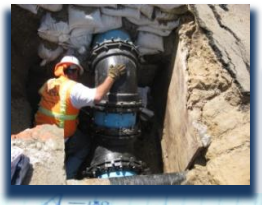
The City of San Diego
America's Finest City

Citywide CADD and Drafting Standards

2012 EDITION



PUBLIC WORKS DEPARTMENT

CHAPTER 1 INTRODUCTION

These Computer Aided Design and Drafting CADD Standards have been developed with the following objectives:

- Enhance the level of graphic consistency.• Provide consistent and uniform symbols and abbreviations in the Contract Documents to minimize confusion in the interpretation of the Contract Documents.
- Maintain an acceptable level of quality and clarity in the contract drawings.
- Supply information to the Design Consultants and Design-Builders relating to the design and drafting methods.

For updates and changes to this guidelines refer to the Citywide Drafting & CADD Standards Committee's operating procedure. Approved updates and changes will be promptly integrated and published onto the City's Official Website for public accessibility.

This manual is not intended to serve as a design textbook, nor as a substitute for professional experience. Furthermore, this manual does not address procedural issues or organizational responsibilities. The primary intent is to address graphic issues and establish guidelines and drafting standards for design drawings (i.e., Plans).

ACKNOWLEDGEMENT

This edition is the product of an extensive team effort by The Citywide CADD Program i.e., City Engineer, Citywide CADD Standards Committee, CADD Users, Engineering Applications Support, and Department of Information Technology (IT).

Following is a list of staff members who contributed to the completion of this edition:

Alfred Bajet, Diana Bergen, Byron Burnham, Ed Fordan, Wendy Gamboa, Robert Hagan, Edecer Jaro, John Montesdeoca, Christopher Naval, Stephanie Pang, Nate Scott, Kathleen Simmons, Mohsen Maali.

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*****2012 EDITION*****

CHAPTER 2 CADD STANDARDS

2.1 General

Although the City of San Diego uses the Bentley MicroStation as its basic CADD graphics engine, coupled with Intergraph Engineering Application programs for engineering design and drawing production, Design Consultants may use other industry standard CADD systems such as AutoCAD to produce hard copy or PDF files which can be transmitted appropriately to the Project Manager as a submittals. However, for compatibility reasons, all electronic CADD files submittals to the City that will uploaded into the City's CADD file management system must be created in MicroStation and conform to the requirements set forth in these standards.

For some exceptional purposes, AutoCAD drawing files can be accepted and uploaded into the City's CADD systems provided that it complies with the following criteria set forth:

1. Can convert from dwg to dgn files.
2. Element attributes should be recognized by the Systems.
3. Comply to the City's CADD Standards.
4. Free of any problems translating from Autocad to Microstation.
5. Possible corrupted files are not acceptable.

The terminology used in these standards follows the customary usage for MicroStation systems, recognizing that other CADD systems use different terms for similar concepts.

The City intends to use the current MicroStation tag data function to collect data electronically for use with the Drawing Management System. The MicroStation drawing file will also be used to collect data for the City's Geographic Information System.

2.2 Development Criteria

These standards have been developed based on the following criteria:

1. Hierarchical computer directory structure that allows groups of files from various sources to be easily incorporated into the overall directory structure.

2. Data separation using level, color, line weight and style within each design file to organize different types of information.

3. Engineering discipline separation using reference files to overlay information for interdisciplinary coordination.

4. Logical names for device/directory in attaching reference files, cell libraries and font libraries to design files so that they can be transported among systems without modification.

5. Well organized transmittal and acceptance procedures.

6. Uniformity in major aspects of CADD design such as units of measurement, text size and font, border and title block data.

7. There are no specific sections dedicated to the Design Consultant as they are assumed to be an integrated part of the Project Team.

2.3 Citywide CADD Program

The Citywide CADD Program lead by the Engineer or designee involves the Citywide CADD Standards Committee, CADD Users, and Department of Information Technology (IT).

2.3.1 City Engineer

The City Engineer or designee approves policies and standards to be used on engineering Plans, forms the Citywide CADD Standards Committee, and sets the duration and appointment of Committee Chairperson and Members.

2.3.2 Citywide CADD Standards Committee

Under the direction of the City Engineer, the Citywide CADD Standards Committee coordinates CADD related topics. See the Committee's Operating Procedure for details.

2.3.3 Engineering Application Support

The Engineering Application/Software support's responsibility is to advise the committee on technical items such as software / hardware upgrades and if needed prepare technical reports or white papers on existing or upcoming technology that may benefit the CADD Program.

2.3.4 CADD Users

Each CADD User for the City of San Diego is responsible for compliance with the CADD Standards whether they are creating drawings or reviewing Plans prepared by the Design Consultants.

2.4 Department of Information Technology

The role of the Department of Information Technology will be to manage and leverage license cost and maintenance for Citywide CADD Program. The IT Section will prepare and present the annual budget allocation for each participating department which will be included in the department's IT Budget.

2.5 Information Control Procedures

The following procedures apply to the acquisition, exchange, and submittal of CADD-related files.

2.5.1 Requesting Electronic Data

Requests for updated information must be directed to the City CIP Project Manager or designee administering the Design Consultant's contract.

2.5.2 Exchange of Electronic Data/Interim Submittals

The exchange or transmittal of electronic data from Design Consultant to Design Consultant is not permitted. Electronic data distribution must be through the appropriate City staff.

When required, the Project Manager contacts the Design Consultant's CADD Contact to request interim submittals of the latest design data for transmittal to other affected projects. Prior to disseminating interim submittals, the City CADD Coordinator reviews the electronic data for compliance with these standards.

2.5.3 Transmitting Electronic Data to the Citywide

Electronic submittals must be addressed to the City Project Manager administering the Design Consultant's contract. Transmittal requirements are described in detail in Section 2.8

2.6 CADD Final Deliverables

For legal purposes, the primary deliverable for engineering drawings is Mylar plots with original or electronic signatures and seals. Delivery of the corresponding electronic data (PDF, DGN, etc.) for CADD drawings is required. CADD files created during design and construction of City facilities will be used by the City over the life of those facilities. Therefore, the Design Consultant shall ensure that the design files enable the City, with reasonable effort, to retrieve, use, and modify the CADD files during operation, maintenance, and modification of the facilities.

CADD file final deliverables must be as-built to reflect actual constructed conditions. Files determined by the Project Manager to be not in compliance with the City CADD standards are to be returned to the "Design Consultant" for correction and re-submission. Electronic files submitted shall be error free as determined by running the file thru Axiom File Fixer or other equal means. The City will not accept corrupted files.

2.6.1 CADD File Specifications

Design Consultants may generate drawings using any CADD application. However, the files must be delivered in a format compatible with current City standards.

2.6.2 City Standard Seed Files and Resource Files

The MicroStation XM CADD standard files are now accessed through ProjectWise via a managed workspace.

1. Seed Files

a) SD 2d.dgn – 2D Nad 83 coordinate based file with working units in Survey Feet

b) SD 2dm.dgn – 2D Nad 83 coordinate based file with working units in metric

c) SD 3d.dgn – 3D Nad 83 coordinate based file with working units in Survey Feet

d) SD 3dm.dgn - 3D Nad 83 coordinate based file with working units in metric

e) SD Arch 2D.dgn – Architectural based file with working units in feet and inches containing separate models with Water sheet border for various scales.

f) SD Survey.dgn – Developed for and used by the Survey group. This seed files contains several different models for different needs.

2. Cell Libraries

a) SD Details.cel – standard City details

b) SD Existing.cel – Existing public structures

c) SD Notes.cel – Most used notes

d) SD Proposed.cel – Proposed public structures

e) SD Traffic Features.cel – Existing, salvaged, and proposed traffic features

f) SD Traffic Eq.cel - Existing, salvaged, and proposed traffic equipment

g) SD Traffic Legend.cel - traffic legends

h) SD Traffic Notes & Details.cel – Most used traffic notes

i) State Sign.cel – Caltrans signs

3. Color Tables

a) SD BW.tbl – Gray scale color ranges uses colors 232 to 239

b) SD Color.tbl – City defined colors range uses colors 0 to 8 and gray scale color range uses colors 232 to 239

4. Level Structure

a) SD Level.csv – Contains all 627 standard City named levels and can be imported into any file as needed.

5. Symbols

a) SD Font.rsc – Font Resource file containing both MicroStation and true type fonts

b) SD Line Style.rsc – Common line styles for public structures. Use with scale factor = 40

c) SD Traffic Line Style.rsc – Commonly used Caltrans traffic striping. Use with scale factor = 1

Seed File Configurations*Working Units Survey Feet is governed by a customized units.def file.

Seed File	Coordinate System	Working Units/Accuracy	Global Origin	Models	Level Structure	City Dimension Styles	Color Table
SD 2d.dgn	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-1665251.6353, -1772251.6353	Default	627 named levels – SD Level.csv	Yes	SD Color.tbl
SD 3dm.dgn	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352, 214748.3648	Default	627 named levels – SD Level.csv	Yes	SD Color.tbl
SD Arch 2D.dgn	None	Feet , Inches/1/8”	0:0,0:0	21 for different scales	627 named levels – SD Level.csv	City plus Arch. scales	SD Color.tbl
SD Survey.dgn	See Survey Seed File Table						

SD Survey.dgn (Developed for Survey Section use only)						
Models	**Coordinate System**	**Working Units/Accuracy**	**Global Origin**	**Level Structure**	**City Dimension Styles**	**Color**
3D – SD SEED	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – 40 SCALE	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – DTM CITY	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – FIELD	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl

Models	Coordinate System	Working Units/Accuracy	Global Origin	Level Structure	City Dimension Styles	Color
3D – FIELD DTM	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – MAPPING	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – MAPPING – DTM	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353, 214748.3601	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – ROW	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353	627 named levels – SD Level.csv	Yes	SD Color.tbl

Models	Coordinate System	Working Units/Accuracy	Global Origin	Level Structure	City Dimension Styles	Color
2D - LAYOUT	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – DTM – METRIC	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352, 214748.3648	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – FIELD – METRIC	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352, 214748.3648	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – MAPPING - METRIC	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352, 214748.3648	627 named levels – SD Level.csv	Yes	SD Color.tbl

Models	Coordinate System	Working Units/Accuracy	Global Origin	Level Structure	City Dimension Styles	Color
2D – ROW – METRIC	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – INDEX	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – SHEET	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353, -1772251.6353	627 named levels – SD Level.csv	Yes	SD Color.tbl

Models	Coordinate System	Working Units/Accuracy	Global Origin	627 named levels – SD Level.csv	City Dimension Styles	Color
2D – SHEET METRIC	NAD 83, CA State Plane, Zone 6	Meters/.1234	-1742251.6352, -337251.6352	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – LOCAL COORD - CUSTOM	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	0.0000,0.0000	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – LOCAL COORD - CUSTOM	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	0.0000, 0.0000, 0.0000	627 named levels – SD Level.csv	Yes	SD Color.tbl
3D – NAD27 – CUSTOM	NAD 27, CA State Plane, Zone 6	Survey Feet/.1234*	-1535251.6352, -35251.6352, 214748.3648	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – NAD27 – CUSTOM	NAD 27, CA State Plane, Zone 6	Survey Feet/.1234*	-1535251.6352, -35251.6352	627 named levels – SD Level.csv	Yes	SD Color.tbl
2D – SHEET – OCE	NAD 83, CA State Plane, Zone 6	Survey Feet/.1234*	-6165251.6353,-1772251.6353	627 named levels – SD Level.csv	Yes	SD Color.tbl

*Working Units Survey Feet is governed by a customized **units.def** file

2.6.3 City Dimension Styles

City dimension styles are defined in each seed file to facilitate the placement of dimension element at the correct size governed by the anticipated plot scale. All styles have predefined settings for geometry, units, text, and symbols.

City10, City20, City40, City80, City100, and City160 dimension styles have extension lines turned ONCity10EX, City20EX, City40EX, City80EX, City100EX, and City160EX dimension styles have extension lines turned OFF.

2.6.4 File Naming Convention

Naming conventions vary by Department. Check with the Project Manager.

2.7 Geographic Information System

Integration with Geographic Information System (GIS)

Currently, information is entered manually into the City of San Diego GIS database from AS-Built drawings, various Project Systems or information gathered from Field. To aid the current manual process of integrating CADD and GIS, CADD drawing files must adhere to these standards. Requirements and changes to the City's current CADD Standards/Specifications will be presented to the various CADD Program entities when the processes and procedures for integration between the CADD and GIS are finalized.

2.8 CADD Transmittal

Electronic data transmittals from the Design Consultant shall be compatible with the City's current computer operating system. These transmittals shall also be subject to the City's applicable Administrative Regulations and the City's security system scans. The Project Manager shall determine the method of data exchange and coordinate the CADD transmittal.

CHAPTER 3 GENERAL DRAFTING STANDARDS

3.1 Symbols

The preparation of clear drawings requires strict adherence to a standard nomenclature. A system of standard symbols for component identification also makes coordination and communication between design disciplines and construction trade groups more effective.

The symbols to be used are those established by the American National Standards Institute (ANSI), the Instrument Society of America (ISA), and other nationally-recognized organizations.

3.2 Abbreviations

These standards do not encourage reliance on abbreviations to convey information on drawings. However, space limitations mandate use of abbreviations in certain situations. Abbreviations used in these standards conform to ANSI as much as possible. A comprehensive list of standard abbreviations used by the City is presented in Figure 3-1.

Abbreviations must be used carefully. Important rules are:

1. Avoid abbreviations with more than one common meaning.
2. An abbreviation used on one drawing must have the same meaning on all the drawings.
3. A word abbreviated once on a drawing must be abbreviated everywhere on the drawing.
4. Use abbreviations only to avoid excessive clutter or busyness on drawings.

Abbreviations that are not defined in the GREENBOOK must be defined on the Plans.

3.3 Classification of Drawings

Drawings are classified by the purpose they serve in the design (e.g., 30%, 60%, 100%, and Final) and construction process.

3.3.1 Final Drawings

These are the complete signed and stamped drawings ready to print and bind in one or more volumes for prospective bidders. They are sometimes referred to as “Camera Ready.”

3.3.2 Addendum Drawings

Addendum drawings are issued by a formal process between the advertisement and bid opening. Addendum drawings may change, add, or remove some of the work of the previously issued drawings.

3.3.3 Construction Drawings

When the contract is awarded, addendum drawings are incorporated onto the final drawings to form the construction drawings.

3.3.4 Change Order Drawings

Change order drawings cover changes made during construction. These drawings become part of the construction drawings after the change order is signed by the City and the Construction Contractor.

3.3.5 Red-lines

Plans with annotations of changes made during construction, in red, to reflect the actual product built during construction whether concealed or visible. This information must be transferred to the CADD file i.e., As-built drawings.

3.3.6 As-Built Drawings

The CADD drawings prepared from the approved Red-lines to reflect the actual product built.

Procedures for as-built drawings are described in the following documents:

1. As-Builts for CIP Projects: Refer to Standard Operating Procedure (SOP-060507)
2. As-Builts for Engineering Permits & Subdivisions (Non-CIP): Refer to Standard Operating Procedure (SOP-022609)

The as-built drawings must be delivered within 60 days after final substantial completion of construction date or in accordance with the contract between the City and Consultant (if applicable).

3.4 Mylar Plotting Materials

Four-mil Mylar is used for all drawings. Drawings submitted on Mylar must be prepared with ink, or electrostatic toner to assure permanent legibility.

The entire drawing must be prepared on the upper side of the sheet. Placing certain portions on the underside of the sheet is not acceptable.

Mylar drawings with stick-on materials, scuff marks, creases, marks on the back or indentations are not acceptable to the City.

3.5 Size

Drawings are prepared in accordance with ANSI Standard Y14.1-1995. ANSI standard sheet sizes are shown in Table 3-1.

D-sized sheets are required for camera ready drawings and are also appropriate for some addendum drawings. Other addendum drawings are better shown on A-sized sheets. Change order and other drawings prepared during construction may use A, B, C or D sheets. Changes must be made in the electronic CADD files. E-sized sheet is not acceptable.

Table 3-1

ANSI Standard Drawing Sheet Sizes

ANSI	Size (Inches)		Margin (Inches)	
Designation	Width	Length	Width	Length
A	8.5	11.0	0.25	.038
B	11.0	17.0	0.38	.062
C	17.0	22.0	0.75	.050
D	22.0	34.0	0.50	1.00
E	34.0	44.0	1.00	0.5

3.6 Drawing Sheets

All drawings must use the standard border applicable to their Department/Division and sheet size. A sample border is shown in Figure 3-2. The border serves several purposes:

1. Identifies the drawing with the appropriate department.
2. Provides information used by the City to archive drawings.
3. Identifies the Design Consultant and staff responsible for preparing the drawing.
4. Provides other basic information (title, scale, revisions, etc.) in a consistent location and format for use in the City document management system.

Sample sheets are attached as Figures 3-13 and 3-14.

3.7 Drafting Practices

Each drawing prepared for City Projects must be uncluttered, legible and easy to understand. Drawings must have a high degree of consistency. This section presents scaling, lettering, lining, notation and dimensioning techniques and practices that all disciplines must follow.

General guidelines are:

1. Eliminate Repetitive Details: When several items have common details, show the common detail once.
2. Eliminate Unnecessary Lines: Only those lines necessary to convey the design must be used.

3. Use Abbreviations Sparingly: Abbreviations may be used only where they are required to save space. Abbreviations must be defined, clear, and easily understood.

4. Use Symbols Frequently: Symbols reduce drafting time, increase legibility and conserve space.

5. Use Tabulations Appropriately: Tables consolidate related data into one location which normally might be scattered in many locations.

3.8 Scale

As a general rule, use the smallest possible scale to show a view without obscuring vital details. Scales must be selected with the following requirements in mind:

1. Maintain clarity when notes and dimensions are added to drawings.

2. Maintain legibility when drawings are reduced to half size.

3. Maintain readability when files are microfilmed for archival purposes.

4. The scales listed in Table 3-2 are recommended; however, they may be varied to accommodate the need of a particular drawing.

5. The use of distorted scales (different horizontal and vertical scales) is acceptable for profile drawings.

The rules listed below must be followed to show the scale of a drawing:

6. When multiple views on a drawing are not to the same scale, the appropriate scale must be centered and a minimum 1/8-inch below the title of each view. The title block scale must read "As Shown."

7. When the entire drawing is to the same scale, the scale must be listed in the title block.

8. When an entire drawing (such as a diagram, a schematic or an isometric drawing) is not to scale, "No Scale" must be noted in the title block. If only one view on the drawing is not to scale, the notation "No Scale" must be placed below the view in question.

9. The notation "NTS" (not to scale) must only be used for specific dimensions within a drawing that are not to scale.

10. For plan and profile drawings, the vertical and horizontal scales must have a 1:10 ratio. That is, if the vertical scale is 1 inch = 4 feet, then the horizontal scale must be 1 inch = 40 feet. Similarly, a 1 inch = 10 feet vertical scale corresponds to a 1 inch = 100 feet horizontal scale.

11. For PDF format, drawing files must be required to be converted into 100% true scale format in which the print queue settings will determines the required paper size which in turn determines the desired scale.

Table 3-2

Typical Drawing Scales, All Disciplines

Scale	Drawing Type
1 inch = 100 feet 1 inch = 200 feet 1 inch = 80 feet 1 inch = 40 feet 1 inch = 400 feet 1 inch = 20 feet 1 inch = 10 feet 1 inch = 1000 feet	General Plan Views, Site Civil, Civil Sections, Yard Piping, etc.
1 inch = 4 feet, vertical and 1 inch = 40 feet, horizontal or 1 inch = 10 feet, vertical and 1 inch = 100 feet, horizontal	Profile Views
1/6 inch = 1 foot 1/8 inch = 1 foot 3/16 inch = 1 foot 1/4 inch = 1 foot 3/8 inch = 1 foot 1/2 inch = 1 foot 3/4 inch = 1 foot 1 inch = 1 foot	Sections, Details, A&E Plans
1-1/2 inch = 1 foot 3 inches = 1 foot	Enlarged Sections, Details

3.9 Lettering

Drawings must to be prepared using a CADD system. MicroStation Font 1 is the basic text font per the Citywide Drafting/CADD Standards. Other fonts may be used in certain

situations. The following information is provided to assist in preparing the few drawings that may be drawn manually.

Drawings must use simple letters and figures without embellishments. The following are general guidelines for lettering.

3.9.1 Size

Lettering on full size D sheets must never be less than 1/8-inch in height.

3.9.2 Freehand Lettering

Freehand lettering is acceptable as long as it matches the style and size required of mechanical (CADD) lettering. A lettering guide or preprinted underlay must be used to ensure straight lines and uniform letter sizes.

3.9.3 Transparent Transfer Tape Lettering

Transparent transfer tape is not acceptable.

3.9.4 Reading Direction

Normally, all letters and figures must be readable from either the bottom or right edge of the sheet. The guide for reading is as follows:

1. Horizontal lettering must read from left to right.
2. Vertical lettering must read from bottom to top.
3. Diagonals must read from left to right, bottom to top up to 120°, top to bottom above 120° (see Figure 3-3).

3.9.5 Other Guidelines

1. All lettering must be upper case.
2. Fractions are set to be vertically written (e.g. 1/2, 1-1/2).
3. Font 1/newft 1 shows "1" with base or flag.

3.10 Line Work

Lines and lettering must be of adequate size and weight to produce legible half-size reproductions. Lines must be sufficiently thick to print well and make readable photocopies. Line work must be smooth, black, firm, equally spaced, of uniform weight and density throughout the drawings, and ends must be clearly defined. Line work must adhere to the following guidelines (see Figure 3-4 for detail of the line pattern and width):

3.10.1 Line Widths

Line widths must vary to distinguish certain features as follows:

1. Extra heavy lines (MicroStation line weight 4) must be used for main process lines on schematics.

2. Heavy lines (MicroStation line weight 3) must be used for emphasis for basic outlining features of new facilities. Examples are baseline, construction layout lines, and the outline of objects. Heavy lines must also be used on secondary process lines on schematics, double-line piping, flange outlines and on cutting plane lines.

3. Medium weight lines (MicroStation line weight 2) must be used for proposed construction and right-of-way, match lines, single-line drawings, flanges and equipment.

4. Fine lines (MicroStation line weight 1) must be used for topography, outline of existing and future facilities and other less important details, centerlines, phantom lines, column lines (see Figure 3-5), dimension lines, leader lines and hidden lines for new and existing facilities.

5. Dashed lines must be used for hidden lines and also to distinguish existing from proposed work.

3.10.2 Line Spacing

Line spacing is one-half the text height.

3.10.3 Line Patterns

Line patterns must be selected from the eight basic ones:

1. Solid
2. Dotted
3. Long Dash
4. Medium Dash
5. Short Dash
6. Dash Dot
7. Dash Dot Dot
8. Long Dash Short Dash

3.10.4 Line Usage

Centerline and column lines must extend 1/4-inch beyond a view, or farther if necessary, for indicating dimensions. Do not extend them into the space between views or continue them from one view to the next. End column lines with column-line balloons (3/8 inch-diameter circles).

1. In general, if an object has dimensions which are too long to be shown at the scale being used, the object must be broken and the dimensions indicated across the break. Scattering of dimensions across the sheet must be avoided if at all possible.

2. The overall dimension and string dimensions must be located far enough away from the object drawing to ensure uniformity and clarity, in addition to providing space for future notations.

3. Where several closely spaced parallel lines occur (i.e., pavements, gutters, curbs, medians), place dimensions between the parallel lines without using arrows. Enlarged details must be used where dimensioning is congested or crowded.

4. Leader or callout lines are usually drawn at an angle of 30E to 60E whenever possible, with an arrowhead at the drawing feature being annotated and no terminator at the note.

   Leader lines must start at the note with a short line (1/8-inch minimum) parallel to the note's base. Leader lines are then angled before terminating at the appropriate feature with a line terminator. When the note is to the right of the object, the leader line must start with the first word of the note. When the note is to the left of the object, the leader line must start with the last word of the note. Leader lines in the same area must be parallel. Avoid leader lines that are:

   - Horizontal or vertical
   - At the same angle as cross-hatching
   - At very small angles to the terminating surface
   - Parallel to extension or dimension lines
   - Curved
   - Crossed
   - Too long

5. Cutting-plane lines must extend beyond the view and end with horizontally bisected circles (1/2-inch diameter on one end and arrowhead at the other end of the cutting-plane line).

3.10.5 Line Terminations

Line terminators are used on dimension lines, leader lines and cutting-plane lines. The type of line terminator used depends on the feature to be emphasized and on available space. Line terminators may be one of the following:

1. Arrowheads are used to terminate dimension and leader lines. If a dimension is required inside a space less than 3/8-inch, external dimension lines and arrowheads may be used (see Figure 3-6).

2. Slashes are used to terminate dimension lines inside a space less than 3/8-inch. Slashes are approximately 1/8-inch long.

3. Loops are used to terminate leader lines at reinforcing steel bars, electrical wires, piping, and schematic lines. Their approximate radius is 1/16-inch, and they start and stop one radius from the line identified.

3.11 Views

Usually, a drawing requires at least two views to adequately describe an area. Complex areas may need several views, including auxiliary views and sections. Some simple areas may require only one view wherein the specification will adequately describe the rest of it.

Views must be oriented within the format so as not to crowd each other, the border or other data. The placement of auxiliary views must be in proper relation to main views and be complete enough only to explain the detail which made the view necessary. Break lines, tabular identities of similar items and short word descriptions are permissible as

long as clarity is not impaired. These guidelines must be followed in placing the views:

1. The main plan view must be placed in the drawing's upper left corner. If there is more than one plan view, views must be arranged at the top of the drawing in sequence from left to right.

2. Sections, details, elevations and schematics (in that order) must be placed directly below the main plan view when space is available; otherwise they must be placed to the right. Sections and details must be displayed in sequential order, always moving from left to right. Whenever possible, views that relate to one another must be grouped on the same drawing.

3. View notes must be located 1/4-inch between the lettering and the drawing and must be left-justified.

4. Allow 4 to 6 inches between views to insert notes and dimensions, and 2-1/2 inches at the borders.

3.12 Callouts

This section describes the formats and layout guidelines for callouts on the drawings.

3.12.1 Sections and Details

If possible, sections and details must be on the same drawing where called out. When shown on a different drawing, place section views to the right of plan views. If a drawing shows only sections and details, sections take precedence, and are shown in sequential order from the drawing's top left corner.

When showing a section cut through a plan, refer to Figure 3-7 for the proper arrowheads to show the direction of the cut, the bubble identifying the section letter and the number of the drawing where the section is located.

Figure 3-8 shows a detail callout. The standards for pen size and thickness of arrow must be followed.

Figure 3-9 shows standard detail callouts.

3.12.2 Equipment and Piping

Equipment and piping callouts must follow Figure 3-10. Equipment and pipe callouts are placed in differently shaped blocks. Criteria for drawing pipes as single or double lines are shown in Table 3-3.

Table 3-3
Criteria for Showing Pipe as Single or Double Line

Pipe Diameter, In.	Drawing Scale			
	1/8	1/4	3/8	1/2
2	S	S	S	S
3	S	S	S	O
4	S	S	O	D
5	S	S	D	D
6	S	O	D	D
8	S	D	D	D
10	S	D	D	D
12	O	D	D	D
14 and larger	D	D	D	D

Note: S = Single line
O = Design Consultant Choice
D = Double Line

3.13 Notes

Two types of notes can appear on drawings: general notes which apply to all drawings, and construction notes which apply to specific features on a specific drawing. The following sections explain the difference.

3.13.1 General Notes

General notes convey information common to the components of an entire drawing, process area, or discipline, or to all the drawings in a package. General notes are typically presented on the cover sheet(s) .

General notes must be placed in a column on the left side of a drawing with single-spaced lines within each note, double-spaced between notes, and must be left-justified.

3.13.2 Construction Notes

Construction notes show information pertaining to specific drawing features. Lines within each note must be single-spaced lines within each note, double-spaced between notes, and must be left-justified. See Figure 3-11 for further detail.

3.14 Signing and Sealing:

Refer to the following document:

- Signing and Sealing Plans & Specifications Standard Operating Procedure (SOP-**…**)
- Electronic (digital) Signature Standard Operating Procedures (SOP-…)

3.15 Other Conventions

3.15.1 North Orientation

General Plans such as maps and site plans must always include a north arrow. The project north orientation may be used to show the buildings and other structures squarely on the drawing sheet. In such drawings, the relationship between true north and project north must be as shown in Figure 3-12. The north arrow may point in any direction within plus or minus 90° of vertical.

The same orientation must be maintained for all plans in a series of similar sheets, regardless of discipline. If a plan view does not fit vertically on a drawing sheet, it can be rotated counterclockwise by as much as 90°. If the same orientation is not possible for certain plans within a set, place the note "Plan Orientation Different from Plan Layout" 1/4-inch below the north arrow.

On plan and profile sheets where the lowest elevation of the sewer, storm drain, and water mains are shown at the left side of each sheet, stationing is from left to right.

The north arrow shall be located near the title block in the lower right corner.

3.15.2 Key Plan

A key plan is a small scale layout of the overall site showing by cross-hatching the context of a drawing of a small portion of the site which otherwise might be difficult to identify. Key plans, if necessary, are placed in the lower right corner of a drawing. Key plans must be no larger than 4 inches square.

3.15.3 Cover Sheet Warning Scale

The standard border for the Cover sheet provides a 1-inch bar to warn that a drawing may not be at its original full-size scale.

3.15.4 Unnecessary Information

Do not repeat dimensions except as necessary to relate one drawing or view clearly to another and only if there is no other way to identify location or orientation.

Do not repeat room names or numbers, door or window numbers or material identification. Show these on a larger scale detail or plan.

Do not render elevations, show shadows, or draw all the bricks, shingles or siding. A small area of texture or hatching at corners or a simple detail showing pattern and direction tells everything necessary. Cross hatching need not cover an entire wall or area in plan.

Do not draw interior elevations in which walls are blank.

Do not detail casework except for very unusual features. Draw elevations only and call out dimensions when necessary.

Do not use the term "By Others." Use "By Owner" or "NIC," meaning "Not In Contract."

3.15.5 General Drawing Information

Use multiple partial plans with match lines on projects if complexity demands it.

Provide only the kinds of information which relate clearly to the specifications. Designate items by generic names, not trade names, i.e., Gypsum Board, not Sheetrock.

Call out specific details of materials such as hardwood species, aluminum finish, or gypsum only when they cannot be clearly identified or described in schedules and specifications.

The accuracy of elements within a CADD drawing file depends on the use of proper drawing techniques and on the working units used in creating the file. There is a misconception that if a drawing is created digitally, it is precise and accurate. In fact, there are varying levels of accuracy. Because of the obvious legal implications involved in the accuracy of the Contract Documents, the accuracy requirements (both legal and contractual) for each project must be understood and followed by each project team member. Additionally, the City intends to use these drawings as a component of its geographical informational system (GIS). The layering structure and attention to procedures is therefore important in that regard as well.

3.15.6 Drawing Changes

Changes made to drawings during design do not lead to any revision notations on the border. The Construction Change/Addendum Table on the border is for formal changes made by addendum during the bid phase, change orders made during construction, and for recording as-built information.

A change is noted by describing it in the Construction Change/Addendum Table, clouding the revised area on the drawing, and placing the revision letter or number in a triangle adjacent to the clouded area. When the next revision is made to the drawing, the previous cloud(s) and letter(s) remain and a new cloud and next sequential letter is applied.

3.15.7 Centerline Coordinates - Station and Elevation

In conformance with industry and local standards, buried pipelines are dimensioned on the Contract Drawings using stationing and invert elevations. Recognizing that this dimensioning system is not precise when slopes and horizontal bends are combined, the pipe fabricator must convert the invert data to a pipe centerline station and elevation coordinate system. For this purpose, the following definitions are used:

1. The horizontal location of the intersection of the pipe centerlines at bends is defined as equal to that of the corresponding invert lines on the plan view.

2. The vertical elevation of the intersection of the pipe centerlines at bends is defined as equal to the invert elevation at intersection of the invert lines plus the pipe inside radius.

Further recognizing that this conversion can have a minor effect upon final as-built pipe invert elevations, the pipe fabricator must provide precise invert elevations and pipe slopes for setting each pipe section and fitting.

Whenever centerline dimensions are given on the contract drawings, they govern.

3.16 Sequence of Drawings

Drawings are arranged in the volume of contract drawings according to the following:

1. General Drawings

Cover Sheet
Overall Site Plan
List of Drawings
General and Project Notes
Abbreviations and Symbols
Traffic Control Plan or Project Notes
Design Criteria
Flow Diagram
Hydraulic Profile

After the General Drawings, drawings are sequenced first by area, second by discipline within the area, and third by sheet sequence within the discipline. Subjects within the disciplines are arranged according to the following:

2. Demolition Drawings

3. Civil Drawings

Civil Plans
Plans and Profiles
Civil Details
Cathodic Protection Plans and Details

4. Landscaping /Irrigation Drawings

Irrigation Plans
Irrigation Details
Landscaping Planting Schedule
Landscaping Plans
Landscaping Details

5. Architectural Drawings

Architectural Plans, Sections and Elevations
Architectural Details
Architectural Schedules

6. Structural Drawings

General Notes and Design Criteria
Structural Plans and Sections
Structural Details

7. Mechanical Drawings

Mechanical Plans and Sections
Mechanical Details
Equipment Schedules
HVAC Schematics
HVAC Plans and Sections
HVAC Details
HVAC Equipment Schedules
Plumbing Schematics
Plumbing Floor Plans
Plumbing Details
Fire Protection Floor Plans
Fire Protection Details

8. Electrical Drawings

Electrical Plans
Electrical Details
Electrical Schedules
Electrical Diagrams

9. Instrumentation Drawings

Piping and Instrumentation Diagrams
Loop Diagrams
Logic Diagrams
Instrument Installation Details

10. Traffic Control Drawings

Traffic Control Index and Notes
Traffic Control Plans
Traffic Control Details
Resurfacing/Striping Plans
Resurfacing/Striping Details

3.17 Discipline Specifics

This section elaborates on the content of the drawings produced by the various disciplines.

3.17.1 Cover Sheet

The standard cover sheet is shown in Figure 3-13. The Design Consultant places the vicinity and location maps on the cover sheet. The name of the consultant, engineer's

declaration, and block for stamp is also included on this sheet. The Discipline code for this sheet is G-1.

3.17.2 General Drawings

General drawings present information which relates to the overall project, not to any single discipline. They are numbered in sequence. The number of general drawings depends on the size of the project. Information on sheets must be combined when possible. These drawings carry a "G" number, in the following sequence.

3.17.2.1 Overall Site Plan

Drawing numbered G-2 follows G-1 in every project. It shows the entire project site. If the project site is too large to be shown with the necessary level of detail, the overall site plan may be used as a key map.

1. Individual structures or process units must be identified. If the scale is small enough to prevent adequate size lettering, a structure or process numbering index must be used.

2. The grid system must be shown on this plan along with the basis of bearing and any adjustment to plan north.

3. The benchmark reference is also shown on this plan.

4. The boundary of the property is shown with bearings and distances or coordinates.

3.18 Microfilm Reproduction

Drawings must be capable of producing acceptable prints when enlarged from 35mm microfilm records. Special attention must be given to avoid the following problems that cause poor microfilm quality:

1. Inconsistent line weight and density
2. Lettering that is fuzzy or too small
3. Incomplete erasures from changes
4. Smudges, dirt, stains, wrinkles and creases resulting from careless handling
5. Insufficient space between lines and letters
6. Over drafting, such as excessive cross hatching and shading
7. Drawings made to excessively small scales

3.19 Standard Details

For water and recycled water system, refer to Books 3 and 7.

For wastewater treatment plant and large pump station facilities, refer to Clean Water Program Guidelines, Volume IV, Section A3.

Standard details can be obtained from the City of San Diego, Public Utilities Department.

3.20 Special Facilities Plan Check

Improvement plans for special facilities such as large water (18-inch and larger), sewer pump stations and metering stations are submitted to Development Services Department (DSD) and routed to the appropriate operating division (responsible for maintenance) for review and comments. Sewer pump stations and metering stations shall be prepared in accordance with the City of San Diego's Sewer Design Guide, Subsection 2.6.2.2. DSD gives final approval of the plans once all disciplines are satisfied. This plan check process information can be obtained from DSD.

Figure 3-1 Standard Abbreviations

ABBREVIATION	MEANING
A/C	AIR CONDITIONING
A	AMPERE, ANODE
AB	ANCHOR BOLT, ANODE BED
ABAND	ABANDON
ABAND'D	ABANDONED
ABBR	ABBREVIATIONS
ABS	ABSOLUTE, ACRYLONITRILE-BUTADIENE-STYRENE
AC	ACTIVATED CARBON, ASPHALT CONCRETE, ALTERNATING CURRENT, ASBESTOS CEMENT
ACB	AIR CIRCUIT BREAKER
ACFL	ACCESS FLOOR
ACK	ACKNOWLEDGE
ACP	ASPHALT CONCRETE PAVEMENT
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AG	ABOVE GRADE
AHD	AHEAD
AI	ANALOG INPUT
AJB	ANODE JUNCTION BOX
AL	ALUMINUM
ALT	ALTERNATE
AM	AUTO/MANUAL
AMB	AMBIENT
AMP	AMPERE
ANN	ANNUNCIATOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AO	ANALOG OUTPUT
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASSEM	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AT	ACOUSTICAL TILE
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILARY
AV	AIR VALVE
AVAR	AIR VACUUM AND AIR RELEASE
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ADVANCED WASTE TREATMENT
AWWA	AMERICAN WATER WORKS ASSOCIATION
AXFMR	AUTO-TRANSFORMER
BAT	BATTERY
BC	BEGIN CURVE, BOLT CIRCLE, BETWEEN CENTERS
BCR	BEGIN CURVE RETURN
BDRY	BOUNDARY
BE	BEVEL END
BF	BLIND FLANGE
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BIL	BASIC IMPULSE LEVEL
BK	BACK
BKR	BREAKER
BLDG	BUILDING

ABBREVIATION	MEANING
BLK	BLACK, BLOCK
BLKG	BLOCKING
BLT	BOLT
BM	BEAM, BENCH MARK
BO	BLOW-OFF ASSEMBLY
BOD	BIOCHEMICAL OXIGEN DEMAND
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BP	BYPASS
BRK	BRICK
BS	BUTT STRAP, BOND STATION
BSMT	BASEMENT
BTWN	BETWEEN
BTU	BRITISH THERMAL UNIT
BVC	BEGIN VERTICAL CURVE
C & G	CURB AND GUTTER
C	CONDUIT, COPPER
CAB	CABINET, CRUSHED AGGREGATE BASE
CAP	CORRUGATED ALUMINUM PIPE, CAPACITOR, CAPACITY
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CATCH BASIN, CHALK BOARD, CUT BACK, CIRCUIT BREAKER
CD	CHEMICAL DRAIN
CEM	CEMENT
CER	CERAMIC
CF	CURB FACE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHKD PL	CHECKERED PLATE
CHNG	CHANGE
CI	CAST IRON
CICL	CAST IRON CEMENT LINED PIPE
CIP	CAST IRON PIPE, CAPITAL IMPROVEMENT PLAN
CIPP	CAST IN PLACE PIPE
CJ	CONSRUCTION JOINT
CKT	CIRCUIT
CKV	CHECK VALVE
CL	CENTERLINE, CHLORINATOR, CHAIN LINK, CLEARANCE, CLASS
CLF	CURRENT LIMITING FUSE
CLG	CEILING
CLR	CLEAR
CM	CENTIMETER
CMC	CEMENT MORTAR COATING
CMH	COMMUNICATIONS MANHOLE
CML	CEMENT MORTAR LINED
CMLCS	CEMENT MORTAR LINED AND COATED STEEL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNCTRC	CONCENTRIC
CND	CONDUIT
CNTRL	CONTROL
CO	CONDUIT ONLY, CUT OFF
COAX	COAXIAL CABLE
COL	COLUMN
COMB	COMBINATION
COMM	COMMUNICATION
COMPR	COMPRESSOR

ABBREVIATION	MEANING
COMPT	COMPARTMENT
CONC	CONCRETE
COND	CONDENSER, CONDUIT
CONN	CONNECTION, CONNECTOR
CONST	CONSTRUCTION
CONT	CONTINUED, CONTINUOUS, CONTROL
CONTR	CONTRACTOR
COORD	COORDINATE
CP	CATHODIC PROTECTION, CONCRETE PIPE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRT	CATHODIC RAY TUBE
CS	CAST STEEL, CARBON STEEL, CONTROL SWITCH
CT	CERAMIC TILE, CURRENT TRANSFORMER
C TO C	CENTER TO CENTER
CTF	CUT TO FIT IN FIELD
CTR	CENTER
CTSK	COUNTERSUNK
CTV	CABLE TELEVISION
CTX	COAL TAR EPOXY
CU	CUBIC
CV	CHLORINATOR VENT AND DETECTOR LINE, CONTROL VALVE, CONE VALVE
CYL	CYLINDER
db	DECIBELS
DBL	DOUBLE
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DE	DRESSER END
DET	DETAIL
DF	DOUGLAS FIR
DFT	DRY FILM THICKNESS
DG	DOOR GRILLE
DI	DUCTILE IRON, DISCRETE INPUT
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIAPH	DIAPHRAGM
DIFF	DIFFERENTIAL
DIP	DUCTILE IRON PIPE
DISC	DISCONNECT
DISCH	DISCHARGE
DISP	DISPENSER
DISTR	DISTRIBUTION
DN	DOWN
DO	DISSOLVED OXYGEN, DISCRETE OUTPUT
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DR	DOOR, DRAIN
DS	DRENCH SHOWER AND EYEWASH, DOWN SPOUT, DISCONNECT SWITCH
DWG	DRAWING
DWY	DRIVEWAY
E	EAST, ELECTRICAL
EA	EACH
EB	EXPANSION BOLT (ANCHOR)
EC	END CURVE
ECC	ECCENTRIC
ECR	END CURB RETURN

ABBREVIATION	MEANING
EF	EACH FACE, EXHAUST FAN
EG	EXHAUST GRILLE, EXISTING GRADE, EDGE OF GUTTER
EGL	ENERGY GRADE LINE
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL, ELECTRONIC
EMER	EMERGENCY
EMH	ELECTRIC MANHOLE
E-NET	ETHERNET
ENCL	ENCLOSURE
ENG	ENGINE
ENTR	ENTRANCE
EP	EXPLOSION PROOF, EDGE OF PAVEMENT
EQ	EQUATION, EQUAL
EQUIP	EQUIPMENT
E SHTDWN	EMERGENCY SHUTDOWN
ESMT	EASEMENT
ETM	ELAPSE TIME METER
EVC	END VERTICAL CURVE
EW	EACH WAY, EYEWASH
EXC	EXCAVATION
EXH	EXHAUST
EXIST	EXISTING
EXP JT	EXPANSION JOINT
EXT	EXTERIOR, EXTENSION
EXTD	EXTRUDED

NOTES: SOME ABBREVIATIONS MAY NOT BE USED IN THIS CONTRACT.

FOR INSTRUMENT IDENTIFICATION LETTERS SEE ANSI/ISA-S5.1, TABLE I.

