

APPENDIX I
PUBLIC WORKS AGREEMENT

PUBLIC WORKS AGREEMENT

This PUBLIC WORKS AGREEMENT ("Agreement") is made and entered into as of DATE (the "Effective Date"), by and between the CITY OF TORRANCE, a municipal corporation ("CITY"), and CONTRACTOR NAME, TYPE OF ENTITY ("CONTRACTOR").

RECITALS:

- A. The CITY wishes to retain the services of an experienced and qualified CONTRACTOR to construct the **PROJECT NAME & BID NUMBER**;
- B. In order to obtain the desired services, The CITY has circulated a Notice Inviting Bids for the construction of the **PROJECT NAME & BID NUMBER** (the "NIB"); and
- C. CONTRACTOR has submitted a Bid (the "Bid") in response to the NIB. CONTRACTOR represents that it is qualified to perform those services requested in the Plans and Specifications. Based upon its review of all Bids submitted in response to the NIB, The CITY is willing to award the contract to CONTRACTOR.

AGREEMENT:

1. SERVICES TO BE PERFORMED BY CONTRACTOR

CONTRACTOR will provide the services and install those materials listed in the Plans and Specifications, which are on file in the Public Works Department. The NIB and the Plans and Specifications are made a part of this Agreement. A copy of the Bid is attached as Exhibit A.

2. TERM

Unless earlier terminated in accordance with Paragraph 4 below, this Agreement will continue in full force and effect for two years from the Effective Date.

3. COMPENSATION

A. CONTRACTOR's Fee.

For services rendered pursuant to this Agreement, CONTRACTOR will be paid in accordance with CONTRACTOR's Bid; provided, however, that in no event will the total amount of money paid the CONTRACTOR, for services initially contemplated by this Agreement, exceed the sum of \$INSERT DOLLAR AMOUNT ("Agreement Sum"), plus a contingency of \$INSERT DOLLAR AMOUNT, if first approved in writing by the CITY.

- B. Schedule of Payment.
Provided that the CONTRACTOR is not in default under the terms of this Agreement, upon presentation of an invoice, CONTRACTOR will be paid monthly, within 30 days after the date of the monthly invoice.

4. TERMINATION OF AGREEMENT

- A. Termination by CITY for Convenience.
1. CITY may, at any time, terminate the Agreement for CITY's convenience and without cause.
 2. Upon receipt of written notice from CITY of such termination for CITY's convenience, CONTRACTOR will:
 - a) cease operations as directed by CITY in the notice;
 - b) take actions necessary, or that CITY may direct, for the protection and preservation of the work; and
 - c) except for work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.
 3. In case of such termination for CITY's convenience, CONTRACTOR will be entitled to receive payment for work executed; and costs incurred by reason of such termination, along with reasonable overhead and profit on the work not executed.
- B. Termination for Cause.
1. If either party fails to perform any term, covenant or condition in this Agreement and that failure continues for 15 calendar days after the nondefaulting party gives the defaulting party notice of the failure to perform, this Agreement may be terminated for cause; provided, however, that if during the notice period the defaulting party has promptly commenced and continues diligent efforts to remedy the default, the defaulting party will have such additional time as is reasonably necessary to remedy the default.
 2. In the event this Agreement is terminated for cause by the default of the CONTRACTOR, the CITY may, at the expense of the CONTRACTOR and its surety, complete this Agreement or cause it to be completed. Any check or bond delivered to the CITY in connection with this Agreement, and the money payable thereon, will be forfeited to and remain the property of the CITY. All moneys due the CONTRACTOR under the terms of this

Agreement will be retained by the CITY, but the retention will not release the CONTRACTOR and its surety from liability for the default. Under these circumstances, however, the CONTRACTOR and its surety will be credited with the amount of money retained, toward any amount by which the cost of completion exceeds the Agreement Sum and any amount authorized for extra services.

3. Termination for cause will not affect or terminate any of the rights of the CITY as against the CONTRACTOR or its surety then existing, or which may thereafter accrue because of the default; this provision is in addition to all other rights and remedies available to the CITY under law.

C. Termination for Breach of Law.

In the event the CONTRACTOR or any of its officers, directors, shareholders, employees, agents, subsidiaries or affiliates is convicted (i) of a criminal offense as an incident to obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of a contract or subcontract; (ii) under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty which currently, seriously, and directly affects responsibility as a public consultant or contractor; (iii) under state or federal antitrust statutes arising out of the submission of bids or proposals; or (iv) of violation of Paragraph 20 of this Agreement; or for any other cause the CITY determines to be so serious and compelling as to affect CONTRACTOR's responsibility as a public consultant or contractor, including but not limited to, debarment by another governmental agency, then the CITY reserves the unilateral right to terminate this Agreement or to impose such other sanctions (which may include financial sanctions, temporary suspensions or any other condition deemed appropriate short of termination) as it deems proper. The CITY will not take action until CONTRACTOR has been given notice and an opportunity to present evidence in mitigation.

5. **FORCE MAJEURE**

If any party fails to perform its obligations because of strikes, lockouts, labor disputes, embargoes, acts of God, inability to obtain labor or materials or reasonable substitutes for labor or materials, governmental restrictions, governmental regulations, governmental controls, judicial orders, enemy or hostile governmental action, civil commotion, fire or other casualty, or other causes beyond the reasonable control of the party obligated to perform, then that party's performance shall be excused for a period equal to the period of such cause for failure to perform.

6. RETENTION OF FUNDS

CONTRACTOR authorizes the CITY to deduct from any amount payable to CONTRACTOR (whether or not arising out of this Agreement) any amounts the payment of which may be in dispute or that are necessary to compensate the CITY for any losses, costs, liabilities, or damages suffered by the CITY, and all amounts for which the CITY may be liable to third parties, by reason of CONTRACTOR's negligent acts or omissions or willful misconduct in performing or failing to perform CONTRACTOR's obligations under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by CONTRACTOR, or any indebtedness exists that appears to be the basis for a claim of lien, the CITY may withhold from any payment due, without liability for interest because of the withholding, an amount sufficient to cover the claim. The failure of the CITY to exercise the right to deduct or to withhold will not, however, affect the obligations of CONTRACTOR to insure, indemnify, and protect the CITY as elsewhere provided in this Agreement.

7. THE CITY'S REPRESENTATIVE

The Public Works Director is designated as the "City Representative," authorized to act in its behalf with respect to the work and services specified in this Agreement and to make all decisions in connection with this Agreement. Whenever approval, directions, or other actions are required by the CITY under this Agreement, those actions will be taken by the City Representative, unless otherwise stated. The City Manager has the right to designate another City Representative at any time, by providing notice to CONTRACTOR.

8. CONTRACTOR REPRESENTATIVE(S)

The following principal(s) of CONTRACTOR are designated as being the principal(s) and representative(s) of CONTRACTOR authorized to act in its behalf with respect to the work specified in this Agreement and make all decisions in connection with this Agreement:

REPRESENTATIVE 1
REPRESENTATIVE 2

9. INDEPENDENT CONTRACTOR

The CONTRACTOR is, and at all times will remain as to the CITY, a wholly independent contractor. Neither the CITY nor any of its agents will have control over the conduct of the CONTRACTOR or any of the CONTRACTOR's employees, except as otherwise set forth in this Agreement. The CONTRACTOR may not, at any time or in any manner,

represent that it or any of its agents or employees are in any manner agents or employees of the CITY. CITY has no duty, obligation, or responsibility to CONTRACTOR's agents or employees under the Affordable Care Act. CONTRACTOR is solely responsible for any tax penalties associated with the failure to offer affordable coverage to its agents and employees under the Affordable Care Act and any other liabilities, claims and obligations regarding compliance with the Affordable Care Act with respect to CONTRACTOR's agents and employees. CITY is not responsible and shall not be held liable for CONTRACTOR's failure to comply with CONTRACTOR's duties, obligations, and responsibilities under the Affordable Care Act. CONTRACTOR agrees to defend, indemnify and hold CITY harmless for any and all taxes and penalties that may be assessed against CITY as a result of CONTRACTOR's obligations under the Affordable Care Act relating to CONTRACTOR's agents and employees.

10. BUSINESS LICENSE

The CONTRACTOR must obtain a City business license prior to the start of work under this Agreement, unless CONTRACTOR is qualified for an exemption.

11. OTHER LICENSES AND PERMITS

CONTRACTOR warrants that it has all professional, contracting and other permits and licenses required to undertake the work contemplated by this Agreement.

12. FAMILIARITY WITH WORK

By executing this Agreement, CONTRACTOR warrants that CONTRACTOR (a) has thoroughly investigated and considered the scope of services to be performed, (b) has carefully considered how the services should be performed, and (c) fully understands the facilities, difficulties and restrictions attending performance of the services under this Agreement. If the services involve work upon any site, CONTRACTOR warrants that CONTRACTOR has or will investigate the site and is or will be fully acquainted with the conditions there existing, prior to commencement of services set forth in this Agreement.

Should CONTRACTOR discover any latent or unknown conditions that will materially affect the performance of the services set forth in this Agreement, CONTRACTOR must immediately inform the CITY of that fact and may not proceed except at CONTRACTOR's risk until written instructions are received from the CITY.

13. CARE OF WORK

CONTRACTOR must adopt reasonable methods during the life of the Agreement to furnish continuous protection to the work, and the equipment, materials, papers, documents, plans, studies and other components to prevent losses or damages, and will be responsible for all damages, to persons or property, until acceptance of the work by the CITY, except those losses or damages as may be caused by the CITY's own negligence.

14. CONTRACTOR'S ACCOUNTING RECORDS; OTHER PROJECT RECORDS

Records of the CONTRACTOR's time pertaining to the project, and records of accounts between the CITY and the CONTRACTOR, will be kept on a generally recognized accounting basis. CONTRACTOR will also maintain all other records, including without limitation specifications, drawings, progress reports and the like, relating to the project. All records will be available to the CITY during normal working hours. CONTRACTOR will maintain these records for three years after final payment.

15. PREVAILING WAGE

All Services rendered pursuant to this agreement must be provided in accordance with all ordinances, resolutions, statutes, rules, regulations, and laws of City and any Federal, State, or local governmental agency of competent jurisdiction. Contractor is aware of the requirements of California Labor Code Sections 1720, et seq., and 1770, et seq., as well as of California Code of Regulations, Title 8, Sections 1600, et seq., (collectively, the "Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "Public works" and "Maintenance" projects. If the Services are being performed as part of an applicable "Public works" or "Maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is ONE THOUSAND DOLLARS (\$1,000) or more, Contractor agrees to fully comply with the Prevailing Wage Laws including, but not limited to, requirements related to the maintenance of payroll records and the employment of apprentices.

Pursuant to California Labor Code Section 1725.5, no contractor or subcontractor may be awarded a contract for public work on a "Public works" project unless registered with the California Department of Industrial Relations ("DIR") at the time the contract is awarded. If the Services are being performed as part of an applicable "Public works" or "Maintenance" project, as defined by the Prevailing Wage Laws, this project is subject to compliance monitoring and enforcement by the California Department of Industrial Relations ("DIR"). Contractor will

maintain and will require all subcontractors to maintain valid and current DIR Public Works Contractor registration during the term of this Agreement. Contractor must notify City in writing immediately, and in no case more than twenty-four (24) hours, after receiving any information that Contractor's or any of its subcontractor's DIR registration status has been suspended, revoked, expired, or otherwise changed.

It is understood that it is the responsibility of Contractor to determine the correct salary scale. Contractor will make copies of the prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Services available to interested parties upon request, and post copies at Contractor's principal place of business and at the project site, if any. The statutory penalties for failure to pay prevailing wage or to comply with State wage and hour laws will be enforced. Contractor must forfeit to City TWENTY FIVE DOLLARS (\$25.00) per day for each worker who works in excess of the minimum working hours when Contractor does not pay overtime. In accordance with the provisions of Labor Code Sections 1810 et seq., eight (8) hours is the legal working day.

Contractor must also comply with State law requirements to maintain payroll records and must provide for certified records and inspection of records as required by California Labor Code Section 1770 et seq., including Section 1776. Contractor will defend (with counsel selected by City), indemnify, and hold City, its elected officials, officers, employees, and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws. It is agreed by the parties that, in connection with performance of the Services, including, without limitation, any and all "Public works" (as defined by the Prevailing Wage Laws), Contractor will bear all risks of payment or non-payment of prevailing wages under California law and/or the implementation of Labor Code Section 1781, as the same may be amended from time to time, and/or any other similar law. Contractor acknowledges and agrees that it will be independently responsible for reviewing the applicable laws and regulations and effectuating compliance with those laws. Contractor will require the same of all subcontractors.

16. INDEMNIFICATION

CONTRACTOR will indemnify, defend, and hold harmless CITY, the Successor Agency to the Former Redevelopment Agency of the City of Torrance, the City Council, each member thereof, present and future, its officers, agents and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages whatsoever, including, but not limited to, those arising from breach of contract, bodily injury, death, personal injury, property damage, loss of use, or property loss however the same may be caused and regardless of the responsibility for negligence. The obligation to indemnify, defend and hold harmless includes, but is not limited to, any liability or expense,

including defense costs and legal fees, arising from the negligent acts or omissions, or willful misconduct of CONTRACTOR, its officers, employees, agents, subcontractors or vendors. It is further agreed, CONTRACTOR's obligations to indemnify, defend and hold harmless will apply even in the event of concurrent negligence on the part of CITY, the City Council, each member thereof, present and future, or its officers, agents and employees, except for liability resulting solely from the negligence or willful misconduct of CITY, its officers, employees or agents. Payment by CITY is not a condition precedent to enforcement of this indemnity. In the event of any dispute between CONTRACTOR and CITY, as to whether liability arises from the sole negligence of the CITY or its officers, employees, agents, subcontractors or vendors, CONTRACTOR will be obligated to pay for CITY's defense until such time as a final judgment has been entered adjudicating the CITY as solely negligent. CONTRACTOR will not be entitled in the event of such a determination to any reimbursement of defense costs including but not limited to attorney's fees, expert fees and costs of litigation.

17. NON-LIABILITY OF THE CITY'S OFFICERS AND EMPLOYEES

No officer or employee of the CITY will be personally liable to CONTRACTOR, in the event of any default or breach by the CITY or for any amount that may become due to CONTRACTOR.

18. INSURANCE

A. CONTRACTOR must maintain at its sole expense the following insurance, which will be full coverage not subject to self-insurance provisions:

1. Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
 - a. Combined single limits of \$2,000,000 per occurrence.
2. General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$3,000,000 per occurrence, with an annual aggregate of no less than \$5,000,000.
3. Workers' Compensation with limits as required by the State of California and Employers Liability with limits of at least \$1,000,000.

B. The insurance provided by CONTRACTOR will be primary and non-contributory.

- C. CITY, the Successor Agency to the Former Redevelopment Agency of the City of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer must be named as additional insureds under the automobile and general liability policies.
- D. CONTRACTOR must provide certificates of insurance and/or endorsements to the City Clerk of the City of Torrance before the commencement of work.
- E. Each insurance policy required by this Paragraph must contain a provision that no termination, cancellation or change of coverage can be made without thirty days notice to the CITY.
- F. CONTRACTOR must include all subcontractors as insureds under its policies or must furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors will be subject to all of the requirements of this Paragraph 18.

19. SUFFICIENCY OF INSURERS

Insurance required by this Agreement will be satisfactory only if issued by companies admitted to do business in California, rated "B+" or better in the most recent edition of Best's Key Rating Guide, and only if they are of a financial category Class VII or better, unless these requirements are waived by the Risk Manager of the CITY ("Risk Manager") due to unique circumstances. In the event the Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the CITY, the CONTRACTOR agrees that the minimum limits of any insurance policies and/or the performance bond required by this Agreement may be changed accordingly upon receipt of written notice from the Risk Manager; provided that CONTRACTOR will have the right to appeal a determination of increased coverage by the Risk Manager to the City Council of the CITY within 10 days of receipt of notice from the Risk Manager.

20. CONFLICT OF INTEREST

- A. No officer or employee of the CITY may have any financial interest, direct or indirect, in this Agreement, nor may any officer or employee participate in any decision relating to the Agreement that effects the officer or employee's financial interest or the financial interest of any corporation, partnership or association in which the officer or employee is, directly or indirectly interested, in violation of any law, rule or regulation.

- B. No person may offer, give, or agree to give any officer or employee or former officer or employee, nor may any officer or employee solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, preparation or any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any way pertaining to any program requirement, contract or subcontract, or to any solicitation or proposal.

21. NOTICE

- A. All notices, requests, demands, or other communications under this Agreement will be in writing. Notice will be sufficiently given for all purposes as follows:

1. Personal delivery. When personally delivered to the recipient: notice is effective on delivery.
2. First Class mail. When mailed first class to the last address of the recipient known to the party giving notice: notice is effective three mail delivery days after deposit in an United States Postal Service office or mailbox.
3. Certified mail. When mailed certified mail, return receipt requested: notice is effective on receipt, if delivery is confirmed by a return receipt.
4. Overnight delivery. When delivered by an overnight delivery service, charges prepaid or charged to the sender's account: notice is effective on delivery, if delivery is confirmed by the delivery service.
5. Facsimile transmission. When sent by fax to the last fax number of the recipient known to the party giving notice: notice is effective on receipt. Any notice given by fax will be deemed received on the next business day if it is received after 5:00 p.m. (recipient's time) or on a non-business day.
6. Addresses for purpose of giving notice are as follows:

CONTRACTOR: CONTRACTOR'S NAME AND ADDRESS

Fax: INSERT FAX NUMBER

CITY: City Clerk
City of Torrance
3031 Torrance Boulevard
Torrance, CA 90509-2970
Fax: (310) 618-2931

with a copy to: Attn: PROJECT MANAGER'S
NAME
Public Works Department
City of Torrance
20500 Madrona Avenue
Torrance, CA 90503
Fax: (310) 781-6902

- B. Any correctly addressed notice that is refused, unclaimed, or undeliverable because of an act or omission of the party to be notified, will be deemed effective as of the first date the notice was refused, unclaimed or deemed undeliverable by the postal authorities, messenger or overnight delivery service.
- C. Either party may change its address or fax number by giving the other party notice of the change in any manner permitted by this Agreement.

22. PROHIBITION AGAINST ASSIGNMENT AND SUBCONTRACTING

This Agreement and all exhibits are binding on the heirs, successors, and assigns of the parties. The Agreement may not be assigned or subcontracted by either the CITY or CONTRACTOR without the prior written consent of the other.

23. INTEGRATION; AMENDMENT

This Agreement represents the entire understanding of the CITY and CONTRACTOR as to those matters contained in it. No prior oral or written understanding will be of any force or effect with respect to the terms of this Agreement. The Agreement may not be modified or altered except in writing signed by both parties.

24. INTERPRETATION

The terms of this Agreement should be construed in accordance with the meaning of the language used and should not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction that might otherwise apply.

25. SEVERABILITY

If any part of this Agreement is found to be in conflict with applicable laws, that part will be inoperative, null and void insofar as it is in conflict with any applicable laws, but the remainder of the Agreement will remain in full force and effect.

26. TIME OF ESSENCE

Time is of the essence in the performance of this Agreement.

27. GOVERNING LAW; JURISDICTION

This Agreement will be administered and interpreted under the laws of the State of California. Jurisdiction of any litigation arising from the Agreement will be in Los Angeles County, California.

28. COMPLIANCE WITH STATUTES AND REGULATIONS

CONTRACTOR will be knowledgeable of and will comply with all applicable federal, state, county and city statutes, rules, regulations, ordinances and orders.

29. WAIVER OF BREACH

No delay or omission in the exercise of any right or remedy by a nondefaulting party on any default will impair the right or remedy or be construed as a waiver. A party's consent or approval of any act by the other party requiring the party's consent or approval will not be deemed to waive or render unnecessary the other party's consent to or approval of any subsequent act. Any waiver by either party of any default must be in writing and will not be a waiver of any other default concerning the same or any other provision of this Agreement.

30. ATTORNEY'S FEES

Except as provided for in Paragraph 16, in any dispute, litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party will be awarded reasonable attorney's fees, together with any costs and expenses, to resolve the dispute and to enforce any judgment.

31. EXHIBITS

All exhibits identified in this Agreement are incorporated into the Agreement by this reference.

32. CONTRACTOR'S AUTHORITY TO EXECUTE

The persons executing this Agreement on behalf of the CONTRACTOR warrant that (i) the CONTRACTOR is duly organized and existing; (ii) they are duly authorized to execute this Agreement on behalf of the CONTRACTOR; (iii) by so executing this Agreement, the CONTRACTOR is formally bound to the provisions of this Agreement; and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which the CONTRACTOR is bound.

City of Torrance,
a municipal corporation

BUSINESS OR INDIVIDUAL NAME
TYPE OF ENTITY

Patrick J. Furey, Mayor

By: _____
SIGNER, TITLE

ATTEST:

Rebecca Poirier, MMC
City Clerk

APPROVED AS TO FORM:

JOHN L. FELLOWS III
City Attorney

By: _____

Attachment: Exhibit A: Bid
Revised: 12/9/15

EXHIBIT A

Bid

APPENDIX II

CITY OF TORRANCE PERMIT AND BUSINESS LICENSE

Contractor Qualification List

Curly/Gutter	A(General Engineering) CB(Concrete Contractor)	Sewer Mainline	A(General Engineering) C34(Pipeline Contractor) C42(Sanitation Contractor)
Driveways	A(General Engineering) CB(Concrete Contractor)	Storm Drains	A(General Engineering) C34(Pipeline Contractor) C42(Sanitation Contractor)
Sidewalks	A(General Engineering) B(General Building) CB(Concrete Contractor)	U/G Utilities.....	A (General Engineering) (Water, Gas or Oil) C34 (Pipeline Contractor)
Street/Alley.....	A(General Engineering) CB(Concrete Contractor) C12(Earth and Paving Contractor)	U/G Electrical	A (General Engineering) CB (Concrete Contractor) C12 (Earth and Paving Contractors)
Sewer Lateral.....	A (General Engineering) C34(Pipeline Contractor) C42(Sanitation Contractor)		

Contractor Qualification List

- 1) FOR INSPECTIONS 24 hour notice is required, before, during, and after construction. Call 310-618-5898, 7:30 AM - 5:30 PM, to SCHEDULE AN INSEPTION.
- 2) Provide TRAFFIC CONTROL per the "CITY OF TORRANCE CONSTRUCTION TRAFFIC CONTROL PROCEDURES." Street closures shall be per City of Torrance Standard T603. Major street lane closures between 8:30 AM - 3:30 PM only. ONE STANDARD ARROWBOARD REQUIRED FOR EACH LANE CLOSURE.
- 3) Permit is not valid until two working days after notifying DIG-ALERT of project USA # _____.
- 4) Do not remove any trees or shrubs without approval of Torrance Tree Supervisor (310-781-6900).
- 5) Contractor will be billed for overtime inspection services. OVERTIME REQUESTS must be submitted for approval 24 hrs in advance.
- 6) Construction site CLEANUP and GRAFFITI removal must be completed prior to finaling of this permit. The work site shall be kept in a well maintained condition. Signage shall be free of graffiti, replaced if bent, vandalized or displays loss of reflectivity. Any graffiti on construction signs must be removed or replaced within 24 hours of notification.
- 7) Any street striping, crosswalk, raised reflective pavement marker or pavement markings damaged by this construction shall be replaced to the satisfaction of the Torrance Public Works Department (310-781-6900).
- 8) THIS PERMIT WILL BE REVOKED if any pollutant is released into or allowed to remain in any component of the city drainage system.
- 9) Trench backfill and pavement repairs shall be per City of Torrance Standard T116.
- 10) Any irrigation system components damaged by this construction shall be replaced to the satisfaction of Park Services (310-618-2930).
- 11) All survey monuments in the project area MUST be located and tied out and a Corner Record filed prior to the start of construction. Also, all destroyed monuments must be replaced prior to receiving final inspection.
- 12) It is the responsibility of the contractor to REPLACE any PAVEMENT removed by this construction.
- 13) The City of Torrance is held harmless from the results of any action or accidents caused by the permittee, his employees, or equipment in the performance of the work described or covered in this permit. Validation of this permit SHALL NOT be held to permit or to be an approval of the violation of any applicable provision of the City Code covering this work, or any other provisions of the City of Torrance Code. In the granting of a Construction & Excavation permit, the Community Development Director may impose such conditions thereon, in addition to those otherwise provided herein, as are reasonably necessary to prevent the proposed operations from being conducted in such a manner as to constitute or create a HAZARD TO LIFE or property or be detrimental to property.

