



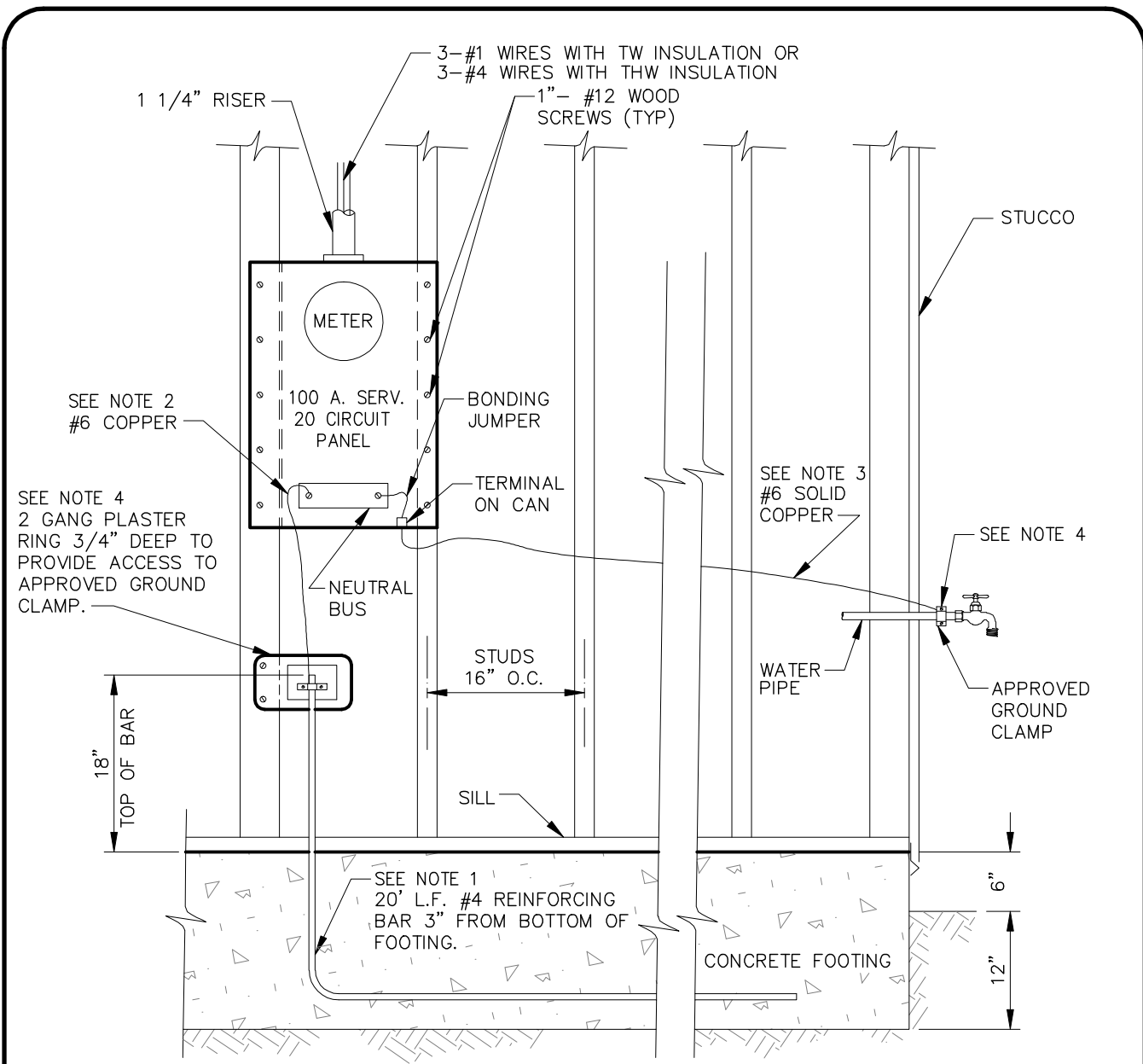
CITY OF GARDEN GROVE PUBLIC WORKS STANDARD PLANS

SERIES B-500 BUILDING

- B-501 ELECTRICAL GROUND INSTALLATION
- B-502 REFUSE STORAGE ENCLOSURE
- B-503 CLARIFIER
- B-504 BLOCKWALL RETAINING 2' OF SOIL
- B-505 MINIMUM REQUIREMENTS FOR 6" OR 8" BLOCK FENCE
- B-507 EQUIPMENT VIEW OBSCURING SCREEN DETAIL
- B-508 GARDEN WALL

SERIES B-700 WATER

- B-701 WET BARREL FIRE HYDRANT-INDUSTRIAL
- B-702 WET BARREL FIRE HYDRANT-RESIDENTIAL / COMMERCIAL
- B-703 GUARD POST DETAIL FOR FIRE HYDRANTS
- B-704 CONCRETE COLLAR DETAIL
- B-705 FIRE HYDRANT SETBACK DETAIL
- B-710 ANCHOR BLOCK DETAILS FOR 6" TO 12" D.I. FITTINGS
- B-711 ANCHOR BLOCK DETAILS FOR 45 DEGREE BEND
- B-712 ANCHOR BLOCK DETAILS FOR PVC WATER MAIN VALVES
- B-713 ANCHOR BLOCK DETAILS FOR 6" THRU 16" PIPE
- B-714 REVERSE TIE ANCHOR BLOCK ASSEMBLY FOR 6" THRU 16" PIPE
- B-720 1" COPPER WATER SERVICE SAMPLE CONNECTION
- B-721 1" COPPER WATER SERVICE INSTALLATION FOR 3/4" & 1" METERS
- B-722 1-1/2" x 2" POSITIVE DISPLACEMENT METER AND 2" COPPER WATER SERVICE INSTALLATION
- B-723 1-1/2" & 2" TURBO METER AND 2" COPPER WATER SERVICE INSTALLATION



SECTION

NOTES

- 1 20' LONG #4 REINFORCING BAR IMBEDDED IN CONCRETE FOOTING.
- 2 #6 BARE COPPER OR GREEN INSULATION WIRE CONTINUOUS FROM REINFORCING BAR TO NEUTRAL BUS IN THE ELECTRIC SERVICE PANEL.
- 3 #6 BARE COPPER OR GREEN INSULATION WIRE CONTINUOUS FROM SERVICE PANEL TO COLD WATER PIPE.
- 4 ONLY U.L. APPROVED GROUNDING CLAMPS TO BE USED AND MUST BE ACCESSABLE.



ELECTRICAL GROUND INSTALLATION

Approved _____ Date _____

REVISIONS

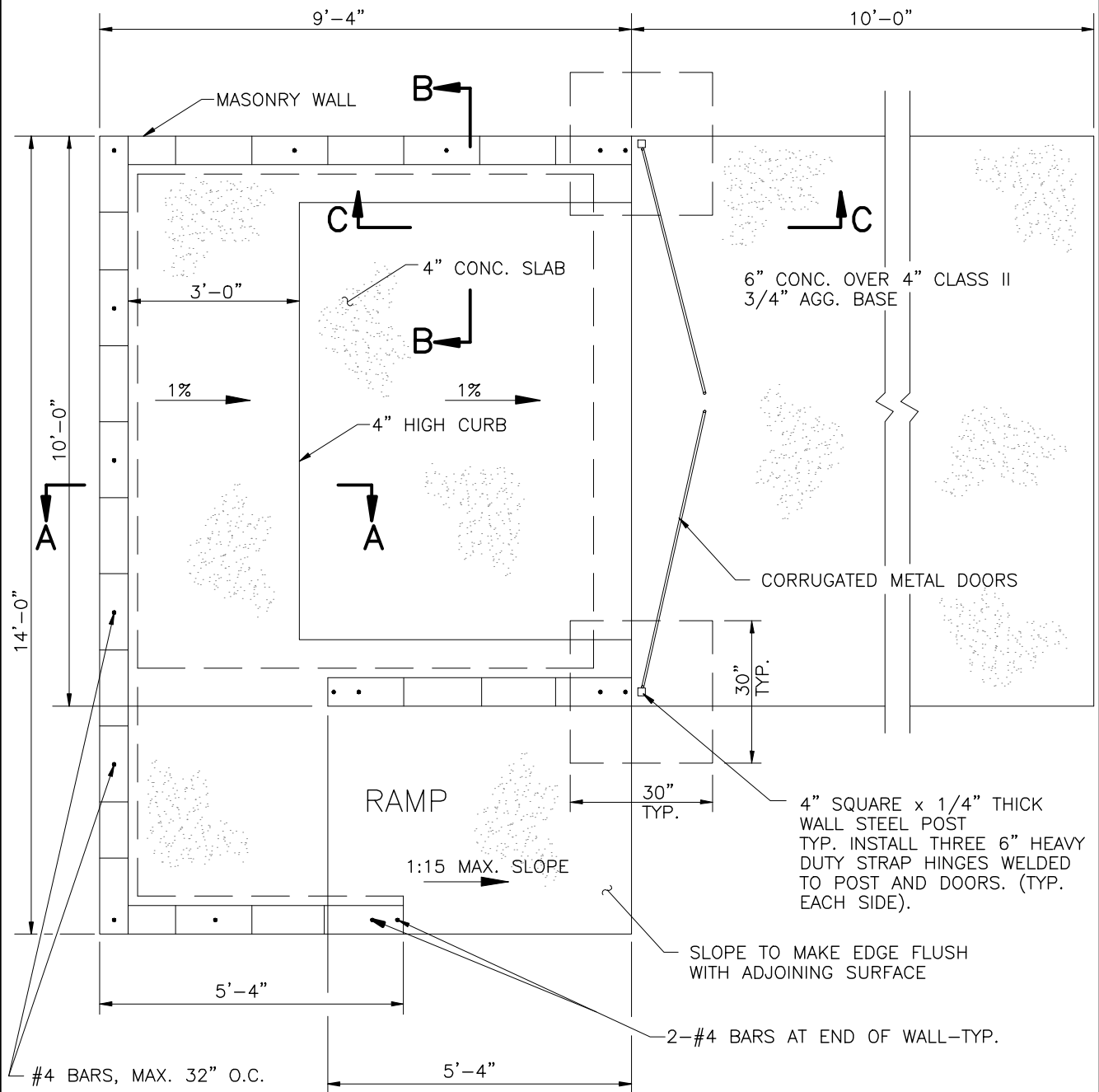
BY

DATE

STD. PLAN NUMBER

City Engineer R.C.E. 50353 Exp.06-30-09

B-501



PLAN
N.T.S.

NOTE:

PLANNING DIVISION TO APPROVE
STYLE AND COLOR OF BLOCK PRIOR
TO CONSTRUCTION.



City of
Garden Grove
California

**REFUSE STORAGE
ENCLOSURE**

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

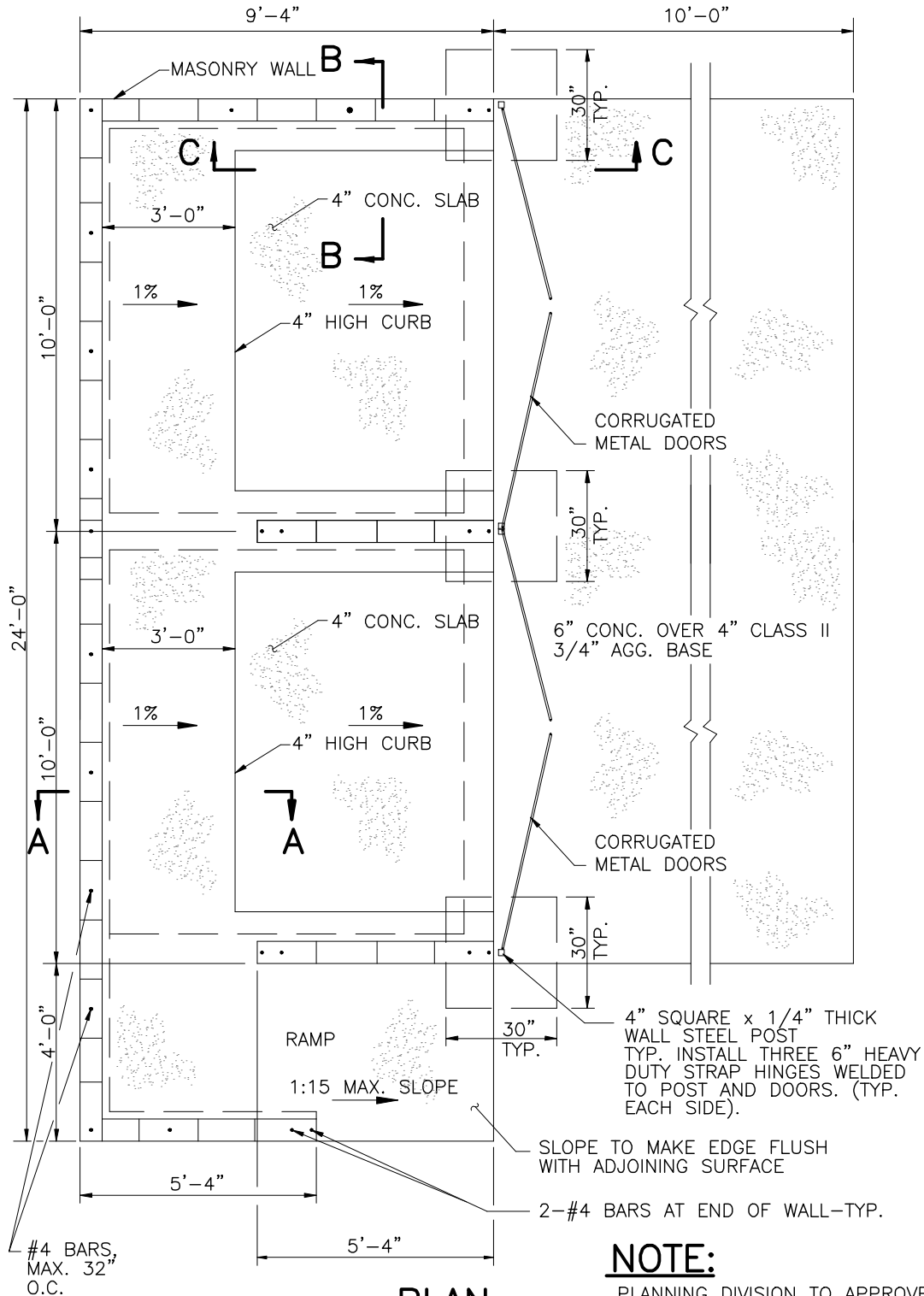
R.C.E. 50353

Exp.06-30-09

B-502

SHEET 1 OF 4

DOUBLE ENCLOSURE



PLAN
N.T.S.

NOTE:

PLANNING DIVISION TO APPROVE STYLE AND COLOR OF BLOCK PRIOR TO CONSTRUCTION.



City of
Garden Grove
California

REFUSE STORAGE ENCLOSURE

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

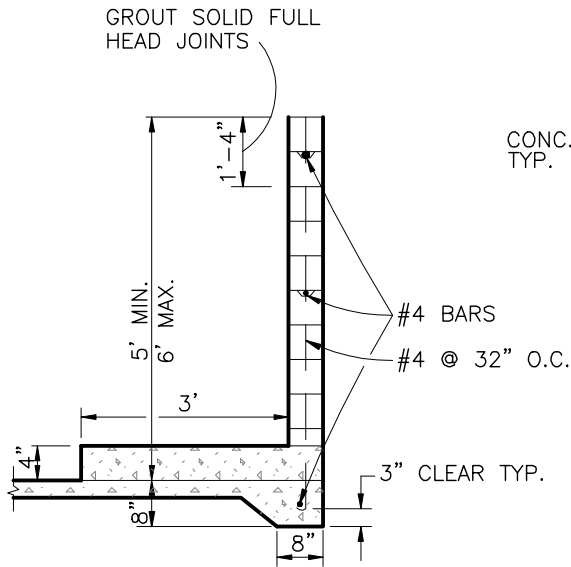
City Engineer

R.C.E. 50353

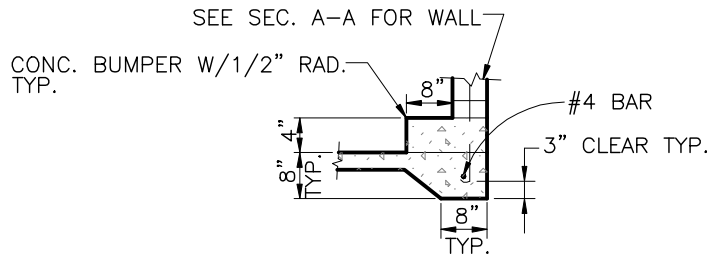
Exp.06-30-09

B-502

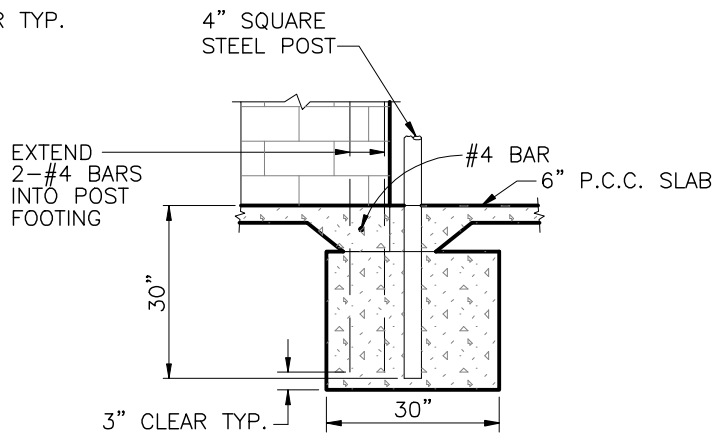
SHEET 2 OF 4



SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

1. LOCATION SHALL BE APPROVED BY THE PUBLIC WORKS DEPARTMENT.
2. AREAS SHALL BE ACCESSIBLE FOR DELIVERY AND COLLECTION.
3. GATES SHALL BE CORRUGATED METAL DOORS, AND MUST BE APPROVED BY PUBLIC WORKS DEPARTMENT PRIOR TO INSTALLATION.
4. GATE LATCHES SHALL BE OF THE PLUNGER BAR TYPE OR EQUIVALENT AS APPROVED BY THE PUBLIC WORKS DEPARTMENT.
5. PLANNING SERVICES DIVISION TO APPROVE BLOCK COLOR & STYLE, COLOR FOR GATES AND ANY OTHER MODIFICATIONS PRIOR TO CONSTRUCTION. CALL 741-5323
6. SEE ATTACHED SPECIFICATIONS, NOTES, AND PROCEDURES.