A–1

STANDARD ABBREVIATIONS (A–E) FIGURE 3–1

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WDS 0-00000
SEWER WDS 0-00000

FOR CITY ENGINEER — DATE — ASSOCIATE ENGINEER

DESIGNATION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

PROJECT ENGINEER
000-0000
CCMS COORDINATE
0000000-0000000
CCMS COORDINATE
CONTRACTOR — DATE STARTED
INSPECTOR — DATE COMPLETED
19905-01-D

STAMP

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Figure 3-1 Standard Abbreviations

ABBREVIATION	MEANING
F	DEGRESS FAHRENHEIT, FLANGE
FA	FIRE ALARM
FAB	FABRICATED
FAT	FACTORY ACCEPTANCE TEST
FB	FLAT BAR, FLOOR BEAM, FIELD BOOK
FBC	FURNISHED BY CITY
FBE	FUSION BONDED EPOXY
FC	FLEXIBLE COUPLING, FAIL CLOSE, FOOT CANDLE
FCA	FLANGE COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FDR	FEEDER
FEXT	FIRE EXTINGUISHER
FF	FLAT FACE, FAR FACE, FINISH FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FHMB	FLAT HEAD MACHINE BOLT
FIG	FIGURE
FIN	FINISHED
FIX	FIXTURE
FL	FLOWLINE, FLOOR
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLG	FLANGE
FLUOR	FLUORESCENT
FM	FORCE MAIN
FMH	FLEXIBLE METAL HOSE
FO	FAIL OPEN, FIBER OPTIC (CABLE)
FOB	FLAT ON BOTTOM
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOR	FORWARD
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FOW	FACE OF WALL
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FAR SIDE, FINISHED, SURFACE, FORGED STEEL, FACTOR OF SAFETY, FIRE SERVICE
FT	FEET, FOOT, FIELD TOP
FTG	FOOTING
FUT	FUTURE
FV	FULL VOLTAGE
FVNR	FULL VOLTAGE NON REVERSING
FW	FIELD WELD
FWD	FORWARD
FWY	FREEWAY
FX	FUSION EPOXY
G/B	GALVANIZED BOLT
GA	GAGE, GAUGE
GAF	GALVANIZED AFTER FABRICATION
GAL	GALLON
GALV	GALVANIZED
GALVI	GALVANIZED IRON
GEN	GENERAL, GENERATOR
GFA	GROOVED FLANGED ADAPTER
GIS	GEOGRAPHICAL INFORMATION SYSTEM
GL	GLASS, GLOBE VALVE
GND	GROUND
GPD	GALLONS PER DAY
	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
	GRADE, GROUND
GRC	GRADE BREAK, GRADE CHANGE
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVBP	GATE VALVE WITH BYPASS
GYP	GYPSUM
H/A	HAND/AUTO
H/P	HIGH POINT
HB	HOSE BIBB
HDR	HEADER
HEX	HEXAGONAL
Hg	MERCURY
HGL	HYDRAULIC GRADE LINE
HGR	HANGER
HGT	HEIGHT
HH	HAND HOLE
HI	HIGH
HMW	HIGH MOLECULAR WEIGHT
HOA	HAND/OFF/AUTOMATIC
HOR	HAND/OFF/REMOTE, HORIZONTAL
HP	HORSEPOWER, HIGH PRESSURE
HR	HOUR
HTG	HEATING
HV	HORIZONTAL AND VERTICAL CONTROL POINT, HIGH VOLTAGE
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC, HYDRANT
HZ	HERTZ
I/O	INPUT/OUTPUT
IA	INSTRUMENT AIR
ID	INSIDE DIAMETER, IDENTIFICATION
IE	INVERT ELEVATION
IF	INSIDE FACE
IL	INDICATING LAMP
IN	INCH
INC	INCANDESCENT
INSTR	INSTRUMENT
INSUL	INSULATION OR INSULATED
INTR	INTERIOR
INVT	INVERT ELEVATION
IP	IRON PIPE
IPS	IRON PIPE SIZE
IRR	IRRIGATION
ISA	INSTRUMENT SOCIETY OF AMERICA
JB	JUNCTION BOX
JC	JUNCTION CHAMBER
JT	JOINT
K	KILO
KA	KILO AMPERES
KCM	KILO CIRCULAR MILLS
KG	KILOGRAM
KM	KILOMETER
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KVAR	KILOVAR
KW	KILOWATT
KWH	KILOWATT HOUR
L/P	LOW POINT
L/R	LOCAL/REMOTE
L	LITER, LENGTH, LEFT
LA	LIGHTNING ARRESTER
LB	POUND
LCP	LOCAL CONTROL PANEL
LEL	LOWER EXPLOSIVE LEVEL
LF	LINEAR FEET, LINE FILTER
LG	LENGTH, LONG
LL	LIVE LOAD
LOC	LOCAL, LOCATION
LONG	LONGITUDINAL
LOS	LOCK OUT STOP
LP	LOW PRESSURE, LIGHTING PANEL
LR	LONG RADIUS, LOCAL/REMOTE
LSP	LANDSCAPING SPRINKLER SYSTEM
LT	LIGHT, LEFT
LTG	LIGHTING
LTS	LIGHTS
LV	LOW VOLTAGE
LVL	LEVEL
LWL	LOW WATER LEVEL
LWR	LOWER
LYT	LAYOUT
M/W	WATER METER
M	METER, MALE (PIPE THREAD)
	MAIN COIL, MOTOR
mA	MILLIAMPS
MA	MANUAL/AUTO
MACH	MACHINE
MAG	MAGNETIC
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MDM	MEDIUM
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MG	MAGNESIUM
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIL	MILITARY, 1/1,000 INCH
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MK	MARK
MMI	MAN MACHINE INTERFACE
MO	MOTOR OPERATED, MASONRY OPENING
MOD	MODIFY, MODIFIED
MON	MONUMENT
MOT	MOTOR
MOV	MOTOR OPERATED VALVE
MS	MANUAL SWITCH
MSL	MEAN SEA LEVEL
MT	MOUNT
MTC	MECHANICAL-TYPE COUPLING
MTD	MOUNTED, MULTIPLE TELEPHONE DUCT
MTG	MOUNTING
MTR	METERING STATION
MULT	MULTIPLE
MV	MEDIUM VOLTAGE
mV	MILLIVOLTS
N	NORTH, NEUTRAL
NA	NON-AUTOMATIC, NOT APPLICABLE
NBS	NATIONAL BUREAU OF STANDARDS
NC	NORMALLY CLOSED
NDL	NEEDLE VALVE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURING ASSOCIATION
NEUT	NEUTRAL
NF	NEAR FACE
NFPA	NATINAL FIRE PROTECTION ASSOCIATION
NG	NATURAL GRADE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NOS	NUMBERS
NPS	NOMINAL PIPE SIZE (FORMERLY I.P.S.)
NPT	NATIONAL PIPE THREAD
NRS	NON-RISING STEM
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	OVER-CROSSING, ON CENTER, OPEN/CLOSE
OCA	OPEN/CLOSE/AUTO
OCB	OIL CIRCUIT BREAKER
OCR	OPEN/CLOSE/REMOTE
OD	OUTSIDE DIAMETER, OVERALL DIMENSION
OE	OUTSIDE EDGE
OF	OUTSIDE FACE
OH	OVERHEAD
OL	OVERLOAD RELAY, OUTLET
OPER	OPERATOR
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OS & Y	OUTSIDE STEM AND YOKE
OUT	OUTPUT
OVFL	OVERFLOW
OVHD	OVERHEAD
OZ	OUNCE

NOTE: SOME ABBREVIATIONS MAY NOT BE USED IN THIS CONTRACT

A-2

STANDARD ABBREVIATIONS (F-O) FIGURE 3-1

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

FOR CITY ENGINEER ____ DATE ____ ASSOCIATE ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

PROJECT ENGINEER
000-0000
DZ89 COORDINATE
0000000-0000000
CD89 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

19905-01-D

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Figure 3-1 Standard Abbreviations

ABBREVIATION	MEANING
P/S	POLE AND SHELF
PE/BS	PLAIN END, BUTT STRAP
P	POLE, PAGE, PIPE, PHASE, PLASTIC
PA	PLANT AIR, PUBLIC ADDRESS
PAVMT	PAVEMENT
PC	PORTLAND CEMENT, POINT OF CURVATURE, PERSONAL COMPUTER
PCM	PROCESS CONTROL MODULE
PCSC	PRESTRESSED CONCRETE STEEL CYLINDER
PD	PLANT DRAIN
PE	PLAIN END, POLYETHYLENE
PED	PEDESTRIAN
PF	POWER FACTOR
PG	PIPE GROUND
PH	PHASE, POT HOLE
pH	HYDROGEN ION CONCENTRATION
PI	POINT OF INTERSECTION, PRESSURE INDICATOR
PI&D	PIPING & INSTRUMENT DIAGRAM
PL, P/L	PLATE, PROPERTY LINE, PLACE, PLUG VALVE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLT	PLANT
PNEU	PNEUMATIC
PNL	PANEL
PNLBD	PANELBOARD
PNT	PAINT
POS	POSITION
PP	POWER POLE, POLYPROPYLENE, POWER PANEL
PPD	POUNDS PER DAY
PPH	POUNDS PER HOUR
PPM	PARTS PER MILLION
PRCST	PRECAST
PREFAB	PREFABRICATED
PRESS	PRESSURE
PRI	PRIMARY
PRV	PRESSURE RELIEF VALVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PS	PRESSURE SWITCH, POWER SUPPLY, PUMPING STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PT	PRESSURE TRANSMITTER POTENTIAL TRANSFORMER
PTFE	POLYTETRAFLUOROETHYLENE (TEFLON)
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	POTABLE WATER, PART WINDING (MOTOR STARTER)
PWR	POWER
QT	QUARRY TILE
QTY	QUANTITY
R/W	RIGHT OF WAY
R	RISER, RATE OR SLOPE, RIGHT, RADIUS
RAM	RANDOM ACCESS MEMORY
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCSC	REINFORCED CONCRETE STEEL CYLINDER
RD	ROOF DRAIN, ROAD
RE-STL	REINFORCING STEEL
RE	REFERENCE ELECTRODE
REC	RECTIFIER
RECPT	RECEPTACLE
RED	REDUCER
REF	REFERENCE
REG	REGULATING STATION
REINF	REINFORCEMENT
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION, REVERSE
RF	ROOF, RAISED FACE
RFG	ROOFING
RGS	RIGID GALVANIZED STEEL
RH	RELATIVE HUMIDITY
RIO	REMOTE I/O
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROFC	RATE OF FLOW CONTROL STATION
ROM	READ ONLY MEMORY
RPM	REVOLUTIONS PER MINUTE, REINFORCED PLASTIC MORTAR
RR	RAILROAD
RS	RISING STEM, RIGID STEEL
RT	RIGHT
RTD	RESISTANCE TEMPERATURE DETECTOR
RTN	RETURN
RTP	REINFORCED THERMOSETTING PLASTIC
RTU	REMOTE TELEMETRY UNIT
RW	RIGHT OF WAY
S/W	SIDEWALK
SE/CJ	SPOT END, CARNEGIE JOINT
S	SOUTH, SINK, SEWER
SA	SAMPLE LINE, STATUS ANNUNCIATOR
SAMA	SCIENTIFIC APPARATUS MAKERS ASSOCIATION
SAT	SITE ACCEPTANCE TEST
SBR	STYRENE BUTADIENE RUBBER
SCD	SCREWED
SCFM	STANDARD CUBIC FEET PER MINUTE
SCHD	SCHEDULE
SCRW	STEEL CYLINDER ROD WRAPPED
SDR	STORM DRAIN
SD	CITY OF SAN DIEGO
SDRSD	SAN DIEGO REGIONAL STANDARD DRAWING
SDSD	CITY OF SAN DIEGO STANDARD DRAWING
SEC	SECONDARY, SECONDS
SECT	SECTION
SEL SW	SELECTOR SWITCH
SEQ	SEQUENCE
SER	SERIES
SHT	SHEET
SHT DN	SHUT DOWN
SIG	SIGNAL
SL	SLOPER, SLOPE LENTH, SURVEY LINE, SLUICE VALVE
SLDG	SLIDING
SO	SIDE OUTLET
SOD	SPECIFIED IN OTHER DIVISIONS
SOL	SOLENOID
SP	SPARE, STATIC PRESSURE
SPDT	SINGLE POLE DOUBLE THROW
SPECF	SPECIFIED
SPECS	SPECIFICATIONS
SPK	SPEAKER
SPST	SINGLE POLE SINGLE THROW
SQ	SQUARE
SR	SHORT RADIUS
SS	STAINLESS STEEL SELECTOR SWITCH, START/STOP
SSB	STAINLESS STEEL BOLT
ST PR	STATIC PRESSURE
STA	STATION
STD	STANDARD
STL	STEEL
STM	STEAM
STR	STRAIGHT
STRD	STRANDED
STRUCT	STRUCTURAL OR STRUCTURE
SUCT	SUCTION
SV	SOLENOID VALVE, SAFETY VALVE, SUPPLY VENT
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMBOL
SYMM	SYMMETRICAL
SYS	SYSTEM

NOTE: SOME ABBREVIATIONS MAY NOT BE USED IN THIS CONTRACT.

A-3

STANDARD ABBREVIATIONS (P-S) FIGURE 3-1

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED
MGR CITY ENGINEER DATE

SUBMITTED BY
ASSOCIATE ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

DESIGNED BY
PROJECT ENGINEER
000-0000
COSD/ CCOORDINATE
0000000-0000000
COSD COORDINATE

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

19905-01-D

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Figure 3-1 Standard Abbreviations

ABBREVIATION	MEANING
T & B	TOP AND BOTTOM
T/C	THERMOCOUPLE
T & G	TONGUE AND GROOVE
T	TREAD OF STAIR, TOP, TOILET, THICKNESS
TACH	TACHOMETER
TAN	TANGENTIAL, TANGENT
TB	TACK BOARD, TERMINAL BOARD
TBD	TO BE DETERMINED
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCH MARK
TBS	TEST BOND STATION
TC	TOP OF CURB, TIMED CLOSED, TOP OF CONCRETE, THERMOCOUPLE
TDOD	TIME DELAY ON DE-ENERGIZE
TDOE	TIME DELAY ON ENERGIZE
TEL	TELEPHONE
TELCO	TELEPHONE UTILITY
TEMP	TEMPERATURE, TEMPORARY
TERM	TERMINAL
THK	THICK, THICKNESS
THRD	THREADED
TK	TANK
TO	TIMED OPEN
TOE	THREAD ONE END
TOL	THREADED OUTLET
TP	TELEPHONE POLE OR TELEGRAPH POLE
TS	TIME SWITCH, TRANSITION STRUCTURE, TEMP SWITCH, TEST STATION
TSPR	TWISTED SHIELDED PAIR
TURB	TURBIDITY
TV	TELEVISION
TW	TOP OF WALL, THERMOMETER WELL
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UC	UNDER-CROSSING
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UMC	UNIFORM MECHANICAL CODE
UNK	UNKNOWN
UPC	UNIFORM PLUMBING CODE
V	VALVE, VALVE STATION, VERTICAL, VENT, VOLT
VA	VOLT/AMPS
VAC	VACUUM
VAP PRF	VAPOR PROOF
VAR	VARIABLE
VB	VALVE BOX
VC	VERTICAL CURVE, VICTAULIC COUPLING
VCP	VITRIFIED CLAY PIPE
VD	VOLTAGE DROP
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VIB	VIBRATION
VIC	VICTAULIC
VOL	VOLUME
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF
W/	WITH
W/O	WITHOUT
W	WEST, WATTS, WIRE, WATER
WB	WELDED BELL
WC	WATER COLUMN
WD	WOOD
WI	WROUGHT IRON
WM	WATER METER
WP	WEATHERPROOF, WATER PROOFING, WALL PLUG
WS	WATER SURFACE, WELDED SPIGOT
WSP	WELDED STEEL PIPE
WSTP	WATER STOP
WT	WEIGHT
WTR	WATER
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
XCVR	TRANSEIVER
XFMR	TRANSFORMER
XING	CROSSING
XMTR	TRANSMITTER
XSEC	CROSS SECTION
YD	YARD
YR	YEAR
Z	ZERO OR ZONE, IMPEDENCE
ZN	ZINC
ZO	ZINC ORTHOPHOSPHATE

NOTE: SOME ABBREVIATIONS MAY NOT BE USED IN THIS CONTRACT

A-4

STANDARD ABBREVIATIONS (T-Z) FIGURE 3-1

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER W.O. 0-00000
SEWER W.O. 0-00000

APPROVED
FOR CITY ENGINEER DATE

SUBMITTED BY
ASSOCIATE ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

DESIGNED BY
PROJECT ENGINEER
000-0000
CCDSD COORDINATE
0000000-0000000
CCDSD COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

19905-01-D

STAMP

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Figure 3-2 CIP Sample Border

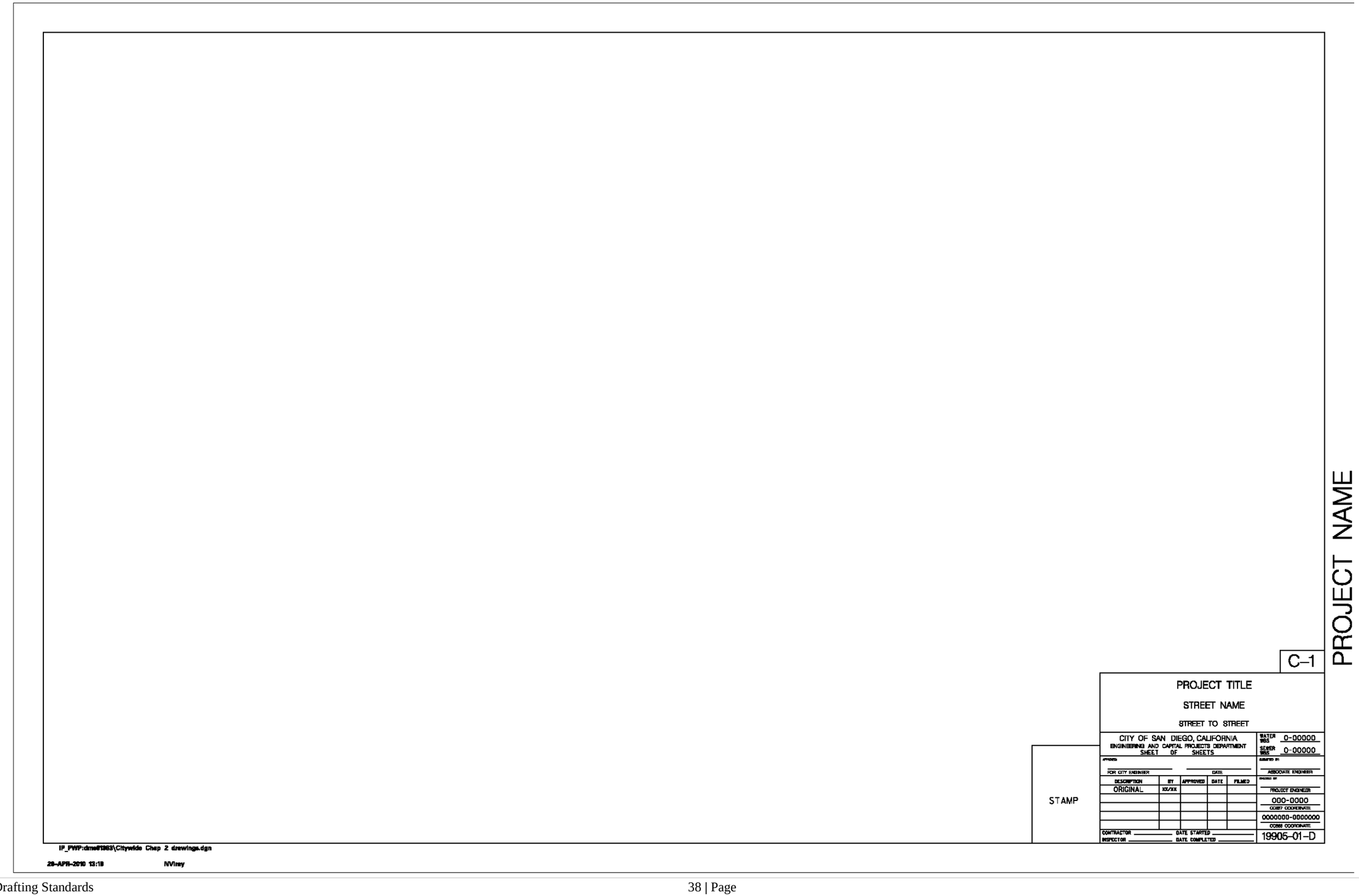


Figure 3-2 CIP Sample Border

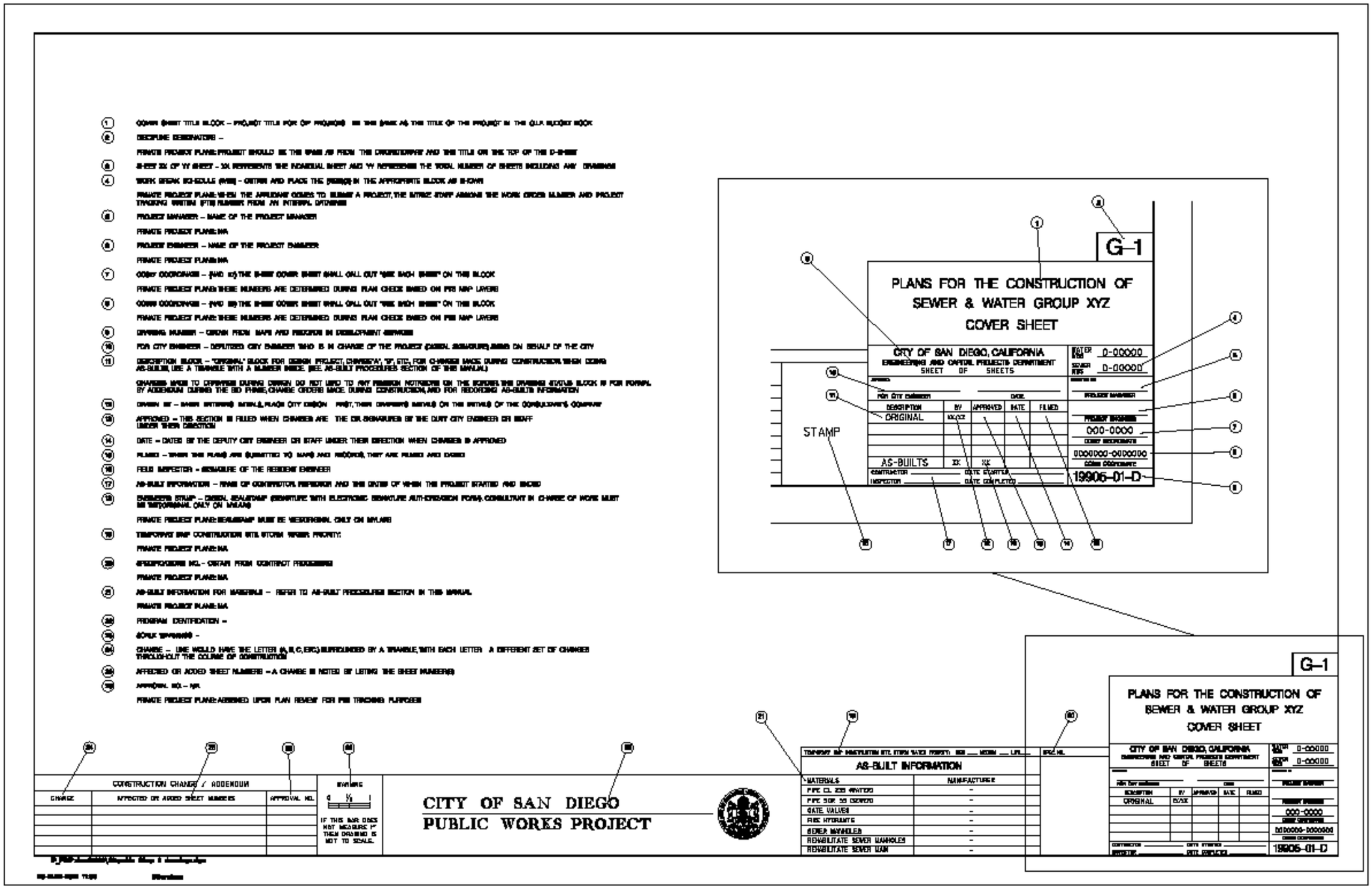


Figure 3-3 Reading Direction

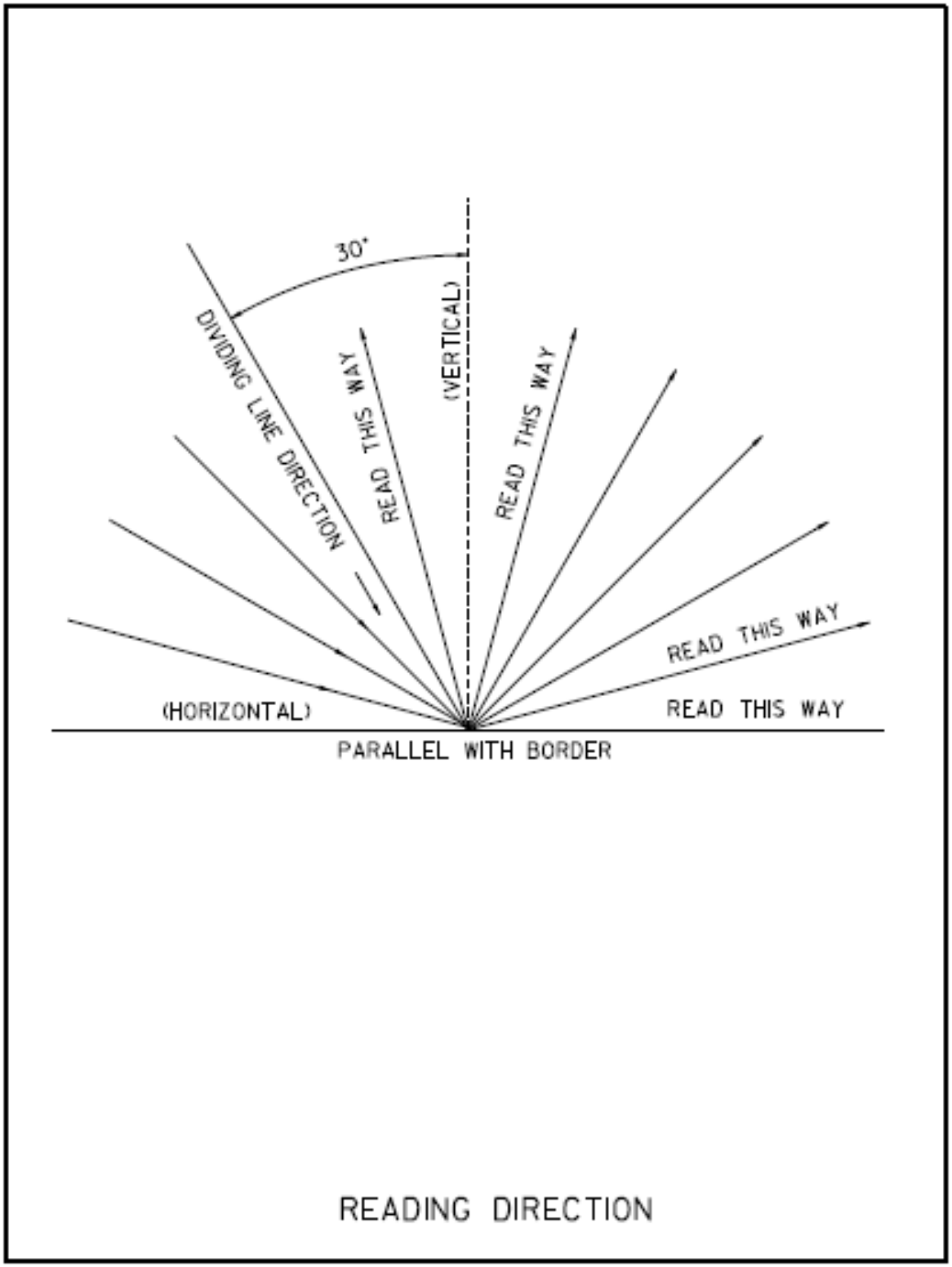


Figure 3-4 Line Patterns and Widths

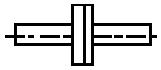
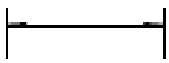
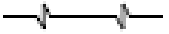
NAME	PATTERN	WIDTH	PEN SIZE
SCHEMATIC MAIN PROCESS		EXTRA HEAVY	3
SCHEMATIC SECONDARY PROCESS		HEAVY	2
CUTLINE–PROPOSED FACILITIES		HEAVY	2
CUTTING PLANE LINE		HEAVY	2
DOUBLE LINE PIPING FLANGE		HEAVY	2
MATCH LINE		MEDIUM	1
SINGLE LINE FLANGE		MEDIUM	1
EQUIPMENT	VARIES	MEDIUM	1
OUTLINE EXISTING FACILITIES		FINE	00
OUTLINE FUTURE FACILITIES		FINE	00
HIDDEN LINE PROPOSED FACILITIES		FINE	00
HIDDEN LINE EXISTING FACILITIES		EXTRA FINE	000
DIMENSION LINES		EXTRA FINE	000
LEADER LINE (CALLOUT LINE)		EXTRA FINE	000
LONG BREAKING LINE		EXTRA FINE	000
CENTERLINE, COLUMN LINE, STRUCTURE OUTLINE		EXTRA FINE	000
PHANTOM LINE		EXTRA FINE	000
LINE PATTERNS AND WIDTHS			

