503 AFC R/W F X F

FFCA-388 FORD FLANGE

CUSTOM FIT METER BOX
ARMORCAST OR EQUIVALENT

CITY OF SAN FERNANDO

SUBMITTED

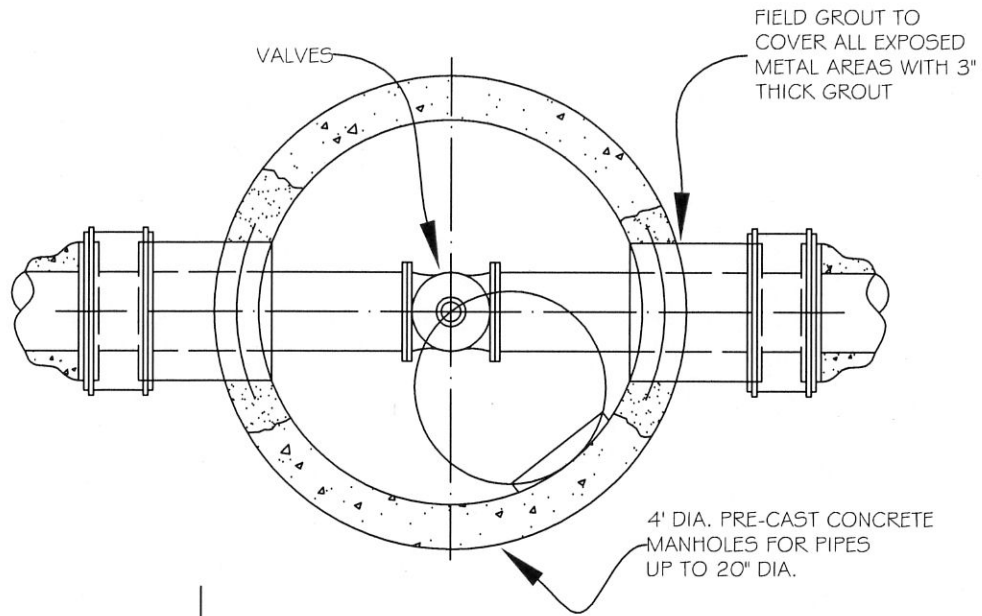
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CONSTRUCTION STANDARDS

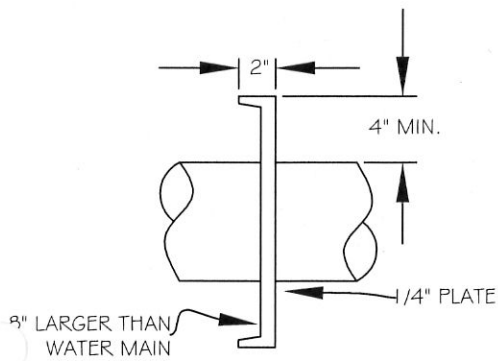
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DATE