City of
Garden Grove
California

**REFUSE STORAGE
ENCLOSURE**

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

R.C.E. 50353

Exp.06-30-09

B-502

SHEET 3 OF 4

MATERIAL SPECIFICATIONS:

1. CONCRETE BLOCK: 6" MINIMUM IN SIZE, ASTM C90.
2. REINFORCING STEEL: ASTM 615, GRADE 40.
3. ACCEPTABLE SOIL TYPES:
 - a. MIN. ALLOWABLE BEARING: 1000 LBS./SQ. FT.
 - b. MIN. LATERAL BEARING: 100 LBS./SQ. FT./FT.
 - c. MAX. EXPANSION INDEX: 20
4. CONCRETE: 2000 LBS./SQ. IN. IN 28 DAYS.
5. MORTAR: 1:1/4:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND, BY VOLUME), MIXED TO PLASTIC CONSISTENCY. REFER TO UBC TABLE 24-A FOR OTHER TYPES OF CEMENT.
6. GROUT: 1:1/10:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND BY VOLUME), MIX TO FLOW WITHOUT SEGREGATION. GROUT MAY CONTAIN 2 PARTS PEA GRAVEL (3/8" MAX. SIZE). MINIMUM COMPRESSIVE STRENGTH: 2000 LBS./SQ. IN. REFER TO UBC TABLE 24-B FOR OTHER TYPES OF CEMENT.

GENERAL NOTES:

1. THIS DESIGN IS FOR AVERAGE CONDITIONS AND MAY NOT BE SUITABLE FOR ALL CASES. IT IS RECOMMENDED THAT A LICENSED CIVIL OR STRUCTURAL ENGINEER BE CONSULTED.
2. FOOTINGS SHALL BE IN NATURAL SOIL OR CERTIFIED FILL.
3. BLOCKS TO BE STAGGERED (RUNNING BOND).
4. ALL CELLS CONTAINING REINFORCING STEEL SHALL BE GROUTED.
5. APPROVED GROUT STOPS ARE REQUIRED BELOW HORIZONTAL STEEL IN PARTIALLY GROUTED WALLS. BAGS, NEWSPAPERS, ETC. ARE NOT APPROVED GROUT STOPS.
6. INITIAL BED JOINT SHALL BE 1/4"MIN., 1"MAX. SUBSEQUENT BED JOINTS SHALL BE 1/4"MIN., 5/8"MAX.
7. VERTICAL CONTINUITY OF CELLS SHALL BE UNOBSTRUCTED. MORTAR PROJECTIONS SHALL NOT EXCEED 1/2" FOR 6" AND LARGER BLOCK. MORTAR DROPPINGS OR OTHER FOREIGN MATTER ARE NOT PERMITTED IN CELLS AND MUST BE REMOVED.
8. EXPANSION JOINTS REQUIRED AT 60'-0" MAX. INTERVALS.
9. REQUIRED BAR LAPS:
 - a. VERTICAL STEEL: 30 BAR DIAMETERS.
 - b. HORIZONTAL STEEL: 40 BAR DIAMETERS.
 - c. WIRE JOINT REINFORCEMENT IN THE MORTARED BED JOINT: 75 WIRE DIAMETERS OR IN ALTERNATE BED JOINTS OF RUNNING BOND, 54 DIAMETERS PLUS TWICE THE BED JOINT SPACING.
10. WHERE HORIZONTAL WIRE JOINT REINFORCEMENT IS REQUIRED OR UTILIZED, IT SHALL BE EQUIVALENT TO TWO 3/16" DIAMETER BARS CONNECTED AT 16" INTERVALS BY NO. 9 GAUGE WELDED WIRE.
11. FOR PIPES AND CONDUIT EMBEDDED IN MASONRY, REFER TO SEC. 2407(g), UBC.
12. 3"MIN. COVER REQUIRED FOR REINFORCEMENT IN CONCRETE WHICH IS CAST AGAINST EARTH.

INSPECTION PROCEDURES:

1. FOUNDATION: AFTER TRENCHES ARE DUG, STEEL IS TIED IN PLACE, AND BEFORE ANY CONCRETE IS Poured.
2. PREGROUT: AFTER ALL BLOCKS (EXCEPT CAP) ARE IN PLACE, VERTICAL AND HORIZONTAL STEEL IS IN PLACE, GROUT STOPS (FOR PARTIALLY GROUTED MASONRY) ARE IN PLACE, AND PRIOR TO GROUTING.
3. FINAL: AFTER GROUT IS IN PLACE AND PRIOR TO PLACEMENT OF CAP.



City of
Garden Grove
California

REFUSE STORAGE ENCLOSURE

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

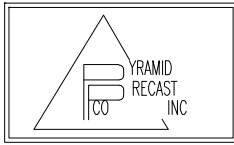
City Engineer

R.C.E. 50353 Exp.06-30-09

B-502

SHEET 4 OF 4

LABEL:

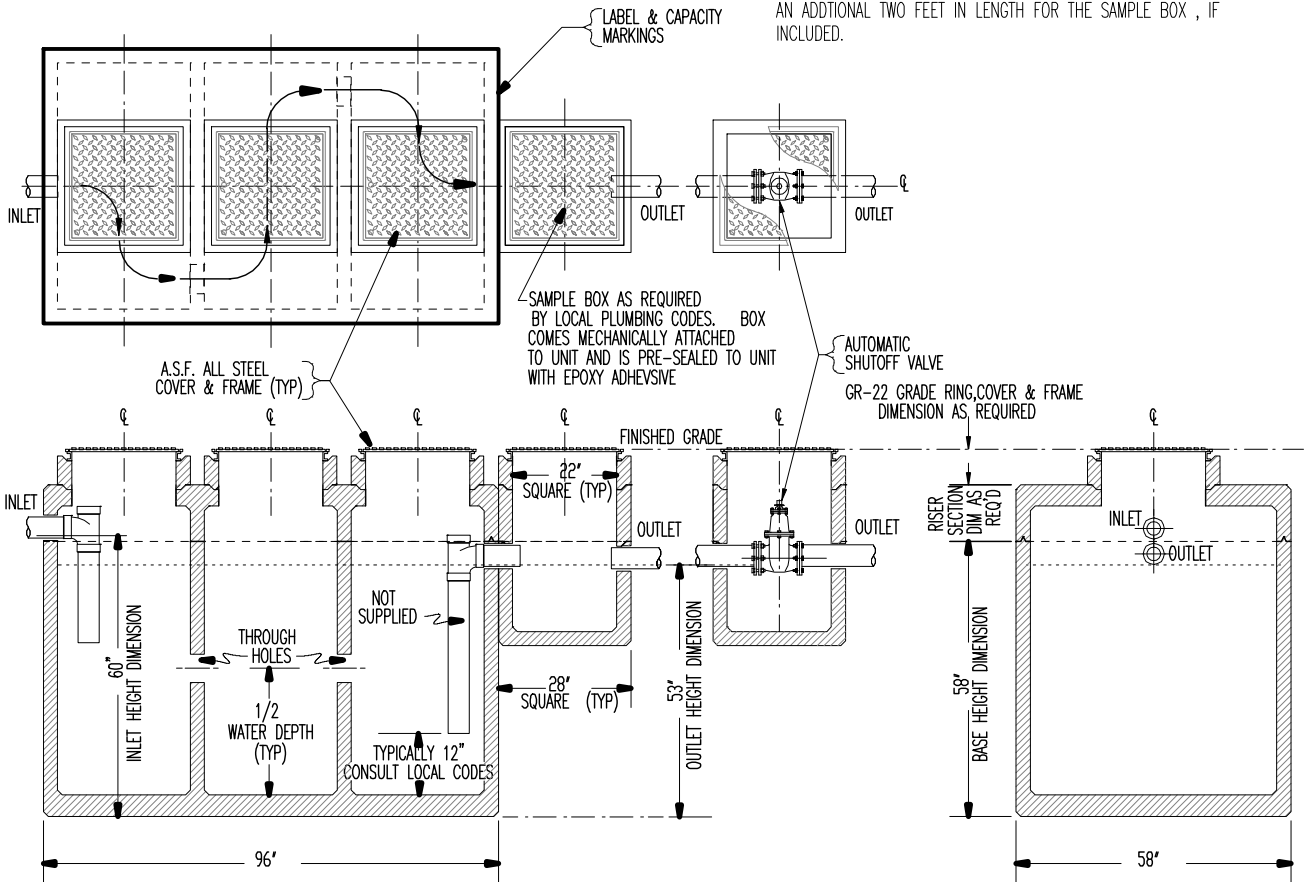


THIS UNIT CONFORMS TO MUNICIPAL UNIFORM PLUMBING CODES AND ASTM C-27 REQUIREMENTS

1000 GALLON IW3 INDUSTRIAL CLARIFIER, OR EQUAL.

LOCATED ON INLET END UPPER LEFT HAND CORNER

PLAN VIEW



NOTE:

1. CONCRETE OF PORTLAND CEMENT DESIGN, POURED AND VIBRATED FOR DENSITY TO DEVELOP 4000 PSI @ 28 DAYS COMPRESSIVE STRENGTH, AND REINFORCED WITH #3 DEFORMED STEEL BARS AS PER STRUCTURAL DRAWINGS. STRUCTURAL DRAWINGS AVAILABLE UPON REQUEST.
 2. REFER TO DRAWING PICO30002A FOR ADDITIONAL CONSTRUCTION NOTES, INSTALLATION INSTRUCTIONS AND MANHOLE DETAILS.
 3. EXCAVATION MUST BE TWO FEET LARGER THAN UNIT SIZE. EXCAVATED BASE MUST BE LEVEL AND COMPACT. SIX INCHES OF ROADBASE OR GRAVEL RECOMMENDED.
 4. A MAXIMUM OF 24" OF GR-22 GRADE RING RECOMMENDED. GREATER REQUIREMENTS SHOULD INVOLVE AN INCREASE IN THE HEIGHT OF THE RISER SECTION TO FACILITATE INSPECTION AND CLEANING.
 5. FITTINGS AT THE INLET AND OUTLET ENDS CANNOT BE SUPPLIED DUE TO VARIANCES IN LOCAL PLUMBING CODES. CONSULT LOCAL CODES FOR REQUIREMENTS.
- EXCAVATION SIZE: 10 FT LONG BY SIX FT WIDE MINIMUM. EXCAVATE AN ADDITIONAL TWO FEET IN LENGTH FOR THE SAMPLE BOX, IF INCLUDED.

SECTION - ELEVATION VIEW

SECTION - END VIEW



City of
Garden Grove
California

**CLARIFIER
GUTTER TYPE "A"**

Approved _____

Date _____

REVISIONS

BY

DATE

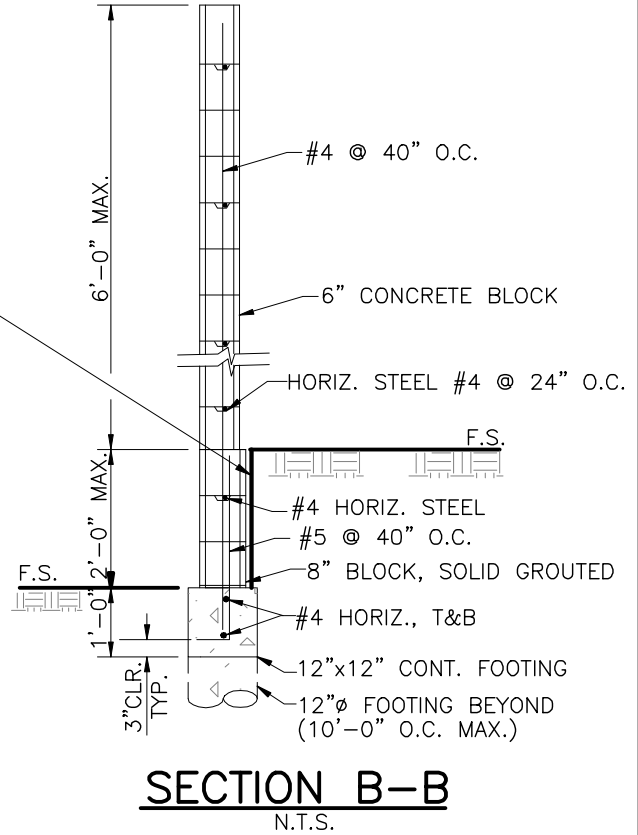
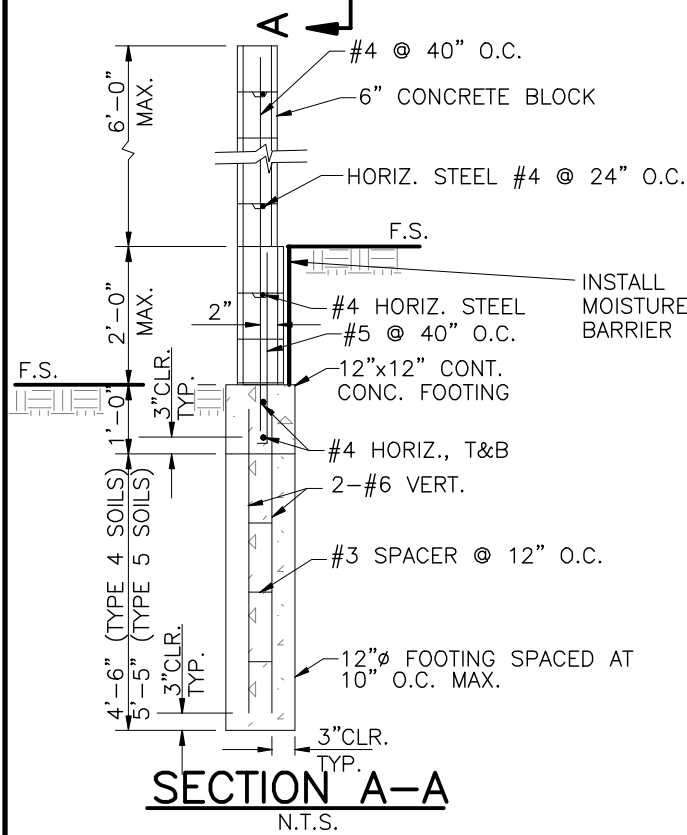
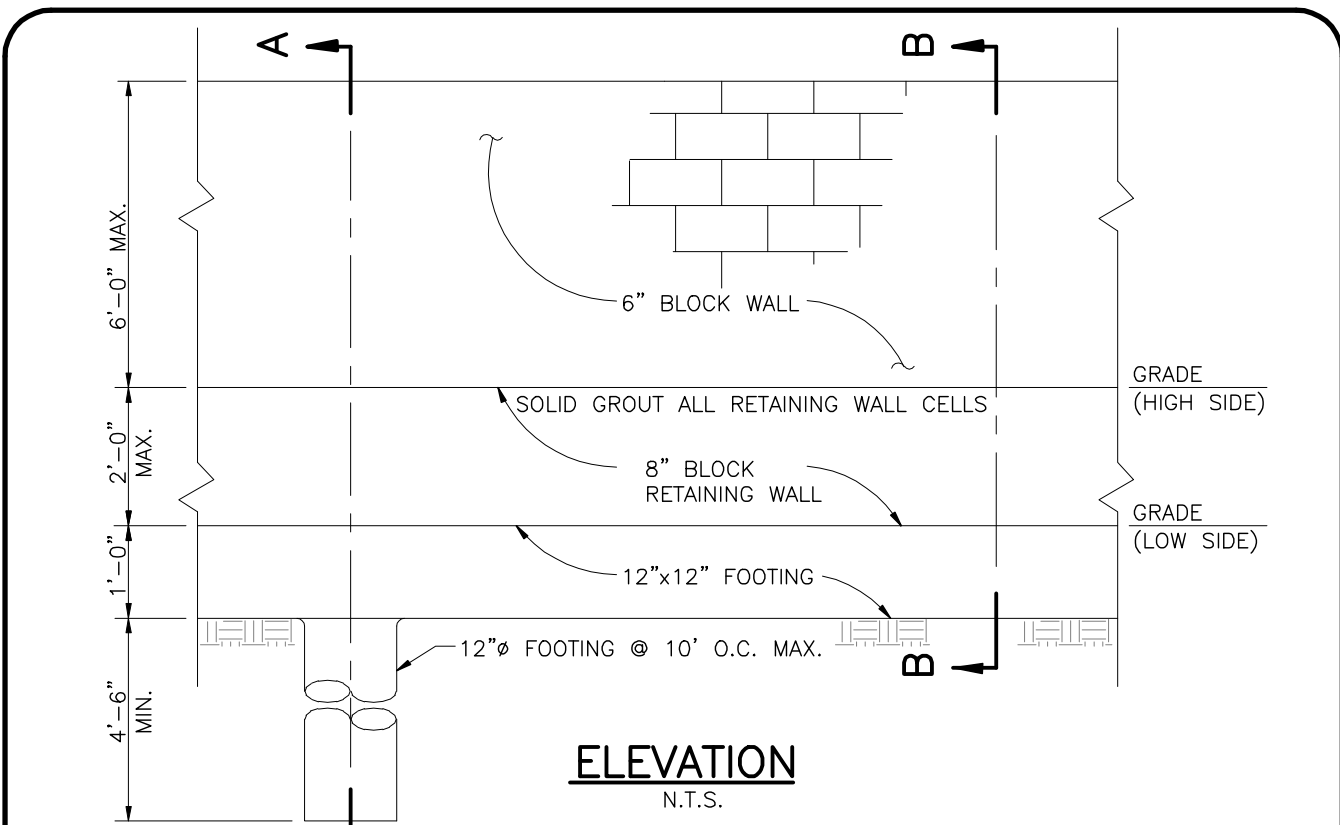
STD. PLAN NUMBER

City Engineer

R.C.E. 50353

Exp.06-30-09

B-503



**BLOCK WALL
RETAINING 2' OF SOIL**

Approved _____ Date _____
City Engineer R.C.E. 50353 Exp.06-30-09

REVISIONS	BY	DATE

STD. PLAN NUMBER
B-504
SHEET 1 OF 2

MATERIAL SPECIFICATIONS:

1. CONCRETE BLOCK: ASTM C-90 OR C-148
2. REINFORCING STEEL: ASTM 615, GRADE 40.
3. ACCEPTABLE SOIL TYPES:
 - a. MIN. ALLOWABLE BEARING: 1000 LBS./SQ. FT.
 - b. MIN. LATERAL BEARING: 100 LBS./SQ. FT./FT.
 - c. MAX. EXPANSION INDEX: 20
4. CONCRETE: 2000 LBS./SQ. IN. IN 28 DAYS.
5. MORTAR: 1:1/4:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND, BY VOLUME), MIXED TO PLASTIC CONSISTENCY. REFER TO UBC TABLE 24-A FOR OTHER TYPES OF CEMENT.
6. GROUT: 1:1/10:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND BY VOLUME), MIX TO FLOW WITHOUT SEGREGATION. GROUT MAY CONTAIN 2 PARTS PEA GRAVEL (3/8" MAX. SIZE). MINIMUM COMPRESSIVE STRENGTH: 2000 LBS./SQ. IN. REFER TO UBC TABLE 24-B FOR OTHER TYPES OF CEMENT.