Figure 3-5 Column Lines and Balloons

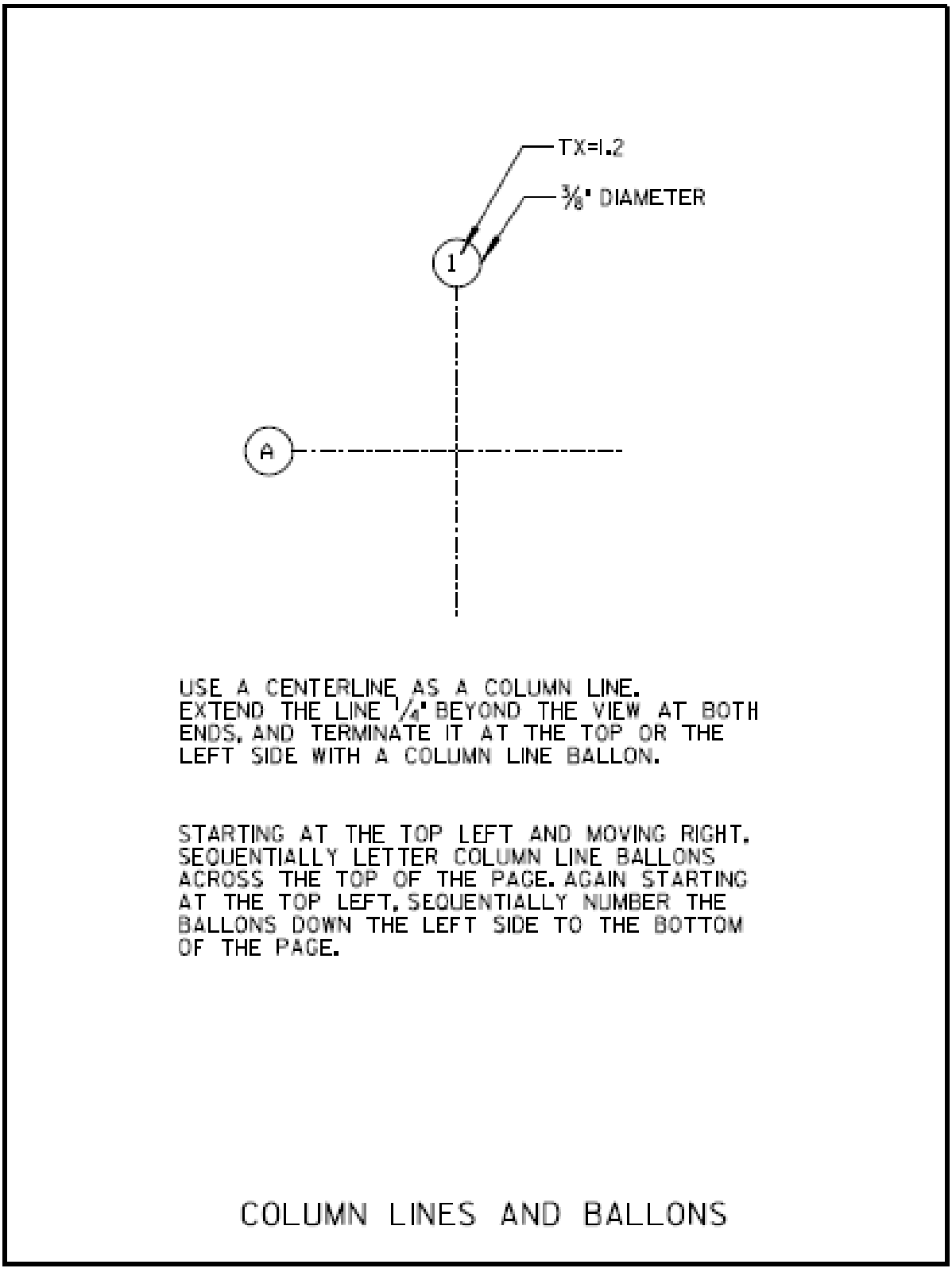


Figure 3-6 Dimensioning

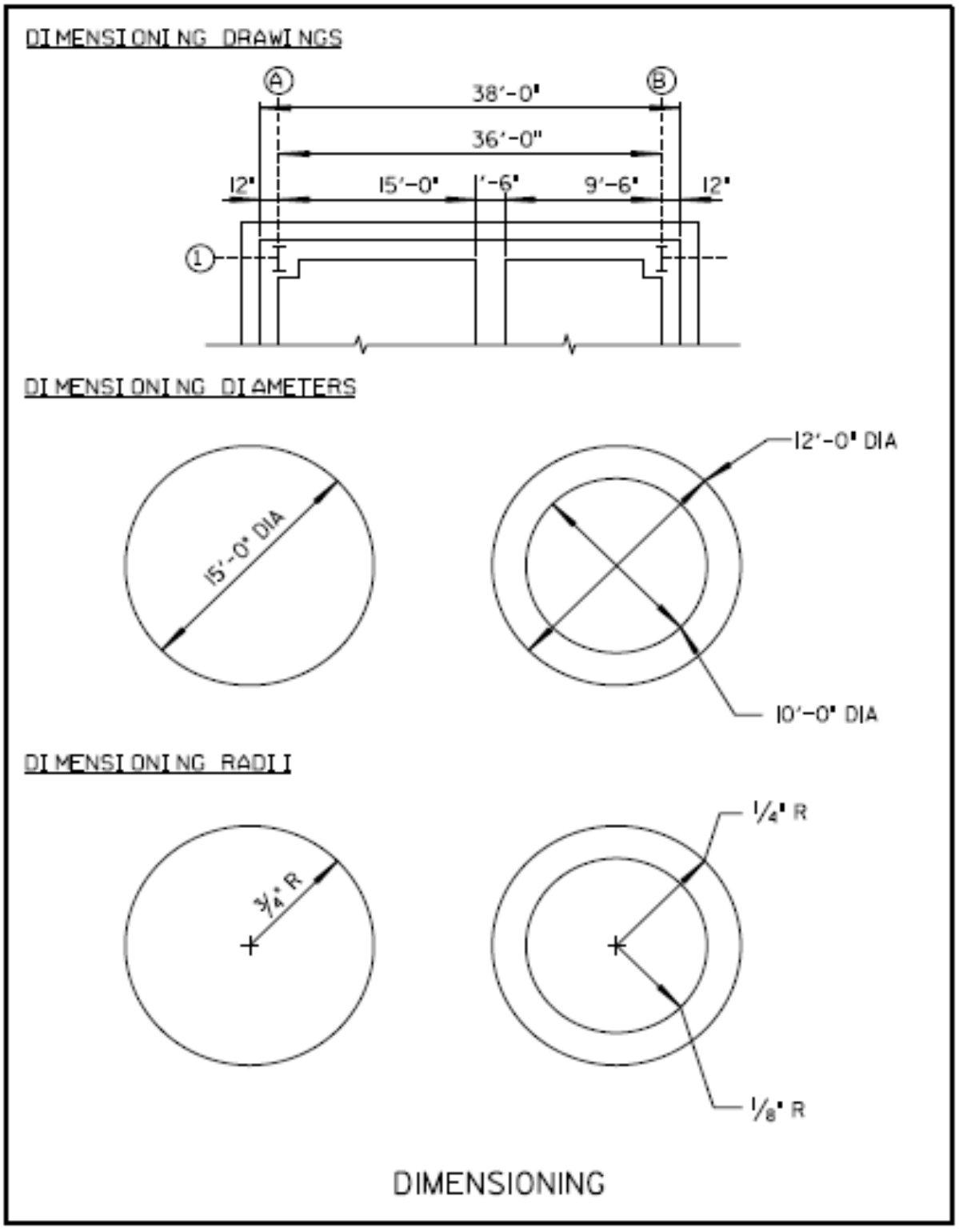


Figure 3-7 Section Callout

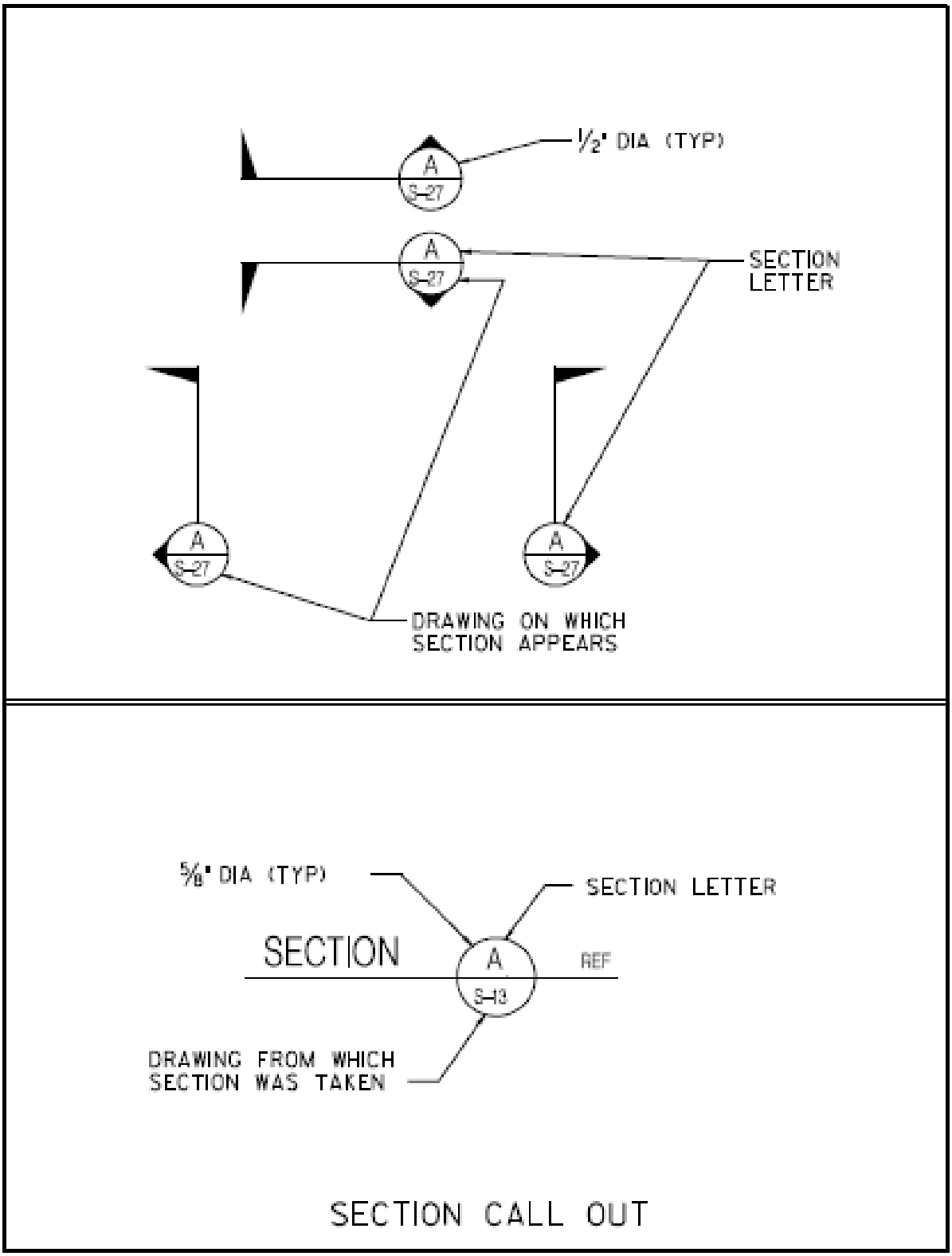


Figure 3-8 Detail Callout

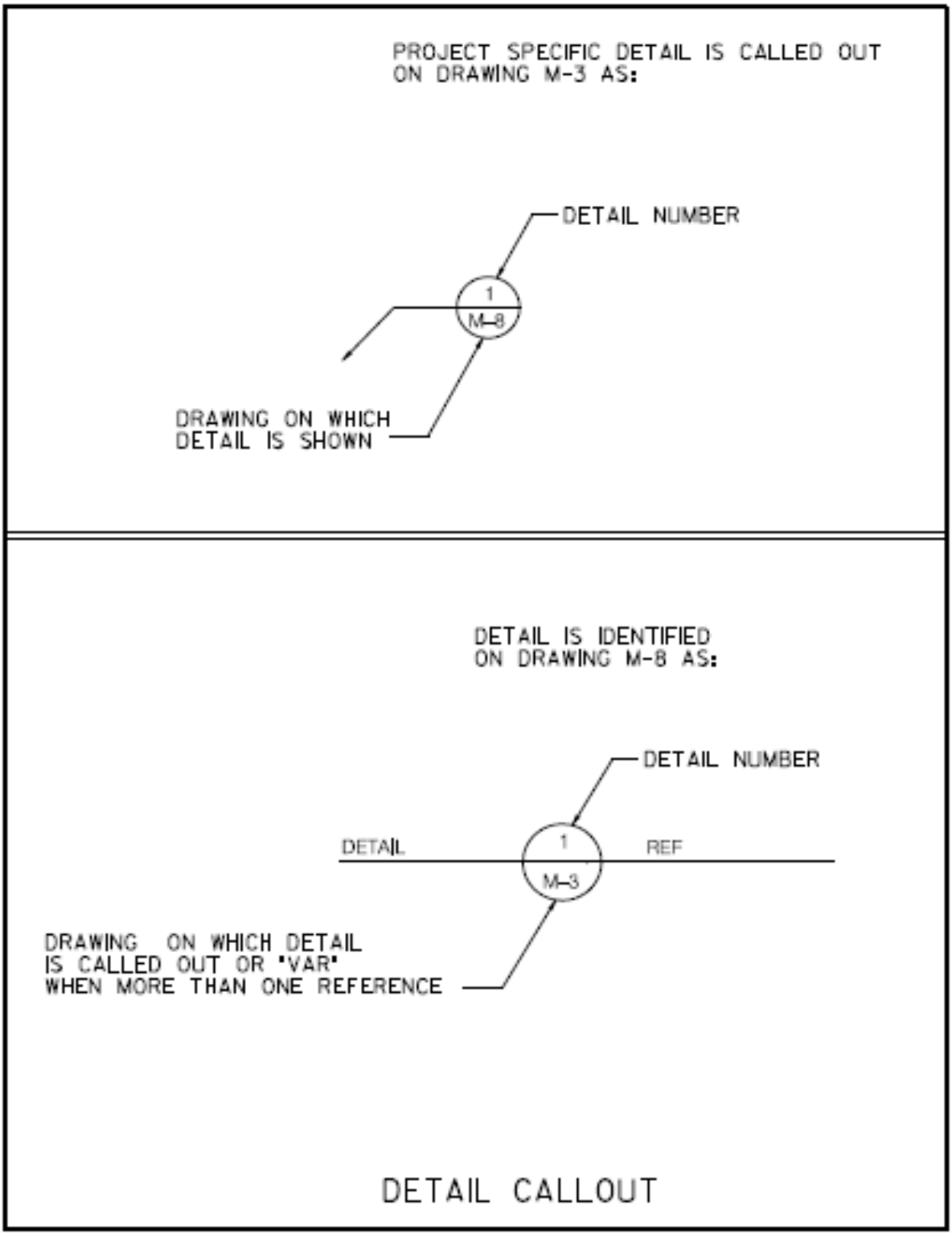


Figure 3-9 Standard Detail Callout

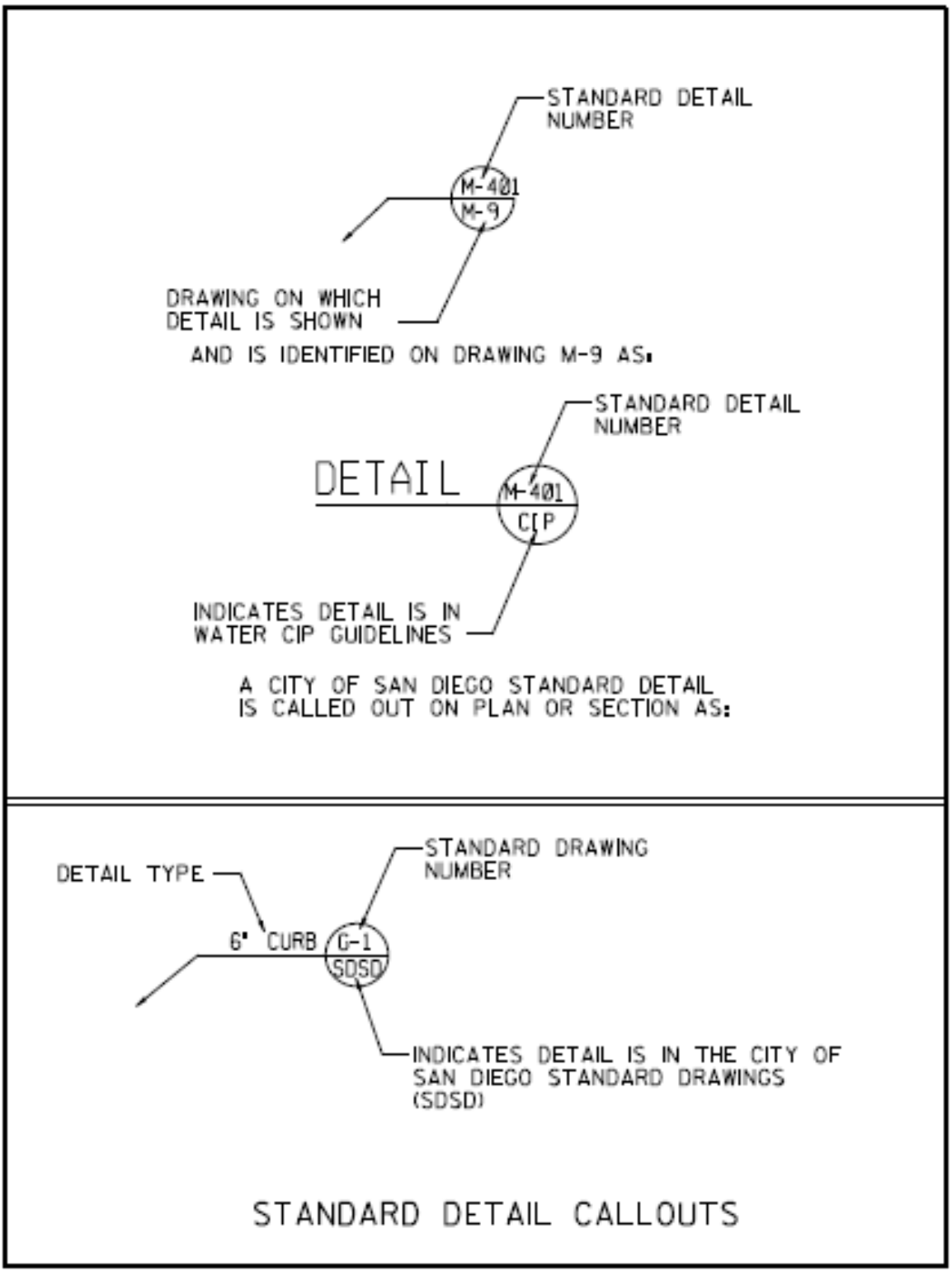


Figure 3-10 Equipment and Piping Callouts

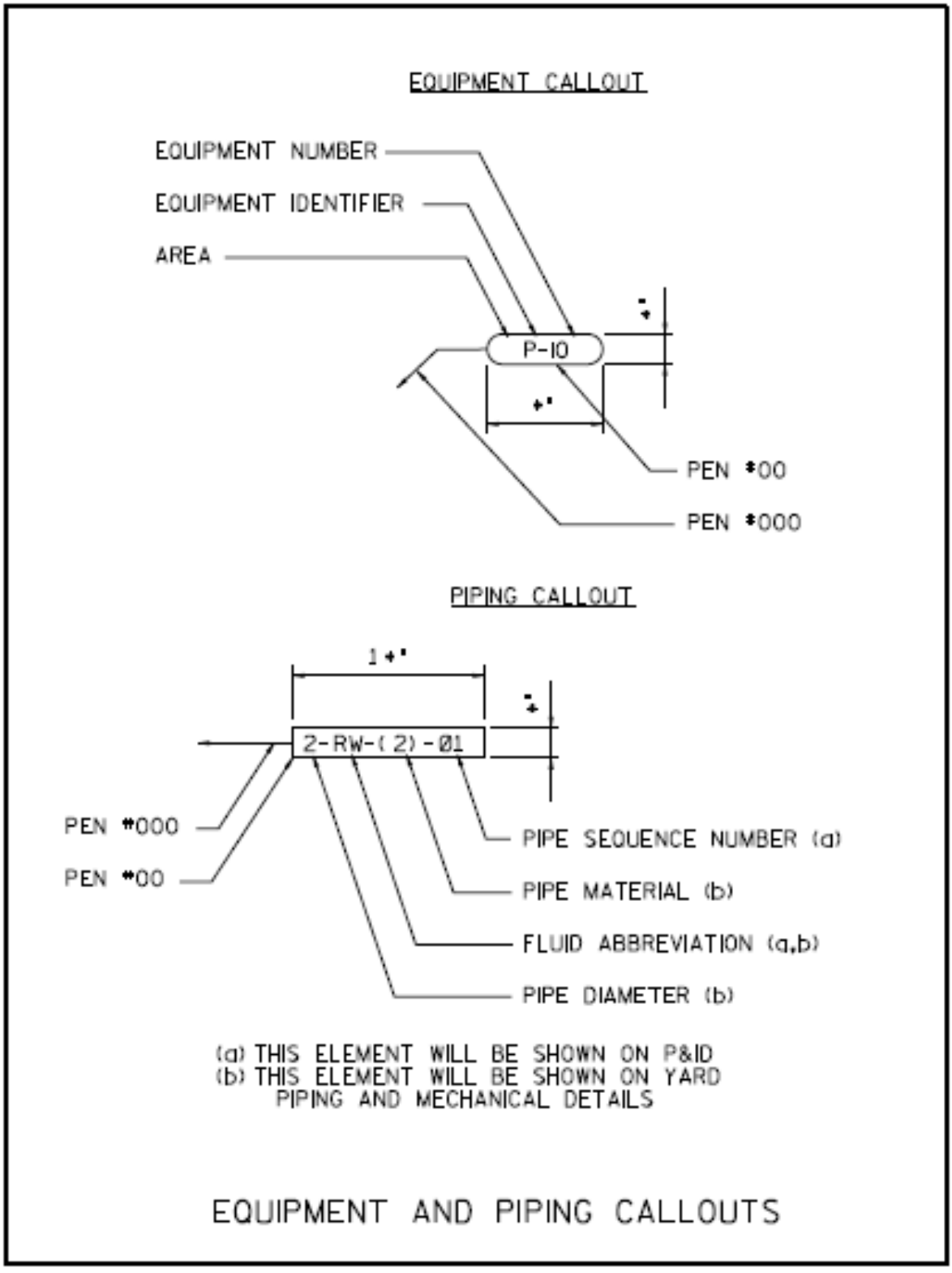


Figure 3-11 View Notes and Leaders

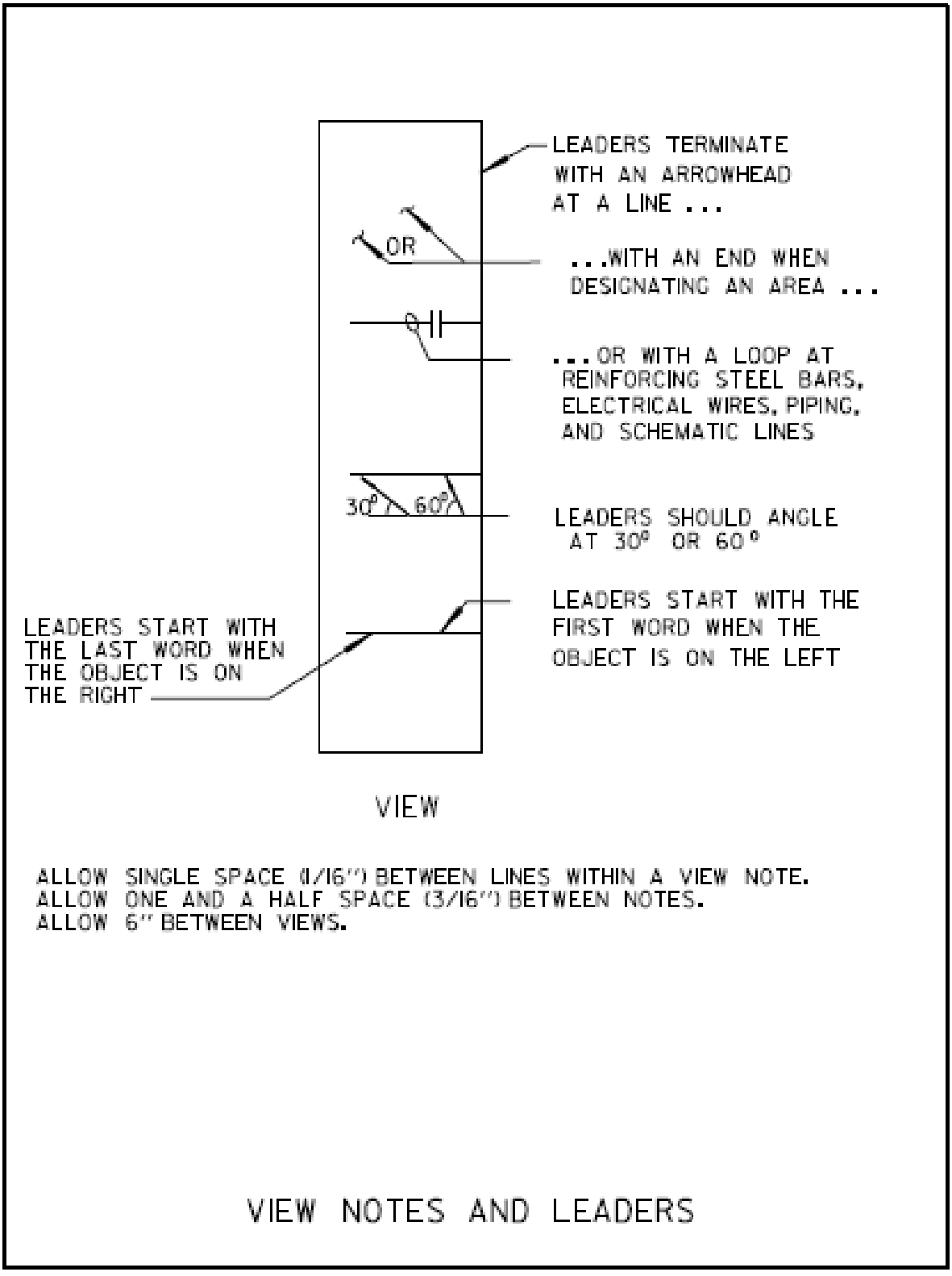


Figure 3-12 North Arrow Direction

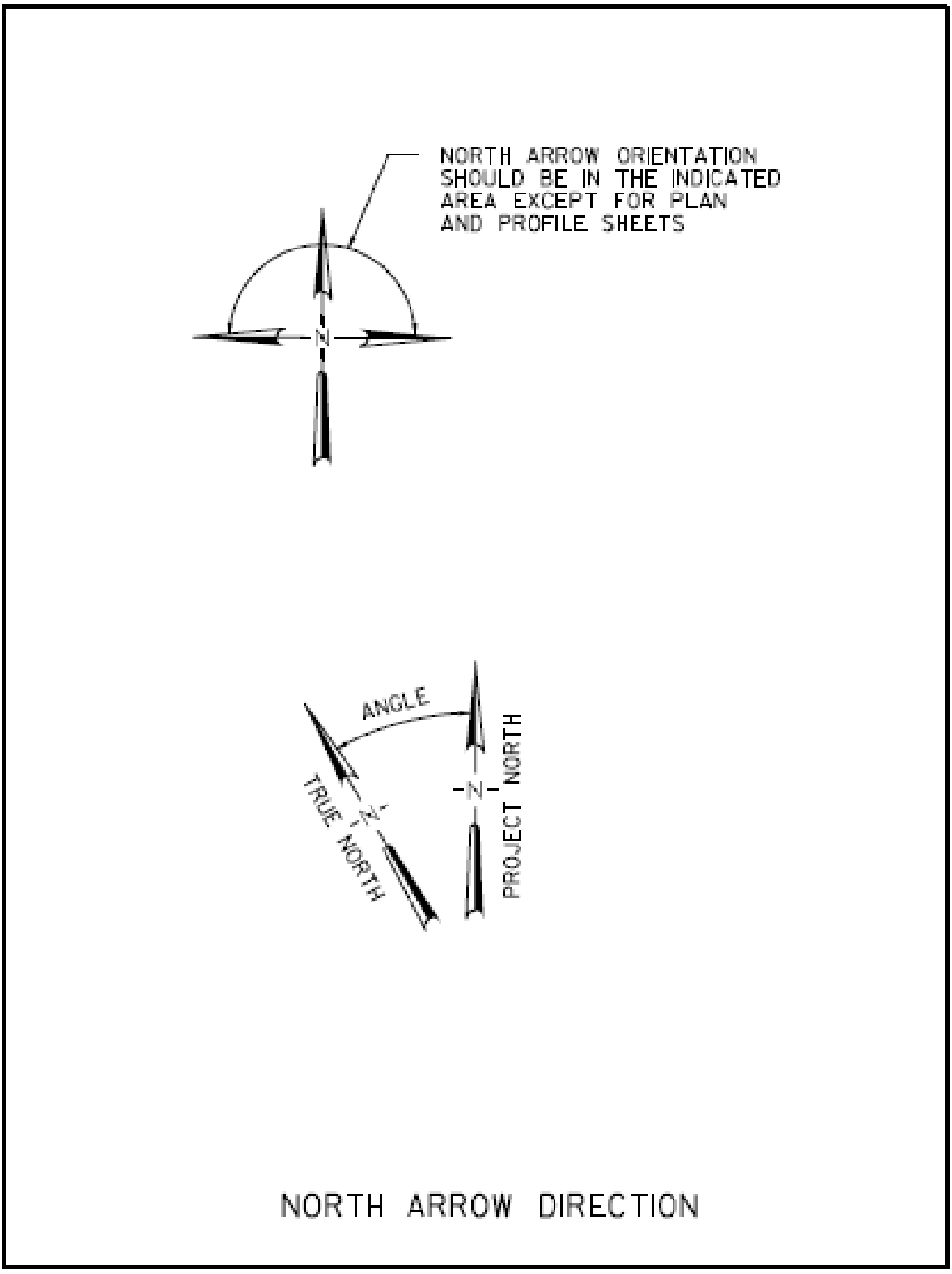


Figure 3-13 Sewer / Water / Storm Drain Cover Sheet Sample

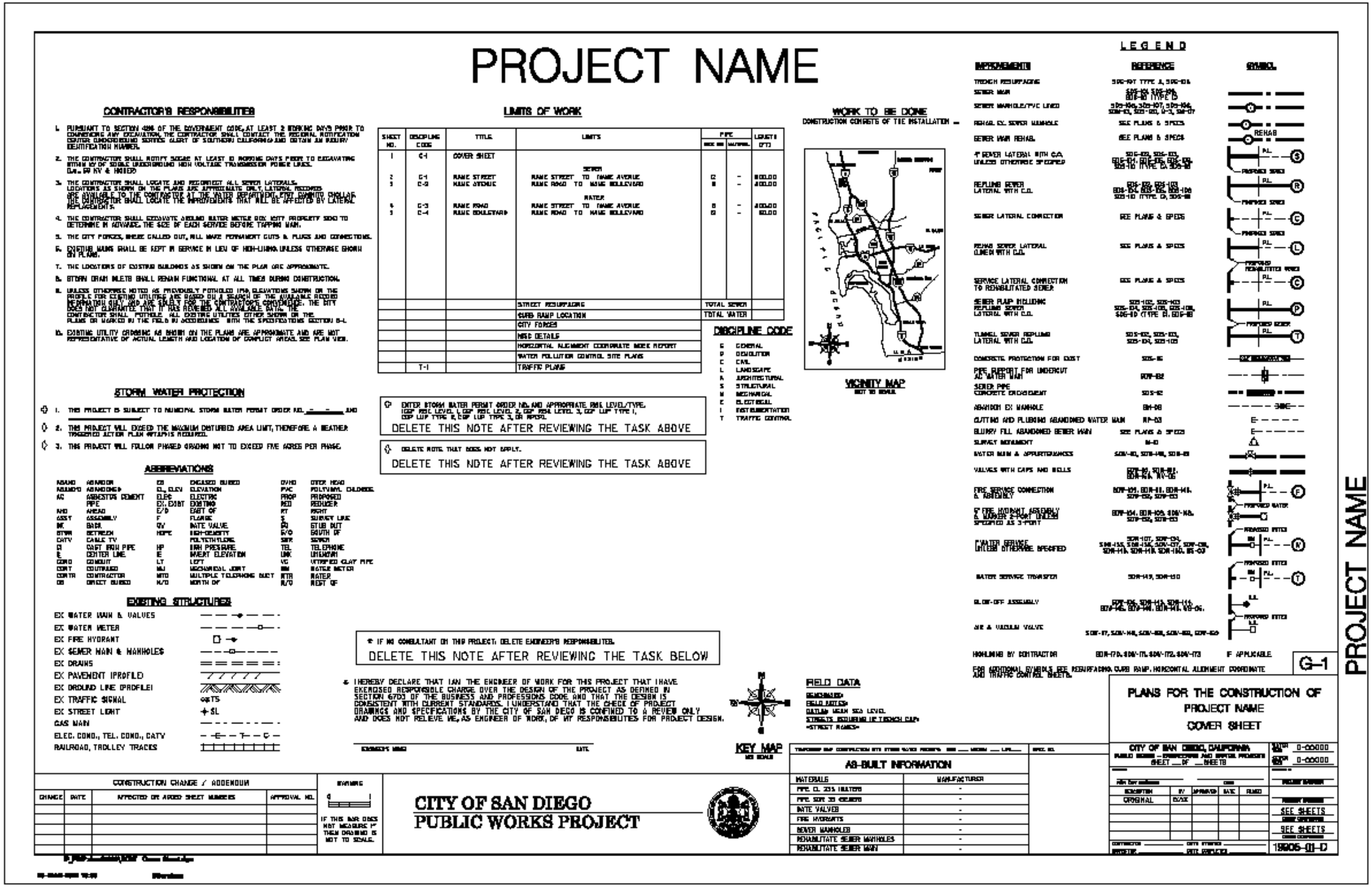
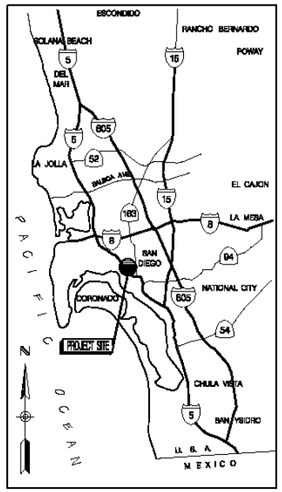
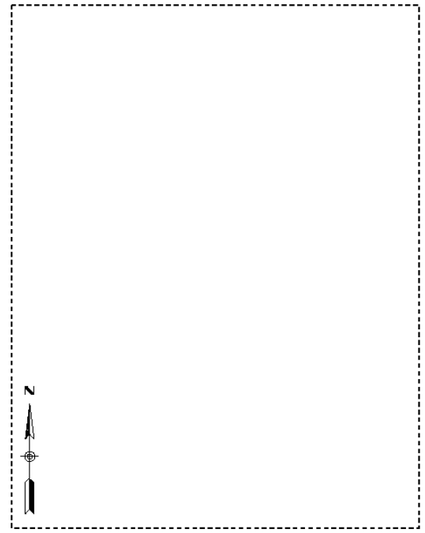


Figure 3-13 Sewer / Water / Storm Drain Cover Sheet 1 Sample

PROJECT NAME



VICINITY MAP
NOT TO SCALE



KEY MAP
NO SCALE

PROJECT NAME

G-1

* IF NO CONSULTANT ON THIS PROJECT; DELETE ENGINEER'S RESPONSIBILITES.
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE

* I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

(ENGINEER'S NAME) DATE

PLANS FOR THE CONSTRUCTION OF
PROJECT NAME
COVER SHEET

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH ____ MEDIUM ____ LOW____

AS-BUILT INFORMATION

MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	-
PIPE SDR 35 (SEWER)	-
GATE VALVES	-
FIRE HYDRANTS	-
SEWER MANHOLES	-
REHABILITATE SEWER MANHOLES	-
REHABILITATE SEWER MAIN	-

SPEC. NO.

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

FOR CITY ENGINEER DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

WATER WO 0-00000
SEWER WO 0-00000
ASSOCIATE ENGINEER
PROJECT ENGINEER
SEE SHEETS CCSD? COORDINATE
SEE SHEETS CCSD? COORDINATE
19905-01-D

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Figure 3-13 Sewer / Water / Storm Drain Cover Sheet 2 Samples

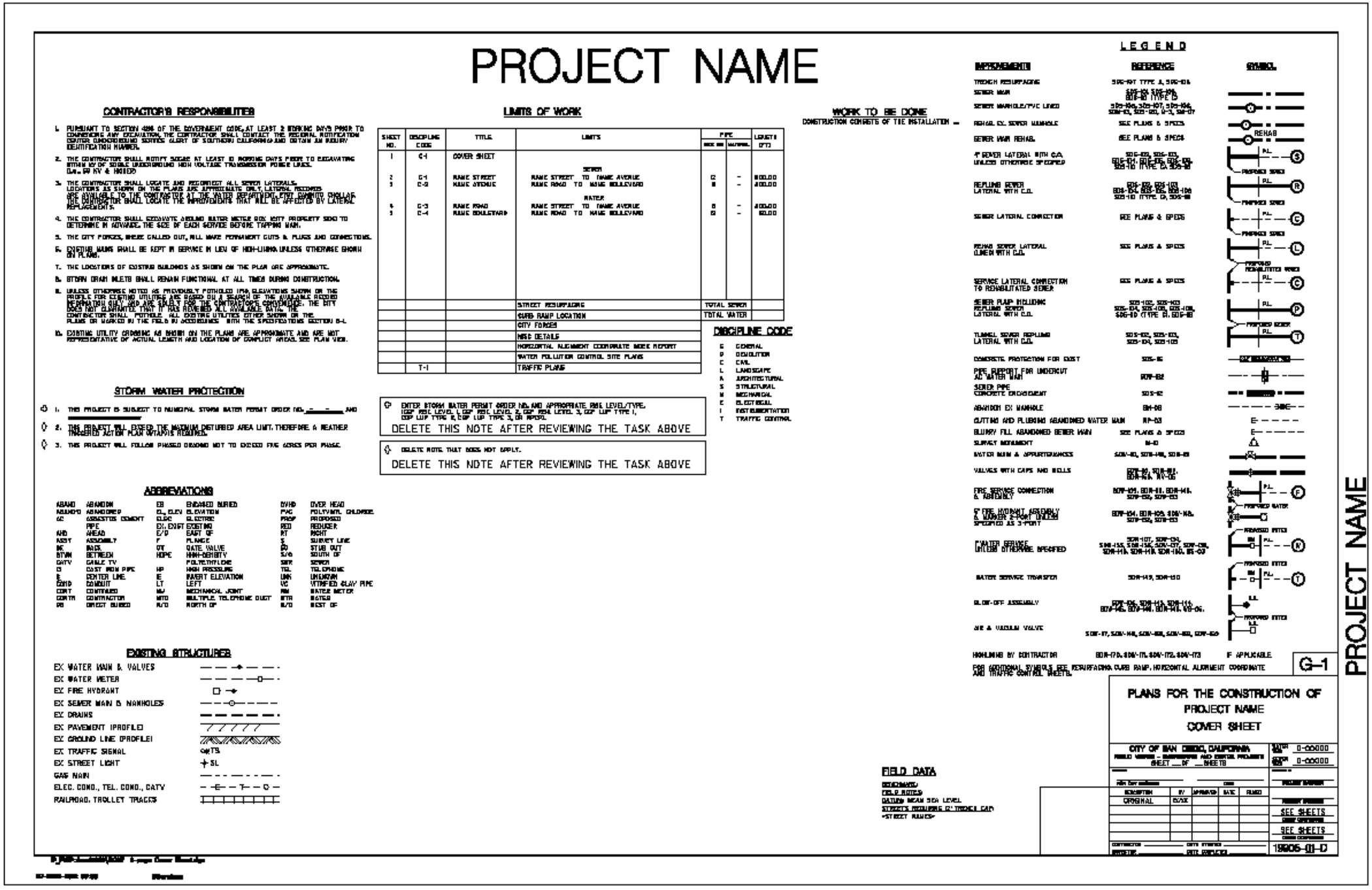
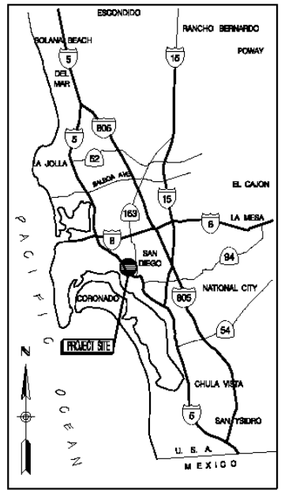
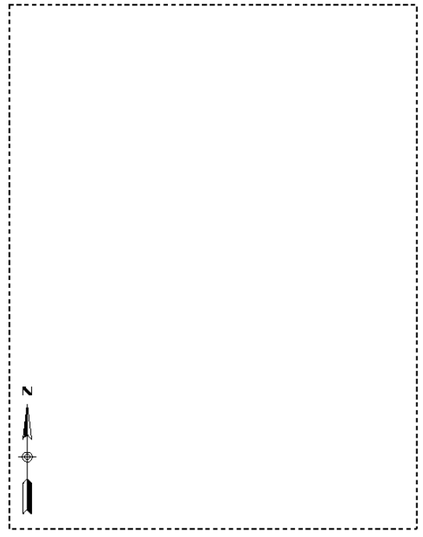


Figure 3-13 Park / Building Cover Sheet 1 Sample

PROJECT NAME



VICINITY MAP
NOT TO SCALE



KEY MAP
NO SCALE

AEP PROJECT NAME

* IF NO CONSULTANT ON THIS PROJECT; DELETE ENGINEER'S RESPONSIBILITES.
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* I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

(ENGINEER'S NAME) DATE

G-1

PLANS FOR THE CONSTRUCTION OF
PROJECT NAME
COVER SHEET

TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH ____ MEDIUM ____ LOW____

CONSULTANT

SPEC. NO.

CONSULTANT

STAMP

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WBS 0-00000
WBS 0-00000

FOR CITY ENGINEER ____ DATE ____

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

ASSOCIATE ENGINEER

PROJECT ENGINEER

SEE SHEETS
CCSD27 COORDINATE

SEE SHEETS
CCSD83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

19905-01-D

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

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Figure 3-13 Park / Building Cover Sheet 2 Sample

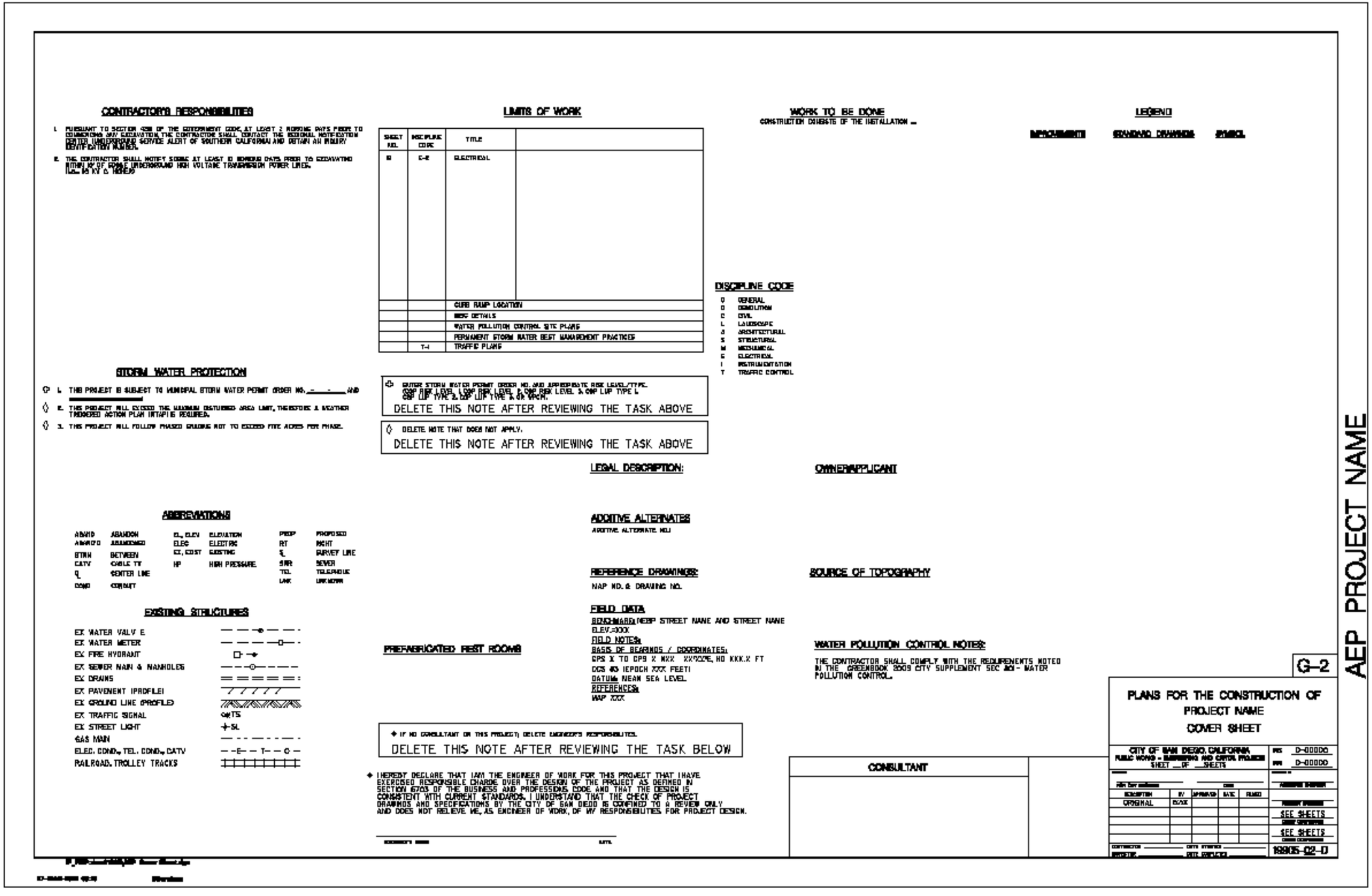


Figure 3-13 Roadway Cover Sheet Sample

PROJECT NAME

CONTRACTORS RESPONSIBILITIES

1. PURSUANT TO SECTION 4216 OF THE GOVERNMENT CODE AT LEAST 2 WORKING DAYS PRIOR TO COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT THE REGIONAL NOTIFICATION CENTER (UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA) AND OBTAIN AN INQUIRY IDENTIFICATION NUMBER.
2. THE CONTRACTOR SHALL NOTIFY SDG&E AT LEAST 10 WORKING DAYS PRIOR TO EXCAVATING WITHIN 10' OF SDG&E UNDERGROUND HIGH VOLTAGE TRANSMISSION POWER LINES. (i.e., 69 kV & HIGHER)

LIMITS OF WORK

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS
3	C-1	CIVIL	NAME ROAD TO NAME BOULEVARD
			CURB RAMP LOCATION
			MISC DETAILS
			WATER POLLUTION CONTROL SITE PLANS
			PERMANENT STORM WATER BEST MANAGEMENT PRACTICES
	T-1		TRAFFIC PLANS

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE STANDARD SPECIFICATIONS AND THE STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

LEGEND

IMPROVEMENTS	REFERENCE	SYMBOL
SIDEWALK	SDG-129, SDG-133, SDG-136, G-1	
CURB AND GUTTER	SDP-95, TYPE H	
CURB INLET	SDD-95, TYPE B-1	
STORM DRAIN CLEANOUT	D-9, TYPE J	
NO.3 1/2" PULLBOX	CALTRANS ES-8	

FOR ADDITIONAL SYMBOLS SEE CURB RAMP AND TRAFFIC CONTROL SHEETS.

DISCIPLINE CODE

B	GENERAL
D	DEMOLITION
C	CIVIL
L	LANDSCAPE
A	ARCHITECTURAL
S	STRUCTURAL
M	MECHANICAL
E	ELECTRICAL
I	INSTRUMENTATION
T	TRAFFIC CONTROL

STORM WATER PROTECTION

○ 1. THIS PROJECT IS SUBJECT TO MUNICIPAL STORM WATER PERMIT ORDER NO. _____ AND _____

◇ 2. THIS PROJECT WILL EXCEED THE MAXIMUM DISTURBED AREA LIMIT, THEREFORE A WEATHER TRIGGERED ACTION PLAN (WTAP) IS REQUIRED.

◇ 3. THIS PROJECT WILL FOLLOW PHASED GRADING NOT TO EXCEED FIVE ACRES PER PHASE.

○ ENTER STORM WATER PERMIT ORDER NO. AND APPROPRIATE BMP LEVEL/TYPE.
MSCP BMP LEVEL 1, CSP BMP LEVEL 2, CSP BEST LEVEL 3, CSP LIP TYPE 1, CSP LIP TYPE 2, OR SPECIAL.
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE

◇ DELETE NOTE THAT DOES NOT APPLY.
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE

VICINITY MAP
REF TO MAP

TRAFFIC CONTROL NOTES:

THE CONTRACTOR SHALL PER SECTION X-XX.X.X OF THE CONTRACT SPECIAL PROVISIONS, PREPARE TRAFFIC CONTROL SHOP DRAWINGS AND SUBMIT THEM TO THE RESIDENT ENGINEER. THE SHOP DRAWINGS WILL BE SENT TO THE ENGINEERING TRAFFIC CONTROL SECTION FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL ALLOW A MINIMUM OF TWENTY (20) WORKING DAYS FOR REVIEW OF THE SHOP DRAWINGS. UPON APPROVAL OF THE TRAFFIC CONTROL PLAN, THE ENGINEERING TRAFFIC CONTROL SECTION WILL ISSUE A TRAFFIC CONTROL PLAN (TCP) PERMIT. WORK SHALL NOT BEGIN IN THE PUBLIC RIGHT OF WAY WITHOUT THE APPROVED TCP PERMIT.

WATER POLLUTION CONTROL NOTES:

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS NOTED IN THE GREENBOOK 2009 CITY SUPPLEMENT SEC 803 - WATER POLLUTION CONTROL.

ABBREVIATIONS

ABAND	ABANDON	EL. ELEV	ELEVATION	PROP	PROPOSED
ABANDD	ABANDONED	ELEC	ELECTRIC	RT	RIGHT
BTWN	BETWEEN	EX. EXIST	EXISTING	℄	SURVEY LINE
CATV	CABLE TV	HP	HIGH PRESSURE	RVR	RIVER
℄	CENTER LINE			TEL	TELEPHONE
COND	CONDUIT			UNK	UNKNOWN

EXISTING STRUCTURES

EX WATER MAIN & VALVES
EX WATER METER
EX FIRE HYDRANT
EX SEWER MAIN & MANHOLES
EX DRAINS
EX PAVEMENT (PROFILE)
EX GROUND LINE (PROFILE)
EX TRAFFIC SIGNAL
EX STREET LIGHT
GAS MAIN
ELEC. COND., TEL. COND., CATV
RAILROAD, TROLLEY TRACKS

◆ IF NO CONSULTANT ON THIS PROJECT, DELETE ENGINEER'S RESPONSIBILITIES.
DELETE THIS NOTE AFTER REVIEWING THE TASK BELOW

* I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK DATE

KEY MAP
NO SCALE

STREET CLASSIFICATION
STREET NAME:
STREET CLASSIFICATION: ADT=XXXXXX

REFERENCE:
MAP NO. & DRAWING NO.

FIELD DATA
BENCHMARK: NGVD STREET NAME AND STREET NAME ELEV.=XXX
FIELD NOTES:
BASIS OF BEARINGS / COORDINATES:
GPS X TO GPS X NAD XXXXNE, HD XXX.X FT
CCS 83 (EPOCH XXX FEET)
DATUM: MEAN SEA LEVEL
REFERENCES:
MAP XXX

TEMPORARY BMP INFORMATION SITE STORM WATER PERMITS BDR ___ MSMAN ___ LIP___ SPEC NO.

CONSTRUCTION CHANGE / ADDENDUM

CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

GRAPHIC SCALE
0 1"
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

G-1

PLANS FOR THE CONSTRUCTION OF
PROJECT NAME
COVER SHEET

CITY OF SAN DIEGO, CALIFORNIA
PUBLIC WORKS - ENGINEERING AND CAPITAL PROJECTS
SHEET __ OF __ SHEETS

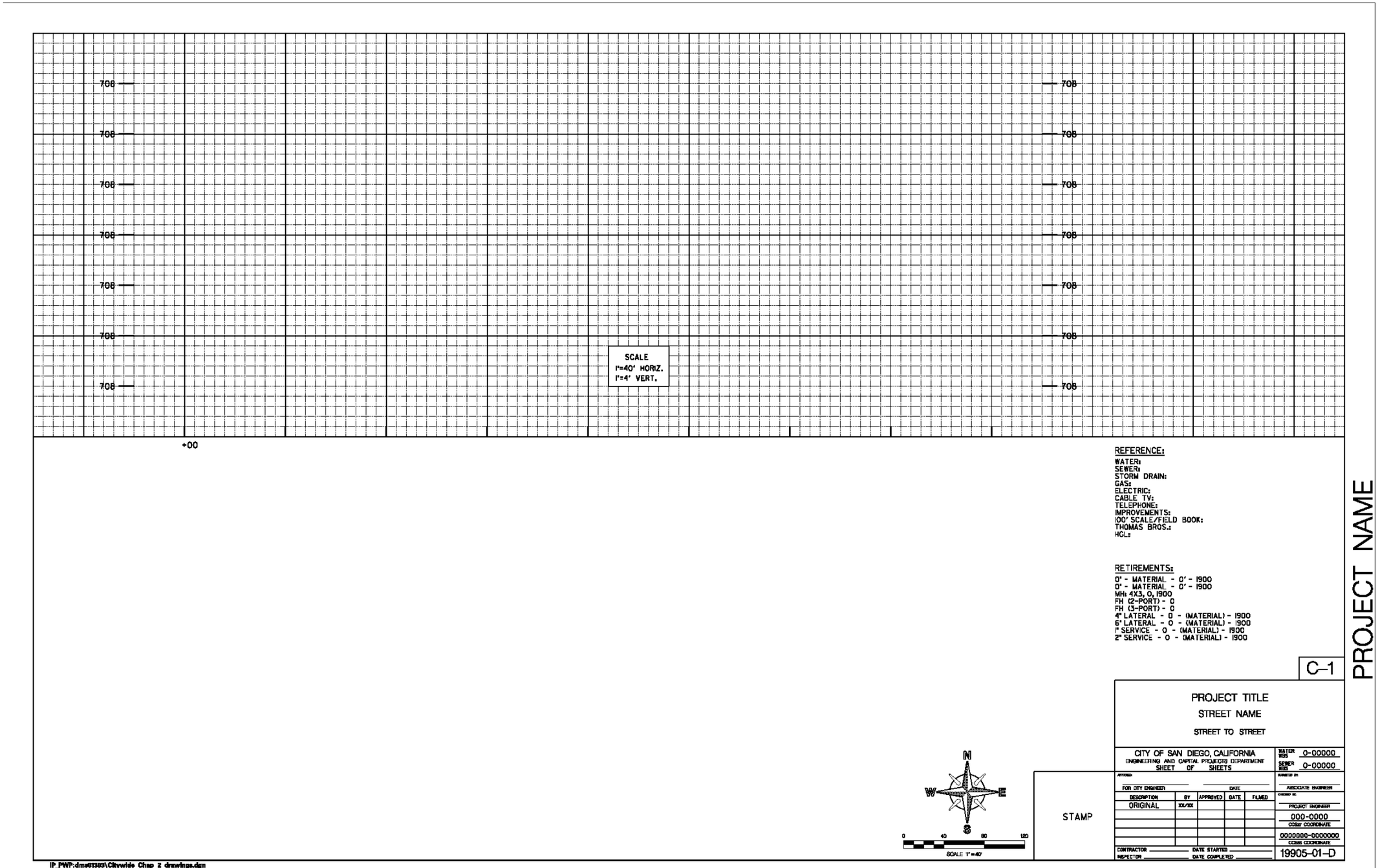
DESCRIPTION	BY	APPROVED	DATE	AS-BUILT
ORIGINAL	ENGR			

CONTRACTOR DATE STARTED
ENGINEER DATE COMPLETED

AS-BUILT DRAWING
PROJECT NUMBER
000-0000
CONST. CONTRACT NO.
000-0000
DRAWING NUMBER
19906-01-D

PROJECT NAME

Figure 3-14 Sample Plan and Profile Sheet



CHAPTER 4 PUBLIC & PRIVATE DEVELOPMENT

4.1 Private Development & Public Improvement (Private Contract)

4.1.1 General Standards and Procedures

Plans must be routed to the Development Services Department (DSD) for plan check and approval to ensure consistency.

The planning functions for private developments are generally required of the land developer from conditions of a development permit (i.e., tentative map resolution, Site Development Permit, Coastal Development Permit, Neighborhood Development Permit, etc.). Any questions of these aspects must be directed to the Project Manager assigned to the submitted project in DSD.

The applicable disciplines from DSD review the project for compliance with the development permit conditions, design standards, and all applicable regional standard drawings.

In general, the City follows the SSPWC (GREENBOOK) and the Regional and City of San Diego Supplements.

4.1.2 Grading and Public Improvement Plan Templates for Private Contracts

Minor public improvements are to be prepared on a Construction Plan (form DS-3179) as outlined in DSD's Information Bulletin 165. Major public improvements and grading projects are to be prepared on D-Sheet format. Format requirements for all templates may be obtained from the following web site; http://www.sandiego.gov/development-services/industry/standtemp.shtml. A sample of the D-Sheet template may be found in Figure 4-1.

All plans must be prepared according to these standards and the templates found at DSD's website. Other drawing formats are not acceptable.

4.1.3 Typical Sheets for Grading and Public Improvement Plans

Grading and Public Improvement Plans on D-Sheets must include the following applicable sheets (but not limited to):

- Title Sheet
- Notes and Details
- Grading Plan
- Improvement Plan (Plan and Profile)
- Erosion Control Plan
- Signing/Striping/Curb Utilization Plan
- Shoring Plan
- Planting/Landscape/Irrigation Plan
- Traffic Signal Plan
- Traffic Control Plan

4.1.4 Drawing Numbering

Each grading and improvement project for private contracts on D-Sheets are assigned a five-digit number by the Engineering Maps and Records Section of DSD. Every construction drawing carries the project number, a sequential number within the set, and the drawing size designation "D" in the lower right-hand corner of the title block.

For example:

20905 - 1- D

Project No.	20905
Sequential Sheet No.	01
Drawing Size Designation	D

4.2 Public Improvement & Facilities

4.2.1 Improvement Plans

4.2.2 Discipline Specifics

This section elaborates on the content of the drawings produced by the various disciplines.

4.2.2.1 Cover Sheet

The standard cover sheet is shown in Figure 4-1. The Design Consultant places the vicinity and location maps on the cover sheet. The name of the consultant, engineer's declaration, and block for stamp is also included on this sheet. The Discipline code for this sheet is D-1.

4.2.2.2 General Drawings

General drawings present information which relates to the overall project, not to any single discipline. They are numbered in sequence. The number of general drawings depends on the size of the project. Information on sheets must be combined when possible. These drawings carry a "D" number, in the following sequence.

A. Overall Site Plan

Drawing numbered D-2 follows D-1 in every project. It shows the entire project site. If the project site is too large to be shown with the necessary level of detail, the overall site plan may be used as a key map.

1. Individual structures or process units must be identified. If the scale is small enough to prevent adequate size lettering, a structure or process numbering index must be used.

2. The grid system must be shown on this plan along with the basis of bearing and any adjustment to plan north.

3. The benchmark reference is also shown on this plan.

4. The boundary of the property is shown with bearings and distances or coordinates.

5. Treatment plant drawings can be classified according to Table 4-1. Unassigned area numbers are available to make the system flexible.

Table 4-1

AREA NUMBERING SYSTEM

No.	Area	No.	Area
1	Influent Pump Station	51	Operations & Maintenance Building
2	Influent Metering	52	Unassigned
3	Unassigned	53	Unassigned
4	Unassigned	54	Unassigned
5	Headworks	55	Chemical Building
6	Unassigned	56	Unassigned
7	Unassigned	57	Unassigned
8	Unassigned	58	Unassigned
9	Unassigned	59	Unassigned
10	Primary Sedimentation Tanks	60	Odor Control Facilities
11	Intermediate Pump Station	61	Unassigned
12	Flow Equalization	62	Unassigned
13	Unassigned	63	Unassigned
14	Unassigned	64	Unassigned

No.	Area	No.	Area
15	Aeration Basins	65	Utility System
16	Unassigned	66	Electrical Substation
17	Unassigned	67	HVAC System
18	Unassigned	68	Unassigned
19	Unassigned	69	Unassigned
20	Secondary Clarifiers	70	Energy Recovery Building
21	Secondary Effluent Splitter Box	71	Unassigned
22	Coagulation & Flocculation Structure	72	Unassigned
23	Unassigned	73	Unassigned
24	Unassigned	74	Unassigned
25	Effluent Drop Structure	75	Dissolved Air Floatation Thickeners
26	Waste Backwash Tank	76	Unassigned
27	Unassigned	77	Unassigned
28	Unassigned	78	Unassigned
29	Unassigned	79	Unassigned
30	Chlorine Contact Tank	80	Digesters
31	Effluent Control Structure	81	Unassigned

No.	Area	No.	Area
32	Effluent Junction Box	82	Unassigned
33	Effluent Drop Structure	83	Unassigned
34	Unassigned	84	Unassigned
35	Chlorination Building	85	Sludge Dewatering
36	Unassigned	86	Unassigned
37	Unassigned	87	Unassigned
38	Unassigned	88	Unassigned
39	Unassigned	89	Unassigned
40	De chlorination Facility	90	Sludge Drying
41	Unassigned	91	Unassigned
42	Unassigned	92	Unassigned
43	Unassigned	93	Unassigned
44	Unassigned	94	Unassigned
45	Sludge Pumping	95	Sludge Composting
46	Unassigned	96	Unassigned
47	Chemical Building	97	Unassigned
48	Unassigned	98	Unassigned

No.	Area	No.	Area
48	Unassigned	98	Unassigned
49	Unassigned	99	Unassigned
50	Administration Building	100	Unassigned

Numbering of facilities (e.g. valves and valve vaults, etc.) between treatment plants, pumping stations, etc., shall be based on area designations for the originating facility. For example, numbering of facilities on the sludge force main between Point Loma Wastewater Treatment Plant and another project site would be based on the area designation for Point Loma sludge Pumping Station.

B. List of Drawings

This drawing shows the list of design drawings with sheet numbers and drawing numbers identified.

C. General and Project Notes

The purpose of the Construction Notes on the Plans is only "to highlight or bring attention to unique or special aspects, construction details, or to cross reference the special provisions.

Special provisions or other contract terms and conditions are what they are and should remain out of the drawings.

This quality issue is especially important with Consultant designed projects, and need to be understood at the beginning of the design development process. By the time it is in the Contract Processing phase it is too late to make major changes.

D. Abbreviations and Symbols

This sheet lists all the abbreviations and symbols used on the drawings. It follows the general and project notes.

E. Design Criteria

This sheet lists the design criteria for the project. (This sheet may not be required for the construction package.)

F. Flow Diagram

This schematic drawing shows where the liquids flow and how the major equipment and major valves are arranged. Major mechanical equipment is shown and labeled; major valves and instruments are shown but are not labeled. Flow diagrams are used for pumping plant facilities.

G. Pump Curve

For a pump station project, the pump curve must be included to describe the relation between the flow rate and head for each pump. The pump curve is a

graph presentation drawing which characterizes pumps.

H. Hydraulic Profile

For a water pump plant, the hydraulic profile must include the steady-state hydraulic grade line (working pressure), the maximum surge hydraulic grade line, and the minimum surge hydraulic grade line. The hydraulic profile must start from the pump plant and end at the reservoir. High and low water levels inside the suction forebay and ending reservoir must also be identified. Design data including flow rate, pipe diameter and Hazen-Williams coefficient used in developing the profile must be identified as notes.

For water and wastewater treatment plants, the hydraulic profile must show water level elevation throughout the treatment process from plant influent to effluent. Levels at peak and average flow rates must be depicted. Inverts and soffits of hydraulic elements and weir crest elevations shall be called out and depicted accurately, and widths and lengths shall be called out below each profile.