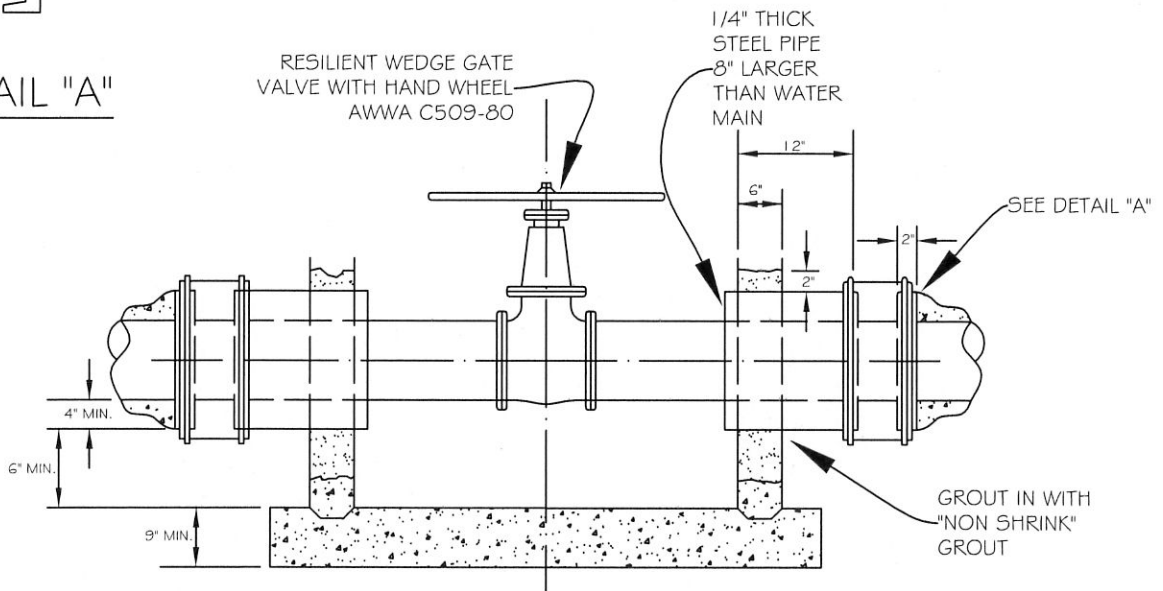
3" AND LARGER COMPOUND WATER
METER SERVICE INSTALLATION



PLAN



DETAIL "A"