**NOTICE
CITY OF TORRANCE
COMMUNITY DEVELOPMENT DEPARTMENT/
ENGINEERING DIVISION
NEW INSURANCE REGULATIONS**

The City of Torrance Community Development Department/Engineering Division will be requiring proof of liability insurance from each contractor applying for a Construction & Excavation permit to work in the public right-of-way or in a public easement beginning October 1, 2001. Insurance shall cover contractor and vehicles used in the construction. The attached requirements dated September 20, 2001 will detail the insurance limits.

All insurance certificates shall have an additional clause that states: "The City of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer" as additional insured.

Contractors should bring in proof of insurance at the time of application for permit. For major companies that are self-insured, a letter stating this fact and signed by an officer of the firm will be acceptable. Annual insurance may also be kept on file for contractors working periodically within the City of Torrance.

If you have any questions, please contact the Engineering Division Permit Counter at 310-618-5898.

**JEFFERY W. GIBSON
Community Development Director
City of Torrance**

EFFECTIVE 8/11/03

8/11/03

**CITY OF TORRANCE
COMMUNITY DEVELOPMENT DEPARTMENT/
ENGINEERING DIVISION**

**PERMIT APPLICATION FORM
INSURANCE REQUIREMENTS**

Any entity performing work on City streets, right-of-way, and property must comply with the following requirements.

1. TYPE OF INSURANCE

Any entity performing work must maintain at their sole expense the following insurance, which shall be full coverage not subject to self-insurance provisions.

- General Liability including coverage for premises, products and completed operations, underground hazards, independent contractors, personal injury and contractual obligations with combined single limits of at least \$1,000,000 per occurrence.
- Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
 - Primary Bodily Injury with limits of at least \$500,000 per person, \$1,000,000 per occurrence AND; Primary Property Damage with limits of at least \$500,000 per occurrence, OR
 - Combined single limits of at least \$1,000,000 per occurrence.
- Workers' Compensation with limits as required by the State of California and Employer's Liability with limits of at least \$1,000,000.

2. CERTIFICATES

- Certificates or an attached endorsement must be provided that contains the following provisions:
 - The City of Torrance, the City Council and each member thereof, members of boards and commissions, every officer, agent, official, employee and volunteer must be named as additional Insured under the automobile and general liability policies.
 - The insurance policies required by this clause shall contain a provision that no termination, cancellation or change of coverage can be made without 30 days written notice to the City.

3. FILING REQUIREMENTS

- Certificates of insurance and/or endorsements must be provided to the Community Development Department, Permits and Records Section, 3031 Torrance Blvd., Torrance, CA 90503, prior to the issuance of the permit.

4. ADDITIONAL REQUIREMENT

- Insurance required of any entity performing work will be satisfactory only if issued by companies rated "B+" or better in the most recent edition of Best's Key Rating Guide, and only if they are of a financial category of a VII or better, unless these requirements are modified or waived by the City's Risk Manager.

Please call the Business License Office at 310-618-5923 for fee amounts. Payment must be submitted with your application.

FOR OFFICIAL USE ONLY	
1. LICENSE NO.	2. CATEGORY NO.
HOME OCCUPATION	HEALTH PRINT
	S.I.C. CODE



**City of Torrance, Revenue Division
Business License Application**

3031 Torrance Boulevard, Torrance, California 90503 • 310(618)-5828

PART I. APPLICANT TO ANSWER ALL QUESTIONS IN THIS SECTION (print or type)

3. BUSINESS NAME OR DBA _____ 4. COMPANY TYPE (IF DIFFERENT FROM ABOVE)

5. BUSINESS ADDRESS _____ CITY _____ STATE _____ ZIP _____

6. MAILING ADDRESS _____ CITY _____ STATE _____ ZIP _____

7. NATURE OF BUSINESS (state type of business being conducted at this location) _____ 8. BUSINESS PHONE _____

9. NO. OF PERSONS WORKING AT LOCATION _____ 10. HOME PHONE _____

10. NAME OF PERSON MAKING APPLICATION (write as owner, partner or corporate officer) _____ 11. TITLE _____

13. RESIDENT ADDRESS _____ CITY _____ STATE _____ ZIP _____ 14. DRIVER'S LICENSE NO. _____ 15. STATE SALES TAX NO. _____

16. STATE CONTRACTOR LICENSE NO. _____ 17. SOCIAL SECURITY NO. _____ 18. PERM NO. _____ 20. REG. NO. _____

21. OWNERSHIP INFORMATION

PARTNERSHIP CORPORATION SOLE OWNERSHIP

NAMES OF OWNERS, PARTNERS, OR PRINCIPAL OFFICERS _____ TITLE _____ HOME ADDRESS _____ HOME PHONE _____

I declare that I am the owner, partner, corporate officer or person with the power of attorney, and I understand if all the information provided above is not the true the business license being applied for may be revoked as outlined in section 31.9-10 of the Torrance Municipal Code.

I am duly authorized to make this application and all of the information provided in this application is true and correct. The business will not provide any service, good or product which is illegal under Federal, State, or Local Laws. I declare under penalty of perjury that the foregoing is true and correct.

SIGNATURE _____ DATE _____

PART II. FOR OFFICIAL USE ONLY

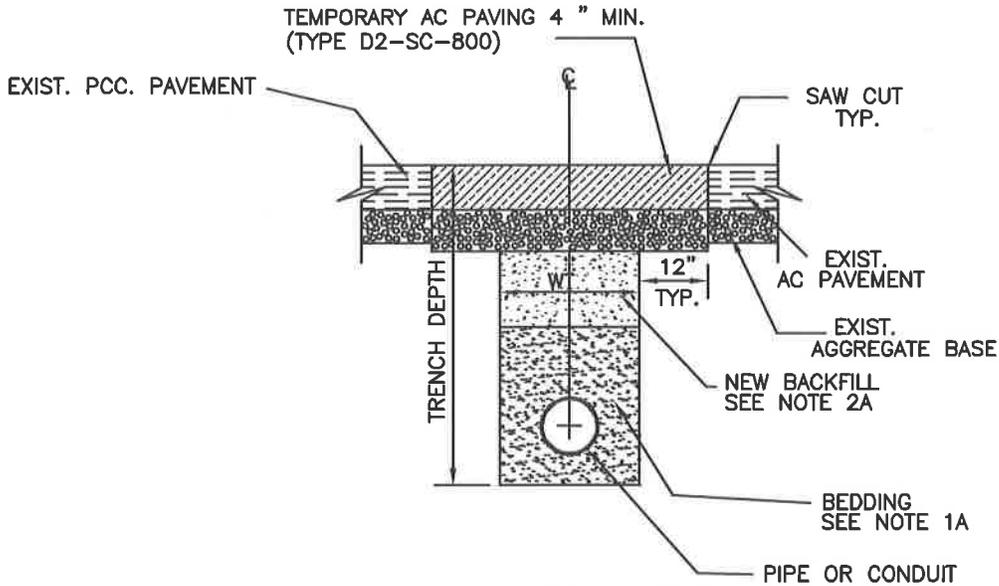
BASIC FEE _____ APPLICATION CERTIFICATE FEE _____ PROCESSING FEE _____ PREP. FEE _____ OTHER _____

PER PERSON FEE _____ YES NO OTHER (LIST): _____

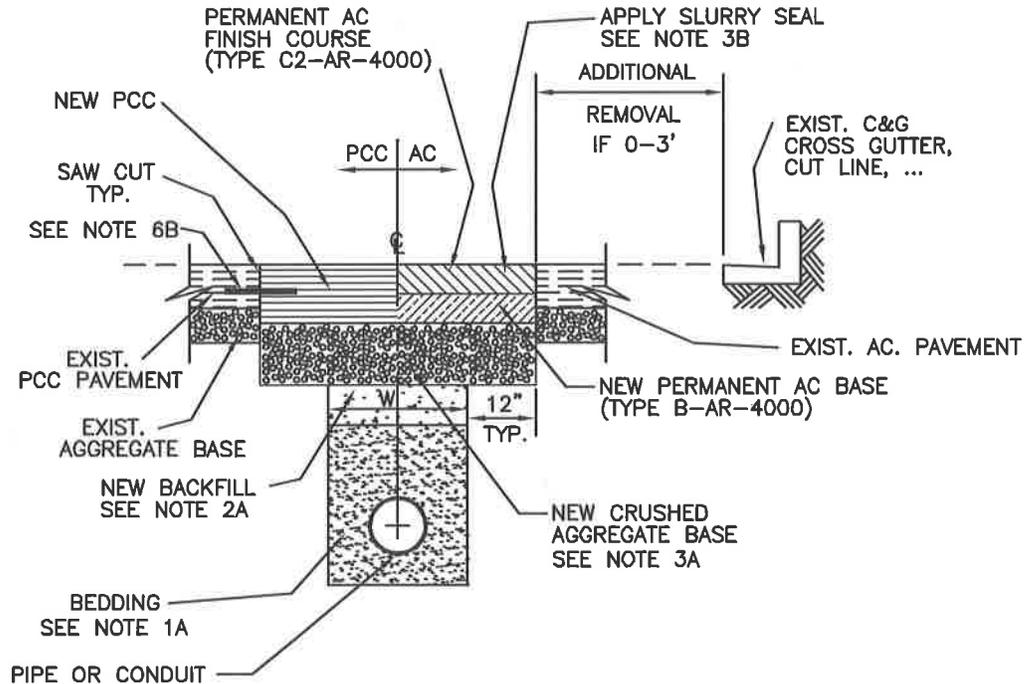
PENALTY FEE _____ HOLD _____ ENT. FEE _____ LARGEST FEE _____

RECEIVED BY _____ DATE _____ CHECK NO. _____ BANK NO. _____ CARD _____ TOTAL AMOUNT \$ _____

APPENDIX III
CITY OF TORRANCE STANDARD PLANS



TEMPORARY ASPHALT REPAIR



PERMANENT TRENCH REPAIR

**TYPICAL TRENCH SECTION WITHIN ROADWAY
(SEE NOTE 8C FOR EXCEPTION)**

CITY OF TORRANCE - ENGINEERING DEPARTMENT

DATE ISSUED
10 SEP 2002

TRENCH BACKFILL & PAVEMENT REPAIRS

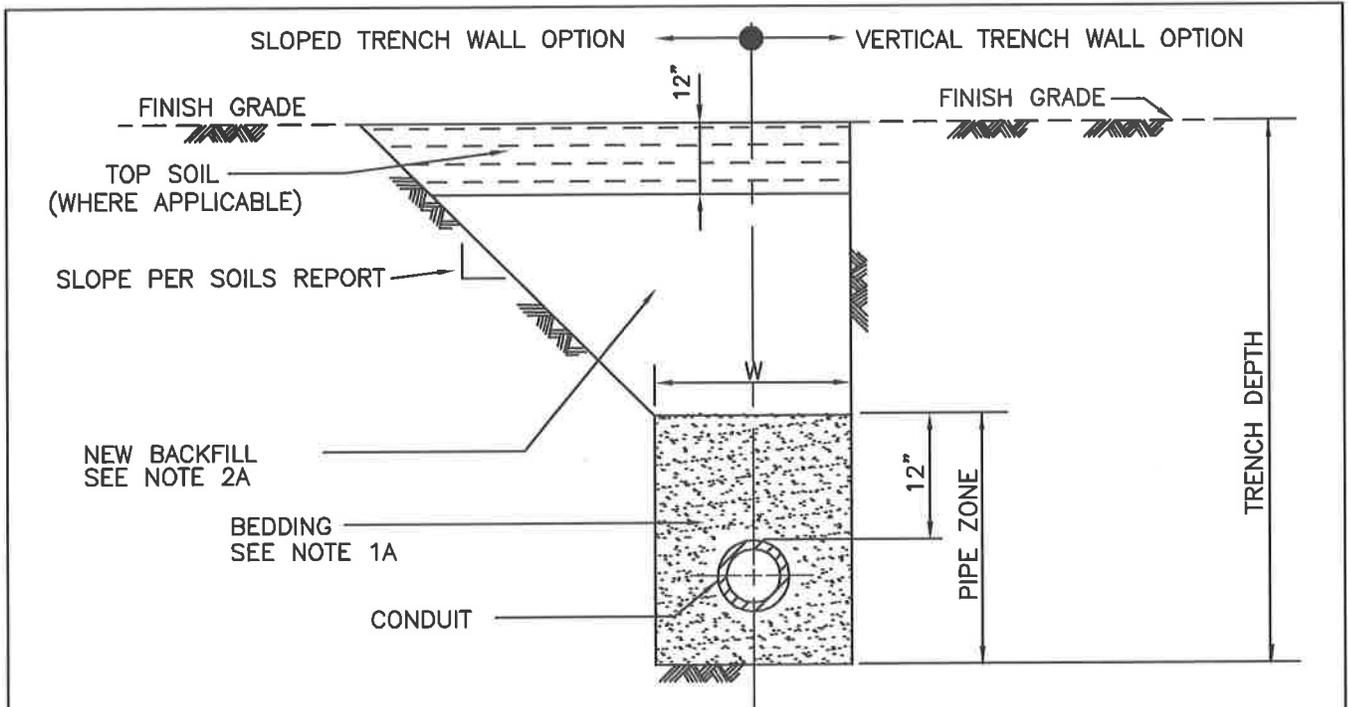
STANDARD NO.

T116-2

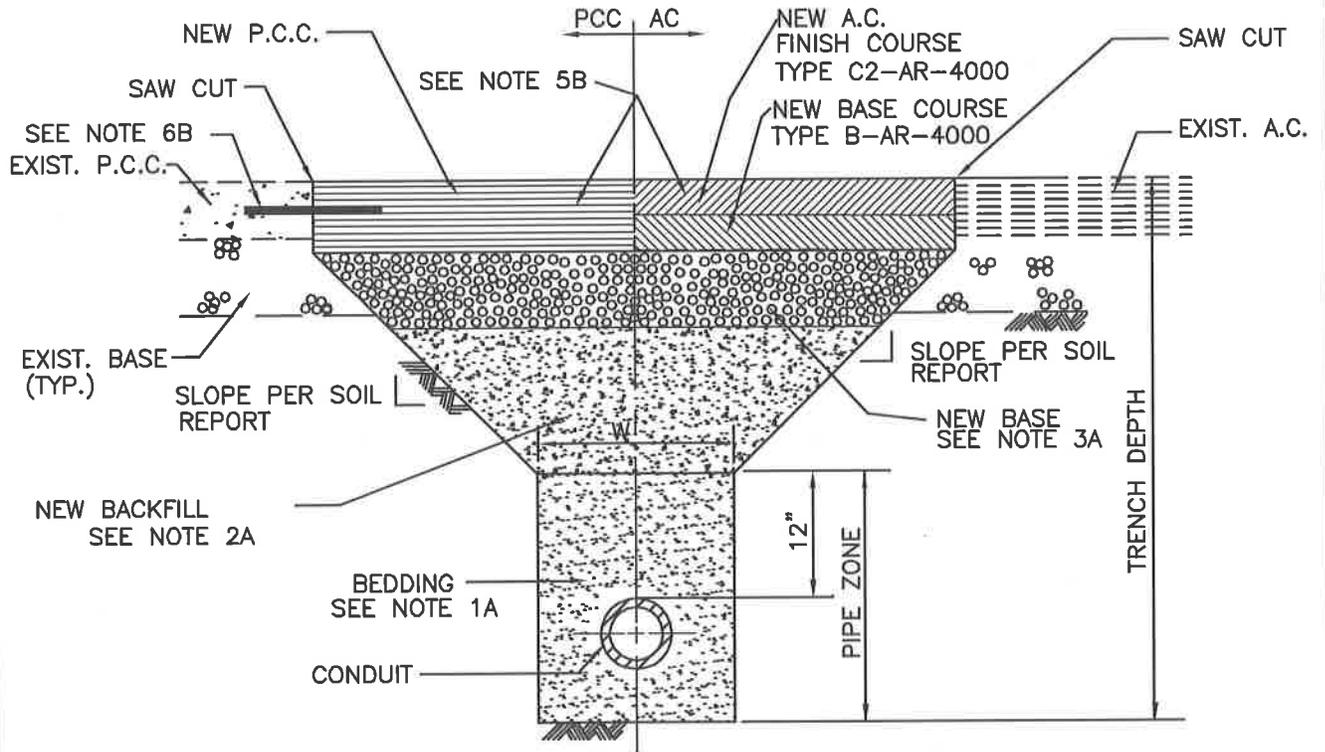
RICHARD W. BURTT
ENGINEERING DIRECTOR
R.C.E. NO. 32862
R.T.E. NO. 1538

SHEET 1 OF 4

T116-2



TYPICAL TRENCH SECTION OUTSIDE ROADWAY



**TYPICAL TRENCH SECTION WITHIN ROADWAY
SLOPED TRENCH WALL OPTION**

CITY OF TORRANCE - ENGINEERING DEPARTMENT

TT116-2

DATE ISSUED 10 SEP 2002	TRENCH BACKFILL & PAVEMENT REPAIRS	STANDARD NO. T116-2
		RICHARD W. BURTT ENGINEERING DIRECTOR R.C.E. NO. 32862 R.T.E. NO. 1538 

NOTES:

BELOW GROUND:

1A. SEE STD. PLAN NO'S T204, T302, AND T701 FOR BEDDING REQUIREMENTS.

2A. FOR TRENCHES WITH "W" GREATER THAN 2' OR IF TRENCH WALLS ARE SLOPED, BACKFILL SHALL BE CRUSHED AGGREGATE BASE, OR NATIVE OR OTHER EXCAVATION MATERIAL WITH AN SE VALUE OF 30 OR GREATER. BACKFILL MATERIAL SHALL BE DENSIFIED TO A RELATIVE COMPACTION OF 95% IN THE UPPER 3 FEET AND TO 90% BELOW THE UPPER 3 FEET. FOR TRENCHES LONGER THAN 200' OR LARGER THAN 1,000 SQUARE FEET A LICENSED SOILS ENGINEER SHALL BE PRESENT TO MONITOR THE NATIVE OR IMPORTED BACKFILL OPERATION AND TEST FOR COMPACTION AT 100' OR 200 SQUARE FOOT MAXIMUM INTERVALS

FOR TRENCHES WITH "W" LESS THAN OR EQUAL TO 2' IN THE ROADWAY, A SAND-CEMENT SLURRY (100-E-100) BACKFILL SHALL BE USED. SLURRY SHALL CURE 16 HOURS MINIMUM PRIOR TO BASE PLACEMENT. RAPID SET CEMENT SLURRY SHALL CURE 1 HOUR MINIMUM PRIOR TO BASE PLACEMENT.

IN AREAS NOT IN EXISTING ROADWAY, BACKFILL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 90%.

3A. NEW CRUSHED AGGREGATE BASE SHALL BE 2" THICKER THAN EXISTING BASE, BUT NOT LESS THAN 8" THICK.

4A. EXCAVATED MATERIAL NOT APPROVED FOR USE IN TRENCH BACKFILL SHALL BE REMOVED FROM JOB SITE UNLESS OTHERWISE USED IN THE WORK.

5A. WHERE WET, UNSTABLE OR RUNNING SOIL IS ENCOUNTERED, SOLID SHEATHING IS REQUIRED FOR ALL VERTICAL TRENCH WALLS.

6A. ANY SHORING REQUIRED SHALL BE DESIGNED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER.

7A. "W" SHALL BE MEASURED AT TOP OF BEDDING.

VISIBLE SURFACE:

1B. IF REMAINING AC PAVEMENT BETWEEN EDGE OF TRENCH AND EXISTING GUTTER, CURB, CROSS GUTTER, OR CUT LINE IS LESS THAN 3 FEET IN WIDTH, THEN THIS AC SHALL BE REMOVED AND REPLACED WITH NEW AC PAVEMENT.

2B. THE ENGINEER MAY REQUIRE WIDER REMOVAL AREA THAN THAT SHOWN ABOVE TO SUIT FIELD CONDITIONS.

3B. CRACKS SHALL BE SEALED AND A TYPE 2 SLURRY SEAL COATING WITH 2% LATEX SHALL BE APPLIED FROM LANE LINE TO LANE LINE FOR LONGITUDINAL TRENCHES GREATER THAN 200' IN LENGTH FOR ANY LANE AFFECTED.

4B. THE THICKNESS OF REPLACEMENT ASPHALT SHALL BE A MINIMUM OF 1" GREATER THAN EXISTING AC (2" GREATER IF EXISTING STREET IS PAVED WITH RUBBERIZED AC) BUT NOT LESS THAN 4" (5" FOR RUBBERIZED AC). IF EXISTING PAVEMENT IS PCC, REPLACEMENT CONCRETE SHALL BE AS PER SECTION 201.1 OF THE STANDARD SPECS AND 1" THICKER THAN EXISTING.

CITY OF TORRANCE - ENGINEERING DEPARTMENT

DATE ISSUED
10 SEP 2002

TRENCH BACKFILL & PAVEMENT REPAIRS

STANDARD NO.

T116-2

RICHARD W. BURTT
ENGINEERING DIRECTOR
R.C.E. NO. 32862
R.T.E. NO. 1538



SHEET 3 OF 4

T116-2

5B. THE NEW FINISH COURSE SHALL BE PLACED FLUSH WITH THE EXISTING ADJACENT PAVING SURFACE - MAXIMUM VARIANCE FROM FLUSH IS 1/8". NEW AC PAVEMENT ADJACENT TO EXISTING EDGE OF PCC GUTTER SHALL BE 3/8" HIGHER THAN EDGE OF GUTTER.

6B. FOR PCC ROADWAY PAVEMENT, DOWEL AT 24" O.C., #4 DEFORMED BAR, 6" EMBEDMENT, AND CENTERED IN EXISTING SLAB WITH 1-1/2" MINIMUM CONCRETE COVER. DOWEL SHALL BE EPOXIED IN EXISTING SLAB AND CAST IN NEW SLAB.

METHODOLOGY:

1C. AT THE END OF EACH WORK DAY, ANY TRENCH IN AN ARTERIAL OR IN ROLLING HILLS ROAD, MAPLE/235TH ST. OR ARLINGTON AVE. SHALL BE COVERED BY NON-SKID STEEL PLATES OR BE PAVED WITH TEMPORARY OR PERMANENT PAVEMENT FLUSH WITH ADJACENT PAVEMENT SURFACES. WHEN NON-SKID STEEL PLATES ARE USED, THEY SHALL BE WELDED, SECURED IN PLACE, RAMPED WITH AC, AND NOT USED FOR MORE THAN 48 CONSECUTIVE HOURS ON THE SAME SEGMENT OF TRENCH. "PLATE AHEAD" SIGN SHALL BE PROPERLY INSTALLED WHEN PLATES ARE IN USE. OTHER CITY STREETS MAY HAVE LESSER REQUIREMENTS AND WILL BE CONSIDERED ON A CASE BY CASE BASIS.

2C. ALL TRAFFIC LANES SHALL BE CLEANED AND RESTORED FOR USE IMMEDIATELY UPON PLACEMENT OF TEMPORARY AC PAVEMENT, TRENCH PLATES AND/OR FINAL AC PAVEMENT.

3C. ALL TRAFFIC STRIPING AND/OR MARKINGS REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AS DIRECTED BY THE ENGINEER.

4C. TRAFFIC CONTROL SHALL BE PER CITY OF TORRANCE "CONSTRUCTION TRAFFIC CONTROL PROCEDURES ON CITY STREETS" AVAILABLE FROM THE ENGINEERING DEPARTMENT PERMIT COUNTER.

5C. MORATORIUM FOR CUTTING NEW OR RECONSTRUCTED STREETS IS 5 YEARS WITHOUT SPECIAL APPROVAL FROM THE ENGINEERING DIRECTOR. NEW UTILITY SERVICE CONNECTIONS AND SERVICE LINE REPAIRS ARE EXCEPTED IF NOT ABLE TO BE FORSEEN AT THE TIME THE ROADWAY WAS RECONSTRUCTED. APPROVED LONGITUDINAL EXCAVATIONS IN NEW STREETS SHALL REQUIRE THE FULL LANE TO BE GROUND AND OVERLAID.

