

**CITY OF TORRANCE, CALIFORNIA**

**ADDENDUM NO. 1  
Issued: August 15, 2019**

**TO**

**PROPOSAL, SPECIFICATIONS, BOND AND  
AFFIDAVIT FOR THE CONSTRUCTION  
OF  
WALNUT STORM WATER CAPTURE AND GROUNDWATER  
REPLENISHMENT BASIN, I-173  
B2019-37**

Note the following changes and/or additions to the Bidder's Submittal, Plans and Specifications for the project indicated above. This Addendum in its entirety may be viewed and downloaded from the Project website at <https://www.torranceca.gov/our-city/public-works/civil-and-traffic-engineering/capital-improvement-projects/walnut-stormwater-capture-and-groundwater-replenishment-basin-project-3144>. The bidder shall execute the Bidder's Certification at the end of this addendum, and shall **attach all pages of this addendum to the Contract Documents submitted with the Bid**. In addition, the bidder shall complete and submit the "Acknowledgment of Addenda Received" Form provided in Section C, page C-6 of the Specifications.

1. **Refer to Section A, NOTICE INVITING BIDS, pages A-1 and A-2 of the Specifications:**

The NOTICE INVITING BIDS pages A-1 to A-2 are hereby deleted in their entirety and replaced with the new Notice Inviting Bids pages A-1a to A-2a which extended the bid date to August 29, 2019 and added a mandatory meeting on August 21, 2019 and are attached to this Addendum.

2. **Refer to Section C, BIDDER'S SUBMITTAL, pages C-1 to C-4 of the Specifications and in the official Bidder's Submittal package provided by the City Clerk:**

The Bidder's Submittal page C-2 is hereby deleted in its entirety and replaced with the new Bidder's Submittal page C-2a which changed JACKING PIT and RECEIVING PIT units from CY to LS and is attached to this Addendum. Bidders must use the new Bidder's Submittal page C-2a in their bid.

3. **Refer to Section E, SPECIAL PROVISIONS, Section 6-1, page E-15 of the Specifications:**

After the third paragraph, insert the following:

Following the pre-construction meeting, an Administrative Notice to Proceed will be issued to allow Contractor to procure long lead items required for work during road closure. A Notice to Proceed will be issued upon completion of the procurement of long lead items. The sixty-five (65) working days shall commence upon issuance of the Notice to Proceed.

4. **Refer to Section E, SPECIAL PROVISIONS, Section 6-7.1, page E-19 of the Specifications:**

Delete the entire paragraph and replace with the following:

Time shall be of the essence in the Contract. The Contractor shall begin Work after the mailing by the Engineer to the Contractor, first class mail, postage prepaid, a Notice to Proceed and shall diligently prosecute the same to completion within 65 working days from the start date specified in the Notice to Proceed. No work is allowed during the period of October 15 to April 15 on the 48" reinforced concrete pipe (RCP) Los Angeles County Project 9814-Unit 2, Line B owned by LACFCD, pursuant to LACFCD permit, Appendix X.

5. **Refer to Section E, SPECIAL PROVISIONS, Section 209, page E-40 of the Specifications:**

Section 209 is hereby deleted in its entirety.

6. **Refer to Section E, SPECIAL PROVISIONS, Section 303-4.1.5, page E-52 of the Specifications:**

Delete the entire paragraph and replace with the following:

Payment for concrete block masonry shall be per the Contract Unit Price in square feet for REINFORCED CONCRETE BLOCK WALL REPAIRS and shall include all removal of existing damaged wall, mortar joints, grout, reinforcing steel, masonry blocks, and all other tools, equipment, labor, materials and methods necessary for repairing the existing concrete block masonry wall. Bid item does not include removal and replacement of wall foundations. Repairs shall be made similar to SPPWC Std. 601-4.

7. **Refer to Section E, SPECIAL PROVISIONS, Section 306-2.6, page E-62 of the Specifications:**

Delete the entire paragraph and replace with the following:

The Contract Unit Price for JACKING PIT shall include full compensation for excavation within the jacking pit limits as specified on the Plans, sloping, shoring, bracing, loading, disposing of surplus material, stockpiling, and hauling material to its final location. The Contract Unit Price for RECEIVING PIT shall include full compensation for excavation of the receiving pit within the City's right-of-way along 238th Street, sloping, shoring, bracing, loading, supporting existing 4" gas line per SPPWC Std. 224-2 Case 1, disposing of surplus material, stockpiling, and hauling material to its final location. The Contract Unit Price per linear foot of JACK 48" RCP, 2400 D shall include the cost of furnishing and installing the conduit, as well as constructing, supporting, and removing pilot tunnels; constructing reinforced concrete cradles where required; providing grout holes, grout, and grouting where necessary; and doing whatever else is appurtenant to jacking conduit within the limits shown on the Plans and as specified herein.

