



CONSTRUCTION DETAILS

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GENERAL SECTION

CONSTRUCTION WITHIN CITY RIGHT-OF-WAY

No person or contractor shall do or cause to be done any improvement or encroachment work of any kind in any public right-of-way within the City without first having obtained an encroachment permit from the Public Works Department.

Developers shall arrange for a pre-construction meeting with the City Engineer (Municipal Code 17.32.250b) prior to commencing any construction. An encroachment permit shall be obtained from the Public Works Department upon completion of said meeting and prior to construction of any improvements within an existing or offered for dedication right-of-way, public utility easement or public service easement.

Contractor shall notify the Public Works Department 48 hours prior to commencement of any work phase. At that time an "Inspection Request Form" shall be completed to ensure proper scheduling of an inspection with the City Engineer's Representative.

Contractor shall not destroy existing permanent survey monuments; whether property corners or street centerline monuments.

All work shall conform to the latest edition of the City of Morgan Hill Standard Details for Construction. Deviations from the Standard Details must be approved by the City Engineer.

Contractor shall only use equipment provided with a spark arrestor device to reduce a potential fire hazard.

ON-SITE CONSTRUCTION

A grading permit shall be obtained from the City of Morgan Hill Building Division prior to any grading of building pads. Applicant for the grading permit shall provide a plan review letter from the Soils Engineer. A grading permit does not give contractor permission to commence off-site (street) grading. Only upon City approval of the improvement plans and completion of a pre-construction meeting, shall contractor commence off-site grading.

Contractor shall preserve all surrounding property by confining operations to within the "Limits of Work". Contractor shall be responsible for maintaining access for all adjoining residents, places of business, and properties at all times and in a safe manner. Contractor shall make proper notification at least 24 hours in advance of any interruption in access or service to the above property owners as well as to the City Engineer's Representative.

RIGHT OF MODIFICATION

Approval of an improvement plan does not release owner/subdivider of the responsibility for correction of mistakes, errors, or omissions, contained within the plans. If during the course of construction, public interest requires a modification of or a departure from the improvement plans or these Standard Details for Construction, the City Engineer shall have the authority to require such modifications and departures and to specify the manner in which the same is to be made.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

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NO.

G-I

OFF-SITE WATER AND DUST CONTROL

Contractor shall provide a water truck onsite at all times. Contractor will be allowed to draw water from the City of Morgan Hill Water Distribution System only after obtaining a hydrant meter from the Public Works Department and an inspection of the water truck for a proper backflow device or "air-gap" filling pipe. Developer has paid for "off-site" construction water which shall not be used for building construction. Contractor shall keep down dust from construction activity to the maximum extent possible. Contractor shall clean all existing streets, curbs, gutters, and sidewalks affected by the project at the end of each working day.

MATERIAL STORAGE

No material shall be stored near the edge of pavement, traveled way, sidewalk, driveway, or shoulder line which may create a hazard for vehicular and pedestrian traffic.

TRAFFIC CONTROL

Contractor shall submit a traffic control plan for approval to the Public Works Department a minimum of 5 days prior to any work within an existing public street. The plan shall be signed by a licensed Traffic Engineer when it involves an arterial street. Contractor shall provide all necessary traffic control in accordance with the latest edition of CALTRANS "Manual of Warning Signs, Lights, and Devices for Use in Performance of Work Upon Highways" while working within the public right-of-way. Two traffic lanes (10' min.), shall be open to vehicular traffic during all hours, weekends, and holidays. One lane one way traffic, may be permitted under the control of not less than 2 (two) competent flagmen during construction operations. Street closures and detours shall only take place upon City Engineer approval and Police Department coordination.



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G-II

LEGEND

PROPOSED	EXISTING	REMOVE, SALVAGE OR RELOCATE	DESCRIPTION
			PROPERTY LINE
			CENTER LINE
			LIMIT OF WORK LINE
			CITY LIMIT LINE
			EDGE OF PAVEMENT
			CURB AND GUTTER
			SIDEWALK
			DRIVEWAY APPROACH
			PAVING CONFORM
			HANDICAP RAMP
			STREET NAME SIGN
			STREET SIGN (W/ABBR. SYMBOL)
			GUARD RAIL
			STREET BARRICADE
			RAILROAD TRACKS
			FENCE (TYPE)
			TOP OF SLOPE
			SLOPE / FLOW LINE DIRECTIONAL ARROW
			BENCH MARK
			STREET MONUMENT
			KEY TO REVISIONS
			DUPLICATE ITEM (INDICATE W/SYMBOL)
			AS-BUILT CHANGES
			JOINT POWER POLE



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G-1

LEGEND

PROPOSED	EXISTING	REMOVE, SALVAGE OR RELOCATE	DESCRIPTION
— SS —	— SS —		SANITARY SEWER
— SD —	— SD —		STORM DRAIN
— W —	— W —		WATER MAIN
	— G —		GAS
	— E —		ELECTRIC
	— T —		TELEPHONE
	— JT —		JOINT TRENCH
— SS — ● — SS —	— SS — ○ — SS —	○	SEWER MANHOLE
— SD — ● — SD —	— SD — ○ — SD —	○	STORM MANHOLE
●	○	○	FIRE HYDRANT
— W — ● — W —	— W — ○ — W —	-- W -- ○ -- W --	WATER VALVE
	— G — ○ — G —		GAS VALVE
● B.O.	○ B.O.	○ B.O.	BLOW OFF
● C.O.	○ C.O.	○ C.O.	CLEAN OUT
● A.R.V.	○ A.R.V.	○ A.R.V.	AIR RELIEF VALVE
■ — ● — ● — ● —	□ — ... —	□ — ... —	WATER SERVICE (WITH METER)
— S	— S	— S	SEWER LATERAL
— W — / — W —	— W — / — W —		BACKFLOW DEVICE
● — ●	○ — ○	○ — ○	ELECTROLIER
— e —	— e —	— e —	ELECTRICAL SECONDARY (ST. LIGHT SERVICE)
▲	△	△	CURB INLET
▲▲	△△	△△	GALLERY INLETS (TYPE AS NOTED)
■	≡	≡	DROP INLET



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LEGEND

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NO.

G-2

STREET SECTION

GENERAL

All work shall be in accordance with the latest edition of Standard Specifications, State of California, Department of Transportation, Caltrans (CSS) and the American Society for Testing and Materials (ASTM), except as modified herein.

SUBGRADE

(a) Preparation. Special care shall be taken by the contractor to achieve an evenly compacted subgrade. The relative compaction shall be 95%, as determined by CSS TM-231, for at least the top 8" of subgrade. In areas of fill, a minimum of 24" from finished grade shall be compacted to 95% relative compaction. Moisture-Density curve determinations shall conform to ASTM D1557.

PAVEMENT

(a) Asphalt Concrete Pavement Asphalt concrete pavement shall contain the number of lifts specified. In the case of two lifts, the first shall be the base course, Type B, 3/4 inch maximum aggregate size, and the second lift shall be the surface course, Type B, 1/2 inch maximum aggregate size, as specified in CSS Section 39. The relative compaction of each asphalt concrete lift shall be 95%, unless approved otherwise by the City Engineer.

(b) Aggregate Base. Aggregate base shall be 3/4" max. Class 2 aggregate base as specified in CSS Section 26.

(c) Aggregate Sub-base. Aggregate sub-base shall be 1 1/2" max. Class 2 aggregate base, as specified in CSS Section 26.

(d) Contaminated Base. Any aggregate base that becomes contaminated during construction shall be removed and replaced with uncontaminated Class 2 Aggregate Base.

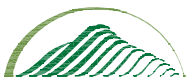
(e) Lime Stabilized Subgrade. Lime stabilized subgrade shall only be used upon approval of the City Engineer and shall be constructed in accordance with CSS Section 24. An increase in the lime content must be approved by the City Engineer.

(f) Proportioning, Mixing, Spreading, and Compacting. The proportioning, mixing, spreading and compacting of asphalt concrete to make up asphalt pavement, shall be in accordance with CSS Section 39.

(g) Priming. Untreated aggregate base shall be primed with MC-70, in accordance with CSS Section 39-4.02.

(h) Tacking. Any vertical edge adjoining new pavement courses shall be tacked with SS-1 prior to placement of pavement course, in accordance with CSS Section 39-4.02.

(i) Fog Sealing. The asphalt surface shall be fog sealed with SS-1 when specified and conform to CSS Section 37.



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A-I

(j) Joining Existing Pavement. Existing pavement which is to be joined by new pavement, shall be saw cut vertical to provide straight, true, and neat joints. Overlapping of existing pavement without saw cutting or grinding shall not be permitted. The vertical edges shall be tacked prior to paving as specified previously. Terminals of all surfacing indicated on the plans shall join any existing surface in a smooth butt joint. Conform paving by method of abrasive grinding will be allowed upon approval of the City Engineer.

(k) Patch Repairs. Where repairs to new or existing asphalt concrete are required, the AC shall be totally removed, edges saw cut and tacked, base primed, and replaced with new hot mix AC. If cold mix is used as a temporary patch, the contractor shall be responsible for maintenance of the cold mix at all times. Contractor shall remove all cold mix prior to finish paving and henceforth become property of the Contractor.

(l) Removal and Disposal of Pavement. Where pavement is shown to be removed on the plans, it shall mean that all asphalt concrete and aggregate base be removed. Waste or surplus asphalt mix, old pavement and sub-base debris shall be removed from the site.

CONCRETE

(a) Cement. All cement shall conform to the specifications and tests for Portland Cement, ASTM Specifications C-150, and shall be Type 2.

(b) Fine aggregate. Fine aggregate shall be clean, natural sand or sand prepared from stone or gravel and shall conform to the requirements of ASTM C-33, and CSS Section 90-2.02B.

(c) Coarse Aggregate. Coarse aggregate shall consist of material conforming to the requirements of ASTM C-33, and shall be in accordance with CSS Section 90-2.02A.

(d) Water. Water used in making concrete shall be clean, free from oil, alkali, acid, organic matter, or other deleterious substances. Water shall be in accordance with CSS Section 90-2.03.

(e) Admixtures. No admixtures will be allowed except as approved by the City Engineer on a job to job basis. Such usage may only be for the purpose of increasing plasticity. No decrease in cement content shall be permitted as a result of the use of such admixtures. No other admixtures shall be added to the concrete mix. The use of admixtures, if approved by the City Engineer, shall be in accordance with CSS Section(s) 90-4.03 and 90-4.04.

(f) Workmanship and Methods. Unless specifically covered elsewhere in these details, all concrete work, including detailing of reinforcing, shall be equal to the best general practice and as set forth in the ACI Building Code, Manuals and Recommended Practices.

(g) Classes of Concrete. Concrete shall consist of two classes, herein referred to as Class 2 and Class 3, as specified in CSS Section 90. Class 2 concrete shall be used in all retaining walls, box culverts, and wherever specified in the plans and specifications. At a minimum, Class 3 concrete shall be used for driveway approaches, sidewalks, curb and gutters, thrust blocks, and miscellaneous construction items such as pipe encasements. No mixture shall produce less than 3,000 psi (at 28 days) with maximum water/cement ratio of 0.5.



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A-II

(h) Pneumatically Placed Mortar. Materials used in Gunite, Shotcrete, Mortar, etc., applied directly to a surface by air jet, shall be in accordance with CSS Section 53 and Section 90, irrespective of manufacture of the mixing and placing apparatus.

(i) Proportioning and Mixing. All proportioning and mixing methods, devices, and transporting, shall be in accordance with CSS Section(s) 90-5 and 90-6.

(j) Workability. Concrete shall be of such consistency that it can be worked readily into the corners and angles of the forms and around the reinforcement without excessive spading and does not permit material segregation or bleeding of water.

(k) Field Tests. During the progress of construction, the Inspector has the authority to order tests to determine whether the concrete, as being produced, complies with the standards of quality specified. These tests shall be made in accordance with ASTM C 31 and ASTM C 39. For all concrete, the standard age for the test shall be 7 days. Slump tests shall be in accordance with ASTM C 143.

EMERGENCY ACCESS SURFACING

Contractor shall be responsible for providing an "All Weather Surface" to any existing structure and/or structures under construction within the project area. For structures under construction, the required surface shall be in place prior to the commencement of any wood framing.

The required "All Weather Surface" shall consist of 6" min. thickness, Class 2 Aggregate Baserock, compacted to a relative compaction of 95%. The contractor shall be responsible for removal of any contaminated baserock prior to finish grading.

The Building Division will issue a "Foundation Only" permit and shall not issue a permit for wood framing unless the following requirements are met:

1. All new water mains are charged, pressure tested, bacteria tested and approved by the Department of Public Works. All fire hydrants within 500' of new construction are charged and operational.
2. All sub-grade is compacted to a relative compaction of 95%, tested and approved by the Department of Public Works.
3. Central Fire District has approved the proposed surface location and has visited the site after construction of the surface, but prior to issuance of Building permits for wood framing.



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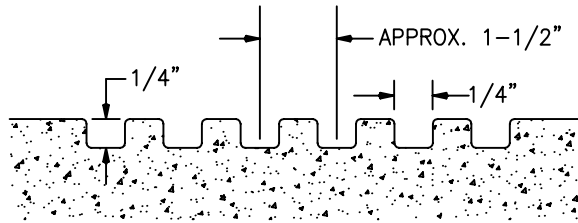
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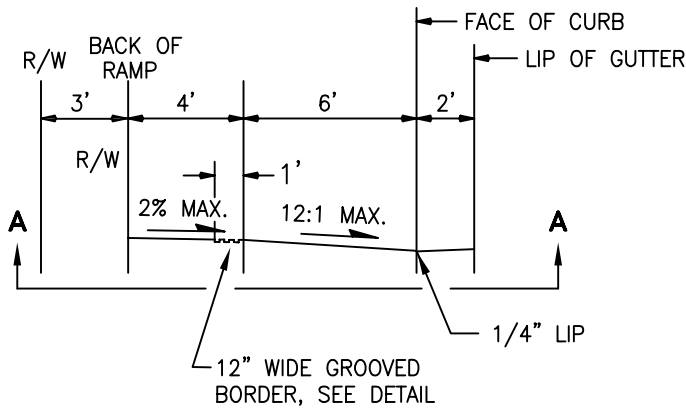
GENERAL NOTES

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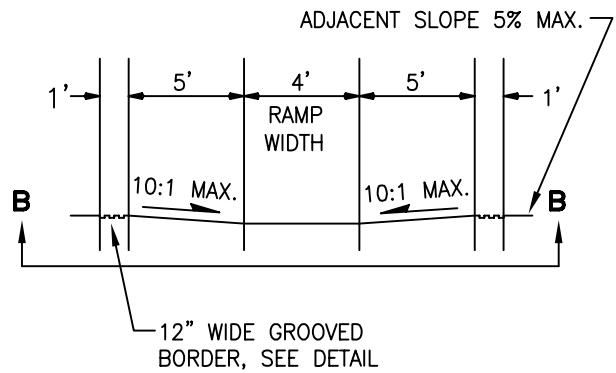
A-III



GROOVING DETAIL

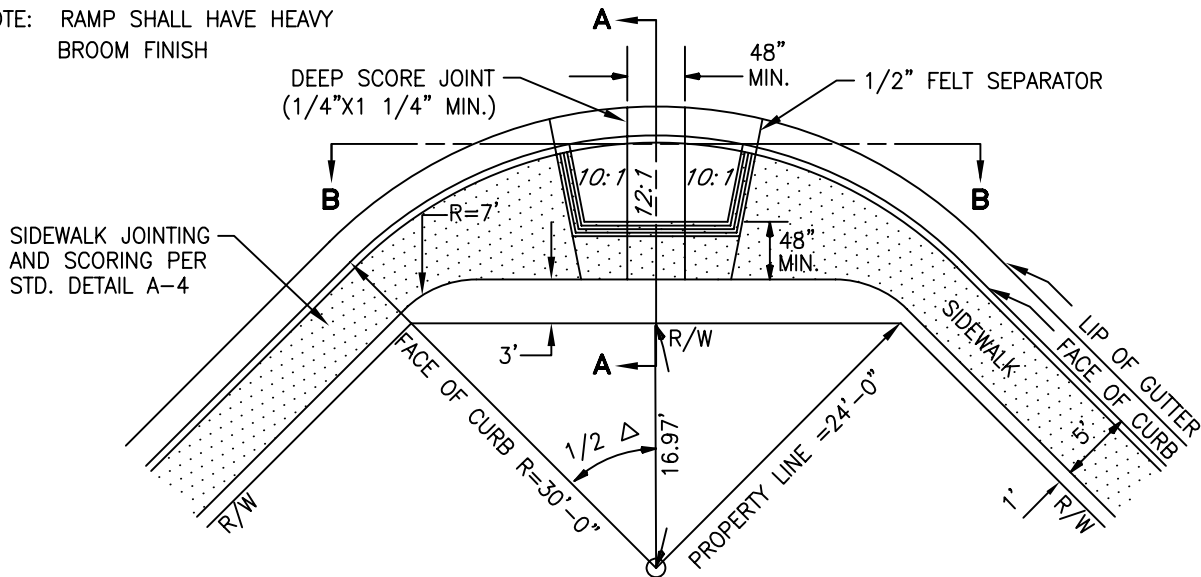


SECTION A - A



SECTION B - B

NOTE: RAMP SHALL HAVE HEAVY BROOM FINISH



NOTE: CURRENT A.D.A. (AMERICANS WITH DISABILITIES ACT) REQUIREMENTS SHALL GOVERN OVER THIS DRAWING.



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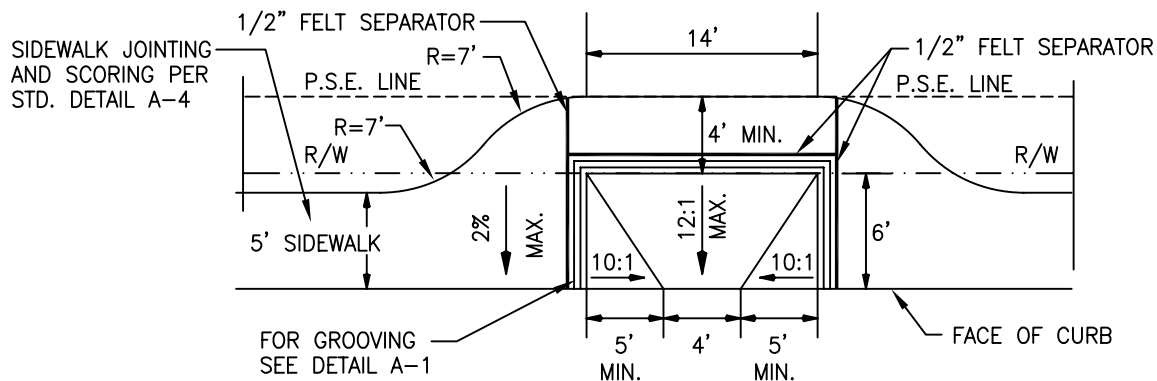
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**HANDICAP RAMP
RESIDENTIAL SIDEWALK**

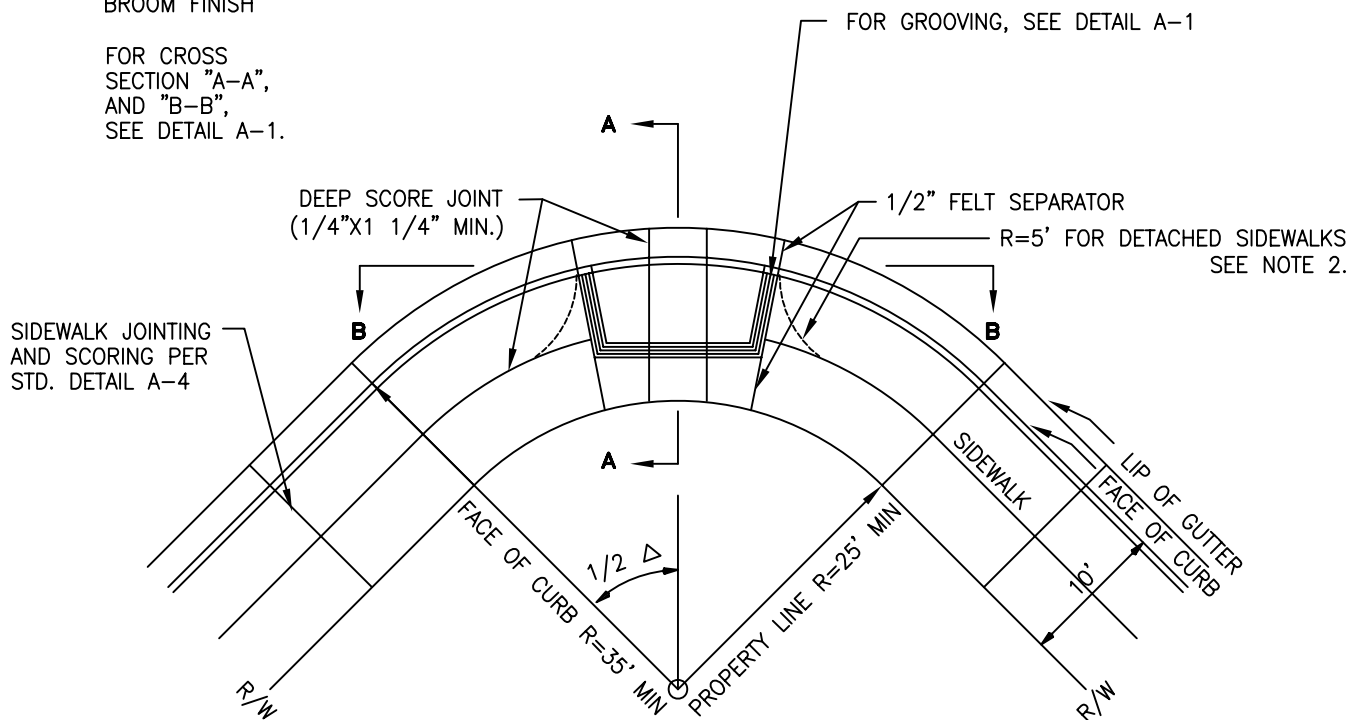
DRAWING
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A-1



"CASE D" HANDICAP RESIDENTIAL RAMP

NOTE: RAMP SHALL HAVE HEAVY
BROOM FINISH

FOR CROSS
SECTION "A-A",
AND "B-B",
SEE DETAIL A-1.



NOTES:

1. CURRENT A.D.A. (AMERICANS WITH DISABILITIES ACT) SHALL GOVERN OVER THIS DRAWING.
2. FOR 5' ATTACHED SIDEWALK, SEE DETAIL A-1 FOR HANDICAP RAMP AND SIDEWALK CONFIGURATION.



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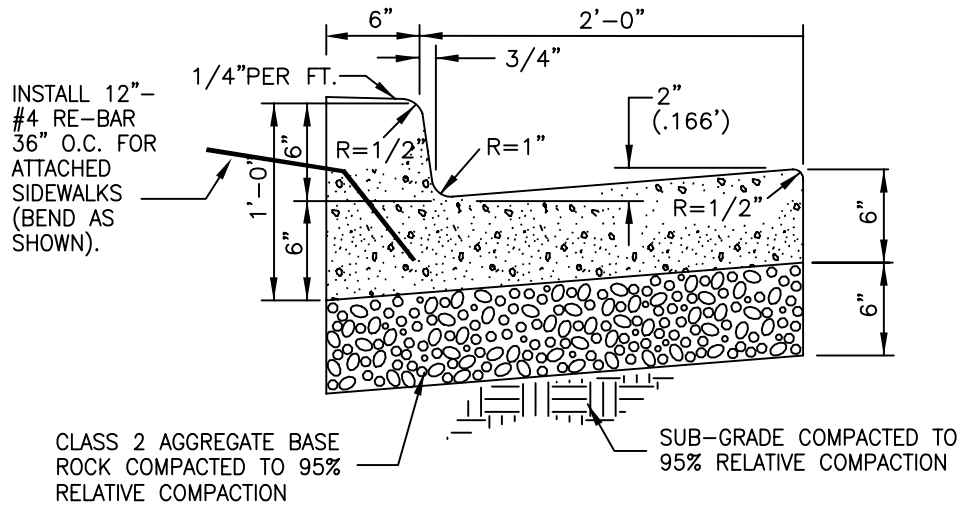
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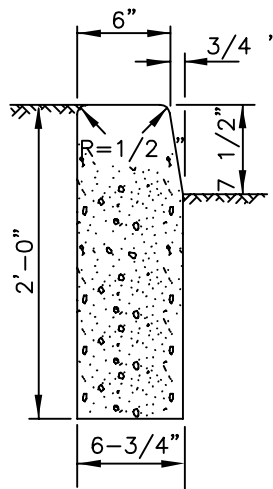
HANDICAP RAMP COMMERCIAL SIDEWALK

DRAWING
NO.

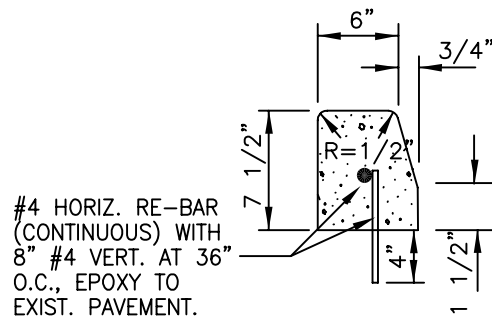
A-2



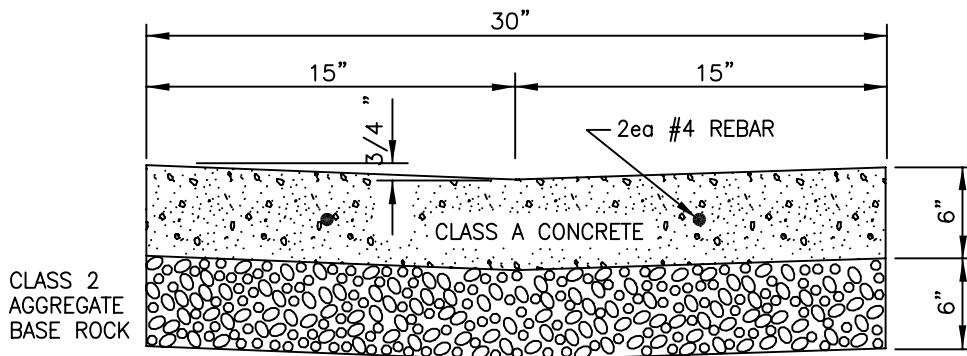
"TYPE 1" CURB AND GUTTER



"TYPE 2" FULL VERTICAL CURB



"TYPE 3" (TEMPORARY) EXTRUDED CURB



"TYPE 4" VALLEY GUTTER

- NOTES:**
1. A DEEP SCORE JOINT AT EVERY 10' (1/4" X 1 1/4" MIN.) AND A FELT SEPARATOR AT EVERY 60' (1/2") SHALL BE INSTALLED FOR ALL GUTTER TYPES.
 2. TYPE 3 (TEMPORARY) EXTRUDED CURB SHALL ONLY BE USED UPON WRITTEN APPROVAL BY THE CITY ENGINEER.



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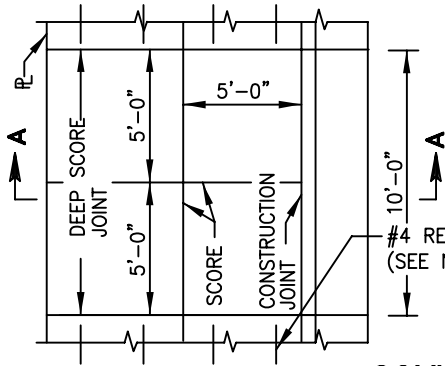
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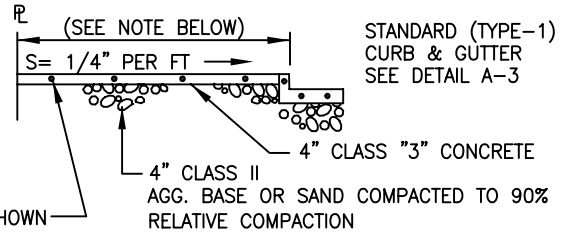
**CONCRETE CURB AND/OR
GUTTER TYPES**

DRAWING
NO.

A-3

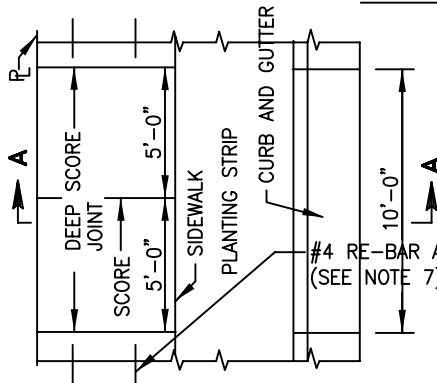


COMMERCIAL

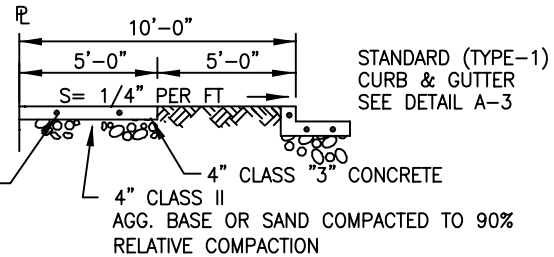


SECTION A-A

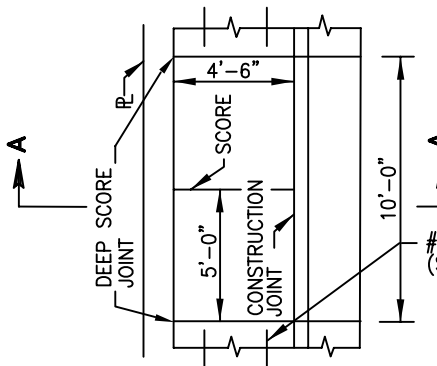
NOTE: 10' COMMERCIAL SIDEWALK IN DOWNTOWN CORE. FOR 5' SIDEWALK, SEE RESIDENTIAL ATTACHED OR DETACHED, DEPENDING UPON PLANNING DEPARTMENT REQUIREMENTS.



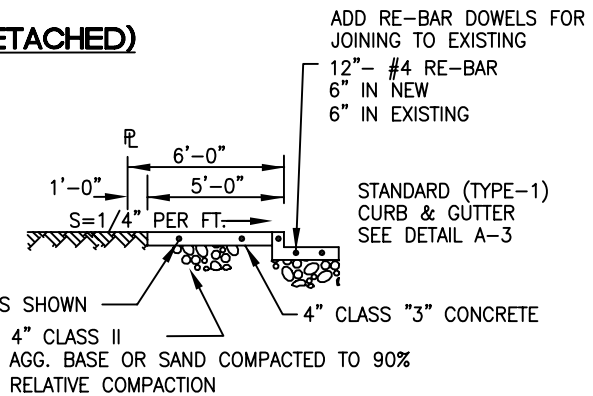
RESIDENTIAL (DETACHED)



SECTION A-A



RESIDENTIAL (ATTACHED)



SECTION A-A

- NOTES:**
1. CONSTRUCT 3/8" EXPANSION JOINTS WITH FELT FILLER AT RETURNS AND MAJOR STRUCTURES.
 2. ROUND ALL EXPOSED EDGES TO 1/2" RADIUS.
 3. PLACE EXPANSION JOINTS EVERY 60' (1/2" FELT SEPARATOR).
 4. PLACE DEEP SCORE JOINTS EVERY 10'. (1/4" X 1 1/4" MIN)
 5. PLACE SCORE MARKS EVERY 5' IN SIDEWALK SECTIONS ONLY. (1/8" X 1/2" MIN.)
 6. PLACE AN "S" FOR SEWER LATERAL AND A "W" FOR WATER SERVICE ON FACE OF CURB (NEW DEVELOPMENTS ONLY).
 7. FOR NEW SIDEWALK POURED TO ADJOIN EXISTING SIDEWALK, 2-#4 REBARS SHALL BE DOWELLED 6" INTO EXISTING SIDEWALK AND EXTEND 6" INTO NEW SIDEWALK POUR (SEE DIAGRAM ABOVE)..
 8. FOR NEW ATTACHED SIDEWALK POURED TO ADJOIN EXISTING CURB, #4 REBARS SHALL BE DOWELLED 6" INTO BACK OF CURB AT EVERY 36" (NOT SHOWN IN DIAGRAM, SEE DETAIL A-3).



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Public Works Department

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CITY ENGINEER

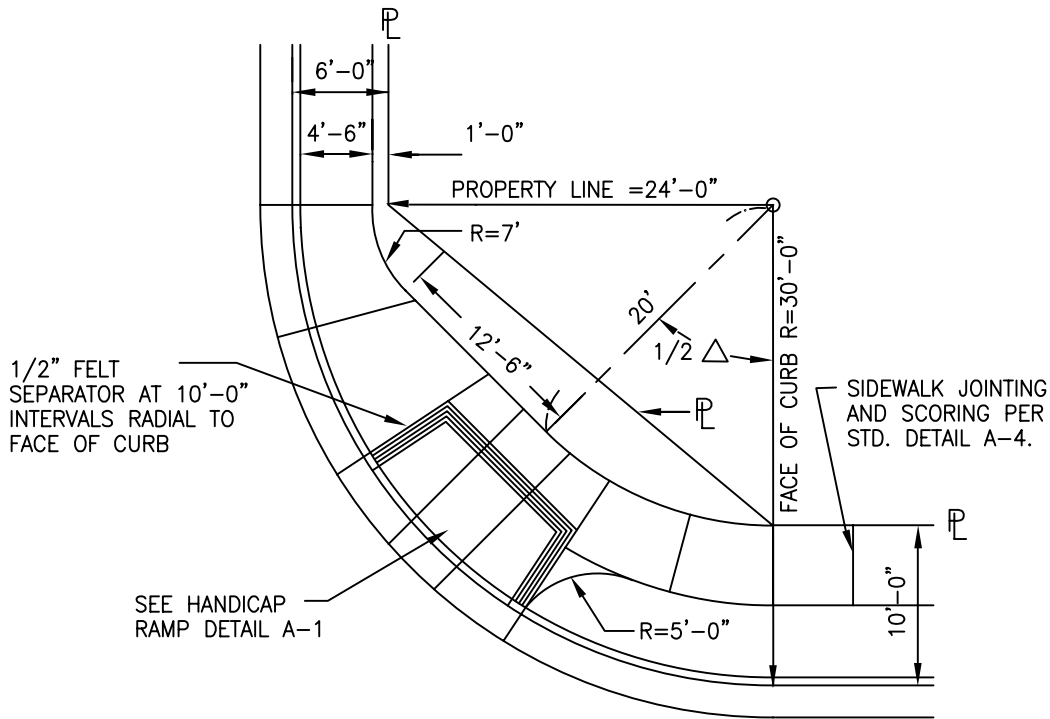
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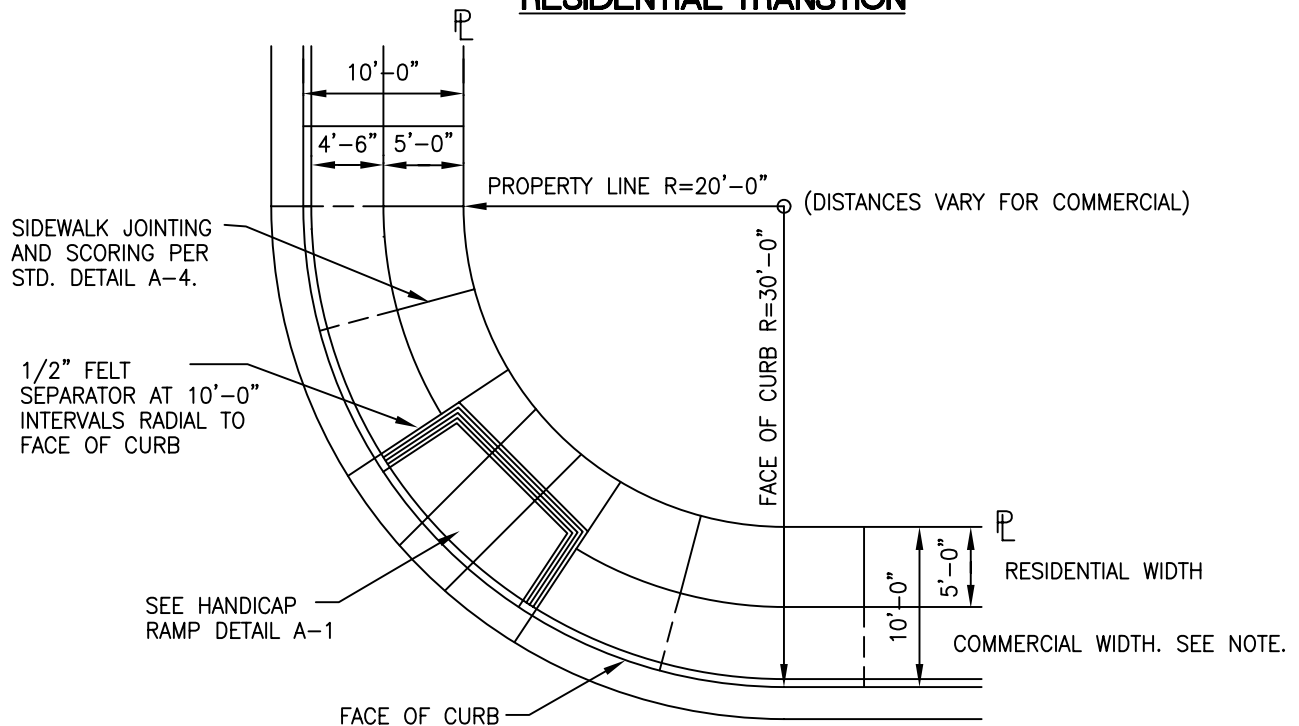
**SIDEWALK COMMERCIAL,
DETACHED RESIDENTIAL,
AND ATTACHED RESIDENTIAL**

DRAWING
NO.

A-4



RESIDENTIAL TRANSITION



RESIDENTIAL DETACHED OR COMMERCIAL

NOTE: 10' COMMERCIAL SIDEWALK IN DOWNTOWN CORE. SEE DETAIL A-1 OR A-2 FOR 5' SIDEWALK, DEPENDING UPON PLANNING DEPARTMENT REQUIREMENTS.



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Public Works Department

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CITY ENGINEER

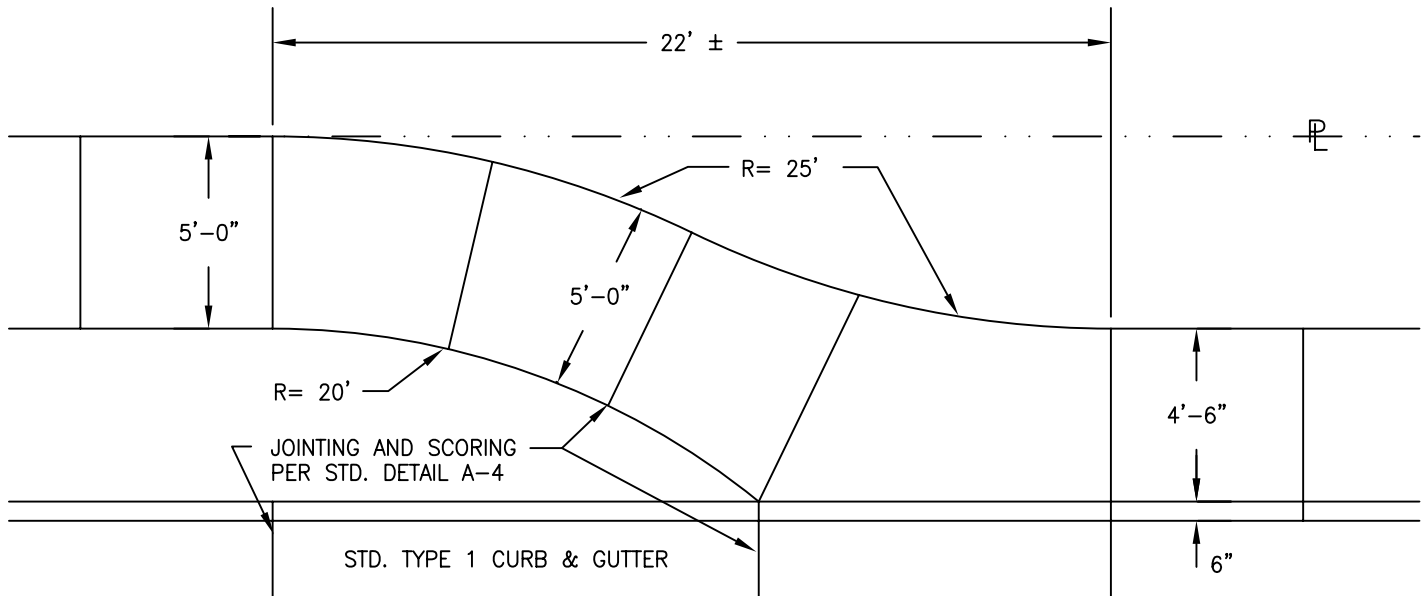
4/1/96
DATE

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STANDARD RETURNS DETACHED AND TRANSITION SIDEWALKS

DRAWING
NO.

A-5



NOTE: 1. SHORTER TRANSITION MAY BE USED UPON CITY ENGINEER APPROVAL



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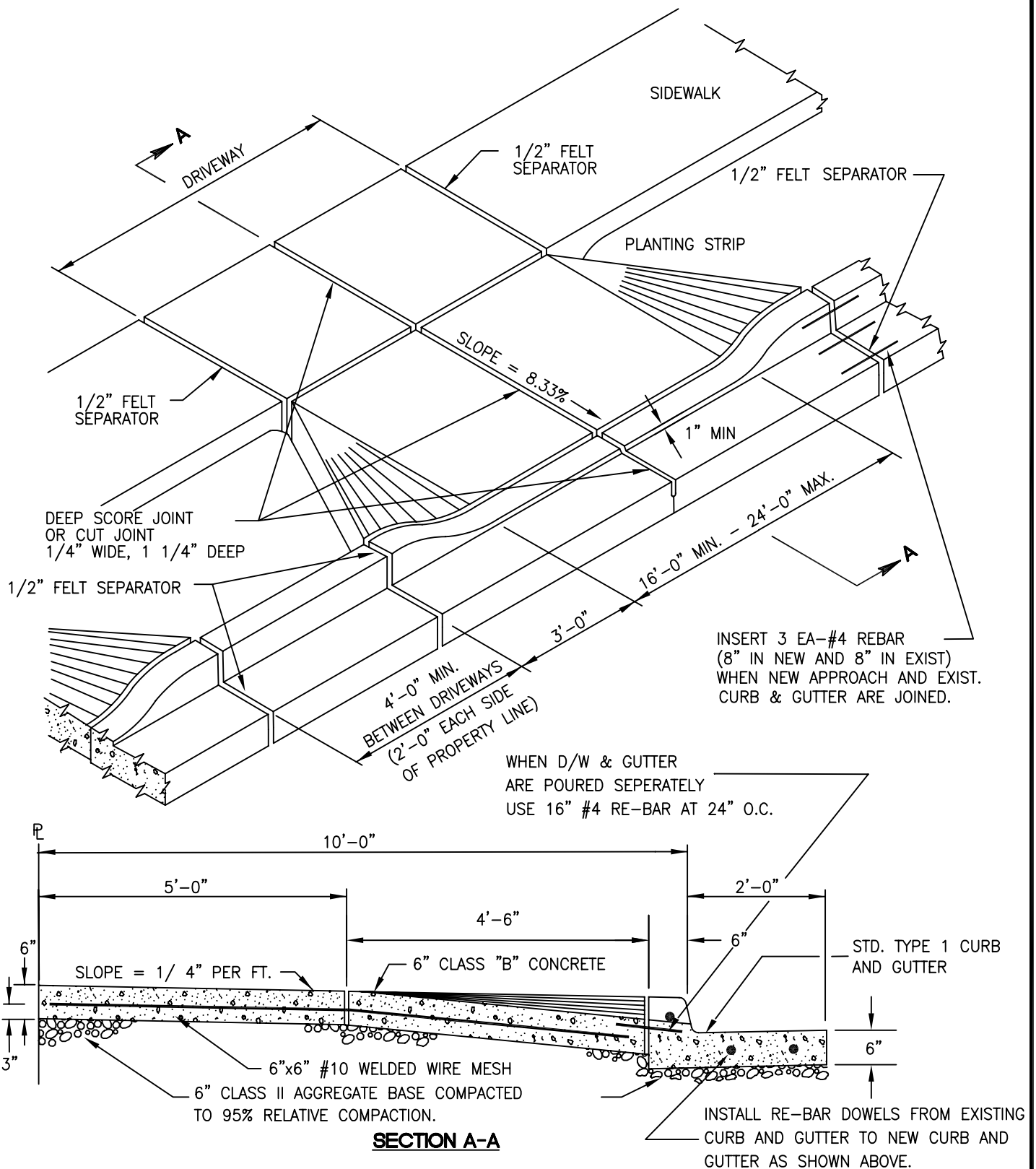
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RESIDENTIAL SIDEWALK TRANSITION

DRAWING
NO.

A-6



- NOTES:**
1. DRIVEWAY APPROACHES EXCEEDING 24' IN WIDTH (EXCLUDING TAPERS), REQUIRE CITY ENGINEER APPROVAL.
 2. DRIVEWAYS SHALL BE CONSTRUCTED A MIN. OF 5' FROM ANY FIRE HYDRANT OR ELECTROLIER.



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Public Works Department

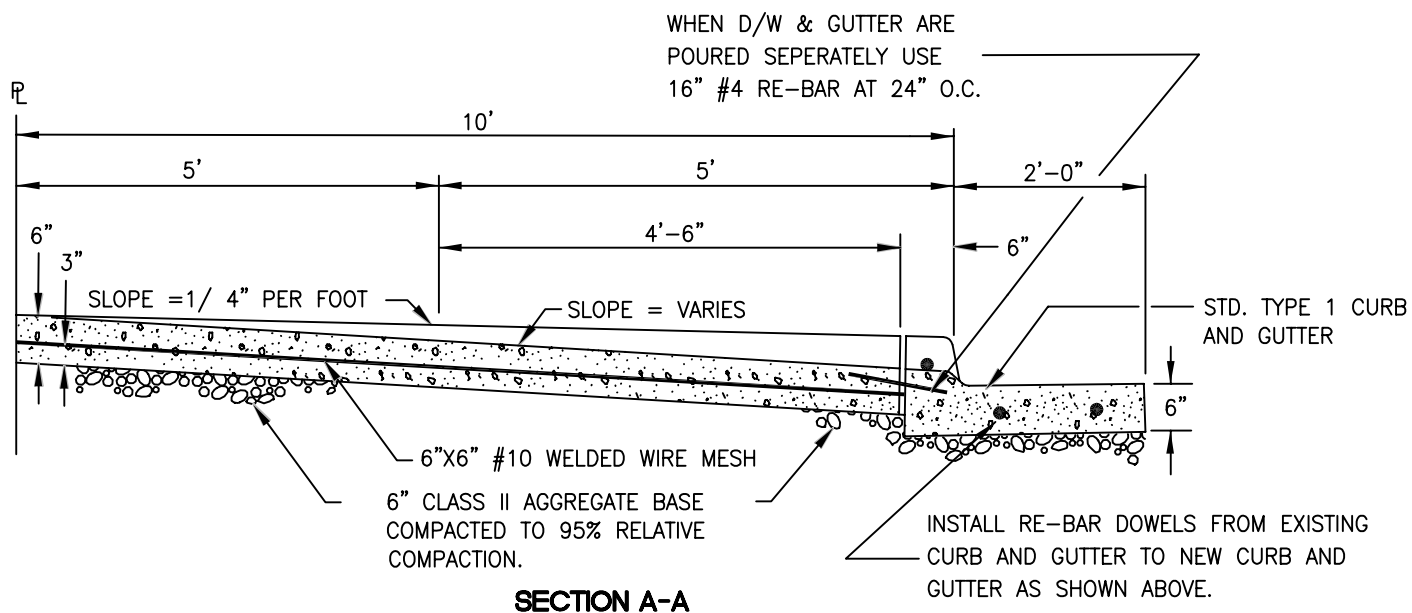
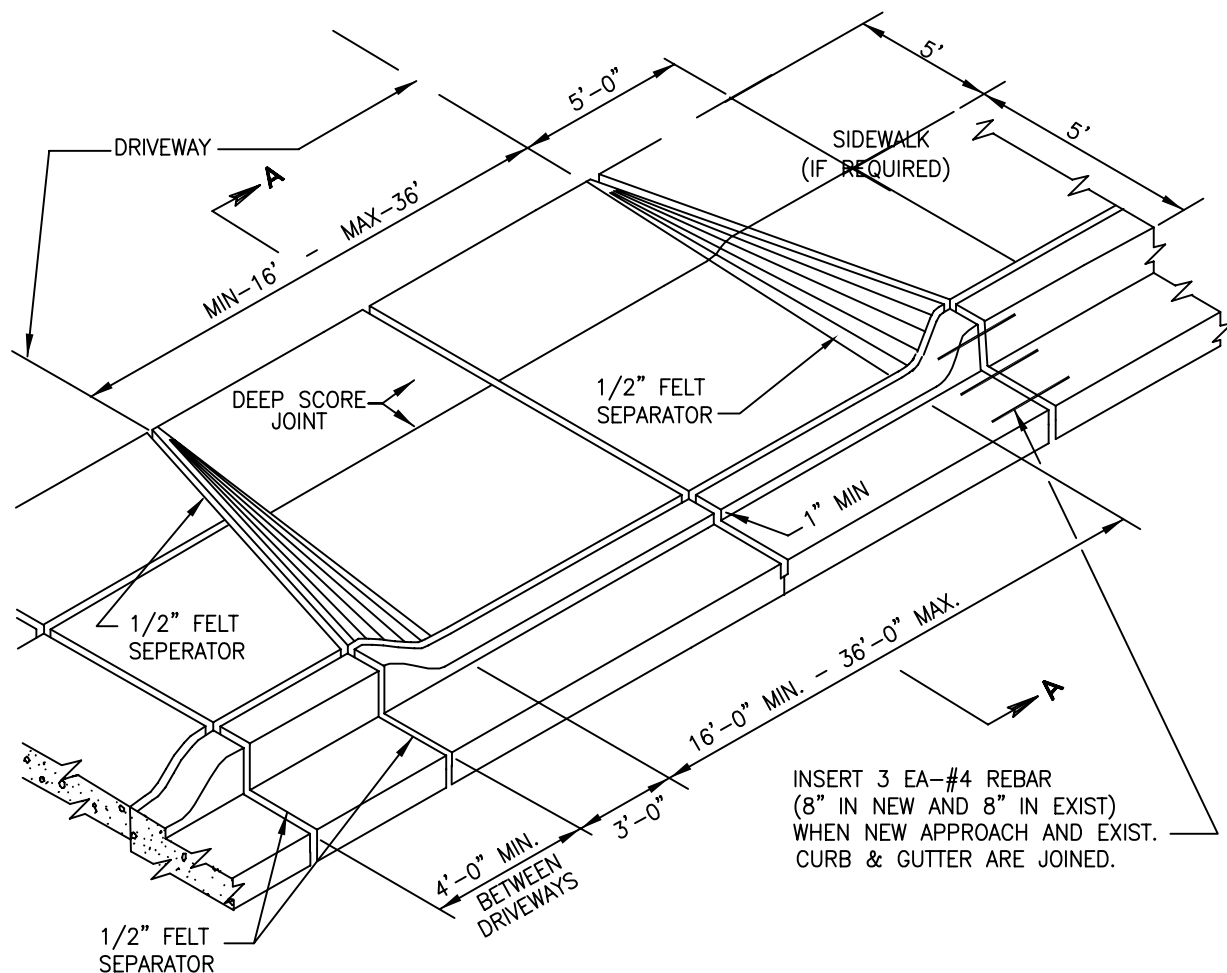
Jim Oshroff
CITY ENGINEER

4/1/96
DATE

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NEW RESIDENTIAL DRIVEWAY APPROACH DETACHED SIDEWALK

DRAWING
NO.
A-9



SECTION A-A



City of Morgan Hill
Public Works Department

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CITY ENGINEER

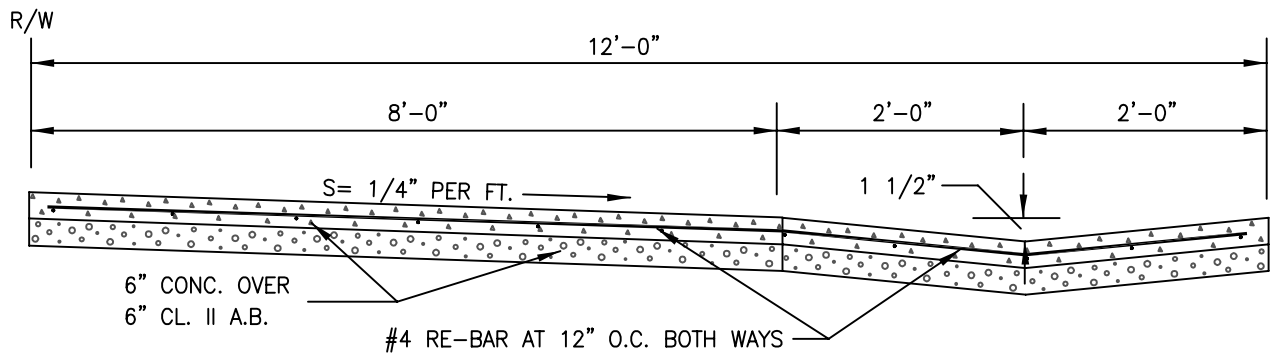
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INDUSTRIAL DRIVEWAY APPROACH COMMERCIAL SIDEWALK

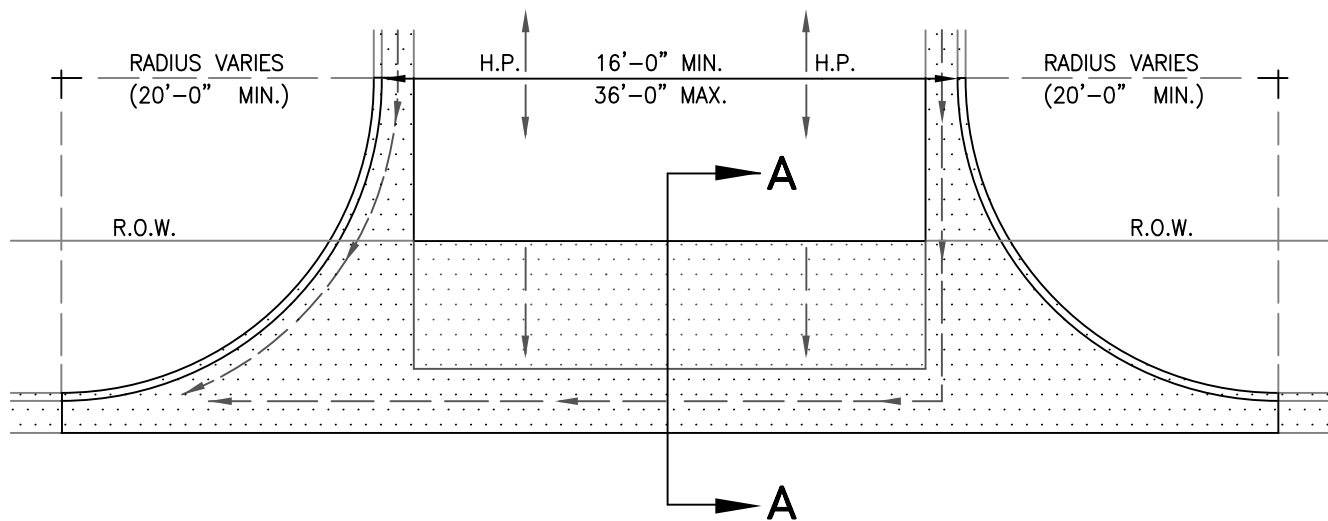
DRAWING
NO.

A-10



SECTION A-A

N.T.S.



PLAN VIEW

N.T.S.

NOTES:

1. CONSTRUCT 1/2" EXPANSION JOINTS WITH FELT FILLER AT ALL RETURNS, FOR EVERY 60 L.F. OF GUTTER SECTION, AND DEEP SCORE JOINTS (1/4" X 1 1/4" MIN.) EVERY 10'.
2. CONTRACTOR SHALL NOTIFY INSPECTOR OF FINAL JOINT CONFIGURATION FOR ALL CONCRETE WORK PRIOR TO POUR.
3. HANDICAP RAMPS MAY BE REQUIRED DEPENDING ON APPLICATION. ANY PROPOSED RAMP CONFIGURATIONS SHALL BE REVIEWED AND APPROVED BY THE CITY ENGINEER PRIOR TO START OF WORK. ALL RAMPS SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST PROVISIONS OF THE "AMERICANS WITH DISABILITIES ACT" (A.D.A.) AND IN ACCORDANCE WITH DETAILS A-1, A-2. AND A-5.
4. APPLICATION SHOWN IS INTENDED TO BE USED AS AN ALTERNATE COMMERCIAL DRIVEWAY AND MAY NOT BE USED FOR AN INTERSECTING STREET OR RESIDENTIAL ACCESS.
5. A DEDICATED 10' P.S.E. (PUBLIC SERVICE EASEMENT) SHALL BE REQUIRED TO ACCOMMODATE THE APPLICATION SHOWN.



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CITY ENGINEER

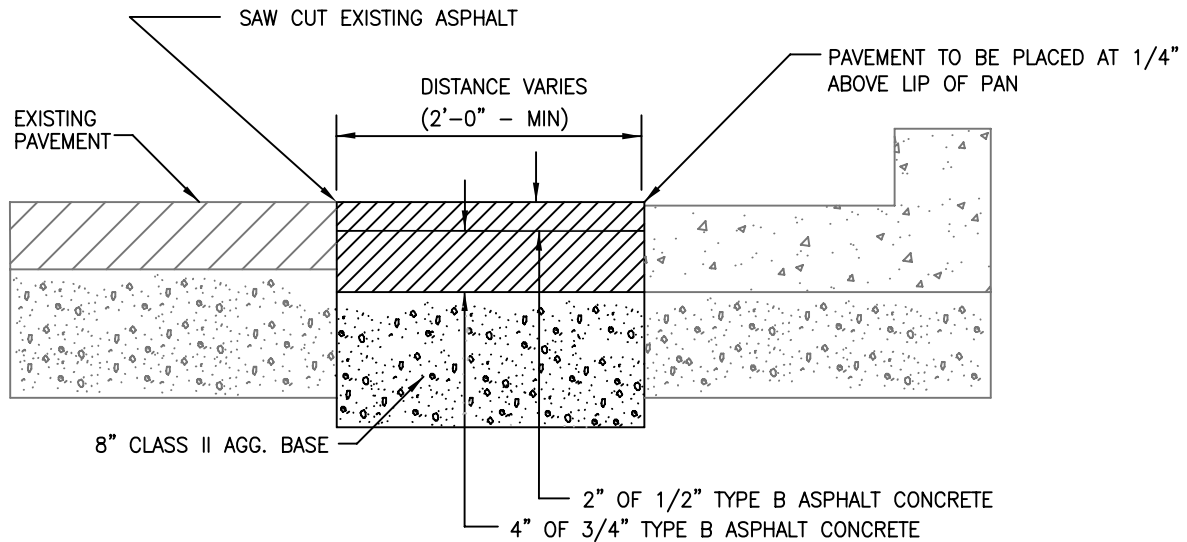
9/15/02
DATE

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CROSS-DRAIN COMMERCIAL DRIVEWAY APPROACH

DRAWING
NO.

A-11



- NOTES:**
1. TACK COAT ALL VERTICAL EDGES PRIOR TO PLACEMENT OF AC.
 2. THE REQUIRED DISTANCE OF THE PAVEMENT TRANSITION SHALL DEPEND ON THE CONDITION OF THE EXISTING AC. CARE SHALL BE TAKEN DURING THE REMOVAL OF THE EXISTING GUTTER PAN TO HELP MINIMIZE THE TRANSITION PAVING WIDTH. A 2'-0" MIN. DISTANCE (AS SHOWN) SHALL BE REQUIRED UNLESS OTHERWISE DETERMINED BY THE CITY ENGINEER.



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PAVEMENT TO NEW CURB TRANSITION

DRAWING
NO.

A-12

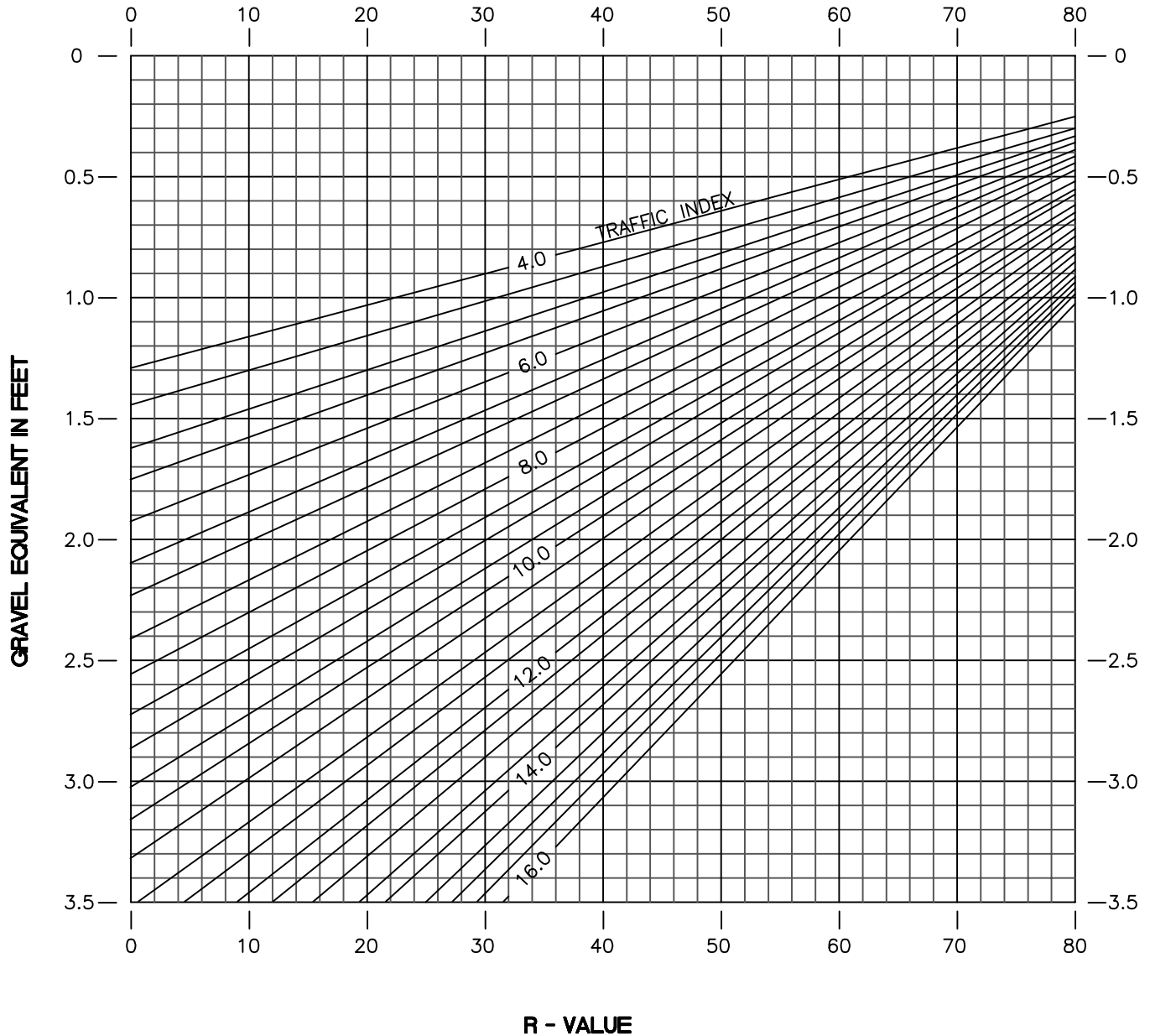
EQUATION:

$$G.E. = 0.0032 (T.I.)(100 - R)$$

G.E. = GRAVEL EQUIVALENT

T.I. = TRAFFIC INDEX

R. = RESISTANCE VALUE



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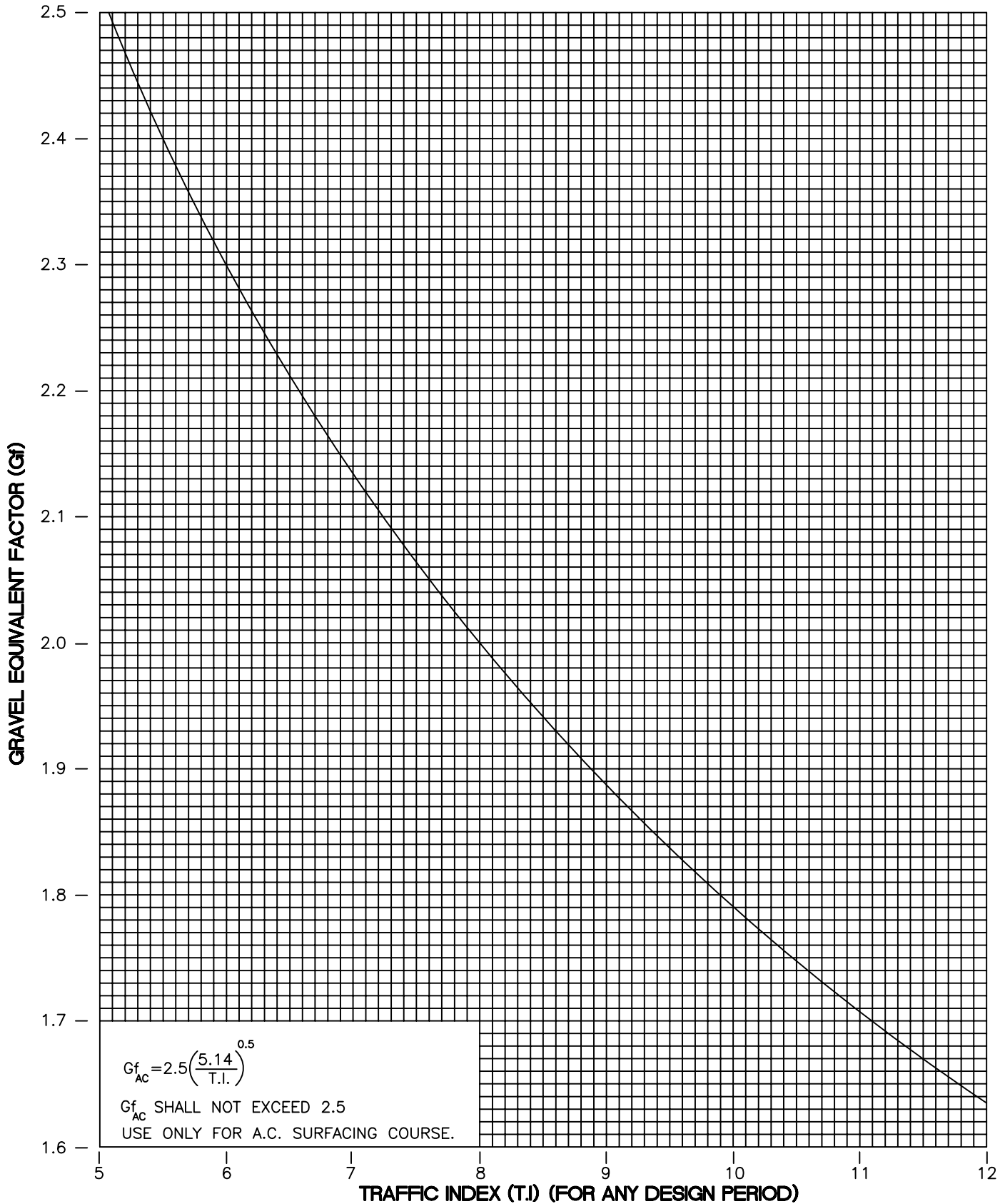
DATE

REVISED

**STRUCTURAL DESIGN CHART
FOR FLEXIBLE PAVEMENTS**

DRAWING
NO.

A-13



City of Morgan Hill
Public Works Department

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4/1/96
DATE

REVISED

**RELATIONSHIP BETWEEN GRAVEL
EQUIVALENT FACTOR FOR
ASPHALT CONCRETE AND
TRAFFIC INDEX**

DRAWING
NO.