Add notes to clarify how many influent screens and tanks of each process are out of service for each profile condition show. Add notes, similar to the profile elevation call outs, below each process unit to indicate the applicable process unit flow rates for each of the profiles.

Submit detailed hydraulic profile calculations to the project manager for inclusion in City Records.

I. Traffic Control Notes and Index

Unlike the previous general drawings, this sheet is always numbered T-1 in contracts where it is used. It lists contractor requirements for general control of traffic at the site and indexes any plan sheets used to define specific traffic controls. Additional traffic control plans are numbered T-2, etc. (These sheets are discarded at As-Built stage.)

4.2.3 Civil Drawings

Civil drawings are classified as follows:

A. Site Plan

Refer to Section 4.2.2 A.

B. Horizontal Control and Paving Plans

Each sheet may have a key index at the lower right corner with hatching to indicate the plan location on the site. The following must be shown on these drawings:

1. The grid system with the grid reference at the perimeter.

2. Existing structures/improvements with easy-to-identify join lines at the interface. New improvements must be shown solid to stand apart from existing structures which are to be shown dashed or screened.

3. Dimensions and coordinates of structures, roads and all surface features. Two coordinates are necessary to locate each structure.

4. The various paving types clearly distinguishable to separate one from the other.

5. Centerlines of point intersection (PI), curve data, road dimensions, etc., in sufficient quantity to locate all improvements without the need for calculations.

6. Cross-referencing of sections and details associated with the paving.

7. Catch basins, manhole, and other utility structures.

8. Parking and striping with dimensions or coordinates, and traffic signs.

9. Fences, with coordinates.

10. Notes.

C. Grading and Drainage Plans

Each drawing may have a key index at the lower right corner with hatching to indicate the plan location on the site. The following must appear on these drawings:

1. The grid system with the grid reference at the perimeter.

2. Existing structures, contours and elevations shown screened or dashed.

3. New contour lines and elevations of new improvements shown solid to stand out and be legible.

4. Control points needed in addition to those of structures and pavement, shown with dimensions or coordinates.

5. Drainage pattern with flow lines and ridges.

6. Labeled transitions.

7. Cross-referencing to sections or details associated with the grading.

8. Notes.

D. Yard Piping Plans

Each drawing may have a key index in the lower right corner with hatching to indicate the plan location on the site. The following appear on these drawings:

1. The grid system with the grid reference at the perimeter.

2. Existing piping and structures dashed or screened.

3. New improvements with solid lines.

4. New piping showing coordinates, size, material and fluid to be conveyed.

5. Existing piping, showing size, materials and fluid to be conveyed.

6. Cross-referencing to profiles, sections and details associated with yard piping.

7. Any temporary piping needed to maintain plant operations during construction.

8. Any work by others which affects the yard piping.

9. Invert elevations on gravity lines six inches and smaller which do not have a profile.

10. Test stations and other cathodic protection equipment, as necessary.

11. Notes.

E. Section Drawings

Section drawings include the following:

1. Screened horizontal and vertical guide lines at 100-foot and 10-foot intervals, respectively.

2. Existing ground lines and structures.

3. New grade lines and structures.

4. Depth of existing soil removal and reworking (to provide structural fill for new improvements).

5. Extent and thickness of special materials such as select fill and gravel.

6. Fencing.

7. Subsurface drains (if required).

8. Space limitations and other unusual constraints.

9. Right of way (if required).

10. Notes.

F. Profile Drawings

Profile drawings include the following:

1. A profile identifier for each profile and reference plan numbers.

2. Existing ground lines.

3. New grade lines.

4. New pipe centerline and appurtenances such as meters, manholes, coupling, valves, etc.

5. Stations along horizontal distances to all pipe angle points, pipe appurtenances, tie-in, inlets, outlets and any other items necessary for fabrication and installation.

6. All pipe crossings, pipe function, material, size, and elevation, including electrical and communications duct banks.

7. All slopes.

8. Pipe class or strength, coating and lining requirements.

9. For storm drain, Q and hydraulic grade for each reach, as well as invert elevations.

10. Flow data (Q,V,d/D) for Trunk Sewers.

11. Concrete encasements where needed.

12. Casing where needed and casing data.

13. Special pipe supports where needed.

14. Manway, meter box or vault, valve box or vault.

15. Notes.

G. Detail Drawings

These drawings are used as needed to clearly show design details.

H. Demolition Plans

These drawings may have a key index at the lower right hand corner with hatching to indicate the plan location on the site. Demolition drawings show the following:

1. The grid system with the grid reference at the perimeter.

2. Existing conditions.

3. Items requiring removal with circled numbers keyed to the notes.

4. Large areas or structures requiring removal with hatched lines for ease of identification.

5. Items to be protected with squared numbers keyed to the notes.

6. Items to be salvaged and relocated with circled number within a square box keyed to notes.

I. Plan and Profile Drawings

These drawings apply to pipelines within the public right-of-way and plans outside a facility site. Plan and profile sheets must adhere to the following guidelines:

1. The drawings must consist of two parts: the top part, a profile; and the bottom part, a construction plan with the pipeline superimposed on it.

2. The vertical and horizontal reference lines for the profile must be selected to minimize distortions and maximize clarity. Reference lines must be screened or of light weight so as not to interfere with the information to be communicated.

3. The profile must show the elevations and stationing and the existing ground line over the pipe line, a finished grade if applicable, the top and bottom of the pipe, all lines crossing the new pipeline and special conditions such as concrete encasement or steel casing for boring.

4. In addition, the profile shows manways/manholes, meter box or vault, valve box or vault, and other appurtenant items. Also, shown are the class of pipe, the length of the pipe, the slope of pipe between grade changes, and degree if changing direction.

5. Station lines must be shown at manways/manholes, elbows, grade breaks and horizontal bends with centerline elevations and slopes between them.

6. The plan must show existing contours, existing improvements dashed or screened so as to stand out from the new improvements which are solid lines.

7. Plans must show stations for the manways/manholes, elbows and other appurtenances to correspond with the profile stationing.

8. The plan must show right-of-way and temporary construction easements.

9. The plan must show referencing to sections and details shown on other sheets or on the same sheet.

10. In addition to stationing, the plan must show pipeline coordinates and bearings to allow location from survey monuments. Identify the pipeline by name.

11. The plan must also show special conditions to alert the contractor for construction requirements which may be out of the ordinary, such as cathodic protection equipment, such as rectifiers, test suctions, isolating flanges, etc., on plan view.

12. Provide hydraulic data for the pipeline on the profile.

13. Pipeline stationing always increases from left to right across each plan and profile drawing and continue through curves.

14. Each plan view must have a north arrow. These stationing criteria are to be satisfied regardless of the resulting orientation of the north arrow on the plan view. The second criterion can, however, be disregarded for site piping around such projects as pumping stations or reservoirs. In these cases the direction of the north arrow must generally match the facility plan sheet.

15. Call out horizontal points of intersection (HPIs) on the plan and vertical points of intersection (VPIs) and combined angles on the profile.

16. Show and station the centerline of the pipe on the plan view and at VPIs in the profile for all pipes larger than 40 inches.

17. Provide a survey control drawing to include basis of bearing, coordinates, benchmarks, coordinates of critical locations, and coordinates at survey points. Show and identify any control points that also appear within the areas covered by the plan and profiles sheets.

18. For a larger area projects that are need to be cut show match line with reference number or letter and a sheet number where it is referred to.

Figure 3-14 is an example of a blank plan and profile sheet.

4.2.4 Landscaping/Irrigation

Use the symbols from the City's Standard Drawings.

4.2.5 Architectural Drawings

Whether or not a separate set of architectural drawings is planned, a building code analysis of any building and site is performed and included in the set of drawings.

When a separate set of architectural drawings is planned, the following drawing classifications are the minimum components of the set:

1. Building Code Analysis

2. General Notes, Materials Legend, Architectural Abbreviations

3. Plans, Sections and Elevations

4. Door, Window, Louver and Finish Schedules and Details

5. Standard Details

A. Building Code Analysis

The building code analysis includes the following:

1. Design Code used (e.g., IBC (International Building Code, current adopted Edition.)

2. Any other applicable codes or references used (e.g., NFPA 101)

3. The following minimum information must appear on the drawings with respect to the code analysis:

- Occupancy Group(s) and actual floor area(s)
- Type of Construction
- Location on Property (relativity of all buildings on site)
- Actual versus allowable floor areas
- Is area increase required?
- Are alarms required?
- Diagram existing provisions
- Fire Resistive Construction Requirements, both as a result of construction type and of special occupancy requirements
- Exiting Loads and Diagrams for any building in which the public is allowed

B. General Notes, Materials Legend and Architectural Abbreviations

The general notes, materials legend and abbreviations include the following:

1. General notes must not contain specification information.

2. A legend identifying the graphic symbols used and textures shown in the plans, sections and details to identify various materials if specific to the architectural discipline and not shown elsewhere.

3. Any special abbreviations used specific to the architectural discipline and not shown elsewhere.

C. Plans, Sections, and Elevations

Plans, sections and elevations include the following:

1. Drawings must contain sizes and materials. Specifications must describe the materials and installation methods.

2. Materials must be called out on drawings in the same terminology as they are specified. Avoid repetition and duplication of information found on other discipline drawings.

3. When drawings of other disciplines are referenced, the specific drawing or detail must be noted.

4. When match lines are used, they must be located in the same place on the drawings of all disciplines.

5. Wherever possible, draw all plans at the same scale.

6. Show information only once. Dimensions shown on small-scale plans must not appear on large-scale plans or vice versa.

7. All disciplines must use the same orientation for their plans.

D. Door, Window, Louver, and Finish Schedule and Details

The use of standard formats for door, window, louver and finish schedules helps ensure consistency of the documents.

E. Details

These drawings are used as needed to clearly show design details.

F. Minimum Information Required on Architectural Drawings

The following information appears on architectural drawings as a minimum requirement regardless of policy, even if shown on other discipline drawings:

1. Plan dimensions, starting with building out-to-out measured at outside face of walls. Plan dimensions include wall locations and thicknesses, all openings through slabs (but located and sized on structural), door, window and louver opening dimensions and locations, interior partition dimensioned locations and thicknesses, and centerline locations of all beams, columns, pilasters and piers.

2. Rooms must be named and numbered; doors, windows and louvers must be designated by number or letter.

3. Show and locate all fire extinguisher cabinets and devices.

4. Show size and location of all architecturally relevant items such as tack or marker boards, built-in cabinets or millwork, lockers, etc.

5. If not shown on structural drawings, show stair width, number and height of risers, number and length of treads, overall dimensions and landing sizes.

6. Show all slab penetrations including sumps and floor drains (but location dimensions must appear on structural plans).

7. Show structural separations and similar features. Reference details.

8. If existing structures are relevant (i.e., part of same facility) or critical (i.e., sufficiently near to possibly impact construction efforts), show these facilities with phantom lines; note as existing.

9. Roof slopes must be shown and called out, and elevations at high and low points provided.

10. Sections and details needed must be provided unless covered by note or reference (as to standard/typical details or other discipline drawings). Sections are sufficient to cover unique conditions without being repetitious. Sections must show interface conditions between architectural and other disciplines, drawn at a scale to clearly show required information and referencing to details.

11. Details are generally used to enlarge non-typical features, which must be drawn at a larger scale.

12. Detailed materials, components and features are clearly indicated.

13. Additional information includes ladders, stairs, handrails, grating (by material and thickness), access covers (also by material and thickness), access hatches and scuttles (by material and size) and doors, windows and louvers.

4.3.6 Structural Drawings

Structural drawings may be classified in three groups: the structural general notes and design criteria drawing, the standard/typical details drawing(s), and the design drawings.

A. Structural General Notes and Design Criteria

This drawing shall be the first structural drawing. The structural general notes and design criteria drawing(s) include the following:

1. Reference Codes, Standards, and Design Loads

   - Design code used (e.g., IBC (International Building Code, current adopted Edition)
   - Reference standards used (e.g., American Welding Society D1.4)
   - Geotechnical report reference, with soils bearing and lateral

pressures

- Assumed live loads used in design, including hydraulic forces if applicable
- Seismic zone and seismic coefficients used (or wind forces if govern)
- Any other applicable codes or references used as needed

2. Materials and Materials Standards

- Concrete strength used in design (may vary for different uses)
- Reinforcing steel grade and ASTM designation
- Structural steel grade and ASTM designation (as applicable)
- Aluminum alloy/stainless steel alloy (if used/where applicable)
- Grating section properties/materials/coatings/manufacturer
- Metal decking depth/gage/section properties/manufacturer (if used)
- Anchor bolt material by ASTM for cast-in-place anchor bolts
- Drilled in concrete anchors (epoxy or wedge) by manufacturer
- Any materials to be galvanized – by ASTM "G-XX" designation
- All other materials used by manufacturers or equal, or by ASTM designation

3. Notes, Legend, Abbreviations

- Additional general notes may be added as deemed appropriate by the Design Consultant. These can include notes regarding coordination with other discipline drawings, verification of existing conditions, construction safety orders, verification of equipment sizes and anchorage with approved vendor shop drawings, etc.

- A legend identifying the graphic symbols used and textures shown in the sections to identify various materials.

- Any special abbreviations used specific to the structural discipline not shown elsewhere.

B. Standard/Typical Details

The use of well-established, time-proven standard/typical details, refined and improved over time as needed to reflect current materials and methods ensures a more consistent approach to drawing presentation. The standard/typical detail drawings must follow the drawing or drawings above as the next in numerical

sequence. The division of information between standard/typical details and design drawings use the following guidelines:

1. Standard/typical details include any frequently occurring detail for which a standard exists. These details may be included on the full-size standard/typical details drawings, or if in 8-1/2 x 11-inch format, bound into the specifications or included as a separate volume of the Bid Documents.

2. When used, each typical detail is referenced at least once on the plans. The typical details must be appropriate for, and coordinated with, the design drawings.

3. Standard/typical details can be any condition occurring more than once. Examples include ladders, grating, access covers, metal stairs, concrete stairs, handrails, connection details (such as steel beam to concrete, steel beam to steel beam or column, etc.), concrete embedment such as frames, and all similar detail information that may apply to one or more locations or more than one structure.

C. Design Drawings

The structural design drawings prepared must include the plans, sections, elevations, and detail drawings containing all job-specific information. In general, the structural drawings show all information needed to build the complete structure, or show where it can be found.

Avoid repetition and duplication of information found on other discipline drawings. The structural drawings need not repeat the wall opening dimensions provided for windows and doors shown on the architectural drawings, although the openings must appear on the structural drawings.

The following information must appear on the structural drawings as a minimum requirement regardless of policy, even if shown on other discipline drawings:

1. All plan dimensions, starting with building out-to-out measured at outside face of walls. Plan dimensions include all wall locations and thickness, locations of edge of slab or change in elevation, size and location of all openings through slabs, and centerline locations of all beams, columns, pilasters, piers and similar structural features. These locations are tied to key functional elements within the structure by centerline location such as a large diameter pipe or manifold within the structure, pump or pumps locations, pipe or vessel support saddles, or similar features in each direction.

2. Unless size is dictated by vendor-specific information, show size and location of all equipment pads and piers.

3. Show stair width, rise, run, and overall dimensions and landing sizes, unless the same information is shown on architectural drawings.

4. Locate all slab high and low points, including sumps and floor drains, by dimension or note.

5. Locate all construction, contraction and expansion joints, structural separations and similar features.

6. If existing structures are relevant (i.e., part of same facility) or critical (i.e., sufficiently near to possibly impact construction efforts), show these facilities with phantom lines; note as existing, and provide plan reference dimensions.

7. Show all elevations and slopes. This includes bottom of footing elevation, invert elevation of all fill concrete, and all top-of-concrete elevations at high and low points, slabs, and landings. Where slope is provided, it must be noted as uniform between high point and low point elevations.

8. For large diameter pipes passing through walls, or large horizontal vessels, provide centerline or invert dimensions.

9. Where steel members are used, top-of-steel dimensions are provided and noted high point, low point, or typical.

10. Sections and details needed are provided unless covered by note or reference. Sections are concise representations of wall and slab conditions drawn at a scale to clearly show reinforcing steel, joints, wall type and thickness. Avoid showing information occurring beyond the section cut.

11. If complex wall penetrations occur and are not shown on architectural drawings, and wall openings such as doors, windows, louvers, etc. are needed, draw wall elevations and note/reference accordingly.

12. Details are generally used to enlarge non-typical features which must be drawn at a larger scale. A detail referenced from the plan shall appear as an enlarged plan view, and a detail referenced from a section shall appear as an enlarged section. If other views are required, they may be developed from this principal view.

13. Clearly indicate detailed materials, components, and features. Materials such as metal decking are shown, including depth, gage, section properties, material and finish, and required welding. Clearly show embedded hardware. Wherever possible, use schedules to present information.

14. Additional information is often associated with the architectural drawings, but those features are identified on structural drawings for this work. These include ladders, stairs, handrails, grating (by material and thickness), access covers (also by material and thickness), access hatches and scuttles (by manufacturer's model number, material, and size) and doors, windows and louvers.

4.3.7 Mechanical Drawings

Mechanical drawings are classified as follows:

A. Area Drawings

Area drawings must show all the equipment inside and outside facility structures. Area drawings also show the routing and location of piping systems to ensure clearances between all components. Develop area drawings using the following guidelines:

1. System component identification in accordance with Subsection 3.17 of this manual. Piping callouts include size, fluid and piping material.

2. Show all piping, including process piping.

3. Illustrate existing piping and future piping and equipment shown on the drawing according to the line styles on Figure 4-2.

4. Show insulation on short sections and note the class within the insulation outline.
5. Add symbols for valve or in-line components to scale. Motor and air actuators are outlined to show clearances and orientation.

6. Terminal dimensions are not shown at the connection of piping to vendor furnished equipment.

7. Pipe supports, anchors, and instrumentation taps are shown and identified but not dimensioned.

8. High and low point vents and drains are noted if no system isometric is provided.

9. Place a key plan at the lower right-hand corner of each drawing to indicate how the plant is divided into areas and by cross-hatching to show the particular area that the drawing covers. Each drawing adjoining another area must have a match line and the number of the adjacent drawing. Any piping continuing from one area to another is identified at this line.

10. Draw plan views for each main floor level. When required, partial plans may be used. One longitudinal and one transverse section along with additional partial sections are generally all that are required.

In addition, the following are shown on area drawings:

- Column centerlines, outlines and designations
- General outlines of building exterior walls
- Doors, hatchways, elevators, stairs, platforms and ladders
- Piping and ductwork

- Centerlines of rails and outline of cranes and monorails necessary to show clearances and hook limits
- Outlines of all equipment in adequate detail to indicate clearance and space requirements

11. Minimum headroom clearance is 7 feet 6 inches or per current CBC.

12. Valve handwheels are oriented for best operation, keeping them out of passageways while retaining easy operability.

B. Utility Drawings

Utility drawings are prepared using separate levels on architectural/structural backgrounds in accordance with Citywide Drafting/CADD Standards.

HVAC drawings show at least floor plans and roof plans (if roof-mounted equipment is involved). Single line ductwork and piping shall be shown for small systems, with ample room for installation. Double-line ductwork and piping are shown for large, complex systems with multiple disciplines occupying the same space. Critically important sections and details of installation, schematics of piping, air flow, and controls must also be presented. In addition, the design drawings include details of seismic supports, bracing and restraints.

American Society of Heating, Ventilating, and Air Conditioning, Inc. (ASHRAE) drafting nomenclature, symbols, and abbreviations are used. For all buildings subject to California Energy Commission (CEC) Energy Efficiency Standards compliance, the design drawings include design criteria based on ASHRAE/CEC weather data for the job location, all required architectural, mechanical, and electrical Title 24 compliance forms, completely filled out, signed and stamped by the respective discipline professional engineers, duly registered in the state of California.

The HVAC equipment included in the design is presented on the equipment schedules showing unit manufacturer and model numbers, service, location, type, design calculations, nominal capacity, electrical rating, optional equipment and features, and method of control.

Plumbing drawings show at least floor plans and roof plans (if roof-mounted equipment is involved). All toilet rooms show connections to the site utility drawings. Piping is routed to a location five feet from the building and is continued on the civil drawings. Critically important sections and details of installation, and schematics of piping, must also be presented. In addition, the design drawings include details of seismic supports, bracing and restraints.

The Uniform Plumbing Code (UPC) and American Society of Plumbing Engineers (ASPE) details, drafting nomenclature, symbols, and abbreviations are used. For all buildings subject to California Energy Commission (CEC) Energy Efficiency Standard compliance, the design drawings include design criteria based on ASHRAE/CEC data and Title 24 compliance forms, completely filled out,

signed and stamped by the respective discipline professional engineers, duly registered in the state of California.

Fire protection drawings show at least floor plans showing fire system components.

National Fire Protection Association (NFPA) details, drafting nomenclature, symbols and abbreviations are used.

The fire protection equipment included in the design is presented on the equipment schedules showing unit manufacturer and model numbers, service, location, type, design calculations and nominal capacity.

C. Isometric Drawings

Isometric drawings provide clarity to piping layouts. They are helpful when a pipe stress analysis is required.

D. System Flow Diagrams

System flow diagrams are schematic drawings that show operational relationships between various components and define the design variables for the major modes of operation.

E. Major Equipment and Valve Schedule

The equipment schedule shows all the major equipment categorized using the abbreviations shown in Table 3-5, including equipment numbers, service, and equipment data. The valve schedule must show all major valves, including valve number, type of valve, and valve size.

F. Piping Schedule

The piping schedule includes the following information regarding piping and fittings:

- Materials
- Schedule or wall thickness
- Pressure ratings
- Types of joints
- Fittings
- Testing requirements
- Cleaning requirements

4.3.8 Electrical Drawings

Electrical drawings are classified as follows:

A. Symbol Lists, Abbreviations and General Notes

This drawing shows all the symbols and abbreviations used, as well as general notes giving special instructions to the contractor.

B. Site/Plot Plan

These drawings incorporate the following:

1. Arrangement of structures and roadways.

2. Underground distribution system including location of pullboxes, manholes and ducts.

3. Location of switchgear, motor control centers (MCCs), power panels, main control board, and major local control panels.

4. Area/parking lighting. The area/parking lighting plan is to be drawn on a separate sheet to avoid confusion with power and control plans.

5. Location of power service, utility substation and in-plant substations.

6. Key plan and orientation arrow.

7. Drawing references for each structure.

C. Overall Single Line Diagrams

This drawing is required for large and complex projects and must present the following:

1. A simplified single-line diagram showing the interconnections of all distribution switchgear, power transformers, distribution boards, MCCs, all major electrical equipment, emergency generators, and power panels.

2. Each equipment single-line diagram is referenced to a drawing where this equipment's single-line diagram shows in detail.

3. Identification of all major electrical equipment.

4. Identification of all power cable and conduits.

5. Sizes of all major electrical components and loads.

D. Single Line Diagrams

These drawings show the makeup and development of all medium voltage switchgear and power distribution to 4160V and 480V loads. These drawings incorporate the following:

1. Power service and revenue meter connections.

2. Main circuit breakers or fused disconnect switches for the main power entrance, power distribution, and motor control centers.

3. Motor loads complete with corresponding horsepower sizes, branch circuit breaker or fused disconnect switches, motor starters, branch circuit conductors, miscellaneous devices and components such as local disconnecting means, speed controllers, power factor correcting capacitors, etc.

4. Miscellaneous electrical loads complete with corresponding circuit breakers, starters, contactors, disconnects, etc.

5. Single-line diagrams for panel or motor control centers must show:

   - Total connected loads including existing, proposed and future loads
   - Approximate maximum demand
   - Future additional loads
   - Bus ampacities
   - Bus bracing
   - Circuit numbers

6. Identification of all panels, motor control centers, feeders, subfeeders, branch circuit conductors and all loads.

7. Substation transformers complete with all protective equipment such as circuit breakers, disconnect switches, surge arresters, grounding resistors, protective relays, etc.

8. Electrical interlocks.

9. All instrumentation.

10. All local vendor furnished control panels with three-phase branch circuits to loads shown with all overcorrect devices, starters, feeder sizes and loads.

E. Schematic Diagrams

These diagrams show the following:

1. Control scheme for each electrical load

2. Interlocks between equipment controls

3. Locations of control components

4. Connections of electrical protective devices

5. Wire termination interphase points

6. Control power sources

7. Identification of all components

F. Electrical Equipment Elevations

Unless a specific situation arises in which it is important to show the elevation of a piece of electrical equipment, the only equipment elevation required is that of the main switchgear. This drawing shows the following:

1. Underground pull section.

2. The service section showing the main metering socket, CTs and PTs, and the main circuit breaker.

3. The distribution sections showing the number of distribution sections required. The location of the breakers in the distribution sections is left up to the electrical equipment vendors.

4. Future expansion is shown in dashed lines.

5. This drawing shows approximate dimensions for each section and an overall height.

6. Notes regarding the approval of the electrical utility company prior to manufacturing are also shown.

G. Power and Control Plans

These drawings show the following:

1. Physical locations and identification of electrical loads, control and process instrumentation devices.

2. Identification of power and control conduit runs.

3. Special routing of conduits.

4. Signal conduit runs.

5. Callouts to enlarged plans and details for special situations.

6. Components such as disconnect switches, lockout-stops, manual switches, cathodic protection rectifiers, pressure switches, solenoids, level switches, temperature switches, miscellaneous instruments, special control devices and panels, etc.

H. Conduit and Cable Schedules

These drawings show all conduits and cables for power and controls, with the following information:

- Conduit/cable number
- From

- To
- Via
- Cable specification
- Voltage
- Insulation type
- Grounding conductor size
- Remarks

A separate schedule must be developed for instrumentation trunking cables.

No lighting branch circuits are shown on the above schedules.

I. Lighting Plans

1. Physical locations of all lighting fixtures
2. Locations and identification of lighting control switches
3. Power conduit homeruns
4. Fixture identifications and number
5. Location of lighting power panels
6. Lighting fixture circuit numbers
7. heights of fixtures
8. Special junction or splice boxes

J. Receptacle Plans

These drawings show:

1. Physical locations of all receptacles
2. Power conduit homeruns
3. Locations of receptacle power panels
4. Receptacle circuit numbers
5. Special types of receptacles
6. All other details necessary to convey the intent of the design to the electrical contractor

4.3.9 Instrumentation Drawings

Instrumentation drawings are classified as follows:

A. Piping and Instrument Diagram (P&ID)

This drawing depicts schematically the basic equipment and the process that takes place within a facility. The P&ID shows pumps and connecting pipes, and the instruments used for controlling and monitoring the process.

The SCADA flow, pressure sensor, and measuring device must be indicated in the drawing.

The P&ID is a combined effort of various disciplines (mechanical process, piping, instrumentation and electrical) to ensure that the plant process is represented in a clear and logical sequence.

The P&ID is the foundation document used for understanding the process, and when used with other supporting documents, it provides the tool for troubleshooting and maintaining the facility.

Layout - The P&ID format, symbols, line work, notation and title block follow the standards provided in this chapter. The P&ID is mainly schematic. It may follow the layout when possible, but the process flows from left to right.

Symbols and Line Conventions - Instrument and equipment symbols are per the symbols and legend sheet shown in Figure 4-2. When additional symbols not shown in the legend sheet are required, use ANSI/ISA S5.1 standard symbols.

Instruments are represented by a bubble containing a functional identification and a loop sequential number identification. The functional identification may be two, three, or four letters (see Figure 4-2 and subsection 4.4.6). The loop sequence is normally a three-digit number, or four-digit for large facilities.

Instrument signal lines may enter or leave the instrument bubble at any angle, preferably horizontally or vertically. Arrowheads are used as required to clarify the direction of flow on process, electrical or pneumatic lines. Crossing line work follows the rule that horizontal lines break when crossing vertical lines, except that instrument lines or process lines of lesser importance break when crossing larger lines.

Equipment Identification - Process equipment, e.g. pumps, compressors, etc. are identified alphanumerically as described in subsection 4.4.1, with capacity in English units, located directly below the equipment symbol. Figure 4-2 shows a sample P&ID.

B. Process Flow Diagrams

For larger and more complex facilities, a process flow diagram is prepared. This type of drawing precedes the P&ID and provides a simplified version of the process. Its main purpose is to depict the relationship among the large equipment and process lines. The flow diagram also contains a matrix listing the mass balance data for each process line; i.e., flow rate, pressure, etc. The matrix and process lines are cross-referenced numerically to facilitate identification.

C. Loop Diagrams

Instrument loop diagrams are provided for each instrument loop. The loop diagram follows the format in ANSI/ISA S5.4. The loop diagram is an extension of the P&ID. It is a valuable tool during construction, checkout, startup, operation, and maintenance of a process plant. The loop diagram is laid out with the field instrument on the left and the electrical (or pneumatic) lines progressing right as they go through junction boxes, cabinets, and panels to the final connection point. The loop diagrams are coordinated with the power and control plans described in subsection 4.3.8 G. Instrument symbols and tag numbers correspond with those shown on the P&IDs. Every connection point is identified by terminal numbers, wire and cable number, and whether the signal is analog or on-off digital. Additionally, the diagram includes the I/O address of every wire connected to the PLC or DCS as applicable. The loop is identified in the title block with the instrument loop number shown on the P&ID.

For wastewater treatment plant and large pump station facilities refer to PUD's web site.

D. Logic Diagrams

Logic diagrams are prepared for complex control logic sequences that cannot be described by logic descriptions. The logic diagrams are intended for the use of the PLC or DCS programmer and for the technician in troubleshooting a control problem. Logic diagrams are per ANSI/ISA S5.2, Binary logic Diagrams for Process Operations. The logic symbols in this standard may be used in combination with block symbols entailing a complex operation or vendor equipment whose logic is still unknown.

Worded descriptions may accompany the logic diagram for clarification and better understanding.

E. Instrument Data Sheets

Instrument data sheets per ISA-S20 must be prepared for each instrument provided in the project. The data sheet lists the process, mechanical, and electrical requirements of the instrument. The data sheets, in addition to providing valuable engineering information, are intended for procurement of the instrument. A bill of material or instrument index is not a substitute for the instrument data sheet since many features of the instrument covered in the data sheet are not covered in the bill of material. The instrument data sheet is filled out in its entirety and refers to the instrument tag number shown on the P&ID. The specification forms provided by ISA-S20 cover 28 types of instruments. If a data sheet form is not found in ISA-S20, a user-modified version may be supplied.

The instrument data sheets are sequentially numbered to facilitate referencing. They are identified with the project title and revision number.

F. Control Panel Layouts

The control panel layout drawing must contain four basic items: the front panel elevation, the interior panel elevation, a nameplate tabulation, and a component list. The front and interior elevations are drawn at an appropriate scale to provide

clear detail of every feature shown. Overall dimensions are provided. Panel door hinge locations are also indicated. If a cabinet stand is provided it is also dimensioned. The nameplate list contains the panel name and equipment number. The nameplate is to be located on the top center of the panel. If the component list is too lengthy to fit on the drawing, it is included in the specifications and referred to on the drawing by note.

G. Instrument Installation Details

Typical installation details for each type of instrument must be provided in a diagrammatic fashion. A sequential identification number is used for each type of installation to be referred to in other project drawings. In addition, the tag numbers of the instruments the installation covers are listed. Refer to Book 3, Standard and Guide Details, Water Department Capital Improvements Program for typical instrument installation details.

4.4 Numbering Systems

This section describes the numbering system to be used for drawings and components of systems. Components include equipment, piping, valves, motors, circuit breakers, controls, protective devices, instruments, alarms, wire, and all other devices necessary to make up a complete system which may be functionally tested and operated.

4.4.1 Equipment Numbering

The purpose of equipment numbering is to uniquely identify each piece of equipment in the facility. The equipment number consists of three elements: process area, equipment ID, and a sequence number.

01 - C - 01

Where:

01 = Area Identifier
C = Equipment Identifier
01 = Sequential Numbers

1. First Element (Area Identifier)

The area identifier is a two digit number according to the numbering system explained in the Clean Water Program Guidelines, Volume III, Section A1.4.

2. Second Element (Equipment Identifier)

The equipment or package identifier is an alpha designator. Mechanical and electrical equipment identifiers are found in Table 4-2. Instrumentation is identified by ISA nomenclature.

3. Third Element (Equipment Sequential Number)

The equipment sequential number is a two-digit number used to identify specific equipment in a process area.

The sequence for equipment numbers must be assigned following the direction of flow.

Table 4-2
Mechanical and Electrical Equipment Identifiers

Letter Designator	Group Description
A	Mixing Equipment
AF	Air Filters
AHU	Air Handling Units
AS	Acoustic Silencers
B	Boilers
C	Compressors
CAC	Computer Room Air Conditioners
D	Dewatering Equipment
E	Engines
F	Fans, Blowers
FCV	Flow Control Valves
G	Gates
H	Heat Exchangers
HV	Manual, Check Valves
LP	Lighting Panel
MCC	Motor Control Centers
O	Conveyors
P	Pumps
PCV	Pressure Control Valves
PP	Power Panels
T	Tanks
TCV	Temperature Control Valves
V	Valves

Table 4-2
Mechanical and Electrical Equipment Identifiers

Letter Designator	Group Description
Y	Expansion Joints
ME	Miscellaneous Equipment

4.4.2 Equipment Schedules

Major pieces of equipment may be listed on schedules when the contract requires multiple units. Schedules refer to locations on drawings and in the specifications where more complete information is given.

Schedules on the drawings must list:

1. Equipment number
2. Equipment name, type and size
3. Type of service
4. Drawing where shown in plan
5. Specification section

4.4.3 Pipe Line Numbering

The purpose of pipe numbering is to uniquely identify each pipe in the facility. Each pipe number consists of four elements. The first element represents the pipe size in inches. The second element identifies the fluid flowing in the pipe. The third element represents the material of the pipe and type of fittings as a group. The fourth element represents the sequential number.

10 - RW - (29) - 01

Where:

10 = Piping Size [(a)]
RW = Fluid Abbreviation [(a,b)]
(29) = Piping Material [(a)]
01 = Sequential Number [(b)]

(a) This element must be used on piping callouts on mechanical drawings.

(b) This element must be used on piping callouts on P&ID drawings.

When the sequential number is used, these guidelines must be followed:

1. Assign a separate number to each line.
2. Assign a single number to all drains or vents from one piece of equipment.
3. Assign a separate number to each drain and vent line from different pieces of similar equipment. If manifold together, assign one number to an entire manifold.
4. Assign a bypass pipe the same number as the inlet and outlet headers if the

bypass line has a single valve. However, if the bypass line has two valves, assign a separate number to the pipe between valves.

5. Assign a separate number to each pipe on multiple pipes between two pieces of equipment.
6. Assign a separate number to each header.
7. Assign the same number as the main piping run up to the isolation valve on a branch of the main run.
8. Assign a separate number for each significant temperature and pressure change in the line.
9. Assign separate numbers for each material class.
10. Assign separate numbers when a pipe changes sizes.

4.4.4 Valve Numbering

Valves must be identified for type and must be numbered according to the ISA system. Only instrument air valves are excluded.

For example, the first manual valve for fluid abbreviation RW would be:

01 - HV - 01

Where:

01	=	Area Identifier
HV	=	Manual Valve
01	=	Sequential Number

4.4.5 Cable Numbering

Power, control and signal cables are each assigned a unique identification number. Power cable is identified using the following system:

MCC2 - 4 - A

Where:

MCC2	=	Denotes MCC number 2
4	=	Denotes circuit number 4
A	=	Suffix for special cases. AA@ for continuation of cable on secondary side of transformer
X	=	Denotes spare conduit

Control and signal cable are identified using the following system:

3 - S - 2

Where:

3	=	Area Identifier
S	=	Type of Cable - "C" for control cable; "S" for signal cable
2	=	Sequential number

4.4.6 Instrument and Loop Numbering

Each instrument must be designated by an alphanumeric number consisting of functional identification letters and a loop number. For functional identification letters, see Piping

and Instrumentation Diagram Symbols and Legend, Figure 4-3. These guidelines must be followed in numbering instruments and loops.

1. Identify an instrument according to its function. For example, a differential-pressure recorder used for flow measurement must be functionally identified as "FR"; a pressure indicator and a pressure-actuated switch connected to the output of a pneumatic level transmitter must be functionally identified as "LI" and "LS", respectively.

2. Select the first letter of the functional identification according to the measured or initiating variable, not the manipulated variable. For example, a control valve which varies flow in response to a level controller must be functionally identified as "LCV" not "FCV."

3. Use the succeeding letters of the functional identifiers to designate one or more readout or passive functions and/or output functions. A modifying letter may be in addition to one or more succeeding letters. Modifying letters may modify either a first letter or succeeding letters. For example, "TDAL" contains two modifiers; the "D" changes the measured variable "T" into a new variable, "temperature differential." The letter "L" restricts the readout function "A" to represent a low alarm only.

4. The sequence of the functional identifier begins with one letter which designates the measured or initiating variable. Readout or passive letters may follow in any order with output functional letters following these in sequence except that output letter "C" (control) precedes output letter "V" (valve), i.e., "PCV," a pressure control valve. When modifying letters are used, interpose them so that they immediately follow the letters they modify.

5. Symbolize a multiple function device by showing a bubble for each measured variable, output and function. For example, a temperature controller with an integral switch is symbolized by two tangent bubbles: one functionally identified as "TC" and the other as "TSH." The instrument is functionally identified as "TC/TSH" in the specifications.

6. The number of functional letters used for any one instrument must not exceed four. The number of functional letters must be kept to a minimum by arranging the functional letters into subgroups or by omitting the "I" (indicate) if an instrument both indicates and records the same measured variable. All letters in the functional identifiers must be upper case.

7. Each instrument loop must have a unique number not assigned to any other loop at the facility. Each instrument in a loop must have the same loop number.

8. An instrument common to two or more loops must carry the identification of the loop considered predominant.

9. Loop numbering is serial, using a single sequence of numbers regardless of the loop function. For example, loops in area 4 would be numbered:

TIC - 4001
FRC - 4002
LIC - 4003

10. If a loop has more than one instrument with the same function, a suffix is appended to the loop number according to the following:

    (1) Use only an upper case letter

    (2) Alternate letters and numbers for further loop subdivisions

For example, the primary elements for a multipoint pressure recorder would be:

PE - 25A

PE - 25B

PE - 25C

11. Instrument accessories such as purge meters, air sets, and seal pots that are not explicitly shown on a drawing, but which need a designation for other purposes must be tagged according to their function using the same loop identification as the instruments they directly serve. For example, an orifice flange union associated with orifice plate "FE-7" must be tagged "FX-7."

4.4.7 Drawing Numbering

For example:

19905 - 01- D

Project No.	19905
Sequential Sheet No.	01
Drawing Size Designation	D

The Design Consultant assigns internal sheet numbers by the discipline involved. Within each discipline, sheets are numbered sequentially by subject in the order listed below.

Subject

Plans
Sections
Elevations
Details
Schedules

An example is:

M - 13

Where:

M	=	Mechanical Discipline Drawing (Table 4-6)
13	=	Sheet 13 of the Mechanical Drawings

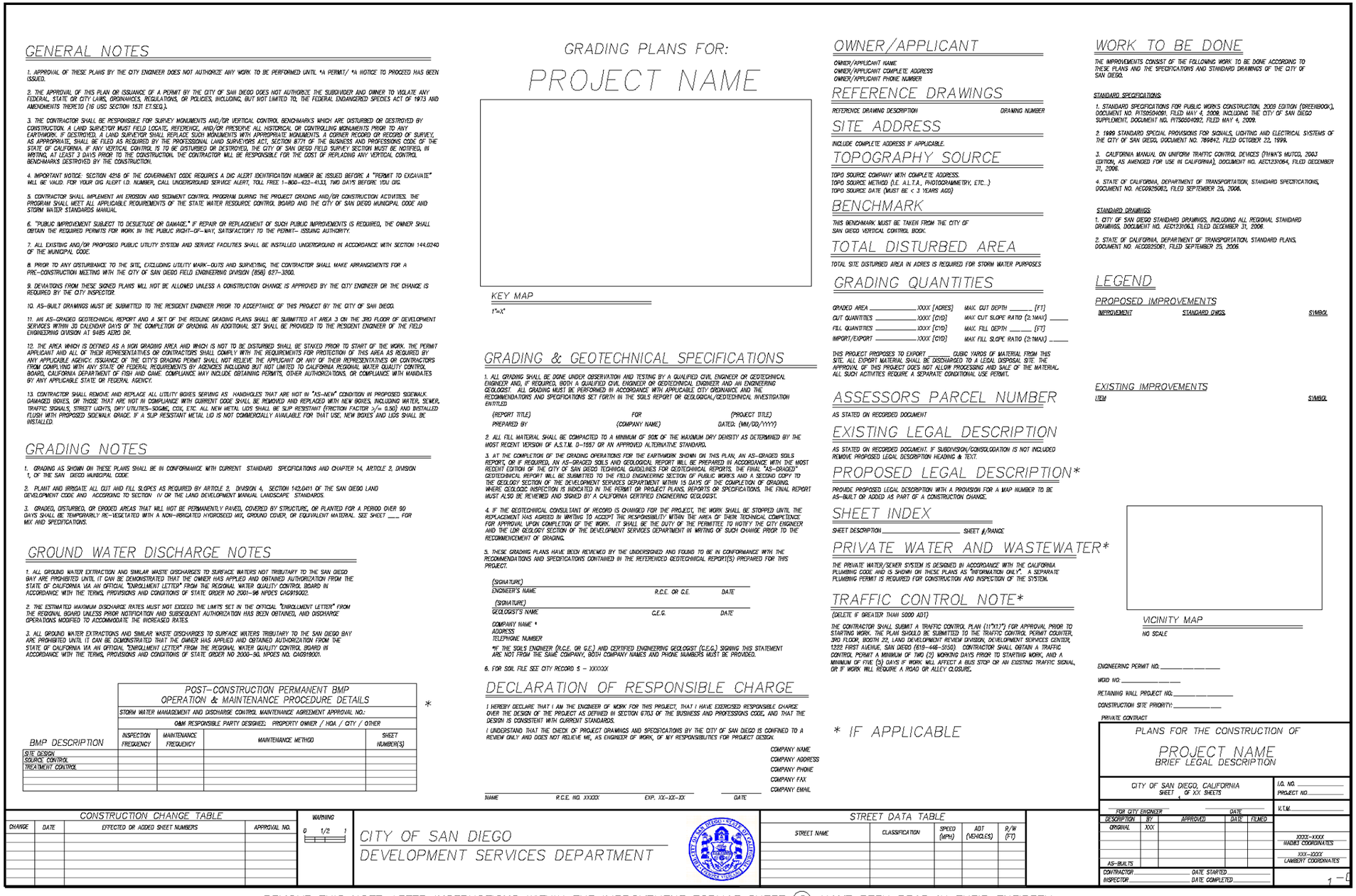
Discipline designators are shown in Table 4-3.

Table 4-3

Discipline Designators

Discipline	Prefix
General	G
Demolition	D
Civil	C
Landscape	L
Architectural	A
Structural	S
Mechanical	M
Electrical	E
Instrumentation	I
Traffic Control	T

Figure 4-1 DSD Cover Sheet Sample



GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER DOES NOT AUTHORIZE ANY WORK TO BE PERFORMED UNTIL *A PERMIT/ *A NOTICE TO PROCEED HAS BEEN ISSUED.

2. THE APPROVAL OF THIS PLAN OR ISSUANCE OF A PERMIT BY THE CITY OF SAN DIEGO DOES NOT AUTHORIZE THE SUBDIVIDER AND OWNER TO VIOLATE ANY FEDERAL, STATE OR CITY LAWS, ORDINANCES, REGULATIONS, OR POLICIES, INCLUDING, BUT NOT LIMITED TO, THE FEDERAL ENDANGERED SPECIES ACT OF 1973 AND AMENDMENTS THERETO (16 USC SECTION 1531 ET.SEQ.).

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LAND SURVEYOR MUST FIELD LOCATE, REFERENCE, AND/OR PRESERVE ALL HISTORICAL OR CONTROLLING MONUMENTS PRIOR TO ANY EARTHWORK. IF DESTROYED, A LAND SURVEYOR SHALL REPLACE SUCH MONUMENTS WITH APPROPRIATE MONUMENTS. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED AS REQUIRED BY THE PROFESSIONAL LAND SURVEYORS ACT, SECTION 8771 OF THE BUSINESS AND PROFESSIONS CODE OF THE STATE OF CALIFORNIA. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF SAN DIEGO FIELD SURVEY SECTION MUST BE NOTIFIED, IN WRITING, AT LEAST 3 DAYS PRIOR TO THE CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.

4. IMPORTANT NOTICE: SECTION 4216 OF THE GOVERNMENT CODE REQUIRES A DIG ALERT IDENTIFICATION NUMBER BE ISSUED BEFORE A "PERMIT TO EXCAVATE" WILL BE VALID. FOR YOUR DIG ALERT I.D. NUMBER, CALL UNDERGROUND SERVICE ALERT, TOLL FREE 1-800-422-4133, TWO DAYS BEFORE YOU DIG.

5. CONTRACTOR SHALL IMPLEMENT AN EROSION AND SEDIMENT CONTROL PROGRAM DURING THE PROJECT GRADING AND/OR CONSTRUCTION ACTIVITIES. THE PROGRAM SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE STATE WATER RESOURCE CONTROL BOARD AND THE CITY OF SAN DIEGO MUNICIPAL CODE AND STORM WATER STANDARDS MANUAL.

6. "PUBLIC IMPROVEMENT SUBJECT TO DESUETUDE OR DAMAGE." IF REPAIR OR REPLACEMENT OF SUCH PUBLIC IMPROVEMENTS IS REQUIRED, THE OWNER SHALL OBTAIN THE REQUIRED PERMITS FOR WORK IN THE PUBLIC RIGHT-OF-WAY, SATISFACTORY TO THE PERMIT- ISSUING AUTHORITY.