8. **Refer to Section E, SPECIAL PROVISIONS, Section 318-2.3, page E-66 of the Specifications:**

After the second paragraph, insert the following:

Jensen Precast  
521 Dunn Circle  
Sparks, NV 89431  
(775) 352-2700

9. **Refer to SD-512 PLAN SHEETS, Sheet 4 of 9:**

SD-512 Plan Sheets, Sheet 4 of 9 is hereby deleted in its entirety and replaced with Sheet 4 of 9 Revision 1, where the split rail fence material was changed to Western Red Cedar and staff gauge height updated to 15 feet and is attached to this Addendum.

10. **Refer to SD-512 PLAN SHEETS, Sheet 5 of 9:**

SD-512 Plan Sheets, Sheet 5 of 9 is hereby deleted in its entirety and replaced with Sheet 5 of 9 Revision 1, which added note 54 remove abandoned utility line and is attached to this Addendum.

By Order of the City Engineer

/S/ STEVE FINTON

Steve Finton  
Acting Deputy Public Works Director/City Engineer

Attachments:

- 1.) Bidder's Certification
- 2.) Notice Inviting Bids, A-1a to A-2a
- 3.) Bidder's Submittal, C-2a
- 4.) SD-512, Sheet 4 of 9, Rev. 1
- 5.) SD-512, Sheet 5 of 9, Rev. 1
- 6.) SPPWC Std. 224-2 Case 1

BIDDER'S CERTIFICATION

I acknowledge receipt of the foregoing Addendum No. 1 and accept all conditions contained therein.

\_\_\_\_\_  
Bidder

\_\_\_\_\_

By

\_\_\_\_\_

Date

**\*\*\*\*\* Submit this executed form with the bid \*\*\*\*\***

**Please fill out and submit the  
"Acknowledgment of Addenda Received" form  
provided in Section C of the Specifications.**

**CITY OF TORRANCE, CALIFORNIA**

**NOTICE INVITING BIDS**

Notice is hereby given that sealed bids for performing the following described work will be received at the Office of the City Clerk of the City of Torrance, California, **until 3:00 p.m. on Thursday, August 29, 2019**, after which time they will be publicly opened and read at 3:15 p.m. in the Council Chambers of said City:

**CONSTRUCTION OF  
WALNUT STORM WATER CAPTURE AND GROUNDWATER REPLENISHMENT BASIN, I-173**

**B2019-37**

Plans and Specifications are available on the City's project website at <https://www.torranceca.gov/our-city/public-works/civil-and-traffic-engineering/capital-improvement-projects/walnut-stormwater-capture-and-groundwater-replenishment-basin-project-3144>

Those who only view and/or print the Plans and Specifications from the City's website will not automatically be added to the City's Plan Holder list for this project.

**The official Bidder's Submittal packet must be obtained from the Office of the City Clerk, City Hall, 3031 Torrance Boulevard, Torrance, California. Contact the City Clerk's office at (310) 781-7530 or [CityClerk@TorranceCA.gov](mailto:CityClerk@TorranceCA.gov) for more information. There is no cost if the Bidder's Submittal is obtained at City Hall. A payment of \$5 is required if requested by mail.** The amount includes tax and is not refundable. A prospective bidder must provide to the City Clerk the firm's name, address, telephone and fax numbers, a contact person and a valid email address. This will ensure that your firm is listed as a "Plan Holder" and that you can be contacted for any purpose related to this bid. Addenda will be issued only by posting to the project's website listed above. It is the Bidder's sole responsibility to visit the project's website to obtain and administer any Addendum related to this bid. An Addendum must be acknowledged by a bidder in its submitted form of Proposal. **If a bidder submits its Bidder's Submittal on forms other than the official Bidder's Submittal forms, the City may declare the bid as non-responsive.**

Full-size 24" x 36" Plans and a bound Specifications booklet may also be obtained at the same Office of the City Clerk, upon payment of \$50 if obtained at City Hall, or payment of \$60 if requested by mail. Both amounts include tax. Neither amount is refundable. The \$50 includes a copy of the official Bidder's Submittal packet. If requesting any item(s) by mail, please send check to the following:

**CITY OF TORRANCE  
OFFICE OF THE CITY CLERK  
3031 TORRANCE BLVD  
TORRANCE, CA 90503  
ATTN: B2019-37**

The Engineer's estimate of the contract total is between \$735,000 and \$745,000. All work shall be completed within **65** working days from the date of the Construction Notice to Proceed (NTP).

An Administrative Notice to Proceed will be issued prior to the issuance of a Construction Notice to Proceed. Refer to Section 6-1.1 of the specifications for additional details.

Per Division 2, Chapter 2 of the Torrance Municipal Code, the Torrance City Council may reject any and all bids, waive any informality or irregularity in such bids, and determine the lowest responsible bidder. No facsimile bids shall be accepted by the City.

