LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DRAFTING STANDARDS
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by Engineering Systems

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PREFACE

The standards for drafting contained herein are issued for the purpose of maintaining uniformity and clarity in the preparation of Department project drawings.

The manual is intended to be used by the various Divisions within the Department and by consultants doing work with or for the Department. This manual is not a text book on drafting practices or a substitute for drafting knowledge, but is an aid to create uniform and easy to read Department drawings. Drawings may be drafted manually or with a CADD system. The standards will be applicable to both types of drawings unless specifically noted otherwise. If the plans are prepared with freehand lettering, all lettering on the title sheets, street names, title blocks, section titles and other prominent lettering shall be done using Leroy lettering with an equivalent size to the size shown on the sample plans.

The manual is arranged in sections. The first section contains the general drafting procedures. The later sections supplement the general information with specific information pertaining to individual types of drawings, details or projects.

SECTION A
GENERAL DRAFTING INFORMATION

A-1 INTRODUCTION

This section contains general drafting guidelines for various aspects of a project. The information in later sections supplements these guidelines. Any conflicting information in later sections has precedence over information in this section. Any deviation from, or addition to, these standards should be adequately shown on the plan so that construction details are not overlooked and/or misinterpreted.

A-2 DRAFTING MATERIALS

Use 3 mil polyester drafting film for all manually drafted projects. Use ink and pens acceptable for use on polyester drafting film. Contact the Technical Services Unit, Design Division, regarding allowable substitutes or alternatives.

Reproduce final CADD drawings onto photographic polyester drafting film after drawings are ready for signature. All stamps and signatures will be placed on the photographic copy of the drawings.

A-3 PREPRINTED AND ELECTRONIC SHEETS

Los Angeles County Department of Public Works standard title, plan, plan/profile, and section sheets for various types of projects are available in electronic format and on preprinted polyester drafting film. These sheets are 841 x 594 mm in size. A list of these sheets and their available formats is shown in **Appendix A, Table A3-1**.

A-4 NUMBERING

When displaying numbers, always use decimals, never fractions. Use a leading zero before the decimal marker for values less than one. Use spaces instead of commas to separate blocks of three digits, both before and after the decimal marker, except for currency. In numbers with only four digits on either side of the decimal, a space is not necessary except for uniformity in tables. The decimal marker is a period. Place a space between the number and the unit of measure, when shown.

[When not using SI units, use commas to separate blocks of three digits before the decimal marker. Numbers after the period are not separated. Do not place a space between the number and the unit of measure symbol.]

A-5 LETTERING

Letter all text in Leroy font or equivalent, such as Universal or Helvetica. Lettering for

all titles, subtitles, street names and match line text will be upper case. It is preferable not to use abbreviations. However, when room for lettering is limited, abbreviations may be used. Periods are not to be used with abbreviations. Abbreviations will be capitalized and spelled as shown in **Appendix A, Table A5-1**. Do not mix names and abbreviations in units of measure. All other lettering will follow normal grammatical rules: the first letter of the first word in a sentence is upper case and the rest of the statement lower case. The plural form of metric units is the same as the singular form. Lettering in plan view will not have a slant, but lettering in profile view will have a 15o slant to the right so that the letters will stand out against the profile grid.

Place lettering to avoid crossing leader lines. When necessary, leader lines will be broken to accommodate lettering. Draft text with height and line weight as shown in **Appendix A, Table A5-2**. Minimum text height will be 2.5 mm (.100") for both freehand and mechanical lettering. This minimum will ensure the readability of the plans when they are reduced for micro fiche or other long term storage. Sample text showing the direction of lettering is shown in **Figure A5-1**.

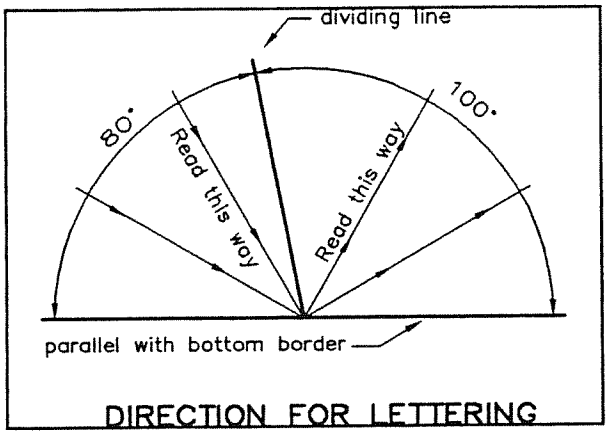


Figure A5-1

A-6 LINE FONTING AND THICKNESS

All lines should be clear, sharp, and distinct. Lines are shown with different thicknesses and fonting so the entities that they symbolize are recognizable quickly and distinctly. Draft line work with thickness and fonting as shown in **Appendix A, Table A6-1**.

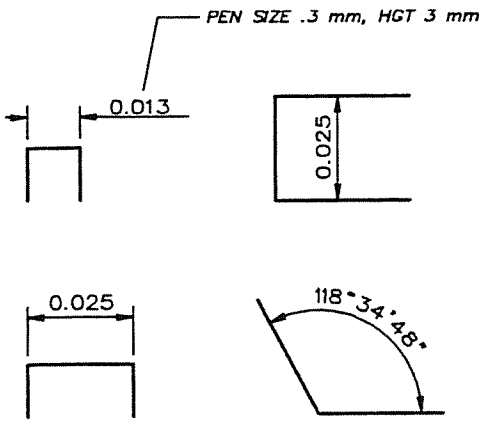
A-7 PATTERN HATCHING AND THICKNESS

Areas are filled with a pattern to distinguish them from other areas. Draft hatching with thickness and pattern as shown in **Appendix A, Table A7-1**.

A-8 DIMENSIONING

All dimension text will be in meters. A leading zero and 3 decimal places is required for dimensions less than 1 meter.

[When not using SI units, the format of dimension text will be governed by the type of drawing scale used. Feet and inches (16'-6") are to be used with architectural scales and decimal feet (16.50') are to be used with engineering scales. A leading zero is required for dimensions less than 1 foot when using the engineering scale. Dimensions 2 feet and less shall be shown as inches when using the architectural scale.]



DIMENSIONS

Figure A8-1

The dimension line will be solid with arrows on both ends. The arrow style will be a filled triangle. Its size will be 4 mm (0.15") long with a length to width ratio of 3. Place dimension text parallel to and centered above the dimension line. When extension lines are used, leave a 1 mm (0.05") gap between extension lines and entity being dimensioned. Do not place a dimension line between extension lines when text and arrows are placed outside of extension lines due to space requirements for dimension text. When text is placed outside of extension lines, it should be centered above and parallel to the arrow leader. Dimensioning examples are shown in **Figure A8-1**.

A-9 LABELS AND CALLOUTS

Labels will read parallel with the bottom border of the sheet. The tail will be centered at the beginning of the text string when the label is to the right of the object, and at the end of the text string when the label is to the left of the object. This applies to both single and multi-line text strings.

Callouts will be perpendicular to the alignment centerline,and placed outside of the property lines. Examples of labels and callouts are shown in **Figure A9-1.**

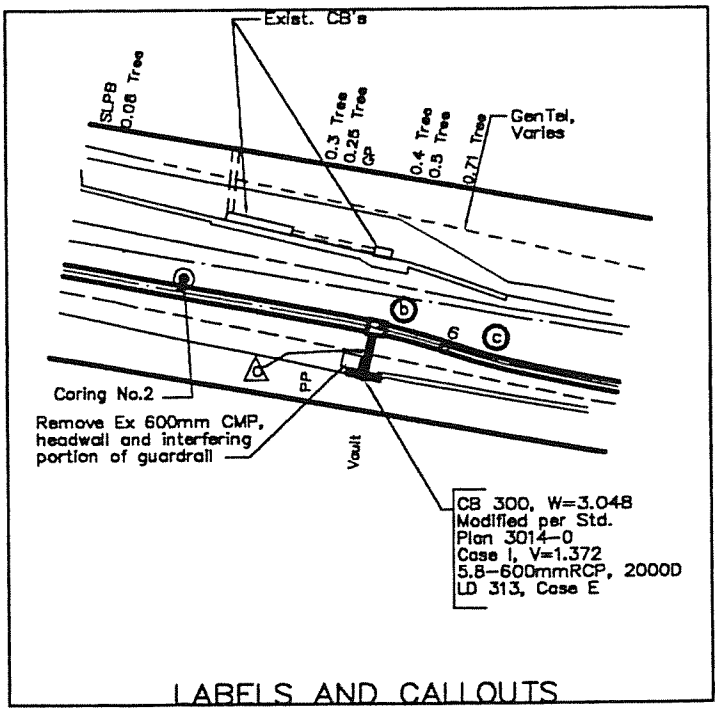


Figure A9-1

A-10 SCALES

Draw plan/profile sheets to a horizontal scale of 1:500 (1"=40') and a vertical scale of 1:50 (1"=4'). It is acceptable to use a vertical scale of 1:100 (1"=8') when steep grades would otherwise require more than one break line per sheet. Use the same

vertical scale throughout the length of the project. Clearly note on the profile the use of a vertical scale other than 1:50 (1"=4').

Draw plan sheets to a horizontal scale of 1:500 (1"=40'). Plan sheets may also be drawn to a scale of 1:1000 (1"=80'), 1:200 (1"=20') or 1:120 (1"=10') when more or less detail is required.

Draw details to a scale of 1:100 (1/8"=1'-0"), 1:50 (1/4"=1'-0"), 1:20 (1/2"=1'0") or 1:10 (1"=1'-0"). Details will be of such scale that all pertinent data and controlling dimensions can be shown legibly. Details should be proportional when not drawn to scale.

[Architectural scales should be used for structural details. 1/4"=1'-0", 3/8"=1'-0", 1/2"=1'-0", 3/4"=1'-0", 1"=1'-0", 1 1/2"=1'-0" or 3"=1'-0" are the preferred scales to use.]

Provide a graphic scale beneath the North arrow on all plan and plan/profile sheets. Graphic scale examples are shown in **Appendix A, Table A10-1**

A-11 SLOPES

Show slope data on all storm drain and sewer structure profiles in decimal format with 5 decimal places. Show slope data on all highway profiles in percent format with 3 decimal places. Show slope data on all cross sections except cut and fill slopes in decimal format with 3 decimal places.

Show cut and fill slopes as a ratio of vertical to horizontal. For slopes less than 45°, the vertical component shall be 1. For slopes over 45°, the horizontal component shall be 1. To eliminate confusion, a V should be used after the vertical leg and an H after the horizontal leg. Show all slope text parallel to the structure being annotated. Examples of displaying slopes are shown in **Figure A11-1**.

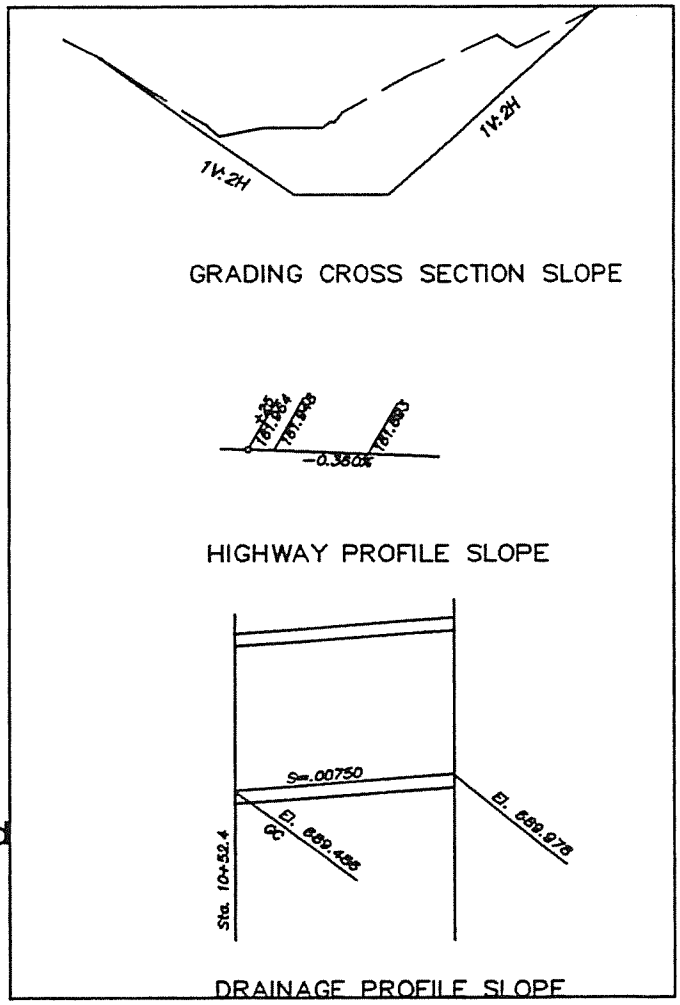
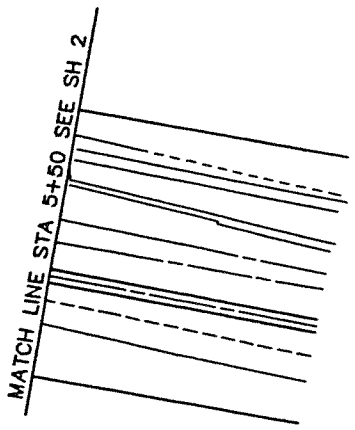


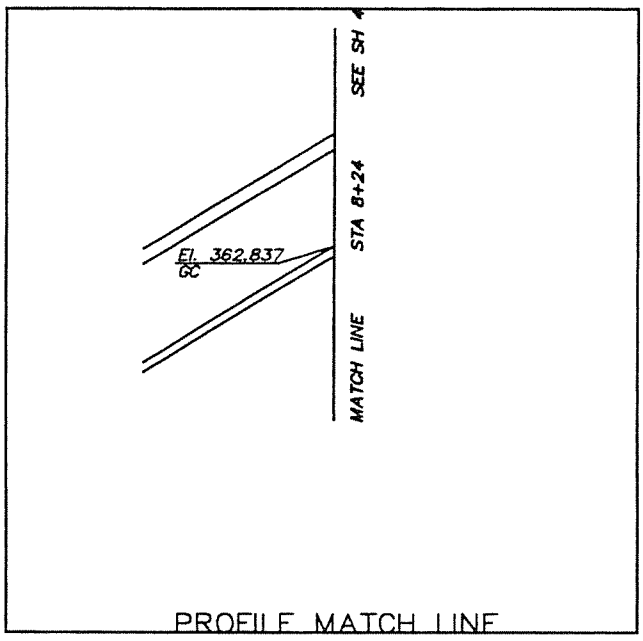
Figure A11-1

A-12 MATCH LINES



PLAN MATCH LINE

Figure A12-1



PROFILE MATCH LINE

Figure A12-2

Show match lines (except on sewer plans) when the plan must be continued on another sheet. Show station of match line and corresponding sheet reference at each match line. Letter match line text in uppercase with a mechanical lettering guide and place text parallel to the match line. Example match lines are shown in **Figure A12-1** and **Figure A12-2**.

A-13 BENCH MARKS

The first line of the bench mark must include the Name or number, Elevation, Datum, Book and Page. Subsequent lines shall show the general location and specific point as worded verbatim from the survey bench mark book. A bench mark should be specified on every plan sheet near the lower right hand corner.

Example: BM H-32, Elev 204.739 (MALIBU '80), PWFB 852, Pg 21
First Avenue and Arcadia Street, NE Corner
L & T 1.5 m east of east ECR

A-14 NORTH ARROW

Locate the north arrow near the title block on each plan sheet drawing or near the right side of a section or detail. If a graphic scale is used, it should be placed below

the north arrow. The full size north arrow is 65 mm (2.5") long. For details or sections, use a scaled down version of the north arrow. Draft north arrow as shown in **Figure A14-1**.

Figure A14-1

A-15 SYMBOLS

Use the following symbols when applicable:

ⓐ 6mm (1/4") diameter circle with enclosed lower case letter - curve data symbol

Ⓐ 6mm (1/4") diameter circle with enclosed upper case letter(s) - type of R/W symbol

Ⓒ 6mm (1/4") diameter circle with enclosed number - construction item symbol

[2] 10mmx10mm (.4"x.4") box with enclosed number - engineer's estimate item symbol

A-16 CURVE DATA

Show curve data in tabular form with lower case letters in circles identifying each respective curve. If space exists, show BC and EC stationing on the curve radial lines. Always place the BC and EC stations with the curve data. Show back of walk radius only when walk is to be constructed. Example curve data tables are shown in **Figure A16-1**.

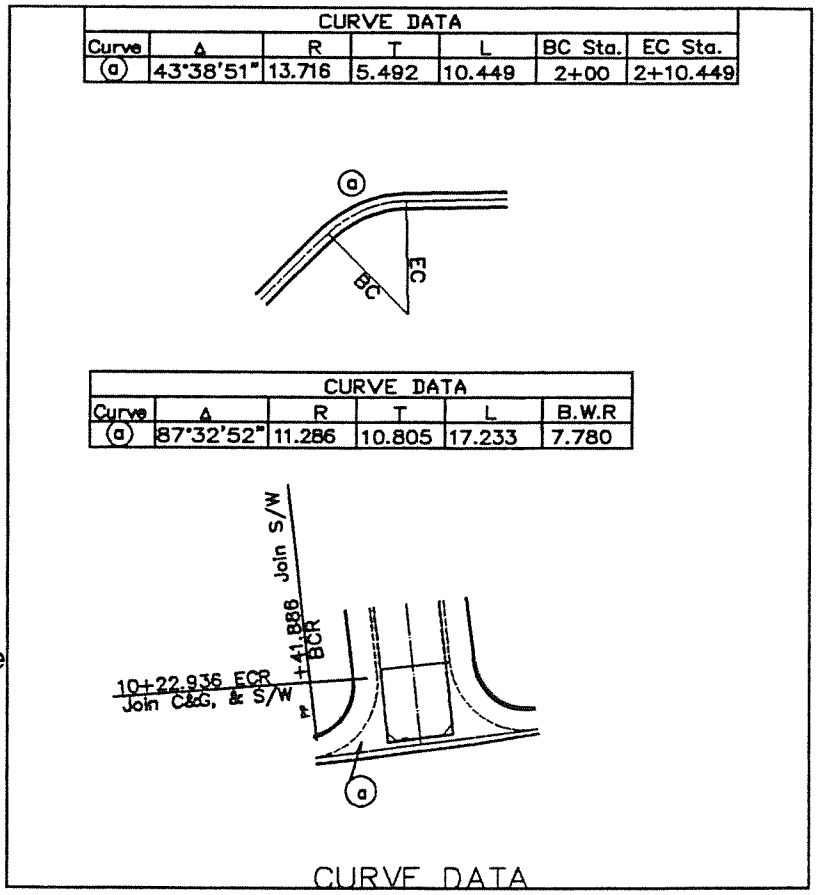


Figure A16-1

A-17 NOTES

General notes should be shown on the first or second sheet of the project. Structural notes should be shown on the structural sheet. Notes particular to a sheet should be shown near the lower right hand corner of the sheet, either above or to the left of the title block.

Instructions to the contractor shall be in the present tense unless the work is to

be done by another party or agency. Place a title above notes.

A-18 TITLE AND SIGNATURE BLOCK

All plans shall have the appropriate Department title and signature block. When a city signature block is required, check with the Project Engineer for the correct format. Example title and signature blocks are shown in **Appendix A**, **Table A18-1**.

A-19 STATIONING

Stationing will be based on 100 meter (feet) per station. Show tick mark at each station centered on the centerline, 5 mm (1/4") total length. Show station text above each tick mark.

A-20 SURVEY INFORMATION

The following standards are used by Department survey crews in locating miscellaneous topography:

- Offsets to objects are taken at the edge nearest the centerline of the street and at the point where the object enters the ground. Offsets are given in the nearest tenth of a meter (foot).
- Tree diameter is indicated as a fraction such as 0.38 m/0.61 m (15"/24"). The 0.38 m (15") indicates the waist-high diameter of the tree in meters, and the 0.61 m (24") indicates the diameter of the tree at the ground in meters. When the size of the tree is shown on the plan, use the waist high diameter.
- The centerline station and offset are given where one station is sufficient to locate an object. In general, the nearest tenth meter (feet) is given.

A-21 TOPOGRAPHY

Draft all existing topography on the reverse side of the sheet, except when drafting with CADD. Show all topography affecting the area of construction. Label existing topography as shown on the sample plans. Place tick marks at the beginning and end of each curb return. Use appropriate symbols to display the topography as shown on **Figure A21-1**. Draft line work

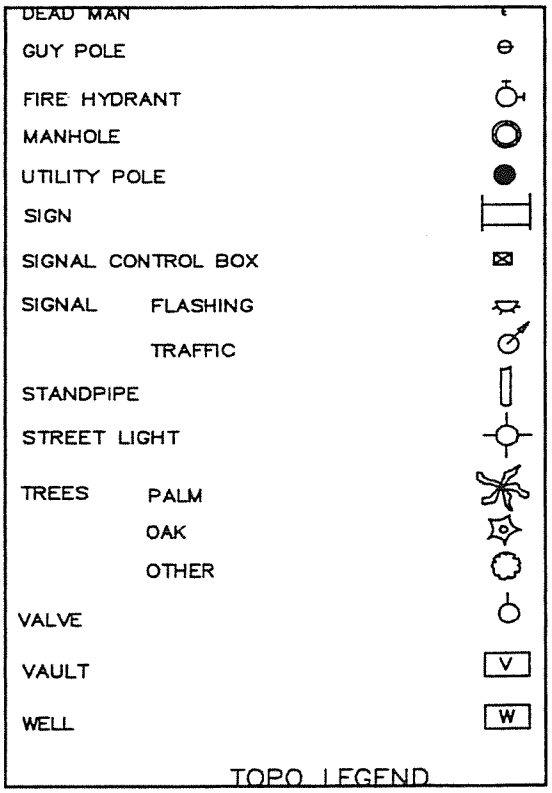


Figure A21-1

with thickness and fonting as shown in **Appendix A, Table A6-1**.

- Rectangular Coordinates

  Show rectangular coordinate points (+) when topography maps are used in undeveloped areas for plans. Label a minimum of two points with a northing and easting. Draft rectangular coordinate points at a size of 10 mm (1/2") by 10 mm (1/2").

- Contour Lines

  When existing contour lines are to be shown, draft them on the reverse side of the sheet, except when drafting with CADD. Draft appropriate index and intermediate contours as shown in **Figure A21-2**

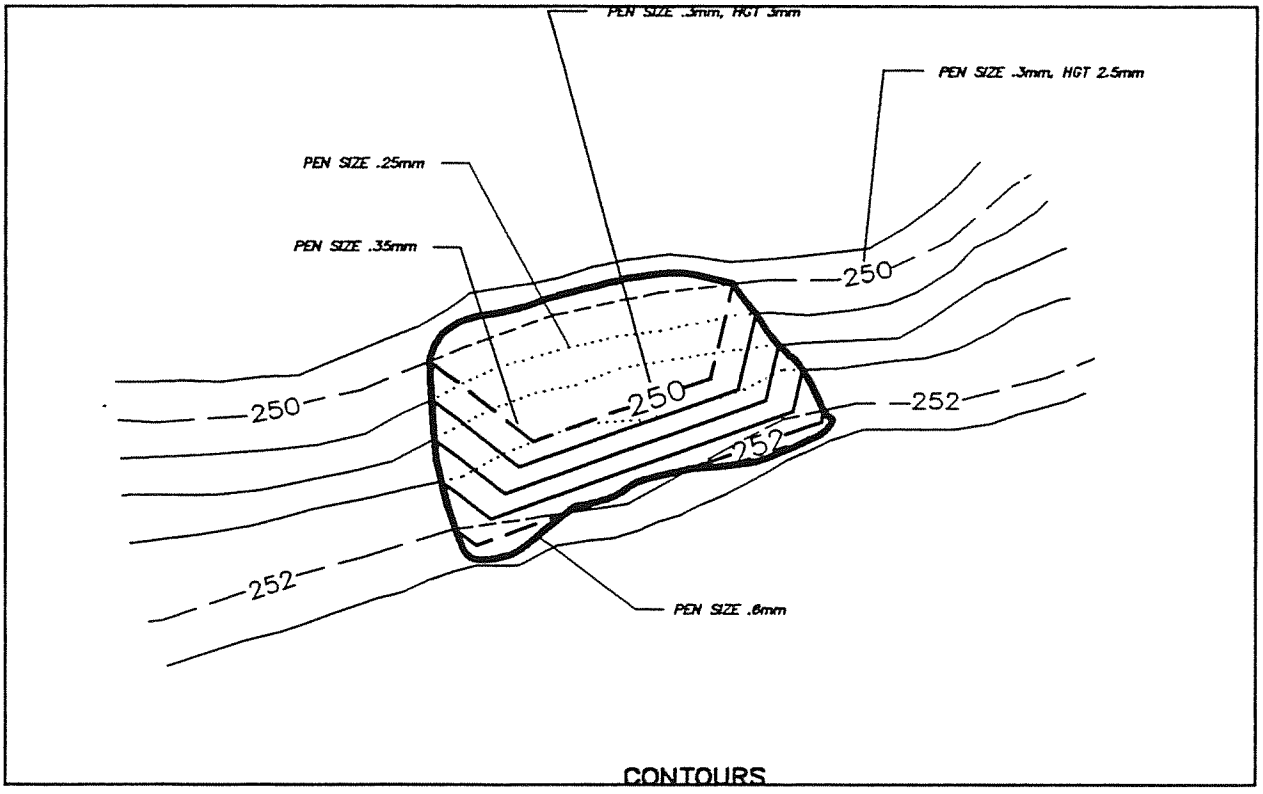


Figure A21-2

- Lot and Tract

  When lot numbers, tract numbers, and map book numbers are to be shown, mechanically draft tract numbers and map book numbers while lot numbers may optionally be drafted freehand.