6C. SLURRY SEALING OF TRENCH AREA MAY BE OMITTED IF PROJECT IS COORDINATED WITHIN ONE YEAR OF A CITY STREET REHABILITATION OR SLURRY SEAL PROJECT.

7C. A COLLECTION DEVICE SHALL BE USED TO COLLECT SEDIMENTS GENERATED DURING SAWCUTTING OPERATION.

8C. TRENCHES WITH "W" LESS THAN 8" WIDE AND LESS THAN OR EQUAL TO 24" DEEP ARE NOT REQUIRED TO USE T-SECTION PAVEMENT CONSTRUCTION, OR APPLY SLURRY SEAL.

9C. ALL PAVEMENT REMOVALS SHALL USE STRAIGHT LINE SAW CUTS A MINIMUM OF 1.5" DEEP.

10C. BORING SHALL BE CONSIDERED AS A CONTINUOUS TRENCH AS FAR AS EXCAVATION REPAIR. POTHOLES LOCATED INTERMITTENTLY WILL NOT BE TREATED AS SEPARATE EXCAVATIONS BUT AS A CONTINUOUS EXCAVATION. THE CITY SHALL RESERVE THE RIGHT TO REQUIRE BORING OR OPEN TRENCH AS THE SITUATION MAY ARISE.

CITY OF TORRANCE - ENGINEERING DEPARTMENT

DATE ISSUED
27 SEP 2002

TRENCH BACKFILL & PAVEMENT REPAIRS

STANDARD NO.

T116-2

RICHARD W. BURTT
ENGINEERING DIRECTOR
R.C.E. NO. 32862
R.T.E. NO. 1538



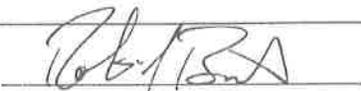
SHEET 4 OF 4

TT\T116-2

SANITARY SEWER GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION AND SUPPLEMENTS THERETO, AS WRITTEN AND PROMULGATED BY PUBLIC WORKS STANDARDS, INC., HEREINAFTER REFERRED TO AS THE STANDARD SPECIFICATIONS, THE TORRANCE STANDARDS, AND TO THE SATISFACTION OF THE COMMUNITY DEVELOPMENT OR PUBLIC WORKS DIRECTOR.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE, VERIFY DEPTH AND PROTECT ALL STRUCTURES, INCLUDING SUBSTRUCTURES, SHOWN ON THE PLAN. THE CONTRACTOR SHALL BEAR THE ENTIRE COST OF REPAIRING OR REPLACING ANY OF SAID STRUCTURES DAMAGED BY HIM/HER DURING PROSECUTION OF THE WORK. ALL REPAIRS AND REPLACEMENTS SHALL BE DONE IN THE PRESENCE OF THE INSPECTOR. ALL LOCATIONS SHOWN ON THE PLAN FOR UTILITY LINES HAVE BEEN TAKEN FROM AVAILABLE RECORDS AND THEIR COMPLETENESS AND CORRECTNESS ARE IN NO WAY GUARANTEED.
3. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) AT 1-800-227-2600 AND ALL PUBLIC UTILITY COMPANIES AND OWNERS OF PRIVATE FACILITIES WITHIN THE AREA OF CONSTRUCTION AT LEAST 2 WORKING DAYS IN ADVANCE OF PERFORMING ANY WORK WITHIN SAID AREA.
4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE CITY BEFORE COMMENCING WORK. TRAFFIC CONTROL WITHIN PUBLIC STREET RIGHTS OF WAY SHALL BE IN CONFORMANCE WITH THE "WATCH MANUAL" AND "CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD CALIFORNIA SUPPLEMENT MANUAL)" LATEST EDITION. THE CONTRACTOR SHALL PROVIDE A 24-HOUR TELEPHONE NUMBER FOR EMERGENCY REPAIRS TO TRAFFIC CONTROL AND PAVEMENT MARKINGS.
5. OVERHEAD UTILITY LINE CAUTION: REVIEW APPROVED CONSTRUCTION PLAN. IF CONSTRUCTION REQUIRES WORKERS AND/OR EQUIPMENT TO BE WITHIN 6 FEET OF CRANES OR HOISTING DEVICES TO BE WITHIN 10 FEET OF OVERHEAD ELECTRIC/UTILITY LINES, CALL SOUTHERN CALIFORNIA EDISON CO. AT 310-783-9336.
6. PRIOR TO COMMENCEMENT OF WORK, ALL SURVEY MONUMENTS IN THE PROJECT AREA SHALL BE LOCATED AND TIED OUT. ALL CENTERLINE MONUMENTS OR TIES LOST OR DESTROYED BY THIS WORK SHALL BE REPLACED EITHER BY A LICENSED SURVEYOR OR A CIVIL ENGINEER REGISTERED PRIOR TO JANUARY 1, 1982 AND NEW TIE SHEETS PROVIDED. METHOD OF ESTABLISHMENT SHALL BE STATED ON THE TIE SHEET.
7. GRADE SHEETS PREPARED AND STAMPED BY A LICENSED ENGINEER OR SURVEYOR SHALL BE DELIVERED TO THE INSPECTOR 24 HRS PRIOR TO COMMENCEMENT OF WORK.
8. THE CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT AT 310-781-6900 PRIOR TO TRIMMING, REMOVING OR RELOCATING ANY EXISTING STREET TREES.
9. UNLESS OTHERWISE SHOWN, ALL TRAFFIC SIGNS SHALL BE RELOCATED OR REMOVED BY THE CONTRACTOR.
10. BEFORE BREAKING INTO OR CONSTRUCTION ON A COUNTY SANITATION DISTRICT SEWER AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, COUNTY SANITATION DISTRICT INSPECTOR SHALL BE NOTIFIED BY PHONE AT 310-638-1161 IN ORDER THAT REQUIRED INSPECTION MAY BE MADE.
11. EXISTING DOWNSTREAM MANHOLES SHALL BE BULKHEADED WITH BRICK AND MORTAR OR PLUGS APPROVED BY THE INSPECTOR AT NEW INLET DURING CONSTRUCTION OF NEW UPSTREAM LINES. BRICK AND MORTAR OR PLUG SHALL BE REMOVED IN THE PRESENCE OF THE INSPECTOR(S) DURING CLEANING OF THE FIRST UPSTREAM SECTION OF THE NEW SYSTEM.
12. NO CONNECTION FOR THE DISPOSAL OF INDUSTRIAL WASTES SHALL BE MADE TO SEWERS SHOWN ON THESE DRAWINGS UNTIL A PERMIT FOR INDUSTRIAL WASTE WATER DISCHARGE HAS BEEN ISSUED BY THE COUNTY SANITATION DISTRICTS FOR SAID CONNECTION.
13. TRENCHES CUT INTO AN EXISTING ROADWAY WITHIN THE PUBLIC RIGHT OF WAY SHALL BE BACKFILLED AND PAVED AS PER TORRANCE STANDARD T116.

CITY OF TORRANCE

DATE ISSUED	SANITARY SEWER GENERAL NOTES	STANDARD NO.
19 FEB 2008	ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737 	T200
		SHEET 1 OF 2

TT\T200

SANITARY SEWER GENERAL NOTES (CON'T)

14. TRENCH RESURFACING SHALL BE OF THE SAME TYPE AS THE EXISTING PAVEMENT, EXCEPT IF EXISTING PAVEMENT IS A.C. OVER P.C.C., RESURFACING MAY BE FULL-DEPTH A.C.

15. MANHOLE COVER SHALL BE CAST WITH THE WORDS "TORRANCE SEWER" FOR CITY MAINTAINED LINES AND "PRIVATE SEWER" FOR PRIVATELY MAINTAINED LINES.

16. ALL SEWER LINES CONSTRUCTED TO PUBLIC STANDARDS SHALL BE VITRIFIED CLAY PIPE (VCP). DUCTILE IRON PIPE MAY BE USED SUBJECT TO PRIOR WRITTEN APPROVAL FROM THE COMMUNITY DEVELOPMENT/PUBLIC WORKS DIRECTOR. ALL HOUSE CONNECTION LATERALS SHALL BE MINIMUM 6 INCH DIAMETER.

17. CONTRACTOR SHALL SET ALL MANHOLE FRAMES AND COVERS TO FINISHED GRADE.

18. CONCRETE ENCASEMENT SHALL BE REQUIRED FOR SEWER MAIN LINE AND HOUSE LATERALS WITH LESS THAN 3 FEET OF COVER.

19. THE CONTRACTOR SHALL MAKE AVAILABLE FOR THE INSPECTOR'S REVIEW, ON A DAILY BASIS, AS-BUILT DRAWINGS FOR WORK PERFORMED UP TO AND INCLUDING THE PREVIOUS DAY'S ACTIVITIES. WORK SHALL NOT BE CONSIDERED AS COMPLETE UNTIL AS-BUILT DRAWINGS ARE SUBMITTED TO AND ACCEPTED BY THE COMMUNITY DEVELOPMENT/PUBLIC WORKS DIRECTOR.

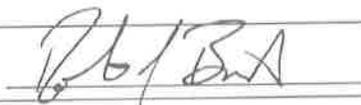
CITY OF TORRANCE

DATE ISSUED

19 FEB 2008

SANITARY SEWER GENERAL NOTES

ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

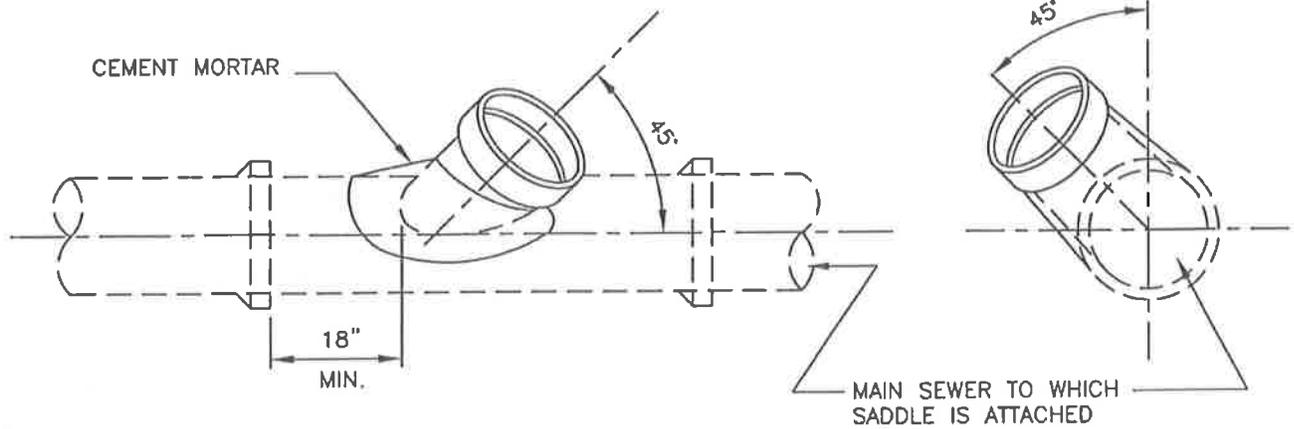


STANDARD NO.

T200

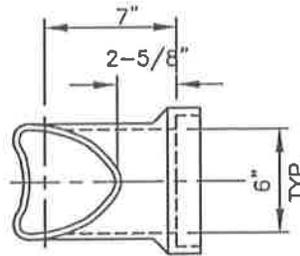
SHEET 2 OF 2

TT\T200



SIDE VIEW

END VIEW



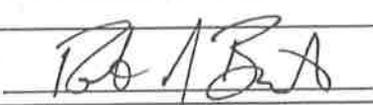
SADDLE PLAN

SHOWING CONTACT OPENING

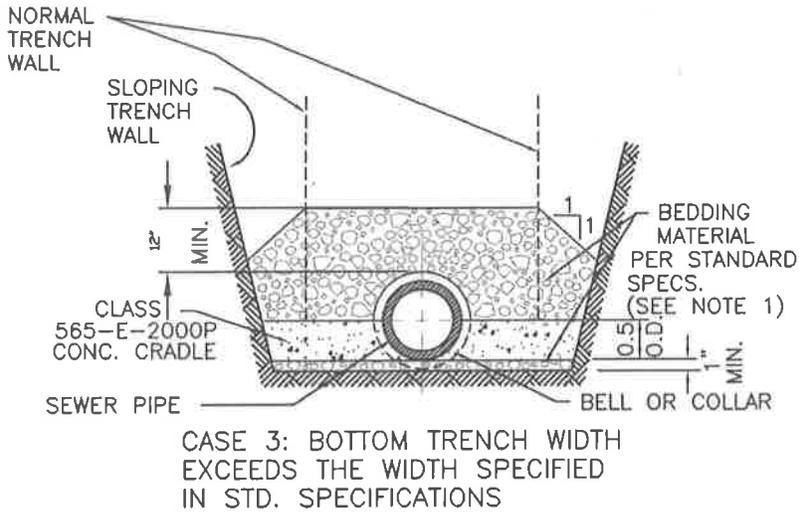
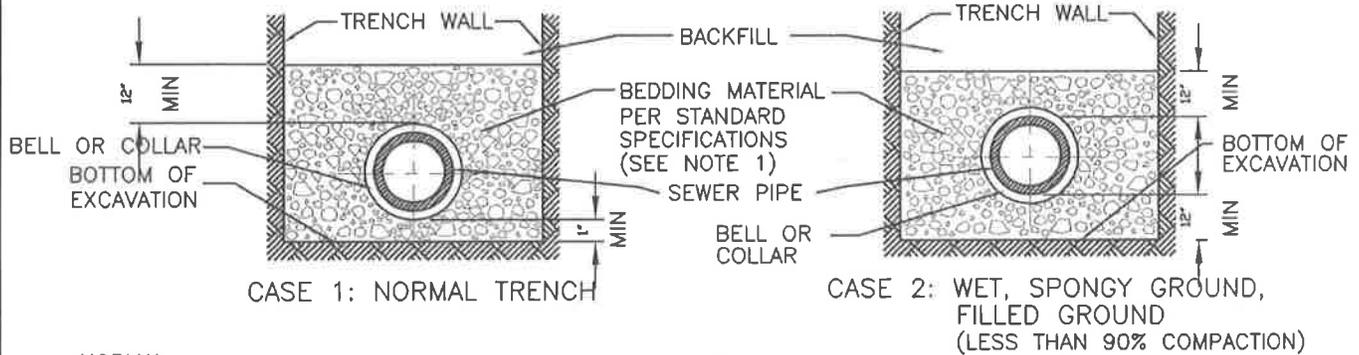
NOTES:

1. OPENING IN MAIN SEWER SHALL BE CUT TO EXACTLY FIT THE SADDLE AND THE SADDLE SHALL BE CAREFULLY ALIGNED, FITTED & ENCASED IN CEMENT MORTAR AS SHOWN.
2. SADDLE INSTALLATION SHALL BE PERFORMED IN THE PRESENCE OF AN INSPECTOR.
3. INSTALLATION SHALL BE CARRIED OUT IN SUCH A MANNER AS TO PREVENT THE INTRODUCTION OF DIRT, BROKEN PIPE, OR OTHER FOREIGN MATTER INTO THE SEWER PIPE.
4. PIPE TO BE SADDLED SHALL BE A MINIMUM OF ONE SIZE LARGER THAN SIZE OF CONNECTING LATERAL BUT IN NO CASE SHALL THE SIZE OF THE CONNECTING LATERAL BE LARGER THAN 8".

CITY OF TORRANCE

DATE ISSUED	SADDLE CONNECTION	STANDARD NO.
02 JUL 2008		T203
ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737		 SHEET 1 OF 1

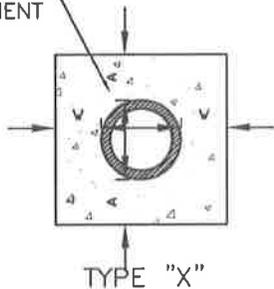
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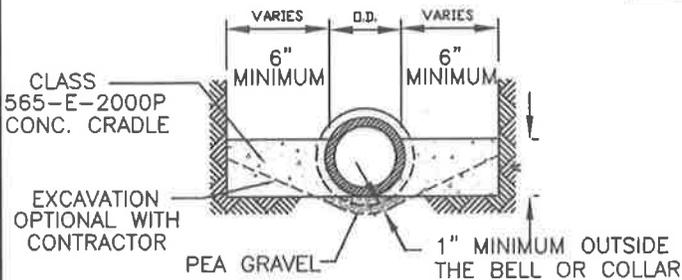
NOTE 1: NATIVE MATERIAL AND SAND ARE UNSUITABLE FOR BEDDING OF 8" OR LARGER PIPES.

CONCRETE REINFORCEMENT FOR SEWER PIPE

CLASS 565-E-2000P CONC. REINFORCEMENT



TYPE "X"



TYPE "Z"

CONCRETE REINFORCEMENT MUST EXTEND TO SOLID BANK

TABLES BELOW INDICATE DIMENSIONS OF CONCRETE FOR DIFFERENT SIZES OF PIPE

SIZE	TYPE "X"					
	W	A	CLAY PIPE		CONCRETE PIPE	
			STANDARD STRENGTH	EXTRA STRENGTH	STANDARD STRENGTH	EXTRA STRENGTH
6"	4"	4"	0.051	0.051	0.050	0.050
8"	4"	4"	0.063	0.063	0.063	0.063
10"	4"	4"	0.074	0.074	0.074	0.074
12"	4"	4"	0.086	0.086	0.086	0.091
15"	4"	4"	0.107	0.108	0.107	0.114
18"	5"	5"	0.158	0.166	0.159	0.171

SEE NOTE 2

SIZE	TYPE "Z"					
	A	CLAY PIPE		CONCRETE PIPE		
		STANDARD STRENGTH	EXTRA STRENGTH	STANDARD STRENGTH	EXTRA STRENGTH	
6"	5"	0.017	0.017	0.017	0.017	
8"	7"	0.024	0.024	0.024	0.024	
10"	9"	0.032	0.032	0.032	0.032	
12"	10"	0.037	0.037	0.037	0.037	
15"	13"	0.050	0.050	0.050	0.050	
18"	16"	0.063	0.064	0.063	0.064	

SEE NOTE 2

NOTE 2: COLUMNS INCLUDED BETWEEN ARROWS IN THE TABLES ABOVE INDICATE CUBIC YARDS OF CONCRETE PER LINEAR FT. OF PIPE.

CITY OF TORRANCE

DATE ISSUED

23 SEP 2009

BEDDING FOR SEWER PIPE

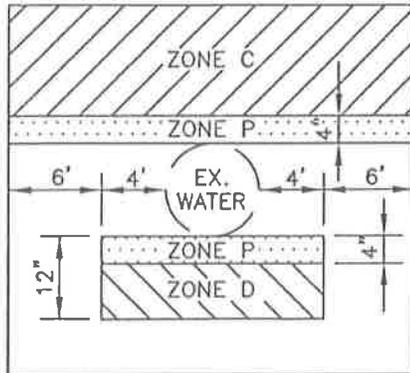
ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

STANDARD NO.

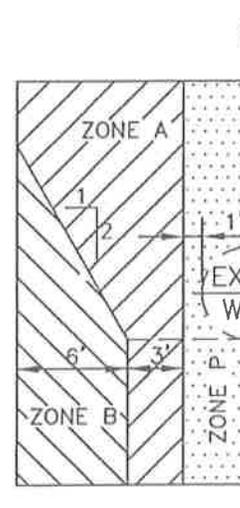
T204

SHEET 1 OF 1

TT/T204



PERPENDICULAR CONSTRUCTION



PARALLEL CONSTRUCTION

BASIC SEPARATION STANDARDS

1. PARALLEL CONSTRUCTION: THERE SHALL BE AT LEAST 10 FEET HORIZONTAL CLEARANCE BETWEEN PRESSURE DOMESTIC WATER MAINS AND SEWER LINES.
2. PERPENDICULAR CONSTRUCTION (CROSSING): PRESSURE WATER MAINS SHALL BE AT LEAST ONE FOOT ABOVE SANITARY SEWER LINES WHERE THESE LINES MUST CROSS.
3. SPECIAL PROVISIONS: ALTERNATE CONSTRUCTION CRITERIA WHERE THE BASIC SEPARATION STANDARDS CANNOT BE ATTAINED ARE SHOWN BELOW:

ZONE	SEWER CONSTRUCTION (EXISTING WATER)
B	1) EXTRA STRENGTH V.C.P. WITH COMPRESSION JOINTS. 2) APPROVED ALTERNATES.
C/D	1) A CONTINUOUS SECTION OF DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING. 2) APPROVED ALTERNATES.
A	NO CONSTRUCTION WITHOUT APPROVAL OF TORRANCE MUNICIPAL WATER DEPARTMENT AND STATE DEPARTMENT OF HEALTH SERVICES.
P	CONSTRUCTION WITHIN THIS AREA PROHIBITED.

CITY OF TORRANCE

**SEWER AND WATER
SEPARATION REQUIREMENTS**

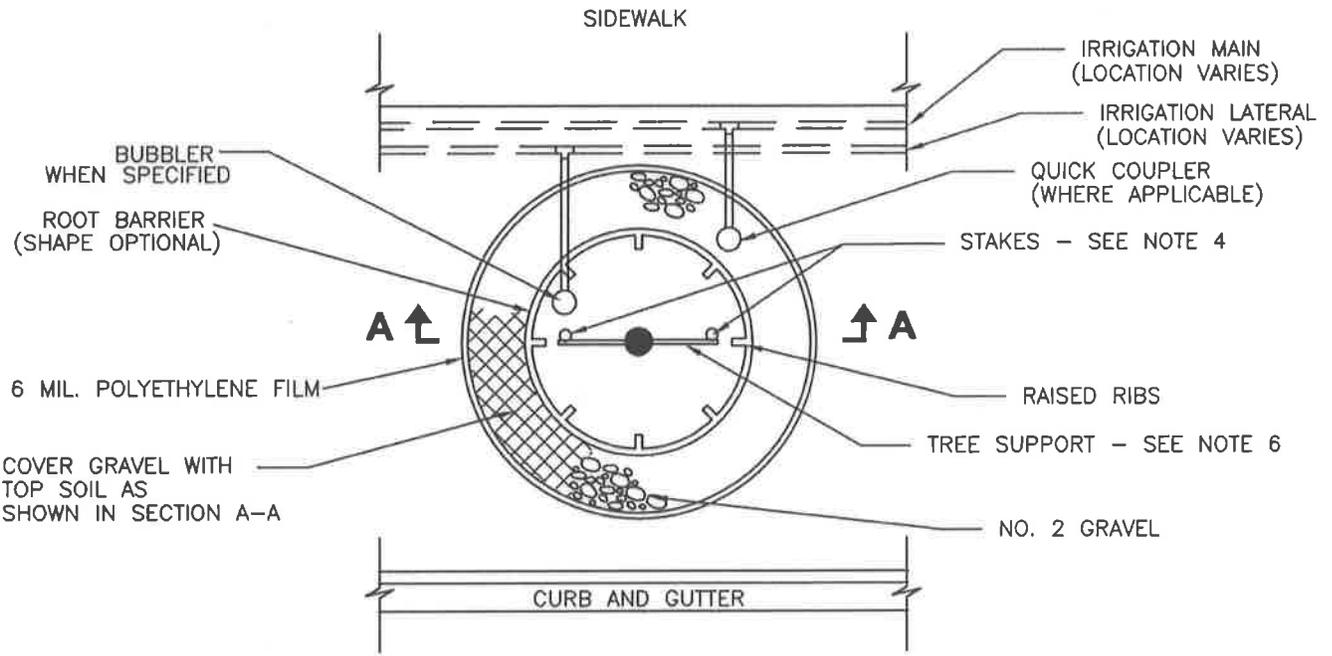
ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

STANDARD NO.