SECTION

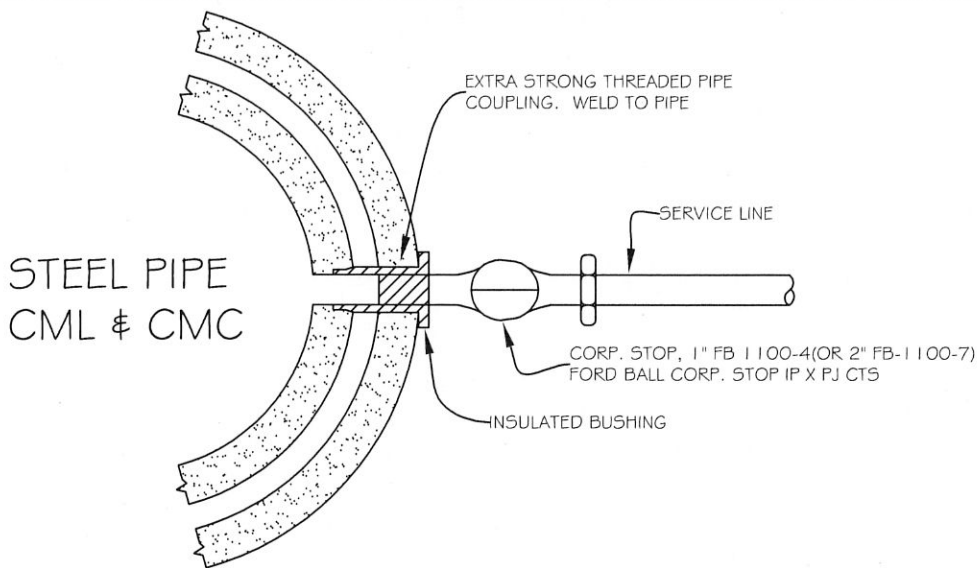
CITY OF SAN FERNANDO

SUBMITTED DATE

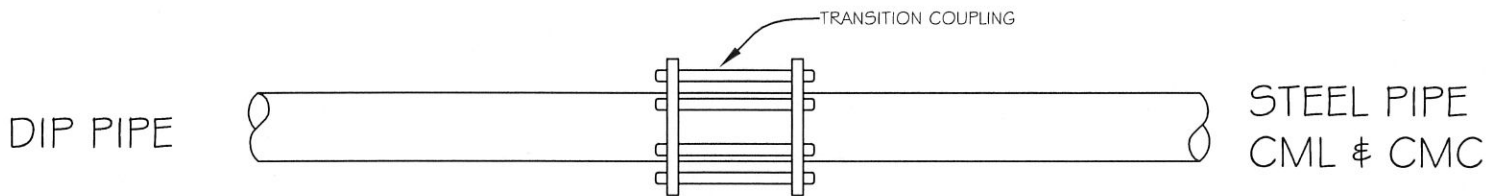
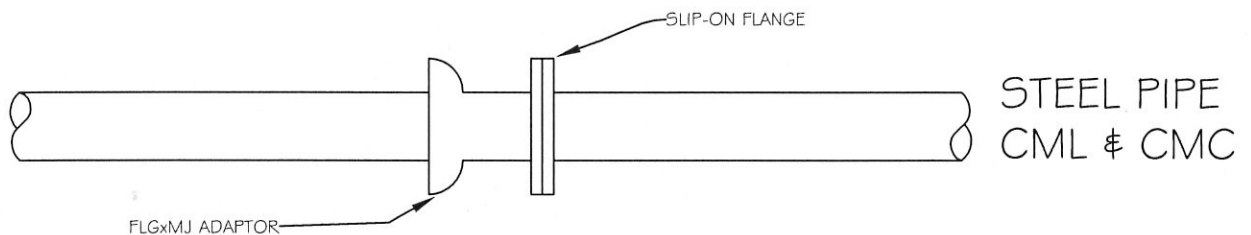
CONSTRUCTION STANDARDS

APPROVED DATE

MANHOLE
FOR DEEP VALVES



DIAELECTRIC SERVICE CONNECTION TO STEEL MAIN
(SEE NOTE 1.)



MAIN LINE CONNECTIONS

NOTES:

1. WRAP SERVICE CONNECTION WITH 20 MIL TAPE FROM COUPLING TO 4-FEET FROM MAIN. WRAP CORP STOP OR VALVE IN OPEN POSITION.

CITY OF SAN FERNANDO

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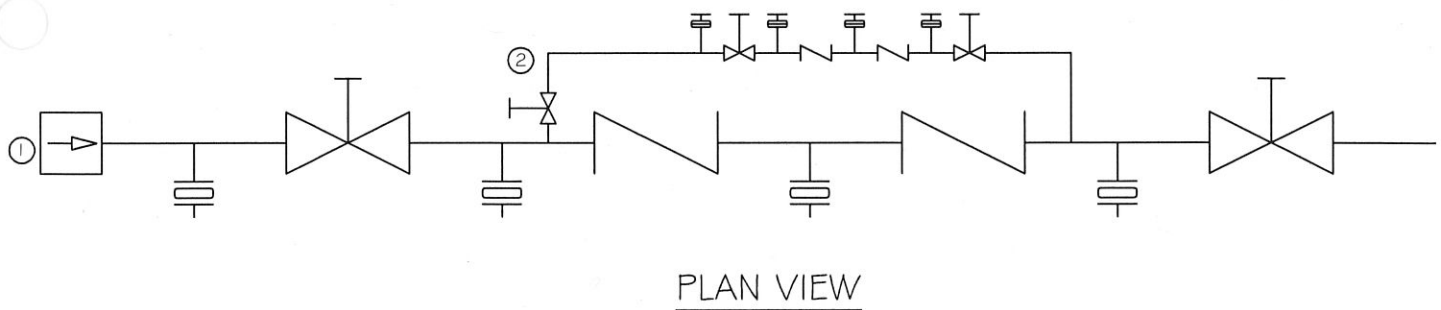
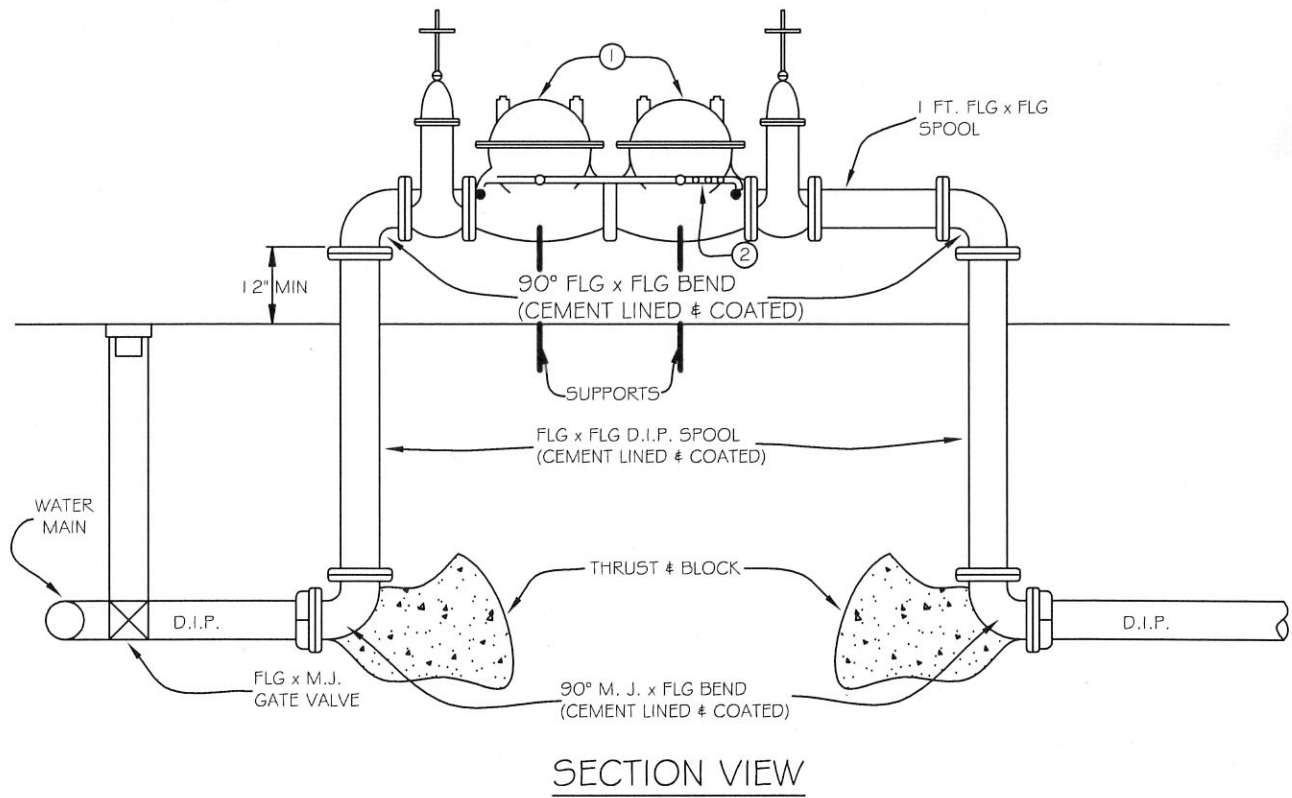
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
CONSTRUCTION STANDARDS

APPROVED

DATE

DISSIMILAR PIPE CONNECTIONS



KEY	DESCRIPTION OF EQUIPMENT DEVICES
1	APPROVED DOUBLE CHECK DETECTOR ASSEMBLY WITH O.S. B.Y. VALVES
2	BYPASS METER WITH APPROVED DOUBLE CHECK VALVE ASSEMBLY
	TEST COCK

NOTE: ALL M.J. FITTINGS SHALL BE WITH RETAINING GLANDS.

RETAINING GLAND - FORD 1400. SERIES OR APPROVED EQUAL.