A-14

GRAVEL EQUIVALENT FACTORS

MATERIAL

GRAVEL EQUIVALENT FACTOR (G_f)

LEAN CONCRETE BASE (LCB)	1.9
CLASS A CEMENT TREATED BASE (CTB)	1.7
ASPHALT TREATED PERMEABLE MATERIAL (ATPM)	1.4
OPEN GRADED ASPHALT CONCRETE (OGAC)	1.4
CLASS B CEMENT TREATED BASE (CTB)	1.2
ASPHALT TREATED BASE	1.2
SOIL CEMENT	1.2
AGGREGATE BASE	1.1
AGGREGATE SUBBASE	1.0
LIME TREATED BASE (LTB)	0.9 + (unconfined compressive strength in psi / 1000)

GRAVEL EQUIVALENTS OF FULL DEPTH ASPHALT CONCRETE

A.C. THICKNESS (FT.)	TRAFFIC INDEX *								
	6	7	8	9	10	11	12	13	14
0.55 — — — — —	1.30	1.20	1.12	1.05	1.00	0.95	0.92	0.87	0.85
0.60 — — — — —	1.44	1.33	1.24	1.17	1.10	1.06	1.02	0.97	0.94
0.65 — — — — —	1.60	1.48	1.38	1.30	1.23	1.17	1.13	1.08	1.05
0.70 — — — — —	1.79	1.65	1.54	1.45	1.37	1.31	1.26	1.20	1.17
0.75 — — — — —	1.97	1.82	1.70	1.60	1.52	1.45	1.39	1.33	1.29
0.80 — — — — —		1.99	1.86	1.75	1.66	1.59	1.53	1.46	1.41
0.85 — — — — —		2.14	2.00	1.88	1.78	1.70	1.64	1.56	1.52
0.90 — — — — —		2.31	2.17	2.04	1.93	1.84	1.77	1.69	1.64
0.95 — — — — —			2.35	2.21	2.09	2.00	1.92	1.83	1.78
1.00 — — — — —			2.51	2.36	2.23	2.13	2.05	1.96	1.90
1.05 — — — — —			2.67	2.51	2.38	2.27	2.18	2.08	2.02
1.10 — — — — —				2.68	2.54	2.42	2.33	2.22	2.16
1.15 — — — — —				2.83	2.68	2.56	2.46	2.35	2.38
1.20 — — — — —					2.82	2.70	2.59	2.48	2.40
1.25 — — — — —					2.98	2.85	2.74	2.62	2.54
1.30 — — — — —					3.15	3.00	2.89	2.76	2.68
1.35 — — — — —						3.16	3.03	2.90	2.81
1.40 — — — — —						3.31	3.18	3.04	2.95
1.45 — — — — —						3.47	3.33	3.18	3.09
1.50 — — — — —							3.48	3.32	3.22
1.55 — — — — —							3.62	3.46	3.36
1.60 — — — — —							3.77	3.61	3.50
1.65 — — — — —								3.76	3.65
1.70 — — — — —								3.90	3.78
1.75 — — — — —								4.06	3.94

* SAFETY FACTOR OF 0.10 TO BE ADDED TO TOTAL GE BEFORE ENTERING TI COLUMN.

R-VALUE:	CLASS B CTB=80	ASB CLASS 1 = 60
	AB=78	ASB CLASS 2 = 50
		ASB CLASS 3 = 40
		ASB CLASS 4 = 50



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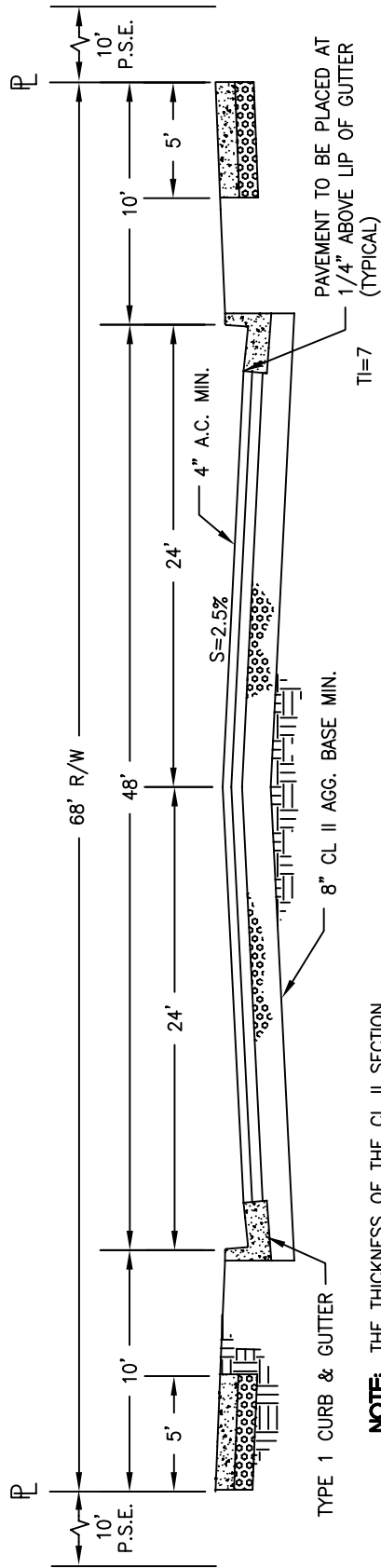
Jim Obercraft
CITY ENGINEER

4/1/96
DATE

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GRAVEL EQUIVALENTS AND EQUIVALENT FACTORS

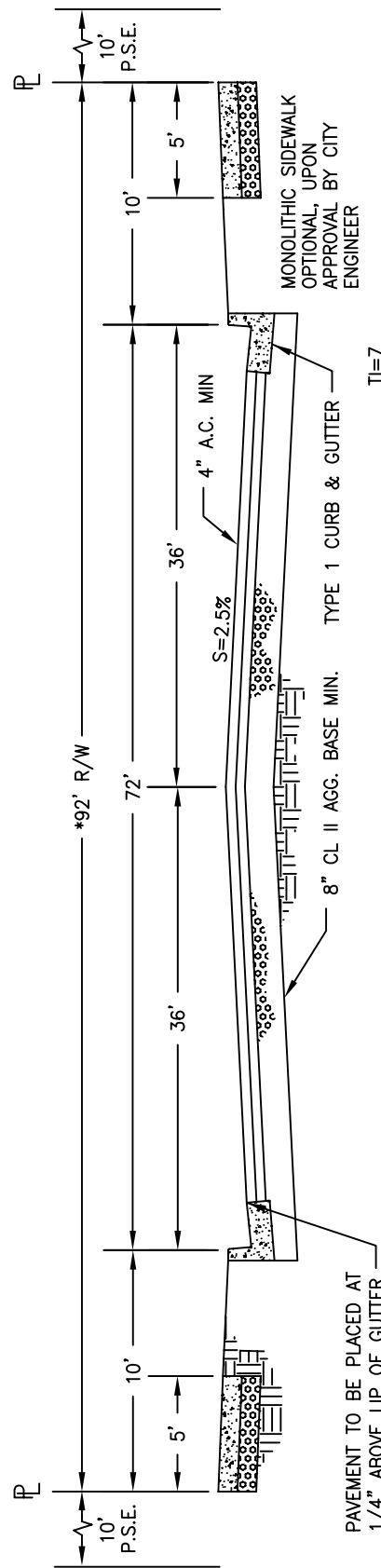
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A-15



NOTE: THE THICKNESS OF THE CL II SECTION IS DETERMINED BY THE CITY ENGINEER.

SIDEWALK LOCATION SUBJECT TO APPROVAL BY THE CITY ENGINEER.

INDUSTRIAL

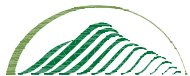


4 LANE UNDIVIDED ARTERIAL

(Bike Lane Required)

*: Developer required to provide 36' Right Of Way, and 26' pavement surface (42' Right Of Way, and 32' pavement for new street extension). City participation or fee credit for remainder portion may be applicable.

STREET SECTION



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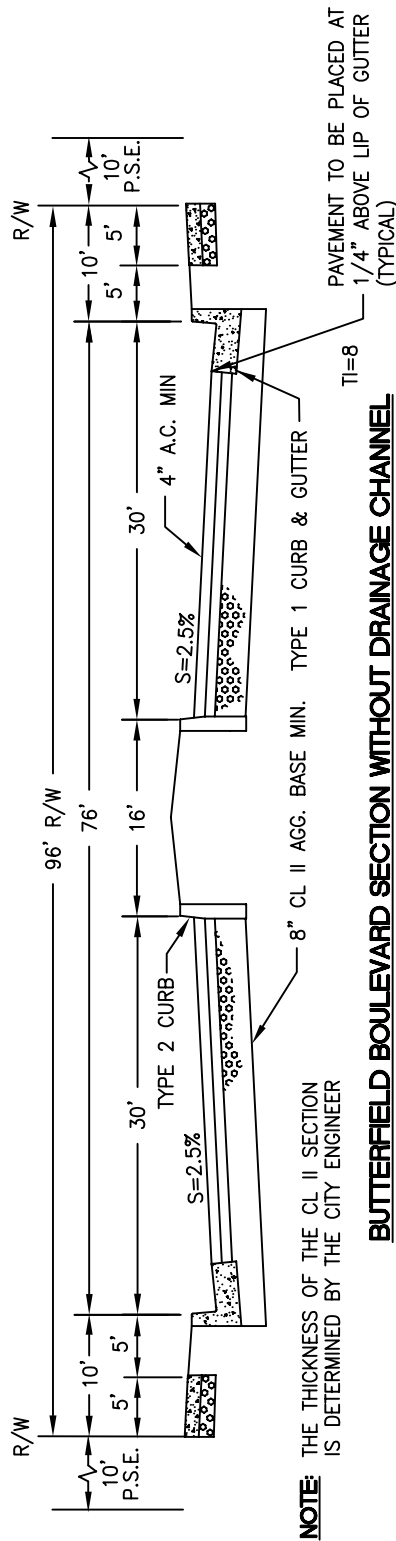
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CITY ENGINEER

4/1/96
DATE

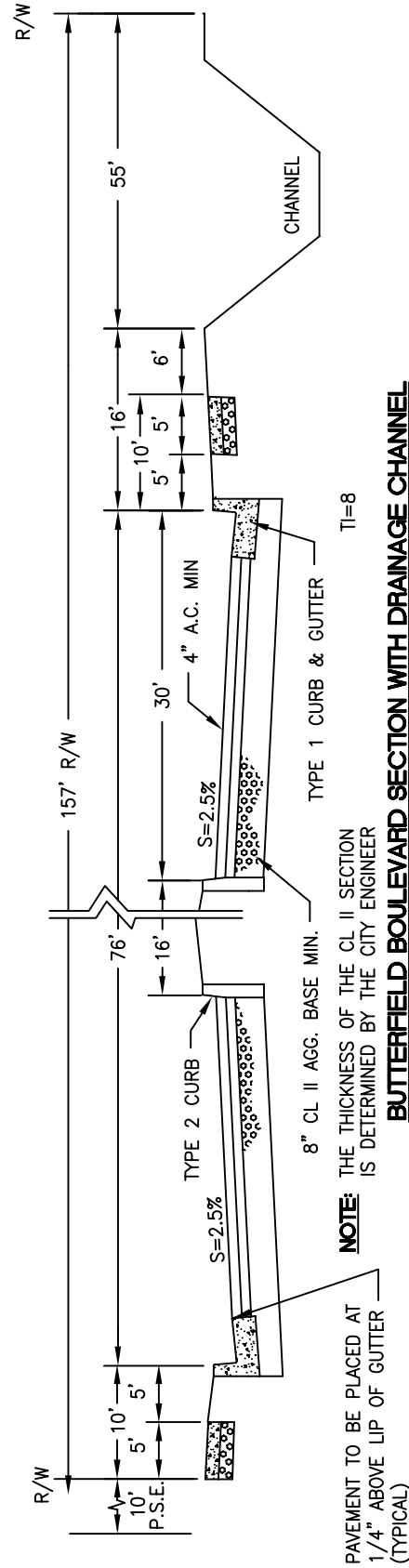
3/15/07
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DRAWING
NO.

A-16



*: Developer required to provide 36' Right Of Way, and 26' pavement surface (42' Right Of Way, and 32' pavement for new street extension). City participation or fee credit for remainder portion may be applicable.



*: Developer required to provide 36' Right Of Way, and 26' pavement surface (42' Right Of Way, and 32' pavement for new street extension). City participation or fee credit for remainder portion may be applicable.



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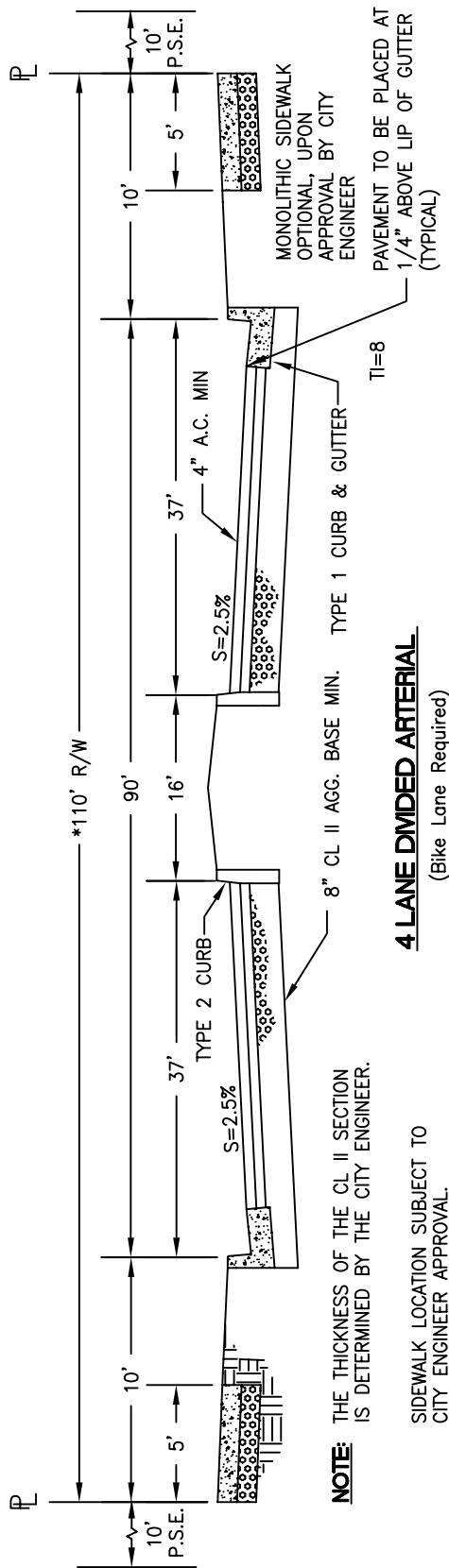
4/1/96
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STREET SECTION BUTTERFIELD BOULEVARD

DRAWING
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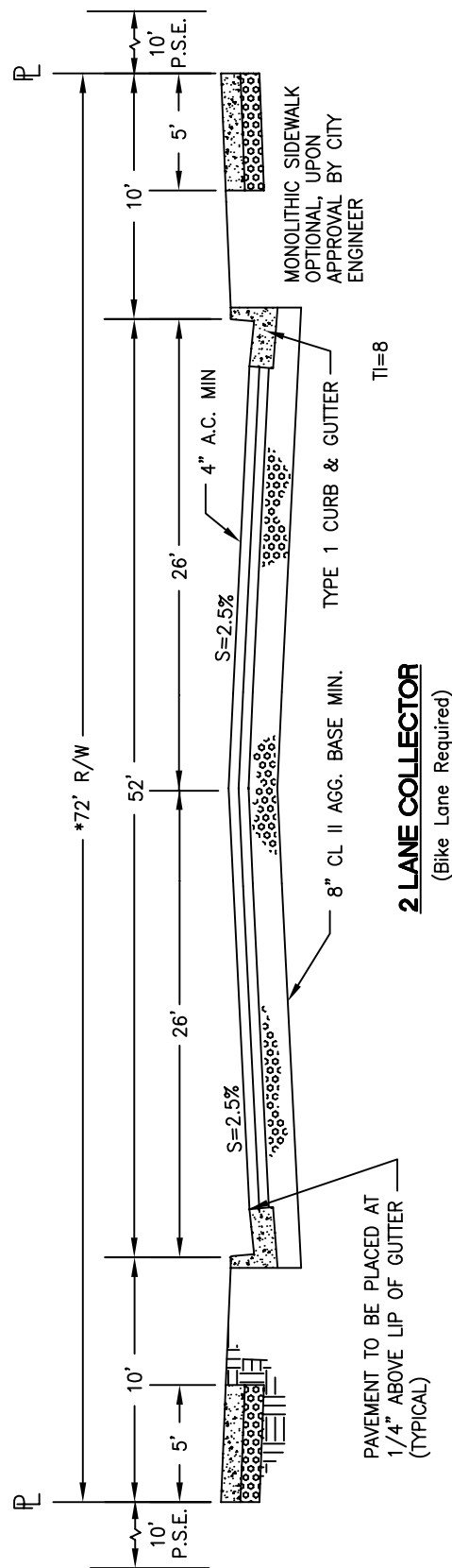
A-17



NOTE: THE THICKNESS OF THE CL II SECTION IS DETERMINED BY THE CITY ENGINEER.
SIDEWALK LOCATION SUBJECT TO CITY ENGINEER APPROVAL.

4 LANE DIVIDED ARTERIAL (Bike Lane Required)

*: Developer required to provide 36' Right Of Way, and 26' pavement surface. City participation or fee credit for remainder may be applicable.



PAVEMENT TO BE PLACED AT 1/4" ABOVE LIP OF GUTTER (TYPICAL)

2 LANE COLLECTOR (Bike Lane Required)

*: 64' R/W width acceptable on less significant collector streets.



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Public Works Department

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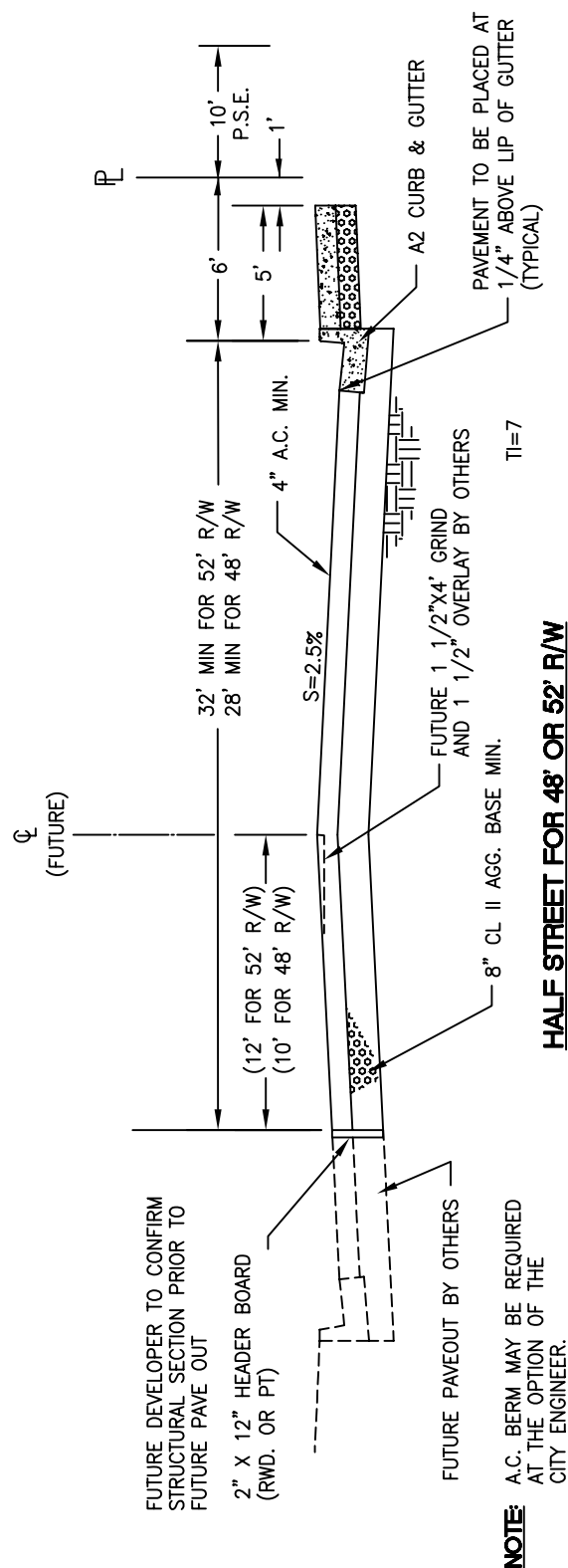
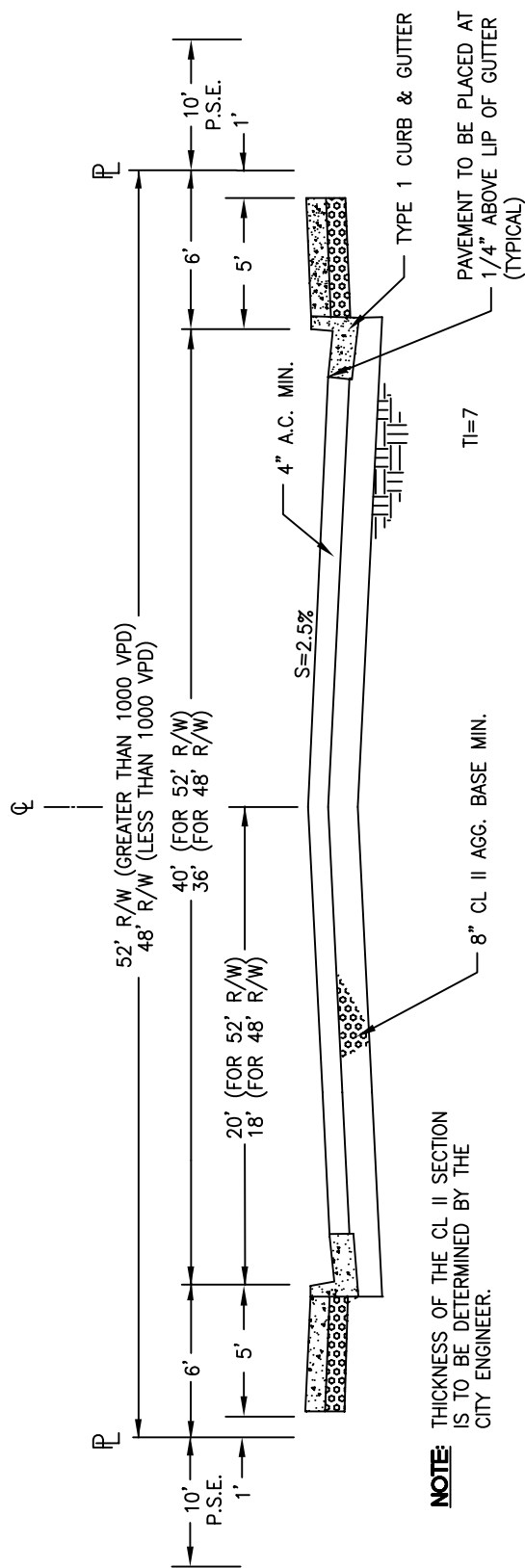
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DATE

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STREET SECTION

DRAWING
NO.

A-18



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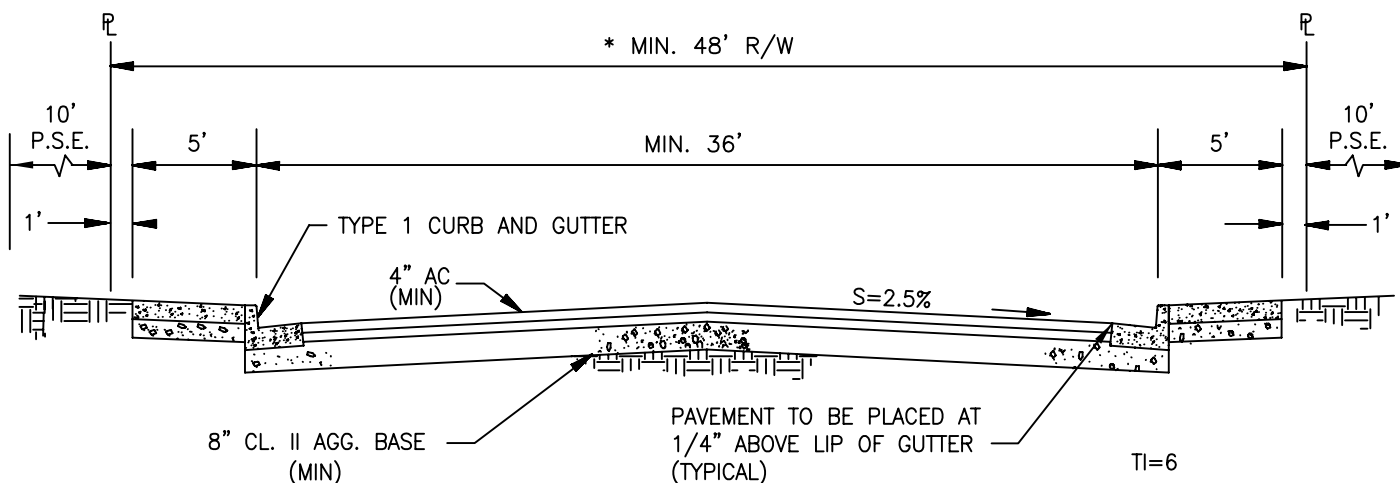
7/5/96
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RESIDENTIAL STREET SECTION AND HALF STREET SECTION

DRAWING
NO.

A-19

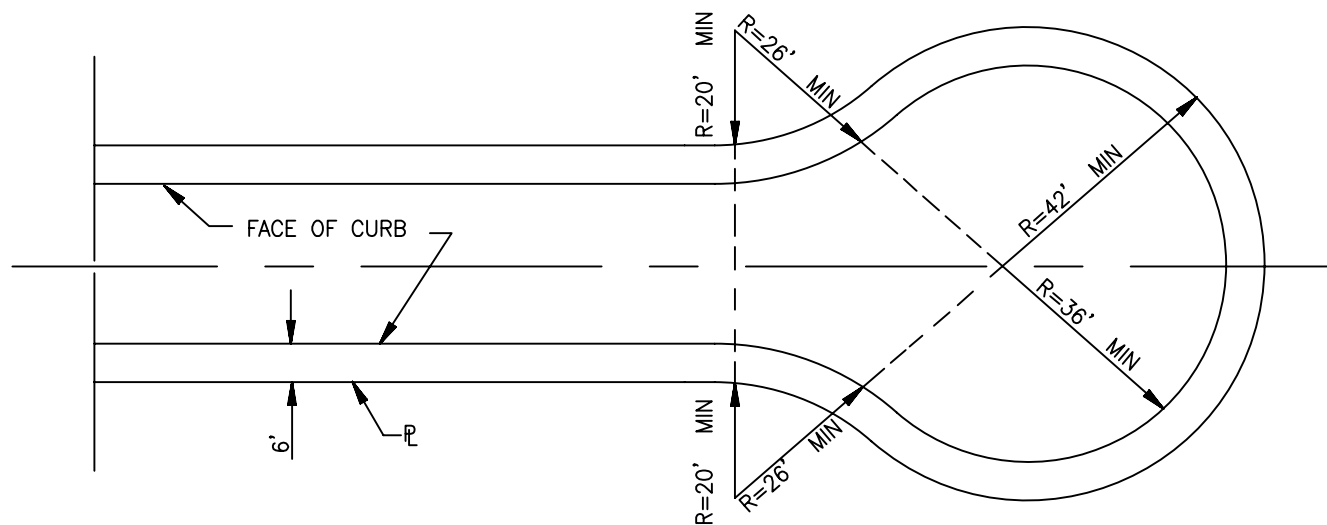


TYPICAL CUL-DE-SAC STREET SECTION (WITH ≤ 200 A.D.T.)

NOTE: PARKING SHALL BE ON BOTH SIDES OF THE STREET.

MAXIMUM CUL-DE-SAC LENGTH (WITHOUT SECONDARY FIRE ACCESS), FROM THE CENTER OF THE INTERSECTING STREET TO THE CENTER OF THE TURN AROUND, SHALL NOT EXCEED 600'.

*: RIGHT-OF-WAY OF 52' MAY BE USED FOR CUL-DE-SACS. SEE RESIDENTIAL STREET SECTION DETAIL A-19.



INCREASE RADIUS AS REQUIRED FOR LOT FRONTAGE

TYPICAL CUL-DE-SAC DATA



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7/5/96
DATE

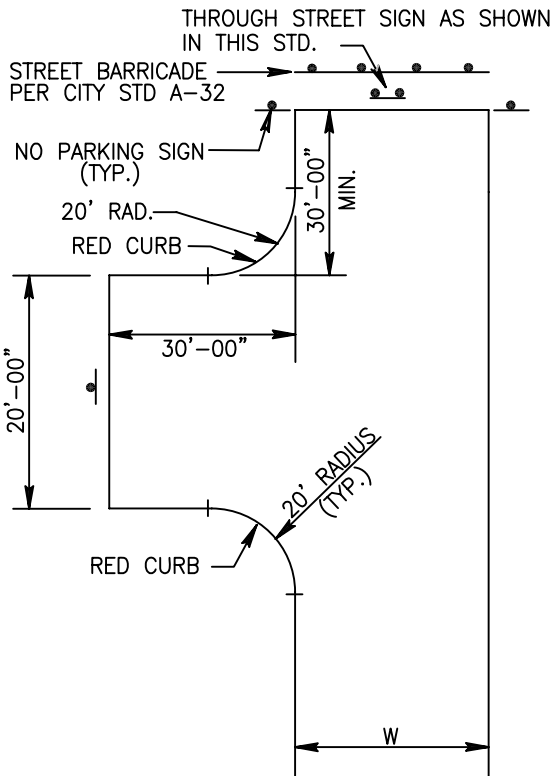
3/15/07
REVISED

STREET SECTION

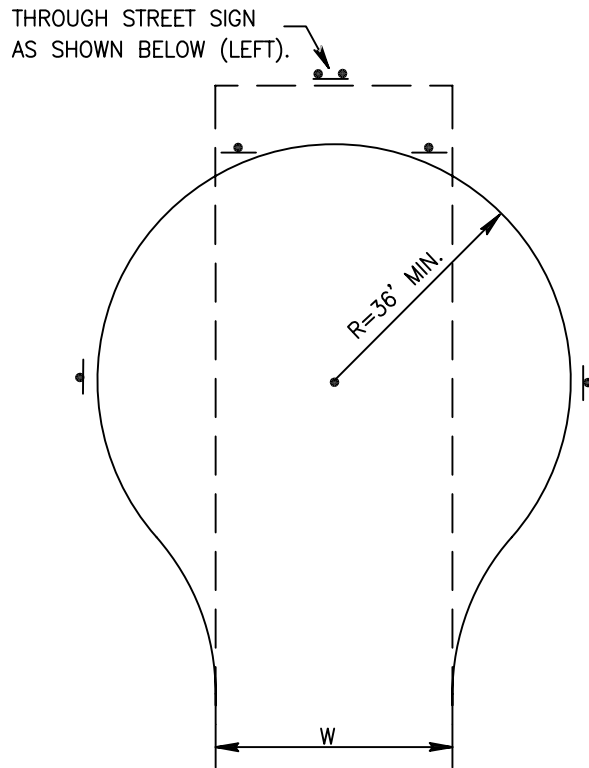
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A-20

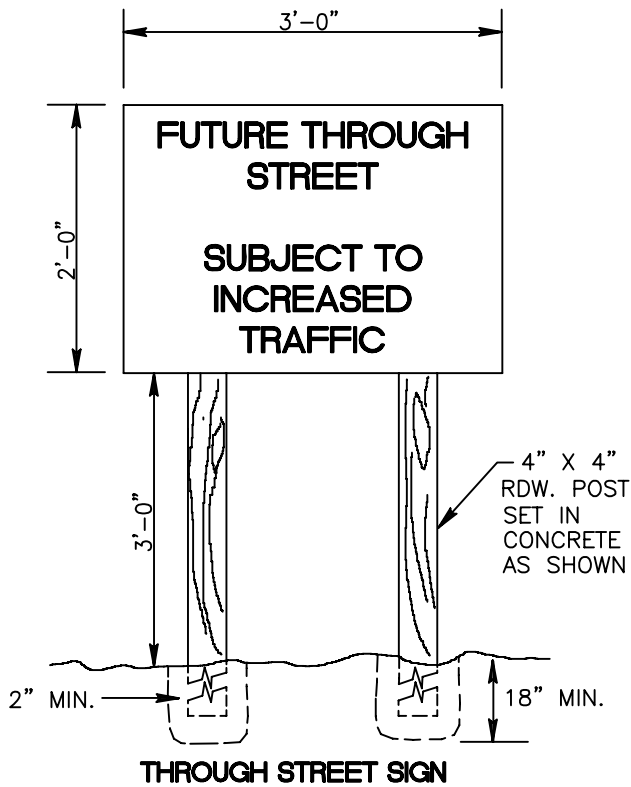
A-21



TEMPORARY HAMMERHEAD



TEMPORARY CUL-DE-SAC



NOTES:

1. SIGN SHALL BE REFLECTORIZED PER CAL TRANS STANDARD SHEETING BLACK ON WHITE METAL SIGN WITH 2"(MIN.) LETTERS.
2. W = 20' ON TEMPORARY HAMMERHEAD.
3. DRIVEWAY APPROACHES MAY BE USED AS PART OF TEMPORARY HAMMERHEAD, PROVIDED THEY MEET THE DIMENSIONS OF THE TEMPLATE ABOVE.



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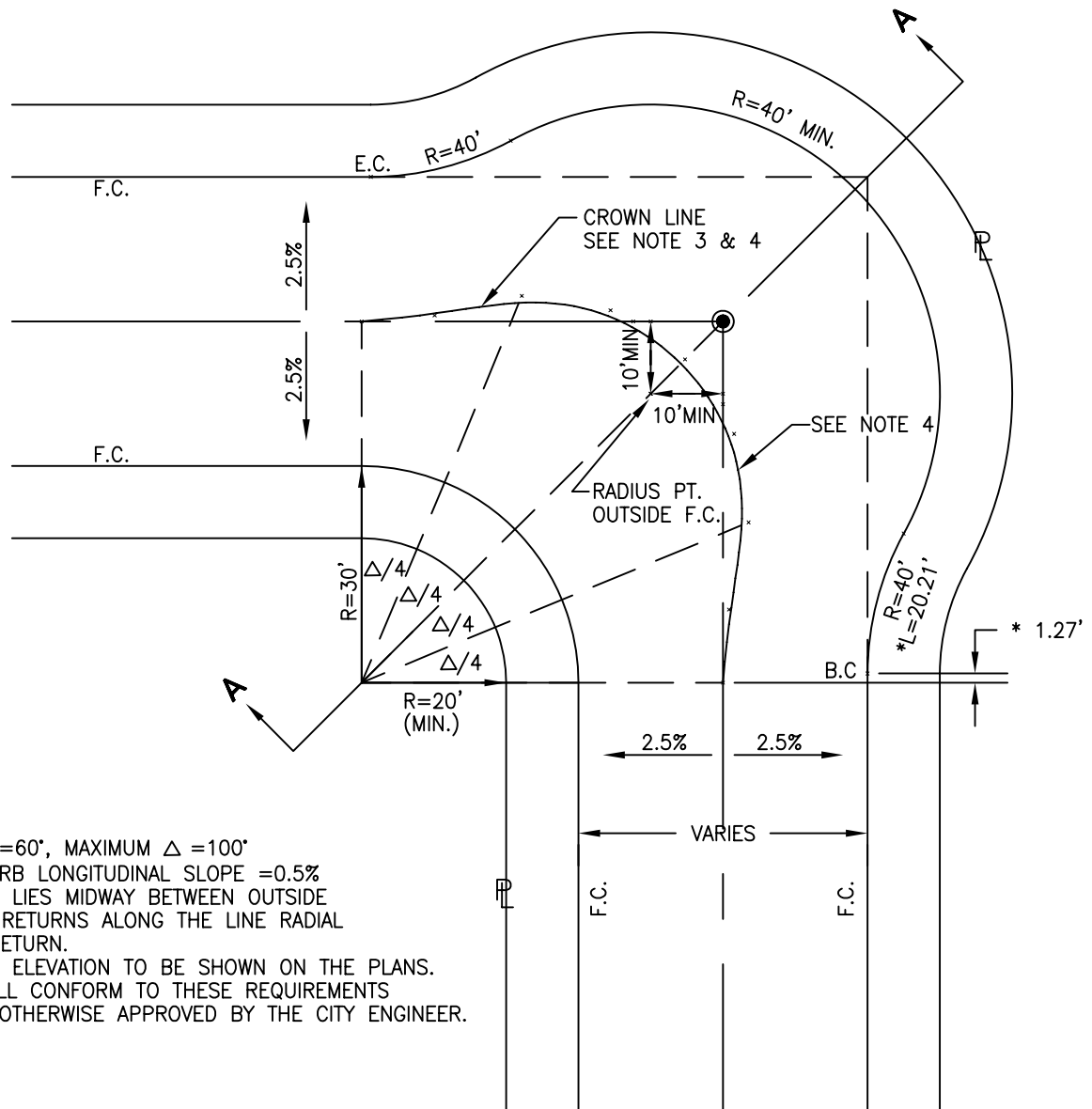
Jim Oshroff
CITY ENGINEER

4/1/96
DATE

6/8/00
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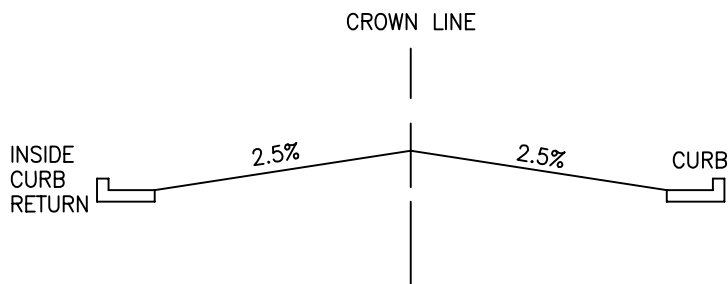
**TEMPORARY TURNAROUND
FOR FUTURE STREET**

DRAWING
NO.
A-22



NOTES:

1. MINIMUM $\Delta = 60^\circ$, MAXIMUM $\Delta = 100^\circ$
2. MINIMUM CURB LONGITUDINAL SLOPE = 0.5%
3. CROWN LINE LIES MIDWAY BETWEEN OUTSIDE AND INSIDE RETURNS ALONG THE LINE RADIAL TO INSIDE RETURN.
4. CROWN LINE ELEVATION TO BE SHOWN ON THE PLANS.
5. DESIGN SHALL CONFORM TO THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED BY THE CITY ENGINEER.



SECTION A-A
MINIMUM CROSS SLOPE.



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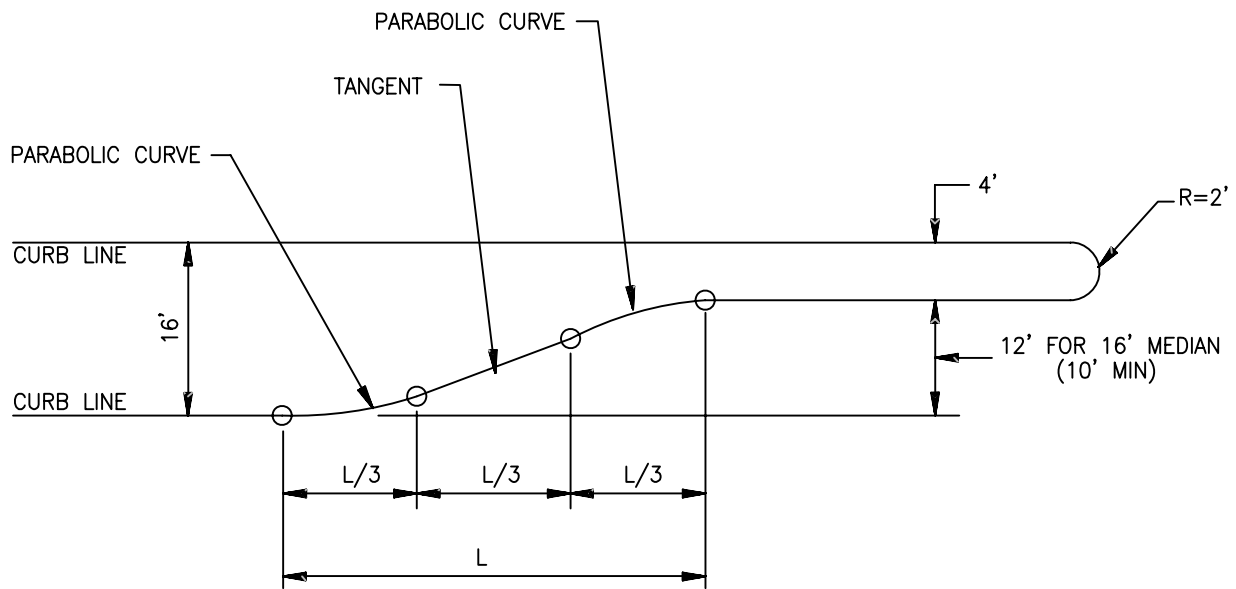
4/1/96
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**STANDARD STREET
KNUCKLE**

DRAWING
NO.

A-23



L-LENGTH OF TAPER				OFFSET DISTANCE FOR LANE WIDTH OF		
60'	90'	120'		10'	11'	12'
DIST FROM BEG OF TAPER						
5	7.5	10		.16	.17	.19
10	15.0	20		.62	.69	.75
15	22.5	30		1.41	1.55	1.69
20	30.0	40		2.50	2.75	3.00
30	45.0	60		5.00	5.50	6.00
40	60.0	80		7.50	8.25	9.00
45	67.5	90		8.59	9.45	10.31
50	75.0	100		9.38	10.31	11.25
55	82.5	110		9.84	10.83	11.81
60	90.0	120		10.00	11.00	12.00

NOTES:

1. OFFSETS ARE MEASURED FROM A BASE LINE WHICH IS THE CURB LINE EXTENDED.
2. DISTANCE ALONG THE BASE LINE IS MEASURED FROM THE POINT OF TANGENCY AT THE BEGINNING OF TAPER.
3. TAPER LENGTH SHALL BE 90' UNLESS OTHERWISE APPROVED.



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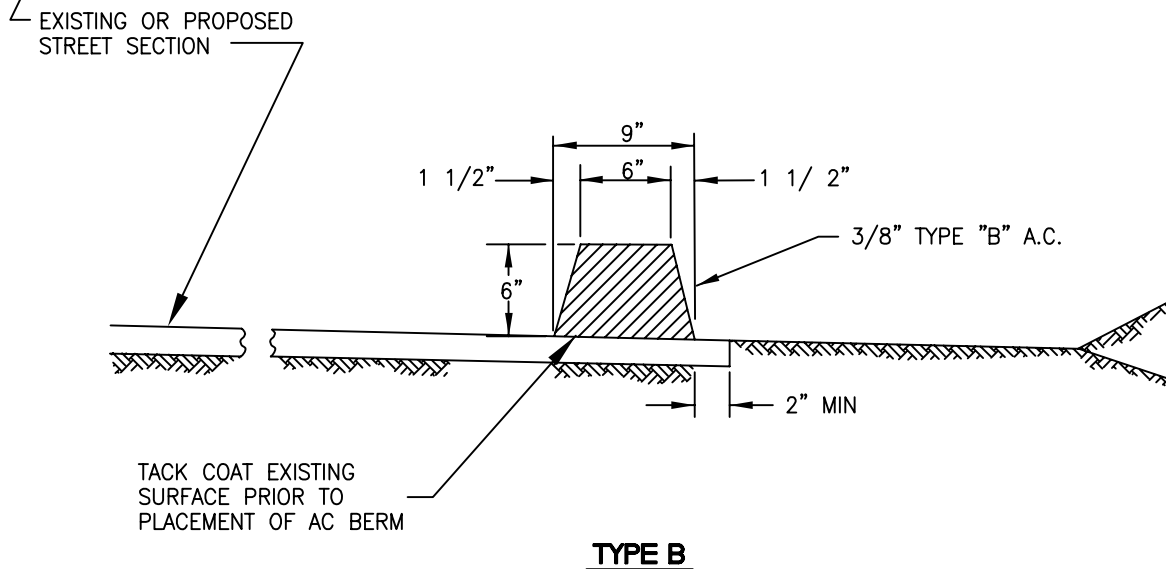
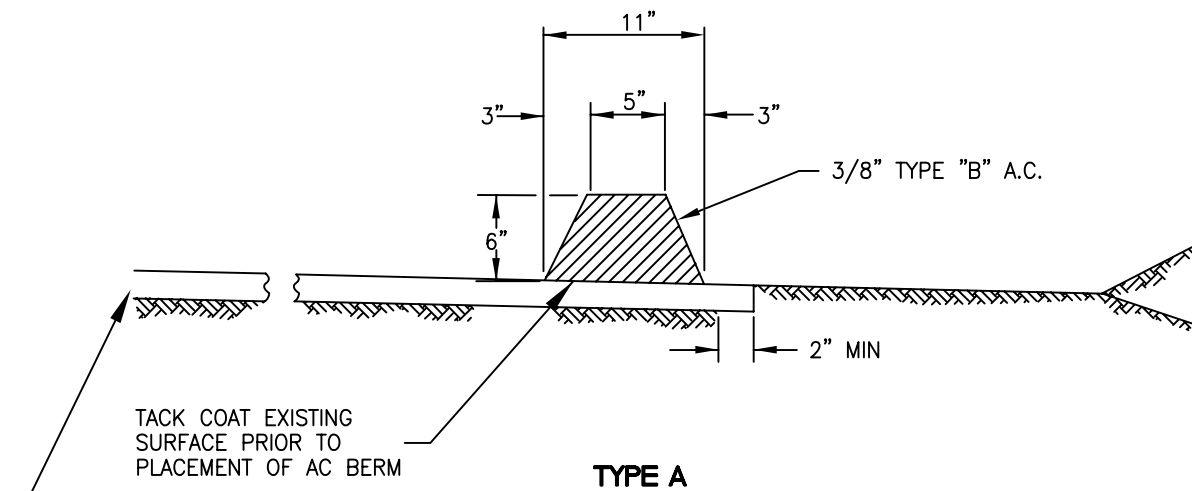
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STANDARD MEDIAN TAPER

DRAWING
NO.

A-24



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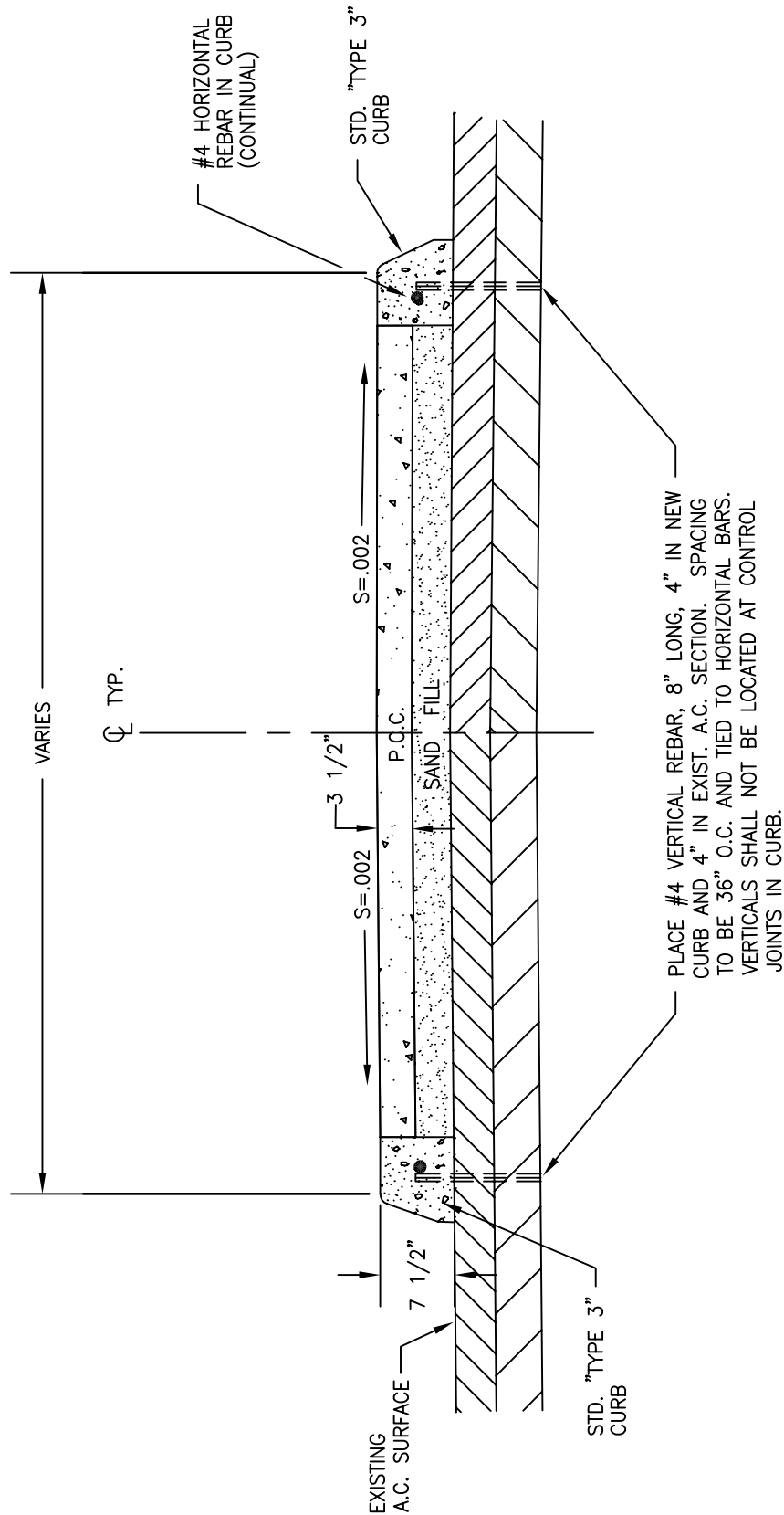
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DATE

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ASPHALT CONCRETE BERM

DRAWING
NO.

A-25



NOTE: CONTRACTOR TO PLACE BLOCK OUTS IN CONCRETE FOR SIGN POSTS PER APPROVED TRAFFIC PLAN.



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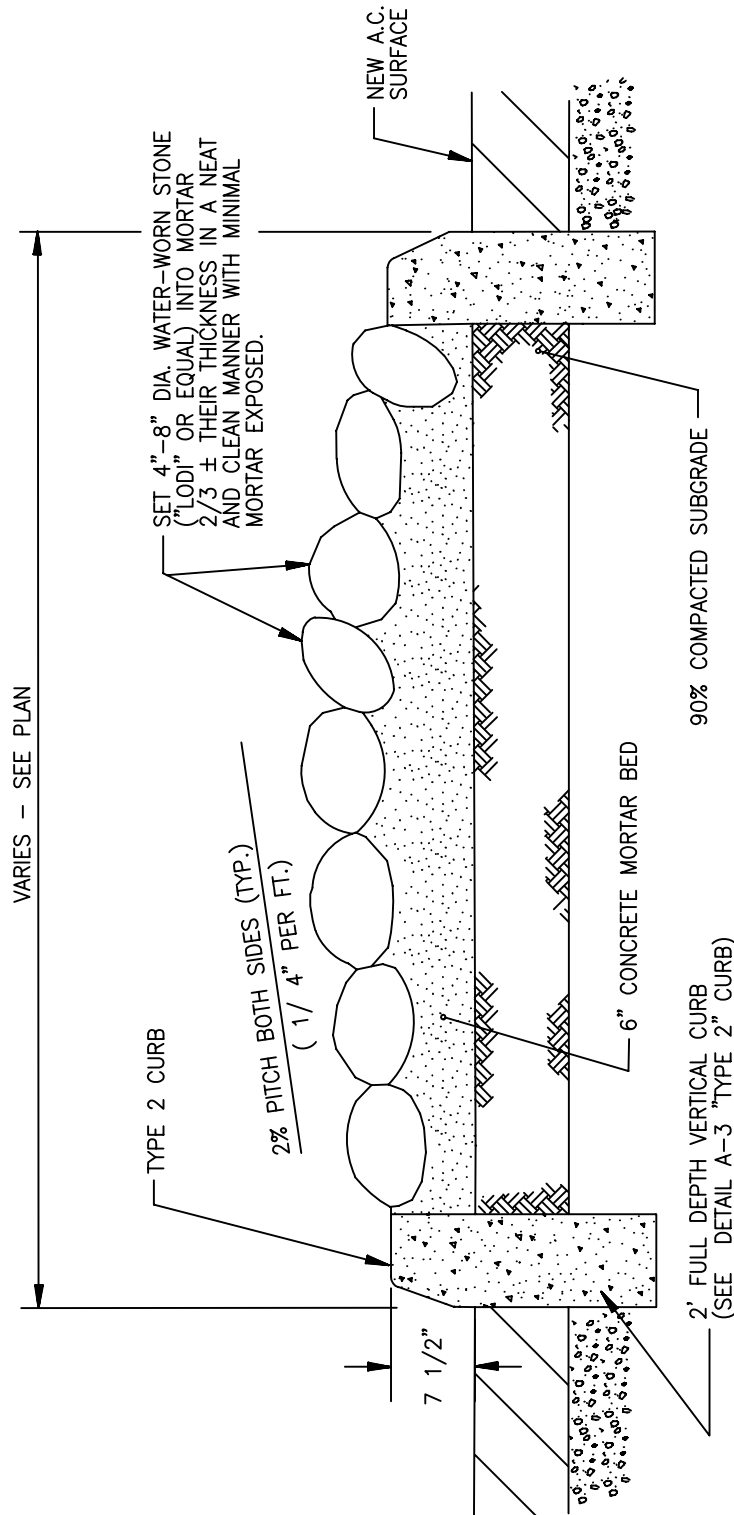
4/1/96
DATE

5/1/06
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TEMPORARY PAVED MEDIAN ISLAND

DRAWING
NO.

A-26



NOTES:

1. AFTER THE COBBLESTONE HAS BEEN SET INTO THE MORTAR, EXCESSIVE MORTAR BETWEEN THE JOINTS OF THE COBBLESTONES SHALL BE CAREFULLY REMOVED AND RAKED TO A SMOOTH JOINT (PROTRUSION OF MORTAR IS NOT ALLOWED).
2. SEAL FINAL SURFACE WITH WATER SEALER.
3. UPON CITY ENGINEER APPROVAL, THE MEDIAN CENTER MAY BE PAVED (P.C.C.) PER DETAIL A-26, PROVIDED THE "TYPE 2" CURB APPLICATION IS USED.
4. CONTRACTOR TO PLACE BLOCK OUTS IN COBBLE PATTERN AND/OR CONCRETE AREA FOR SIGN POSTS.



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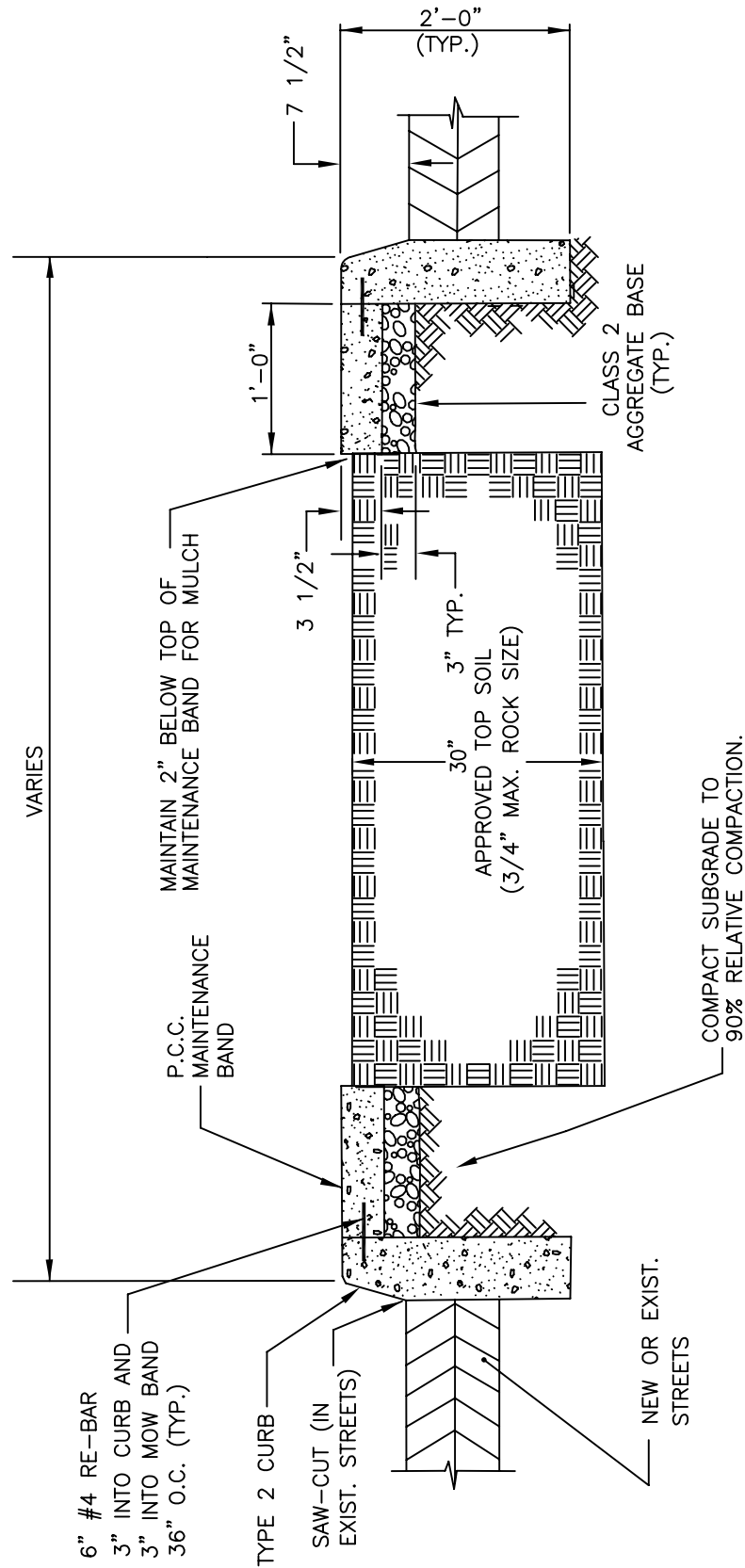
4/1/96
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3/15/07
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COBBLESTONE MEDIAN ISLAND

DRAWING
NO.

A-27



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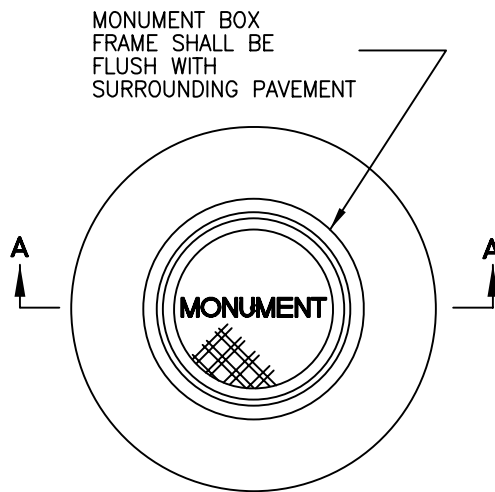
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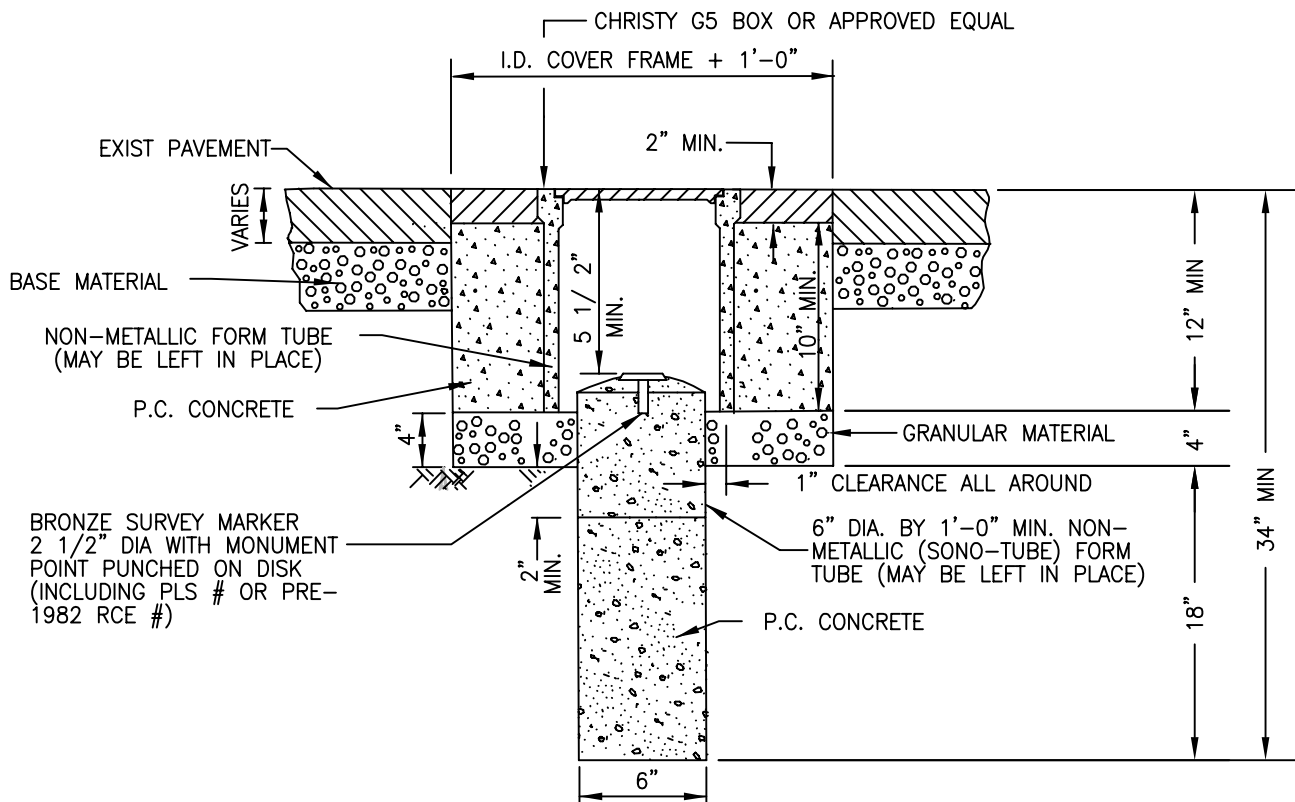
LANDSCAPE MEDIAN ISLAND

DRAWING
NO.

A-28



**COVER INSTALLATION
PLAN VIEW**



City of Morgan Hill
Public Works Department

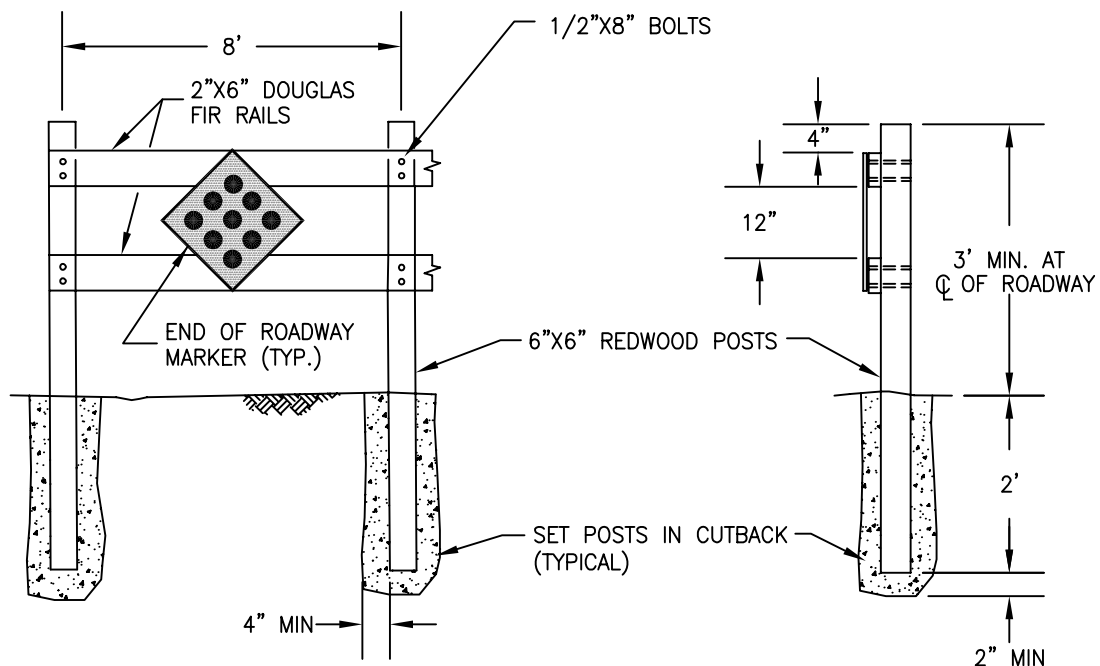
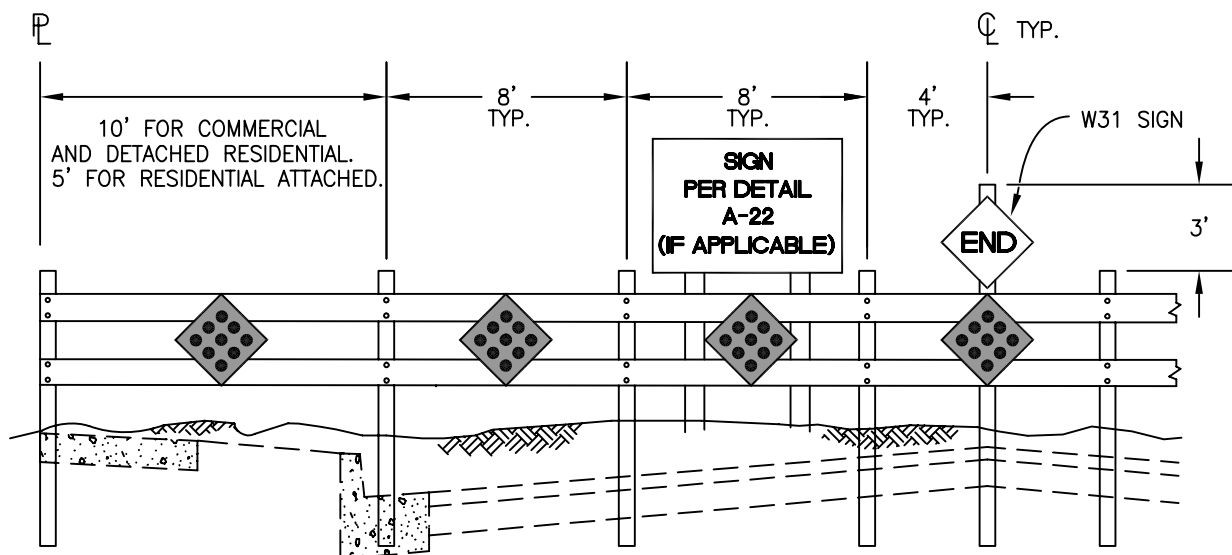
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

STANDARD CITY MONUMENT

DRAWING
NO.
A-31



NOTES:

1. PAINT ALL EXPOSED WOOD SURFACES WITH ONE APPLICATION OF EXTERIOR WOOD PRIMER AND TWO COATS EXTERIOR WHITE ENAMEL.
2. SECURE EACH JOINT WITH TWO GALVANIZED 1/2"x8" BOLTS. ALL RAIL ENDS TO MEET AT CL OF POSTS
3. PLACE AASHTO OM4-1 "END OF ROADWAY" MARKERS IN EACH SECTION AS SHOWN.
4. RAILS TO BE CONSTRUCTION GRADE DOUGLAS FIR S4S 2" x 6", POSTS TO BE CONSTRUCTION GRADE REDWOOD S4S 6" x 6".