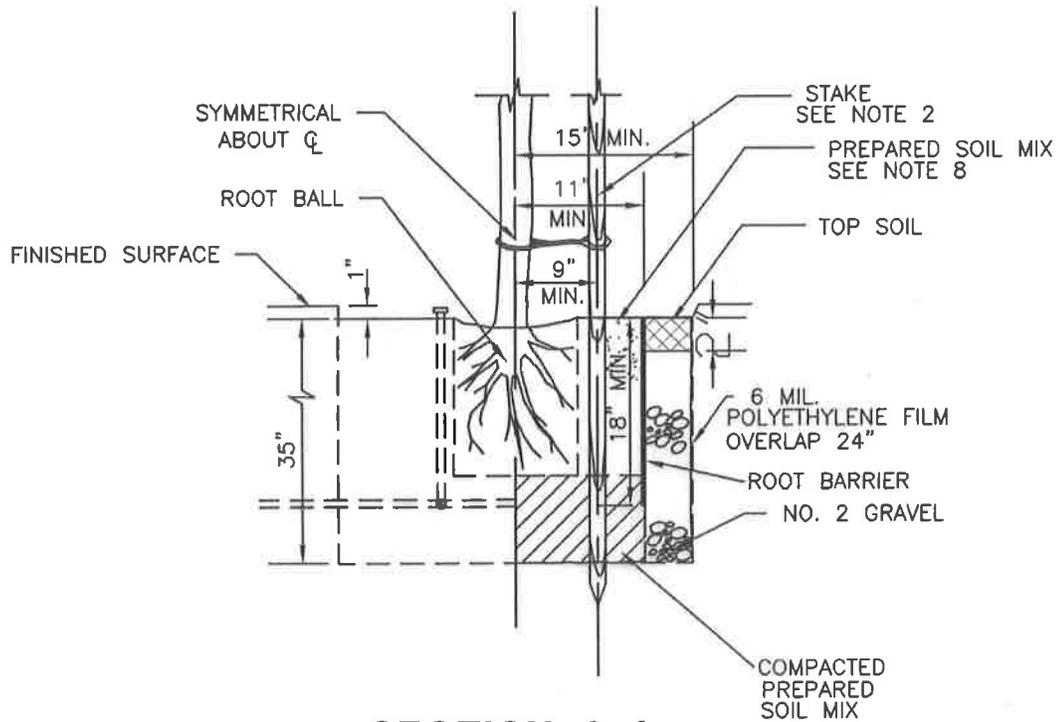
T206

SHEET 1 OF 1

TT\T206



TREE - DIRT PARKWAY



SECTION A-A

CITY OF TORRANCE

TREE PLANTING

STANDARD NO.

T401

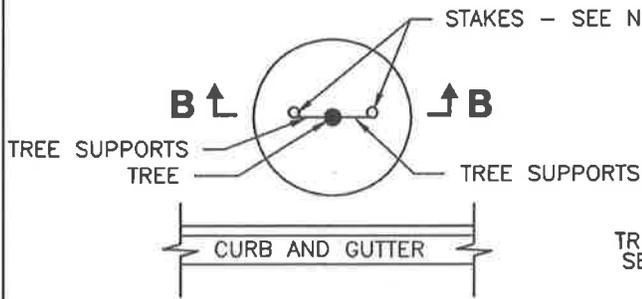
SHEET 1 OF 2

DATE ISSUED

23 SEP 2009

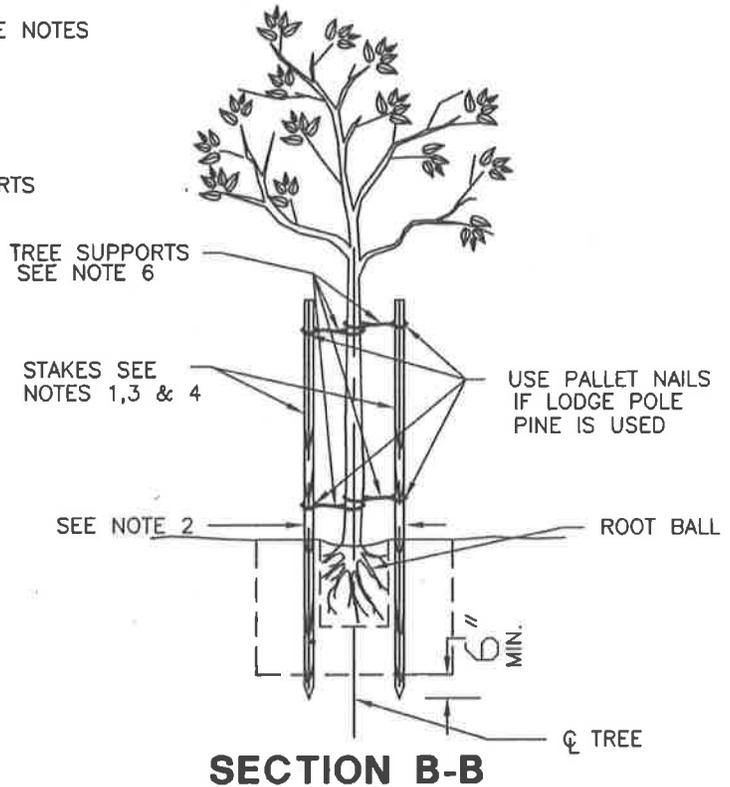
ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

TT/T401



PLAN

LENGTH OF STAKES	
TREE SIZE	LENGTH
15 GAL.	10'
24" BOX	12'
30" BOX	12'
36"-48" BOX	SEE NOTE 5



SECTION B-B

NOTES:

1. STAKES SHALL BE EITHER 2" DIAMETER LODGE POLE PINE, TREATED WITH COPPER NANTHANATE OR PRESSURE TREATED WITH CHROMATED COPPER ARSENATE, OR GALVANIZED STEEL PIPE, PER SUBSECTION 308-4.6.1 (METHOD A) OF THE STD. SPEC'S
2. PLACE STAKES 18" APART FOR 15 GAL. TREE. PLACE STAKES AT OUTER EDGE OF ROOT BALL FOR LARGER SIZE (BOX) TREES.
3. HEIGHT OF STAKES SHALL NOT BE HIGHER THAN THE TOP OF THE TREE.
4. ALL STAKES SHALL BE ALIGNED IN THE EAST-WEST DIRECTION REGARDLESS OF CURB ORIENTATION.
5. FOR 36" OR LARGER BOX TREES - STAKE OR GUY AT THE DIRECTION OF THE STREETScape ADMINISTRATOR.
6. TREE TIES SHALL BE PER SUBSECTION 308-4.6.2 OF THE STANDARD SPECIFICATIONS.
7. THE STREETScape ADMINISTRATOR WILL DESIGNATE THE GROUND LOCATION OF ALL TREES BY PLACING OF STAKES OR OTHER SUITABLE MARKERS.
8. UNLESS OTHERWISE APPROVED BY STREETScape ADMINISTRATOR PREPARED SOIL MIX SHALL BE:
 - 4 PARTS BY VOLUME NITROGEN-STABILIZED ORGANIC AMENDMENT.
 - 6 PARTS BY VOLUME ON-SITE SOIL FROM AN AREA APPROVED BY THE STREETScape ADMINISTRATOR.
 - 2 LBS. IRON SULFATE PER CUBIC YARD OF MIX.
9. ROOT BARRIERS WHEN SPECIFIED ON PROJECT DRAWINGS OR IN PROJECT SPECIFICATIONS, SHALL BE FABRICATED FROM A HIGH DENSITY AND HIGH IMPACT PLASTIC SUCH AS POLYVINYL CHLORIDE, ABS OR POLYETHYLENE AND HAVE A MINIMUM THICKNESS OF 0.06". THE PLASTIC SHALL HAVE 1/2" TO 3/4" HIGH RAISED VERTICAL RIBS ON THE INNER SURFACE SPACED AT LEAST 6" BUT NOT MORE THAN 8" APART.

CITY OF TORRANCE

DATE ISSUED

23 SEP 2009

TREE PLANTING

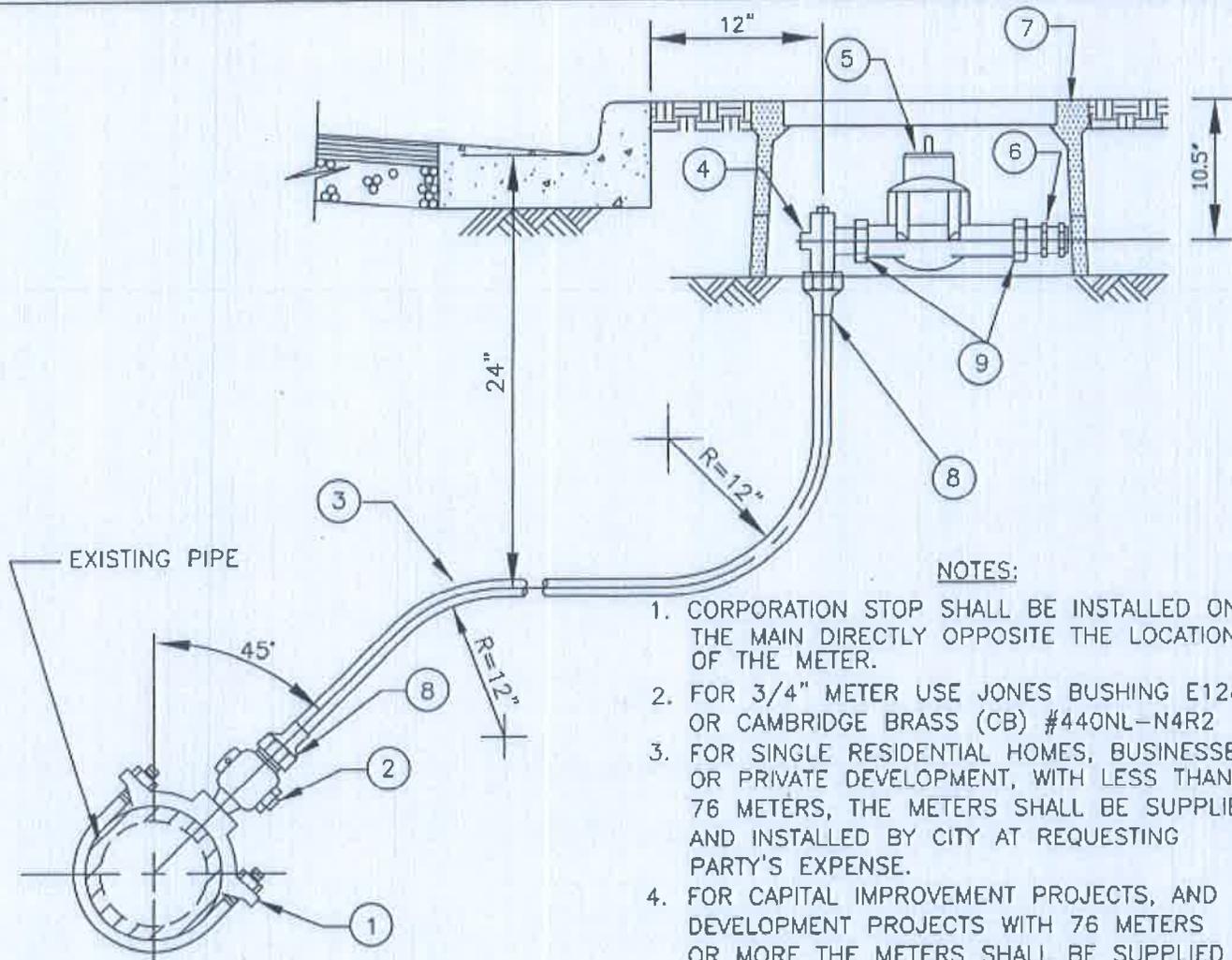
ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

STANDARD NO.

T401

SHEET 2 OF 2

TT/T401



NOTES:

1. CORPORATION STOP SHALL BE INSTALLED ON THE MAIN DIRECTLY OPPOSITE THE LOCATION OF THE METER.
2. FOR 3/4" METER USE JONES BUSHING E128H OR CAMBRIDGE BRASS (CB) #440NL-N4R2
3. FOR SINGLE RESIDENTIAL HOMES, BUSINESSES, OR PRIVATE DEVELOPMENT, WITH LESS THAN 76 METERS, THE METERS SHALL BE SUPPLIED AND INSTALLED BY CITY AT REQUESTING PARTY'S EXPENSE.
4. FOR CAPITAL IMPROVEMENT PROJECTS, AND DEVELOPMENT PROJECTS WITH 76 METERS OR MORE THE METERS SHALL BE SUPPLIED AND INSTALLED BY CONTRACTOR AT CONTRACTOR'S EXPENSE

ACCOMPANYING STD.'S T700, T701, T702 AND T116

ITEM	DESCRIPTION	SIZE
①	SERVICE SADDLE-DOUBLE STRAP-BRONZE JONES 979, MCDONALD 3825, MUELLER BR2B, CAMBRIDGE BRASS #810 - CC THREAD	MAIN SIZE X 1"
②	CORPORATION STOP-JONES E1930, FORD FB600-4NL, MUELLER B25000N CAMBRIDGE BRASS 301NL-M7B7, MCDONALD 74701B	1"
③	COPPER TUBING-TYPE "K" SOFT	1"
④	ANGLE METER STOP-JONES E1964W, FORD BA23-444WNL, MUELLER B24255N CB 210NL-B7MF7, MCDONALD 74620	1" (SEE NOTE 2)
⑤	NEPTUNE T-10 WATER METER, E-CODER) R900i WITH STUBBY ANTENNA CU.FT. REGISTER	3/4" SL OR 1"
⑥	METER SWIVEL COUPLING - JONES E130, MCDONALD 74620 - FORD C38-23-2.5NL (3/4") - FORD C38-44-2.625NL (1")	3/4", 1"
⑦	METER BOX W/COVER -ARMORCAST	BOX #33 (A6000486) COVER #33 (A6000483-IT)
⑧	COPPER FLARE NUT	1"
⑨	NEOPRENE FULL FACE GASKET	

AREAS SUBJECT TO TRAFFIC LOADS SEE T-724

CITY OF TORRANCE

DATE ISSUED

**TYPICAL 3/4" OR 1" METER (NON-TRAFFIC AREA)
INSTALLATION WITH 1" SERVICE LINE**

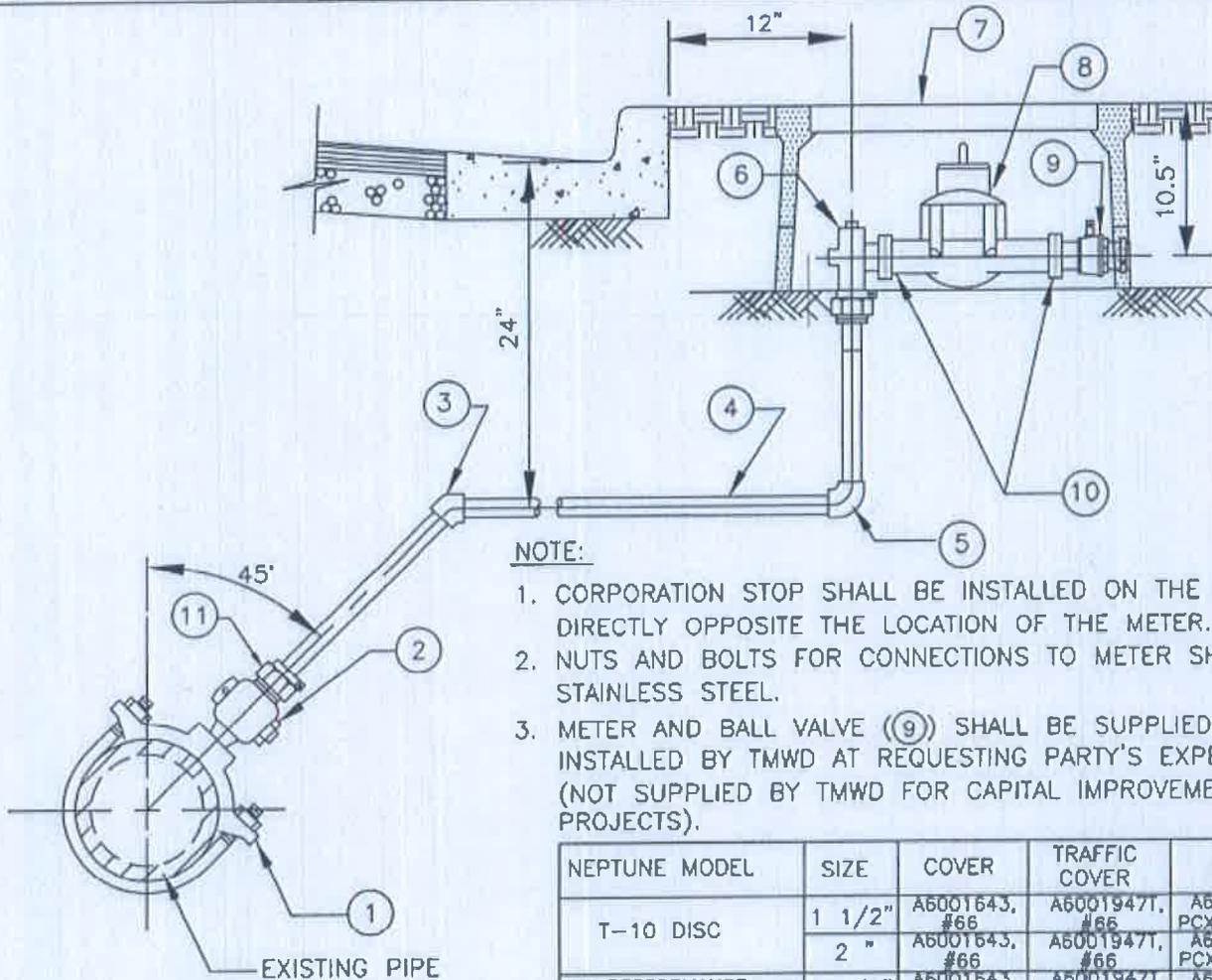
STANDARD NO.

JAN 2011

T 703

ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

SHEET 1 OF 1



NOTE:

1. CORPORATION STOP SHALL BE INSTALLED ON THE MAIN DIRECTLY OPPOSITE THE LOCATION OF THE METER.
2. NUTS AND BOLTS FOR CONNECTIONS TO METER SHALL BE STAINLESS STEEL.
3. METER AND BALL VALVE ((9)) SHALL BE SUPPLIED AND INSTALLED BY TMWD AT REQUESTING PARTY'S EXPENSE. (NOT SUPPLIED BY TMWD FOR CAPITAL IMPROVEMENT PROJECTS).

NEPTUNE MODEL	SIZE	COVER	TRAFFIC COVER	BOX
T-10 DISC	1 1/2"	A6001643, #66	A60019471, #66	A6001640 PCX12, #66
	2"	A6001643, #66	A60019471, #66	A6001640 PCX12, #66
HI-PERFORMANCE TURBINE W/STRAINER (NOT SHOWN)	1 1/2"	A6001643, #66	A60019471, #66	A6001640 PCX12, #66
	2"	A6001643, #66	A60019471, #66	A6001640 PCX12, #66
TRU FLO COMPOUND W/ SEPARATE STRAINER (NOT SHOWN)	2"	A6001975, #67	A60019471, #67	A6001974 PCX12, #66

ACCOMPANYING STD.'S T700, T701, T702 AND T116.

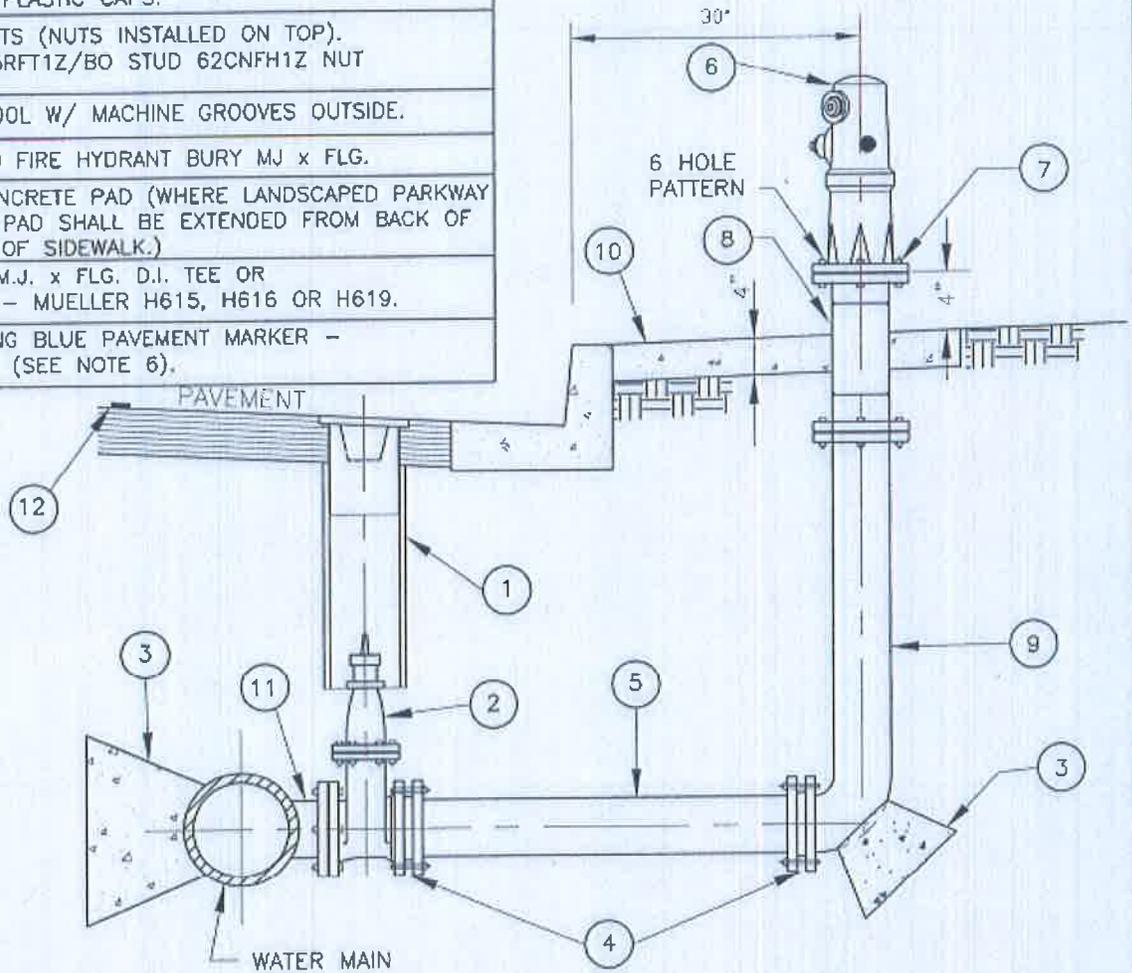
ITEM	DESCRIPTION	SIZE
①	SERVICE SADDLE-DOUBLE STRAP-BRONZE JONES 979, MCDONALD 3825, MUELLER BR2B, CAMBRIDGE BRASS (CB) #810- CC THREAD	MAIN SIZE X 2"
②	CORPORATION STOP-JONES E1930, FORD FB600-4NL, MUELLER B25000N CAMBRIDGE BRASS 301INL-M7B7, MCDONALD 74701B	2"
③	45° ELBOW-COPPER TO COPPER SJxSJ	2"
④	COPPER TUBING-TYPE "K" SOFT	2"
⑤	90° ELBOW-SJxSJ	2"
⑥	ANGLE METER STOP-JONES E1975W, FORD BFA43-777WNL, CB210NL-B7MF7	2"
⑦	METER BOX W/ COVER - ARMORCAST	SEE TABLE
⑧	NEPTUNE WATER METER, E-CODER)R900i WITH STUBBY ANTENNA CU. FT. REGISTER (TYPE TO BE DETERMINED BY TMWD)	SEE TABLE
⑨	BALL VALVE-JONES E1913W, FLGxFIP, CB# 212NL-F7MF7 -FORD BF13-777WNL OR 666WNL, W/HB67S HANDLE, FLGxFIP	1-1/2" OR 2"
⑩	NEOPRENE FULL FACE GASKET	1-1/2" OR 2"
⑪	PACK JOINT	

CITY OF TORRANCE

DATE ISSUED	TYPICAL 1-1/2" OR 2" METER (NON-TRAFFIC AREA) INSTALLATION WITH 2" SERVICE LINE	STANDARD NO.
JAN 2011		T 704
ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737 <i>126/13A</i>		SHEET 1 OF 1

X:\ENG\VP\resad\Water Standards\T704.dwg 2/08/11 13:17 wprasad

ITEM	MATERIALS
①	VALVE BOX ASSEMBLY PER T712.
②	6" VALVE MUELLER NO. A-2360-16 W/EVERDUR STEM & SS 316 FASTENERS W/2" NUT & NRS OPENING CCW.
③	CONCRETE THRUST BLOCK PER T713.
④	RESTRAINED JOINTS
⑤	6" D.I.P. (CLASS 350) SERVICE LINE
⑥	FIRE HYDRANT - JAMES JONES CO. J3700-R WITH CHAIN AND PLASTIC CAPS.
⑦	BREAK-AWAY BOLTS (NUTS INSTALLED ON TOP). TRIPAC 62C35625RFT1Z/BO STUD 62CNFH1Z NUT
⑧	BREAK-AWAY SPOOL W/ MACHINE GROOVES OUTSIDE.
⑨	6" CEMENT LINED FIRE HYDRANT BURY MJ x FLG.
⑩	4' x 4' x 4" CONCRETE PAD (WHERE LANDSCAPED PARKWAY IS 4' WIDE, PCC PAD SHALL BE EXTENDED FROM BACK OF CURB TO FRONT OF SIDEWALK.)
⑪	MAIN SIZE x 6" M.J. x FLG. D.I. TEE OR TAPPING SLEEVE - MUELLER H615, H616 OR H619.
⑫	2-WAY REFLECTING BLUE PAVEMENT MARKER - STIMSONITE 88AB (SEE NOTE 6).