Substitution of securities for withheld funds is permitted per Section 22300 of the Public Contract Code.

The City has determined that a Class **A** Contractor's license is necessary to bid this project, but reserves the right to accept another Class at the sole discretion of either the Public Works Director or Engineer.

Pursuant to Section 1770, et. seq., of the California Labor Code, the successful bidder shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. These wage rates are available from the California Department of Industrial Relations' Internet website at <http://www.dir.ca.gov/DLSR/PWD>

Pursuant to Section 1725.5 of the California Labor Code, no contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations at the time the contract is awarded. Contractors and subcontractors may find additional information for registering at the Department of Industrial Relations website at <http://www.dir.ca.gov/Public-Works/PublicWorks.html>.

Pursuant to Labor Code section 1771.1, no contractor or subcontractor may be listed on a bid proposal for a public works project submitted on or after March 1, 2015 unless registered with the Department of Industrial Relations. Furthermore, all bidders and contractors are hereby notified that no contractor or subcontractor may be awarded, on or after April 1, 2015, a contract for public work on a public works project unless registered with the Department of Industrial Relations.

Pursuant to Labor Code section 1771.4, all bidders are hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Also refer to Special Provisions Section 7-2.6 of this document. (SB854)

A **mandatory** meeting will be held at the Walnut Basin on Wednesday, August 21, 2019, 11:00 a.m. to 12 noon. A driveway leading to the entrance to the basin is located beside the property at 23914 Walnut Street near 240th Street.

By order of the City Council of the City of Torrance, California.

For further information, please contact John Dettle, Engineering Manager in the Public Works Department at (310) 618-3059 or via the main office at (310) 781-6900.

<b>Item #</b>	<b>Est. Qty</b>	<b>Unit</b>	<b>Bid Item Description</b>	<b>Sect. E Special Prov.</b>	<b>Unit Price</b>	<b>Total Bid</b>
10	275	SF	REMOVAL AND DISPOSAL OF DRIVEWAY AND SIDEWALK	300-1.3	\$	\$
11	30	LF	REMOVAL AND DISPOSAL OF CURB AND GUTTER	300-1.3	\$	\$
12	83	TON	RIPRAP (FACING CLASS)	300-11	\$	\$
13	20	TON	AC PAVEMENT	302-5	\$	\$
14	1	EA	CATCH BASIN PER STD PLAN 300, W=7'	303-1	\$	\$
15	1	EA	PIPE CONNECTION PER STD PLAN 335, CASE 1	303-1	\$	\$
16	1	EA	DIVERSION STRUCTURE	303-1	\$	\$
17	1	EA	PERMANENT BULKHEAD, 48" RCP	303-1	\$	\$
18	1	EA	TEMPORARY BULKHEAD, 24" RCP	303-1	\$	\$
19	1	EA	HEADWALL & WINGWALLS PER CALTRANS STD PLAN D86B	303-1	\$	\$
20	30	LF	PCC CURB & GUTTER, TYPE A2-6	303-5	\$	\$
21	230	SF	PCC SIDEWALK, 4" THICK	303-5	\$	\$
22	35	SF	PCC DRIVEWAYS, 6" THICK	303-5	\$	\$
23	1	EA	LOCAL DEPRESSION PER STD PLAN 313-3, CASE B	303-5	\$	\$
24	1	EA	SLOPED PROTECTION BARRIER PER STD PLAN 360-2	304-1	\$	\$
25	8	LF	18" RCP, 1500 D	306-1	\$	\$
26	25	LF	24" RCP, 2200 D	306-1	\$	\$
27	25	LF	48" RCP, 2400 D	306-1	\$	\$
28	135	LF	JACK 48" RCP, 2400 D	306-2	\$	\$
29	1	LS	JACKING PIT	306-2	\$	\$
30	1	LS	RECEIVING PIT	306-2	\$	\$