- Utilities

Draft existing utility lines on the reverse side of the sheet, except when drafting with CADD. Draft the utilities in plan, profile and sectional views as shown in **Figure A21-3**.

When shown in profile, show only the invert of a parallel sanitary sewer line and any utility line that falls in the construction trench, except when it is 0.300 m (12") or larger, then show both invert and soffit. When showing crossing utilities on the profile or typical section, draft at full size.

Label utility line with size, type of utility and location of utility as referenced to the right of way line or the street center line. Labels should be in mixed text case using proper rules of grammar. If the same type of utility line is represented by two or more companies, the company name should be added in parentheses after the description. All utility company names should be listed on the title sheet.

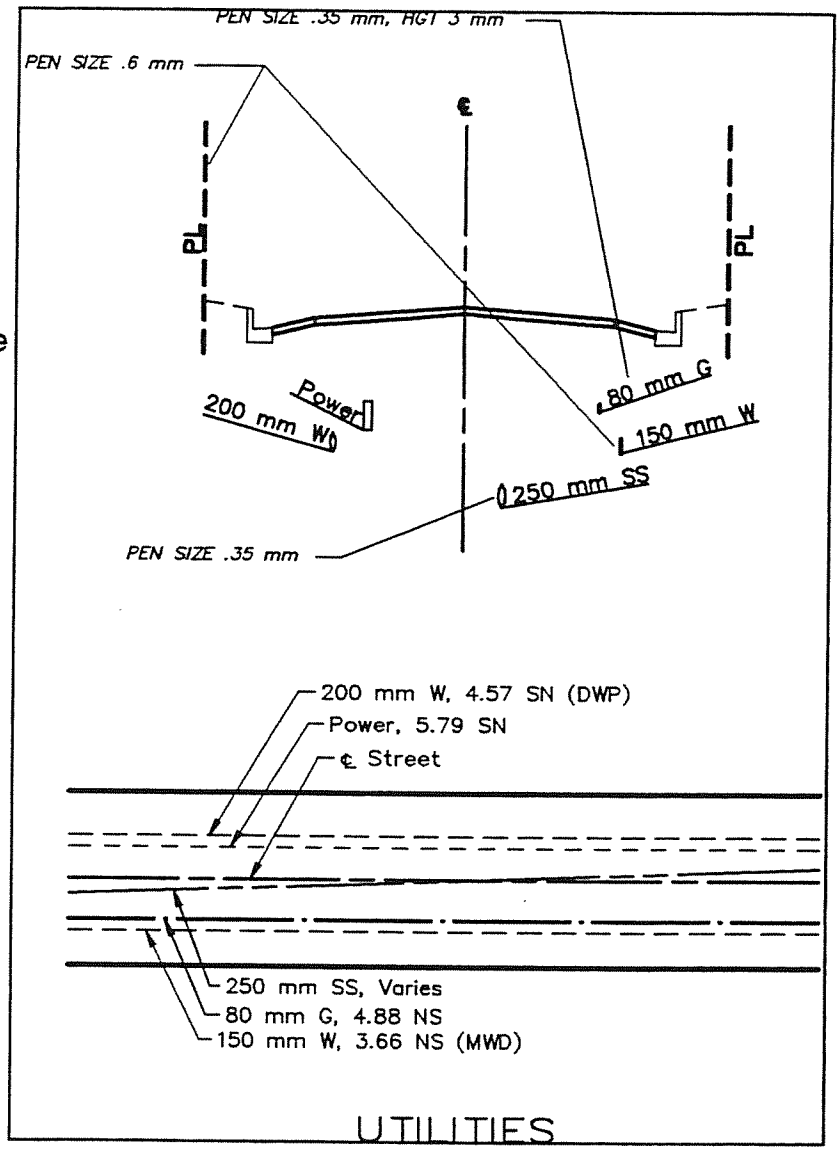


Figure A21-3

A-22 STREETS

Label all streets shown on plan in uppercase letters. Letter the street names with a mechanical lettering method. Indicate state highways with their official number such as "STATE HIGHWAY 1". Place the street name on the road centerline or within the

road right of way when space is restricted. Dimension all R/W and street widths. Draft line work with thickness and fonting as shown in **Appendix A, Table A6-1**.

A-23 TITLE SHEETS

See individual sections for layout requirements and material to be contained on the title sheet. Sample title sheets for various types of projects are also shown in their respective sections.

A-24 PLAN/PROFILE

When beginning a plan/profile sheet, line up the left station of the plan, as near as possible, with the matching left station of the profile. Provide enough room at each end for reference elevations on the profile and match line information on the plan. Draft the plan and the profile to the same horizontal scale. Each sheet should represent a complete and clear portion of the project. Do not place a match line or terminate a sheet within an intersection, railroad crossing or drainage structure.

Line up the stations with the major vertical grid lines on the profile. Label each station directly beneath the profile grid. Label a minimum of two reference elevations on each side of each profile shown.

The plan and profile should be shown in such a manner as to avoid breaks. When a profile needs to be broken, stagger the break at least one major grid and label the break as"identical" from invert to invert or grade line to grade line. Label a minimum of two reference elevations on each side of the profile break. When a plan needs to be broken, label the break as "identical" from ℄ of construction to ℄ of construction.

The existing ground and street surface should be shown as a long dashed line from 30 mm (1.25") to 40 mm (1.5"). The finished grade should be shown as a solid line. For manual drafting, use a straight edge to show the existing street surface and all finished grade and use freehand to show existing ground surface.

Draft line work with thickness and fonting as shown in **Appendix A, Table A6-1**. An example of a plan and a profile are shown in **Appendix A**.

A-25 DETAILS AND SECTIONS

Details and sections should be uniquely labelled and distributed throughout the sheets. Because the two are independent of each other, a detail can have the same name as a section. When sections and details are not on the same sheet to which they pertain, they should be adequately cross referenced by sheet number. Examples are shown in **Figure A25-1.**

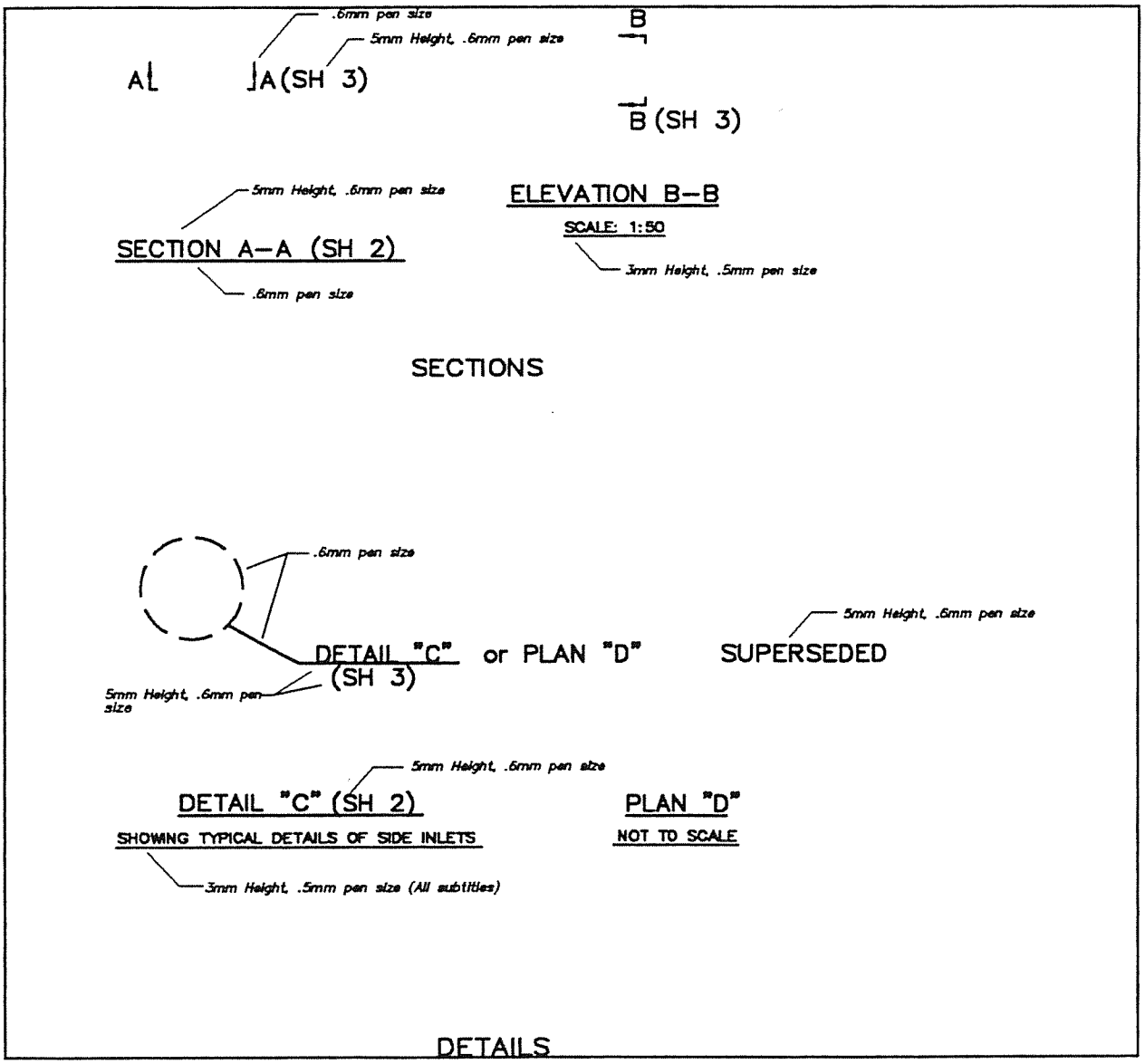


Figure A25-1

A-26 PLANS PREPARED FOR OTHER AGENCIES AND/OR CITIES

Other agencies may require a different plan layout and format depending on the requirements of that agency. The Project Engineer shall determine if the Department's format is acceptable to the other agency prior to preparing plans. If the Department's format is unacceptable, use that agency's format.

SECTION B
DRAINAGE FACILITIES

B-1 INTRODUCTION

The purpose of drainage construction drawings is to show the builder where and how to build drainage facilities.

B-2 GENERAL

Drafting drainage facilities shall conform to the instructions and standards established in Section A of this manual. Section B includes additional instructions specifically for drainage facilities. Sample drainage plans are shown in **Appendix B**.

Upstream is always shown to the right. Orient the plan so that the plan progresses from left to right, upstream, regardless of the orientation of the north arrow.

The centerline of the proposed project shall be called the construction centerline. Stationing along the construction centerline will increase when going upstream. When the construction centerline is parallel to the survey line, indicate the offset. Show construction centerline curve data on the plan. Tie BCs, ECs, and angle points to the survey line. Use distances along survey line from key survey points to perpendicular offset points of construction centerline. Projects in open terrain may use coordinate data to layout construction centerline.

B-3 TOPOGRAPHY

Show all topography and utilities within drainage right of way and within limits of the project. Show all pertinent topography and utilites outside of right of way.

B-4 MAIN LINE

Draft the main line on the plan. Draft main line structures on the plan. Group structural data for these structures in tables as needed.

Draft the main line on the profile. Show thickness to scale of the conduit or channel. Station all structures and grade changes in main line.

B-4 LATERAL

Generally, a separate plan and profile sheet is used to show laterals. On a lateral drawing, show the main line as a heavy dashed line and the lateral as a heavy solid line. Conversely, on a main line drawing, show the main line as a heavy solid line and

the lateral as a heavy dashed line. Clearly reference the lateral drawing on the main line drawing. When more than one lateral is being shown on a sheet, the laterals should be titled on the plan and on the profile.

All drafting standards applying to the main line plan and profile also apply to the lateral plan and profile.

B-5 CATCH BASIN

Draft the catch basin on the plan. Do not show catch basin manholes except for a curb opening catch basin with a manhole in the street.

Locate catch basin on the plan by showing dimension from the nearest curb return to the catch basin location tie. If a curb return is not present, locate the catch basin by providing the construction centerline station of the catch basin location tie.

Call out the catch basin data in a bracket along with the connector pipe data. See appropriate Standard Plans for required catch basin data and location tie.

B-6 LOCAL DEPRESSION

Draft the local depression on the plan.

Call out the local depression data with the catch basin and connector pipe data when not provided for in the project General Notes. See appropriate Standard Plans for required local depression data.

B-7 CONNECTOR PIPE

Draft the connector pipe on the plan.

Call out the connector pipe data with the catch basin data.

B-8 JUNCTION STRUCTURE FOR A CATCH BASIN CONNECTOR PIPE

Do not draft a graphical representation of the junction structure for a catch basin connector pipe on the plan.

Call out the junction structure data for Standard Plans 333 and 331 either at the inlet location on the profile or grouped in a chart on the plan. Call out the junction structure data for standard plans 334 and 332 in the project General Notes. See appropriate Standard Plans for required junction structure data.

B-9 SIDE INLETS

Side inlets to be constructed should be shown solid in profile. The inlet data should include the station, pipe size and the side of the conduit (N, S, E, W) on which it is located. Elevations should not be shown unless requested by the Project Engineer. See appropriate Standard Plans for required inlet data.

B-10 CONDUIT DATA

The data for pipe, box, and open channel should be placed below the conduit profile. Letter the data in mixed case.

- Pipe data should include length, size and D-load. Show additional data as required.
- Box data should include size, type of structure, and section information.
- Open channel data should include size, type of structure and section information.

B-11 QUANTITY OF FLOW

Show the Q above the top border of the profile along the reach for which the Q is applicable. Indicate design frequency when a frequency other than the standard is used.

B-12 CROSS SECTIONS

When cross sections are required, such as for open channel projects, draft them on a separate cross section sheet(s). They are taken looking upstream and should be placed in sequence to read as if moving upstream. The first cross section is placed in the lower-left-hand corner of the cross section sheet. The next cross section is placed above it and the column is continued to the top of the sheet. The next column is started to the right of the first and at the bottom of the sheet with the cycle being repeated as many times as necessary. Plot cross sections above each other so that the construction centerline maintains a straight vertical line for the column.

- Construction Centerline

  Label the construction centerline with the centerline symbol (℄) and the word construction above the top and bottom cross section of each column.

- Right of Way (R/W)

  Right of way lines should appear on the cross sections where applicable. Place the text parallel to and outside of the R/W line.

- Station and Elevations

  Letter station text in upper case. Place the text centered below the structure. Place grid elevations on the right side of each cross section and centered on the main horizontal grid lines.

- Dimensions and Description

  Show structure dimensions on the cross section. If the wall height and width of the structure is the same for several cross sections, show the dimensions only on the lowest stationed cross section.

  Show existing and proposed call outs on the cross section. If the call outs are generally typical for the sheet, the call out need only be shown once per sheet.

- Earthwork

  On each cross section sheet, identify areas of compacted fill at least once.

B-13 TYPICAL CROSS SECTION

A typical cross section is normally shown on a plan/profile sheet when that reach of the project is not covered by the cross section sheets or if there are no cross section sheets. All typical cross sections are taken looking upstream.

Place the typical cross section on the right side of the profile. Title the section CROSS SECTION. If a station is also used as an identifier, it should appear as a subtitle, centered below the title. Show the scale below the title. Pavement thickness shall not be shown on the typical cross sections.

- Elevations

  Place grid elevations per Section B-12.

- Utilities

  Show existing utilities larger than 0.15m (6") dashed and at full size. When a utility is 0.15m (6") or less, use a heavy solid line (Leroy pen 2) to represent the

utility. Abbreviations or single letters should be used to identify the different utility lines. Dimension utilities when applicable.

- Right of Way (R/W)

  Place R/W line per Section B-12.

B-14 STANDARD STRUCTURAL DETAILS (STEEL SCHEDULE)

Use standard structural detail sheets showing typical section, table dimensioning, elevations, and reinforcement when applicable. These standard sheets are listed in **Appendix A, Table A3-1**.

B-15 DETAILS AND SECTIONS

An enlarged detail of the channel, storm drain, or debris basin shall be of such scale that "layout" details and controlling dimensions can be shown legibly. Sectional views, public utilities and obstructions shall be indicated on this plan and adequately referenced to the sheets showing the details for construction. The details and sections should be distributed uniformly in consecutive order throughout the plans.

Sectional views shall be drawn to show completed composition of the structure for the reach where the section is taken. The longitudinal sections should be drawn as though the observer were in the center of the channel looking at the bank (upstream to the right).

SECTION C
HIGHWAY DRAWINGS

C-1 INTRODUCTION

Highway drawings contain information from which contractors prepare bids, surveyors stake construction, contractors build projects and engineer's inspect the contractors work. These plans become permanent records for future reference.

C-2 GENERAL

Drafting highway facilities shall conform to the instructions and standards established in Section A of this manual. Section C includes additional instructions specifically for highway facilities. Sample highway plans are shown in **Appendix C**.

C-3 SHEET LAYOUT

Project limits shall read from north to south or west to east.

Sheets shall be numbered so sheets read from the right on the preceding page to the left on the next page.

The north arrow shall point up or to the right or left. Right or left north arrow orientation is determined by roadway stationing (should increase from left to right), existing plans (maintain existing plan orientation) and adjacent projects (north arrow orientation between adjacent projects should be maintained).

Plan sheets should be numbered in the following sequence: title, typical cross section, roadway plan and profile, intersection details, drainage plan and profile, drainage details, and structural details.

Roadway plans shall be drawn at a 1:500 (1" = 40') scale; however, a 1:200 (1" = 20') scale should be considered when additional drawing space is required for clarity.

Do not show more than 300m (1000ft) or 150m (500ft) of roadway, respectively, on a 500m (40ft)-scale or 200m (20ft)-scale plan and profile sheet.

Sheet layout shall provide adequate drawing space at the beginning and end of the project for pavement transitions. Do not terminate a sheet within an intersection or railroad crossing.

C-4 TOPOGRAPHY

Show all topography within road right of way and within the limits of the project. Show all pertinent topography outside of right of way.

Indicate the type of existing pavement on plan. Existing asphalt covered concrete pavement should be labeled "EX AC ON CONC PVMT" even if it is to be removed. Show the outline of existing curb ramps and driveways as dashed lines in plan view.

C-5 REFERENCE DATA

When an existing curb return is to remain, indicate curb radii on plan.

Show the direction of drainage flow with arrows and the rate of grade to 0.1% at all curb and gutter joins.

Show existing centerline curve data on plan.

C-6 PLAN

Indicate even roadway stations along the centerline with a perpendicular tick mark.

Indicate stations of intersections and changes in alignment with a 2mm (0.075") diameter circle on the centerline.

At intersections, show the station of the street being designed above the leader and the cross street below the leader.

C-7 EXISTING PROFILES

For reconstruction projects, plot centerline, and right and left right of way line profiles.

If the existing curb is to remain, plot the centerline and the edge of gutter profiles.

Indicate paved surfaces with a solid line and unpaved surfaces with a dashed line.

Show existing driveway profiles along the right of way line with a heavier line.

When the pavement at centerline is to be saved, indicate the existing centerline elevations every half station.

C-8 PROPOSED PROFILES

Show proposed profiles as solid lines.

Use 2mm (0.075") diameter circles to indicate grade breaks.

Indicate elevations at every half station, BC, EC, PRC, BCR, ECR, angle point and grade break.

At curb and gutter joins, show existing top of curb, edge of gutter and flow line elevations.

Show the extended top of curb profile, not actual profile, over driveways, curb ramps, etc.

Show street grades for tangents longer than 15 meters (50 feet).

C-9 DETAIL SHEETS

Detail sheets show additional construction information and are usually drawn at larger scales.

C-10 RECOMMENDED LINE WEIGHTS

See **Appendix A, Table A5-2** for text height and line weight.

SECTION D
BRIDGE STRUCTURES

D-1 INTRODUCTION

The Department constructs new and refurbishes existing bridges. The bridge construction drawings are used to show the builder where and how to construct the structures.

D-2 GENERAL

This space is reserved for future information.

SECTION E
MECHANICAL

E-1 INTRODUCTION

The mechanical section of Design Division is involved in designing, modifying, and engineering the replacement of equipment for dams, pumping stations, water conservation facilities, and various building programs. The drafting required for this type of work is almost always mechanical drawing layouts and details.

E-2 GENERAL

This space is reserved for future information.

SECTION F
RIGHT OF WAY & RIGHT OF WAY IDENTIFICATION MAPS

F-1 INTRODUCTION

The term right of way (R/W), when used through out this manual, refers to all forms of land rights allowing for the construction and/or maintenance of DPW facilities.

Drawings which indicate areas needed to be acquired with R/W codes and dimensions are known as R/W identification maps. They will be used by others to prepare an acquisition map from which the legal description will be written and the actual R/W acquisition made.

F-2 GENERAL

Drafting R/W shall conform to the instructions and standards established in Section A of this manual. Section F includes additional instructions specifically for R/W and R/W identification maps.

All construction drawings must show R/W. Use preliminary study maps, when available from Mapping & Property Management Division, as the basis for R/W. If they are not available, R/W may be drawn based upon Los Angeles County Assessor Office maps.

There are two methods of presenting R/W identification maps. Method A is to present the R/W identification information on the construction plans. Method B is to draft the R/W information on plan sheets, separate from the construction plans. When the required R/W is minimal and easy to define, use method A. Otherwise, use method B.

Both methods require a DPW standard R/W legend on each sheet containing R/W modifications. The R/W legend will contain only the types of R/W to be acquired on that sheet. Use symbols, circled upper case letters with arrows, to identify the types and areas of R/W to be acquired. The most common R/W types are shown in **Table F2-1**.

See "Guidelines for Right of Way Mapping" available in Mapping & Property Management Division for a complete list of R/W types. The revision block shall be filled in and dated only on those sheets with changes made after the drawings have been fully approved.

F-3 R/W ON CONSTRUCTION DRAWINGS

For both methods, existing R/W lines not modified by the proposed changes will be

shown as solid lines with the appropriate line thicknesses. Existing R/W lines modified by the proposed changes will be shown as dashed lines with the appropriate line thicknesses. Proposed R/W lines will be shown as solid lines with the appropriate line thicknesses. Identify the ownership and width of all R/W shown for public agencies, railroads and utilities.

When using Method A, show, dimension and identify all forms of R/W on the construction drawings. When using Method B, show all forms of R/W on the construction drawings, except permits to enter and construct. Dimensions and identifications will be shown on the separate R/W Identification Map. See **Appendix F** for samples of R/W on construction drawings.

F-4 R/W IDENTIFICATION MAPS

In addition to section F-3, drawings used as R/W identification maps must adequately dimension the existing and proposed R/W. Show sufficient information to clearly identify the size and location of the R/W to be acquired. Stationing and/or distance to property lines shall be used as references.

Draft R/W on standard Department plan sheets (sheet number DPW.XXXXX). No title sheet is necessary. Show the horizontal controls and stationing used on the construction drawings. Show the curve data, angle points and stationing of the center line on which the R/W is based. Show street and channel names. Use match lines to divide the project into sections. Show the north arrow on each sheet. Use the same scale as the construction drawings. Do not show topography or proposed improvements. Sample R/W Identification Maps are shown in **Appendix F**.

TABLE F2-1
RIGHT OF WAY CODES

R/W Type	Code	Cadd Layer	Pen Size
Public Road Right of Way	R	6	.6 mm (Leroy 2)
Flood Control Purposes	F	6	.6 mm (Leroy 2)
Drainage Purposes	D	6	.6 mm (Leroy 2)
Water Works	W	6	.6 mm (Leroy 2)
Drainage and Slope	DS	249	.6 mm (Leroy 2)
Ingress and Egress	IE	249	.6 mm (Leroy 2)
Access Road	A	249	.6 mm (Leroy 2)
Slope Purposes	S	249	.6 mm (Leroy 2)
Temporary Construction Area	T	249	.6 mm (Leroy 2)
Temporary Slope Purposes	TS	249	.6 mm (Leroy 2)
Traffic Signal Purposes	TC	249	.6 mm (Leroy 2)
Sewer Purposes	SS	249	.6 mm (Leroy 2)
Utility	U	249	.6 mm (Leroy 2)
Sight Distance	V	249	.6 mm (Leroy 2)
Access Rights Denied	NR	249	.6 mm (Leroy 2)
Bike Path	B	249	.6 mm (Leroy 2)
Riding and Hiking	RH	249	.6 mm (Leroy 2)
Inundation	I	249	.6 mm (Leroy 2)
Well	WL	249	.6 mm (Leroy 2)
Gaging Station	GS	249	.6 mm (Leroy 2)
Special Use Permit	SP	247	.35 mm(Leroy 2)
Permit to Enter and Construct	P	247	.35 mm(Leroy 2)

SECTION G
LOGS OF BORINGS

G-1 INTRODUCTION

Materials Engineering Division is responsible for soil investigations for Department projects. As part of this work, logs of borings drawings are prepared to present subsurface information for the construction of storm drains, debris basins, buildings, bridges and other Department facilities.