NOTES:

1. SERVICE LINE SHALL BE INSTALLED LEVEL WITH MAINLINE UNLESS SHOWN OTHERWISE ON PLAN.
2. ALL PARTS OF THE FACILITY ABOVE GROUND SHALL BE THOROUGHLY CLEANED BY WIRE BRUSHING AND PAINTED WITH 3 COATS OF RUSTOLEUM No. 7773 OR APPROVED EQUAL. COLOR OF HYDRANT SHALL BE PAINTED WITH 2 COATS OF SHERWIN WILLIAMS #B66YD0600 S YELLOW. TOTAL THICKNESS OF COATINGS SHALL BE A MINIMUM OF 6 MILS.
3. FIRE HYDRANT SHALL BE LOCATED 5 FEET MIN. FROM DRIVEWAYS END/BEGINNING OF CURB RETURN OR OTHER OBSTRUCTIONS. NO FIRE HYDRANT SHALL BE LOCATED IN THE CURB RADIUS.
4. PLACE MARKER SIX INCHES FROM CENTER OF ROADWAY OR PAINTED CENTERLINE ON SIDE NEAREST THE HYDRANT.

ACCOMPANYING STD'S T700, T701, T712, T713, 723 AND T116.

CITY OF TORRANCE

**TYPICAL FIRE HYDRANT INSTALLATION FOR
LOCAL STREETS & NON-HIGH PRESSURE ZONE**

STANDARD NO.

T 705

SHEET 1 OF 1

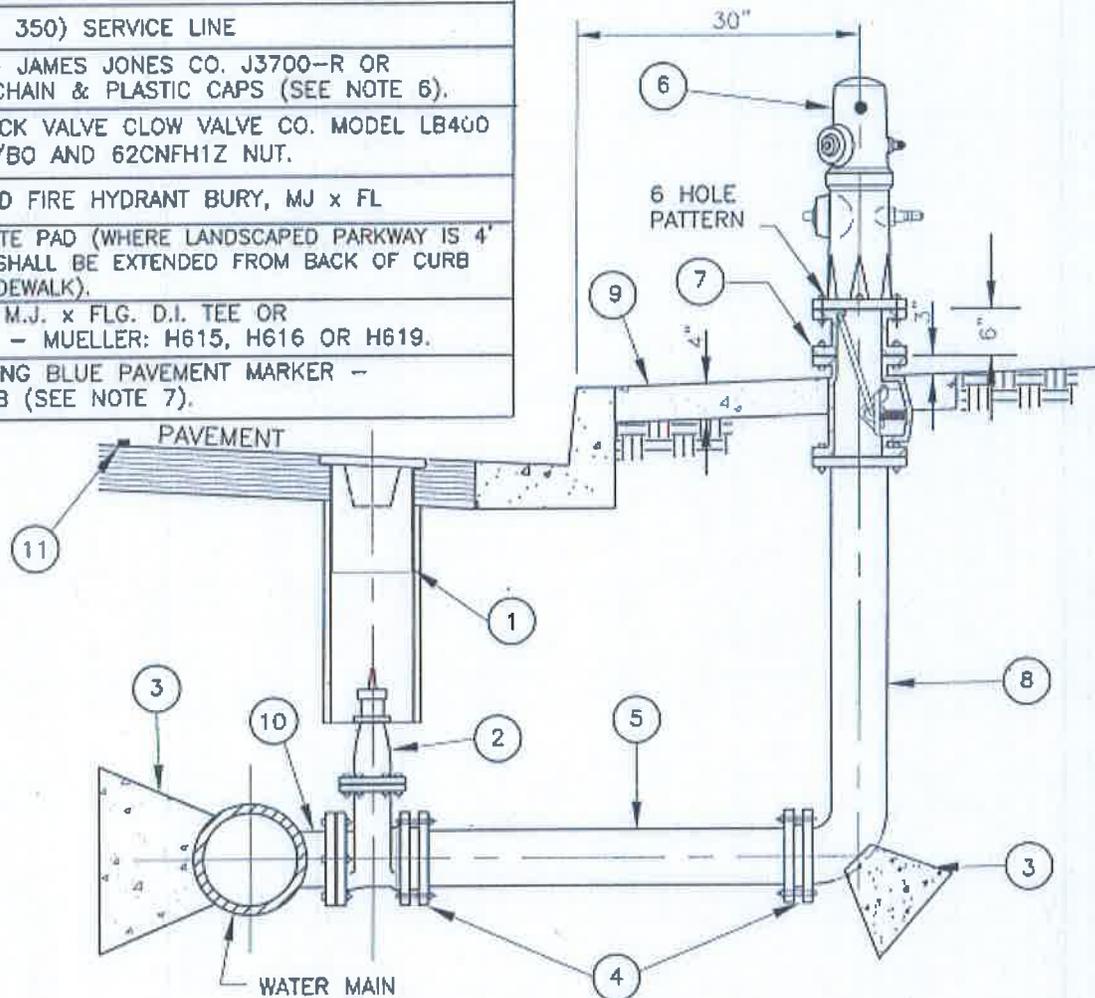
DATE ISSUED

JAN 2011

ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

RA 1 BX

ITEM	MATERIALS
①	VALVE BOX ASSEMBLY PER T712.
②	6" VALVE MUELLER NO. A-2360-16 W/EVERDUR STEM & SS 316 FASTENERS W/2" NUT & NRS OPENING CCW.
③	CONCRETE THRUST BLOCK PER T713.
④	RESTRAINED JOINTS
⑤	6" D.I.P. (CLASS 350) SERVICE LINE
⑥	FIRE HYDRANT - JAMES JONES CO. J3700-R OR J3765-R WITH CHAIN & PLASTIC CAPS (SEE NOTE 6).
⑦	BREAK-OFF CHECK VALVE CLOW VALVE CO. MODEL LB400 62C35625RFT1Z/BO AND 62CNFH1Z NUT.
⑧	6" CEMENT LINED FIRE HYDRANT BURY, MJ x FL
⑨	4'x4'x4" CONCRETE PAD (WHERE LANDSCAPED PARKWAY IS 4' WIDE, PCC PAD SHALL BE EXTENDED FROM BACK OF CURB TO FRONT OF SIDEWALK).
⑩	MAIN SIZE x 6" M.J. x FLG. D.I. TEE OR TAPPING SLEEVE - MUELLER: H615, H616 OR H619.
⑪	2-WAY REFLECTING BLUE PAVEMENT MARKER - STIMSONITE 8BAB (SEE NOTE 7).



NOTES:

- SERVICE LINE SHALL BE INSTALLED LEVEL WITH MAINLINE UNLESS SHOWN OTHERWISE ON PLAN.
- ALL PARTS OF THE FACILITY ABOVE GROUND SHALL BE THOROUGHLY CLEANED BY WIRE BRUSHING AND PAINTED WITH 3 COATS OF RUSTOLEUM No. 7773 OR APPROVED EQUAL. COLOR OF HYDRANT SHALL BE PAINTED WITH 2 COATS OF SHERWIN WILLIAMS #B66Y00600 S YELLOW. TOTAL THICKNESS OF COATINGS SHALL BE A MINIMUM OF 6 MILS.
- FIRE HYDRANT SHALL BE LOCATED 5 FEET MIN. FROM DRIVEWAYS END/BEGINNING OF CURB RETURN OR OTHER OBSTRUCTIONS. NO FIRE HYDRANT SHALL BE LOCATED IN THE CURB RADIUS.
- USE J3765-R IN COMMERCIAL OR INDUSTRIAL AREAS AND ALONG MAJOR STREETS.
- PLACE MARKER SIX INCHES FROM CENTER OF ROADWAY OR PAINTED CENTERLINE ON SIDE NEAREST THE HYDRANT.

ACCOMPANYING STD'S T700, T701, T712, T713, T723 AND T116.

CITY OF TORRANCE

DATE ISSUED

JAN 2011

**TYPICAL FIRE HYDRANT INSTALLATION FOR
NON-LOCAL STREETS OR HIGH PRESSURE ZONE**

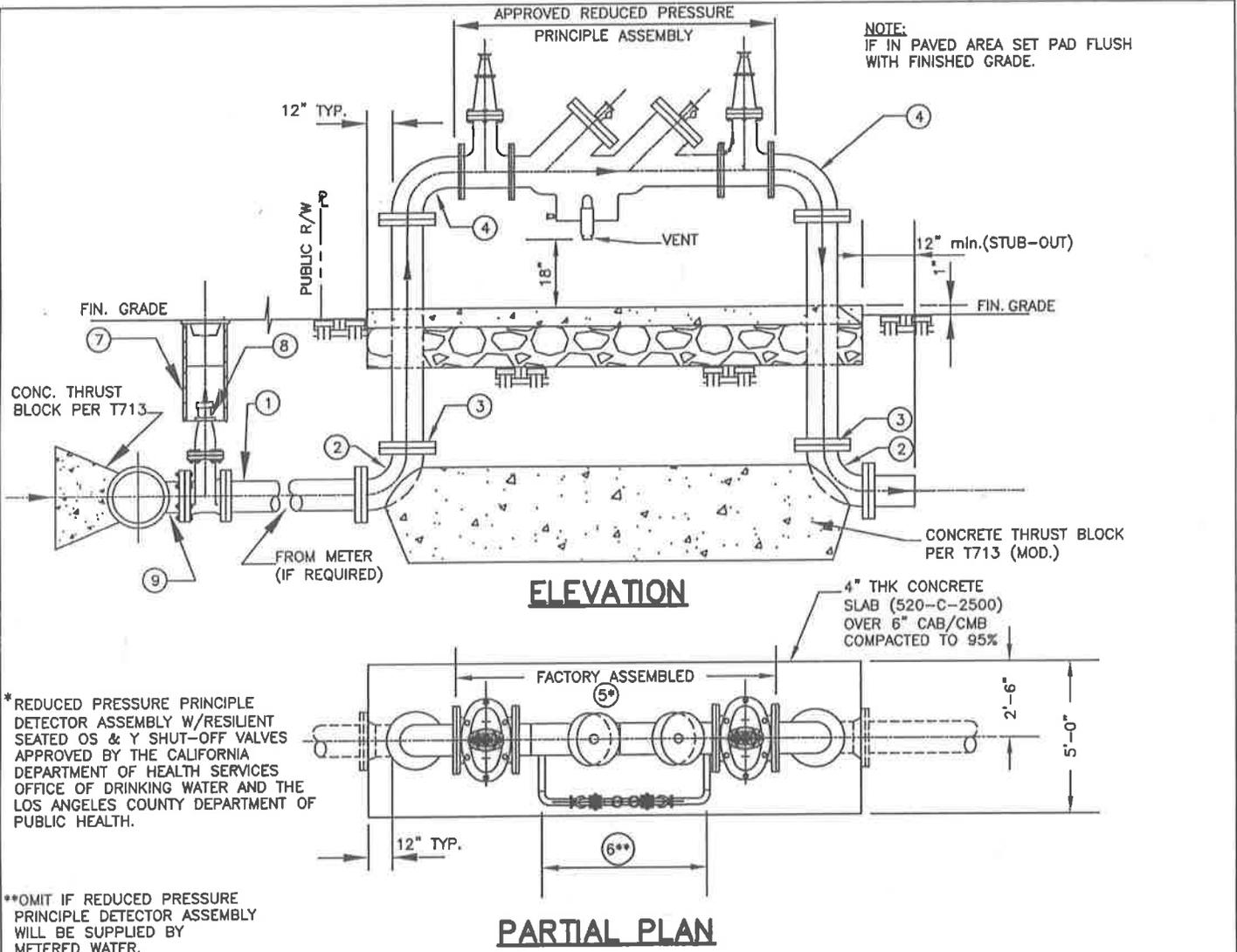
ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

RA / BA

STANDARD NO.

T 706

SHEET 1 OF 1



* REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY W/RESILIENT SEATED OS & Y SHUT-OFF VALVES APPROVED BY THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES OFFICE OF DRINKING WATER AND THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH.

** OMIT IF REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY WILL BE SUPPLIED BY METERED WATER.

ASSEMBLY SHALL BE TESTED BY A CITY APPROVED TESTER CERTIFIED BY THE LOS ANGELES COUNTY DEPT. OF PUBLIC HEALTH. THE DEVELOPER/OWNER IS RESPONSIBLE FOR THE COST OF TESTING THE ASSEMBLY.

ITEM	DESCRIPTION	SIZE
①	D.I. WATER PIPE (CLASS 350)	
②	90°, D.I. ELBOW, MJ X FLG, CLS 350	SERVICE SIZE
③	D.I. SPOOL, CLS 350 (BOTH ENDS SHALL BE FLANGED) (UNI-FLANGE SHALL NOT BE USED)	
④	90°, D.I. ELBOW, FLG. CLS 350.	
⑤	REDUCED PRESSURE PRINCIPLE ASSEMBLY	
⑥	3/4" COPPER BY-PASS ASSEMBLY (NEPTUNE WATER METER, E-CODER) R900i WITH STUBBY ANTENNA CUBIC FEET REGISTER). (3)-3/4" FIP BALL VALVES W/LOCKWING (JONES E1908, FORD B13-332WNL)	5/8"
⑦	VALVE BOX ASSEMBLY PER T712	
⑧	MUELLER NO.2360-16 GATE VALVE, MJxFLG, W/EVERDUR STEM & SS 316 FASTENERS W/2" NUT & NRS OPENING CCW.	
⑨	M.J. x FLG. DUCTILE IRON TEE OR TAPPING SLEEVE (MUELLER: H615, H616 OR H619)	

CITY OF TORRANCE

REDUCED PRESSURE PRINCIPLE DETECTOR ASSEMBLY > 2"

STANDARD NO.

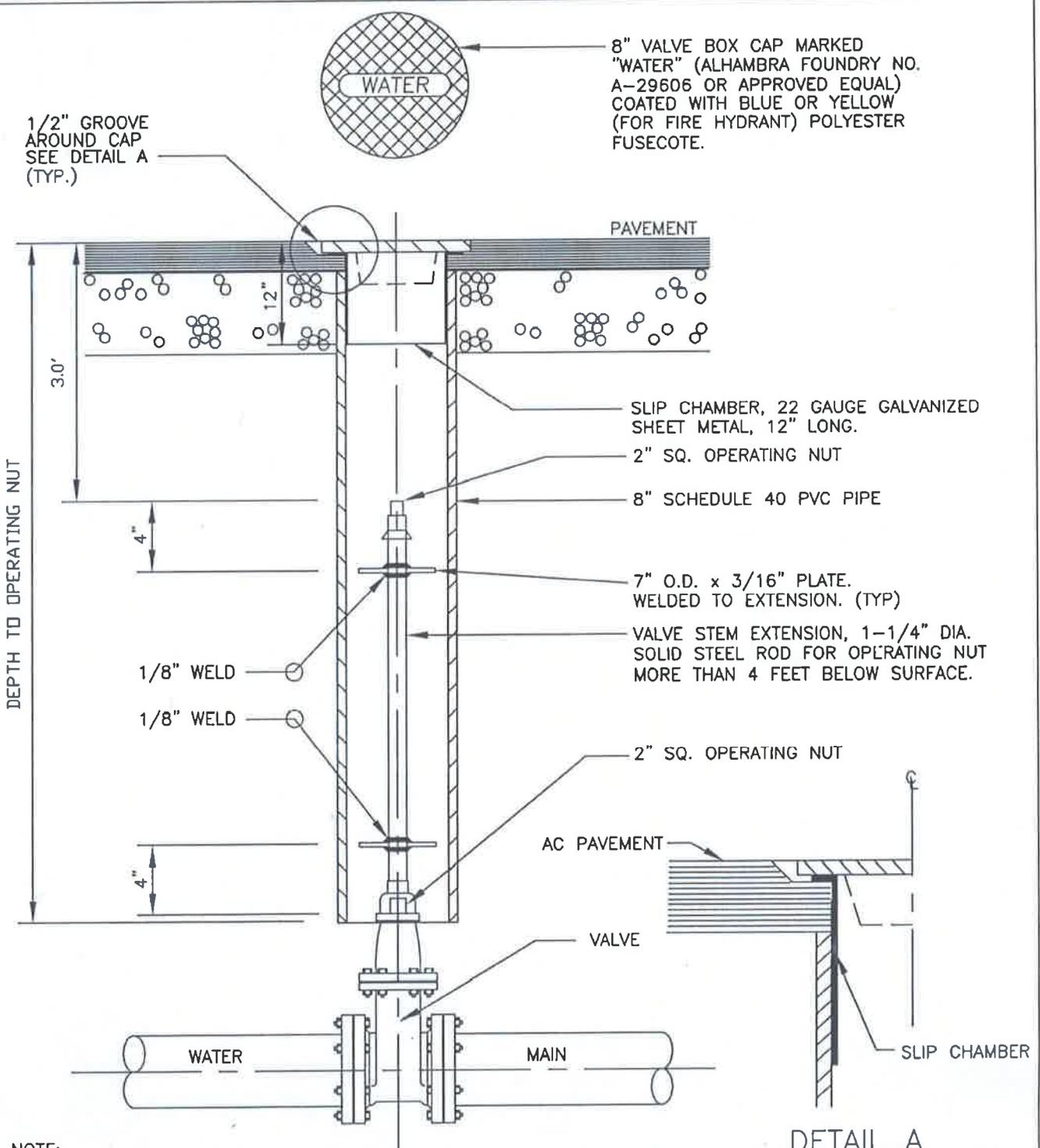
T 711

DATE ISSUED

SEPT 2011

ROBERT J. BESTE
PUBLIC WORKS DIRECTOR
R.C.E. NO. 50737

SHEET 1 OF 1

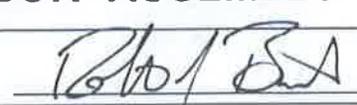


NOTE:
 VALVE STEM EXTENSION SHALL BE PROVIDED WHERE DEPTH TO OPERATING NUT EXCEEDS 4'-0".

DETAIL A
 NOT TO SCALE

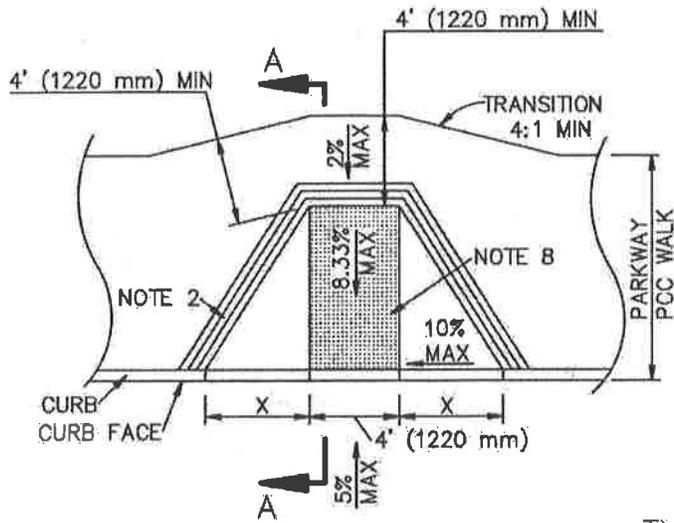
ACCOMPANYING STD. T700 AND T701

CITY OF TORRANCE

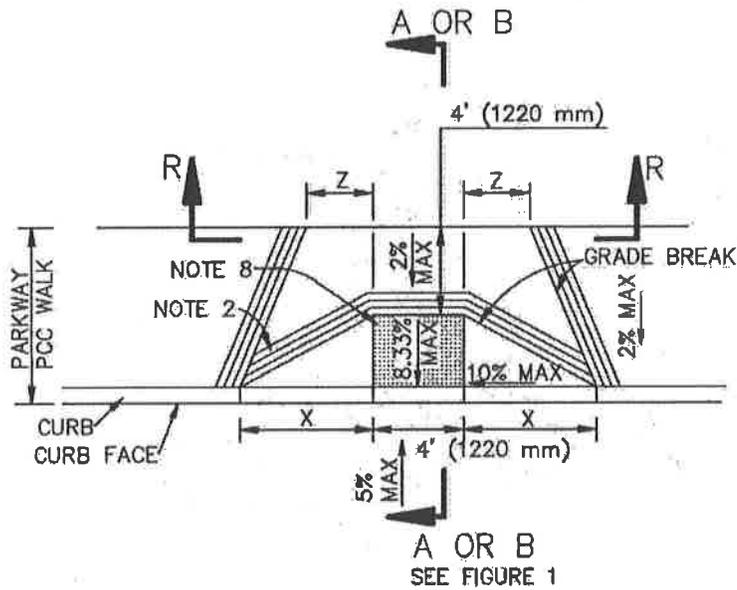
EM/T712-3	DATE ISSUED	VALVE BOX ASSEMBLY	STANDARD NO.
	11 DEC 2006		T712
		ROBERT J. BESTE PUBLIC WORKS DIRECTOR R.C.E. NO. 50737 	SHEET 1 OF 1

APPENDIX IV

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION (SPPWC)



TYPE 1



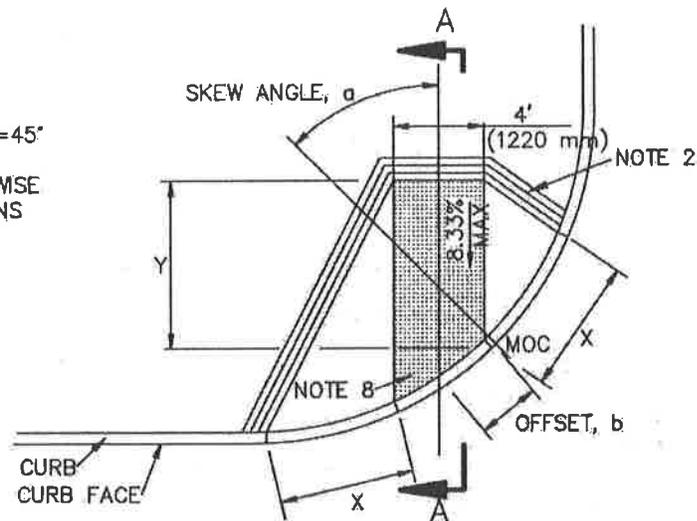
TYPE 2

CASE A

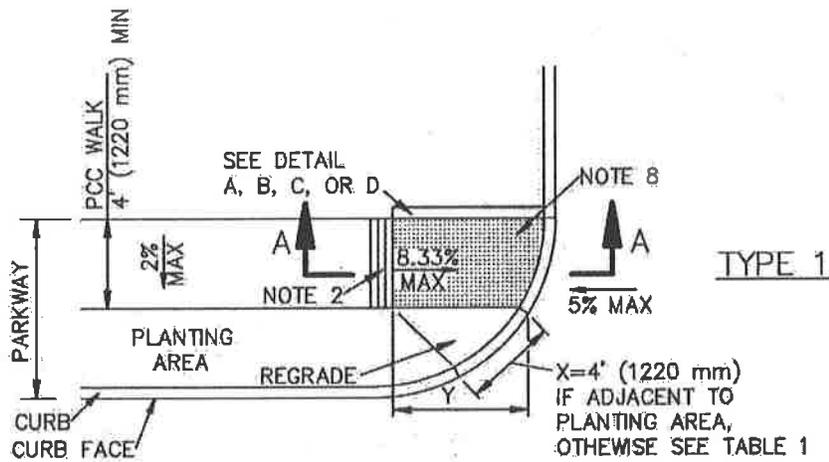
PARTS OF THIS STANDARD PLAN SHOW INSTALLATION FOR TYPICAL RETROFIT CONDITIONS, AND ARE NOT FULLY COMPLIANT WITH CALIFORNIA BUILDING CODE REQUIREMENTS FOR NEW DEVELOPMENT.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION		
PROMULGATED BY THE PUBLIC WORKS STANDARDS INC. GREENBOOK COMMITTEE 1982 REV. 1996, 2000, 2005, 2009, 2013	<h2 style="margin: 0;">CURB RAMP</h2>	STANDARD PLAN <h1 style="margin: 0;">111-5</h1> SHEET 1 OF 10
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION		