GENERAL NOTES:

1. THIS DESIGN IS FOR AVERAGE CONDITIONS AND MAY NOT BE SUITABLE FOR ALL CASES. IT IS RECOMMENDED THAT A LICENSED CIVIL OR STRUCTURAL ENGINEER BE CONSULTED.
2. FOOTINGS SHALL BE IN NATURAL SOIL OR CERTIFIED FILL.
3. BLOCKS TO BE STAGGERED (RUNNING BOND).
4. ALL CELLS CONTAINING REINFORCING STEEL SHALL BE GROUTED.
5. APPROVED GROUT STOPS ARE REQUIRED BELOW HORIZONTAL STEEL IN PARTIALLY GROUTED WALLS. BAGS, NEWSPAPERS, ETC. ARE NOT APPROVED GROUT STOPS.
6. INITIAL BED JOINT SHALL BE 1/4"MIN., 1"MAX. SUBSEQUENT BED JOINTS SHALL BE 1/4"MIN., 5/8"MAX.
7. VERTICAL CONTINUITY OF CELLS SHALL BE UNOBSTRUCTED. MORTAR PROJECTIONS SHALL NOT EXCEED 1/2" FOR 6" AND LARGER BLOCK. MORTAR DROPPINGS OR OTHER FOREIGN MATTER ARE NOT PERMITTED IN CELLS AND MUST BE REMOVED.
8. EXPANSION JOINTS REQUIRED AT 60'-0" MAX. INTERVALS.
9. REQUIRED BAR LAPS:
 - a. VERTICAL STEEL: 30 BAR DIAMETERS.
 - b. HORIZONTAL STEEL: 40 BAR DIAMETERS.
 - c. WIRE JOINT REINFORCEMENT IN THE MORTARED BED JOINT: 75 WIRE DIAMETERS OR IN ALTERNATE BED JOINTS OF RUNNING BOND, 54 DIAMETERS PLUS TWICE THE BED JOINT SPACING.
10. WHERE HORIZONTAL WIRE JOINT REINFORCEMENT IS REQUIRED OR UTILIZED, IT SHALL BE EQUIVALENT TO TWO 3/16" DIAMETER BARS CONNECTED AT 16" INTERVALS BY NO. 9 GAUGE WELDED WIRE.
11. FOR PIPES AND CONDUIT EMBEDDED IN MASONRY, REFER TO SEC. 2407(g), UBC.
12. 3"MIN. COVER REQUIRED FOR REINFORCEMENT IN CONCRETE WHICH IS CAST AGAINST EARTH.
13. NO BACKFILL TO BE PLACED AGAINST RETAINING WALL FOR A MINIMUM OF 7 DAYS.
14. METHOD OF COMPACTION WITHIN 4ft. OF RETAINING WALL TO BE APPROVED BY BUILDING INSPECTOR PRIOR TO START OF WORK.

INSPECTION PROCEDURES:

1. FOUNDATION: AFTER TRENCHES ARE DUG, STEEL IS TIED IN PLACE, AND BEFORE ANY CONCRETE IS POURED.
2. PREGROUT: AFTER ALL BLOCKS (EXCEPT CAP) ARE IN PLACE, VERTICAL AND HORIZONTAL STEEL IS IN PLACE, GROUT STOPS (FOR PARTIALLY GROUTED MASONRY) ARE IN PLACE, AND PRIOR TO GROUTING.
3. FINAL: AFTER GROUT IS IN PLACE AND PRIOR TO PLACEMENT OF CAP.



City of
Garden Grove
California

BLOCK WALL RETAINING 2' OF SOIL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

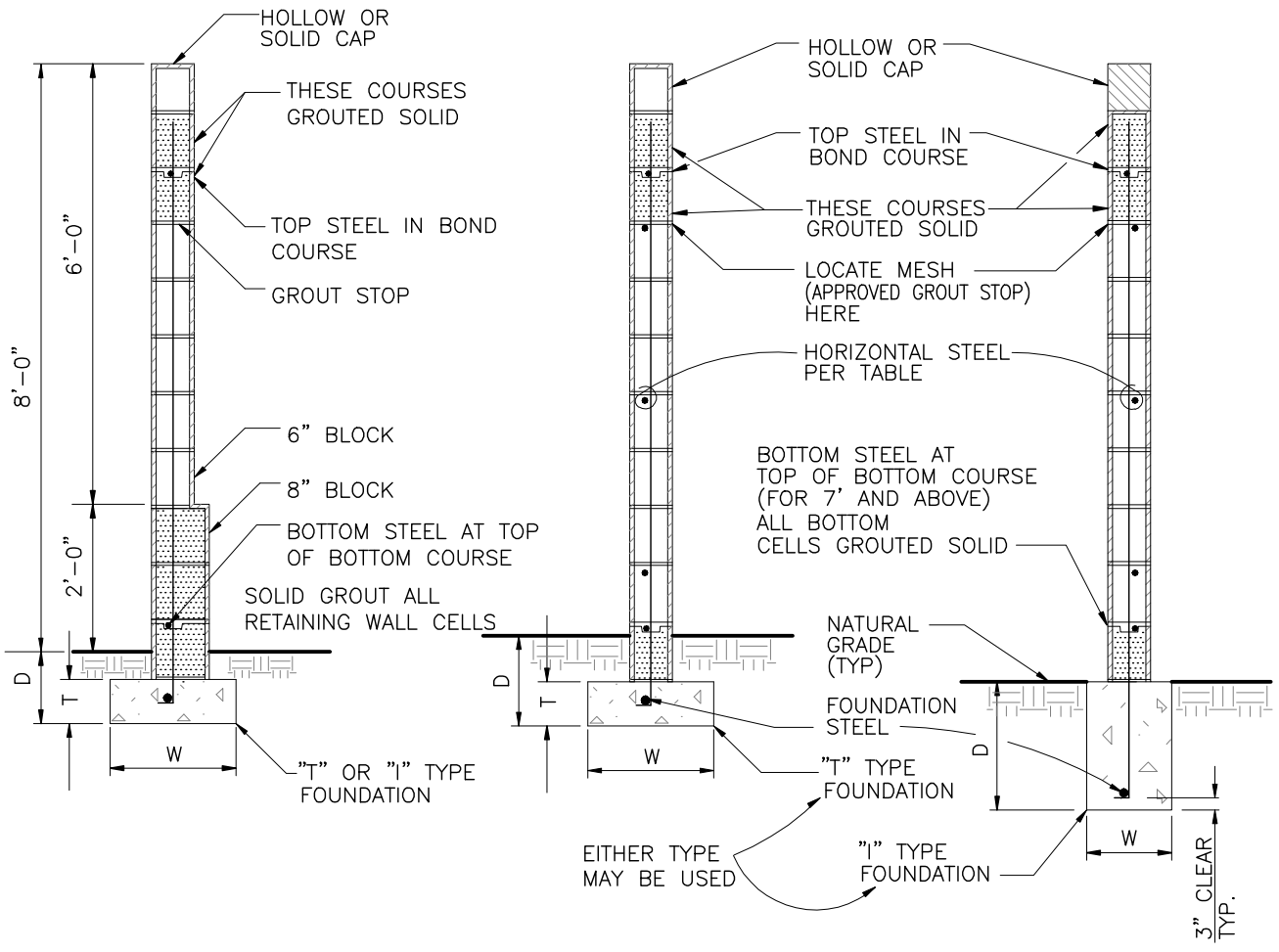
City Engineer

R.C.E. 50353 Exp.06-30-09

B-504

SHEET 2 OF 2

WALL HEIGHT	BLOCK SIZE	"T" TYPE FDN			"I" TYPE FDN		VERTICAL STEEL	HORIZONTAL STEEL
		W	D	T	W	D		
6'-0"	6"	22"	18"	12"	12"	38"	#4@32"O.C.	#4@24"O.C.
7'-0"	6"	26"	18"	12"	12"	42"	#5@24"O.C.	#4@24"O.C.
8'-0"	6" 8"	30"	18"	12"	12"	46"	6" BL #4@32"O.C. 8" BL #5@32"O.C.	#4@24"O.C.



**TYPICAL SECTION THROUGH
8' HIGH WALL**

**TYPICAL SECTION THROUGH
6' OR 7' HIGH WALL**

NOTE:

PLANNING DIVISION TO APPROVE STYLE AND COLOR OF BLOCK FOR ALL COMMERCIAL AND MULTI-RESIDENTIAL DEVELOPMENTS PRIOR TO CONSTRUCTION.



**MINIMUM REQUIREMENTS
FOR 6" OR 8" BLOCK WALL**

Approved _____	Date _____	REVISIONS	BY	DATE	STD. PLAN NUMBER
City Engineer	R.C.E. 50353				B-505
	Exp.06-30-09				SHEET 1 OF 2

MATERIAL SPECIFICATIONS:

1. CONCRETE BLOCK: ASTM C-90 OR C-148
2. REINFORCING STEEL: ASTM 615, GRADE 40.
3. ACCEPTABLE SOIL TYPES:
 - a. MIN. ALLOWABLE BEARING: 1000 LBS./SQ. FT.
 - b. MIN. LATERAL BEARING: 100 LBS./SQ. FT./FT.
 - c. MAX. EXPANSION INDEX: 20
4. CONCRETE: 2000 LBS./SQ. IN. IN 28 DAYS.
5. MORTAR: 1:1/4:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND, BY VOLUME), MIXED TO PLASTIC CONSISTENCY. REFER TO UBC TABLE 24-A FOR OTHER TYPES OF CEMENT.
6. GROUT: 1:1/10:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND BY VOLUME), MIX TO FLOW WITHOUT SEGREGATION. GROUT MAY CONTAIN 2 PARTS PEA GRAVEL (3/8" MAX. SIZE). MINIMUM COMPRESSIVE STRENGTH: 2000 LBS./SQ. IN. REFER TO UBC TABLE 24-B FOR OTHER TYPES OF CEMENT.

GENERAL NOTES:

1. THIS DESIGN IS FOR AVERAGE CONDITIONS AND MAY NOT BE SUITABLE FOR ALL CASES. IT IS RECOMMENDED THAT A LICENSED CIVIL OR STRUCTURAL ENGINEER BE CONSULTED.
2. FOOTINGS SHALL BE IN NATURAL SOIL OR CERTIFIED FILL.
3. BLOCKS TO BE STAGGERED (RUNNING BOND).
4. ALL CELLS CONTAINING REINFORCING STEEL SHALL BE GROUTED.
5. APPROVED GROUT STOPS ARE REQUIRED BELOW HORIZONTAL STEEL IN PARTIALLY GROUTED WALLS. BAGS, NEWSPAPERS, ETC. ARE NOT APPROVED GROUT STOPS.
6. INITIAL BED JOINT SHALL BE 1/4"MIN., 1"MAX. SUBSEQUENT BED JOINTS SHALL BE 1/4"MIN., 5/8"MAX.
7. VERTICAL CONTINUITY OF CELLS SHALL BE UNOBSTRUCTED. MORTAR PROJECTIONS SHALL NOT EXCEED 1/2" FOR 6" AND LARGER BLOCK. MORTAR DROPPINGS OR OTHER FOREIGN MATTER ARE NOT PERMITTED IN CELLS AND MUST BE REMOVED.
8. EXPANSION JOINTS REQUIRED AT 60'-0" MAX. INTERVALS.
9. REQUIRED BAR LAPS:
 - a. VERTICAL STEEL: 30 BAR DIAMETERS.
 - b. HORIZONTAL STEEL: 40 BAR DIAMETERS.
 - c. WIRE JOINT REINFORCEMENT IN THE MORTARED BED JOINT: 75 WIRE DIAMETERS OR IN ALTERNATE BED JOINTS OF RUNNING BOND, 54 DIAMETERS PLUS TWICE THE BED JOINT SPACING.
10. WHERE HORIZONTAL WIRE JOINT REINFORCEMENT IS REQUIRED OR UTILIZED, IT SHALL BE EQUIVALENT TO TWO 3/16" DIAMETER BARS CONNECTED AT 16" INTERVALS BY NO. 9 GAUGE WELDED WIRE.
11. FOR PIPES AND CONDUIT EMBEDDED IN MASONRY, REFER TO SEC. 2407(g), UBC.
12. 3"MIN. COVER REQUIRED FOR REINFORCEMENT IN CONCRETE WHICH IS CAST AGAINST EARTH.

INSPECTION PROCEDURES:

1. FOUNDATION: AFTER TRENCHES ARE DUG, STEEL IS TIED IN PLACE, AND BEFORE ANY CONCRETE IS POURED.
2. PREGROUT: AFTER ALL BLOCKS (EXCEPT CAP) ARE IN PLACE, VERTICAL AND HORIZONTAL STEEL IS IN PLACE, GROUT STOPS (FOR PARTIALLY GROUTED MASONRY) ARE IN PLACE, AND PRIOR TO GROUTING.
3. FINAL: AFTER GROUT IS IN PLACE AND PRIOR TO PLACEMENT OF CAP.



City of
Garden Grove
California

MINIMUM REQUIREMENTS FOR 6" OR 8" BLOCK FENCE

Approved _____

Date _____

REVISIONS

BY

DATE

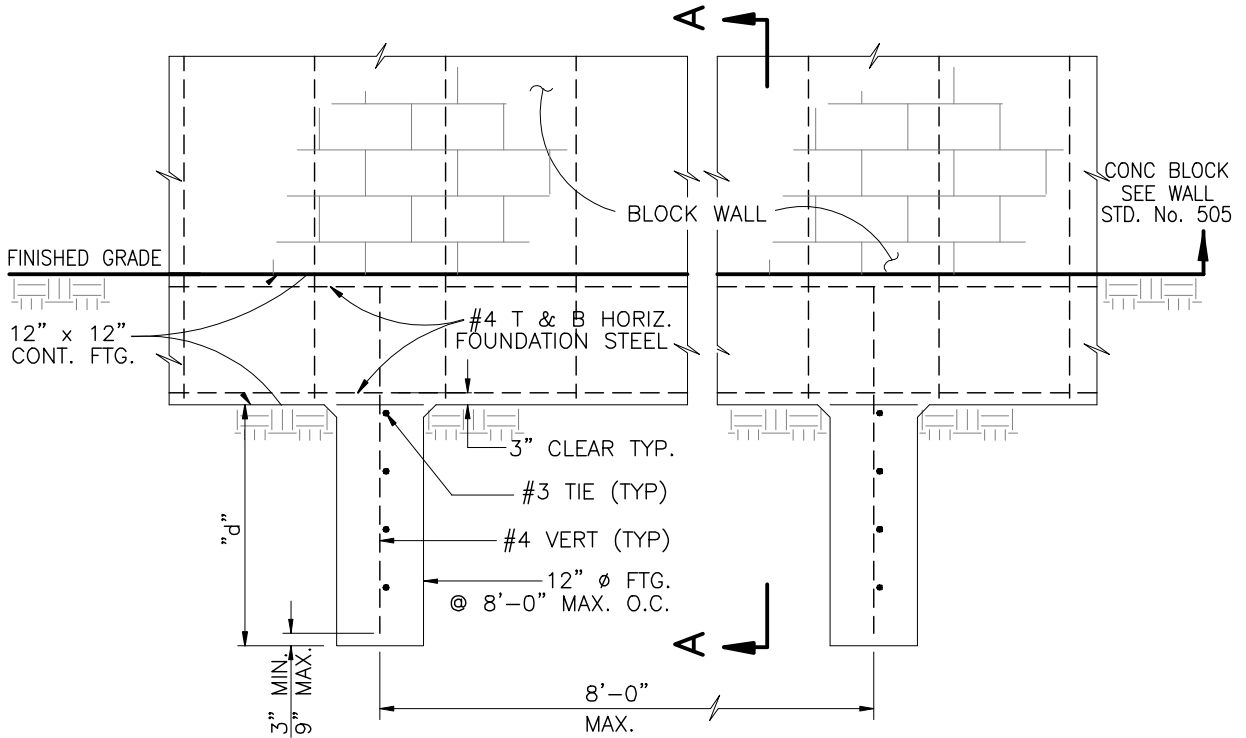
STD. PLAN NUMBER

City Engineer

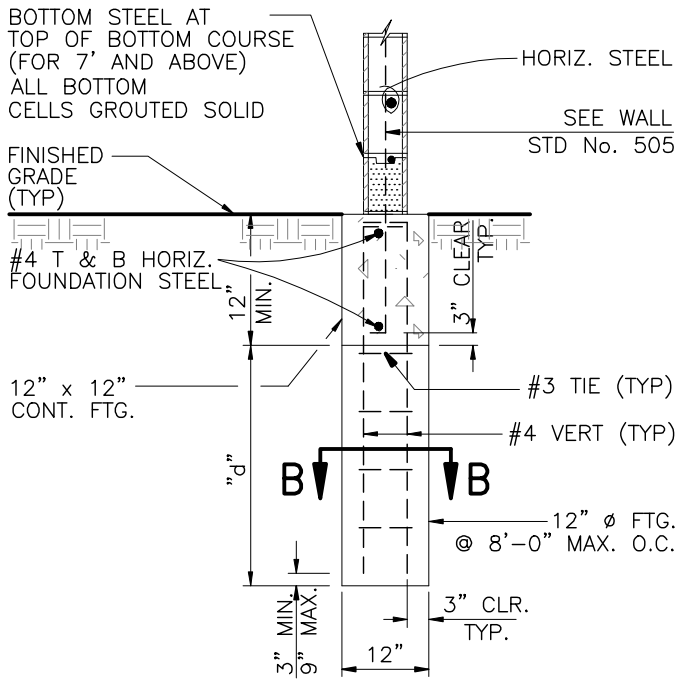
R.C.E. 50353 Exp.06-30-09

B-505

SHEET 2 OF 2

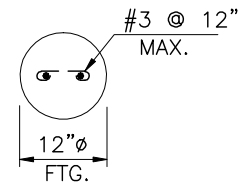


SECTION



SECTION A-A

MAX. WALL HT.	"d" MIN.
6'-0"	3'-0"
7'-0"	3'-6"
8'-0"	4'-0"