G-2 GENERAL

Drafting for logs of borings drawings shall conform to the instructions and standards established in Section A of this manual. This section includes additional instructions specifically for logs of borings drawings. When trenches are used instead of borings, replace the term borings with trenches.

Logs of borings shall be drafted on standard Department plan sheets (form number DPW.XXXXXX). Place the notes and symbol legend on the right side of the sheet near the title block. The standard vertical scale is 1:50 (1"=4'), but another vertical scale may be used depending on the specific situation.

Do not use any freehand lettering on logs of borings sheets. Letter the boring, notes and symbols legend titles using a 0.9 mm (.035 in) line thickness and 5 mm (.200") text height. Letter the chart column titles using a .30 mm (.013 in) line thickness and 2.5 mm (.100") text height. Letter the remaining text, both chart and notes text, using a .35 mm (.017 in) line thickness and 3 mm (.125") text height. Draw chart using a .50 mm (.021 in) line thickness and pattern hatching using a .30 mm (.013 in) line thickness. Sample Logs of Borings sheets are shown in **Appendix G**.

G-3 LOGS OF BORINGS

Space the logs of borings uniformly in numerical order from left to right, starting in the upper left corner. Use appropriate pattern hatching for the soil group representations as shown on the Unified Soil Classification System Soil Legend chart, **Appendix G, Table G3-1**. Use commercially available tapes with correct pattern hatching, when they exist, for the soil group representations when manually drafting the logs of borings sheets. In case of dual symbols, use the hatching for the finer grained soil. Use the correct symbols to indicate "depth to conduit subgrade" and "depth to ground water at time of drilling" on the logs of borings chart, when required. An example of a log of boring with pattern hatching is shown in **Figure G3-2**. An example symbols legend is shown in **Figure G3-3**.

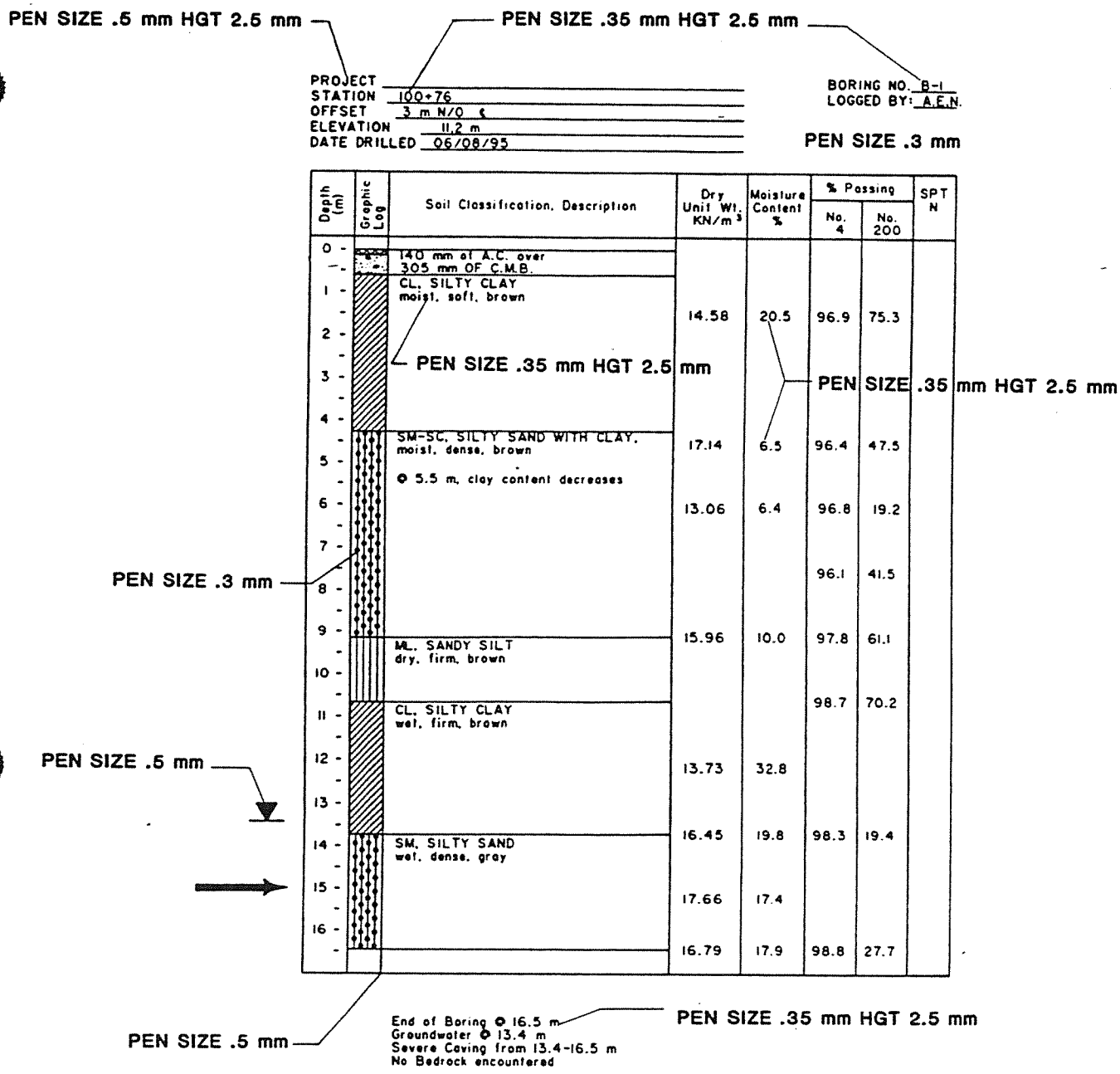


Figure G3-2

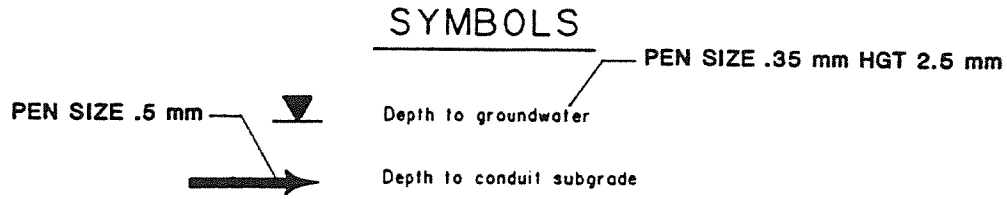
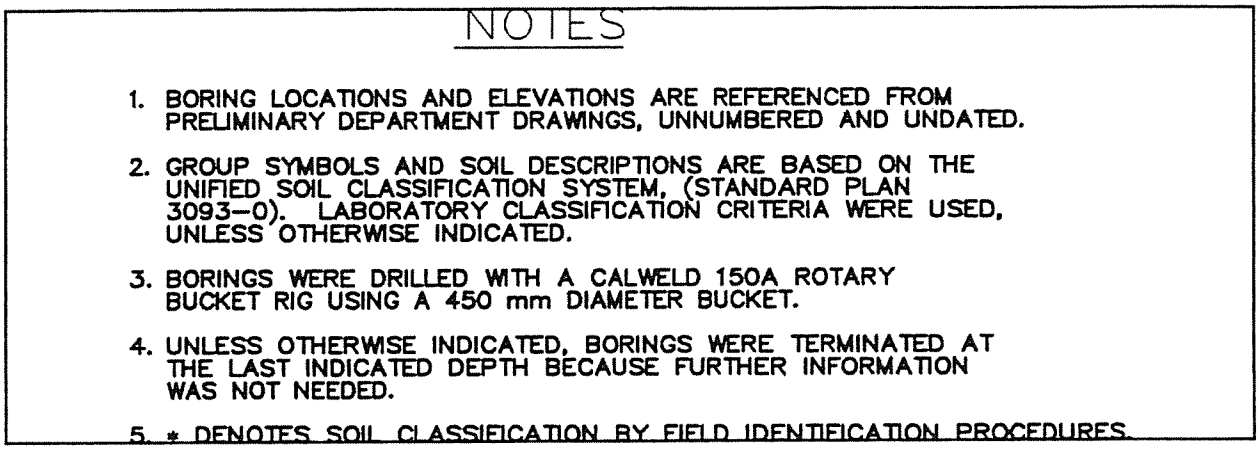


Figure G3-3

G-4 NOTES

Include soil classification, type of exploration equipment used and references to project drawings in the logs of borings notes. Example notes are shown in **Figure G4-1**.


NOTES

1. BORING LOCATIONS AND ELEVATIONS ARE REFERENCED FROM PRELIMINARY DEPARTMENT DRAWINGS, UNNUMBERED AND UNDATED.
2. GROUP SYMBOLS AND SOIL DESCRIPTIONS ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM, (STANDARD PLAN 3093–0). LABORATORY CLASSIFICATION CRITERIA WERE USED, UNLESS OTHERWISE INDICATED.
3. BORINGS WERE DRILLED WITH A CALWELD 150A ROTARY BUCKET RIG USING A 450 mm DIAMETER BUCKET.
4. UNLESS OTHERWISE INDICATED, BORINGS WERE TERMINATED AT THE LAST INDICATED DEPTH BECAUSE FURTHER INFORMATION WAS NOT NEEDED.
5. * DENOTES SOIL CLASSIFICATION BY FIELD IDENTIFICATION PROCEDURES.

Figure G4-1

G-5 TITLE AND SIGNATURE BLOCKS

LOGS OF BORINGS will be the drawing title for a logs of borings drawing with two or more borings. Projects with only one boring will use the title LOG OF BORING. Logs of borings drawings are usually to be included in a set of project drawings and should be numbered as part of the set. The drawing number and sheet number should be obtained from the project engineer. Fill in title blocks per Section A. When a single log of boring is placed on a different type of sheet, place an Engineers seal and signature block below the boring chart.

The project soil engineer signs the approved logs of borings drawing.

SECTION H
SANITARY SEWER

H-1 INTRODUCTION

County Improvement, Accumulative Capital Outlay Project, Cash Contract, Private Contract, and Sewer Reconstruction plans show the builder where and how to build sewer facilities. The different names denote the source of funding for these projects.

H-2 GENERAL

This space is reserved for future information.

SECTION I
CHANGE OF PLAN AND AS BUILT DRAWINGS

I-1 INTRODUCTION

A "Change of Plan" is a modification of the final project design that occurs after the project contract has been awarded but prior to or during construction.

An "As Built Drawing" is a set of original contract drawings that have been revised to reflect how the job was actually constructed.

I-2 GENERAL

The drafting of the "Change of Plan" shall be made by Design Division during the "As Built" change. The "Change of Plan" should be noted in the "Revision Block" of the affected sheet. A triangle, containing a number of order should be used as the symbol.

If the changes are so extensive, a copy is made of the original drawing. The copy maintains the old sheet number. The original takes the next consecutive sheet number and the changes are made on the original sheet. On the title sheet, under the Index to Project Drawings, the new sheet number shall be added.

I-3 PROCEDURE

Revisions are transferred from Construction Division's "As Built" prints to the original contract drawings. Check the project for proposals. If a proposal was awarded, all other proposals should be crossed out on the originals. Erasing is not permitted; therefore, all changes shall be lined out.

Each revision shall be marked with the "As Built" symbol, a blackened square, and shall be so noted in the "Revision Block". In the revision block enter the symbol, the date the sheet was completed, and the words "Field modifications".

On all sheets, the words "As Built Drawings" shall be placed, using 5 mm (.175 in) text height with .6 mm (.026 in) line thickness, in the lower right hand corner below the title block.

Check all projects for joint financing. If the project has been jointly financed, the limits of financing should be indicated on the first sheet of the originals. An example of an "As Built" drawing sheet is shown in **Appendix I.**

APPENDIX A

TABLE A3-1

PREPRINTED AND ELECTRONIC SHEETS

Form Number	Name and Description Cadd file name(s)	Available Formats
	GENERAL	
DPW.XXXXX	Title Sheet form.dd.titlesheet	CV, DXF, DWG, DGN
DPW.XXXXX	Full Plan Sheet form.dd.plansheet	CV, DXF, DWG, DGN
DPW.XXXXX	Plan/Profile Sheet form.dd.planprofilesheet	CV, DXF, DWG, DGN
DPW.XXXXX	Full Profile Sheet form.dd.profilesheet	CV, DXF, DWG, DGN
DPW.XXXXX	Full Section Sheet form.dd.sectionsheet	CV, DXF, DWG, DGN
	STRUCTURAL	
DPW.XXXXX	Single Reinforced Concrete Box Structural Sheet for Drainage Projects form.dd.singleboxsheet	CV, DXF, DWG, DGN
DPW.XXXXX	Double Reinforced Concrete Box Structural Sheet for Drainage Projects form.dd.doubleboxsheet	CV, DXF, DWG, DGN
DPW.XXXXX	Reinforced Concrete Channel Structural Sheet for Drainage Projects form.dd.channelsheet	CV, DXF, DWG, DGN
DPW.XXXXX	Outlet Structural Sheet for Drainage Projects form.dd.outletsheet	CV, DXF, DWG, DGN
	CALTRANS	
DPW.XXXXX	Plan/Profile Sheet for Caltrans Projects form.ct.planprofilesheet1	
DPW.XXXXX	Full Plan Sheet for Caltrans Projects form.ct.plansheet1	
DPW.XXXXX	Full Plan Sheet for Caltrans Projects form.ct.plansheet2	
DPW.XXXXX	Full Plan Sheet for Caltrans Projects form.ct.plansheet3	
DPW.XXXXX	Plan Sheet for Caltrans Traffic&Lighting Projects form.tnl.caltransbase	
DPW.XXXXX	Full Profile Sheet for Caltrans Projects form.ct.profilesheet1	
DPW.XXXXX	Full Section Sheet for Caltrans Projects form.ct.sectionsheet	
DPW.XXXXX	Title Sheet for Caltrans Projects form.ct.titlesheet1	
DPW.XXXXX	Title Sheet for Caltrans Projects form.ct.titlesheet2	
DPW.XXXXX	Standard Plans List Sheet for Caltrans Projects form.ct.stdplanlistsheet	
DPW.XXXXX	Log of Boring Sheet for Caltrans Projects form.ct.logboringsheet	

DPW.XXXXX	Foundation Sheet for Caltrans Projects form.ct.foundationsheet
	SEWER
DPW.XXXXX	Title Sheet for Sewer Projects form.sw.titlesheet
DPW.XXXXX	Title sheet for CI Sewer Projects form.sw.cititlesheet
DPW.XXXXX	Title Sheet for CC Sewer Projects form.sw.cctitlesheet
DPW.XXXXX	Plan/Profile Sheet for Sewer Projects form.sw.planprofilesheet
DPW.XXXXX	Plan/Profile Sheet for CI Sewer Projects form.sw.ciplanprofilesheet
	WATER
DPW.XXXXX	Title Sheet for Water Line Projects form.wt.titlesheet
DPW.XXXXX	Plan/Profile Sheet for Water Line Projects form.wt.planprofilesheet
	TITLE
DPW.XXXXX	Title Sheet for Debris Basin Projects dbb.plansheet
DPW.XXXXX	Title Sheet for Traffic&Lighting Projects form.tnl.titlebase
	PLAN
DPW.XXXXX	GD Striping Plan Sheet for Traffic&Lighting Projects form.tnl.gdbase
DPW.XXXXX	GS Striping Plan Sheet for Traffic&Lighting Projects form.tnl.gsbase
DPW.XXXXX	Plan Sheet for Street Lighting Projects form.tnl.lgtbase
DPW.XXXXX	Plan Sheet for Traffic Survey Projects form.tnl.speedzone
DPW.XXXXX	Plan Sheet for Traffic Signal Projects form.tnl.tsbase
DPW.XXXXX	Sheet for Right of Way Plans form.dp.new92.plan-location
DPW.XXXXX	Sheet for Right of Way Plans form.dp.new92.plan
DPW.XXXXX	Sheet for County Airport Site Plans for Aviation Division form.aviabase
DPW.XXXXX	Plan Sheet for LA City Projects form.dd.lacityplansheet
	MAPS
DPW.XXXXX	Sheet for Preliminary Maps form.dp.new92.preliminary
DPW.XXXXX	Mapping Sheet for Preliminary and Final Flood Control Projects form.dp.new92.fcdbase
DPW.XXXXX	Sheet for "Paid Road Job" and "Waterworks" Maps form.dp.new92.condemn

DPW.XXXXX	Sheet for Gratis Road Maps form.dp.new92.rightofway
DPW.XXXXX	Sheet for Certification Maps form.dp.new92.cert-location
DPW.XXXXX	Sheet for Pay Certification Maps form.dp.new92.cert
DPW.XXXXX	Sheet for Gratis Certification Maps form.dp.new92.gratis-cert
DPW.XXXXX	Sheet for 100 Scale House Number Maps in Zone 7 State Plane Coord Sys form.7base
DPW.XXXXX	Sheet for 400 Scale Index Maps in Zone 7 State Plane Coordinate System form.imbase
DPW.XXXXX	Sheet for 400 Scale Precinct Maps for Register-Recorder/County Clerk form.pctbase
DPW.XXXXX	Sheet for 500 Scale House Number Maps in Zone 7 State Plane Coord Sys form.hrbase
DPW.XXXXX	Sheet for County Surveyors B Series Maps form.csbbase
DPW.XXXXX	Sheet for 400 Scale Topo Maps in Zone 7 State Plane Coordinate System form.topobase
DPW.XXXXX	Sheet for 50 Scale Substructure Maps form.ssbase

MISCELLANEOUS

DPW.XXXXX	8.5"x14" Sheet for Right of Way Search Information form.dp.new92.engsearch
DPW.XXXXX	Sketch Sheet to Accompany Right of Way Calculations in "Pouch Folder" form.dp.new92.calcbook
DPW.XXXXX	Sketch Sheet to Accompany Right of Way Calculations in R/W Calcbooks form.dp.new92.fcdcalcbook
DPW.XXXXX	11"x17" Sheet for Right of Way Plans form.tnl.rwbase
DPW.XXXXX	8.5"x11" Sheet with County Title Block form.dd.8x11sheet
DPW.XXXXX	11"x17" Sheet with County Title Block form.dd.11x17sheet
DPW.XXXXX	8.5"x11" Sheet for Traffic Survey Plans form.tnl.trafficsurvey

TABLE A5-1

ABBREVIATIONS

*Abbreviations are from the Standard Specifications for Public Works Construction, 1994 Edition.

A

abandon	aban	asphalt concrete*	AC
approximate	approx	air & vacuum release valve	AV
abutment	abut	asphalt concrete paving	AC Pav
as shown	AS	alternate	Alt
acrylonitrile butadiene styrene*	ABS	asphalt concrete wearing surface	ACWS
asbestos cement pipe*	ACP	American Standard	Amer Std
adapter	adptr	assembly	Assy
asphalt	asph	American wire gage (nonferrous wire)*	AWG
aggregate	agg	avenue	Av
asphalt-mastic coating	AMC	ampere	A
ahead	ah	average	avg

B

back of walk	B Wk	breaker	Bkr
black, block	blk	beginning of Transition	BT
back of wall*	B/W	bronze	brz
bolt	blt	beginning of vertical curve*	BVC
band	Bd	building	bldg
book	bk	bell-bell-bell	BBB
barbed wire fence	BW fn	buried cable	bur ca
bottom of wall	BW	bell-bell-flange	BBF
begin	beg	bell-flange	BF
Boulevard	Bl	bell-spigot	BS
beginning of curb return*	BCR	bench mark*	BM
boundary	Bdry	both ways	BW
beginning of curve*	BC	both faces	BF

C

calculated	calc	corrugated	corr
conduit	cond	cement mortar-coated*	CMC
California bearing ratio*	CBR	corrugated aluminum pipe*	CAP
connection	Conn	cement mortar-lined*	CML
Calif Dept of Transportation*	Caltrans	corrugated metal pipe	CMP
construct, construction	Const	cement treated base*	CTB
canyon	cyn	corrugated steel pipe*	CSP
cast iron	CI	center line, class	CL
coordinate	Coord	county	Co
cast iron pipe*	CIP	center to center	c-c
copper	COP	creek	Ck
cast-in place pipe*	CIPP	chain	ch
copper-copper	COP-COP	cross section	x-sect
catch basin*	CB	chain link fence*	CLF
corporation	Corp	crushed aggregate base*	CAB
caulking	calk	chamfer	cham
corporation stop (thread)	CS	crushed miscellaneous base*	CMB
cement	cem	channel	chan

cubic feet per second	CFS
check valve*	CV
cubic meters per second	cms
circle	cir
cubic yard	CY
clamp	clmp
culvert	Culv
cleanout (sewer)*	CO
curb and gutter*	C&G
clearance, clear	clr
coal-tar coating	CTC
curb face*, cubic feet	CF
coal-tar loading	CTL
curb*	Cb
column	Col
concrete	Conc

D

D-load	D
double	DBL
dead end	DE
double pole double throw	DPDT
dead load*	DL
double strap (steel)	DS
dead man	DM
douglas fir*	DF
debris basin, double strap (bronze)	DB
down stream	D/S
decibels*	dB
drain tile*	DT
department	Dept
drawing	Dwg
detail	det
drive	Dr
diameter	Dia
driveway approach	Dwy Appr
diaphram	DIAPHR
driveway	Dwy
direct current	DC
drop manhole	DMH
district	Dist
duct	Du
division	Div
ductile iron pipe	DIP

E

each	ea
embankment	Embk
each face*	EF
emulsion treated base*	ETB
easement	Esmt
end of curb return*	ECR
east	E
end of curve*	EC
east of	E/O
end of transition	ET
easterly	E'ly
end of vertical curve*	EVC
eccentric	ECC
energy grade line*	EGL
edge of gutter*	EG
engineer, engineering*	Engr
edge of pavement*	EP
excavation	Exc
electric, electrical	Elec
electric metallic tubing	EMT
existing	Ex
electrolier lighting conduit*	ELC
elevation*	El
expansion joint	Exp Jt

F

Fahrenheit*	F
flange	Flg
fabricate	Fab
flange-flange-flange	FFF
face of wall*	FW
flexible	flex
federal aid secondary	FAS
float valve	FV
federal aid urban	FAU
flood control, full circle	FC
federal specification	Fed Spec
floor drain*	FD
feet	ft
flow line*	FL
female	F
fluid-tite	FT
fence	Fn
foot-pound	ft-lb
field book, flange bell	FB
footing	ftg
finished grade*	FG
foundation	Fdn
frame and cover*	F&C
finished surface*, flange-spigot	FS

freeway	Fwy	fire service meter	FM
fire hydrant*	FH	furnish and install*	F&I
front of walk	f wk		

G

galvanized iron pipe*	GIP	ground	gnd
grade change	GC	gas meter*	GM
galvanized steel pipe*	GSP	gutter	gut
grade	Gr	gasoline	gaso
galvanized	Galv	guy pole*	GP
grating	Grtg	gauge	Ga
gas Line	G		

H

head	HD	house	hse
hinge	hng	high pressure	HP
headwall	Hdwl	house connection*	HC
horizontal	Hor	high pressure gas*	HPG
heavy	hvy	Housing and Urban Dev	HUD
horsepower	Hp	high pressure sodium (Light)*	HPS
height, high	H or Hgt	hydraulic	Hyd
hose bib*	HB	highway	Hwy
hertz	H	hydraulic grade line*	HGL

I

I-Beam	I	inside diameter*	ID
invert*	Inv	irrigation stand pipe	irr SP
inches	IN	inspection	Insp
iron pipe*	IP	irrigation valve	irr V
indicator	ind	intersection	int
irrigation pipe	irr P	including	incl

J

joint	Jt	junction structure*	JS
junction chamber*	JC	junction box	JB
junction	Jct		

K

kilowatt	KW		

L

laboratory	Lab	lead and tack	L&T
lineal feet	LF	long sweep	LS
lamp hole*	LH	left	lt
liquid tight	Liq Tite	longitudinal	Long
lamp post*	LP	length*	L
live load*	LL	lime treated base	LTB
large end bell, level book	LB	Los Angeles	LA
local depression*	LD	lime treated soil*	LTS
lateral	Lat	low pressure sodium (light)*	LPS
long	Lg		

M

machine each end	MEE	mercury vapor light*	MVL

machine end	ME	map book	MB
military specification	Mil Spec	mark	Mk
maintenance	Maint	monolithic	Mono
minimum	min	material	Matl
male	M	monument	Mon
miscellaneous	Misc	maximum	Max
manhole frame and cover	MHF&C	multiple	Mult
modified	Mod	measure	Meas
manhole*	MH	Multiple Tile Duct	MTD
modular openings	MO	thousand circular mils	MCM

N

north	N	northeast	NE
northwest	NW	number	no
north of	N/O	northerly	N'ly
not in contract	NIC		

O

obsolete	Obs	on center	oc
original	Orig	outer edge*	OE
oil Line	O	opposite	Opp
ornamental light conduit	OLC	outside diameter*	OD
ornamental light standard	OLS	optional	opt

P

parkway	Pkwy	point of curvature*	PC
point on curve*	POC	private drain	PD
pavement	Pvmt	point of intersection*	PI
pipe and wire revetment	P&W	private right-of-way	Pvt R/W
polyethylene*	PE	point of reverse vertical curve*	PRVC
place, plate	PI	processed miscellaneous base*	PMB
polyvinyl chloride*	PVC	point of reverse curve*	PRC
point	pt	property line*	PL
pounds per cubic foot	PCF	point of tangent*	POT
point of compound curve, portland cement		proposed	Prop
concrete*	PCC	point of tangency*	PT
power Line	P	pull box*	PB
point of compound vertical curve*	PCVC	pounds per square foot	psf
power pole*	PP	pounds per square inch	psi

Q

quadrangle, quadrant*	Quad	rate of flow in cubic feet per second*	Q

R

radius*	R	recycled asphalt concrete*	RAC
reinforced concrete pipe*	RCP	right	rt
railroad right of way	RR R/W	recycling agent*	RA
reinforced or reinforcement	Reinf	right-of-way*	R/W
railroad*	RR	reference	Ref
remote control valve*	RCV	road	Rd
railway	ry	roadway	rdwy
reservoir	Res	reinforced concrete*	RC
reclaimed asphalt pavement*	RAP	rock and oil*	R&O
retaining wall	Ret wall	reinforced concrete box*	RCB

S

international system of units (metric)*	SI		stirrup	Stir	
spillway	Spwy		south of	S/O	
sanitary sewer*	SS		storm drain manhole	SDMH	
square feet	Sq Ft		southeast	SE	
sanitary sewer manhole	SSMH		storm drain*	SD	
square feet	SF		southerly	S'ly	
section	Sect		straight	Str	
square yard	SY		southwest	SW	
select material base	SMB		straight grade	Str Gr	
sewer manhole	SMH		special catch basin	Sp CB	
standard	Std		street	St	
sheet	Sh		special manhole	Sp MH	
state highway	St Hwy		structural/structure	Struc	
sidewalk*	SW		special structure	Sp Struc	
station	Sta		survey	Surv	
single tile duct	STD		specifications	Spec	
steel cylinder concrete pipe*	SCCP		symmetrical	sym	
slope or South	S		spike and tin	S&T	

T

tangent	Tan		transition	Trans	
traffic control box	TCB		thick	Th	
tangent distance	T		transition structure	TS	
traffic signal conduit*	TSC		top of curb*	TC	
telephone	Tel		transverse	Transv	
traffic signal or transition structure*	TS		top of rail	TR	
telephone manhole	Tel MH		trap manhole	TMH	
traffic signal	TSi		top of wall*	TW	
telephone pole	TP		trapezoidal	Trap	
traffic signal standard*	TSS		topography	Topo	
temporary	temp		typical	Typ	
traffic signal conduit	TSiC		tract	Tr	
terminal manhole	TLMH				

U

underground service alert	USA		unknown	unk	
up stream	U/S				

V

valve box*	VB		varies, variable	Var	
vertical	Vert		volume	Vol	
vitrified clay pipe*	VCP		vertical curve*	VC	

W

walk	Wk		water tank	WT	
welded wire fabric	WWF		without	w/o	
water line, wide	W		water valve	WV	
west of	W/O		wood fence	Wd Fn	
water meter*	WM		weakened plane joint*	WPJ	
westerly	W'ly		woven wire fence	WW Fn	
water surface	WS		weight	wt	
with	w/		wrought iron*	WI	

cross connection*	X-Conn	X	cross Section*	XSEC
yard	yd	Y		

*Abbreviations are from the Standard Specifications for Public Works Construction, 1994 Edition.

