

RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT  
**DRAFTING MANUAL**



August 2018

**T**his manual provides guidance for the development of construction drawings for District projects or for projects that are designed to be transferred to the District for operation and maintenance

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# DRAFTING MANUAL



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## Digital Resources / Attachments (Download)

		MicroStation	AutoCad
<a href="#">Attachment 1</a>	District Border Sheet	RCFCD Border.dgn	RCFCD Border.dwg
<a href="#">Attachment 2</a>	MicroStation Cell Libraries	RCFCD Cells.cel	RCFCD Cells.dxf
<a href="#">Attachment 3</a>	MicroStation Plotting Resources	RCFCD Laser.pltcfg RCFCD PDF Maker.pltcfg RCFCD Plotter.pltcfg RCFCD Laser.tbl RCFCD PDF Maker.tbl RCFCD Plotter.tbl hptlegal.pro hptleter.pro hpttbl1.pro pscript.pro	
<a href="#">Attachment 4</a>	MicroStation Font File	newfront_01.rsc refcls~1.rsc	
<a href="#">Attachment 5</a>	Inroads Preferences	RCFCD Std Preferences.xin RCFCD Std Templates.itl	
<a href="#">Attachment 6</a>	MicroStation Seed File	RCFCD 3d_83 Seed.dgn	RCFCD 3d_83 Seed.dwg
<a href="#">Attachment 7</a>	Sample GIS CAD File (samp_gis.dgn)	GIS Cad.dgn	GIS Cad.dwg

# DRAFTING MANUAL



## I. INTRODUCTION

The purpose of this manual is to establish drafting standards to be used in the preparation of all District drawings and to enable new employees and consultants to become familiar with them. Because Computer Aided Drafting (CAD) is used extensively by the District and private consultants, there are multiple CAD related references throughout this document (e.g., leveling guides) and several CAD related resource files are available as an accompaniment to the manual. The District uses MicroStation exclusively to prepare its drawings and the included resource files are MicroStation based. Some have been converted to AutoCad format where feasible. However, this manual is primarily intended to help users standardize the **appearance** of District plans and is not intended as a MicroStation specific manual nor as a comprehensive CAD manual. The rapid nature of CAD software development renders all CAD related references and standards somewhat "provisional". This is especially true for the affiliated CAD-based resources.

**This manual should be considered a living document that will be revised/updated as needed. All users of this manual and/or its attachments should contact the District to verify that they possess the most current version.**

Users may access the latest version of this document at <https://rcflood.org/Business/Engineering-Tools> or by contacting the District at 951.955.1200.

It should also be noted that at times the District will prepare a drawing in conjunction with another government agency on a joint project. Before using this manual, the engineer/draftsman must first verify which government agency's drafting standards are to be utilized for that specific project.

## II. DRAFTING INSTRUCTIONS FOR CONSTRUCTION DRAWINGS

### A. GENERAL INFORMATION

Construction drawings are prepared to delineate the construction work to be completed in the field. Generally, the complexity of the drawings is determined by the complexity of the engineering design. This section includes general information that is applicable across all District construction drawings.

#### 1. SHEET SIZE

Permanent construction drawings are to be on sheets having the overall dimensions as shown on **Appendix B**. Users will note that the District's

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standard sheet size (21.7 by 34.9 inches) is somewhat smaller than the industry standard 24 by 36 inches. This is to accommodate the District's need to publish half scale copies of the drawings on 11- by 17-inch cut sheet paper. Unless otherwise specified, the final construction drawings shall be printed on mylar having a standard thickness of 0.004 inches (4 mil), and the District shall be provided a copy of the digital CAD files.

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## 2. FORMAT

Beginning in October 2016, the District maintains all record drawings in PDF format, and also copies on mylar sheets. In most cases, signatures on plans will be applied electronically to the source file such that the PDF becomes the record drawing. The procedure for obtaining, authorizing, and applying electronic signatures is outlined in the District's internal document titled "*Digital Plan Creation and Revision Workflow*". Contact the project or plan check engineer for instructions on applying electronic signatures to the project drawings. Mylars are then printed from these PDFs and stored in the District vault for reference.

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## 3. CONTENT

The drawings shall be **brief, concise, and provide only essential information** required to delineate the scope of work and the information required for construction. Unnecessary lines, dimensions, symbols, and abbreviations shall be omitted. The notes on the drawings must also be brief, and designers are reminded that typewritten specifications will usually supplement the drawings, therefore, in lieu of involved notes on the drawing, the designer should utilize the specifications for lengthy construction information wherever possible.

Each drawing or detail should be drafted in a manner to have a clear focus subject. Unrelated elements should either not be displayed, or if important to show for context, they should be shown as 'background information' by an appropriate combination of line weights, styles, or greyscales. For example, on plan and profile sheets the underground utilities are important information, but are shown at a lighter line weight than the storm drain. Curbs and gutters are also important, but are typically shown in greyscale so as to not interfere with interpretation of more critical elements of the storm drain construction. In contrast, curbs and gutters are shown in black, thicker lines on a paving sheet because they are more important than storm drain details.

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## 4. SEQUENCE AND TIMING OF DEVELOPMENT

The order of presentation of information in a set of construction drawings is to be uniform for all projects. The general sequence of sheets is as follows:

SEQUENCE IN PLAN SET	PHASE COMPLETE BY		
1. Title Sheet	30%		
2. Plan and Profile Sheets	30%		
3. Survey Control Sheet	30%		
4. Basin Grading Sheets	30%		
5. Connector Pipe Profile Sheets		60%	
6. Miscellaneous Details Sheets		60%	
7. Utility Relocation Plan & Profile Sheets		60%	
8. Paving Sheets		60%	
9. Structural/Reinforcing Details			90%
10. Maintenance Plan			90%
11. Traffic Control Plan Sheets			90%

Notes: Developer projects will be submitted at 100% unless directed otherwise by the Plan Check Section. Not every set of construction drawings will contain all of the above individual types of sheets. The 'phase complete by' column is for District-commissioned projects and indicates the design phase by which certain sections of the plans are expected to be complete. For example: Structural/Reinforcing Details are expected to be complete as part of the 90% phase drawings. Developers shall coordinate with the District's Plan Check Engineer for phase complete by schedule.

## 5. SCALES

The scales being utilized for various items throughout the drawings must be clearly presented and consistent among sheets. The scales should be labeled and placed directly below the title of the item to which they apply. A 50% reduction of the drawings is frequently utilized to facilitate handling during and after plan preparation. Therefore, to be meaningful in both the full size and the reduced size drawings, the scale must be presented in a bar scale fashion and, where possible, **should be a standard engineering scale when multiplied by 2 to facilitate the 50% reduction. Most items on the drawings should be drawn and presented "to scale"**. Exaggerated vertical scales are acceptable, but

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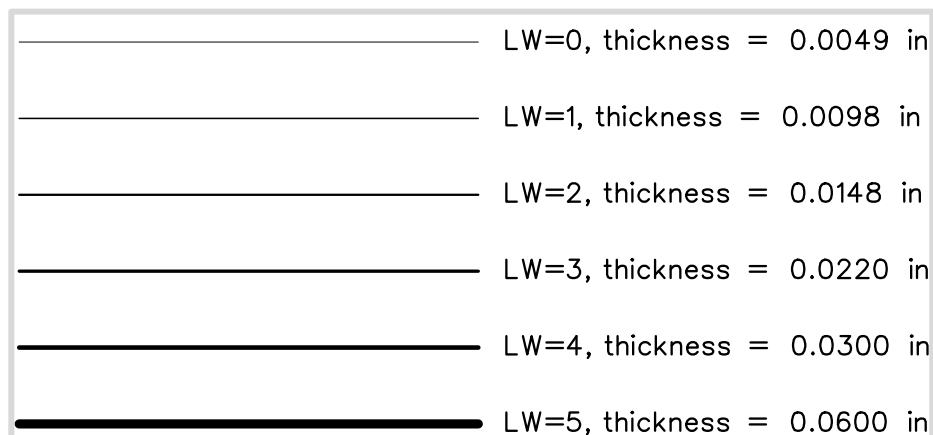
presenting items as "not to scale" should be avoided where possible. Standard scales are as follows:

ITEM	SCALE (ON FULL-SIZE SHEET)
1. Vicinity Map	As needed
2. Index Map	Generally 1" = 400' to 1" = 800'
3. Plan View of Mainline and Laterals	Large Open Channel, Levees: 1" = 50' (this translates to about 800 linear feet per sheet) Underground System and Small Open Channels: 1" = 20' (or about 400 linear feet per sheet)
4. Profile View of Mainline and Laterals	Horizontal: Same as plan view Vertical: 1" = 5'
5. Typical Cross Sections	Horizontal and Vertical: 1" = 10'
6. Basin Grading Sheets	As needed
7. Connector Pipe Profiles	Horizontal and Vertical: 1" = 5'
8. Details	As needed

## 6. LINEWORK

Proper variation in width of lines, line style, and greyscales will facilitate reading of the drawings. Important features shall be emphasized using lines heavy and dark enough to distinguish these items from relatively non-important features. **Figure 1** and **Figure 2** depict the five MicroStation specific line weights and six line styles commonly used on District construction drawings.

FIGURE 1: LINE WEIGHTS AND THICKNESSES

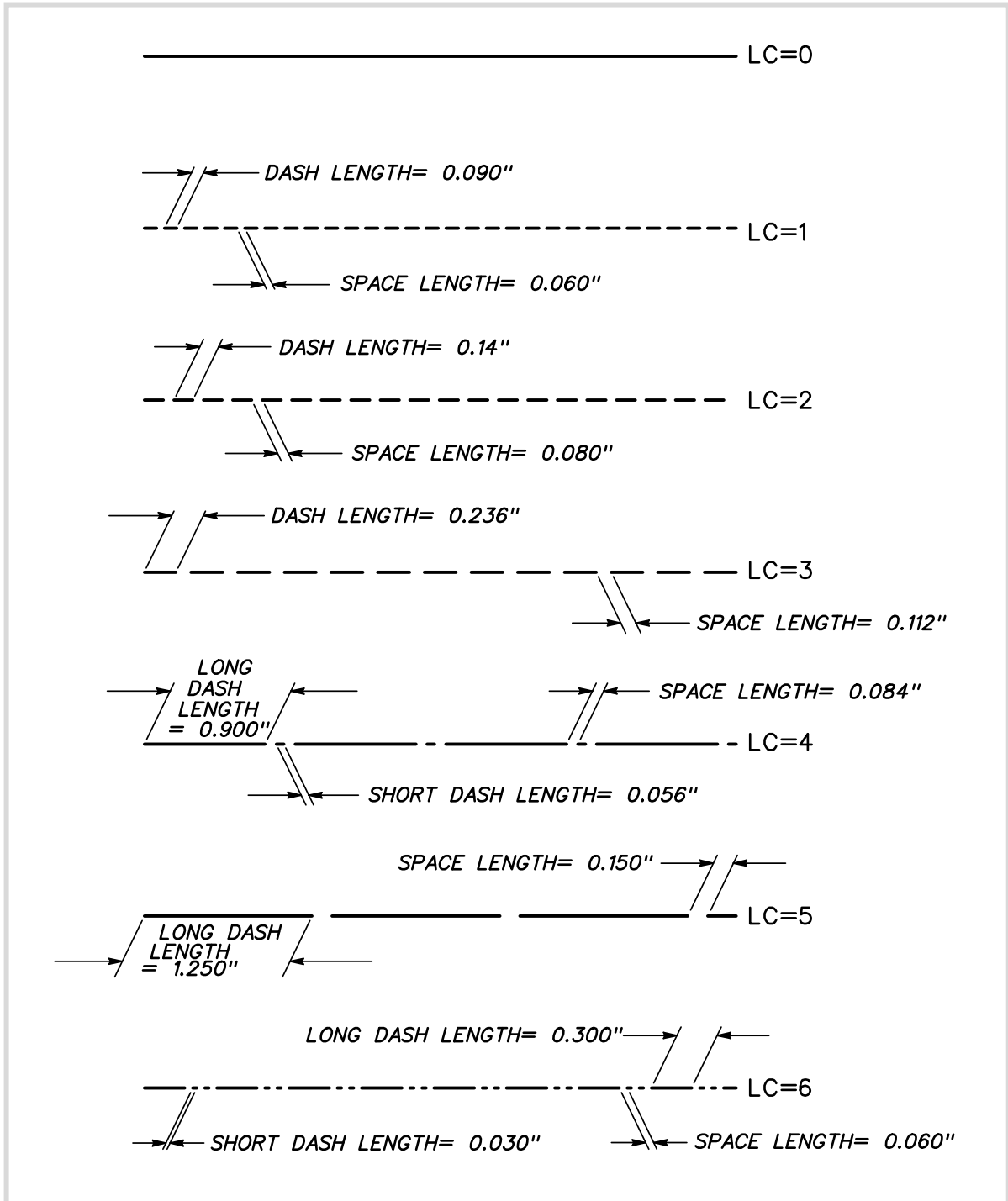




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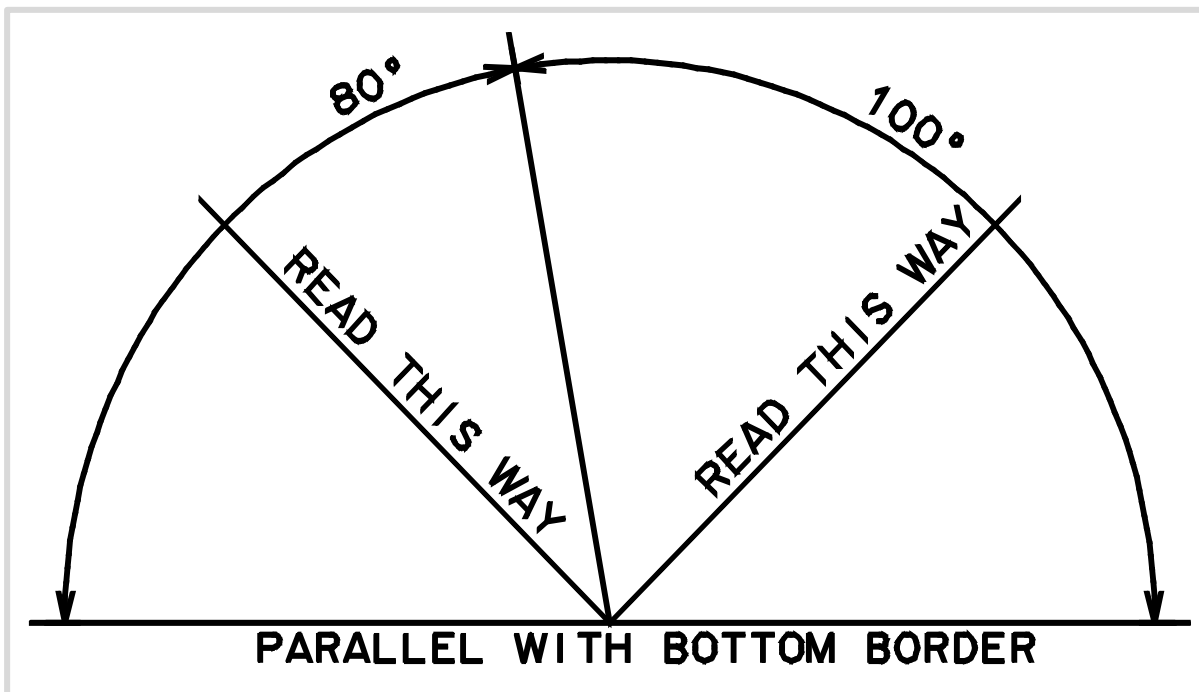
FIGURE 2: LINE STYLES



## 7. TEXT AND SYMBOLS

In general, most permanent construction drawing lettering is intended to mimic the style of "Leroy" mechanical lettering (61 0300-XXXX guides/templates). All lettering shall be vertical and upper case with sizes to be used as indicated on the sample drawings included in this manual. The direction to be used for lettering should be determined from the lettering diagram below (Figure 3).

FIGURE 3: LETTER ORIENTATION DIAGRAM



For a list of abbreviations acceptable for use on District drawings, see District Standard [Drawing M814](#).

The use of symbols greatly simplifies the visual presentation of existing facilities or proposed construction but only if the symbols are clearly and readily identified. For a list of symbols acceptable for use on District drawings, see District Standard [Drawing M814](#). **The symbols should be sized to be clear when reduced 50%.**



## 8. CONSTRUCTION NOTES

Construction notes shall be used to clarify how elements of the project should be constructed. They must be thoughtfully implemented to serve as a "bridge" between the Construction Drawings, Standard Drawings, Quantities, and Detailed Specifications. Below is guidance on how construction notes should be used on District Construction Drawings:

- **Note numbers should be consistent across sheets.** This means that if an item is to be constructed multiple times on a project, the construction note and number should be identical each time that item occurs. For example, if Construction Note 7 on Sheet 2 is 'CONSTRUCT MANHOLE NO. 4 PER RCFC STANDARD MH254', then a Manhole No. 4 on Sheet 4 should also be assigned Construction Note 7 with the same wording.
- **Construction notes should avoid instance-specific dimensions.** For example, if the above example Construction Note 7 were to read 'CONSTRUCT MANHOLE NO. 4 PER RCFC STANDARD MH254 WITH D1=84" AND D2=96"', then the next instance of a Manhole No. 4 would be a different construction note to reflect the different sizes for that manhole. By instead wording the construction note more generally, such as 'CONSTRUCT MANHOLE NO. 4 PER RCFC STANDARD MH254', then Construction Note 7 can be easily repeated for each Manhole No. 4 on each sheet. The designer should make sure that the necessary dimensions (per the Standard Drawings) are clearly labeled on the drawings rather than included in the construction note. A key exception to this guidance is for storm drain pipe/box. The District will typically have separate construction notes for different sizes of storm drain.
- **Each construction note should refer to a single element of construction.** For example, the example Construction Note 7 above only addresses the construction of Manhole No. 4. Avoid grouping multiple items, such as 'CONSTRUCT MANHOLE, CONNECTOR PIPE, AND CATCH BASIN' into a single note.
- **Notes should use same wording as the specifications and estimates.** For example, if the specifications include an item for 'Warped Wingwall Transition Structure', then the construction note should incorporate the exact same wording (for example, 'CONSTRUCT WARPED WINGWALL TRANSITION STRUCTURE PER CALTRANS STANDARD D86A').



## B. TITLE SHEET

The title sheet is the first sheet of a set of drawings and thus serves to introduce the project to the reader. Sample title sheets for District and developer projects are included in [Appendix A-1](#) of this manual and it should be referred to during the following discussion. The title sheet shall, at minimum, contain the seven following items:

1. District Title: "RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT"
2. Border Sheet: See Digital Resources, [Attachment 2](#), including Project Name, Number, and Stage
3. Vicinity Map
4. Index Map
5. General Notes: See Digital Resources, [Attachment 2](#)
6. Sheet Index
7. Permanent Benchmark and Survey Datums

The vicinity map and index map are to be located on the left-hand portion of the title sheet. Both the vicinity map and index map shall be oriented with their north arrows pointing to the top of the title sheet whenever possible. The purpose of the vicinity map is to relate the specific construction area to pronounced landmarks that are more easily found on a typical State of California road map. The purpose of the index map is to provide:

- All pertinent street name information.
- The alignment of the new District facility showing project limits.
- The alignment of existing storm drain facilities which are affected by the new construction.
- The plan and profile sheet limits and number.

All District projects follow specific requirements for the Project Name, Project Number, Stage, P8 Number, and Drawing Number. Please contact the District to obtain the proper information for these fields.

Coordinates must be based on the same coordinate system (State Plane Zone 6) as the survey control points and benchmarks used for the project. Local coordinate systems are not allowed, unless approved by the project engineer. The horizontal and vertical datum of an existing facility shall be used for all subsequent future projects connecting to the existing facility.

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A list of general notes shall be included in the central portion of the title sheet. All general notes as implied by their name should be applicable to the drawings as a whole. Construction notes of a specific application should not be placed on the title sheet but be placed on the sheet where the construction is shown. District Standard General Notes are included in Digital Resources, **Attachment 2**, and may be supplemented with additional project-specific General Notes as needed. A separate list of Developer's General Notes shall be included on the title sheet for all developer projects. District Standard Developer General Notes are also included in Digital Resources, **Attachment 2**.

The sheet index (essentially a "Table of Contents" for the drawing set) is to be located along the top right-hand side of the title sheet and shall follow the sequence in plan set as described in Section II.A.4 above. Include within the index a complete list of Standard Drawings necessary for the construction of the project. District Standard Drawings shall be listed in the order found by visiting the Design tab on the District's website: <https://rcflood.org/Business/Engineering-Tools>

## C. PLAN AND PROFILE SHEETS

The plan and profile sheets delineate the majority of construction information for both the mainline and named laterals<sup>1</sup>. Uniformity in presentation is essential for clarity and the resulting consistency of interpretation among readers. Samples of plan and profile sheets for both underground storm drain and open channel construction have been included in **Appendix A-1** in this manual and should be referred to during the following discussion. The plan and profile sheets must at minimum contain these basic items as follows:

- Border Sheet including local benchmark data, City or other government approval blocks and the Underground Service Alert telephone number (see CAD file in **Attachment 1**)
- Plan view of mainline / laterals
- Profile view associated with the plan view mainline / laterals
- Typical cross section(s)
- Size and location of catch basin / inlets (planimetrics only)

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<sup>1</sup> The mainline is the main storm drain that the project is constructing; 'named laterals' refers to significant laterals (or portions thereof) which are identified and named in the applicable Master Drainage Plan. Smaller pipes connecting to inlets / catch basins are referred to in this manual as 'connector pipes', and drafting of such are discussed in Section II.F of this manual.

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- Plan view alignment for connector pipes (see also Section II.F)
- Construction notes for the above items

The following items may (optionally) also be included on the plan and profile sheets if there is sufficient space.

- Plan Details (see also Section II.G)
- Connector Pipe Profiles (only when plan view is on same sheet, see also Section II.F)

Drafting requirements include levels, line weights, line styles, and font types and sizes and are shown on the example drawings provided in [Appendix A-1](#). Every plan and profile sheet must also have a signature block for the local jurisdiction (City/County) represented within that sheet.

Unless the information is not available, each plan and profile sheet shall have, within the border sheet, a description of a benchmark used as the basis for design. On those sheets not having a benchmark, a note referring to the nearest sheet having a benchmark shall be included within the space normally occupied by the benchmark data.

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## 1. PLAN VIEW

The plan view portion of the plan and profile sheets (whether delineating an underground storm drain or an open channel) will have several drafting characteristics to be uniform on all District drawings:

- All stationing shall increase from left to right across the sheet in the upstream direction.
- Matchlines denoting individual sheet and station limits shall be included on the plan view of each sheet. Do not split plan and profile sheets within street intersections.
- The stationing at the intersection of the mainline centerline and all MDP named laterals shall be labeled on the plan view. Provide a station equation if the lateral is independently stationed from the mainline.

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Horizontal ties for survey control of the open channel or underground storm drain alignment must be included on the plan view portion of each plan and profile sheet. The method of displaying horizontal tie data will depend on the information available for each particular project.

Where control point data is not available, the following is generally true:

- **Open Channels:** Display bearings on the channel centerline alignment and on all street centerlines crossing the channel. Station all street centerlines crossing the channel alignment, and identify the respective channel stations where the channel crosses a street centerline. Provide offsets from street centerline and/or property lines as applicable.
- **Underground Storm Drains:** Display ties from the street centerline to the storm drain alignment. Station all street centerlines crossing the storm drain alignment, and identify the respective storm drain and street stations where the storm drain crosses a street centerline. Display bearings on the centerline alignments.