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

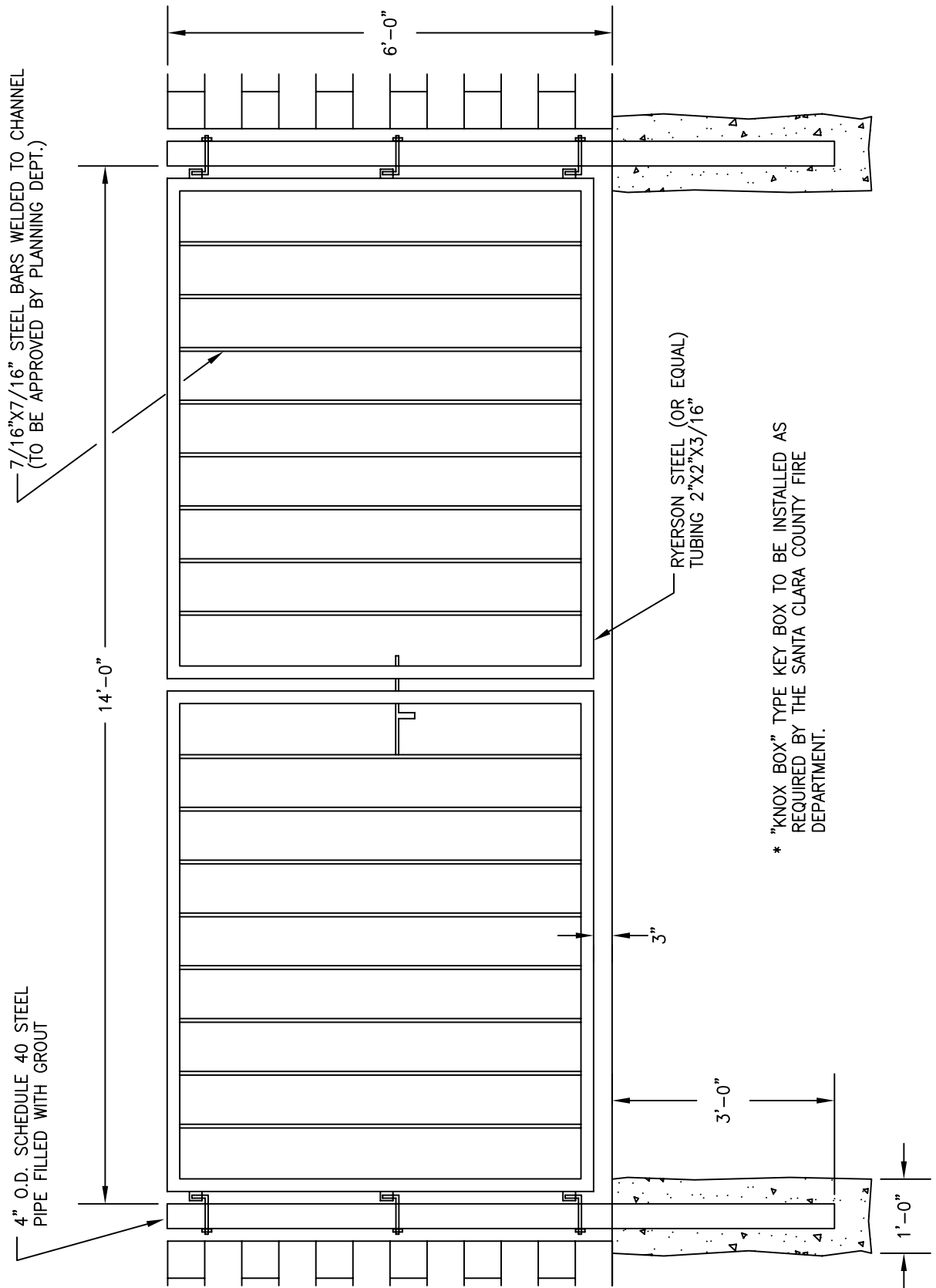
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DATE

3/15/07
REVISED

STREET BARRICADE

DRAWING
NO.

A-32



City of Morgan Hill
Public Works Department

Jim Cascraft
CITY ENGINEER

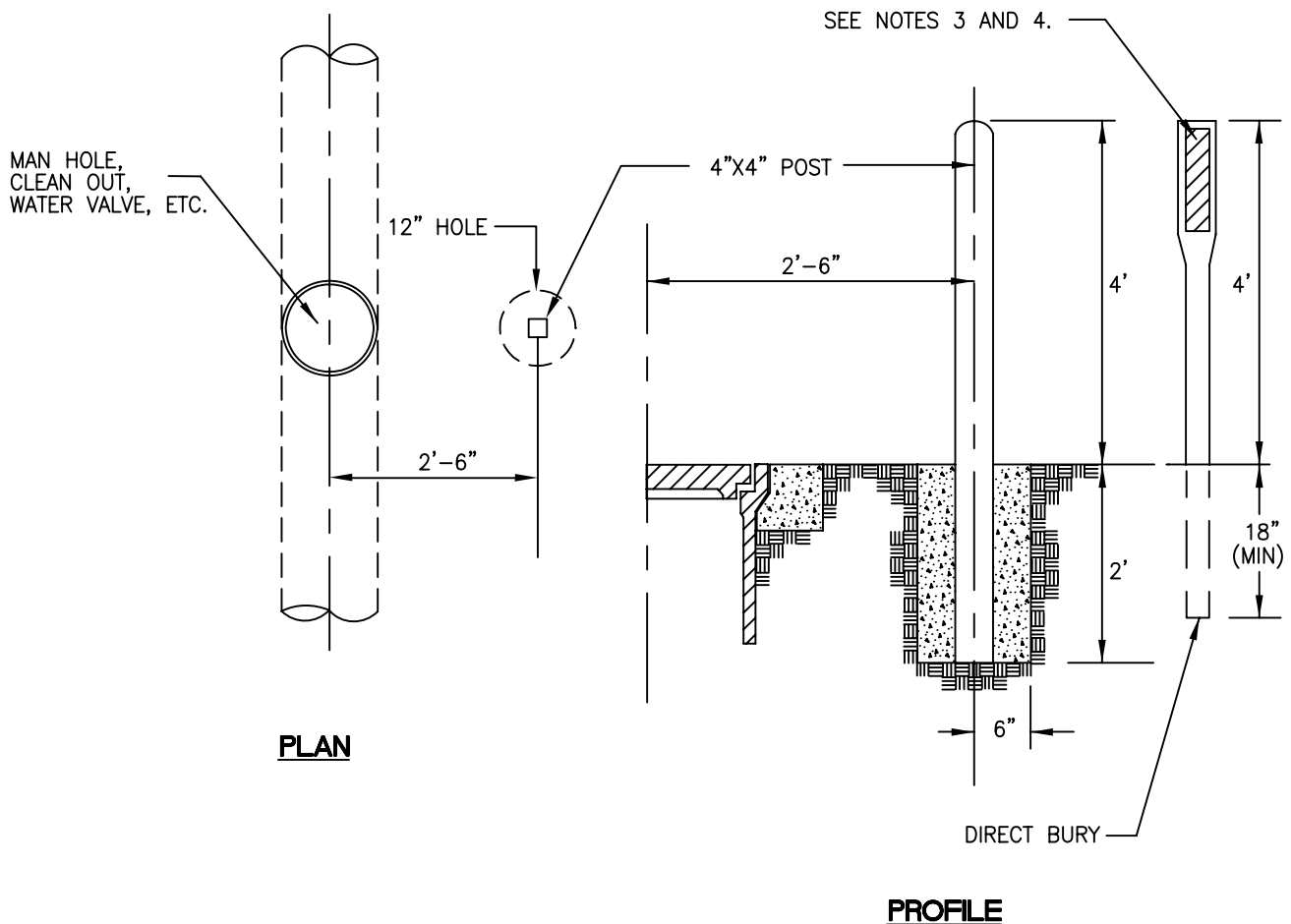
4/1/96
DATE

REvised

EMERGENCY ACCESS GATE

DRAWING
NO.

A-33



NOTES:

1. MARKER POSTS SHALL BE USED IN UNIMPROVED EASEMENTS AND RIGHT OF WAYS TO LOCATE MANHOLES, WATER VALVES, FLUSHING INLETS, BLOWOFFS, AND OTHER FACILITIES AS REQUIRED BY THE CITY ENGINEER.
2. POSTS SHALL BE COATED WITH ONE APPLICATION OF WOOD PRIMER AND TWO COATS OF EXTERIOR ENAMEL (SEE NOTE 4 FOR COLOR).
3. FIBER-GLASS PADDLE MARKERS. (CALTRANS CLASS I FLEXIBLE POST DELINEATORS MAY BE USED IN LIEU OF WOOD POSTS)
4. COLOR TO CONFORM WITH USA LOCATE STANDARDS (GREEN FOR SEWER, BLUE FOR WATER, ETC.).
5. PORTION OF POST SET IN CONCRETE SHALL BE TREATED TO PREVENT ROTTING.



City of Morgan Hill
Public Works Department

Jim Oshecraft
CITY ENGINEER

4/1/96
DATE

3/15/07
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MARKER POSTS IN EASEMENTS

DRAWING
NO.

A-34

WATER SECTION

GENERAL

All work shall be done in accordance with the latest editions of the American Water Works Association Standards (AWWA), and the American Society for Testing and Materials (ASTM), except as modified herein.

WATER LINES

All water lines shall be Ductile Iron (Min. Thickness Class 50) with Ductile Iron fittings and shall conform to AWWA/ANSI C151/A21.51 standards. ALL valves, valve boxes, and covers shall be as indicated in the City of Morgan Hill Standard Details.

A standard gate valve, with a brass blow-off shall be installed at the end of all dead-end lines. A 1" air relief valve must be installed at all high points in the line. Water tight plugs shall be placed at all open ends of pipes when the job site is unattended.

All water services shall be Type "K" copper tubing as shown on Detail W-1.

The concrete Contractor shall stamp a letter "W" on the face of curb directly above the water service.

All fire hydrants shall have companion valves and be of the type indicated on Detail W-8.

All water lines shall be blocked with concrete kick blocks at all changes in direction, all bends, crosses, wyes, tees, reducers, plugs, dead-ends and changes in size. Thrust block or kick block dimensions shall be based on the greater of either 150 PSI min. or 1.5 times the working pressure, while assuming a 2000 PSF soil bearing.

CLEANING AND TESTING

After installation, all pipe lines shall be flushed at 1.0 fps (main line velocity) with clean water. Lines shall be filled slowly and provisions shall be made for venting of the air. Only Department of Public Works Personnel shall open valves to the City's water system. Water lines shall be tested for tightness at the lower end of the line under a hydrostatic pressure of 150 PSI, or 50% above normal operating pressure, whichever is greater. The Contractor shall furnish all necessary equipment, labor and materials needed for the test. The test shall conform to AWWA C600 Section 4 and be conducted for at least 2 hours. See Detail W-IV for allowable leakage of ductile iron pipe.

All water lines shall be tested after completion of the trench backfill and compaction of the final base material, but prior to placement of the final roadway surface.

STERILIZATION

After pressure testing, and before putting into service, all water lines shall be chlorinated by the Contractor in accordance with AWWA C651 or as directed by the City Engineer. Chlorine is furnished by the Contractor and chlorination shall be supervised by a City Inspector.

Chlorination by placement of chlorine tablets in each section of pipe is allowed and shall be in accordance with AWWA C651 and held for a duration of 24 hours.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

GENERAL NOTES

DRAWING
NO.

W-I

MICROBIOLOGICAL TESTING

The Contractor shall provide the City with a laboratory report as to the purity of the water before acceptance by the City and placement of the new lines into service. The procedures for such tests shall be as follows:

1. The Contractor shall notify and receive approval for coliform bacteria testing from the Inspector a minimum of 48 hours prior to taking the test, and only after the water line has been hydrostatically tested, chlorinated, final flushed and passed by the Inspector.
2. All sampling and testing for the City of Morgan Hill Water System shall be performed by authorized staff from any laboratory chosen by the Contractor which is certified by the California State Department of Health Services to perform microbiological analysis of drinking water.
3. Authorized staff from the chosen certified laboratory shall take a chlorine residual test prior to taking the coliform test. Chlorine residual shall not exceed 0.3 parts per million, otherwise the coliform test shall not be taken. Flushing shall then continue until the maximum chlorine level is attained.
4. The Contractor shall submit to the Public Works Department the following items:
 - A. Proof of State Department of Health Services certification for the laboratory chosen;
 - B. A copy (Fax OK) of the chain-of-custody for the water sample;
 - C. A copy (Fax OK) of the results of the test with an original "hard copy" to follow.
5. Upon review and approval of the items submitted in item 4., only Department of Public Works personnel shall open the necessary valves to connect the new lines to City's water system. Failure to follow the above requirement shall be considered an "unlawful connection" to the City Water System and may result in the issuing of a citation and fines as specified in Section 13.04 of the Morgan Hill Municipal Code.
6. Connections requiring shut down of the system shall be done between the hours of 12:00 Midnight and 6:00 AM, and only upon coordination with the Department of Public Works.

DUCTILE IRON

- (a) Pipe. Ductile iron pipe shall conform to the requirements of AWWA C100 series. Class 50 pipe shall be the minimum allowable thickness class.
- (b) Joints. All ductile iron pipe laid underground shall have push-on, mechanical, or flange joints unless approved otherwise.
- (c) Lining and Coating. Water pipes shall be smooth cement lined in accordance with the requirements of AWWA C104. Polyethylene encasement wrap may be required in special soil conditions. Wrapping shall be in accordance with AWWA C105.
- (d) Fittings. Fittings shall be cast iron, cement lined and coal tar pitch varnish coated of the Bell and Spigot type and shall conform to ANSI A21.10. Where a specific type of fitting is called for on the Plans, this type shall be used. Fittings shall be all bell, unless indicated otherwise on the Plans. Fitting joints shall be made up with roll-on rubber gaskets. Junctions with other types shall be made with suitable adapters or fittings. Gaskets shall be rubber.



City of Morgan Hill
Public Works Department

Jim Cascraft
CITY ENGINEER

4/1/96
DATE

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GENERAL NOTES

DRAWING
NO.

W-II

DUCTILE IRON (Continued)

(e) Taps. Taps into ductile iron pipe shall be by machine. Contractor shall perform all service taps as the City does not provide this service. Hot taps to main lines will be allowed only upon approval of the City Engineer. Tapping sleeves may only be used where a water main is at least two nominal sizes larger than the proposed branch. Less than two nominal size differential may be allowed upon City Engineer approval, but will not be allowed on water mains that are not ductile iron.

VALVES

All gate valves shall meet the standards of AWWA C509. Flanged ends shall meet the requirements of ANSI B16.1, class 125. Mechanical joint ends shall meet the requirements of AWWA C111. Interior corrosion prevention coatings shall meet the requirements of AWWA C550. All valves shall be resilient wedge, non-rising stem and double O-ring equipped.

Butterfly valves shall only be used upon the direction or approval of the City Engineer and shall meet the requirements of AWWA C504.

BOLTS AND NUTS

Underground bolts and nuts shall be of low carbon steel in accordance with AWWA C141. Stainless steel bolts and nuts may be required upon direction of the City Engineer.

DEPTH

All water lines shall have a minimum of 36 inches cover at any given time, unless directed otherwise by the City Engineer.

MARKER POSTS

Contractor shall place marker posts adjacent to all air relief valves and blow off assemblies along water mains located in unimproved areas or fields. The posts shall be pressure treated redwood 4"x4"x6', painted white, buried 2'-6", and inscribed with "W/A.V." (for air relief valves) or "B.O." (for blow off assemblies), in 3 inch high carved letters painted blue.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

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GENERAL NOTES

DRAWING
NO.
W-III

ALLOWABLE LEAKAGE FOR DUCTILE IRON PIPE

ALLOWABLE LEAKAGE
(PER 1000 L.F.)

PIPE DIAMETER (inches)	AVG. TEST PRESSURE AT LOWEST POINT IN THE LINE- PSI						
	50	75	100	125	150	200	225
	LEAKAGE- GAL./HR.						
4	0.21	0.26	0.30	0.34	0.37	0.42	0.45
6	0.32	0.39	0.45	0.50	0.55	0.64	0.68
8	0.42	0.52	0.60	0.67	0.74	0.85	0.90
10	0.53	0.65	0.75	0.84	0.92	1.06	1.13
12	0.64	0.78	0.90	1.01	1.10	1.27	1.35
14	0.74	0.91	1.05	1.18	1.29	1.49	1.58
16	0.85	1.04	1.20	1.34	1.47	1.70	1.80
18	0.96	1.17	1.35	1.51	1.66	1.91	2.03
20	1.06	1.30	1.50	1.68	1.84	2.12	2.25
24	1.27	1.56	1.80	2.01	2.21	2.55	2.70

* DATA BASED ON THE FOLLOWING FORMULA:
PER AWWA C600 SEC. 4

$$\frac{(\text{DIA.})(\text{LENGTH})(\sqrt{\text{AVG. TEST PRESSURE}})}{133200} = \text{ALLOWABLE LEAKAGE (GALLONS / HOUR)}$$



City of Morgan Hill
Public Works Department

Jim Cochran
CITY ENGINEER

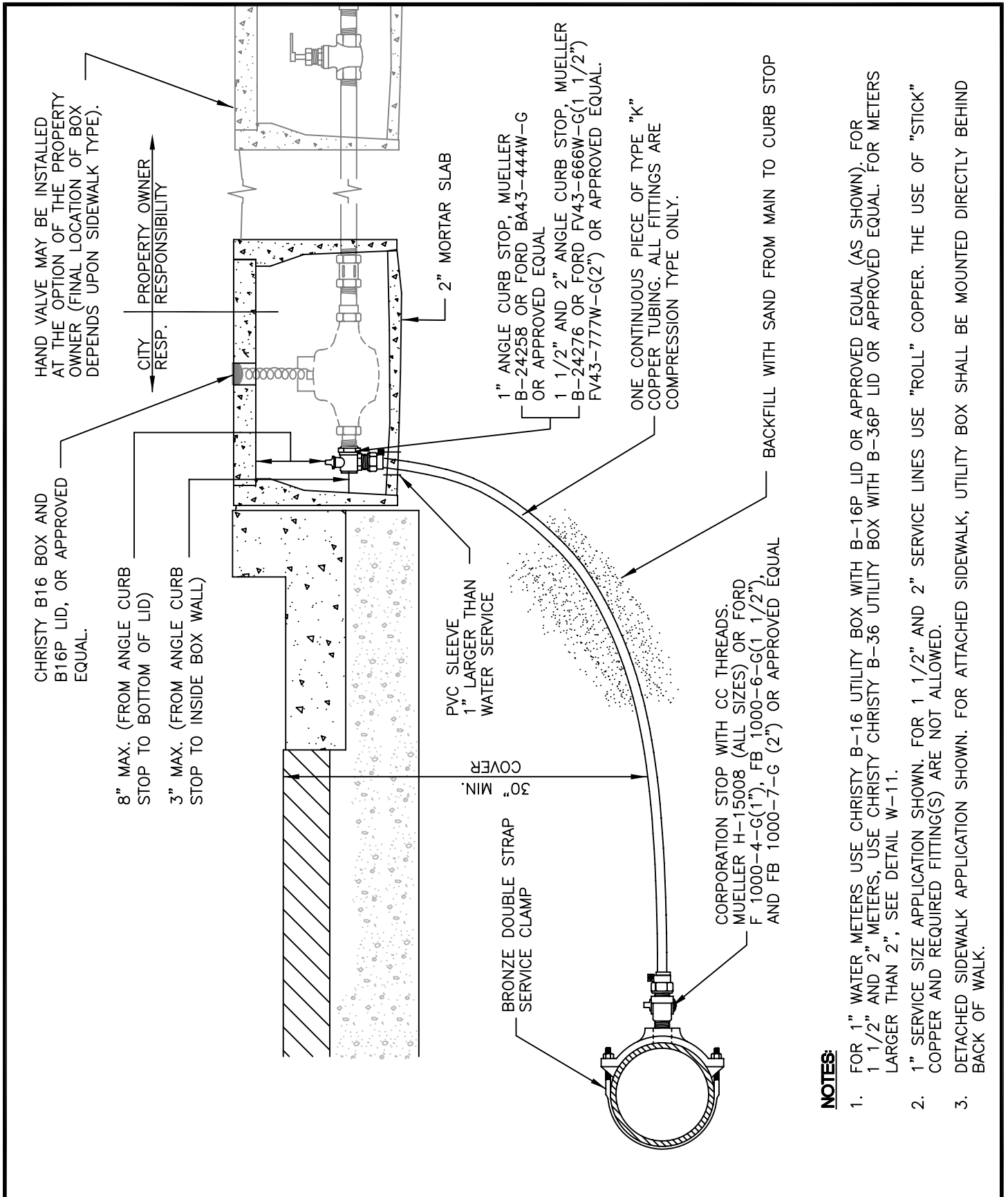
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GENERAL NOTES

DRAWING
NO.

W-IV



NOTES:

1. FOR 1" WATER METERS USE CHRISTY B-16 UTILITY BOX WITH B-16P LID OR APPROVED EQUAL (AS SHOWN). FOR 1 1/2" AND 2" METERS, USE CHRISTY CHRISTY B-36 UTILITY BOX WITH B-36P LID OR APPROVED EQUAL. FOR METERS LARGER THAN 2", SEE DETAIL W-11.
2. 1" SERVICE SIZE APPLICATION SHOWN. FOR 1 1/2" AND 2" SERVICE LINES USE "ROLL" COPPER. THE USE OF "STICK" COPPER AND REQUIRED FITTING(S) ARE NOT ALLOWED.
3. DETACHED SIDEWALK APPLICATION SHOWN. FOR ATTACHED SIDEWALK, UTILITY BOX SHALL BE MOUNTED DIRECTLY BEHIND BACK OF WALK.



City of Morgan Hill
Public Works Department

Jim Cahcraft
CITY ENGINEER

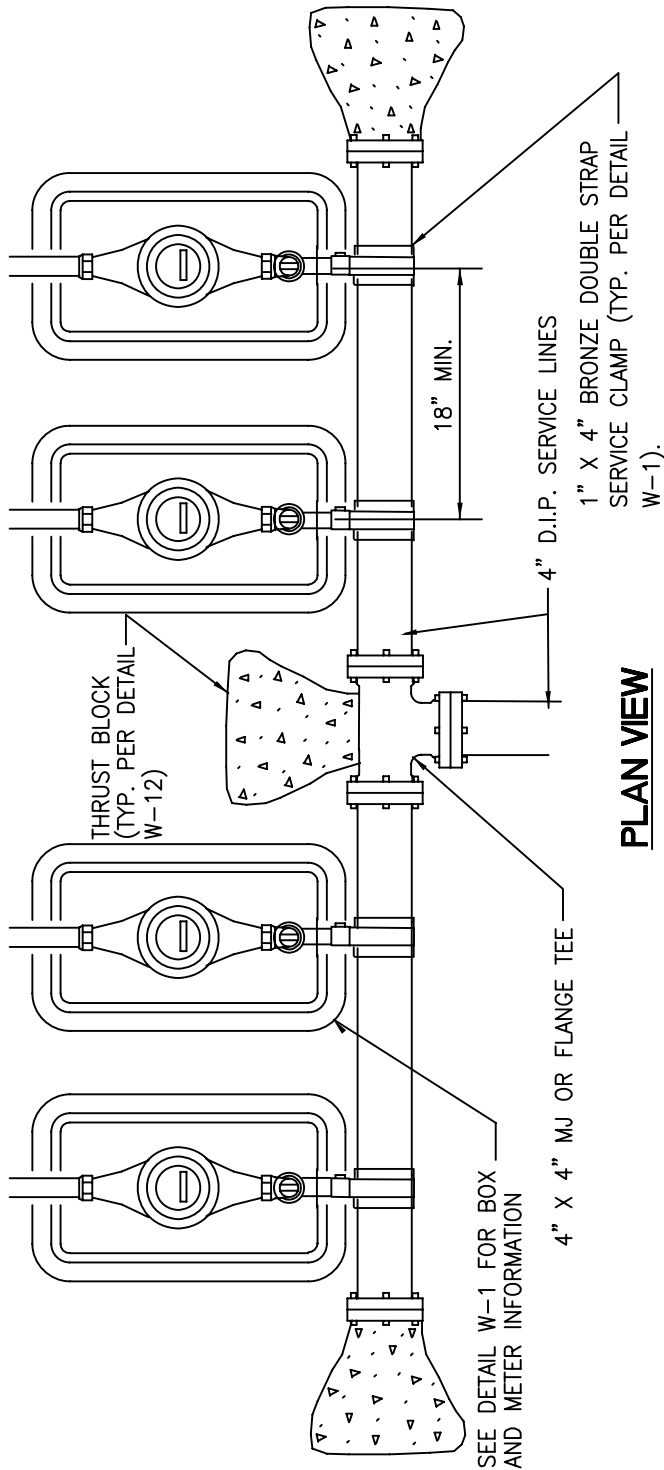
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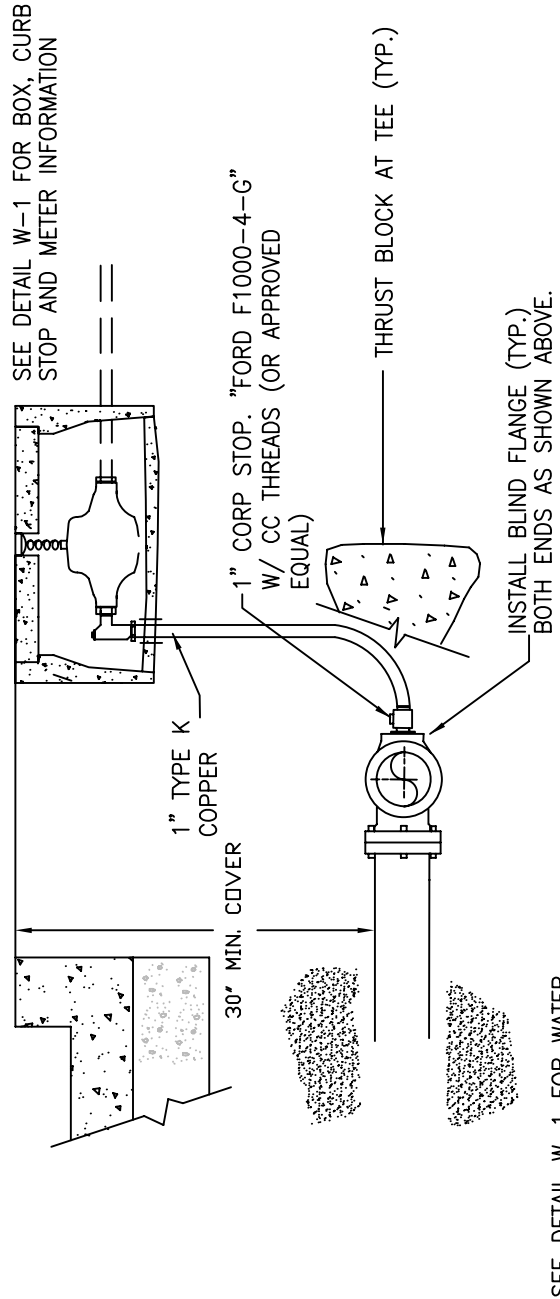
TYPICAL WATER SERVICE INSTALLATION

DRAWING
NO.

W-1



PLAN VIEW



PROFILE VIEW
(other meters hidden)

NOTES:

1. STANDARD DETAIL W-1, "RESIDENTIAL WATER SERVICE" IS A PART OF THIS DETAIL, EXCEPT AS MODIFIED HEREIN.
2. ADDITIONAL WATER SERVICES/METERS (MORE THAN 4) SHALL REQUIRE SERVICE LINE GREATER THAN 4".
3. A COMPANION VALVE (EQUAL TO PROPOSED SERVICE SIZE) SHALL BE USED AT CONNECTION OF SERVICE TO MAIN IN STREET (SEE DETAIL W-9 FOR REFERENCE).



City of Morgan Hill
Public Works Department

Jim Oschcraft
APPROVED

11/08/00
DATE

3/15/07
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**WATER SERVICE MANIFOLD
FOR 4" OR GREATER
SERVICE LINE**

DRAWING
NO.

W-3

SEE DETAIL W-1 FOR WATER
MAIN CONNECTION REQUIREMENTS

SEE DETAIL W-1 FOR BOX, CURB
STOP AND METER INFORMATION

1" CORP STOP. "FORD F1000-4-G"
W/ CC THREADS (OR APPROVED
EQUAL)

1" TYPE K
COPPER

30" MIN. COVER

THRUST BLOCK AT TEE (TYP.)

INSTALL BLIND FLANGE (TYP.)
BOTH ENDS AS SHOWN ABOVE.

SEE DETAIL W-1 FOR BOX
AND METER INFORMATION

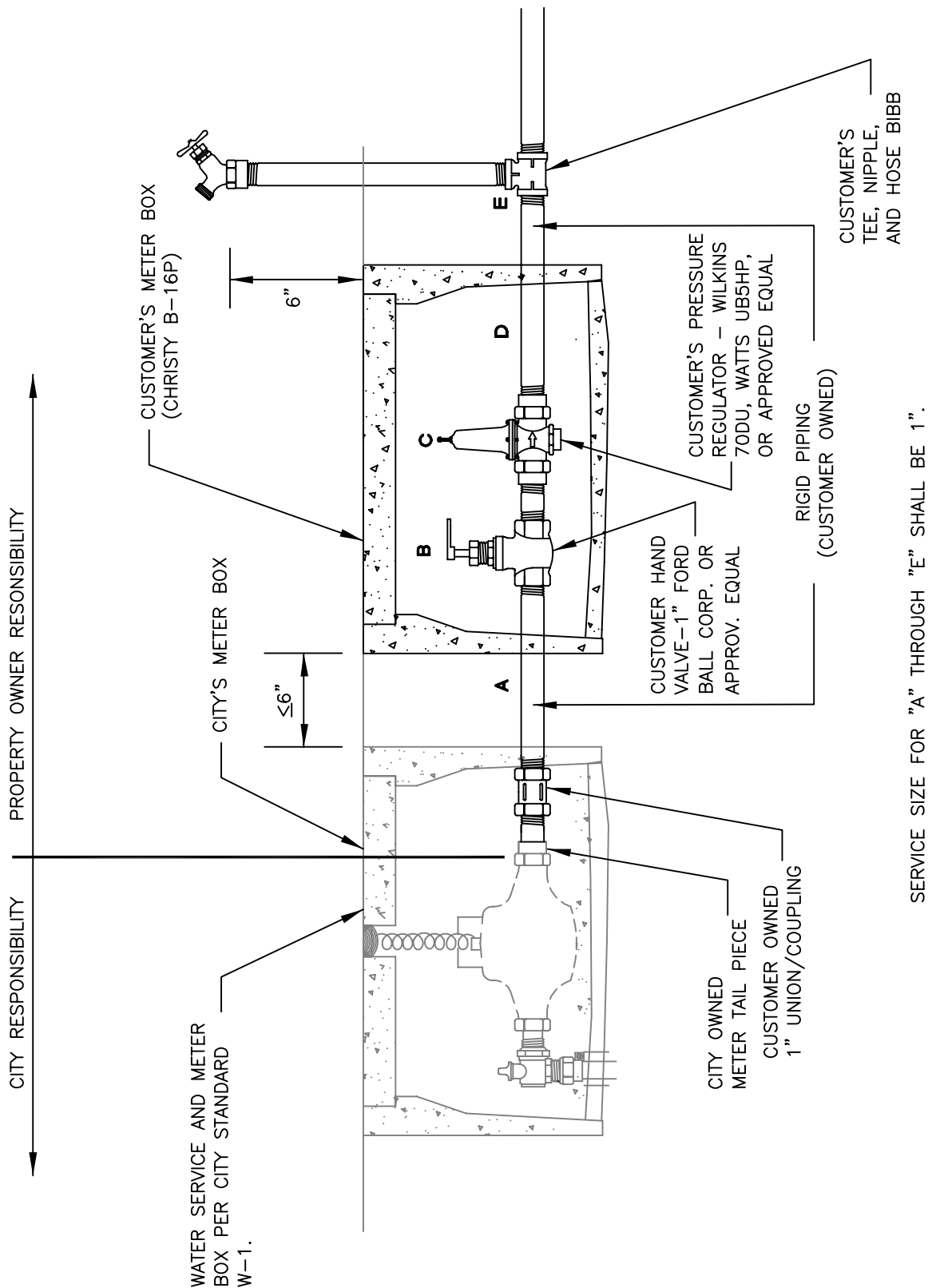
4" X 4" MJ OR FLANGE TEE

4" D.I.P. SERVICE LINES

1" X 4" BRONZE DOUBLE STRAP
SERVICE CLAMP (TYP. PER DETAIL
W-1).

18" MIN.

THRUST BLOCK
(TYP. PER DETAIL
W-12)



City of Morgan Hill
Public Works Department

Jim Oshroff
CITY ENGINEER

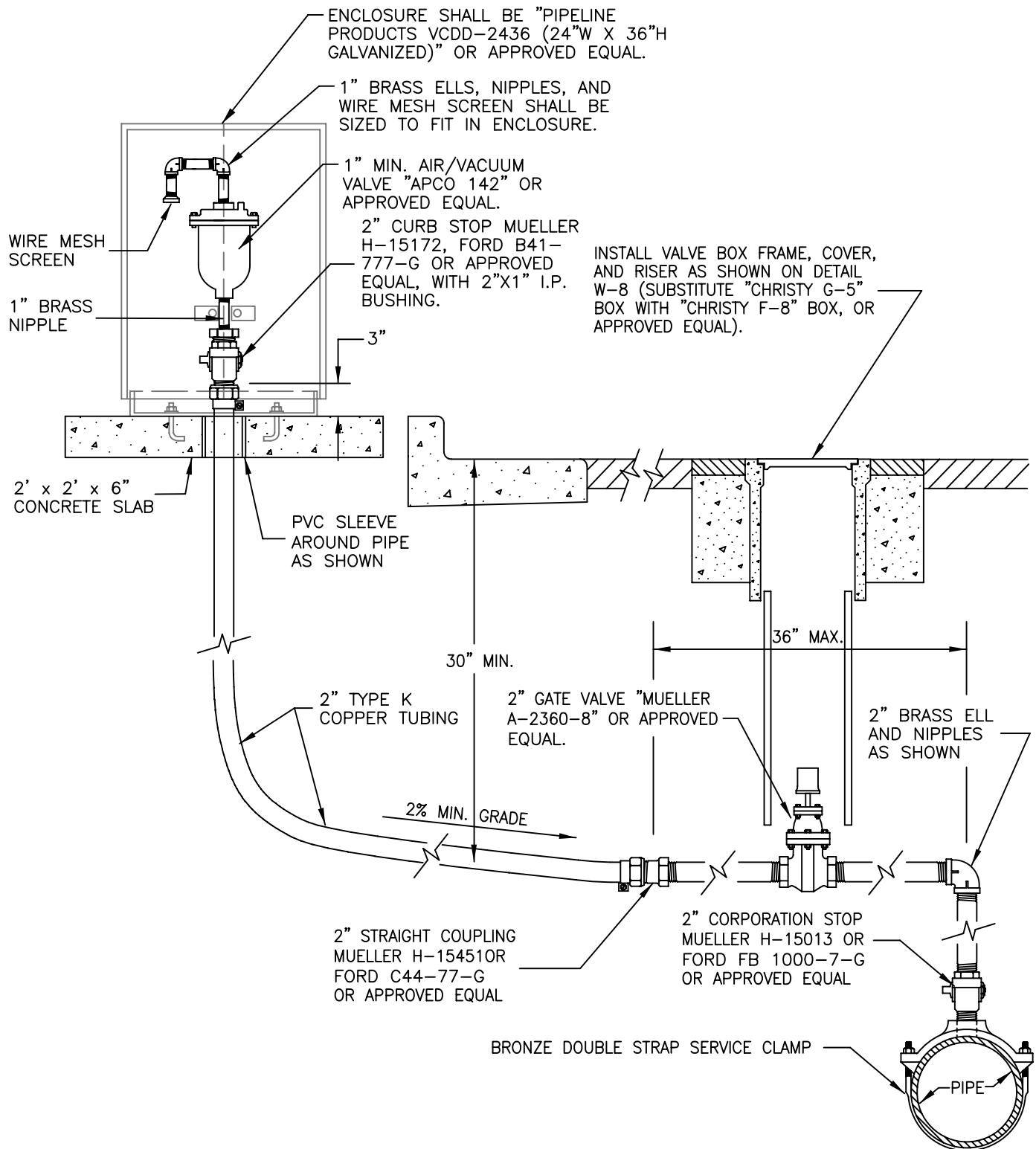
3/15/07
DATE

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**RECOMMENDED PRESSURE REGULATOR
ASSEMBLY AND LOCATION
FOR WATER SERVICES
WITH PRESSURE ≥150 PSI**

DRAWING
NO.

W-4



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Public Works Department

Jim Ashcraft
CITY ENGINEER

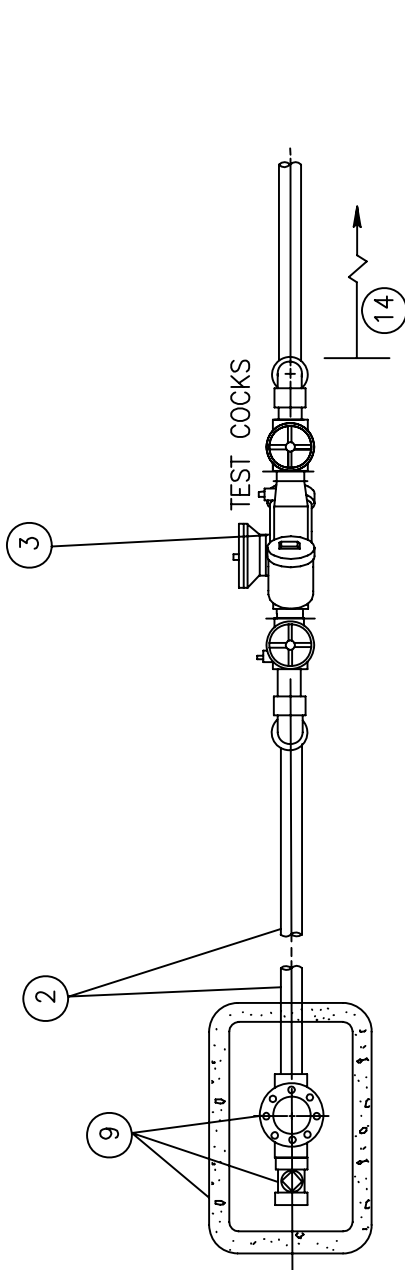
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3/15/07
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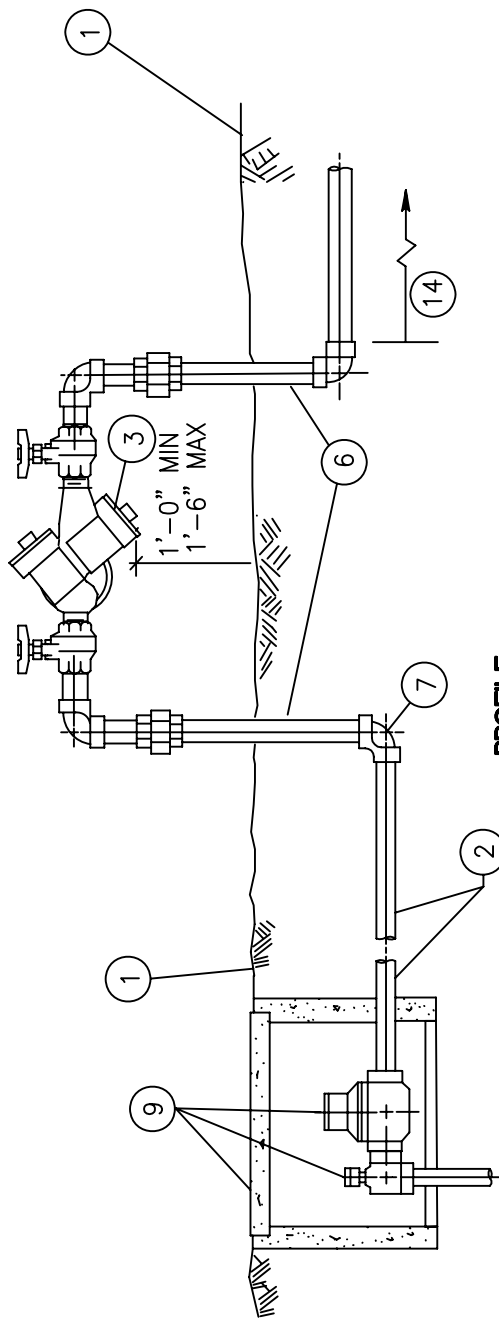
AIR RELIEF VALVE ASSEMBLY

DRAWING
NO.

W-5



PLAN



PROFILE

FOR NOTES AND LEGEND, SEE DETAIL W-10

(FOR SIZES 1" TO 2" BACKFLOW UNITS SHALL BE FEBCO 825 Y OR APPROVED EQUAL)

NOTE:

1. PIPING BETWEEN BACKFLOW DEVICE AND METER SHALL BE EXPOSED FOR INSPECTION BY THE UTILITY SYSTEMS MANAGER.



City of Morgan Hill
Public Works Department

Jim Cahcraft
CITY ENGINEER

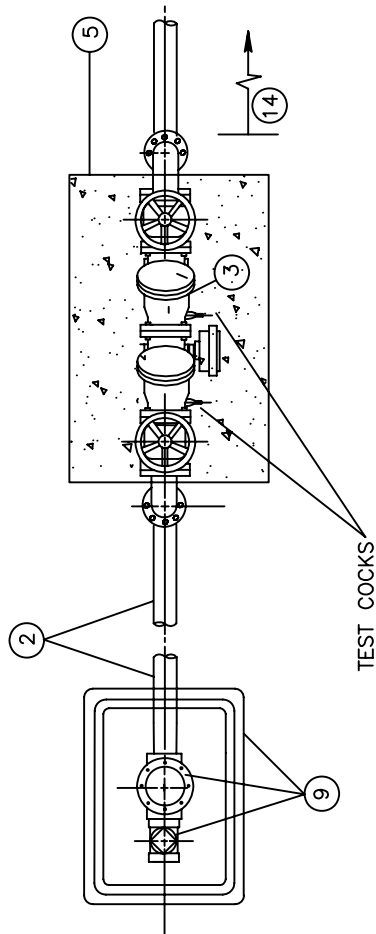
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DATE

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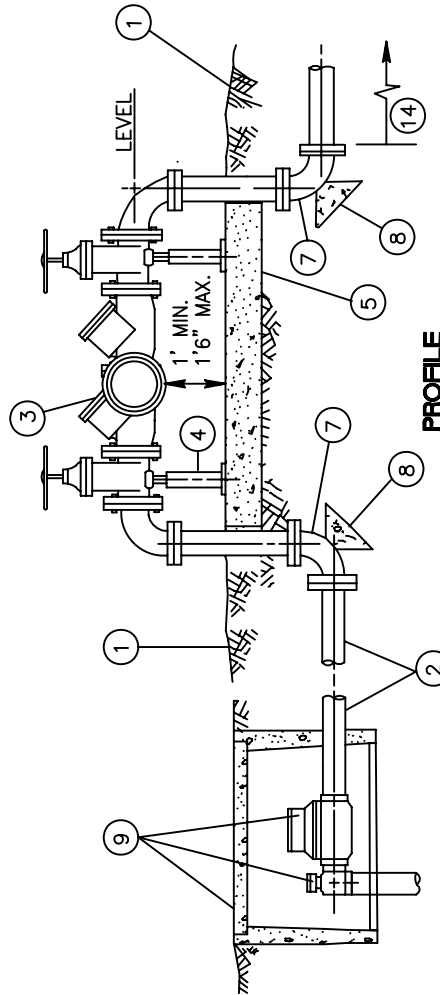
**REDUCED PRESSURE
BACKFLOW PREVENTER
(SIZES 1" TO 2")**

DRAWING
NO.

W-6



PLAN



PROFILE

FOR NOTES AND LEGEND, SEE DETAIL W-10

(FOR SIZES 2 1/2" TO 4" BACKFLOW UNITS SHALL BE FEBCO 825 YD OR APPROVED EQUAL)

NOTES:

1. PIPING BETWEEN BACKFLOW DEVICE AND METER SHALL BE EXPOSED FOR INSPECTION BY THE UTILITY SYSTEMS MANAGER.
2. FOR METER SIZES GREATER THAN 2 1/2", SEE DETAILS W-9 AND W-11.



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Public Works Department

Jim Oschcraft
CITY ENGINEER

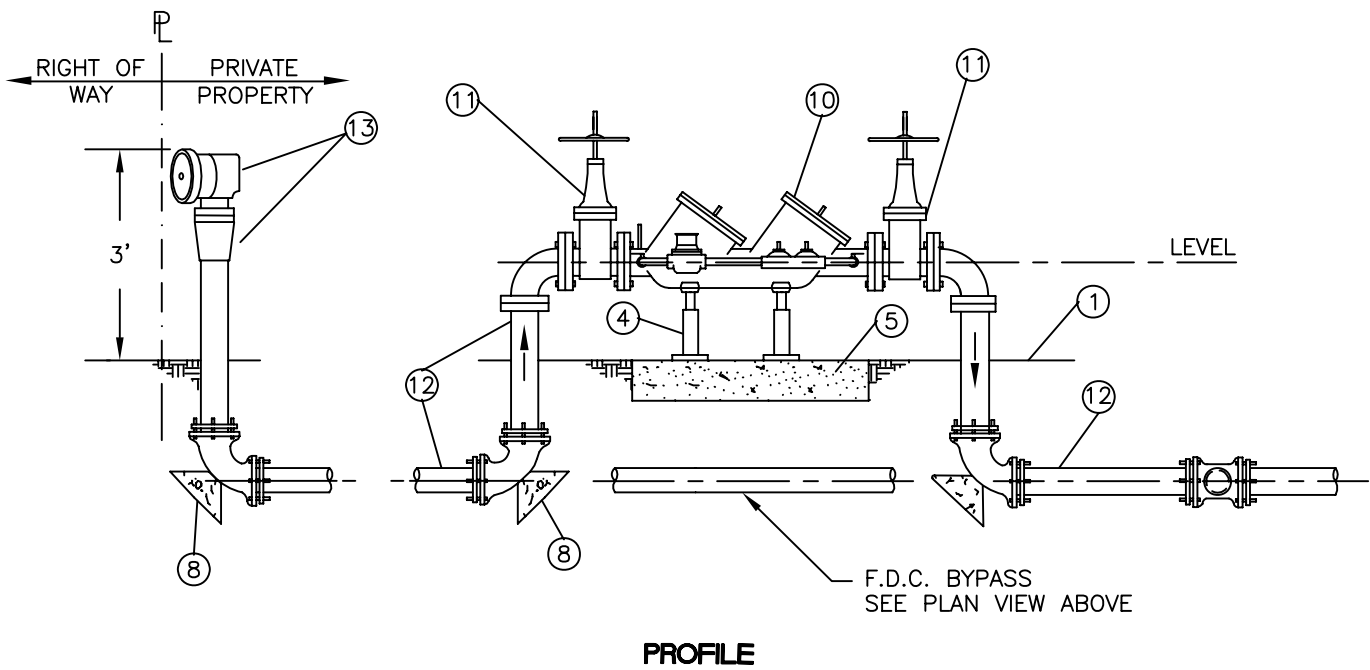
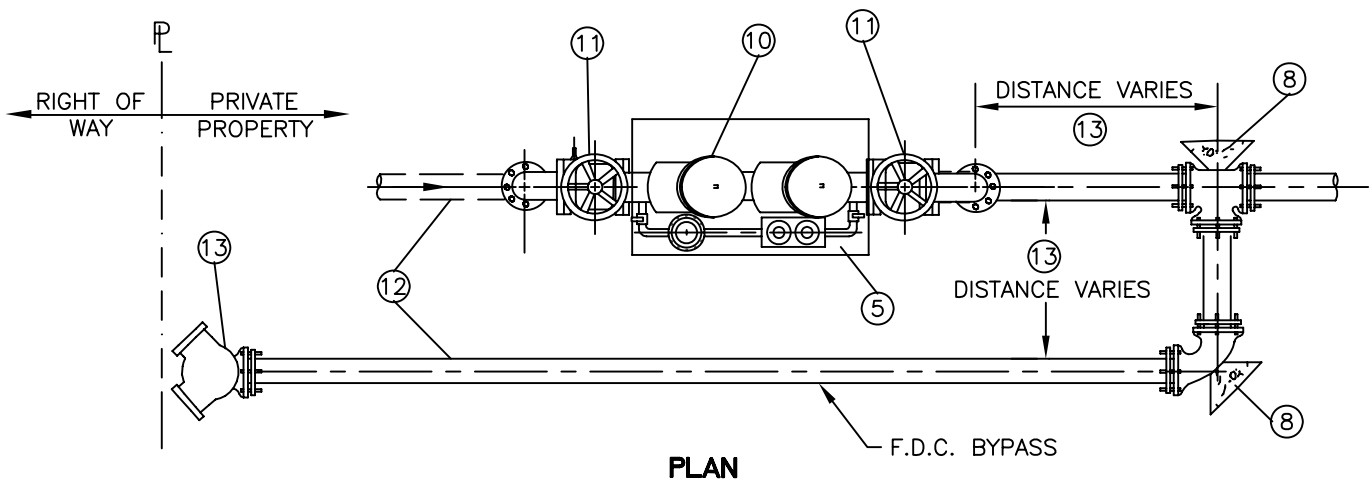
4/1/96
DATE

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**REDUCED PRESSURE
BACKFLOW PREVENTER
(SIZES 2-1/2" TO 4")**

DRAWING
NO.

W-7



FOR NOTES AND LEGEND, SEE DETAIL W-10.

NOTES:

1. REQUESTED DEVIATIONS FROM THE F.D.C. BYPASS CONFIGURATION (IF BYPASS IS REQUIRED) ABOVE SHALL BE SUBMITTED IN THE FORM OF A PLAN AND PROFILE DRAWING AND MUST BE APPROVED BY THE CITY ENGINEER.
2. APPLICATION SHOWN IS FOR PRIVATELY MAINTAINED FIRE SERVICES, SEE DETAILS W-9 AND W-11 FOR METER (IF REQUIRED) AND CONNECTION INFORMATION.



City of Morgan Hill
Public Works Department

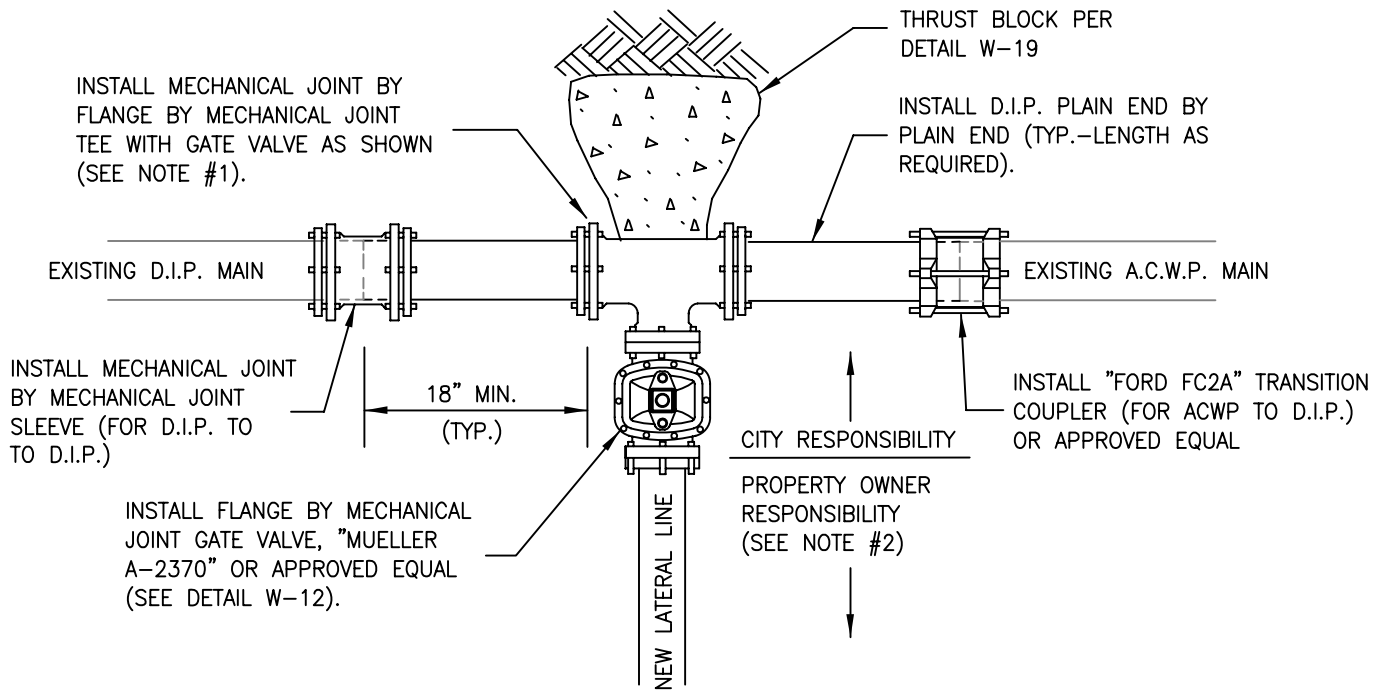
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

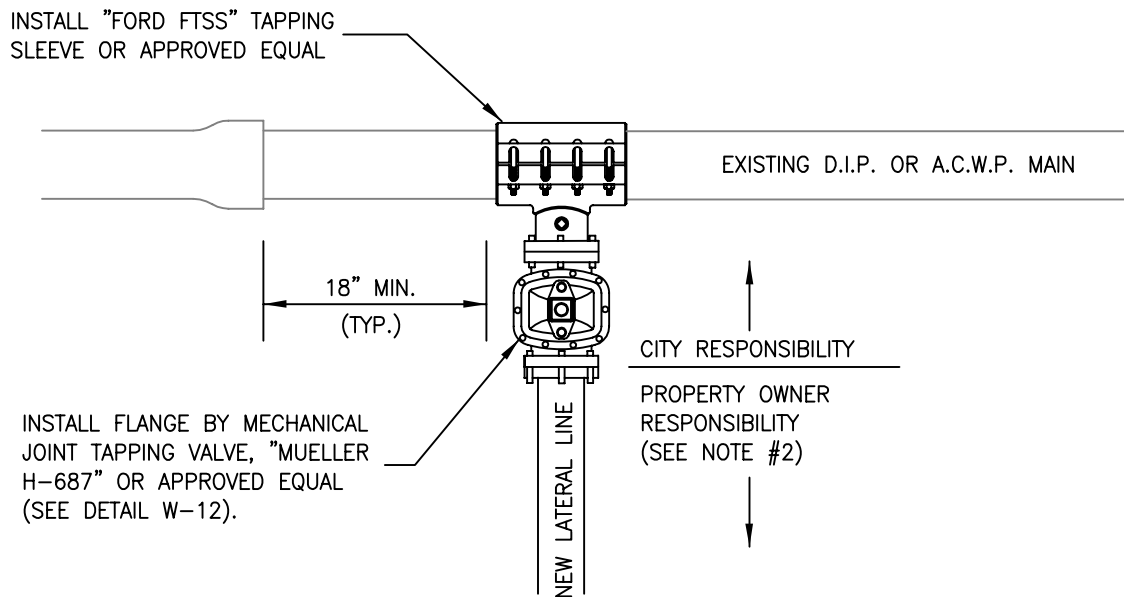
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DOUBLE DETECTOR CHECK VALVE ASSEMBLY

DRAWING
NO.
W-8



'CUT-IN' TEE FOR PRIVATE LATERAL



'HOT TAP' TIE-IN FOR PRIVATE LATERAL

NOTES:

1. THE APPLICATIONS SHOWN ARE INTENDED FOR USE IN CONNECTING PRIVATE LATERALS FOR PRIVATELY MAINTAINED FIRE SERVICE LINES. METHODS OF CONNECTIONS SHOWN MAY BE USED FOR PUBLICLY MAINTAINED CONNECTIONS. REFER TO APPROVED IMPROVEMENT PLANS FOR EXACT APPLICATIONS AND CONFIGURATIONS.
2. CUSTOMER TO PERFORM TEE INSTALLATION OR TAP. THE OWNER SHALL BE RESPONSIBLE FOR THE WATER LATERAL STARTING AT THE CUSTOMER SIDE OF THE COMPANION VALVE AND ENDING AT A POINT LOCATED ON THE PRIVATE PROPERTY.



City of Morgan Hill
Public Works Department

Jin Cahcraft
CITY ENGINEER

03/15/07

DATE

REVISED

PRIVATE WATER LATERAL CONNECTIONS 4" AND GREATER

DRAWING
NO.

W-9

LEGEND

- ① FINISHED GRADE.
- ② SERVICE SIZE GALVANIZED STEEL PIPE FROM WATER METER.
- ③ REDUCED PRESSURE BACKFLOW PREVENTER FEBCO 825Y (OR APPROVED EQUAL) FOR SIZES 1" TO 2" AND FEBCO 825 YD (OR APPROVED EQUAL) FOR SIZES 2 1/2" TO 4".
- ④ ADJUSTABLE PIPE SADDLE SUPPORT, GALVANIZED STEEL, SUITABLE FOR SUPPORTING GENERAL PIPING 4" AND LARGER, FROM FLOOR (12" MIN. AND 18" MAX. DISTANCE FROM BOTTOM OF DEVICE TO FLOOR).
- ⑤ 6" CONCRETE ENCLOSURE PAD, SIZE AS SHOWN ON THE PLAN.
- ⑥ SERVICE SIZE GALVANIZED STEEL PIPE RISER WITH A MINIMUM OF TWO (2) UNIONS FOR THREADED CONNECTIONS.
- ⑦ 90° ELBOW, FLANGED OR THREADED.
- ⑧ CONCRETE THRUST BLOCK (SEE DETAIL W-17 FOR MINIMUM THRUST BLOCK DIMENSIONS.)
- ⑨ WATER SERVICE BY OTHERS PER DTL. W-1
- ⑩ DOUBLE DETECTOR CHECK VALVE ASSEMBLY TO BE FEBCO 806 YD OR APPROVED EQUAL
- ⑪ VALVES TO BE MUELLER O.S. & Y.A-2473-6 OR APPROVED EQUAL, CHAINED AND LOCKED WITH "KNOX BOX" TYPE LOCK, AND TAMPER SWITCH.
- ⑫ ALL PIPE SHALL BE DUCTILE IRON PIPE (D.I.P), AND ALL FITTINGS SHALL BE FLANGED.
- ⑬ FIRE DEPARTMENT CONNECTION, F.D.C., SHALL BE 4" RISER X 2.5" X 2.5" SIAMESE CONNECTIONS AND STRAIGHT WAY CHECK VALVE, ("KWIK-CHECK" OR APPROVED EQUAL), WITH METAL CAPS. WHEN THE F.D.C. SERVES ON-SITE FIRE HYDRANTS, THE ASSEMBLY SHALL BE 6" MINIMUM (RISER) x 2.5" x 2.5" x 2.5" x 2.5" (CONNECTIONS). LOCATION OF F.D.C. RISER TO BE NO MORE THAN 40' FROM THE NEAREST FIRE HYDRANT. CONTRACTOR MAY BE REQUIRED TO INSTALL A NEW HYDRANT IF THE ABOVE REQUIREMENT CANNOT BE MET. LOCATION OF BYPASS CONNECTION SHALL BE MADE BEHIND THE THE DEVICE (DOWN-STREAM SIDE).
- ⑭ TYPE OF PIPE FROM THIS POINT INWARD, PER APPROVED PLAN.

NOTES:

1. GATE VALVES AND TEST COCKS ARE REQUIRED.
2. WATER SUPPLY- NO CONNECTIONS OR TEES WILL BE ALLOWED BETWEEN THE WATER METER AND BACKFLOW UNIT.
3. PROTECTION FROM FREEZE DAMAGE MAY BE REQUIRED IN EXPOSED AREAS.
4. DEVICE MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE.
5. WRAP BURIED GALVANIZED PIPE WITH 10 MIL PVC TAPE.
6. ASSEMBLY MUST BE TESTED BY A TESTER APPROVED BY THE CITY OF MORGAN HILL. THE CITY APPROVED TESTER LIST CAN BE OBTAINED BY CALLING 408-776-7333.
7. ASSEMBLY MUST BE LOCATED ABOVE GROUND AND DIRECTLY BEHIND WATER METER AS SHOWN ON DTL W-6 ,W-7 AND W-8.
8. ADDITIONAL INFORMATION MAY BE OBTAINED FROM M.H. ORDINANCE 647 NEW SERIES, ADOPTED OCT, 1993
9. ALL DEVICES MUST BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION AND HYDRAULIC RESEARCH".



City of Morgan Hill
Public Works Department

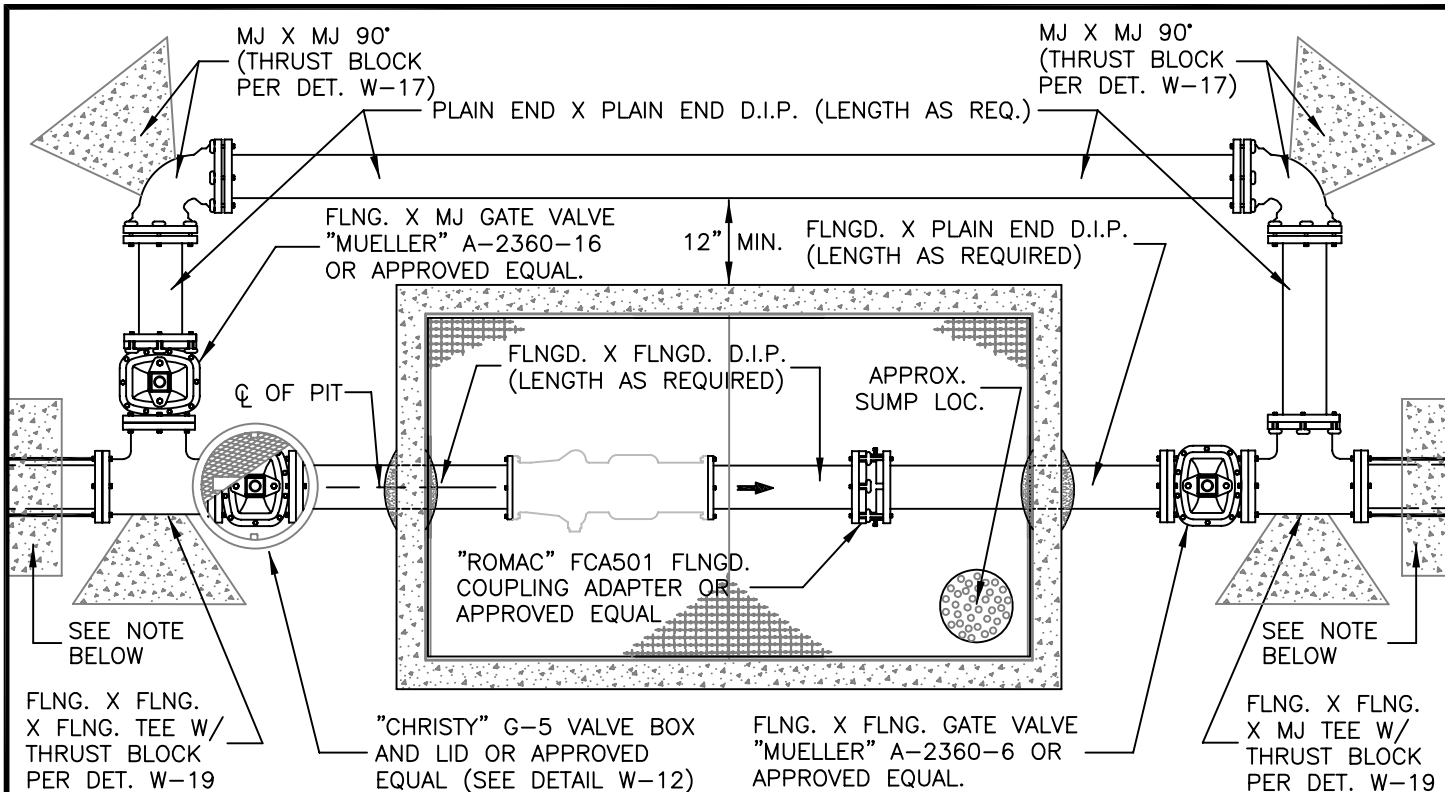
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
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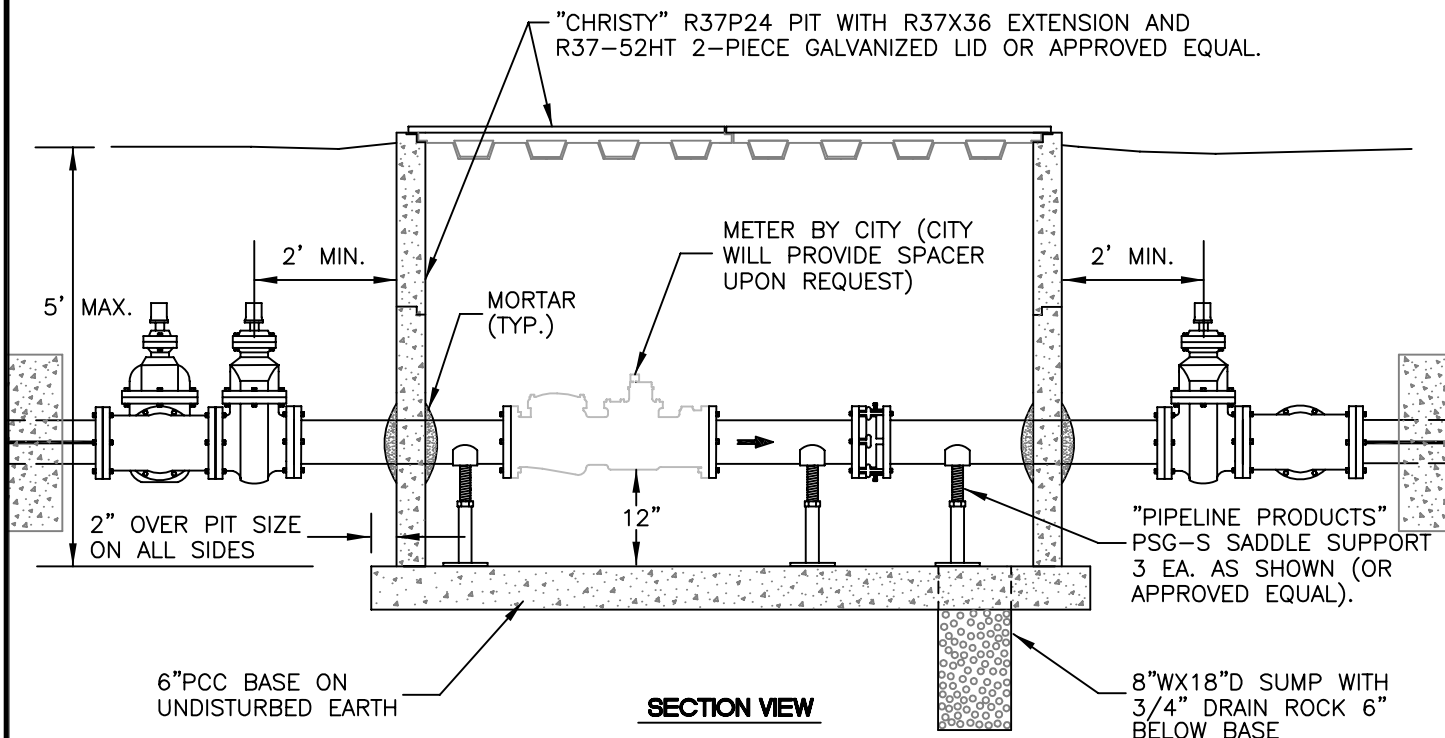
BACKFLOW PREVENTION LEGEND & NOTES

DRAWING
NO.
W-10



NOTE: REVERSE ANCHOR THRUST BLOCKS SHALL BE INSTALLED AT EACH END OF THE ASSEMBLY PRIOR TO AND JUST AFTER BYPASS PIPING AS SHOWN. REVERSE ANCHOR THRUST BLOCKS NOT SHOWN IN ENTIRETY, SEE DETAIL W-20 FOR THRUST BLOCK AND ANCHOR INFORMATION.