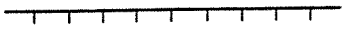
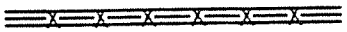
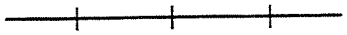
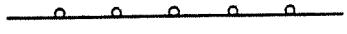
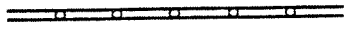
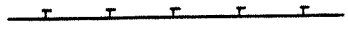
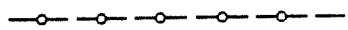
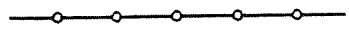
TABLE A5-2

LETTERING HEIGHT & THICKNESS

Line Thickness	Description	Text Height
0.30 mm	Miscellaneous topography labeling	2.5 mm (.100")
0.50 mm	Match line and leader text	3 mm (.125")
0.50 mm	Construction symbol number	3 mm (.125")
0.30 mm	Construction text	3 mm (.125")
0.30 mm	Bench marks	3 mm (.125")
0.30 mm	Dimension text	3 mm (.125")
0.30 mm	Existing contour text	3 mm (.125")
0.30 mm	Proposed contour text	3 mm (.125")
0.30 mm	Miscellaneous substructure labeling	3 mm (.125")
0.30 mm	General notes, list of standard drawings	3 mm (.125")
0.30 mm	PLAN-stationing drainage structures	3 mm (.125")
0.30 mm	PLAN-highway stations and elevations	3 mm (.125")
0.35 mm	"Q" values on drainage profiles	3 mm (.125")
0.50 mm	PROFILE-stationing drainage structures, elev & utilities	3 mm (.125")
0.50 mm	PROFILE-proposed highway stations and elevations	3 mm (.125")
0.50 mm	Right-of-way text	5 mm (.200")
0.90 mm	Side street name	5 mm (.200")
0.90 mm	Main street name	5 mm (.200")
0.60 mm	PLAN-titles for details and cross sections	5 mm (.200")
0.50 mm	PROFILE-titles for details and cross sections	5 mm (.200")
0.60 mm	Reference elevations	5 mm (.200")
1.00 mm	City name	7 mm (.280")
1.00 mm	County name	7 mm (.280")

Table A6-1
LINE FONTING AND THICKNESS

ILLUSTRATION	PEN SIZE (mm)	DESCRIPTION
		MAPPING
	1	state boundary line
	1	county boundary line
	1	city boundary line
	.30	existing centerlines
	.35	lot/property/section lines
	.35	cut lines
	.35	R/W easements
	.35	tie lines
		concrete
	.30	expressways to be opened
	.30	expressways to be widened
	.30	parkway to be widened
	.30	parkway to be opened
	.30	secondary highway to be widened
	.30	secondary highway to be opened
	.30	major highway to be widened
	.30	freeway
	.30	major highway to be opened
	.30	regional arterial to be widened
	.30	regional arterial to be opened
		TOPOGRAPHY
	.30	existing condition
	.30	building
	.30	AC ditch
	.30	AC walk
	.30	barbed wire fence
	.30	wood/wood rail fence A
	.30	wood/wood rail fence B
	.30	rock retaining wall
	.30	rubble/stone wall
	.30	concrete wall
	.30	block/brick wall

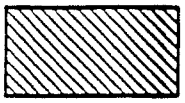
	.30	caltrans fence
	.30	barricade
	.30	railroad
	.30	guardrail (proposed)
	.30	guardrail (existing)
	.30	pipe and wire revetment
	.30	double pipe and wire revetment
	.30	rail and timber revetment
	.30	double rail and timber revetment
	.30	ex chain link fence
	.30	prop chain link fence
	.25	intermediate contour inside contact line
	.25	index contour inside contact line

UTILITIES

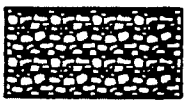
	.25	shared trench
	.25	water line
	.25	gas line
	.25	sewer line
	.25	ornamental lights
	.25	telephone lines
	.25	oil lines
	.25	gasoline lines
	.25	cable tv
	.25	power lines

TABLE A7-1

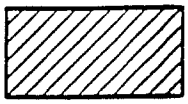
PATTERN HATCHING AND THICKNESS



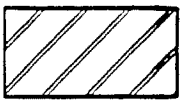
CAST IRON
(DD.PHA.IRON)



GRAVEL
(DD.PHA.STONE)

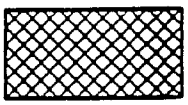


EXISTING CONCRETE
(DD.PHA.EXCONCRETE)

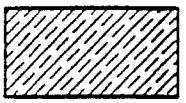


STEEL
(DD.PHA.STEEL)

RIPRAP
(DD.PHA.STONE)

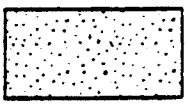


ASPHALTIC CONCRETE
(DD.PHA.AC)

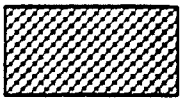


BRONZE.BRASS.COPPER
(DD.PHA.OH)

RUBBLE
(DD.PHA.STONE)

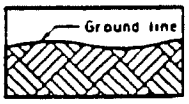


SAND.GROUT.MORTAR
(DD.PHA.SAND)

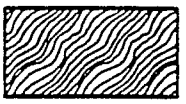


ALUMINUM
(DD.PHA.ALUM)

GROUTED ROCK
(DD.PHA.GROUTEDROCK)

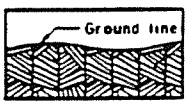


EARTH
(DD.PHA.EARTH)



WOOD END
(DD.PHA.WOODEND)

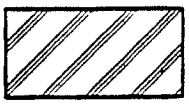
NEW CONCRETE
(DD.PHA.CONCRETE)



ROCK
(DD.PHA.ROCK)

WOOD FACE
(DD.PHA.WOODFACE)

BRICK.CONCRETE BLOCK
SLUMPSTONE
(DD.PHA.BLOCK)

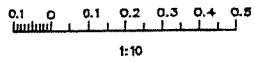


PLASTIC.RUBBER
(DD.PHA.PLASTIC)

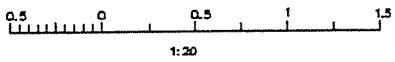
Table A10-1

ENGINEERING GRAPHIC SCALES

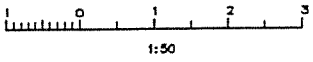
METRIC



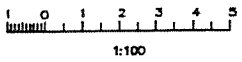
1:10



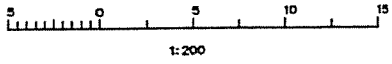
1:20



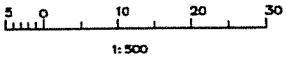
1:50



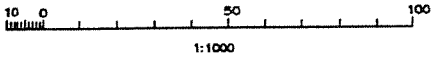
1:100



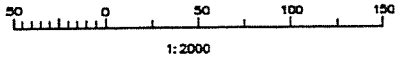
1:200



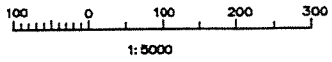
1:500



1:1000



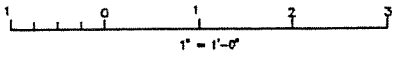
1:2000



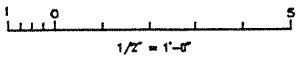
1:5000

ENGINEERING AND ARCHITECTURAL GRAPHIC SCALES

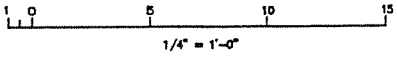
SCALE OF FEET



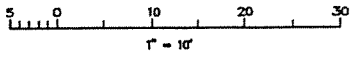
1" = 1'-0"



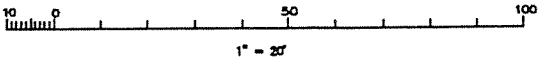
1/2" = 1'-0"



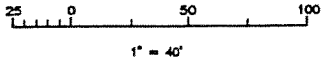
1/4" = 1'-0"



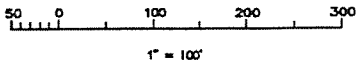
1" = 10'



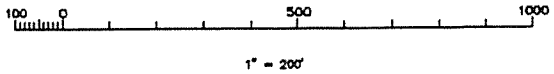
1" = 20'



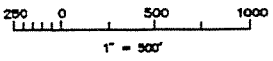
1" = 40'



1" = 100'



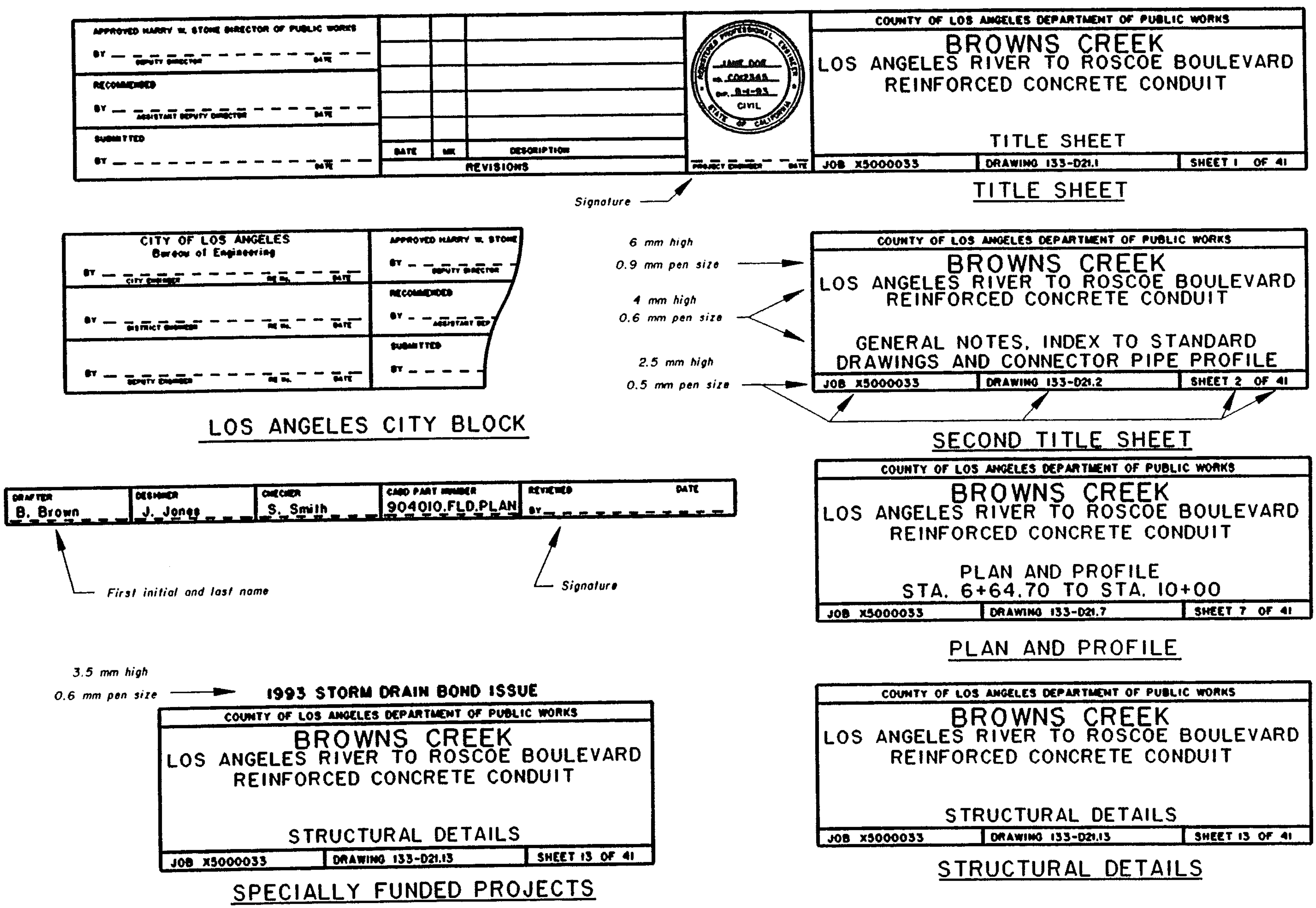
1" = 200'

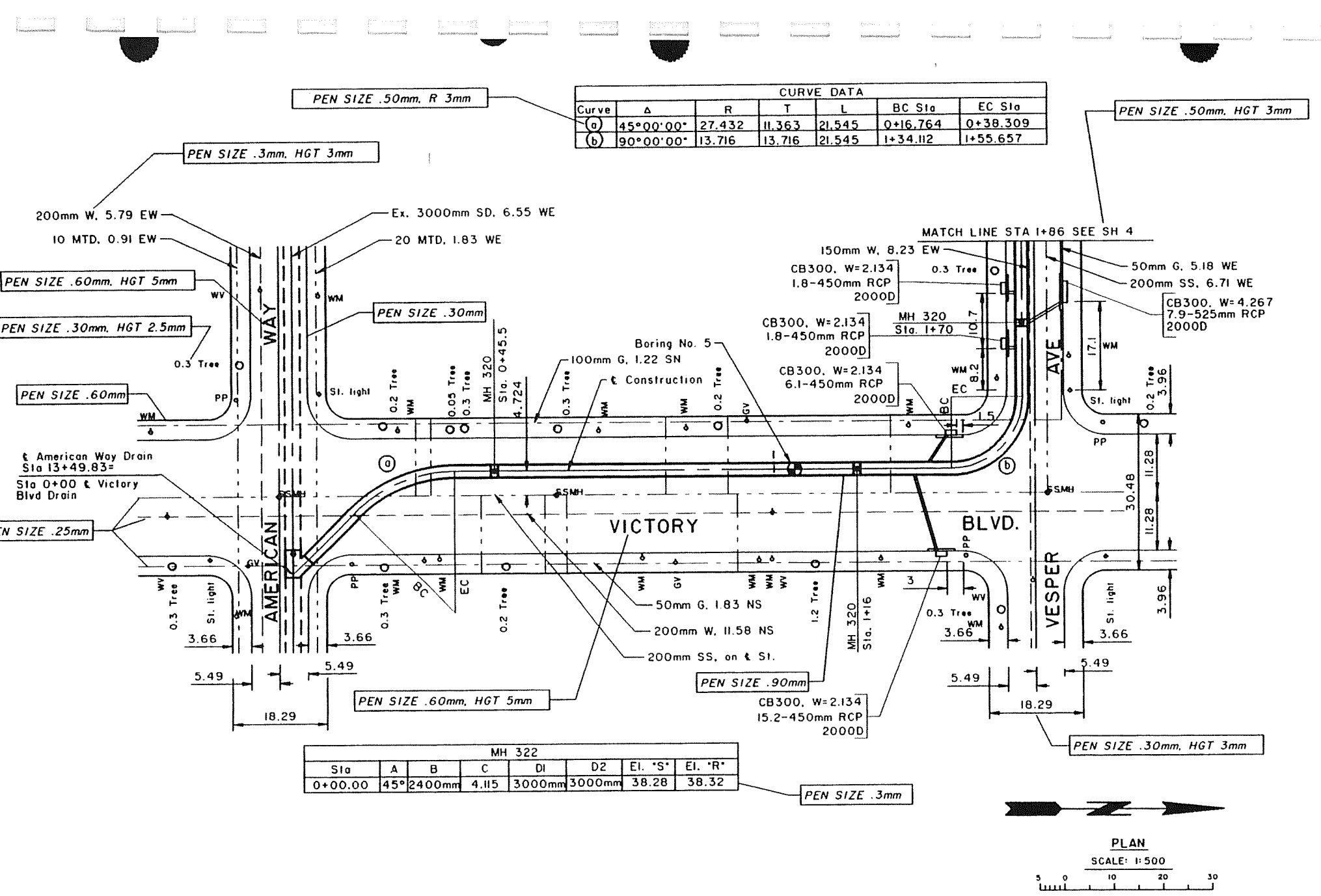


1" = 500'

GRAPHIC SCALES

TABLE A18-1


APPROVED HARRY W. STONE DIRECTOR OF PUBLIC WORKS
BY DEPUTY DIRECTOR DATE
RECOMMENDED
BY ASSISTANT DEPUTY DIRECTOR DATE
SUBMITTED
BY DATE
DATE
MK
DESCRIPTION
REVISIONS
PROJECT ENGINEER DATE
CIVIL
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BROWNS CREEK
LOS ANGELES RIVER TO ROSCOE BOULEVARD
REINFORCED CONCRETE CONDUIT
TITLE SHEET
JOB X5000033
DRAWING 133-D21.1
SHEET 1 OF 41
Signature
TITLE SHEET
CITY OF LOS ANGELES
Bureau of Engineering
BY CITY ENGINEER DATE
BY DISTRICT ENGINEER DATE
BY DEPUTY ENGINEER DATE
APPROVED HARRY W. STONE
BY DEPUTY DIRECTOR
RECOMMENDED
BY ASSISTANT DEP
SUBMITTED
BY
LOS ANGELES CITY BLOCK
6 mm high
0.9 mm pen size
4 mm high
0.6 mm pen size
2.5 mm high
0.5 mm pen size
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BROWNS CREEK
LOS ANGELES RIVER TO ROSCOE BOULEVARD
REINFORCED CONCRETE CONDUIT
GENERAL NOTES, INDEX TO STANDARD
DRAWINGS AND CONNECTOR PIPE PROFILE
JOB X5000033
DRAWING 133-D21.2
SHEET 2 OF 41
SECOND TITLE SHEET
DRAFTER
B. Brown
DESIGNER
J. Jones
CHECKER
S. Smith
CARD PART NUMBER
904010.FLD.PLAN
REVIEWED
BY
DATE
First initial and last name
Signature
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BROWNS CREEK
LOS ANGELES RIVER TO ROSCOE BOULEVARD
REINFORCED CONCRETE CONDUIT
PLAN AND PROFILE
STA. 6+64.70 TO STA. 10+00
JOB X5000033
DRAWING 133-D21.7
SHEET 7 OF 41
PLAN AND PROFILE
3.5 mm high
0.6 mm pen size
1993 STORM DRAIN BOND ISSUE
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BROWNS CREEK
LOS ANGELES RIVER TO ROSCOE BOULEVARD
REINFORCED CONCRETE CONDUIT
STRUCTURAL DETAILS
JOB X5000033
DRAWING 133-D21.13
SHEET 13 OF 41
SPECIALLY FUNDED PROJECTS
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BROWNS CREEK
LOS ANGELES RIVER TO ROSCOE BOULEVARD
REINFORCED CONCRETE CONDUIT
STRUCTURAL DETAILS
JOB X5000033
DRAWING 133-D21.13
SHEET 13 OF 41
STRUCTURAL DETAILS



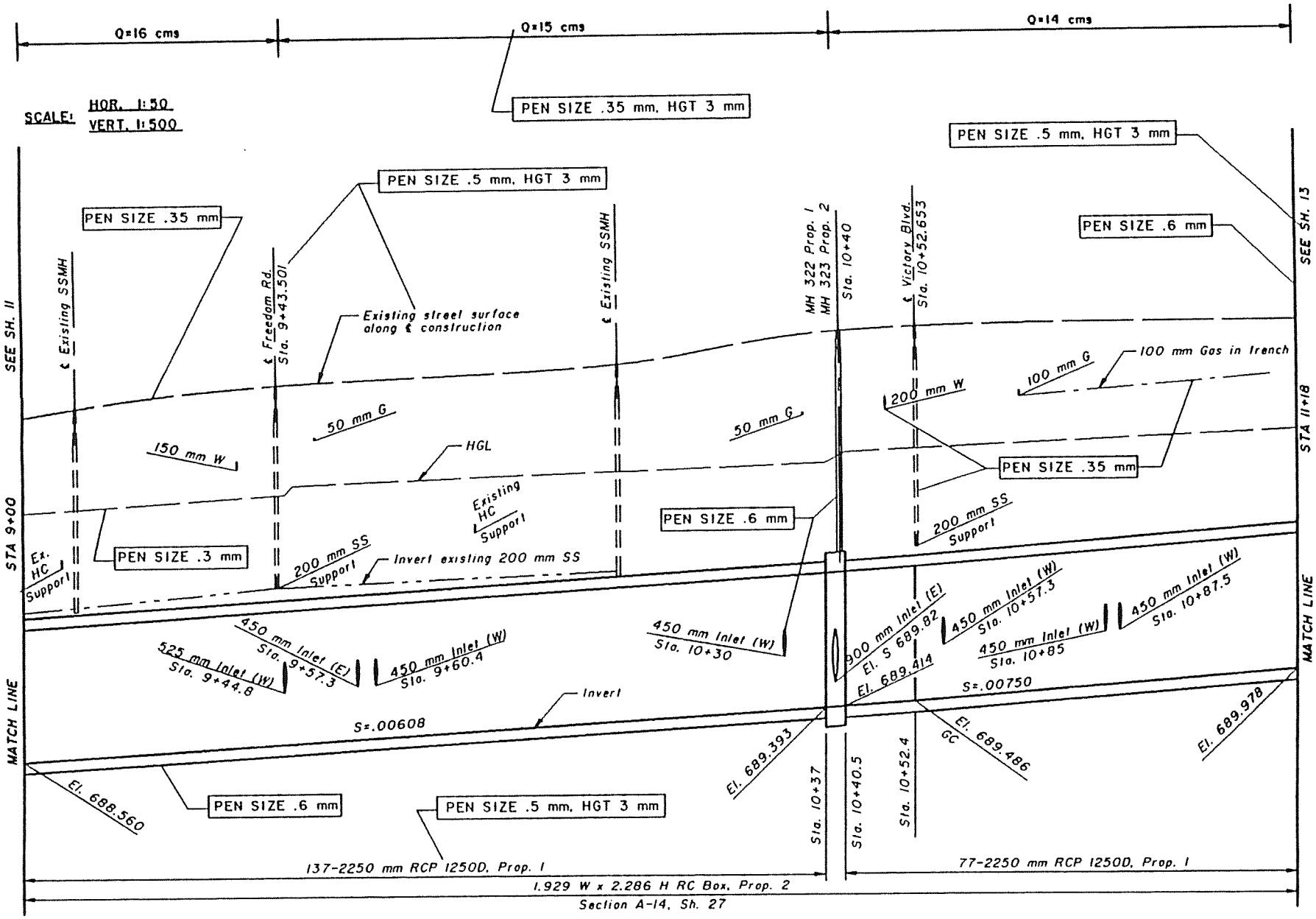
CURVE DATA						
Curve	Δ	R	T	L	BC Sta	EC Sta
(a)	45°00'00"	27.432	11.363	21.545	0+16.764	0+38.309
(b)	90°00'00"	13.716	13.716	21.545	1+34.112	1+55.657