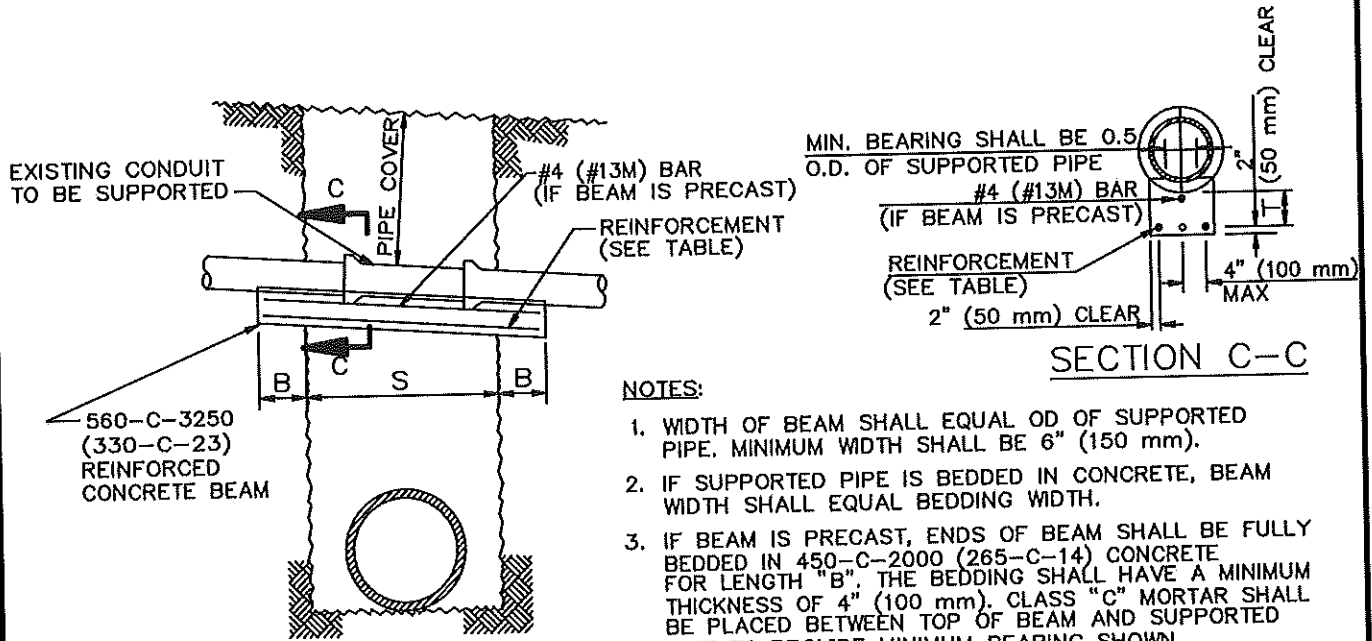






# CASE I REINFORCED CONCRETE BEAM

FOR 4" (100 mm) TO 24" (610 mm) ID PIPE



**NOTES:**

1. WIDTH OF BEAM SHALL EQUAL OD OF SUPPORTED PIPE. MINIMUM WIDTH SHALL BE 6" (150 mm).
2. IF SUPPORTED PIPE IS BEDDED IN CONCRETE, BEAM WIDTH SHALL EQUAL BEDDING WIDTH.
3. IF BEAM IS PRECAST, ENDS OF BEAM SHALL BE FULLY BEDDED IN 450-C-2000 (265-C-14) CONCRETE FOR LENGTH "B". THE BEDDING SHALL HAVE A MINIMUM THICKNESS OF 4" (100 mm). CLASS "C" MORTAR SHALL BE PLACED BETWEEN TOP OF BEAM AND SUPPORTED PIPE TO PROVIDE MINIMUM BEARING SHOWN.
4. THIS CASE IS PERMITTED ONLY IF THE TRENCH WALLS ARE FIRM AND UNYIELDING.
5. MAXIMUM SPACING OF BARS SHALL BE 4" (100 mm) OC.

SEE REINFORCED CONCRETE BEAM TABLE (DIMENSIONS AND REINFORCEMENT) ON PAGE 2, THIS SECTION.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE  
PUBLIC WORKS STANDARDS INC.  
GREENBOOK COMMITTEE  
1984  
REV. 1996, 2009

## SUPPORTS FOR CONDUITS ACROSS TRENCHES

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

# 224-2

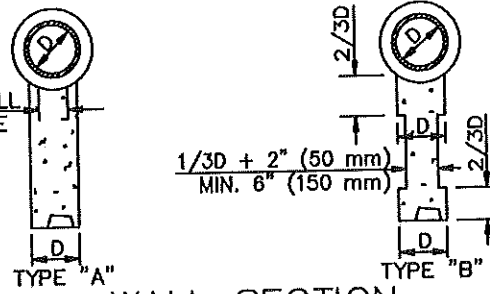
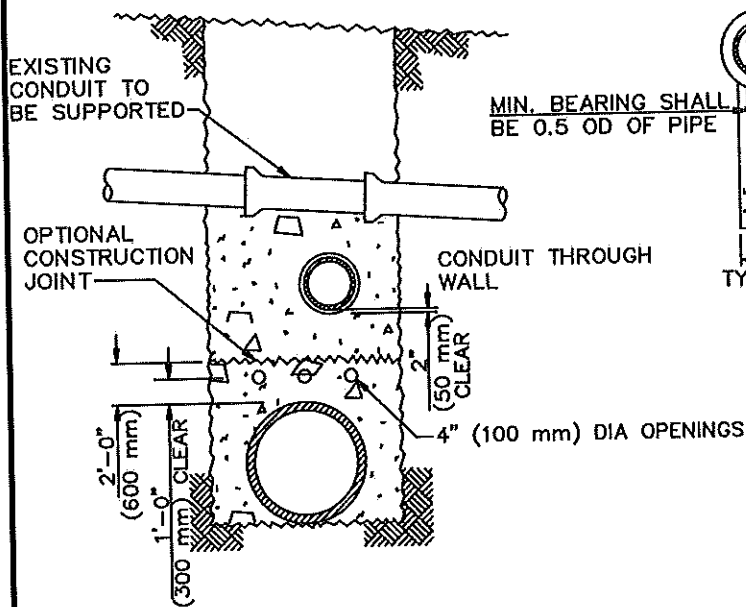
SHEET 1 OF 4