Where control point data is available, the following is generally true for either open channel or underground storm drains:

- Tie all points of intersection and angle points to the adjacent control points. Station at least one control point on each plan and profile sheet based on a perpendicular offset from the storm drain centerline. Also, as in the case where control point is not available, display bearings on the channel centerline alignment.
- The centerline curve data for all curves in the alignment of an open channel or underground storm drain shall be displayed near the appropriate curve in a table format. The data to be listed is indicated on the sample drawings of the plan and profile sheets.

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## 2. PROFILE VIEW

The profile view portion of the plan and profile sheets (whether delineating an underground storm drain or an open channel) will have several drafting characteristics to be uniform on all District drawings.

- All profiles of the storm drain / channel shall slope upstream from left to right across the sheet.
- As closely as possible, the profile stationing shall be vertically aligned with the plan stationing.

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- Underground storm drain conduit:
  - Show both the invert and roof / soffit of the conduit (including the thickness of both), as well as the existing ground (and proposed / future grade, if applicable) along the centerline.
- Open channels:
  - Show the invert (including the thickness), the existing ground along the centerline, as well as profiles along the top of channel on each side, and profiles of existing ground at the nearest adjacent property / easement lines.
- Show in the profile view all underground utilities crossing the alignment, as well as inlets into the storm drain / channel.
  - Utilities shall be plotted at the station where their centerlines cross the storm drain or channel centerline, shown at their estimated or known elevation, and shown to scale (with vertical exaggeration).
  - Inlets to the storm drain or channel shall be plotted where their centerlines intersect the sidewall of the structure, and shall be shown to scale (with vertical exaggeration). See [Appendix A-1](#) for example.
- Matchlines denoting individual sheet and station limits shall be included on the profile view of each sheet. These matchlines must be at the same station as used in the plan view. As mentioned above, do not split plan and profile sheets within street intersections.
- The water surface or HGL and supporting hydraulic data, including the design flow rate (Q) and velocity (V), shall be shown on the profile view of each sheet. The water surface on an open channel presentation shall be shown for the entire length of profile while the HGL on an underground storm drain presentation shall be shown for a short reach on each end and at any critical change throughout the profile view.
- The following note shall be included on the profile view of every sheet on District construction projects: "NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED."
- Identify the agency<sup>2</sup> that will be responsible to maintain the storm drain / channel.

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<sup>2</sup> The District *may* be willing to accept ownership and maintenance of storm drains / channels constructed by others, if built per District standards and the design and construction was plan checked / inspected by the District pursuant to an executed Cooperative Agreement. Contact the District for more information before identifying the District as the maintenance entity.



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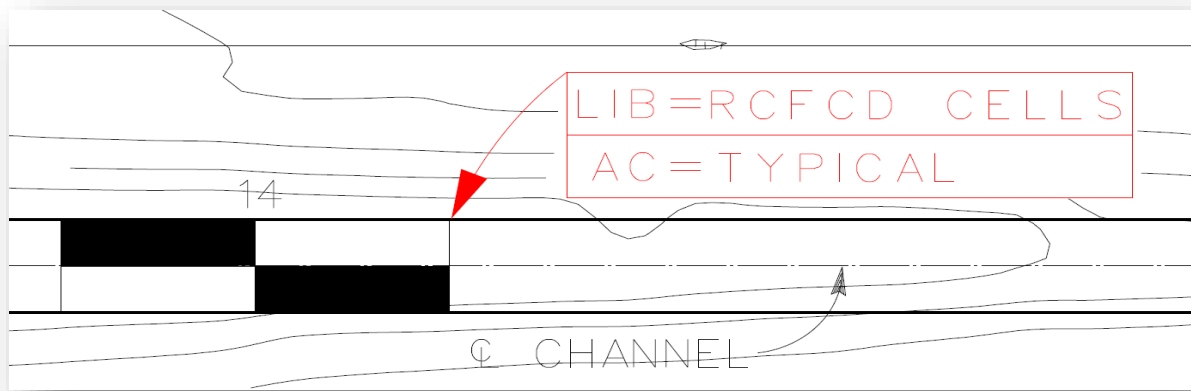
- All profiles of adjacent sewer mainlines and manholes shall be shown and labeled. See [Appendix A-1](#) for example.

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### 3. CROSS SECTION VIEW

At least one typical cross section, located on the right-hand portion of the plan view, shall be included on every sheet. This cross section must be plotted looking downstream and shall be representative of the majority of plan and profile included on the same sheet. Call out the cross section in the plan view to specify the reach that it represents and indicate where the typical cross section is taken as shown in [Figure 4](#) below.

FIGURE 4: TYPICAL CROSS SECTION LOCATION CALLOUT



See [Appendix A-1](#) for an example of cross section view. At minimum, show and label:

- The storm drain / channel with access roads, including any paving / rock / concrete thickness
- Adjacent utilities with offset dimensions to critical utilities that may require special protection
- Labels of key street features (EP, C&G, centerline, etc.)
- Offsets of storm drain / channel to street centerline

## D. SURVEY CONTROL SHEET

The survey control sheet provides all information necessary for survey staking of the basin grading plan. A sample survey control sheet is included in [Appendix A-2](#) of this manual and it should be referred to during the following discussion. The survey control sheet shall, at minimum, contain the following items:

- Basin survey control table (can be on a second sheet if needed)
- Basin plan view showing key structures that affect the grading plan (i.e., retaining walls, wingwalls, etc.)
- Survey points, identifying coordinates<sup>3</sup>, and elevation (where appropriate) of key grading elements (top / toe of slope, flow lines, etc.)

<sup>3</sup> Coordinates must be based on the same coordinate system (State Plane Zone 6) as the survey control points and benchmarks used for the project. Local coordinate systems are typically not allowed.



- Daylight limits of grading
- Access roads and alignments
- R/W, P/L, TCE, including offsets / ties to design elements

## E. BASIN GRADING SHEETS

The basin grading sheets include both plan view and sections sufficient to provide construction information for grading. Sample basin grading sheets are included in [Appendix A-3](#) of this manual and should be referred to during the following discussion. The basin grading sheets shall, at minimum, contain the following items:

- Basin plan view
- Section views
- Slopes and dimensions
- Major and minor contours of existing ground
- Construction notes
- Paylines diagram

The following items may also be included on the basin grading sheet.

- Proposed contours
- Details (see also Section II.G)

## F. CONNECTOR PIPE PROFILE SHEETS

The connector pipe profile sheets illustrate the vertical information for connector pipes and catch basins. A sample connector pipe profile sheet is included in [Appendix A-4](#) of this manual and it should be referred to during the following discussion. The connector pipe profile sheet shall, at minimum contain the following items.

- Profile view of connector pipe with stations and elevations of key points. Profile **MUST be oriented looking downstream along the mainline** that the connector ties into
- Key elevations and dimensions of structures per the Standard Drawings (i.e., Elev. 'S', Elev. 'R', Dimension 'C' for Junctions / Manholes, and Depth 'H' or 'V' for Catch Basins, etc.)
- Utilities crossing the connector pipe and crossing or adjacent to the catch basin

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- Construction notes
- Street Center Line, EP, R/W
- The following note shall be included on every Connector Pipe Profile Sheet:  
"NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED."
- Signature block for the public agency that will maintain the connector pipe / catch basin

Every connector pipe shall have a unique, project-specific name, such as CP-1, CP-2, etc. This name should be added to the plan view and clearly labeled on the profile view. Refer to [Sheet 4](#) for example of the reference labeling.

## G. DETAIL DRAWINGS

An enlargement or other type of detailed drawing is appropriate wherever proposed construction information or delineation of existing facilities cannot be clearly indicated on the plan and profile sheets. A partial list of typical detailed drawings includes the following:

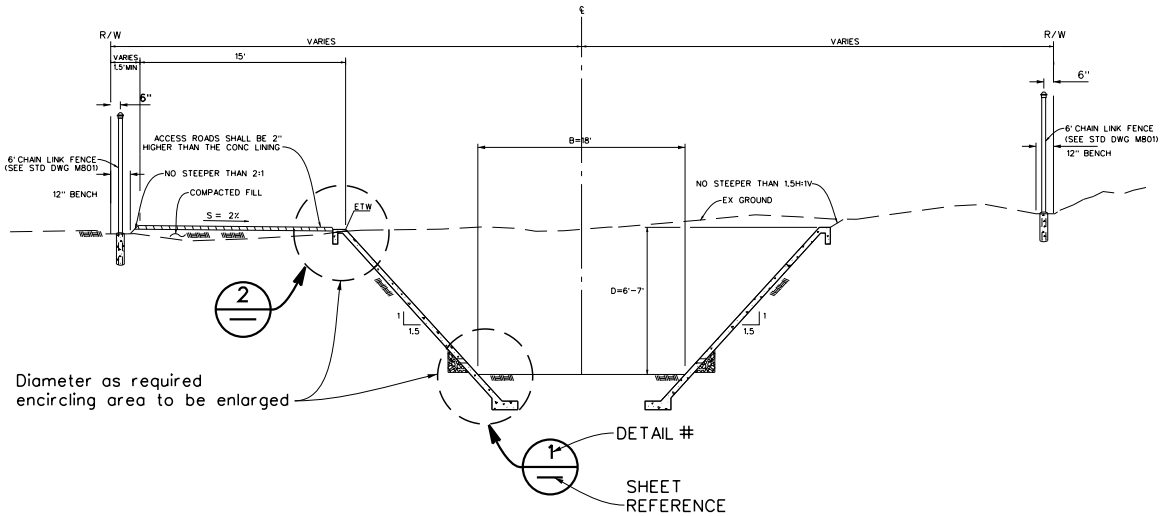
- Enlargement details
- Grading details
- Sections and elevations of structures / custom inlets / outlets
- R/W details

A sample structural detail sheet has been included in [Appendix A-5](#) of this manual and should be used as a guide for preparation of detail sheets. If space is available, the detailed drawing may be included on the originating plan and profile sheet. Otherwise, separate detail sheets shall be created and located after the plan and profile sheets as described in Section II.A.4 of this manual. Signature block(s) for the public agency(ies) that will own / maintain the items being detailed

In order to readily locate any type of detail or section, the following method of reference and cross-reference will be used. If the detail or section is located on the originating sheet, refer to [Sheet 1](#) and [Sheet 3](#). If the detail is located on a different sheet, refer to [Sheet 2](#) and [Sheet 3](#).

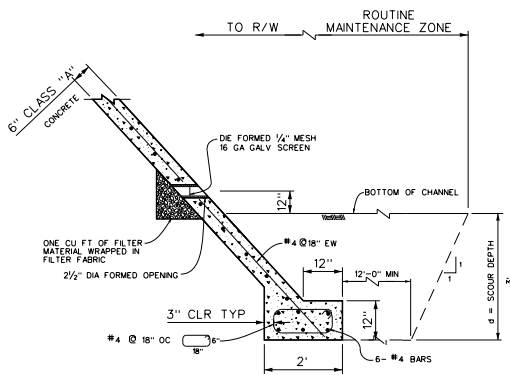
FIGURE 5: DETAIL CALLOUT, DIFFERENT SHEET

## Detail on Same Sheet as Originating Drawing

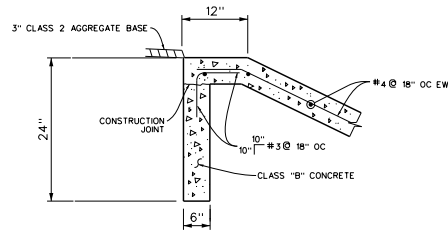


Diameter as required encircling area to be enlarged

**TYPICAL SECTION**  
 STA 204+88.27 - STA 239+25.09



**DETAIL 1**



**DETAIL 2**

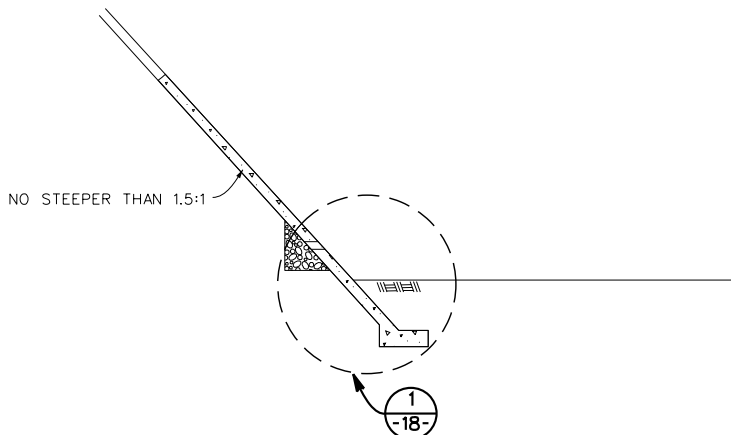


Where indicates Detail 1 can be found on the same sheet.



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## Detail on Sheet Other than Originating Drawing

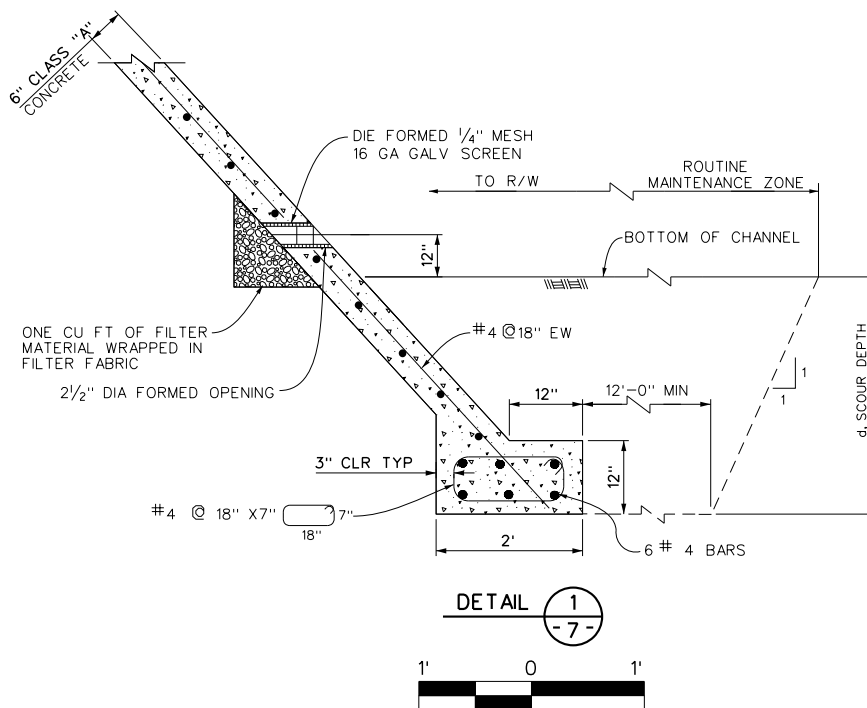


TYPICAL SECTION

NTS

SHEET 7

SHEET 18



DETAIL  $\frac{1}{-7-}$



Where  $\frac{1}{-18-}$  indicates Detail 1 from Sheet 7 is found on Sheet 18 and

DETAIL #

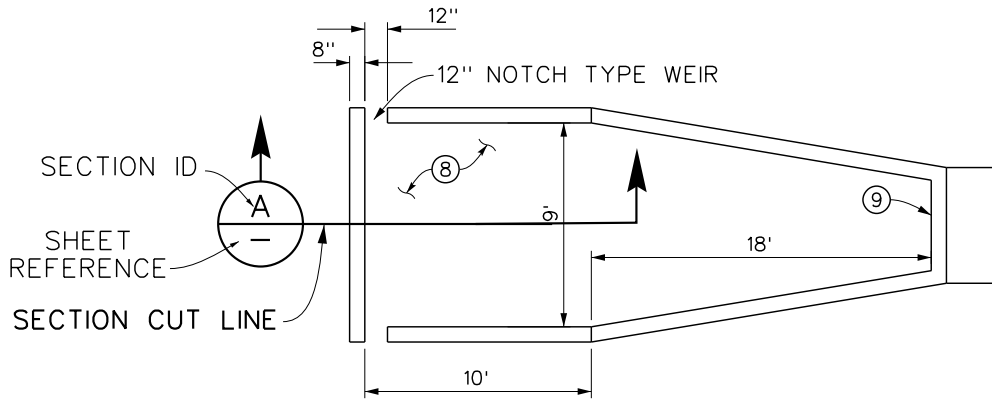
SHEET REFERENCE

DETAIL  $\frac{1}{-7-}$  indicates that Detail 1 on Sheet 18 was referenced from Sheet 7.

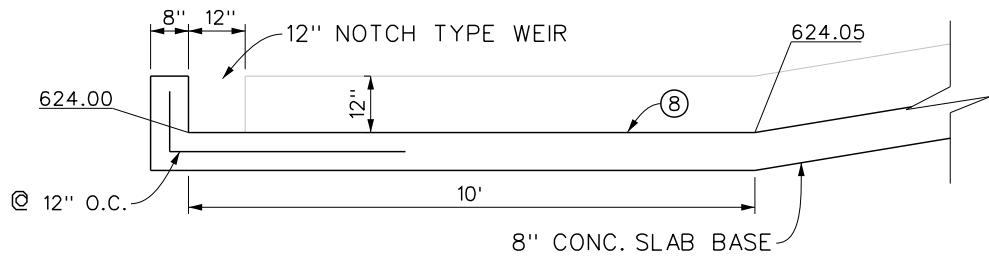


# DRAFTING MANUAL

## Cross-section Sheet Reference



**CONCRETE FOREBAY DETAIL** A  
-



**SECTION** 1  
-

Where A  
- indicates Section A can be found on the same sheet.

SECTION ID

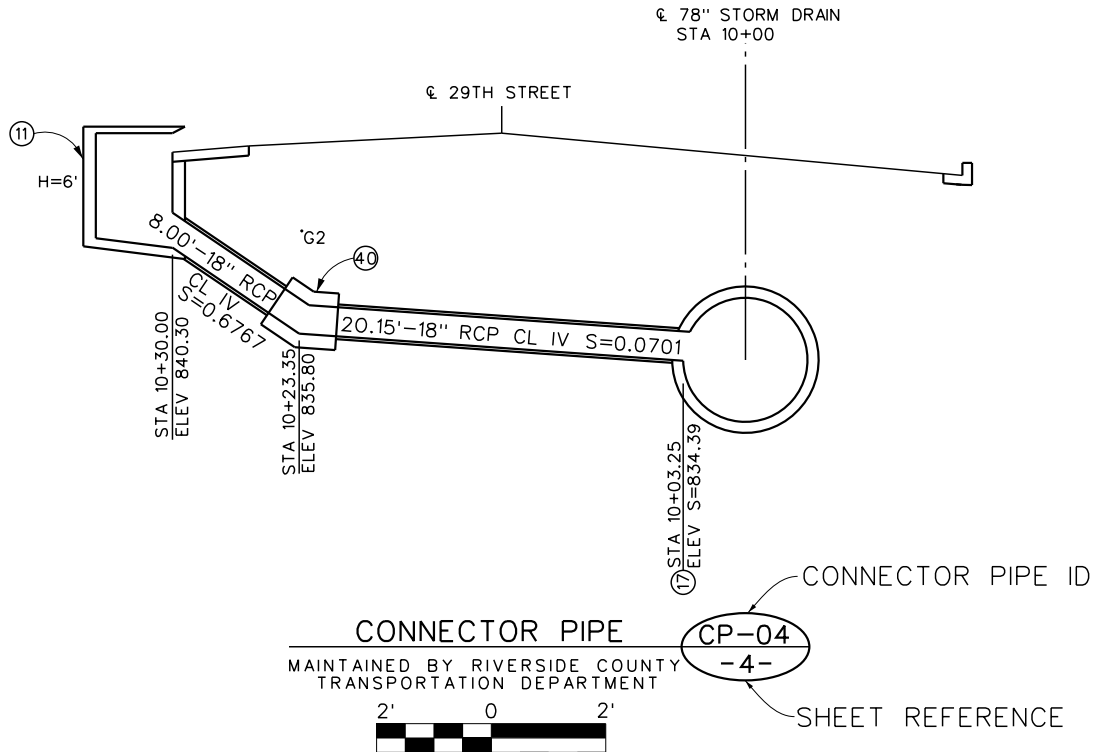
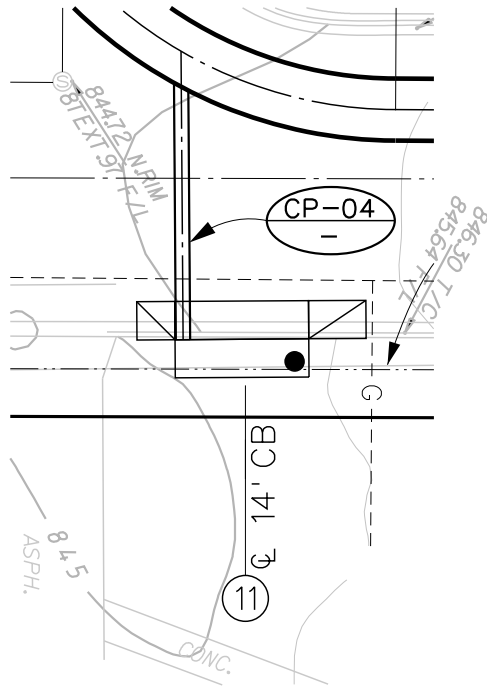
Where A  
-18- indicates Section A from Sheet 7 is found on Sheet 18 and

**SECTION** A  
-7- indicates that Section A on Sheet 18 was referenced from Sheet 7.

SHEET REFERENCE

# DRAFTING MANUAL

## Connector Pipe Sheet Reference



Where **CP-04** indicates Connector pipe CP-04 from and on the same sheet.

Where **CP-04** indicates Connector pipe CP-04 is found on Sheet 4.





## H. PAVING SHEET

A sample paving sheet is included in [Appendix A-6](#) of this manual and should be referred to during the following discussion. The paving sheet shall, at minimum, contain the following items:

- Plan view clearly identifying the extents of paving, with dimensions or stationing to identify the limits as needed
- Plan view should use shading / hatch patterns to differentiate the horizontal limits of different paving sections
- Typical paving sections for each type of paving
- Legend of patterns
- Construction notes
- Signature block for the public agency responsible for maintaining the street, if applicable

## I. MAINTENANCE PLAN SHEET

The maintenance plan sheet is not required for all projects, but should be used where necessary to identify instructions and/or limitations on maintenance sensitive areas. For example, a project that incorporates water quality features may have special instructions on how to maintain those features; conversely, regulatory permits may dictate areas that are "no maintenance" zones. In either case, the maintenance plan sheet(s) will communicate to responsible agency the necessary maintenance requirements.

A sample maintenance plan sheet is included in [Appendix A-8](#) of this manual and should be referred to during the following discussion. The maintenance plan sheet shall, at minimum, contain the following items:

- Plan view of post-construction conditions with sufficient detail to be able to readily identify maintenance locations and limits
- Clear identification of Zero Maintenance or Limited Maintenance areas
- Clear identification of features that **require** specific maintenance
- Notes for any special instructions
- Legend of patterns / symbols
- R/W, P/L, TCE, fence
- Signature block for the agency responsible for maintenance of the environmentally sensitive area, if other than the District



## J. TRAFFIC CONTROL / DETOUR SHEET

Two sample traffic control / detour sheets are included in [Appendix A-7](#) of this manual and should be referred to during the following discussion. The traffic control / detour sheet shall, at minimum, comply with the current California Manual for Uniform Traffic Control Devices (CA MUTCD) or approved alternative. Traffic control / detour sheets are required for all District-led projects that will impact traffic flow. These sheets are optional if the project will be constructed by others. The following items should be addressed on the plans:

- Traffic Control Sheet(s): The traffic control sheet(s) identify how traffic will be routed in the immediate vicinity of the work area, particularly for *partial* road closures. The number of sheets needed will depend on the complexity of the construction impacts, and should clearly identify:
  - The lanes and direction of travel that are to remain open;
  - Cones or other barricades and their locations;
  - Traffic control signage and locations;
  - Standard notes (see [Attachment 2](#));
  - Additional notes as needed;
  - Legend of symbols; and
  - Signature block for public agency responsible for maintaining the street, if applicable.
- Detour Sheet(s): Detour sheets are used where the local agency has approved a temporary road closure. The number of sheets needed will depend on the complexity of the closures, but should at minimum include:
  - Plan view of the closure and all adjacent potentially affected streets;
  - Clearly identified detour route;
  - Signage that will be deployed to facilitate the detour;
  - Location of barricades, considering local resident / business access; and
  - Signature block for public agency responsible for maintaining the street, if applicable.
- All traffic control / detour sheets shall have their own sheet numbering starting with TC1 of TCXX, TC2 of TCXX, and so on.