MH 322							
Sta	A	B	C	D1	D2	El. "S"	El. "R"
0+00.00	45°	2400mm	4.115	3000mm	3000mm	38.28	38.32

PLAN

SCALE: 1:500

5 0 10 20 30


Q=16 cms
Q=15 cms
Q=14 cms
SCALE: HOR. 1:50
VERT. 1:500
PEN SIZE .35 mm, HGT 3 mm
PEN SIZE .5 mm, HGT 3 mm
PEN SIZE .35 mm
PEN SIZE .5 mm, HGT 3 mm
PEN SIZE .6 mm
SEE SH. 11
SEE SH. 13
STA 9+00
STA 11+18
MATCH LINE
MATCH LINE
℄ Existing SSMH
℄ Freedom Rd. Sta. 9+43.501
Existing street surface along ℄ construction
℄ Existing SSMH
MH 322 Prop. 1
MH 323 Prop. 2
Sta. 10+40
℄ Victory Blvd. Sta. 10+52.653
100 mm Gas in trench
100 mm G
200 mm W
50 mm G
50 mm G
150 mm W
HGL
Existing HC Support
PEN SIZE .35 mm
PEN SIZE .3 mm
Ex. HC Support
200 mm SS Support
Invert existing 200 mm SS
PEN SIZE .6 mm
200 mm SS Support
450 mm Inlet (E) Sta. 9+57.3
450 mm Inlet (W) Sta. 9+60.4
525 mm Inlet (W) Sta. 9+44.8
450 mm Inlet (W) Sta. 10+30
900 mm Inlet (E) El. S 689.82
El. 689.414
450 mm Inlet (W) Sta. 10+57.3
450 mm Inlet (W) Sta. 10+85
450 mm Inlet (W) Sta. 10+87.5
S=.00750
Invert
S=.00608
El. 689.393
GC
El. 689.486
El. 689.978
El. 688.560
PEN SIZE .6 mm
PEN SIZE .5 mm, HGT 3 mm
Sta. 10+37
Sta. 10+40.5
Sta. 10+52.4
137-2250 mm RCP 1250D, Prop. 1
77-2250 mm RCP 1250D, Prop. 1
1.929 W x 2.286 H RC Box, Prop. 2
Section A-14, Sh. 27

PROFILE

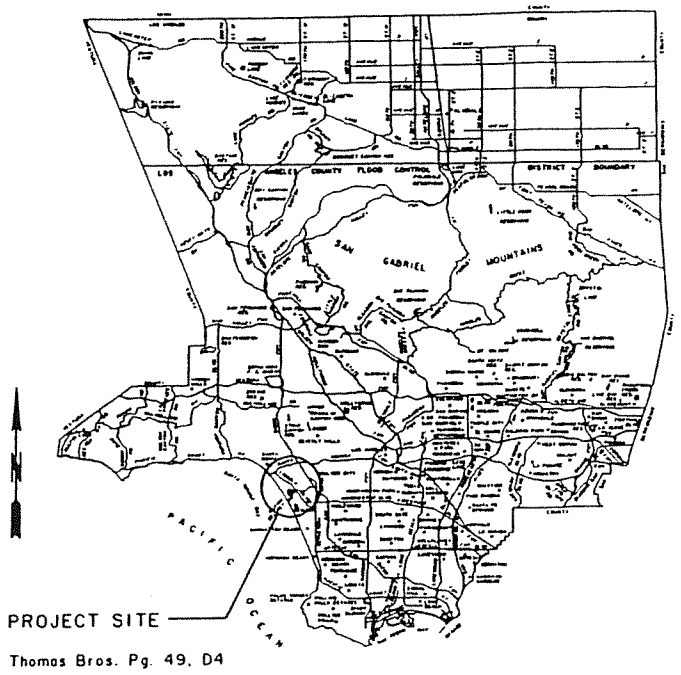
APPENDIX B

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

OXFORD RETENTION BASIN AND PUMP STATION

PEN SIZE 1 mm, HGT 13 mm

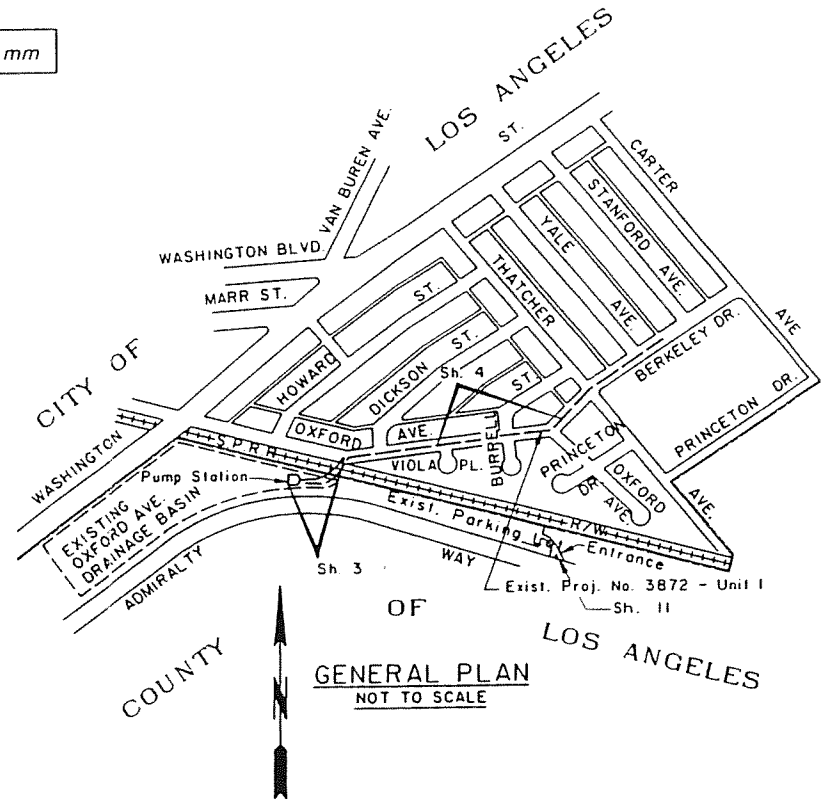
PEN SIZE 2.5 mm, HGT 13 mm



LOCATION MAP

INDEX TO PROJECT DRAWINGS

SH. NO	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES, CONNECTOR PIPE DETAIL AND STREET LIGHTING DETAIL
3	PLAN AND PROFILE - STA. 1+03.75 TO 1+60.293
4	THATCHER AVE. LATERAL, PLAN AND PROFILE - STA. 0+00 TO 4+41
5	RETROFITTING FLAPGATES AND DETAILS
6	SINGLE RC BOX, STRUCTURAL SCHEDULE, NOTES AND DETAILS
7	PUMP STATION -ARCHITECTURAL, PLANS, ELEVATIONS AND DETAILS
8	PUMP STATION -STRUCTURAL, REINFORCING PLANS AND SECTIONS
9	PUMP STATION -MECHANICAL, PLANS, SECTIONS AND SCHEDULES
10	PUMP STATION -ELECTRICAL, PLANS SECTIONS AND DIAGRAMS
11	LOGS OF BORING



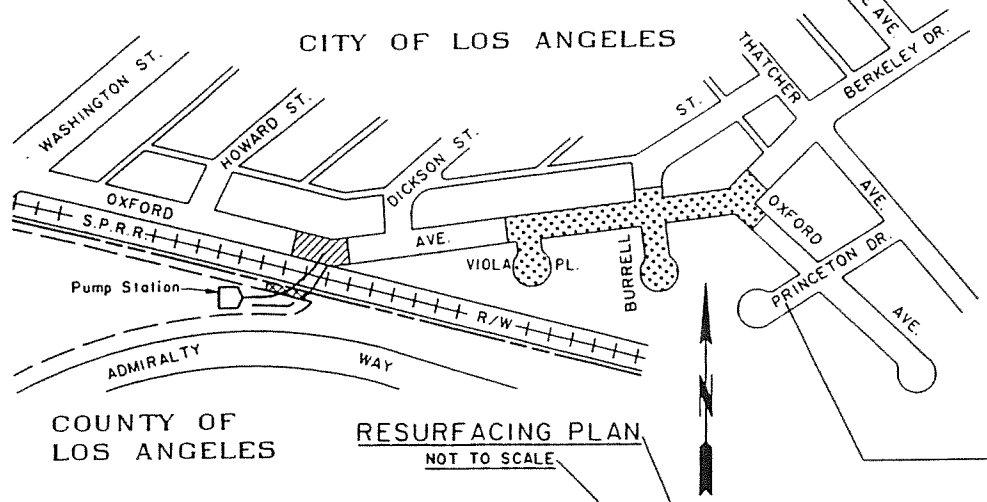
GENERAL PLAN
NOT TO SCALE

PEN SIZE .35 mm, HGT 3 mm

PEN SIZE 0.6 mm, HGT 5 mm

UTILITIES

WATER	DEPARTMENT OF WATER AND POWER
GAS	SOUTHERN CALIFORNIA GAS COMPANY
TELEPHONE	GTE
SANITARY SEWER	CITY OF LOS ANGELES
POWER	DEPARTMENT OF WATER AND POWER



RESURFACING PLAN
NOT TO SCALE

PEN SIZE .35 mm, HGT 3 mm

PEN SIZE 0.6 mm, HGT 5 mm

PEN SIZE 0.35 mm, HGT 3 mm

PEN SIZE .35 mm, HGT 3 mm

NOTES:
1) THE RESURFACING PLAN SHOWN ABOVE IS SCHEMATIC. PAVEMENT THICKNESS SHOWN APPLY ONLY WITHIN THE LIMITS OF EXCAVATION. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO PAVEMENT OUTSIDE THE LIMITS OF EXCAVATION.

RESURFACING SCHEDULE		
SYMBOL	EXISTING PAVEMENT	RESURFACING PAVEMENT
	0.1 AC	0.13 AC on 0.15 CAB
	0.13 AC on 0.15 CAB	0.15 AC on 0.15 CAB
	0.15 AC	0.15 AC

REFERENCES

PROJECT NO. 3872, UNIT 1 - DWG. NO. 470-3872-D3
PROJECT NO. 3872, UNIT 1, AUTOMATIC FLAPGATES - DWG. NO. 470-3872-D8
PWFB 1015
PWLB 1015

CADD PART NUMBER | CHECKER | DESIGNER | DRAFTER

TWO DAYS BEFORE YOU DIG
CALL USA TOLL FREE
1-800-422-4133

APPROVED T.A. TIDEMANSON DIRECTOR OF PUBLIC WORKS
BY — DEPUTY DIRECTOR — DATE
RECOMMENDED
BY — ASSISTANT DEPUTY DIRECTOR — DATE
REVIEWED
BY — DATE

DATE	MK	DESCRIPTION
REVISIONS		

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — NO. — EXP. — CIVIL
PROJECT ENGINEER — DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

OXFORD RETENTION BASIN AND PUMP STATION

TITLE SHEET

JOB X5780107	DWG 507-D1.1	SHEET 1 OF 11

PEN SIZE 0.6 mm, HGT 5 mm

GENERAL NOTES

1. NUMBERS IN CIRCLES INDICATE ITEMS UNDER WHICH PAYMENT WILL BE MADE.
2. NUMBERS AND LETTERS IN BRACKETS, SUCH AS [3] OR [A-3], IDENTIFY STRUCTURES FOR CONTRACT ADMINISTRATION PURPOSES.
3. ELEVATIONS SHOWN ARE IN METERS ABOVE THE U.S.G.S. MEAN SEA LEVEL DATUM, BASED ON L.A. CITY 1980 ADJUSTMENT.
4. STATIONS SHOWN ON THE DRAWINGS ARE ALONG CENTER LINE OF CONDUIT OR ON A LINE NORMAL TO CENTER LINE OF CONDUIT.
5. STATIONS AND INVERT ELEVATIONS OF PIPE INLETS SHOWN ON THE PROFILES ARE AT THE INSIDE FACE OF THE CONDUIT, UNLESS OTHERWISE SHOWN.
6. ALL PIPE IN OPEN TRENCH SHALL BE BEDDED ACCORDING TO STANDARD PLAN NO. 3080-0, CASE 3, EXCEPT BELL AND SPIGOT PIPE WHICH SHALL BE CASE 2 BEDDING, UNLESS OTHERWISE SHOWN. "W" VALUES SHALL BE AS SPECIFIED ON STANDARD PLAN NO. 3080-1 FOR CASE 3 BEDDING, NOTES 3(a), 3(b) AND 3(c). IF THE "W" VALUE AT THE TOP OF THE PIPE IS EXCEEDED, THE BEDDING SHALL BE MODIFIED, AND/OR PIPE OF ADDITIONAL STRENGTH SHALL BE PROVIDED. THE PROPOSED MODIFICATION SHALL BE APPROVED BY THE DEPARTMENT.
7. CONCRETE BACKFILL SHALL BE PROVIDED AROUND PIPE 525 mm IN DIAMETER OR LESS WHERE THE COVER IS EQUAL TO OR LESS THAN 0.61, AROUND PIPE GREATER THAN 525 mm IN DIAMETER BUT LESS THAN 1000 mm WHERE THE COVER IS LESS THAN 0.381, AND FOR PIPE 1000 mm OR GREATER WHERE THE COVER IS LESS THAN 0.305. THE CONCRETE BACKFILL SHALL BE AS SPECIFIED ON STANDARD PLAN NO. 3080-0, NOTE 3.
8. FOR LOCAL DEPRESSIONS, APWA-AGC STANDARD PLAN NO. 313-0, CASE E SHALL BE USED. H SHALL EQUAL 0.025 FOR ALL CASES, UNLESS OTHERWISE NOTED ON THE PROJECT DRAWINGS.
9. CURB FACE SHALL BE 0.203 AT THE ENDS OF LOCAL DEPRESSIONS WHERE THERE IS NO EXISTING CURB.
10. LOCATIONS SHOWN ON THE PLANS FOR EXISTING SANITARY SEWER HOUSE CONNECTIONS ARE APPROXIMATE ONLY.
11. SANITARY SEWER HOUSE CONNECTION RECONSTRUCTION AND RECONNECTION SHALL BE IN ACCORDANCE WITH CITY OF LOS ANGELES STANDARD PLAN NO. S-111-0, UNLESS OTHERWISE SHOWN.
12. SANITARY SEWERS AND HOUSE CONNECTIONS CROSSING OVER THE STORM DRAIN TRENCH SHALL BE SUPPORTED IN ACCORDANCE WITH APWA-AGC STANDARD PLAN NO. 224-0. THE CASE OF SANITARY SEWER SUPPORTS PER CASES 1, 2, AND 4. THE SEWER SHALL BE ENCASED. THE ENCASEMENT SHALL BE A MINIMUM OF 0.152 WIDER ON EACH SIDE OF THE SEWER (O.D. PLUS 300 mm) AND A MINIMUM OF 0.152 ABOVE THE TOP OF THE SEWER. THE SUPPORT BEAM OR SUPPORT WALL SHALL BE WIDENED TO THE WIDTH OF THE ENCASEMENT AND SHALL BE LENGTHENED TO FULLY SUPPORT THE ENCASEMENT.
13. WHEN INDICATED ON THE DRAWINGS, SANITARY SEWERS AND HOUSE CONNECTIONS SHALL BE PROTECTED IN ACCORDANCE WITH CITY OF LOS ANGELES STANDARD PLAN S-255-1.
14. ALL EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE THE PROPERTY OF THE AGENCIES LISTED ON SHEET 1, UNLESS OTHERWISE NOTED.
15. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR, UNLESS OTHERWISE NOTED.
16. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO DETERMINE THE DEPTH AND LOCATION OF EXISTING UTILITIES WHERE SO INDICATED BY THE SYMBOL "△".
17. UTILITIES DESIGNATED BY THE SYMBOL "✱" WILL BE ABANDONED IN PLACE AND THE OWNER WILL INSTALL A NEW SECTION OF THE AFFECTED UTILITY AT A LOCATION IN CLOSE PROXIMITY TO, BUT WHICH DOES NOT PHYSICALLY INTERFERE WITH, THE PROPOSED STORM DRAIN CONDUIT AND APPURTENANT STRUCTURES.
18. UTILITIES DESIGNATED BY THE SYMBOL "⌀" WILL BE REMOVED BY THE OWNER AND THE OWNER WILL REINSTALL A NEW SECTION OF THE AFFECTED UTILITY AT A LOCATION IN CLOSE PROXIMITY TO, BUT WHICH DOES NOT PHYSICALLY INTERFERE WITH, THE PROPOSED STORM DRAIN CONDUIT AND APPURTENANT STRUCTURES.
19. WHERE THE UTILITIES ARE INDICATED ON THE DRAWINGS TO BE SUPPORTED, SAID SUPPORTS SHALL BE IN ACCORDANCE WITH APWA-AGC STANDARD PLAN NO. 224-0, UNLESS OTHERWISE INDICATED.
20. ALL OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES SHALL BE SEALED WITH 0.203 OF BRICK AND MORTAR OR 0.152 OF CONCRETE, UNLESS OTHERWISE SHOWN.
21. ALL RESURFACING, CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS, AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED SHALL BE CONSTRUCTED AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
22. REFER TO SHEET 2 FOR TYPICAL CATCH BASIN CONNECTOR PIPE PROFILE.
23. STREET RESURFACING PLANS ARE SHOWN ON SHEET 1.
24. TEMPORARY SUPPORTS FOR WATER LINES SHALL BE IN ACCORDANCE WITH D.W. & P. STD. PLAN A-3615A, UNLESS OTHERWISE SHOWN.
25. MANHOLE 321 SHALL USE THE APWA-AGC STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION 630-1 FOR THE "FRAME AND COVER" AND 635-0 FOR THE "STANDARD DROP STEP".
26. STRUCTURAL NOTES WILL BE FOUND ON THE SHEET 6.
27. EXISTING TREES SHALL BE REMOVED ONLY IF SO DESIGNATED. THOSE TREES NOT INTERFERING WITH CONSTRUCTION SHALL BE PROTECTED IN PLACE.
28. RIGHT OF WAY FENCING SHALL BE PLACED 0.152 INSIDE THE RIGHT OF WAY LINE.
29. THE WORK SHOWN ON THESE DRAWINGS REQUIRES THE PRIME CONTRACTOR TO HAVE A VALID CLASS A OR C42 LICENSE ISSUED BY THE STATE OF CALIFORNIA.
30. ALL FIELD BOOK REFERENCES ARE TO LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS FIELD BOOKS, UNLESS OTHERWISE NOTED.
31. CURB RAMPS SHALL BE CASE E UNLESS OTHERWISE SPECIFIED. ANY STREET LIGHTING PULL BOXES IN THE RAMP SHALL BE RELOCATED OUTSIDE THE RAMP.
32. "Vin" IS THE DEPTH OF INLET OF CATCH BASINS IN SERIES MEASURED FROM TOP OF CURB TO INVERT OF THE CONNECTOR PIPE.

DRAWN | DESIGNED | CHECKED | CADD PART NUMBER | REVIEWED BY | DATE

INDEX TO STANDARD DRAWINGS

LACDPW

PLAN NO.	TITLE
3061-0	AUTOMATIC FLAPGATE INLETS TO STORM DRAINS
3080-1	PIPE BEDDING IN TRENCHES
3090-0	CRITERIA FOR THE DESIGN OF SHORING FOR EXCAVATIONS
3091-0	SAMPLE SHEET FOR USE AS A GUIDE IN PREPARING CALCULATIONS FOR SHORING OF EXCAVATIONS
3093-0	UNIFIED SOIL CLASSIFICATION SYSTEM
6002-0	PORTABLE SECURITY FENCE FOR OPEN TRENCHES

AGC-APWA

STD. PLAN	TITLE
110-0	DRIVEWAY APPROACHES
120-0	CURB AND GUTTER-BARRIER
224-0	SUPPORTS FOR CONDUITS ACCROSS TRENCHES
300-1	CURB OPENING CATCH BASIN
308-0	MONOLITHIC CATCH BASIN CONNECTION
309-0	CATCH BASIN REINFORCEMENT
310-0	CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
312-1	CATCH BASIN MANHOLE FRAME AND COVER
313-0	LOCAL DEPRESSIONS AT CATCH BASINS
321-0	MANHOLE 321
324-0	CONCRETE RINGS, REDUCER & PIPE FOR MANHOLE SHAFT
329-0	SPECIAL PRESSURE MANHOLE SHAFT AND PRESSURE PLATE DETAILS
331-1	JUNCTION STRUCTURE 331
380-1	CONCRETE COLLAR FOR PIPES 12 INCHES THROUGH 66 INCHES
600-0	CHAIN LINK FENCE AND GATES
602-0	STANDARD PIPE GATE
606-0	METAL HAND RAILINGS
610-0	REINFORCED CONCRETE RETAINING WALL TYPE I
630-1	600 mm MANHOLE FRAME & COVER
635-0	STEEL STEP

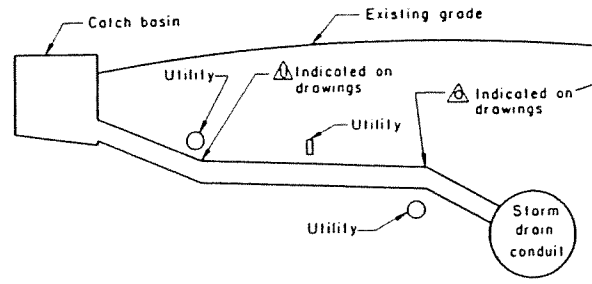
CITY OF LOS ANGELES
BUREAU OF ENGINEERING

STD PLAN	TITLE
S-610-17	NOTICE TO CONTRACTORS
S-791-0	ADVANCE CONSTRUCTION NOTICE SIGN
S-111-0	HOUSE CONNECTION REMODELING
S-255-1	BLANKET PROTECTION PIPES
S-442-1	CURB RAMPS

DEPARTMENT OF WATER AND POWER

STD PLAN	TITLE
A-3615A	WATER SYSTEM SUPPORT REQUIREMENTS FOR MAINS 400 mm AND SMALLER

PEN SIZE .35 mm, HGT 3 mm



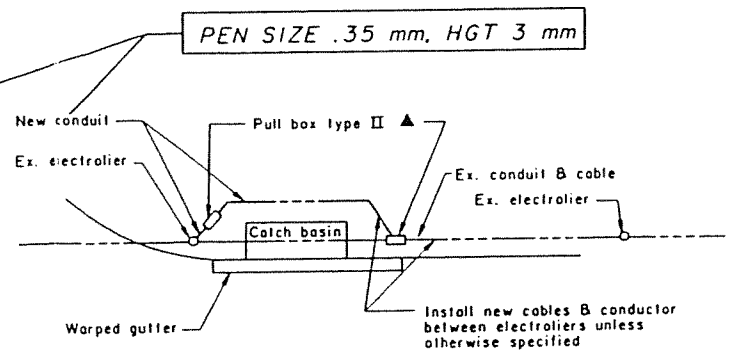
TYPICAL CONNECTOR PIPE PROFILE

NOT TO SCALE

NOTES:

1. THE CHANGE IN GRADE OF THE CONNECTOR PIPE MAY OCCUR EITHER OVER OR UNDER AN EXISTING UTILITY. THE PARTICULAR UTILITY AT WHICH THE CHANGE IN GRADE OCCURS, IS NOTED ON THE PROJECT DRAWINGS. AT LOCATIONS WHERE UTILITY CROSSINGS ARE MARKED ⚠, THE CONNECTOR PIPE GRADE WILL BREAK OVER THE UTILITY. AT LOCATIONS WHERE UTILITY CROSSINGS ARE MARKED ⚠, THE CONNECTOR PIPE GRADE WILL BREAK UNDER THE UTILITY.
2. ON THOSE CONNECTOR PIPES WHERE CHANGE IN GRADE IS NOT INDICATED, IT IS ASSUMED THAT THE CONNECTOR PIPE CAN BE LAID ON A STRAIGHT GRADE FROM THE CATCH BASIN TO THE STORM DRAIN WITHOUT INTERFERENCE WITH UTILITIES.
3. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO DETERMINE THE EXACT LOCATION AND DEPTH OF UTILITIES, EXCEPT SANITARY SEWER, WHICH IS MARKED ⚠ OR ⚠. AFTER THE EXACT LOCATION OF A UTILITY HAS BEEN DETERMINED, THE GRADE AND ALIGNMENT OF THE CONNECTOR PIPE WILL BE STAKED SO AS TO CLEAR THE UTILITY.
4. WHERE CONNECTOR PIPE HAS A GRADE CHANGE EXCEEDING 0.10 m PER m OR DIFFERS IN DIAMETER FROM THAT OF EXISTING PIPE, USE CONCRETE COLLAR AS PER STANDARD DRAWING 380-1.
5. AUTOMATIC FLAPGATE VAULT IS NOT SHOWN. REFER TO SHT. 4 FOR DETAILS.