REINFORCED CONCRETE BEAM (DIMENSIONS AND REINFORCEMENT)

PIPE COVER

S	0' TO 8'-0"						8'-0" TO 12'-0"						12'-0" TO 16'-0"						16'-0" TO 20'-0"						20'-0" TO 25'-0"					
	(0 m TO 2.4 m)						(2.4 m TO 3.7 m)						(3.7 m TO 4.9 m)						(4.9 m TO 6.0 m)						(6.0 m TO 7.6 m)					
	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B	T	BARS	B
0' TO 4'-0" (8m TO 1.2m)	#4 (#13M)	1'-6" (0.50m)	8" (200mm)	#4 (#13M)	1'-6" (0.50m)	9" (230mm)	#4 (#13M)	1'-6" (0.50m)	10" (255mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)	#4 (#13M)	1'-6" (0.50m)	10 1/2" (270mm)
4'-0" TO 5'-0" (1.2m TO 1.50m)	#4 (#13M)	1'-6" (0.50m)	9 1/2" (250mm)	#4 (#13M)	1'-6" (0.50m)	11" (280mm)	#4 (#13M)	1'-6" (0.50m)	12" (305mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)	#4 (#13M)	1'-6" (0.50m)	12 1/2" (320mm)
5'-0" TO 6'-0" (1.5m TO 1.85m)	#4 (#13M)	1'-6" (0.50m)	11" (280mm)	#5 (#16M)	1'-6" (0.50m)	11" (280mm)	#5 (#16M)	1'-6" (0.50m)	12 1/2" (320mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)	#5 (#16M)	1'-6" (0.50m)	13 1/2" (340mm)
6'-0" TO 7'-0" (1.85m TO 2.15m)	#5 (#16M)	1'-6" (0.50m)	12 1/2" (320mm)	#5 (#16M)	1'-6" (0.50m)	14 1/2" (370mm)	#5 (#16M)	1'-6" (0.50m)	15 1/2" (395mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)	#5 (#16M)	1'-6" (0.50m)	16 1/2" (420mm)
7'-0" TO 8'-0" (2.15m TO 2.45m)	#5 (#16M)	1'-6" (0.50m)	14" (355mm)	#5 (#16M)	1'-6" (0.50m)	14" (355mm)	#5 (#16M)	1'-6" (0.50m)	15 1/2" (395mm)	#5 (#16M)	1'-6" (0.50m)	16" (410mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)	#5 (#16M)	1'-6" (0.50m)	17 1/2" (445mm)
8'-0" TO 9'-0" (2.45m TO 2.75m)	#5 (#16M)	2'-0" (0.6m)	15 1/2" (395mm)	#6 (#19M)	2'-0" (0.6m)	15 1/2" (395mm)	#6 (#19M)	2'-0" (0.6m)	17" (430mm)	#6 (#19M)	2'-0" (0.6m)	17 1/2" (445mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)
9'-0" TO 10'-0" (2.75m TO 3.0m)	#6 (#19M)	2'-0" (0.6m)	17" (430mm)	#6 (#19M)	2'-0" (0.6m)	17" (430mm)	#6 (#19M)	2'-0" (0.6m)	19 1/2" (495mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)	#6 (#19M)	2'-0" (0.6m)	21 1/2" (545mm)
10'-0" TO 10'-0" (3.0m TO 3.35m)	#6 (#19M)	2'-6" (0.75m)	18 1/2" (470mm)	#6 (#19M)	2'-6" (0.75m)	18 1/2" (470mm)	#6 (#19M)	2'-6" (0.75m)	20" (510mm)	#6 (#19M)	2'-6" (0.75m)	20" (510mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)	#6 (#19M)	2'-6" (0.75m)	21 1/2" (545mm)
11'-0" TO 12'-0" (3.35m TO 3.65m)	#6 (#19M)	2'-6" (0.75m)	20" (510mm)	#6 (#19M)	2'-6" (0.75m)	20" (510mm)	#6 (#19M)	2'-6" (0.75m)	23 1/2" (595mm)	#6 (#19M)	2'-6" (0.75m)	23 1/2" (595mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)	#6 (#19M)	2'-6" (0.75m)	25 1/2" (635mm)
12'-0" TO 13'-0" (3.65m TO 4.00m)	#6 (#19M)	3'-0" (0.90m)	21 1/2" (545mm)	#7 (#22M)	3'-0" (0.90m)	21 1/2" (545mm)	#7 (#22M)	3'-0" (0.90m)	23 1/2" (595mm)	#7 (#22M)	3'-0" (0.90m)	25 1/2" (635mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)	#7 (#22M)	3'-0" (0.90m)	27 1/2" (700mm)
13'-1" TO 14'-0" (4.00m TO 4.25m)	#7 (#22M)	3'-0" (0.90m)	23" (585mm)	#7 (#22M)	3'-0" (0.90m)	23" (585mm)	#7 (#22M)	3'-0" (0.90m)	24 1/2" (625mm)	#7 (#22M)	3'-0" (0.90m)	26 1/2" (675mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)
14'-0" TO 15'-0" (4.25m TO 4.60m)	#7 (#22M)	3'-0" (0.90m)	25" (635mm)	#7 (#22M)	3'-0" (0.90m)	25" (635mm)	#7 (#22M)	3'-0" (0.90m)	26 1/2" (675mm)	#7 (#22M)	3'-0" (0.90m)	28" (710mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)	#7 (#22M)	3'-0" (0.90m)	30" (760mm)
15'-0" TO 16'-0" (4.6m TO 4.90m)	#7 (#22M)	3'-6" (1.10m)	26 1/2" (675mm)	#7 (#22M)	3'-6" (1.10m)	26 1/2" (675mm)	#7 (#22M)	3'-6" (1.10m)	28" (710mm)	#7 (#22M)	3'-6" (1.10m)	30" (760mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)
16'-0" TO 17'-0" (4.90 TO 5.20m)	#7 (#22M)	3'-6" (1.10m)	28" (710mm)	#7 (#22M)	3'-6" (1.10m)	28" (710mm)	#7 (#22M)	3'-6" (1.10m)	30" (760mm)	#7 (#22M)	3'-6" (1.10m)	32 1/2" (830mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)	#7 (#22M)	3'-6" (1.10m)	34 1/2" (880mm)
17'-0" TO 18'-0" (5.20m TO 5.50m)	#8 (#25M)	4'-6" (1.40m)	29 1/2" (750mm)	#8 (#25M)	4'-6" (1.40m)	29 1/2" (750mm)	#8 (#25M)	4'-6" (1.40m)	31 1/2" (800mm)	#8 (#25M)	4'-6" (1.40m)	33 1/2" (860mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)	#8 (#25M)	4'-6" (1.40m)	35 1/2" (910mm)