PLAN VIEW



SECTION VIEW



City of Morgan Hill
Public Works Department

Jim Oshcraft
CITY ENGINEER

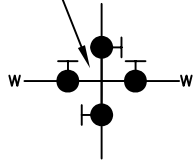
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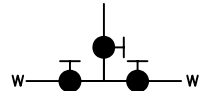
**METER INSTALLATION & BYPASS
(FOR 4" THRU 8" DOMESTIC
WATER SERVICES)**

DRAWING
NO.
W-11

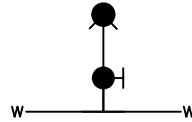
FLANGE FITTINGS
WITH FLANGE BY
MECHANICAL VALVES (TYP)



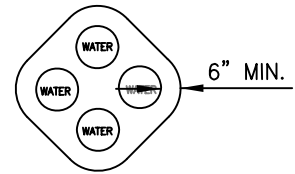
CROSS



TEE



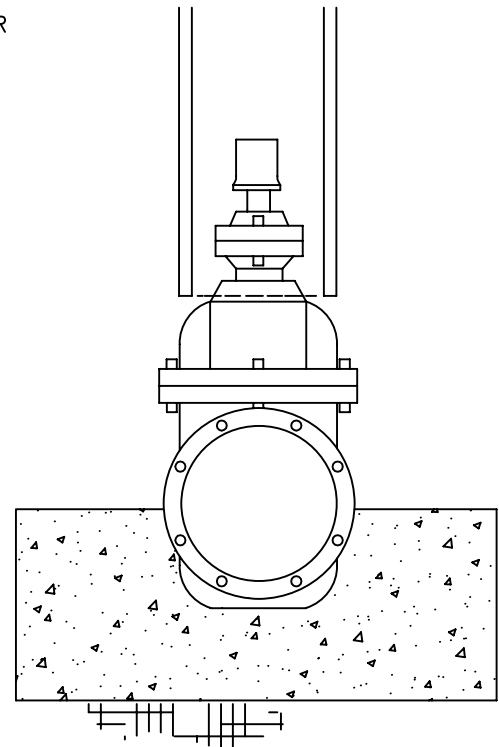
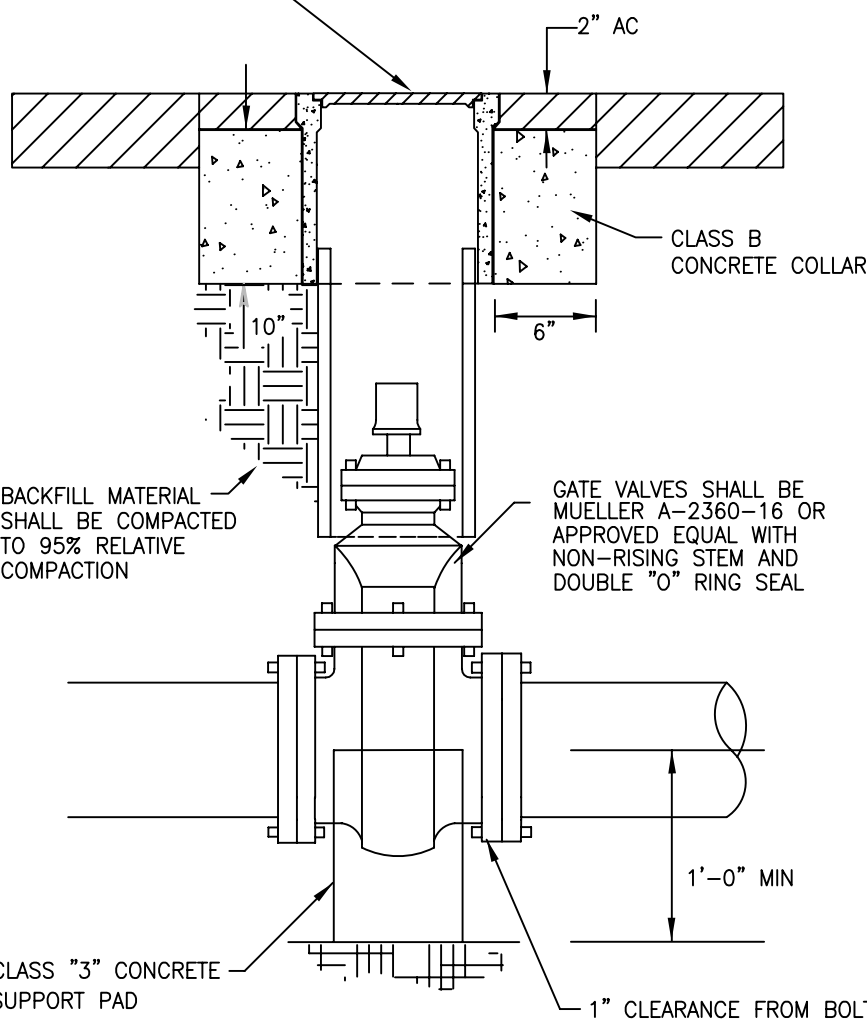
COMPANION VALVE



PAVING AROUND
VALVE CLUSTER

VALVE CONFIGURATIONS

10 1/4" DIA. TRAFFIC
VALVE BOX. CHRISTY G5
OR APPROVED EQUAL.
LID STAMPED "WATER"



VALVES LARGER THAN 12" REQUIRE SPECIAL DETAILS AND SHALL BE APPROVED BY THE CITY ENGINEER.



City of Morgan Hill
Public Works Department

Jim Calcraft
CITY ENGINEER

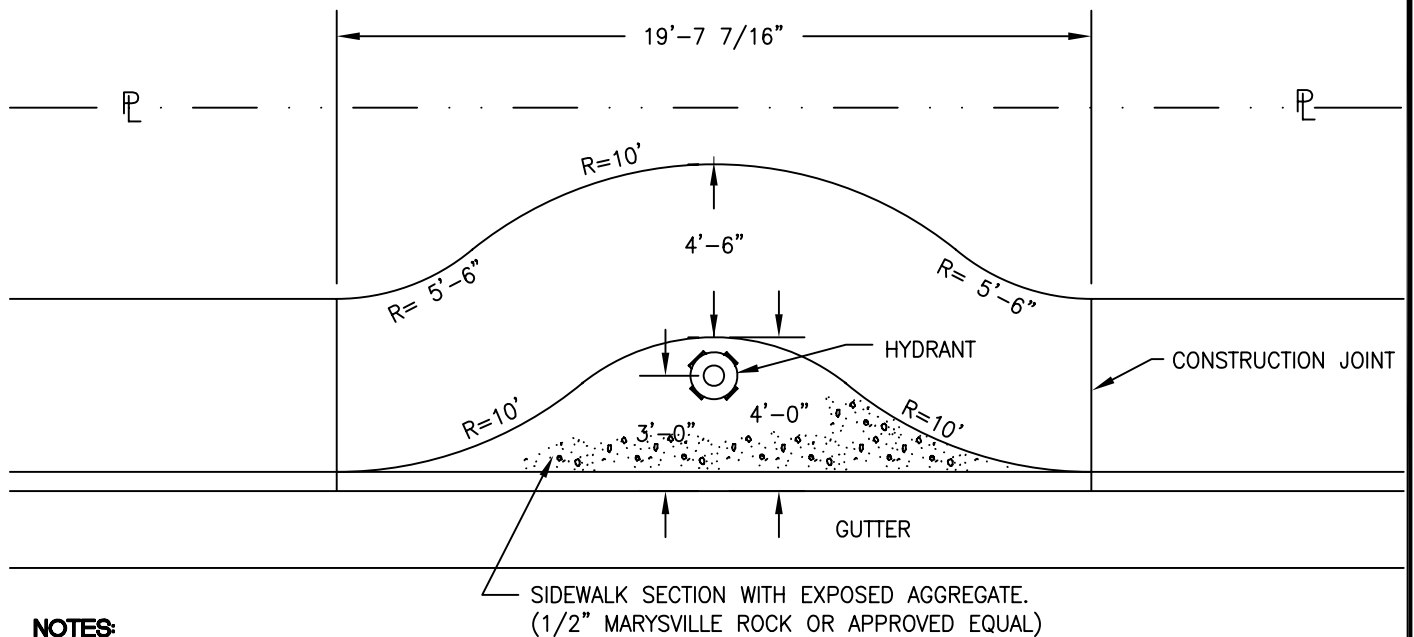
4/1/96
DATE

3/15/07
REVISED

TYPICAL VALVE INSTALLATION

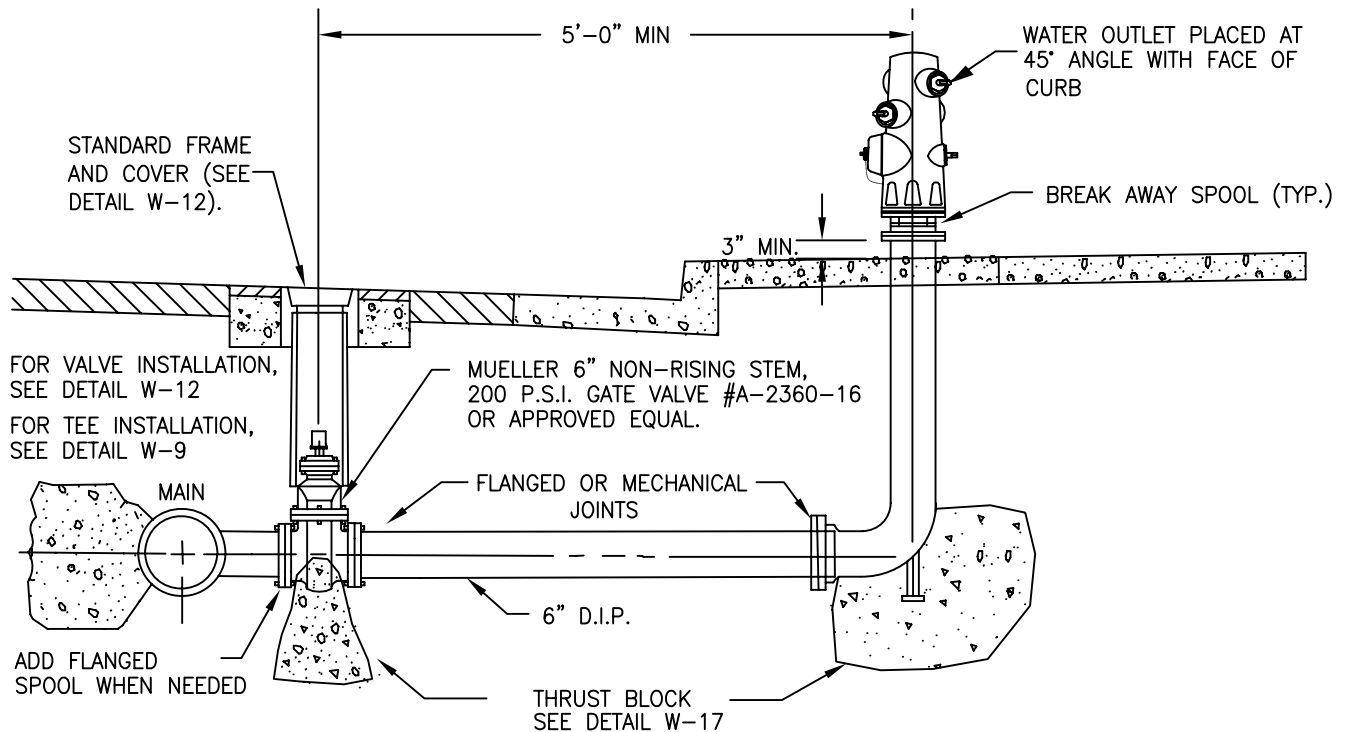
DRAWING
NO.

W-12



NOTES:

1. FOR COMMERCIAL / INDUSTRIAL APPLICATIONS ONLY, PAINT CURB RED 15' ON BOTH SIDES OF HYDRANT.
2. PLACE BLUE PAVEMENT MARKER IN STREET DIRECTLY ACROSS FROM HYDRANT, SEE DETAIL W-16.
3. HYDRANTS: RESIDENTIAL CLOW VALVE CO. #950 WITH 1-2 1/2" AND 1-4 1/2" OUTLET OR APPROVED EQUAL. PAINTED WITH FINISH YELLOW.
INDUSTRIAL CLOW VALVE CO. #960 WITH 2-2 1/2" AND 1-4 1/2" OUTLET OR APPROVED EQUAL. PAINTED WITH FINISH YELLOW.
4. CENTER OF HYDRANT TO FACE OF CURB SHALL BE 3' FOR ATTACHED SIDEWALKS WITH MEANDER AND DETACHED SIDEWALK CONFIGURATIONS (ATTACHED SIDEWALK WITH MEANDER SHOWN). FOR ATTACHED SIDEWALK WITHOUT SIDEWALK MEANDER SEE DETAIL W-14.
5. JOINT TRENCHES LOCATED BEHIND SIDEWALK SHALL FOLLOW MEANDER AROUND FIRE HYDRANT.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

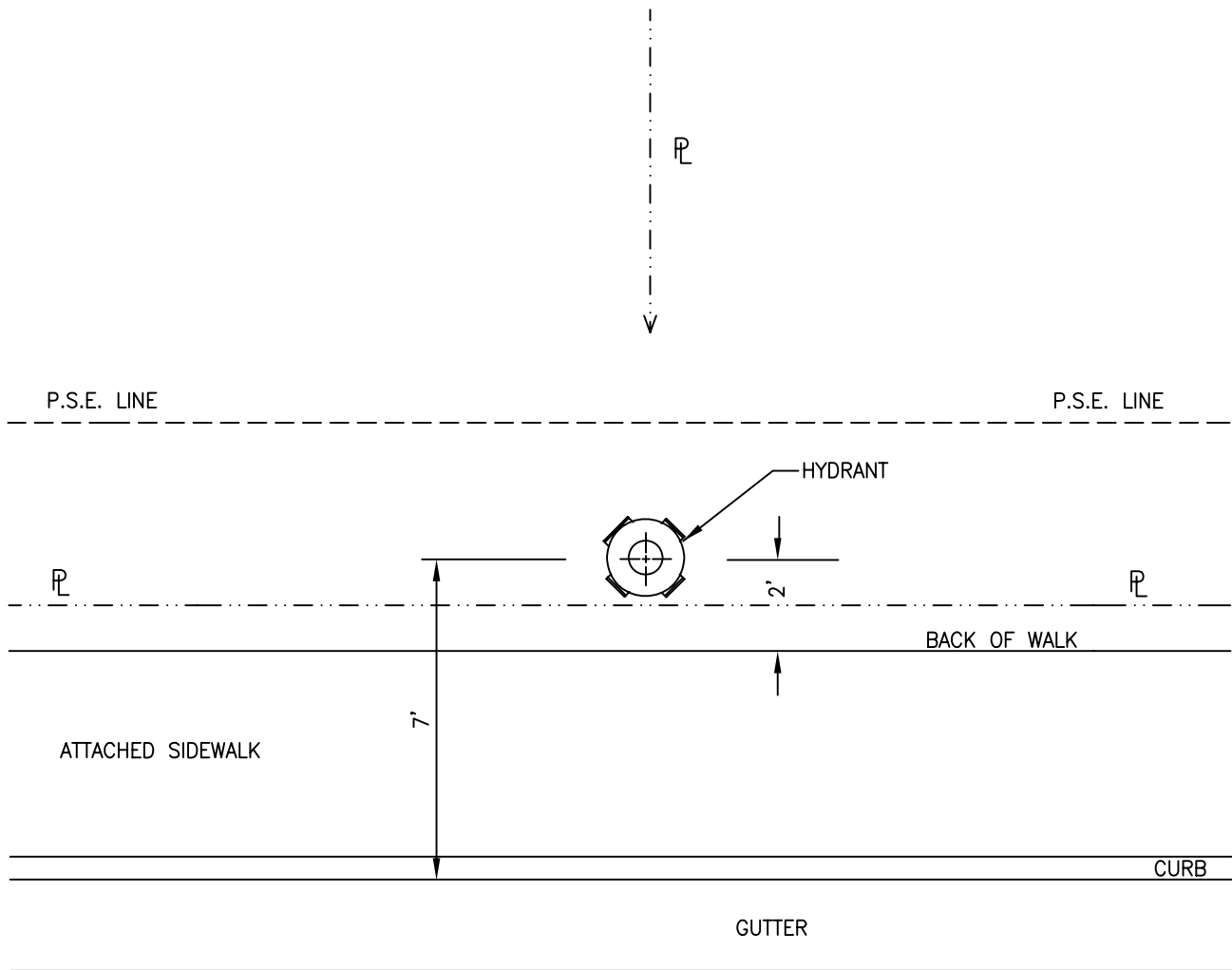
4/1/96
DATE

3/15/07
REVISED

HYDRANT INSTALLATION AND LOCATION (with SIDEWALK MEANDER)

DRAWING
NO.

W-13



ATTACHED SIDEWALK
(WITHOUT SIDEWALK MEANDER)

NOTES:

1. SEE DETAIL W-13 "HYDRANT INSTALLATION AND LOCATION", DETAIL W-12 "TYPICAL VALVE INSTALLATION", AND W-17 " ELBOW THRUST BLOCK".
2. CENTER OF HYDRANT TO FACE OF CURB SHALL BE 7' FOR THIS SIDEWALK APPLICATION.
3. CURB SHALL NOT BE PAINTED FOR THIS APPLICATION. PAINTED CURBS ARE NOT REQUIRED FOR RESIDENTIAL APPLICATIONS.
4. PLACE BLUE PAVEMENT MARKER IN STREET DIRECTLY ACROSS FROM HYDRANT, SEE DETAIL W-16.
5. FOR ADDITIONAL NOTES SEE DETAIL W-13.



City of Morgan Hill
Public Works Department

Jim Cahcraft
CITY ENGINEER

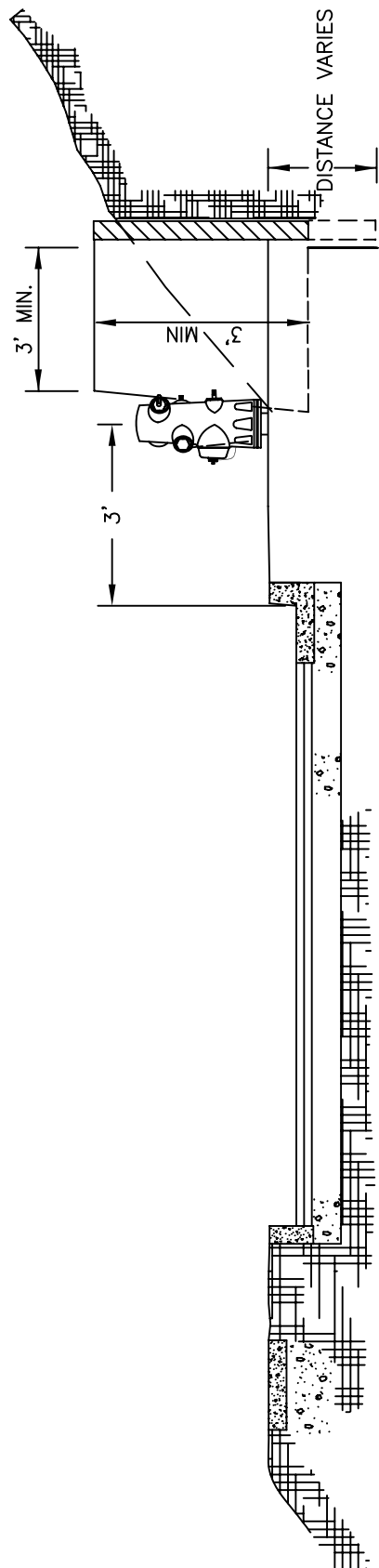
6/8/00
DATE

8/5/06
REVISED

**HYDRANT LOCATION
ATTACHED SIDEWALK
(without) SIDEWALK MEANDER**

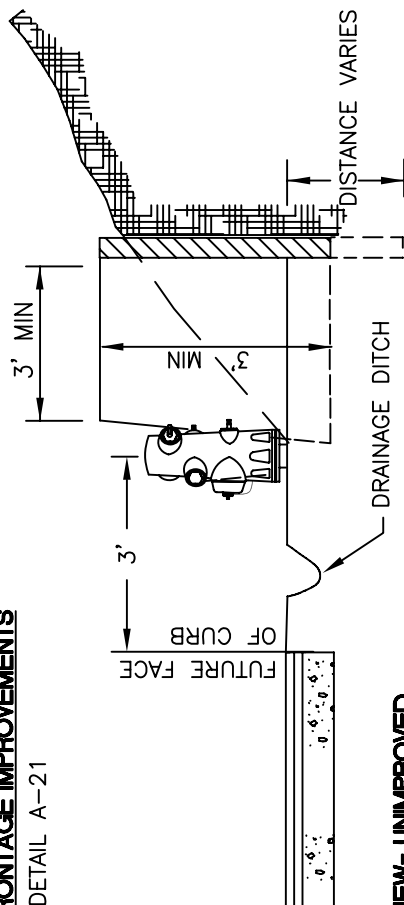
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NO.

W-14

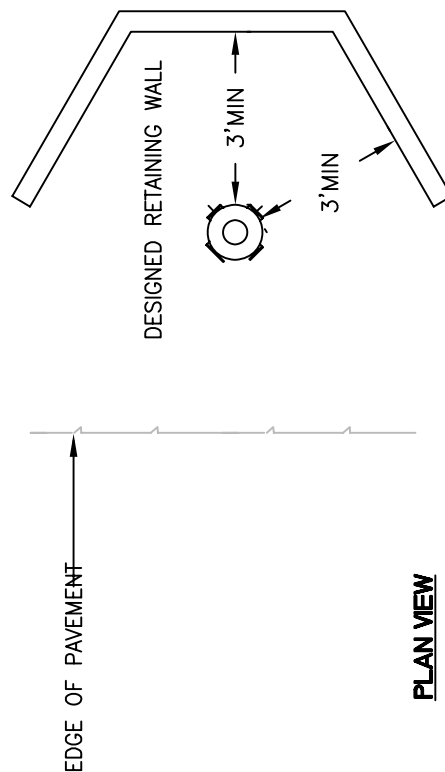


SECTION VIEW - FRONTAGE IMPROVEMENTS

SEE DETAIL A-21



SECTION VIEW - UNIMPROVED



PLAN VIEW



City of Morgan Hill
Public Works Department

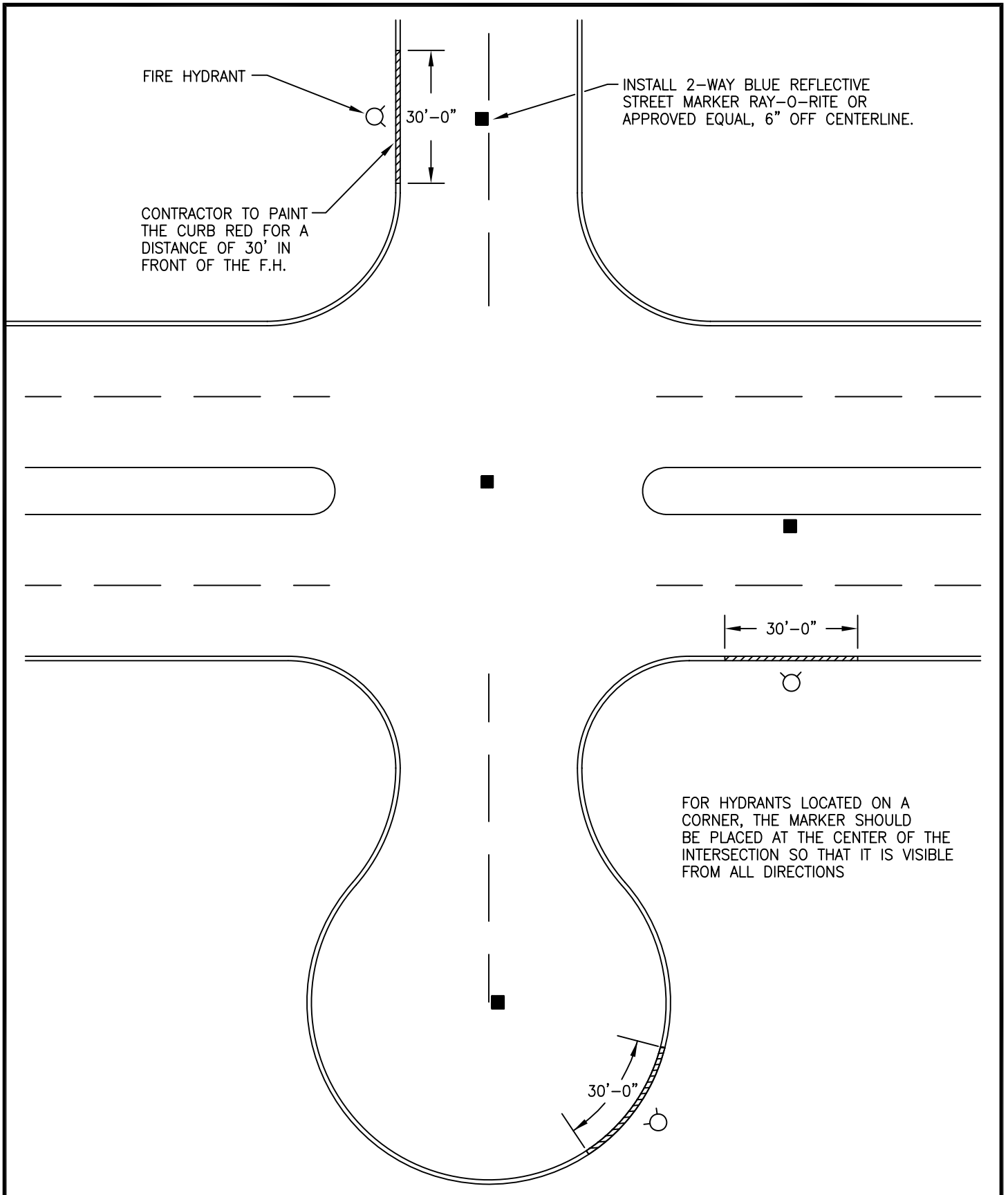
Jim Cahcraft
CITY ENGINEER

4/1/96
DATE

REVISD

HILLSIDE FIRE HYDRANT LOCATION

DRAWING
NO.
W-15



City of Morgan Hill
Public Works Department

Jim Clahcraft
CITY ENGINEER

4/1/96
DATE

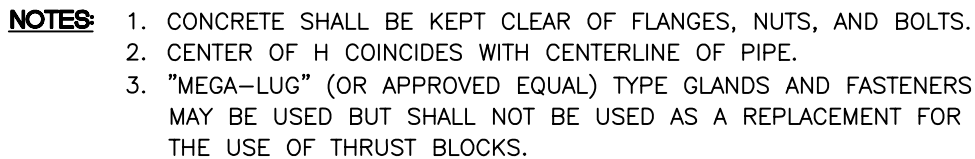
REVISED

FIRE HYDRANT LOCATION MARKER

DRAWING
NO.

W-16

CENTER BEARING AREA ON
PIPE & FORCE LINE.



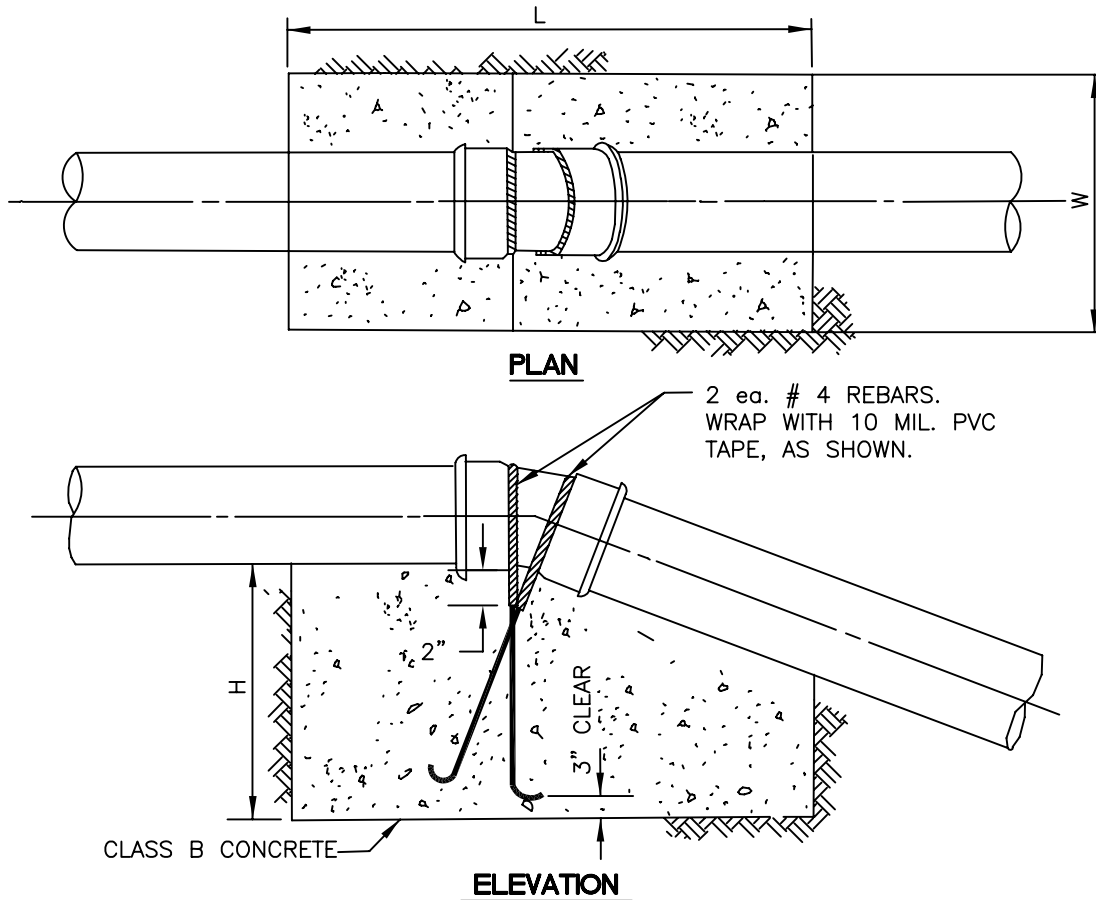
PIPE SIZE	DIMENSIONS — L x H (200 PSI TEST)			
	11 1/4"	22 1/2"	45"	90"
4"—6"	1'0" x 1'0"	1'5" x 1'5"	1'9" x 1'9"	2'3" x 2'3"
8"	1'0" x 1'0"	1'5" x 1'5"	2'0" x 2'0"	2'10" x 2'10"
10"	1'5" x 1'5"	2'0" x 2'0"	2'8" x 2'8"	3'5" x 3'5"
12"	1'9" x 1'9"	2'3" x 2'3"	3'0" x 3'0"	4'2" x 4'2"
14"	1'9" x 1'9"	2'8" x 2'8"	3'6" x 3'6"	4'10" x 4'10"
16"	2'0" x 2'0"	2'10" x 2'10"	4'0" x 4'0"	5'5" x 5'5"
18"	3'0" x 3'0"	4'0" x 4'0"	5'0" x 5'0"	6'6" x 6'6"



REVISÉ

DRAWING
NO.

W-17



- NOTES:**
1. CONCRETE SHALL BE KEPT CLEAR OF FLANGES, NUTS & BOLTS.
 2. "MEGA-LUG" (OR APPROVED EQUAL) TYPE GLANDS AND FASTENERS MAY BE USED BUT SHALL NOT BE USED AS A REPLACEMENT FOR THE USE OF THRUST BLOCKS.

DIMENSIONS (150 PSI TEST)

PIPE SIZE	11 1/4" BEND			22 1/2" BEND			45° BEND		
	L	W	H	L	W	H	L	W	H
6"	2'0"	2'0"	1'0"	2'0"	2'0"	2'0"	2'0"	2'0"	2'0"
8"	2'0"	2'0"	1'0"	2'0"	3'0"	2'0"	2'0"	4'0"	2'0"
10"	2'0"	3'0"	2'0"	2'0"	4'0"	2'0"	2'0"	4'0"	3'0"
12"	2'0"	3'0"	2'0"	2'0"	6'0"	2'0"	2'0"	6'6"	3'0"
18"	3'0"	3'0"	3'0"	3'0"	6'0"	3'0"	3'0"	5'0"	5'0"



City of Morgan Hill
Public Works Department

Jim Oshroff
CITY ENGINEER

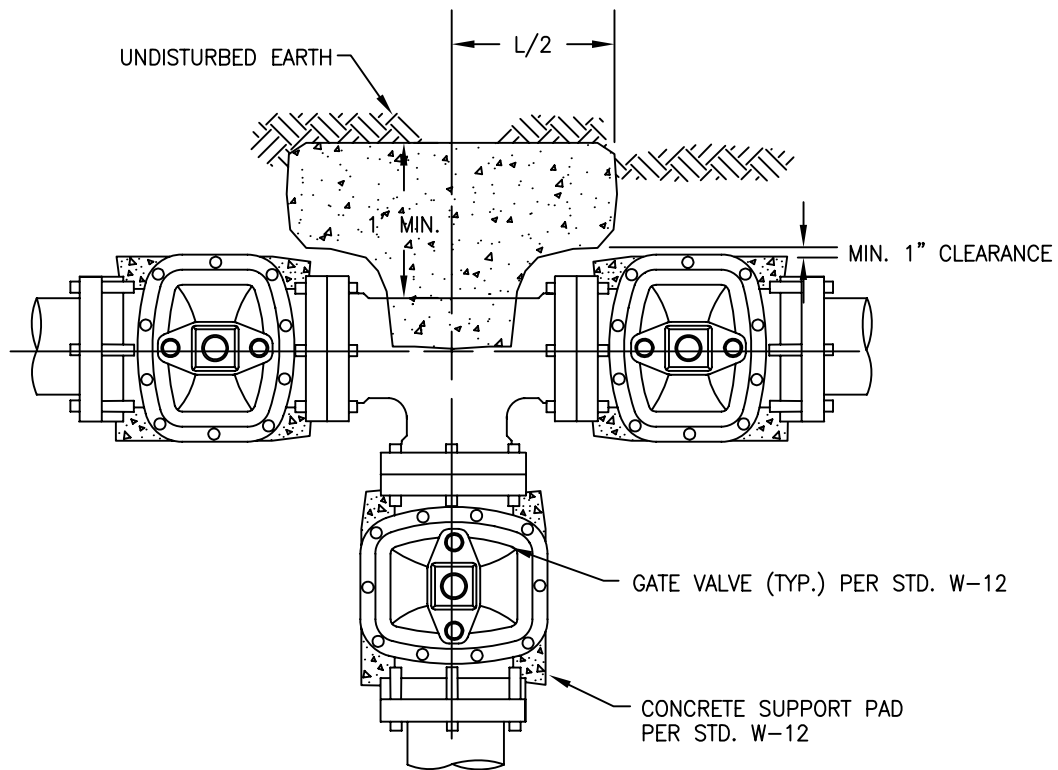
4/1/96
DATE

REVISED

ELBOW THRUST BLOCK UPWARD THRUST

DRAWING
NO.

W-18



- NOTES:**
1. CONCRETE SHALL BE KEPT CLEAR OF FLANGES, NUTS, AND BOLTS.
 2. "MEGA-LUG" (OR APPROVED EQUAL) TYPE GLANDS AND FASTENERS MAY BE USED BUT SHALL NOT BE USED AS A REPLACEMENT FOR THE USE OF THRUST BLOCKS.

BLOCKING FOR PIPE TEES		
PIPE SIZE	BEARING (SQ. FT.)	L X H
6"	3	1'-9"X1'-9"
8"	5	2'-3"X2'-3"
10"	9	3'-0"X3'-0"
12"	12	3'-5"X3'-5"
10"	16	4'-0"X4'-0"
12"	21	4'-7"X4'-7"



City of Morgan Hill
Public Works Department

Jim Clahcraft
CITY ENGINEER

4/1/96
DATE

REVISED

TEE THRUST BLOCK

DRAWING
NO.

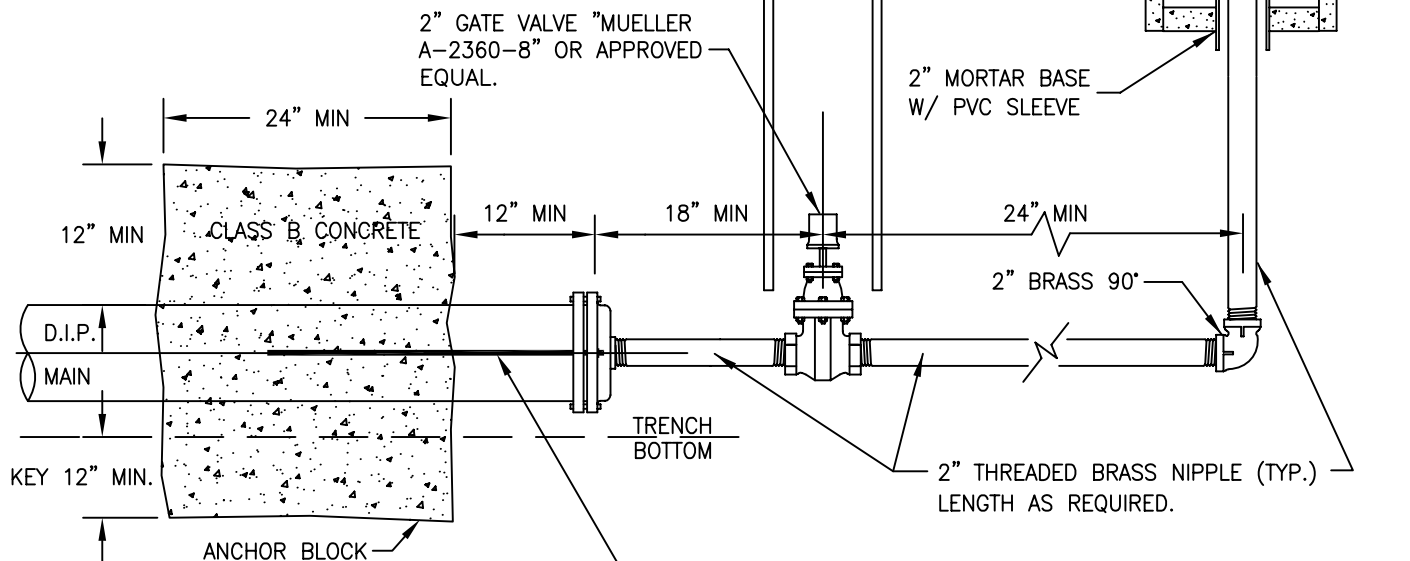
W-19

INSTALL VALVE BOX, FRAME, COVER, AND RISER AS SHOWN ON DETAIL W-8 (SUBSTITUTE "CHRISTY G-5" BOX WITH "CHRISTY F-8" BOX, OR APPROVED EQUAL).

INSTALL VALVE BOX, FRAME, COVER, AND RISER AS SHOWN ON DETAIL W-8 ("CHRISTY G-5" BOX OR APPROVED EQUAL).

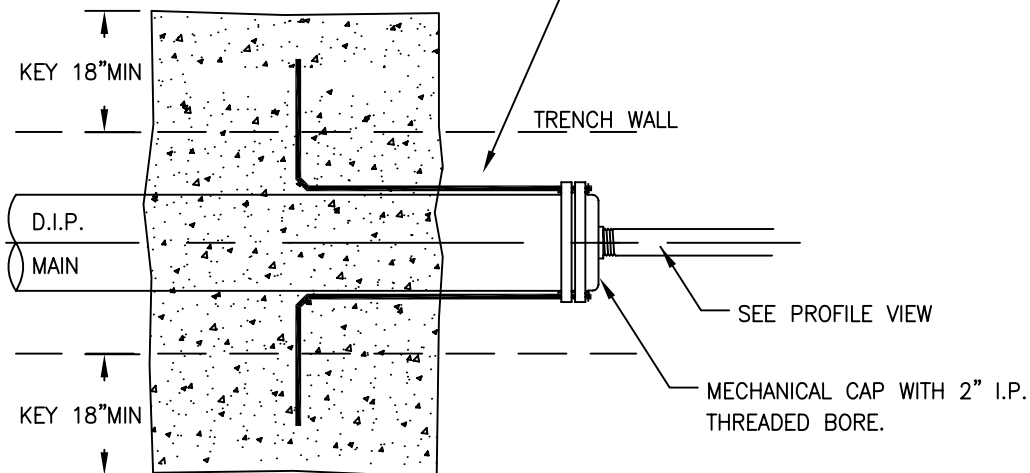
2" BRASS I.P. COUPLING WITH BRASS I.P. CAP
4" MAX.

NOTE: TRENCH WALL AND TRENCH BOTTOM SHALL BE KEYED TO ACCEPT CONCRETE ANCHOR BLOCK.



PROFILE VIEW

2 EA. - 3/4" X 36" MIN. ANCHOR RODS (24" MIN. W/ 12" MIN. TAIL BEND).



PLAN VIEW



City of Morgan Hill
Public Works Department

Jim Oshcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

BLOW OFF

DRAWING
NO.

W-20

SANITARY SEWER

GENERAL

All Sanitary Sewers shall be constructed in accordance with the City of Morgan Hill Standard Details. Materials shall conform to the American Society for Testing and Materials (ASTM), and the American Water Works Association (AWWA), except as modified herein.

SEWER MAINS

Main sewer lines shall be PVC or ABS "composite wall" pipe, PVC solid wall pipe, ABS solid wall pipe, polyurethane lined D.I.P. or PVC C900. Polyurethane D.I.P. (or PVC C900 upon City Engineer approval) shall be used where pipe cover is less than 3 feet but at least 2 feet.

After all testing, backfill and pavement restoration has been completed, the contractor shall flush and clean all sewer lines 24 inches or less in diameter by the "Wayne Ball" method.

TYPES OF SEWER MAIN/LATERALS

POLY-VINYL CHLORIDE (PVC)

Poly-Vinyl Chloride (4" to 12") solid wall pipe, shall conform to ASTM D 3034 (SDR 26) with rubber gasket joints. PVC used for force or shallow mains shall conform to AWWA C900 and installation conform to ASTM D 2774.

ACRYLONITRILE-BUTADIENE-STYRENE (ABS)

Acrylonitrile-Butadiene-Styrene (4" to 12") solid wall pipe, shall conform to ASTM D 2751 (SDR 26).

COMPOSITE WALL PIPE

Double wall, truss type braced, and concrete filled, composite wall pipe, shall conform to ASTM D 2680, SDR 23.5.

DUCTILE IRON PIPE (Polyurethane Lined & Polyethylene Encased)

Polyurethane Lined D.I.P. for force mains or shallow mains, shall be "POLYTHANE Lined Ductile Iron Pipe and Fittings" as manufactured by U.S. Pipe or approved equal. Polyethylene Encasement shall be "GREENSHIELD Polyethylene Film" as manufactured by U.S. Pipe or approved equal, and conform to AWWA C105.

SEWER MAIN/LATERAL INSTALLATION

PVC/ABS solid wall pipe shall be installed per ASTM D2321 using sand as the embedment material. Sand shall conform to CALTRANS Section 19-3.025B.

LATERALS

The underground contractor shall keep an accurate record of all manholes and the distance between them and each wye branch lateral and their direction. Laterals shall be laid on a minimum of 2% grade. The end of the lateral shall be marked as shown in Detail S-2 prior to construction of the curb and gutter. The concrete contractor shall stamp an "S" on the face of curb directly above the lateral.



City of Morgan Hill
Public Works Department

Jim DeHaven
CITY ENGINEER

4/1/96
DATE

REVISED

GENERAL NOTES

DRAWING
NO.

S-I

TESTING

After backfill and compaction of the base rock, all sewer mains, laterals and manholes shall be required to pass an air or water leakage test. The contractor shall furnish all equipment, labor and materials needed to perform the test. A "Mandrel Test" may also be required by the City Engineer.

AIR TEST

The pneumatic test method or "air test" is the preferred test for leakage detection of new sewer lines. Contractor shall furnish all equipment, labor and materials necessary to perform the test. Length of line tested at one time shall be limited to the length between adjacent manholes.

Air test procedure shall be as follows: Pressurize the test section to 3.5 PSI, disconnect the compressor from the hose and time for not less than 5 minutes. If at the end of the test period the pressure is less than 3.0 PSI, the section of pipe has failed. If the new main is below ground water level, the Uni-Bell UNI-B-6 "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe" shall be used.

AIR TEST ON PRESSURE MAIN

Force mains shall hold air pressure that is 50% higher than the normal operating pressure for a period of 3 minutes with pressure drop not to exceed 0.5 psi.

WATER TEST

In lieu of the air test a water test may be performed upon approval of the inspector. Where grades are slight, two or more sections between manholes may be tested at the same time. Where grades are steep, the maximum head on any one section shall not exceed 12 feet. All lines and branches not under test shall be plugged to prohibit overflow.

A section of sewer line prepared as above shall be tested by filling the manhole with water to a height of four feet above the invert at midpoint of the test section, or one foot above the top of pipe in the upstream manhole, whichever is greater. Water should be introduced into the test section at least 6 hours in advance of the official test period to allow pipe and joint material to become saturated with water. All entrapped air shall be removed from the test section prior to performing the test. At the beginning of the test, the height of water in the upper manhole shall be carefully measured from a point on the manhole rim. After a period of 2 hours or less, with the approval of the inspector, the water height shall be measured from the same point on the manhole rim and loss of water during the test period calculated. Allowable leakage shall not exceed 4 gallons per hour per 1000 feet of line per inch of pipe diameter.

Sewer sections showing leakage in excess of the maximum shall be repaired or reconstructed as necessary to reduce leakage to the maximum specified above.

The contractor's attention is directed to the fact that the stipulated maximum leakage shall in no way relieve the contractor of his obligation to correct, stop or otherwise remedy individual leaks in the system due to defective workmanship or material even though such leakage might fall within the maximum.

MANDREL TEST

A Mandrel test may be required by the City Engineer. The Mandrel shall be 4% smaller than the inside diameter of the pipe tested.



City of Morgan Hill
Public Works Department

Jim DeHaven
CITY ENGINEER

4/1/96
DATE

REVISED

GENERAL NOTES

DRAWING
NO.

S-II

TELEVISION INSPECTION

After the leakage test, but prior to paving, a television inspection shall be performed at all locations of newly installed sewer mains throughout the project at contractor's expense. The television inspection shall be made in the presence of the inspector and contractor.

An electronic format & (Flash Drive) video shall be furnished by the contractor to the City at the initial inspection and upon the completion of any repairs. All LACP and/or MACP version 7.0 or later. A written Inspection Log for all video inspections shall accompany each DVD.

Logs shall accurately measure distances measured from center point of each manhole and shall clearly show the location in relation to the manhole of all points of significance in the sewer line. As a minimum, each Log shall include the location and left/right orientation of all service laterals, the location and depth of sags, offset pipes, or any other points of significance.

Additionally, each record shall accurately describe the above ground location of the manhole section including the street name, direction traveled (north, south, etc.), direction of flow, adjoining house numbers, and any other landmarks that will clearly and quickly identify the section. All defects and deficiencies discovered in this inspection shall be corrected by the contractor to the satisfaction of the City Engineer and at the contractor's expense.

Measuring devices and depth tolerances for trapped water shall be as follows:

<u>Device</u>	<u>Depth Tolerance</u>
6"	0.08'
8"	0.11'
10"	0.13'
12"	0.16'
15"	0.20'
>15"	10% of pipe area

The Contractor shall follow the standards set in the National Association of Sewer Service, (NASSCO), "Pipeline Assessment Certification Program Condition Classification"(PACP) most current, to describe internal pipe conditions and/or defects.

If the City suspects any damage or breaks in the line, a television inspection may be required within the one year warranty period at the contractor's expense. All defects discovered in this inspection shall be corrected by the contractor at his expense.

MANHOLES

Manhole bases shall be cast in place. Precast bases may be used if approved by the City Engineer. Manholes shall be waterproofed by grouting and/or painting the interior with COLORED sodium silicate or other approved waterproofing.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

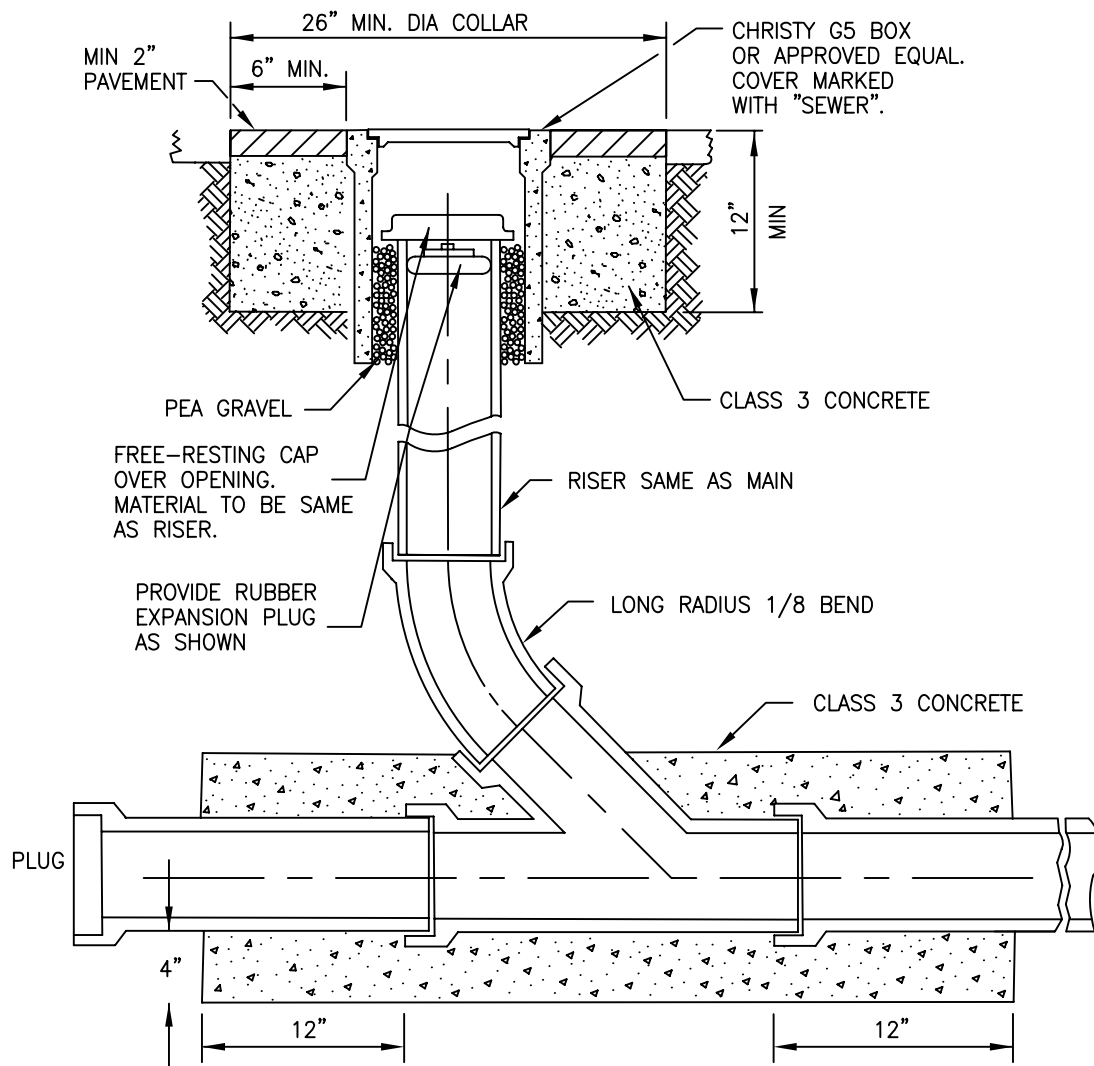
4/1/96
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11/11/19
REVISED

GENERAL NOTES

DRAWING
NO.

S-III



City of Morgan Hill
Public Works Department

Jim Oshroff
CITY ENGINEER

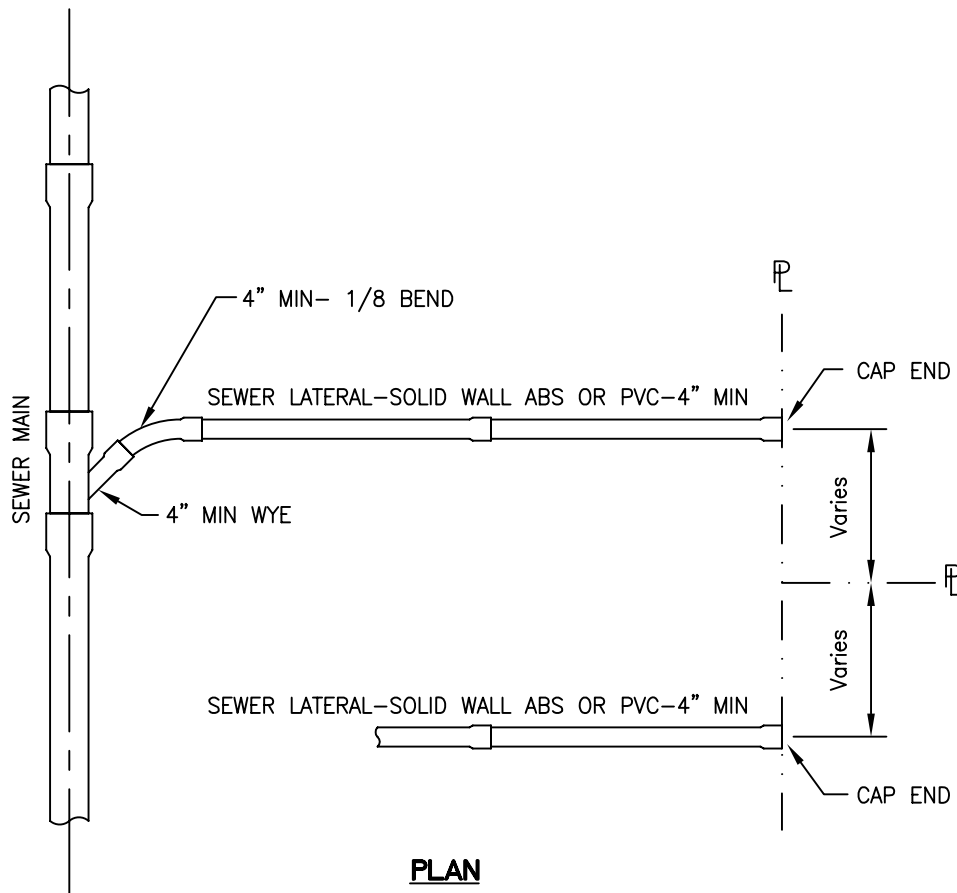
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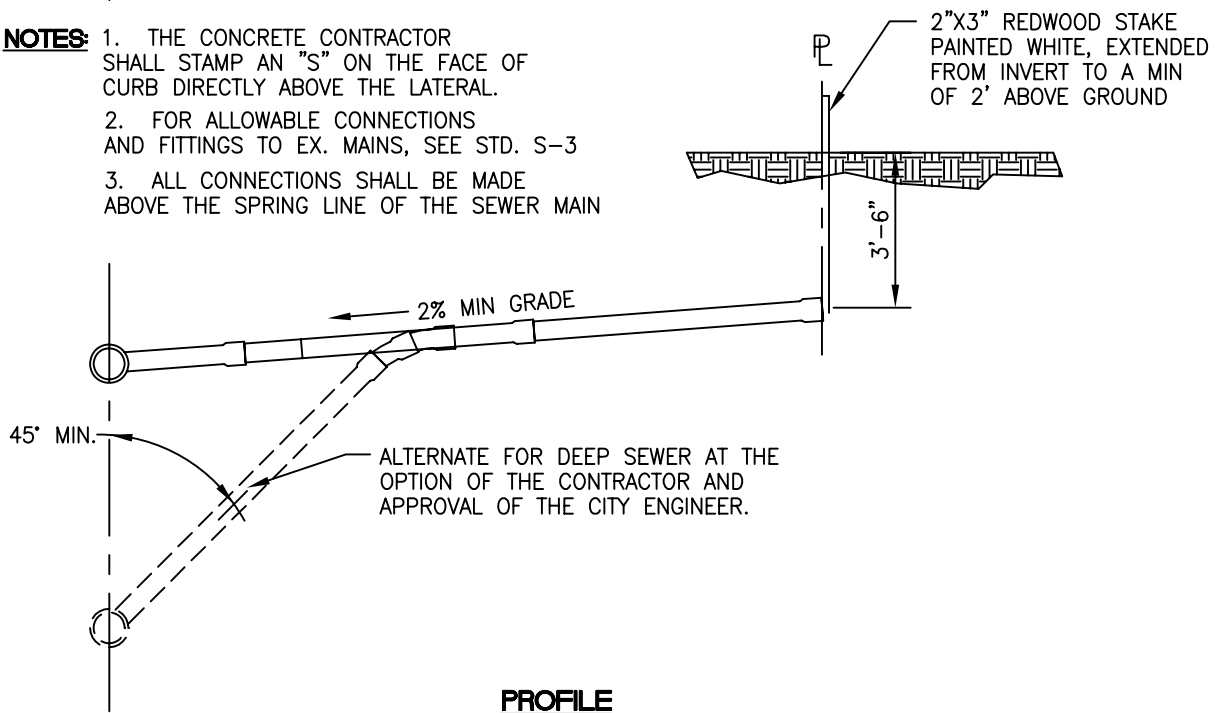
SEWER CLEANOUT

DRAWING
NO.

S-1



- NOTES:**
1. THE CONCRETE CONTRACTOR SHALL STAMP AN "S" ON THE FACE OF CURB DIRECTLY ABOVE THE LATERAL.
 2. FOR ALLOWABLE CONNECTIONS AND FITTINGS TO EX. MAINS, SEE STD. S-3
 3. ALL CONNECTIONS SHALL BE MADE ABOVE THE SPRING LINE OF THE SEWER MAIN



City of Morgan Hill
Public Works Department

Jim Clecraft
CITY ENGINEER

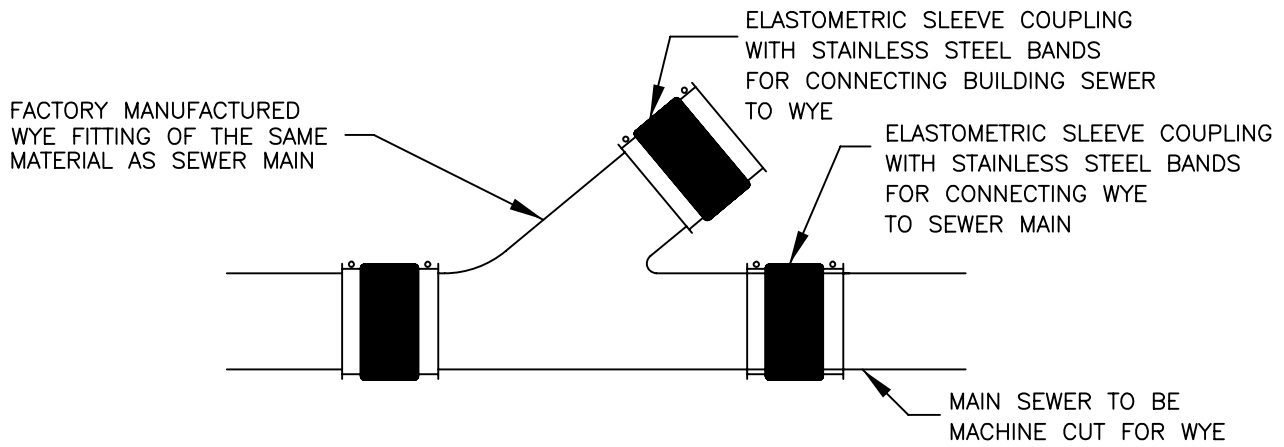
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3/15/07
REVISED

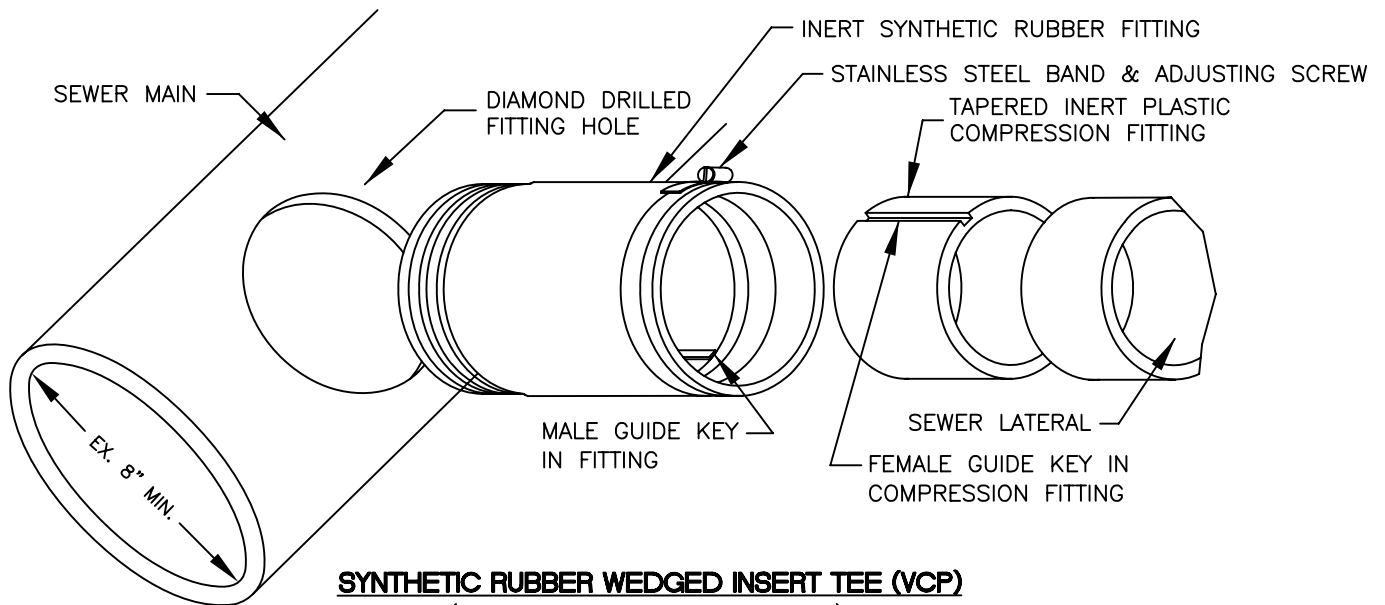
SEWER LATERAL

DRAWING
NO.

S-2

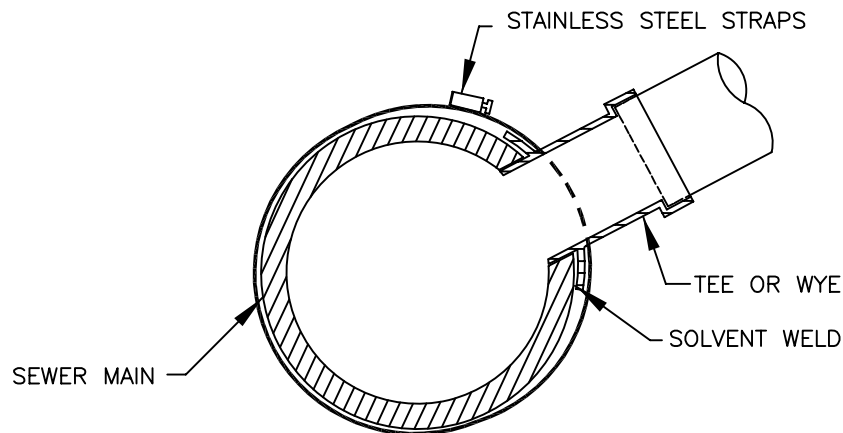


INSERTION OF MANUFACTURED WYE (VCP)



SYNTHETIC RUBBER WEDGED INSERT TEE (VCP)

(MIN. DIFFERENTIAL OF TWO SIZES REQUIRED)



TEE OR WYE TAP (PVC OR ABS)

(SOLVENT WELDED FITTINGS)



City of Morgan Hill
Public Works Department

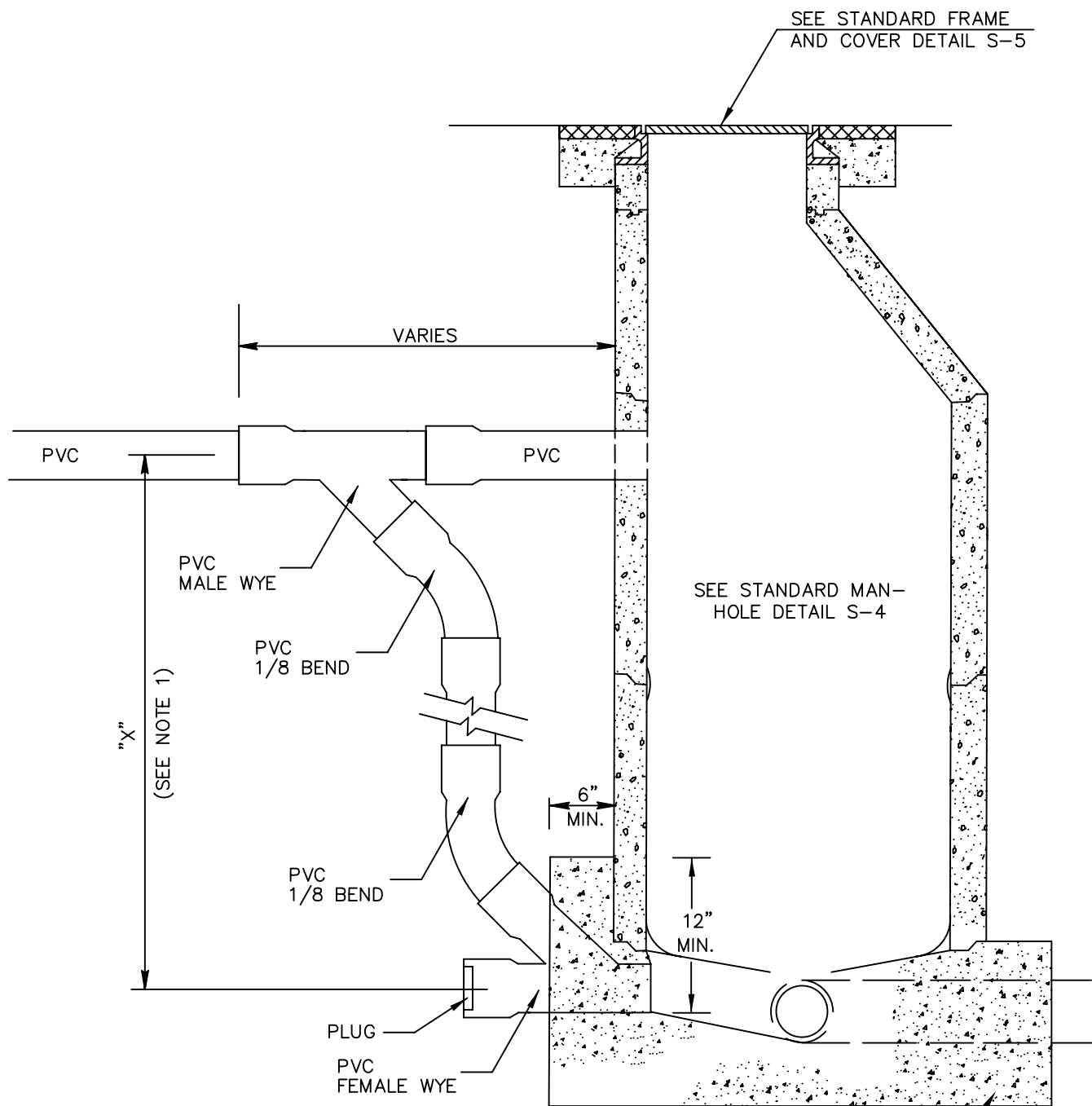
Jim Clahcraft
CITY ENGINEER

4/1/96
DATE

REVISD

SEWER LATERAL CONNECTION OPTIONS

DRAWING
NO.
S-3



NOTES:

1. THIS DETAIL SHALL BE USED WHEN DISTANCE "X" IS GREATER THAN 2'-0" FROM INVERT OUT.
2. "OUTSIDE" DROP MANHOLE SHOWN. "INSIDE" MANHOLES MAY ONLY BE USED WITH WRITTEN PERMISSION OF THE CITY ENGINEER.
3. ALL PIPING SHALL BE SDR 26 PVC OR ABS.
4. CONNECTION TO PRE-CAST SECTION OF MANHOLE SHALL BE SEALED WITH "RAMNECK" TYPE GASKET MATERIAL AND SHALL BE MORTARED AS DESCRIBED IN NOTE 3 OF DETAIL S-4.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

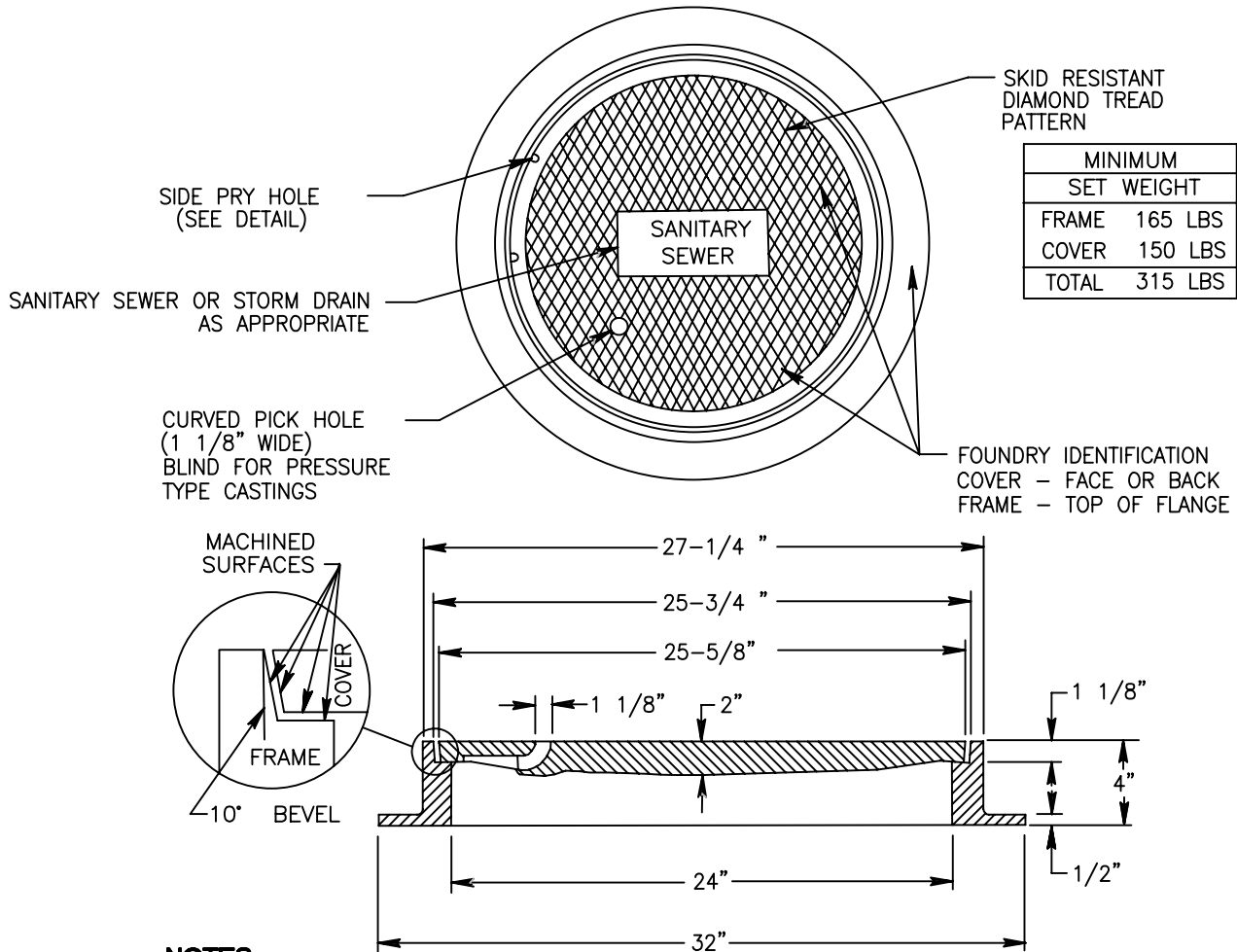
3/15/07
DATE

REVISED

DROP MANHOLE

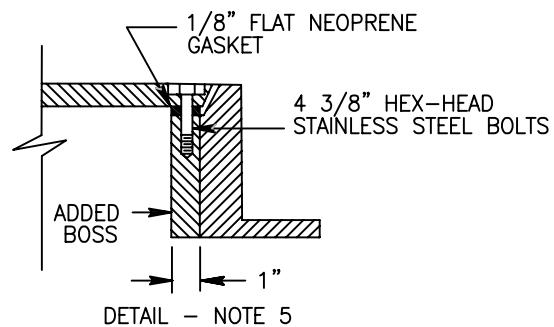
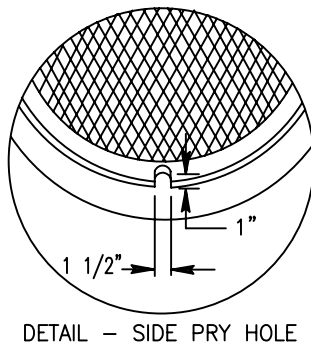
DRAWING
NO.