PEN SIZE .35 mm, HGT 3 mm



TYPICAL MODIFICATION OF STREET LIGHTING CONDUIT

NOT TO SCALE

▲ Pull boxes shall not be installed unless approved by the engineer

PEN SIZE 0.5 mm, HGT 3 mm

STREET LIGHTING NOTES

1. ALL WORK INDICATED & SHOWN ON THIS PLAN IN CONNECTION WITH THE ELECTROLIER LIGHTING INSTALLATION SHALL BE DONE BY THE CONTRACTOR, AND ALL THE MATERIALS SHALL BE FURNISHED TO COMPLETE THE SYSTEM, READY FOR OPERATION, ALL IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT LOCATIONS WHERE NEW ELECTROLIER LIGHTING CABLE IS REQUIRED, THE CONTRACTOR SHALL FURNISH & INSTALL IN ELECTROLIER LIGHTING CONDUIT A NO.8 A.W.G. COPPER CONDUCTOR, INSULATED WITH U.L. APPROVED POLYETHYLENE COMPOUND RATED FOR 5000 V OPERATION.
3. ELECTROLIER LIGHTING CABLES SHALL RUN THROUGH PULL BOXES WITHOUT SPLICING, EXCEPT FOR TRANSFORMERS, ALLOWING 1m (3') OF SLACK IN EACH CABLE, IN EACH PULL-BOX.
4. CONTRACTOR SHALL MAINTAIN SERVICE TO ANY EXISTING LAMPS, MAKE ALL NECESSARY TEMPORARY CONNECTIONS, & CONNECT ALL LAMPS AS DIRECTED BY THE STREET LIGHTING ENGINEER. WHERE CONDUIT IS DISTURBED AND FOUND UNSAFE BY THE INSPECTOR OF THE (•), CONTRACTOR SHALL REPLACE CONDUIT AND CABLE.
5. WARNING: CONTRACTOR SHALL OBTAIN DAILY SAFETY CIRCUIT CLEARANCE FROM THE (•) CUTOUT PLUGS MUST BE PLUGGED, AND "MEN AT WORK" SIGNS POSTED AT SERVICE POINTS BEFORE ANY WORK IS DONE, OR ANY CONNECTIONS MADE INVOLVING EXISTING LIGHTING SYSTEMS.
6. ⚠ 250 INDICATES NUMBER AND TOTAL LENGTH OF WIRES TO BE REMOVED. FURNISH AND INSTALL NEW WIRES.
7. ⚠ 25 INDICATES SIZE AND LENGTH OF CONDUIT TO BE REMOVED. FURNISH AND INSTALL NEW CONDUIT.
8. ⚠ INDICATES PROTECT EXISTING STREET LIGHTING FACILITIES.

• USE APPROPRIATE AGENCY.

DATE	ME	DESCRIPTION

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER | DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

OXFORD RETENTION BASIN AND PUMP STATION

GENERAL NOTES, CONNECTOR PIPE DETAIL, AND STREET LIGHTING DETAIL

JOB X5780107 | DWG 507-D1.2 | SHEET 2 OF 11

CURVE DATA						
Curve	Δ	R	T	L	BC Sta.	EC Sta.
ⓑ	7°29'36"	97.374	6.376	12.735	5+87.280	5+99.018
ⓒ	6°15'16"	116.711	6.376	12.741	5+99.018	6+11.759
ⓓ	11°54'25"	223.26[illegible]	23.284	46.397	6+22.442	6+68.838
ⓔ	30°19'10"	137.828	37.344	72.936	6+93.037	7+65.972
ⓕ	22°07'17"	82.296	16.087	31.772	7+94.660	8+26.435

Bench Mark: El. 360.035
CD #4 (L.A. City 1980 Adj.)
L.A. City Mon. at C/L intersection
Sunset Blvd. and Allenford Ave.

MH 322							
Sta	A	B	C	D1	D2	El. "S"	El. "R"
5+90.919	90°	600mm	1.372	1500mm	1350mm	349.83	N.A.

JS 331				
Sta	A	B	C	D1
6+94.5	75°	600mm	0.518	1350mm

DATE	MK	DESCRIPTION

REVISIONS

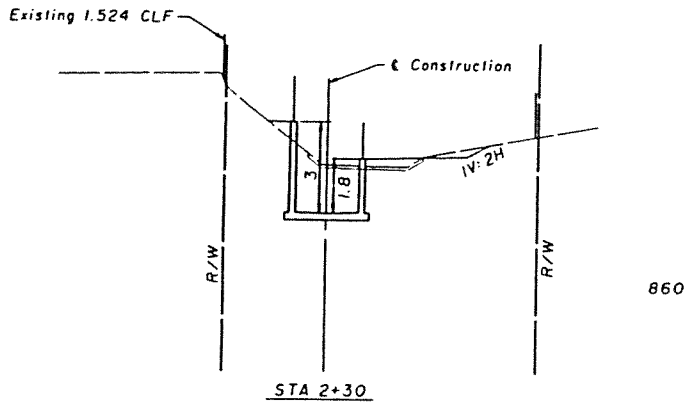
PROJECT ENGINEER DATE

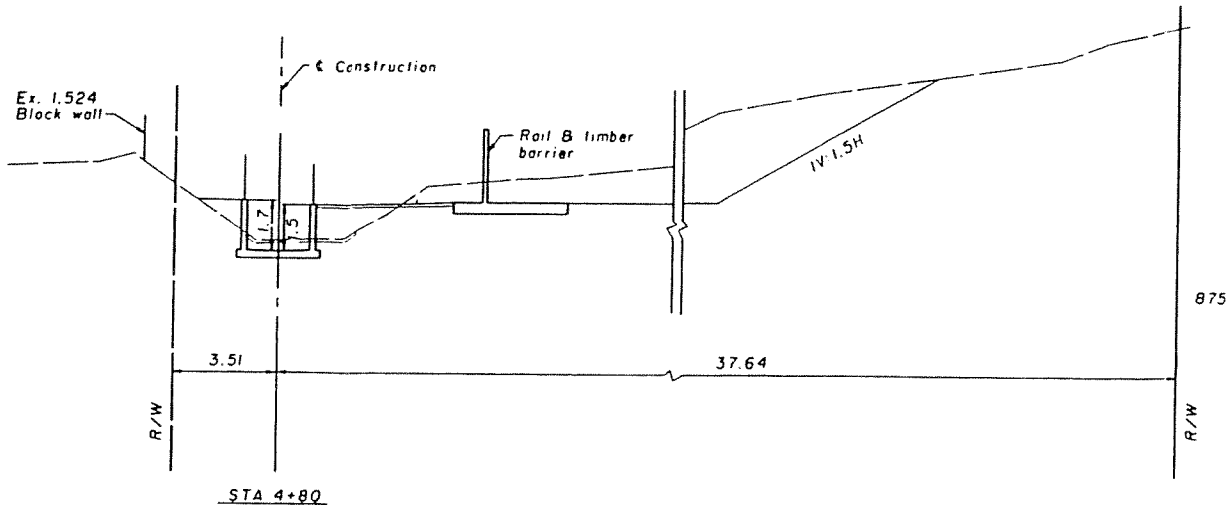
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

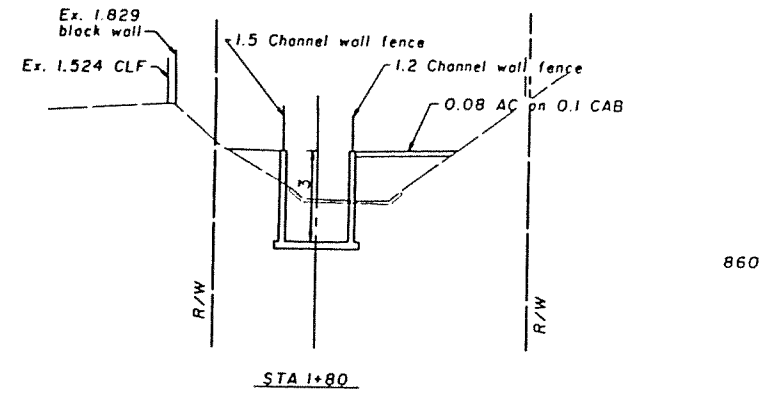
CAPRI DRAIN UNIT I
REINFORCEDNCONCRETE CONDUIT
PLAN AND PROFILE
STA 5+50 TO STA 8+36

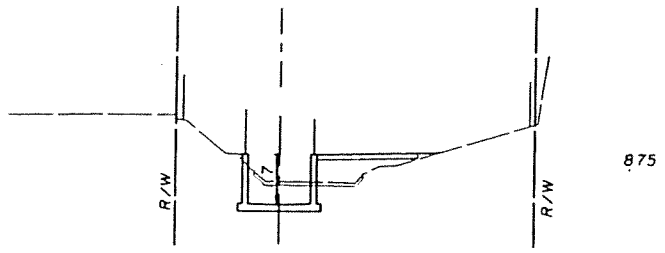
JOB DWG SHEET OF

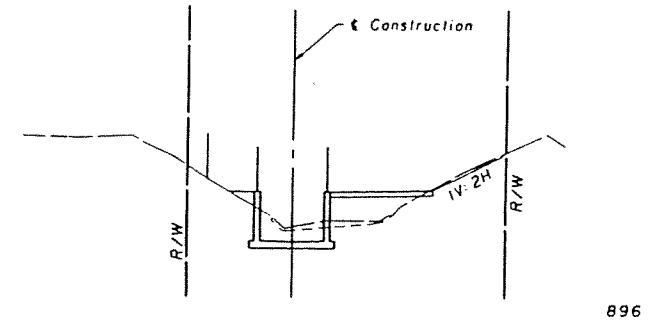
DRAFTER DESIGNER CHECKER CADD PART NUMBER REVIEWED BY DATE

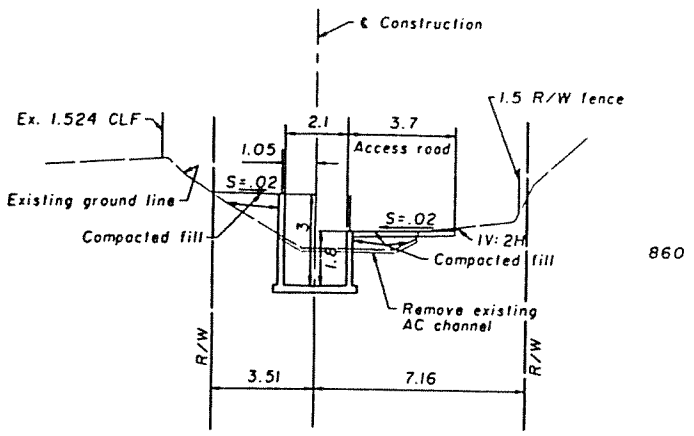


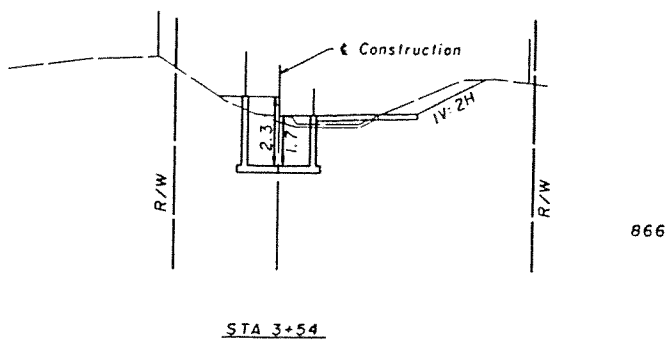


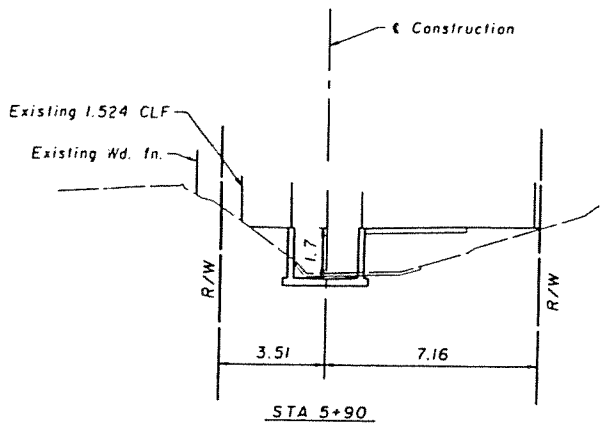












Note:
Cross sections are taken looking upstream.

SCALE: 1:100

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER HYD.CROSSECT | REVIEWED BY: | DATE

DATE	MK	DESCRIPTION
REVISIONS		

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CROSS SECTIONS

JOB | DWG | SHEET

APPENDIX C

PEN SIZE 2.5 mm, HGT 13 mm

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

PEN SIZE 1 mm, HGT 13 mm

CALIFORNIA AVENUE

BOLSA CHICA AVENUE TO W/O COYOTE BOULEVARD

PEN SIZE .35 mm, HGT 3 mm

PEN SIZE 0.6 mm, HGT 5 m

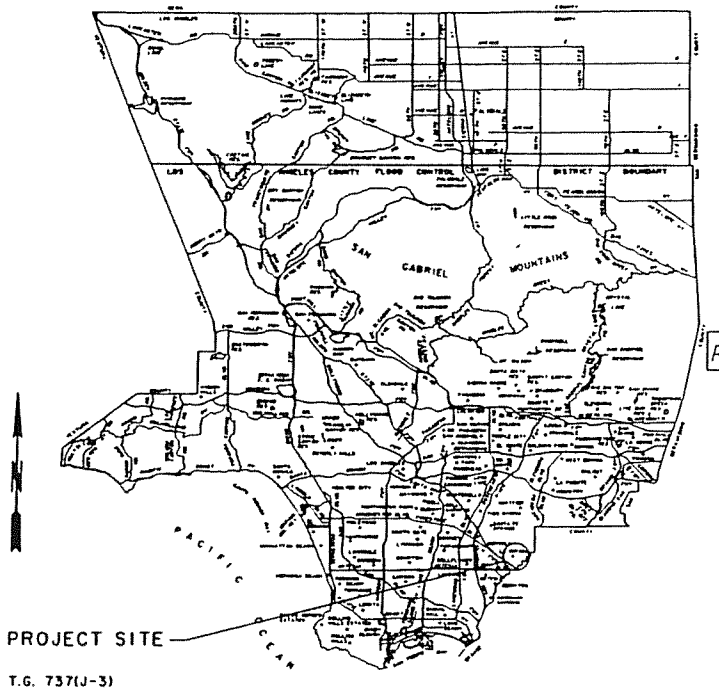
PEN SIZE 0.6 mm, HGT 7 mm

TOTAL LENGTH 885 METERS

CITY OF LA MIRADA

PEN SIZE 0.5 mm, HGT 5 mm

PEN SIZE .35 mm, HGT 3 mm

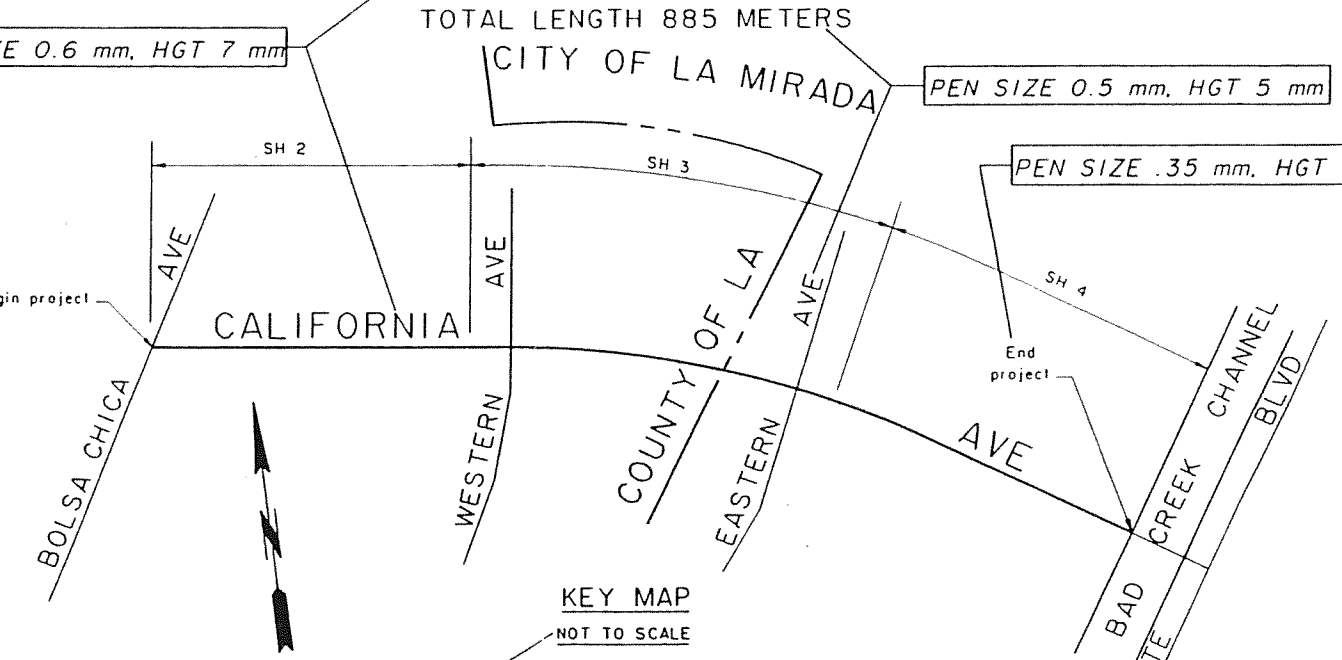


PROJECT SITE

T.G. 737(J-3)

LOCATION MAP

NOT TO SCALE



KEY MAP

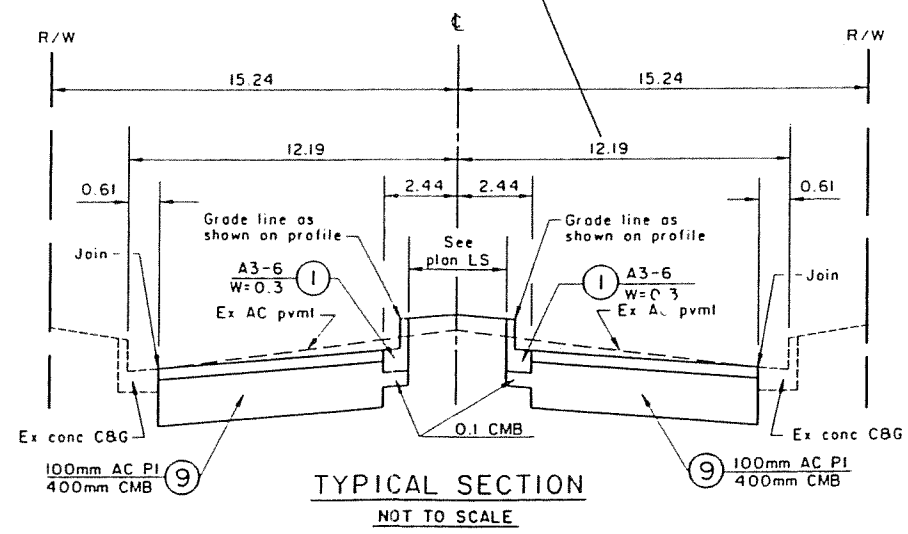
NOT TO SCALE

PEN SIZE 0.5 mm, HGT 3 mm

PEN SIZE .35 mm, HGT 3 mm

GENERAL NOTES

1. PRIME CONTRACTOR LICENSE REQUIRED: CLASS A OR C12.
2. ALL STRUCTURES SHALL BE CONSTRUCTED PER APWA STANDARD PLANS, UNLESS OTHERWISE SHOWN. THE TOPOGRAPHY SYMBOLS SHOWN ON PLAN ARE PER STD. 100-1. FOR AC PAVEMENT TYPE SEE LACDPW STD. 1010-0.
3. ALL CURB RAMPS ARE PER LACDPW STD 1200-2.
4. ADJUST THE ELEVATION OF TRAFFIC SIGNAL AND STREET LIGHT PULL BOXES AS NECESSARY AS PART OF WHEELCHAIR RAMP CONSTRUCTION. ADJUSTMENT COST SHALL BE INCLUDED IN THE BID PRICE FOR PCC WALK.
5. FIELD DENSITY AFTER ROLLING OF ALL ASPHALT CONCRETE PLACED ON THIS PROJECT SHALL BE A MINIMUM OF 95 PERCENT RELATIVE COMPACTION, PER SUBSECTION 302-5.6.2 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL LOCATE AND ADJUST ALL STORM DRAIN AND SEWER MANHOLES TO NEW STREET SURFACE, AT THE BID PRICE FOR MANHOLE ADJUSTMENT AND/OR RECONSTRUCTION.
7. THE CONTRACTOR SHALL CONTACT MR. JOHN REDNER, (213) 774-7272, COUNTY SANITATION DISTRICTS, FORTY-EIGHT HOURS PRIOR TO STARTING CONSTRUCTION. SEE SPECIFICATIONS FOR ADJUSTING DISTRICTS' MANHOLES TO NEW STREET SURFACE.
8. REMOVE EXISTING AC PATCHES AT CURB & GUTTER AND SIDEWALK WHERE THERE IS CURB & GUTTER AND SIDEWALK REPLACEMENT.
9. THE CONTRACTOR SHALL MODIFY EXISTING SPRINKLER SYSTEMS AS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION. THE COST TO MODIFY SPRINKLER SYSTEMS SHALL BE INCLUDED IN THE BID PRICE FOR PCC WALK.
10. PRIOR TO PLACING AC PAVEMENT, ALL CRACKS WIDER THAN 6 mm SHALL BE SEALED WITH EMULSIFIED ASPHALT AND SAND PER SPECIAL PROVISIONS.
11. AFTER COLD MILLING, AND PRIOR TO PLACING LEVELING COURSE, REPAIR SEVERELY LOCALIZED ALLIGATORED AREAS AND FILL ALL CRACKS WIDER THAN 6 mm WITH EMULSIFIED ASPHALT AND SAND. THE COST TO CRACK SEAL SHALL BE INCLUDED IN THE BID PRICE FOR AC PAVEMENT.
12. DO NOT COLD MILL OVER EXISTING MANHOLES, CATCH BASIN LOCAL DEPRESSIONS, OR SIGNAL LOOP LEADINS.
13. DROPOFFS ON THE PAVEMENT OVER 25 mm IN HEIGHT THAT WILL REMAIN OVERNIGHT SHALL BE RAMPED WITH TEMPORARY AC PAVEMENT.
14. WHERE NEW FULL-WIDTH SIDEWALK IS TO BE BUILT, CONSTRUCT TREE WELLS PER APWA STD. 519-2, TYPE 3, CASE 3 WITH TEMPORARY TREE WELL COVERS PER APWA STD. 524-0, CASE 3.



TYPICAL SECTION

NOT TO SCALE

INDEX TO PROJECT DRAWINGS

SHEET 1	TITLE SHEET & TYPICAL SECTION
SHEET 2-4	PLAN & PROFILE
PLAN L	LIGHTING PLANS
PLAN S	SIGNING & STRIPING PLANS
PLAN T	TRAFFIC SIGNAL PLANS
PLAN LS	LANDSCAPING & IRRIGATION PLANS

CONSTRUCTION LEGEND

1. PORTLAND CEMENT CONCRETE CURB AND GUTTER.
2. PORTLAND CEMENT CONCRETE CURB.
3. ASPHALT CONCRETE CURB.
4. PORTLAND CEMENT CONCRETE GUTTER.
5. PORTLAND CEMENT CONCRETE SIDEWALK, 100 mm THICK
6. PORTLAND CEMENT CONCRETE SIDEWALK, 150 mm THICK
7. PORTLAND CEMENT CONCRETE PAVEMENT ON BASE MATERIAL
8. ASPHALT CONCRETE PAVEMENT.
9. ASPHALT CONCRETE PAVEMENT ON BASE MATERIAL
10. ASPHALT CONCRETE PAVEMENT, VARIABLE THICKNESS
11. PAVEMENT FABRIC.
12. SELECT SUBBASE.
13. COLD MILL ASPHALT CONCRETE PAVEMENT.
14. DRIVEWAY, PER STD. 110-0.
15. ALLEY INTERSECTION ON _ CMB.
16. CROSS GUTTER ON _ CMB.
17. BUS PAD, PER LACDPW STD. 131-0.
18. DRAINAGE SYSTEM AS SHOWN ON SHEET INDICATED.
19. HOUSE WALK (100 mm PCC SIDEWALK)
20. CURB RAMP.

CONSTRUCTION SYMBOLS

- (NO) — INDICATES WORK PER CONSTRUCTION LEGEND.
- A3-6 — ABOVE LINE: INDICATES THE TYPE OF STANDARD OR THICKNES OF SURFACE MATERIAL IN METERS
- DETAIL A, SHT.10 — BELOW LINE: REFERENCE TO DETAIL OR THICKNESS OF BASE MATERIAL IN METERS.
- (14) W, ℄ STA. — ABOVE LINE: A=WIDTH OF DRIVEWAY BEHIND R/W B=JOIN DISTANCE FROM R/W. BELOW LINE: THICKNESS AND TYPE OF SURFACE BEHIND R/W. LEFT OF LINE: ℄ STA. OF DRIVEWAY APRON. RIGHT OF LINE: DRIVEWAY WIDTH "W" OF APRON
- (MT) W/L — MEDIAN TAPER PER STD. PLAN 140-1
- (MF) W/L — MEDIAN FLARE PER STD. PLAN 141-0
- (19) ℄ STA. — ABOVE LINE: A=WIDTH WITHIN R/W. BELOW LINE: B=WIDTH BEHIND R/W. C=JOIN DISTANCE FROM R/W. LEFT OF LINE: ℄ STA. OF HOUSE WALK.
- R — TREE TO BE REMOVED.