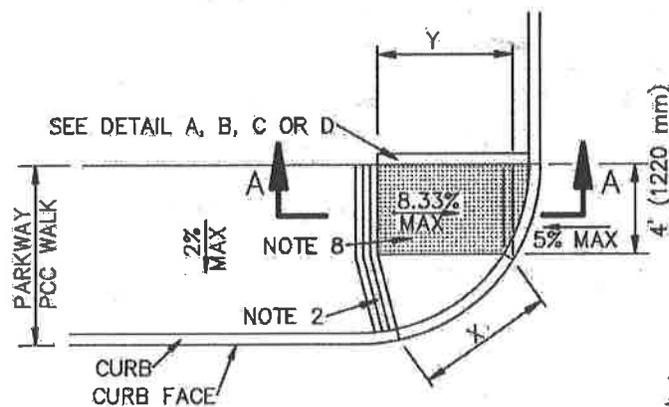
SKEW ANGLE $\alpha=45^\circ$
 OFFSET $b=0$
 UNLESS OTHERWISE
 NOTED ON PLANS



CASE C

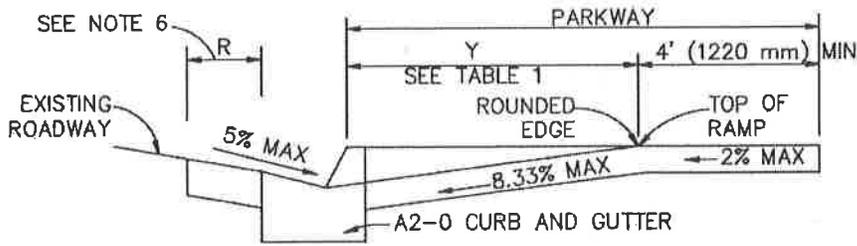


TYPE 1



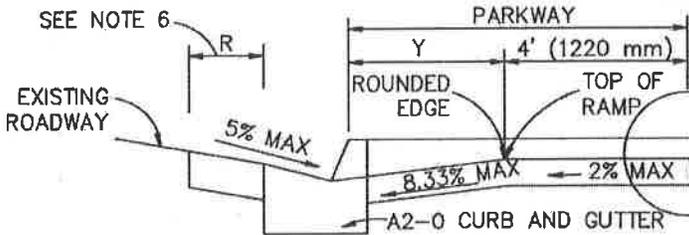
TYPE 2

CASE D



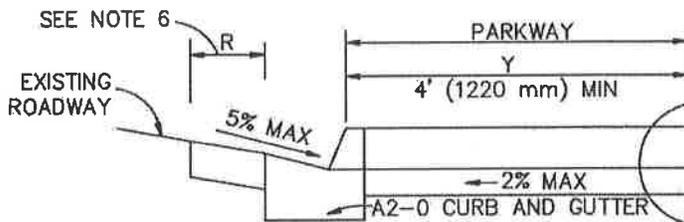
SECTION A-A

USE FIGURE 1 TO DETERMINE WHICH OF SECTIONS A-A, B-B OR C-C IS APPROPRIATE.



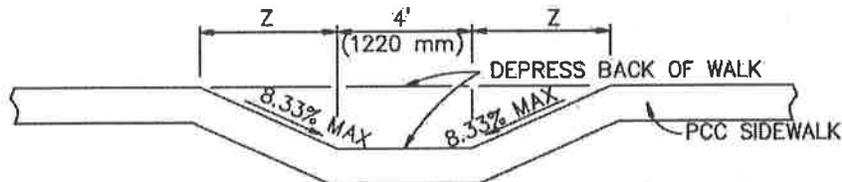
SECTION B-B

DEPRESS BACK OF WALK SEE DETAIL A, B, C OR D, SHEET 10.

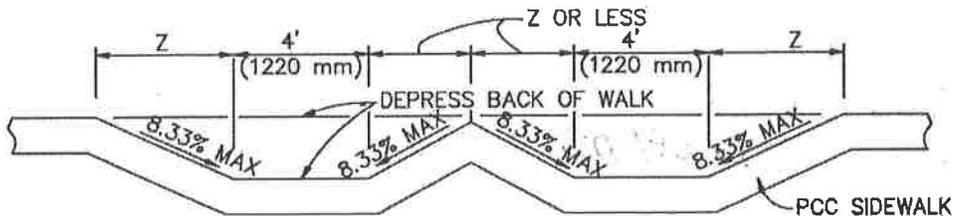


SECTION C-C

DEPRESS BACK OF WALK SEE DETAIL A, B, C OR D, SHEET 10.



SECTION R-R



SECTION S-S

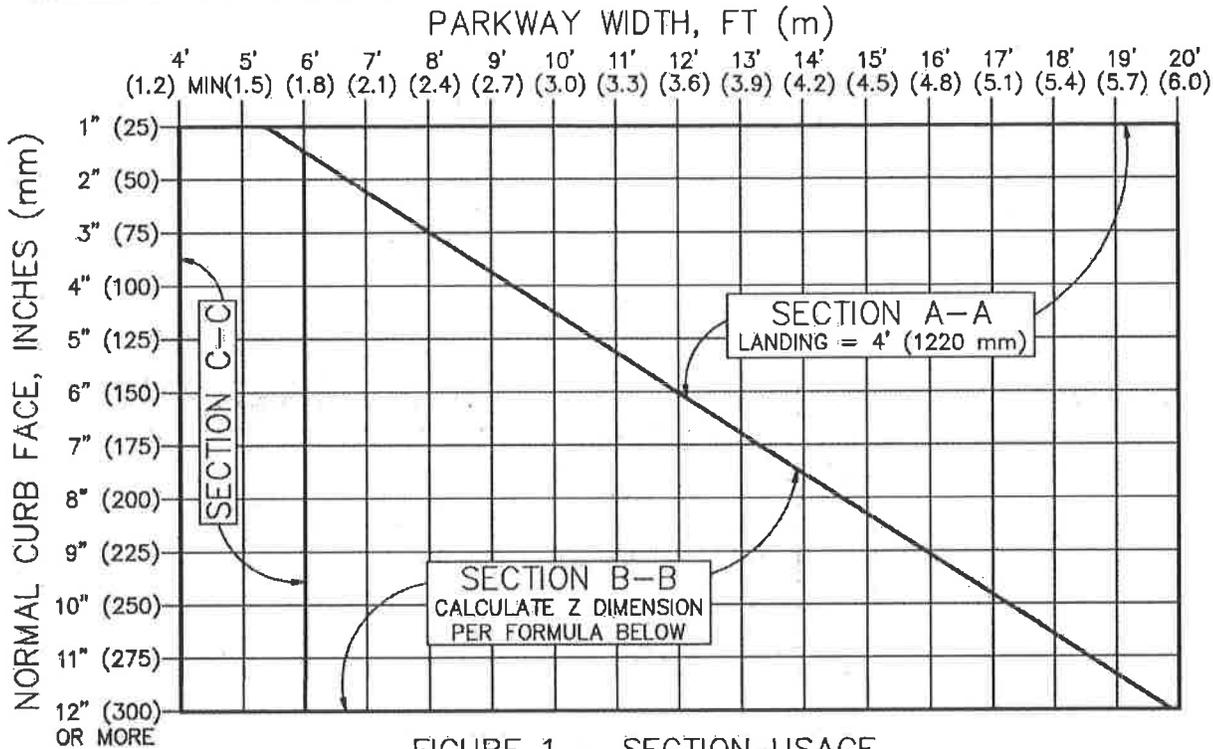


FIGURE 1 - SECTION USAGE

NORMAL CURB FACE, INCHES (mm)	(10% slope)	
	X, FT (mm)	SECTION Y-Y Y, FT (mm)
2" (50)	4.00' (1220) MIN	2.63' (790)
3" (75)	4.00' (1220) MIN	3.95' (1185)
4" (100)	4.00' (1220) MIN	5.26' (1580)
5" (125)	4.17' (1275)	6.58' (1975)
6" (150)	5.00' (1525)	7.90' (2370)
7" (175)	5.83' (1775)	9.21' (2765)
8" (200)	6.67' (2035)	10.53' (3160)
9" (225)	7.50' (2285)	11.84' (3555)
10" (250)	8.33' (2540)	13.16' (3950)
11" (275)	9.17' (2795)	14.47' (4340)
12" (300)	10.00' (3050)	15.79' (4735)

WHERE FIGURE 1 SHOWS USE OF SECTION B-B, FIGURE Z DIMENSION AS FOLLOWS:

W = PARKWAY WIDTH
 L = LANDING WIDTH, 4' (1220 mm) TYP
 $Z = [(Y+L)-W] \times 0.760$

IF $(Y+L) < W$, THEN $Z = 0$

SEE SHEET 9 FOR STREET SLOPE ADJUSTMENT FACTORS, ALL STREETS

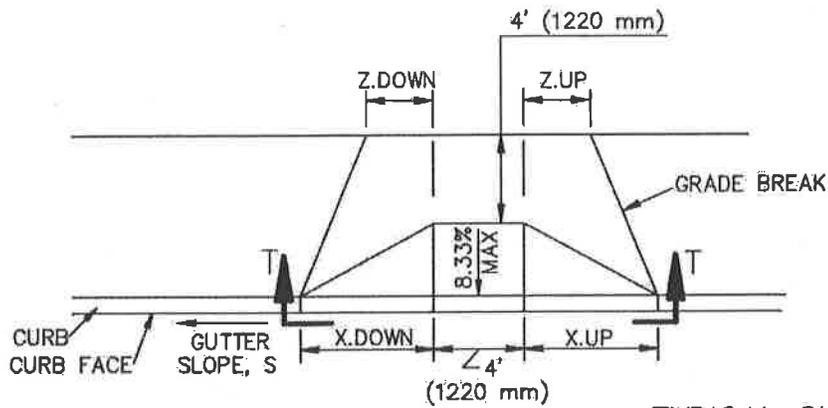
TABLE 1 - X AND Y VALUES

TABLE 1 REFERENCE FORMULAS:

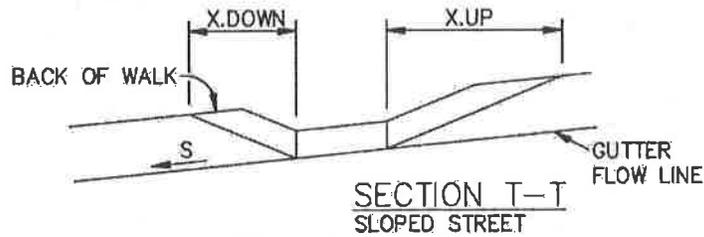
$X = CF / 8.333\%$

$Y = CF / (8.333\% - 2\% \text{ WALK CROSS SLOPE})$

$x = cf / 10\%$



TYPICAL CURB RAMP



FOR SLOPED STREETS, MULTIPLY THE DIMENSIONS PARALLEL TO THE STREET, X AND Z, UPSTREAM AND DOWNSTREAM OF THE RAMP, BY THE FACTORS IN THE FOLLOWING TABLE.

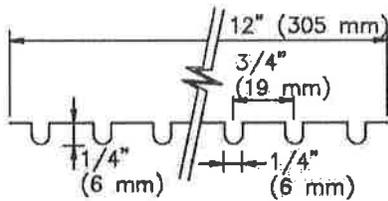
FOR EXAMPLE, $X.DOWN = X \times K.DOWN$

S	K.DOWN	K.UP
0%	1.000	1.000
0.2%	0.977	1.025
0.5%	0.943	1.064
1%	0.893	1.136
2%	0.806	1.316
3%	0.735	1.563
4%	0.676	1.923
5%	0.625	2.500

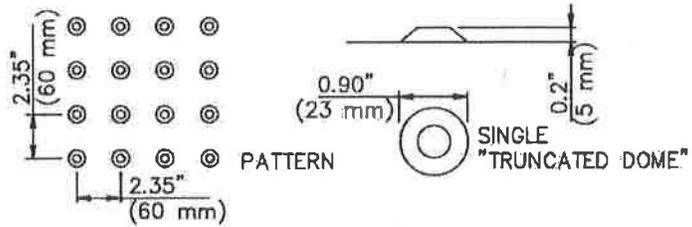
TABLE 2 - SLOPE ADJUSTMENTS

TABLE 2 REFERENCE FORMULAS:
 $K.DOWN = 8.333\% / (8.333\% + S)$
 $K.UP = 8.333\% / (8.333\% - S)$

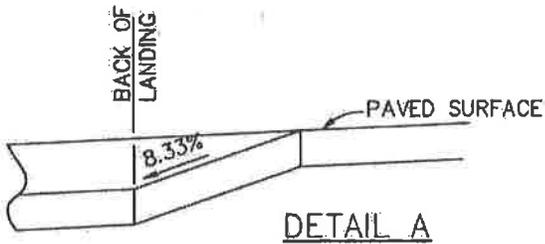
STREET SLOPE ADJUSTMENTS



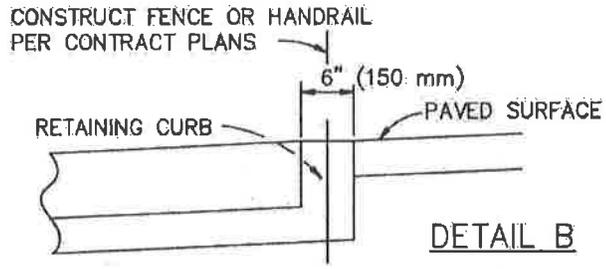
GROOVING DETAIL



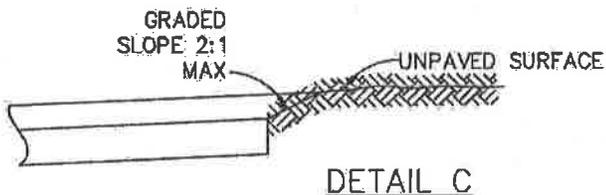
DETECTABLE WARNING DETAIL



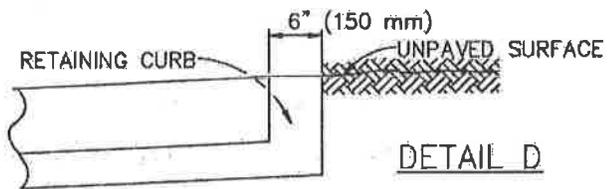
DETAIL A



DETAIL B



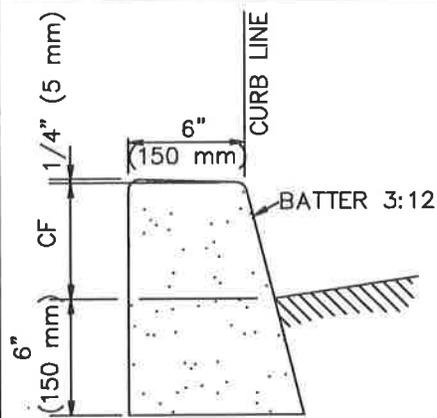
DETAIL C



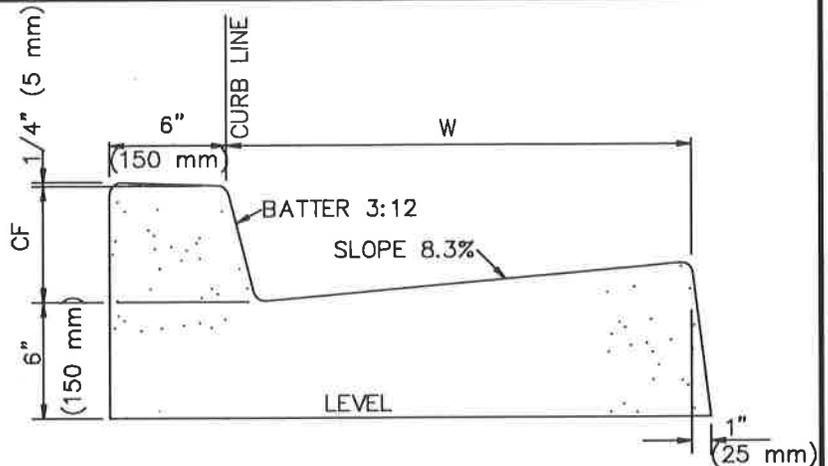
DETAIL D

GENERAL NOTES:

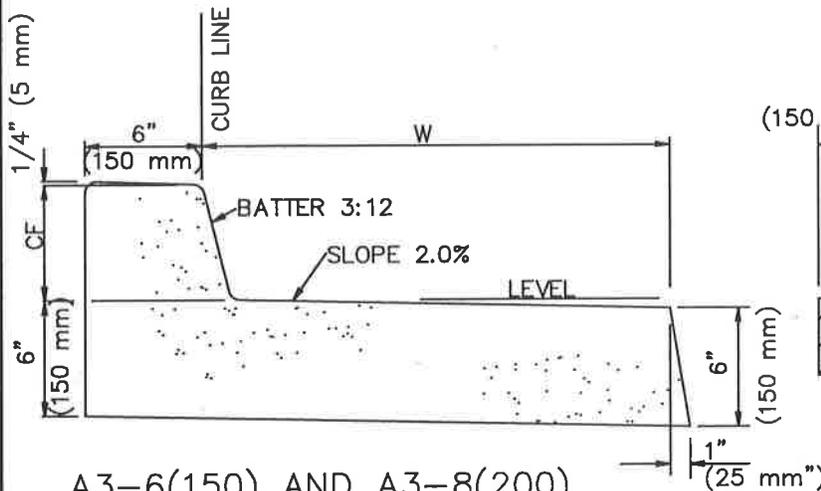
1. CONCRETE SHALL BE CLASS 520-C-2500 (310-C-17) CONFORMING TO SSPWC 201-1.1.2 AND SHALL BE 4" (100 mm) THICK.
2. THE RAMP SHALL HAVE A 12" (305 mm) WIDE BORDER WITH 1/4" (6 mm) GROOVES APPROXIMATELY 3/4" (19 mm) OC. SEE 'GROOVING' DETAIL.
3. THE RAMP SURFACE SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE CONFORMING TO SSPWC 303-1.9.
4. USE DETAIL "A" OR "B" IF EXISTING SURFACE BEHIND LANDING IS PAVED.
5. USE DETAIL "C" OR "D" IF EXISTING SURFACE BEHIND LANDING IS UNPAVED.
6. R = 3' (900 mm) UNLESS OTHERWISE SHOWN ON PLAN. SEE SHEET 7.
7. ANGLE = $\Delta/2$ UNLESS OTHERWISE SHOWN ON PLAN.
8. CONSTRUCT DETECTABLE WARNING SURFACE PER DETAIL THIS SHEET. MATERIALS SHALL BE PER CONTRACT DOCUMENTS.



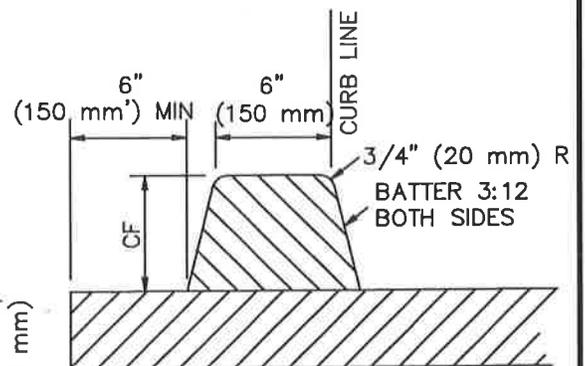
A1-6(150) AND
A1-8(200)



A2-6(150) AND A2-8(200)



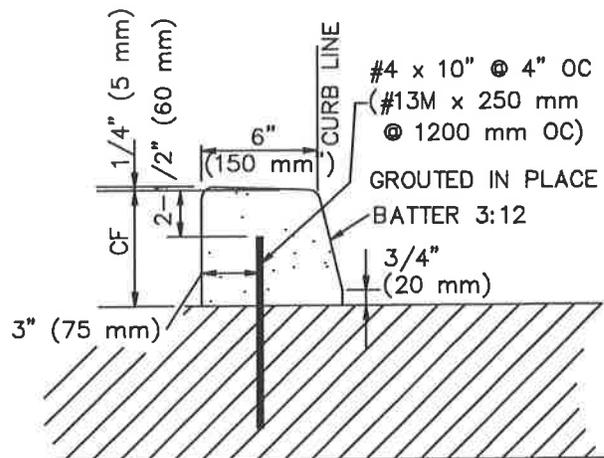
A3-6(150) AND A3-8(200)



D1-6(150) AND
D1-8(200)

NOTES:

1. THE LAST NUMBER IN THE DESIGNATION IS THE CURB FACE (CF) HEIGHT, INCHES (mm).
2. GUTTER WIDTH, W, IS 24" (600 mm) UNLESS OTHERWISE SPECIFIED.
3. TYPES A1, A2, A3 AND C1 SHALL BE CONSTRUCTED FROM PCC.
4. TYPE D1 CURB SHALL BE CONSTRUCTED FROM ASPHALT CONCRETE.
5. TYPE C1 CURB SHALL BE ANCHORED WITH STEEL DOWELS AS SHOWN OR WITH AN EPOXY APPROVED BY THE ENGINEER.
6. ALL EXPOSED CORNERS ON PCC CURBS AND GUTTERS SHALL BE ROUNDED WITH A 1/2" (15 mm) RADIUS.