## CASE 2 CONCRETE WALL

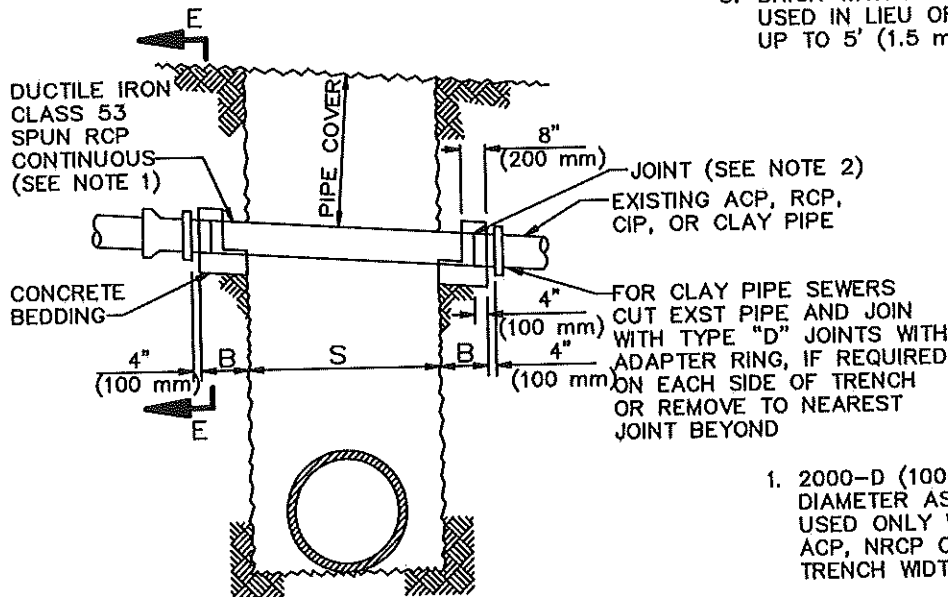


**WALL SECTION**

**NOTES**

1. THE SUPPORTING WALL SHALL HAVE A FIRM BEARING ON THE SUBGRADE AND AGAINST THE SLIDES OF THE EXCAVATION.
2. ANY CONDUIT PASSING THROUGH THE WALL SHALL HAVE 2" (50 mm) CLEARANCE FROM THE WALL.
3. 4" (100 mm) DIA OPENING THROUGH THE WALL AT 2' (600 mm) OC HORIZONTALLY AND AT 5' (1.5 m) OC VERTICALLY SHALL BE PROVIDED TO PREVENT UNEQUAL PRESSURE RESULTING FROM JETTED BACKFILL.
4. IF SUPPORTED PIPE IS BEDDED IN CONCRETE, MINIMUM THICKNESS OF WALL SHALL EQUAL BEDDING WIDTH.
5. BRICK WITH MORTAR JOINTS MAY BE USED IN LIEU OF CONCRETE FOR WALLS UP TO 5' (1.5 m) IN HEIGHT OR LENGTH.

## CASE 3 DUCTILE IRON PIPE

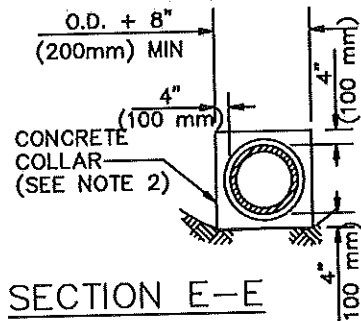