7. ALL EXISTING AND/OR PROPOSED PUBLIC UTILITY SYSTEM AND SERVICE FACILITIES SHALL BE INSTALLED UNDERGROUND IN ACCORDANCE WITH SECTION 144.0240 OF THE MUNICIPAL CODE.

8. PRIOR TO ANY DISTURBANCE TO THE SITE, EXCLUDING UTILITY MARK-OUTS AND SURVEYING, THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR A PRE-CONSTRUCTION MEETING WITH THE CITY OF SAN DIEGO FIELD ENGINEERING DIVISION (858) 627-3200.

9. DEVIATIONS FROM THESE SIGNED PLANS WILL NOT BE ALLOWED UNLESS A CONSTRUCTION CHANGE IS APPROVED BY THE CITY ENGINEER OR THE CHANGE IS REQUIRED BY THE CITY INSPECTOR.

10. AS-BUILT DRAWINGS MUST BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO ACCEPTANCE OF THIS PROJECT BY THE CITY OF SAN DIEGO.

11. AN AS-GRADED GEOTECHNICAL REPORT AND A SET OF THE REDLINE GRADING PLANS SHALL BE SUBMITTED AT AREA 3 ON THE 3RD FLOOR OF DEVELOPMENT SERVICES WITHIN 30 CALENDAR DAYS OF THE COMPLETION OF GRADING. AN ADDITIONAL SET SHALL BE PROVIDED TO THE RESIDENT ENGINEER OF THE FIELD ENGINEERING DIVISION AT 9485 AERO DR.

12. THE AREA WHICH IS DEFINED AS A NON GRADING AREA AND WHICH IS NOT TO BE DISTURBED SHALL BE STAKED PRIOR TO START OF THE WORK. THE PERMIT APPLICANT AND ALL OF THEIR REPRESENTATIVES OR CONTRACTORS SHALL COMPLY WITH THE REQUIREMENTS FOR PROTECTION OF THIS AREA AS REQUIRED BY ANY APPLICABLE AGENCY. ISSUANCE OF THE CITY'S GRADING PERMIT SHALL NOT RELIEVE THE APPLICANT OR ANY OF THEIR REPRESENTATIVES OR CONTRACTORS FROM COMPLYING WITH ANY STATE OR FEDERAL REQUIREMENTS BY AGENCIES INCLUDING BUT NOT LIMITED TO CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, CALIFORNIA DEPARTMENT OF FISH AND GAME. COMPLIANCE MAY INCLUDE OBTAINING PERMITS, OTHER AUTHORIZATIONS, OR COMPLIANCE WITH MANDATES BY ANY APPLICABLE STATE OR FEDERAL AGENCY.

13. CONTRACTOR SHALL REMOVE AND REPLACE ALL UTILITY BOXES SERVING AS "HANDHOLES" THAT ARE NOT IN "AS-NEW" CONDITION IN PROPOSED SIDEWALK. DAMAGED BOXES, OR THOSE THAT ARE NOT IN COMPLIANCE WITH CURRENT CODE SHALL BE REMOVED AND REPLACED WITH NEW BOXES, INCLUDING WATER, SEWER, TRAFFIC SIGNALS, STREET LIGHTS, DRY UTILITIES-SDG&E, COX, ETC. ALL NEW METAL LIDS SHALL BE SLIP RESISTANT (FRICTION FACTOR >/= 0.50) AND INSTALLED FLUSH WITH PROPOSED SIDEWALK GRADE. IF A SLIP RESISTANT METAL LID IS NOT COMMERCIALLY AVAILABLE FOR THAT USE, NEW BOXES AND LIDS SHALL BE INSTALLED.

GRADING NOTES

1. GRADING AS SHOWN ON THESE PLANS SHALL BE IN CONFORMANCE WITH CURRENT STANDARD SPECIFICATIONS AND CHAPTER 14, ARTICLE 2, DIVISION 1, OF THE SAN DIEGO MUNICIPAL CODE.

2. PLANT AND IRRIGATE ALL CUT AND FILL SLOPES AS REQUIRED BY ARTICLE 2, DIVISION 4, SECTION 142.0411 OF THE SAN DIEGO LAND DEVELOPMENT CODE AND ACCORDING TO SECTION IV OF THE LAND DEVELOPMENT MANUAL LANDSCAPE STANDARDS.

3. GRADED, DISTURBED, OR ERODED AREAS THAT WILL NOT BE PERMANENTLY PAVED, COVERED BY STRUCTURE, OR PLANTED FOR A PERIOD OVER 90 DAYS SHALL BE TEMPORARILY RE-VEGETATED WITH A NON-IRRIGATED HYDROSEED MIX, GROUND COVER, OR EQUIVALENT MATERIAL. SEE SHEET ___ FOR MIX AND SPECIFICATIONS.

GROUND WATER DISCHARGE NOTES

1. ALL GROUND WATER EXTRACTION AND SIMILAR WASTE DISCHARGES TO SURFACE WATERS NOT TRIBUTARY TO THE SAN DIEGO BAY ARE PROHIBITED UNTIL IT CAN BE DEMONSTRATED THAT THE OWNER HAS APPLIED AND OBTAINED AUTHORIZATION FROM THE STATE OF CALIFORNIA VIA AN OFFICIAL "ENROLLMENT LETTER" FROM THE REGIONAL WATER QUALITY CONTROL BOARD IN ACCORDANCE WITH THE TERMS, PROVISIONS AND CONDITIONS OF STATE ORDER NO 2001-96 NPDES CAG919002.

2. THE ESTIMATED MAXIMUM DISCHARGE RATES MUST NOT EXCEED THE LIMITS SET IN THE OFFICIAL "ENROLLMENT LETTER" FROM THE REGIONAL BOARD UNLESS PRIOR NOTIFICATION AND SUBSEQUENT AUTHORIZATION HAS BEEN OBTAINED, AND DISCHARGE OPERATIONS MODIFIED TO ACCOMMODATE THE INCREASED RATES.

3. ALL GROUND WATER EXTRACTIONS AND SIMILAR WASTE DISCHARGES TO SURFACE WATERS TRIBUTARY TO THE SAN DIEGO BAY ARE PROHIBITED UNTIL IT CAN BE DEMONSTRATED THAT THE OWNER HAS APPLIED AND OBTAINED AUTHORIZATION FROM THE STATE OF CALIFORNIA VIA AN OFFICIAL "ENROLLMENT LETTER" FROM THE REGIONAL WATER QUALITY CONTROL BOARD IN ACCORDANCE WITH THE TERMS, PROVISIONS AND CONDITIONS OF STATE ORDER NO 2000-90 NPDES NO. CAG919001.

POST-CONSTRUCTION PERMANENT BMP OPERATION & MAINTENANCE PROCEDURE DETAILS *

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT APPROVAL NO.:

O&M RESPONSIBLE PARTY DESIGNEE: PROPERTY OWNER / HOA / CITY / OTHER

BMP DESCRIPTION	INSPECTION FREQUENCY	MAINTENANCE FREQUENCY	MAINTENANCE METHOD	SHEET NUMBER(S)
SITE DESIGN				
SOURCE CONTROL				
TREATMENT CONTROL				

GRADING PLANS FOR:

PROJECT NAME

KEY MAP

1"=X'

GRADING & GEOTECHNICAL SPECIFICATIONS

1. ALL GRADING SHALL BE DONE UNDER OBSERVATION AND TESTING BY A QUALIFIED CIVIL ENGINEER OR GEOTECHNICAL ENGINEER AND, IF REQUIRED, BOTH A QUALIFIED CIVIL ENGINEER OR GEOTECHNICAL ENGINEER AND AN ENGINEERING GEOLOGIST. ALL GRADING MUST BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY ORDINANCE AND THE RECOMMENDATIONS AND SPECIFICATIONS SET FORTH IN THE SOILS REPORT OR GEOLOGICAL/GEOTECHNICAL INVESTIGATION ENTITLED

(REPORT TITLE) (FOR) (PROJECT TITLE)
PREPARED BY (COMPANY NAME) DATED: (MM/DD/YYYY)

2. ALL FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MOST RECENT VERSION OF A.S.T.M. D-1557 OR AN APPROVED ALTERNATIVE STANDARD.

3. AT THE COMPLETION OF THE GRADING OPERATIONS FOR THE EARTHWORK SHOWN ON THIS PLAN, AN AS-GRADED SOILS REPORT, OR IF REQUIRED, AN AS-GRADED SOILS AND GEOLOGICAL REPORT WILL BE PREPARED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE CITY OF SAN DIEGO TECHNICAL GUIDELINES FOR GEOTECHNICAL REPORTS. THE FINAL "AS-GRADED" GEOTECHNICAL REPORT WILL BE SUBMITTED TO THE FIELD ENGINEERING SECTION OF PUBLIC WORKS AND A SECOND COPY TO THE GEOLOGY SECTION OF THE DEVELOPMENT SERVICES DEPARTMENT WITHIN 15 DAYS OF THE COMPLETION OF GRADING. WHERE GEOLOGIC INSPECTION IS INDICATED IN THE PERMIT OR PROJECT PLANS, REPORTS OR SPECIFICATIONS, THE FINAL REPORT MUST ALSO BE REVIEWED AND SIGNED BY A CALIFORNIA CERTIFIED ENGINEERING GEOLOGIST.

4. IF THE GEOTECHNICAL CONSULTANT OF RECORD IS CHANGED FOR THE PROJECT, THE WORK SHALL BE STOPPED UNTIL THE REPLACEMENT HAS AGREED IN WRITING TO ACCEPT THE RESPONSIBILITY WITHIN THE AREA OF THEIR TECHNICAL COMPETENCE FOR APPROVAL UPON COMPLETION OF THE WORK. IT SHALL BE THE DUTY OF THE PERMITTEE TO NOTIFY THE CITY ENGINEER AND THE LDR GEOLOGY SECTION OF THE DEVELOPMENT SERVICES DEPARTMENT IN WRITING OF SUCH CHANGE PRIOR TO THE RECOMMENCEMENT OF GRADING.

5. THESE GRADING PLANS HAVE BEEN REVIEWED BY THE UNDERSIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AND SPECIFICATIONS CONTAINED IN THE REFERENCED GEOTECHNICAL REPORT(S) PREPARED FOR THIS PROJECT.

(SIGNATURE)
ENGINEER'S NAME R.C.E. OR G.E. DATE

(SIGNATURE)
GEOLOGIST'S NAME C.E.G. DATE

COMPANY NAME *
ADDRESS
TELEPHONE NUMBER

*IF THE SOILS ENGINEER (R.C.E. OR G.E.) AND CERTIFIED ENGINEERING GEOLOGIST (C.E.G.) SIGNING THIS STATEMENT ARE NOT FROM THE SAME COMPANY, BOTH COMPANY NAMES AND PHONE NUMBERS MUST BE PROVIDED.

6. FOR SOIL FILE SEE CITY RECORD S - XXXXXX

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

COMPANY NAME
COMPANY ADDRESS
COMPANY PHONE
COMPANY FAX
COMPANY EMAIL

NAME R.C.E. NO. XXXXX EXP. XX-XX-XX DATE

OWNER/APPLICANT

OWNER/APPLICANT NAME
OWNER/APPLICANT COMPLETE ADDRESS
OWNER/APPLICANT PHONE NUMBER

REFERENCE DRAWINGS

REFERENCE DRAWING DESCRIPTION DRAWING NUMBER

SITE ADDRESS

INCLUDE COMPLETE ADDRESS IF APPLICABLE.

TOPOGRAPHY SOURCE

TOPO SOURCE COMPANY WITH COMPLETE ADDRESS.
TOPO SOURCE METHOD (I.E. A.L.T.A., PHOTOGRAMMETRY, ETC..)
TOPO SOURCE DATE (MUST BE < 3 YEARS AGO)

BENCHMARK

THIS BENCHMARK MUST BE TAKEN FROM THE CITY OF SAN DIEGO VERTICAL CONTROL BOOK.

TOTAL DISTURBED AREA

TOTAL SITE DISTURBED AREA IN ACRES IS REQUIRED FOR STORM WATER PURPOSES

GRADING QUANTITIES

GRADED AREA _____ XXXX [ACRES] MAX. CUT DEPTH _____ [FT]
CUT QUANTITIES _____ XXXX [CY(D)] MAX CUT SLOPE RATIO (2:1MAX) _____
FILL QUANTITIES _____ XXXX [CY(D)] MAX. FILL DEPTH _____ [FT]
IMPORT/EXPORT _____ XXXX [CY(D)] MAX FILL SLOPE RATIO (2:1MAX) _____

THIS PROJECT PROPOSES TO EXPORT _____ CUBIC YARDS OF MATERIAL FROM THIS SITE. ALL EXPORT MATERIAL SHALL BE DISCHARGED TO A LEGAL DISPOSAL SITE. THE APPROVAL OF THIS PROJECT DOES NOT ALLOW PROCESSING AND SALE OF THE MATERIAL. ALL SUCH ACTIVITIES REQUIRE A SEPARATE CONDITIONAL USE PERMIT.

ASSESSORS PARCEL NUMBER

AS STATED ON RECORDED DOCUMENT

EXISTING LEGAL DESCRIPTION

AS STATED ON RECORDED DOCUMENT. IF SUBDIVISION/CONSOLIDATION IS NOT INCLUDED REMOVE PROPOSED LEGAL DESCRIPTION HEADING & TEXT.

PROPOSED LEGAL DESCRIPTION*

PROVIDE PROPOSED LEGAL DESCRIPTION WITH A PROVISION FOR A MAP NUMBER TO BE AS-BUILT OR ADDED AS PART OF A CONSTRUCTION CHANGE.

SHEET INDEX

SHEET DESCRIPTION _____ SHEET #/RANGE

PRIVATE WATER AND WASTEWATER*

THE PRIVATE WATER/SEWER SYSTEM IS DESIGNED IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE AND IS SHOWN ON THESE PLANS AS "INFORMATION ONLY". A SEPARATE PLUMBING PERMIT IS REQUIRED FOR CONSTRUCTION AND INSPECTION OF THE SYSTEM.

TRAFFIC CONTROL NOTE*

(DELETE IF GREATER THAN 5000 ADT)

THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN (11"X17") FOR APPROVAL PRIOR TO STARTING WORK. THE PLAN SHOULD BE SUBMITTED TO THE TRAFFIC CONTROL PERMIT COUNTER, 3RD FLOOR, BOOTH 22, LAND DEVELOPMENT REVIEW DIVISION, DEVELOPMENT SERVICES CENTER, 1222 FIRST AVENUE, SAN DIEGO (619-446-5150). CONTRACTOR SHALL OBTAIN A TRAFFIC CONTROL PERMIT A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO STARTING WORK, AND A MINIMUM OF FIVE (5) DAYS IF WORK WILL AFFECT A BUS STOP OR AN EXISTING TRAFFIC SIGNAL, OR IF WORK WILL REQUIRE A ROAD OR ALLEY CLOSURE.

* IF APPLICABLE

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS:

1. STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2009 EDITION (GREENBOOK), DOCUMENT NO. PITS0904091, FILED MAY 4, 2009, INCLUDING THE CITY OF SAN DIEGO SUPPLEMENT, DOCUMENT NO. PITSGSD4092, FILED MAY 4, 2009.

2. 1999 STANDARD SPECIAL PROVISIONS FOR SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS OF THE CITY OF SAN DIEGO, DOCUMENT NO. 789842, FILED OCTOBER 22, 1999.

3. CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CHWA'S MUTCD, 2003 EDITION, AS AMENDED FOR USE IN CALIFORNIA), DOCUMENT NO. AEC1231084, FILED DECEMBER 31, 2006.

4. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DOCUMENT NO. AEC0925082, FILED SEPTEMBER 25, 2006.

STANDARD DRAWINGS:

1. CITY OF SAN DIEGO STANDARD DRAWINGS, INCLUDING ALL REGIONAL STANDARD DRAWINGS, DOCUMENT NO. AEC1231061, FILED DECEMBER 31, 2006

2. STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD PLANS, DOCUMENT NO. AEC0925061, FILED SEPTEMBER 25, 2006

LEGEND

PROPOSED IMPROVEMENTS

IMPROVEMENT STANDARD DWGS. SYMBOL

EXISTING IMPROVEMENTS

ITEM SYMBOL

VICINITY MAP

NO SCALE

ENGINEERING PERMIT NO.: _____
WORK NO: _____
RETAINING WALL PROJECT NO: _____
CONSTRUCTION SITE PRIORITY: _____
PRIVATE CONTRACT

PLANS FOR THE CONSTRUCTION OF

PROJECT NAME
BRIEF LEGAL DESCRIPTION

CITY OF SAN DIEGO, CALIFORNIA
SHEET 1 OF XX SHEETS

I.O. NO. _____
PROJECT NO. _____

FOR CITY ENGINEER DATE

V.T.M. _____

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XXX			
AS-BUILTS				

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

XXXX-XXXX WADEL COORDINATES

XXX-XXXX LAMBERT COORDINATES

1 - D

CONSTRUCTION CHANGE TABLE

CHANGE	DATE	EFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1/2 1

CITY OF SAN DIEGO
DEVELOPMENT SERVICES DEPARTMENT

STREET DATA TABLE

STREET NAME	CLASSIFICATION	SPEED (MPH)	ADT (VEHICLES)	R/W (FT)

REMOVE THIS NOTE AFTER INSTRUCTIONS WITHIN THE IMPROVEMENT FORMAT SHEET (?) HAVE BEEN READ IN THEIR ENTIRETY.

Figure 4-2 Piping & Instrumentation Diagram Symbols and Legend Sheet 1 Sample

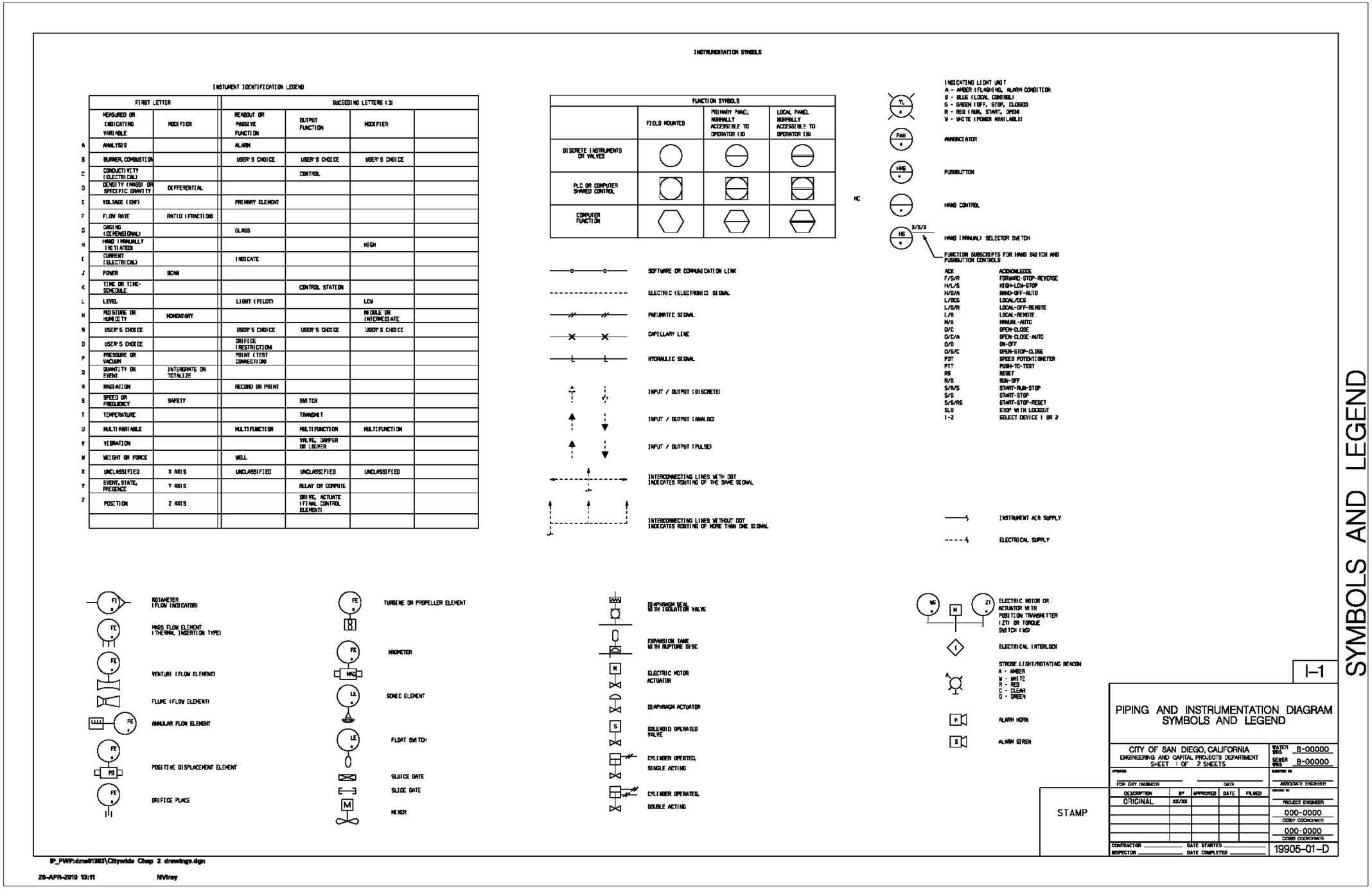


Figure 4-2 Piping & Instrumentation Diagram Symbols and Legend Sheet 2 Sample

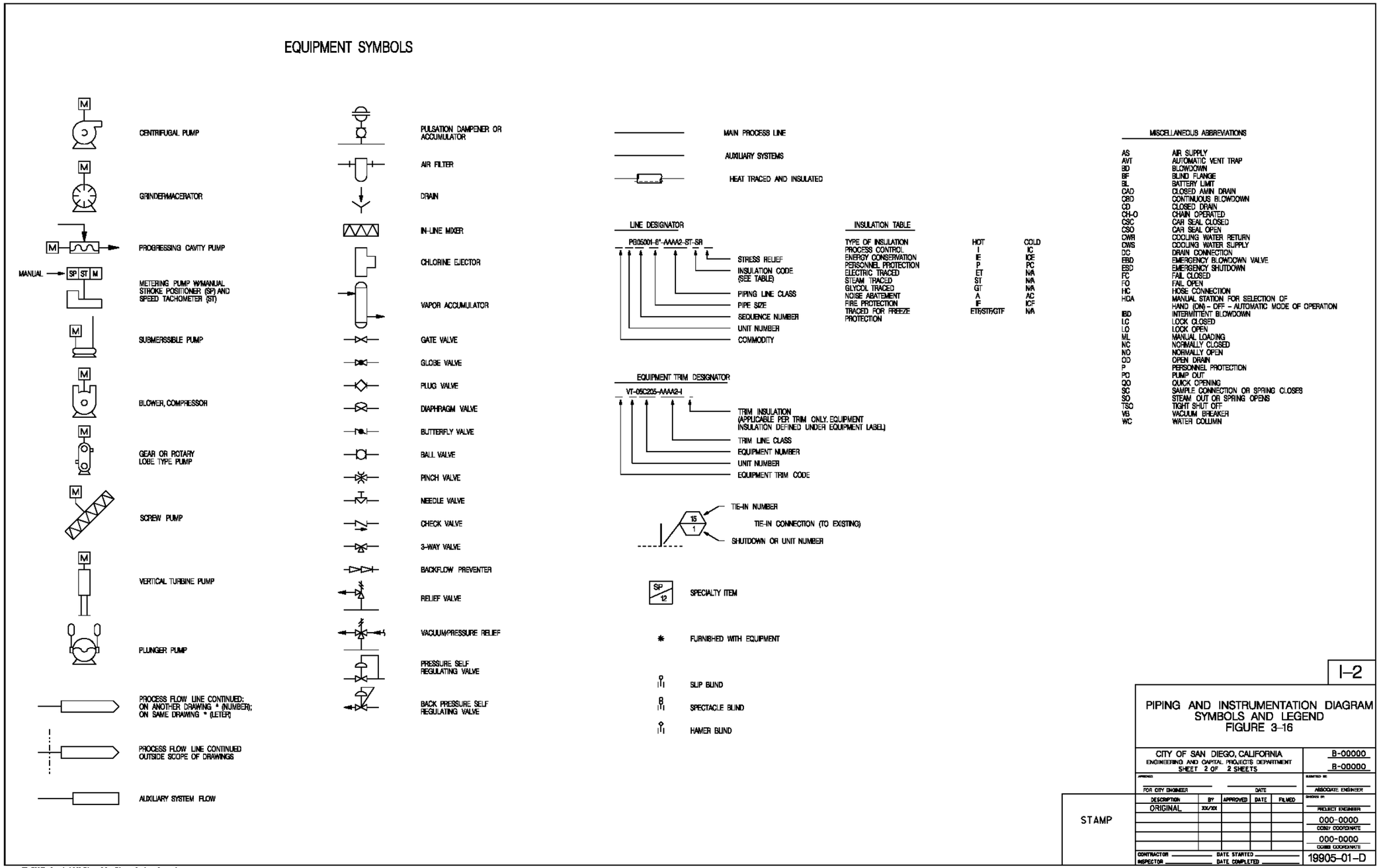
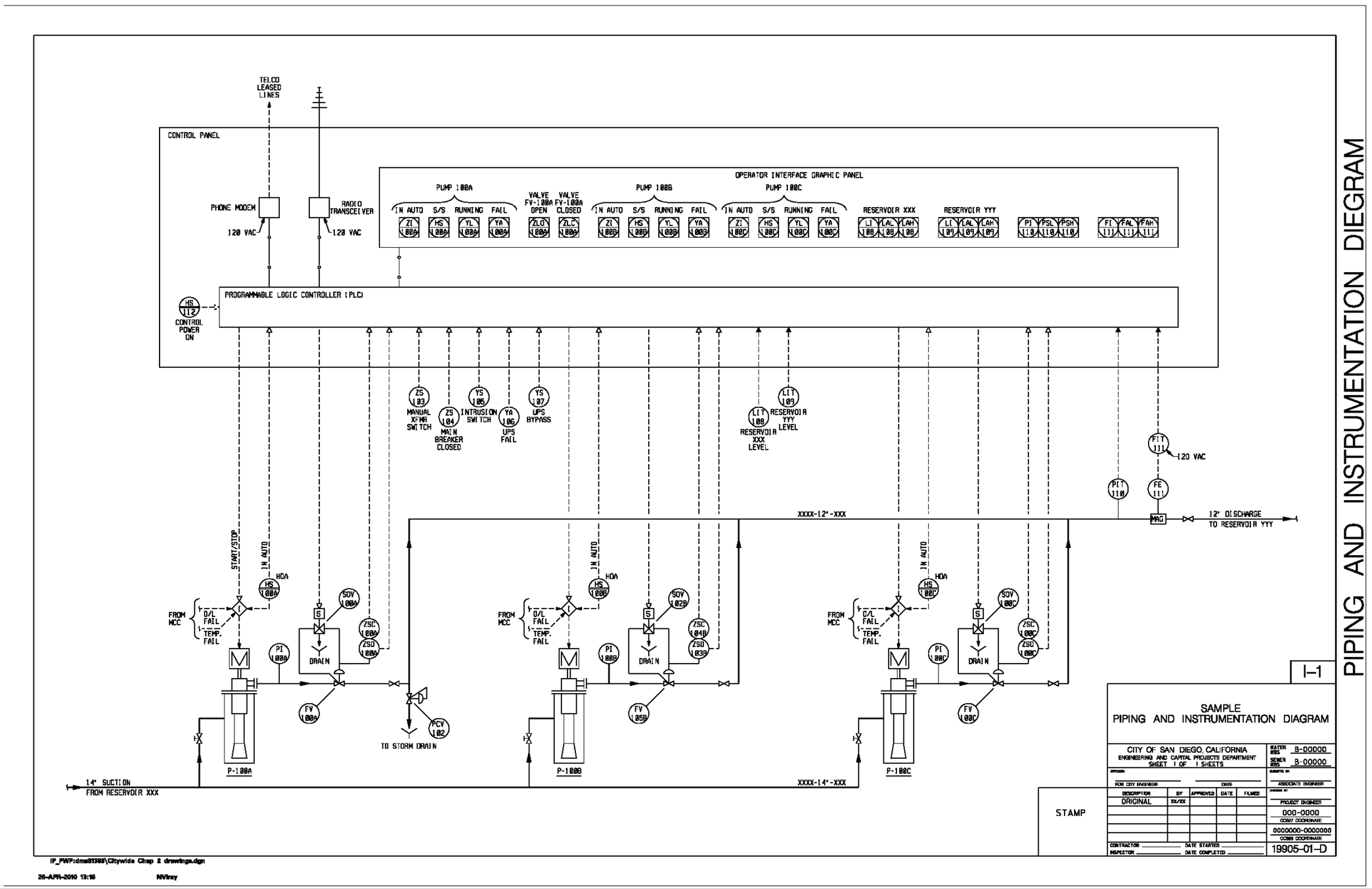


Figure 4-3 Piping & Instrumentation Diagram Sheet Sample



APPENDIX ‘A’

ENGINEERING & CAPITAL PROJECTS

RIGHT-OF-WAY

CADD
TEXT AND SYMBOL
SECTION

CADD TEXT STANDARDS FOR COVER SHEETS

DESCRIPTION	TEXT SIZE	WEIGHT
TITLE	43	FILL
RT. MARGIN (STREET NAME)	20	FILL
DRAWING NUMBER	8.0	3
C.I.P. NUMBER /S.A.P.	4.8	1
COVER SHEET NOTES	4.8	1
WORK TO BE DONE SCHEDULE (TITLE ONLY)	8.0	2
GENERAL NOTES (TITLE ONLY)	5.6	2
SHEET NUMBER & PIPE SIZE ON PROJECT LIMITS MAP	5.6	2
TITLE BLOCK	8.0	3

NOTE:
ALL TEXT SHALL BE FONT 1 UNLESS OTHERWISE NOTED
AND TEXT SIZES ARE BASED ON 40' MAPPING

FOR 20' SCALE DIVIDE BY 2
FOR 10' SCALE DIVIDE BY 4

CADD TEXT STANDARDS FOR EXISTING UTILITIES

DESCRIPTION	TEXT SIZE	WEIGHT
SUBDIVISION NAME (SLANT) FONT. 23	8.0	3
BLOCK NUMBER–1/2" CIRCLE (BROKEN)	7.0	3
STREET NAME	7.0	3
RETIREMENTS (TOTAL LENGTH OF PIPE–SIZE–TYPE OF PIPE–YEAR INSTALLED)	4.8	1
RETIREMENTS FIRE HYDRANTS – NUMBER BEING REPLACED	4.8	1
LOT NUMBER	4.8	1
HORZ–VERT. SCALE (PROFILE VIEW)	4.8	1
SCALE (PLAN VIEW)	4.8	1
BENCH MARKS	4.8	1
REFERENCE NOTES (SUBSEQUENT SHEETS)	4.8	1
SHEET–OF–SHEETS (TITLE BLOCK)	4.8	1
LAMBERT COORDINATES (TITLE BLOCK)	4.8	1
DIMENSIONS	4.8	1
EXISTING (UTILITY DESCRIPTIONS)	4.8	1
ADDRESSES (SLANT) FONT. 23	4.8	1
MAP NUMBER (SLANT) FONT. 23	8.0	3

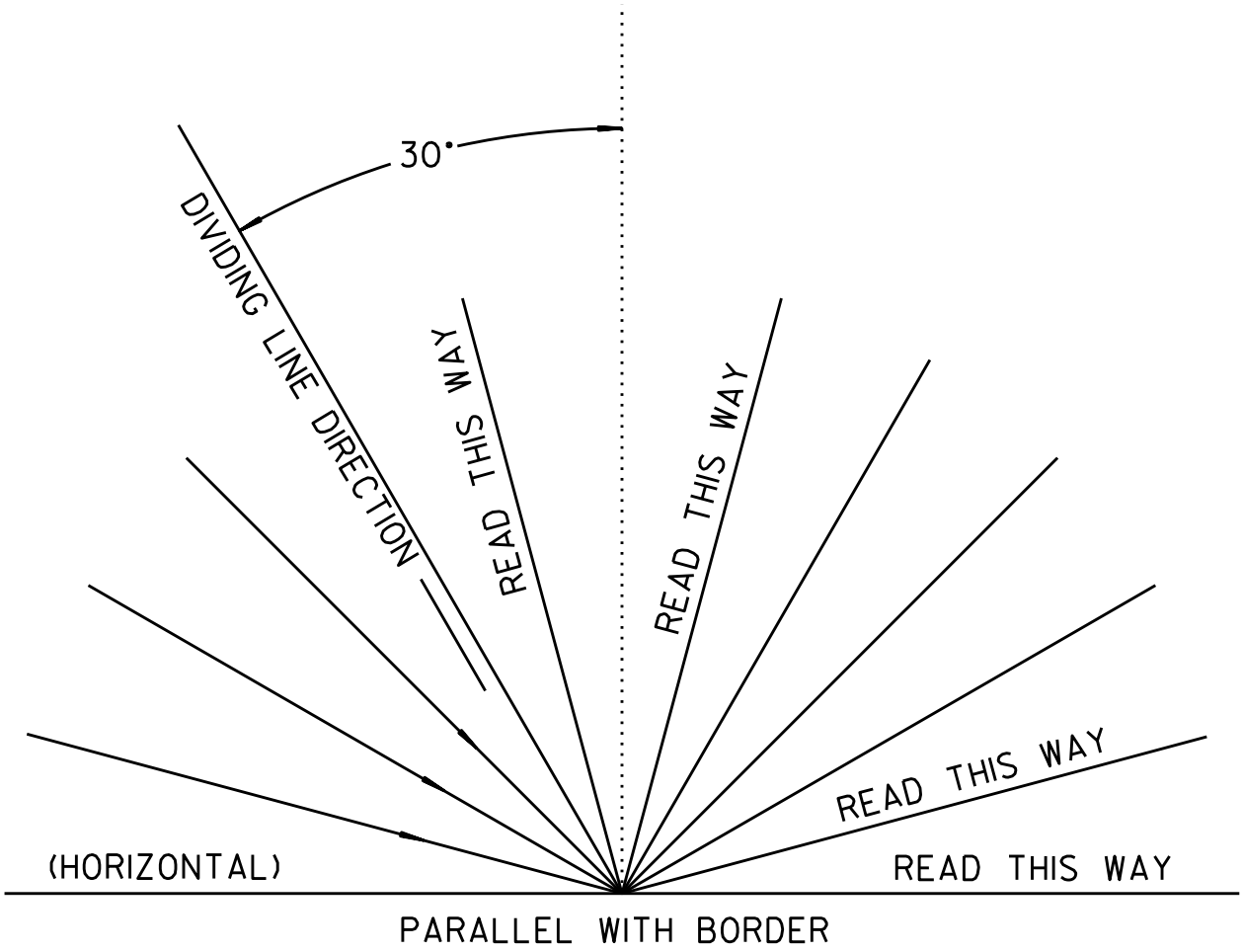
CADD TEXT STANDARDS FOR PROPOSED CONSTRUCTION

DESCRIPTION	TEXT SIZE	WEIGHT
PROJECT NAME (TITLE BLOCK)	8.0	3
STREET NAME (TITLE BLOCK)	7.0	3
LIMITS OF STREET OR ALLEY (TITLE BLOCK)	5.6	2
PIPE SIZE (WTR. MAINS PLAN & PROFILE)	7.0	3
PIPE SIZE (SEWER MAINS, PLAN VIEW)	7.0	3
PIPE SIZE & SLOPE (SWR. MAINS, PROFILE)	7.0	3
CALL–OUTS, MH NO. (PLAN&PROFILE SWR)	7.0	3
DISTANCE BETWEEN MANHOLES (PROFILE SEWER)	4.8	1
ELEVATION FOR PROFILE GRADE	5.6	2
ADJOINING SHEET (MATCH LINE)	5.6	2
CAUTION CALL–OUT (GAS, TEL, ELEC, OIL, ETC)	5.6	2
PROFILE STATION NUMBERS (SURVEY LINE)	5.6	2
PLAN STATION NUMBERS (SURVEY LINE)	4.8	1
CONNECTION NOTE FOR SEWER STUB–OUT	4.8	1
NOTES (OTHER THAN COVER SHEET)	4.8	1

CADD TEXT STANDARDS FOR PROPOSED CONSTRUCTION

DESCRIPTION	TEXT SIZE	WEIGHT
CHANGE IN ELEVATION (PROFILE WATER)	4.8	1
"INVERT OF PIPE" (WATER & SEWER)	4.8	1
W.O. NUMBER	4.8	1
WATER CONSTRUCTION NOTE TITLE (BY CITY..... or BY CONTRACTOR....)	5.6	1
WATER CONSTRUCTION NOTE	4.8	1

CADD TEXT STANDARD FOR READING DIRECTION



CADD
SYMBOL STANDARDS
SECTION

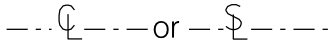
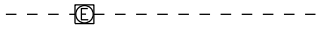
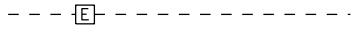
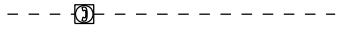
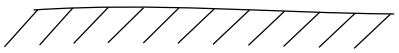
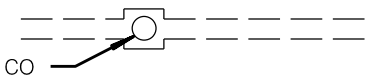
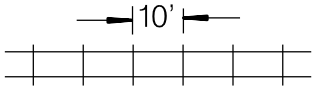
EXISTING UTILITIES CADD SYMBOLS

NOTE:
IN THIS SECTION ALL TEXT SIZE SHALL BE 4.8 (TX=4.8)
AND TEXT WEIGHT SHALL BE 1 (WT=)1, UNLESS OTHERWISE NOTED.

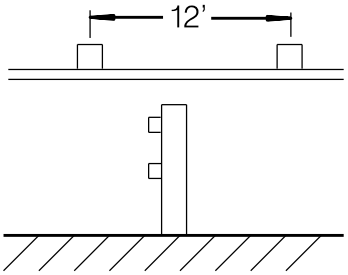
CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
LA JOLLA VILLAGE 610 NORTH CITY 510	PRESSURE ZONE BOUNDARY	3	1
1/4" 1/8"	STATE R /W LINE	0	3
	PROPERTY LINE ALONG STREET OR ALLEY R /W	0	3
	SUBDIVISION BOUNDARY LINE	6	3
	EASEMENT LINE	3	0
	PROPERTY SPLITS	6	0
	LOT LINE	0	0
	CURB LINE	0	0
E	UNDERGROUND ELEC. (1/8" DASHES, TEXT 3.2)	P	0
T or C	UNDERGROUND TEL. "T" or CABLE T.V. "C" (1/32" DASHES TEXT 3.2)	P	0
	GAS MAIN	6	0
S	STEAM LINE (TEXT 3.2)	P	0
	EX WATER	3	1
	EX SEWER	7	1

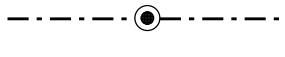
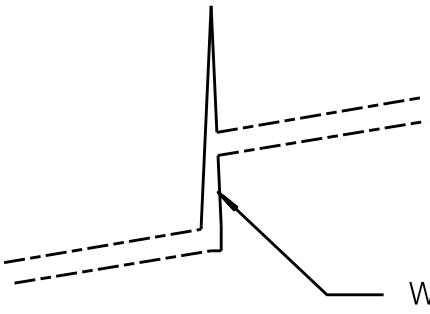
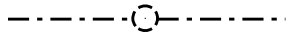
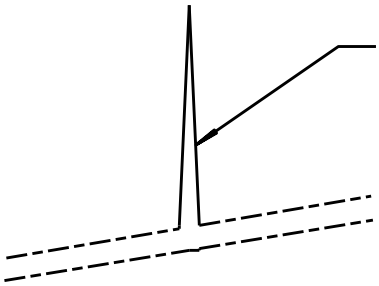
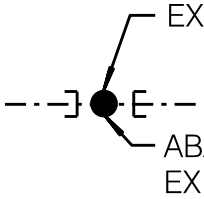
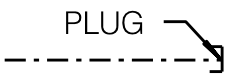
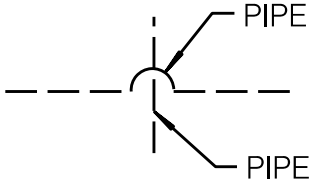
CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	CENTER OR SURVEY LINE (BASELINE)	C	0
	ELEC. MH OR HANDHOLD (HH)	C	0
	TRANSFORMER	C	0
	TELEPHONE MH. OR HANDHOLD (HH)	C	0
E ELEC. I IRIG. ELEC. T TEL. TR TRAFFIC LIGHT.	ELEC. OR PHONE PULLBOX	C	0
	EXISTING PAVEMENT	P	1
	EXISTING GROUND LINE	P	1
	EDGE OF PAVEMENT (PLAN VIEW)	P	1
	FUEL LINE (TEXT 3.2)	P	0
	FENCE – PIPE, WIRE, WOOD, ETC. (TEXT 3.2)	P	0
	STORM DRAIN – SCALE TO SIZE (TEXT 3.2)	3	0
	RAILROAD, STREET CAR TRACKS OR TROLLEY – SCALE TO SIZE	0	0

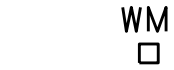
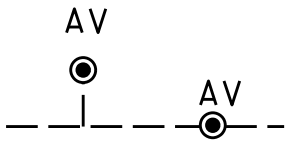
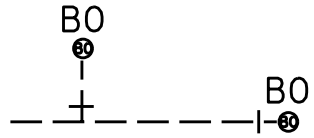
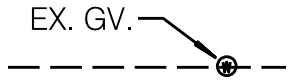
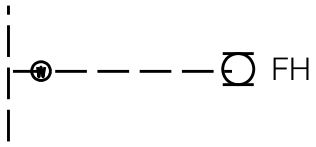
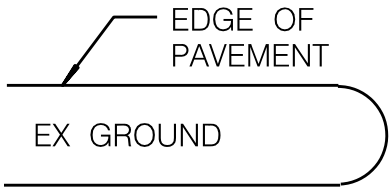
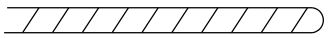
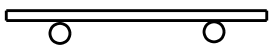
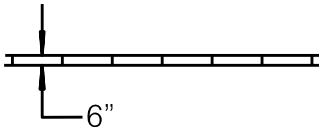
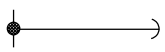
CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	GUARD RAIL – BARRICADE (1⁄16" BOX)	C	0
	GUARD RAIL – BARRICADE PROFILE (1⁄16" BOX)	C	0
	TRAFFIC LIGHT ACTUATOR	C	0
TLA	TRAFFIC LIGHT ACTUATOR–BAR SCALE TO SIZE (TEXT 3.2)	P	0
TR	TRAFFIC CONTROL BOX	C	0
	TRAFFIC LIGHT	C	0
	STREET LIGHT	C	0
	POWER POLE	C	0
	TELEPHONE POLE	C	0
	OVERHEAD ELECTRICAL, CABLE TV OR TELEPHONE. CALL OUT ON PLANS IF LESS THAN 15' HIGH	0	0
	OWNERSHIP LINE FOR LOTS	C	0
	EX. SURVEY CONTROL MONUMENT	C	0

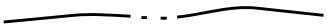
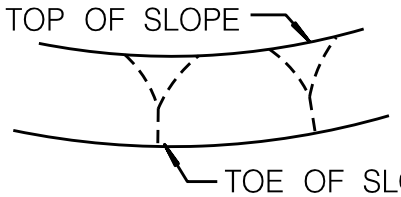
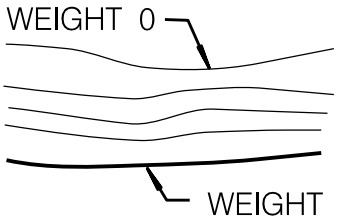
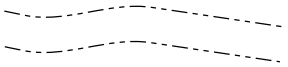
CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	EXISTING DROP MANHOLE–PLAN VIEW	C	0
	EXISTING DROP MANHOLE–PROFILE VIEW	C	0
	EXISTING MANHOLE–PLAN VIEW AND SEWER MAIN	C	0
	EXISTING MANHOLE–PROFILE VIEW AND SEWER MAIN	C	0
	EX ABANDONED MANHOLE OR ABANDON EX MANHOLE	C	0
	PLUG EXISTING SEWER	0	0
	EXISTING REDUCER NOTE: EX. RED. TO BE SHOWN ONLY WHEN CONNECTING NEW PIPE TO EX RED.	C	1
	CROSSING OF LINES (NOT CONNECTING)	0	1

CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	WATER METER BOX	C	0
	EX AIR VALVE EX WATER MAIN	C	0
	EX. BLOW–OFF EX WATER MAIN	C	0
	EX. GATE VALVE	C	6
	EX. FIRE HYDRANT	C	0
	CATCH BASIN, DRAIN INLET, DRAW TO SCALE. REFER TO SDRSD FOR TYPE A, B, C, ETC)	C	0
	DIRT MEDIAN	0	1
	ISLAND	0	0
	BILL BOARD (DRAW TO SCALE, CALL OUT ON PLANS)	0	0
	BERM (ASPHALT)	0	0
	POWER POLE W/CABLE SUPPORT	C	0

CADD SYMBOL STANDARDS FOR EXISTING UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	TRACKS – INDICATE IF ABANDONED AND REFER TO DETAIL ON SHT. X . SHOW DETAIL ON X. SHOW TO SCALE. (PROFILE)	P	0
	BUSHES,TREES. INCLUDE SIZE OF TRUNK FOR TREES IN CONFLICT AREA (TEXT 3.2)	C	0
	MARSH OR SWAMP	P	0
	TOP OF LEVEE (CALL OUT ON PLANS)	0	0
	CENTER LINE OF DITCH OR STREAM (CALL OUT ON PLANS)	0	0
	EXISTING EMBANKMENT, DASHED	0&2	1
	BODIES OF WATER LAKES, PONDS (CALL OUT ON PLANS)	0	0&2
	BODIES OF WATER, SMALL STREAMS (CALL OUT ON PLANS)	6	0

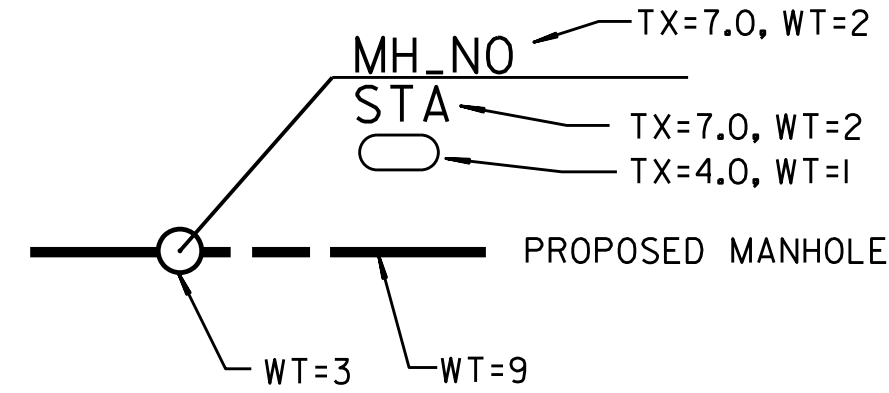
PROPOSED UTILITIES CADD SYMBOLS

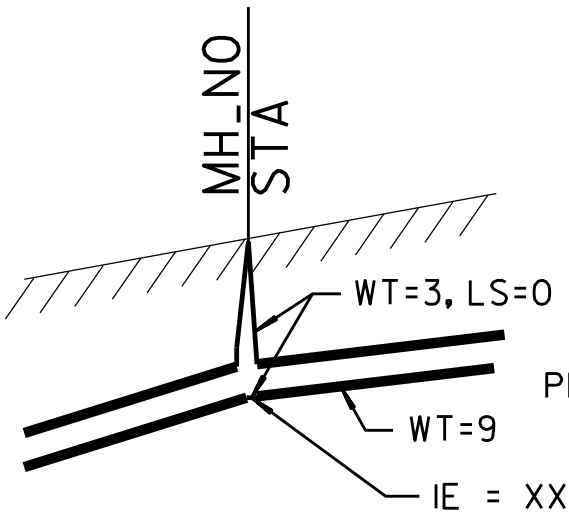
NOTE:
IN THIS SECTION ALL TEXT SIZE SHALL BE 4.8 (TX=4.8)
AND TEXT WEIGHT SHALL BE 1 (WT=)1, UNLESS OTHERWISE NOTED.