SECTION B-B



City of
Garden Grove
California

ALTERNATIVE FOOTING FOR WALL STANDARD No. 505

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

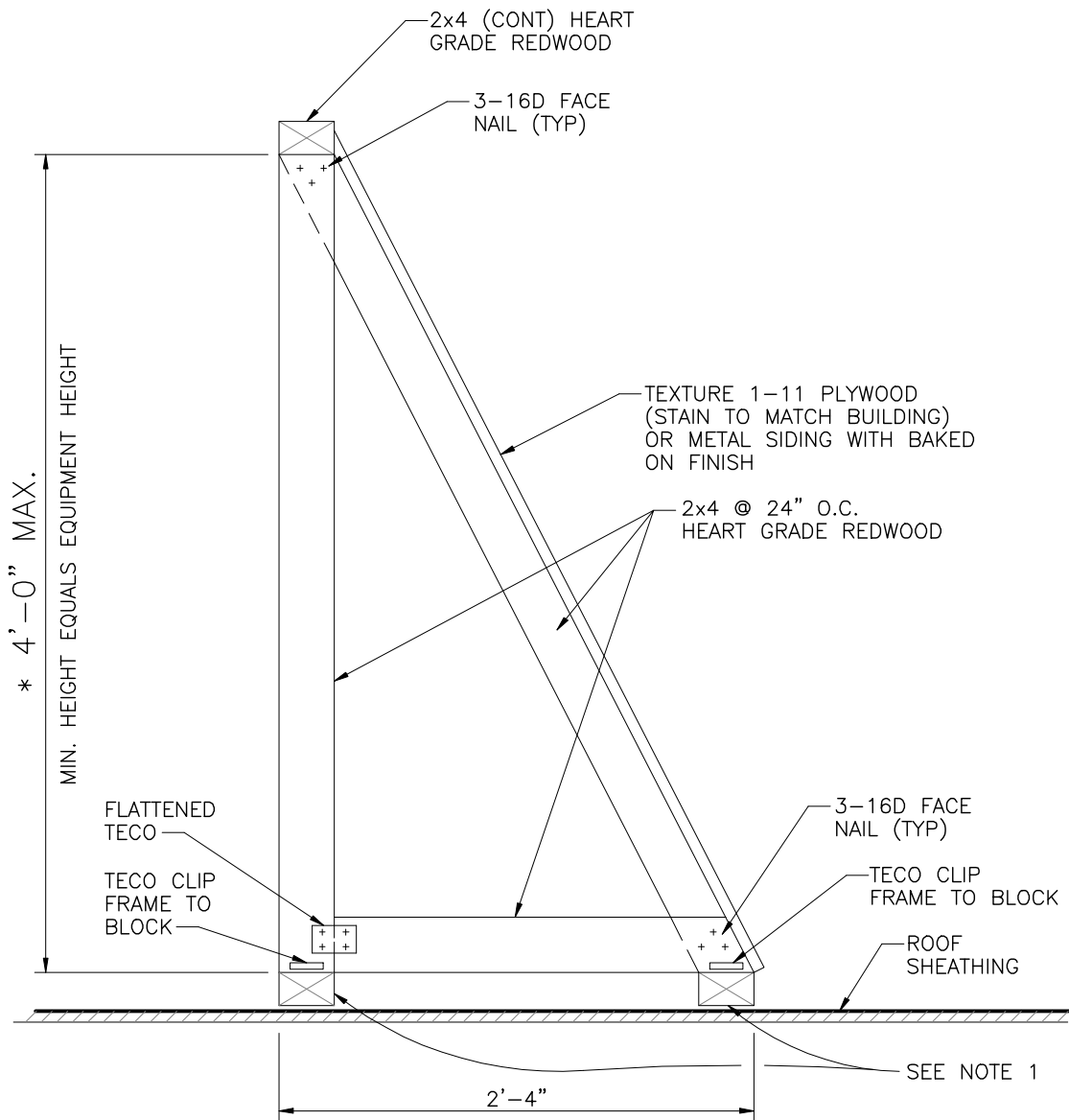
R.C.E. 50353

Exp.06-30-09

B-505A

SHEET 1a OF 2

G.G./B-505a.DWG



SECTION

NOTES:

1. SET 2"x4"x24" LONG BLOCK IN MASTIC TYPICAL @ 48" O.C. ATTACH EACH BLOCK TO PURLINS OR SUBPURLINS WITH 2-3/8" DIA. x 5" LAG BOLTS. SEAL HEAD OF LAG BOLT WITH MASTIC. BLOCKS TO BE HEART GRADE REDWOOD.
2. ALL NAILS, SCREWS, BOLTS AND TECO CLIPS TO BE GALVANIZED METAL.
3. PROVIDE ACCESS GATE TO EQUIPMENT.

* OVER 4'-0" HIGH REQUIRES DETAILED PLAN



City of
Garden Grove
California

**EQUIPMENT VIEW
OBSCURING SCREEN DETAIL**

Approved _____

Date _____

REVISIONS

BY

DATE

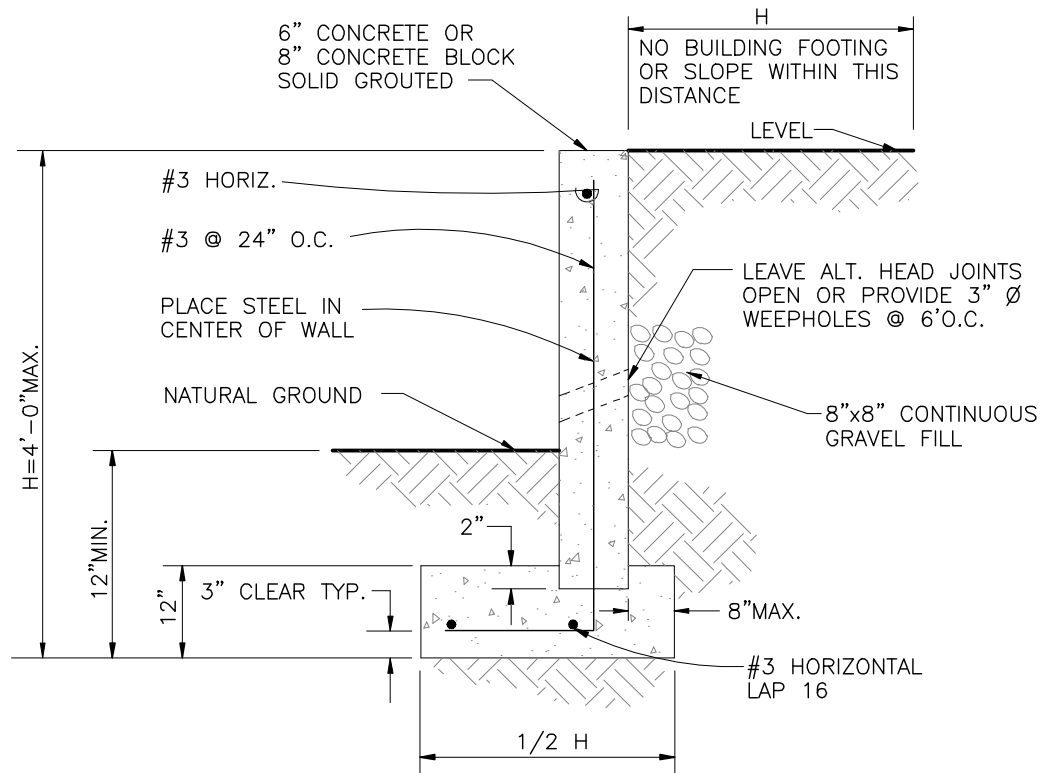
STD. PLAN NUMBER

City Engineer

R.C.E. 50353

Exp.06-30-09

B-507



SECTION

NO PERMIT IS REQUIRED



City of
Garden Grove
California

GARDEN WALL

Approved _____ Date _____

City Engineer R.C.E. 50353 Exp.06-30-09

REVISIONS	BY	DATE

STD. PLAN NUMBER

B-508

SHEET 1 OF 2

MATERIAL SPECIFICATIONS:

1. CONCRETE BLOCK: ASTM C-90 OR C-148
2. REINFORCING STEEL: ASTM 615, GRADE 40.
3. ACCEPTABLE SOIL TYPES:
 - a. MIN. ALLOWABLE BEARING: 1000 LBS./SQ. FT.
 - b. MIN. LATERAL BEARING: 100 LBS./SQ. FT./FT.
 - c. MAX. EXPANSION INDEX: 20
4. CONCRETE: 2000 LBS./SQ. IN. IN 28 DAYS.
5. MORTAR: 1:1/4:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND, BY VOLUME), MIXED TO PLASTIC CONSISTENCY. REFER TO UBC TABLE 24-A FOR OTHER TYPES OF CEMENT.
6. GROUT: 1:1/10:3 (PORTLAND CEMENT: HYDRATED LIME OR LIME PUTTY: SAND BY VOLUME), MIX TO FLOW WITHOUT SEGREGATION. GROUT MAY CONTAIN 2 PARTS PEA GRAVEL (3/8" MAX. SIZE). MINIMUM COMPRESSIVE STRENGTH: 2000 LBS./SQ. IN. REFER TO UBC TABLE 24-B FOR OTHER TYPES OF CEMENT.

GENERAL NOTES:

1. THIS DESIGN IS FOR AVERAGE CONDITIONS AND MAY NOT BE SUITABLE FOR ALL CASES. IT IS RECOMMENDED THAT A LICENSED CIVIL OR STRUCTURAL ENGINEER BE CONSULTED.
2. FOOTINGS SHALL BE IN NATURAL SOIL OR CERTIFIED FILL.
3. BLOCKS TO BE STAGGERED (RUNNING BOND).
4. ALL CELLS CONTAINING REINFORCING STEEL SHALL BE GROUTED.
5. APPROVED GROUT STOPS ARE REQUIRED BELOW HORIZONTAL STEEL IN PARTIALLY GROUTED WALLS. BAGS, NEWSPAPERS, ETC. ARE NOT APPROVED GROUT STOPS.
6. INITIAL BED JOINT SHALL BE 1/4"MIN., 1"MAX. SUBSEQUENT BED JOINTS SHALL BE 1/4"MIN., 5/8"MAX.
7. VERTICAL CONTINUITY OF CELLS SHALL BE UNOBSTRUCTED. MORTAR PROJECTIONS SHALL NOT EXCEED 1/2" FOR 6" AND LARGER BLOCK. MORTAR DROPPINGS OR OTHER FOREIGN MATTER ARE NOT PERMITTED IN CELLS AND MUST BE REMOVED.
8. EXPANSION JOINTS REQUIRED AT 60'-0" MAX. INTERVALS.
9. REQUIRED BAR LAPS:
 - a. VERTICAL STEEL: 30 BAR DIAMETERS.
 - b. HORIZONTAL STEEL: 40 BAR DIAMETERS.
 - c. WIRE JOINT REINFORCEMENT IN THE MORTARED BED JOINT: 75 WIRE DIAMETERS OR IN ALTERNATE BED JOINTS OF RUNNING BOND, 54 DIAMETERS PLUS TWICE THE BED JOINT SPACING.
10. WHERE HORIZONTAL WIRE JOINT REINFORCEMENT IS REQUIRED OR UTILIZED, IT SHALL BE EQUIVALENT TO TWO 3/16" DIAMETER BARS CONNECTED AT 16" INTERVALS BY NO. 9 GAUGE WELDED WIRE.
11. FOR PIPES AND CONDUIT EMBEDDED IN MASONRY, REFER TO SEC. 2407(g), UBC.
12. 3"MIN. COVER REQUIRED FOR REINFORCEMENT IN CONCRETE WHICH IS CAST AGAINST EARTH.

INSPECTION PROCEDURES:

1. FOUNDATION: AFTER TRENCHES ARE DUG, STEEL IS TIED IN PLACE, AND BEFORE ANY CONCRETE IS POURED.
2. PREGROUT: AFTER ALL BLOCKS (EXCEPT CAP) ARE IN PLACE, VERTICAL AND HORIZONTAL STEEL IS IN PLACE, GROUT STOPS (FOR PARTIALLY GROUTED MASONRY) ARE IN PLACE, AND PRIOR TO GROUTING.
3. FINAL: AFTER GROUT IS IN PLACE AND PRIOR TO PLACEMENT OF CAP.



City of
Garden Grove
California

GARDEN WALL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

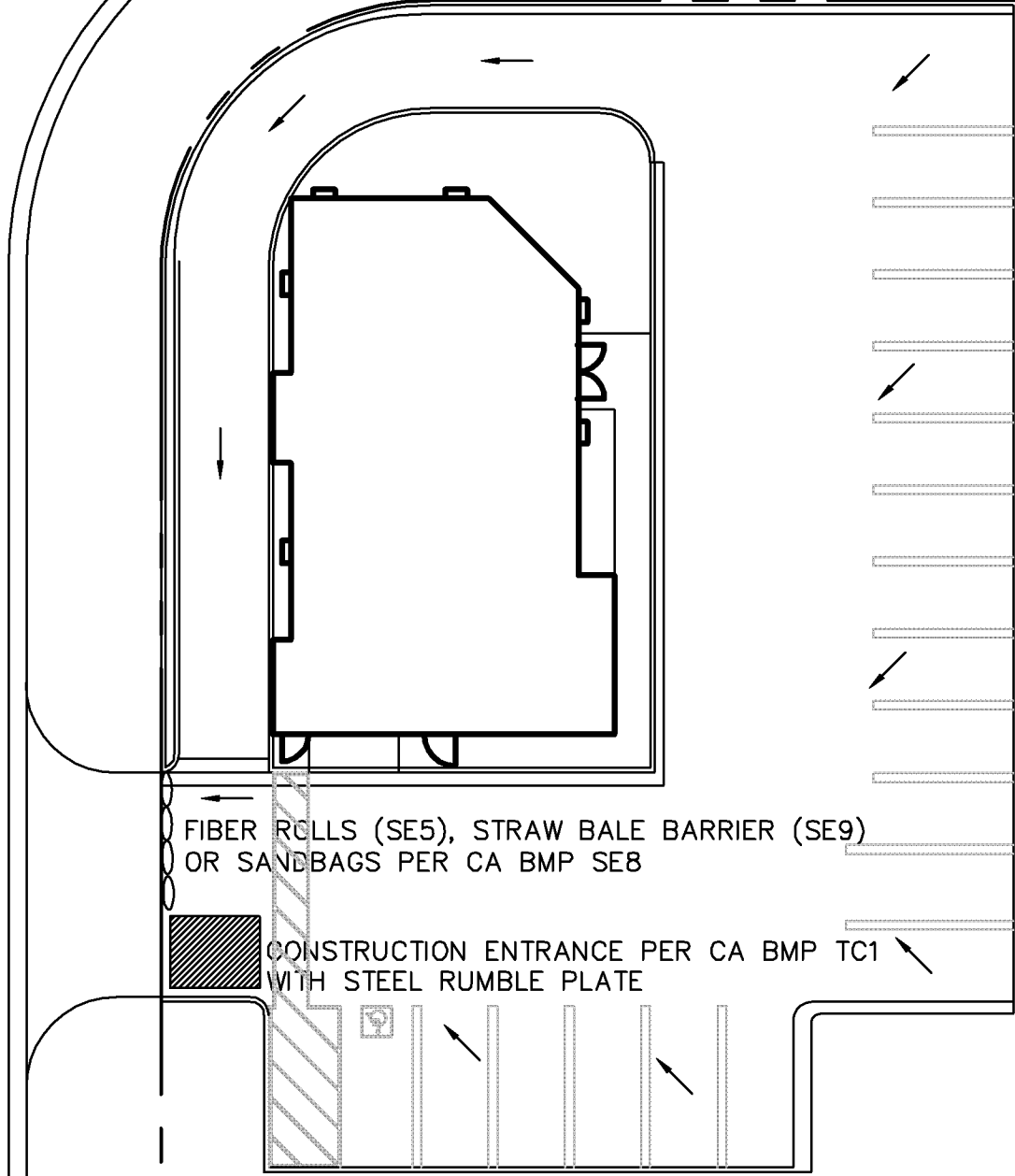
City Engineer

R.C.E. 50353 Exp.06-30-09

B-508

SHEET 2 OF 2

NOTE: THESE MEASURES ARE NEEDED PRIOR TO CONSTRUCTION OF FINAL HARD SURFACES (PAVEMENT AND BUILDING SLAB)