**NOTES**

1. 2000-D (100-D) SPUN RCP OF SAME DIAMETER AS THE EXISTING PIPE MAY BE USED ONLY WHEN THE EXISTING PIPE IS ACP, NRCP OR RCP AND THE TRENCH WIDTH IS 5' (1.5 m) OR LESS.
2. THE CONCRETE COLLAR JOINT SHALL BE USED FOR JOINTS IN STORM DRAIN PIPE.

ALLOWABLE SPANS AND MIN. REQUIRED BEARING FOR DUCTILE IRON PIPE

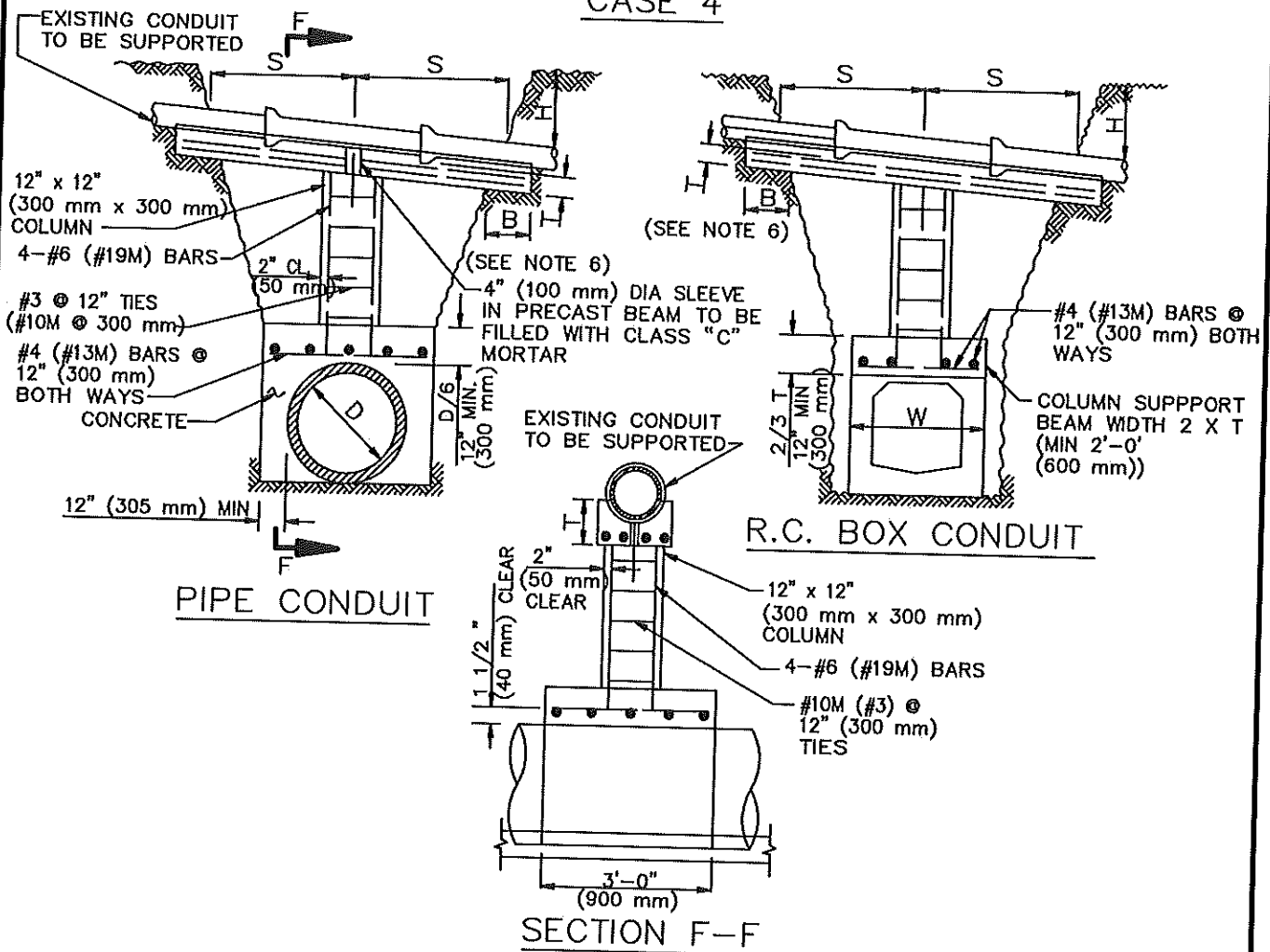
DEPTH OF COVER	6" (150 mm) PIPE		8" (200 mm) PIPE		10" (250 mm) PIPE	
	S (Max)	B (Min)	S (Max)	B (Min)	S (Max)	B (Min)
0' TO 8'-0" (0 m TO 2.45 m)	11'-0" (3.35 m)	1'-6" (0.5 m)	13'-6" (4.10 m)	1'-6" (0.5 m)	16'-6" (5.03 m)	2'-0" (0.6 m)
8'-0" TO 16'-0" (2.45 m TO 4.90 m)	8'-0" (2.45 m)	1'-6" (0.5 m)	10'-0" (3.00 m)	2'-0" (0.6 m)	12'-0" (3.66 m)	2'-0" (0.6 m)
16'-0" TO 25'-0" (4.90 m TO 7.60 m)	7'-0" (2.15 m)	1'-6" (0.5 m)	9'-0" (2.75 m)	2'-0" (0.6 m)	10'-6" (3.20 m)	2'-6" (0.75 m)