## III. MICROSTATION-SPECIFIC DRAFTING INSTRUCTIONS / RESOURCES

In general, all title sheets, connector pipe profile sheets, structural detail sheets, basin detail sheets, paving and earthwork sheets, and traffic plan detail drawings shall conform to the samples included as [Appendix A](#). Particular attention shall be paid to the sheet layout and lettering size indicated on each sample sheet. It should be noted that the District has not evaluated these resources for use in Bentley's OpenRoads software.

### A. BORDER SHEET

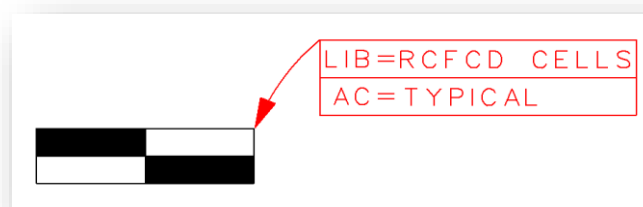
[Appendix B](#) is a plot of the District's standard border sheet (also included as [Attachment 1](#), MicroStation file: RCFCD Border.dgn). Users will note that this file contains, by virtue of multiple levels, all of the various grids necessary to produce drawings of the standard scales used by the District (see Section II.A.5 above). Also contained in this file are all the general notes that appear on District title sheets as well as the County Vicinity Map. All placeholder text should be reviewed and filled in as applicable to the project.

Users will note that the District's standard sheet size (34.9 by 21.7 inches) is somewhat smaller than the industry standard 24 by 36 inches. This is to accommodate the District's need to publish half scale copies of the drawings on 11- by 17-inch cut sheet paper.

### B. CELL LIBRARY

[Appendix C](#) is a plot of all of the cells contained in the District's customized MicroStation cell library, RCFCD Cells.cel. These cell libraries are also included in [Attachment 2](#). Users will note the many references to cells on the sample drawings.

FIGURE 6: CELL LIBRARY REFERENCE



# DRAFTING MANUAL



he "LIB =" reference means the cell can be found in the cell library "RCFCD Cells.cel". The "AC =" reference is to the cell named "TYPICAL".

## C. LEVELING GUIDE

**Appendix D** is the District's current leveling guide. It was developed to:

- Enable the use of level driven plotter settings, which the District uses extensively.
- Make it easier to share work among multiple draftsmen and between the District and consulting firms.
- Facilitate the transfer of design CAD file information into the District's Geographic Information System.

All recent District-generated design topographic mapping will conform to this leveling guide. If topographic mapping prepared by others does not conform to this leveling guide, then the District's plotter settings will not work, and custom settings will be necessary to ensure that the plotted product conforms to this drafting manual.

## D. FONT LIBRARY

The District's MicroStation font resource file contains a number of fonts. The font called "stencil" has been customized to include a number of custom characters used on District drawings. Entering a 4-character alphanumeric string into the text editor box creates these custom characters.

For example the string \201 yields €

**Figure 7** below lists all of the custom characters and the alphanumeric string to access them.

# DRAFTING MANUAL



FIGURE 7: CUSTOM CHARACTERS

NEWFONT.RSC Font Library	
STENCIL1-FONT	
Text	Keys
±	\200
¢	\201
∠	\202
€	\203
D <sub>1</sub>	\204
D <sub>2</sub>	\205
D <sub>3</sub>	\206
D <sub>4</sub>	\207
∅	\208
Δ	\209
•	^



## E. PLOTTER DRIVERS AND PEN TABLES

The District uses large-format printers to plot the full size drawings and a laser printer to create half scale progress prints for our projects. The District has customized some of the "hpgl2"-based plotter drivers included with MicroStation, and has also written custom "pen tables" to create drawings that emphasize the important design elements. Line weights and line styles are set by the plot drivers (\*.plt files), and color and priority are set by the pen table (\*.pen files).

For example, the contours from the base mapping are on levels "Contours Major Design" and "Contours Minor Design"; the pen tables re-map the contours to two shades of gray and set priority such that they always plotted underneath the remainder of the design linework.

All linework other than base mapping and grids is forced to plot as color black. The exception to this is level Fill Shapes and Colors 8 and 9. Elements on level Fill Shapes and Colors 8 and 9 plot in the color they are created, and all closed shapes will plot as filled elements. Priority for level Fill Shapes and Colors 8 and 9 is set such that elements on level Fill Shapes and Colors 8 and 9 will plot beneath all other elements. This allows the engineer / draftsman to employ gray shading rather than crosshatching to emphasize design elements such as paving overlays. It also allows the use of color.

These customizations assist with conformance to the leveling guide while allowing the draftsman a fair degree of freedom to work with colors of their liking. These plotter resources are included in [Attachment 3](#).



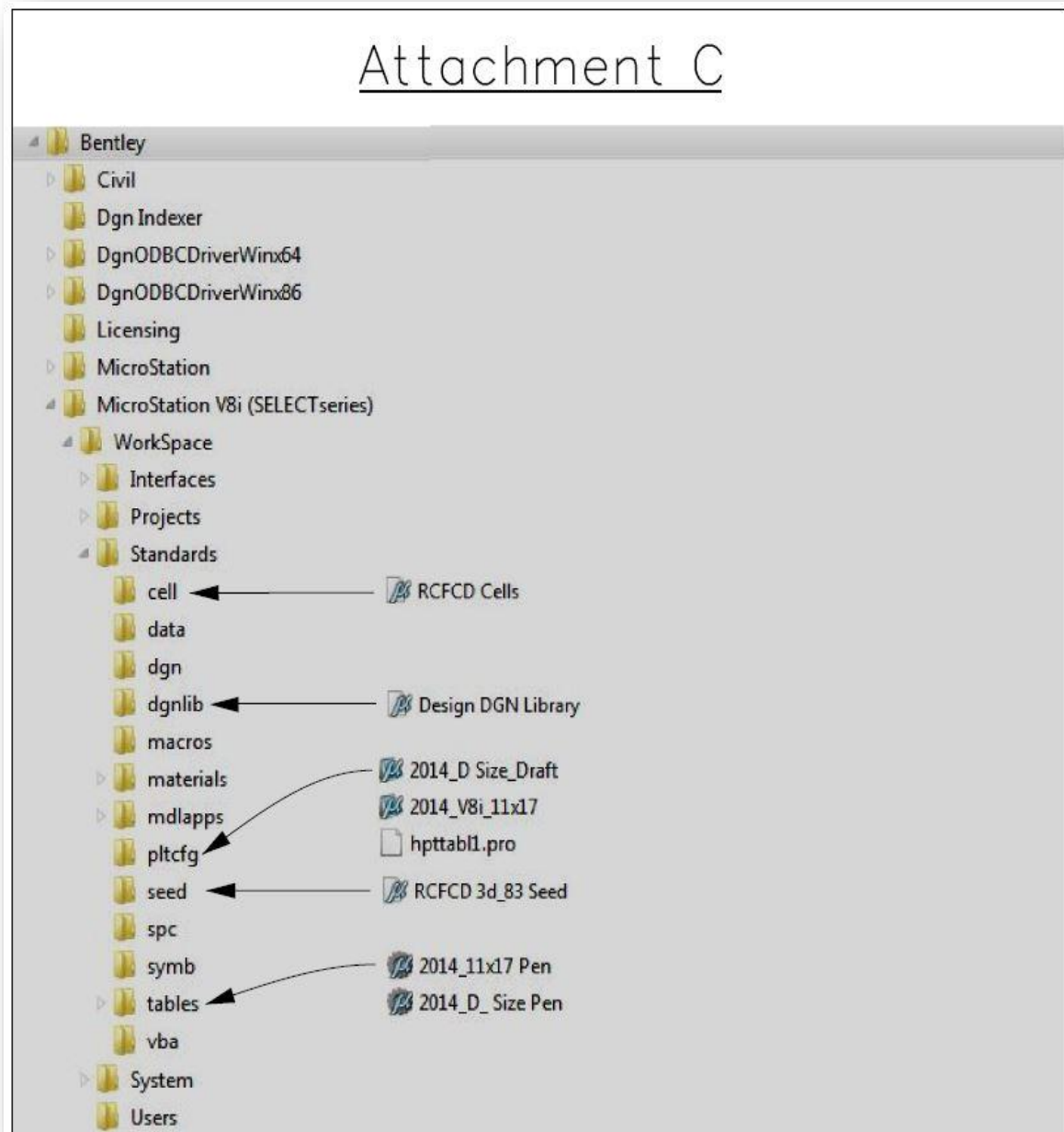
## F. RESOURCE FILE LOCATIONS

A standard MicroStation installation sets up a fairly complex directory / folder structure for all of the various resource files used by the program. The reason for this is best explained by the excerpt from a "plot driver" file below.

```
=====
;
; >>>> WARNING WARNING WARNING WARNING WARNING WARNING <<<<<
;
; Plotter driver configuration files are now stored in two directories:
;
; ${_USTN_WORKSPACEROOT}/System/plotdrv/
; ${_USTN_WORKSPACEROOT}/Standards/plotdrv/
;
; System/plotdrv/ should be reserved for .plt files delivered by
; MicroStation and other Bentley products. Standards/plotdrv/ is
; provided as a place for you to store customized .plt files. To
; simplify plotter selection from the Plot dialog, you may also
; elect to store frequently-used .plt files in Standards/plotdrv/
; even if you do not customize them.
;
; To minimize the risk of losing your changes during a product
; reinstallation, do not edit the files in the System/plotdrv/
; directory. Instead, copy the necessary files to Standards/plotdrv/
; and edit them there. If the .plt file depends on other files, such
; as PostScript prolog (*.pro) files, copy them to the same directory.
;
;=====
```

To assist users in placing the resource files provided with this manual in the correct folders, we have formatted **Attachment C** in a directory structure that mimics the format set up by a default MicroStation installation.

FIGURE 8: PLACEMENT OF MICROSTATION RESOURCE FILES







## G. GIS DRAFTING INSTRUCTIONS

The District uses design CAD elements as the basis for generating Geographic Information System (GIS) features for the District's GIS facilities layer.

The District's GIS requires the importation of project centerline (linework), area (features), water quality features, manholes, and inlets. The District's GIS Section is responsible for maintaining the database of lines and areas for District-accepted RCFC facilities.

All that is required for GIS importation is a CAD file (built-in California Grid coordinates) containing the following elements in separate levels (layers) including annotation (attributes):

- Project centerline (linework) (ex. RCP, RCB, EAR, TRAP, CIP, CONC, etc.) locations on level: Alignment Centerline
- Filled circles indicating manhole locations on level: Manhole
- Areas (features): Ex. basin, dam, levee, etc.
- Circles indicating inlet (features) locations on level: Drop Inlet (catch basins for District and Cities)
- Filled circles indicating water quality features on level: WQ features

Incorporate attribute tables as shown in [Appendix E](#) to convey key data about each element. District staff will attach the data or attributes to the CAD elements and import them into the GIS. [Appendix E](#) depicts a sample GIS file in which a design draftsman has digitally annotated the project CAD file to pass to the GIS technician. The GIS technician incorporates the tabular data when importing the graphics into the GIS.

# DRAFTING MANUAL



## APPENDIX A SAMPLE DRAWINGS

July 2018

# DRAFTING MANUAL



## APPENDIX A-1

### TITLE SHEET AND PLAN AND PROFILE SHEET EXAMPLES

July 2018

# ALL INFORMATION IN RED IS FOR CLARITY AND NOT TO BE PRINTED ON PLANS

## RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

### FOR DISTRICT IN HOUSE PROJECTS

**INFORMATIONAL NOTE**  
ALL TEXT WILL BE FONT STYLE NO. 1 STENCIL UNLESS LABELED OTHERWISE

TXT	.20
LVL	TEXT
LW	4

SHEET NO.:

TITLE SHEET	1
PLAN & PROFILE	2-6
CONNECTOR PIPE DETAILS	7-9
MISCELLANEOUS DETAILS	10
TRAFFIC CONTROL PLAN	TC1-TC2

#### R.C.F.C. & W.C.D. STANDARD DRAWINGS

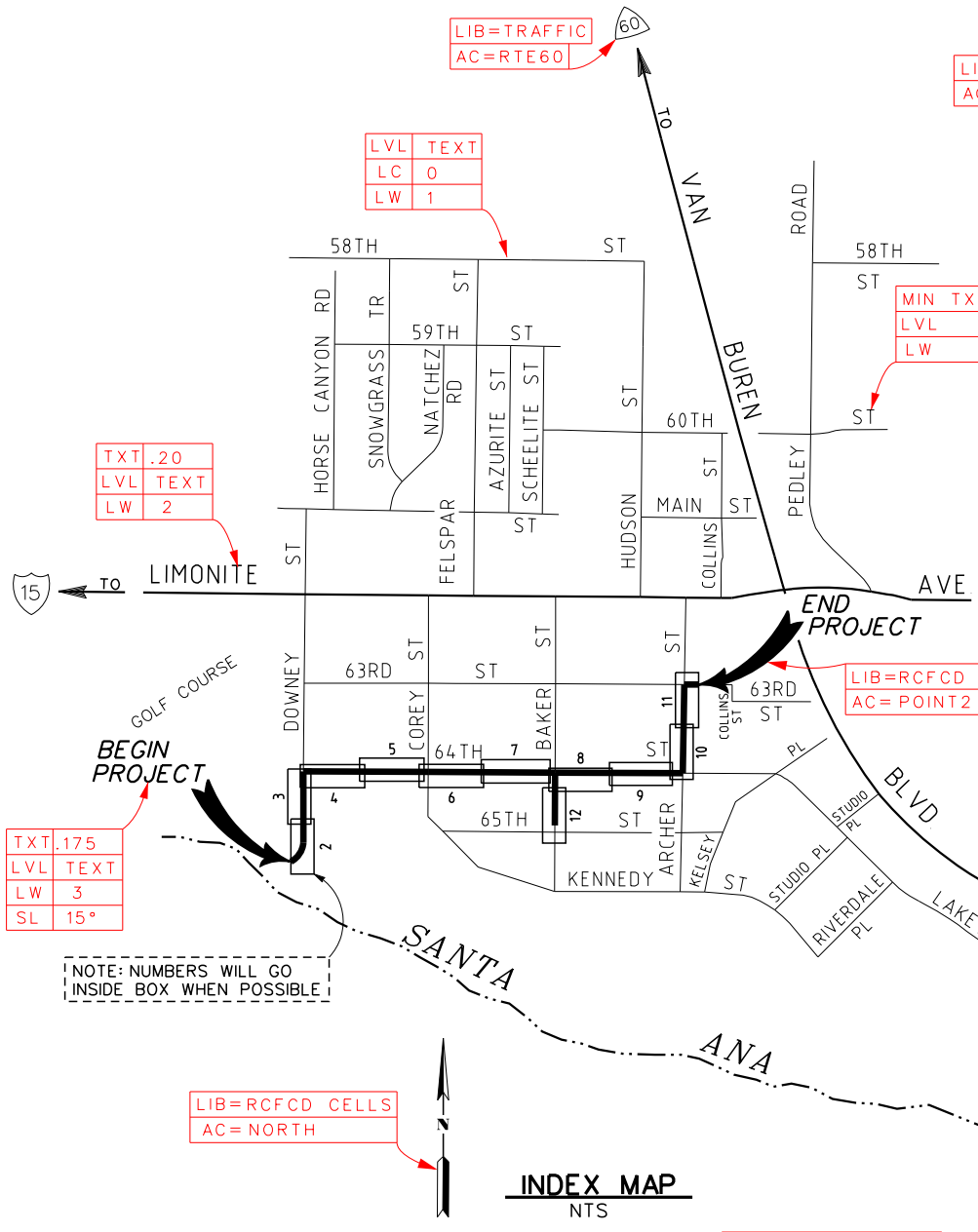
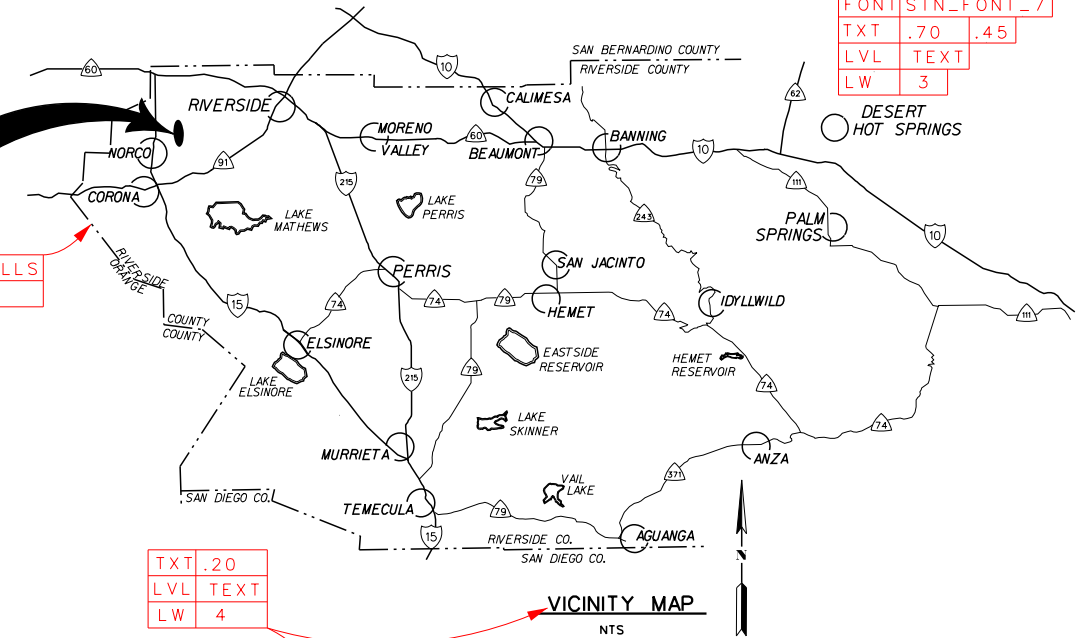
CB100	CATCH BASIN NO. 1
CB103	MANHOLE FRAME AND COVER
CB105	DETAIL OF CATCH BASIN OPENING & INSTALLATION DETAILS/REMOVABLE PROTECTION BAR FOR C.B.
CB106	CATCH BASIN REINFORCEMENT
CB109	SPECIAL CONNECTIONS TO CATCH BASIN
CB110	CONCRETE DROP INLET
LD201	LOCAL DEPRESSION NO. 2
JS226	JUNCTION STRUCTURE NO. 1
JS228	JUNCTION STRUCTURE NO. 3
JS229	JUNCTION STRUCTURE NO. 4
MH253	MANHOLE NO. 3
MH255	MANHOLE FRAME & COVER NON-ROCKING
MH257	MANHOLE SHAFT FOR CAST PIPE
MH259	STANDARD DROP STEP
M814	ABBREVIATIONS AND SYMBOLS
M815	BEDDING AND PAY LINES
M816	CONCRETE BULKHEAD
M819	MAXIMUM CHORD LENGTHS FOR CURVED SECTIONS

#### CITY OF RIVERSIDE STANDARD DRAWINGS

200	CURB AND GUTTER
302	DRIVEWAY TYPE III
303	DRIVEWAY & CURB DEPRESSION
TEXT5	SIDEWALK

#### CALTRANS STANDARDS

T3	TEMPORARY RAILING TYPE K
----	--------------------------



LIB=RCFCD CELLS  
AC=GENERAL NOTES

#### GENERAL NOTES

- EXCAVATION AND BACKFILL PAY LINES ARE SHOWN ON RCFD STANDARD DRAWING M815 UNLESS SHOWN OTHERWISE ON THESE PLANS.
- ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION.
- ALL CHANNEL/STORM DRAIN REFERENCES AND CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
- TOPOGRAPHY BY DIGITAL PHOTOGRAMMETRIC METHODS. AERIAL PHOTOGRAPHS TAKEN AT AN ALTITUDE NOT TO EXCEED A FLYING HEIGHT TO CONTOUR INTERVAL RATIO OF 1800. PHOTOGRAPHY DATED 00/00/0000.
- THE VERTICAL DATUM IS DERIVED FROM XXXXX. THE HORIZONTAL DATUM IS DERIVED FROM NAD83(XXXX) EPOCH XXXX.XX, AND CALIFORNIA STATE PLANE, ZONE 6
- STANDARD DRAWINGS CALLED FOR ON THE PLAN & PROFILE SHALL CONFORM TO RCFD & WCD STD DRAWINGS, OR CALTRANS/CITY/COUNTY STANDARD PLANS.
- ELEVATIONS AND LOCATIONS OF UTILITIES WERE OBTAINED FROM AVAILABLE INFORMATION AND ARE SHOWN APPROXIMATELY ON THESE PLANS. 48 HOURS BEFORE EXCAVATION CALL UNDERGROUND SERVICE ALERT AT 1-800-227-2600. ALL UTILITIES SHALL BE PROTECTED IN PLACE EXCEPT AS NOTED ON PLANS AND SPECIFICATIONS.
- THE CONTRACTOR IS REQUIRED TO CONTACT ALL UTILITY AGENCIES REGARDING TEMPORARY SUPPORT AND SHORING REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
- ALL OPENINGS RESULTING FROM CUTTING OR PARTIAL REMOVAL OF EXIST. CULVERTS, PIPES, OR SIMILAR STRUCTURES TO BE ABANDONED, SHALL BE SEALED AT BOTH ENDS WITH 6" MINIMUM CLASS "B" CONCRETE.
- UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT ASPHALT MIX OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
- ALL RECONSTRUCTION, RESURFACING AND PAVEMENT DELINEATION, CURBS, SIDEWALKS AND OTHER IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND AT THE SAME LOCATIONS AND ELEVATIONS AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
- ⊙ INDICATES APPROX. SOIL BORING LOCATION PER SOILS REPORT DATED 00/00/0000.
- ALL JUNCTION STRUCTURES SHALL BE JS NO.0 PER RCFD STD JS000, A=90°, UNLESS OTHERWISE NOTED.