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

(STORM & SANITARY)

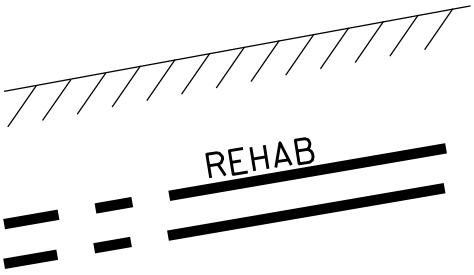
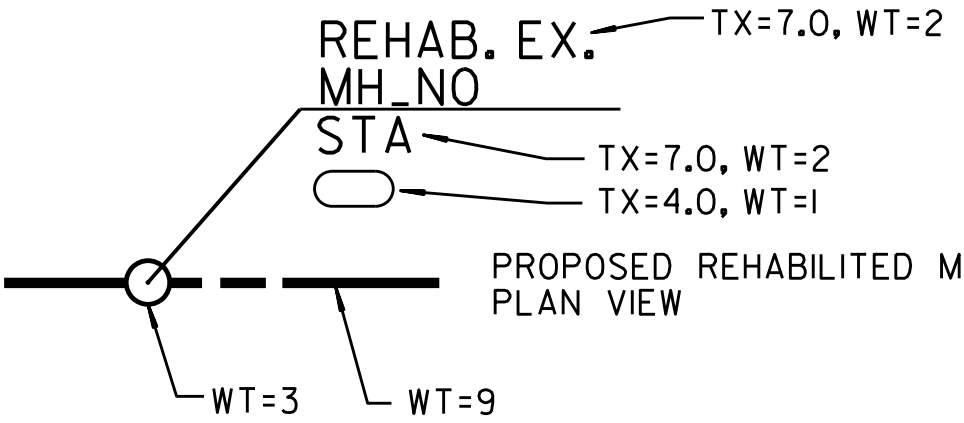
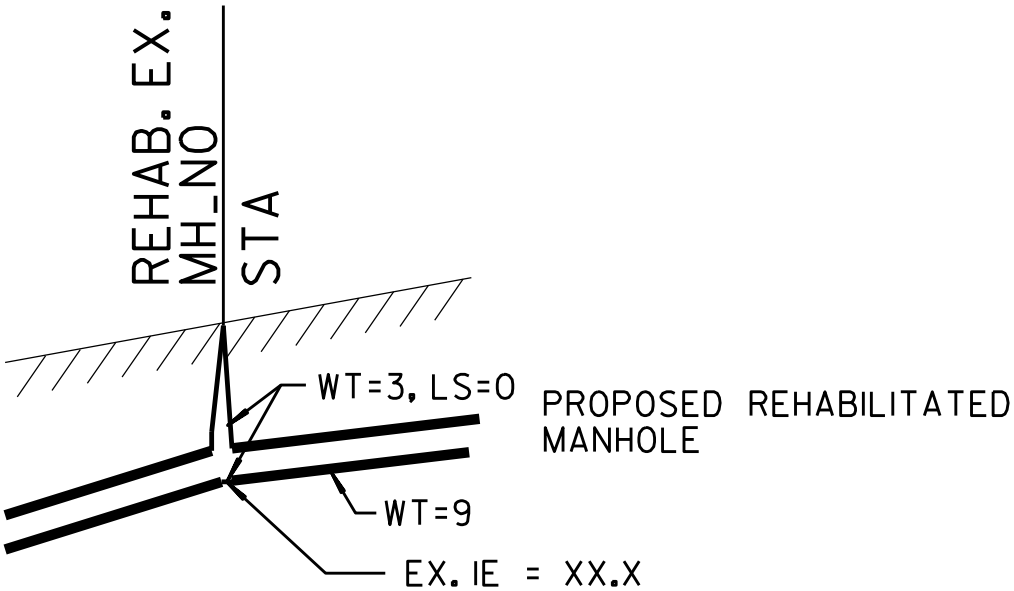
SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	PROPOSED SEWER MAIN, PLAN VIEW	P	9
	PROPOSED SEWER MAIN, PROFILE VIEW	P	9
	PROPOSED MANHOLE PLAN VIEW	C	3
	PROPOSED MANHOLE PROFILE VIEW	C	3



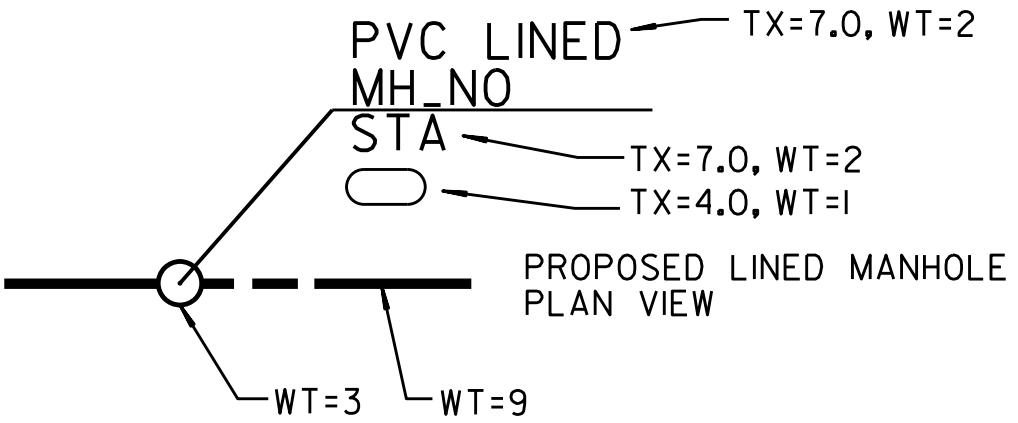
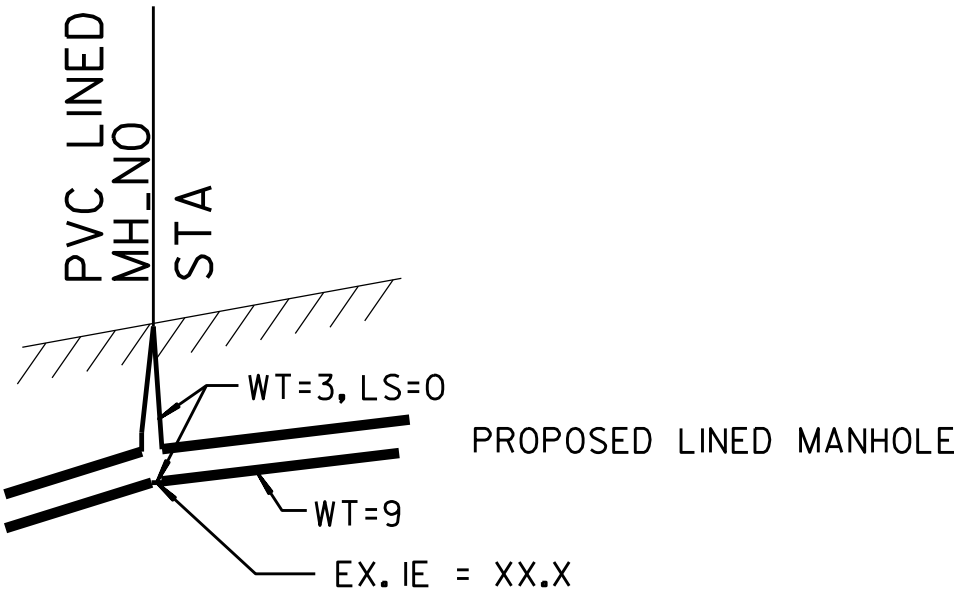


CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

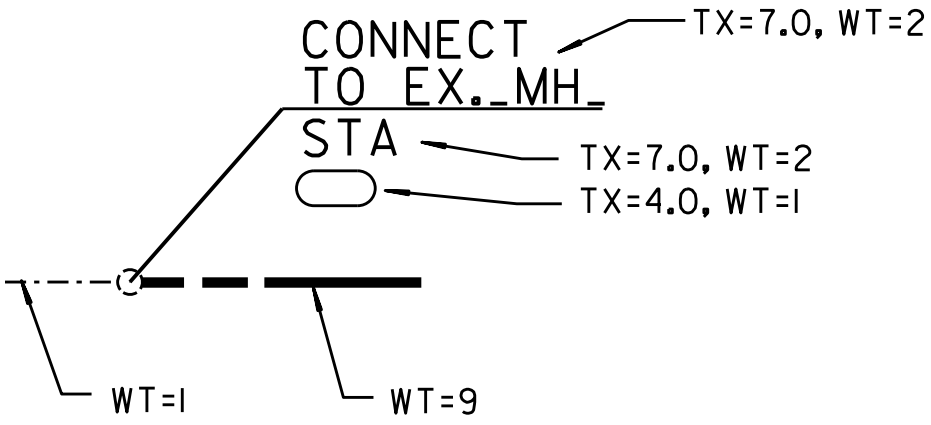
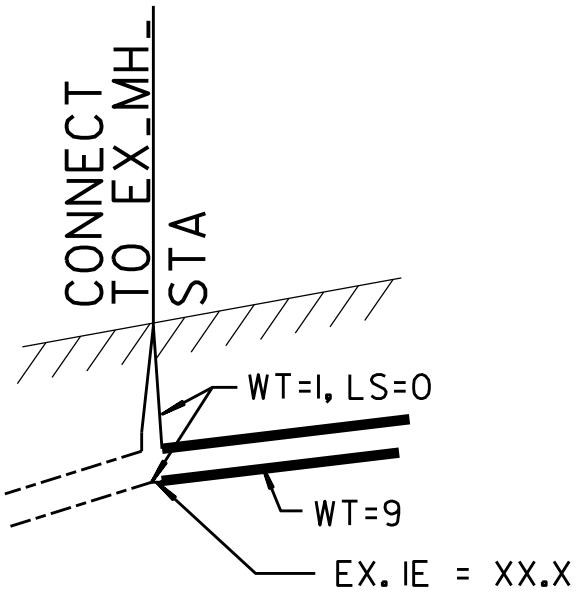
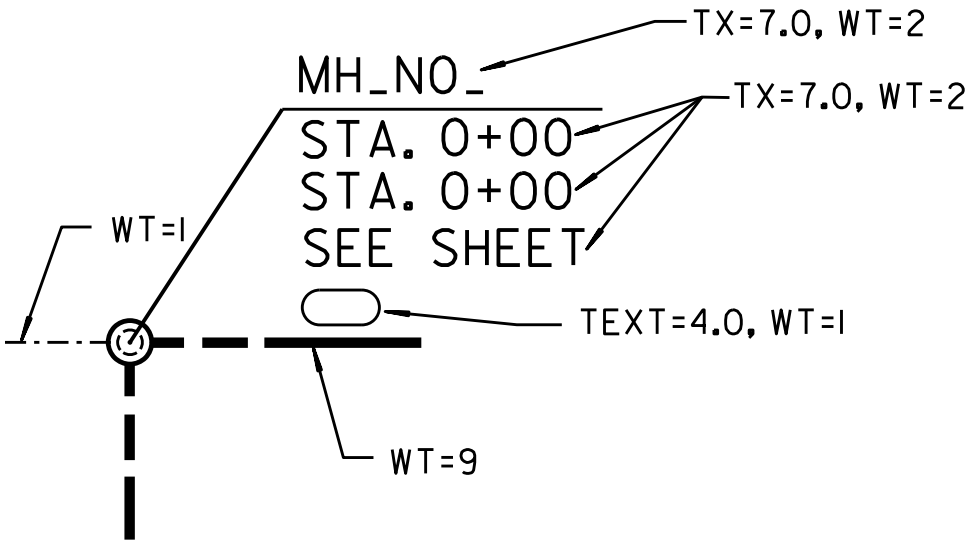
(REHABILITATION)

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	PROPOSED REHABILITATION SEWER MAIN, PLAN VIEW	P	9
	PROPOSED REHABILITATION SEWER MAIN, PROFILE VIEW	P	9
	PROPOSED REHABILITED MANHOLE PLAN VIEW	C	3
	PROPOSED REHABILITATED MANHOLE	C	3

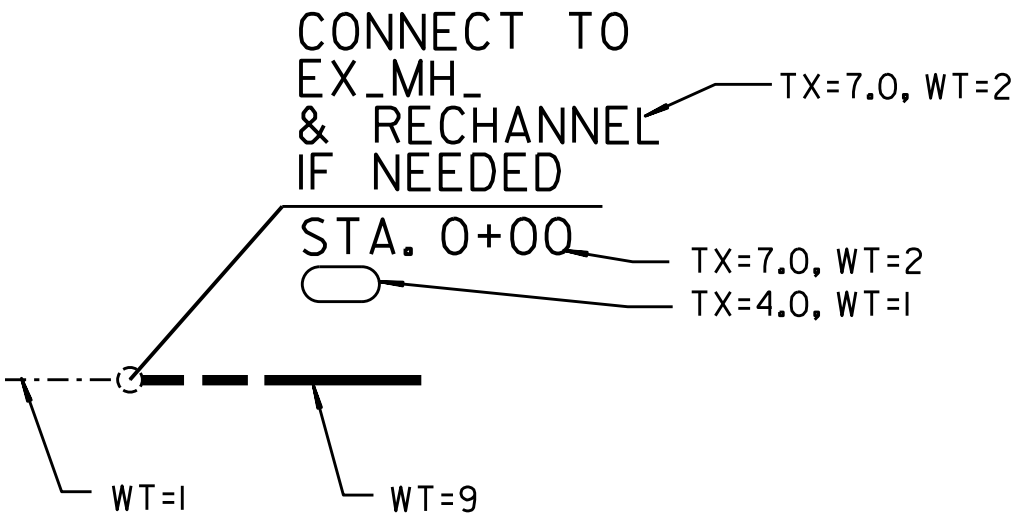
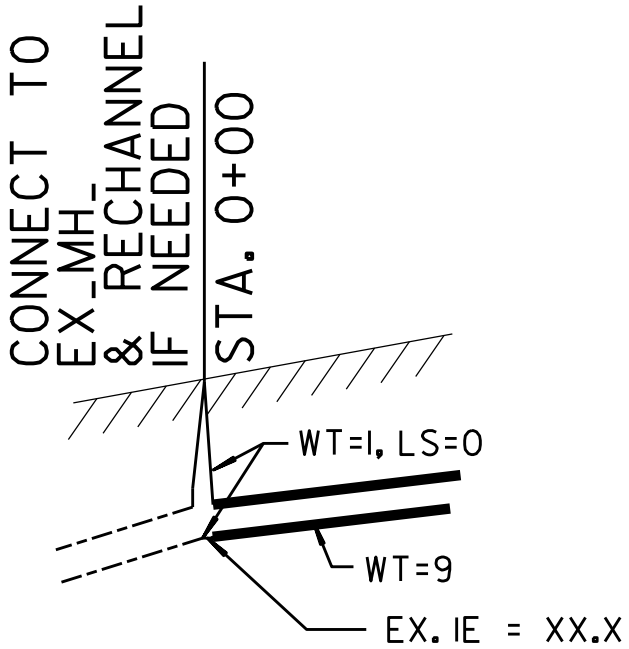
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	PROPOSED LINED MANHOLE PLAN VIEW	C	3
	PROPOSED LINED MANHOLE	C	3

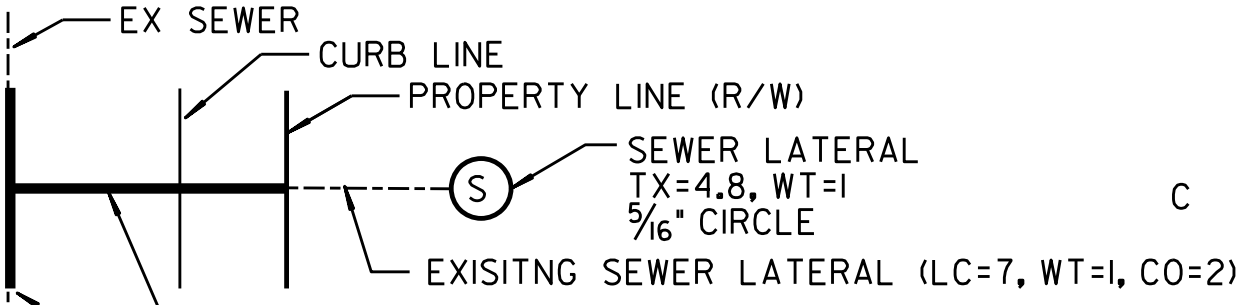
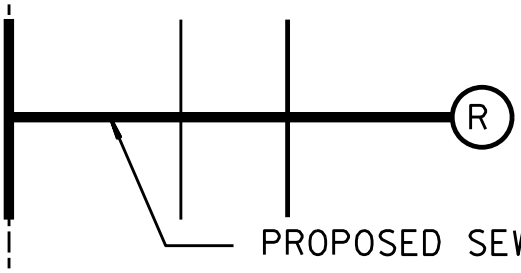
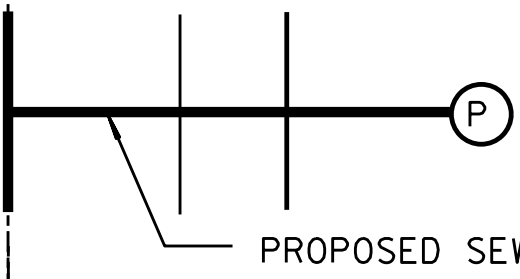
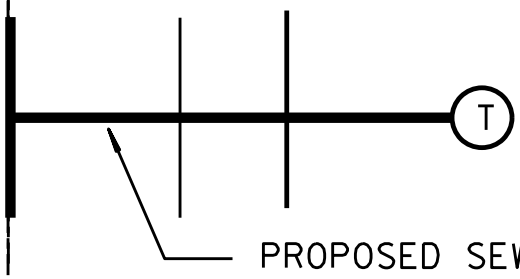
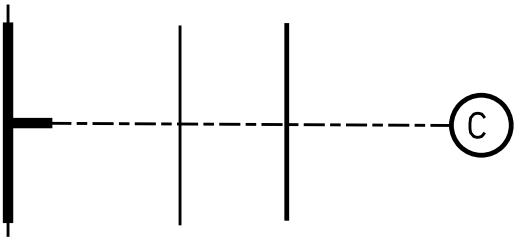
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
		C	3
		C	3
		C	3

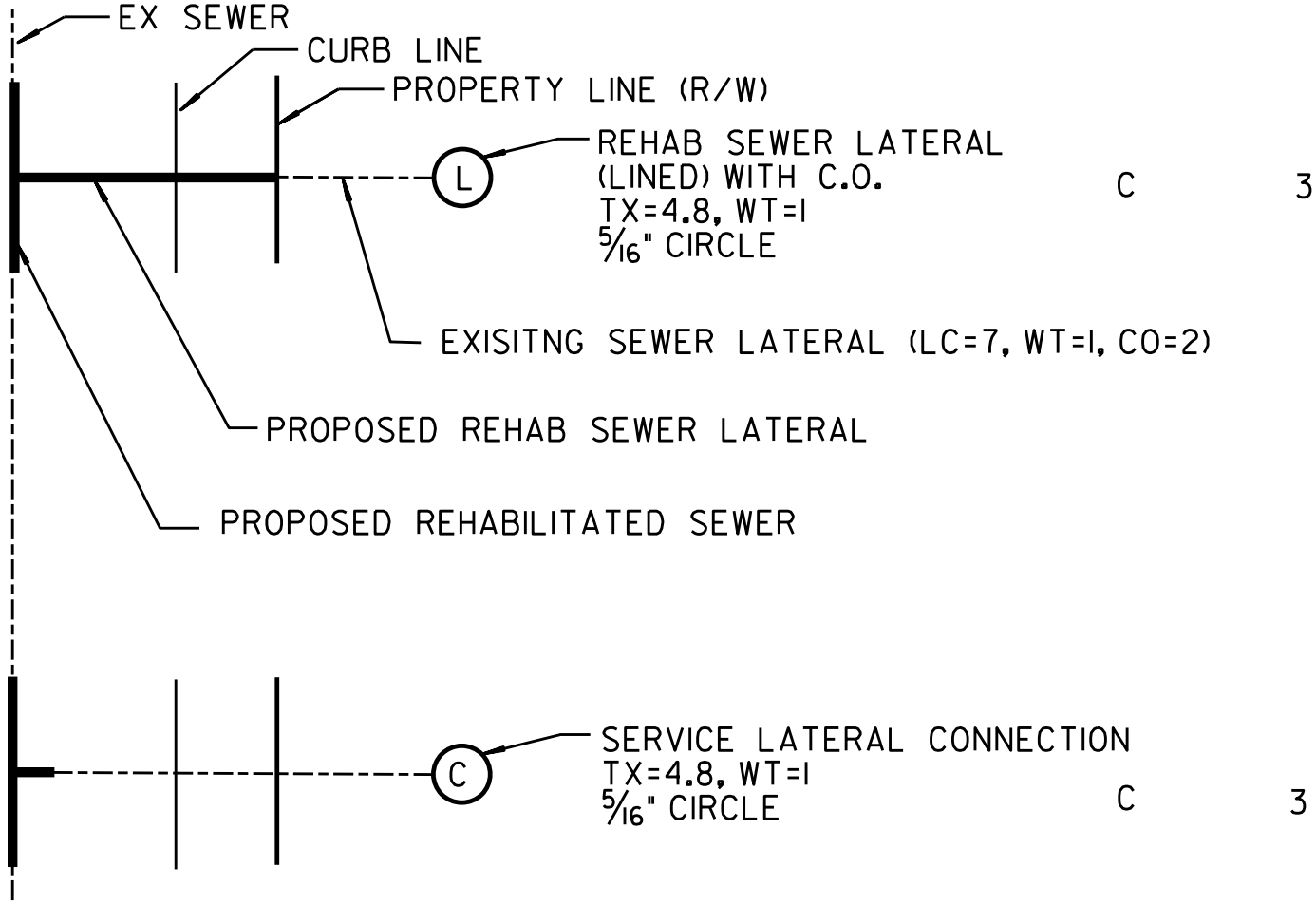
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
		C	3
		C	3

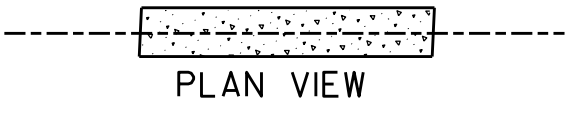
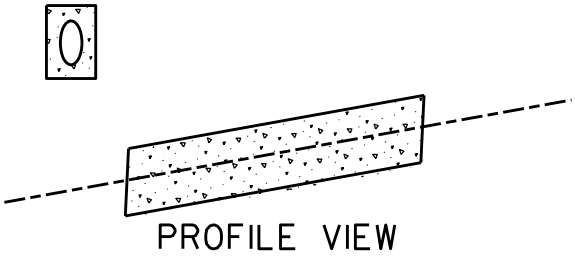
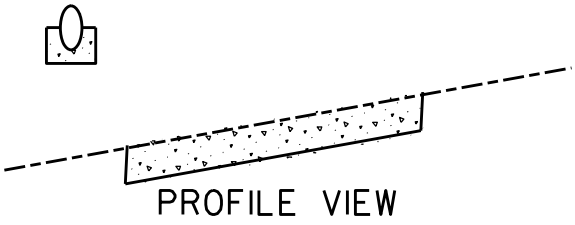
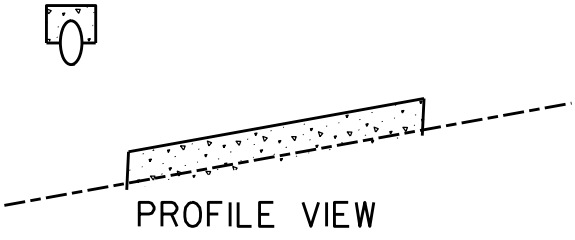
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	SEWER LATERAL TX=4.8, WT=1 5/16" CIRCLE	C	3
	REPLUMB SEWER LATERAL WITH C.O. TX=4.8, WT=1 5/16" CIRCLE	C	3
	SEWER PUMP INCLUDING REPLUMB SEWER LATERAL WITH C.O. TX=4.8, WT=1 5/16" CIRCLE	C	3
	TUNNEL SEWER REPLUMB LATERAL WITH C.O. (LINED) WITH C.O. TX=4.8, WT=1 5/16" CIRCLE	C	3
	SEWER LATERAL CONNECTION TX=4.8, WT=1 5/16" CIRCLE	C	3

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

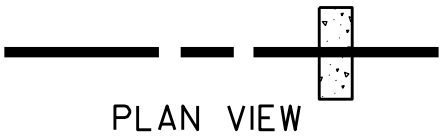
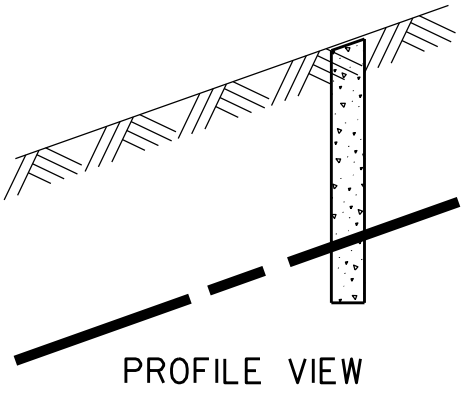
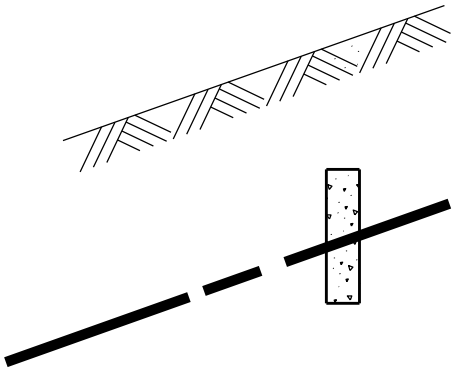
SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	REHAB SEWER LATERAL (LINED) WITH C.O. TX=4.8, WT=1 5/16" CIRCLE	C	3
	SERVICE LATERAL CONNECTION TX=4.8, WT=1 5/16" CIRCLE	C	3

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	CONCRETE ENCASEMENT (REFER TO THE SDRSD) CONCRETE SUPPORT (REFER TO THE SDRSD)	P	0
	CONCRETE ENCASEMENT (REFER TO THE SDRSD) CONCRETE SUPPORT (REFER TO THE SDRSD)	P	0
	CONCRETE CRADLE (REFER TO THE SDRSD)	P	0
	CONCRETE CRADLE (REFER TO THE SDRSD)	P	0
	CONCRETE BACKFILL (REFER TO THE SDRSD) CONCRETE PROTECTION (REFER TO THE SDRSD)	P	0
	CONCRETE BACKFILL (REFER TO THE SDRSD) CONCRETE PROTECTION (REFER TO THE SDRSD)	P	0

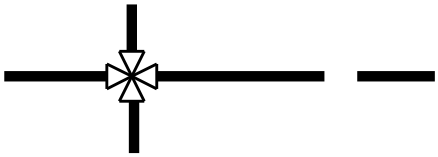
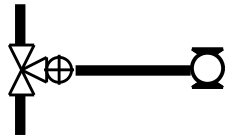
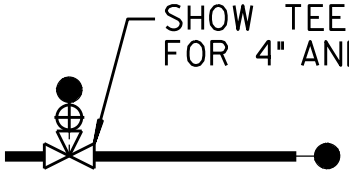
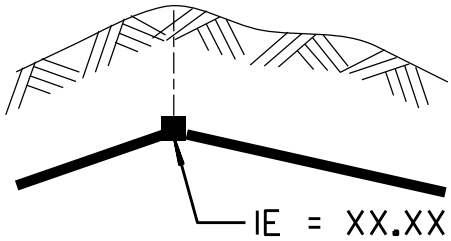
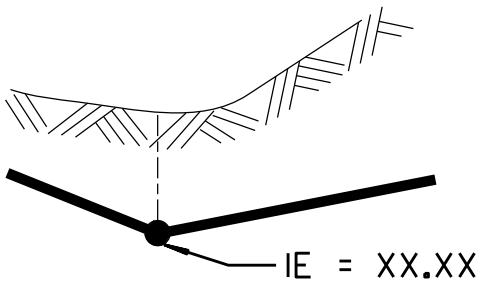
REFER TO THE SDRSD FOR PROPER SIZES

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

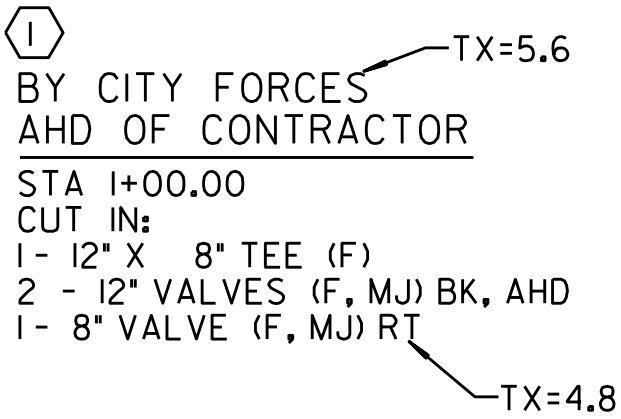
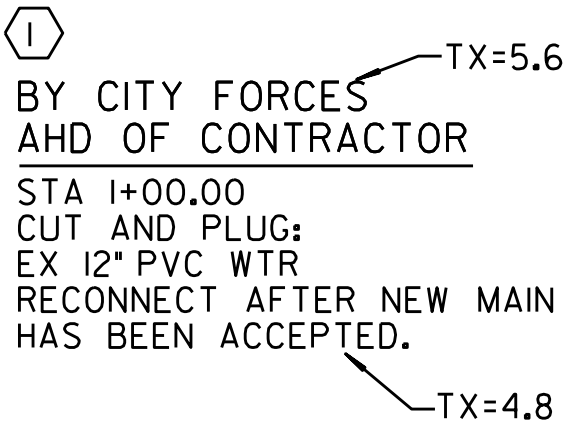
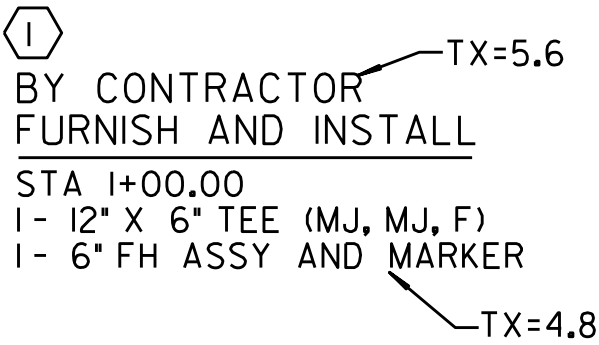
SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
 PLAN VIEW	CONCRETE CUTOFF WALL (REFER TO THE SDRSD)	P	0
 PROFILE VIEW	CONCRETE CUTOFF WALL (REFER TO THE SDRSD)	P	0
 PLAN VIEW	CONCRETE ANCHOR (REFER TO THE SDRSD)	P	0
 PROFILE VIEW	CONCRETE ANCHOR (REFER TO THE SDRSD)	P	0

REFER TO THE SDRSD FOR PROPER SIZES

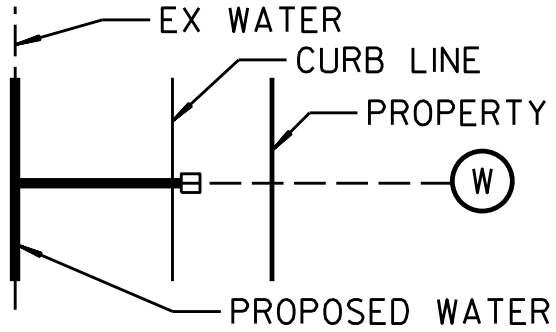
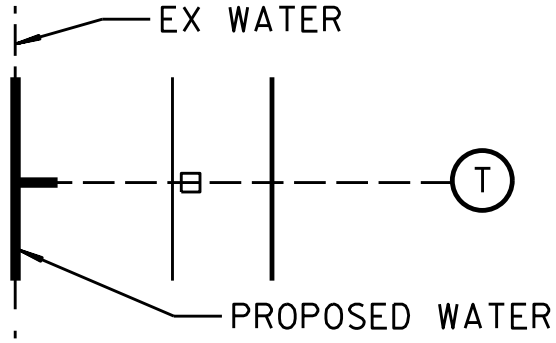
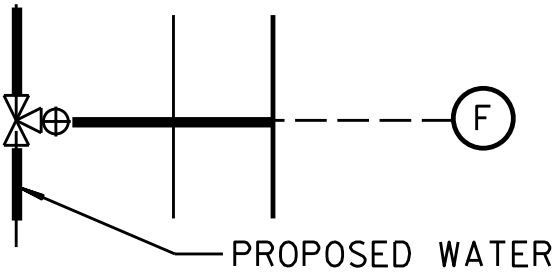
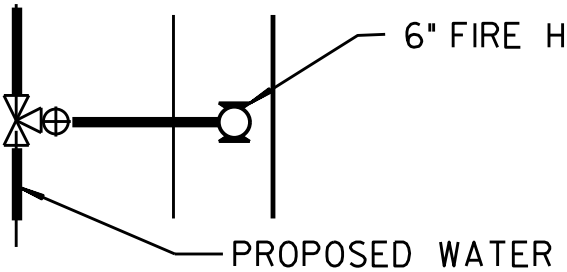
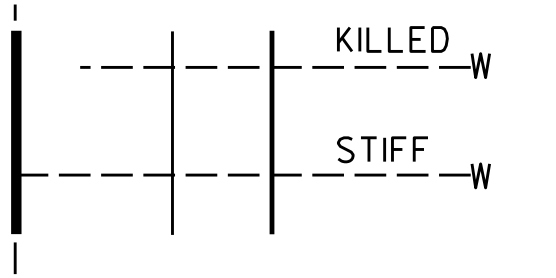
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	PROPOSED REDUCER	C	I
	PROPOSED WATER MAIN	P	9
	PROPOSED VALVE	C	I
	PROPOSED CROSS, TEE, BEND, ETC.	C	I
	PROPOSED AIR VALVE ASSEMBLY	C	I
	PROPOSED FIRE HYDRANT	C	I
	PROPOSED BLOW-OFF, INLINE OR DEADEND.	C	I
	PROPOSED AIR VALVE ASSEMBLY	C	I
	PROPOSED BLOW-OFF FOR WATER MAINS.	C	I

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	CONSTRUCTION NOTE BY CONTRACTOR FOR PROPOSED WATER	C	1
	CONSTRUCTION NOTE BY CITY FORCES FOR PROPOSED WATER	C	1
	CONSTRUCTION NOTE FOR CONTRACTOR FURNISH AND INSTALL FIRE HYDRANT ASSEMBLY.	C	1

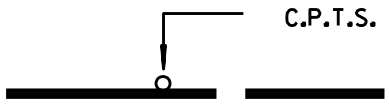
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
	WATER SERVICE TX=4.8, WT=I 5/16" CIRCLE	C	3
	WATER SERVICE TRANSFER TX=4.8, WT=I 5/16" CIRCLE	C	3
	FIRE SERVICE TX=4.8, WT=I 5/16" CIRCLE	C	3
		C	3
	KILLED WATER SERVICE STIFF WATER SERVICE	O O	I I

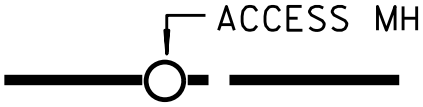
CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT

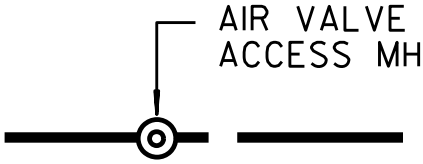
SYMBOLS USED ON MAJOR (24" OR LARGER) WATER MAINS SHOWN BELOW



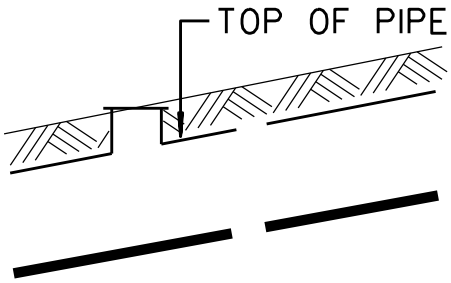
CATHODIC PROTECTION TEST STATION (1/16" CIRCLE) TX=3.2 — C — 0



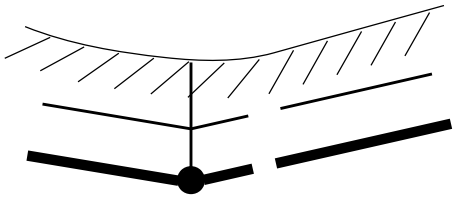
PROPOSED ACCESS MANHOLE PLAN VIEW (5/32" CIRCLE) — C — 3



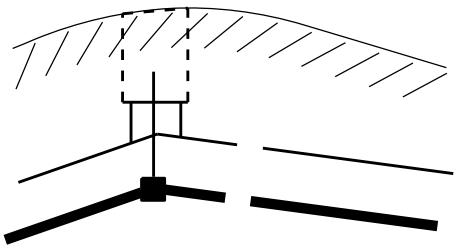
PROPOSED AIR VALVE IN ACCESS MH PLAN VIEW (1/16" CIRCLE IN A 5/32" CIRCLE) — C — 3



PROPOSED ACCESS MANHOLE PROFILE — O — 0

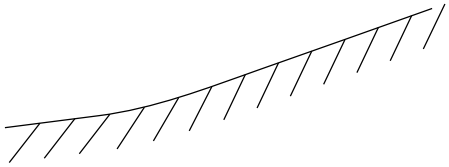
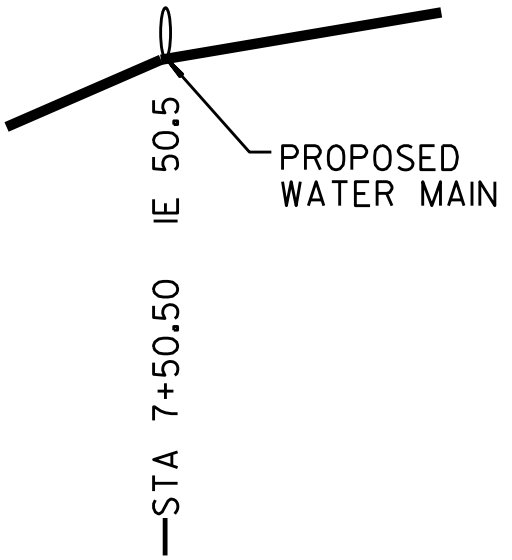
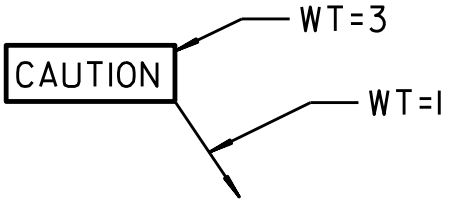
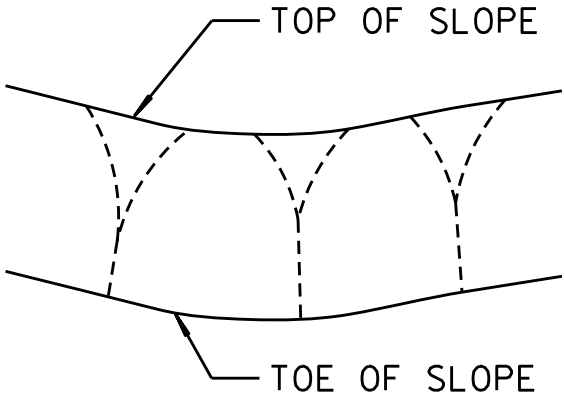


PROPOSED BLOW-OFF, PROFILE (1/8" DOT) — C — 0



PROPOSED AIR VALVE IN ACCESS MANHOLE, PROFILE (1/8" SOLID SQUARE) — C — 0

CADD SYMBOL STANDARDS FOR PROPOSED UTILITIES

SYMBOL	DESCRIPTION	CELL, LINE STYLE, PATTERN	LINE WEIGHT
			
	PROPOSED PERPENDICULAR WTR. MAIN W/ STATION AND ELEVATION TX=4.8	C	I
	CAUTION CALL-OUT TX=5.6, WT=2	C	
	PROPOSED EMBANKMENT PLAN FOR CONSTRUCTION	0&2	I 0

RIGHT OF WAY DIVISION

STANDARDS AND PROCEDURES

FOR IMPROVEMENT PLAN

Revised 01-2011

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Water Description

Plan View

Profile View

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PREFACE

The purpose and intent of this document is to provide the necessary information and guidelines to enable a drafter and an engineer to prepare a set of improvement plans in accordance with the Water and Sewer Design Division's Standards.

While it is intended that this manual cover most standard situations with regards to preparing plans for a project, there may be unique situations or circumstances not covered in this manual. The Associate Engineer shall obtain approval from the Senior Civil Engineer in charge of the project for any deviations from these standards.

Additional information not specifically covered in this manual may be required on the plans when such information is necessary for a clear and concise set of plans.

The plans shall be prepared under the direction of the Project Engineer and shall be based upon an aerial survey or physical survey in accordance with the Engineering Division's Standards and Procedures. Text and Symbol Standards and County of San Diego Aerial Conditions and Specifications.

NOTE: For the procedures and examples described on the following pages, the Department's "Text and Symbol Standards" should be referred to for text size, weight or symbol to be used.

For those procedures that do not include an example, their written description is self-explanatory

SECTION I

COVER SHEET

&

TITLE BLOCK

COVER SHEET DESCRIPTION

1. **PROJECT TITLE** - Edit title of project at top of sheet and right hand border.

2. **WORK TO BE DONE** – Shall match the Contract Documents (Specifications).

3. **LEGEND** – Shall include a list of some bid items and a listing of the standard drawings which will apply to construction. Delete those symbols on the Legend, which do not pertain to your project.

4. **EXISTING STRUCTURES** – This list includes symbols for existing water, sewer, storm drains and their appurtenances, existing surfaces, and various public utilities. This list covers most existing conditions and generally requires no change.

5. **TITLE BLOCK –** Refer to pages 4-6 for procedures.

6. **LIMITS OF WORK TABLE** – Fill out the information as listed in the first row of this table. For sewer pipe length, do not subtract manholes.

7. **DISCIPLINE CODE** - Delete the codes that do not apply to your project.

8. **BENCHMARK, FIELD NOTES, & DATUM** – Can be found within the survey files (electronic copy or hardcopy).

9. **STREETS REQUIRING 12" TRENCH CAP** – List the streets that require 12" Trench Cap.

10. **VICINITY MAP** – The project site shall be pointed out. Each vicinity map will have a north arrow and "No Scale."

11. **PROJECT LOCATION / KEY MAP** – Using different symbols, one for water and one for sewer, delineate the mains being installed. Include sheet numbers next to the alignment. Each location map shall have a north arrow, and a "No Scale."

12. **CONTRACTOR'S RESPONSIBILITIES** – Any **special notes** pertaining to the overall project shall be placed here. Delete the notes that do not pertain to the project. The notes to be approved by the Senior Engineer.

13. **ABBREVIATIONS** – This list shall include any abbreviations included in the drawings.

14. **CONSULTANT AGREEMENT** – To be signed and dated by consultant. Delete note if non consultant is used on project.

15. **STORM WATER PROTECTION** – Enter the Permit Number and the Appropriate Risk Level.