**SECTION E-E**

# COLUMN SUPPORT WITH REINFORCED CONCRETE BEAM

## CASE 4



### NOTES

1. SPAN "S" SHALL BE MAXIMUM 18' (5.5 m) FOR EARTH COVER 8' (2.45 m) OR LESS, 12' (3.65 m) FOR EARTH COVER 16' (4.9 m) OR LESS, AND 10' (3.0 m) FOR OVER 16' (4.9 m) EARTH COVER.
2. CONCRETE SHALL BE CLASS 560-C-3250 (330-C-23).
3. WHEN THE PIPE TO BE SUPPORTED CROSSES THE TRENCH ON A SKEW ANGLE, THE WALL OR BEAM WHICH SUPPORTS THE COLUMN SHALL BE CONSTRUCTED AT RIGHT ANGLE TO THE TRENCH.
4. SUPPORT SYSTEM MAY BE USED OVER CAST-IN-PLACE STRUCTURES.
5. BACKFILL ABOVE THE SUPPORT BEAM SHALL NOT BE PLACED UNTIL 72 HOURS AFTER THE SUPPORT IS POURED.
6. REINFORCED CONCRETE BEAM DIMENSIONED AND REINFORCED PER TABLE UNDER CASE 1.

### GENERAL NOTES

1. "S" IS THE SPAN OF THE PIPE SUPPORT MEASURED ALONG ITS CENTERLINE.
2. "B" IS THE LENGTH OF BEARING OF THE SUPPORT AGAINST UNDISTURBED EARTH MEASURED ALONG THE PIPE CENTERLINE.
3. CASE 2 SHALL BE USED FOR PARTIAL CROSSINGS, EXCEPT THAT WHERE THE DISTANCE FROM A SEWER CHIMNEY TO UNDISTURBED EARTH IS 18" (450 mm) OR LESS, THE TRENCH BACKFILL MAY BE DENSIFIED TO 18" (450 mm) ABOVE A HOUSE CONNECTION SEWER AND THEN RE-EXCAVATED FOR THE PIPE INSTALLATION.
4. ANY SEWER OR STORM DRAIN EXPOSED OR PARTIALLY EXPOSED IN A TUNNEL EXCAVATION SHALL BE SUPPORTED WITH A WALL, CASE 2.
5. IF BEDDING IS REMOVED FROM THE EXISTING PIPE THAT WILL REMAIN IN PLACE, THE PIPE SHALL BE EMBEDDED WITH CONCRETE AT NO EXTRA COST TO THE AGENCY.
6. UNLESS OTHERWISE INDICATED, CONCRETE SHALL BE CLASS 450-C2000 (265-C-14).