S-5



NOTES:

1. MANHOLE FRAME AND COVER SHALL BE SOUTH BAY FOUNDARY SBF-1254 OR AN APPROVED EQUAL WHICH MEETS MINIMUM SET WEIGHT.
2. CASTING SHALL BE DIPPED IN ASPHALT PAINT.
3. MINIMUM WEIGHT OF SET 315 LBS.
4. CAST IRON SHALL CONFORM TO ASTM A 48 CLASS 35B.
5. WHERE BOLT DOWN COVERS ARE CALLED FOR ON THE PLANS, ADD BOSSES TO FRAME (4 EA. @ 90°), SEE DETAIL.
6. MANUFACTURER SHALL CERTIFY MATERIAL, WEIGHT AND DIMENSIONS.
7. MANUFACTURER TO CERTIFY THAT FRAME AND COVER MEET ALL LOAD REQUIREMENTS FOR H-20 HIGHWAY LOADING.



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Public Works Department

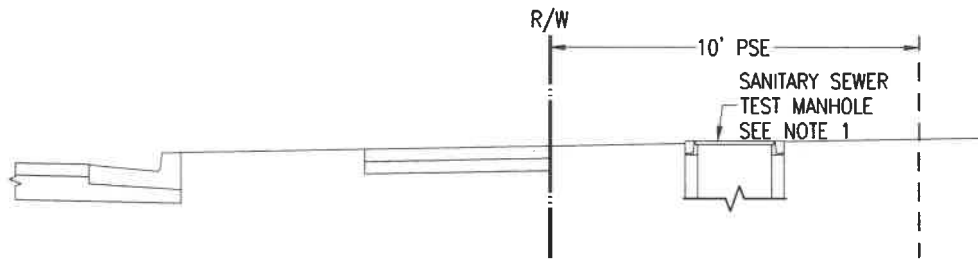
Jim Oschcraft
CITY ENGINEER

4/1/96
DATE

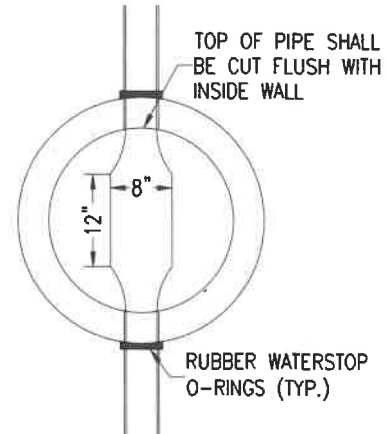
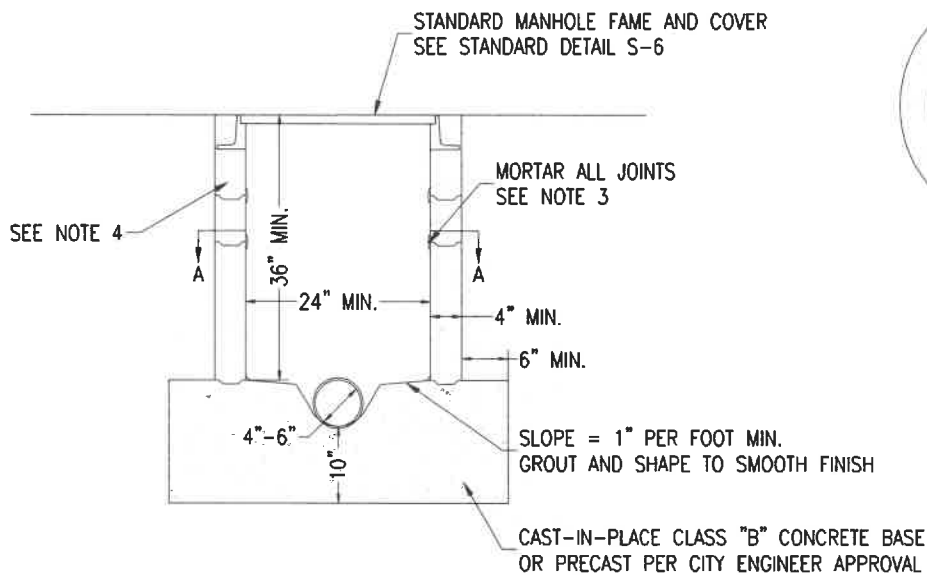
3/15/07
REVISED

STANDARD MANHOLE FRAME & COVER

DRAWING
NO.
S-6



TEST MANHOLE LOCATION



SECTION A-A

NOTES:

1. SANITARY SEWER TEST MANHOLE SHALL BE PLACED WITHIN THE PUBLIC SERVICE EASEMENT IN A LANDSCAPED AREA AT THE MOST DOWNSTREAM LOCATION OF THE LATERAL OR PRIVATE SEWER SYSTEM. SYSTEMS REQUIRING TEST MANHOLES TO BE PLACED WITHIN A PAVED AREA SHALL INSTALL A STANDARD MANHOLE PER STANDARD S-4, UNLESS APPROVED BY THE CITY ENGINEER. TEST MANHOLE SHALL BE LOCATED SUCH THAT LANDSCAPING DOES NOT OBSTRUCT ACCESS TO THE MANHOLE.
2. PRECAST CONCRETE SECTIONS AND ADJUSTMENT RINGS SHALL CONFORM TO CLASS II REINFORCED CONCRETE PIPE (ASTM C478).
3. USE "RAMECK" TYPE GASKET MATERIAL ON ALL JOINTS. ALL JOINTS SHALL BE SMOOTHLY FINISHED WITH WATER PROOF MORTAR.
4. A MINIMUM OF 1 ADJUSTMENT RING SHALL BE REQUIRED. THE USE OF MORE THAN 12 INCHES OF ADJUSTING RINGS TO CONFORM TO THE GRADE SHALL NOT BE PERMITTED.
5. PRIVATE SEWER SYSTEMS REQUIRING PIPE SIZES OF 8 INCHES OR LARGER SHALL INSTALL STANDARD MANHOLE PER STANDARD DETAIL S-4 UNLESS AUTHORIZED BY CITY ENGINEER.


CITY ENGINEER

City of Morgan Hill
Public Works Department

7/28/25

DATE

REVISED

SANITARY SEWER TEST MANHOLE

DRAWING
NO.

S-7

STORM DRAIN SECTION

All Storm Drains shall be constructed in accordance with the City of Morgan Hill Standard Details and designed in accordance with the City of Morgan Hill Design Standards, the Standard Specifications, State of California, Department of Transportation, Caltrans (CSS), and the Santa Clara Valley Water District (SCVWD). Materials shall conform to the American Society for Testing and Materials (ASTM), and the American National Standards Institute (ANSI), except as modified herein.

Main line storm drains shall be Class 3 R.C.P., or C.M.P. (upon approval of the City Engineer), and have no less than 30" cover from finished grade. Laterals shall be Class 3 R.C.P. (15" min.), and have no less than 24" cover from finished grade.

All R.C.P. shall be Class 3, bell and spigot, rubber gasketed, push on pipe. Tongue and groove, mortared joint pipe will not be allowed. Class 4 or Class 5 R.C.P. may be required when loading conditions vary.

After all backfill, testing and pavement restoration has been completed, the contractor shall clean and flush all storm drain mains, laterals, inlets and man holes, prior to acceptance.

TESTING (If required by the City Engineer)

If the City suspects any damage or breaks in the line, the storm drain may be subject to television inspection and/or required to pass a leakage test. The contractor shall furnish all labor, equipment, and materials needed to perform the test. A televised inspection may be required within the one year warranty period at the contractor's expense. All defects discovered in this inspection shall be corrected by the contractor at his expense.

If the City requires a leakage test on said line, the test shall be a hydrostatic water test in accordance with CSS Section 65-1.08.

TYPES OF STORM DRAIN MAIN

REINFORCED CONCRETE PIPE (R.C.P.)

Reinforced Concrete Pipe (15" Min.), shall be in conformance with ASTM C 76 Class 3 and CSS Section 65, bell and spigot ends with rubber gasket joints.

CORRUGATED METAL PIPE (C.M.P.)

Corrugated Metal Pipe shall be in accordance with CSS Section 66 and used only upon City Engineer approval.

CAST-IN-PLACE-PIPE (C.I.P.P.)

Cast-In-Place-Pipe (concrete) shall be in accordance with CSS Section 63 and used only upon City Engineer approval.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

REVISED

GENERAL NOTES

DRAWING
NO.

SD-I

MANHOLES

Manhole bases shall be cast in place. Precast bases may be used if approved by the City Engineer. Manholes shall be waterproofed by grouting and/or painting the interior with sodium silicate or other approved waterproofing.

INLETS

Unreinforced inlets shall be cast in place with class "A" concrete. Pre-cast inlet structures may be used subject to approval of the City Engineer. All fabricated steel shall be hot dipped galvanized after fabrication.

WORK IN DRAINAGE DISTRICT RIGHT OF WAY

All rip-rap structures, cut off walls, out fall structures, inlet structures, etc., shall be done in accordance with all applicable standards of the Santa Clara Valley Water District (SCVWD). An encroachment permit must be obtained from SCVWD prior to commencement of any work.

Contractor must provide a Letter of Acceptance, or a copy of a signed-off encroachment permit from SCVWD prior to the acceptance of the entire project.

Permits from other state and local agencies may be required.



City of Morgan Hill
Public Works Department

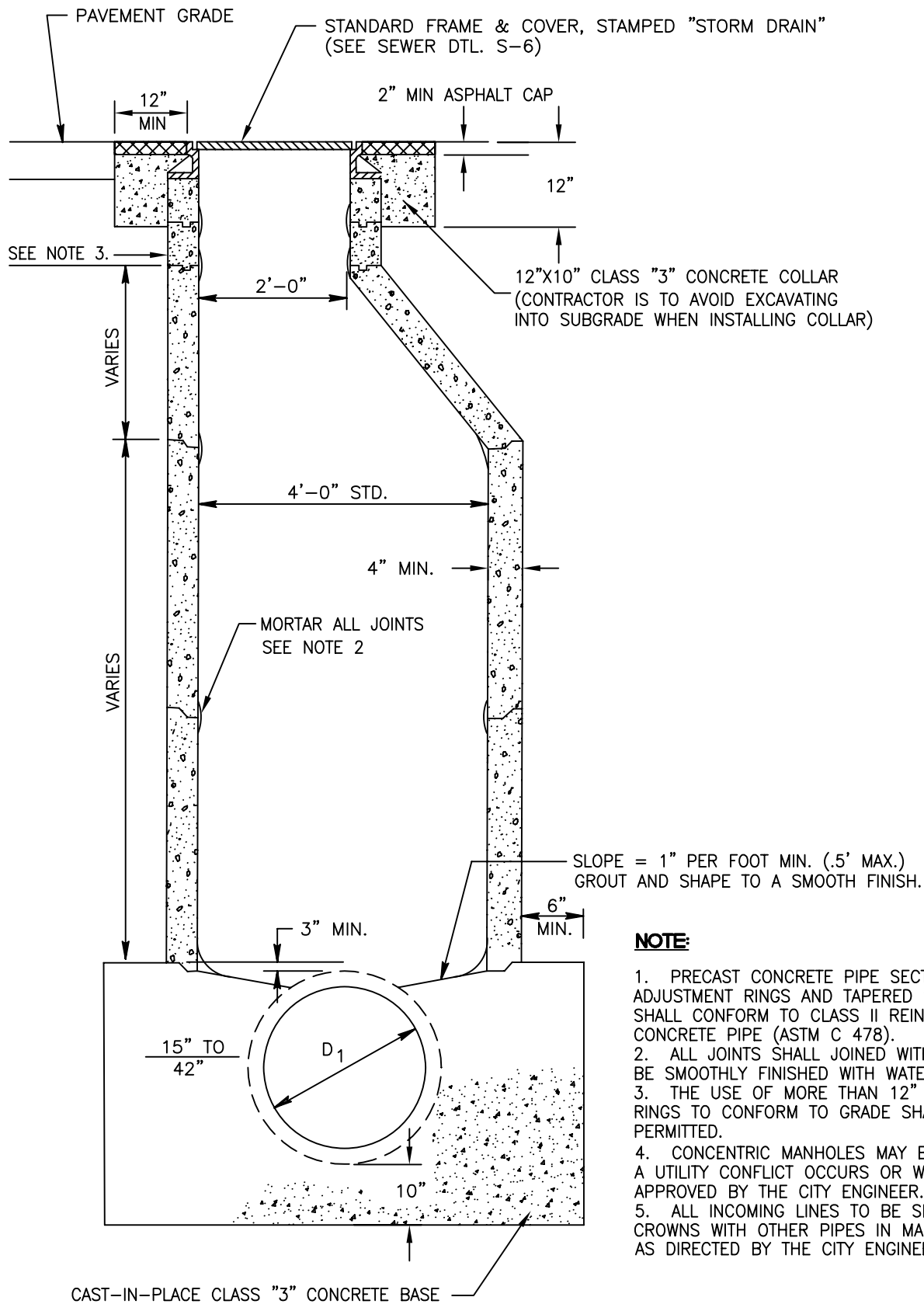
Jim Oshecraft
CITY ENGINEER

4/1/96
DATE

REVISED

GENERAL NOTES

DRAWING
NO.
SD-II



NOTE:

1. PRECAST CONCRETE PIPE SECTIONS, ADJUSTMENT RINGS AND TAPERED SECTIONS SHALL CONFORM TO CLASS II REINFORCED CONCRETE PIPE (ASTM C 478).
2. ALL JOINTS SHALL JOINED WITH "RAMECK" AND BE SMOOTHLY FINISHED WITH WATER PROOF MORTAR.
3. THE USE OF MORE THAN 12" OF ADJUSTING RINGS TO CONFORM TO GRADE SHALL NOT BE PERMITTED.
4. CONCENTRIC MANHOLES MAY BE USED WHEN A UTILITY CONFLICT OCCURS OR WHEN APPROVED BY THE CITY ENGINEER.
5. ALL INCOMING LINES TO BE SET TO MATCH CROWNS WITH OTHER PIPES IN MANHOLE, OR AS DIRECTED BY THE CITY ENGINEER.



City of Morgan Hill
Public Works Department

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CITY ENGINEER

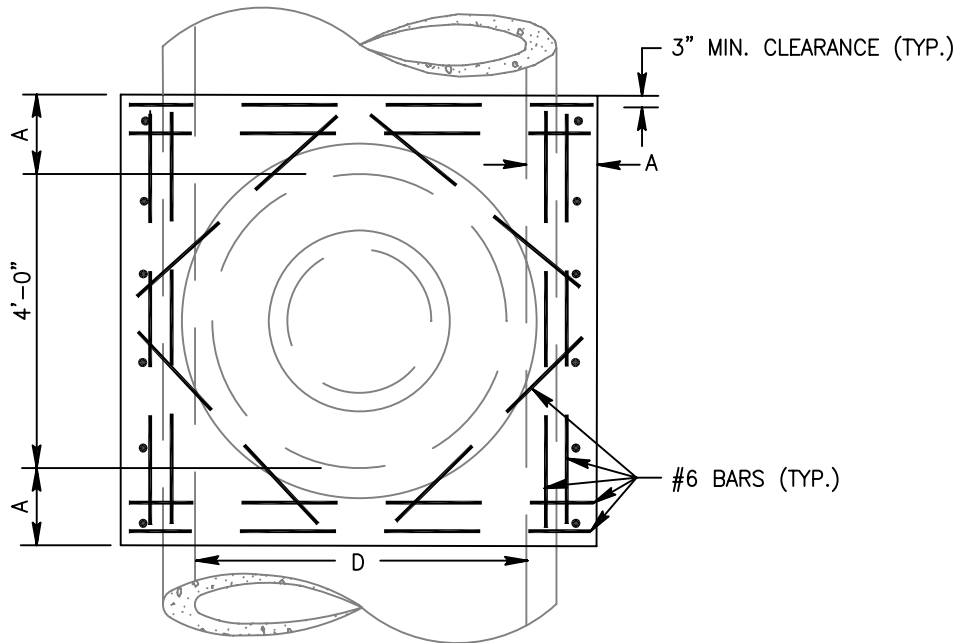
4/1/96
DATE

3/15/07
REVISED

**STORM DRAIN MANHOLE
PIPE SIZES 15" TO 42"**

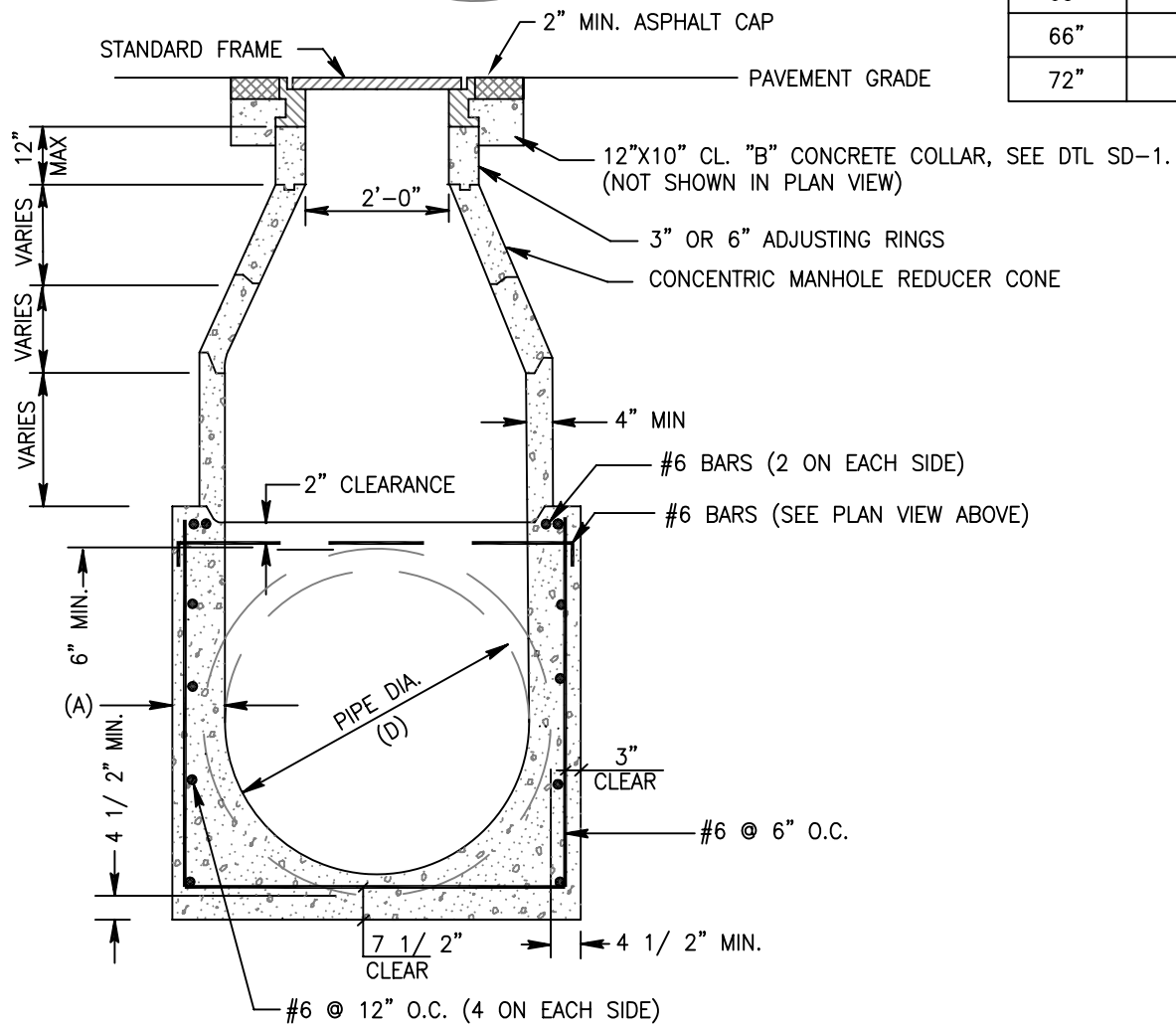
DRAWING
NO.

SD-1



REDUCER DIMENSIONS	
PIPE DIA.	REDUCER DIA.
48"	48" x 48"
54"	60" x 48"
60"	60" x 48"
66"	72" x 48"
72"	72" x 48"

WALL THICKNESS (A)	
PIPE DIA. (D)	MIN (A)
42"	10"
48"	10"
54"	10"
60"	10"
66"	11"
72"	11"



City of Morgan Hill
Public Works Department

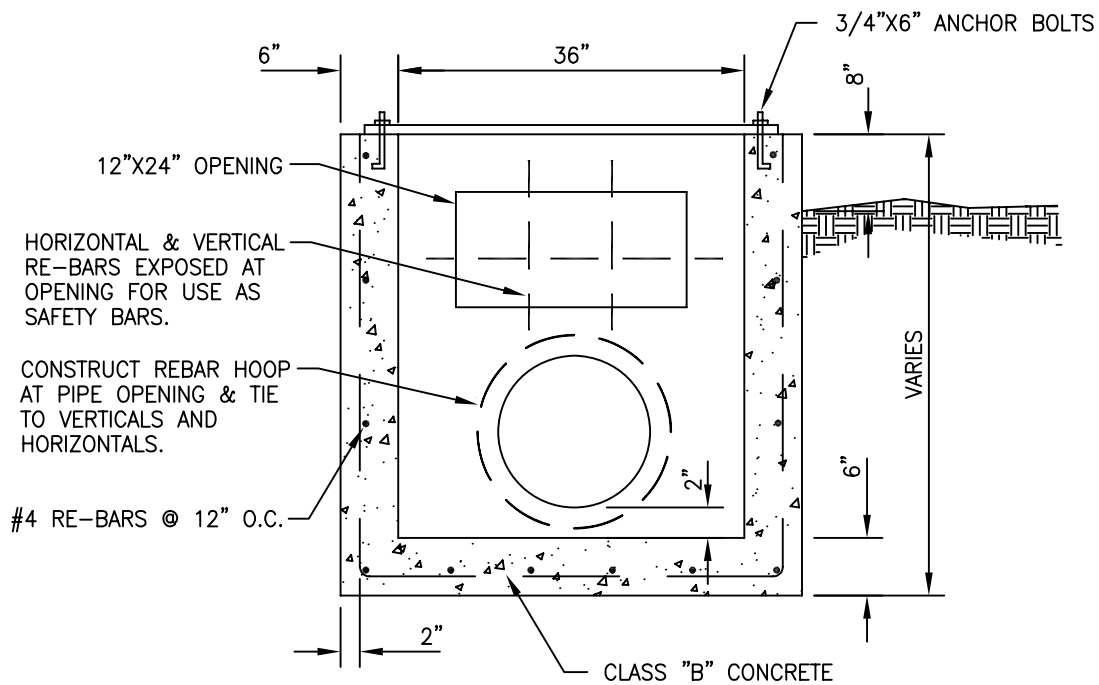
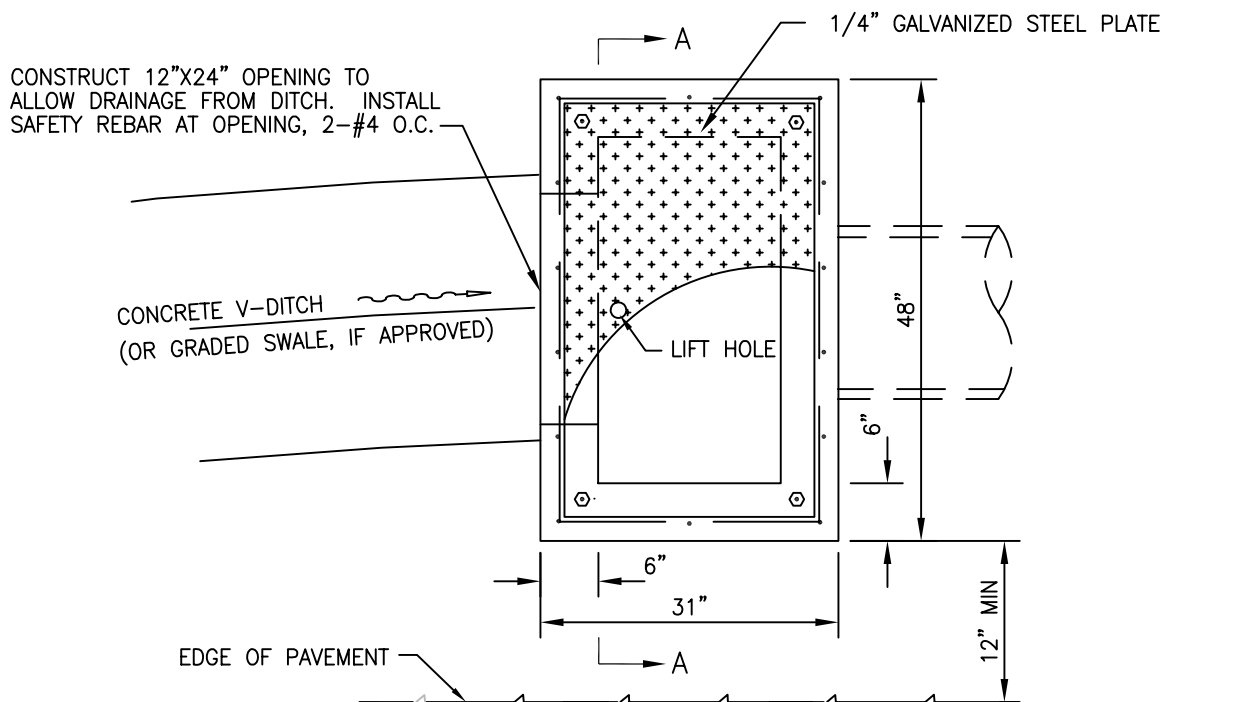
Jim Ashcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

STORM DRAIN MANHOLE PIPE SIZES 48" TO 72"

DRAWING
NO.
SD-2



SECTION A-A

NOTES:

1. COAT INSIDE OF STRUCTURE WITH MORTAR
2. INVERT OF PIPE SHALL BE 2" ABOVE BOTTOM OF INLET TO ACT AS A SEDIMENT COLLECTION BASIN.



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Public Works Department

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4/1/96
DATE

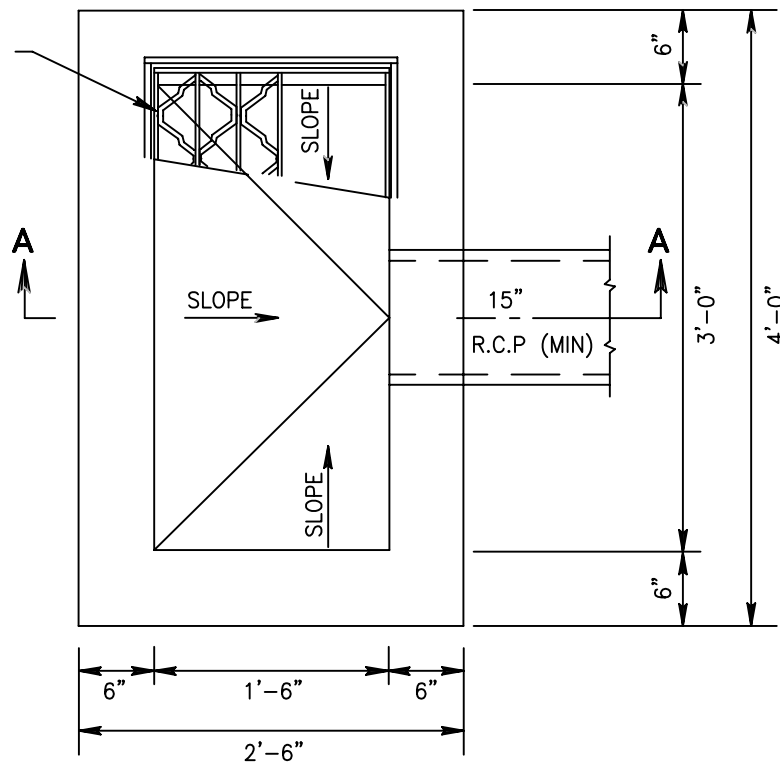
REVISED

DITCH INLET

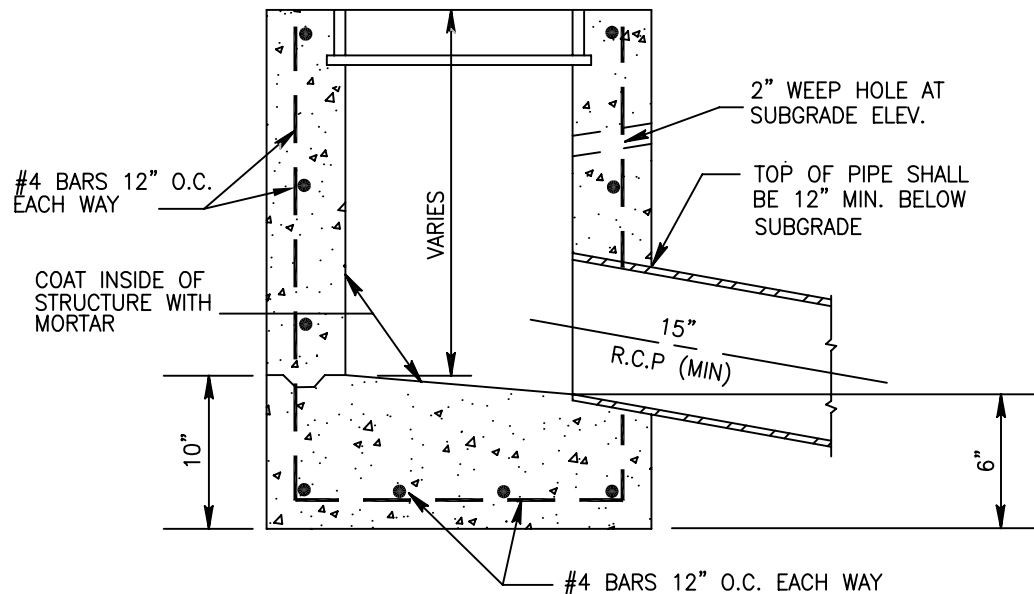
DRAWING
NO.

SD-3

STANDARD FRAME AND
GRATE(SEE DETAIL SD-6)



PLAN



SECTION A-A

NOTES:

1. LARGER SIZE INLETS MAY BE REQUIRED AS INDIVIDUAL PROJECT DESIGN DICTATES.
2. DIMENSIONS SHALL BE SAME AS CURB INLET (SD-5), IF DROP INLET IS TO BE USED AS A FUTURE CURB INLET.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

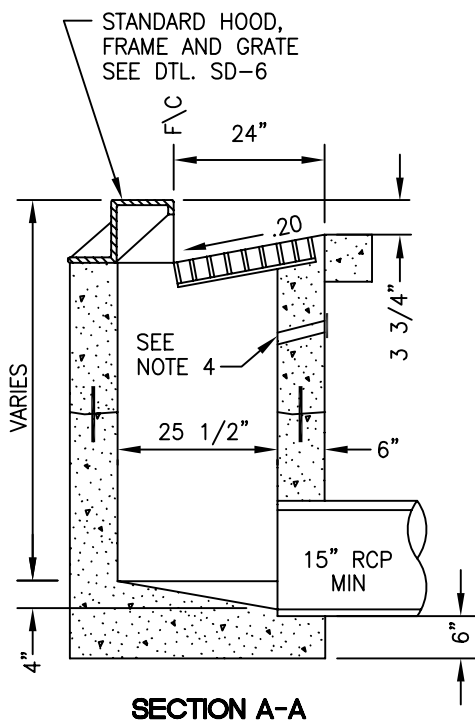
4/1/96
DATE

8/6/98
REVISED

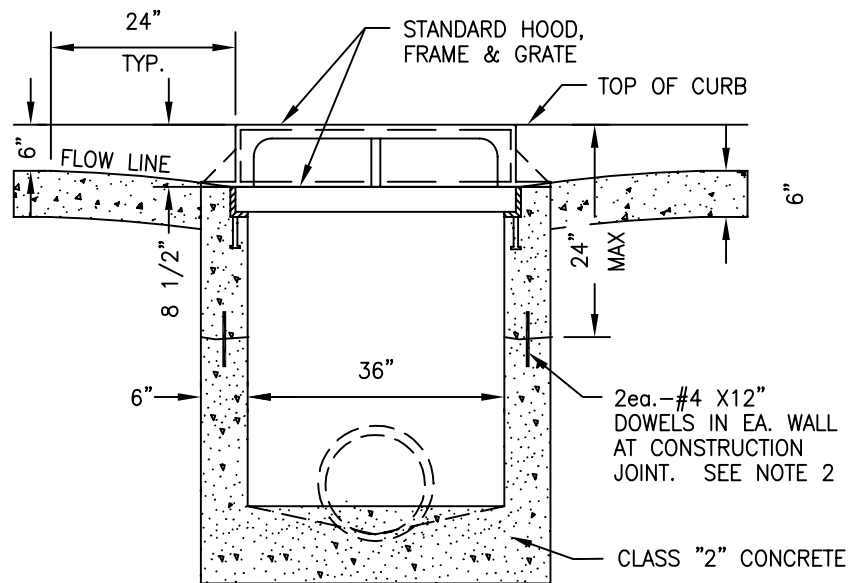
DROP INLET

DRAWING
NO.

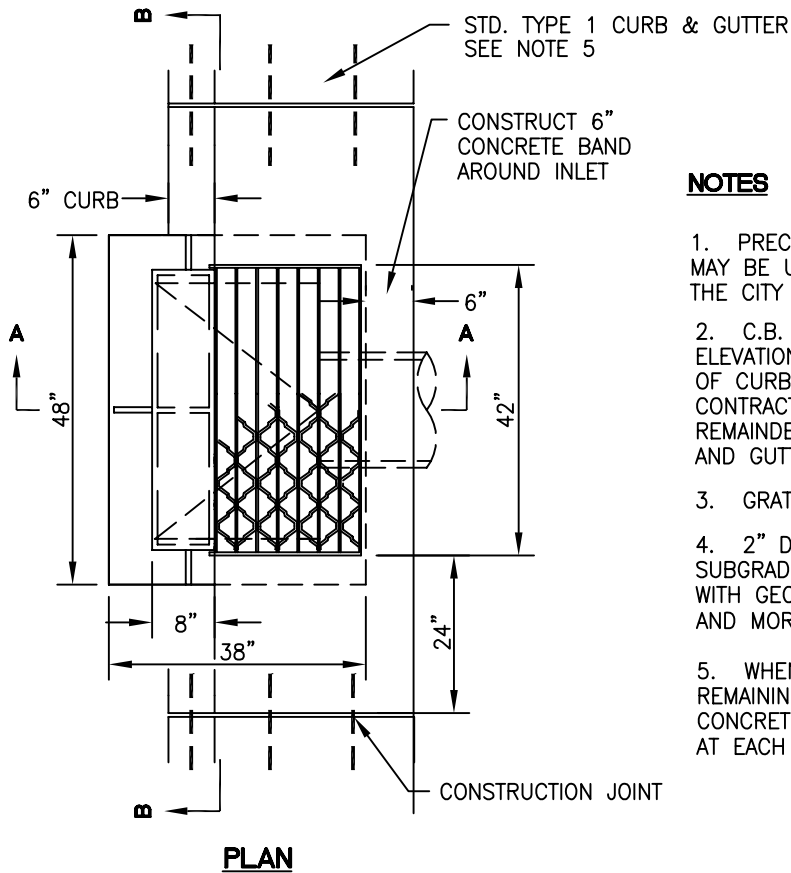
SD-4



SECTION A-A



SECTION B-B



PLAN

NOTES

1. PRECAST CONCRETE CATCH BASINS MAY BE USED UPON APPROVAL OF THE CITY ENGINEER.
2. C.B. WALLS WILL BE POURED TO AN ELEVATION NOT LESS THAN 24" BELOW TOP OF CURB. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FRAME IN AND POUR THE REMAINDER MONOLITHICALLY WITH THE CURB AND GUTTER.
3. GRATE TO BE PLACED AFTER CONCRETE CURES.
4. 2" DIAMETER WEEPHOLES CONSTRUCTED AT SUBGRADE LEVEL IN EACH WALL. COVER WEEP HOLE WITH GEOTEXTILE FABRIC DURING SUB-GRADE PREPARATION, AND MORTAR AFTER FINISH PAVING.
5. WHEN CURB & GUTTER IS POURED SEPARATELY FROM REMAINING INLET (MANUALLY OR BY MACHINE), THE CONCRETE CONTRACTOR SHALL INSERT 3ea #4X12" REBAR AT EACH CONSTRUCTION JOINT AS SHOWN.



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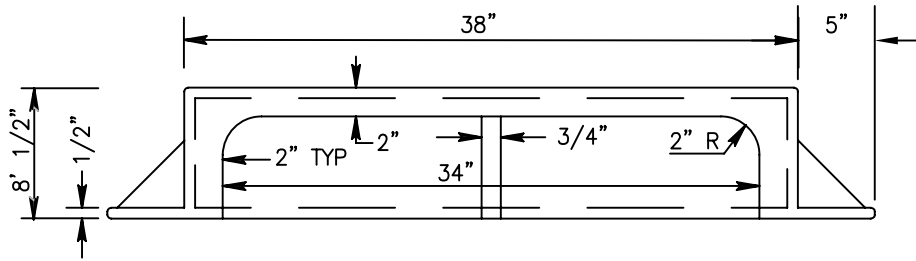
4/1/96
DATE

3/15/07
REVISED

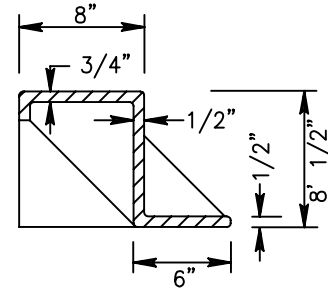
CURB INLET

DRAWING
NO.

SD-5



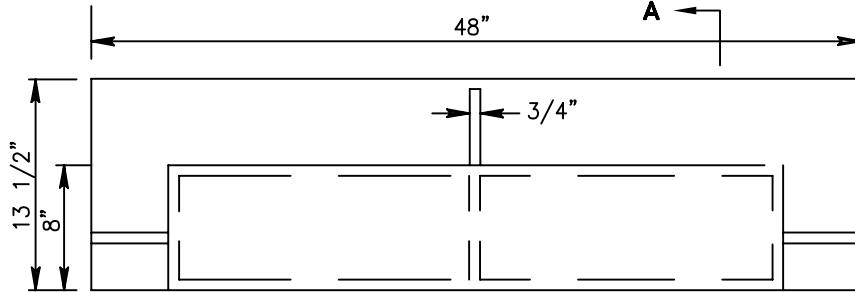
HOOD- FRONT VIEW



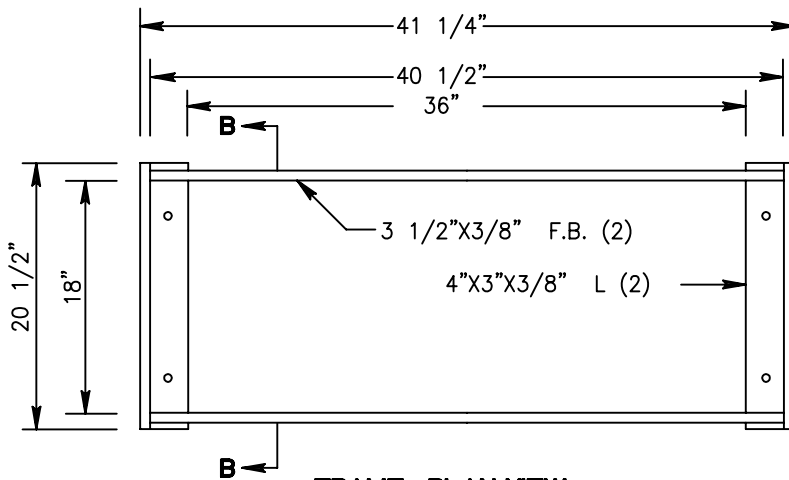
SECTION A-A

NOTES:

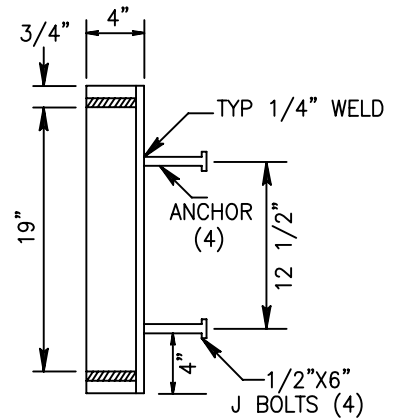
1. HOOD SHALL BE CAST IRON AND BE EQUAL TO PHOENIX IRON WORKS P-6002 OR SAN JOSE FOUNDRY'S "LARGE".
2. WEIGHT OF HOOD = 185 LBS (MIN).
3. CASTING SHALL BE GIVEN A HOT ASPHALT DIP.



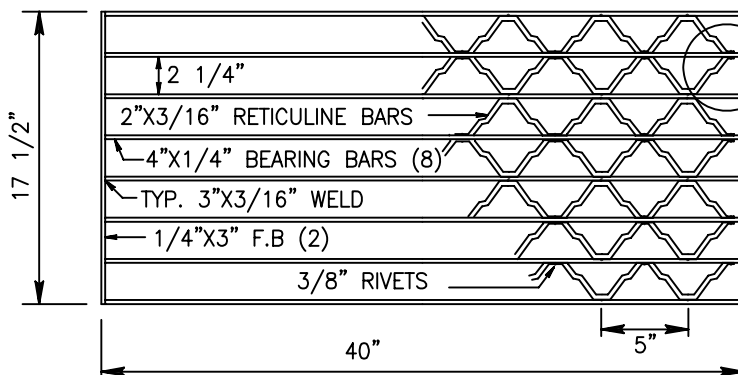
HOOD- PLAN VIEW



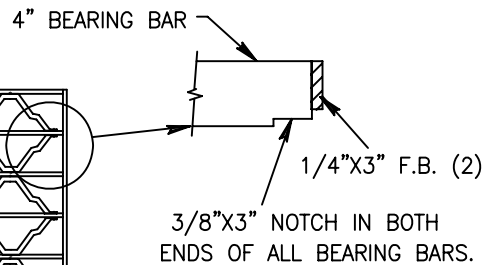
FRAME- PLAN VIEW



SECTION B-B



GRATE- PLAN VIEW



NOTES:

1. FRAME AND GRATE SHALL BE EQUAL TO PHOENIX IRON WORKS P-6301 OR METALFAB M-1001.
2. MATERIAL TO BE HOT DIP GALVANIZED AFTER FABRICATION.



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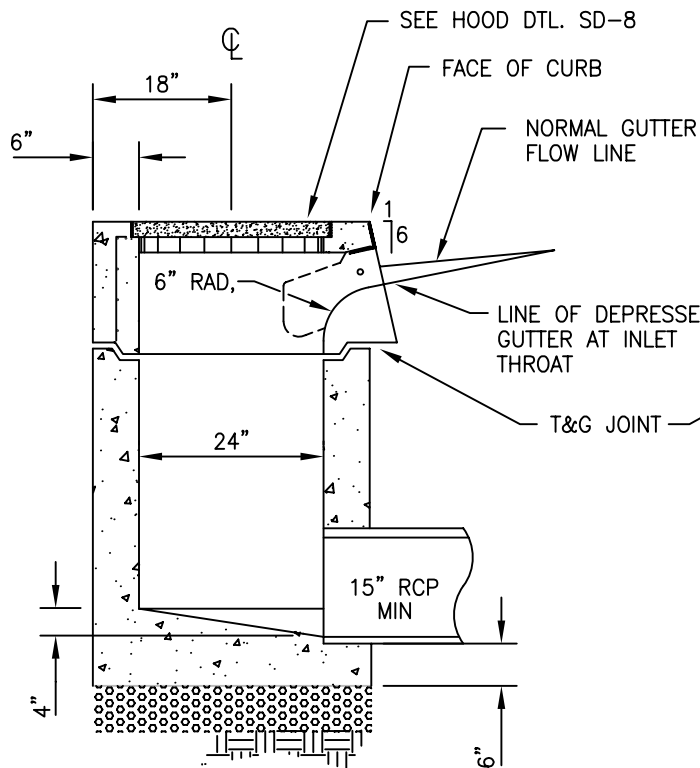
4/1/96
DATE

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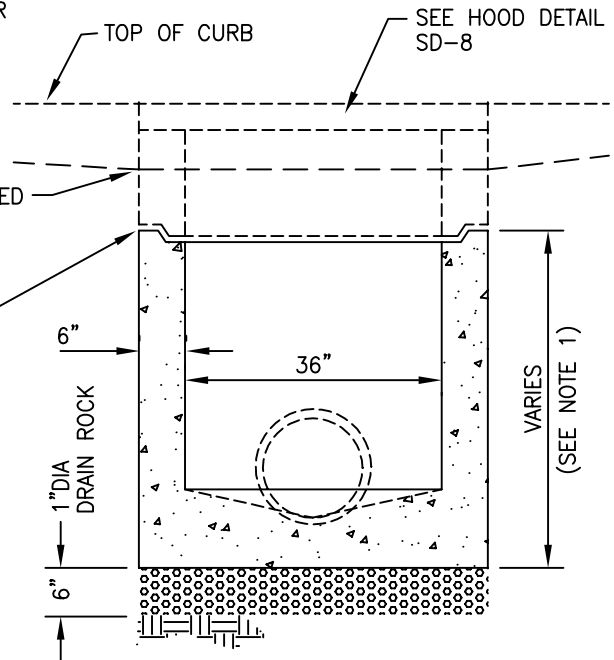
HOOD, FRAME, AND GRATE

DRAWING
NO.

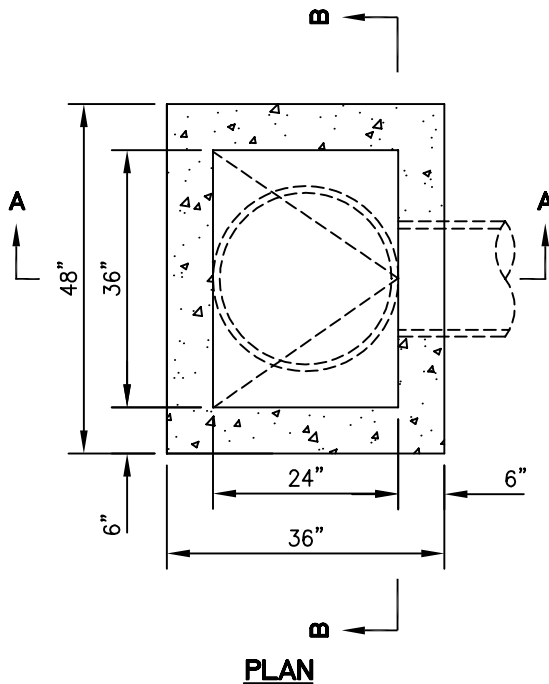
SD-6



SECTION A-A



SECTION B-B



PLAN

NOTES:

1. FOR PRE-CAST BASE HEIGHT, ORDER AS REQUIRED PER PLANS, EXCLUDING HOOD DIMENSION.
2. PRE-CAST BASE SHOWN IS FOR USE WITH SPECIAL HOOD AND GALLERY. PRE-CAST BASES USED WITH SD-5 CURB INLET ARE NOT ALLOWED.
3. BASE SHALL BE "SANTA ROSA" CAST PRODUCTS 1L, OR APPROVED EQUAL.
4. APPLICATION: COMBINATION PRE-CAST HOOD (SD-8), PRE-CAST BASE, AND FIBERGLASS GALLERY (SD-9), SHALL ONLY BE USED UPON CITY ENGINEER APPROVAL.



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Public Works Department

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CITY ENGINEER

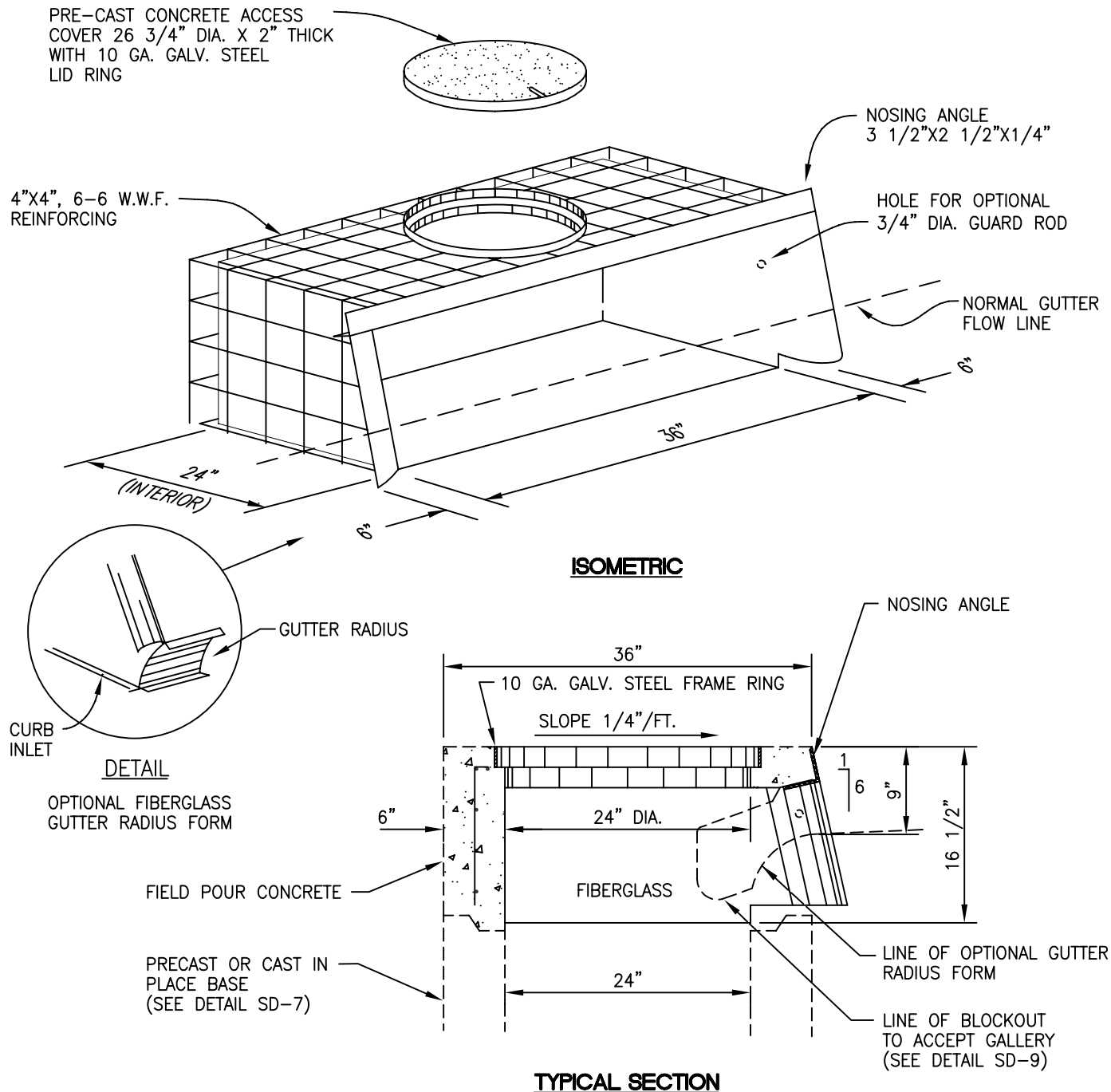
4/1/96
DATE

REVISED

**PRE-CAST BASE
GALLERY SYSTEM
CURB INLET**

DRAWING
NO.

SD-7



- NOTES:**
1. HOOD SHOWN IS FOR USE WITH 7' OR 12' GALLERY AND SPECIAL BASE ONLY. HOOD WITHOUT GALLERY OR BASE WILL NOT BE ALLOWED.
 2. HOOD SHALL BE "SANTA ROSA CAST PRODUCTS MODEL 3AJ", OR APPROVED EQUAL.
 3. APPLICATION: COMBINATION PRE-CAST HOOD, FIBERGLASS GALLERY (SD-9), AND PRE-CAST BASE (SD-7), SHALL ONLY BE USED UPON CITY ENGINEER APPROVAL.



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Public Works Department

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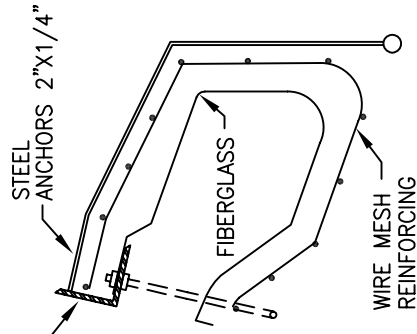
4/1/96
DATE

REVISED

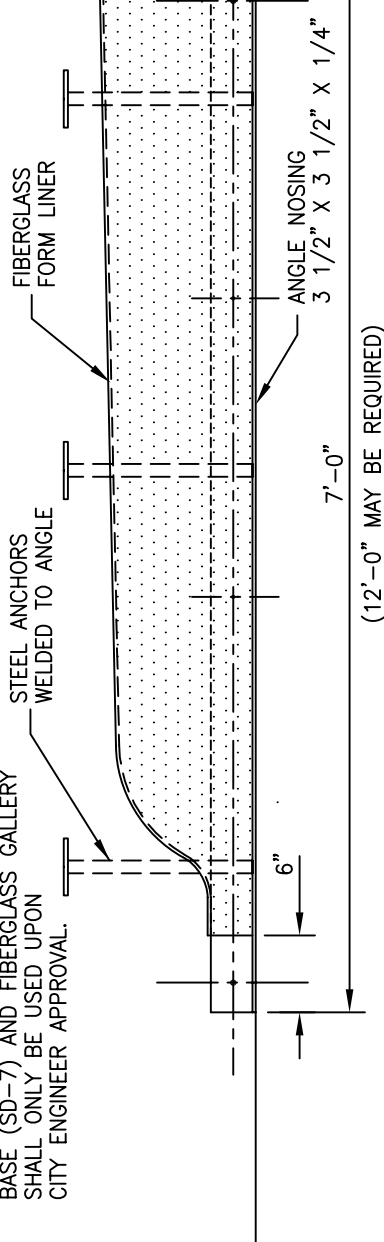
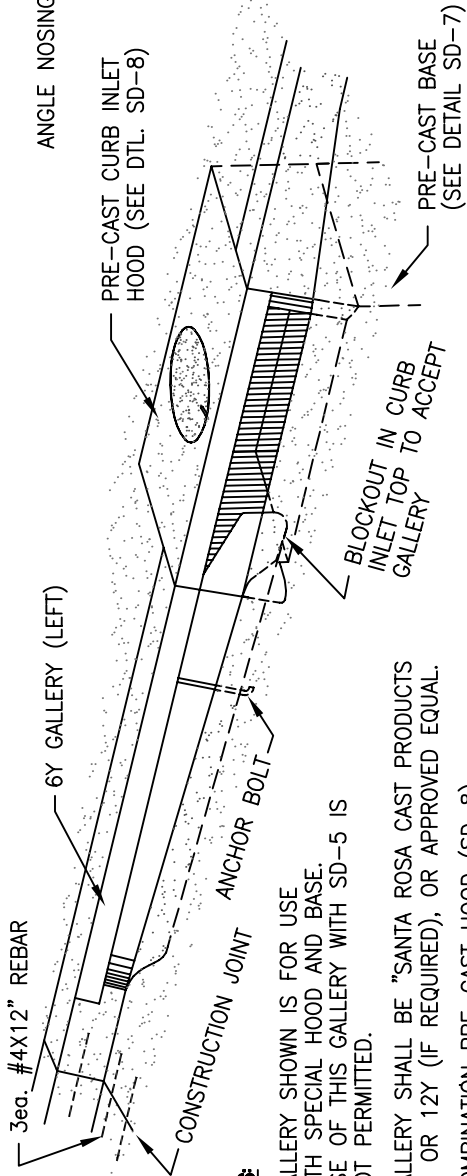
HOOD GALLERY SYSTEM CURB INLET

DRAWING
NO.

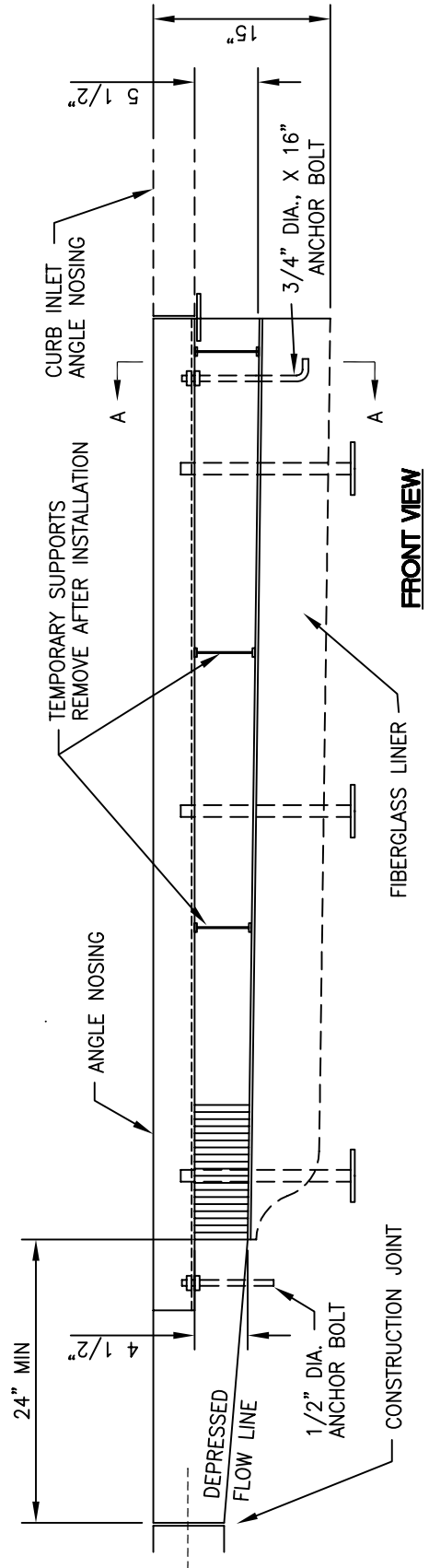
SD-8



SECTION A-A (TYP)



FRONT VIEW



DETAILED FRONT VIEW



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Public Works Department

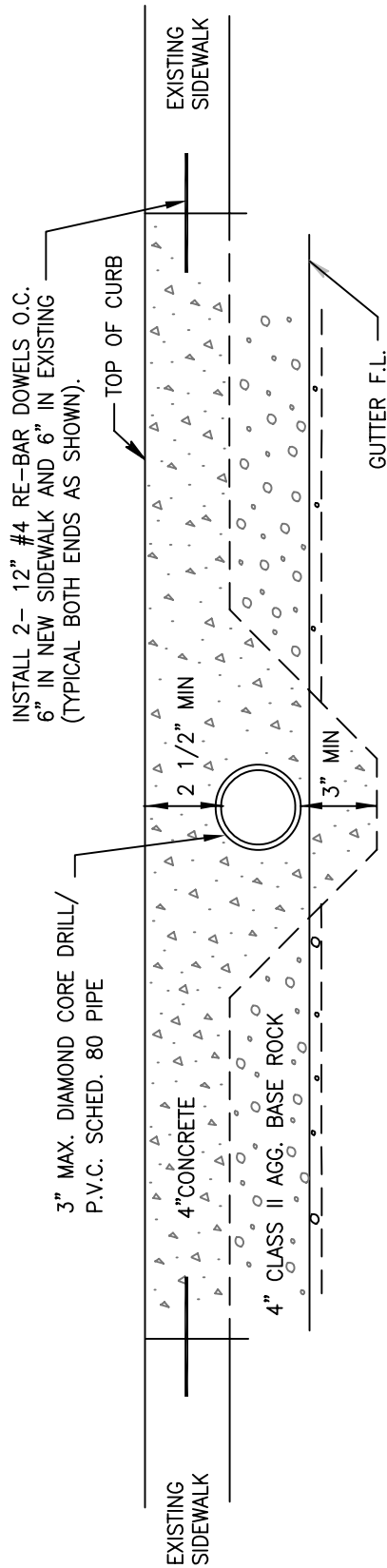
Jim Cascraft
CITY ENGINEER

4/1/96
DATE

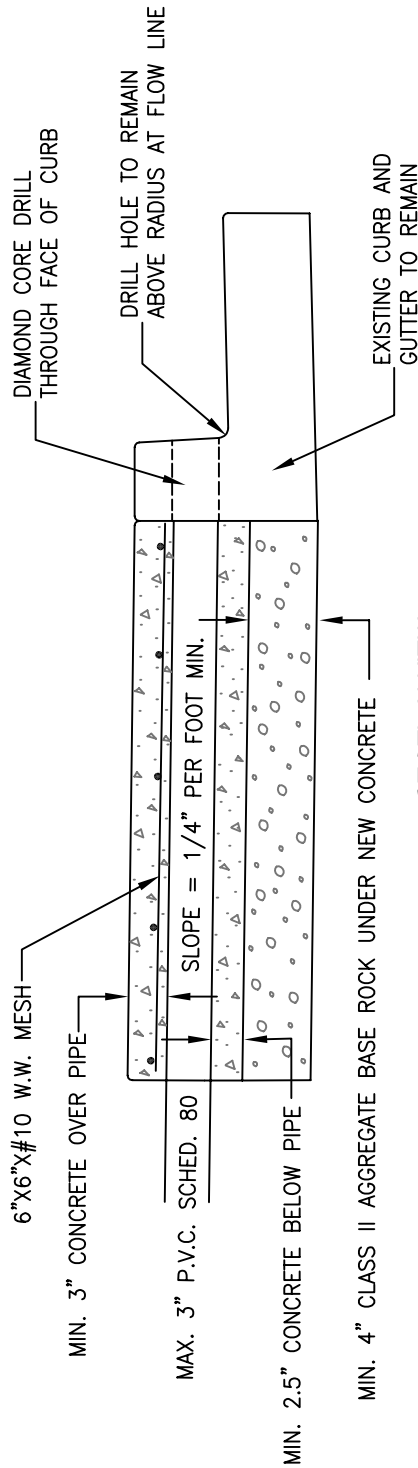
REVISED

FIBERGLASS GALLERY GALLERY SYSTEM CURB INLET

DRAWING
NO.
SD-9



ELEVATION AT FACE OF CURB



SECTION VIEW

NOTES

1. IT SHALL BE THE PROPERTY OWNER'S RESPONSIBILITY TO MAINTAIN THIS DRAINAGE STRUCTURE.
2. MULTIPLE DRAINLINES MAY BE INSTALLED PROVIDED THAT THERE IS A MINIMUM OF 6" BETWEEN ANY DRAIN LINES, AND DRAIN LINES SHALL NOT BE INSTALLED WITHIN 6" OF ANY EXPANSION AND/OR CONTROL JOINTS.
3. THIS DRAINAGE STRUCTURE SHALL ONLY BE INSTALLED WITHIN THE PROPERTY FRONTAGE OF THE SUBJECT PROPERTY ONLY.
4. PROPERTY OWNER SHALL OBTAIN AN ENCROACHMENT PERMIT TO INSTALL THIS DRAINAGE STRUCTURE.
5. IN CASES WHERE SIDEWALK DOES NOT EXIST, CONCRETE SHALL BE PLACED OVER PIPE(S) AT A MINIMUM THICKNESS OF 2 1/2" (AS SHOWN).