FONT	STN_FONT_7
TXT	.70
LVL	TEXT
LW	3

MIN TXT	.10
LVL	TEXT
LW	1

TXT	.20
LVL	TEXT
LW	4

TXT	.12
LVL	TEXT
LW	2

TXT	.20
LVL	TEXT
LW	2

LVL	TEXT
LC	0
LW	1

LIB=TRAFFIC  
AC=RTE60

TXT	.175
LVL	TEXT
LW	3
SL	15°

LVL	MAPPING
LC	0
LW	3

LIB=RCFCD CELLS  
AC=POINT2

TXT	.12
LVL	TEXT
LW	2

TXT	.12
LVL	BORDER DES SIG
LW	1

TXT	.08
LVL	BORDER APP SIG
LW	1

TXT	.20
LVL	BORDER PROJECT
LW	4

TXT	.14
LVL	BORDER TITLE
LW	2

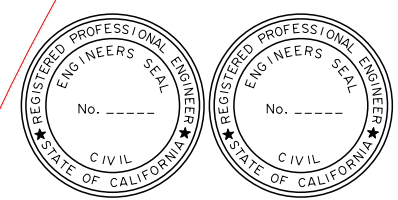
TXT	.175
LVL	BORDER PROJECT
LW	3

LIB=RCFCD CELLS  
AC=SIG1  
LVL BORDER CITY

LIB=RCFCD CELLS  
AC=DIG  
LVL BORDER DIG

TXT	.10
LVL	BORDER BENCH
LW	1

TXT	.10
LVL	BORDER REV
LW	2

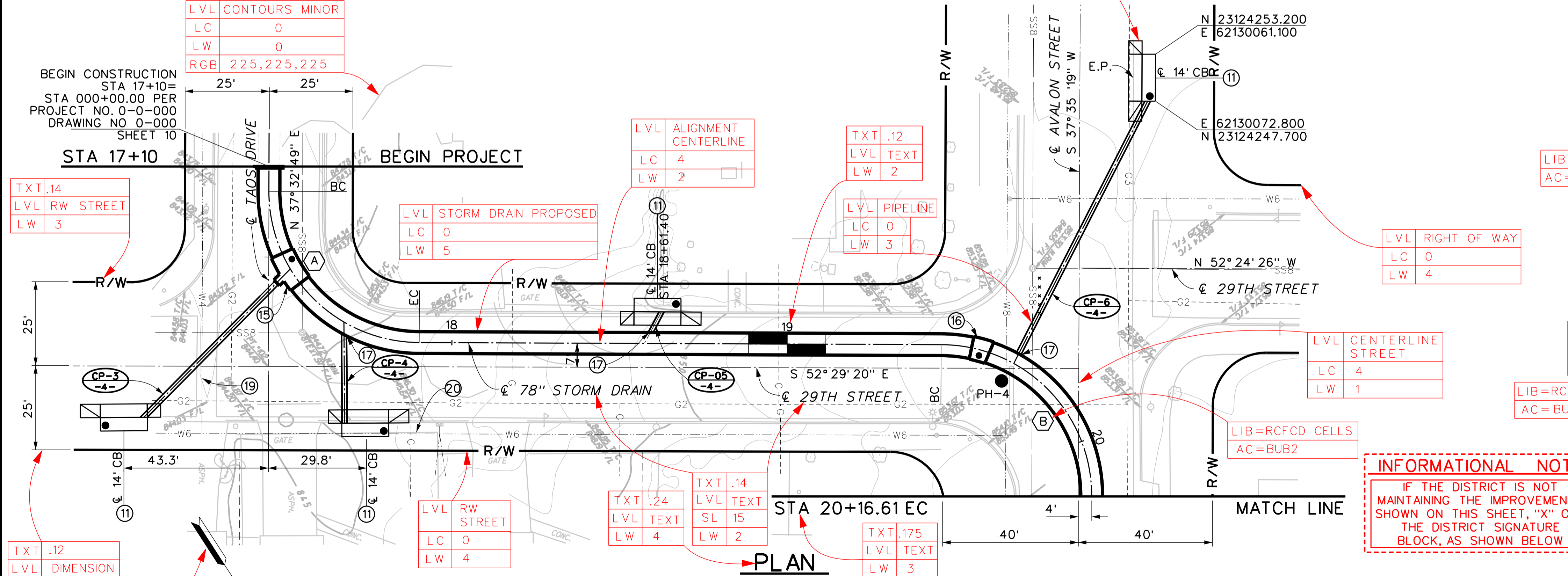
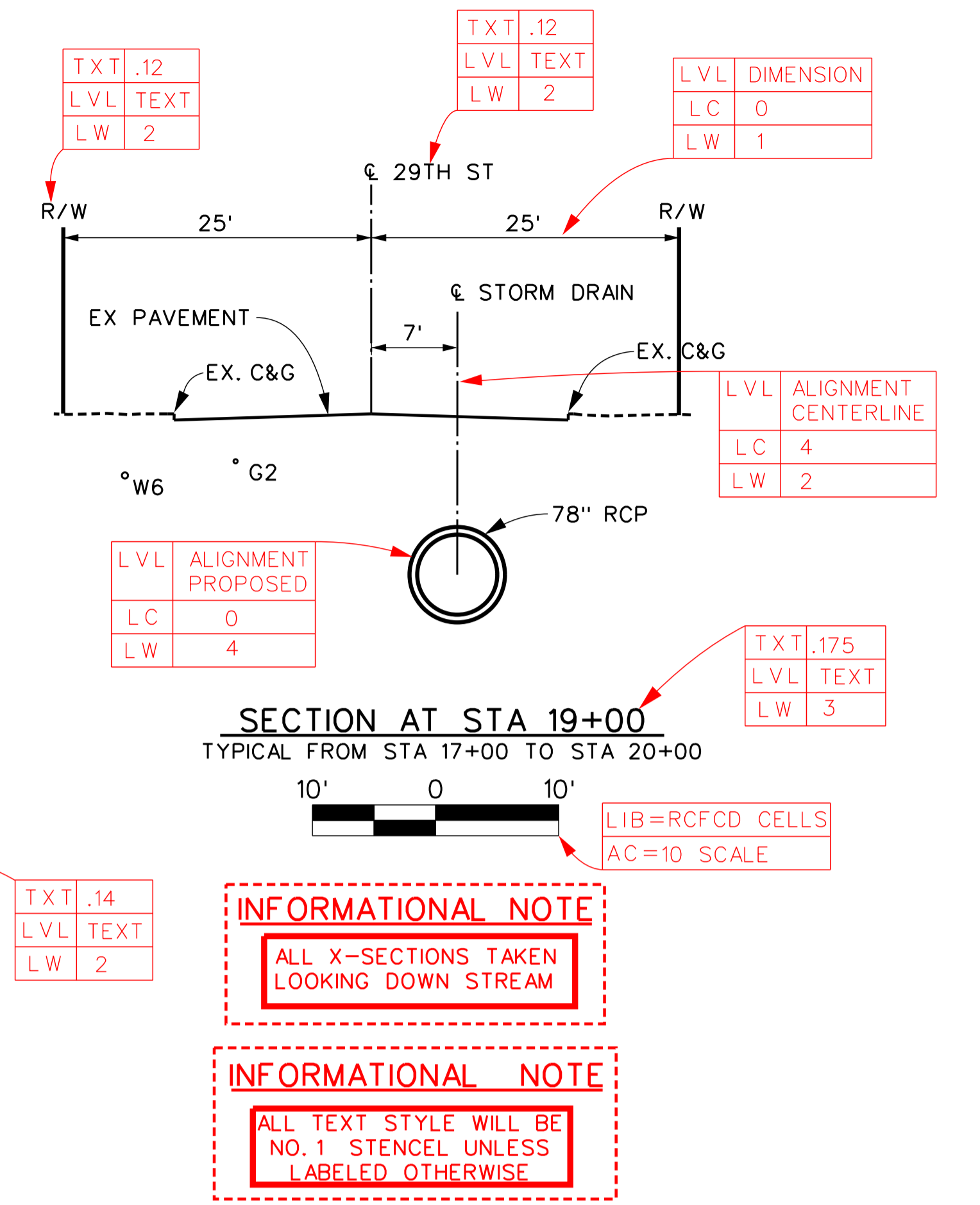
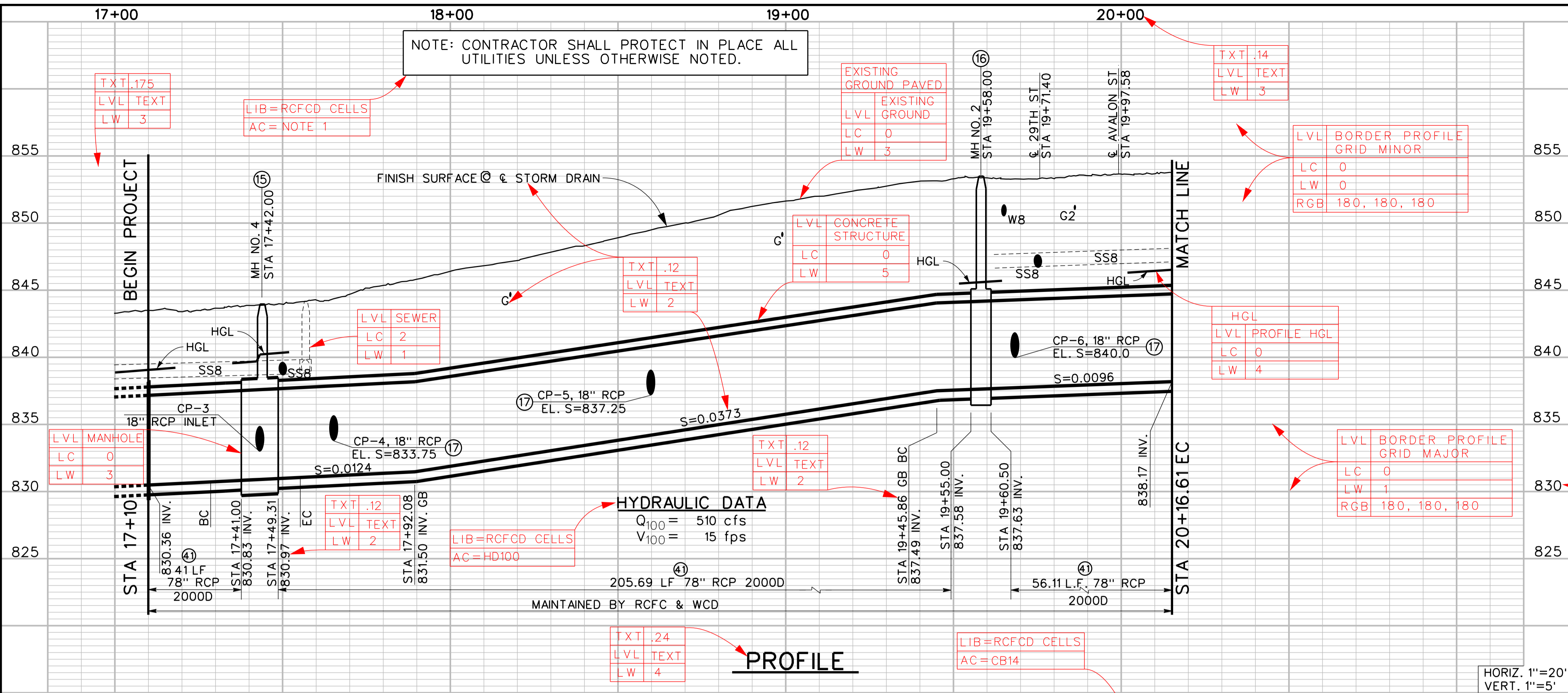


COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT APPROVED BY: _____ DEPUTY DIRECTOR OF TRANSPORTATION DATE: _____	Don't Dig...Until You Call U.S.A. Toll Free <b>1-800-227-2600</b> for the location of buried utility lines. Don't disrupt vital services. 	PERMANENT BENCH MARK B.M. NO. XX BENCH MARK DESCRIPTION AS SHOWN FROM SURVEYORS FIELD BOOK OR OTHER RELIABLE SOURCE SHOULD BE INSERTED IN THIS SPACE. XYZ.XY EL.	REVISIONS REF. DESCRIPTION APPR. DATE	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR P8 NUMBER: 123456	RECOMMENDED FOR APPROVAL BY: _____ APPROVED BY: _____ GENERAL MANAGER-CHIEF ENGINEER DATE: _____	<b>PEDLEY - 64TH STREET STORM DRAIN</b> TITLE SHEET	PROJECT NO. 0-0-0000 DRAWING NO. 0-000 SHEET NO. 1 OF 11
----------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------	--------------------------------------------------------	----------------------------------------------------------------









MANHOLE / JUNCTION STRUCTURE DATA

LATERAL	€ STATION	WALL STATION	STRUCTURE	A	C
CP-3	17+42	17+43	MH NO. 4	75°	5'
CP-4	17+65	17+65	JS NO. 4	90°	-
CP-5	18+57.40	18+59.20	JS NO. 4	90°	-
-	19+58	-	MH NO.2	45°	-
CP-6	19+68	19+68	JS NO. 4	90°	-

CURVE DATA

	(A)	(B)
R	45.00'	45.00'
Δ	90° 02' 10"	90° 04' 39"
L	70.71'	70.75'
T	45.03'	45.06'
B. C.	STA. 17+18.57	STA. 19+45.86
E. C.	STA. 17+89.29	STA. 20+16.61
P. I.	NORTHING 23124247.700	23122718.700
EASTING	62130072.800	62132064.800

- NOTES**
- ① CONSTRUCT CATCH BASIN PER RIVERSIDE COUNTY STD NO. 300
  - ② CONSTRUCT MH NO. 4 PER STD MH254.
  - ③ CONSTRUCT MH NO.2 PER STD MH252.
  - ④ CONSTRUCT JS NO.4 PER STD JS229.
  - ⑤ 4" WATERLINE TO BE RELOCATED BY OTHERS.
  - ⑥ 6" WATERLINE TO BE RELOCATED BY OTHERS.
  - ⑦ CONSTRUCT 78" RCP PER DETAIL.

**INFORMATIONAL NOTE**  
IF THE DISTRICT IS NOT MAINTAINING THE IMPROVEMENTS SHOWN ON THIS SHEET, "X" OUT THE DISTRICT SIGNATURE BLOCK, AS SHOWN BELOW

Don't Dig...Until You Call U.S.A. Toll Free  
**1-800-227-2600**  
for the location of buried utility lines.  
Don't disrupt vital services.  
TWO WORKING DAYS BEFORE YOU DIG

TEMPORARY BENCH MARK  
Z-7272  
NAIL AND R.C.F.C. TAG FLUSH.  
EL. 638.80

REVISIONS

NO.	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: ENGINEER  
DRAWN BY: TECHNICIAN  
CONSTR. SET: MNTH DAY, YR  
PB NUMBER: 123456

RECOMMENDED FOR APPROVAL BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

**BELLTOWN LINE D**  
STAGE 1  
STA 17+00 TO STA 20+16.61

PROJECT NO.  
**0-0-0000**  
DRAWING NO.  
**0-000**  
SHEET NO.  
**3 OF 11**



# DRAFTING MANUAL



APPENDIX A-2  
SURVEY CONTROL SHEET EXAMPLE

July 2018

LVL	CONTOURS MINOR
LC	0
LW	0
RGB	225,225,225

LVL	CONTOURS MAJOR
LC	0
LW	1
RGB	180, 180, 180

LVL	RIP RAP
LC	0
LW	0
RGB	225,225,225

LVL	BASIN
LC	0
LW	3

LVL	DAYLIGHT LIMITS
LC	3
LW	3

LVL	SLOPE SYMBOLS
LC	0
LW	2

LVL	ACCESS ROAD
LC	0
LW	2

LIB=RCFCD CELLS  
AC=SLOPE TERMINATOR

LIB=RCFCD CELLS  
AC=NORTH

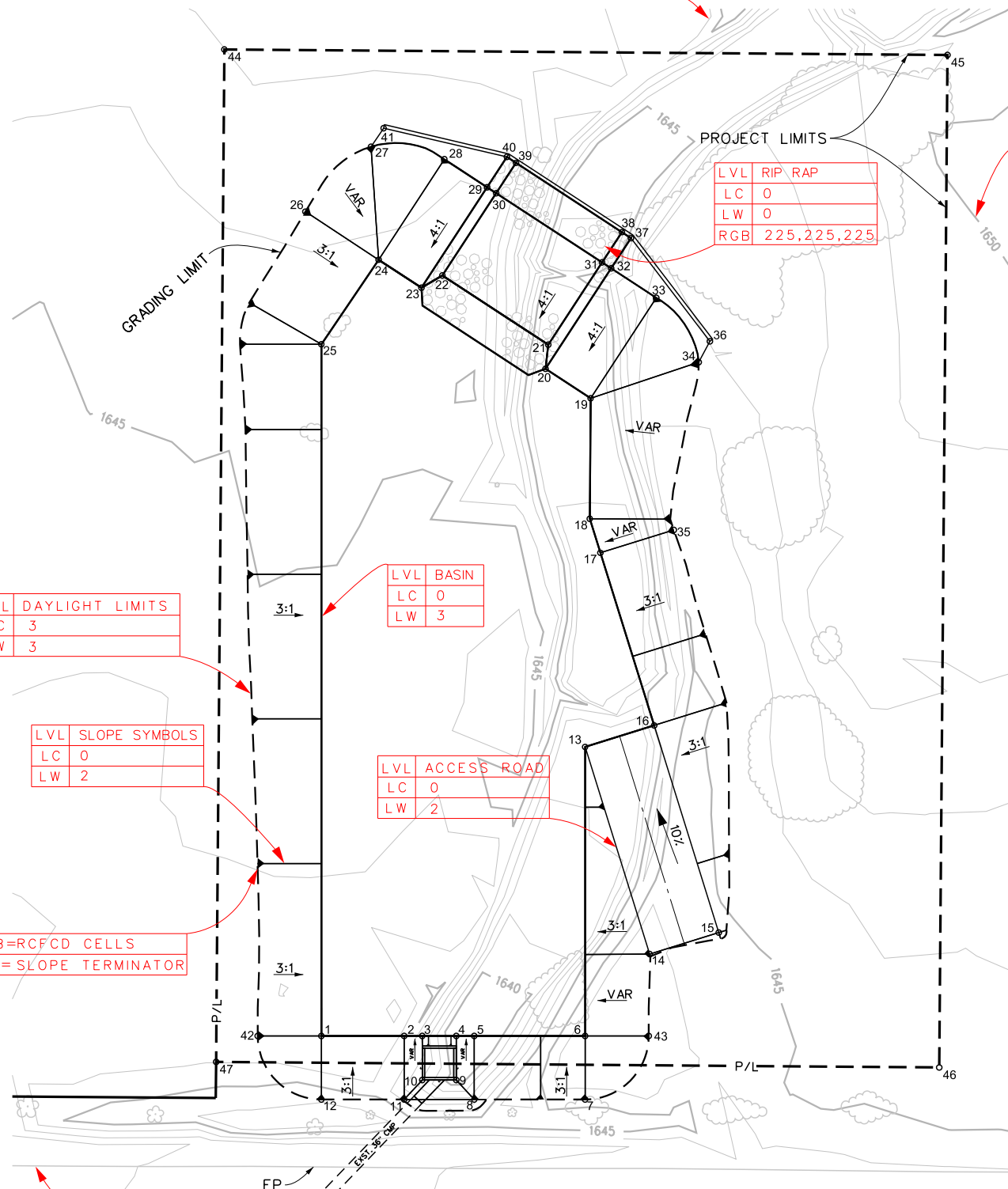
LVL	EDGE OF PAVEMENT
LC	0
LW	2

LIB=RCFCD CELLS  
AC=SCALE 20

BASIN SURVEY CONTROL				
PT.	NORTHING	EASTING	EL.	DESCRIPTION
1	2281395.29	6277406.57	1638.2	PROP. GRADE
2	2281395.29	6277429.47	1638.2	PROP. GRADE
3	2281395.29	6277434.47	1638.2	-
4	2281395.29	6277443.87	1638.2	-
5	2281395.29	6277448.83	1638.2	-
6	2281395.29	6277479.52	1638.2	-
7	2281377.71	6277479.52	1644.0	DAYLIGHT
8	2281377.71	6277448.87	1644.0	-
9	2281383.11	6277443.87	1644.0	TOP OF WALL
10	2281383.11	6277434.47	1644.0	TOP OF WALL
11	2281377.71	6277429.47	1644.0	-
12	2281377.71	6277406.57	1644.0	-
13	2281475.21	6277479.52	1638.2	-
14	2281417.93	6277497.37	1644.1	-
15	2281423.88	6277516.46	1644.1	-
16	2281481.17	6277498.61	1638.2	-
17	2281528.90	6277483.73	1638.2	-
18	2281538.31	6277480.80	1638.2	-
19	2281571.63	6277481.03	1638.2	-
20	2281579.78	6277468.56	1638.2	-
21	2281586.44	6277469.33	1638.2	-
22	2281605.60	6277440.04	1638.2	-
23	2281602.21	6277434.24	1638.2	-
24	2281609.94	6277422.42	1638.2	-
25	2281586.56	6277406.57	1638.2	-
26	2281623.25	6277402.15	1646.2	-
27	2281641.21	6277420.29	1646.5	-
28	2281637.73	6277440.59	1646.5	-
29	2281630.00	6277452.41	1646.5	-
30	2281628.36	6277454.92	1645.0	-
31	2281609.21	6277484.22	1645.0	-
32	2281607.57	6277486.73	1646.5	-
33	2281599.42	6277499.20	1646.5	-
34	2281581.62	6277510.94	1646.5	-
35	2281535.24	6277504.06	1645.2	-
36	2281587.38	6277514.02	1646.5	TOP OF WALL
37	2281615.94	6277492.20	1646.5	TOP OF WALL
38	2281617.58	6277489.69	1645.0	TOP OF WALL
39	2281636.73	6277460.39	1645.0	TOP OF WALL
40	2281638.37	6277457.88	1646.5	TOP OF WALL
41	2281646.32	6277423.79	1646.5	TOP OF WALL
42	2281395.29	6277388.99	1644.0	TOP OF WALL
43	2281395.29	6277497.09	1644.0	-

PROJECT LIMITS		
PT.	NORTHING	EASTING
44	2281668.11	6277379.73
45	2281666.57	6277579.73
46	2281386.58	6277577.45
47	2281388.11	6277377.46

TXT	.12
LVL	TEXT
LW	2



TEMPORARY BENCH MARK Z-7272 NAIL AND R.C.F.C. TAG FLUSH. EL. 638.80	REVISIONS		RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		PROJECT NO. 0-0-0000
	DESIGNED BY: ENGINEER	RECOMMENDED FOR APPROVAL BY:	APPROVED BY:	DRAWING NO. 0-000	SHEET NO. 4 OF 11
REF.	DESCRIPTION	APPR.	DATE	CONSTR. SET: MNTH DAY, YR PB NUMBER: 123456	DATE:

**MORENO - COTTONWOOD  
BASIN**  
SURVEY CONTROL

# DRAFTING MANUAL



## APPENDIX A-3 BASIN GRADING SHEET EXAMPLE

July 2018

LVL	CONTOURS MINOR
LC	0
LW	0
RGB	225,225,225

**INFORMATIONAL NOTE**  
 PROPOSED CONTOURS SHALL BE SHOWN ON PLANS. CONTOURS TRUNCATED HERE FOR CLARITY

LVL	PROPOSED CONTOURS
LC	0
LW	0

LVL	PROPOSED CONTOURS
LC	0
LW	2

LVL	BASIN
LC	0
LW	3

LIB=RCFCD CELLS  
 AC=SLOPE TERMINATOR

LVL	RIGHT OF WAY
LC	0
LW	4

LVL	CONTOURS MAJOR
LC	0
LW	1
RGB	180, 180, 180

LVL	DIMENSION
LC	0
LW	1

TXT	.175
LVL	TEXT
LW	3

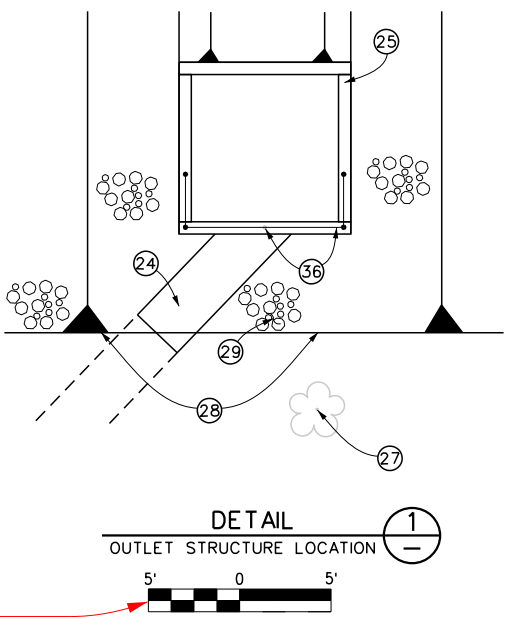
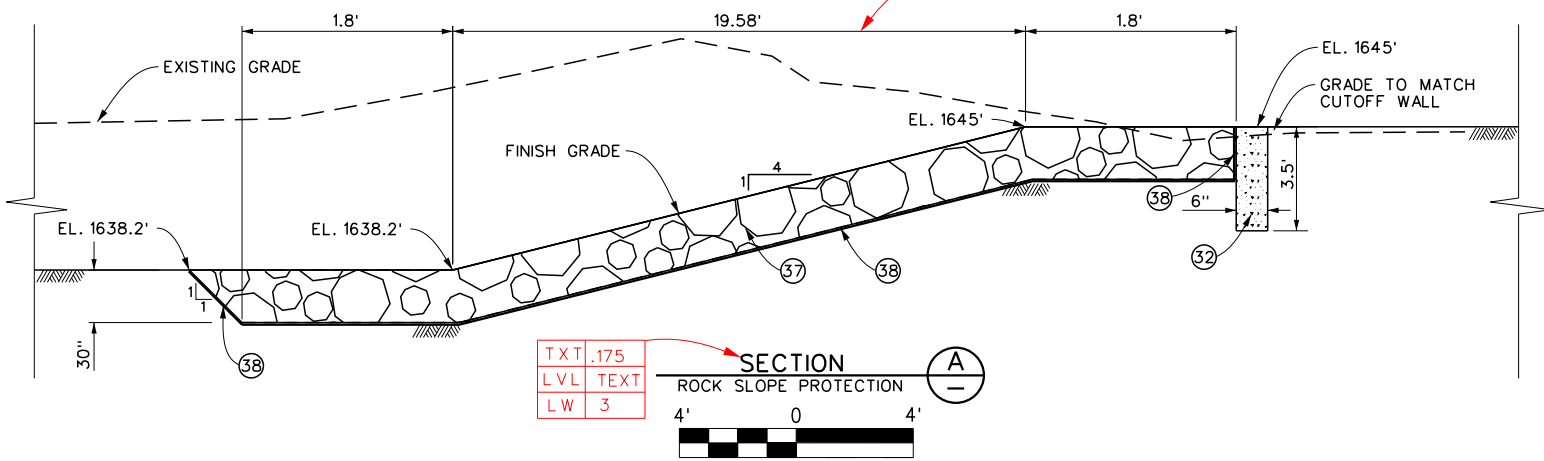
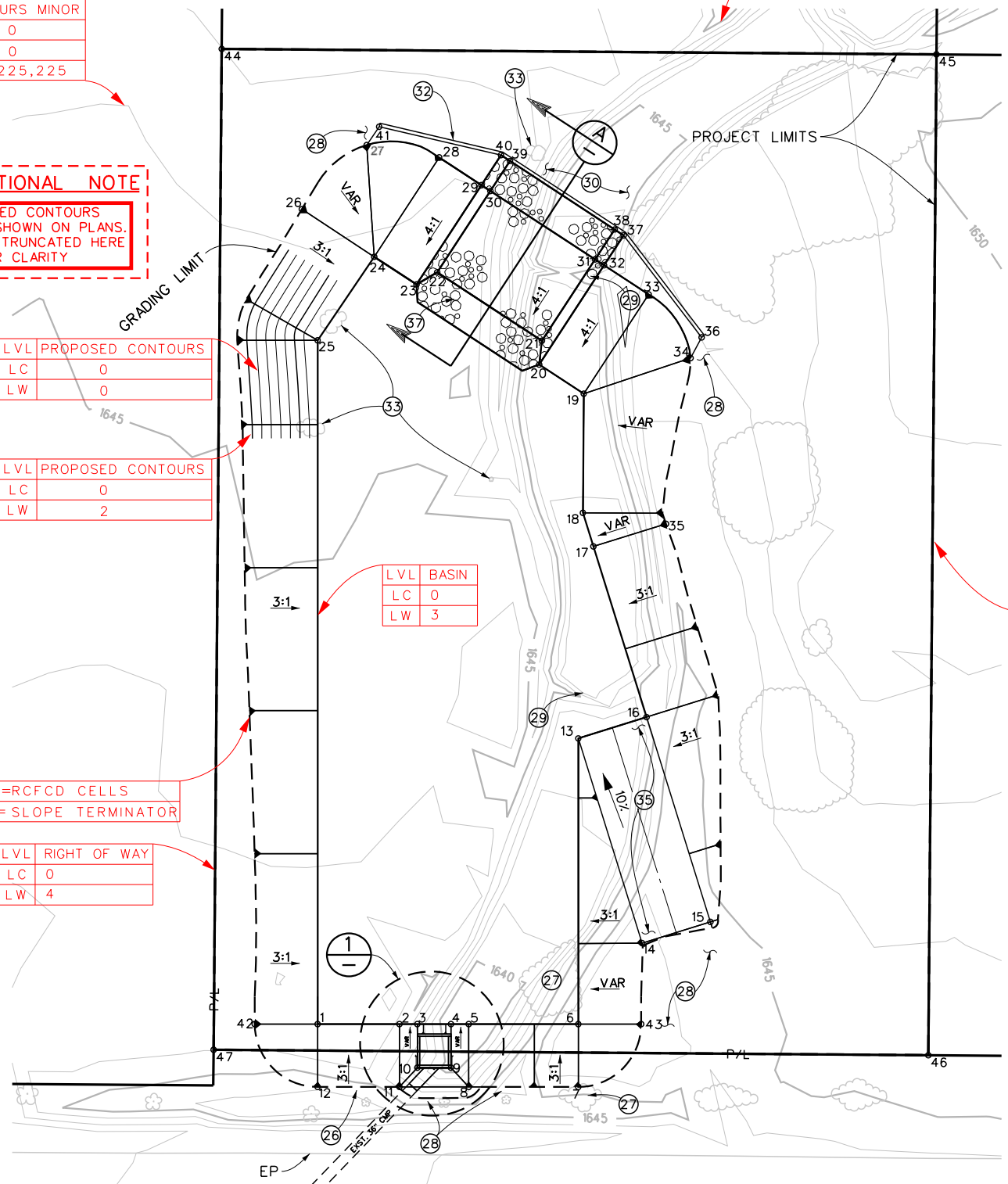
TXT	.12
LVL	TEXT
LW	2

LVL	RIGHT OF WAY
LC	0
LW	4

LIB=RCFCD CELLS  
 AC=NORTH

LIB=RCFCD CELLS  
 AC=SCALE 5

LIB=RCFCD CELLS  
 AC=SCALE 20



**NOTES**

- 24 EXTEND EXISTING 36" CMP CULVERT, TO OUTLET STRUCTURE.
- 25 CONSTRUCT OUTLET STRUCTURE. ALL WALLS, AND SLAB SHALL BE 8" THICK. STRUCTURAL REBAR SHALL BE #4 BARS PLACED 10" ON CENTER, EACH WAY ON ALL FACES.
- 27 PROTECT EXISTING VEGETATION AS DIRECTED BY ENGINEER.
- 28 GRADE EXISTING GROUND TO MATCH BASIN GRADING AS DIRECTED BY THE ENGINEER.
- 29 REMOVE AND DISPOSE OF EXISTING RIPRAP AS DIRECTED BY ENGINEER.
- 30 GRADE EXISTING DITCH TO DRAIN AND MATCH TOP OF 3' CUTOFF WALL. FINISHED CUT/FILL SLOPES SHALL NOT EXCEED 2:1 (H:V).
- 32 CONSTRUCT 3.5' CUTOFF WALL PER SECTION A HEREON.
- 33 REMOVE AND DISPOSE OF EXISTING VEGETATION.
- 35 PLACE 3" OF CLASS 2 AGGREGATE BASE.
- 36 INSTALL CABLE RAILING PER CALTRANS STANDARD DRAWING NO. B11-47.
- 37 PLACE 30" THICK ROCK SLOPE PROTECTION, LIGHT CLASS.
- 38 PLACE MIRAFI1100N FILTER FABRIC OR EQUIVALENT ON BOTTOM AND BOTH SIDES OF ROCK SLOPE PROTECTION.

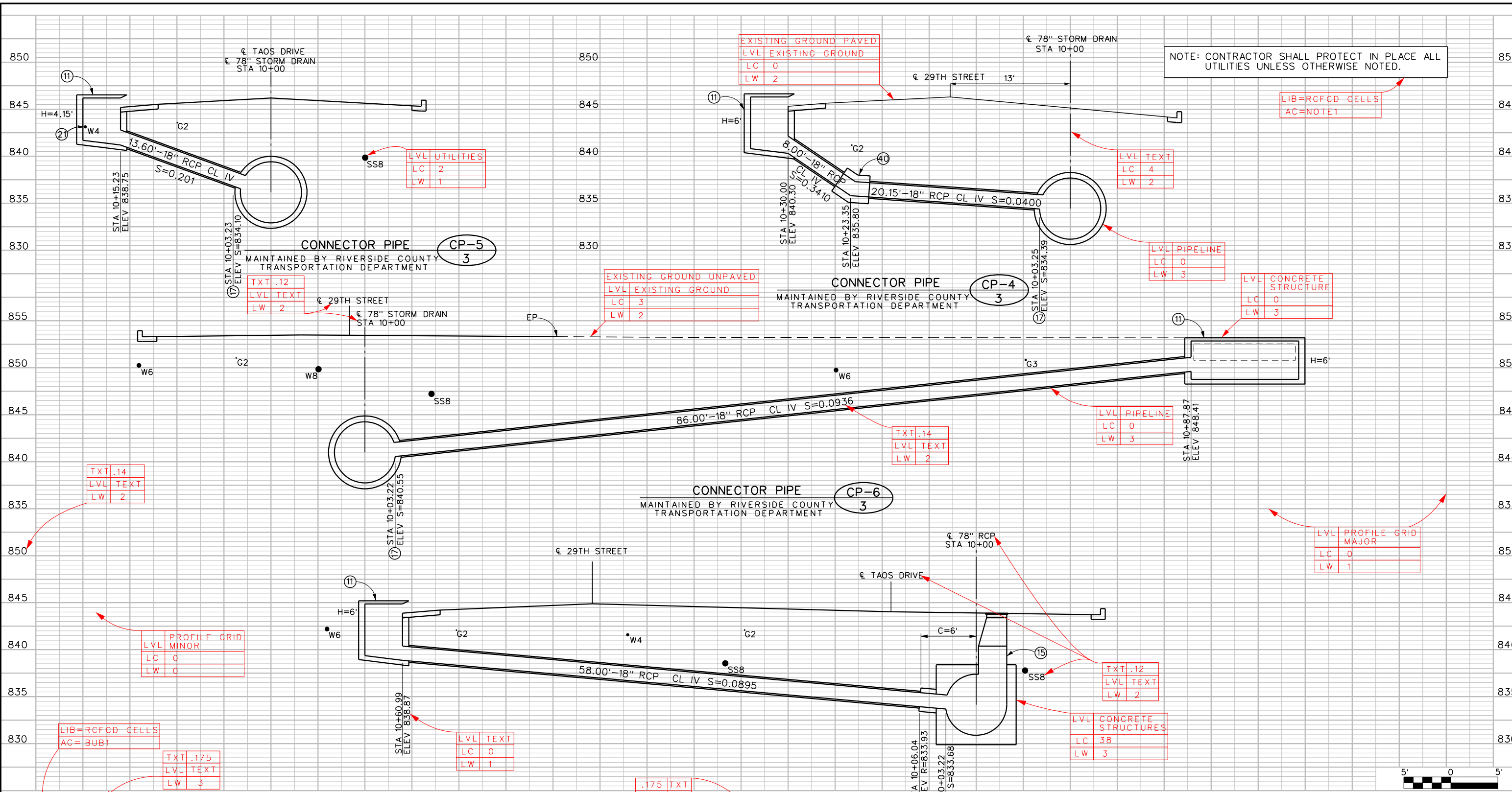
TEMPORARY BENCH MARK Z-7272 NAIL AND R.C.F.C. TAG FLUSH. EL. 638.80	REVISIONS		RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		PROJECT NO. <b>0-0-0000</b> DRAWING NO. <b>0-000</b> SHEET NO. <b>5 OF 11</b>
	DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR		RECOMMENDED FOR APPROVAL BY: _____ APPROVED BY: _____ DATE: _____		
REF.	DESCRIPTION	APPR.	DATE	PB NUMBER: 123456	MORENO - COTTONWOOD <b>BASIN</b> BASIN GRADING

# DRAFTING MANUAL



APPENDIX A-4  
CONNECTOR PIPE PROFILE SHEET EXAMPLE

July 2018



NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED.

LIB=RCFCD CELLS  
AC=NOTE1

EXISTING GROUND PAVED  
LVL EXISTING GROUND  
LC 0  
LW 2

LVL TEXT  
LC 4  
LW 2

LVL PIPELINE  
LC 0  
LW 3

LVL CONCRETE STRUCTURE  
LC 0  
LW 3

EXISTING GROUND UNPAVED  
LVL EXISTING GROUND  
LC 3  
LW 2

LVL PIPELINE  
LC 0  
LW 3

TXT .14  
LVL TEXT  
LW 2

LVL PROFILE GRID MAJOR  
LC 0  
LW 1

LVL PROFILE GRID MINOR  
LC 0  
LW 0

TXT .12  
LVL TEXT  
LW 2

LVL CONCRETE STRUCTURES  
LC 38  
LW 3

LVL TEXT  
LC 0  
LW 1

TXT .175  
LVL TEXT  
LW 3

.175 TXT  
TEXT LVL  
3 LW

INFORMATIONAL NOTE  
ALL TEXT STYLE WILL BE NO. 1 STENCIL UNLESS LABELED OTHERWISE

INFORMATIONAL NOTE  
DO NOT DUPLICATE NOTES/ INFORMATION FROM OTHER SHEETS

- NOTES**
- 11 CONSTRUCT CATCH BASIN PER RIVERSIDE COUNTY STD NO. 300.
  - 15 CONSTRUCT MH NO. 4 PER STD MH254.
  - 17 CONSTRUCT JS NO.4 PER STD JS229.
  - 21 TO BE RELOCATED BY OTHERS.
  - 40 CONSTRUCT CONCRETE COLLAR PER STD M803.

COUNTY OF RIVERSIDE  
TRANSPORTATION DEPARTMENT  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_



REVISIONS	DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT  
DESIGNED BY: ENGINEER  
DRAWN BY: TECHNICIAN  
CONSTR. SET: MNTH DAY, YR  
PB NUMBER: 123456  
RECOMMENDED FOR APPROVAL BY: \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

**BELLTOWN LINE D**  
STAGE 1  
CONNECTOR PIPE PROFILES

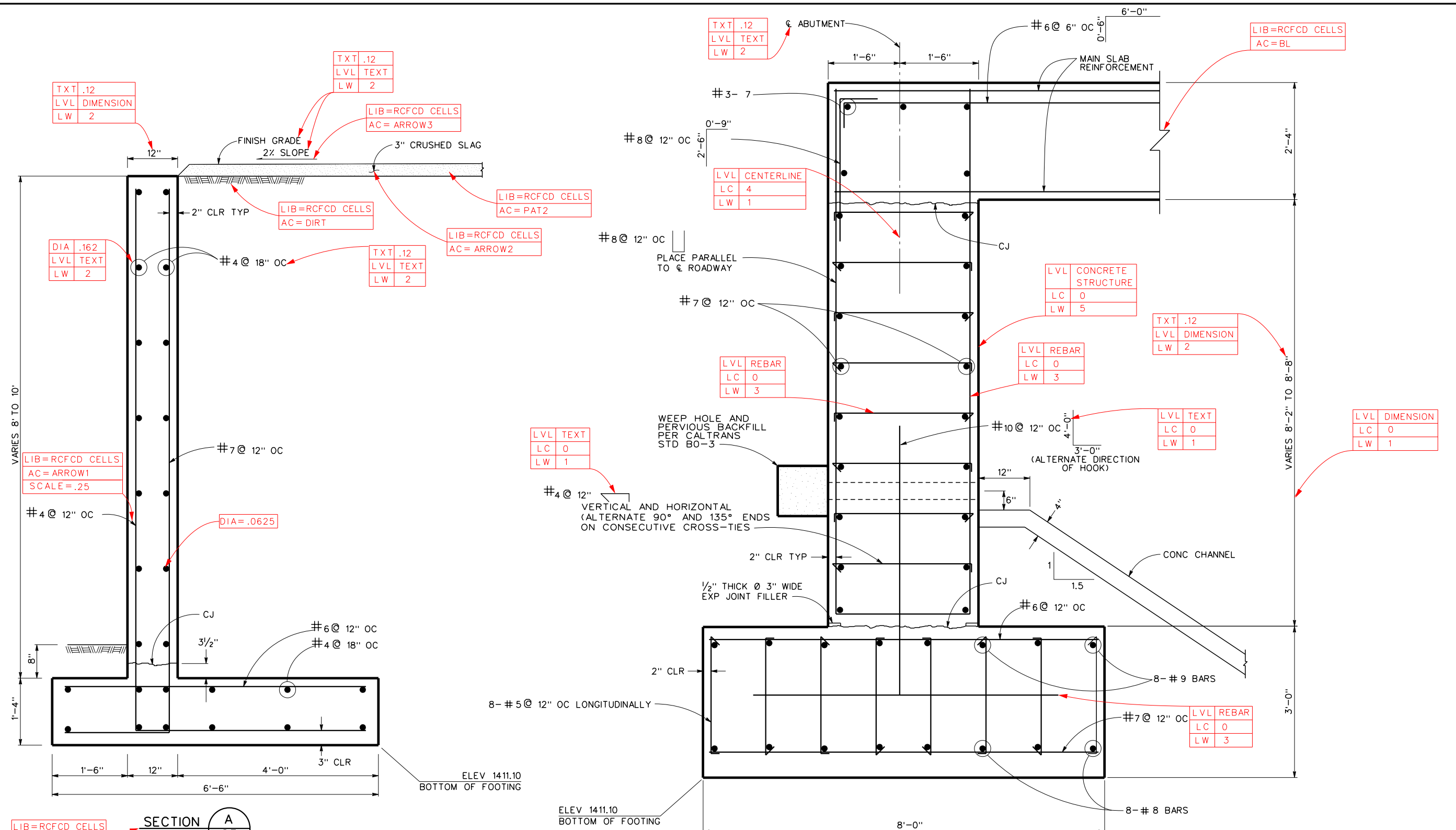
PROJECT NO. 0-0-0000  
DRAWING NO. 0-000  
SHEET NO. 6 OF 11

# DRAFTING MANUAL



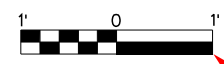
APPENDIX A-5  
DETAIL SHEET EXAMPLE

July 2018



LIB=RCFCD CELLS  
AC=DETAIL

SECTION **A**  
-25-



LIB=RCFCD CELLS  
AC=01SC

SECTION **B**  
-25-



**INFORMATIONAL NOTE**  
NO HATCH PATTERNS SHALL BE USED WHERE REINFORCING STEEL IS PROPOSED

**INFORMATIONAL NOTE**  
ALL TEXT STYLE WILL BE NO. 1 STENCIL UNLESS LABELED OTHERWISE

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT APPROVED BY: _____ DATE: _____		REVISIONS <table border="1"> <tr><th>NO.</th><th>DESCRIPTION</th><th>DATE</th></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>		NO.	DESCRIPTION	DATE										RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR DATE: _____ PB NUMBER: 123456		RECOMMENDED FOR APPROVAL BY: _____ APPROVED BY: _____ DATE: _____		<b>PERRIS VALLEY MDP</b> <b>LINE J</b> <b>STAGE 3</b> STRUCTURAL DETAILS		PROJECT NO. <b>0-0-000</b> DRAWING NO. <b>0-000</b> SHEET NO. <b>7 OF 11</b>	
NO.	DESCRIPTION	DATE																					

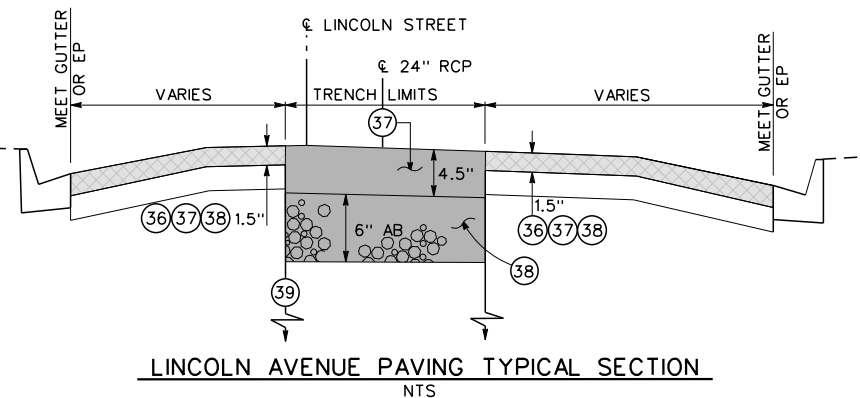
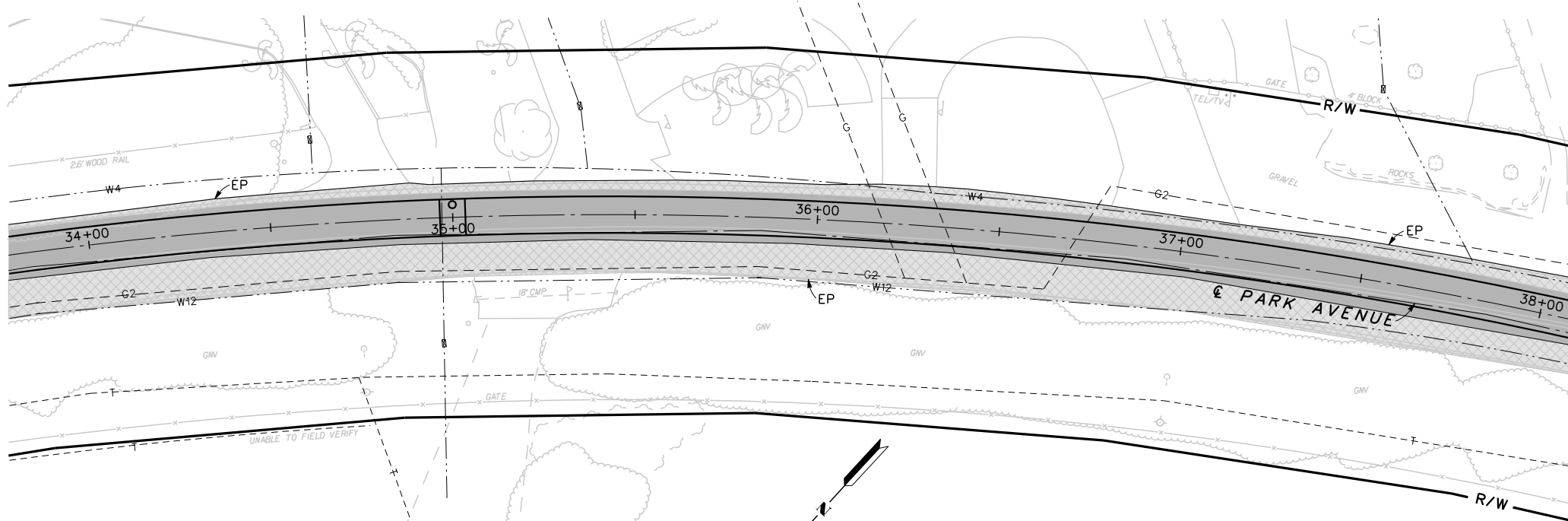