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER

TWO DAYS BEFORE YOU DIG
CALL USA TOLL FREE
1-800-422-4133

APPROVED HARRY W. STONE DIRECTOR OF PUBLIC WORKS
BY — DEPUTY DIRECTOR — DATE
RECOMMENDED
BY — ASSISTANT DEPUTY DIRECTOR — DATE
SUBMITTED
BY — HIGHWAY DESIGN SECTION — DATE

CITY OF LA MIRADA — DATE

DATE	MK	DESCRIPTION
REVISIONS		

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER — DATE

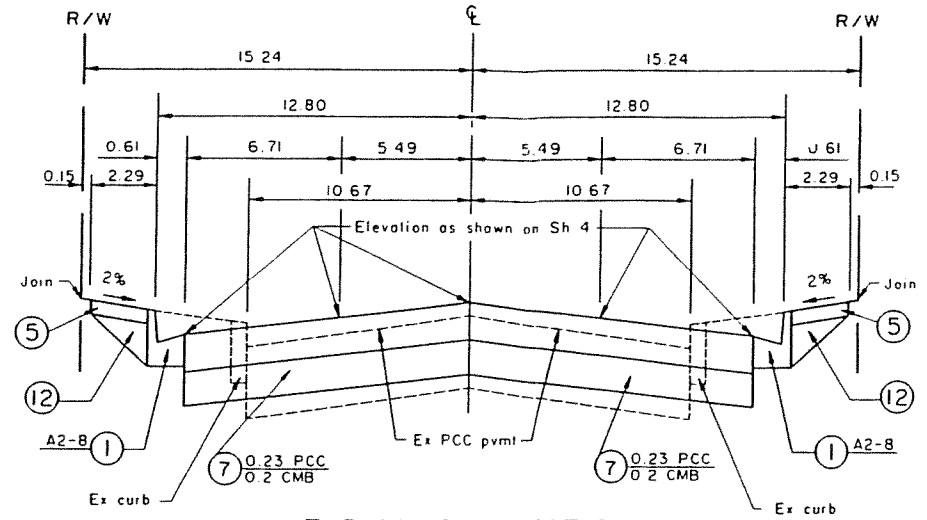
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CALIFORNIA AVENUE
BOLSA CHICA AVE TO W/O COYOTE BLVD
CASH CONTRACT NO 1001

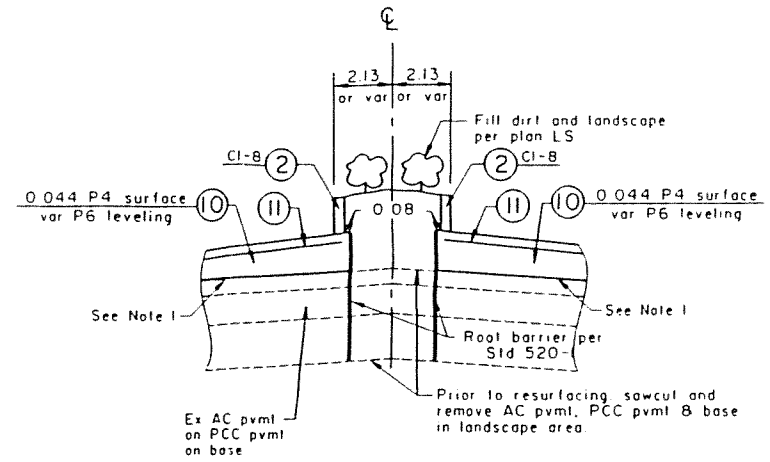
JOB	DWG	SHEET 1 OF

TABLE I - CURB DRAIN LOCATIONS

CONSTRUCT CURB DRAIN PER STD. 150-1 AT THE FOLLOWING LOCATIONS:			
ON LOS ANGELES BLVD.			
STATION	CASE	N	COMMENTS
7+78 S/S	III	1	Join ex pipe at R/W.
7+89 S/S	III	1	Join ex pipe at R/W.
8+90 S/S	III	1	Join ex pipe at R/W.
9+16 S/S	III	1	Join ex pipe at R/W.
7+43 N/S	III	1	Join ex pipe at R/W.
7+77 N/S	III	1	Join ex pipe at R/W.
8+49 N/S	III	1	Join ex pipe at R/W.
8+53 N/S	III	1	Join ex pipe at R/W.
8+71 N/S	III	1	Join ex pipe at R/W.
9+29 N/S	III	3	Join ex pipe at R/W.
9+54 N/S	III	1	Join ex pipe at R/W.
9+60 N/S	II	1	Loc may be adj. by engr.
ON 1ST ST.			
0+69 E/S	III	1	Join ex pipe at R/W.
ON 2ND ST.			
0+80 W/S	III	1	Join ex pipe at R/W.

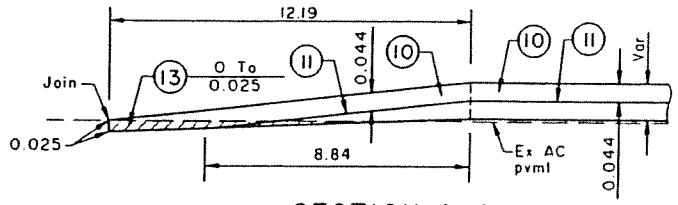


TYPICAL PCC SECTION
2ND ST
NOT TO SCALE

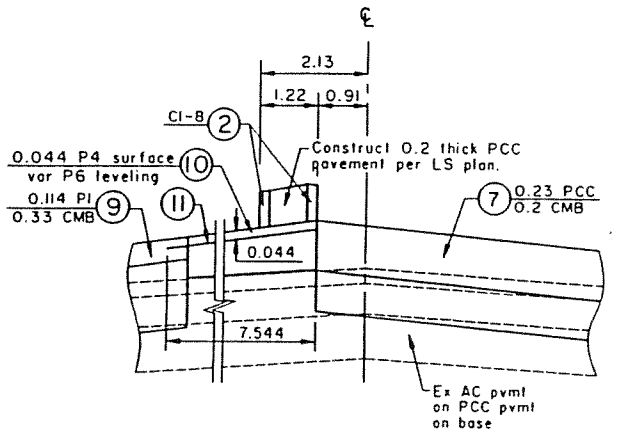


LANDSCAPED MEDIAN DETAIL
SEE LANDSCAPE PLAN FOR LOCATION

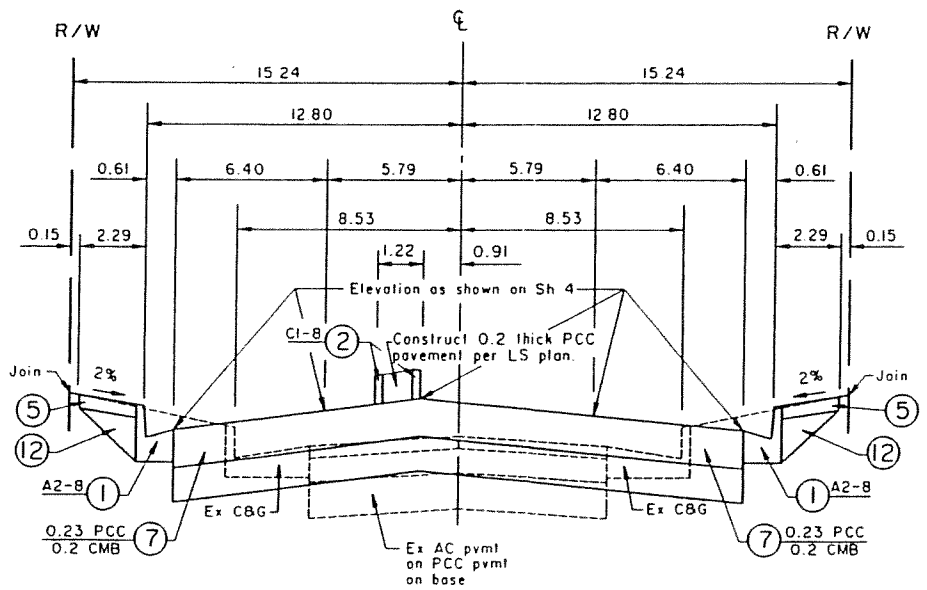
NOT TO SCALE



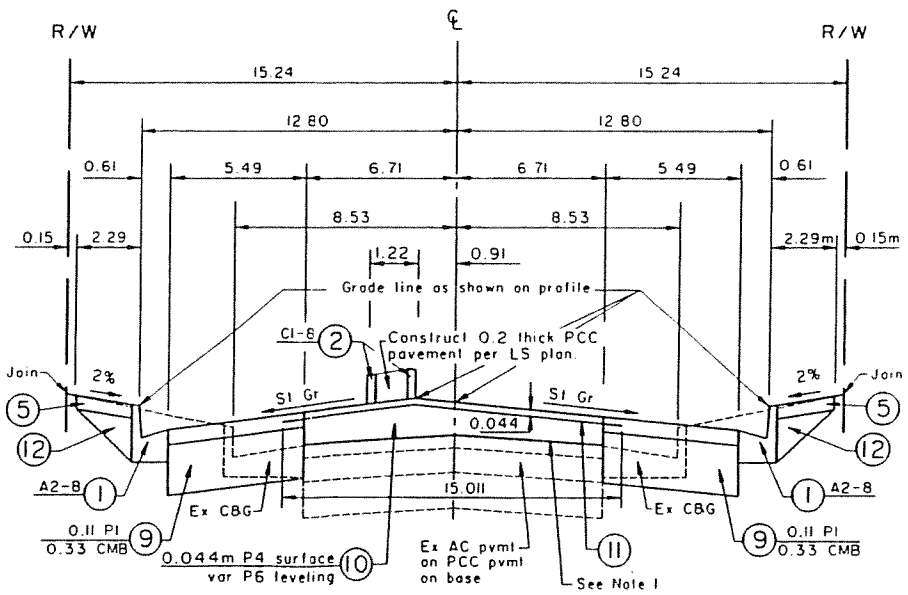
SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE



TYPICAL PCC SECTION
LOS ANGELES BL
NOT TO SCALE



TYPICAL AC SECTION
LOS ANGELES BL
NOT TO SCALE

TREE PLANTING NOTES

1. See special provisions for tree planting.
2. Tree planting per APWA Stds. 520-1 (Case 1) and 518-1.
3. Tre planting location will be subject to the following minimum clearances:
   A) 15.24 from the BCR on the approach to an intersection and 4.57 from the ECR on the exit side.
   B) 6.1 from light standards.
   C) 3 from fire hydrants and driveways.
   D) 1.5 from house walks and utility meters.
4. Exact location to be determined by the field engineer.

DRAWN	DESIGNED	CHECKED	CADD PART NUMBER HYD.TYPSECTION	REVIEWED	DATE
				BY	

DATE	MK	DESCRIPTION

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

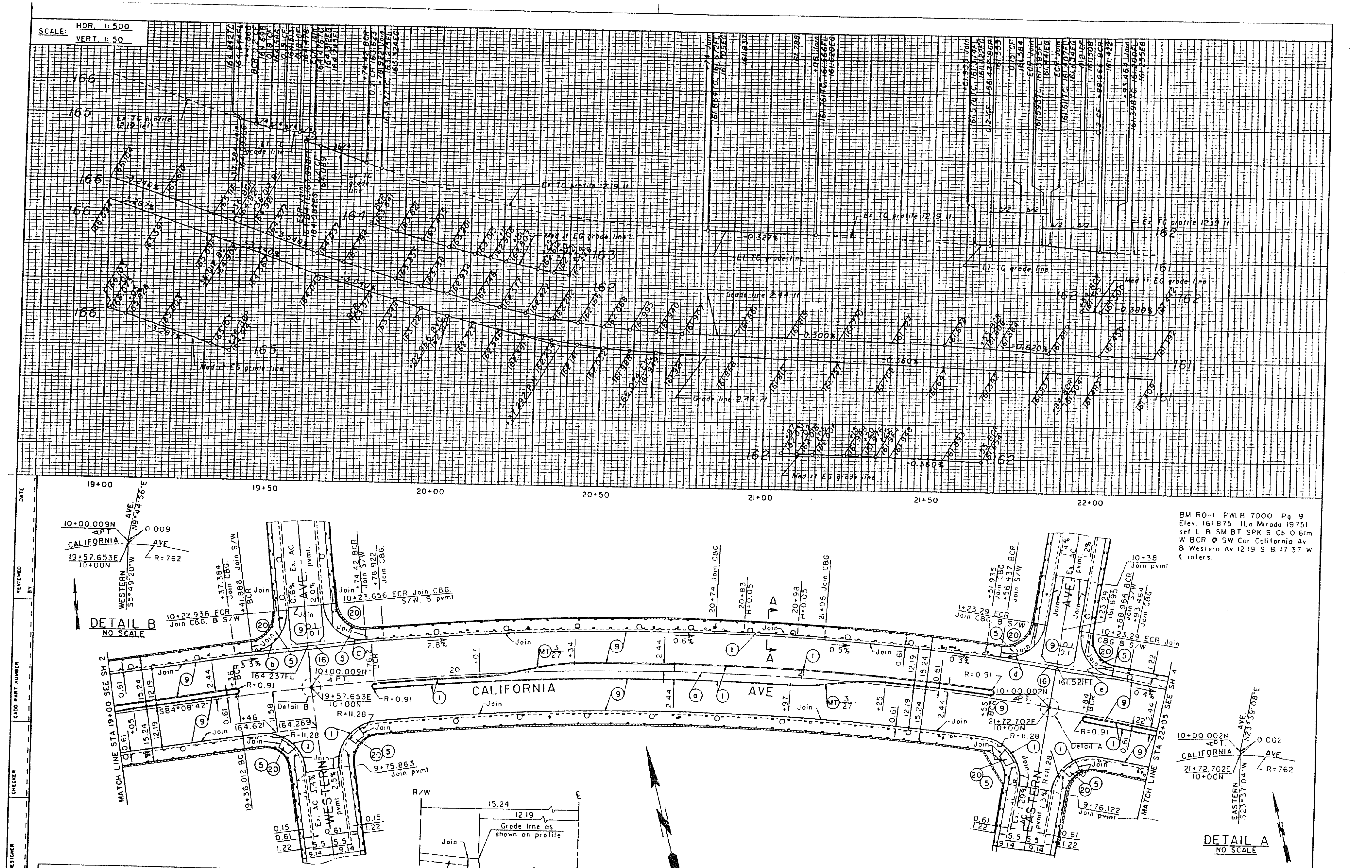
PROJECT ENGINEER — DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

LOS ANGELES BOULEVARD
1ST STREET TO 70 METERS E/O 3RD STREET

CASH CONTRACT NO. 1000
TYPICAL SECTIONS

	JOB	DWG	SHEET 2 OF 5



CURVE DATA					
Curve	Δ	R	T	L	B.W.R
(a)	25°15'42"	762	170.758	335.966	-
(b)	87°32'52"	11.286	10.805	17.233	7.780
(c)	90°00'21"	11.286	11.278	17.715	7.780
(d)	88°46'31"	11.286	11.040	17.474	7.780
(e)	88°46'31"	11.286	11.040	17.474	7.780

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER | REVIEWED BY | DATE

DATE	MK	DESCRIPTION

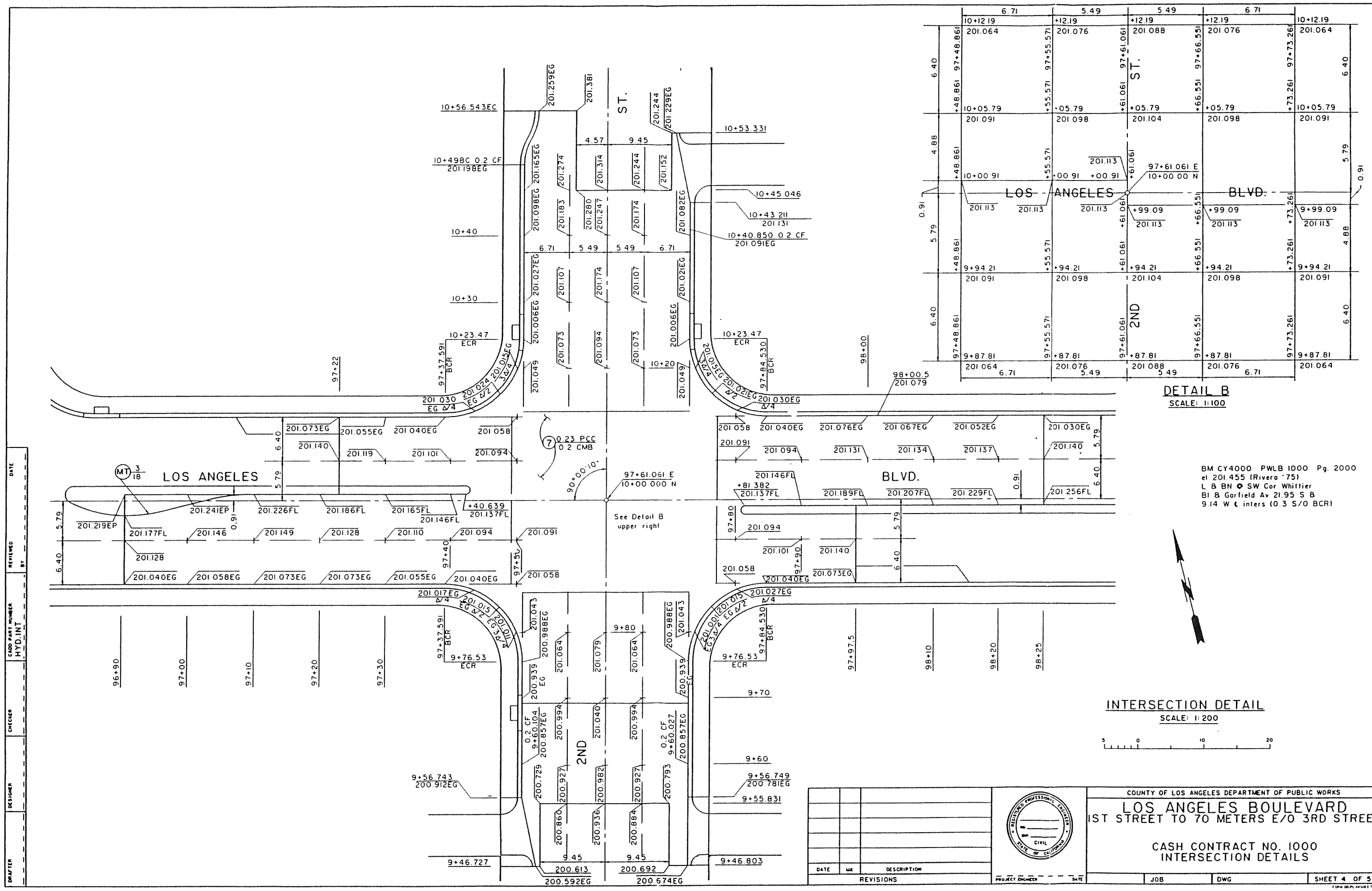
REVISIONS

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CALIFORNIA AVENUE

BOLSA CHICA AVENUE TO W/O COYOTE BLVD

CASH CONTRACT NO 1001



DETAIL B
SCALE: 1:100

BM CY4000 PWLB 1000 Pg. 2000
el 201.455 (Rivera '75)
L & BN ○ SW Cor Whittier
Bl & Garfield Av 21.95 S & 9.14 W ℄ inters (0.3 S/O BCR)

INTERSECTION DETAIL
SCALE: 1:200

5 0 10 20

DRAFTER	DESIGNER	CHECKER	CADD PART NUMBER	REVIEWED BY	DATE
			HYD.INT		

DATE	MK	DESCRIPTION
		REVISIONS

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

LOS ANGELES BOULEVARD
1ST STREET TO 70 METERS E/O 3RD STREET

CASH CONTRACT NO. 1000
INTERSECTION DETAILS

JOB	DWG	SHEET 4 OF 5

APPENDIX F

SCALE: HOR. 1"=
VERT. 1"=

1+900

DETAIL B
NO SCALE

CURVE DATA

CURVE	RADIUS METERS	CENTRAL ANGLE DEG.	MIN.	SEC.	LENGTH METERS	TANGENT METERS	B.W.R. METERS
a	762	25	15	42	335.966	170.758	—
b	11.28	87	32	52	17.233	10.805	7.77
c	11.28	90	00	21	17.715	11.278	7.77
d	11.28	88	46	36	17.474	11.040	7.77
e	11.28	88	46	39	17.474	11.040	7.77

LETTER LEGEND OF AREAS TO BE ACQUIRED

(R) Public Road Right of Way
(D) Drainage Purposes
(P) Permit to Enter and Construct: Construction or rehabilitation should be indicated by:
(P) Type: Detours, Retaining walls, etc.
Dimension: W=Width, D=Distance behind R/W

SECTION A-A
NOT TO SCALE

PLAN
SCALE: 1:500

BM RO-1 PWLB 7000 Pg. Elev. 161.875 (Lo Mirada 19 sel L B SM BT SPK S Cb O W BCR ● SW Cor California & Western Av 12.19 S & 17.3 ℄ inters

DETAIL A
NO SCALE

DATE	MK	DESCRIPTION
REVISIONS		

PROJECT ENGINEER — DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

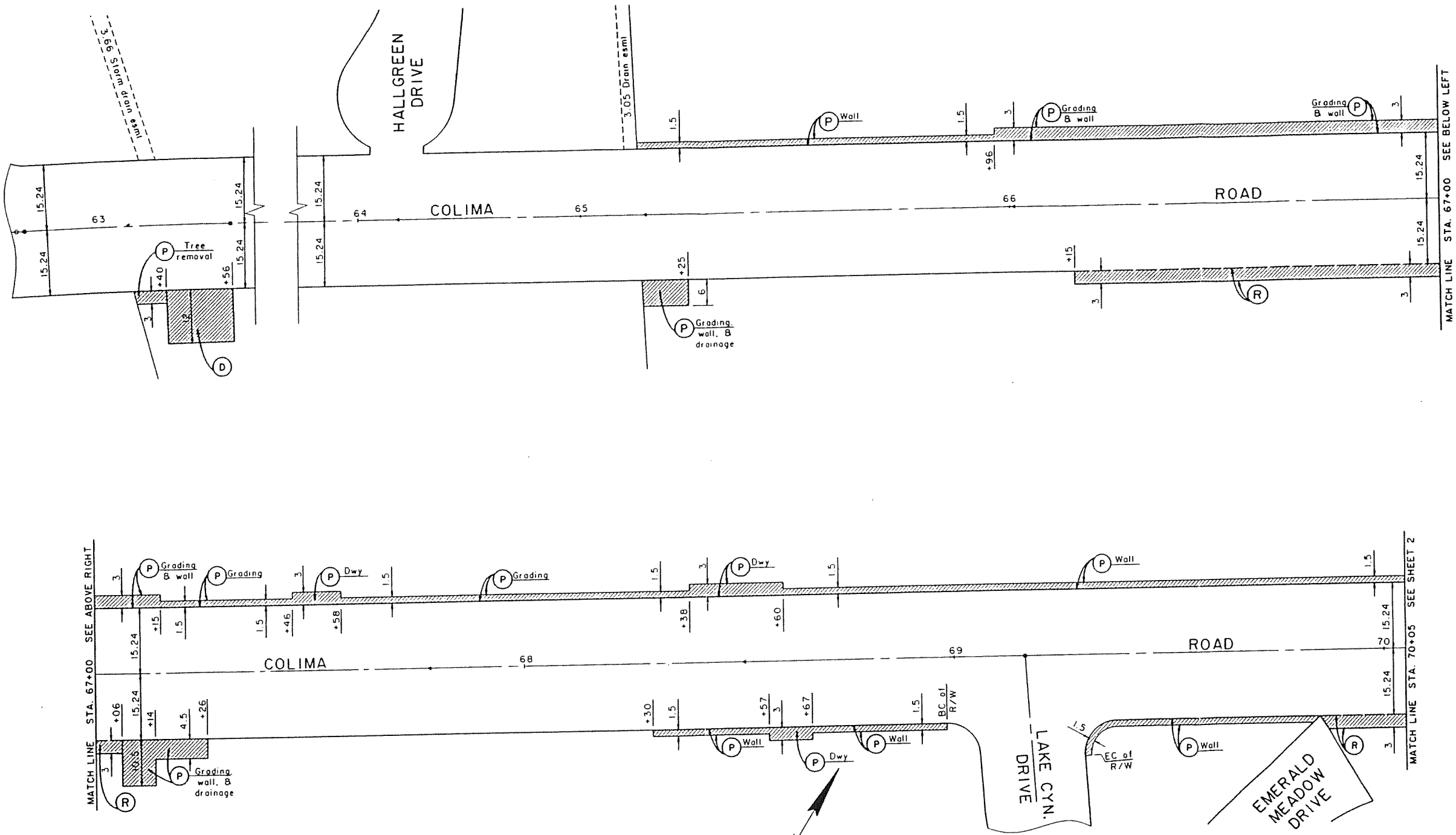
CALIFORNIA AVENUE

BOLSA CHICA AVE. TO W/O COYOTE BL

CASH CONTRACT NO. 1001

JOB	DWG	SHEET 3

DATE | REVIEWED BY | CLOD PART NUMBER HYD.PLAN | CHECKER | DESIGNER | DRAFTER



LETTER LEGEND OF AREAS TO BE ACQUIRED

- (R) Public Road Right of Way
- (D) Drainage Purposes
- (P) Permit to Enter and Construct: Construction or rehabilitation should be indicated by:
  - (P) Type: Detours, Retaining walls, etc.
  - Dimension: W=Width, D=Distance behind R/W

PLAN
SCALE: 1:500
5 0 10 20 30

REFERENCES: 910024.RWY.COLIMA.PRE, 910024.SUD.COLIMA-ZO, RDFB 1032/1033/1133, PWFB 1032, PWLB 1032/1033/1133.