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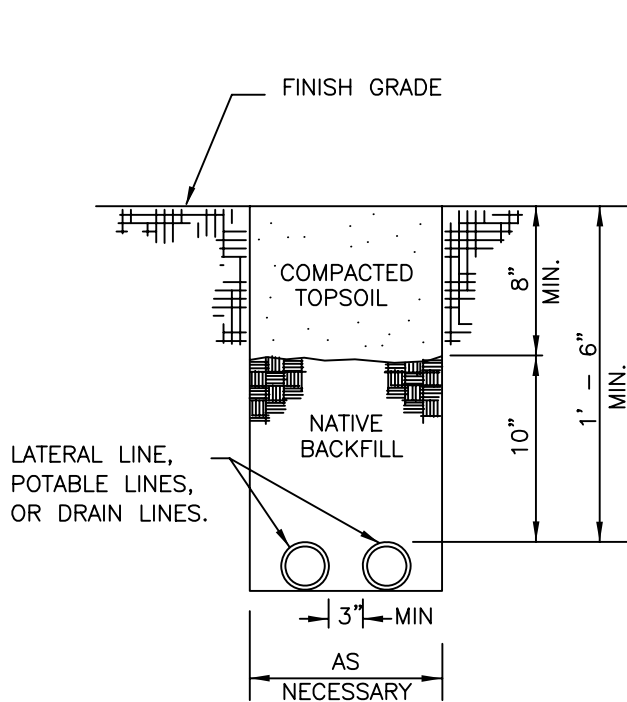
4/1/96
DATE

3/15/07
REVISED

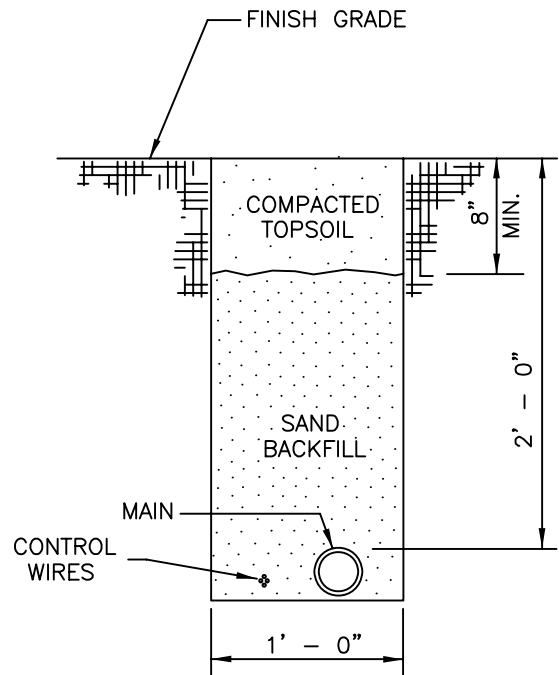
"THROUGH THE CURB" DRAIN

DRAWING
NO.

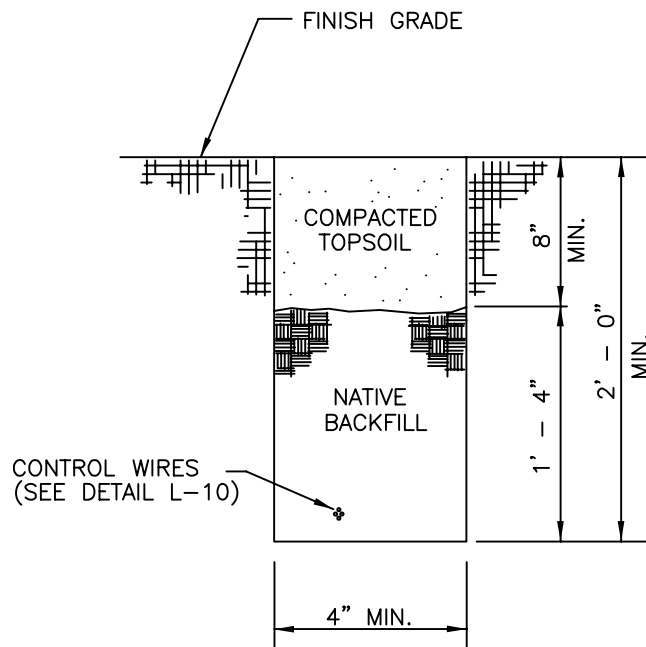
SD-10



LATERAL LINE AND POTABLE LINE



MAIN AND CONDUCTORS



CONDUCTORS ONLY

NOTES:

1. TAPE AND BUNDLE WIRING AT 10 FOOT INTERVALS.
2. NATIVE BACKFILL AND TOP SOIL TO BE FREE OF ROCK AND DEBRIS.(3/4" MAX. ROCK SIZE)



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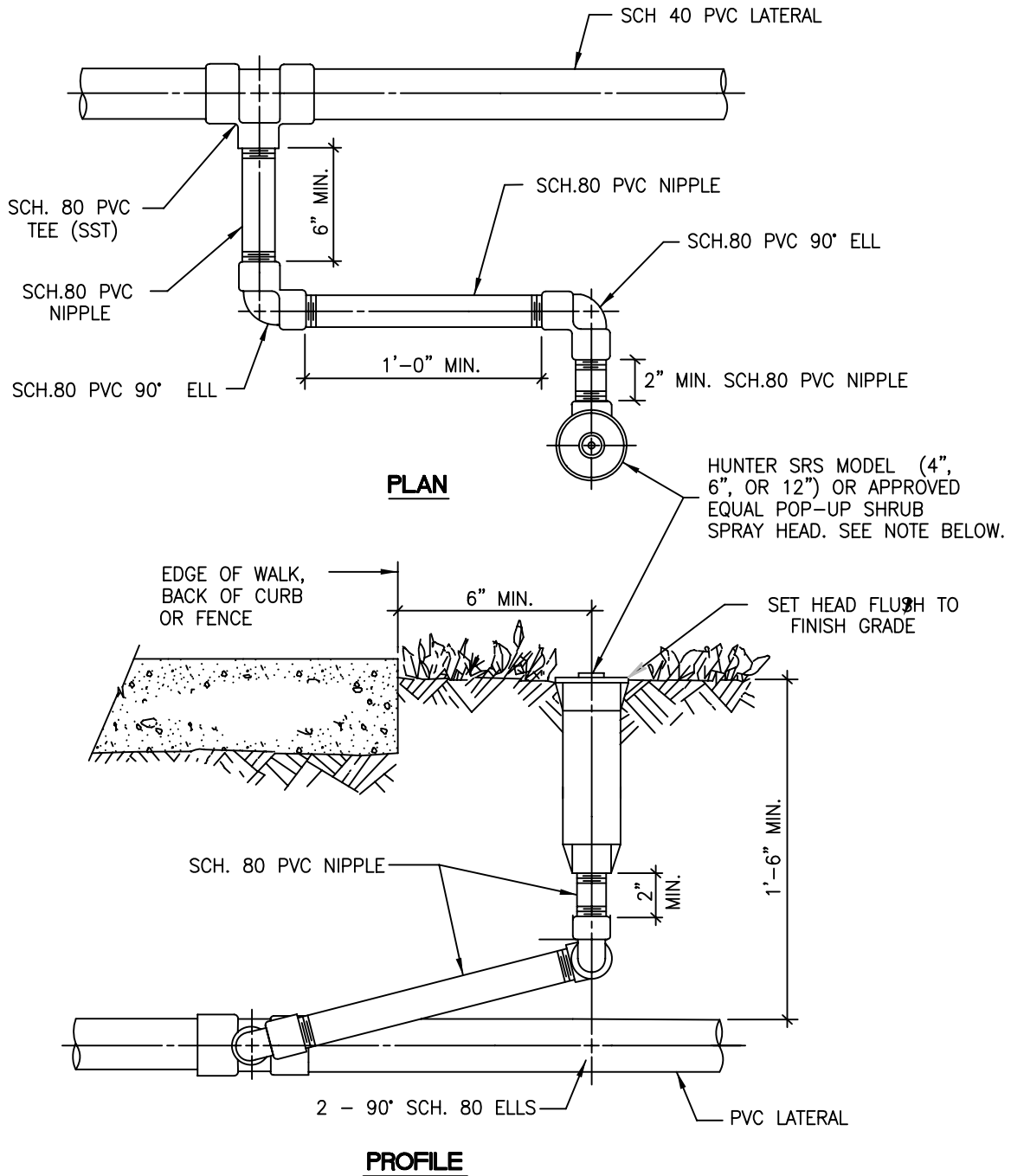
8/6/98
DATE

6/8/00
REVISED

**IRRIGATION
AND
DRAIN LINE TRENCH**

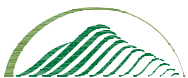
DRAWING
NO.

L-1



NOTE:

1. POP-UP SIZE DEPENDENT UPON PLANT MATERIAL.



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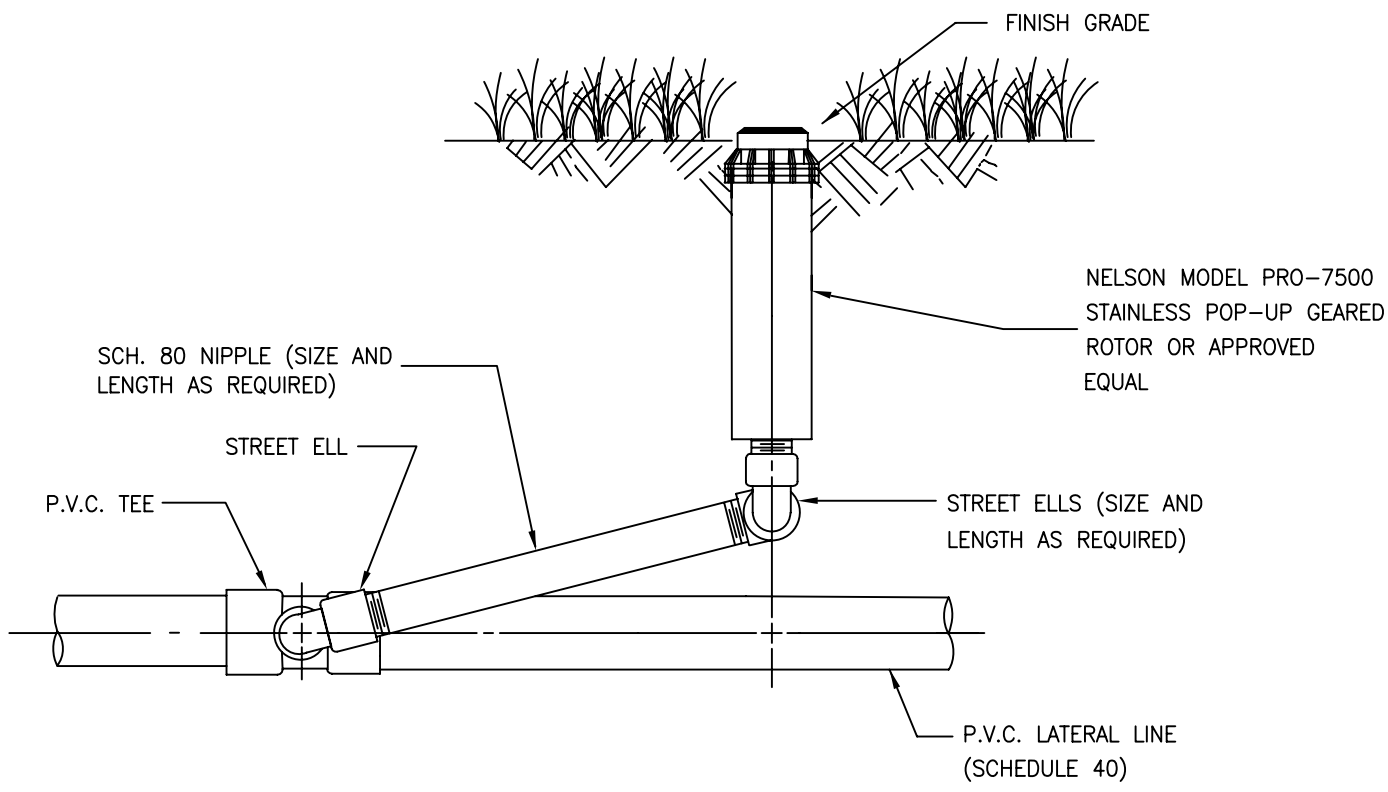
8/6/98
DATE

REVISD

HIGH POP-UP SHRUB HEAD

DRAWING
NO.

L-2



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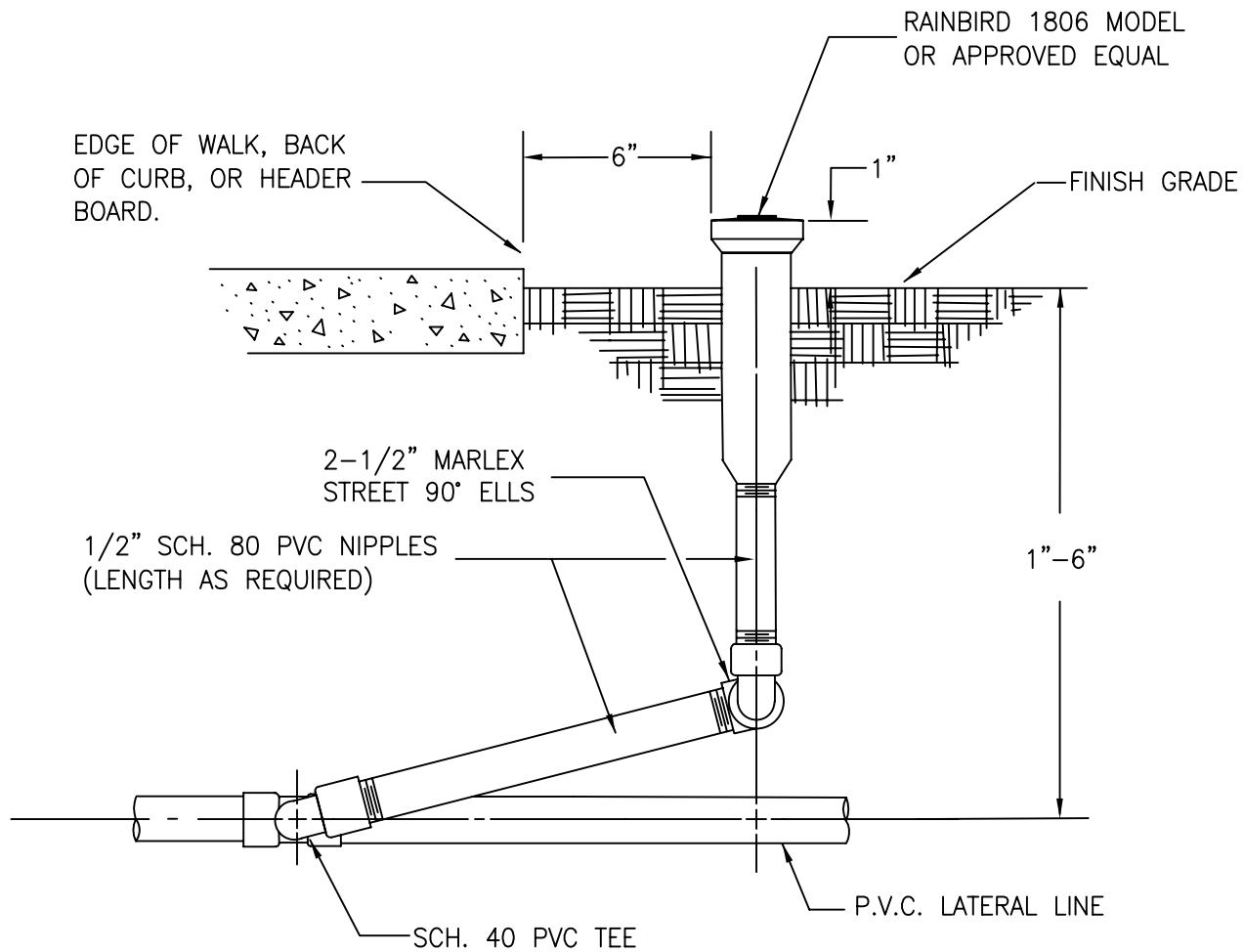
8/6/98
DATE

REVISED

TURF ROTOR POP-UP RISER

DRAWING
NO.

L-3



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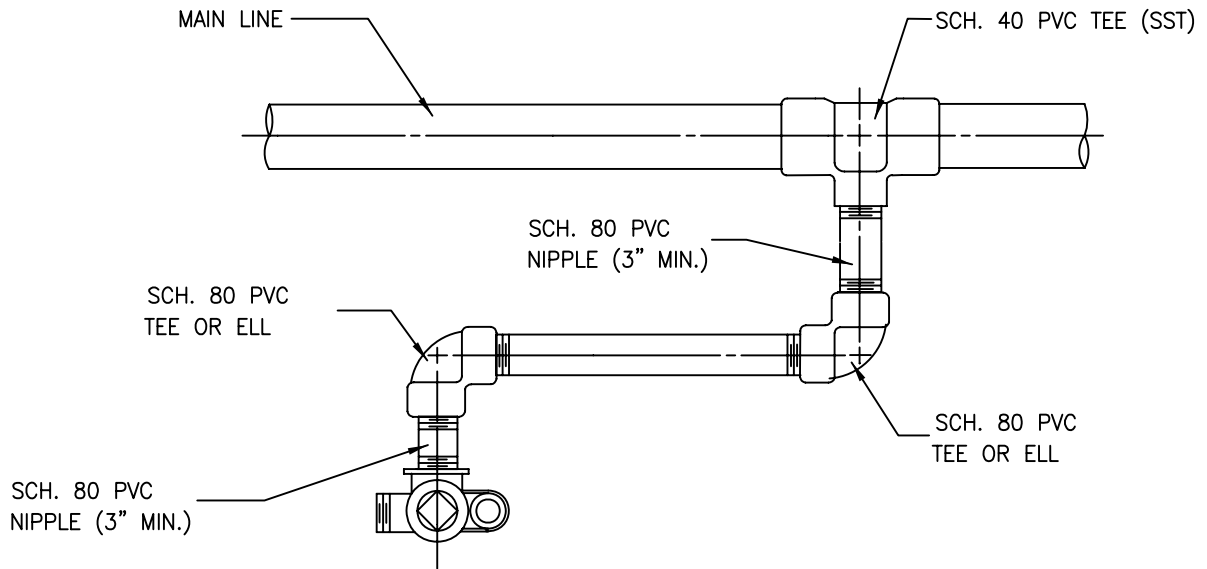
8/6/98
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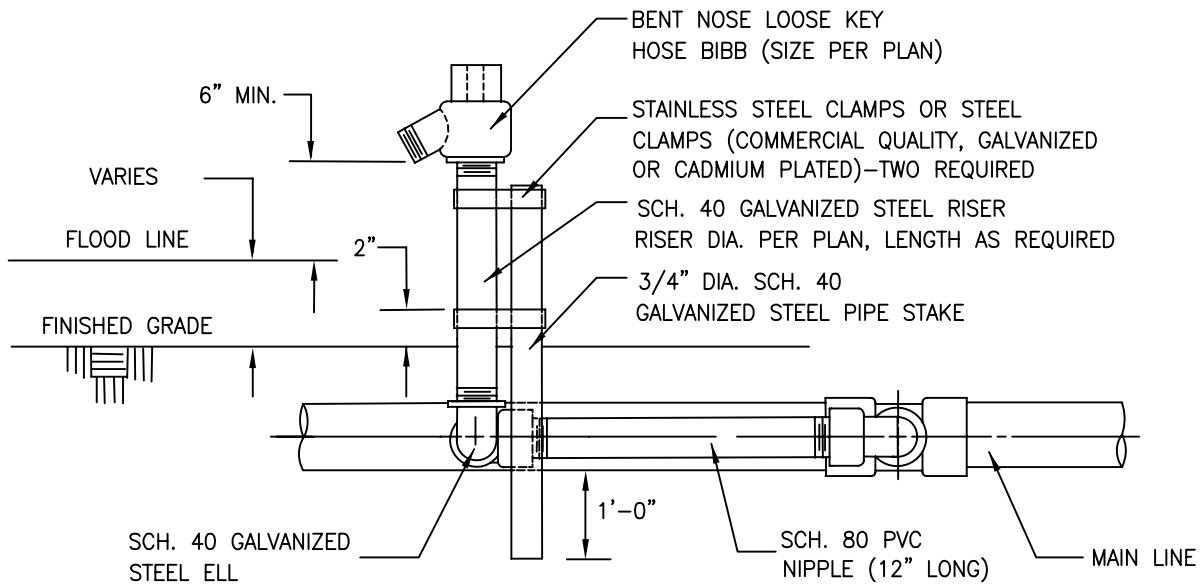
6" POP-UP SPRAY HEAD

DRAWING
NO.

L-4



PLAN



ELEVATION

NOTES:

1. ALL PIPE AND FITTINGS TO BE SCH. 80 PVC UNLESS OTHERWISE NOTED.
2. PIPE SIZE FROM MAIN LINE SHALL MATCH HOSE BIBB INLET DIAMETER.
3. DISSIMILAR METALS SHALL BE SEPARATED BY AN APPROVED DIELECTRIC COUPLING.
4. PLASTIC PIPE SHALL NOT BE USED ABOVE GRADE.



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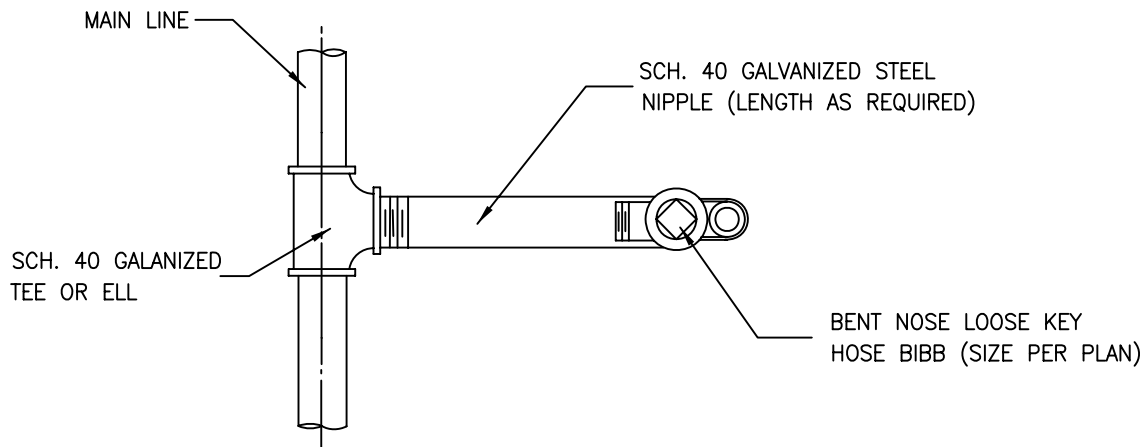
8/6/98
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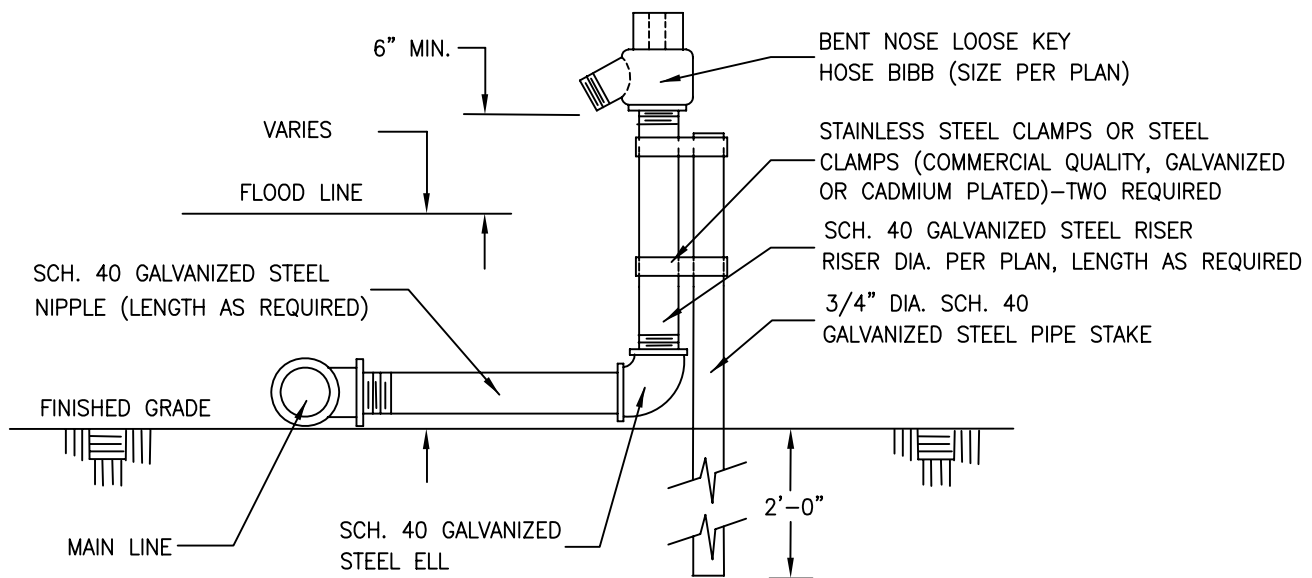
**HOSE BIBB VALVE
BELOW GROUND INSTALLATION**

DRAWING
NO.

L-5



PLAN



ELEVATION

NOTES:

1. ALL PIPE AND FITTINGS TO BE SCH. 40 GALVANIZED STEEL UNLESS OTHERWISE NOTED.
2. PIPE SIZE FROM MAIN LINE SHALL MATCH HOSE BIBB INLET DIAMETER.
3. DISSIMILAR METALS SHALL BE SEPARATED BY AN APPROVED DIELECTRIC COUPLING.
4. PLASTIC PIPE SHALL NOT BE USED ABOVE GRADE.



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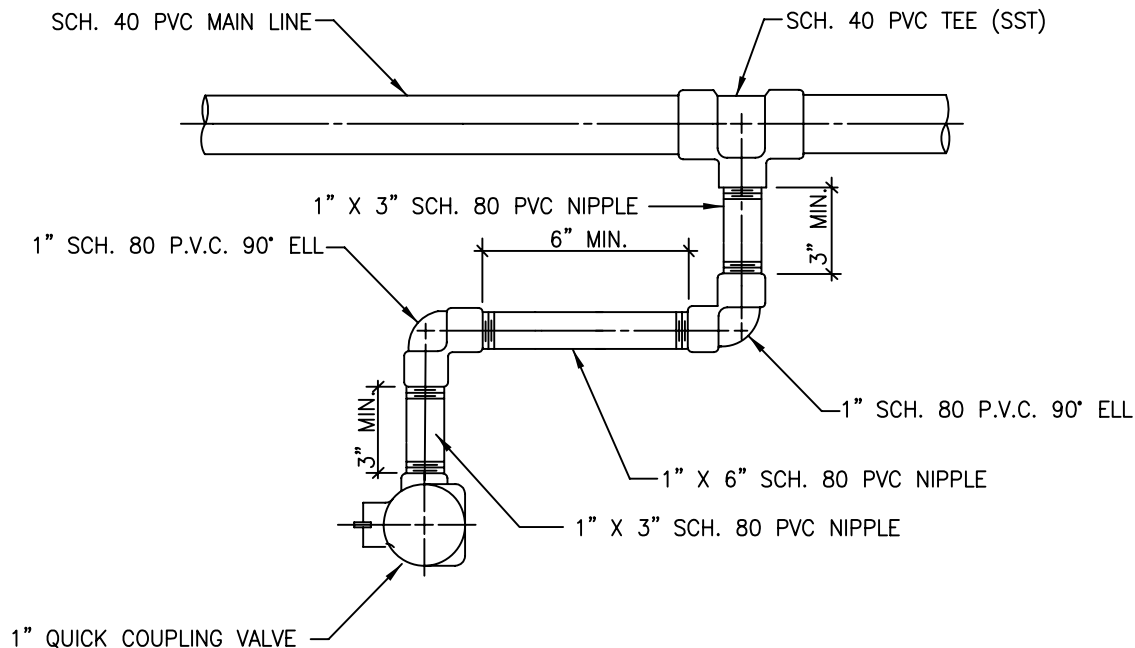
8/6/98
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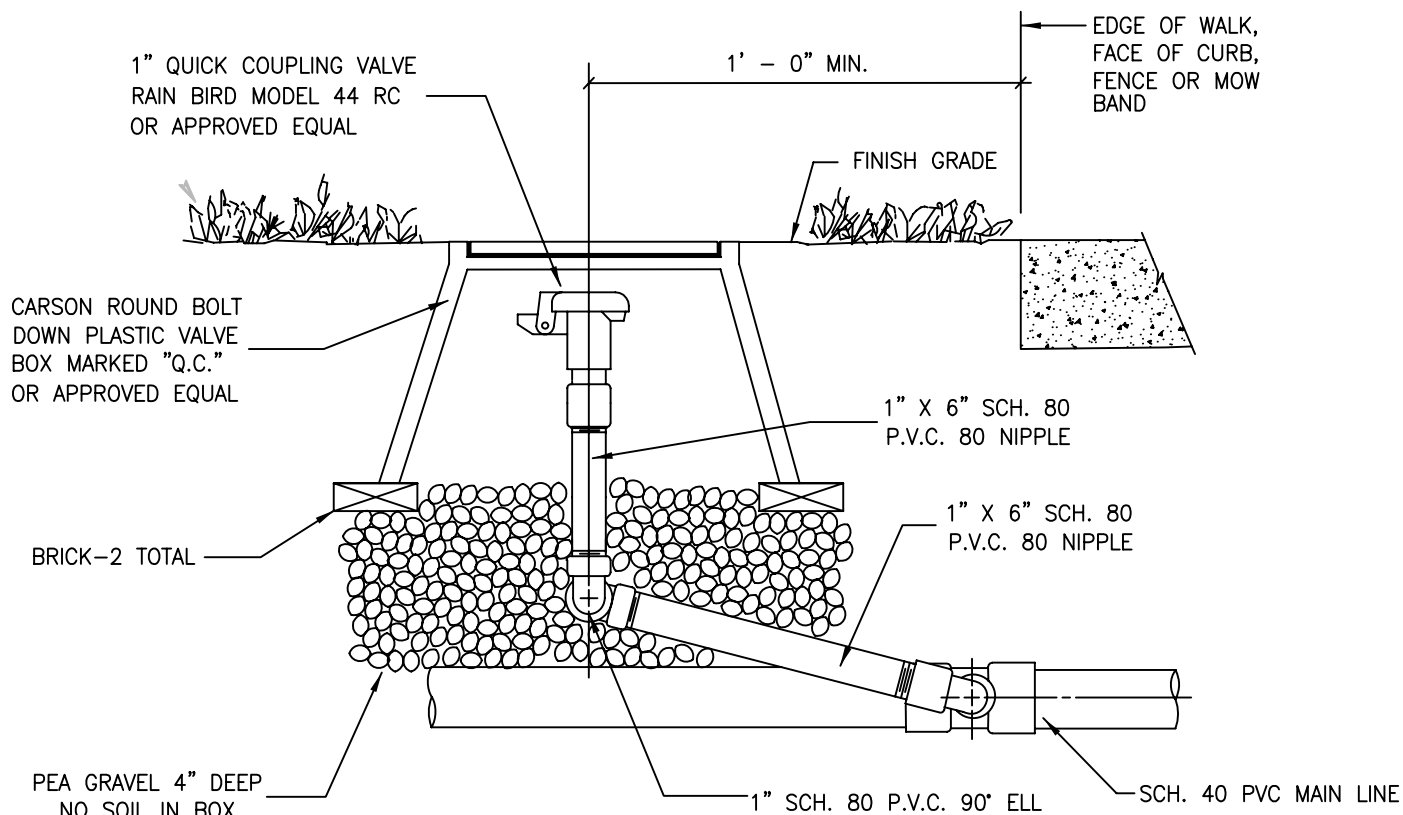
**HOSE BIBB VALVE
ABOVE GROUND INSTALLATION**

DRAWING
NO.

L-6



PLAN



PROFILE

NOTES:

1. ALL PIPING TUBE TO BE 1" OR LARGER.
2. VALVE BOX LID TO HAVE "Q.C." MOLDED INTO TOP OF LID OR BRASS TAG INSTALLED ON LID MARKED "Q.C.".



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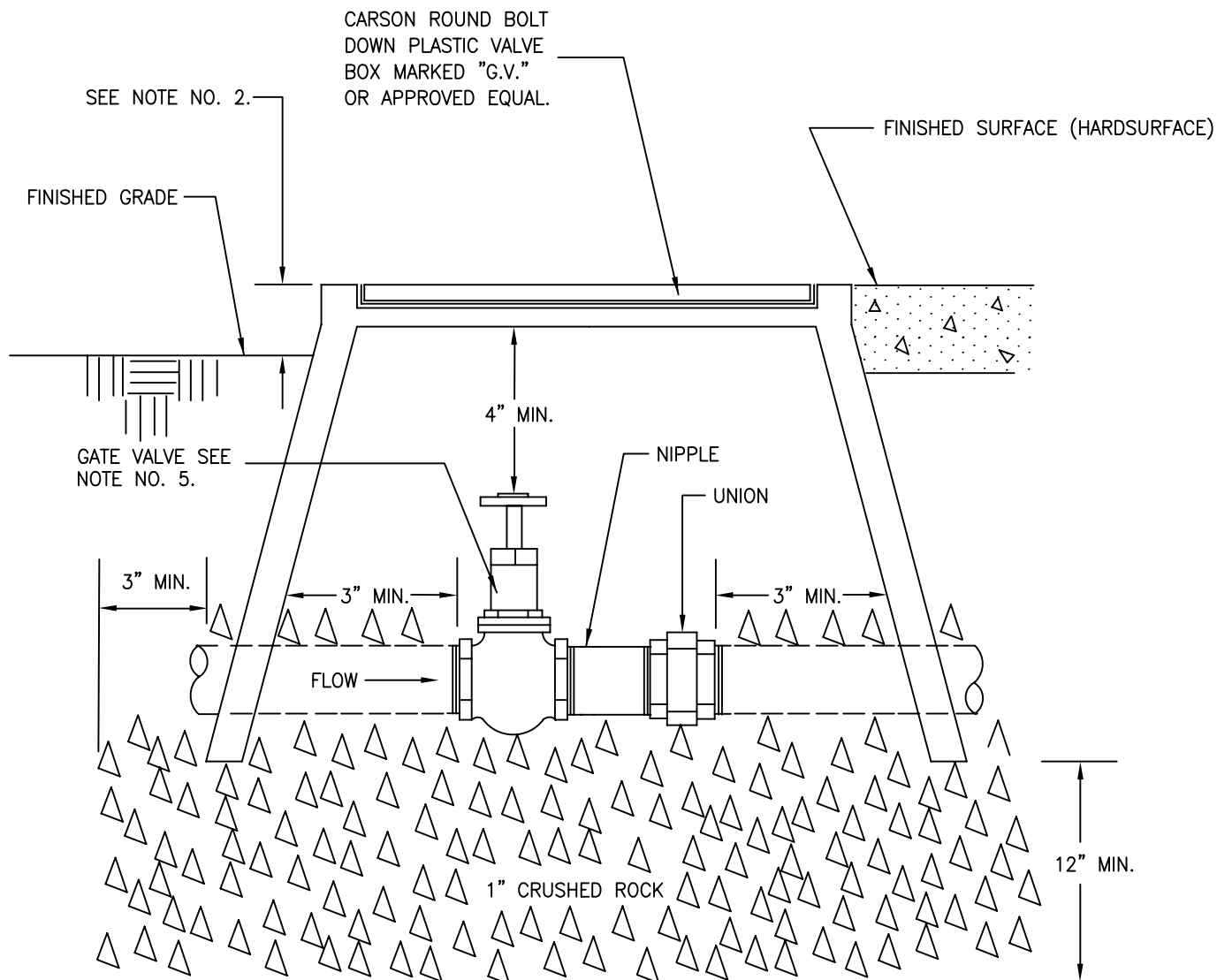
8/6/98
DATE

REVISD

1" QUICK COUPLING VALVE

DRAWING
NO.

L-7



NOTES:

1. AREA AROUND BOX CAN EITHER BE PLANTED, HARDSURFACE OR A COMBINATION.
2. TOP OF BOX:
 $\frac{1}{2}$ " ABOVE GRADE OR LAWN.
1" ABOVE GRADE FOR GROUND COVER OR SHRUBS.
3. CLOSE NIPPLES SHALL NOT BE USED.
4. CRUSHED ROCK SHALL COVER VALVE BOX PIPE OPENINGS TO PREVENT SOIL ENTRY.
5. GATE VALVE SHALL BE "RED & WHITE", OR APPROVED EQUAL.



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Public Works Department

Jim Oshcraft
CITY ENGINEER

8/6/98
DATE

REVISD

GATE VALVE

DRAWING
NO.

L-8

NOTE:

ALL CONTROL WIRES SHALL BE COILED 3 FEET INTO EACH BOX EXCEPT IN CLUSTERS



NOTE:

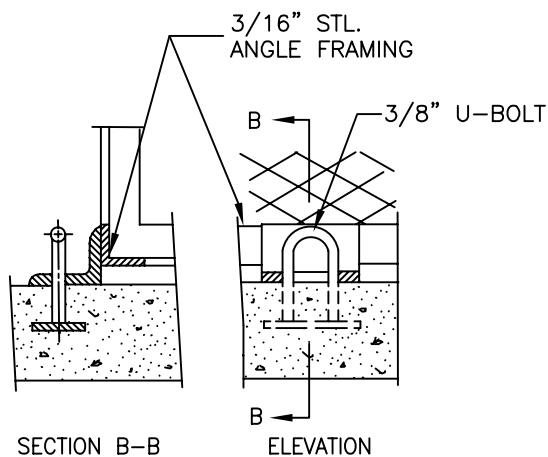
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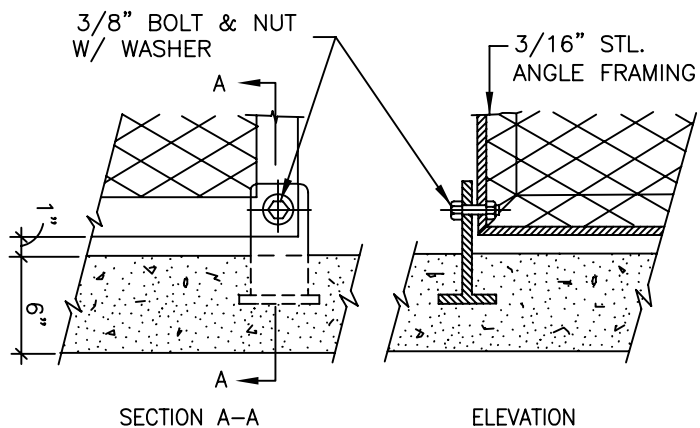
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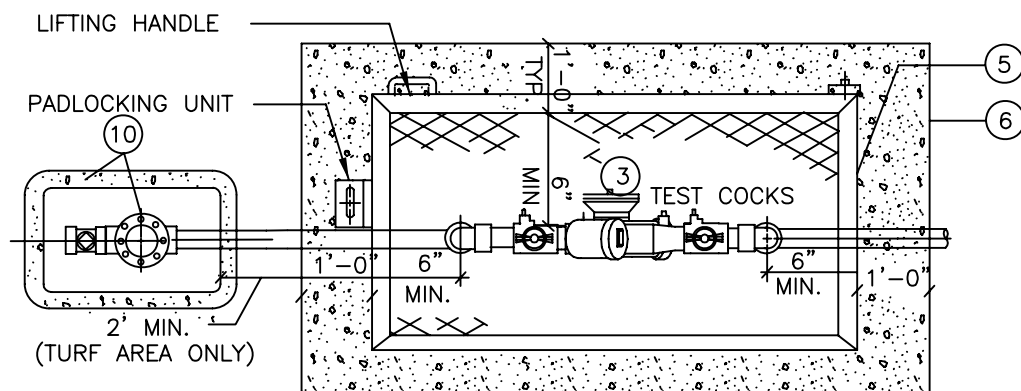
L-9



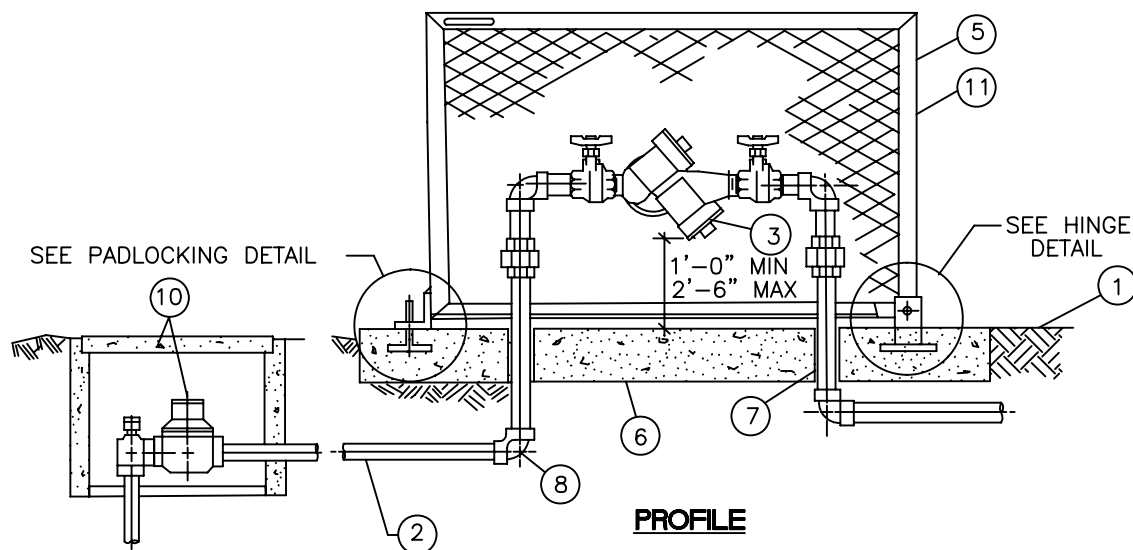
PADLOCKING DETAIL



HINGE DETAIL



PLAN



PROFILE

FOR MEDIAN ISLANDS AND PUBLIC PARKS/FACILITIES
(SIZES 1" TO 2")



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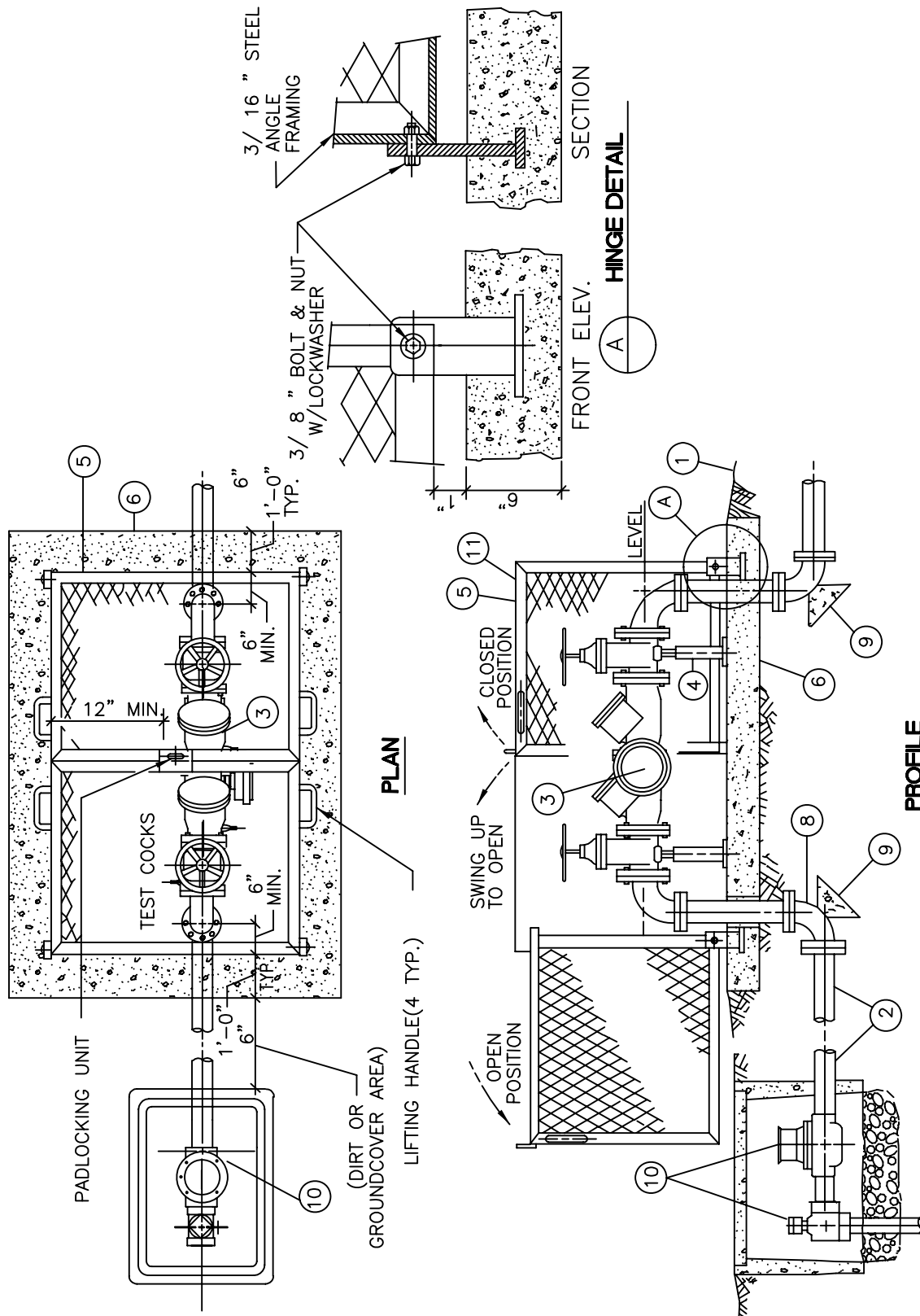
8/1/97
DATE

3/15/07
REVISED

**R.P. BACKFLOW PREVENTER
WITH SINGLE-SWING
HINGED ENCLOSURE**

DRAWING
NO.

L-10



(FOR MEDIAN ISLANDS & PUBLIC PARKS/FACILITIES
(FOR SIZES 2 1/2" TO 4")

NOTE: FOR NOTES AND LEGEND SEE SHEET L-8.



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Public Works Department

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8/6/98
DATE

REVISED

R.P BACKFLOW PREVENTER WITH DOUBLE-SWING HINGED ENCLOSURE

DRAWING
NO.

L-11

NOTE: THESE NOTES APPLY TO LANDSCAPING WORK. FOR DOMESTIC, COMMERCIAL/INDUSTRIAL APPLICATIONS, SEE "W"—WATER SECTION.

LEGEND

- ① Finish Grade.
- ② Service size galvanized steel pipe from water meter. Use Ductile Iron Pipe with flange fittings for sizes 2 1/2" and larger.
- ③ Reduced Pressure Backflow Preventer FEBCO 825Y (or approved equal) for sizes 3/4" through 2", and FEBCO 825 YD (or approved equal) for sizes 2 1/2" to 4".
- ④ Adjustable pipe saddle support, galvanized steel, suitable for supporting general piping 4" and larger.
- ⑤ Backflow preventer enclosure manufactured by Lemeur (or approved equal). Enclosure shall be single-swing type for backflow unit sizes 3/4" through 2" and double-swing type ("clam shell") for backflow unit sizes 2 1/2" through 4". Frame shall be 1 1/2" X 1 1/2" X 3/16" steel angle with 1 1/2" #9 expanded metal. Install as shown on plans.
- ⑥ 6" concrete enclosure pad, size as shown on the plan.
- ⑦ Service size galvanized steel pipe riser with a minimum of two (2) unions for threaded connections (sizes 1" to 2").
- ⑧ 90° elbow, flanged or threaded, wrapped with 10 mil PVC tape.
- ⑨ Concrete thrust block for service size 4" or larger (see detail W-12).
- ⑩ Water meter and service by others (see detail W-1)
- ⑪ Two coats of enamel. Color specified per approved plans.

NOTES:

- 1. Gate valves and test cocks are required.
- 2. Water supply— no connections or tees are allowed between the water meter and backflow unit.
- 3. Protection from freeze damage may be required in exposed areas.
- 4. Device must be accessible for testing and maintenance. Prior to activation, call 776-7333 for backflow device inspection.
- 5. Wrap buried galvanized pipe with 3M tape or approved equal.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

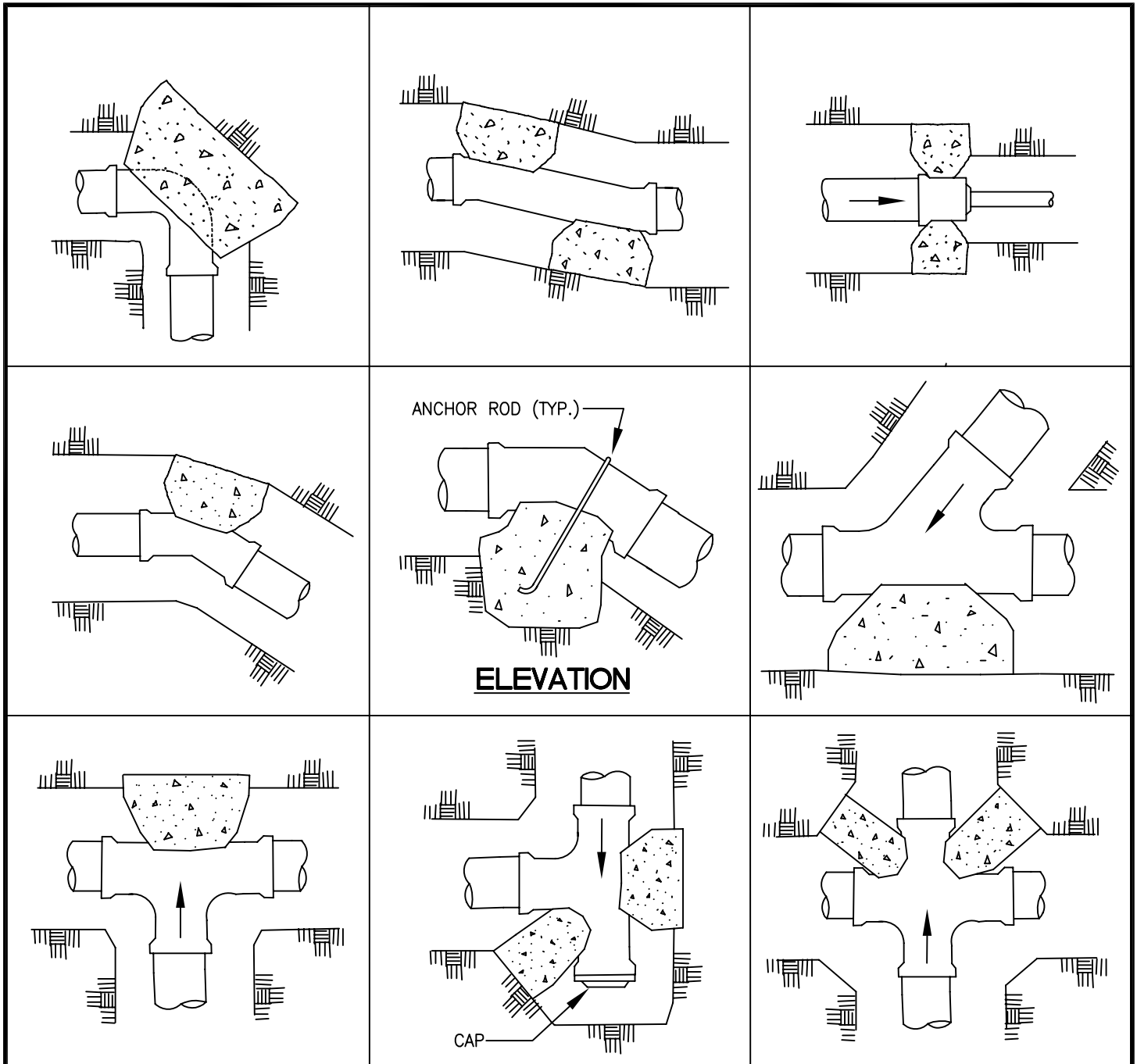
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3/15/07
REVISED

**LANDSCAPE BACKFLOW
PREVENTER
LEGEND AND NOTES**

DRAWING
NO.

L-12



NOTES:

1. ALL PLASTIC PIPE TO BE INSTALLED ACCORDING TO THESE DETAILS UNLESS OTHERWISE NOTED OR DETAILED.
2. THE PORTLAND CEMENT CONCRETE USED FOR THRUST BLOCKS SHALL BE 420-C-2000 CONCRETE.
3. ALL ANCHOR RODS SHALL BE GALVANIZED STEEL, MINIMUM 1/2" DIAMETER, WRAPPED AROUND PIPE.
4. SIZE OF THRUST BLOCKS SHALL BE SPECIFIED ON PLANS.
5. THRUST BLOCKS SHALL BE USED FOR PLASTIC PIPES WITH 3" DIAMETER OR LARGER.
6. FLOW DIRECTION INDICATED BY
7. ALL VIEWS ARE PLAN VIEW UNLESS OTHERWISE SHOWN.



City of Morgan Hill
Public Works Department

Jim Oshecraft
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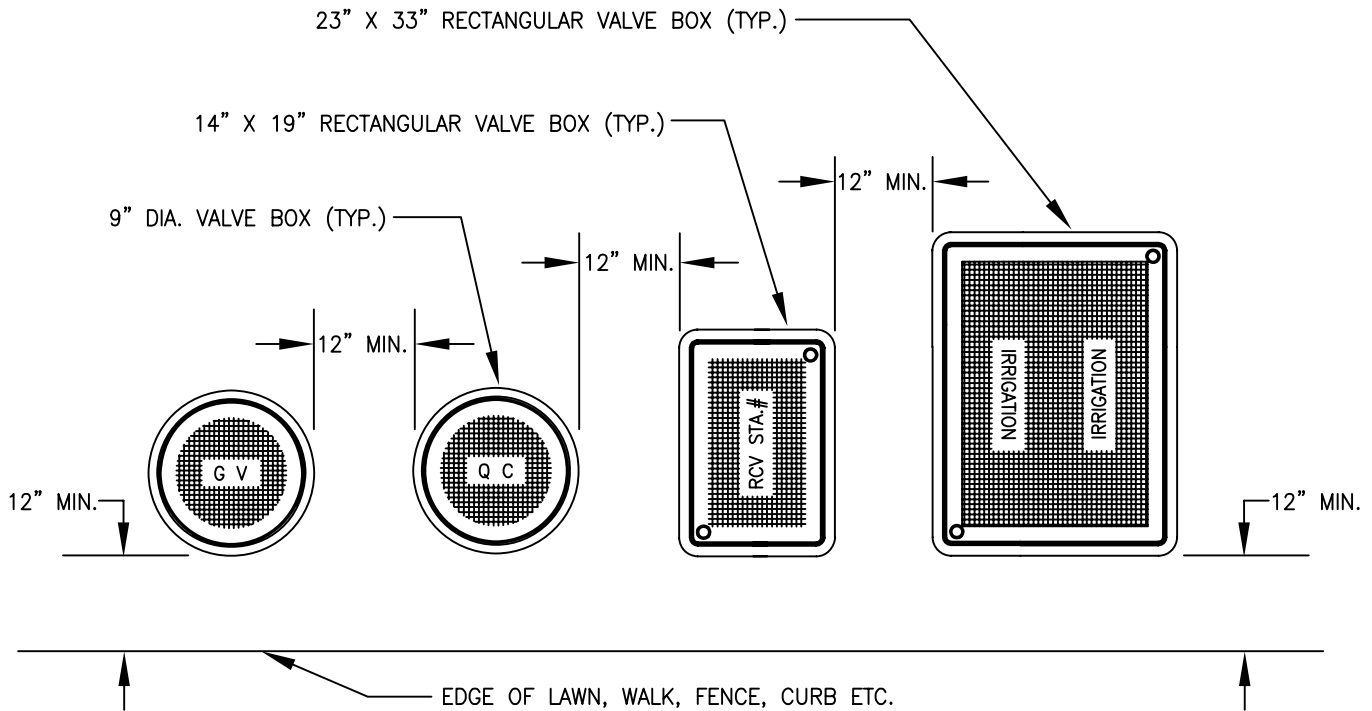
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THRUST BLOCKS FOR PLASTIC PIPES

DRAWING
NO.

L-13



NOTES:

1. CENTER BOX OVER REMOTE CONTROL VALVE TO FACILITATE SERVICING VALVE.
2. SET BOXES 1" ABOVE FINISH GRADE OR MULCH COVER IN GROUND COVER / SHRUB AREA AND FLUSH WITH FINISH GRADE IN TURF AREAS.
3. SET RCV AND VALVE BOX ASSEMBLY IN GROUND COVER / SHRUB AREA WHERE POSSIBLE. INSTALL IN LAWN AREA ONLY IF GROUND COVER DOES NOT EXIST ADJACENT TO LAWN.
4. SET BOXES PARALLEL TO EACH OTHER AND PERPENDICULAR TO EDGE.
5. AVOID COMPACTING SOIL AROUND VALVE BOX EDGES TO PREVENT COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
6. ALL BOXES SHALL BE "CARSON" OR APPROVED EQUAL, AND BE EQUIPPED WITH BOLT DOWN LIDS.
7. ALL VALVE BOX LIDS SHALL IDENTIFY EQUIPMENT CONTAINED IN BOX BY MOLDING OR BRASS TAG TO LID AS FOLLOWS:
 GATE VALVE – "G.V."
 QUICK COUPLER – "Q.C."
 REMOTE CONTROL VALVE – "R.C.V. STA. # ____"
 MISCELLANEOUS ELECTRICAL EQUIPMENT – "ELECTRICAL"
 MISCELLANEOUS IRRIGATION EQUIPMENT – "IRRIGATION"



City of Morgan Hill
Public Works Department

Jim Oshroff
CITY ENGINEER

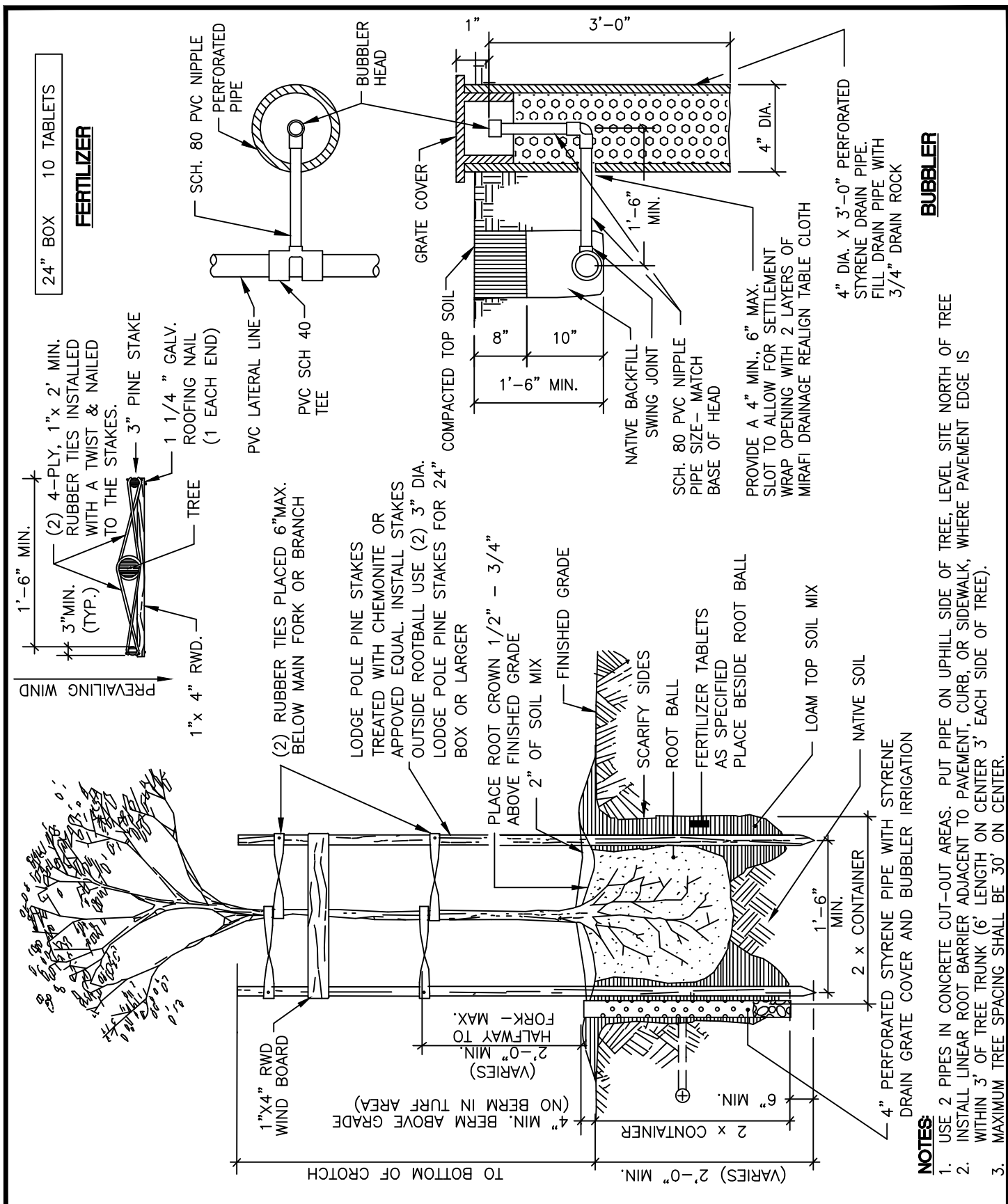
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VALVE BOX LOCATION

DRAWING
NO.

L-14



BUBBLER

- NOTES:**
1. USE 2 PIPES IN CONCRETE CUT-OUT AREAS. PUT PIPE ON UPHILL SIDE OF TREE, LEVEL SITE NORTH OF TREE
 2. INSTALL LINEAR ROOT BARRIER ADJACENT TO PAVEMENT, CURB, OR SIDEWALK, WHERE PAVEMENT EDGE IS WITHIN 3' OF TREE TRUNK (6' LENGTH ON CENTER 3' EACH SIDE OF TREE).
 3. MAXIMUM TREE SPACING SHALL BE 30' ON CENTER.



City of Morgan Hill
Public Works Department

Jim Oakcraft
CITY ENGINEER

8/1/97
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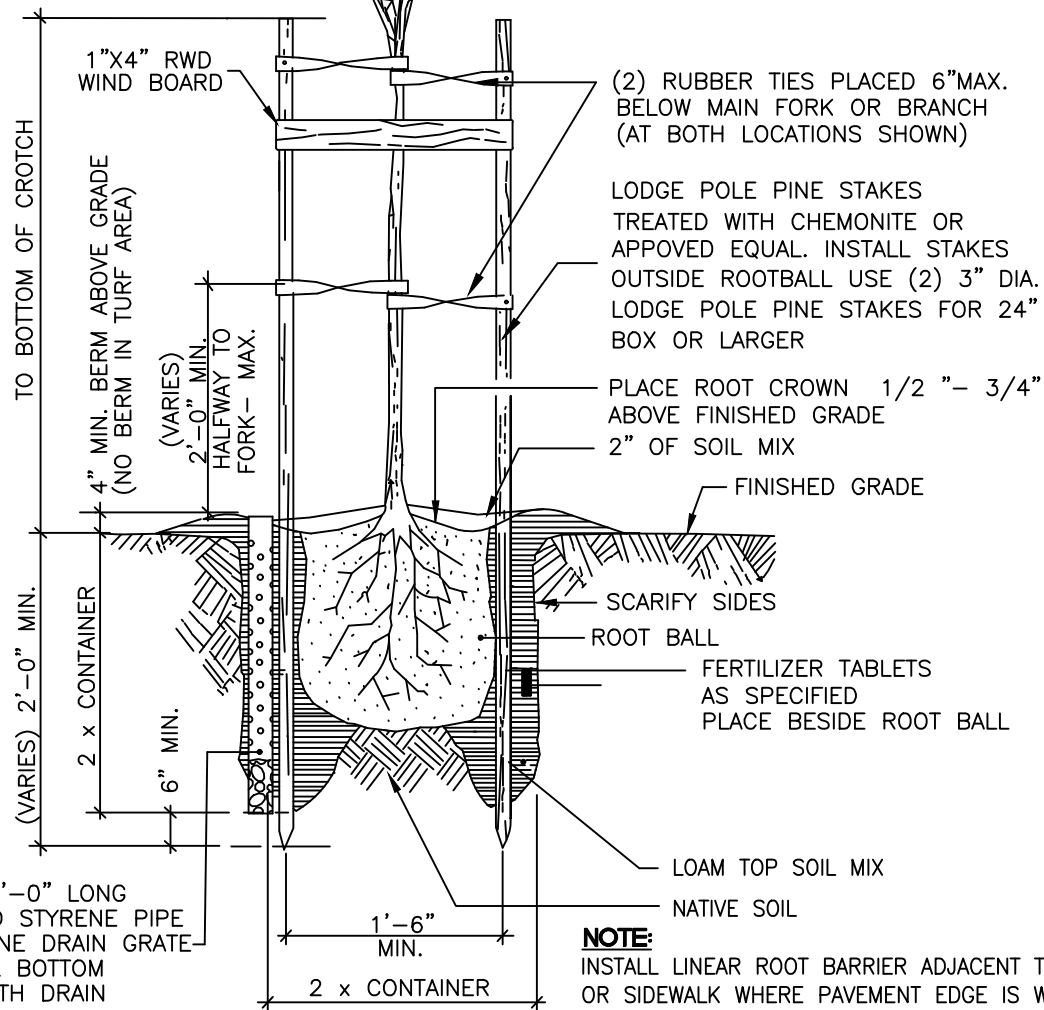
STANDARD PARK STRIP TREE PLANTING & STAKING WITH BUBBLER IRRIGATION

DRAWING
NO.

L-15



10 TABLETS



INSTALL LINEAR ROOT BARRIER ADJACENT TO PAVEMENT, CURB, OR SIDEWALK WHERE PAVEMENT EDGE IS WITHIN 3' OF TREE TRUNK (6' LENGTH ON CENTER 3' EACH SIDE OF TREE).



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

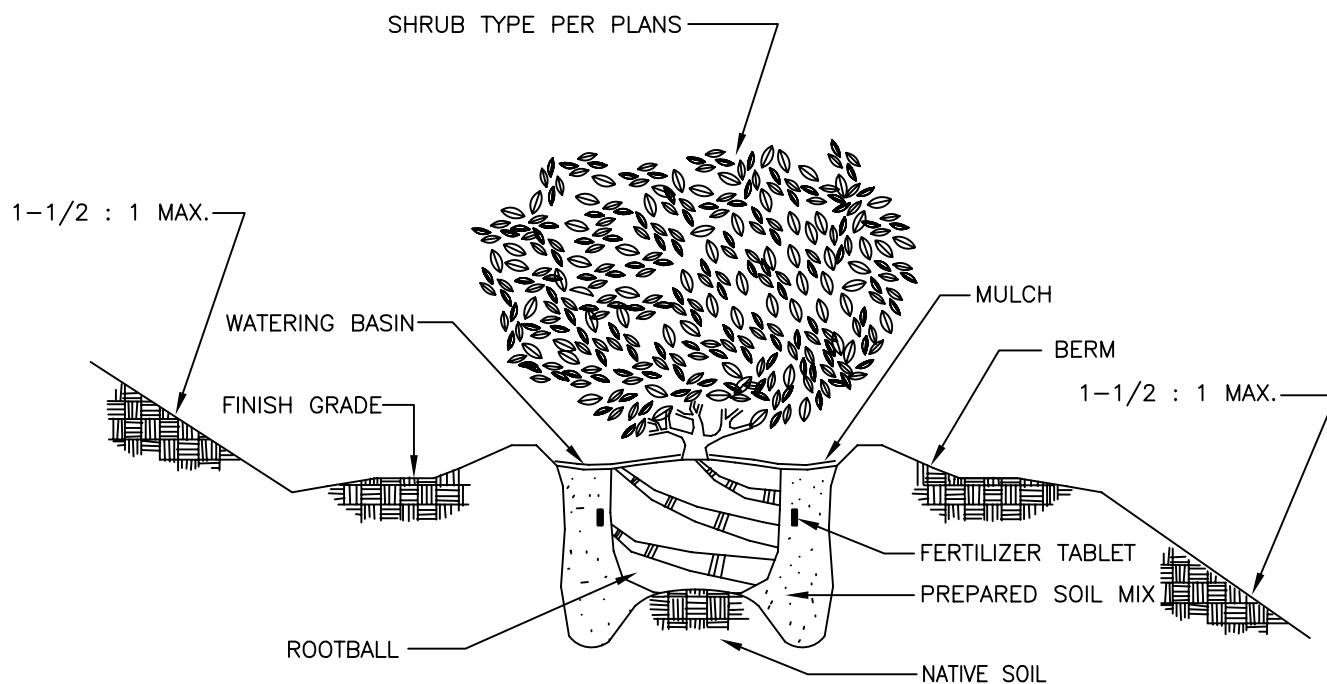
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STANDARD TREE PLANTING & STAKING WITHOUT IRRIGATION SYSTEM

DRAWING
NO.

L-16



NOTES:

1. SET CROWN 1-1/2" ABOVE FINISH GRADE TO ALLOW FOR SETTLEMENT.
2. WELL DEVELOPED SHRUB ROOTBALL; LIGHTLY SCARIFY PERIMETER.
3. SLOW RELEASE FERTIZER TABLET AS PERSPECIFICATIONS.
4. 4" HIGH BERM TEMPORARY WATER BASIN. INSIDE DIAMETER TO EQUAL ROOTBALL DIAMETER.
5. PLANTING HOLE; TWO TIMES DIAMETER AND DEPTH OF SHRUB ROOTBALL. SCARIFY SIDES AND BOTTOM.
6. MULCH AS PER SPECIFICATIONS.
7. BACKFILL MIXTURE AS PER SPECIFICATIONS.