FIBER ROLLS (SE5), STRAW BALE BARRIER (SE9)
OR SANDBAGS PER CA BMP SE8

CONSTRUCTION ENTRANCE PER CA BMP TC1
WITH STEEL RUMBLE PLATE

CALIFORNIA STORMWATER BMP HANDBOOK (WWW.CABMPHANDBOOKS.COM)



City of
Garden Grove
California

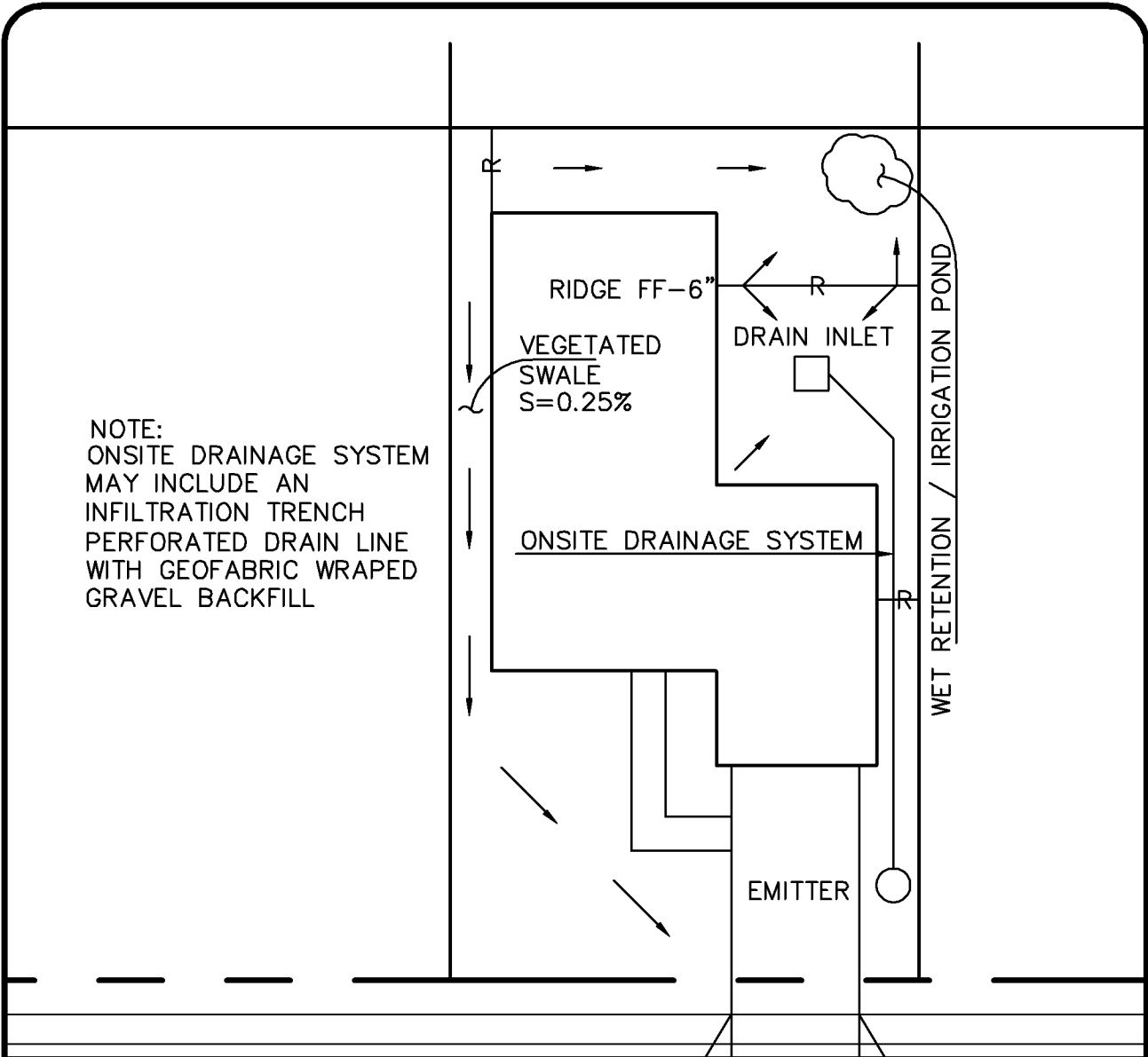
COMMERCIAL SWPPP DEVICES
FOR SITES <1.0 Ac

Approved _____ Date _____

City Engineer R.C.E. 50353 Exp.06-30-11

REVISIONS	BY	DATE

STD. PLAN NUMBER
B-509
SHEET 1 OF 1



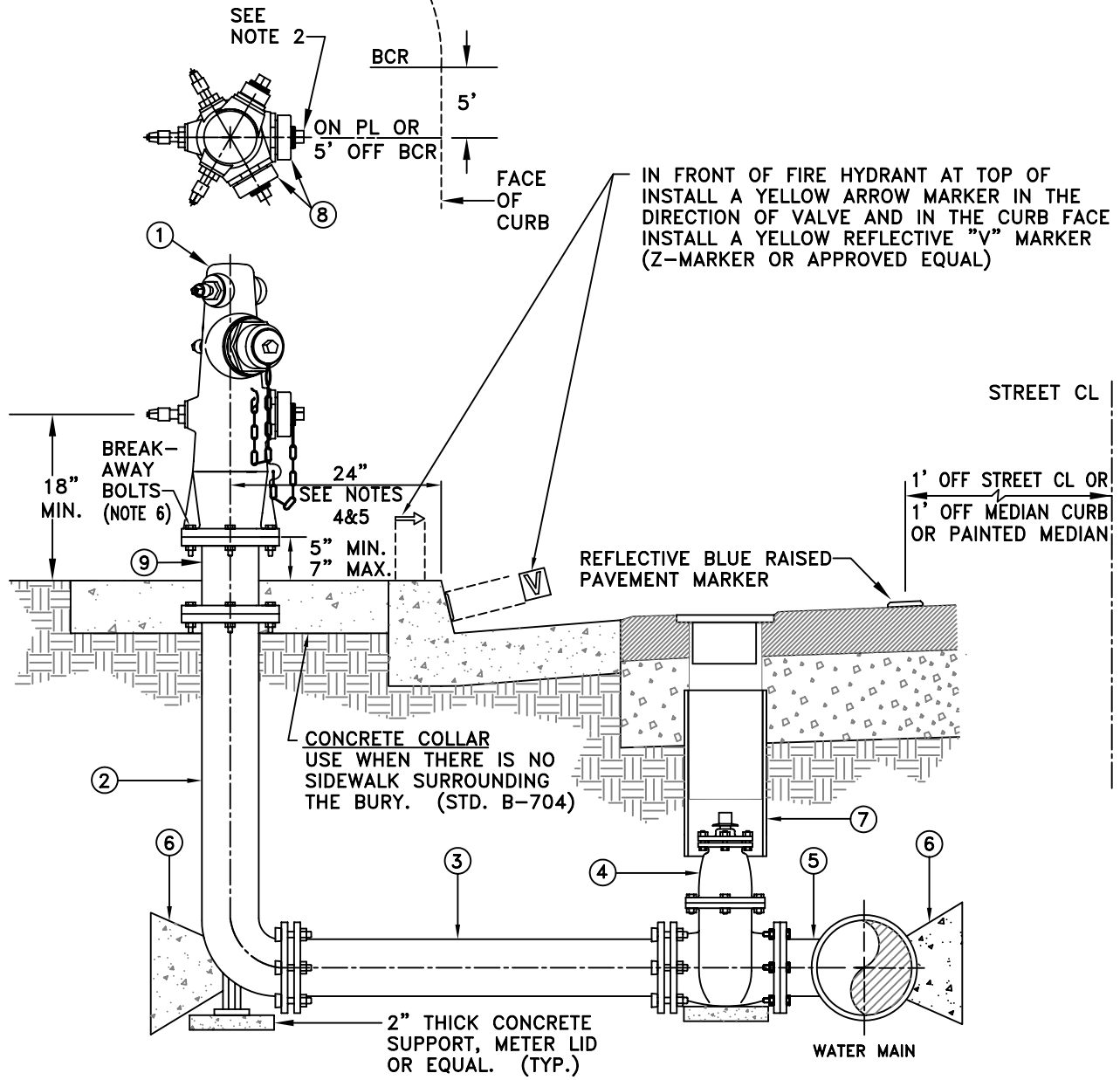
NOTE:
 ONSITE DRAINAGE SYSTEM
 MAY INCLUDE AN
 INFILTRATION TRENCH
 PERFORATED DRAIN LINE
 WITH GEOFABRIC WRAPED
 GRAVEL BACKFILL

A RESIDENTIAL DWELLING MAY USE ANY COMBINATION OF THE FOLLOWING OPTIONS:
 INFILTRATION TRENCH PER CA BMP TC10
 WET RETENTION / IRRIGATION POND PER CA BMP TC12 OR TC20
 VEGETATED SWALE PER CA BMP TC30
 SEE CALIFORNIA STORMWATER BMP HANDBOOK (WWW.CABMPHANDBOOKS.COM)



RESIDENTIAL WATER QUALITY SYSTEMS

Approved _____ City Engineer	Date _____ R.C.E. 50353 Exp.06-30-11	REVISIONS	BY	DATE	STD. PLAN NUMBER
					B-510
					SHEET 1 OF 1



ALL UNDERGROUND BOLTS TO BE COATED WITH KOPPERS BITUMASTIC #50

MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR.
①	1	WET BARREL FIRE HYDRANT, (1) 2-1/2" AND (2) 4" OUTLETS; 1-1/2" PENTAGON OPERATING NUT; 6 BOLT PATTERN.	CLOW, MODEL F-865
②	1	MECHANICAL JOINT FIRE HYDRANT BURY IN 24", 30", 36", 42", & 48" LENGTHS AS NEEDED; 6 BOLT PATTERN.	CLOW OR APPROVED EQUAL
③	—	6" AWWA C900 PVC PIPE, CLASS 150, AS REQUIRED	—
④	1	6" RESILIENT WEDGE GATE VALVE, FLG. x MJ	SEE SECTION 2-05.03
⑤	1	TEE OR TAPPING SLEEVE, TAPPING TO BE PER STD. B-750	—
⑥	—	TRUST BLOCK PER STD. B-710.	—
⑦	1	GATE VALVE CAN ASSEMBLY PER STD. B-752, B-753 IF WITHIN CONCRETE.	—
⑧	—	(2) 4" AND (1) 2-1/2" METAL PROTECTOR CAPS AND CHAIN.	—
⑨	1	6" x 12", 18", & 24" SOLID EXTENSION, WITH 6 BOLT PATTERN. (THIS SPOOL IS MANDATORY)	—



City of
Garden Grove
California

WET BARREL FIRE HYDRANT
INDUSTRIAL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

R.C.E. 50353 Exp.06-30-09

B-701

SHEET 1 OF 2

NOTES:

1. PROVIDE 24" X 36" EXPANSION JOINT AROUND FIRE HYDRANT FOR NEW SIDEWALK CONSTRUCTION.
2. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 5' FROM BCR, ECR, OR DRIVEWAY APPROACH.
3. 4" OUTLET TO BE FACING STREET, PERPENDICULAR TO CURB.
4. DISTANCE TO BE 5'-3" WHEN 4' SIDEWALK IS ADJACENT TO CURB. FOR MORE DETAIL, REFER TO STD PLAN B-705.
5. FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBJECT IN THE WALK.
6. BREAK-AWAY FEATURES OTHER THAN BOLTS WILL NOT BE ALLOWED.
7. FIRE HYDRANT SHALL BE PAINTED IN ACCORDANCE WITH SECTION 2-14.
8. CONTRACTOR SHALL USE ADDITIONAL RESTRAINED BEND NECESSARY TO AVOID OTHER EXISTING OR PROPOSED UTILITIES WHEN REQUIRED.
9. FOR ROLLED CURB, THE DISTANCE FROM THE EDGE OF PAVEMENT TO THE FIRE HYDRANT SHALL BE AS DIRECTED BY THE WATER SERVICES DIVISION.



City of
Garden Grove
California

WET BARREL FIRE HYDRANT
INDUSTRIAL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

B-701

City Engineer

R.C.E. 50353

Exp.06-30-09

SHEET 2 OF 2

NOTES:

1. PROVIDE 24" X 36" EXPANSION JOINT AROUND FIRE HYDRANT FOR NEW SIDEWALK CONSTRUCTION.
2. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 5' FROM BCR, ECR, OR DRIVEWAY APPROACH.
3. 4" OUTLET TO BE FACING STREET, PERPENDICULAR TO CURB.
4. DISTANCE TO BE 5'-3" WHEN 4' SIDEWALK IS ADJACENT TO CURB. FOR MORE DETAIL, REFER TO STD PLAN B-705.
5. FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENT THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALK.
6. BREAK-AWAY FEATURES OTHER THAN BOLTS WILL NOT BE ALLOWED.
7. FIRE HYDRANT SHALL BE PAINTED IN ACCORDANCE WITH SECTION 2-14.
8. CONTRACTOR SHALL USE ADDITIONAL RESTRAINED BEND(S) NECESSARY TO AVOID OTHER EXISTING OR PROPOSED UTILITIES WHEN REQUIRED.
9. FOR ROLLED CURB, THE DISTANCE FROM THE EDGE OF PAVEMENT TO THE FIRE HYDRANT SHALL BE AS DIRECTED BY THE WATER SERVICES DIVISION.



City of
Garden Grove
California

WET BARREL FIRE HYDRANT
RESIDENTIAL/COMMERCIAL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

B-702

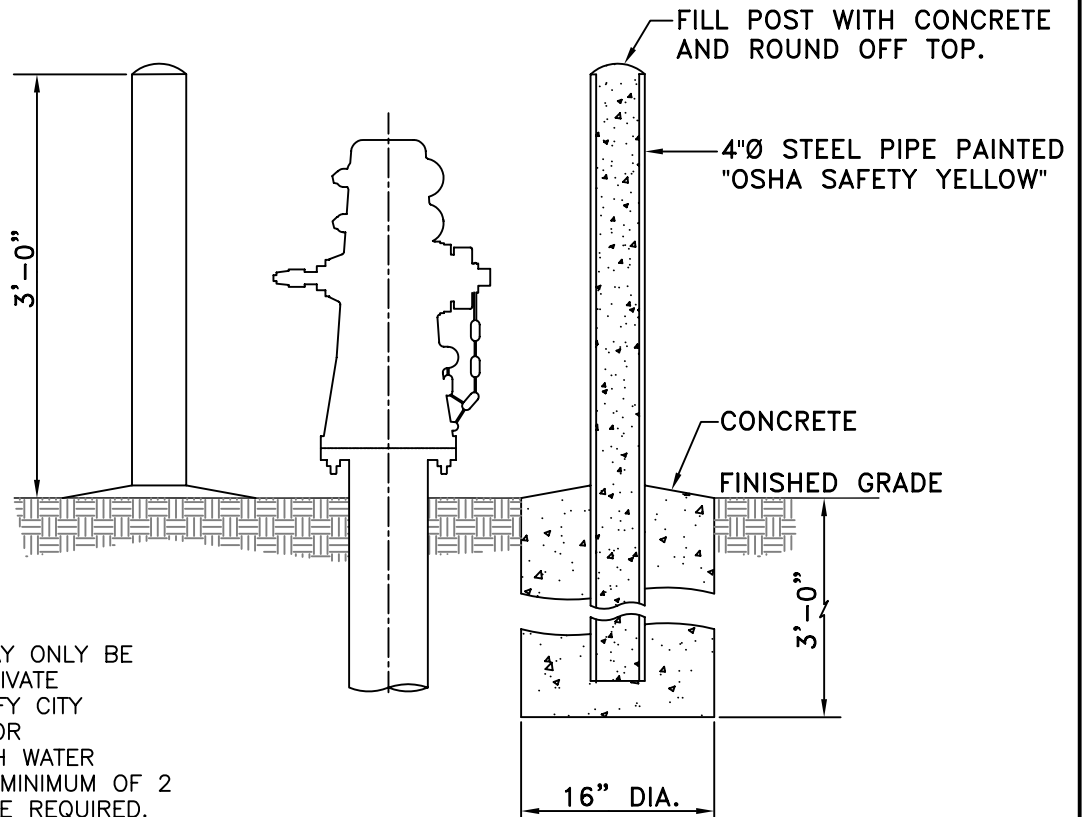
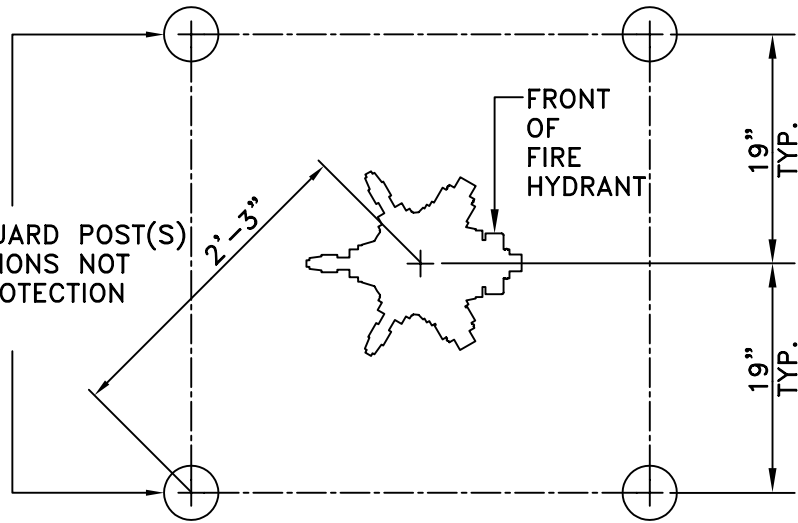
City Engineer

R.C.E. 50353

Exp.06-30-09

SHEET 2 OF 2

OMIT REAR GUARD POST(S)
ON INSTALLATIONS NOT
REQUIRING PROTECTION
FROM REAR.