C1-6(150) AND C1-8(200)

STANDARD PLAN FOR PUBLIC WORKS CONSTRUCTION

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GREENBOOK COMMITTEE
1984
REV. 1996, 2009

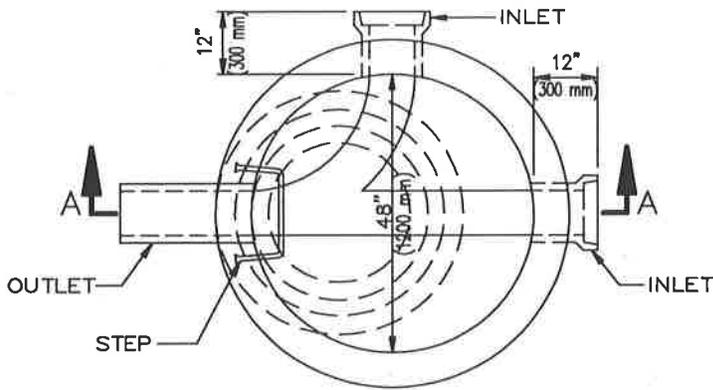
CURB AND GUTTER - BARRIER

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

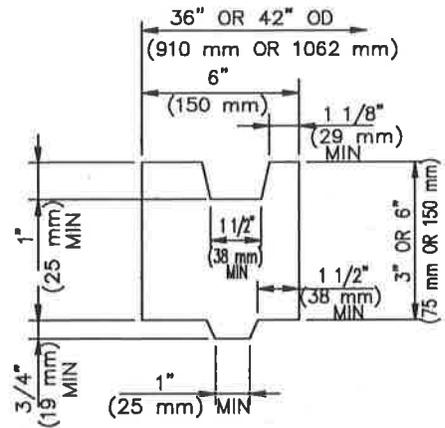
STANDARD PLAN

120-2

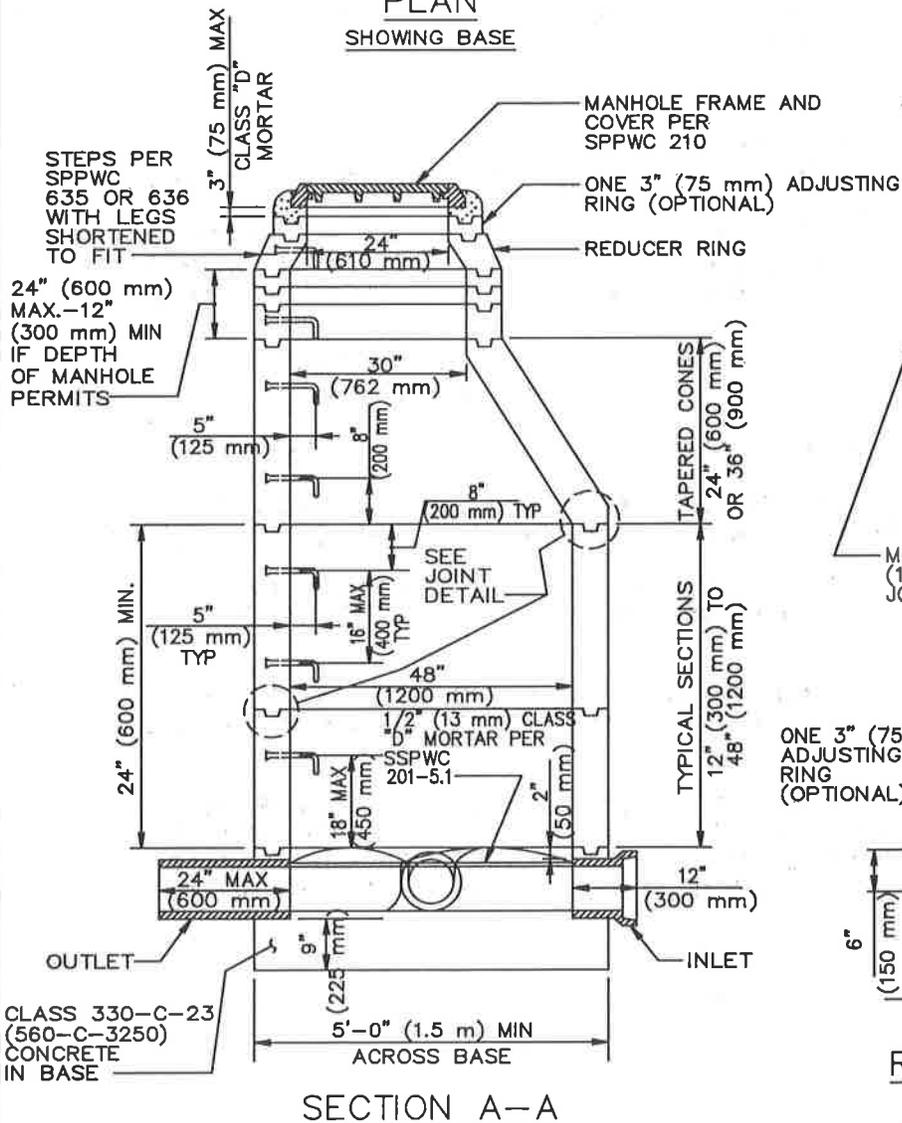
SHEET 1 OF 1



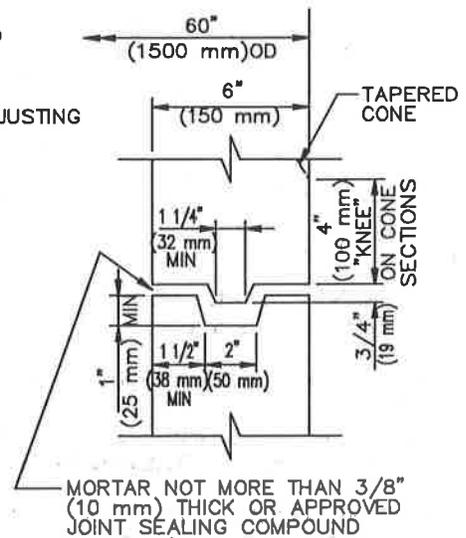
PLAN
SHOWING BASE



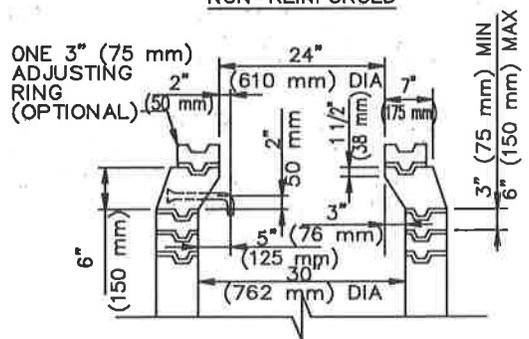
ADJUSTING
RING DETAIL



SECTION A-A



JOINT DETAIL
NON-REINFORCED



REDUCER RING AND
ADJUSTING RINGS

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
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1984
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PRECAST CONCRETE
SEWER MANHOLE

STANDARD PLAN

200-3

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 2

NOTES:

1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C 478. AS AN ALTERNATE CURING METHOD, THE UNITS MAY BE CURED USING SATURATED STEAM FOR A MINIMUM OF 12 HOURS FOLLOWED BY 6 DAYS OF WATER CURING OR MEMBRANE CURING. IF THE UNITS ARE CURED BY THE ALTERNATE METHOD, THEY SHALL NOT BE SHIPPED PRIOR TO 8 DAYS AFTER CASTING NOR UNTIL THE CONCRETE HAS ATTAINED A STRENGTH OF 3500 PSI (25 MPa).
2. MANHOLE STEPS SHALL CONFORM TO SPPWC 635 TYPE 1 OR 3 OR SPPWC 636. THE MANHOLE STEPS SHALL BE UNIFORMLY SPACED AT A MAXIMUM OF 16" (400 mm). THE LOWEST STEP SHALL BE PLACED NOT LESS THAN 8" (200 mm) NOR MORE THAN 18" (450 mm) ABOVE THE SHELF. THE STEPS SHALL PROJECT 5" (125 mm) INSIDE THE MANHOLE.
3. RISER SECTIONS MAY BE REINFORCED OR UNREINFORCED. REINFORCED SECTIONS SHALL BE REINFORCED IN ACCORDANCE WITH ASTM C 478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 5" (125 mm). UNREINFORCED RISER SECTIONS SHALL HAVE A MINIMUM WALL THICKNESS OF 6" (150 mm).
4. THE 24"x48" (600 mm x 1200 mm) ECCENTRIC CONES MAY BE REINFORCED OR UNREINFORCED. IF REINFORCED, THE WALL THICKNESS SHALL BE NOT LESS THAN 5" (125 mm). IF UNREINFORCED, THE WALL THICKNESS SHALL NOT BE LESS THAN 6" (150 mm).
5. JOINTS SHALL BE TONGUE AND GROOVE. JOINTS FOR REINFORCED STRUCTURES SHALL CONFORM WITH ASTM C 478 SECTION 14.
6. PRECAST UNITS SHALL BE ASSEMBLED USING CLASS "B" MORTAR.
7. IF 30" (762 mm) DIAMETER MANHOLE FRAME AND COVER IS REQUIRED, IT SHALL BE INSTALLED WHERE THE REDUCER RING IS SHOWN IN THE SECTION.
8. FOR REINFORCED PRECAST STRUCTURES, ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2" (50 mm) OF COVER OVER THE STEEL ON THE INSIDE FACE.
9. THE TOP OPENING OF THE MANHOLE AND THE STEPS SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.
10. CONCRETE BASE AND STUB WALLS SHALL BE POURED IN ONE OPERATION TO A POINT 2" (50 mm) ABOVE THE INLET AND OUTLET PIPES. ALL PIPES SHALL BE RIGIDLY SUPPORTED BY TEMPORARY PIERS OR OTHER METHODS DURING THE OPERATION. CONCRETE SHALL SET FOR 24 HOURS BEFORE PLACING PRECAST UNITS.

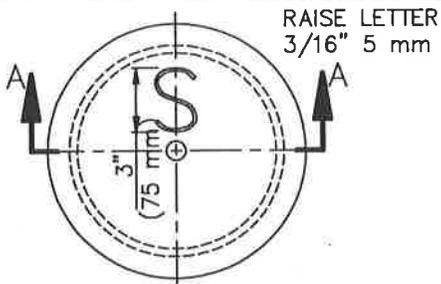
STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

**PRECAST CONCRETE
SEWER MANHOLE**

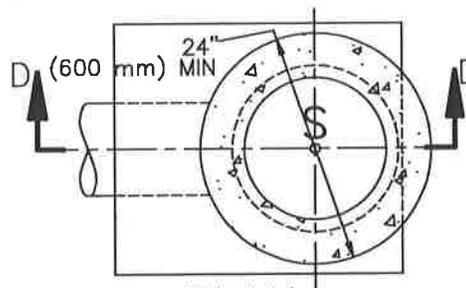
STANDARD PLAN

200-3

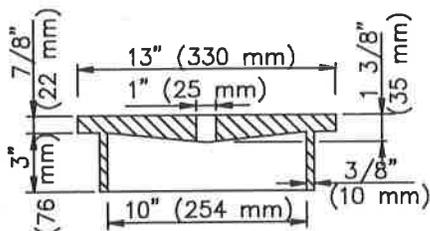
SHEET 2 OF 2



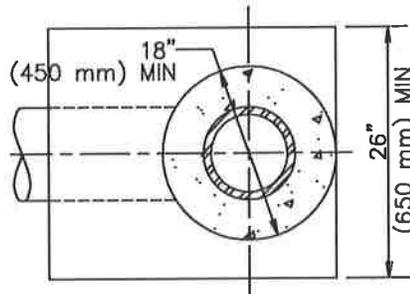
ACCESS COVER



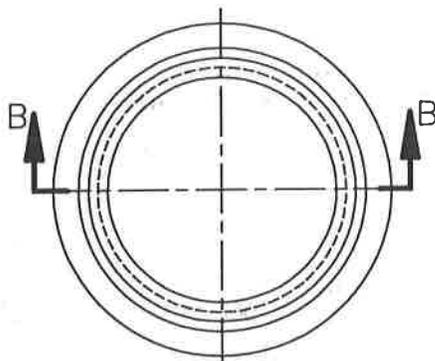
PLAN



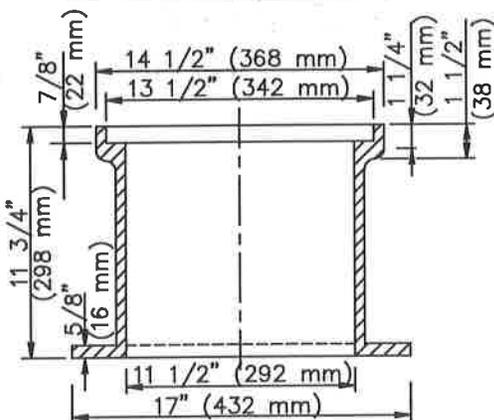
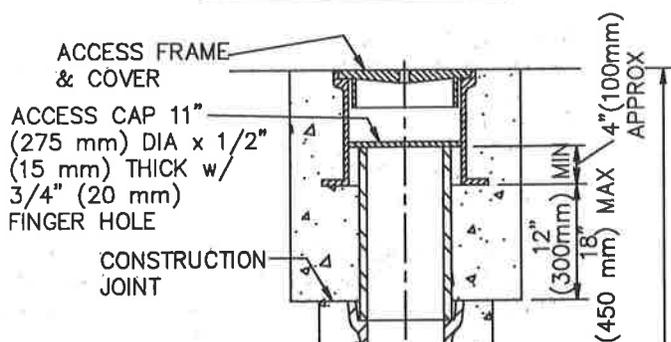
SECTION A-A



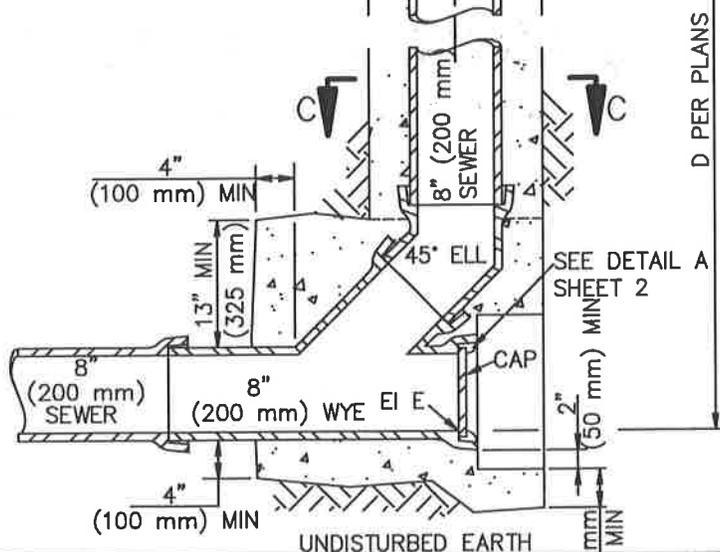
SECTION C-C



ACCESS FRAME



SECTION B-B



SECTION D-D

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

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PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1993
REV. 2005, 2009

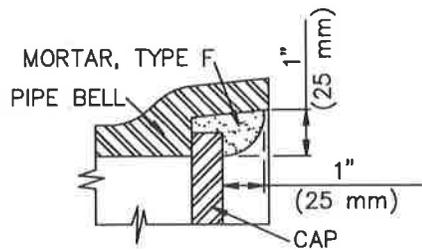
TERMINAL CLEANOUT STRUCTURE

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

204-2

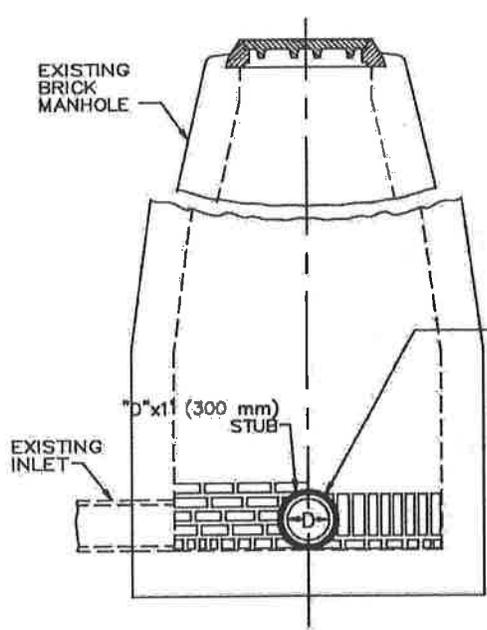
SHEET 1 OF 2



DETAIL A

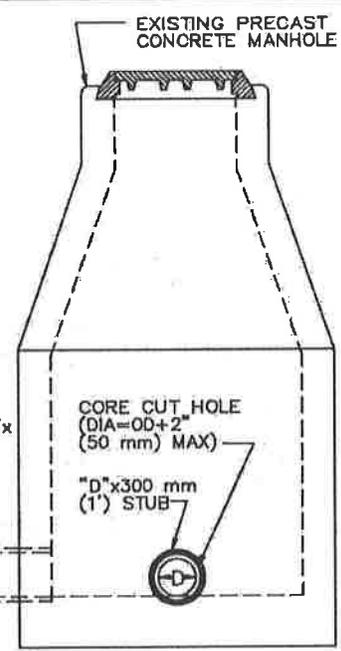
NOTES:

1. SEE PLANS FOR VALUES OF DIMENSION D AND ELEVATION E.
2. PIPE AND FITTINGS, UNLESS OTHERWISE NOTED, SHALL BE OF THE SAME MATERIALS AS THE SEWER, UNLESS APPROVED ADAPTORS ARE USED, AND MAY BE ANY OF THE FOLLOWING:
 - A. VC PIPE
 - B. PE PIPE
 - C. ABS SOLID WALL PIPE
 - D. ABS COMPOSITE PIPE
 - E. PVC PLASTIC PIPE
3. PIPE AND FITTINGS SHALL BE BEDDED AND ENCASED IN PCC AS SHOWN. PCC SHALL BE CLASS 450-C-2000(265-C-14). JOIN AND ALIGN PIPE AND FITTINGS BEFORE PLACING CONCRETE. MAINTAIN ALIGNMENT WHILE PLACING AND ALLOWING PCC TO SET.
4. THE ACCESS FRAME, COVER AND CAP SHALL BE CAST IRON. THE FINGER HOLES MAY BE DRILLED OR BLOCKED OUT PRIOR TO CASTING. THEY SHALL NOT BE PUNCHED OUT.
5. THE CONTRACTOR MAY PLACE EITHER CIRCULAR OR SQUARE CONCRETE PIPE WALL SUPPORTS.

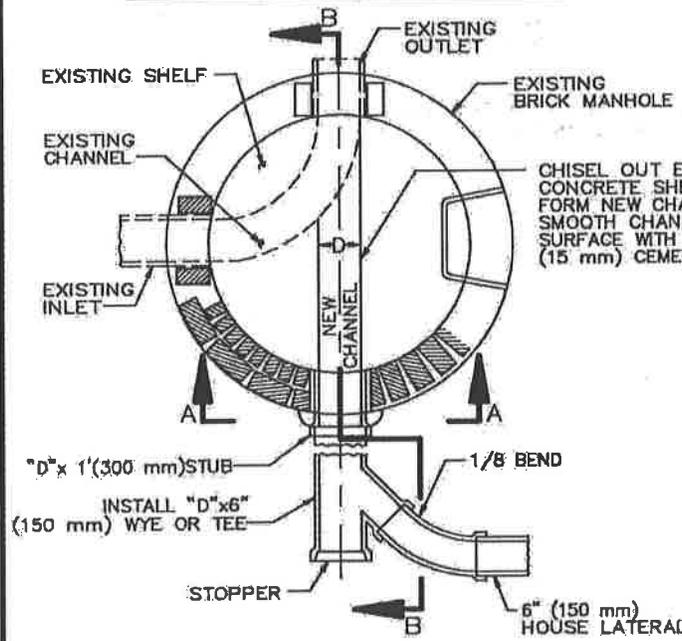


SECTIONAL ELEVATION A-A

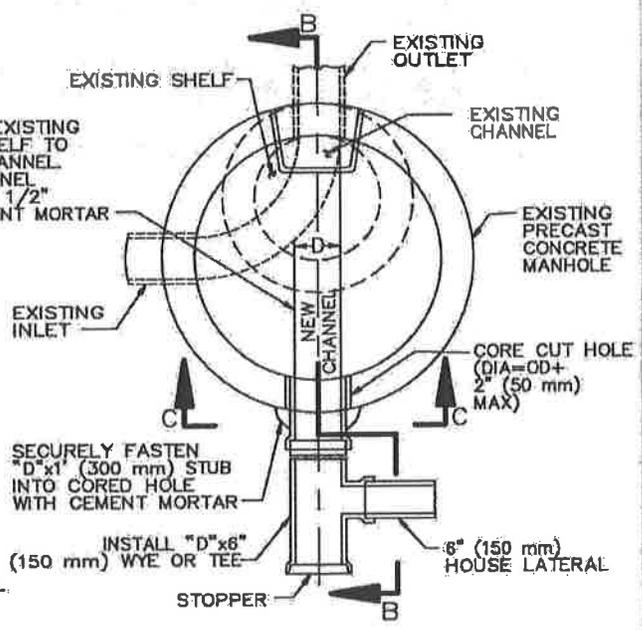
CORE CUT HOLE OR
BREAK OUT BRICKS
CAREFULLY AND NEATLY
TO FORM MINIMUM
OPENING OF $OD + 2"$
(50 mm). SECURELY FASTEN " D "x
1' (300 mm) STUB INTO
HOLE WITH CEMENT MORTAR



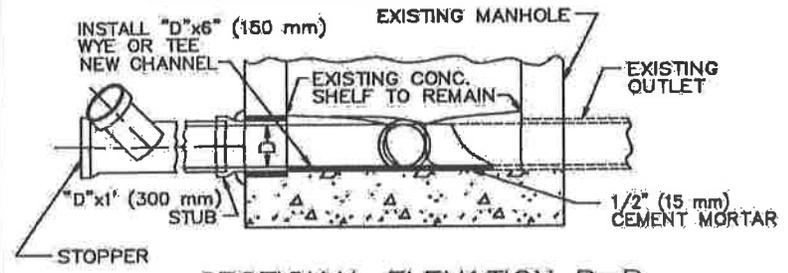
SECTIONAL ELEVATION C-C



SECTIONAL PLAN OF BASE



SECTIONAL PLAN OF BASE



SECTIONAL ELEVATION B-B
CHANNEL BASE

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION		
PROMULGATED BY THE PUBLIC WORKS STANDARDS, INC., GREENBOOK COMMITTEE 1954 REV. 1995, 2005	<h2 style="margin: 0;">BREAKING INTO EXISTING MANHOLES</h2>	STANDARD PLAN 208-2 SHEET 1 OF 2
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION		

NOTES:

1. INVERT ELEVATION OF "D" x 1' (300 mm) STUB AT THE INSIDE FACE OF MANHOLE TO BE 0.10' (30 mm) HIGHER THAN EXISTING OUTLET INVERT ELEVATION.
2. THE CORE CUT HOLE SHALL BE MADE WITH EQUIPMENT SPECIALLY DESIGNED TO CUT A SMOOTH HOLE WITHOUT SPALLING OR DAMAGE TO THE REINFORCING STEEL OR STRUCTURE.
3. "D" TO BE 8" (200 mm) MINIMUM.
4. ALL WORK SHALL BE UNCOVERED AND CONVENIENT FOR THE INSPECTION.
5. ALL CEMENT MORTAR SHALL BE CLASS "D" PER SSPWC 201-5.1.

HOUSE LATERAL NOTES:

1. WYE SHALL BE LAID WITH 1/8" (3 mm) RISE PER 1" (300 mm) AND 6" (150 mm) SPUR AT 45° FROM HORIZONTAL UNLESS OTHERWISE NOTED ON PLANS.
2. "D" x 4" (100 mm) WYE OR TEE AND 4" (100 mm) HOUSE LATERAL MAY BE SUBSTITUTED FOR "D" x 6" (150 mm) WYE OR TEE AND 6" (150 mm) HOUSE LATERAL.
3. USE TYPE "D" OR "G" JOINTS PER SSPWC 208-2.