City of Morgan Hill
Public Works Department

Jin Oschcraft
CITY ENGINEER

8/6/98
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3/15/07
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SHRUB PLANTING

DRAWING
NO.

L-17

PROHIBITED STREET TREES

<u>Botanical Name</u>	<u>Common Name</u>
Acacia	All Species
Ailanthus Glandulosa	Trees of Heaven
Ceratonia Siliqua	St. John's Bread (Carob Tree)
Cinnamomum Camphora	Camphor Tree
Conifers	All Species
Eucalyptus	All Species
Fruit Trees	All Fruit Bearing Species
Juglans California	California Black Walnut
Juglans Hindsii	American Black Walnut
Juglans Regia	English Walnut
Liquidambar Styraciflua	American Sweet Gum
Magnolia Grandiflora	Southern Magnolia
Palms	All Species
Pinus Radiata	Monterey Pines (All Species)
Platanus Orientalis	European Plane Tree
Olea Europaea	Olive (Fruiting)
Populus (Popular Tree)	All Species
Robina Pseudoacacia	Black Locust
Sequoia Gigantea	Redwood
Ulmus Americana	American Elm



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

8/6/98
DATE

3/15/07
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PROHIBITED TREE LIST

DRAWING
NO.

L-18

APPROVED TREES

All trees planted within the Public Right of Way, and in publicly maintained districts, shall be planted in accordance with the City of Morgan Hill Street Tree Master Plan. All trees shall be installed in accordance with the applicable drawings of this section. Copies of the Street Tree Master Plan may be obtained from the City of Morgan Hill Community Development Department.

LOW GROWING SHRUBS AND GROUND COVERS

<u>Botanical Name</u>	<u>Common Name</u>
May be used in any parking strip:	
Arctostaphylos 'Emerald Carpet'	Manzanita 'Emerald Carpet'
Convolvulus sp.	Bush Morning Glory
Coprosma Repens	Mirror Plan
Cotoneaster Dammeri	Bearberry Cotoneaster
Erigeron Karvinskianus	Santa Barbara Daisy
Fragaria Chiloensis	Ornamental Strawberry
Gazania sp.	Gazania
Hedera Helix 'Needlepoint'	Needlepoint Ivy
Hemerocallis sp.	Daylily (evergreen varieties)
Hypericum Calycinum	Ivy Geranium
Juniperus Procumbens 'Nana'	Dwarf Japanese Graden Juniper
Juniperus Prostratus	Prostrate Juniper
Lantana sp.	Trailing Lantana
Pelargonium Peltatum	Ivy Geranium
Rosa sp.	Rose (groundcover varieties only)
Rosmarinus Prostratus	Trailing Rosemary
Vinca Minor	Dwarf Periwinkle

All shrubs which grow to a natural height of more than 18" shall be trimmed to a height of 18" or be removed at the contractor and/ or owners expense.

This list is not intended to be complete, nor is it to be final. Final selections of species shall be made by the City of Morgan Hill Public Works Superintendent, upon considering location, mature size of tree and general habitat of growth.

Trees and Ground Covers not listed, as well as deviations in maximum spacing, must be approved by the Public Works Superintendent.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

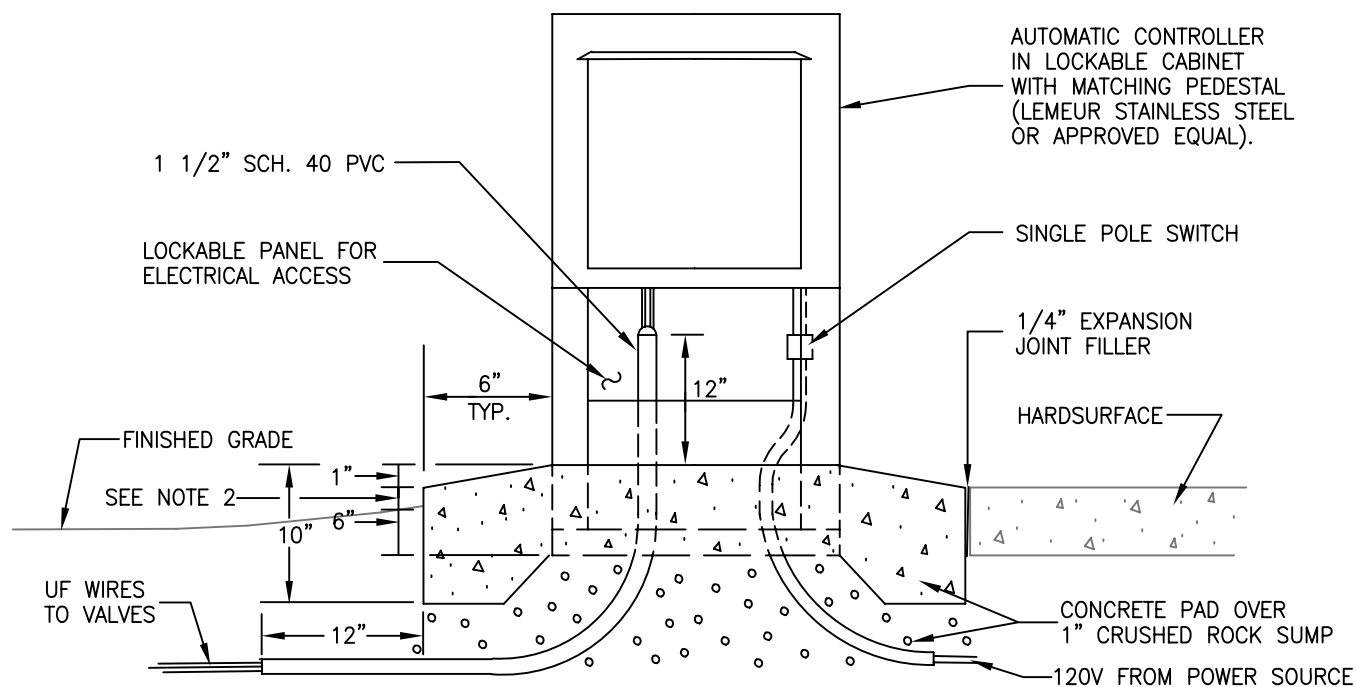
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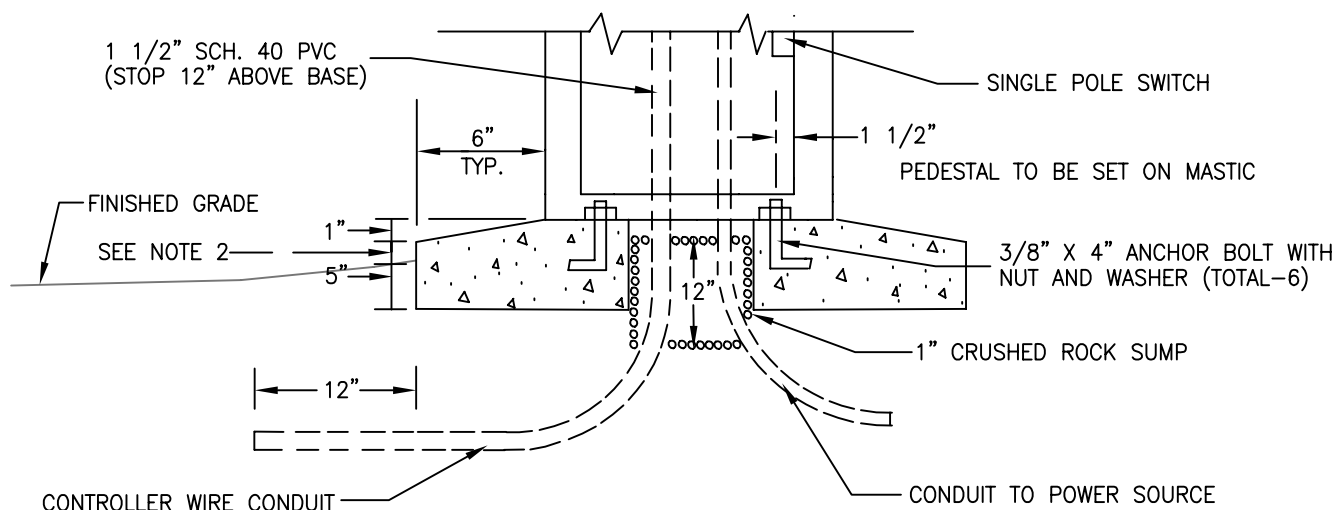
APPROVED TREES AND GROUND COVERS

DRAWING
NO.

L-19



CASE 1



CASE 2

NOTES:

1. AREA AROUND BASE CAN EITHER BE PLANTED, HARDSURFACE OR A COMBINATION.
2. TOP OF BASE:
 - 1/2" ABOVE GRADE FOR LAWN.
 - 1" ABOVE GRADE FOR GROUND COVER AND SHRUBS.
3. IRRITROL MC + (SIZE AS REQUIRED) CONTROLLER NOT SHOWN.
4. SEE "ELECTRICAL SECTION" FOR POWER SOURCE CONNECTIONS.



City of Morgan Hill
Public Works Department

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CITY ENGINEER

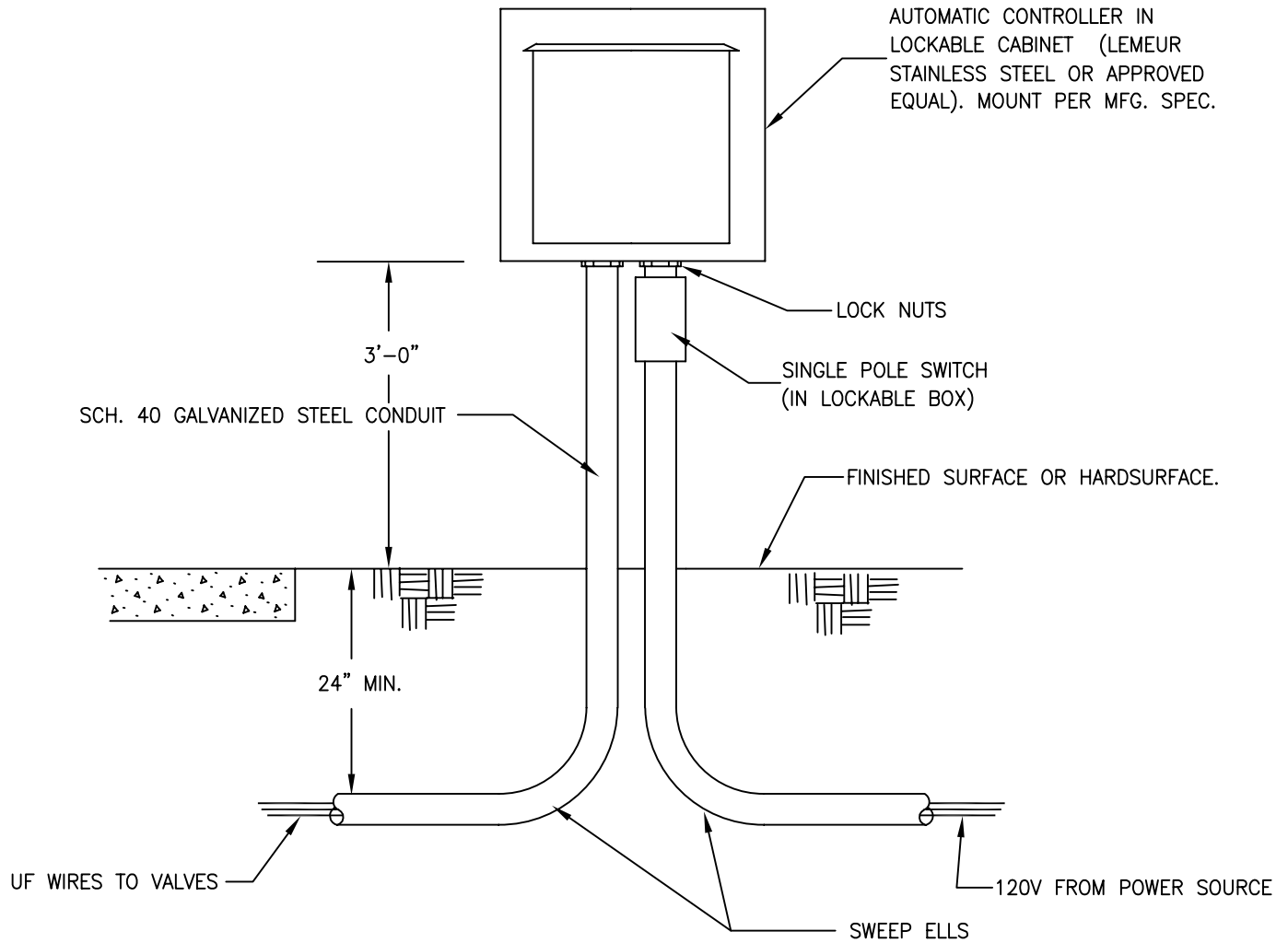
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**IRRIGATION CONTROLLER
PEDESTAL MOUNT**

DRAWING
NO.

L-20



NOTES:

1. IRRITROL MC+ (SIZE AS REQUIRED) CONTROLLER NOT SHOWN.
- 2.. SEE "ELECTRICAL SECTION" FOR POWER SOURCE CONNECTIONS.



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Public Works Department

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CITY ENGINEER

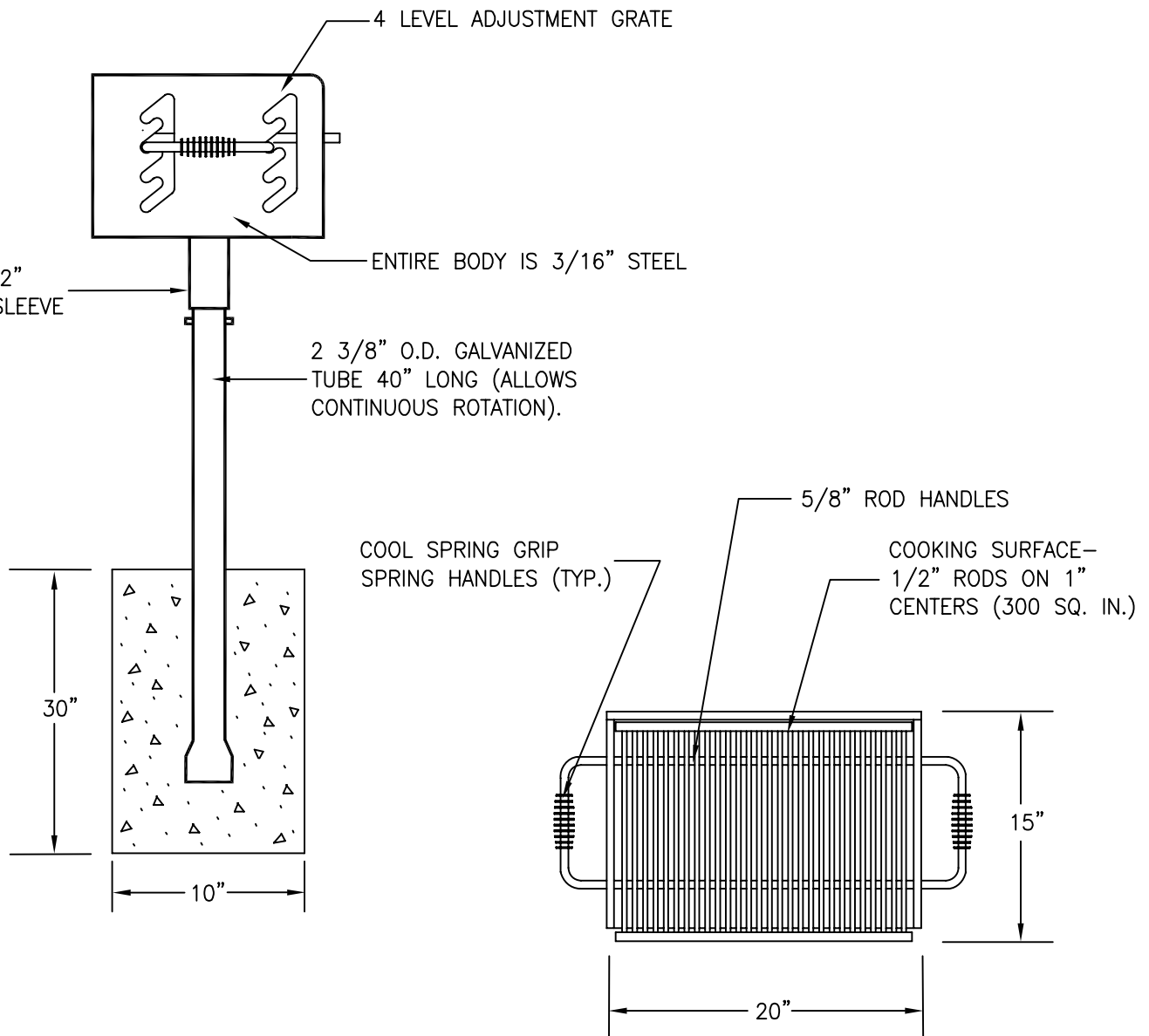
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**IRRIGATION CONTROLLER
WALL MOUNT**

DRAWING
NO.

L-21



NOTES:

1. SIZE OF FOOTING IS A SUGGESTION ONLY, CHECK WITH MANUFACTURER AND/OR PROJECT SOILS REPORT.
2. FINISH IS NON-TOXIC HEAT RESISTANT BLACK ENAMEL.
3. MODEL SHOWN IS "KAY PARK #SB16" (SB16G FOR GALVANIZED PEDESTAL) SUBMITTAL AND APPROVAL REQUIRED FOR ALL EQUALS.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

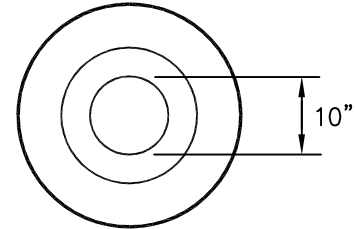
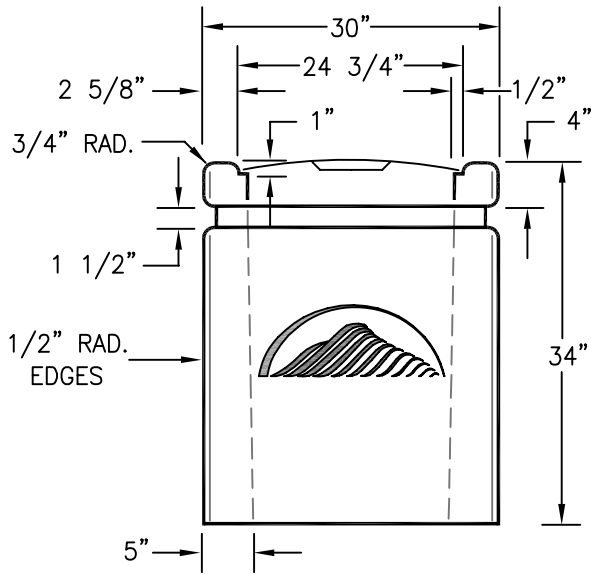
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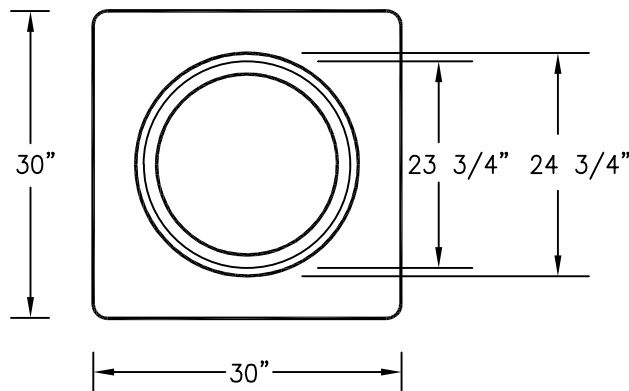
**CHARCOAL
RECEPTACLE**

DRAWING
NO.

L-22



14 GAUGE METAL
POWDER COATED LID



NOTES:

1. MINIMUM THICKNESS OF ALL AREAS TO BE 5".
2. MINIMUM WEIGHT TO BE 1450 LBS.
3. COLORING AGENTS ARE TO BE PURE MINERAL OXIDES AND SHALL BE MIXED INTEGRALLY WITH CEMENT.
4. CONCRETE MIX DESIGN TO INCLUDE EIGHT AND ONE HALF (8.5) SACKS PORTLAND CEMENT PER YARD WITH MAXIMUM ROCK SIZE OF 3/4" REINFORCED WITH #4 AND #5 REBAR GRID. CURED CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 7,000 P.S.I.
5. ALL FORMED SURFACES AND EDGES SHALL BE FULLY ROUNDED AND SMOOTH FINISHED. FINISH OF ALL SURFACES TO HAVE A CONCRETE GRAFFITI-RESISTANT SEALER APPLIED.
6. BRACKET INSTALLED TO ACCEPT PLASTIC BAG INSERT.
7. MODEL SHOWN: "OUTDOOR CREATIONS MODEL #503". SUBMITTAL AND APPROVAL REQUIRED FOR ALL EQUALS.
8. SPECIFICATIONS FOR LOGO AVAILABLE UPON REQUEST FROM THE CITY OF MORGAN HILL DEPARTMENT OF PUBLIC WORKS AT 408-776-7333.



City of Morgan Hill
Public Works Department

Jim Oshecraft
CITY ENGINEER

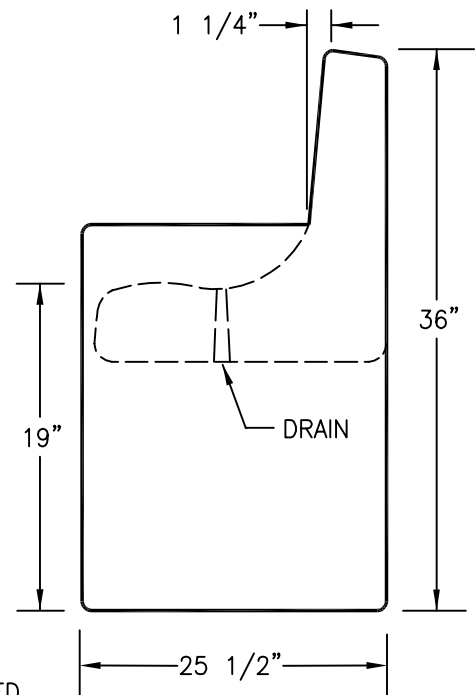
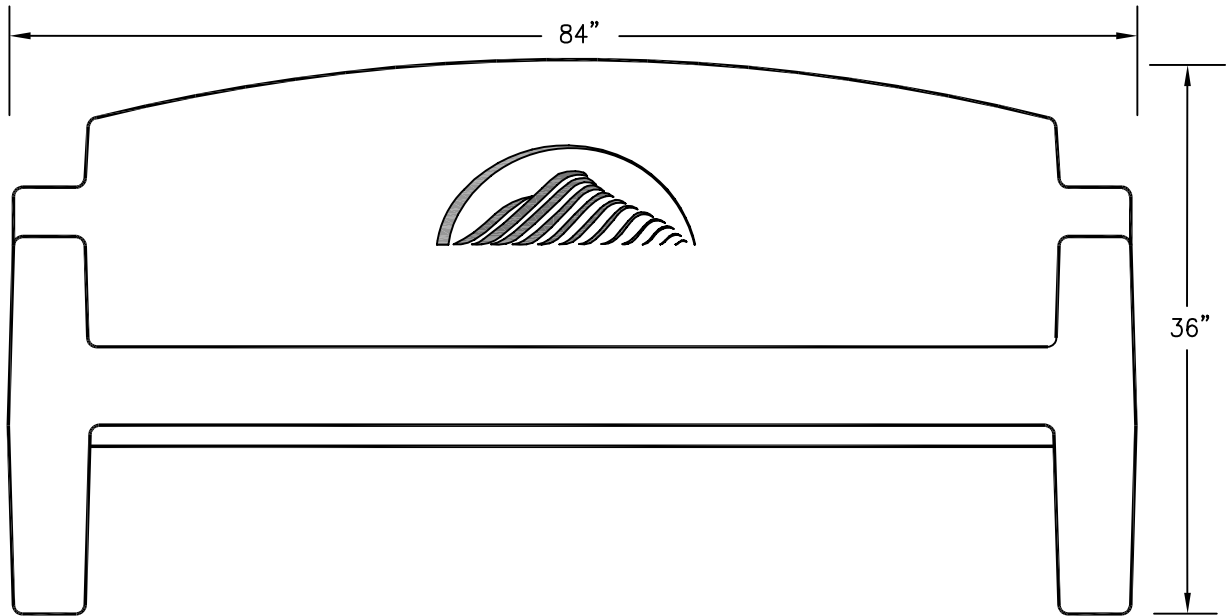
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WASTE RECEPTACLE

DRAWING
NO.

L-23



NOTES:

1. MINIMUM THICKNESS OF ALL AREAS TO BE 4".
2. MINIMUM WEIGHT TO BE 2000 LBS.
3. BENCH IS CAST IN ONE INTEGRAL PIECE. NO ASSEMBLY REQUIRED.
4. COLORING AGENTS ARE TO BE PURE MINERAL OXIDES AND SHALL BE MIXED INTEGRALLY WITH CEMENT. COLOR TO BE DAVIS COLORS SEQUOIA SAND. FINISH TO BE SMOOTH.
5. CONCRETE MIX DESIGN TO INCLUDE EIGHT AND ONE HALF (8.5) SACKS PORTLAND CEMENT PER YARD WITH MAXIMUM ROCK SIZE OF 3/4" REINFORCED WITH #4 AND #5 REBAR GRID. CURED CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 7,000 P.S.I.
6. ALL FORMED SURFACES AND EDGES SHALL BE FULLY ROUNDED AND SMOOTH FINISHED. FINISH OF ALL SURFACES TO HAVE A CONCRETE GRAFFITI-RESISTANT SEALER APPLIED.
7. MODEL SHOWN: "OUTDOOR CREATIONS #408". SUBMITTAL AND APPROVAL REQUIRED FOR ALL EQUALS.
8. SPECIFICATIONS FOR LOGO AVAILABLE UPON REQUEST FROM THE CITY OF MORGAN HILL DEPARTMENT OF PUBLIC WORKS-MAINTENANCE DIVISION AT 408-776-7333.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

8/6/98
DATE

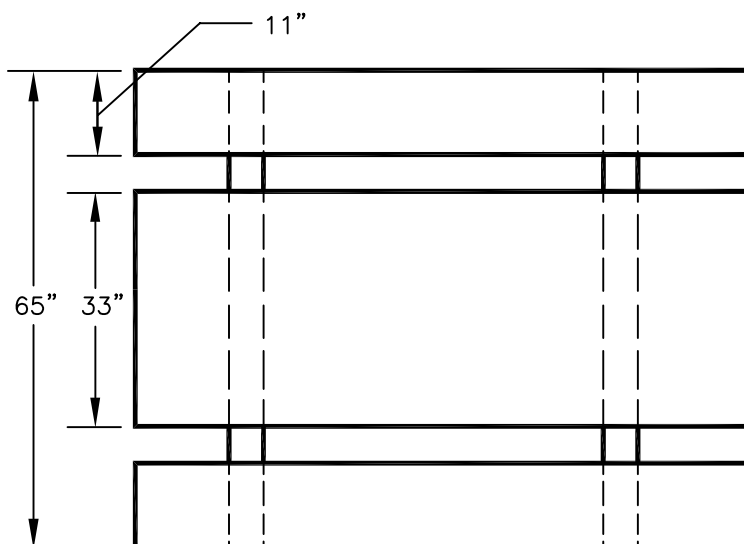
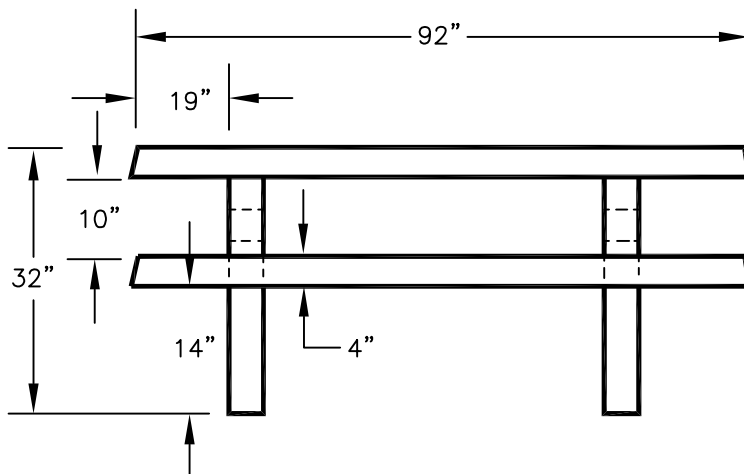
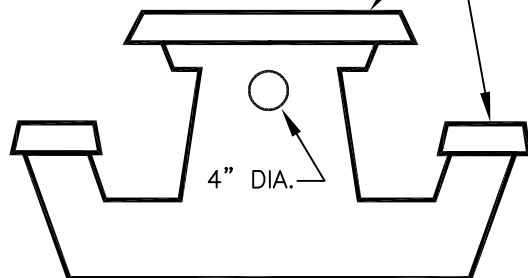
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CONTOUR BENCH

DRAWING
NO.

L-24

WOOD GRAIN TOP AND SEATS



NOTES:

1. MINIMUM THICKNESS OF ALL AREAS TO BE 4".
2. MINIMUM WEIGHT TO BE 2450 LBS.
3. PICNIC TABLE TOP, BENCHES, BENCH AND TABLE SUPPORTS CAST IN ONE INTEGRAL PIECE. NO ASSEMBLY REQUIRED.
4. COLORING AGENTS ARE TO BE PURE MINERAL OXIDES AND SHALL BE MIXED INTEGRALLY WITH CEMENT.
5. CONCRETE MIX DESIGN TO INCLUDE EIGHT AND ONE HALF (8.5) SACKS PORTLAND CEMENT PER YARD WITH MAXIMUM ROCK SIZE OF 3/4" REINFORCED WITH #4 AND #5 REBAR GRID. CURED CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 7,000 P.S.I..
6. ALL FORMED SURFACES AND EDGES SHALL BE FULLY ROUNDED AND SMOOTH FINISHED. FINISH OF ALL SURFACES TO HAVE A CONCRETE GRAFFITI-RESISTANT SEALER APPLIED.
7. WOOD GRAIN AND ROCK TEXTURE MOLDED INTO CONCRETE SURFACE.
8. MODEL SHOWN: "OUTDOOR CREATIONS #104FSS (FOREST SERIES). SUBMITTAL AND APPROVAL REQUIRED FOR ALL EQUALS.



City of Morgan Hill
Public Works Department

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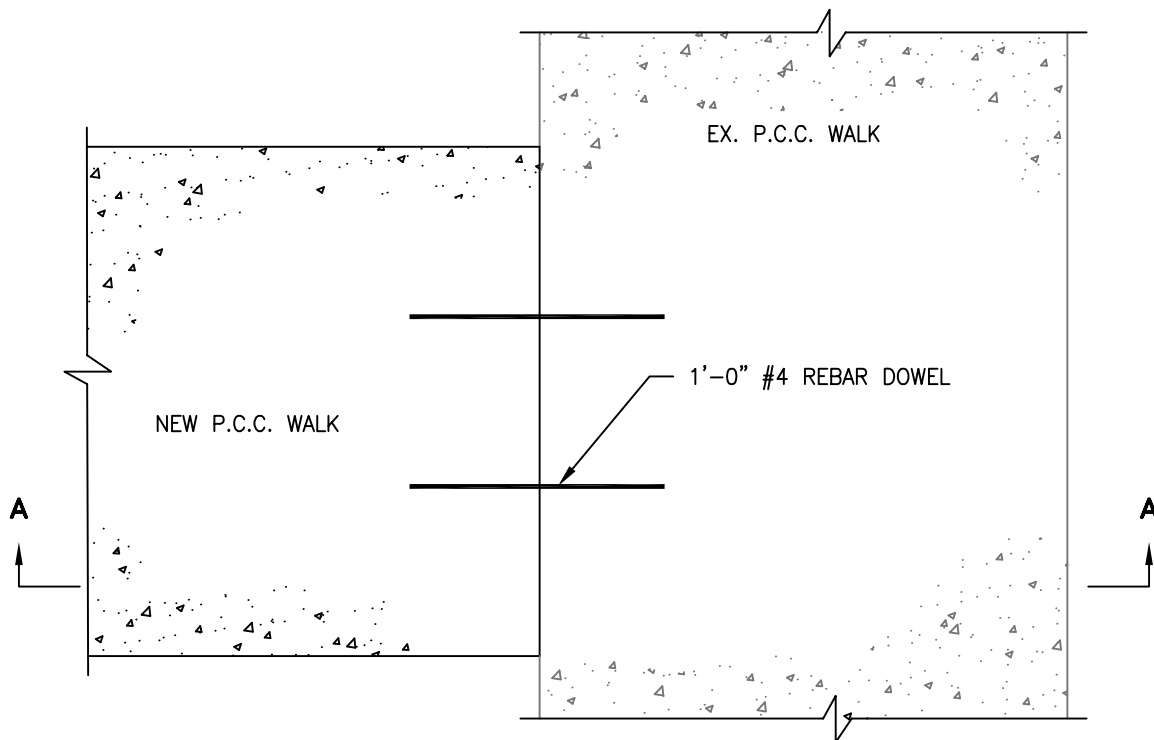
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PICNIC TABLE

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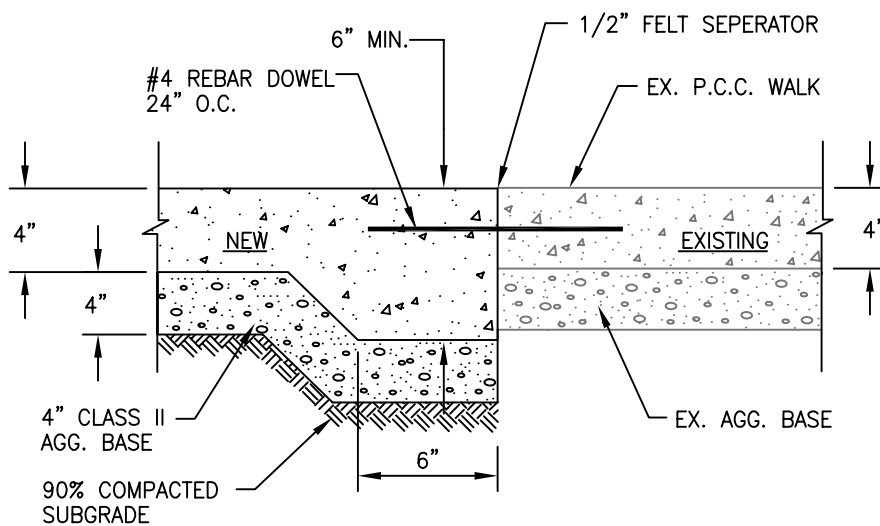
L-25



NOTE:

1. DRILL & EPOXY DOWEL INTO EX. P.C.C. & GREASE OTHER HALF BEFORE POURING.

PLAN



SECTION A-A



City of Morgan Hill
Public Works Department

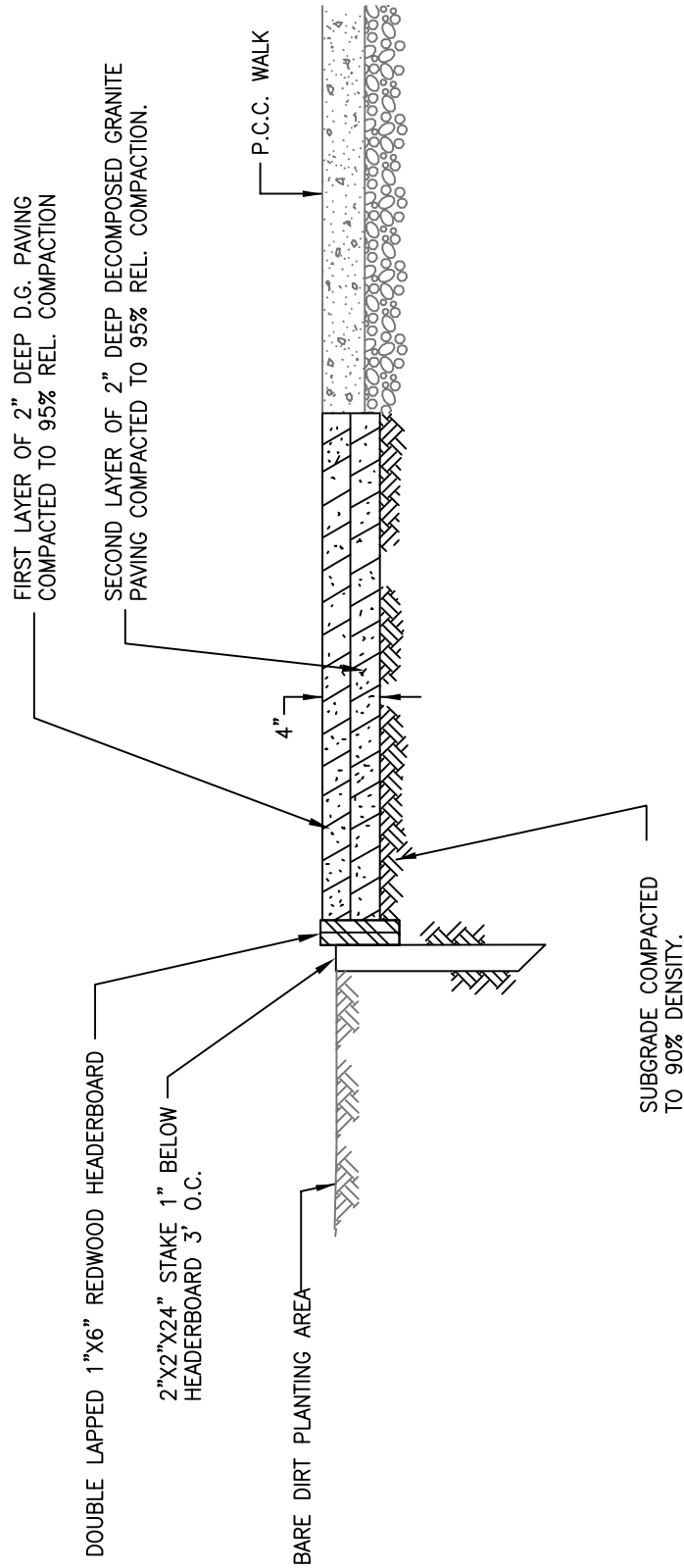
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8/6/98
DATE

REVISED

**P.C.C. WALKWAY NEW WALK
TO EXISTING CONNECTION**

DRAWING
NO.
L-26



NOTE: FIRST LAYER OF D.G. SHALL BE COMPACTED BEFORE INSTALLATION OF SECOND LAYER.



City of Morgan Hill
Public Works Department

Jim Oshecraft
CITY ENGINEER

8/6/98
DATE

REVISED

DECOMPOSED GRANITE PAVING

DRAWING
NO.
L-27

ELECTRICAL SECTION

GENERAL

All electrical equipment, materials, and workmanship shall be in accordance with the Standard Specifications, State of California, Department of Transportation, Caltrans (CSS), the National Electrical Manufacturers Association (NEMA), the Underwriters' Laboratories Inc. (UL), the Electrical Testing Laboratories (ETL), the National Electrical Testing Association (NETA), the Electronic Industries Association (EIA), the National Electric Code (NEC), the American Society for Testing and Materials (ASTM), where applicable and and except as modified herein.

ELECTROLIERS

(a) Electroliers. Electroliers shall consist of a 30' single arm galvanized steel pole (standard) equivalent to VALMONT DS30-8.0A300-8S-GV, an 8' mast arm, and a "cobra head" type 100W or 150W high pressure sodium luminaire, "GE- Model M2ARXXSON2GMS21" or approved equal, furnished and installed in accordance with the City of Morgan Hill Standard Details for Construction. For mast arms longer than 8', the pole shall be equivalent to CALTRANS Type 15. For electrolier spacing and luminaire wattage requirement, see Detail E-17.

(b) Conduit. All conduit shall be 1 1/2" Schedule 40 Polyvinyl Chloride (PVC), and conform to ASTM D 2241. Rigid conduit may be required by the City Engineer.

(c) Trenching for Conduits. Conduit trenches shall be dug to 24" min. depth. Conduit shall be placed directly behind the back of curb (6" Max., from back of curb to center of conduit). In cases where there will be an attached sidewalk, the backfill material shall be sand with the concrete sidewalk poured over the trench location. In cases where there will be a detached sidewalk, the conduit shall be covered by 3 inches of concrete. For electrolier conduit designed to occupy PG&E's joint trench, see paragraph h.

(d) Conductors. All conductors shall be #8 AWG type THW (#10 AWG allowed in pole only) unless otherwise specified, and be UL listed for 600V operation. All wire shall be stranded copper in accordance with ASTM B 3 and B 8. All conductor insulation shall be standard type THW in accordance with ASTM D 2219 and ASTM D 2220.

(e) Fuses. Fuses shall be standard midjet ferrule type, with "Non-Time Delay" feature, and shall be 13/22" x 1 1/2". All lighting service conductors shall be fused at the service connection point (30 AMP Max) and at all electroliers with a 10 Amp fuse accesible from the hand hole opening on the standard.

(f) Service Connection Point. Pull boxes for streetlight service connection points shall be installed adjacent to P.G.&E. secondary box designated for service connection.

(g) Pull Boxes. Pull boxes shall be precast of reinforced portland cement concrete in accordance with CSS Section 86-2.06A. Any pull box made of non portland cement concrete material shall conform to ASTM D 635. All individual pull boxes for electroliers shall be placed directly in front of the standard and parallel to the face of curb.



City of Morgan Hill
Public Works Department

Jim Oshecraft
CITY ENGINEER

4/1/96
DATE

3/15/07
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GENERAL NOTES

DRAWING
NO.

E-I

DEVELOPER INSTALL OPTION

(h) Electrolier Conduit Location. If developer elects to install the substructure for PG&E, Cable, and Telephone ("Private Utilities"), electrolier conduit may occupy the joint trench only upon approval the City Engineer. Otherwise, electrolier conduit shall be located and installed per the Electrical Section General Notes and standard details E-1 and E-2.

(i) Plan Submittal Developer shall submit to the Public Works Department two (2) sets of a substructure plan for review after PG&E review and approval. The Public Works Department shall only review the plan for possible conflicts with existing "Public Utilities" and approved subdivision improvements. Changes to the plans shall be directed as they relate to utility conflicts and all matters related to electroliers. It is developer's responsibility to ensure that the substructure plans meet PG&E's, GTE's and Charter Communication's standards. The plans shall contain, as a minimum, the following information:

(1) STREET LIGHTING PLAN— shows all proposed electroliers, boxes and conduit related to the subdivision's street lighting system as well as their location in respects to sidewalks, driveway approaches and handicap ramps.

(2) JOINT TRENCH PLAN— using the "Overall Utility Plan" as the background, shows joint trench locations, electroliers, existing and proposed "Public" and "Private" utilites.

(3) DETAILS SHEET— shows all applicable City of Morgan Hill Standard Details, to include trench restoration and backfill details.

(4) PRIMARY ELECTRICAL, GAS, CABLE & TELEPHONE PLANS— information shown per respective utility's standards.

(j) Commencement of Work Developer's substructure contractor shall not commence work until the above plans have been reviewed by the Public Works Department and an encroachment permit issued specifically for such work.



City of Morgan Hill
Public Works Department

Jim Oshecraft
CITY ENGINEER

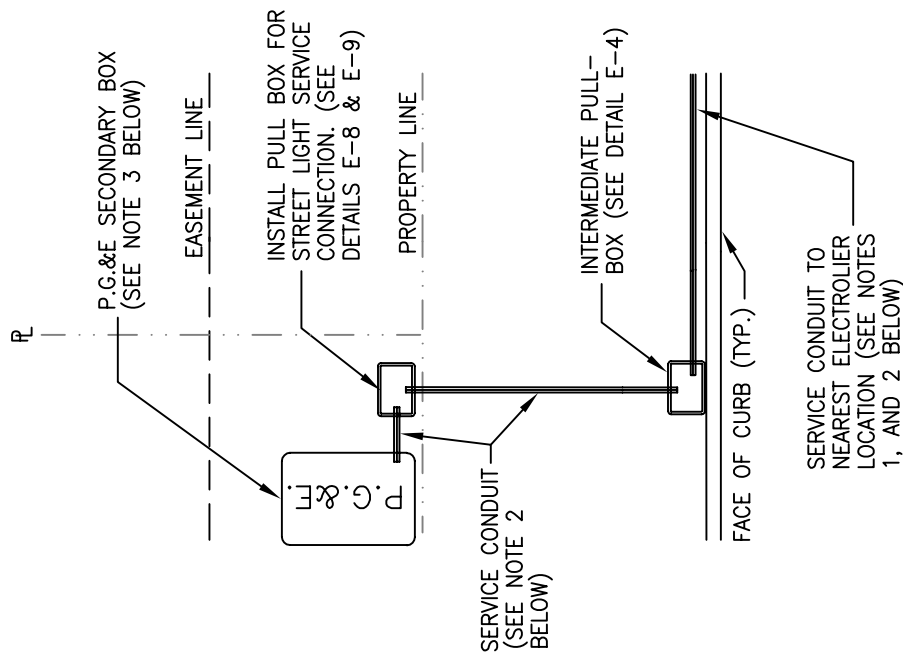
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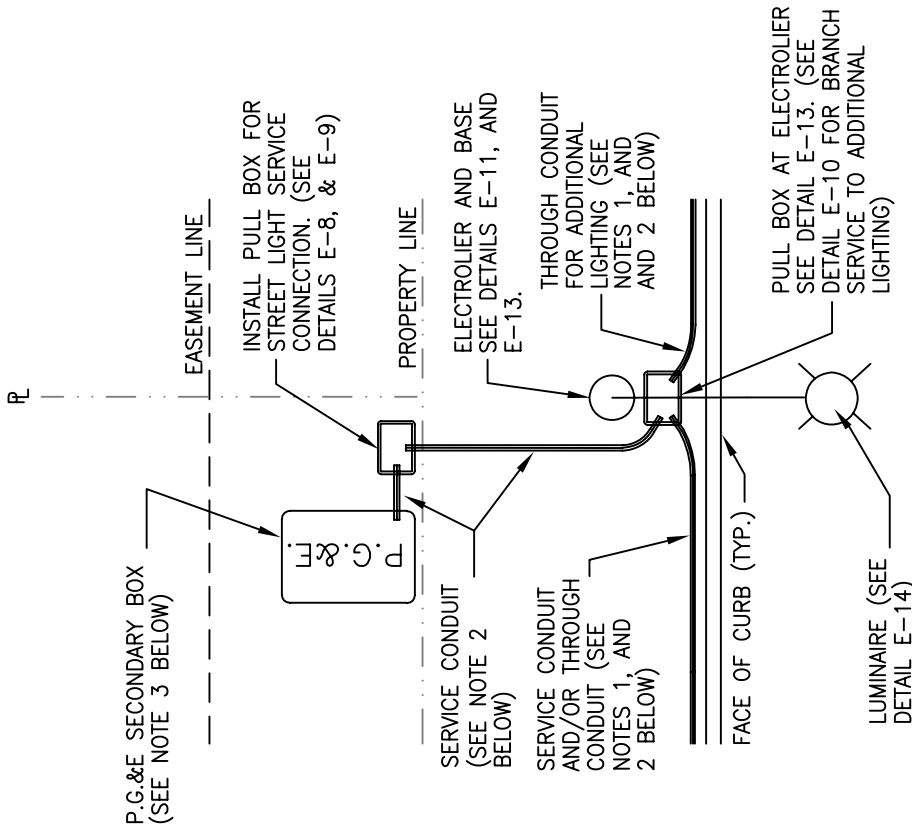
GENERAL NOTES

DRAWING
NO.

E-II



SERVICE FROM REMOTE CONNECTION POINT



SERVICE FROM NEARBY CONNECTION POINT

NOTES:

1. ALL CONDUIT SHALL BE LOCATED 6" BEHIND BACK OF CURB, AND INSTALLED AT A MINIMUM OF 24" DEPTH. SEE "ELECTRICAL SECTION-GENERAL NOTES", SHEET E-1, PARAGRAPH C.
2. ALL CONDUIT SHALL BE 1 1/2" SCHEDULE 40 P.V.C.. THE MAXIMUM DISTANCE BETWEEN PULL BOXES SHALL NOT EXCEED 200', AND SHALL NOT CONTAIN MORE THAN 3 (45' MAX.) BENDS.
3. STREET LIGHT SERVICE CONNECTIONS TO P.G.&E. SECONDARY SERVICE BOXES SHALL ONLY BE MADE TO P.G.&E. DESIGNATED STREET LIGHT CONNECTION POINTS. SERVICE CONDUIT FROM PULL BOX TO P.G.&E. SECONDARY BOX SHALL CONTAIN THE NECESSARY CONDUCTORS, AND AN ADDITIONAL 24" (MIN.) SLACK FOR P.G.&E..
4. THIS DETAIL IS DIAGRAMMATICAL, ACTUAL CONDITIONS MAY VARY.



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

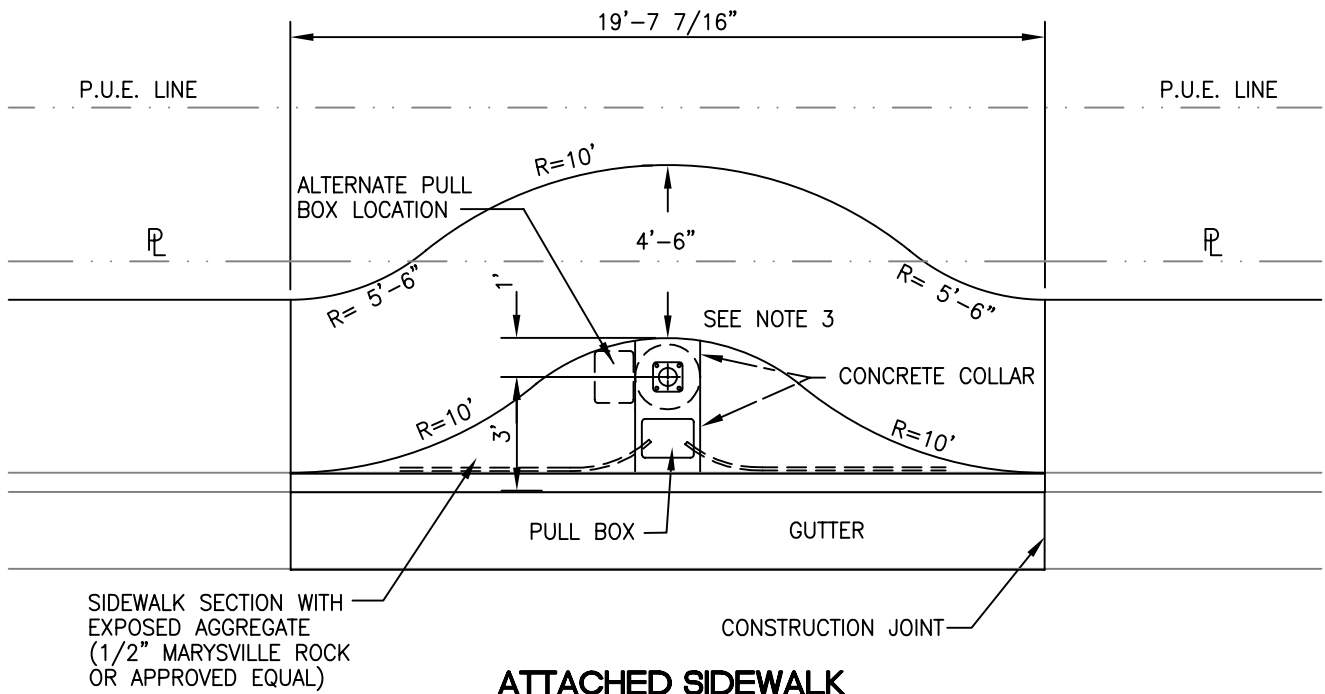
4/1/96
DATE

REVISED

SERVICE CONNECTION DIAGRAM

DRAWING
NO.

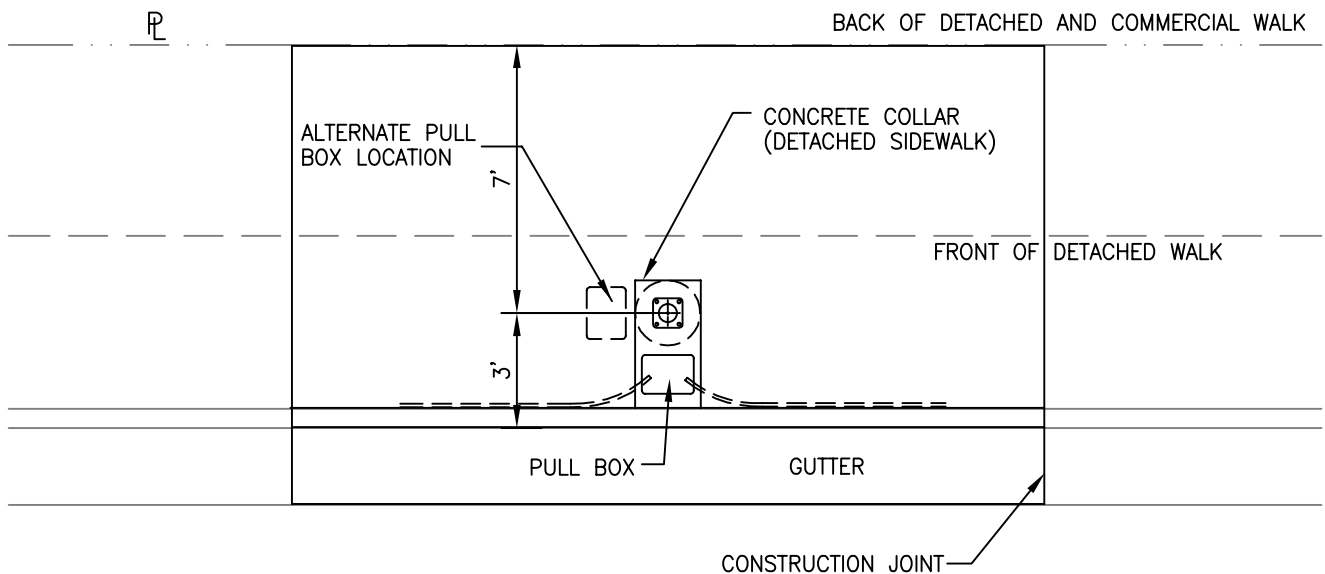
E-1



ATTACHED SIDEWALK (WITH SIDEWALK MEANDER)

NOTES:

1. JOINT TRENCHES LOCATED BEHIND SIDEWALK SHALL FOLLOW PATH OF MEANDER AROUND ELECTROLIER (ATTACHED SIDEWALK).
2. SEE DETAIL E-11 "ELECTROLIER & BASE", DETAIL E-13 "ELECTROLIER SERVICE CONNECTION", DETAIL E-4 "CONCRETE PULLBOX NON-TRAFFIC" AND DETAIL E-7 "CONCRETE PULLBOX NOTES".
3. SEE DETAIL E-3 FOR ELECTROLIER LOCATION WITHOUT SIDEWALK MEANDER.



DETACHED OR COMMERCIAL SIDEWALK



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Public Works Department

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CITY ENGINEER

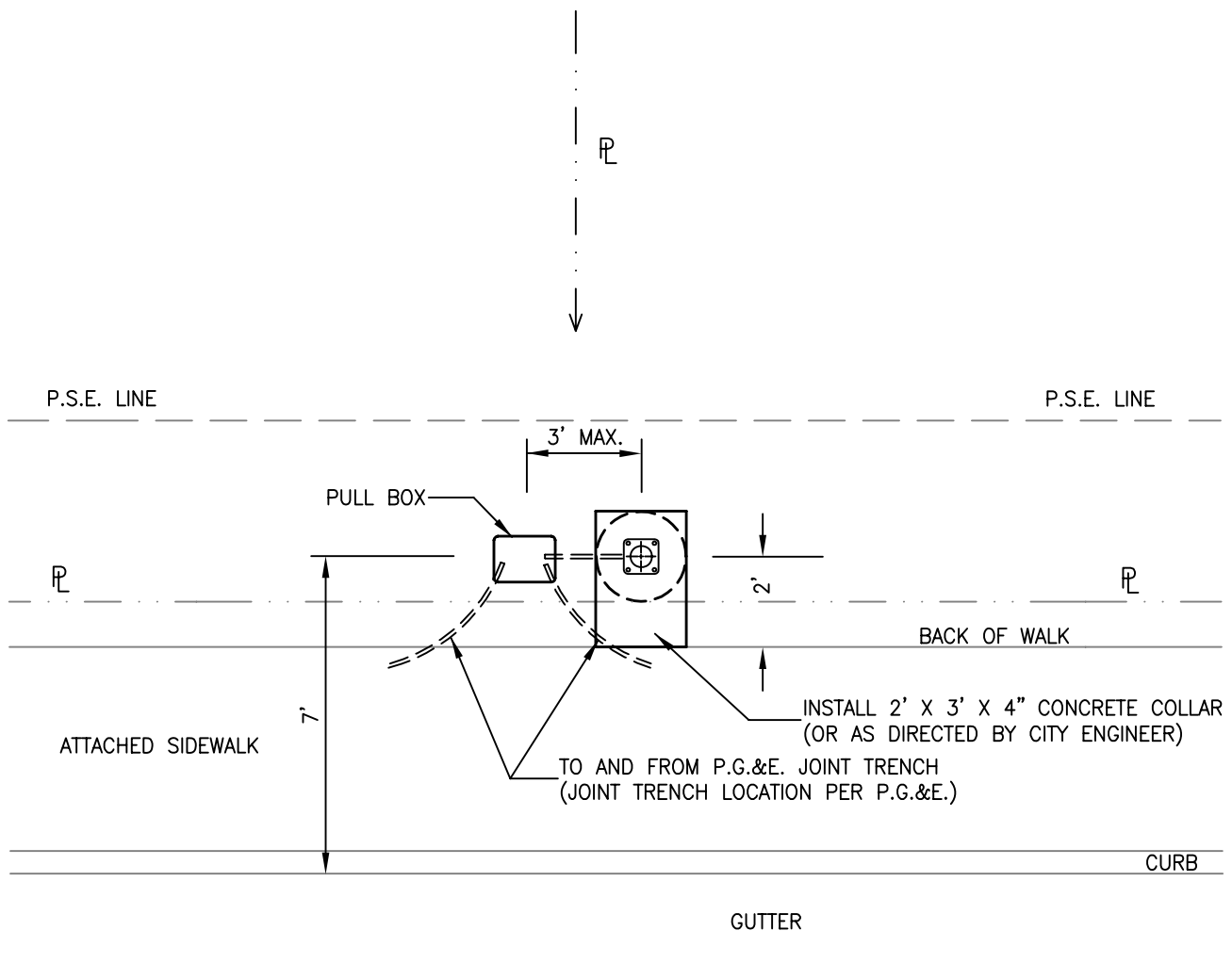
4/1/96
DATE

3/15/07
REVISED

**ELECTROLIER LOCATION
ATTACHED SIDEWALK (with)
SIDEWALK MEANDER, DETACHED,
& COMMERCIAL SIDEWALK**

DRAWING
NO.

E-2



ATTACHED SIDEWALK
(WITHOUT SIDEWALK MEANDER)

NOTES:

1. SEE DETAIL E-11 "ELECTROLIER & BASE", DETAIL E-13 "ELECTROLIER SERVICE CONNECTION", DETAIL E-4 "CONCRETE PULLBOX NON-TRAFFIC" AND DETAIL E-7 "CONCRETE PULLBOX NOTES".
2. POLE SHALL BE CALTRANS TYPE 15, OR APPROVED EQUAL, WITH 12' MAST ARM (SEE DETAIL E10).
3. IF JOINT TRENCH FACILITIES DO NOT EXIST, STREET LIGHTING SECONDARY SHALL BE LOCATED DIRECTLY BEHIND CURB (AS SHOWN THROUGHOUT THIS SECTION).
4. PULL BOX SHALL BE LOCATED TO THE LEFT OF THE ELECTROLIER (OR DIRECTLY IN FRONT OF HAND HOLE).



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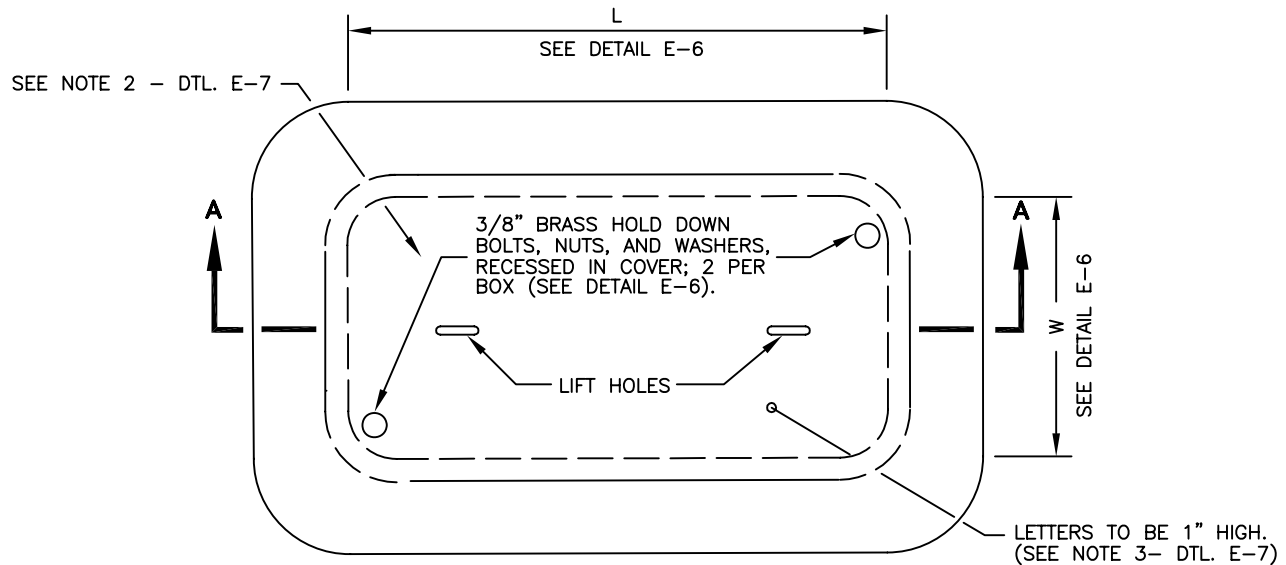
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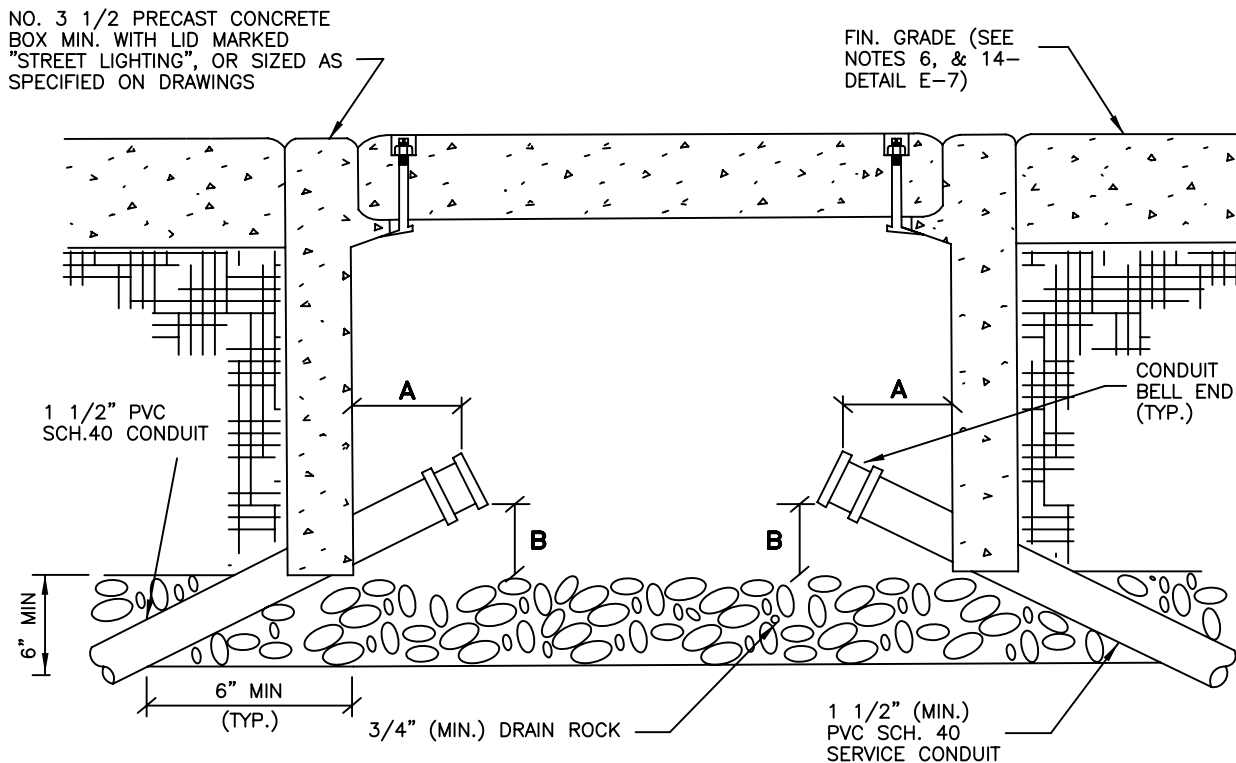
ELECTROLIER LOCATION
ATTACHED SIDEWALK
(without) SIDEWALK MEANDER

DRAWING
NO.

E-3



TOP VIEW



SECTION A-A

DIMENSION

A: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)
 B: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)

NOTE:

APPLICATION: PLACED IN CONDUIT RUNS IN AREAS WHERE BOX IS NOT SUBJECT TO VEHICULAR TRAFFIC
 LOAD: SEE DETAILS E-6 AND E-7 FOR PULL BOX DETAILS AND NOTES.