NOTE

GUARD POSTS MAY ONLY BE
INSTALLED ON PRIVATE
PROPERTY. VERIFY CITY
REQUIREMENTS FOR
INSTALLATION WITH WATER
SERVICES DIV. A MINIMUM OF 2
GUARD POSTS ARE REQUIRED.



City of
Garden Grove
California

GUARD POST DETAIL FOR FIRE HYDRANTS

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

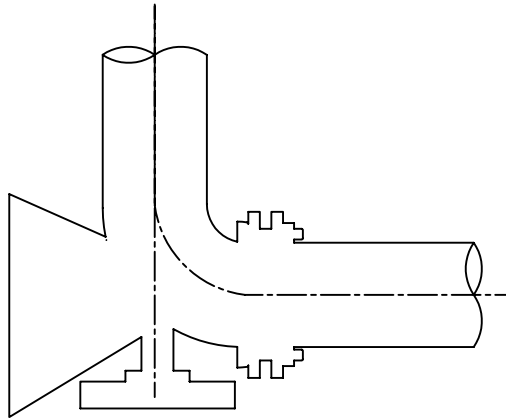
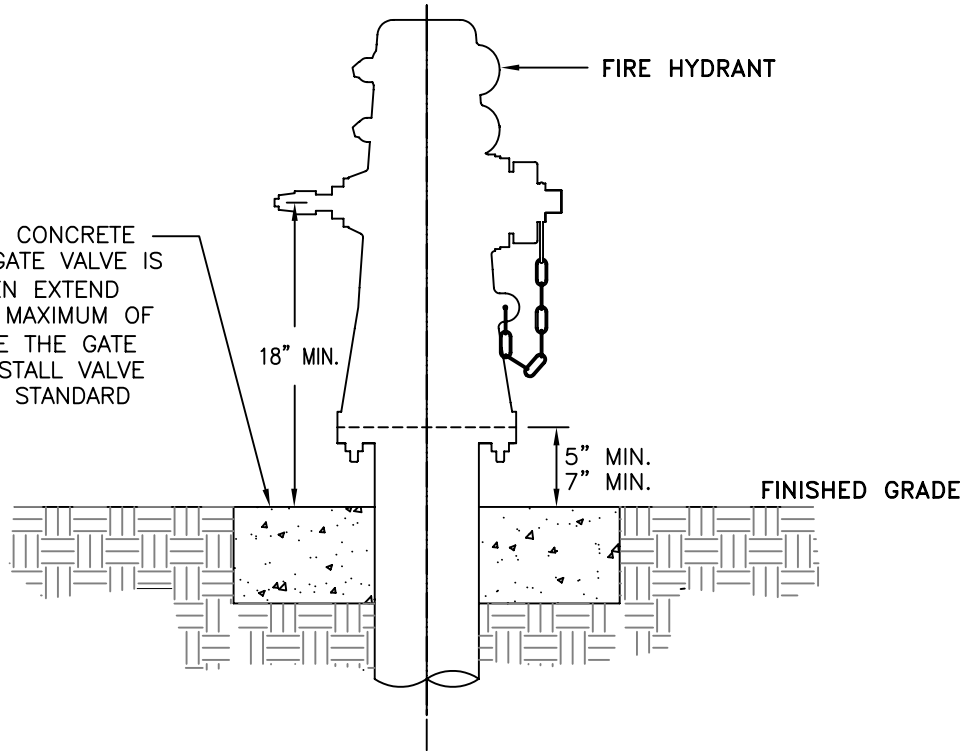
R.C.E. 50353

Exp.06-30-09

B-703

SHEET 1 OF 1

4'x4'x8" DEEP CONCRETE COLLAR. IF GATE VALVE IS WITHIN 4' THEN EXTEND COLLAR TO A MAXIMUM OF 4' TO INCLUDE THE GATE VALVE AND INSTALL VALVE CAN PER CITY STANDARD B-753.



NOTES:

CONCRETE COLLAR TO BE USED ON FIRE HYDRANTS WHERE THERE IS NO CONCRETE SIDEWALK .



City of
Garden Grove
California

CONCRETE COLLAR DETAIL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

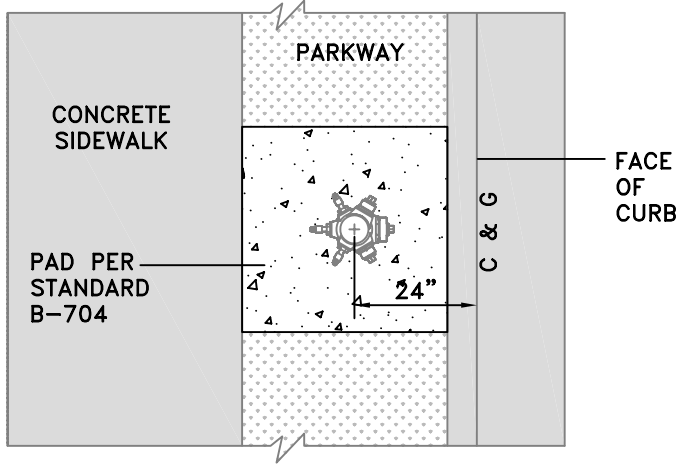
City Engineer

R.C.E. 50353

Exp.06-30-09

B-704

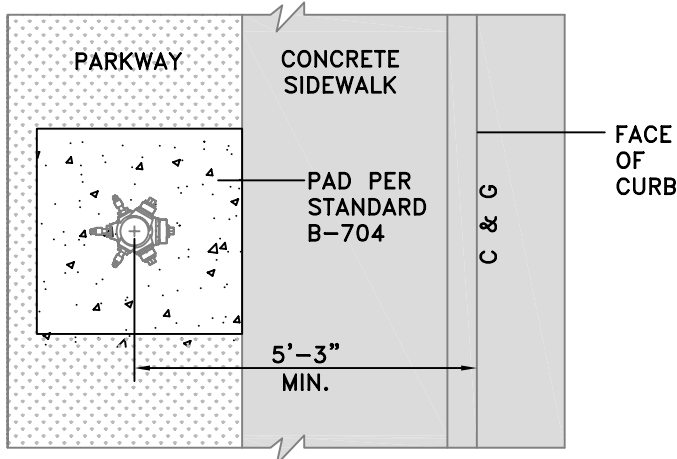
SHEET 1 OF 1



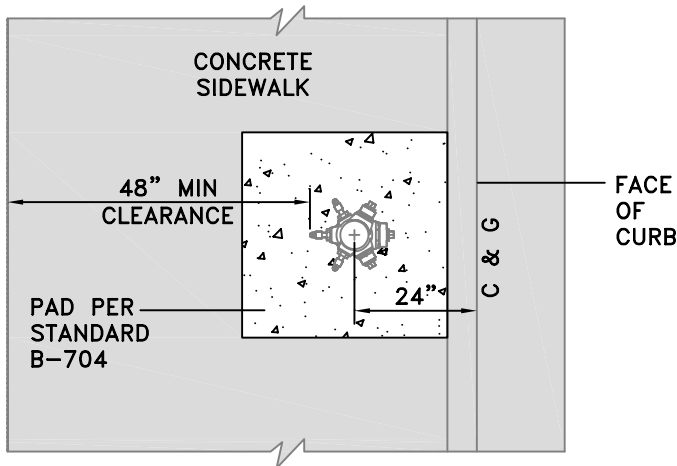
DETACHED SIDEWALK

NOTE:

FOR ALL CASES, THE LOCATION OF FIRE HYDRANT SHALL MEET ADA REQUIREMENTS THAT A MINIMUM 48" CLEARANCE SHALL BE MAINTAINED FROM ANY OBSTRUCTION IN THE WALKWAY.



4' WIDE ATTACHED SIDEWALK



6' OR WIDER SIDEWALK



City of
Garden Grove
California

FIRE HYDRANT
SETBACK DETAIL

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

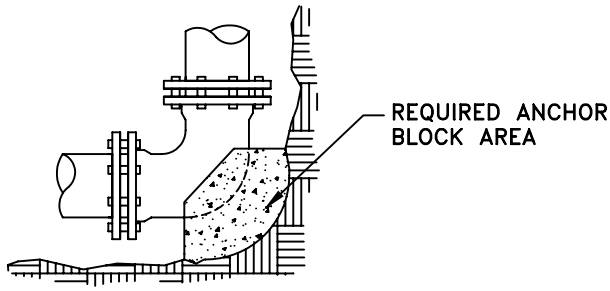
City Engineer

R.C.E. 50353

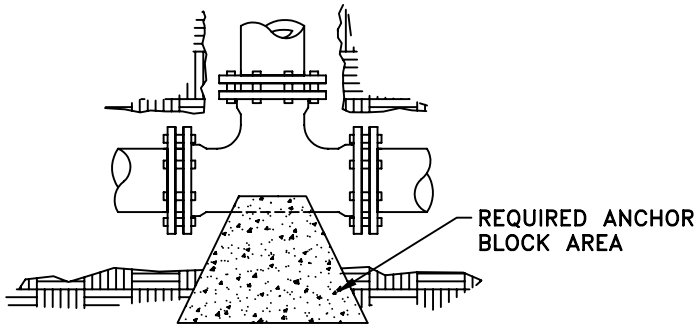
Exp.06-30-09

B-705

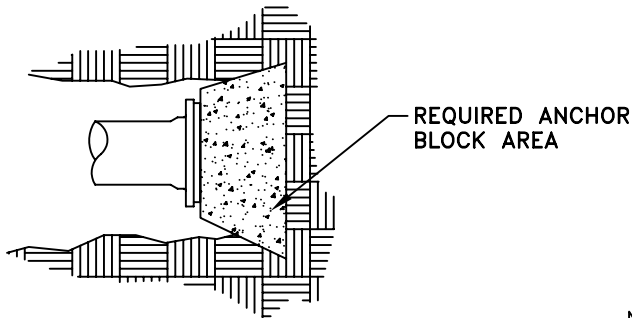
SHEET 1 OF 1



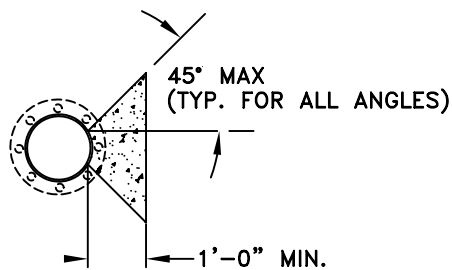
ANCHOR BLOCK FOR C.I. BEND



ANCHOR BLOCK FOR TEE OUTLET



ANCHOR BLOCK FOR DEAD END



TYPICAL SECTION THRU ANCHOR BLOCK

ANCHOR BLOCK AREA REQUIRED (SQ. FT.)	
FITTINGS	ALLOWABLE SOIL BEARING VALUE: 2000#/SQ.FT
6"-11 1/4" BEND	1.0
6"-22 1/2"	1.5
6"-45°	3.0
6"-90°	5.5
6"-TEE OUTLET	4.0
6"-DEAD END	4.0
8"-11 1/4" BEND	1.5
8"-22 1/2"	3.0
8"-45°	5.0
8"-90°	9.5
8"-TEE OUTLET	6.5
8"-DEAD END	6.5
10"-11 1/4" BEND	2.5
10"-22 1/2"	4.5
10"-45°	8.5
10"-90°	15.5
10"-TEE OUTLET	11.0
10"-DEAD END	11.0
	3.0
12"-11 1/4"	
12"-22 1/2"	6.0
12"-45°	12.0
12"-90°	22.0
12"-TEE OUTLET	15.0
12"-DEAD END	15.0

NOTES:

1. ANCHOR BLOCKS SHALL BE 450-C-2000 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.
2. ANCHOR BLOCK REQUIREMENTS ON ALL 4" FITTINGS ARE THE SAME AS FOR 6" FITTINGS.
3. CONCRETE SHALL HAVE 3" MINIMUM CLEARANCE AROUND ALL JOINTS.
4. FOR THRUST BLOCKS ON FITTINGS LARGER THAN 12" CONTACT WATER ENGINEER AT (714) 741-5395.



City of
Garden Grove
California

ANCHOR BLOCK DETAILS FOR 6" - 12" D.I. FITTINGS

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

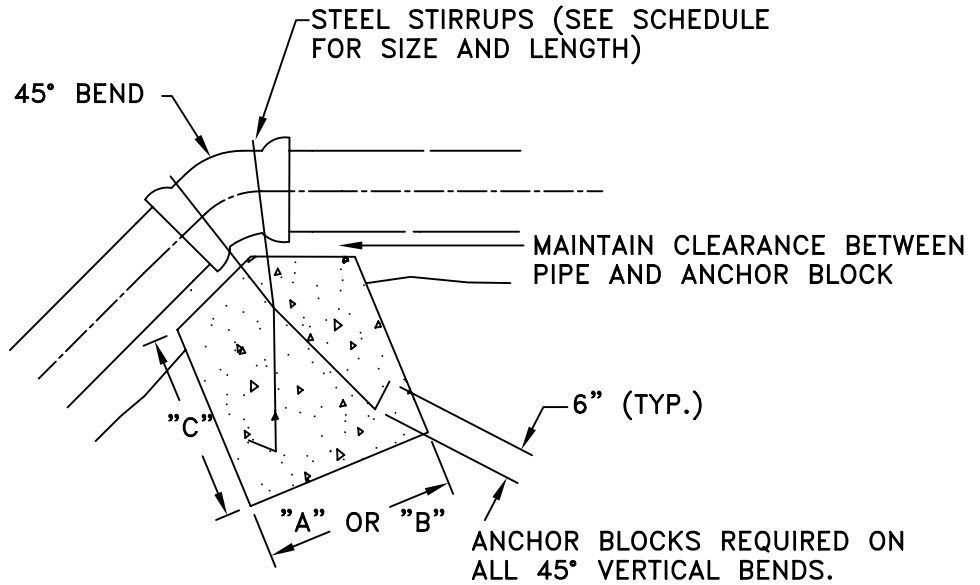
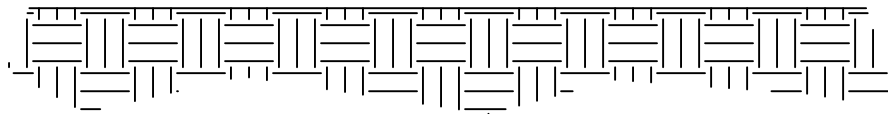
City Engineer

R.C.E. 50353

Exp.06-30-09

B-710

SHEET 1 OF 1



NOTES:

1. ANCHOR BLOCK SHALL BE 450-C-2000 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.
2. ALL STEEL STIRRUPS NOT EMBEDDED IN CONCRETE SHALL BE COATED WITH 1/8" THICK KOPPER BITUMASTIC #50 OR AS APPROVED BY THE ENGINEER.