# DRAFTING MANUAL



APPENDIX A-6  
PAVING SHEET EXAMPLE

July 2018



LVL	FILL SHAPES
LC	0
LW	0
RGB FILL	225,225,225

LVL	PATTERNS
LC	0
LW	0
	45° CROSS HATCH

HMA GRIND / OVERLAY LIMITS

LVL	FILL SHAPES
LC	0
LW	0
RGB FILL	180,180,180

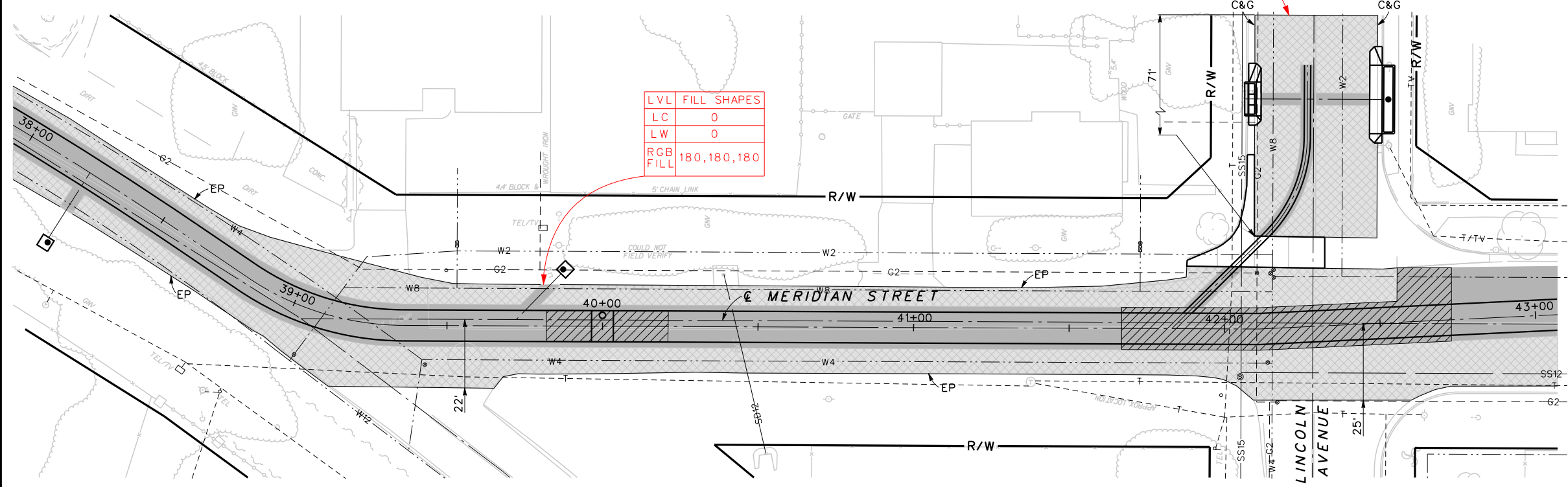
LVL	HATCHING
LC	0
LW	0
	45° HATCH

HMA AND AB REPLACEMENT WITHIN TRENCH LIMITS

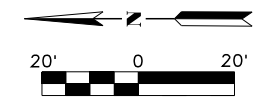
SUPPLEMENT PATTERNS (USE AS NEEDED)

LVL	HATCHING
LC	0
LW	0
	60° HATCH

LVL	FILL SHAPES
LC	0
LW	0
RGB FILL	225,225,225



LVL	FILL SHAPES
LC	0
LW	0
RGB FILL	180,180,180



- NOTES**
- (36) GRIND EXISTING ASPHALT TO THE DEPTH SHOWN.
  - (37) PAVE WITH 'TYPE A' HOT MIX ASPHALT.
  - (38) PLACE 'CLASS 2' AGGREGATE BASE.
  - (39) SEE TYPICAL EARTHWORK AND PAYLINE DETAIL, SHEET 27.
  - 42 PROTECT IN PLACE ALL MANHOLES/VALVES. ADJUST TO GRADE AS REQUIRED.
  - 43 INSTALL/REPLACE ALL DISTURBED STRIPING, YELLOW CENTERLINE, WHITE EDGE LINES AND REFLECTIVE PAVEMENT.
  - 44 ALL SIGNING, STRIPING AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH SECTION 84 OF THE CALTRANS STANDARD SPECIFICATIONS (LATEST EDITION) AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

<b>CITY OF HEMET</b> APPROVED BY: CITY ENGINEER DATE: _____	Don't Dig...Until You Call U.S.A. Toll Free <b>1-800-227-2600</b> for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG	<b>REVISIONS</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REF.</th> <th>DESCRIPTION</th> <th>APPR.</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	REF.	DESCRIPTION	APPR.	DATE													<b>RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT</b> DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR PB NUMBER: 123456 RECOMMENDED FOR APPROVAL BY: _____ APPROVED BY: _____ DATE: _____	<b>LITTLE LAKE MDP LINE B STAGE 1</b> PAVING AND EARTHWORK PLAN STA 34+00 TO STA 43+00 PROJECT NO. 0-0-0000 DRAWING NO. 0-000 SHEET NO. 8 OF 11
REF.	DESCRIPTION	APPR.	DATE																	

# DRAFTING MANUAL



## APPENDIX A-7

### TRAFFIC CONTROL / DETOUR SHEET EXAMPLES

July 2018

LEGEND	
•	CONES
■	CONSTRUCTION SIGNS
+++	TYPE III BARRICADE
←	DIRECTION OF TRAVEL
▨	CONSTRUCTION AREA
⇨	FLASHING ARROW SIGN
○○○○	CRASH CUSHION
—	TEMPORARY RAILING (TYPE K) CALTRANS STD T3A
M4-10(RT)	DETOUR RIGHT (INSIDE ARROW)
M4-10(LT)	DETOUR LEFT (INSIDE ARROW)
R3-1	NO RIGHT TURN
R3-2	NO LEFT TURN
R3-3	NO TURN
R5-1	DO NOT ENTER
R9-9	SIDEWALK CLOSED
R9-11A	SIDEWALK CLOSED - CROSS HERE
R11-2	ROAD CLOSED
W20-1	ROAD WORK AHEAD
W20-2	DETOUR AHEAD
W20-3	ROAD CLOSED AHEAD

LIB=RCFCD CELLS  
AC=BAR3

LIB=RCFCD CELLS  
AC=FLOW

LIB=RCFCD CELLS  
AC=FAS

LVL	DIMENSION
LC	0
LW	3

TXT	.12
LVL	TEXT
LW	2

LVL	TRAFFIC SYMBOLS
LC	0
LW	2

LIB=RCFCD CELLS  
AC=CONES

TXT	.14
LVL	TEXT
LW	2

LIB=RCFCD CELLS  
AC=K-RAIL

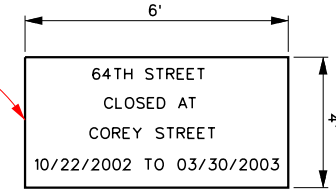
TXT	.20
LVL	TEXT
LW	3

LIB=RCFCD CELLS  
AC=NOTES

**NOTES**

- THESE ARE THE MINIMUM TRAFFIC CONTROL REQUIREMENTS. ADDITIONAL TRAFFIC CONTROL MAY BE REQUIRED TO FACILITATE PUBLIC SAFETY AND TRAFFIC FLOW IF DEEMED NECESSARY BY THE ENGINEER OR RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT.
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CALIFORNIA MUTCD MONTH DAY, 20\_\_ EDITION.)
- SPECIAL CONSTRUCTION SIGNS SHALL BE MANUFACTURED USING MINIMUM 3" UPPER CASE BLACK LETTERS AND A BLACK BORDER ON AN ORANGE REFLECTIVE BACKGROUND.
- FLASHING YELLOW BEACONS, TYPE B, SHALL ILLUMINATE ALL C18 SIGNS AND TYPE III BARRICADES USED AT THE WORK AREA DURING HOURS OF DARKNESS.
- ALL TRENCHES SHALL BE BACK FILLED, PLATED, OR OTHERWISE ADEQUATELY PROTECTED FROM PUBLIC ACCESS AT THE END OF EACH WORK DAY.
- PRIVATE PROPERTY AND EMERGENCY ACCESS SHALL BE MAINTAINED AT ALL TIMES.
- SPECIAL CONSTRUCTION SIGNS SHALL BE POSTED A MINIMUM OF 1 WEEK PRIOR TO CLOSING THE ROADWAY.
- ADDITIONAL "STOP" SIGNS MAY BE NEEDED IF EQUIPMENT/WORKERS ARE BLOCKING THEM FROM VIEW.
- POST "NO PARKING" DATE/TIME THROUGH WORK ZONES.

**INFORMATIONAL NOTE**  
SPECIAL CONSTRUCTION SIGN  
WORDING TO BE SHOWN  
ON PLANS IF APPLICABLE



**SPECIAL SIGN NO. 1 DETAIL**

TXT	.175
LVL	TEXT
LW	3

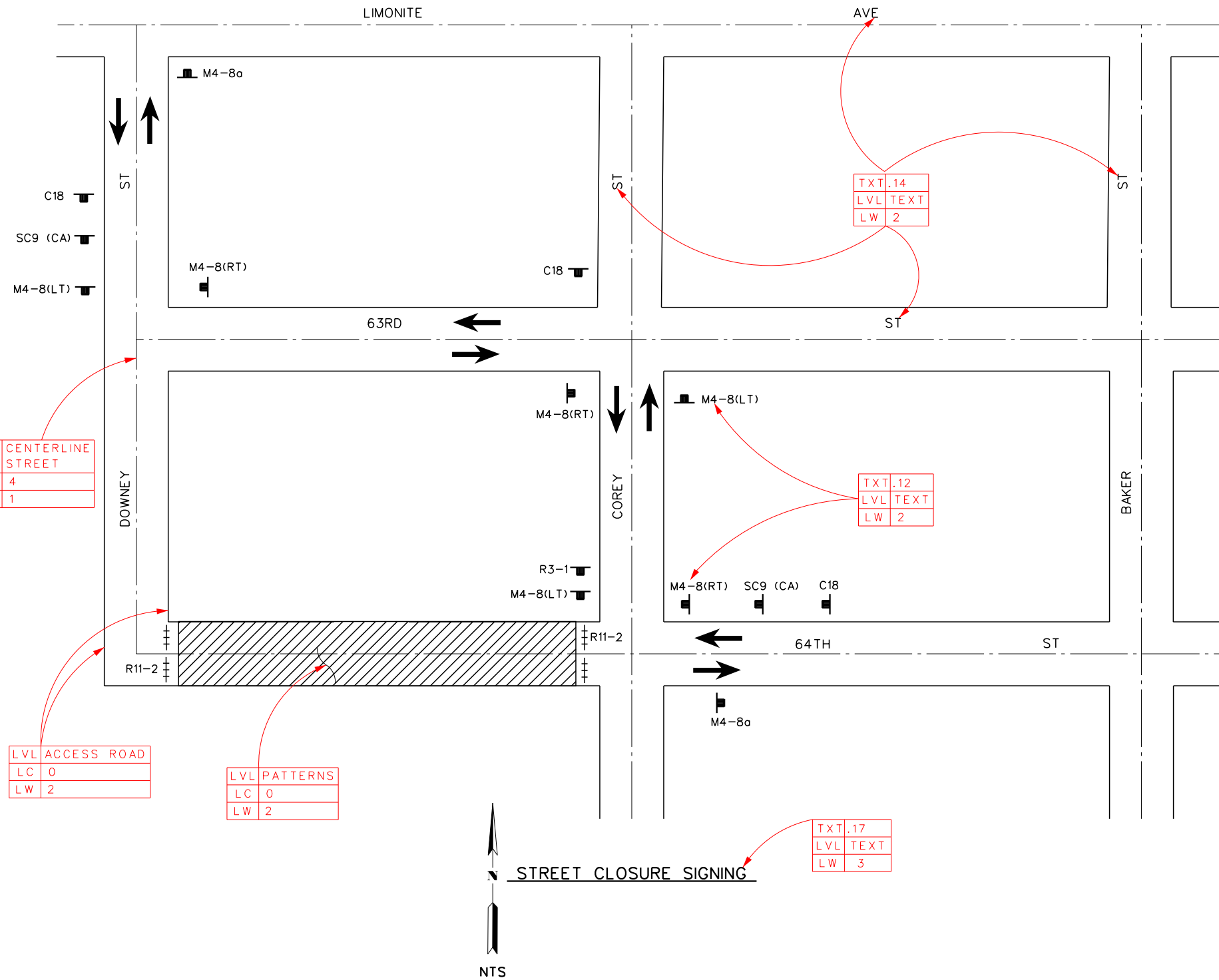
**FLORIDA AVENUE LANE CLOSURE**

NTS

LIB=RCFCD CELLS  
AC=SIG1

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT APPROVED BY: _____ DATE: _____	CITY OF HEMET APPROVED BY: _____ CITY ENGINEER DATE: _____		REVISIONS		RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		PROJECT NO. 0-0-0000 DRAWING NO. 0-0000 SHEET NO. TC1 OF TC6
			DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR P8 NUMBER: 123456	RECOMMENDED FOR APPROVAL BY: _____ DATE: _____	APPROVED BY: _____ DATE: _____		

**INFORMATIONAL NOTE**  
 ALL TEXT STYLE WILL BE NO. 1 STENCIL UNLESS LABELED OTHERWISE



LIB=RCFCD CELLS  
AC= SIGN

LIB=RCFCD CELLS  
AC= BAR 3

LIB=RCFCD CELLS  
AC= ARROW 1

**LEGEND**

- TRAFFIC CONTROL SIGNS
- TYPE III BARRICADE
- DIRECTION OF TRAVEL
- CONSTRUCTION AREA
- SC9 (CA) DETOUR AHEAD
- R11-2 ROAD CLOSED
- M4-8 DETOUR
- M4-8a END DETOUR
- C18 ROAD CONSTRUCTION AHEAD
- R3-1 NO RIGHT TURN
- R3-2 NO LEFT TURN
- C13 END CONSTRUCTION

TXT.12  
LVL TEXT  
LW 2

TXT.21  
LVL TEXT  
LW 3

TXT.20  
LVL TEXT  
LW 3

LIB=RCFCD CELLS  
AC= NOTES

**NOTES**

- THESE ARE THE MINIMUM TRAFFIC CONTROL REQUIREMENTS. ADDITIONAL TRAFFIC CONTROL MAY BE REQUIRED TO FACILITATE PUBLIC SAFETY AND TRAFFIC FLOW IF DEEMED NECESSARY BY THE ENGINEER OR RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT.
- ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CALIFORNIA MUTCD MONTH DAY, 20... EDITION.)
- SPECIAL CONSTRUCTION SIGNS SHALL BE MANUFACTURED USING MINIMUM 3" UPPER CASE BLACK LETTERS AND A BLACK BORDER ON AN ORANGE REFLECTIVE BACKGROUND.
- FLASHING YELLOW BEACONS, TYPE B, SHALL ILLUMINATE ALL C18 SIGNS AND TYPE III BARRICADES USED AT THE WORK AREA DURING HOURS OF DARKNESS.
- ALL TRENCHES SHALL BE BACK FILLED, PLATED, OR OTHERWISE ADEQUATELY PROTECTED FROM PUBLIC ACCESS AT THE END OF EACH WORK DAY.
- PRIVATE PROPERTY AND EMERGENCY ACCESS SHALL BE MAINTAINED AT ALL TIMES.
- SPECIAL CONSTRUCTION SIGNS SHALL BE POSTED A MINIMUM OF 1 WEEK PRIOR TO CLOSING THE ROADWAY.
- ADDITIONAL "STOP" SIGNS MAY BE NEEDED IF EQUIPMENT/WORKERS ARE BLOCKING THEM FROM VIEW.
- POST "NO PARKING" DATE/TIME THROUGH WORK ZONES.

LVL CENTERLINE STREET  
LC 4  
LW 1

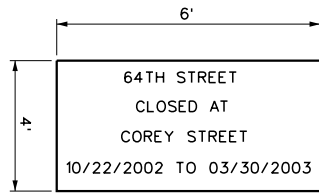
LVL ACCESS ROAD  
LC 0  
LW 2

LVL PATTERNS  
LC 0  
LW 2

TXT.17  
LVL TEXT  
LW 3

LIB=RCFCD CELLS  
AC= NORTH

LIB=RCFCD CELLS  
AC= SIG1



**INFORMATIONAL NOTE**  
 SPECIAL CONSTRUCTION SIGN WORDING TO BE SHOWN ON PLANS IF APPLICABLE

**SPECIAL SIGN NO. 1 DETAIL**

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT APPROVED BY: _____ DATE: _____		TEMPORARY BENCH MARK	REVISIONS	RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	PROJECT NO. 0-0-0000 DRAWING NO. 0-000 SHEET NO. TC2 OF TC6
DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR		REF. DESCRIPTION APPR. DATE	RECOMMENDED FOR APPROVAL BY: _____ DATE: _____	APPROVED BY: _____ DATE: _____	PEDLEY - 64TH STREET STORM DRAIN TRAFFIC DETOUR PLAN
PB NUMBER: 123456					

# DRAFTING MANUAL



## APPENDIX A-8 MAINTENANCE PLAN SHEET EXAMPLE

July 2018

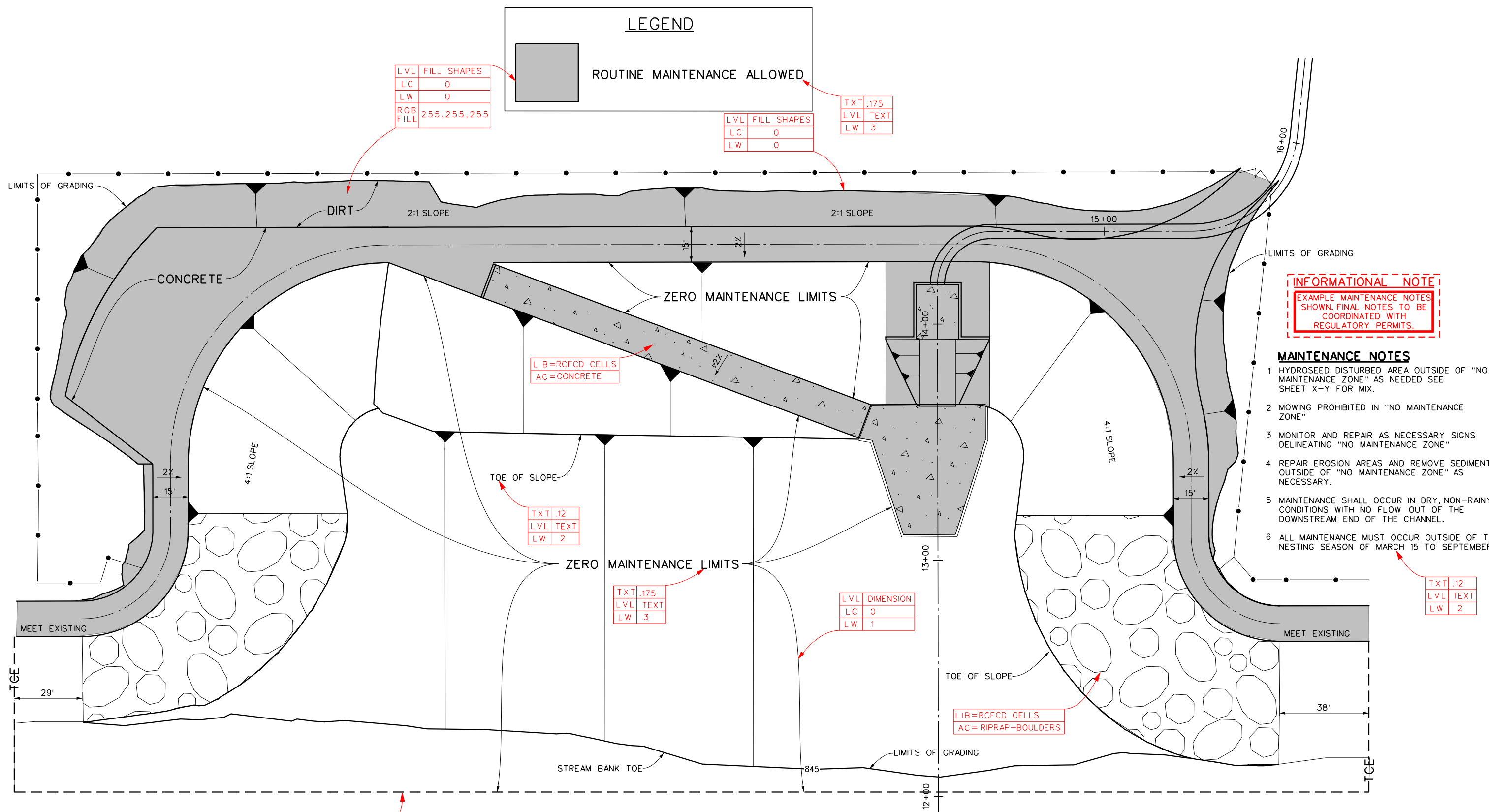
**LEGEND**

ROUTINE MAINTENANCE ALLOWED

LVL	FILL SHAPES
LC	0
LW	0
RGB	255,255,255
FILL	

LVL	FILL SHAPES
LC	0
LW	0

TXT	.175
LVL	TEXT
LW	3



**INFORMATIONAL NOTE**  
 EXAMPLE MAINTENANCE NOTES SHOWN. FINAL NOTES TO BE COORDINATED WITH REGULATORY PERMITS.

**MAINTENANCE NOTES**

- 1 HYDROSEED DISTURBED AREA OUTSIDE OF "NO MAINTENANCE ZONE" AS NEEDED SEE SHEET X-Y FOR MIX.
- 2 MOWING PROHIBITED IN "NO MAINTENANCE ZONE"
- 3 MONITOR AND REPAIR AS NECESSARY SIGNS DELINEATING "NO MAINTENANCE ZONE"
- 4 REPAIR EROSION AREAS AND REMOVE SEDIMENT OUTSIDE OF "NO MAINTENANCE ZONE" AS NECESSARY.
- 5 MAINTENANCE SHALL OCCUR IN DRY, NON-RAINY CONDITIONS WITH NO FLOW OUT OF THE DOWNSTREAM END OF THE CHANNEL.
- 6 ALL MAINTENANCE MUST OCCUR OUTSIDE OF THE NESTING SEASON OF MARCH 15 TO SEPTEMBER 15.