PROJECT NAME

(1)

CONTRACTOR'S RESPONSIBILITIES

(12)

1. PURSUANT TO SECTION 4216 OF THE GOVERNMENT CODE, AT LEAST 2 WORKING DAYS PRIOR TO COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT THE REGIONAL NOTIFICATION CENTER (UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA) AND OBTAIN AN INQUIRY IDENTIFICATION NUMBER.
2. THE CONTRACTOR SHALL NOTIFY SDG&E AT LEAST 10 WORKING DAYS PRIOR TO EXCAVATING WITHIN 10' OF SDG&E UNDERGROUND HIGH VOLTAGE TRANSMISSION POWER LINES. (i.e., 69 KV & HIGHER)
3. THE CONTRACTOR SHALL LOCATE AND RECONNECT ALL SEWER LATERALS. LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY, LATERAL RECORDS ARE AVAILABLE TO THE CONTRACTOR AT THE WATER DEPARTMENT, 2797 CAMINITO CHOLLAS. THE CONTRACTOR SHALL LOCATE THE IMPROVEMENTS THAT WILL BE AFFECTED BY LATERAL REPLACEMENTS.
4. THE CONTRACTOR SHALL EXCAVATE AROUND WATER METER BOX (CITY PROPERTY SIDE) TO DETERMINE IN ADVANCE, THE SIZE OF EACH SERVICE BEFORE TAPPING MAIN.
5. THE CITY FORCES, WHERE CALLED OUT, WILL MAKE PERMANENT CUTS & PLUGS AND CONNECTIONS.
6. EXISTING MAINS SHALL BE KEPT IN SERVICE IN LIEU OF HIGH-LINING, UNLESS OTHERWISE SHOWN ON PLANS.
7. THE LOCATIONS OF EXISTING BUILDINGS AS SHOWN ON THE PLAN ARE APPROXIMATE.
8. STORM DRAIN INLETS SHALL REMAIN FUNCTIONAL AT ALL TIMES DURING CONSTRUCTION.
9. UNLESS OTHERWISE NOTED AS PREVIOUSLY POTHOLED (PH), ELEVATIONS SHOWN ON THE PROFILE FOR EXISTING UTILITIES ARE BASED ON A SEARCH OF THE AVAILABLE RECORD INFORMATION ONLY AND ARE SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CITY DOES NOT GUARANTEE THAT IT HAS REVIEWED ALL AVAILABLE DATA. THE CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITIES EITHER SHOWN ON THE PLANS OR MARKED IN THE FIELD IN ACCORDANCE WITH THE SPECIFICATIONS SECTION 5-1.
10. EXISTING UTILITY CROSSING AS SHOWN ON THE PLANS ARE APPROXIMATE AND ARE NOT REPRESENTATIVE OF ACTUAL LENGTH AND LOCATION OF CONFLICT AREAS. SEE PLAN VIEW.

STORM WATER PROTECTION

(15)

- ✣ 1. THIS PROJECT IS SUBJECT TO MUNICIPAL STORM WATER PERMIT ORDER NO. - - AND -.
- ◇ 2. THIS PROJECT WILL EXCEED THE MAXIMUM DISTURBED AREA LIMIT, THEREFORE A WEATHER TRIGGERED ACTION PLAN (WTAP) IS REQUIRED.
- ◇ 3. THIS PROJECT WILL FOLLOW PHASED GRADING NOT TO EXCEED FIVE ACRES PER PHASE.

(13)

ABBREVIATIONS

ABAND	ABANDON	EB	ENCASED BURIED	OVHD	OVER HEAD
ABAND'D	ABANDONED	EL, ELEV	ELEVATION	PVC	POLYVINYL CHLORIDE
AC	ASBESTOS CEMENT PIPE	ELEC	ELECTRIC	PROP	PROPOSED
		EX, EXIST	EXISTING	RED	REDUCER
AHD	AHEAD	E/O	EAST OF	RT	RIGHT
ASSY	ASSEMBLY	F	FLANGE	℄	SURVEY LINE
BK	BACK	GV	GATE VALVE	SO	STUB OUT
BTWN	BETWEEN	HDPE	HIGH-DENSITY POLYETHYLENE	S/O	SOUTH OF
CATV	CABLE TV	HP	HIGH PRESSURE	SWR	SEWER
CI	CAST IRON PIPE	IE	INVERT ELEVATION	TEL	TELEPHONE
℄	CENTER LINE	LT	LEFT	UNK	UNKNOWN
COND	CONDUIT	MJ	MECHANICAL JOINT	VC	VITRIFIED CLAY PIPE
CONT	CONTINUED	MTD	MUTTPLE TELEPHONE DUCT	WM	WATER METER
CONTR	CONTRACTOR	N/O	NORTH OF	WTR	WATER
DB	DIRECT BURIED			W/O	WEST OF

(4)

EXISTING STRUCTURES

- EX WATER MAIN & VALVES
- EX WATER METER
- EX FIRE HYDRANT
- EX SEWER MAIN & MANHOLES
- EX DRAINS
- EX PAVEMENT (PROFILE)
- EX GROUND LINE (PROFILE)
- EX TRAFFIC SIGNAL — TS
- EX STREET LIGHT — SL
- GAS MAIN
- ELEC. COND., TEL. COND., CATV — E — T — C —
- RAILROAD, TROLLEY TRACKS

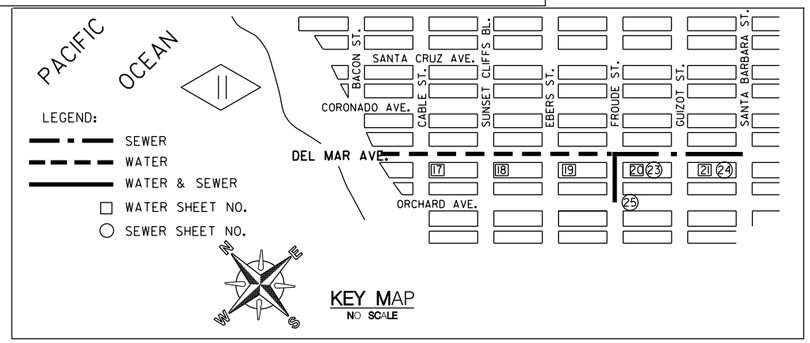
(6)

LIMITS OF WORK

SHEET NO.	DISCIPLINE CODE	TITLE	LIMITS	PIPE SIZE (IN)	PIPE MATERIAL	LENGTH (FT)
1	G-1	COVER SHEET	NAME STREET TO NAME AVENUE			
			SEWER			
2	C-1	NAME STREET	NAME STREET TO NAME AVENUE	12	SEWER	600.00
3	C-2	NAME AVENUE	NAME ROAD TO NAME BOULEVARD	8	SEWER	800.00
			WATER			
4	C-3	NAME ROAD	NAME STREET TO NAME AVENUE	8	WATER	800.00
5	C-4	NAME BOULEVARD	NAME ROAD TO NAME BOULEVARD	12	WATER	60.00
			STREET RESURFACING	TOTAL SEWER		
			CURB RAMP LOCATION	TOTAL WATER		
			CITY FORCES			
			MISC DETAILS			
			HORIZONTAL ALIGNMENT COORDINATE INDEX REPORT			
			WATER POLLUTION CONTROL SITE PLANS			
			TRAFFIC PLANS			

✣ ENTER STORM WATER PERMIT ORDER NO. AND APPROPRIATE RISK LEVEL/TYPE. (CGP RISK LEVEL 1, CGP RISK LEVEL 2, CGP RISK LEVEL 3, CGP LUP TYPE 1, CGP LUP TYPE 2, CGP LUP TYPE 3, OR WPCP).
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE

◇ DELETE NOTE THAT DOES NOT APPLY.
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE



(11)

KEY MAP
NO SCALE

* IF NO CONSULTANT ON THIS PROJECT; DELETE ENGINEER'S RESPONSIBILITES.
DELETE THIS NOTE AFTER REVIEWING THE TASK ABOVE

* I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS. I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

(ENGINEER'S NAME) DATE

(14)

(2)

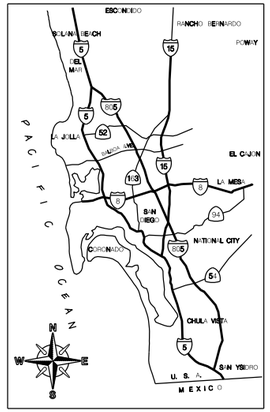
WORK TO BE DONE

CONSTRUCTION CONSISTS OF THE INSTALLATION ...

DISCIPLINE CODE

G	GENERAL
D	DEMOLITION
C	CIVIL
L	LANDSCAPE
A	ARCHITECTURAL
S	STRUCTURAL
M	MECHANICAL
E	ELECTRICAL
I	INSTRUMENTATION
T	TRAFFIC CONTROL

(7)



VICINITY MAP
NOT TO SCALE

(10)

(8)

FIELD DATA

BENCHMARK:
FIELD NOTES:
DATUM: MEAN SEA LEVEL
STREETS REQUIRING 12" TRENCH CAP:
•STREET NAMES•

(9)

LEGEND

IMPROVEMENTS	REFERENCE (3)	SYMBOL
TRENCH RESURFACING	SDG-107, SDG-108	
SEWER MAIN	SDS-101, SDS-108, SDS-110 (TYPE C)	
SEWER MANHOLE/PVC LINED	SDS-106, SDS-107, SDS-108, SDM-113, SDS-120, M-3, SM-07	
REHAB. EX. SEWER MANHOLE	SEE PLANS & SPECS	
SEWER MAIN REHAB.	SEE PLANS & SPECS	REHAB
4" SEWER LATERAL WITH C.O. UNLESS OTHERWISE SPECIFIED	SDS-102, SDS-103, SDS-104, SDS-105, SDS-108, SDS-110 (TYPE C), SDS-118	P.L. — S — PROPOSED SEWER
REPLUMB SEWER LATERAL WITH C.O.	SDS-102, SDS-103 SDS-104, SDS-105, SDS-108 SDS-110 (TYPE C), SDS-118	P.L. — R — PROPOSED SEWER
SEWER LATERAL CONNECTION	SEE PLANS & SPECS	P.L. — C — PROPOSED SEWER
REHAB SEWER LATERAL (LINED) WITH C.O.	SEE PLANS & SPECS	P.L. — L — PROPOSED REHABILITATED SEWER
SERVICE LATERAL CONNECTION TO REHABILITATED SEWER	SEE PLANS & SPECS	P.L. — C
SEWER PUMP INCLUDING REPLUMB SEWER LATERAL WITH C.O.	SDS-102, SDS-103 SDS-104, SDS-105, SDS-108, SDS-110 (TYPE C), SDS-118	P.L. — P — PROPOSED SEWER
TUNNEL SEWER REPLUMB LATERAL WITH C.O.	SDS-102, SDS-103, SDS-104, SDS-105	P.L. — T
CONCRETE PROTECTION FOR EXIST	SDS-116	
PIPE SUPPORT FOR UNDERCUT AC WATER MAIN	SDW-162	
SEWER PIPE CONCRETE ENCASEMENT	SDS-112	
ABANDON EX MANHOLE	SM-08	
CUTTING AND PLUGGING ABANDONED WATER MAIN	WP-03	
SLURRY FILL ABANDONED SEWER MAIN	SEE PLANS & SPECS	
SURVEY MONUMENT	M-10	
WATER MAIN & APPURTENANCES	SDW-110, SDW-148, SDW-151	
VALVES WITH CAPS AND WELLS	SDW-110, SDW-152, SDW-153, WV-05	
FIRE SERVICE CONNECTION & ASSEMBLY	SDW-109, SDW-118, SDW-148, SDW-152, SDW-153	P.L. — F — PROPOSED WATER
6" FIRE HYDRANT ASSEMBLY & MARKER 2-PORT UNLESS SPECIFIED AS 3-PORT	SDW-104, SDW-109, SDW-148, SDW-152, SDW-153	PROPOSED WATER
1" WATER SERVICE UNLESS OTHERWISE SPECIFIED	SDW-107, SDW-134, SDW-135, SDW-136, SDW-137, SDW-138, SDW-148, SDW-149, SDW-150, WS-03	PROPOSED WATER WM P.L. — W
WATER SERVICE TRANSFER	SDW-149, SDW-150	PROPOSED WATER WM P.L. — T
BLOW-OFF ASSEMBLY	SDW-106, SDW-143, SDW-144, SDW-145, SDW-146, SDW-148, WB-05,	B.O. — PROPOSED WATER
AIR & VACUUM VALVE	SDW-117, SDW-148, SDW-158, SDW-159, SDW-160	A.V.
HIGHLINING BY CONTRACTOR	SDW-170, SDW-171, SDW-172, SDW-173	IF APPLICABLE

(1)

FOR ADDITIONAL SYMBOLS SEE RESURFACING, CURB RAMP, HORIZONTAL ALIGNMENT COORDINATE AND TRAFFIC CONTROL SHEETS.

G-1

PROJECT NAME

CONSTRUCTION CHANGE / ADDENDUM			
CHANGE	DATE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING
0 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH ____ MEDIUM ____ LOW____	SPEC. NO.
AS-BUILT INFORMATION	(5)

MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	-
PIPE SDR 35 (SEWER)	-
GATE VALVES	-
FIRE HYDRANTS	-
SEWER MANHOLES	-
REHABILITATE SEWER MANHOLES	-
REHABILITATE SEWER MAIN	-

PLANS FOR THE CONSTRUCTION OF
PROJECT NAME
COVER SHEET

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WATER WBS 0-00000
SEWER WBS 0-00000
BY WHOM? (PM)
PROJECT MANAGER
PROJECT ENGINEER
SEE SHEETS
CCS27 COORDINATE
SEE SHEETS
CCS83 COORDINATE
19905-01-D

IP_PWP:dms05659\Guidelines 12-09.dgn

21-MAR-2012 10:42 bburnham

COVER SHEET TITLE BLOCK DESCRIPTION

1. **COVER SHEET TITLE BLOCK** - Project title for CIP projects shall be the same as the title of the project in the CIP budget book.

2. **DISCIPLINE DESIGNATORS** – Project should be the same as from the discretionary and the title on the top of the D-sheet.

3. **SHEET XX OF YY SHEET** - XX represents the individual sheet and YY represents the total number of sheets including any drawings.

4. **WORK BREAKDOWN SYSTEM (WBS) NUMBER** - Obtain and place the number(s) in the appropriate block as shown.

5. **PROJECT MANAGER** - Name of the Project Manager.

6. **PROJECT ENGINEER** - Name of the Project Engineer.

7. **CCS27 COORDINATE** - (NAD 27): The sheet cover sheet shall call out "SEE EACH SHEET" shall be placed in this location.

8. **CCS83 COORDINATE** - (NAD 83): The sheet cover sheet shall call out "SEE EACH SHEET" shall be placed in this location.

9. **DRAWING NUMBER** - Contact Development Services Department's Maps and Records. This can be done over the phone. Provide the Project's W.B.S. Number, cost Center Number, Project Engineer's name and Project Title.

10. **FOR CITY ENGINEER** - Deputized City Engineer who is in Charge of the Project (Digital Signature) signs on behalf of the City.

11. **DESCRIPTION BLOCK** - "ORIGINAL" block for design project, CHANGE"A", "B", etc., for changes made during construction. When doing as-builts, use a triangle with a number inside (see As-Built Procedures Section of this manual).

12. **DRAWN BY** - when entering initials, place design engineer first, then drafter's initials or the initials of the consultant's company.

13. **APPROVED** - This section is filled when changes are made to the original drawing. Signatures by the Duty City Engineer or staff under their direction.

14. **DATE** - Dated by the Deputy City Engineer or staff under their direction when changes are approved.

15. **FILMED** - When the plans are submitted to Maps and Records, they are filmed and dated.

16. **FIELD INSPECTOR** - Signature of the Resident Engineer.

17. **AS-BUILT INFORMATION** - Name of contractor, Inspector and the dates of when the project started and ended.

18. **ENGINEERS STAMP** - Digital seal/stamp (Signature with electronic signature authorization form). Consultant in charge of work must be wet/original only on mylars.

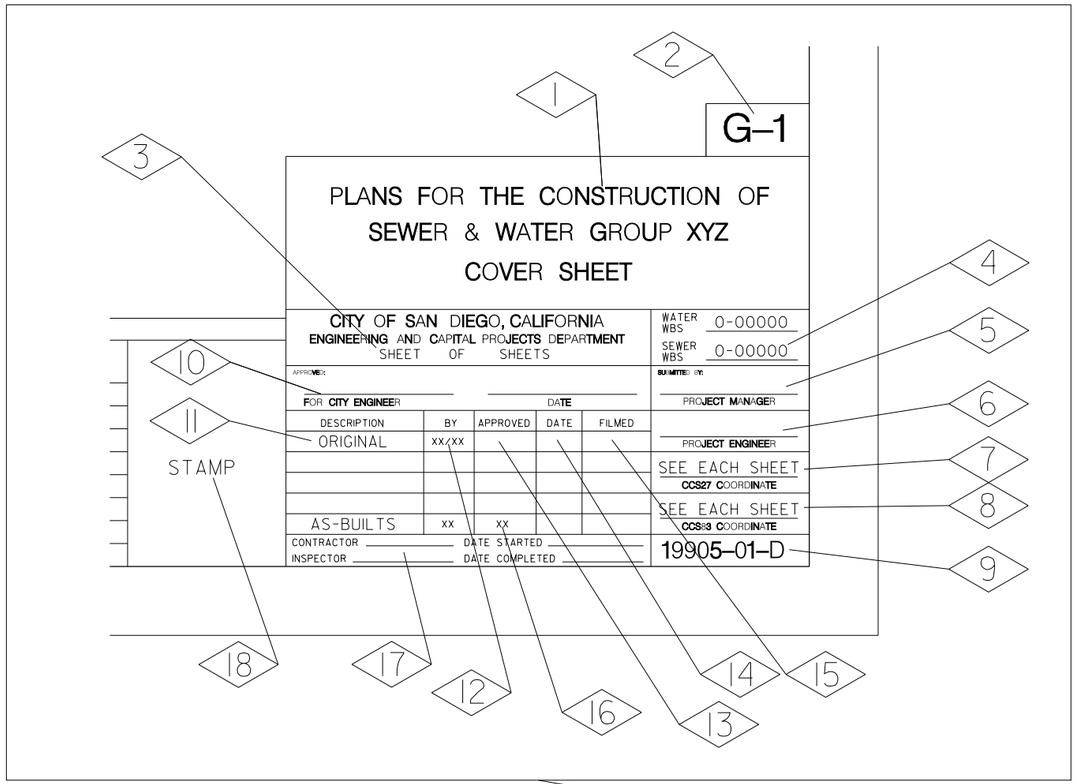
19. **TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY** – See Environmental Documentation to determine priority.

20. **SPECIFICATIONS NO.** - Obtain from contract processing.

21. **AS-BUILT INFORMATION FOR MATERIALS** - Refer to as-built procedures section in this manual.

22. **CHANGE** – Place a triangle with a letter (A, B, C, ETC.) representing each sequential change during construction.

23. **AFFECTED OR ADDED SHEET NUMBERS** - A change is noted by listing the sheet number(s).



TEMPORARY BMP CONSTRUCTION SITE STORM WATER PRIORITY: HIGH ____ MEDIUM ____ LOW____

SPEC. NO.

AS–BUILT INFORMATION

MATERIALS	MANUFACTURER
PIPE CL 235 (WATER)	-
PIPE SDR 35 (SEWER)	-
GATE VALVES	-
FIRE HYDRANTS	-
SEWER MANHOLES	-
REHABILITATE SEWER MANHOLES	-
REHABILITATE SEWER MAIN	-

CONSTRUCTION CHANGE / ADDENDUM

CHANGE	AFFECTED OR ADDED SHEET NUMBERS	APPROVAL NO.

WARNING

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

CITY OF SAN DIEGO
PUBLIC WORKS PROJECT

$1234567890123456789012345678901234567890123456789012345678901234567890$

$plot$date$time$$ $user$

PLAN SHEET TITLE BLOCK DESCRIPTION

1. **PROJECT TITLE** – Underline the type of infrastructure being replaced on the first line of each sheet, either Sewer or Water. No underlining needed for sewer or water only.

2. **STREET NAME(S) / ALLEY BLK NO. (S)** - Pertaining to street / alley layout for each individual sheet. First Street to Twelfth Street should be spelled out.

3. **LIMITS** – Use Street to Street limits. If streets limits are unavailable, use stationing limits.

4. **SHEET XX OF YY SHEETS** – **XX** represents the individual sheet, and **YY** represents the total number of sheets including any consultant drawings. Traffic Control Plans are not included in total number of sheets.

5. **WORK BREAKDOWN SYSTEM (WBS) NUMBER** – Obtain and place the number(s) in the appropriate block as shown.

6. **PROJECT MANAGER** - Name of the Project Manager.

7. **PROJECT ENGINEER** - Name of the Project Engineer.

8. **CCS27 COORDINATE** - (NAD 27): Use the most southwesterly coordinates from the 100' scale map pertaining to street layout for each individual sheet.

9. **CCS83 COORDINATE** - (NAD 83): Use the most southwesterly coordinates from the 100' scale map pertaining to street layout for each individual sheet.

10. **DRAWING NUMBER** - Contact Development Services Department's Maps and Records. This can be done over the phone. Provide the W.B.S. Number, Cost Center Number, Project Engineer's name and project title.

11. **DESCRIPTION BLOCK** - "ORIGINAL" block for design project, CHANGE"A", "B", etc., for changes made during construction. When doing as-builts, use a triangle with a number inside (see As-Built Procedures Section of this manual).

12. **DRAWN BY** - when entering initials, place design engineer first, then drafter's initials or the initials of the consultant's company.

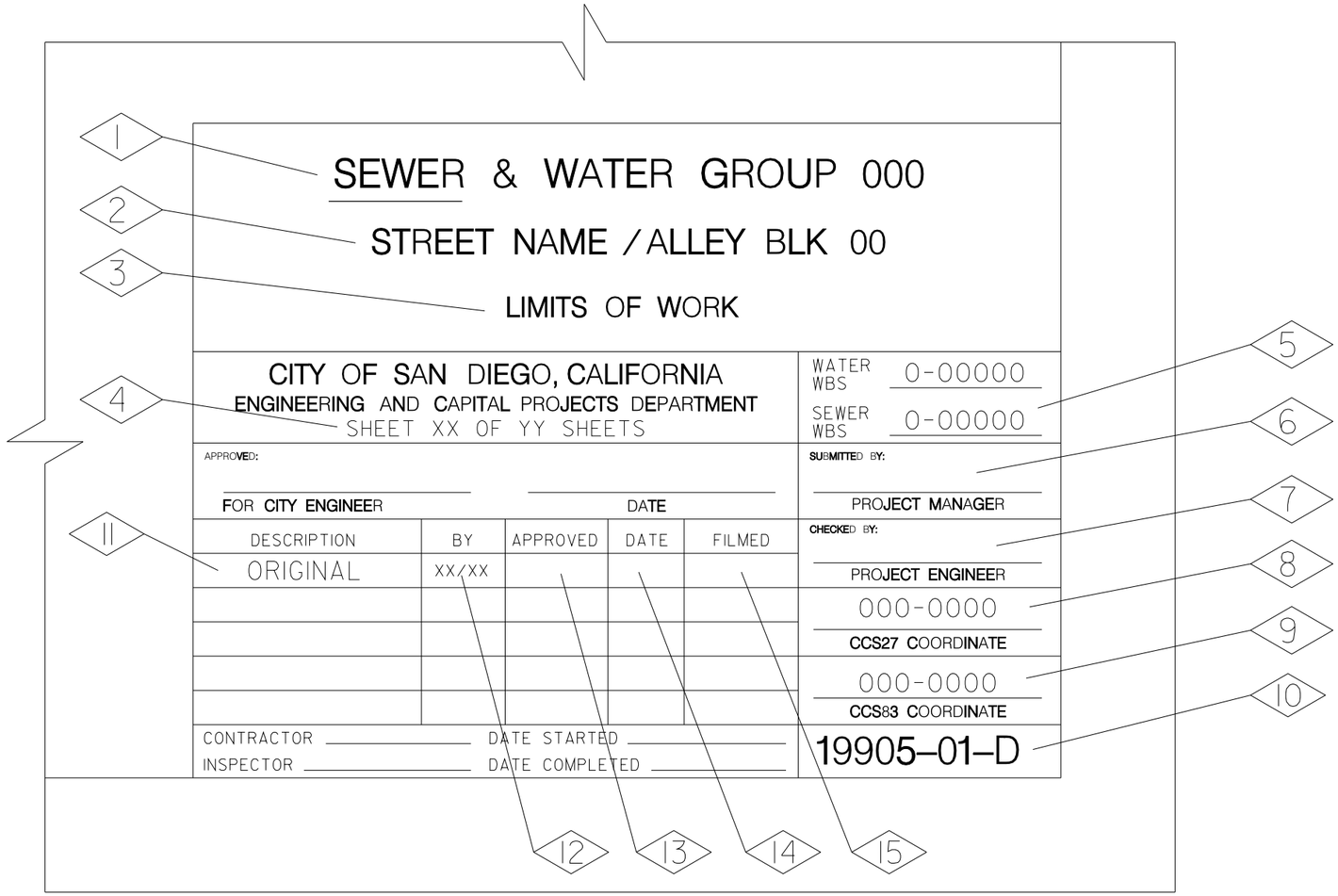
13. **APPROVED** - This section is filled when changes are made to the original drawing. Signatures by the Duty City Engineer or staff under their direction.

14. **DATE** - Dated by the Deputy City Engineer or staff under their direction when changes are approved.

15. **FILMED** - When the plans are submitted to Maps and Records, they are filmed and dated. Filled out by Maps & Records after the completion of the project. (This portion is filled out by the drafter after plans have been picked up at Maps & Records. Maps & Records personnel will never fill this out on our .dgn file).

NOTE: Refer to the Development Services Department Instructions for more information on revision changes to title block.

PLAN VIEW SHEET
TITLE BLOCK DETAIL



SECTION II

COMMON SEWER

&

WATER DESCRIPTION

COMMON SEWER AND WATER EXAMPLES

PLAN VIEW

1. **REFERENCES** – Are located above the title block. List all As-Built references that pertain to each sheet.

2. **RETIREMENTS** – Fill out the information:
   Size & Material of Pipe - Total Length of Pipe – Manholes - Year Installed (if a year cannot be found after researching, then make an educated guess).
   Size of Lateral / Service – Quantity – Material - Date
   Fire Hydrants - Indicate the # of 2-port or 3-port fire hydrants being removed and / or replaced. Include all mains and appurtenances replaced or abandoned by the contractor.

3. **NORTH ARROW & SCALE w/ GRAPHIC BAR**– Shall be located near title block with scale of drawing underneath. Otherwise, place north arrow in noticeable location. ***Note**: Personalized north arrows are allowed within limits of good taste and time used to produce the arrow. The arrow must include an "N" for north. (There are agencies that use south arrows.) Keep the style and size to a minimum.

4. **RIGHT MARGIN** – Street name, which should match the title block of the corresponding sheet, is located here according to the example and the text standards.

5. **SUBDIVISION NAME** – Is located outside the clip reference boundary of the plan view.

6. **SUBDIVISION MAP NUMBER** – Is located outside the clip reference boundary of the plan view.

7. **BLOCK NUMBER** – Is located above or below lot lines and within the block it is identifying.

8. **Right-of-Way LINES** – Are located per field survey, subdivision maps, reference drawings or assessor maps. **Note**: assessor's parcel maps are not legal maps and are only the source of "last resort."

9. **ADDRESSES** – To be located within the lot lines, usually perpendicular to the street (Right-of-Way).

10. **LOT LINES** – Obtain from parcel, subdivision, record of survey or assessors maps.

11. **LOT NUMBERS** – Obtain from subdivision, parcel and assessors maps. Locate numbers parallel to the street (Right-of-Way).

12. **OWNERSHIP LINE** – To be used only if showing ownership of more than one lot and can be obtained from the assessor maps.

13. **PROPERTY SPLITS** – Obtain from assessor's maps. Draw ownership line to indicate ownership.

14. **EASEMENT LINES** – Are shown in its appropriate location along with the legal drawing number showing the width and location of the easement. If you have to acquire an easement, then follow the procedure in the Easement Research Section of the Design Guide.

15. **STREET ALIGNMENT** – Whenever possible, align streets on D-sheets so that survey stationing in the plan view is in a direct projection to the stationing in the profile view.

16. **STREET NAME** – Is located within the R/W (right-of-way) area. First Street to Twelfth Street should be spelled out.

17. **CENTER LINE** – Is usually located in the center of the legal right-of-way, which can differ from center of pavement. Check record maps for openings and vacations (closures), which can result in an "off-center" centerline.

18. **EXISTING STRUCTURES** – Including Abandoned Structures that are in the vicinity of the proposed alignment shall be included on the drawings. These can all be determined from your research. They shall be labeled and designated with an arrow. Only City owned utilities (WTR, SWR, SD) are called out with existing.

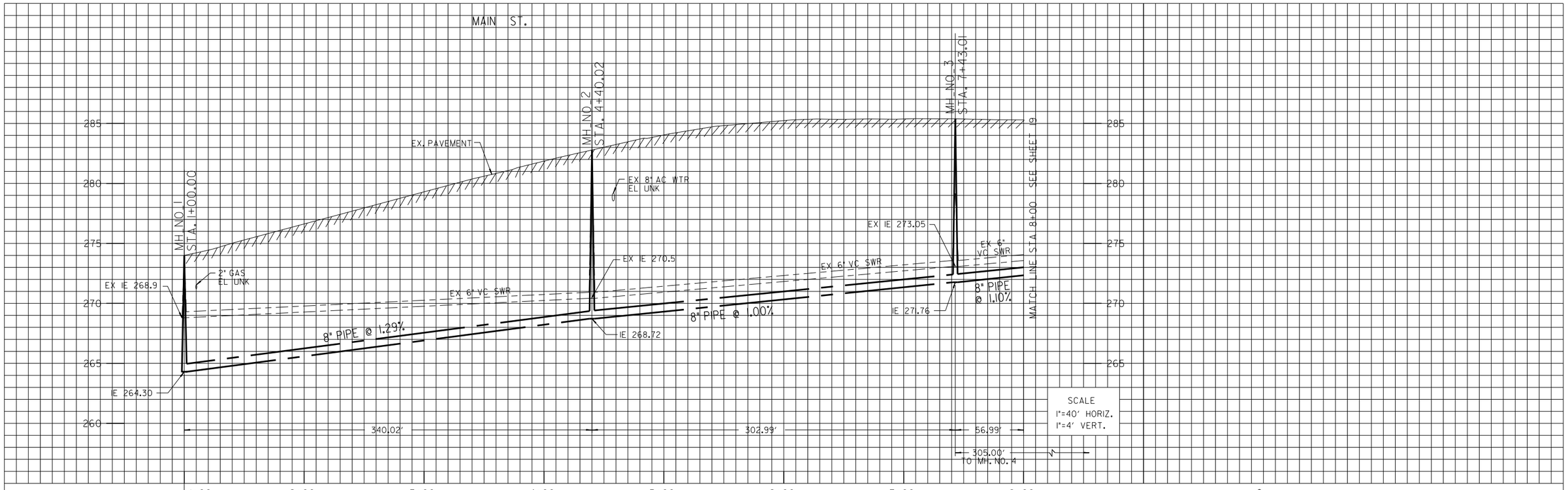
19. **LATERALS, SERVICES & FIRE SERVICES OF EXISTING UTILITIES** – Are to be shown on the plans even though the Green Book specifies that the contractor assume a lateral / service to each lot for each utility.

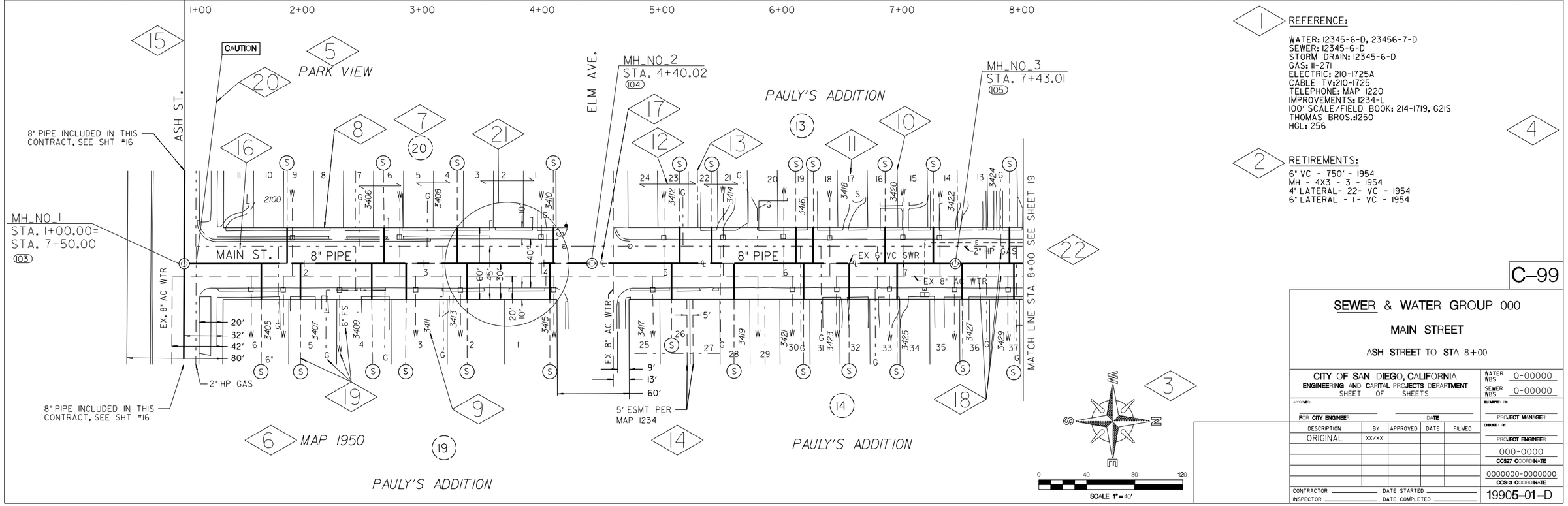
20. **LEADER LINES** – Shall be used when information cannot be placed next to the object designated. Try not to use LONG leader lines if possible. Leader lines shall not cross other leader lines, text or dimensions.

21. **DIMENSIONS** – All streets, alleys, and curb widths, existing, abandoned, and proposed utilities are to be dimensioned. The electrical, telephone, and cable TV utilities need only be dimensioned if a reliable offset has been found on the utility as-built or utility map. They shall appear in a noticeable location and be dimensioned clearly. Try to keep dimensions away from areas where there may be several callouts or cautions designated. At least one dimension shall be tied to the curb line and all others can be tied to the Right-Of-Way line. Dimensions shall be rounded off to the nearest whole number. For example: 44.75' = 45'

22. **SHEET LIMITS FOR PROPOSED PIPE – <u>OPTION A</u>**
MATCH LINE (SEWER) – The proposed pipe shall have limits at the beginning and ending of a sheet at 50 or 100-foot stationing whenever possible. For example 5+00, 7+50. If this is not possible, the break may occur at the nearest 10'station. Example 7+40, 8+60. Match lines shall be used where the 50' or 100' stations occur. The match line shall be weight 3, style 0 and be perpendicular to the proposed alignment. Include text indicating the location of the continued proposed pipe. The text size shall be 5.6 and a weight of 2.
For example: **MATCH LINE STA. 5+00 SEE SHEET 20**.

OPTION B (sewer only) – See Sewer Description Section.





1 REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, G21S
THOMAS BROS.: 1250
HGL: 256

2 RETIREMENTS:

6" VC - 750' - 1954
MH - 4X3 - 3 - 1954
4" LATERAL- 22- VC - 1954
6" LATERAL - 1- VC - 1954

SEWER & WATER GROUP 000

MAIN STREET

ASH STREET TO STA 8+00

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED: FOR CITY ENGINEER DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

RECOMMENDED: PROJECT MANAGER
CHECKED: PROJECT ENGINEER
000-0000 CCS27 COORDINATE
0000000-0000000 CCS83 COORDINATE
CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED
19905-01-D

C-99

MAIN STREET

23. **STREET LIGHTS & TRAFFIC LIGHTS** – Are located in appropriate location and referred to as shown in the symbols section.

24. **TRAFFIC ACTUATORS / SENSORS/DETECTORS** – Are located in the appropriate location and referred to as shown in the symbols section. Refer to General Service's Communication / Electrical drawings and reference for locations of detectors.

25. **LOW OVERHEAD UTILITY LINES** – Use the appropriate contractor note, when the utility lines are 15' or less above the proposed trench. Overhead power lines do not need to be shown the plan view.

26. **POWER POLE AND / OR TELEPHONE POLE** – Should be shown on the plan view. If they are close to a manhole, use the appropriate contractor's note. For Example: **Contractor is required to coordinate the supporting of power polls with SDG&E before beginning construction**.

27. **STATIONING LINE** – Shall be along the proposed pipeline at 100' intervals and continue to the end of the alignment. Stationing begins at Station 1+00 to avoid negative stationing if design changes beyond the proposed alignment.

28. **PROPOSED PIPE** – Draft proposed pipe onto drawing according to symbol standards. Show the size of pipe above the proposed pipe, example: **12" PIPE**.

29. **CAUTION CALLOUTS** – Shall be shown when the proposed pipe trench crosses any utilities. Label the crossing utility with a **CAUTION** callout and a leader line to each crossing point. Advanced notices: Use contractor's note when crossing gas mains 4" or larger.

30. **SHEET LIMITS FOR PROPOSED PIPE**
MATCH LINE (WATER) – The proposed pipe shall have limits at the beginning and ending of a sheet at 50 or 100-foot stationing whenever possible. For example 5+00, 7+50. If this is not possible, the break may occur at the nearest 10'station. Example 7+40, 8+60. Match lines shall be used where the 50' or 100' stations occur. The match line shall be weight 3, style 0 and be perpendicular to the proposed alignment. Include text indicating the location of the continued proposed pipe. The text size shall be 5.6 and a weight of 2. For example: **MATCH LINE STA. 5+00 SEE SHEET 20**.

31. **CONSTRUCTION / CAUTION NOTES** – (if any) shall be placed in an appropriate location on the plans.

32. **WATER CONSTRUCTION NOTES** - Shall be provided by the Project Engineer and placed in an organized manner on the plans.

33. **MEDIANS** – Shall be shown along with cross section detail drawing, and/or call out for a standard drawing that pertains to the median being trenched.

34. **CONTOUR LINES** – Are usually turned off on the final plot for clarity. They may be left on with the approval of the Senior Engineer.

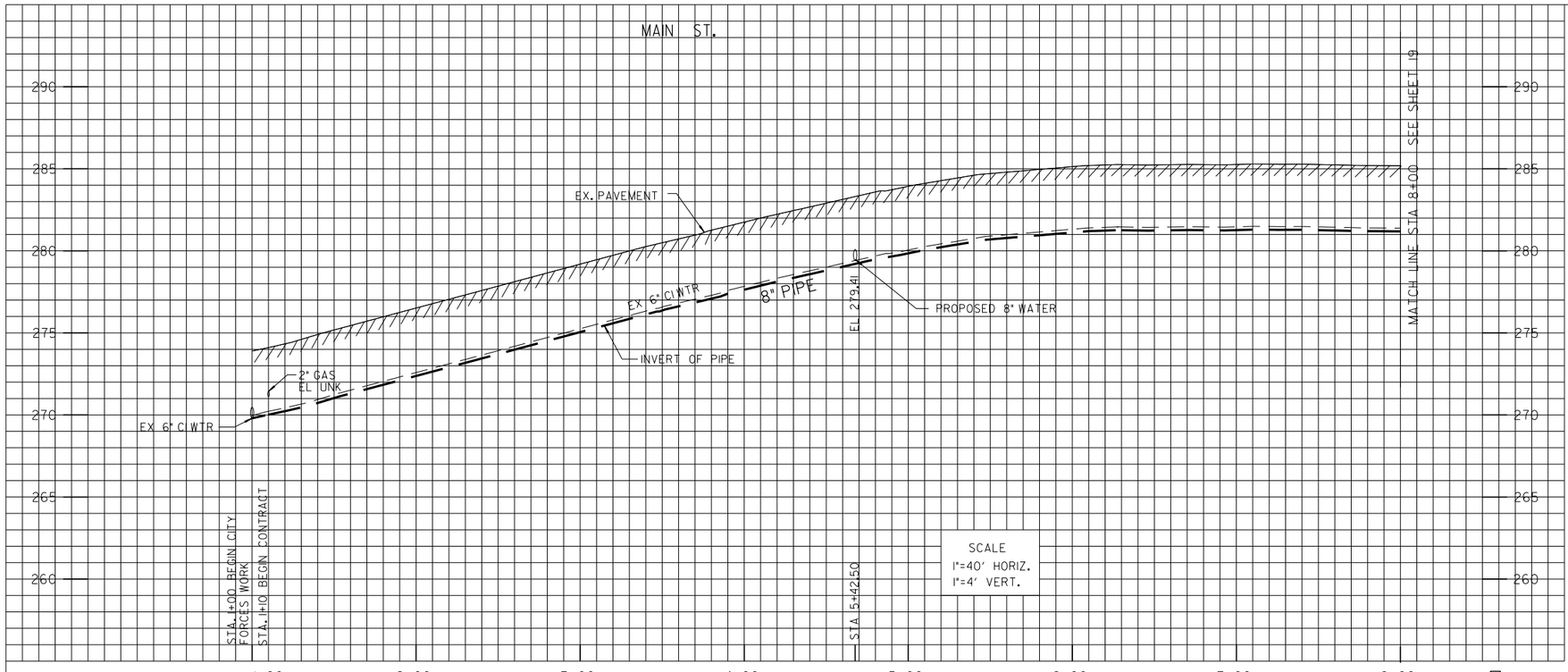
35. **STREET INTERSECTIONS SHOWN ON MORE THAN ONE STREET** – When an intersection includes a proposed part of the contract which is being built on another sheet, show it as proposed work, modify clip boundary or turn off the proposed lateral / service symbols (circles) for those laterals / services which are to be installed on the other sheet so that the project engineer will not count them twice in the project cost estimate.

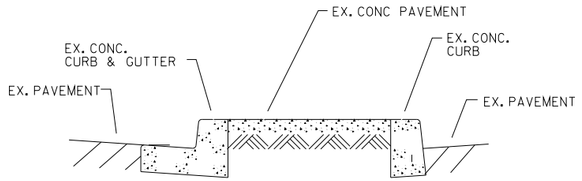
36. **SEWER & WATER COMBINED** – For clarity the proposed sewer and water shall not be shown on the same sheet, except where short sections of either utility are being proposed, but show sheet number for work to be done in the same area. For example: **8" WATER INCLUDED IN THIS CONTRACT. SEE SHEET 23.**

37. **ADDENDUM** – An Addendum is a change to plans or contract that is issued before the project is awarded. Show the changes from the Addendum on the plans by lining out features that will be removed and adding new features. Nothing shall be deleted from the plans at this stage. If required, cross out the entire sheet and add a new sheet for the change. Place graphic "clouds" around the area of change along with a lettered Delta cell. Place the Addendum Cell in the appropriate location on the Title Block.

CONSTRUCTION CHANGE – A Construction Change is a change to the plans that is issued after the project is awarded. This change is large enough that the Resident Engineer requires instructions from the Project Engineer, and usually results in a change in the design and the project cost. Show the changes from the Construction Change on the plans by lining out features that will be removed and adding the new design. Nothing shall be deleted from the plans at this stage. If required, cross out the entire sheet and add a new sheet for the change. Place graphic "clouds" around the area of change along with a lettered Delta cell. Place the Construction Change Cell in the appropriate location on the Title Block.

38. **RAILROAD, TROLLEY TRACKS** – Shall be shown on the plan view if they cross the proposed pipe. For details of tracks, refer to Tracks in City Streets drawing. Also show buried roadways if encountered.

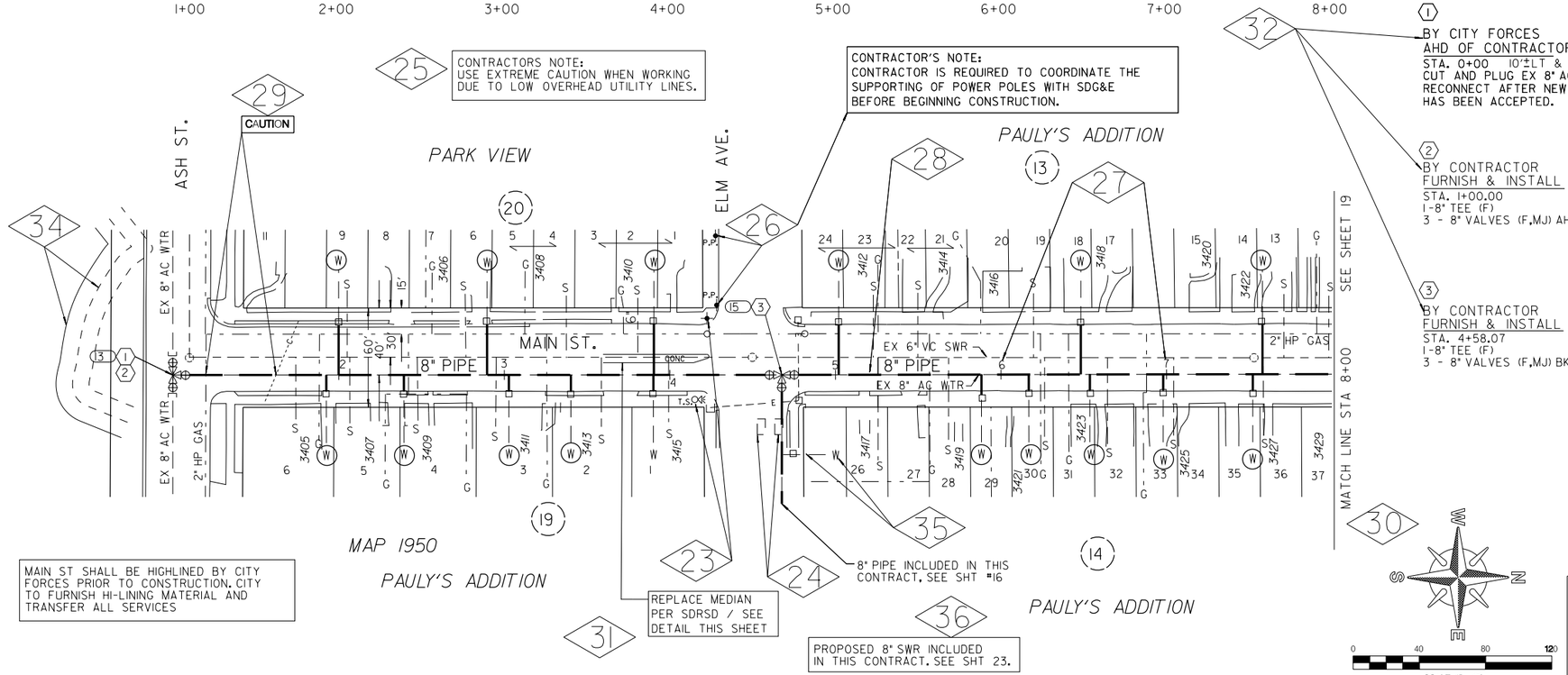




33

CONCRETE MEDIAN

NOT TO SCALE



1 BY CITY FORCES
AHD OF CONTRACTOR
STA. 0+00 10'±LT & RT
CUT AND PLUG EX 8" AC WTR
RECONNECT AFTER NEW MAIN
HAS BEEN ACCEPTED.