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 Public Works Department

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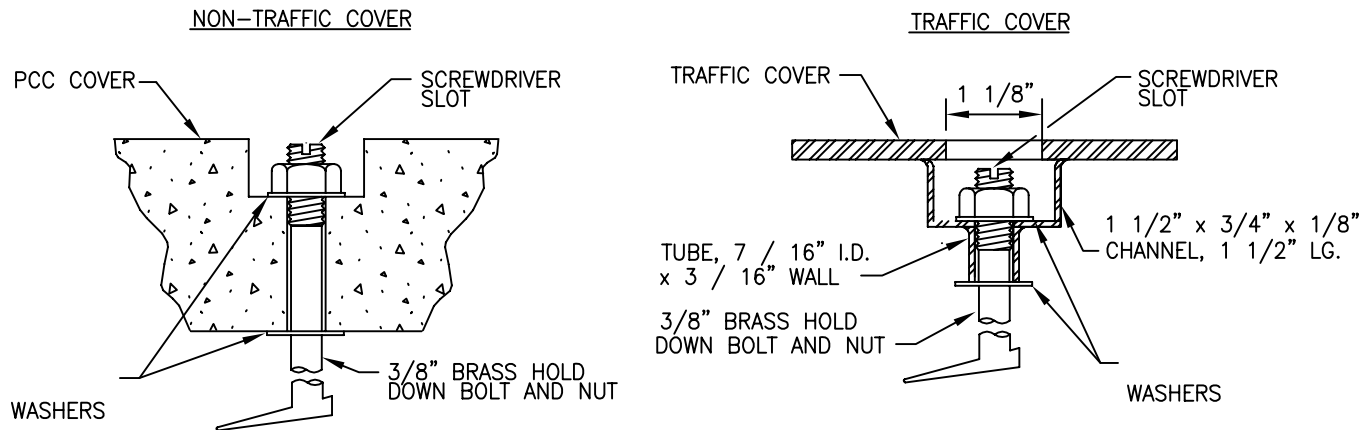
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CONCRETE PULLBOX
NON-TRAFFIC

DRAWING
 NO.
E-4



HOLD DOWN BOLT DETAIL



DIMENSION TABLE

	CONCRETE BOX		CONCRETE COVER					TRAFFIC COVER			△ ROCK SUMP
PULL BOX	MIN. THICKNESS	MIN. DEPTH	L	W	R	EDGE THICKNESS	EDGE TAPER	L	W	PLATE THICKNESS	
NO. 3 1/2	1"	12"	15 3/8"	10 1/8"	1 1/8"	1 3/4"	1/8"	19 1/8"	14"	1/4"	1.8
NO. 5	1"	12"	23 1/4"	13 3/4"	1 1/4"	2"	1/8"	24 5/8"	15 1/8"	1/4"	2.6
NO. 6	1 1/2"	12"	30 5/8"	17 5/8"	1 1/4"	2"	1/8"	34 5/8"	21 7/8"	1/4"	5.3
NO. 7	1 1/2"	14"	35 3/4"	24"	1 1/4"	3"	1/8"	39 3/4"	28 1/8"	1/4"	7.7
NO. 8	1 1/2"	14"	47 3/4"	30 1/8"	1 1/4"	3"	1/8"	51 3/4"	33 5/8"	1/4"	12.2
△ = MINIMUM CUBIC FEET OF DRAIN ROCK FOR ROCK SUMP. DOES NOT APPLY TO TRAFFIC BOX. PROVIDE DRAIN ROCK FOR TRAFFIC BOX IN ACCORDANCE WITH STD. E-5											



City of Morgan Hill
Public Works Department

Jim Oschcraft
CITY ENGINEER

4/1/96
DATE

REVISD

CONCRETE PULLBOX DETAILS AND DIMENSIONS

DRAWING
NO.
E-6

PULL BOX NOTES

1. Use steel cover and special concrete footing, as shown in Detail E-5, when box is approved by the City Engineer to be installed where subject to vehicular traffic loads. Steel cover shall have embossed non-skid pattern. (See detail E-5)
2. Steel reinforcing shall be as regularly used in the standard products of the respective manufacturer.
3. Pull boxes shall be marked as follows:
"TRAFFIC SIGNAL": For traffic signal systems with or without street lighting systems.
"STREETLIGHTING": For streetlighting systems only.
"SPRINKLER CONTROL": For sprinkler control systems only.
"ELECTRICAL": For miscellaneous electrical systems only.
4. All metal covers, metal Z-bar frame, metal rings, or any metallic component of a pull box shall be bonded to a #10 AWG or larger copper grounding conductor. Bonding jumpers shall be solid or braided copper equivalent to #10 AWG and shall be attached to a 1/4"-20 stainless steel screw (drill and tap as required) and approved grounding lug.
5. The pullbox cover opening shall be 1/8" greater in length and width.
6. The City Engineer shall approve installation of pullboxes in a sidewalk area except as shown in Dtl. E-2, Commercial Sidewalk. The depth of the pullbox shall be adjusted so that the top of the box is flush with the surrounding sidewalk.
7. Pull boxes shall not be installed within the boundary of new or existing wheelchair ramps or driveways.
8. All pull boxes shall be located within the City Right-Of-Way, or in an officially dedicated Public Utility Easement (upon the approval of the City Engineer).
9. Drain rock cushion shall extend a minimum of 6" beyond inside walls of non-traffic boxes.
10. Conduits shall terminate not more than 2" and not less than 1" inside the box, and shall be not less than 1" nor more than 2" clear from the bottom of the box.
11. Conduits shall enter the box with manufactured long radii type or standard 45° elbow.
12. Pull box shall be size No. 3 1/2 minimum unless approved otherwise.
13. Pull boxes shall be placed at intervals not exceeding 200' in conduit runs.
14. Install pull box extension(s) as required to set top of pull box flush with surrounding grade.



City of Morgan Hill
Public Works Department

Jim Ashcraft
CITY ENGINEER

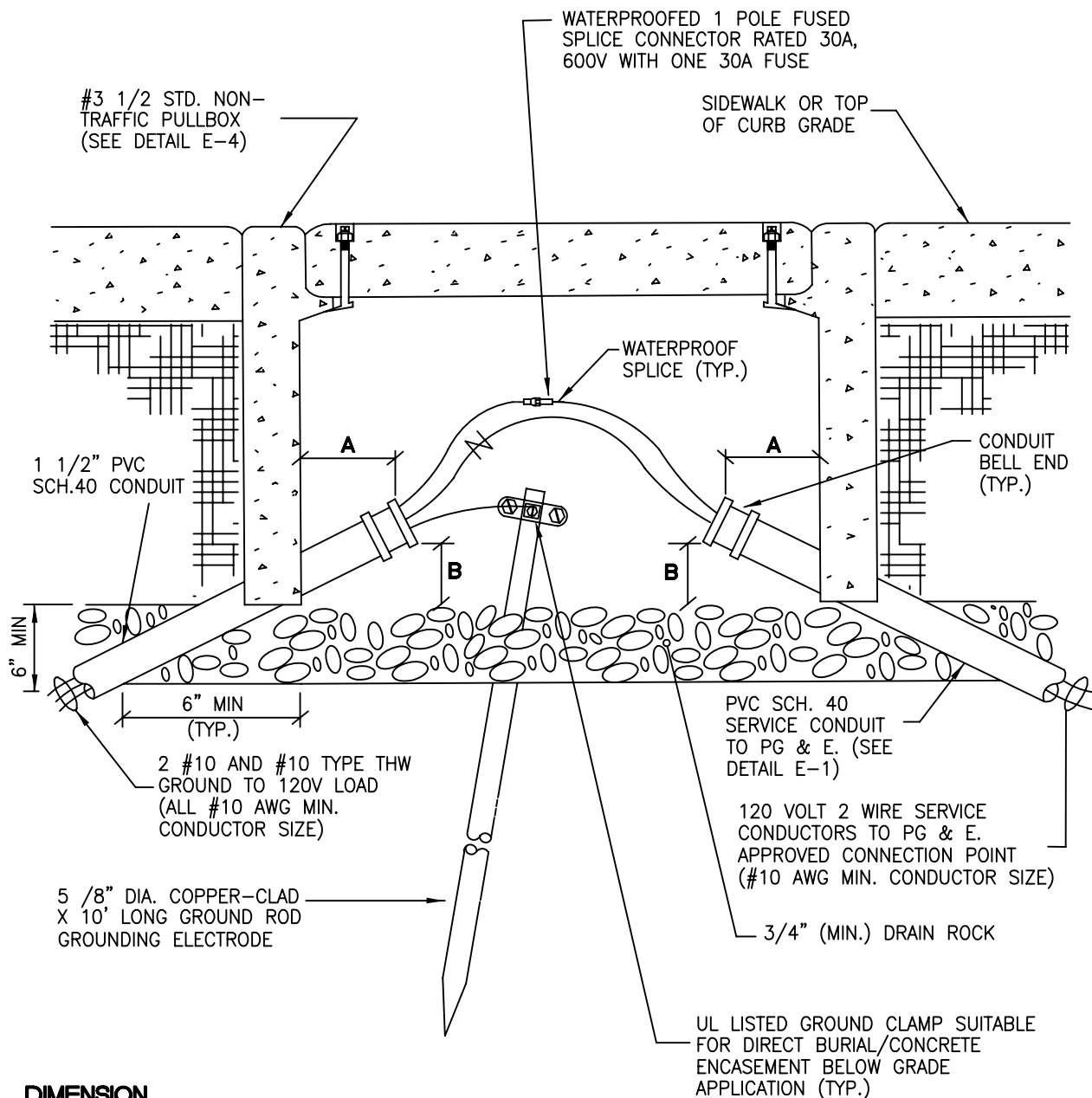
4/1/96
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CONCRETE PULLBOX NOTES

DRAWING
NO.

E-7



DIMENSION

A: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)
 B: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)

NOTES:

1. SEE DETAILS E-6, AND E-7 NOTES.
2. PROVIDE 3' OF SLACK IN ALL CONDUCTORS IN ACCORDANCE WITH SPECIFICATIONS. (SLACK NOT SHOWN.)



City of Morgan Hill
 Public Works Department

Jim Oschcraft
 CITY ENGINEER

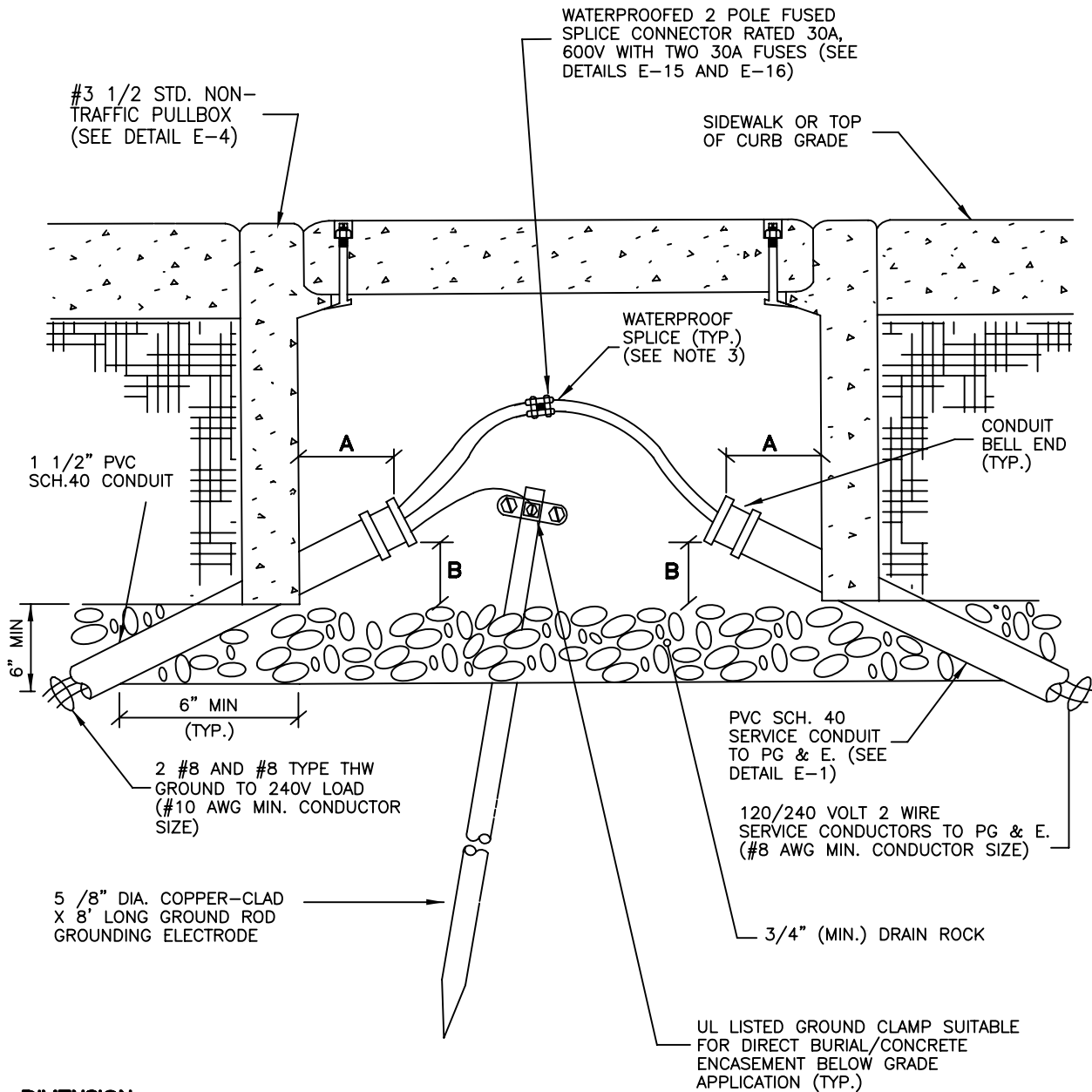
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UNDERGROUND STREETLIGHT 120V SERVICE CONNECTION

DRAWING
 NO.

E-8



DIMENSION

- A: 1" MIN. 2" MAX. (TYP.— ALL CONDUITS)
 B: 1" MIN. 2" MAX. ABOVE GROUT (TYP.— ALL CONDUITS)

NOTES:

1. SEE DETAILS E-6, AND E-07 NOTES.
2. PROVIDE 3' OF SLACK IN ALL CONDUCTORS IN ACCORDANCE WITH SPECIFICATIONS (SLACK NOT SHOWN).



City of Morgan Hill
 Public Works Department

Jim Oshroff
 CITY ENGINEER

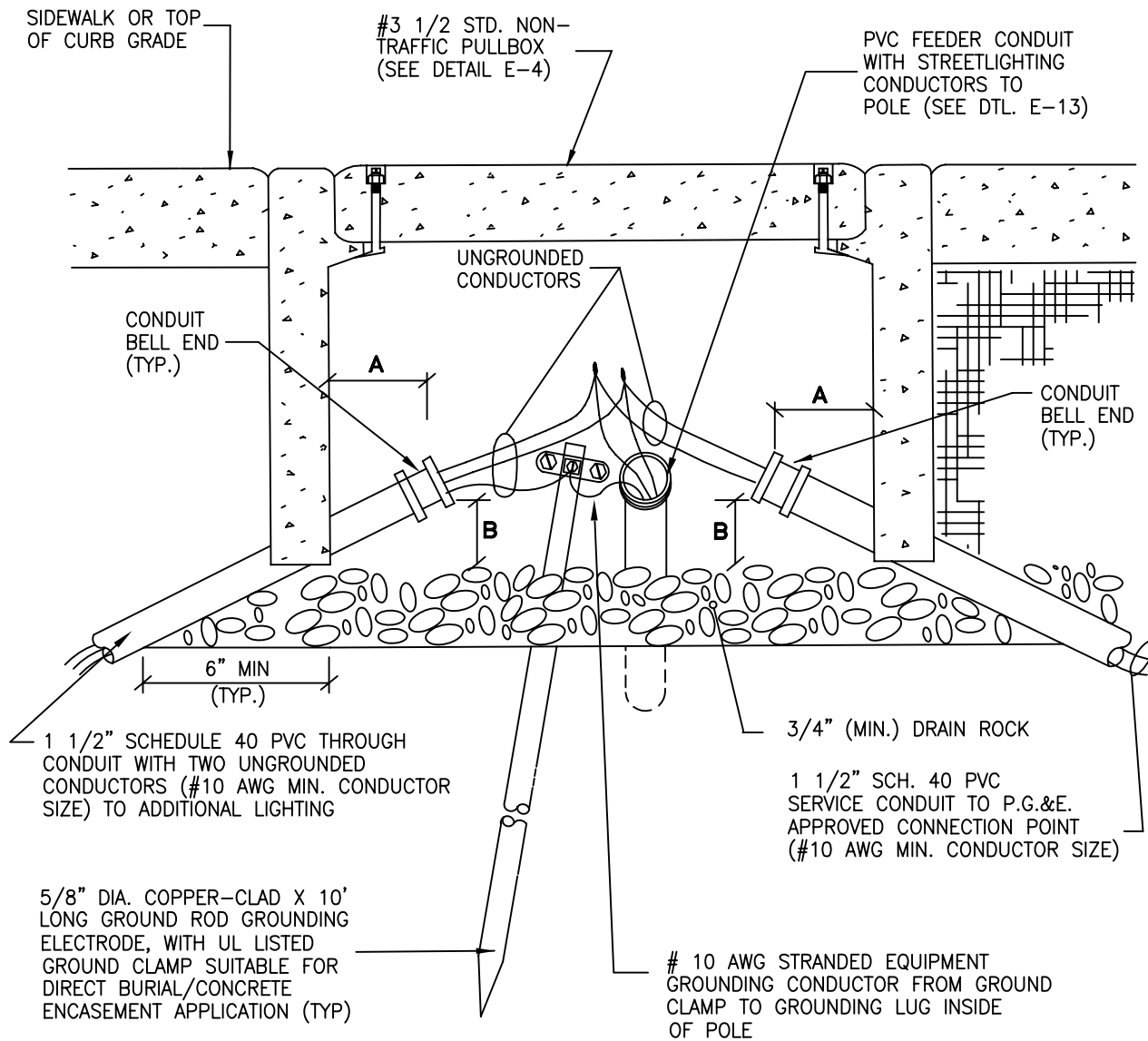
4/1/96
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6/8/00
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UNDERGROUND STREETLIGHT 240V SERVICE CONNECTION

DRAWING
 NO.

E-9



DIMENSION

- A: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)
 B: 1" MIN. 2" MAX. (TYP.- ALL CONDUITS)

NOTES:

1. SEE DETAILS E-6 AND E-7 NOTES.
2. PROVIDE 3' OF SLACK IN ALL CONDUCTORS IN ACCORDANCE WITH SPECIFICATIONS. (SLACK NOT SHOWN.)
3. 240V STREETLIGHTING CIRCUIT SHOWN. 120V STREETLIGHTING SIMILAR EXCEPT NEUTRAL CONDUCTOR IS PRESENT.



City of Morgan Hill
 Public Works Department

Jim Ashcraft
 CITY ENGINEER

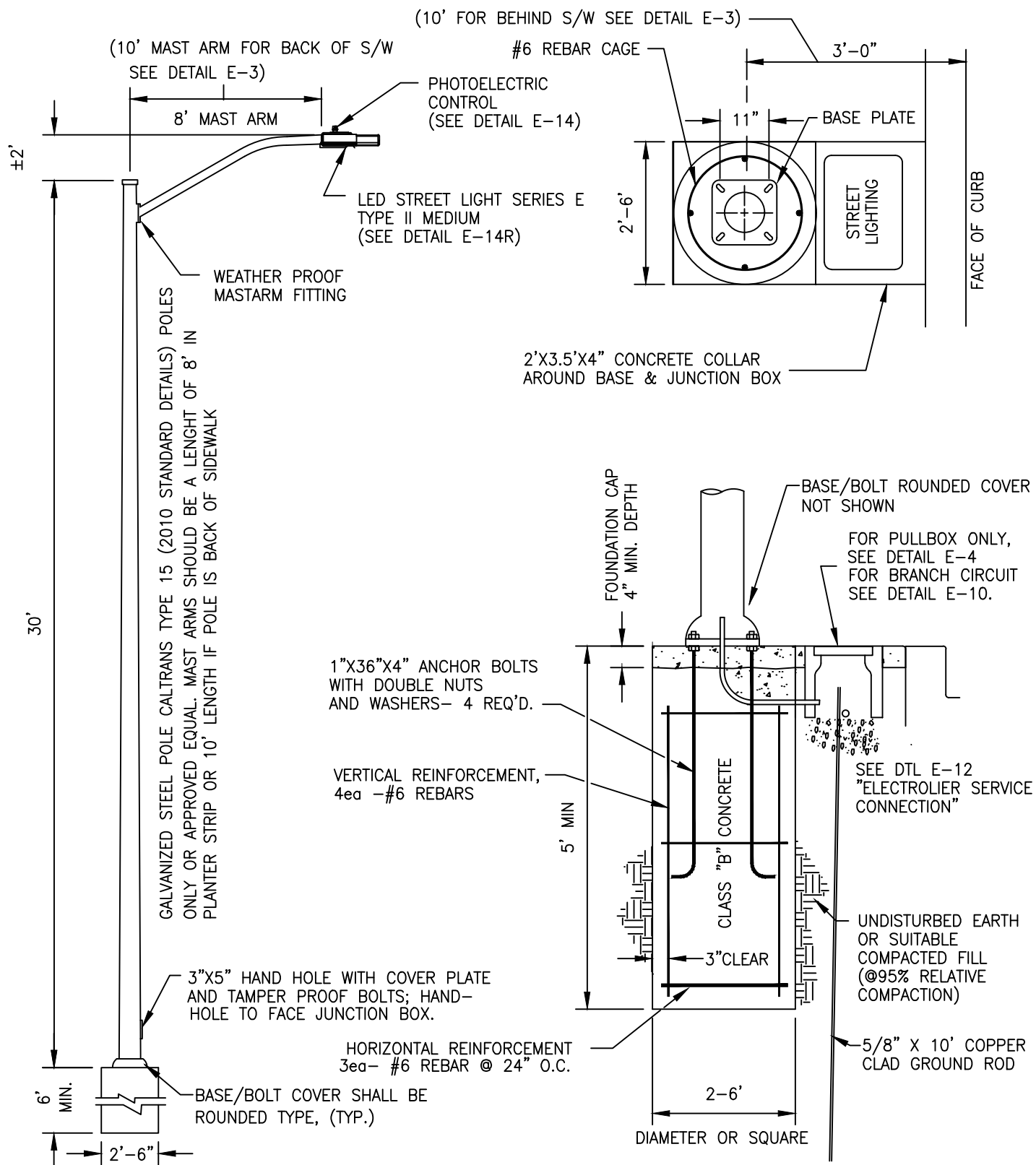
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STREETLIGHT-BRANCH CIRCUIT PULLBOX

DRAWING
 NO.

E-10



NOTE: THE APPLICATION SHOWN REFERENCES ELECTROLIERS INSTALLED WITH A DETACHED SIDEWALK. FOR ELECTROLIERS LOCATED BEHIND THE SIDEWALK USE DETAIL E-3 FOR LOCATION DIMENSIONS.



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Public Works Department

S.E.
CITY ENGINEER

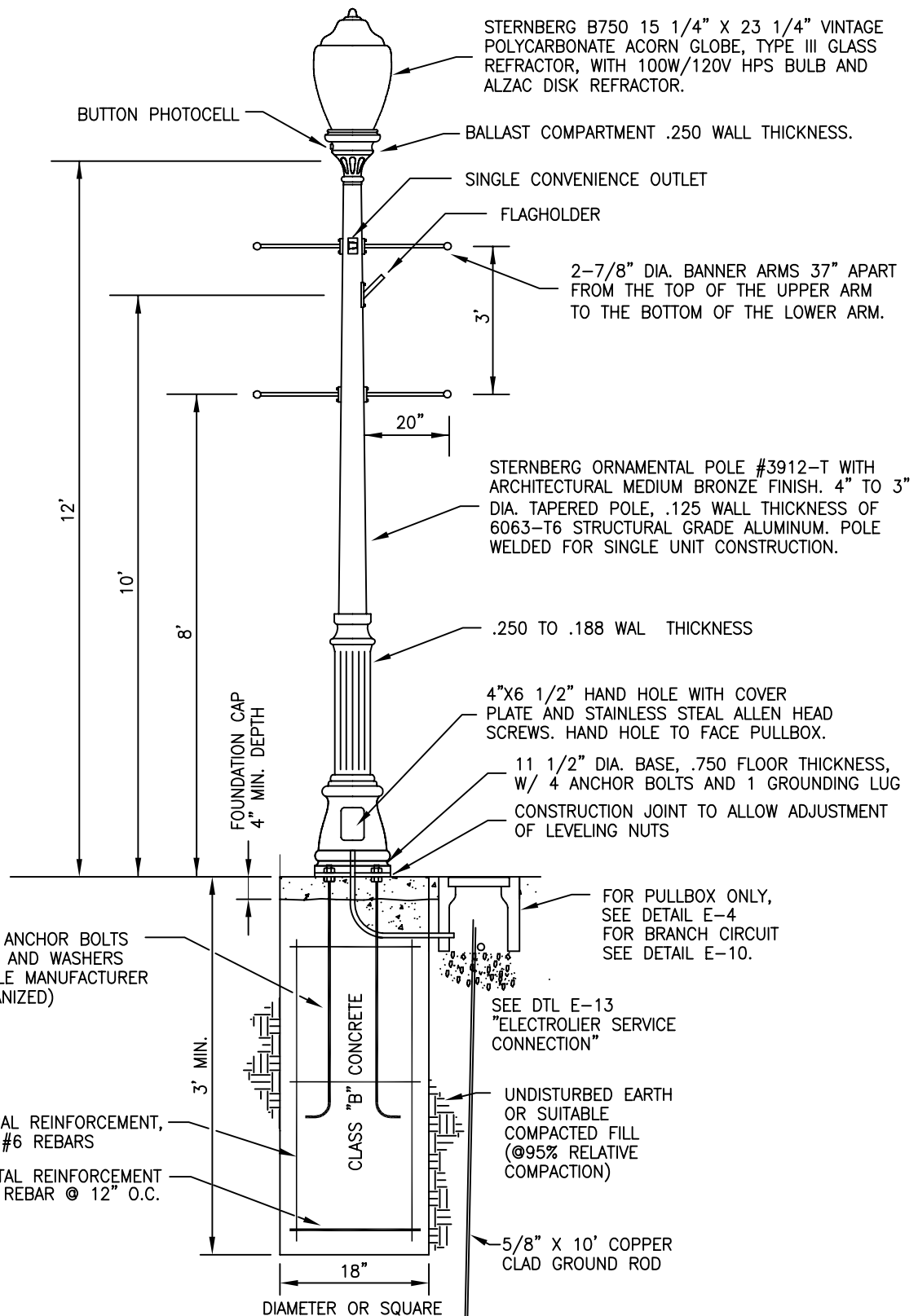
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ELECTROLIER & BASE

DRAWING
NO.

E-11



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Public Works Department

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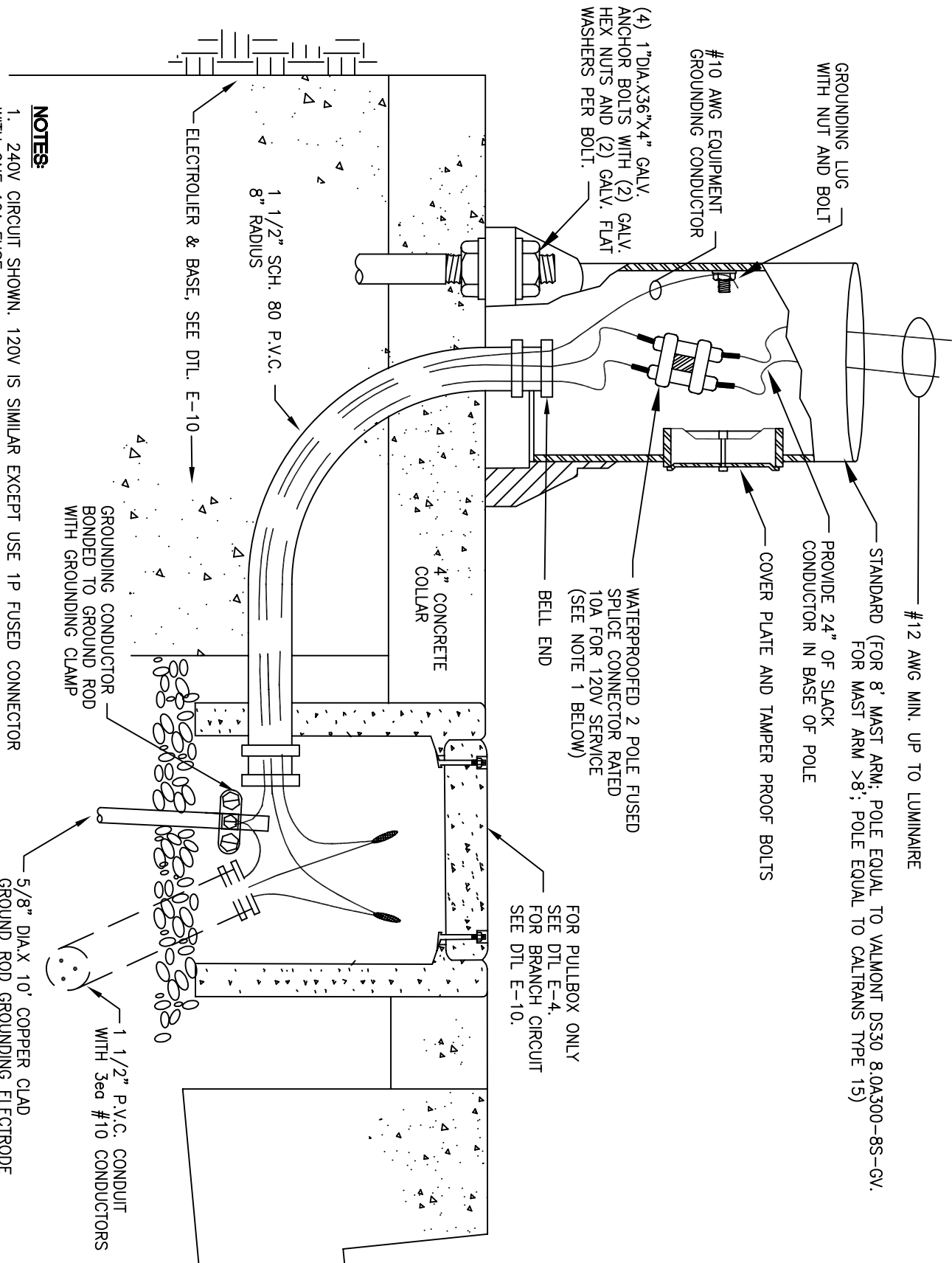
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DECORATIVE STREET LIGHT

DRAWING
NO.

E-12



NOTES:

1. 240V CIRCUIT SHOWN. 120V IS SIMILAR EXCEPT USE 1P FUSED CONNECTOR WITH ONE 10A FUSE.
2. THIS DETAIL SHOULD BE PROVIDED WITH DETAIL E-1, E-11, E-16 AND E-17



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Public Works Department

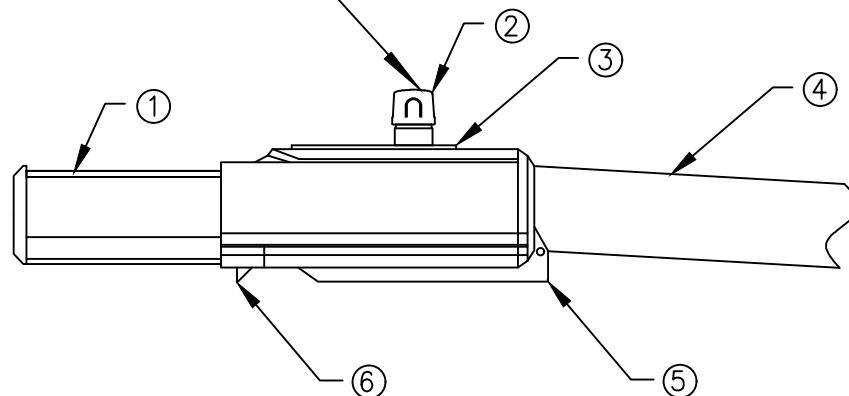
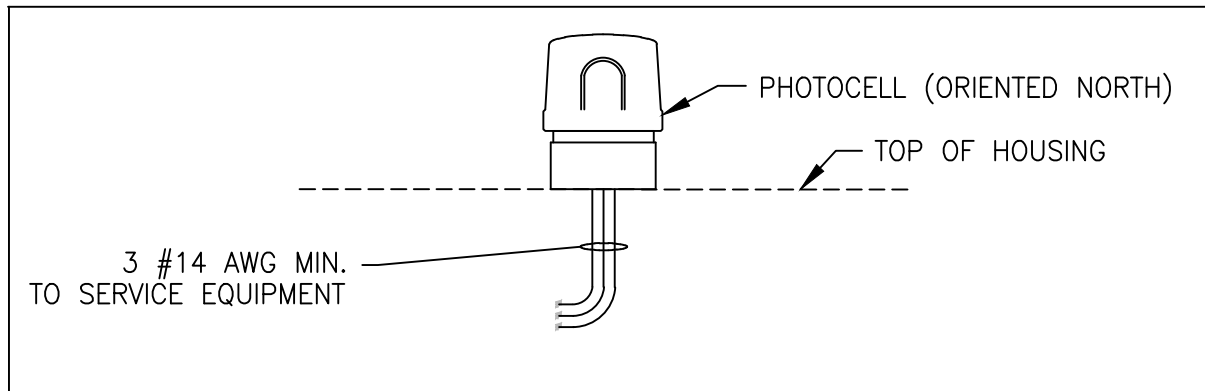
Jim Oshroff
CITY ENGINEER

4/1/96
DATE

8/6/98
REVISED

**ELECTROLIER SERVICE
CONNECTION**

DRAWING
NO.
E-13



SIDE VIEW

LED STREETLIGHT SERIES E
TYPE II MEDIUM

NOTES:

- ① LIGHT ENGINE PORTION OF EXTRUSION TO REMAIN NATURAL ALUMINUM, NO PAINTING
- ② NEMA PHOTOCELL(NOT INCLUDED) AND RECEPTICAL
- ③ FIXTURE HOUSING IS ALL ALUMINUM AND DESIGNED TO MOUNT ON 1.25" OR 2" O.D. HORIZONTAL TENON, 3 BOLT PATTERN, POLE TYPE 15
- ④ MAST/ARM LENGHT 10' FOR POLE AT BACK OF WALK, OR 8' LENGHT FOR USE IN PARK STRIP
- ⑤ COVER
- ⑥ LATCH
- ⑦ UTILIZE CREE BRAND FIXTURE OR CITY APPROVED EQUIVALENT. WATTAGE SHALL BE BASED ON EQUIVALENT WATTAGE. RESIDENTIAL STREETS WILL BE 53 WATTS, COLLECTOR WILL BE 89 WATTS AND ARTERIAL STREETS WILL BE 139 WATTS.
- ⑧ ALL RESIDENTIAL FIXTURES SHALL HAVE BACKLIGHTING SHIELDS.



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Public Works Department

Kare Bair

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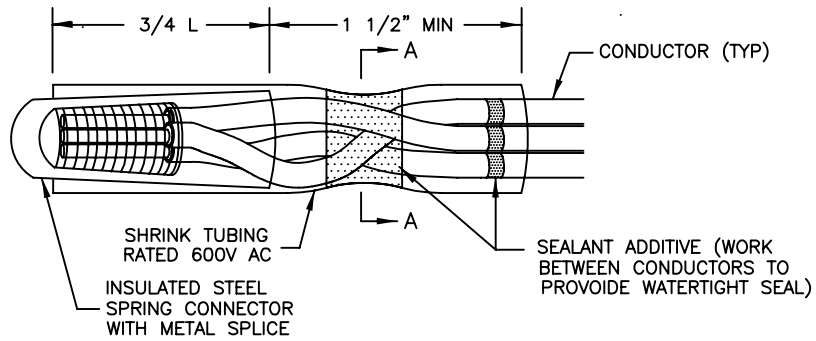
3/4/14
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11/2/17
REVISED

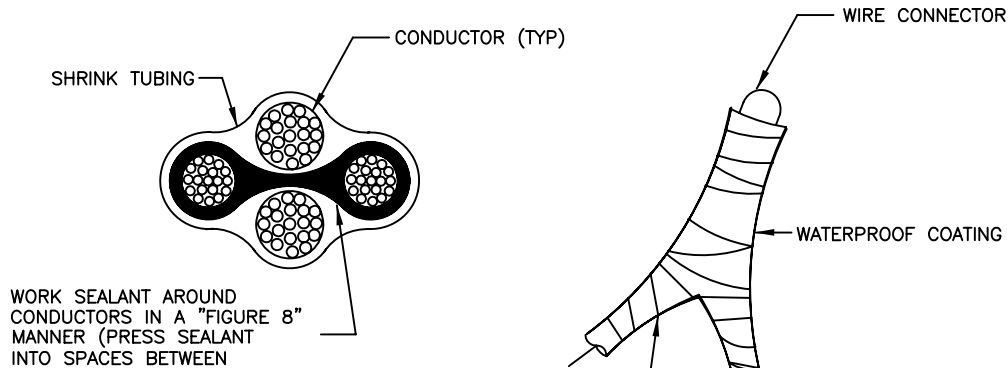
LED LUMINAIRE

DRAWING
NO.

E-14

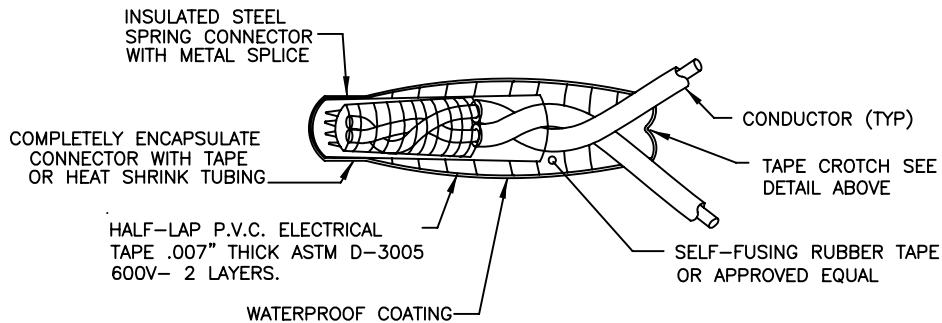


SPLICE WITH SHRINK TUBING



SECTION A - A

CROTCH DETAIL



SPLICE WITH OUT SHRINK TUBING

NOTES:

1. PAINT ALL TAPED SPLICES WITH ELECTRICAL WATERPROOF COATING.
2. DO NOT EXCEED SPRING CONNECTOR MANUFACTURER'S RECOMMENDATIONS FOR AWG COPPER WIRE SPLICING COMBINATIONS.



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Public Works Department

Jim Oshecraft
CITY ENGINEER

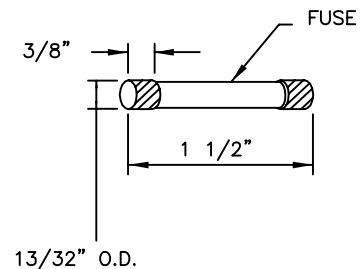
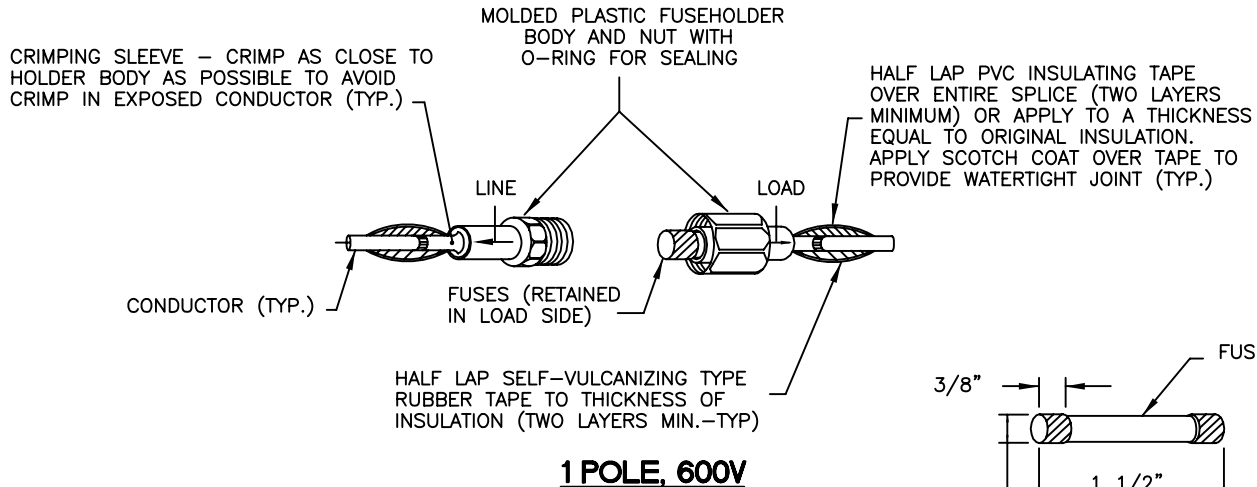
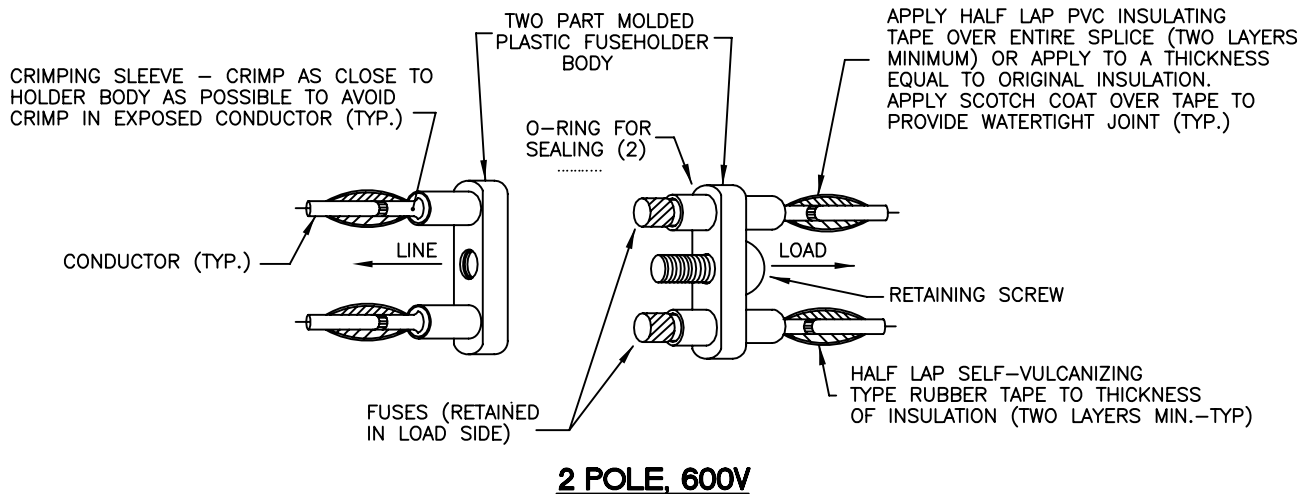
4/1/96
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REVISED

CONDUCTOR SPLICING SPRING CONNECTORS

DRAWING
NO.

E-15



NOTES:

1. STRIP ENDS OF CONDUCTOR INSULATION.
2. CRIMP CONNECTOR WITH TOOL DESIGNED FOR THIS PURPOSE.
3. AMPERE RATING OF FUSEHOLDERS SHALL BE RATED 30A MIN.
4. VOLTAGE RATING OF FUSEHOLDERS SHALL BE 600V MIN.
5. PAINT ALL FINISHED TAPED CONNECTIONS WITH ELECTRICAL INSULATING COMPOUND (COATING) TO PROVIDE WATERTIGHT JOINTS.
6. FUSEHOLDERS SHALL BE TRON TYPE "HEX" (240V) OR "HEB" (120V) AS MANUFACTURED BY BUSSMAN DIV. MCGRAW-EDISON CO. OR APPROVED EQUAL. REJECTION TYPE FUSEHOLDERS ARE NOT ACCEPTABLE.
7. USE 10A, 250V A.C. RATED, GENERAL PURPOSE NON-TIME DELAY TYPE "BAF" OR "BAN" FUSES AS MANUFACTURED BY BUSSMAN DIV. OR APPROVED EQUAL FOR INDIVIDUAL STREETLIGHT FUSING APPLICATIONS.
8. FUSE EACH 240V OR 120V STREETLIGHT LUMINAIRE INDIVIDUALLY WITH A 10A FUSE.
9. USE 30A, 250V A.C. RATED, TRON TIME-DELAY TYPE "FNQ" FUSES AS MANUFACTURED BY BUSSMAN DIV. OR APPROVED EQUAL FOR SERVICE APPLICATIONS AS REQUIRED.
10. FUSES FOR UNDERGROUND FED ELECTROLIERS SHALL BE INSTALLED IN THE BASE OF THE ELECTROLIER. SEE DTL. E-13



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Public Works Department

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4/1/96
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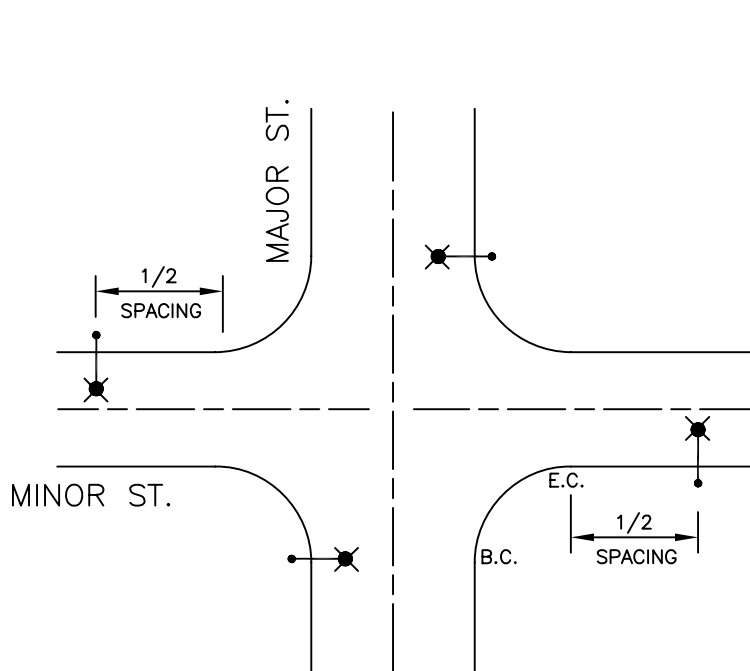
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FUSED SPLICE CONNECTORS

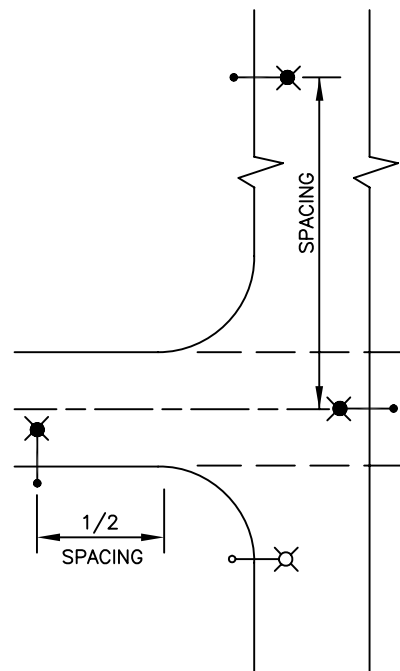
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E-16

ROAD TYPE	WATTAGE OF HIGH PRESSURE SODIUM	SPACING
ARTERIAL	150	160' – 180' OPPOSITE
COLLECTOR	150	130' – 140' STAGGERED
LOCAL	100	130' – 140' STAGGERED
RURAL	100	380' – 420' STAGGERED



4-WAY INTERSECTION SPACING



"T" INTERSECTION SPACING

- — ✕ "BASIC" ELECTROLIER
- — ✕ ADDITIONAL (WHEN REQUIRED)



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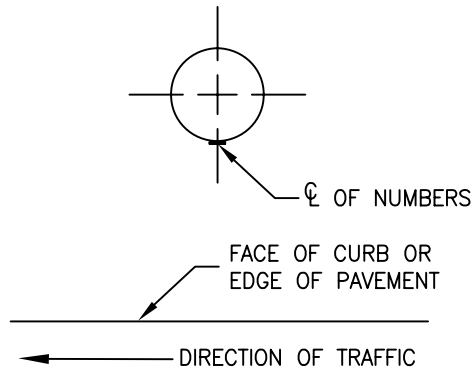
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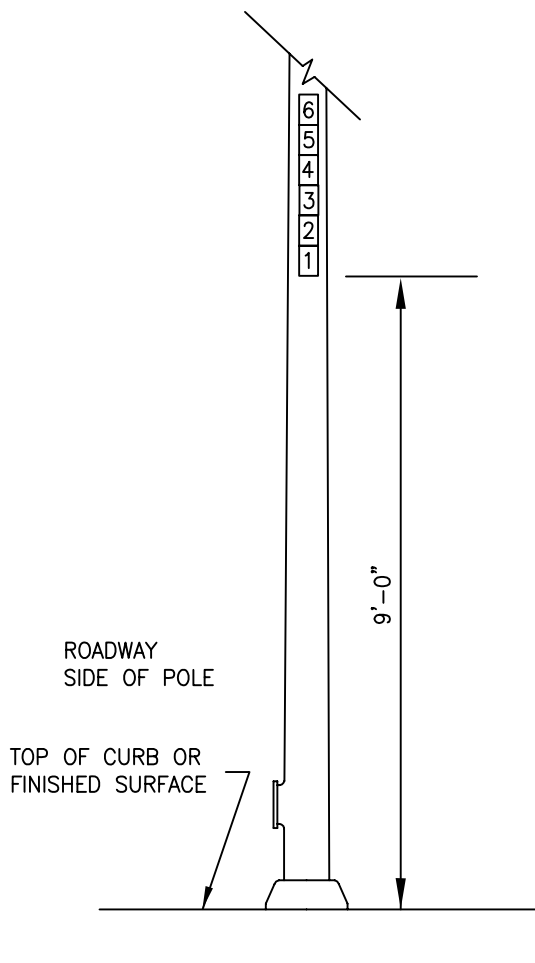
ELECTROLIER SPACING

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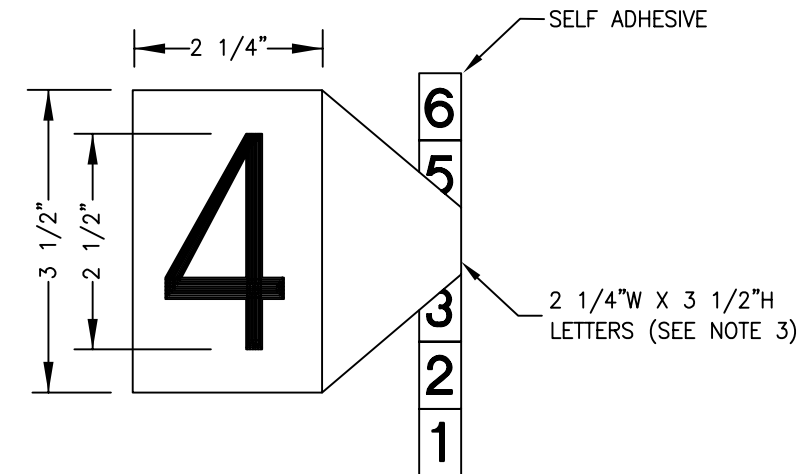
E-17



PLAN VIEW
N.T.S.



NUMBER LOCATION
N.T.S.



NUMBER DETAIL
N.T.S.

NOTES

1. STICK-ON REFLECTIVE NUMBERS AND LETTERS SHALL BE PLACED ON ALL ELECTROLIERS AND TRAFFIC SIGNAL POLES. ALL LUMINAIRES SHALL HAVE WATTAGE CODES AFFIXED TO THE BOTTOM OF LAMP HOUSING AND SHALL BE VISIBLE FROM DIRECTLY BELOW THE LAMP. ALL NUMBERING AND/OR LETTERING FOR POLES AND LAMPS SHALL BE PLACED IN ACCORDANCE WITH PACIFIC GAS AND ELECTRIC (P.G.&E.) ENGINEERING STANDARD 015137 "IDENTIFICATION OF STREET LIGHT NUMBERS".
2. REFLECTIVE SHEETING, NUMBERS AND LETTERS SHALL COMPLY WITH THE RESPECTIVE SPECIFICATIONS IN THE STATE DEPARTMENT OF TRANSPORTATION PUBLICATION "SPECIFICATIONS FOR ALUMINUM REFLECTIVE SHEETING SIGNS".
3. THE NUMBERS AND EDGE SEALER SHALL BE PLACED ON THE EQUIPMENT WHERE DESIGNATED BY THE PLANS OR THE ENGINEER. THE CONTRACTOR SHALL OBTAIN THE SPECIFIC DESIGNATION FROM THE ENGINEER.
4. REFLECTIVE NUMBERS AND LETTERS SHALL HAVE SILVER REFLECTIVE ADHESIVE SHEETING, 2 1/4" IN WIDTH, WITH 3 1/2" IN HEIGHT BLACK SERIES D LETTERS AND NUMBERS. THE LETTERS AND NUMBERS MAY BE SCREENED ON TO THE REFLECTIVE SHEETING OR MAY BE DIE-CUT AND ADHESIVELY ATTACHED.
5. THE LABELS FOR EACH LOCATION MAY BE INDIVIDUAL CHARACTERS APPLIED OR A CONTINUOUS STRIP APPLIED. THE LABELS SHALL BE VERTICALLY ARRANGED WITH THE BOTTOM HEIGHT PLACED 9'-0" FROM THE TOP OF CURB OR FINISHED GRADE.
6. REFLECTIVE NUMBERS SHALL BE APPLIED TO A CLEAN SURFACE. THE EDGES OF THE NUMBERS SHALL BE TREATED WITH EDGE SEALER.
7. WHERE NEW NUMBERS ARE TO BE PLACED ON EXISTING OR RELOCATED EQUIPMENT, THE EXISTING NUMBERS SHALL BE REMOVED AND THE SURFACE SHALL BE CLEANED.



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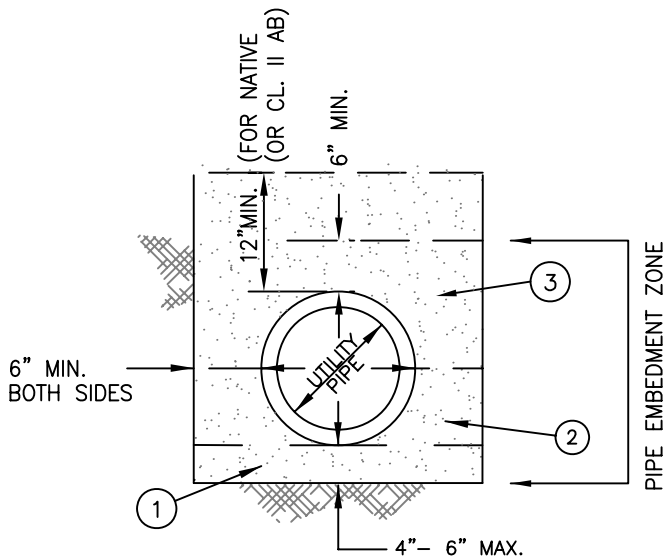
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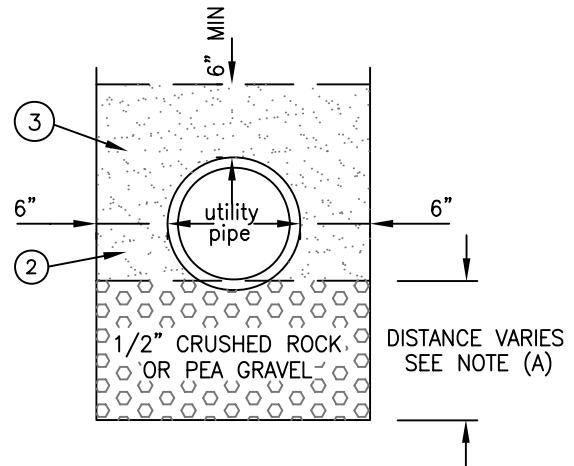
POLE NUMBERING FOR TRAFFIC SIGNAL POLES AND ELECTROLIERS

DRAWING
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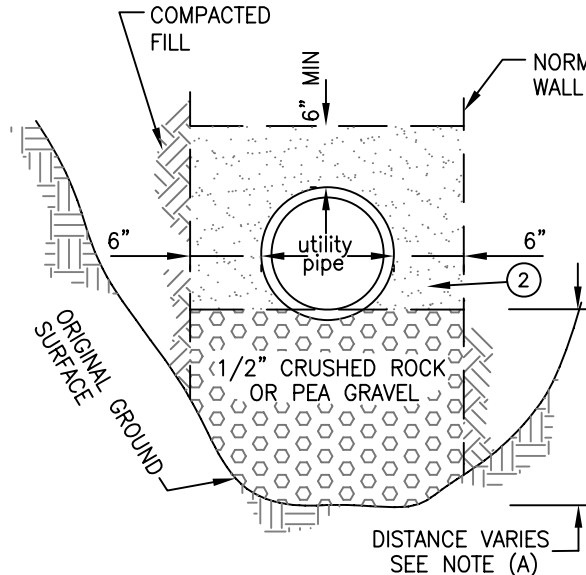
E-18



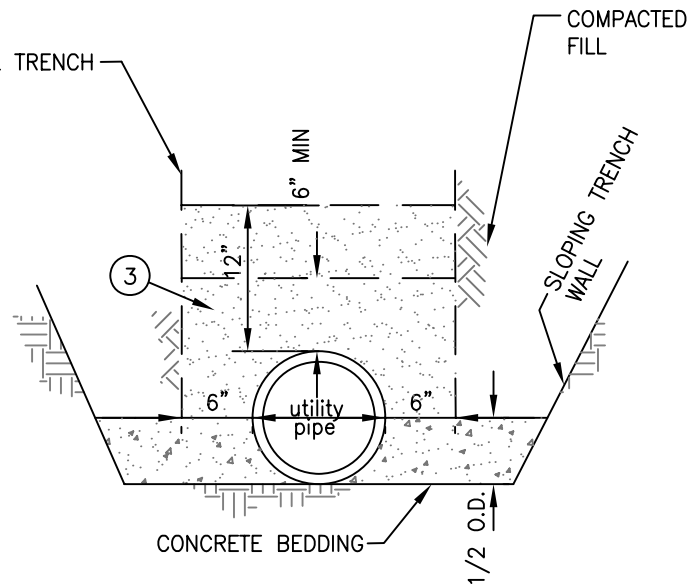
CASE 'A': NORMAL TRENCH
NTS



CASE 'B': WET / SPONGY GROUND
NTS



CASE 'C': FILLED GROUND
NTS



**CASE 'D': BOTTOM OF TRENCH
EXCEEDS NORMAL TRENCH WIDTH**
NTS

NOTES:

- (A) DISTANCE WILL VARY BASED UPON FIELD CONDITIONS, AND SOILS REPORT RECOMMENDATIONS.
- (B) PIPE EMBEDMENT SHALL CONFORM TO THE PRACTICE RECOMMENDED FOR CLASS III MATERIAL (SAND) IN ASTM D 2321 "UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS".
- (1) SAND BEDDING, HAND PLACED AND COMPACTED TO MIN. 90% RELATIVE COMPACTION, 4" MIN. TO 6" MAX.
- (2) HAUNCHING; HAND PLACED AND COMPACTED TO MIN. 90% RELATIVE COMPACTION TO SPRING LINE OF PIPE.
- (3) INITIAL BACKFILL, INSTALL AND COMPACT TO A MINIMUM OF 6" ABOVE PIPE CROWN (12" MIN. FOR NATIVE).



City of Morgan Hill
Public Works Department

Jim Oshroff
CITY ENGINEER

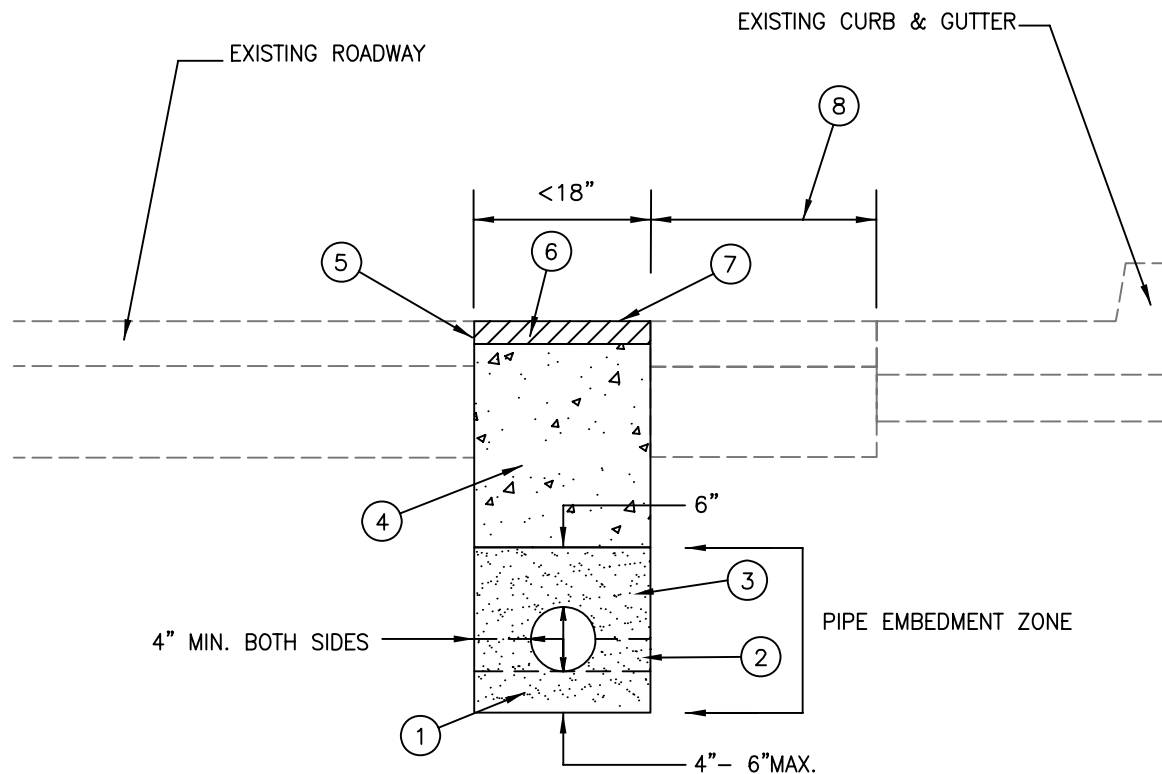
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TRENCH BEDDING

DRAWING
NO.

U-1



NOTES:

- A. PIPE EMBEDMENT SHALL CONFORM TO THE PRACTICE RECOMMENDED FOR CLASS III MATERIAL (SAND) IN ASTM D 2321 "UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS".
- (1). SAND BEDDING, HAND PLACED AND COMPACTED TO 90% RELATIVE COMPACTION, 4" MIN. TO 6" MAX.
- (2). HAUNCHING, HAND PLACED AND COMPACTED TO 90% RELATIVE COMPACTION TO SPRING LINE OF PIPE.
- (3). INITIAL BACKFILL, INSTALL AND COMPACT TO A MINIMUM OF 6" ABOVE PIPE CROWN.
- (4). 1.5 SACK CEMENT SLURRY BACK FILL. CEMENT SLURRY BACKFILL TO BE CURED PER MANUFACTURERS REQUIREMENTS PRIOR TO PAVING.
- (5). SAW CUT EXISTING PAVEMENT, ALL VERTICAL EDGES SHALL BE TACKED PRIOR TO PAVING.
- (6). 1 1/2" AC (1/2" TYPE B).
- (7). SURFACE SHALL BE FOG SEALED AFTER PAVING. EXISTING ROADWAY SURFACE SHALL BE REPLACED IN KIND (OIL & SCREENED, SLURRY SEAL, ETC.)
- (8). IF DISTANCE IS LESS THAN 3 FEET, PAVEMENT RESTORATION SHALL EXTEND TO LIP OF GUTTER.



City of Morgan Hill
Public Works Department

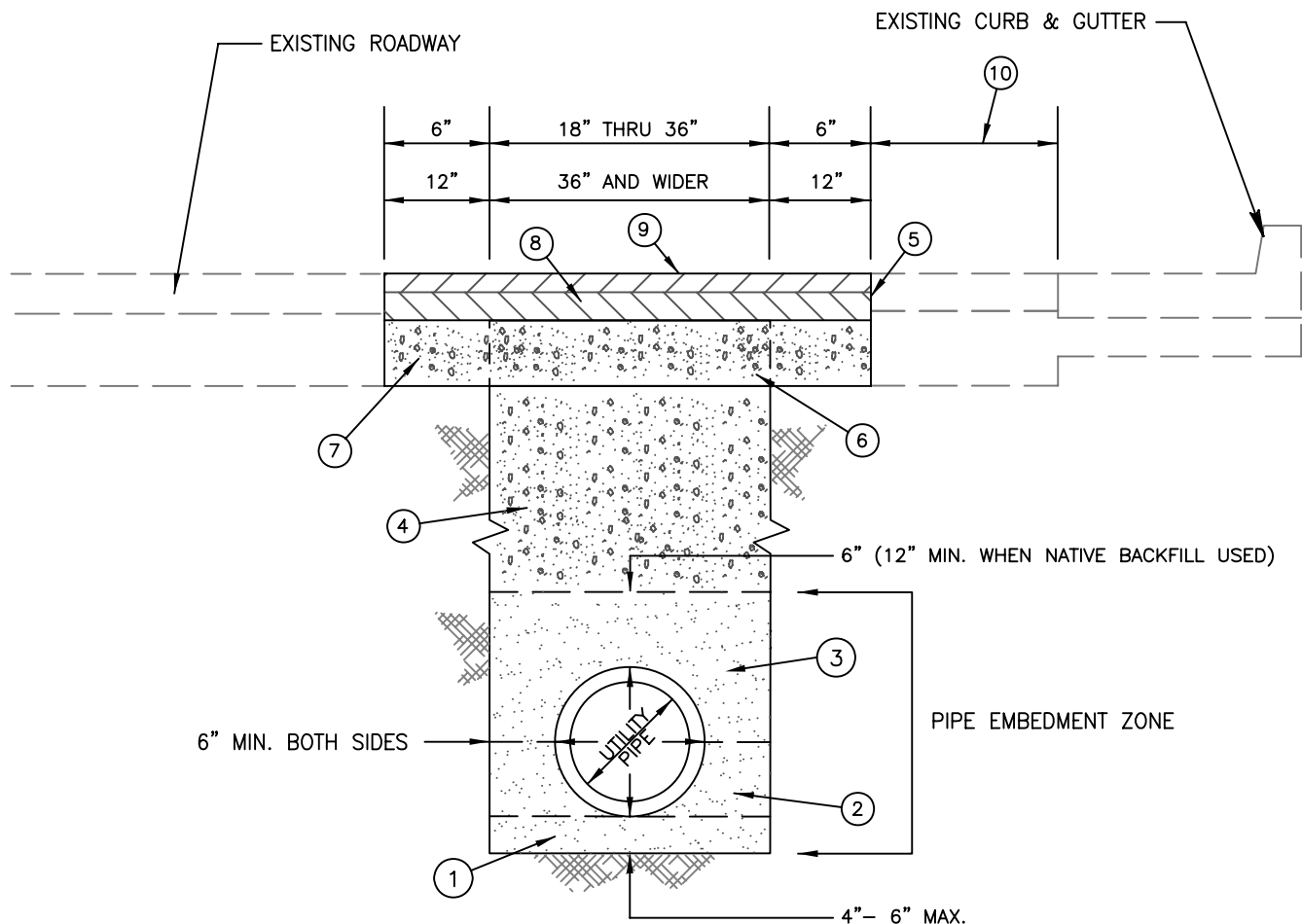
Jim Oschcraft
CITY ENGINEER

4/1/96
DATE

3/15/07
REVISED

**TRENCH RESTORATION/BACKFILL
FOR
TRENCH WIDTHS LESS THAN 18"**

DRAWING
NO.
U-2



NOTES:

- A. PIPE EMBEDMENT SHALL CONFORM TO THE PRACTICE RECOMMENDED FOR CLASS III MATERIAL (SAND) IN ASTM D 2321 "UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS".
- (1). SAND BEDDING, HAND PLACED AND COMPACTED TO MIN. 90% RELATIVE COMPACTION, 4" MIN. TO 6" MAX.
- (2). HAUNCHING; HAND PLACED AND COMPACTED SAND TO MIN. 90% RELATIVE COMPACTION TO SPRING LINE OF PIPE.
- (3). INITIAL SAND BACKFILL, INSTALL AND COMPACT TO A MINIMUM OF 6" ABOVE PIPE CROWN (12" MIN. FOR NATIVE).
- (4). 100% CLASS 2 AGGREGATE BASE ROCK BACKFILL COMPACTED IN LIFTS TO 95% RELATIVE COMPACTION. FLOODING OR JETTING SHALL ONLY BE ALLOWED UPON CITY ENGINEER APPROVAL. NATIVE BACKFILL MAY BE USED DURING THE CONSTRUCTION OF NEW STREETS ONLY AND SHALL BE USED ONLY UPON APPROVAL OF THE CITY ENGINEER AND UPON THE RECOMMENDATION OF A QUALIFIED SOILS ENGINEER/SOILS REPORT.
- (5). SAW CUT EXISTING PAVEMENT, ALL VERTICAL EDGES SHALL BE TACKED PRIOR TO PAVING.
- (6). 8" (MIN) CLASS 2 AGGREGATE BASE ROCK, COMPACTED TO 95% RELATIVE COMPACTION.
- (7). AT THE DISCRETION OF THE PROJECT INSPECTOR, THE EXISTING BASE ROCK MAY REMAIN FOR THIS TRENCH WIDTH PROVIDED THAT THE BASE ROCK IS COMPACTED AND IS NOT CONTAMINATED.
- (8). MATCH EXIST. AC SECTION OR 6" MIN. IN 2 LIFTS. BASE COURSE TO BE 3/4" TYPE B AC, AND SURFACE COURSE TO BE 1/2" TYPE B AC.
- (9). SURFACE SHALL BE FOG SEALED AFTER PAVING. EXISTING ROADWAY SURFACE SHALL BE REPLACED IN KIND.
- (10). IF DISTANCE IS LESS THAN 3 FEET, PAVEMENT RESTORATION SHALL EXTEND TO LIP OF GUTTER.



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TRENCH RESTORATION/BACKFILL FOR TRENCH WIDTHS GREATER THAN 18"

DRAWING
NO.

U-3