LIB=RCFCD CELLS  
 AC=CONCRETE

TXT .12  
 LVL TEXT  
 LW 2

TXT .175  
 LVL TEXT  
 LW 3

LVL DIMENSION  
 LC 0  
 LW 1

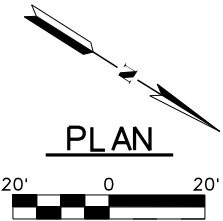
LIB=RCFCD CELLS  
 AC=RIPRAP-BOULDERS

TXT .12  
 LVL TEXT  
 LW 2

LVL TCE  
 LC 3  
 LW 3

LIB=RCFCD CELLS  
 AC=SIG1

ENVIRONMENTALLY SENSITIVE AREA



COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT APPROVED BY: _____ DATE: _____	Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG	REVISIONS <table border="1"> <tr><th>NO.</th><th>DESCRIPTION</th><th>APPR.</th><th>DATE</th></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	NO.	DESCRIPTION	APPR.	DATE													RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		PROJECT NO. 0-0-0000 DRAWING NO. 0-0000 SHEET NO. 11 OF 11
			NO.	DESCRIPTION	APPR.	DATE															
DESIGNED BY: ENGINEER DRAWN BY: TECHNICIAN CONSTR. SET: MNTH DAY, YR P8 NUMBER: 123456	RECOMMENDED FOR APPROVAL BY: _____ DATE: _____	APPROVED BY: _____ DATE: _____	TEMESCAL CREEK FOSTER RD SD STAGE 1 MAINTENANCE PLAN																		

# DRAFTING MANUAL



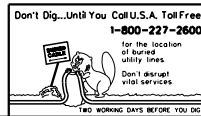
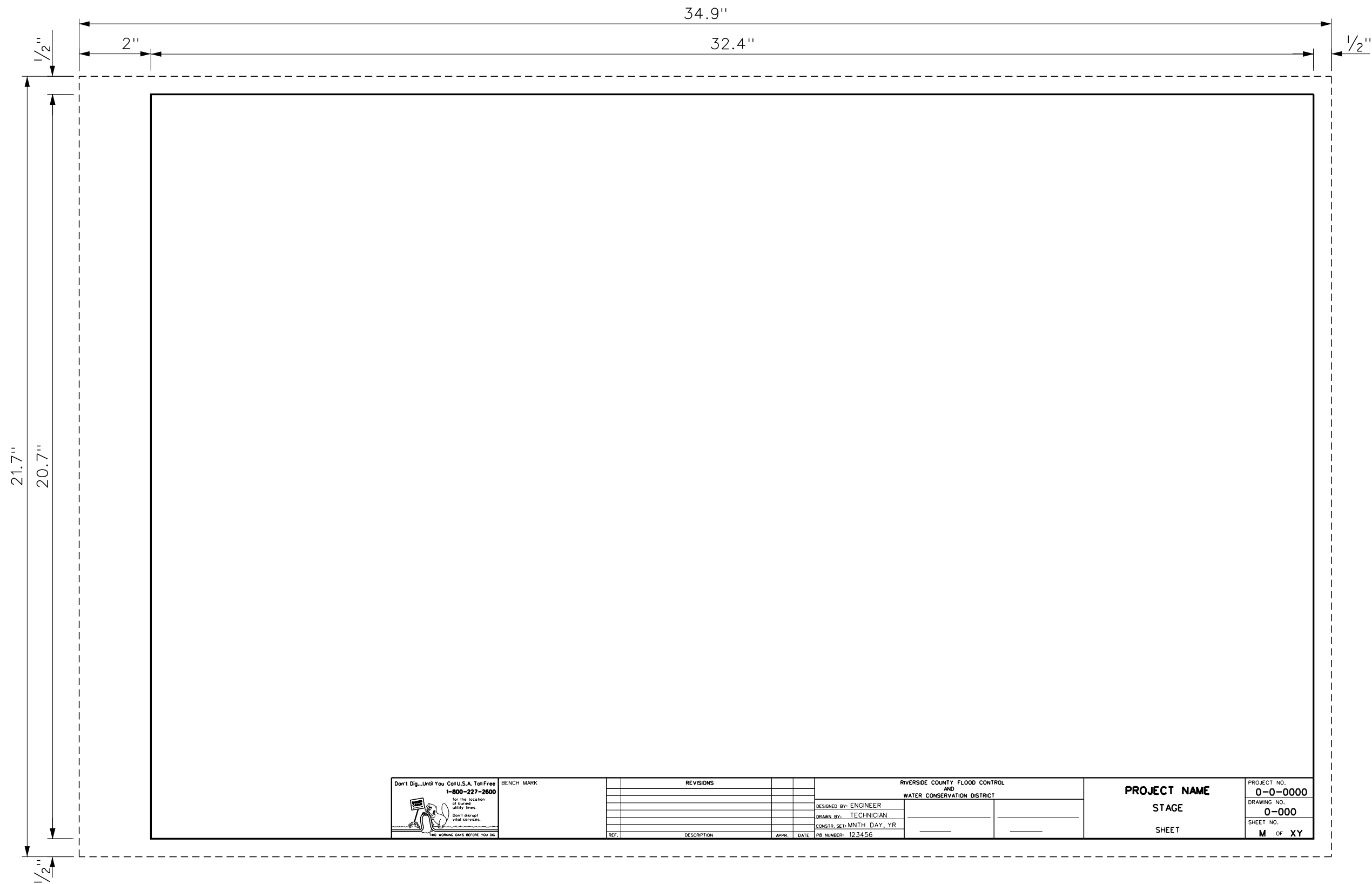
## APPENDIX B BORDER SHEET

July 2018



# BASE SHEET SEED FILE

MICROSTATION FILE NAME = "RCFCD BORDER.DGN"



BENCH MARK	
------------	--

REF.	DESCRIPTION	APPR.	DATE

DESIGNED BY: ENGINEER		RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
DRAWN BY: TECHNICIAN			
CONSTR. SET: MNTH DAY, YR			
PB NUMBER: 123456			

<b>PROJECT NAME</b>
STAGE
SHEET

PROJECT NO. 0-0-0000
DRAWING NO. 0-000
SHEET NO. M OF XY

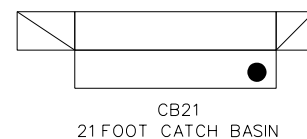
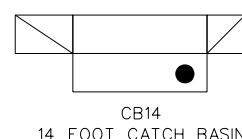
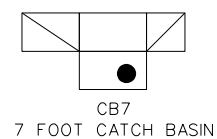
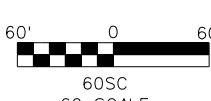
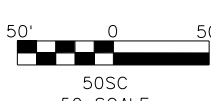
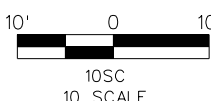
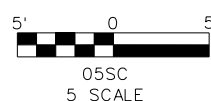
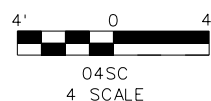
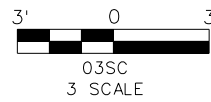
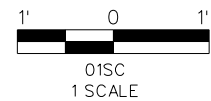
# DRAFTING MANUAL



## APPENDIX C

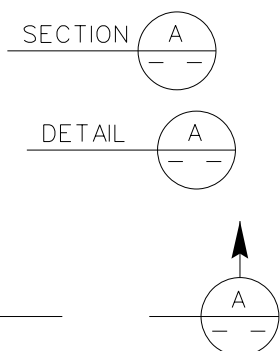
### CELLS

July 2018



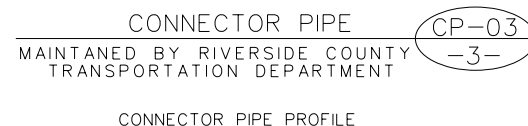
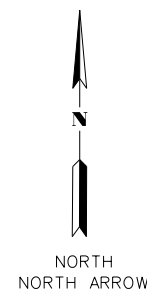
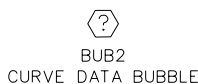
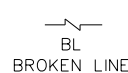
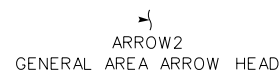
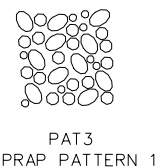
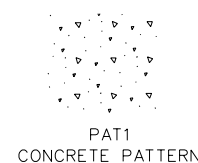
CURVE DATA		
	A	B
Δ	90° 02' 10"	90° 04' 39"
R	45.00'	45.00'
T	45.03'	45.06'
L	70.71'	70.75'
BC	STA. 17+18.57	STA. 19+45.86
EC	STA. 17+89.29	STA. 20+16.61
PI	N 23124247.700	N 23122718.700
	E 62130072.800	E 62132064.800

CURVE CENTERLINE CURVE DATA



DETAIL DETAIL AND SECTION

$f_c =$   
 $f'_c =$   
 $f_s =$   
 $f_y =$   
STRESS ALLOWABLE CONC. STRESS

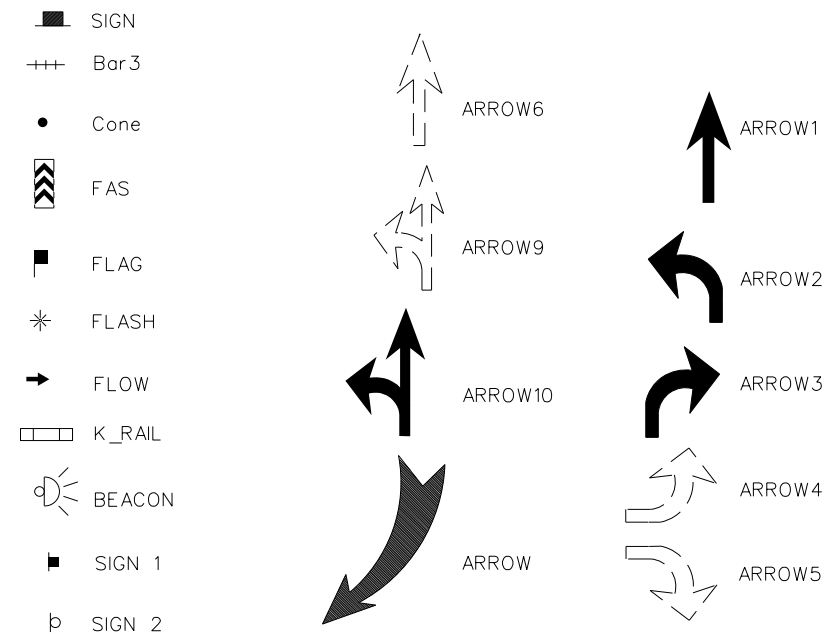


CONNECTOR PIPE PROFILE

GENERAL NOTES

- BEDDING AND PAYLINES ARE SHOWN ON RCFC STANDARD DRAWING M815 UNLESS SHOWN OTHERWISE ON THESE PLANS.
- ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION.
- ALL CHANNEL/STORM DRAIN REFERENCES AND CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
- TOPOGRAPHY BY DIGITAL PHOTOGRAMMETRIC METHODS. AERIAL PHOTOGRAPHS TAKEN AT AN ALTITUDE NOT TO EXCEED A FLYING HEIGHT TO CONTOUR INTERVAL RATIO OF 1800. PHOTOGRAPHY DATED 00/00/0000.
- THE VERTICAL DATUM IS DERIVED FROM NAVD 88 (COH 88). THE HORIZONTAL DATUM IS DERIVED FROM NAD83(YEAR) EPOCH 2011.0, AND CALIFORNIA STATE PLANE, ZONE 6
- STANDARD DRAWINGS CALLED FOR ON THE PLAN & PROFILE SHALL CONFORM TO RCFC & WCD STD DRAWINGS, OR CALTRANS/CITY/COUNTY STANDARD PLANS.
- ELEVATIONS AND LOCATIONS OF UTILITIES WERE OBTAINED FROM AVAILABLE INFORMATION AND ARE SHOWN APPROXIMATELY ON THESE PLANS. 48 HOURS BEFORE EXCAVATION CALL UNDERGROUND SERVICE ALERT AT 1-800-227-2600. ALL UTILITIES SHALL BE PROTECTED IN PLACE EXCEPT AS NOTED ON PLANS AND SPECIFICATIONS.
- THE CONTRACTOR IS REQUIRED TO CONTACT ALL UTILITY AGENCIES REGARDING TEMPORARY SUPPORT AND SHORING REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
- ALL OPENINGS RESULTING FROM CUTTING OR PARTIAL REMOVAL OF EXIST. CULVERTS, PIPES, OR SIMILAR STRUCTURES TO BE ABANDONED, SHALL BE SEALED AT BOTH ENDS WITH 6" MINIMUM CLASS "B" CONCRETE.
- UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT ASPHALT MIX OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
- ALL RECONSTRUCTION, RESURFACING AND PAVEMENT DELINEATION, CURBS, SIDEWALKS AND OTHER IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND AT THE SAME LOCATIONS AND ELEVATIONS AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
- ⊕ INDICATES APPROX. SOIL BORING LOCATION PER SOILS REPORT DATED 00/00/0000.
- ALL JUNCTION STRUCTURES SHALL BE JS NO.0 PER RCFC STD JS000, A=90°, UNLESS OTHERWISE NOTED.

GENERAL NOTES NOTES FOR TITLE SHEET



HYDRAULIC DATA  
 $Q_{10} =$  cfs  
 $V_{10} =$  fps  
HD10  
HYDRAULIC DATA 10

HYDRAULIC DATA  
 $Q_{100} =$  cfs  
 $V_{100} =$  fps  
HD100  
HYDRAULIC DATA 100

CURVE DATA	①	②	③	④	⑤	⑥	⑦
R	00.00						
Δ	0° 00' 00"						
L	00.00						
T	00.00						
B.C.	0						
E.C.	0						
P. I.	NORTHING	0000000.000					
	EASTING	0000000.000					

CURVE DATA TABLE  
MULTIPLE CURVE DATA TABLE

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	€ STATION	WALL STATION	STRUCTURE	A	C
CP-01	15+23	15+23	JS NO. 3	90°	5'
CP-02	15+48	15+48	JS NO. 3	90°	5'

TABLE  
MULTIPLE MANHOLE / JUNCTION STRUCTURE DATA TABLE

NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED.

NOTE1  
UTILITY NOTE

PROJECT NAME	PEDLEY - 64TH STREET STORM DRAIN
PROJECT NUMBER	1-0-0139-00
DRAWING NUMBER	1-248
P8 NUMBER	123456
COPO AGREEMENT P8 NUMBER	012345
DATE PLANS SIGNED	00/00/0000
OWNER	RCFC
<ul style="list-style-type: none"> <li>* RCFC</li> <li>* COUNTY</li> <li>* CITY ( BY NAME OF CITY )</li> <li>* CALTRANS</li> <li>* OTHER ( HAVE SPACE TO ENTER DEVELOPER/OWNER NAME )</li> </ul>	
TYPE	UNDERGROUND STORM DRAIN
<ul style="list-style-type: none"> <li>* OPEN CHANNEL</li> <li>* UNDERGROUND STORM DRAIN</li> <li>* BASIN</li> <li>* JURISDICTIONAL DAM</li> <li>* LEVEE</li> <li>* OTHER</li> </ul>	

GIS  
GIS ATTRIBUTE FORM

COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT
APPROVED BY:
DEPUTY DIRECTOR OF TRANSPORTATION
DATE:

SIG1  
CO. OF RIV. SIGNATURE

CITY OF ????
APPROVED BY:
CITY ENGINEER
DATE:

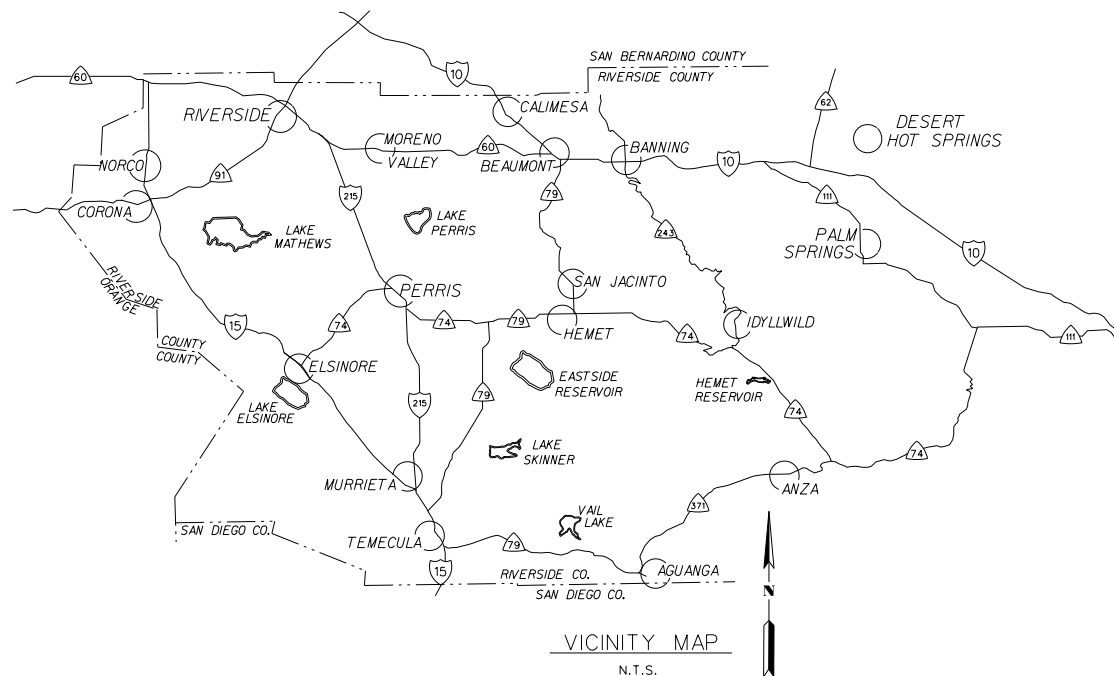
SIG3  
GENERIC SIGNATURE CITY OF

CITY OF RIVERSIDE PUBLIC UTILITIES-WATER DIVISION
APPROVED BY:
DIRECTOR OF UTILITIES
DATE:

SIG2  
CITY OF RIV. SIGNATURE

CITY OF ????
PUBLIC WORKS DEPARTMENT
APPROVED BY:
CITY ENGINEER
DATE:

SIG4  
GENERIC SIGNATURE (PUBLIC WORKS)



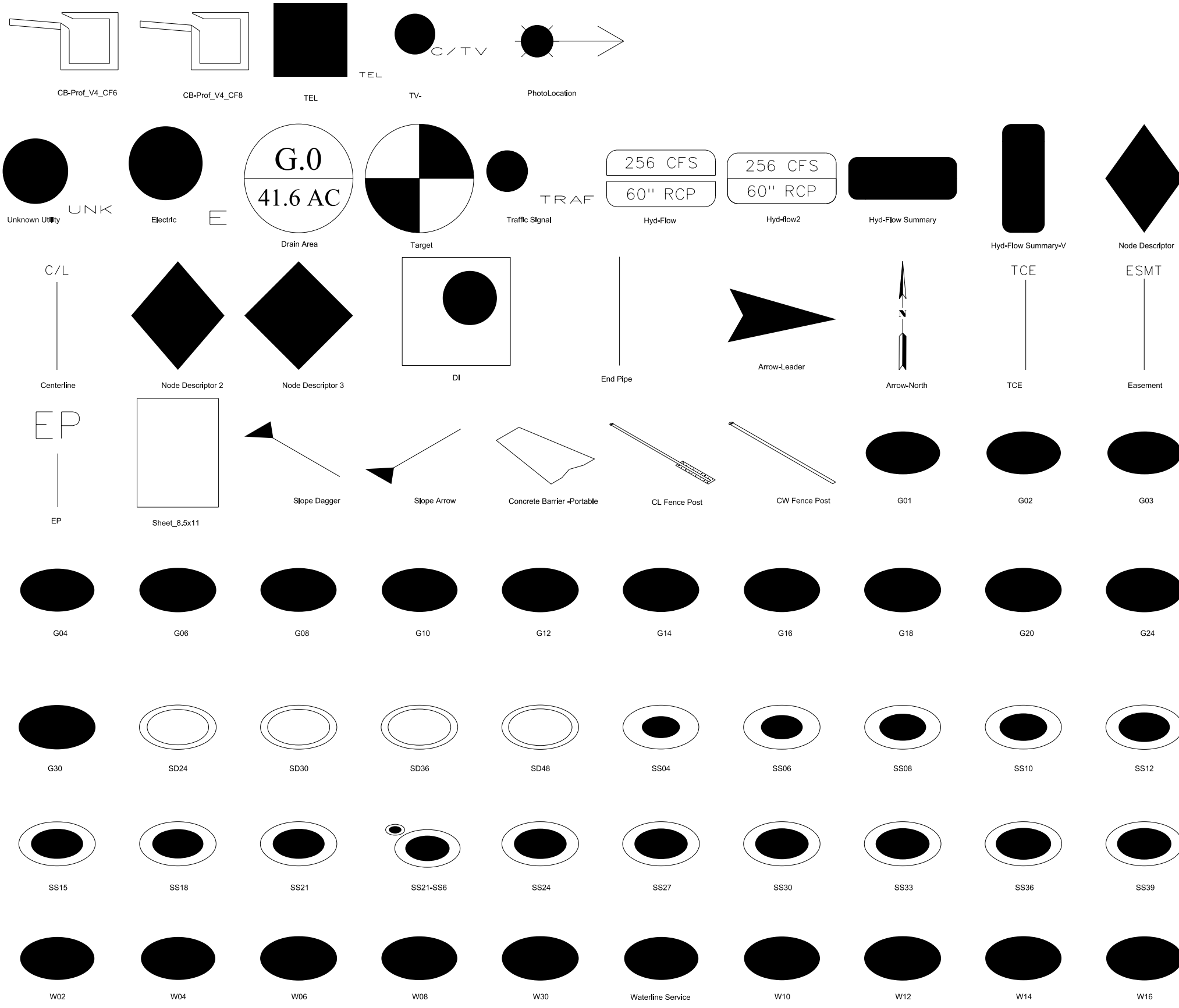
VICNTY  
RIV. CO. VICINITY MAP

★ PRELIMINARY ★  
SUBJECT TO REVISION

PRELIM  
PRELIMINARY STAMP



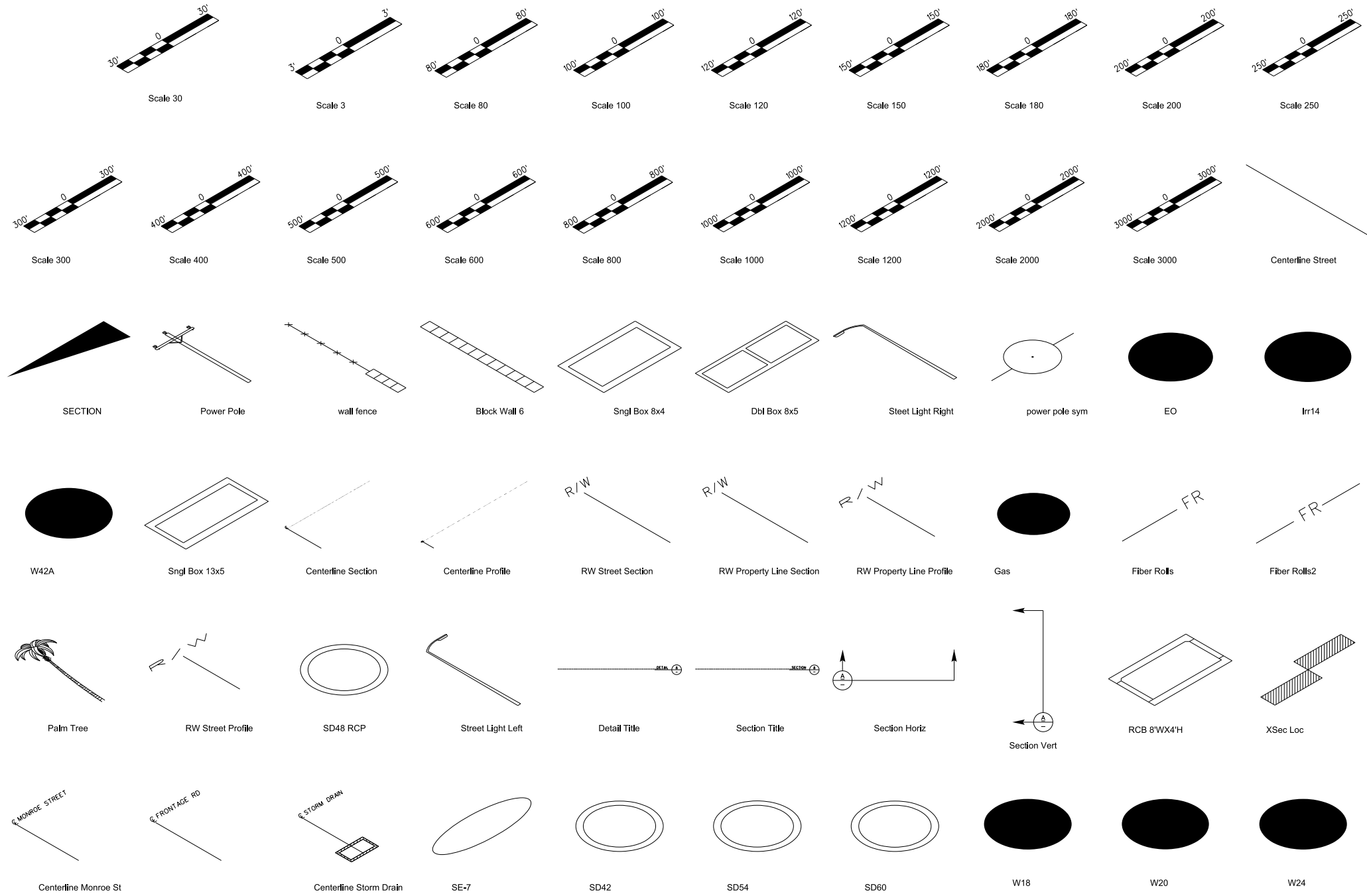
DIG  
DIG ALERT STAMP



## GENERAL NOTES

- 1 THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S M.O.U STANDARD SPECIFICATIONS DATED JUNE 24, 2008, AND THE DISTRICT'S STANDARD MANUAL. FOR THE LATEST DRAWINGS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICT'S WEBSITE.
- 2 CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955.1266 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM THE DISTRICT. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
- 3 CONTACT CONSTRUCTION MANAGEMENT AT 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY THE DISTRICT. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
- 4 ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
- 5 STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
- 6 FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1.800.227.2600.
- 7 ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD 88).
- 8 ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN DATUM (NAD 83), CALIFORNIA COORDINATE SYSTEM (CCS), ZONE 6 AND EPOCH \_\_\_\_\_.
- 9 ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
- 10 ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
- 11 UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
- 12 OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
- 13 PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
- 14 PIPE BEDDING SHALL CONFORM TO THE DISTRICTS STANDARD DRAWING NO. M815 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2,000 PSI) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
- 15 BH-1 INDICATES SOIL BORING LOCATIONS BASED ON THE SOILS REPORT DATED \_\_\_\_\_. LOCATIONS SHOWN ARE APPROXIMATE.
- 16 "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
- 17 CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
- 18 ALL CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
- 19 STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
- 20 THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
- 21 DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT PONDING WATER AND DAMAGE TO ADJACENT PROPERTIES.
- 22 APPROVAL OF THESE PLANS BY THE DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
- 23 THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
- 24 THE CONCRETE COATING ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3-1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSIFOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSIFOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
- 25 CONSTRUCTION JOINTS FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE PLACED ACCORDING TO THE DISTRICT STANDARD DRAWING NO. BOX 401.