SCHEDULE

CONCRETE ANCHOR BLOCK FOR 45° UPPER BEND AT VERTICAL OFFSET

FITTING	CONCRETE ANCHOR BLOCK			STEEL STIRRUPS		
	"A" LENGTH	"B" LENGTH	"C" LENGTH	SIZE	QUANTITY	LENGTH
4" & 6" x 45° BEND	2'-0"	2'-0"	2'-0"	1/2" ø	2	8'-6"
8" x 45° BEND	2'-6"	2'-6"	2'-6"	1/2" ø	2	9'-0"
10" x 45° BEND	3'-0"	3'-0"	3'-6"	1/2" ø	2	11'-6"
12" x 45° BEND	4'-0"	4'-0"	4'-0"	1/2" ø	2	12'-0"



City of
Garden Grove
California

ANCHOR BLOCK DETAIL
FOR 45° VERTICAL BEND

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

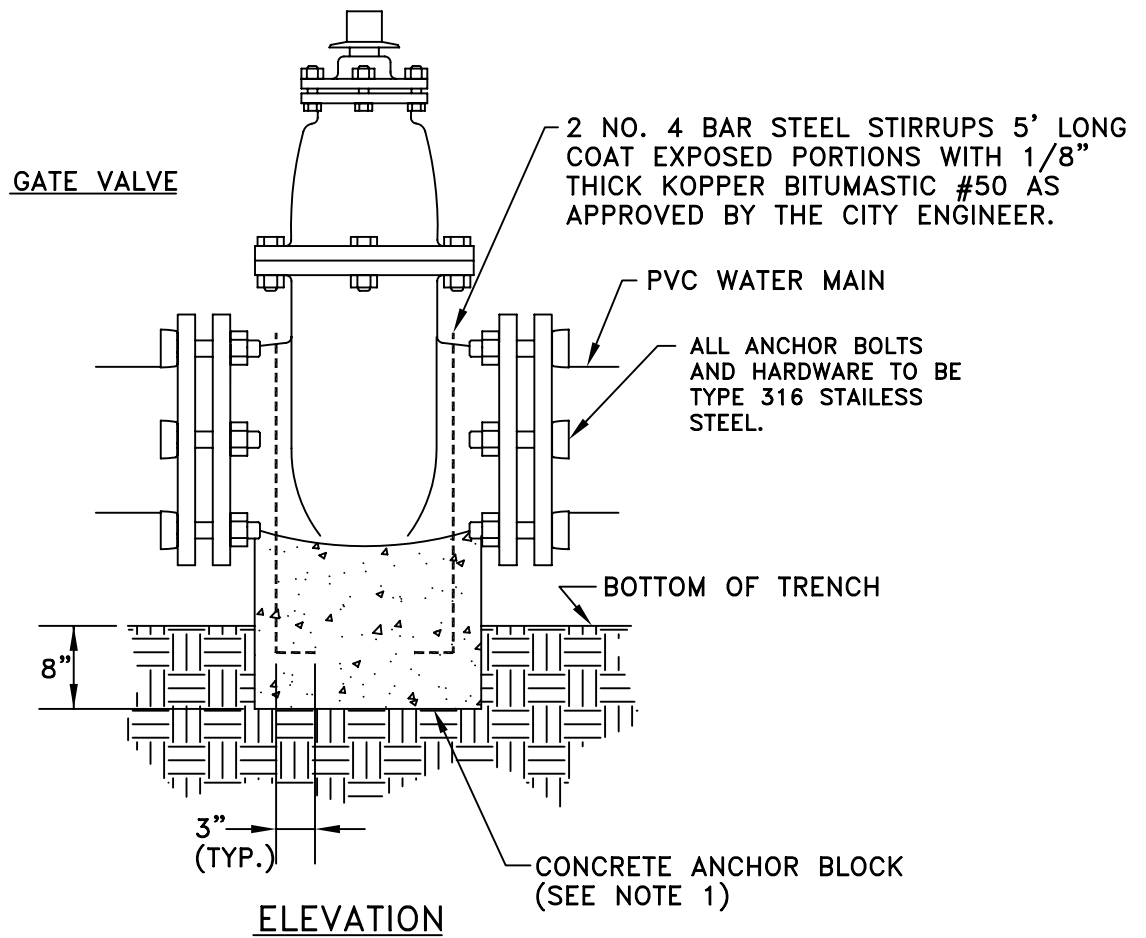
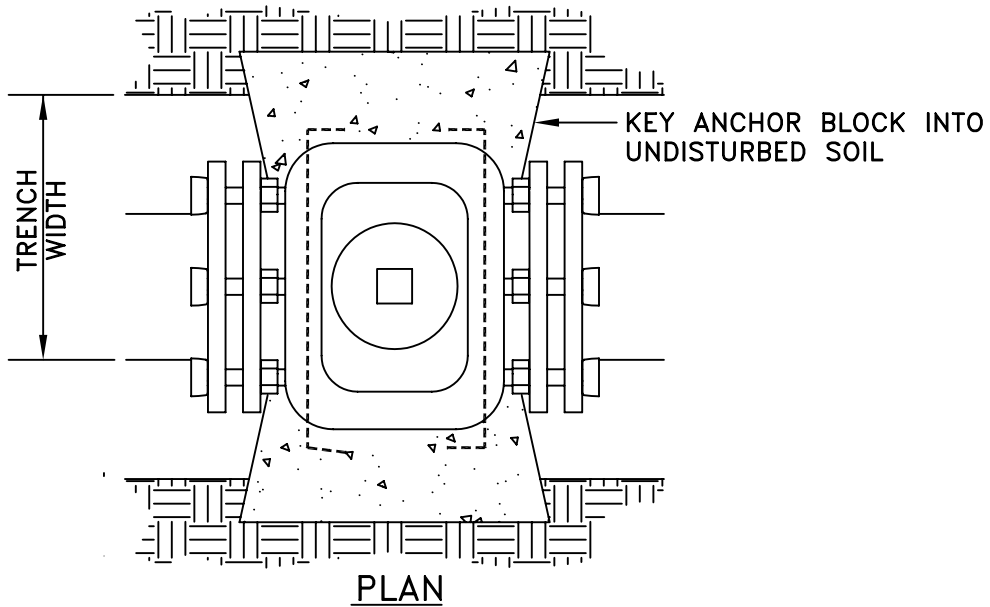
B-711

City Engineer

R.C.E. 50353

Exp.06-30-09

SHEET 1 OF 1



NOTES:

1. ANCHOR BLOCK SHALL BE 450-C-2000 CONCRETE (GREENBOOK) AND POURED AGAINST UNDISTURBED SOIL.



City of
Garden Grove
California

ANCHOR BLOCK DETAIL PVC WATER MAIN VALVES

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

R.C.E. 50353

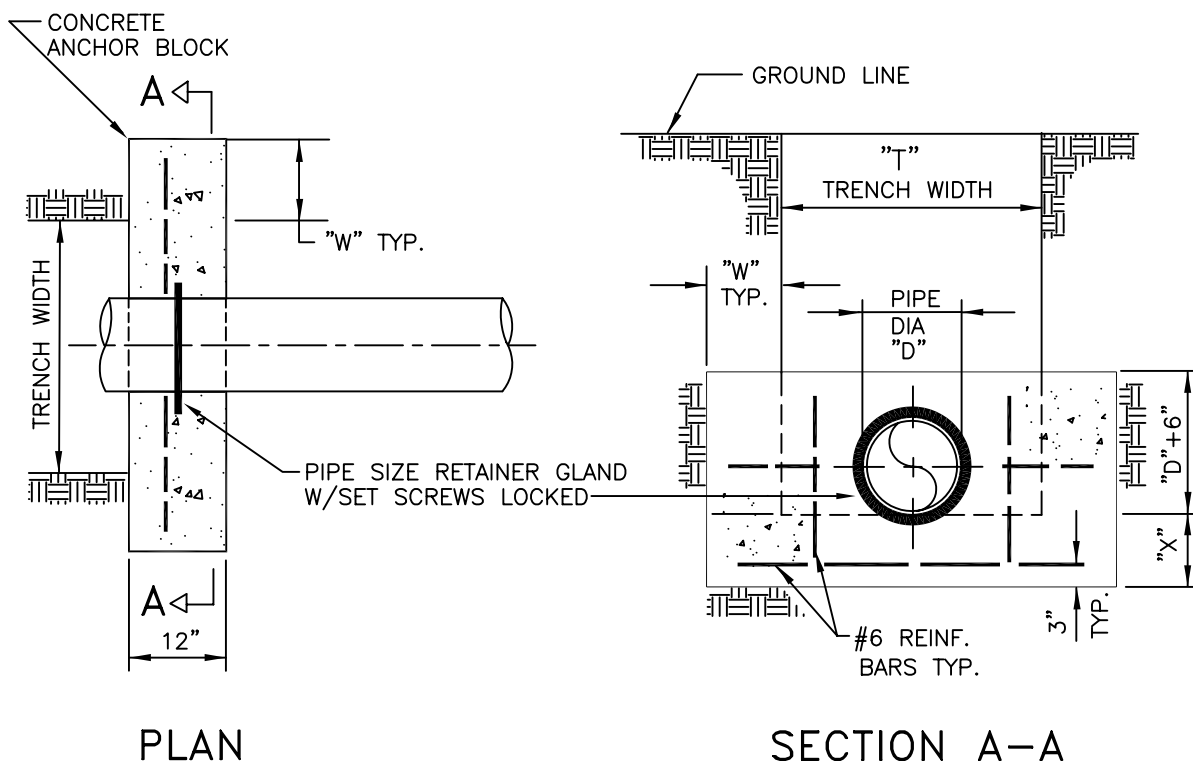
Exp.06-30-09

B-712

SHEET 1 OF 1

ANCHOR BLOCK DIMENSIONS

T	D	VARIABLE	STATIC WATER PRESSURE – PSI										
			100	110	120	130	140	150	160	170	180	190	200
30"	6"	AREA SF	2.1	2.3	2.5	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2
		W (INCHES)	14	14	16	18	18	13	14	15	15	16	17
		X (INCHES)	0	0	0	0	0	6	6	6	6	6	6
30"	8"	AREA SF	3.8	4.1	4.5	4.9	5.3	5.7	6.0	6.4	6.8	7.2	7.5
		W (INCHES)	10	12	12	14	16	16	14	16	16	18	18
		X (INCHES)	6	6	6	6	6	6	9	9	9	9	9
30"	10"	AREA SF	5.9	6.5	7.1	7.7	8.2	8.8	9.4	10.0	10.6	11.2	11.8
		W (INCHES)	16	18	16	18	16	18	18	20	22	24	24
		X (INCHES)	6	6	9	9	12	12	12	12	12	12	12
36"	12"	AREA SF	8.5	9.3	10.2	11.0	11.9	12.7	13.6	14.4	15.3	16.1	17.0
		W (INCHES)	18	16	18	20	22	24	20	20	22	24	26
		X (INCHES)	9	12	12	12	12	12	18	18	18	18	18
36"	16"	AREA SF	15.1	16.6	18.1	19.6	21.1	22.6	24.1	25.6	27.1	28.7	30.2
		W (INCHES)	18	18	18	18	18	18	20	20	22	22	24
		X (INCHES)	15	15	18	21	25	30	30	30	30	30	30



NOTES

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREEN BOOK)
2. CONCRETE SHALL BE PORED AGAINST UNDISTURBED EARTH.
3. DIMENSIONS ARE BASED ON 1.5 TIMES STATIC WATER PRESSURE, 2000 P.S.F. SOIL BEARING CAPACITY PRESSURE & 60,000 LB. REINFORCE BAR TENSILE STRENGTH.
4. THIS IS NOT APPLICABLE TO A.C. PIPE AND SHALL NOT BE USED FOR A.C. PIPE.



City of
Garden Grove
California

ANCHOR BLOCK DETAILS FOR 6" THRU 16" PIPE

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

City Engineer

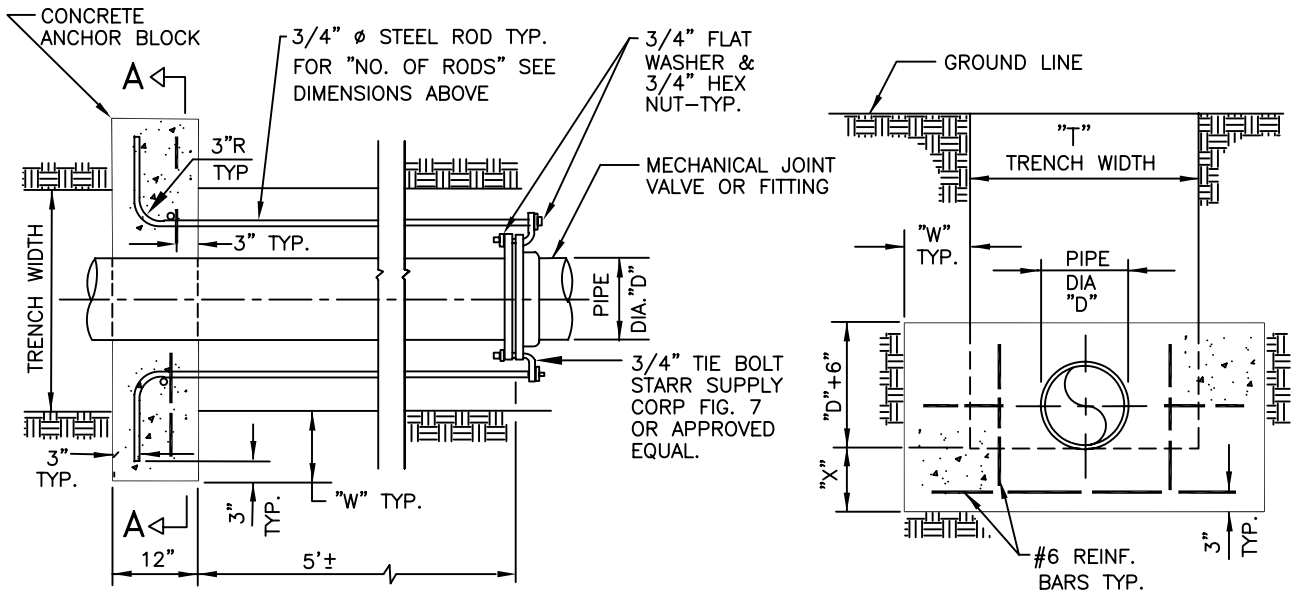
R.C.E. 50353 Exp.06-30-09

B-713

SHEET 1 OF 1

ANCHOR BLOCK DIMENSIONS

T	D	VARIABLE	STATIC WATER PRESSURE – PSI										
			100	110	120	130	140	150	160	170	180	190	200
30"	6"	AREA SF	2.1	2.3	2.5	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2
		W (INCHES)	14	14	16	18	18	10	10	10	12	12	12
		X (INCHES)	0	0	0	0	0	6	6	6	6	6	6
		NO. OF RODS	2	2	2	2	2	2	2	2	2	2	2
30"	8"	AREA SF	3.8	4.1	4.5	4.9	5.3	5.7	6.0	6.4	6.8	7.2	7.5
		W (INCHES)	10	12	12	14	16	16	14	16	16	18	18
		X (INCHES)	6	6	6	6	6	6	9	9	9	9	9
		NO. OF RODS	2	2	2	2	2	2	3	3	3	3	3
30"	10"	AREA SF	5.9	6.5	7.1	7.7	8.2	8.8	9.4	10.0	10.6	11.2	11.8
		W (INCHES)	16	18	16	18	16	18	18	20	22	24	24
		X (INCHES)	6	6	9	9	12	12	12	12	12	12	12
		NO. OF RODS	3	3	3	3	3	3	4	4	4	4	4
36"	12"	AREA SF	8.5	9.3	10.2	11.0	11.9	12.7	13.6	14.4	15.3	16.1	17.0
		W (INCHES)	18	16	18	20	22	24	20	20	22	24	26
		X (INCHES)	9	12	12	12	12	12	18	18	18	18	18
		NO. OF RODS	4	4	4	4	4	5	5	5	6	6	6
36"	16"	AREA SF	15.1	16.6	18.1	19.6	21.1	22.6	24.1	25.6	27.1	28.7	30.2
		W (INCHES)	18	18	18	18	18	18	20	20	22	22	24
		X (INCHES)	15	15	18	21	25	30	30	30	30	30	30
		NO. OF RODS	6	6	7	7	8	8	9	9	10	10	11



PLAN

SECTION A-A

NOTES

1. ANCHOR BLOCK SHALL BE 560-C-3250 CONCRETE (GREEN BOOK)
2. ALL STEEL REINFORCEMENT BOLT, ETC., IN CONTACT WITH THE SOIL SHALL BE COATED WITH BITUMASTIC OR APPROVED EQUAL
3. CONCRETE SHALL BE PORED AGAINST UNDISTURBED EARTH.
4. DIMENSIONS ARE BASED ON 1.5 TIMES STATIC WATER PRESSURE, 2000 P.S.F. SOIL BEARING CAPACITY PRESSURE & 60,000 LB. REINFORCE BAR TENSILE STRENGTH.



REVERSE TIE ANCHOR BLOCK ASSEMBLY FOR 6" THRU 16" PIPE

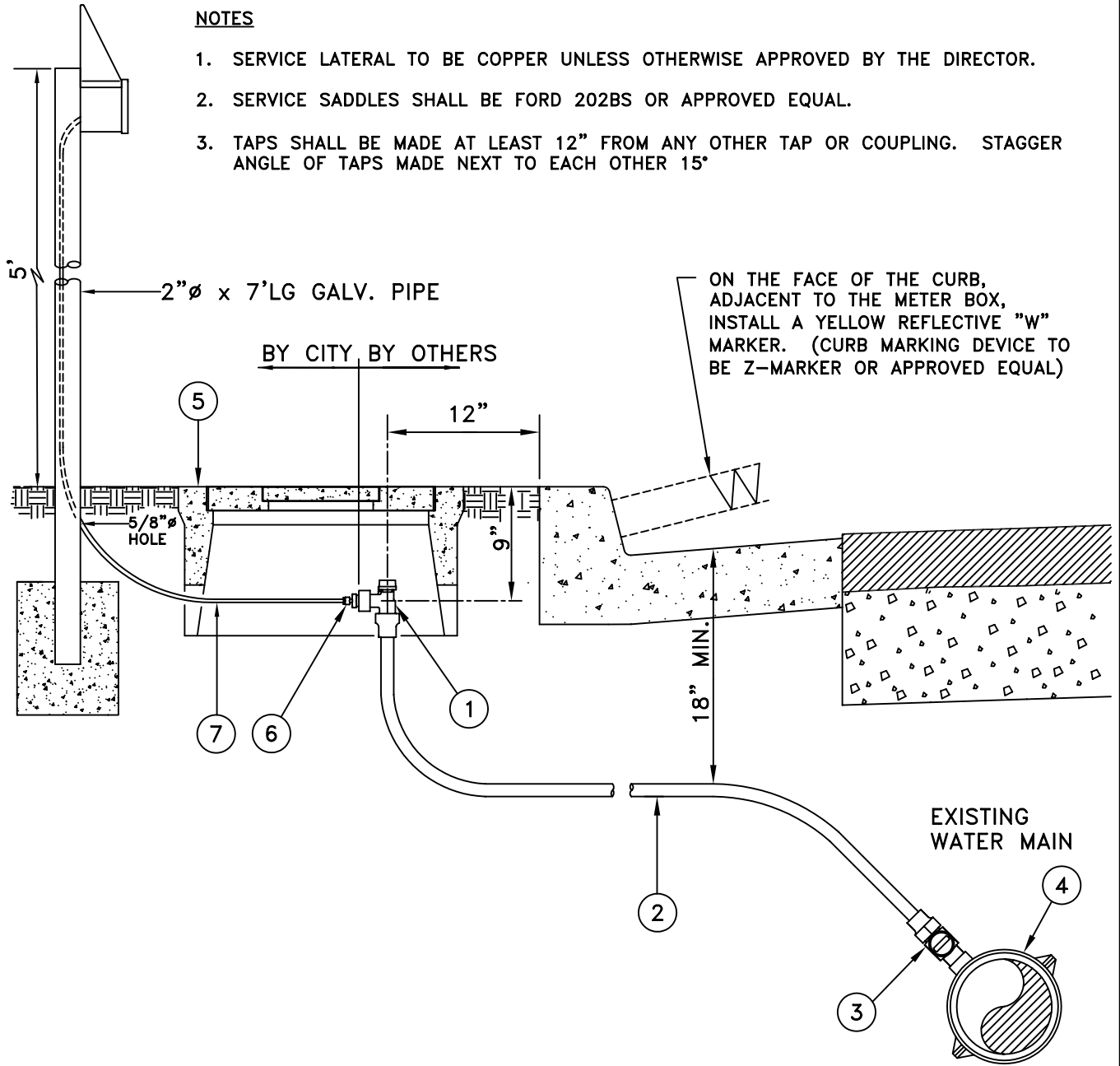
Approved _____ Date _____
 City Engineer R.C.E. 50353 Exp.06-30-09