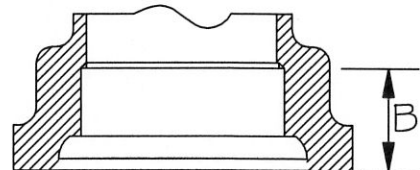
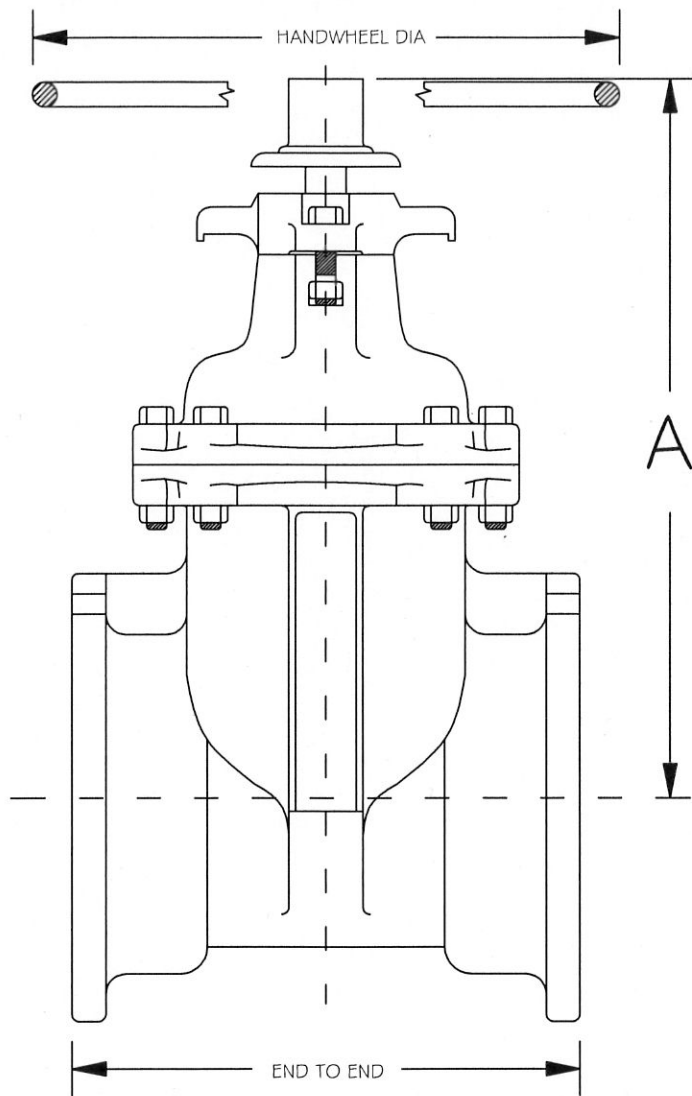
CITY OF SAN FERNANDO

SUBMITTED DATE

CONSTRUCTION STANDARDS

APPROVED DATE

FIRE SERVICE INSTALLATION



MECH. JOINT

NOTES:

1. FLANGED ENDS IN ACCORDANCE WITH ANSI B16.1-1975, CLASS 125, SEE PLATE 84-3-1 FOR FLANGE DIMENSIONS.
2. MECHANICAL JOINT ENDS IN ACCORDANCE WITH ANSI/AWWA C111/A21.11-80.
3. FLANGED ENDS OF TAPPING VALVES IN ACCORDANCE WITH MSS SP-60.
4. SEE PLATE 82-4-2 FOR BOSSES ON FL/FL VALVE BODIES.

	VALVE SIZE							
	2"	2-1/2"	3"	4"	6"	8"	10"	12"
END TO END MJ/MJ	8-1/4	—	9-1/2	11	12	12-1/2	14-3/4	16-5/8
END TO END FL/FL	7	7-1/2	8	9	10-1/2	11-1/2	13	14
END TO END FL/MJ	—	—	—	10	11-1/4	12	13-7/8	15-5/16
END TO END FL/MJ TAPPING	—	—	—	10-5/16	11-1/2	12-7/8	14-1/8	15-9/16
A	9-1/4	9-1/4	12-1/16	13-3/8	16-3/4	20-3/16	24-1/8	27-1/2
B	2-1/2	—	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
HANDWHEEL DIA	8	8	10	10	12	14	16	16
NO. OF TURNS TO OPEN	9	9	10	13	19	26	32	38

CITY OF SAN FERNANDO

SUBMITTED

DATE

CONSTRUCTION STANDARDS

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GATE VALVE (TYPICAL)
CITY OF SAN FERNANDO