DEVELOPERS GENERAL NOTES  
NOTES FOR TITLE SHEET



# DRAFTING MANUAL



## APPENDIX D LEVELING GUIDE

July 2018

# DRAFTING MANUAL



Level Name	Description
Access Road	Proposed Access Roads, Edge of Road, Edge of Pavement
Aerial	Aerial Maps, Raster, All Images
Alignment Bearings	Bearings and Distances Along Alignment
Alignment Cardinal Stations	BC and EC Station Callouts
Alignment Centerline	Proposed Centerline Alignment
Alignment Curve Data	Inroads Generated Curve Data
Alignment Event Points	Specific Pts Adjacent to & Along ALG, Ex. Potholes
Alignment Mainline	Proposed ALG Line work, Walls of Pipe, etc.
Alignment Major Stations	Mainline Stations and Tic Marks
Alignment Points	POB, POE, PI's, BC's and EC Symbols
Alignment Radius + A	Curve Radius Callouts, Usually Not Shown
Alignment Station Equations	Ahead and Back Stations
Basin	Water and Debris Basins
Berm	Asphalt, Earth, and Concrete Berms
Border 20 Scale Full Length Grid Major	Screened Major Prof Grid
Border 20 Scale Full Length Grid Minor	Screened Minor Prof Grid
Border 20 Scale Grid Major	Screened Major Prof Grid
Border 20 Scale Grid Minor	Screened Minor Prof Grid
Border 5 Scale Grid Major	Screened Major Prof Grid
Border 5 Scale Grid Minor	Screened Minor Prof Grid
Border 50 Scale Grid Major	Screened Major Prof Grid
Border 50 Scale Grid Minor	Screened Minor Prof Grid
Border App Sig	Border Approval Signatures
Border Bench	Border Bench Mark Information
Border City	Border City or County Signature Block
Border Des Sig	Border Design Signatures
Border Dig	Border Dig Alert Stamp
Border General Notes	General Notes on title Sheets

July 2018



# DRAFTING MANUAL



Level Name	Description
Border Index List	Project Index List
Border Line work	Border Standard Line work
Border Plot	Border Plot Shape
Border Revision	Border Revision Symbol, Rev Cloud, and Text
Border Stamp 1	General Managers Stamp
Border Stamp 2	Principal Engineer Stamp
Border Stamp 3	Senior Engineer Stamp
Border Stamp 4	Project Engineer Stamp
Border Stg Dwg List	RCFC Std Dwg List
Border Title	Border Title Text
Border Vic Map	Line work for Vicinity Map
Border Vic Map Text	Text Callouts for Vicinity Map
Border Vic Map Title	Vicinity Map Title Text, North Arrow, and Arrows
Bridge	Existing and Proposed Bridge Structures
Building	Building Outlines, roof Lines and Pad Outlines
Catch Basin	Existing and Proposed Catch Basins
Channel	Concrete and Earth Channels
Comments Topo	
Concrete Structure	Any Non Specified Concrete Structures
Contours Major	Major Contours Spacing Varies Per Project
Contours Minor	Minor Contours Spacing Varies Per Project
Contours Text	Major Contour Elevation Labels
Control Point	Control Points, Monument Points, and Relative Text
Cross Section Grid Major	Screened Major Gridline for Sections
Cross Section Grid Minor	Screened Minor Gridline for Sections
Cross Section Indicators	Section Callouts with Cross Reference Bubbles and Arrows
Culvert	Any unaccounted for Culverts
Curb	Any Curb Data, TC, Back of Curb and FL
Daylight Limits	Limits of Grading and Limits of DTM Surface Information

July 2018

# DRAFTING MANUAL



Level Name	Description
Default	
Dimensions	All Automatic Dimensioning
Dirt Road	All New Dirt Roads and Any Existing Dirt Road Outlines from Mapping
Driveway	Proposed Driveway Improvements at RCFC Facilities
Drop Inlet	Fabricated and Prefabricated Drop Inlets
Edge Of Pavement	Edge of Existing and Proposed Pavement
Fence	Chain Link Fence, Wood Fence, Barbed Wire Fence
Fill Shapes	Closed Filled Shapes
Fire Hydrant	Existing and Relocated Fire Hydrant
Flowline	Proposed Design Flowlines
Guard Rail	Guard Rails, Guard posts, Concrete Barrier
Gutter	Gutter line
Hatching	Hatching that plots black
Lights	Proposed Lights and Wiring for New Systems
Manhole	Any New Manholes
Matchlines	Profile and Plan Match lines
Median	Existing or Proposed Medians Affecting Project
Miscellaneous	Misc Topo Features and Various Elements
Notes	Notes that will be turned off during printing of the project
Patterns	Detail and Plan Patterns used on the Project-will plot grey
Piping Above Ground	Above Ground Irrigation or Drainage Lines
Power Poles	All Existing Power Poles and Proposed New Poles and Relocations
Preliminary Stamp	Preliminary Stamp, Include Project Completion Percentage
Profile Alignment	Profile Invert, or other Controlled Alignment
Profile Axis	Profile Axis Lines, Turn Off for P&P Generator
Profile Elevations	Profile Elevation Limits
Profile Existing Ground CL	Existing Ground Above Centerline of Proposed Alignment
Profile Existing Ground RW LT	Existing Ground Left of Improvement at Limits of RW

July 2018

# DRAFTING MANUAL



Level Name	Description
Profile Existing Ground RW RT	Existing Ground Left of Improvement at Limits of Left of Way
Profile HGL Water Surf	Profile hydraulic Grade Line or Existing Water Surface
Profile Legend	Legend of Surfaces Used
Profile Major Grid	Screened Major Prof Grid, Turn Off for P&P Generator
Profile Major Ticks	Major Tick Marks, Turn Off for P&P Generator
Profile Minor Grid	Screened Minor Prof Grid, Turn Off for P&P Generator
Profile Minor Ticks	Major Tick Minor, Turn Off for P&P Generator
Profile Station Bottom	Profile Major Alignment Bottom Station, Turn Off for P&P Generator
Profile Station Top	Profile Major Alignment Top Station
Profile Title	Profile Title
Railroad	Railroad Track, barriers, Signals, etc.
Random Points	Random DTM and COGO Points for Inroads
Rebar	Rebar for Details in Concrete Structures
Retaining Wall	All Walls used as a Retaining Structure
Revisions Blue	Design revision are Printed in Blue
Revisions Red	As-builts will be Printed in Red
Rip Rap	Rip Rap, Shot Crete, Rock Armoring, Dissipating Structure
Road Striping	Existing and Proposed Road Striping
RW Centerline Street	Street Centerlines Shown on Topo
RW Easement Non RCFC	Right of Way Easements, Not Owned by RCFC
RW Easement RCFC	Permanent RCFC Right of Way Easements
RW Easement TCE	Temporary Construction Easement
RW Fee RCFC	RCFC Fee Property RW
RW Property Line	Property Lines for Personal Properties
RW Street	Street Right of Way
Scale Bar	Scale Bars
Section Title	Titles and Descriptions for Cross Sections
Sewer	Sewer Line Line work

July 2018

# DRAFTING MANUAL



Level Name	Description
Shed	Proposed of Existing Shed outlines
Spot Elevations	Spot Elevations and Spot Elevation Text
Storm Drain	Storm Drain Line work
Street Names	
Swale	Concrete and Earth Swales
Text	All Text Placed on Design Drawing
Text Mapping	All Descriptive Text From Mapping
Tick Marks	Tick Marks Shown in Mapping File
TOS	Toe or Top of Slope
Traffic Symbols	Cones, Direction Arrows, Signs, etc. for Traffic Plans
Triangles Existing	Inroads DTM Triangles from Existing Mapping
Triangles Proposed	Inroads DTM Triangles from Design Surface
Triangles Survey	Inroads DTM Triangles from Project Specific Field Survey Data
U - Gas 1 inch	1" Gas Line Shown As 4" For Visibility
U - Gas 10 inch	10" Gas Line
U - Gas 12 inch	12" Gas Line
U - Gas 14 inch	14" Gas Line
U - Gas 16 inch	16" Gas Line
U - Gas 18 inch	18" Gas Line
U - Gas 2 inch	2" Gas Line Shown As 4" For Visibility
U - Gas 20 inch	20" Gas Line
U - Gas 24 inch	24" Gas Line
U - Gas 3 inch	3" Gas Line Shown As 4" For Visibility
U - Gas 30 inch	30" Gas Line
U - Gas 4 inch	4" Gas Line
U - Gas 6 inch	6" Gas Line
U - Gas 8 inch	8" Gas Line
U - SD 24 inch	24" RCP Storm Drain (Wall Type B)

July 2018

# DRAFTING MANUAL



Level Name	Description
U - SS 27 inch	27" Sanitary Sewer Line
U - SS 30 inch	30" Sanitary Sewer Line
U - SS 33 inch	33" Sanitary Sewer Line
U - SS 36 inch	36" Sanitary Sewer Line
U - SS 39 inch	39" Sanitary Sewer Line
U - SS 4 inch	4" Sanitary Sewer Line
U - SS 6 inch	6" Sanitary Sewer Line
U - SS 8 inch	8" Sanitary Sewer Line
U - SS21-SS6	21" Effluent & 6" Sludge
U - W 10 inch	10" Potable Waterline
U - W 12 inch	12" Potable Waterline
U - W 14 inch	14" Potable Waterline
U - W 16 inch	16" Potable Waterline
U - W 18 inch	18" Potable Waterline
U - W 2 inch	2" Potable Waterline
U - W 20 inch	20" Potable Waterline
U - W 24 inch	24" Potable Waterline
U - W 30 inch	30" Potable Waterline
U - W 4 inch	4" Potable Waterline
U - W 6 inch	6" Potable Waterline
U - W 8 inch	8" Potable Waterline
U - W Unknown	Unknown Size - Shown 4" for Visibility
Util Cable TV	Includes all Boxes, Risers, Manholes, Or Related Info for Cable TV
Util Electrical	Includes all Boxes, Risers, Manholes, Or Related Info for Electrical
Util Fiber Optic	Includes all Boxes, Risers, Manholes, Or Related Info for Fiber Optic
Util Gas	Includes all Boxes, Risers, Manholes, Or Related Info for Gas
Util Irrigation	Includes all Boxes, Risers, Mh, Or Related Info for Irrigation

July 2018

# DRAFTING MANUAL



Level Name	Description
Util Sewer	Includes all Boxes, Risers, Manholes, Or Related Info for Sewer
Util Storm Drain	Includes all Boxes, Risers, Manholes, Or Related Info for Storm Drain
Util Street Light Conduit	Includes all Boxes, Risers, Manholes, Or Related Info for Street Light
Util Telephone	Includes all Boxes, Risers, Manholes, Or Related Info for Telephone
Util Waterlines	Includes all Boxes, Risers, Manholes, Or Related Info for Waterline
Vegetation Brush	Any Non-Tree Vegetation
Vegetation Trees	All Tree and Tree related Cells, Includes Treeline Symbol
Wall	Any Walls, Not Fences

# DRAFTING MANUAL



## APPENDIX E SAMPLE GIS FILE

July 2018

**INFORMATIONAL NOTE**  
 ONLY LEVELS SHOWN  
 WILL BE IN  
 THIS FILE

CHOOSE FROM \* LISTED IN CHART

<b>PROJECT NAME</b>	<b>ROMOLAND LINE A</b>
<b>STAGE</b>	<b>4</b>
<b>PROJECT NUMBER</b>	<b>4-0-00310-04</b>
<b>DRAWING NUMBER</b>	<b>4-0846</b>
<b>TR/PM/MS NUMBER</b>	<b>-</b>
<b>OWNER</b>	<b>RCFC</b>
* RCFC * COUNTY * CITY ( BY NAME OF CITY ) * CALTRANS * OTHER ( HAVE SPACE TO ENTER DEVELOPER/OWNER NAME )	
<b>FACILITY TYPE</b>	<b>ABOVE GROUND</b>
* ABOVE GROUND * UNDER GROUND * DAM * LEVEE	

**PROJECT €**

<b>LVL</b>	<b>ALIGNMENT CENTERLINE</b>
<b>LC</b>	<b>4</b>
<b>LW</b>	<b>1</b>

**INLETS**

<b>LVL</b>	<b>CATCH BASIN</b>
<b>LC</b>	<b>0</b>
<b>LW</b>	<b>2</b>

**MANHOLE**

<b>LVL</b>	<b>MANHOLE</b>
<b>LC</b>	<b>0</b>
<b>LW</b>	<b>0</b>

**PROJECT €**

<b>LVL</b>	<b>ALIGNMENT CENTERLINE</b>
<b>LC</b>	<b>4</b>
<b>LW</b>	<b>1</b>

**WATER QUALITY FEATURE**

<b>LVL</b>	<b>CATCH BASIN</b>
<b>LC</b>	<b>0</b>
<b>LW</b>	<b>2</b>

CHOOSE FROM \* LISTED IN CHART

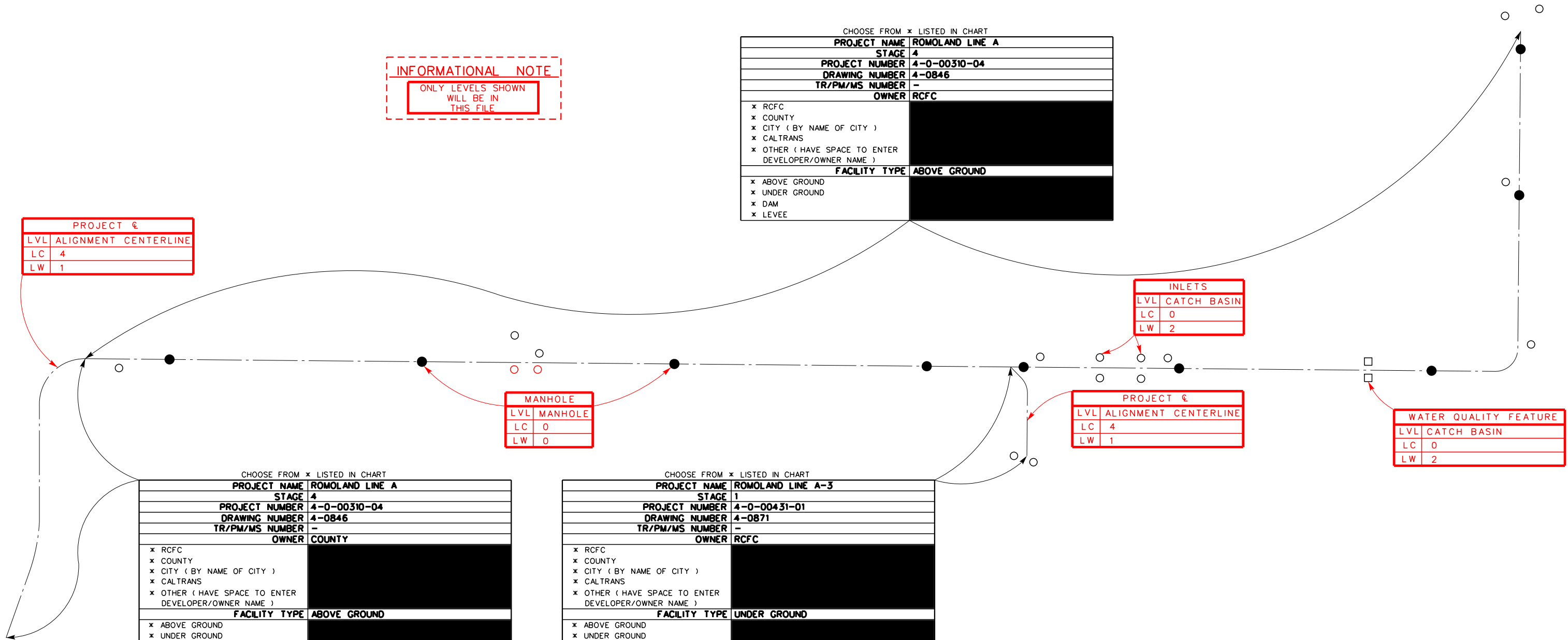
<b>PROJECT NAME</b>	<b>ROMOLAND LINE A</b>
<b>STAGE</b>	<b>4</b>
<b>PROJECT NUMBER</b>	<b>4-0-00310-04</b>
<b>DRAWING NUMBER</b>	<b>4-0846</b>
<b>TR/PM/MS NUMBER</b>	<b>-</b>
<b>OWNER</b>	<b>COUNTY</b>
* RCFC * COUNTY * CITY ( BY NAME OF CITY ) * CALTRANS * OTHER ( HAVE SPACE TO ENTER DEVELOPER/OWNER NAME )	
<b>FACILITY TYPE</b>	<b>ABOVE GROUND</b>
* ABOVE GROUND * UNDER GROUND * DAM * LEVEE	

CHOOSE FROM \* LISTED IN CHART

<b>PROJECT NAME</b>	<b>ROMOLAND LINE A-3</b>
<b>STAGE</b>	<b>1</b>
<b>PROJECT NUMBER</b>	<b>4-0-00431-01</b>
<b>DRAWING NUMBER</b>	<b>4-0871</b>
<b>TR/PM/MS NUMBER</b>	<b>-</b>
<b>OWNER</b>	<b>RCFC</b>
* RCFC * COUNTY * CITY ( BY NAME OF CITY ) * CALTRANS * OTHER ( HAVE SPACE TO ENTER DEVELOPER/OWNER NAME )	
<b>FACILITY TYPE</b>	<b>UNDER GROUND</b>
* ABOVE GROUND * UNDER GROUND * DAM * LEVEE	

**LIB=STD\_GENERAL**

<b>AC</b>	<b>GIS</b>
<b>LVL</b>	<b>NOTES</b>





<u>LEVEL NAMES</u>	<u>LINE TYPES</u>	<u>LINE STYLES</u>	<u>LINE WEIGHTS</u>	<u>LEVEL NAMES</u>	<u>LINE TYPES</u>	<u>LINE STYLES</u>	<u>LINE WEIGHTS</u>
U - Gas 1 inch	-----G-----	2	0	Non Pot-Able	-----NP-----	2	2
U - Gas 2 inch	-----G2-----	2	0	U - W 2 inch	-----W2-----	2	0
U - Gas 3 inch	-----G3-----	2	0	U - W 4 inch	-----W4-----	2	0
U - Gas 4 inch	-----G4-----	2	0	U - W 6 inch	-----W6-----	2	0
U - Gas 6 inch	-----G6-----	2	0	U - W 8 inch	-----W8-----	2	0
U - Gas 8 inch	-----G8-----	2	0	U - W 10 inch	-----W10-----	2	0
U - Gas 10 inch	-----G10-----	2	0	U - W 12 inch	-----W12-----	2	0
U - Gas 12 inch	-----G12-----	2	0	U - W 14 inch	-----W14-----	2	0
U - Gas 14 inch	-----G14-----	2	0	U - W 16 inch	-----W16-----	2	0
U - Gas 16 inch	-----G16-----	2	0	U - W 18 inch	-----W18-----	2	0
U - Gas 18 inch	-----G18-----	2	0	U - W 20 inch	-----W20-----	2	0
U - Gas 20 inch	-----G20-----	2	0	U - W 24 inch	-----W24-----	2	0
U - Gas 24 inch	-----G24-----	2	0	U - W 30 inch	-----W30-----	2	0
U - Gas 30 inch	-----G30-----	2	0	U - W Unknown	-----W?-----	2	0
U - SD 24 inch	-----SD24-----	2	0	Util Cable TV	-----TV-----	2	0
U - SD 30 inch	-----SD30-----	2	0	Util Electrical	-----E-----	2	0
U - SD 36 inch	-----SD36-----	2	0	Util Fiber Optic	-----G4-----	2	0
U - SD 48 inch	-----SD48-----	2	0	Util Gas	-----G-----	2	0
U - SS 4 inch	-----SS4-----	2	0	Util Irrigation	-----G4-----	2	0
U - SS 6 inch	-----SS6-----	2	0	Util Sewer	-----SS-----	2	0
U - SS 8 inch	-----SS8-----	2	0	Util Storm Drain	-----SD-----	2	0
U - SS 10 inch	-----SS10-----	2	0	Util Street Light Conduit	-----G4-----	2	0
U - SS 12 inch	-----SS12-----	2	0	Util Telephone	-----T-----	2	0
U - SS 15 inch	-----SS15-----	2	0	Util Waterlines	-----W-----	2	0
U - SS 18 inch	-----SS18-----	2	0				
U - SS 21 inch	-----SS21-----	2	0				
U - SS 24 inch	-----SS24-----	2	0	SANITARY SEWER, ID IN INCHES	-----SS12-----		
U - SS 27 inch	-----SS27-----	2	0	TELEPHONE CABLE	-----T-----		
U - SS 30 inch	-----SS30-----	2	0	TELEPHONE, MULTIPLE TILE DUCT	-----T(MTD)-----		
U - SS 33 inch	-----SS33-----	2	0	TELEPHONE, MULTIPLE CEMENT DUCT	-----T(MCD)-----		
U - SS 36 inch	-----SS36-----	2	0	TRAFFIC SIGNAL LINE	-----TRAF-----		
U - SS 39 inch	-----SS39-----	2	0				
U - SS21-SS6	-----SS21-SS6-----	2	0				

REVISIONS			RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT				PROJECT NO. 0-0-0000
			DESIGNED BY: ENGINEER	RECOMMENDED FOR APPROVAL BY:	APPROVED BY:	DRAWING NO. 0-000	
			DRAWN BY: TECHNICIAN			SHEET NO.	
			CONSTR. SET: MNTH DAY, YR	DATE: _____	DATE: _____	X OF X	
REF.	DESCRIPTION	APPR.	DATE	P8 NUMBER: 123456			