REVISIONS	BY	DATE

STD. PLAN NUMBER
B-714
 SHEET 1 OF 1

NOTES

1. SERVICE LATERAL TO BE COPPER UNLESS OTHERWISE APPROVED BY THE DIRECTOR.
2. SERVICE SADDLES SHALL BE FORD 202BS OR APPROVED EQUAL.
3. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°



MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR. CAT NO.
1	1	3/4" x 1" ANGLE METER VALVE, COMPRESSION TYPE	
2	AS NEEDED	1" SOFT COPPER TUBING, TYPE "K"	
3	1	1" CORPORATION STOP, COMPRESSION TYPE	
4	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	
5	1	#37 METER BOX AND LID	
6	1	3/4" MALE THREAD x 1/4" SWAGELOK TUBING ADAPTER, BRASS	
7	AS NEEDED	1/4" ϕ SOFT COPPER TUBING	



City of
Garden Grove
California

1" COPPER WATER SERVICE
SAMPLE CONNECTION

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

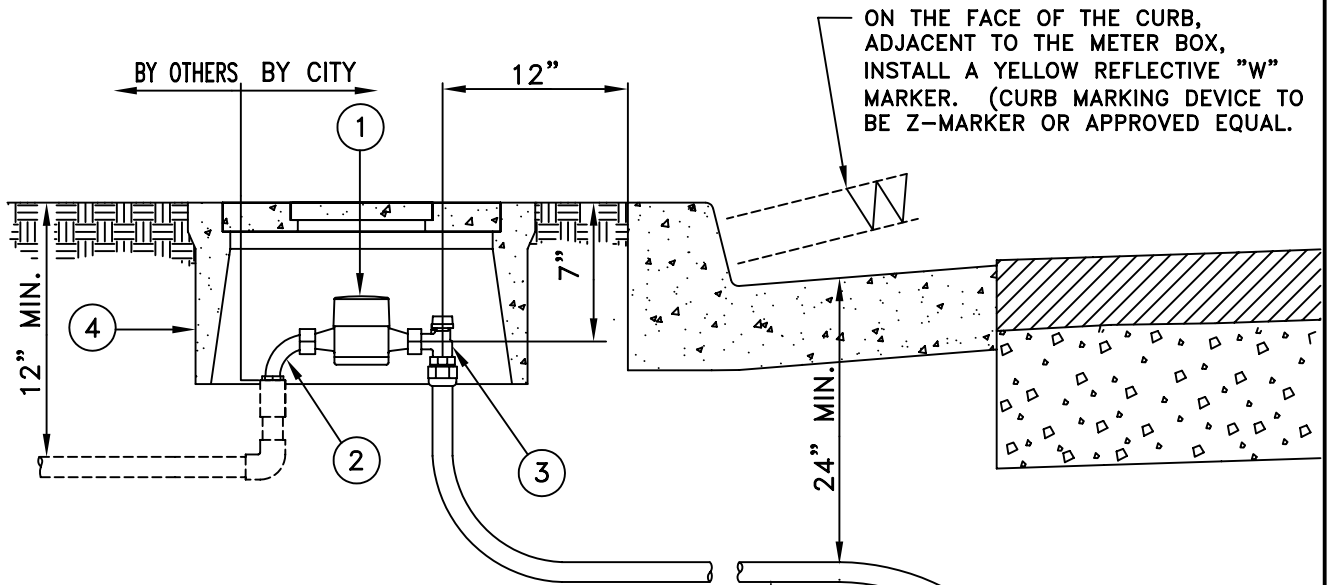
B-720

City Engineer

R.C.E. 50353

Exp.06-30-09

SHEET 1 OF 1



METER SIZE	LAY LENGTH
5/8" x 3/4"	7-1/2"
1"	10-3/4"

FITTING SCHEDULE		
METER SIZE	ANGLE STOP	CORP. STOP
3/4"	3/4" x 1"	1"
1"	1" X 1"	3/4" x 1"

NOTES

1. ALL CITY SERVICES TO BE TYPE K SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED.
3. SERVICE SADDLES SHALL BE FORD 202BS OR APPROVED EQUAL.
4. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
5. METER, METER BOX, AND ANGLE METER COUPLING AND TAILPIECE, BY CITY, AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE NOTED.

MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR. CAT NO.
①	1	5/8" x 3/4" OR 1" METER	SENSUS, SR11
②	1	3/4" OR 1" ANGLE METER COUPLING	
③	1	3/4" x 1" OR 1" x 1" ANGLE METER VALVE, COMPRESSION TYPE	JONES OR FORD
④	1	#37 METER BOX AND LID	
⑤	1	1" CORPORATION STOP, COMPRESSION TYPE WITH C.S. THREAD INLET	
⑥	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	
⑦	AS NEEDED	1# SOFT COPPER TUBING, TYPE "K"	



City of
Garden Grove
California

1" COPPER WATER SERVICE INSTALLATION FOR 3/4" & 1" METERS

Approved _____

Date _____

REVISIONS

BY

DATE

STD. PLAN NUMBER

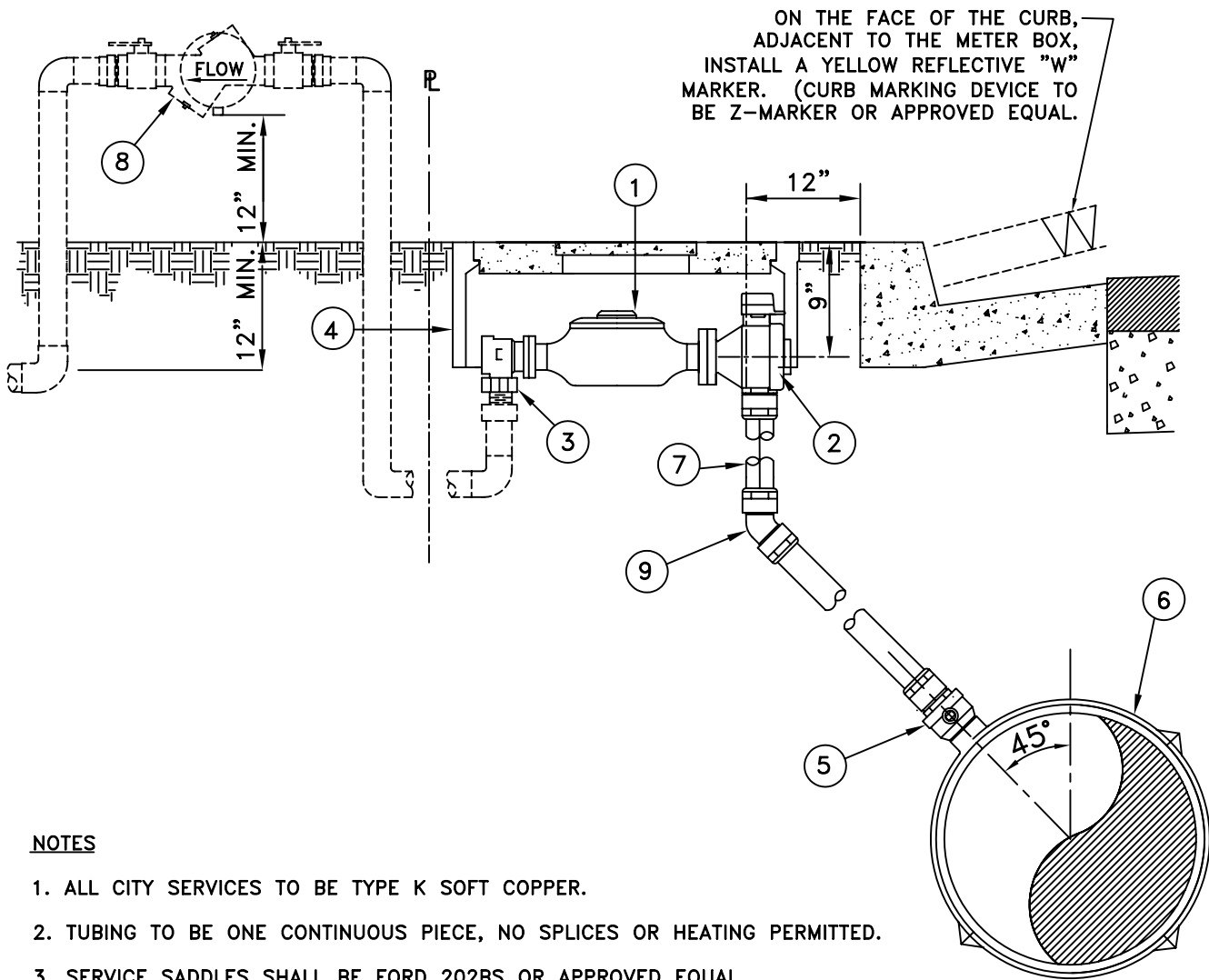
B-721

City Engineer

R.C.E. 50353

Exp.06-30-09

SHEET 1 OF 1



ON THE FACE OF THE CURB, ADJACENT TO THE METER BOX, INSTALL A YELLOW REFLECTIVE "W" MARKER. (CURB MARKING DEVICE TO BE Z-MARKER OR APPROVED EQUAL.

NOTES

1. ALL CITY SERVICES TO BE TYPE K SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED.
3. SERVICE SADDLES SHALL BE FORD 202BS OR APPROVED EQUAL.
4. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
5. METER, METER BOX, AND ANGLE METER COUPLING AND TAILPIECE, BY CITY, AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE NOTED.

MATERIAL LIST

ITEM NO.	QUAN.	DESCRIPTION	MFR. CAT NO.
①	1	1-1/2" OR 2" POSITIVE DISPLACEMENT METER, FLANGED	SENSUS (DR)
②	1	1-1/2" OR 2" ANGLE METER BALL VALVES, COMPRESSION TYPE	
③	1	1-1/2" OR 2" ANGLE CHECK VALVE	
④	1	#65 CONCRETE METER BOX	
⑤	1	2" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, CS THREAD	
⑥	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	
⑦	1	2" SOFT COPPER TUBING (TYPE "K"), OR RIGID AS APPROVED BY THE ENGINEER	
⑧	1	REDUCED PRESSURE PRINCIPLE DEVICE PER STD B-771 (BY OTHERS)	
⑨	1	2" DIA COMPRESSION 45° BEND OR SILVER SOLDER 45° BEND	



City of
Garden Grove
California

1"-1/2" POSITIVE DISPLACEMENT
METER AND 2" COPPER WATER
SERVICE INSTALLATION

Approved _____

Date _____

REVISIONS

BY

DATE

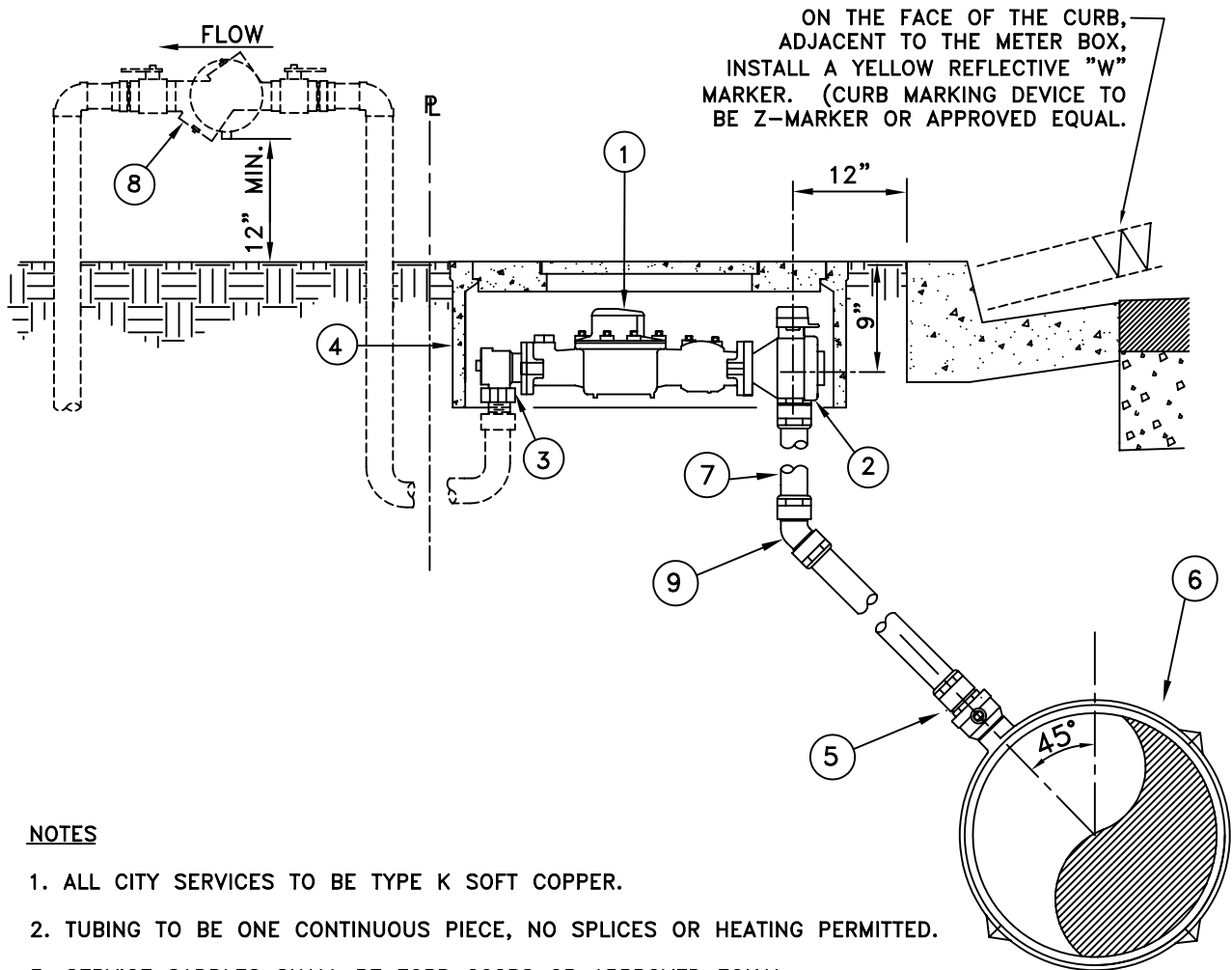
STD. PLAN NUMBER

City Engineer

R.C.E. 50353 Exp.06-30-09

B-722

SHEET 1 OF 1



ON THE FACE OF THE CURB, ADJACENT TO THE METER BOX, INSTALL A YELLOW REFLECTIVE "W" MARKER. (CURB MARKING DEVICE TO BE Z-MARKER OR APPROVED EQUAL.

NOTES

1. ALL CITY SERVICES TO BE TYPE K SOFT COPPER.
2. TUBING TO BE ONE CONTINUOUS PIECE, NO SPLICES OR HEATING PERMITTED.
3. SERVICE SADDLES SHALL BE FORD 202BS OR APPROVED EQUAL.
4. TAPS SHALL BE MADE AT LEAST 12" FROM ANY OTHER TAP OR COUPLING. STAGGER ANGLE OF TAPS MADE NEXT TO EACH OTHER 15°.
5. METER, METER BOX, AND ANGLE METER COUPLING AND TAILPIECE, BY CITY, AT CONTRACTOR'S EXPENSE, UNLESS OTHERWISE NOTED.
6. PROPERTY OWNER TO MUST OPEN A WATER ACCOUNT UPON INSTALLATION.

MATERIAL LIST			
ITEM NO.	QUAN.	DESCRIPTION	MFR. CAT NO.
①	1	2" TURBO METER WITH STRAINER	SENSUS
②	1	1-1/2" OR 2" ANGLE BALL METER VALVE, COMPRESSION	JONES OR FORD
③	1	1-1/2" OR 2" ANGLE CHECK VALVE	
④	1	#65 CONCRETE METER BOX	
⑤	1	2" CORPORATION STOP (COMPRESSION TYPE), BALL TYPE, CS THREAD	
⑥	1	SERVICE SADDLE (FORD 202BS OR APPROVED EQUAL)	
⑦	1	2"ϕ SOFT COPPER TUBING (TYPE "K"), OR RIGID AS APPROVED BY THE ENGINEER	
⑧	1	REDUCED PRESSURE PRINCIPLE DEVICE PER STD B-771 AS REQUIRED (BY OTHERS)	
⑨	1	2"ϕ COMPRESSION 45° BEND OR SILVER SOLDERED 45° BEND	



1-1/2" & 2" TURBO METER
AND 2" COPPER WATER
SERVICE INSTALLATION

Approved _____ Date _____
City Engineer R.C.E. 50353 Exp.06-30-09

REVISIONS	BY	DATE

STD. PLAN NUMBER
B-723
SHEET 1 OF 1