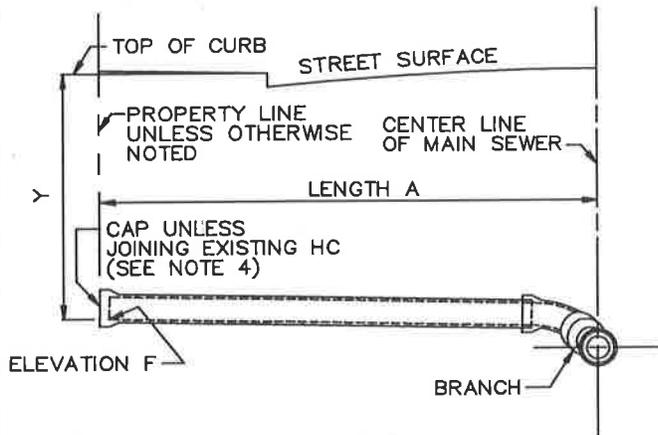
STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

BREAKING INTO EXISTING MANHOLES

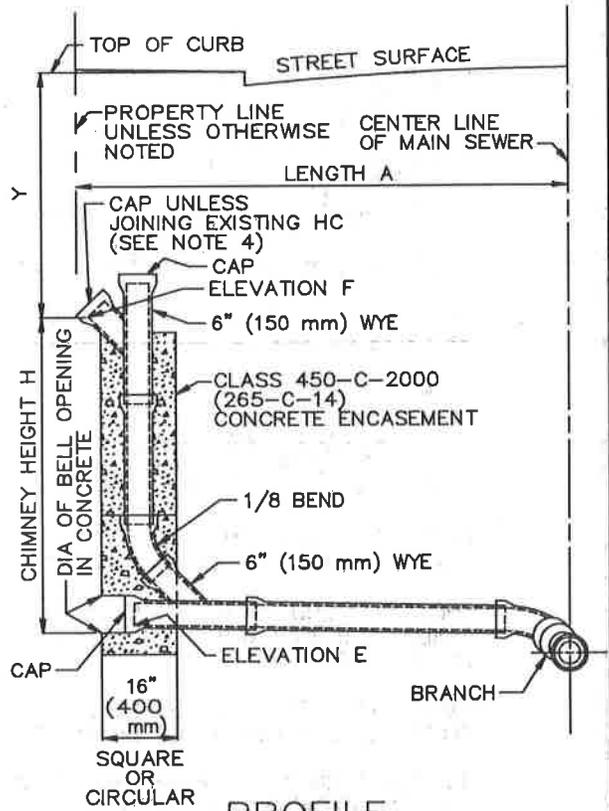
STANDARD PLAN

208-2

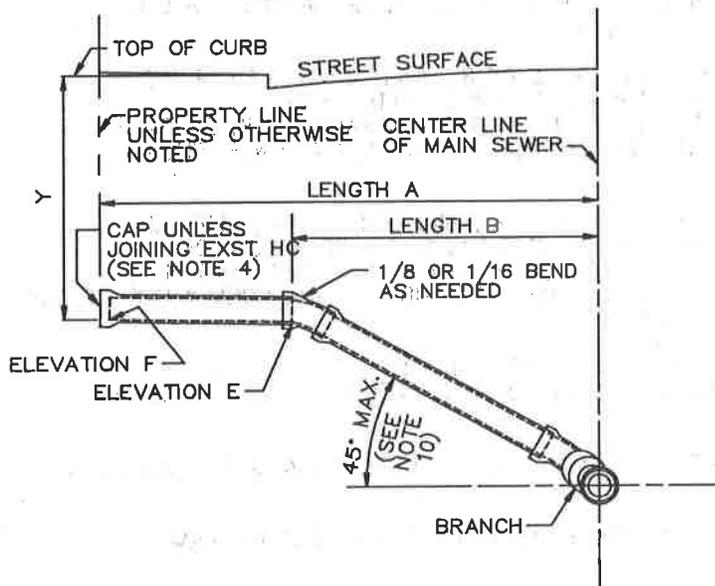
SHEET 2 OF 2



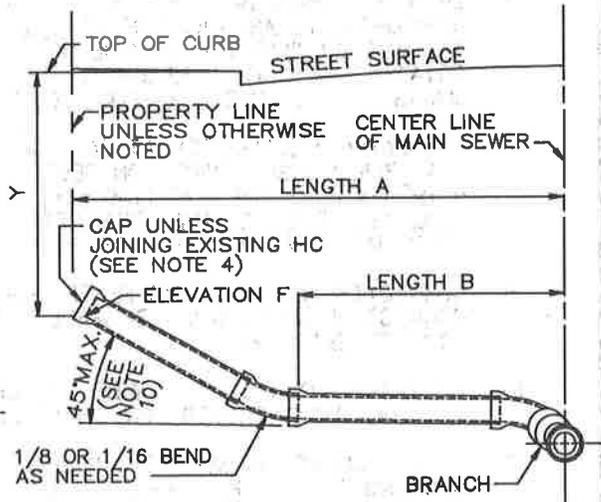
PROFILE TYPE A



PROFILE TYPE B



PROFILE TYPE C



PROFILE TYPE D

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

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GREENBOOK COMMITTEE
1984
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HOUSE CONNECTION SEWER

STANDARD PLAN

222-2

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 2

NOTES

1. EXCEPT AS OTHERWISE INDICATED ON THE PLANS, ALL HOUSE CONNECTION SEWERS SHALL BE TYPE "A" AND SHALL BE CONSTRUCTED ON STRAIGHT LINES AND GRADES BETWEEN CONTROL POINTS AND ELEVATIONS.
2. DIMENSIONS:
 - A. $Y = 6'$ (1.85 m)
 - B. LENGTHS "A" AND "B" - SEE PLANS
 - C. HEIGHT "H" - SEE PLANS
 - D. ELEVATIONS "E" AND "F" - SEE PLANS
3. ALL HOUSE CONNECTION SEWER PIPE SHALL BE 150 mm (6") UNLESS OTHERWISE INDICATED AND MAY BE ANY OF THE FOLLOWING:
 - A. VC PIPE
 - B. PE PIPE
 - C. ABS SOLID WALL PIPE
 - D. ABS COMPOSITE PIPE
 - E. PVC PLASTIC PIPE

PROVIDED THAT CHANGES FROM ONE TYPE OF MATERIAL OR SIZE TO ANOTHER SHALL BE MADE ONLY BY MEANS OF SUITABLE ADAPTERS APPROVED BY THE ENGINEER.

4. THE UPPER END OF THE HOUSE CONNECTION SHALL BE SEALED BY INSTALLING A CAP AND SEALING THE CAP WITH 1" (25 mm) THICK TYPE "F" MORTAR AROUND THE CIRCUMFERENCE OF THE CAP.
5. EXCEPT AS CONTROLLED BY ELEVATIONS INDICATED ON THE PROJECT PLANS, THE MINIMUM SLOPE FOR ALL PIPE SHALL BE 2% ($S=0.02$ MINIMUM).
6. THE FIGURE IN A CIRCLE ON THE PLANS ADJACENT TO A HOUSE CONNECTION SEWER STATION INDICATES THE DEPTH IN FEET (METERS) BELOW THE EXISTING TOP OF CURB TO WHICH THE INVERT OF THE UPPER END OF THE HOUSE CONNECTION SEWER SHALL BE CONSTRUCTED. IF NO DEPTH IS INDICATED, THE INVERT OF THE UPPER END SHALL BE THE ELEVATION SHOWN ON THE PROFILE. WHERE NEITHER DEPTH NOR ELEVATION IS INDICATED, THE INVERT SHALL BE 6' (1.85 m) BELOW THE TOP OF THE EXISTING CURB.
7. BRANCHES SHALL BE EITHER TEES OR WYES AND SHALL BE ROTATED UPWARD FROM THE HORIZONTAL TO AN ANGLE OF $22\frac{1}{2}^{\circ}$ TO 45° WHEN TEES ARE USED. BENDS ARE NOT REQUIRED BUT MAY BE USED AT THE OPTION OF THE CONTRACTOR. WHEN THE BRANCH ROTATION DOES NOT CONFORM TO THE SLOPE OF THE HOUSE CONNECTION SEWER, PULLED JOINTS MAY BE USED FOR ADJUSTMENT.
8. THE MAXIMUM DEFLECTION AT EACH JOINT FOR 4" (100 mm) AND 6" (150 mm) VITRIFIED CLAY PIPE HOUSE CONNECTION SEWERS SHALL BE 4", WHICH IS EQUAL TO A PULL OF $\frac{9}{16}$ " (14 mm) FOR A 6" (150 mm) PIPE AND $\frac{3}{8}$ " (10 mm) FOR A 4" (100 mm) PIPE. (PULL IS DEFINED AS THE SEPARATION OF THE ABUTTING PIPE ENDS ON THE CONVEX SIDE OF THE CURVE MEASURED AT THE OUTSIDE PIPE BARREL.)
9. CONNECTION OF A BUILDING SEWER SMALLER THAN 6" (150 mm) TO A 6" (150 mm) HOUSE CONNECTION SEWER SHALL BE MADE USING AN APPROVED INCREASER TEE OR AN INCREASER FOLLOWED BY A TEE.
10. ALL HOUSE CONNECTION SEWERS OR PORTIONS THEREOF CONSTRUCTED ON A SLOPE EXCEEDING 45° SHALL BE ANCHORED PER SPPWC 221.
11. HOUSE CONNECTION SEWERS CONSTRUCTED PURSUANT TO A HOUSE CONNECTION PERMIT SHALL CONFORM TO ALL APPLICABLE STATUTES AND ORDINANCES.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

HOUSE CONNECTION SEWER

STANDARD PLAN

222-2

SHEET 2 OF 2

APPENDIX V

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN (WMP)

Building Permit Number: _____

CITY OF TORRANCE

Construction & Demolition Waste Management Plan (WMP)

THE REQUIREMENT IS TO REUSE OR RECYCLE AT LEAST 50% OF PROJECT WASTE AND 100% OF EXCAVATED SOIL AND LAND-CLEARING DEBRIS

- 1) As part of your application, you must complete the front and back of this page and the "estimate" or left side of the table on the backside of this page to the best of your ability, indicating that you will recycle at least 50% of the waste from the project and 100% of excavated soil and land-clearing debris.
- 2) As your project proceeds, collect and keep receipts of all waste disposed, recycled, reused or donated. Receipts must show material type, weight of material, how the material was treated and the facility used.
- 3) To final your project, you must then fill out the "actual" or right side of the table on the backside of this sheet, and submit it again with all the receipts to verify that at least 50% of the project's waste and 100% of excavated soil and land-clearing debris was diverted from the landfills.

Please note, if you are contracting with a different company to haul your waste or using a roll off box from another company, that company must have a business license to operate in the City of Torrance.

A COPY OF THIS WMP AND RECEIPTS (SHOWING MATERIAL TYPE, WEIGHT, TREATMENT AND FACILITY USED) FOR ALL RECYCLING AND DISPOSAL SHALL BE SUBMITTED BEFORE THE PROJECT WILL RECEIVE FINAL BUILDING APPROVAL. (FOR DEMO PERMITS, THE RECEIPTS FOR THE DEMOLITION WASTE SHOULD BE PROVIDED BEFORE THE FIRST FOOTING INSPECTION AFTER THE BUILDING PERMIT HAS BEEN ISSUED.)

Project Name: _____

Location: _____

Requesting Infeasibility Exemption: Yes No

Contractor Name: _____ Contact Name: _____

Address: _____ Contact Phone: _____

Recycler: _____ Recycler Contact: _____

Recycler Address: _____ Recycler Contact Phone: _____

CITY USE ONLY	
	Application (Date) Final (Date)
Approved	
Further explanation needed (see attached)	
Denied	
Infeasibility Exemption Approved	
Reviewed By	

Submit this form and the attached Waste Management Plan Table to: **WMP Compliance Official**

Alison Sherman, Public Works

asherman@TorranceCA.Gov

Fax: 310-781-6902

For questions or for in-person visit (by appointment only), please call 310-781-6900

CITY OF TORRANCE

Construction & Demolition Waste Management Plan Table

Project Name: _____

Total Estimated Waste Generated by Project: _____ (in tons).
 (Ask your hauler, recycler or site cleanup vendor to assist you. Use receipts from your previous jobs for estimates)

Complete and return with Building Permit Application			Complete and return with receipts prior to final building approval		
Material Type	Estimated Reused/ Recycled	Estimated Disposed/ Landfilled	Actual Reused/ Recycled	Actual Disposed/ Landfilled	Vendor or Facility Used (Destination)
	(In Tons)	(In Tons)	(In Tons)	(In Tons)	
Asphalt & Concrete					
Bricks/Masonry/Tiles					
Building Materials (doors, windows, fixtures, etc.)					
Cardboard					
Excavated dirt and land-clearing debris					
Dirt					
Landscape Debris (Plant & Tree Trimmings)					
Scrap Metal					
Unpainted Wood & Pallets					
Other (painted wood & drywall, roofing, etc.)					
Mixed C&D*					
Trash/Garbage					
TOTAL					

If you are requesting an infeasibility exemption and the estimated amount reused/recycled is less than 50%, please explain why (attach additional sheets if necessary):

Prepared by (print): _____ Date: _____

Signature: _____ Phone Number: _____

Must be signed by Contractor or Owner. Signatory accepts financial responsibility for penalties for non-compliance.

* Mixed C&D is defined as a mixture of three or more materials (e.g. wood, drywall, roofing, etc.) from construction or demolition sites that will be taken to a facility capable of recycling those commingled materials.

Conversion Rates

The following conversion rates are estimates to help complete the Waste Management Plan by converting materials into tonnage format. The ranges vary widely, depending on how the materials are handled (compacted, loose, chipped, etc.). Use the conversion factors and receipts from any previous projects to help you estimate the potential amount of materials and diversion. Take into consideration the type and load of vehicles that will be used to haul the materials. Ask your hauler or recycler to assist you in estimating these numbers.

Material	Lbs/cy	Tons/cy
Asphalt	1,400 lbs/cy	0.7 tons/cy
Brick	2,430 lbs/cy	1.21 tons/cy
Cardboard	100 lbs/cy	0.05 tons/cy
Concrete	2,600 lbs/cy (Sources range from 1,000 to 4,000)	1.3 tons/cy
Dirt/Soils	2,660 lbs/cy	1.33 tons/cy
Drywall	700 lbs/cy	0.35 tons/cy
Wood (chipped)	300 - 650 lbs/cy	0.15 – 0.3 tons/cy
Mixed C&D Debris	900 lbs/cy	0.45 tons/cy
Mixed Waste/Trash	100 - 350 lbs/cy	0.5 - 0.175 tons/cy

APPENDIX VI
GEOTECHNICAL INVESTIGATION



September 15, 2015

F.N. 5620-01

City of Torrance
Public Works/Engineering Division
20500 Madrona Avenue
Torrance, CA 90503

Attention: Mr. John Dettle

Subject: **GEOTECHNICAL INVESTIGATION**
Sewer Improvement Project on Opal Street
Opal Street between Madrona Avenue and Maple Street
Torrance, California

Dear Mr. Dettle:

As requested, American Geotechnical performed a geotechnical investigation for the Opal Street sewer line improvement project, located in the City of Torrance, California. We performed a subsurface exploration consisting of drilling two (2), hollow stem auger borings along the proposed sewer line alignment. Both bulk and relatively-undisturbed soil samples were collected from the exploratory borings for classification and laboratory testing. Our findings, conclusions, and recommendations are provided below.

1.0 PROJECT DESCRIPTION AND SCOPE OF WORK

Based on the available site plan and project description, it is our understanding that the project consists of placement of a 15-inch diameter vitrified clay pipe sewer line along Opal Street between Madrona Avenue to the west and Maple Avenue to the east. The approximate length of the pipe line is 1,500 linear feet. Placement of the pipe will be located along the center of Opal Street. Pipe invert is approximately 13.5 to 15 feet below existing grade. A Site Location Map and an Aerial View are shown on the attached Plates 1 and 2, respectively.

Our scope of work consisted of the following:

- Project coordination and scheduling;
- Site reconnaissance for marking the proposed boring locations for Underground Service Alert;
- Obtaining the necessary permits for field investigation from the City of Torrance;
- Drilling of two (2) hollow stem auger borings, AGB-1 and AGB-2 to a maximum depth of 26 feet below street grade utilizing a truck mounted rig;
- Logging of the borings using visual and tactile methods;
- Collection of both bulk and relatively undisturbed samples from the borings;
- Laboratory testing of selected soil samples;
- Engineering analyses of the field and laboratory data; and
- Preparation of this report presenting our findings, conclusions, and recommendations for the proposed project.

2.0 FIELD INVESTIGATION

Our field investigation was performed on August 18, 2015, and consisted of the excavation of two (2), hollow stem auger borings, AGB-1 and AGB-2 along Opal Street. AGB-1 was drilled on the east portion of Opal Street in the vicinity of Maple Avenue. The west side of Opal Street near Madrona Avenue was where AGB-2 was drilled.

Both borings were drilled to a maximum depth of 26 feet below the existing street grade. Relatively undisturbed and bulk samples were collected from the borings at regular intervals and brought to the laboratory for testing. Upon the completion of drilling, each boring was backfilled with native soil and capped with asphalt cold patch. The approximate locations of the borings are shown on the Site/Boring Location Plan, Plate 3.

The existing asphalt pavement sections of the borings consist of approximately 2 to 5 inches of asphaltic concrete over 8 to 12 inches of aggregate base. The soils encountered in both borings consisted of silty sand, clayey sand, and silty clay in the upper 16 feet of the borings. At both boring locations, poorly graded sand was encountered below 16 feet. This sand layer was found to be medium

dense to very dense. Groundwater was not encountered at the time of our drilling. However, available maps indicate the historical groundwater was at approximately 10 to 20 feet below ground surface.

3.0 LABORATORY TESTING

Laboratory testing was performed on representative soil samples collected during our field exploration. Laboratory tests included in-situ moisture-density, grain-size analysis, direct shear, and soil chemical testing (pH, electrical resistivity, soluble sulfates, and soluble chlorides). A summary of the laboratory test results is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our review of available information, geotechnical exploration, laboratory testing, and engineering analyses, it is our opinion that that the construction for the proposed sewer line project is feasible from geotechnical standpoint provided that the recommendations in this report are incorporated into the design and construction.

As we understand, the work involved includes deep trench excavation in the center of Opal Street, trench shoring, trench subgrade preparation, installation of pipe bedding, installation of a sewer pipe, trench backfill and compaction, and replacement of the existing street structural section including base and asphalt. We recommend that the subsurface soil conditions discussed in this report be considered and evaluated prior to the start of this project. No particular difficulty during trenching for the sewer line is anticipated. The on-site, excavated soil is generally considered suitable to be used as backfill material. However, the native soils derived from the excavation may be wet. Drying of these soils may be necessary before utilizing as a backfill material. Recommendations for excavations and backfilling as well as other geotechnical considerations are provided below.

4.1 Design Criteria for Sewer Replacement

The new sewer pipe should be designed for an overburden pressure calculated based on 120 pounds per cubic feet of soil density. Additionally, the design should be performed by proper evaluation of all possible loads acting on the pipeline including traffic loads and other surcharge loads. It should be noted that the actual loads acting on the underground pipe depend on several factors including the type

of pipe (rigid or flexible), the depth and width of the trench, the type of backfill, and the type of bedding materials. An allowable soil bearing value of 3,000 pounds per square foot (psf) should be used in the design when the pipe is located at a minimum depth of 5 feet below the lowest adjacent grade.

Additional soil parameters are given below:

- * Soil density..... 120 pcf
- * Angle of internal friction.....32 degrees
- * Coefficient of active earth pressure 0.31
- * Coefficient of passive earth pressure 3.25

4.2 Temporary Excavations and Shoring

All temporary excavations and trenches should be constructed in accordance with Occupational Safety and Health Administration (OSHA) requirements. The temporary excavations should not be steeper than 1.5:1 (horizontal:vertical). However, with the limited space, this temporary sloping excavation may not be feasible at the site. If excavations with vertical walls are planned, temporary shoring should be designed and implemented at the site. The design for the temporary braced shoring should be accomplished based on the criteria presented on Plate 4. In addition to the criteria presented on this plate, surcharge loads adjacent to the shoring due to soil stockpiles, construction equipment, etc., should be applied. Even though no groundwater was encountered, depth to historical groundwater and hydrostatic pressures should also be considered in the shoring design. It should be noted that the shoring design parameters provided herein should be considered as guidelines.

Based on our subsurface investigation, the groundwater was not encountered during the time of drilling at the site. However, the actual conditions may vary due to seasonal fluctuations of the groundwater depth. Considerations may be given to evaluate the existing groundwater conditions at the time of construction. If groundwater is encountered in the temporary excavations, a dewatering plan should be implemented. At all times, the groundwater should be at least 2 feet below the bottom of the excavation. If braced sheet piles are used to shore the excavations, dewatering could be accomplished with sump pumps at the base of the excavations. In such cases, these sheet piles should be driven at least 5 feet below the bottom of the excavations to minimize the potential for bottom heave. The design of a proper dewatering system should be performed by an engineer experienced with the site conditions.

It should be noted that temporary lowering of the water table may produce adverse effects, such as settlement due to the change in the effective stress. These adverse effects should be considered in the overall design of the dewatering system by the dewatering contractor. A survey of existing improvements located near the pipeline alignment before and during construction should also be performed to monitor the performance of the shoring and dewatering activity.

4.3 Bedding and Backfill

It is recommended that the new sewer pipe be underlain by a minimum of 8 inches of bedding material. In addition, a minimum of 12 inches of bedding material is also recommended above the top of the pipe. The bedding material should be predominantly granular with a minimum sand equivalent of 30 or more. It is recommended that the soils engineer review the bottom of the excavations and determine the suitability of the supporting materials. The loose soil at the bottom of the excavations, if present should also be removed and replaced with bedding soil.

The soils encountered in the excavations may be used as backfill materials provided that they are free of any debris, vegetation or deleterious materials. Additionally, the fill materials should also be free of cobbles and rocks larger than 4 inches in diameter. Any wet soil from the excavations, should be dried before utilizing as backfill soil. As an alternative to on-site soil, imported, predominantly granular soil may be utilized for backfill purposes. The backfill soil should be placed within the excavation in thin layers, 8 inches or less in thickness, and be compacted to at least 90 percent to the maximum laboratory density. Aggregate base and upper 12 inches of subgrade below the pavement areas should be compacted to minimum 95 percent of their respective maximum densities. Care should be exercised to prevent damage to the pipes during the compaction effort.

4.4 Concrete

Laboratory testing indicated that the site soil has low levels of sulfates, and as such, no special sulfate resistant concrete mix design is required. However, we recommend that low-permeable concrete be utilized for the project considering site environment. For this purpose, the water to cement ratio in the concrete should be limited to 0.5. Use of utilize Type V cement is also preferred.

4.5 Corrosion

In addition to sulfate tests, Chloride, pH and resistivity tests on site soil were performed. Results of these tests are presented in Appendix B. Test results indicate relatively low corrosion potential for buried metals. However, appropriate design considerations should be made for the risk of damage from corrosion.

4.6 Pavement Replacement

Proposed construction will require removal of the existing pavement along the sewer line alignment. However, it is our understanding that the disturbed asphalt pavement will be replaced to the existing conditions. Therefore, no new pavement design recommendations are provided herein. As recommended before, the aggregate base and upper 12 inches of subgrade should be compacted to 95 percent of their respective maximum density. The asphalt concrete should also be compacted to a minimum 95 percent its maximum density.

5.0 PLAN REVIEW AND CONSTRUCTION OBSERVATION

When the detailed construction plans, including temporary shoring and dewatering plans are developed, they should be reviewed by the geotechnical engineer. During the actual construction, it is recommended that the geotechnical engineer review and verify site geotechnical conditions and determine the conformance with the intentions of the recommendations for construction. It should be noted that prior to placing the new pipe, the subgrade soil should be reviewed and approved by the geotechnical engineer.

6.0 REMARKS

Only a portion of subgrade conditions have been reviewed and evaluated. Conclusions, recommendations, and other information contained in this report are based upon the assumptions that subsurface conditions do not vary appreciably between and adjacent to observation points. Although no significant variation is anticipated, it must be recognized that variations can occur.

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This report has been prepared for the sole use and benefit of our client. The intent of the report is to advise our client on geotechnical matters involving the proposed sewer line rehabilitation. It should be understood that the geotechnical consulting provided and the contents of this report are not perfect. Any errors or omissions noted by any party reviewing this report, and/or any other geotechnical aspect of the project, should be reported to this office to directly receive the advice. Subsequent use of this report can only be authorized by the client. Any transferring of information or other directed use by the client should be considered "advice by the client."

Geotechnical engineering is characterized by uncertainty. Geotechnical engineering is often described as an inexact science or art. Conclusions and recommendations presented herein are partly based upon the evaluations of technical information gathered, partly on experience, and partly on professional judgment. The conclusions and recommendations presented should be considered "advice." Other consultants could arrive at different conclusions and recommendations. Typically, "minimum" recommendations have been presented. Although some risk will always remain, lower risk of future problems would usually result if more restrictive criteria were adopted. Final decisions on matters presented are the responsibility of the client and/or the governing agencies. No warranties in any respect are made as to the performance of the project.

We appreciate the opportunity to be of service. Should you have any questions or if we can be of further service, please do not hesitate to contact our office.

Respectfully submitted,

AMERICAN GEOTECHNICAL, INC.



Mark Principe
Staff Engineer
EIT 151638



Arumugam Alvappillai, Ph.D.
Principal Engineer
G.E. 2504



Enclosures: Appendix A – Boring Logs
Appendix B – Laboratory Results

Distribution: Addressee (Regular Mail and Email: jdettle@torranceca.gov)