DATE	BY	REVISIONS
6/30/93	JN	ADDED AND REVISED PERMITS TO ENTER CHANGED R/W-1 TO R/W-2
DATE	MK	DESCRIPTION

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER HYD.RWY | REVIEWED BY | DATE

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

PROJECT ENGINEER DATE

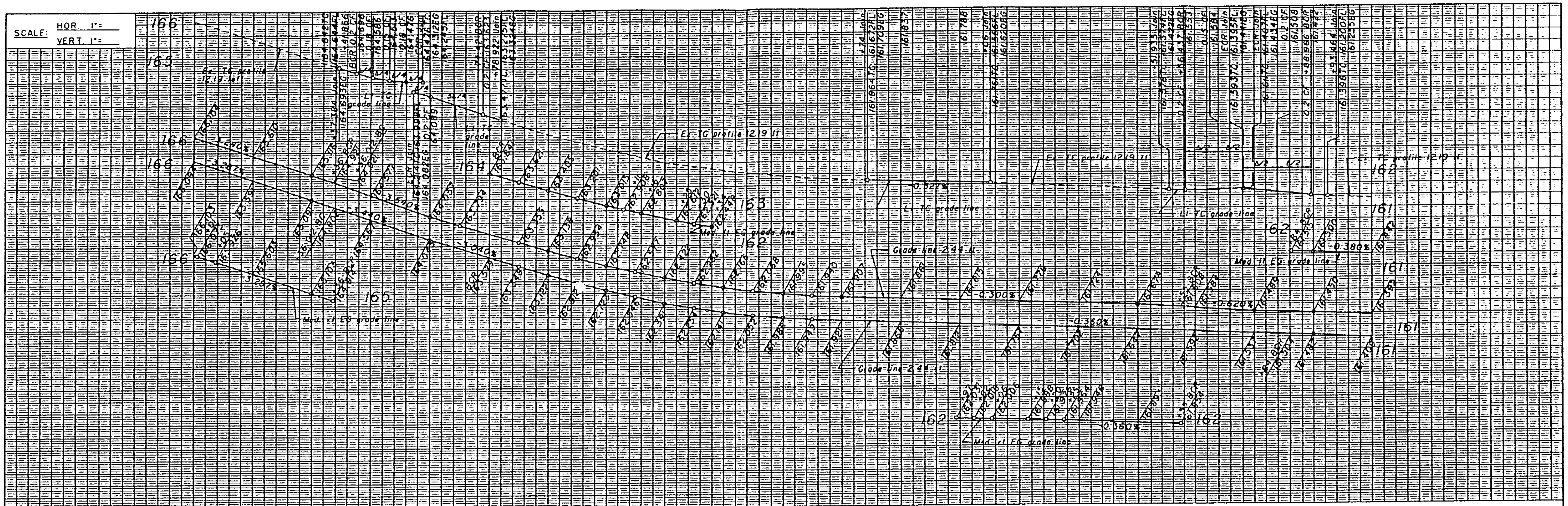
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

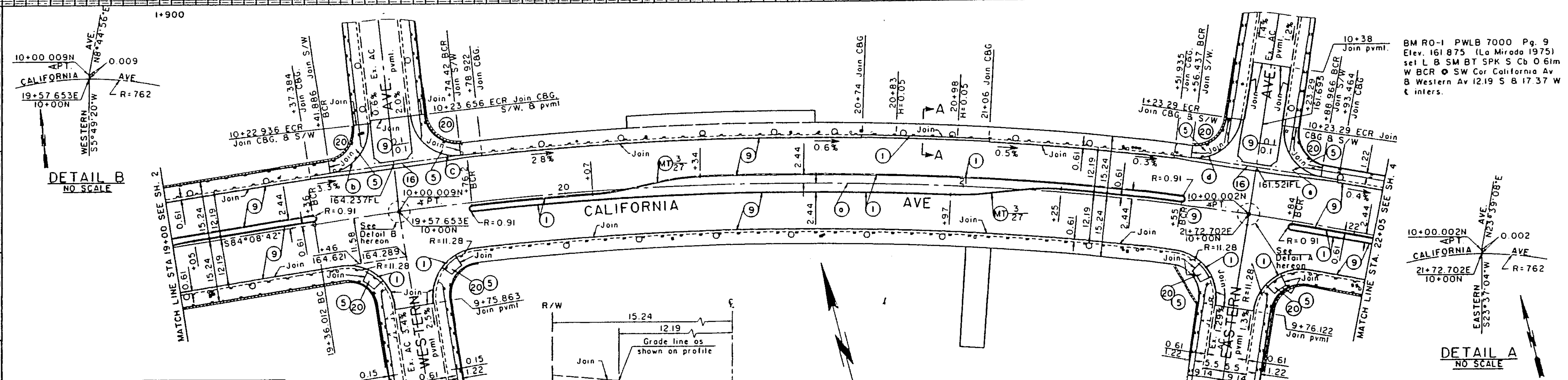
COLIMA ROAD

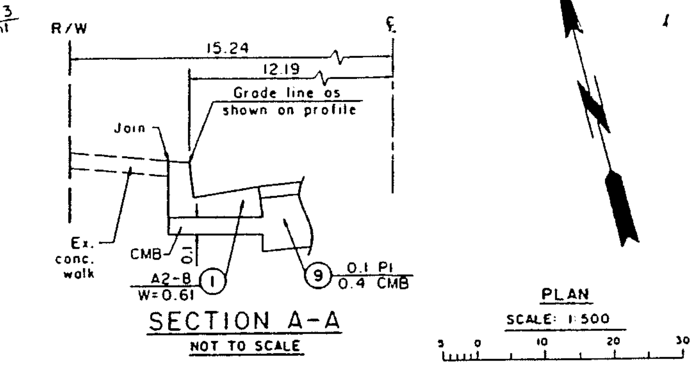
BANIDA AV TO 200 FEET E/O TIERRA LUNA

R/W IDENTIFICATION MAP

JOB | DWG | SHEET 1 OF 2







CURVE DATA							
CURVE	RADIUS METERS	CENTRAL ANGLE DEG.	MIN.	SEC.	LENGTH METERS	TANGENT METERS	B.W.R. METERS
(a)	762	25	15	42	335.966	170.758	—
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(d)	11.28	88	46	36	17.474	11.040	7.77
(e)	11.28	88	46	39	17.474	11.040	7.77

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER HYD.PLANI | REVIEWED BY | DATE

DATE	ME	DESCRIPTION

REVISIONS

PROJECT ENGINEER — DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CALIFORNIA AVENUE

BOLSA CHICA AVE. TO W/O COYOTE BLVD.

CASH CONTRACT NO. 1001

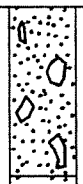
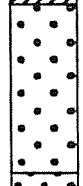
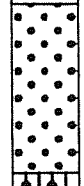
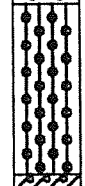
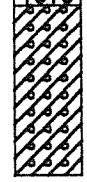
JOB | DWG | SHEET 3 OF 4

APPENDIX G

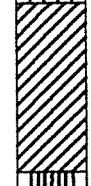
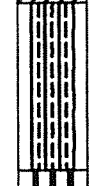
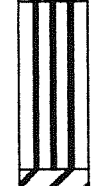
Table G3-1

SOIL LEGEND

COARSE–GRAINED SOILS

HATCHING	GROUP SYMBOL	INSTRUCTIONS
	GW	Draw by hand (DD.PHA.GW)
	GP	Draw by hand (DD.PHA.GP)
	GM	Use standard (ML) printed tape plus draw by hand (DD.PHA.GM)
	GC	Use standard (CL) printed tape plus draw by hand (DD.PHA.GC)
	SW	Use standard printed tape (DD.PHA.SW)
	SP	Use standard printed tape (DD.PHA.SP)
	SM	Use standard printed tape (DD.PHA.SM)
	SC	Use standard printed tape (DD.PHA.SC)

FINE–GRAINED SOILS

HATCHING	GROUP SYMBOL	INSTRUCTIONS
	ML	Use standard printed tape (DD.PHA.ML)
	CL	Use standard printed tape (reversed) (DD.PHA.CL)
	OL	Draw by hand (DD.PHA.OL)
	MH	Draw by hand (DD.PHA.MH)
	CH	Draw by hand (DD.PHA.CH)
	OH	Draw by hand (DD.PHA.OH)

Soil group symbols and hatching are Standards of the Unified Soil Classification System.

() Indicates Department CADD system pattern hatching name for soil types. Insert on layer 246.

Instruction column refers to manual drafting.

PROJECT
STATION 100+76
OFFSET 3 m N/O ℄
ELEVATION 11.2 m
DATE DRILLED 06/08/95

BORING NO. B-1
LOGGED BY: A.E.N

Depth (m)	Graphic Log	Soil Classification, Description	Dry Unit Wt. KN/m³	Moisture Content %	% Passing No. 4	% Passing No. 200	SPT N
0		140 mm of A.C. over 305 mm OF C.M.B.					
1		CL, SILTY CLAY moist, soft, brown	14.58	20.5	96.9	75.3	
2							
3							
4							
5		SM-SC, SILTY SAND WITH CLAY, moist, dense, brown	17.14	6.5	96.4	47.5	
6		@ 5.5 m, clay content decreases	13.06	6.4	96.8	19.2	
7							
8					96.1	41.5	
9		ML, SANDY SILT dry, firm, brown	15.96	10.0	97.8	61.1	
10							
11		CL, SILTY CLAY wet, firm, brown			98.7	70.2	
12			13.73	32.8			
13							
14		SM, SILTY SAND wet, dense, gray	16.45	19.8	98.3	19.4	
15			17.66	17.4			
16			16.79	17.9	98.8	27.7	

End of Boring @ 16.5 m
Groundwater @ 13.4 m
Severe Caving from 13.4-16.5 m
No Bedrock encountered

PROJECT
STATION 101+55
OFFSET 1.2 m N/O ℄
ELEVATION 12.0 m
DATE DRILLED 06/09/95

BORING NO. B-2
LOGGED BY: A.E.N

Depth (m)	Graphic Log	Soil Classification, Description	Dry Unit Wt. KN/m³	Moisture Content %	% Passing No. 4	% Passing No. 200	SPT N
0		100 mm of A.C. over 200 mm of C.M.B.					
1		CL, SILTY CLAY moist, soft, brown	14.45	14.8	91.1	53.4	
2							
3		ML, CLAYEY SILT dry, firm, gray	15.77	9.6			
4							
5			14.94	18.5	100.0	91.5	
6		SM, SILTY SAND moist, medium dense, brown	15.00	5.7	97.2	41.0	
7							
8		CL, SILTY CLAY moist, firm, brown	16.17	19.3	97.8	59.8	
9		SM, SILTY SAND moist, medium dense, brown	15.10	5.5	97.6	43.9	
10		CL*, SILTY SAND very moist, dense, gray	13.64	35.5			
11							
12		SM, SILTY SAND very moist, dense, gray	15.47	8.2	98.8	16.1	
13			18.54	10.5			

End of Boring @ 13.4 m
Groundwater @ 13.1 m
Severe Caving from 11.9-13.4 m
No Bedrock encountered

PROJECT
STATION 102+25
OFFSET 2.1 m N/O ℄
ELEVATION 12.5 m
DATE DRILLED 06/09/95

BORING NO. B-3
LOGGED BY: A.E.N

Depth (m)	Graphic Log	Soil Classification, Description	Dry Unit Wt. KN/m³	Moisture Content %	% Passing No. 4	% Passing No. 200	SPT N
0		177.8 mm of A.C. over 203.2 mm of C.M.B.					
1		SC, CLAYEY SAND moist, medium, dense, brown	17.33	12.9	70.0	34.5	
2		CL, SILTY CLAY dry, very stiff, dark brown					
3			18.13	3.8	95.8	62.3	
4		@ 3.7 m, soil is more silty	14.94	7.0			
5							
6		SM, SILTY SAND dry, medium dense, brown	15.19	2.1	98.7	18.8	
7							
8		CL, SILTY CLAY moist, stiff, dark brown	17.11	17.8	100.0	57.4	
9		SM, SILTY SAND moist, medium dense, gray	14.98	9.6	100.0	34.9	
10			15.86	15.9			

End of Boring @ 10.4 m
Severe Caving from 9.1-10.4 m
No Groundwater encountered
No Bedrock encountered

NOTES

1. Station and off-set of test borings were determined from Department Drawings for (Project Name), unnumbered, unnamed.
2. Group symbols and soil description are based on the Unified Soil Classification System (Standard Plan No. 3093-01). Laboratory classification criteria were used, unless otherwise indicated.
3. * Denotes soil classified by field identification procedures
4. Boring Nos. B-1 to B-3 were drilled with a 12-inch Rotary Bucket Drill rig.

SYMBOLS

▼ Depth to groundwater

Depth to conduit subgrade

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER 950005.MAT_LOG2 | REVIEWED BY | DATE

DATE	MK	DESCRIPTION
REVISIONS		

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER ____ DATE ____

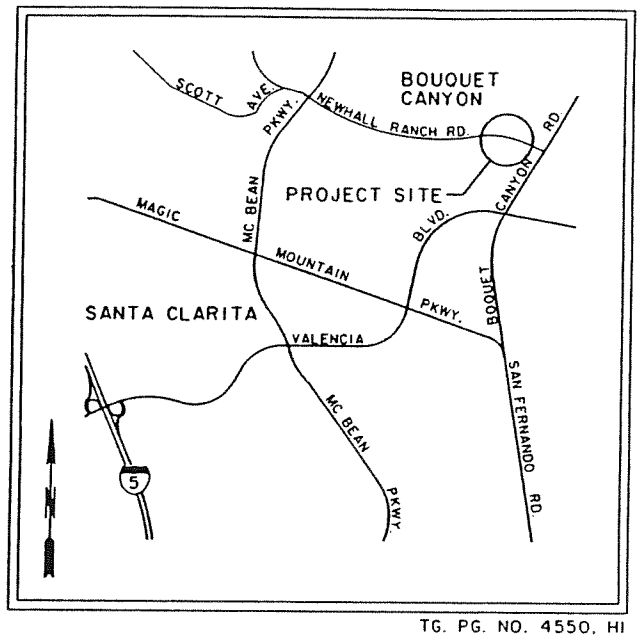
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

LOGS OF BORINGS

JOB X2208194 | DWG | SHEET OF

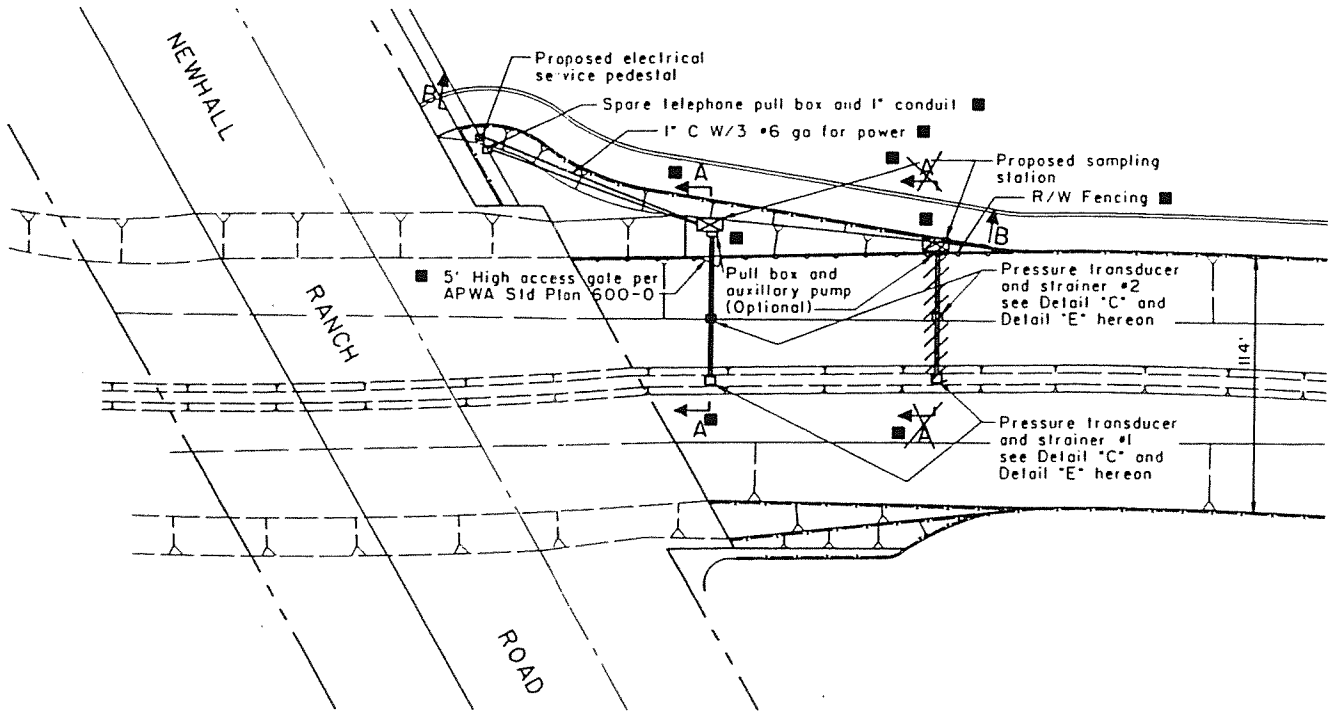
APPENDIX I

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS



TG. PG. NO. 4550. H1

LOCATION MAP
NOT TO SCALE



PLAN
NOT TO SCALE

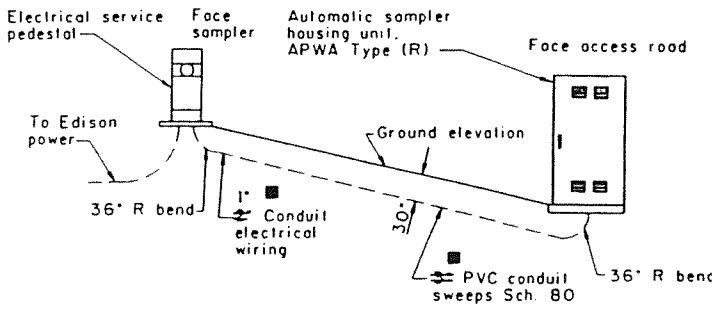
APWA TYPE (R) DIMENSIONS		
HEIGHT	WIDTH	DEPTH
72"	48"	32"

PEDESTAL DIMENSIONS		
HEIGHT	WIDTH	DEPTH
48"	20"	17 1/4"

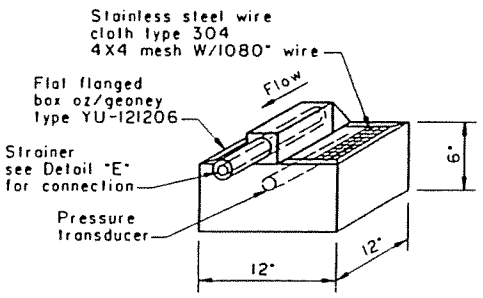
APWA TYPE (R) FOUNDATION		
HEIGHT	WIDTH	DEPTH
*18"	48"	36"

PEDESTAL FOUNDATION		
HEIGHT	WIDTH	DEPTH
*18"	32"	29 1/4"

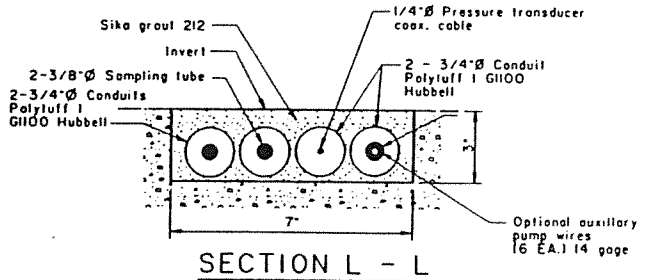
*14 1/2" Below and 3 1/2" above sidewalk finish grade



SECTION B-B
NOT TO SCALE



DETAIL "C"
NOT TO SCALE



SECTION L - L
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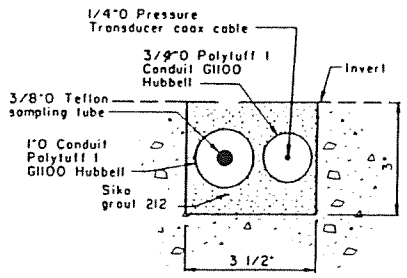

SECTION M - M
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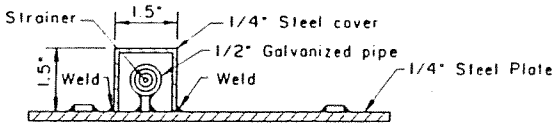

SECTION D-D
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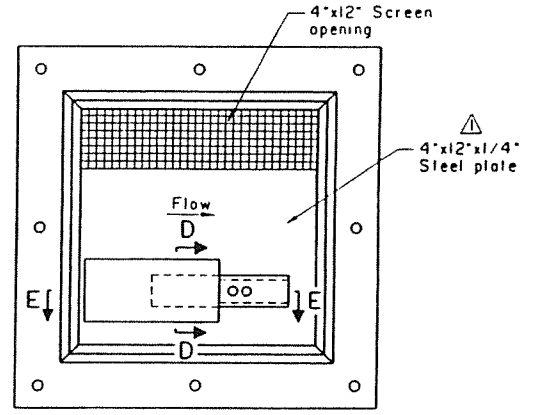

DETAIL "E"
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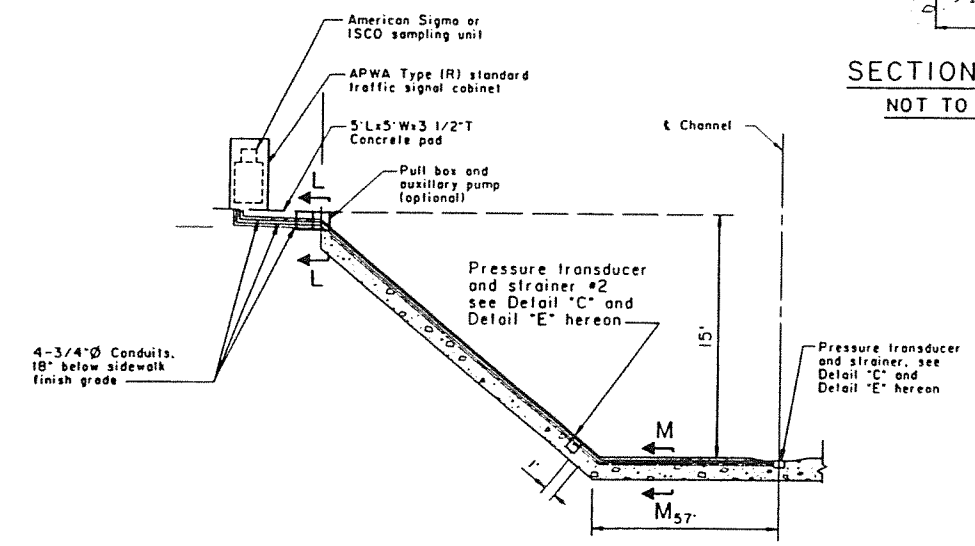

SECTION A-A
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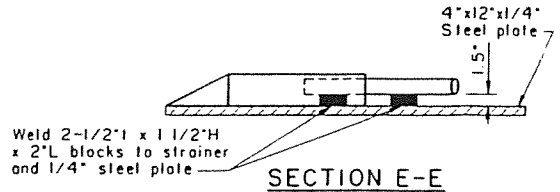

SECTION E-E
NOT TO SCALE

DRAFTER | DESIGNER | CHECKER | CADD PART NUMBER

TWO DAYS BEFORE YOU DIG
CALL USA TOLL FREE
1-800-422-4133

APPROVED HARRY W. STONE DIRECTOR OF PUBLIC WORKS
BY _____ DEPUTY DIRECTOR _____ DATE

RECOMMENDED
BY _____ ASSISTANT DEPUTY DIRECTOR _____ DATE

SUBMITTED
BY _____ DATE

DATE	MK	DESCRIPTION
3/28/96	Δ	Changed steel plate size
5/7/96	■	Field Modifications

REVISIONS

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

PROJECT ENGINEER _____ DATE

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

P.D. 2225
STORM DRAIN MONITORING SYSTEM AT NEWHALL RANCH RD.

TITLE SHEET AND DETAILS

JOB | DWG | SHEET 1 OF