2 BY CONTRACTOR
FURNISH & INSTALL
STA. 1+00.00
1-8" TEE (F)
3 - 8" VALVES (F,MJ) AHD, LT, RT

3 BY CONTRACTOR
FURNISH & INSTALL
STA. 4+58.07
1-8" TEE (F)
3 - 8" VALVES (F,MJ) BK, AHD, RT

REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, G21W
THOMAS BROS.: 1250
HGL: 256

RETIREMENTS:

8" AC - 700' - 1957
1" SERVICE- 15 - COPPER - 1957

C-11

SEWER & WATER GROUP 000

MAIN STREET

ASH STREET TO STA 8+00

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER DATE

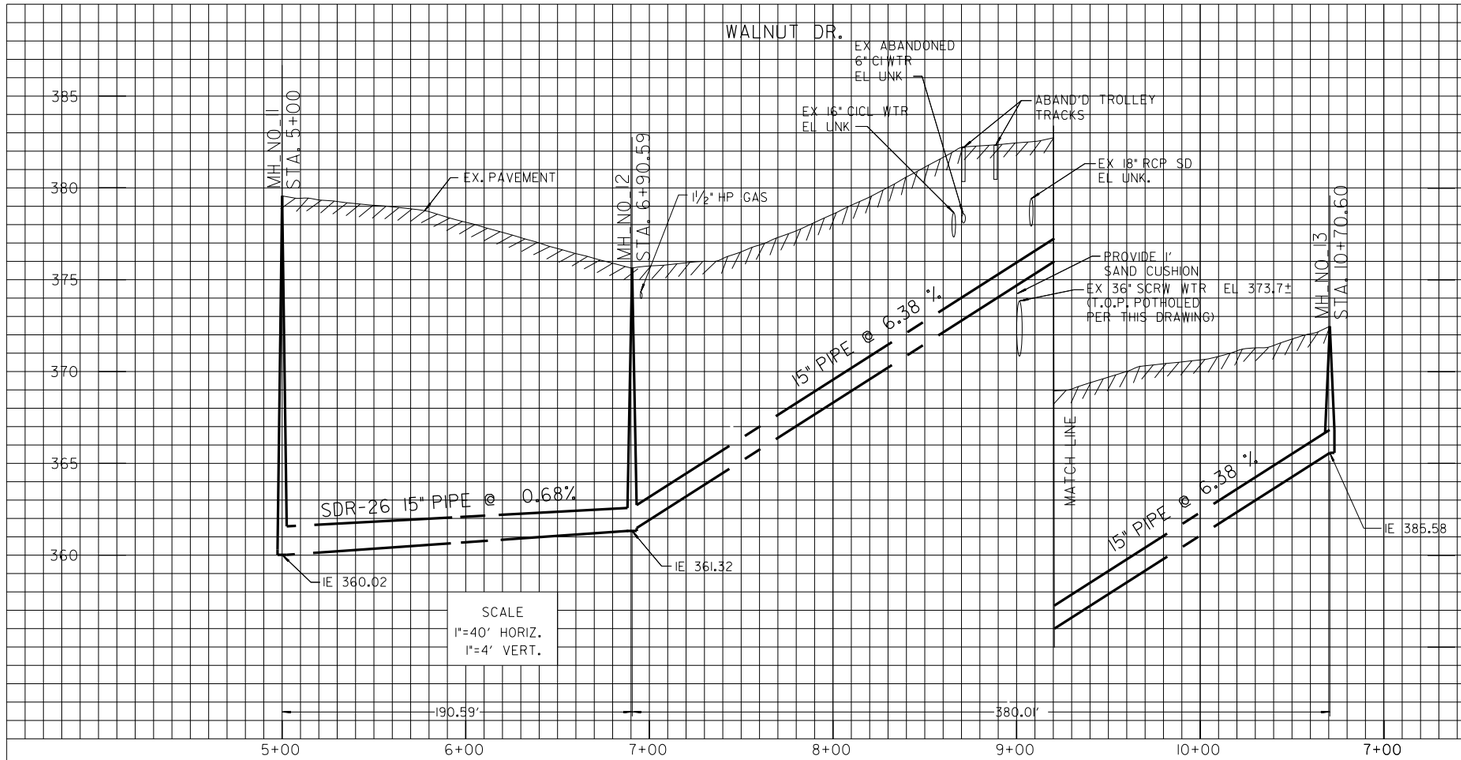
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

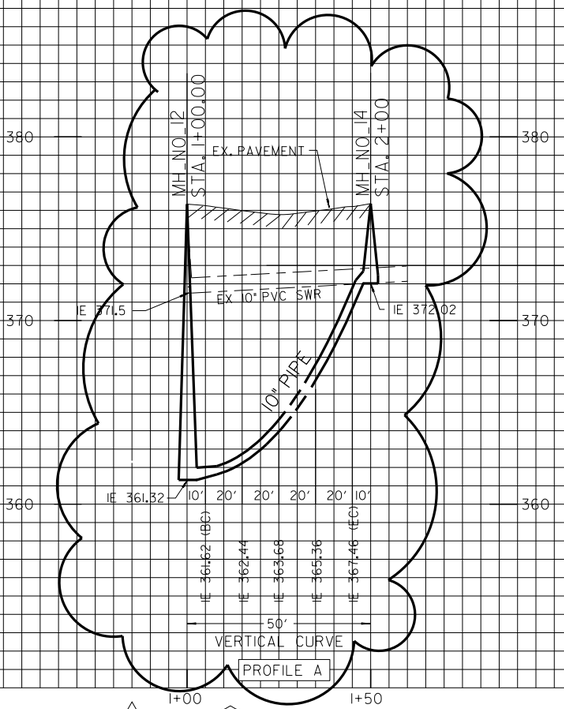
CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

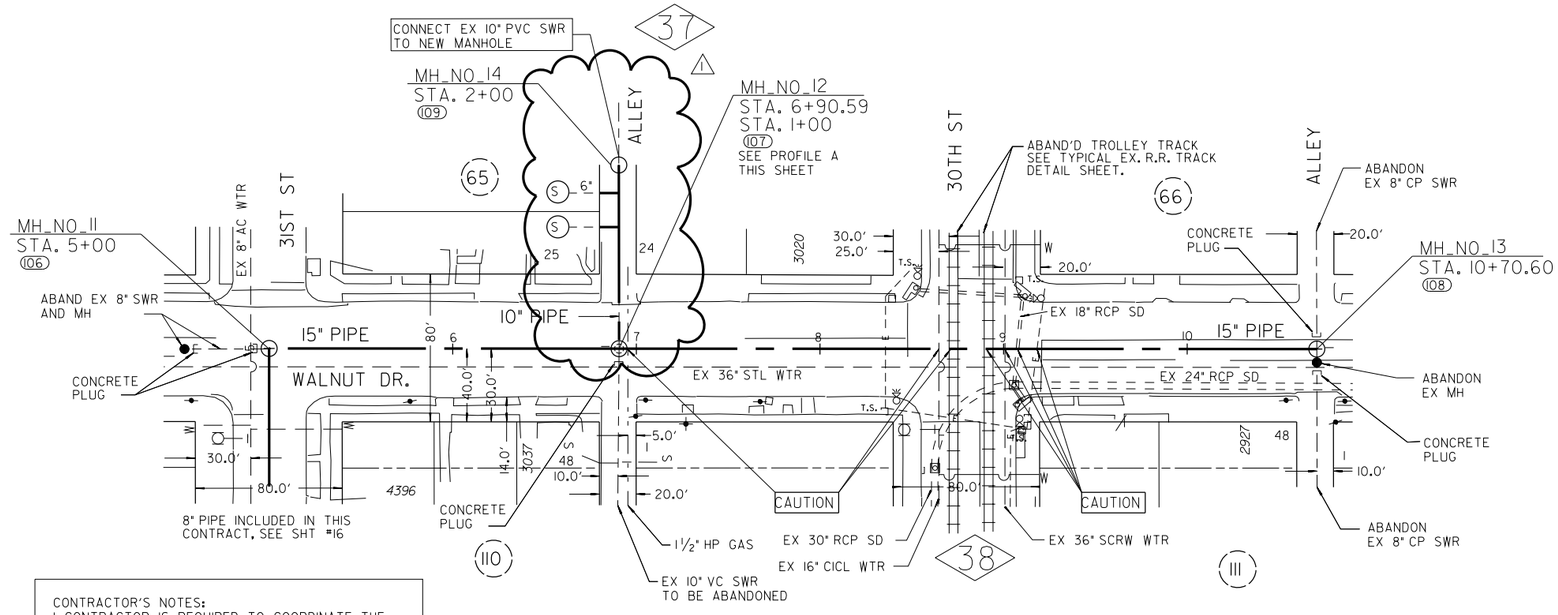
WATER WBS 0-00000
SEWER WBS 0-00000
DRAWN BY:
PROJECT MANAGER
CHECKED BY:
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
19905-10-D

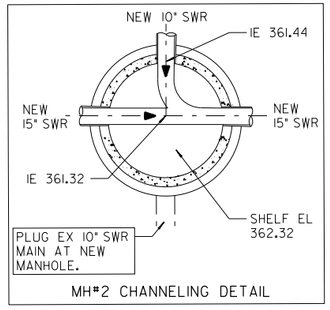
MAIN STREET

WALNUT DR.

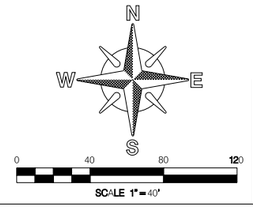








MH#2 CHANNELING DETAIL



CONTRACTOR'S NOTES:
1. CONTRACTOR IS REQUIRED TO COORDINATE THE SUPPORTING OF POWER POLES WITH SDG&E BEFORE BEGINNING CONSTRUCTION.
2. USE EXTREME CAUTION WHEN WORKING DUE TO LOW OVERHEAD UTILITY LINES.

UNIVERSITY HEIGHTS

LP8 - PG 36

REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, G21S
THOMAS BROS.: 1250
HGL: 256

RETIREMENTS:

100' - 10" PVC - 1999
45' - 8" VC - 1975
MH - 3 - 1962
4" LATERAL - 1- 1962
6" LATERAL - 1- 1962

C-28

SEWER GROUP 000

WALNUT DR./ALLEY IN BLOCK 65

31ST STREET TO ALLEY BLK NO. 66

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER — DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			
1 ADDENDUM A	XX/YY			

CONTRACTOR XXXXXXXXXX DATE STARTED 08-08-08
INSPECTOR XXXXXXXXXX DATE COMPLETED 08-08-08

WATER WBS
SEWER WBS 0-00000
BID WITNESS
PROJECT MANAGER
CHECKED
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
19905-27-D

WALNUT DR.

ADDENDUM A

PROFILE VIEW

39. **EXISTING SURFACE** – Use the correct pattern for the type of surface, for example use the ground or pavement pattern.

40. **SCALE BLOCK** – Shall be located within the profile grid; include the horizontal and vertical scales. A Scale Block shall be placed within the limits of each alignment shown on the profile view.

41. **STATIONING OF SURVEY LINE** – Use the Department Profile Preferences to generate the stationing of survey line.

42. **ELEVATION NUMBERS** – Use the Department Profile Preferences to generate elevation numbers. If there is not enough room to place elevations on both sides of profile, or if showing only a short section of pipe then they can be placed on one side. For profiles longer than half the sheet, the elevations may be staggered on each side of the profile.

43. **STREET NAME(S)** The street name in which work is being performed shall also be located near the top of the grid.

44. **RAILROAD, TROLLEY TRACKS** – Shall be shown on the profile view if they cross the proposed pipe. For details of tracks, refer to Tracks in City Streets drawing. Also show buried roadways if encountered.

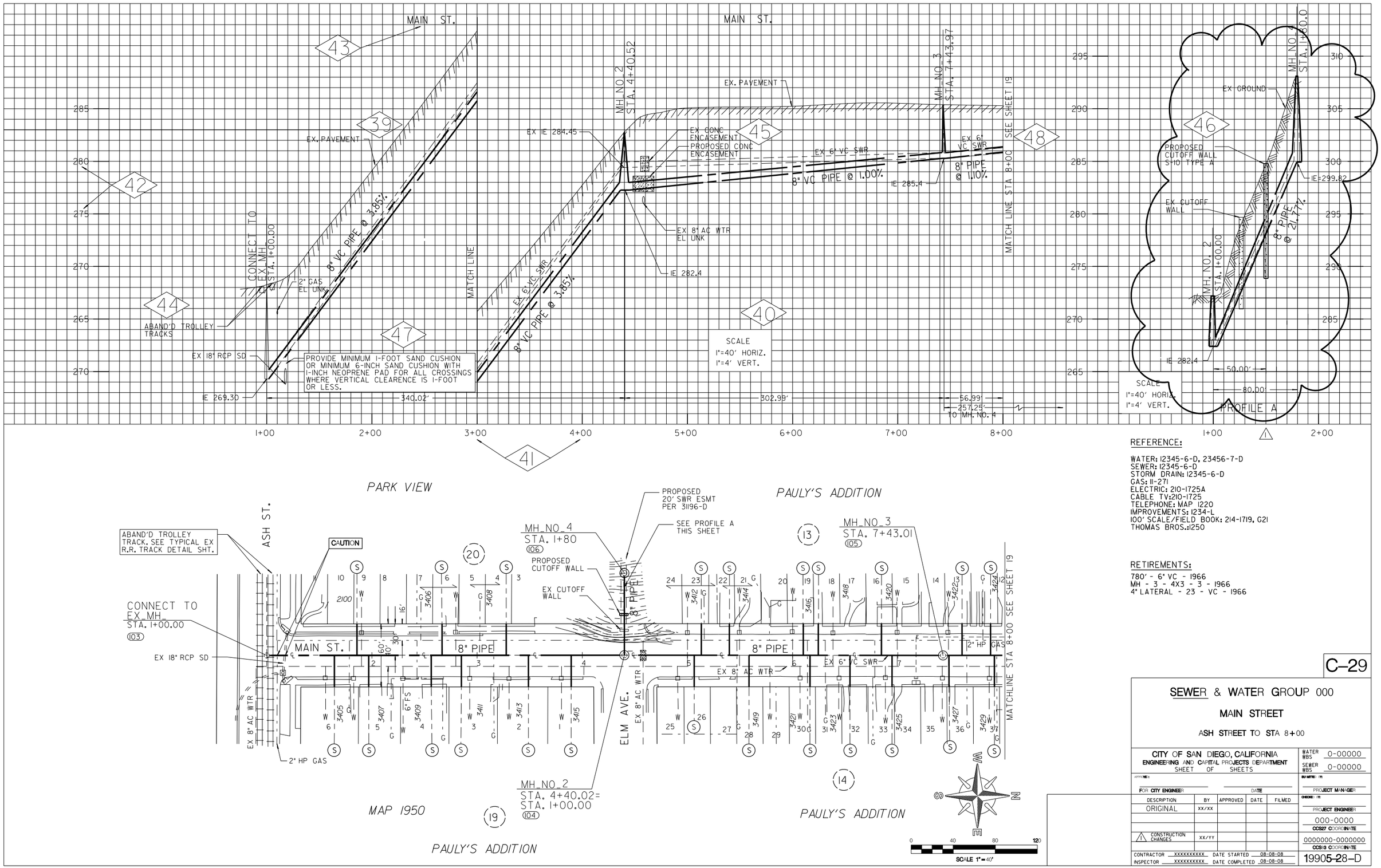
45. **ENCASEMENTS, CRADLES, ETC**. – Shall be called out on both plan and profile views and shall follow the Regional Standard Drawings manual.

46. **CONCRETE CUTOFF WALL** – Are typically used in areas with steep slopes and for erosion protection of the pipe. For requirements and dimensions, refer to the Sewer Design Guide.

47. **CONTRACTORS NOTES** – See the Project Engineer about the notes.

48. **SHEET LIMITS FOR PROPOSED PIPE – OPTION A**
MATCH LINE (SEWER) – The proposed pipe shall have limits at the beginning and ending of a sheet at 50 or 100-foot stationing whenever possible. For example, 5+00, 7+50. If this is not possible, the break may occur at the nearest 10-foot station. Example, 7+40, 8+60. Match lines shall be used where the 50 or 100-foot stations occur. The match line shall be weight 3, style 0 and be perpendicular to the proposed alignment. Include text indicating the location of the continued proposed pipe. The text size shall be 5.6 and a weight of 2. For example: **MATCH LINE STA. 6+00 SEE SHEET 9**.

OPTION B (sewer only) – See Sewer Description Section.



REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, 621
THOMAS BROS.: 1250

RETIREMENTS:

780' - 6" VC - 1966
MH - 3 - 4X3 - 3 - 1966
4" LATERAL - 23 - VC - 1966

C-29

SEWER & WATER GROUP 000

MAIN STREET

ASH STREET TO STA 8+00

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER — DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			
⚠ CONSTRUCTION CHANGES	XX/YY			

CONTRACTOR XXXXXXXXXX DATE STARTED 08-08-08
INSPECTOR XXXXXXXXXX DATE COMPLETED 08-08-08

WATER WBS 0-00000
SEWER WBS 0-00000
DRAWING NO.
PROJECT MANAGER
CHECKED BY
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
19905-28-D

SECTION III

SEWER DESCRIPTION

SEWER DESCRIPTION

PLAN VIEW

1. **PROPOSED SEWER LATERALS** – Size of circle and text shall be per symbol standards. Circles shall be placed in a uniform line whenever possible. Label sewer laterals 6-inches and larger next to the sewer lateral at the curb location or on the lateral line shown vertically.

2. **PROPOSED REPLUMB SEWER LATERALS** – Add a callout to refer to the detail drawing of the proposed alignment.

3. **SHEET LIMITS FOR PROPOSED PIPE – OPTION B**
MANHOLE-to- MANHOLE (SEWER) – The proposed pipe shall begin at a proposed manhole and end at the nearest proposed manhole towards the end of the sheet layout limits. All proposed manholes in-between the sheet limits shall be shown. Start the next sheet with the same proposed manhole as shown at the end of the previous sheet. Include text indicating the next or previous sheet, which continues the proposed pipe alignment. The text size shall be 5.6 and a weight of 2. For example: **"SEE SHEET 20 FOR CONT. OF 8" SEWER," or "FOR CONTINUATION OF 8" SEWER SEE SHEET 20."**

4. **SEWER MANHOLES, CHANNELING, SPECIAL DESIGN** – May require the engineer to design special channeling in the manhole, or modify the Standard Drawings. Show the following for special designs: direction of flow, radius of curve, manhole number, station, inlet and outlet pipe and their sizes, *i.e.,* section lines, stub outs, shelf elevation (inboard and outboard) and any special notes. The detail shall be placed on the plan or profile view determined by the engineer.

5. **PLAN VIEW SEWER MANHOLES** – Show all existing sewer mains and manholes.

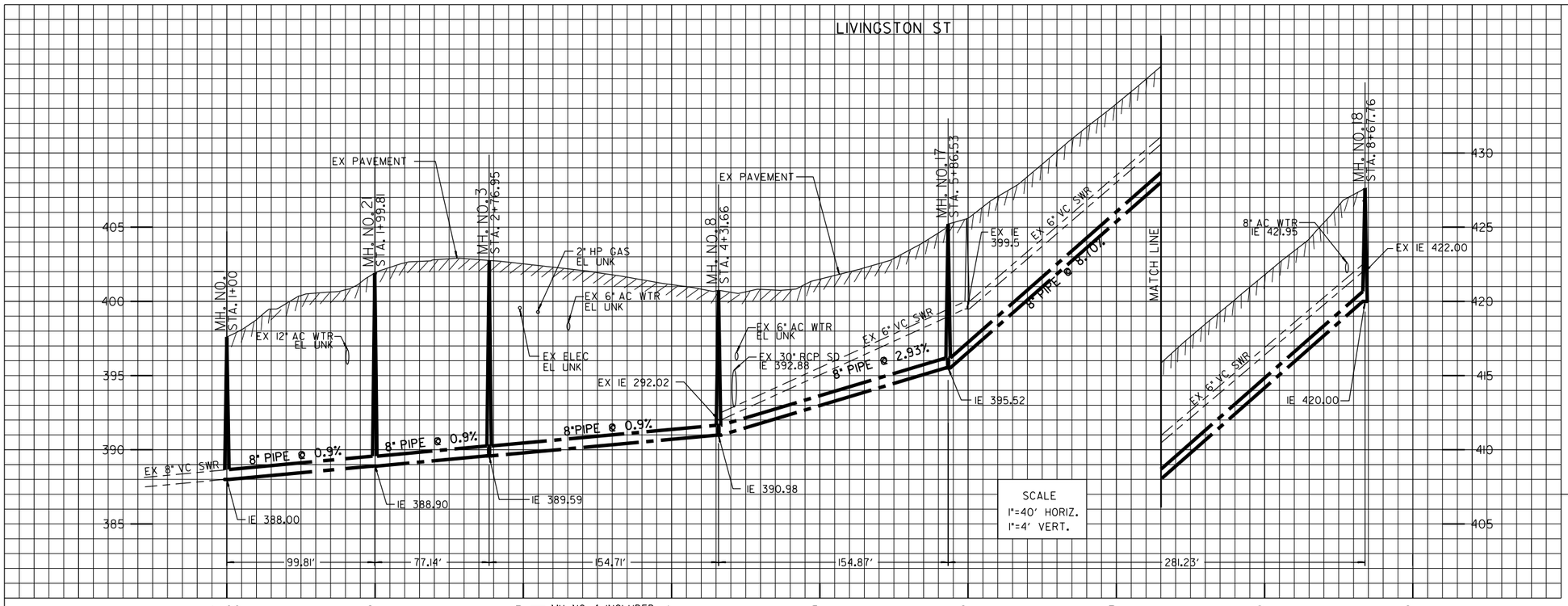
6. **REMOVAL OF EXISTING SEWER MAINS & MANHOLES** – No callout is required for the removal of an existing sewer main & manhole. The Specifications state that the manhole shall be removed along the trench line of the proposed pipe.

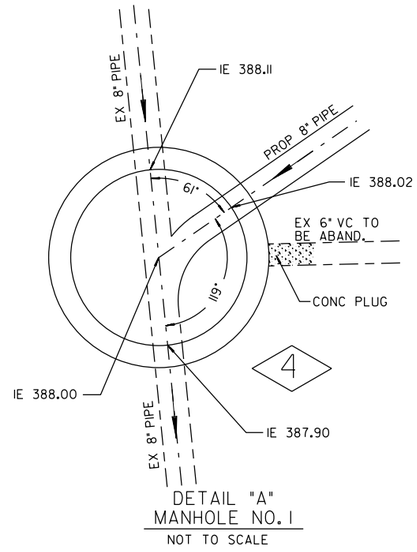
7. **ABANDONMENT OF SEWER MAIN AND MANHOLES** – For abandoning existing sewer main, call out "ABANDON EX" _" SWR " also, show and call out for concrete plugs. For existing manholes to be abandoned, the appropriate symbol and call out "ABANDON EX. MH." shall be used.

8. **PROPOSED MANHOLE WITH POINT NUMBERS CALLOUT** – Represents the Northing and Easting Coordinates that is displayed on the Coordinate Index Sheet on the plans.

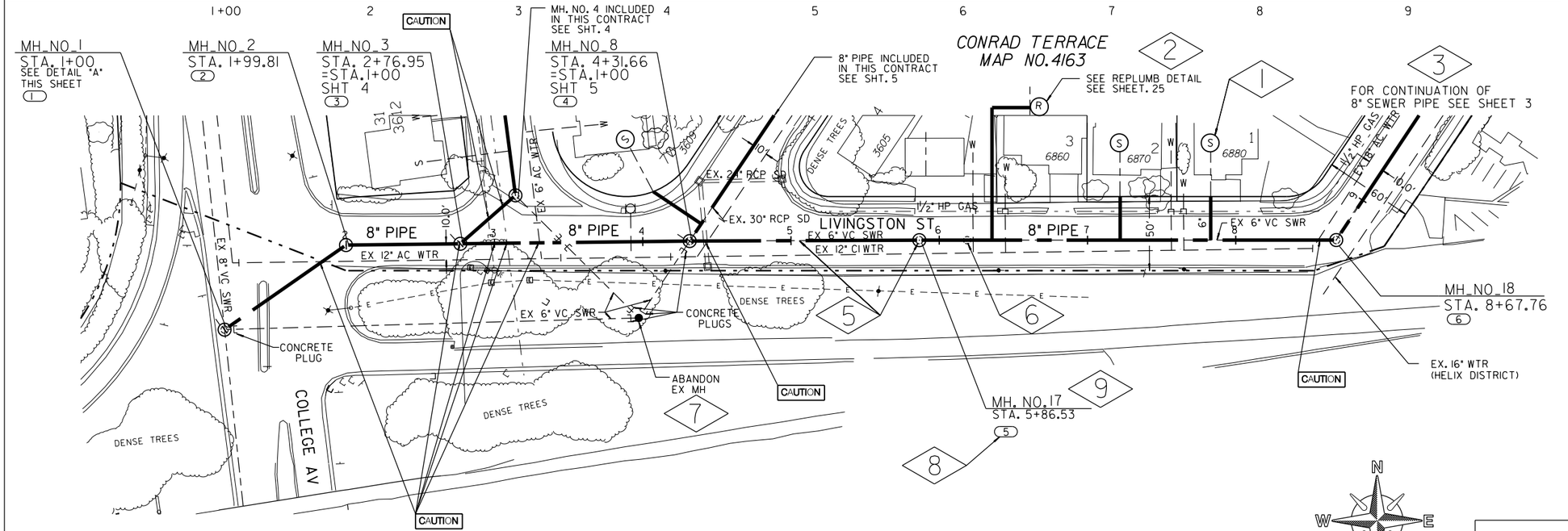
9. **PROPOSED MANHOLE CALLOUT** – For sewer manholes will be located according to the plan view manhole locations. For example:

PVC LINED	REHAB EX.	
MH_NO_00	MH_NO_00	MH_NO_00
STA. 0+00.00	STA. 0+00.00	STA. 0+00.00





DETAIL "A"
MANHOLE NO. 1
NOT TO SCALE



CONTRACTOR'S NOTE

1. PROPOSED WATER MAIN ON LIVINGSTON ST PART OF THIS CONTRACT. SEE SHT 20.

REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, 621
THOMAS BROS.: 1250

RETIREMENTS:

767' - 6" VC - 1971
MH - 4X3 - 5 - 1971
4" LATERAL - 3 - VC - 1971

C-99

SEWER & WATER GROUP 000

LIVINGSTON ST

COLLEGE AVE TO STA 8+67.76

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED (WATER DEPT.)
FOR CITY ENGINEER
DATE
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CHECKED (W)
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED
33074-02-D

LIVINGSTON ST

PROFILE VIEW

10. **PROPOSED MANHOLE CALLOUT** – For proposed sewer manholes to be located according to the plan view manhole locations. For example:

PVC LINED	REHAB EX.	
MH_NO_00	MH_NO_00	MH_NO_00
STA. 0+00.00	STA. 0+00.00	STA. 0+00.00

11. **PROPOSED SEWER PIPE** – The size and slope of the pipe are to be called out either above or below the proposed pipe. The size and slope of the pipe need not be repeated between the manhole distances if they are the same, otherwise they shall be shown for each distance.
For example: **REHAB 6" PIPE @ 2.00%, 15" PIPE @ 2.00%, SDR-26 15" PIPE @ 0.68%**

12. **LENGTH OF PIPE** – The horizontal length being shown between the centers of the manholes and below the proposed pipe using dimension lines. The true length of pipe is used when curved lines represent the alignment of a pipe. Place dimensions between proposed manholes on the profile view towards the bottom of the profile grid. Also, if Match Lines are used, place dimensions between manholes where the alignment extends to preceding and/or following sheets.

13. **INVERT ELEVATIONS AT MANHOLES** – Are to be shown only at the center of the manhole for sewer mains 15" and smaller. All incoming pipes to a manhole need not be shown in the profile view.

    NOTE: Call out invert elevation of EX MH on the profile view. The information will be used for Capitalization of the group job.

14. **SEWER ALIGNMENT (PROFILE)** – Should be shown downstream to upstream starting from the left side of the sheet. This is because sewers are constructed laying pipe upgrade per the Green Book (Pipe Laying). The profile of the sewer will take precedence over the direction of the north arrow.

15. **EXISTING STRUCTURES** – That are crossed by the proposed pipe or to be connected to the proposed pipe shall be shown. The crossing utilities shall be place accurately based on as-built drawings or obtained from potholing. Sewer elevations may be interpolated between manholes and labeled as calculated elevations. Otherwise, if no elevation is known then "**EL UNK"** shall be called out.

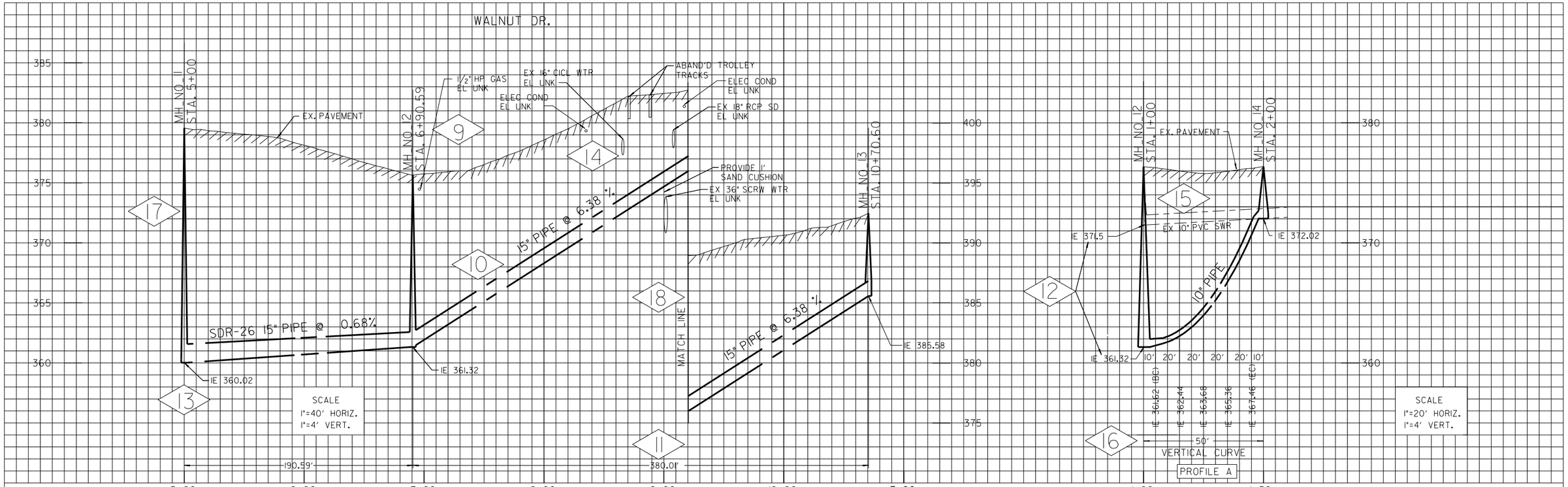
16. **EXISTING SEWER MAIN REPLACED IN-PLACE (HORIZ.)** – If the existing sewer is being replaced in-place horizontally, then the existing sewer shall be shown in the profile along with the proposed sewer.

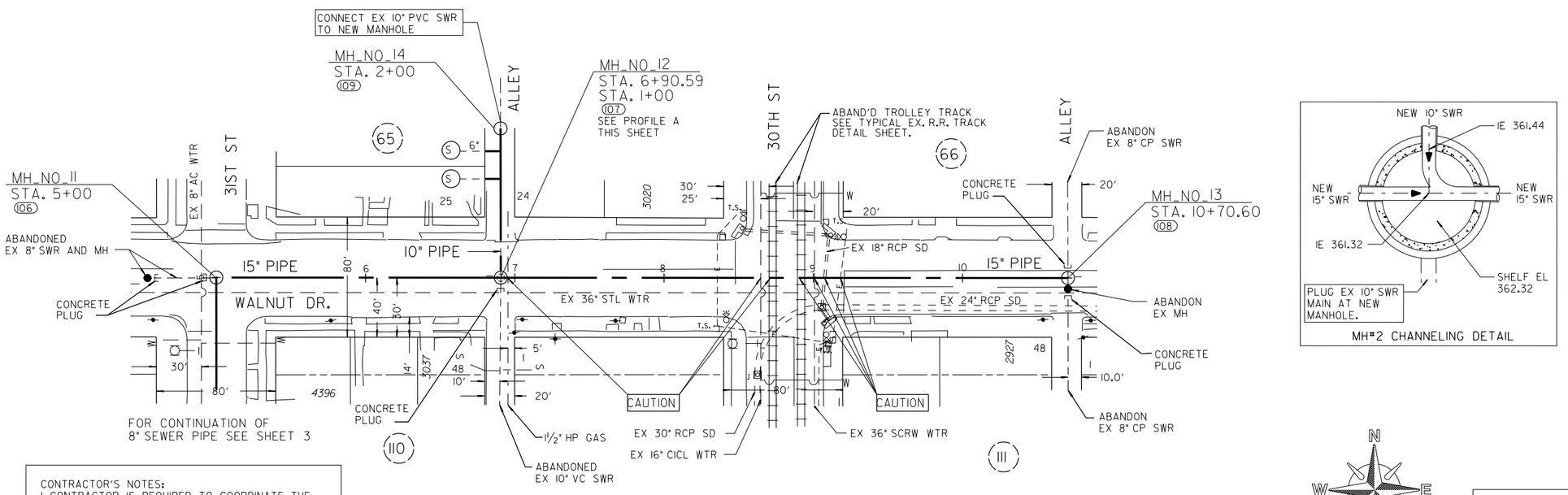
17. **VERTICAL CURVES** – Shall show the changes in elevations at the deflection of the pipe and the horizontal distance between each change in elevation.

18. **SHEET LIMITS FOR PROPOSED PIPE – <u>OPTION B</u>**
MANHOLE -to- MANHOLE (SEWER) – The proposed pipe shall begin at a proposed manhole and end at the nearest proposed manhole towards the end of the sheet layout limits. All proposed manholes in-between the sheet limits shall be shown. Start the next sheet with the same proposed manhole as shown at the end of the previous sheet. Text is not needed to show the next or previous sheet because it is shown on the plan view.

19. **VERTICAL BREAKS** - The proposed pipe and existing pavement / ground shall break at an even station. If this is not possible, the break may occur at the nearest 10-foot station. The match line shall be weight 3, style 0. The text size shall be 5.6 and a weight of 2. For example: **MATCH LINE**.

Option:
Vertical Scale of 1"= 4' should be used continuous throughout the plans.
When the grade of the alignment is such that it exceeds the lower or upper limits of the profile grid, vertical breaks may be used. If several vertical breaks occur on the profile view, a modified scale can be used. For clarity, the profile view may be modified using 1”= 8’ vertical scale. Project alignments should remain at the same profile vertical scale, from beginning station to ending station.



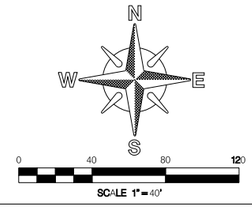


CONTRACTOR'S NOTES:
1. CONTRACTOR IS REQUIRED TO COORDINATE THE SUPPORTING OF POWER POLES WITH SDG&E BEFORE BEGINNING CONSTRUCTION.
2. USE EXTREME CAUTION WHEN WORKING DUE TO LOW OVERHEAD UTILITY LINES.

UNIVERSITY HEIGHTS

LP8 - PG 36

MH#2 CHANNELING DETAIL



REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, G21
THOMAS BROS.: 1250
HGL: 256

RETIREMENTS:

100' - 10" PVC - 1999
45' - 8" VC - 1975
MH - 3 - 1962
4" LATERAL - 1- 1962
6" LATERAL - 1- 1962

C-99

SEWER GROUP 000

WALNUT DR./ALLEY IN BLOCK 65

31ST STREET TO ALLEY BLK NO. 66

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED: _____ DATE _____
FOR CITY ENGINEER

BY APPROVED: _____
PROJECT MANAGER

CHECKED: _____
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

000-0000
CCS27 COORDINATE

0000000-0000000
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

19905-01-D

WALNUT DR.

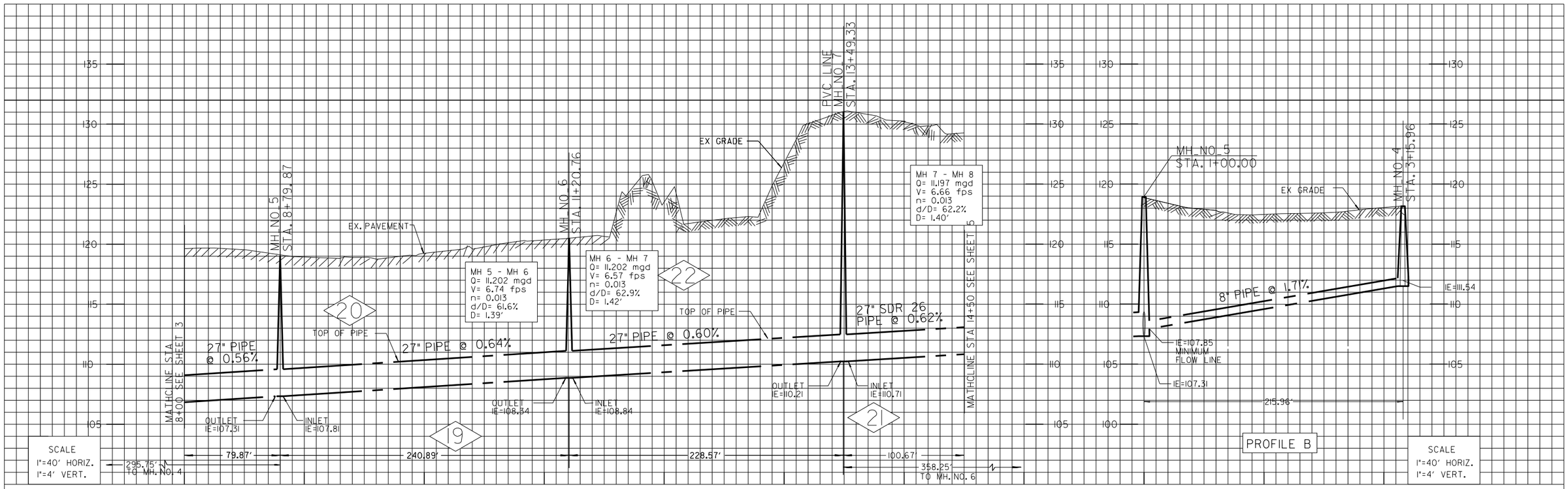
20. **TRUNK SEWER MAINS** – These pipes have special conditions to be considered during design. Trunk Sewers are those where the pipe diameter is larger than 15 inches. Refer to the Sewer Design Guide.

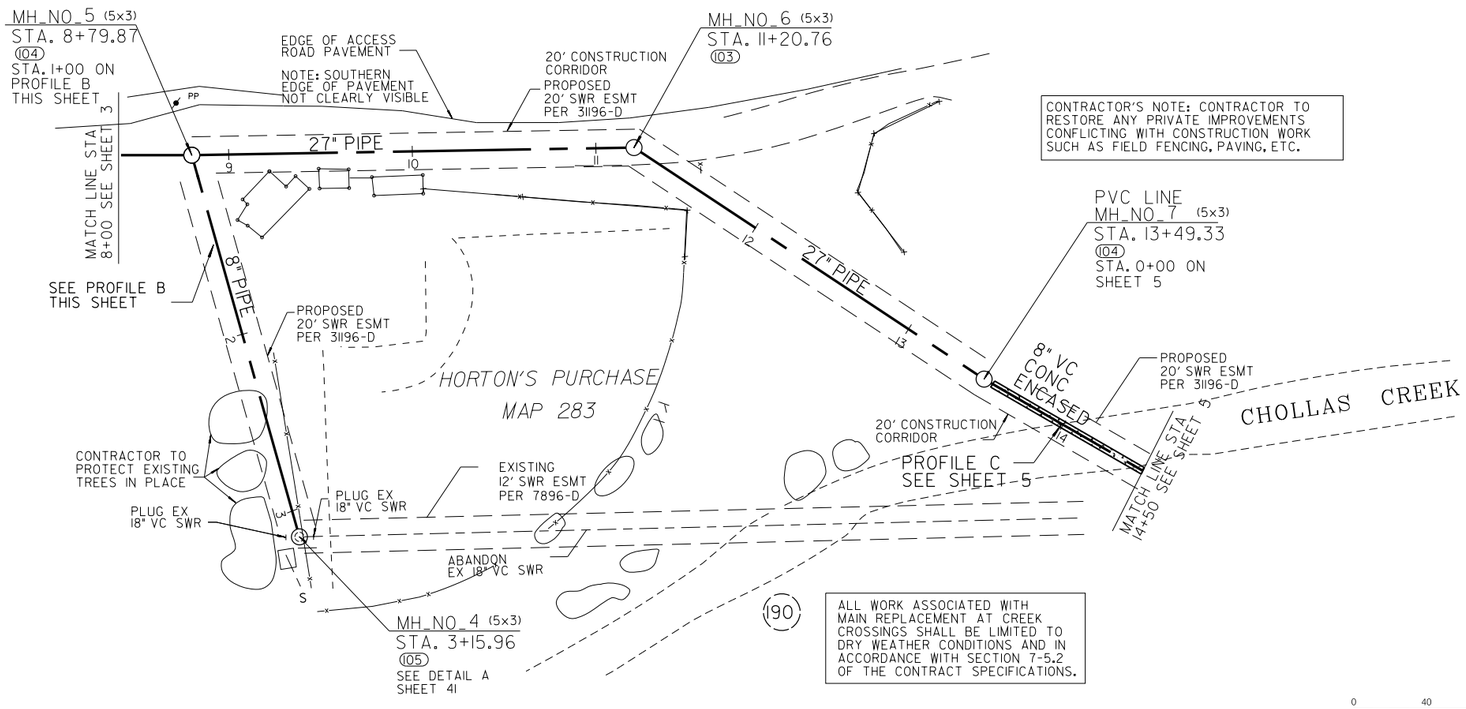
21. **T.O.P. (TOP OF PIPE)** – Used for Trunk Sewer Mains.

22. **INVERT ELEVATIONS FOR** SEWER MAINS 18-INCHES AND LARGER: Show the invert elevations for the inflow and outflow of the manhole are to be shown, calculate the drop in accordance with the Metropolitan Wastewater Department Sewer Design Guide, Section 2.3.6.

    NOTE: Call out invert elevation of EX MH on the profile view. The information will be used for Capitalization of the group job.

23. **HYDRAULIC DATA** – Used for Trunk Sewer Mains (18" Diameter and larger). Refer to the Sewer Design Guide for proper information needed on the profile.





REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, 621S
THOMAS BROS.: 1250

RETIREMENTS:

500' - 18" VC - 1965
MH - 4X3 - 1 - 1965

C-99

CHOLLAS VALLEY TRUNK SEWER PHASE II

EASEMENT

SUNSHINE LITTLE LEAGUE FIELDS

STA 8+00 TO STA 14+50
STA 1+00 TO STA 3+15.96

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED:
FOR CITY ENGINEER
DATE

ENVIRONMENTAL
PROJECT MANAGER
CHECKED
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

19905-01-D

EASEMENT

SECTION IV

WATER DESCRIPTION

WATER DESCRIPTION

PLAN VIEW

1. **PROPOSED WATER SERVICES** – Size of circle and text shall be per symbol standards. Circles shall be placed in a uniform line whenever possible. Water services larger than 1" will be labeled next to the service line at the curb location shown vertically.

2. **STIFF - EXISTING WATER SERVICES** – Label each existing water service on the plan view. Verify the water service through field check.

3. **PROPOSED REDUCERS** – Are shown when connecting to a pipe of a different diameter.

4. **EXISTING REDUCERS** – Are not to be shown unless connecting into one or if one is required to be removed. See Symbol Standards Section.

5. **HIGHLINING NOTE** – If no highlining is required, then a note similar to the following: "The existing water mains, fire hydrants and services on this sheet are to be kept in service during construction" shall be used.

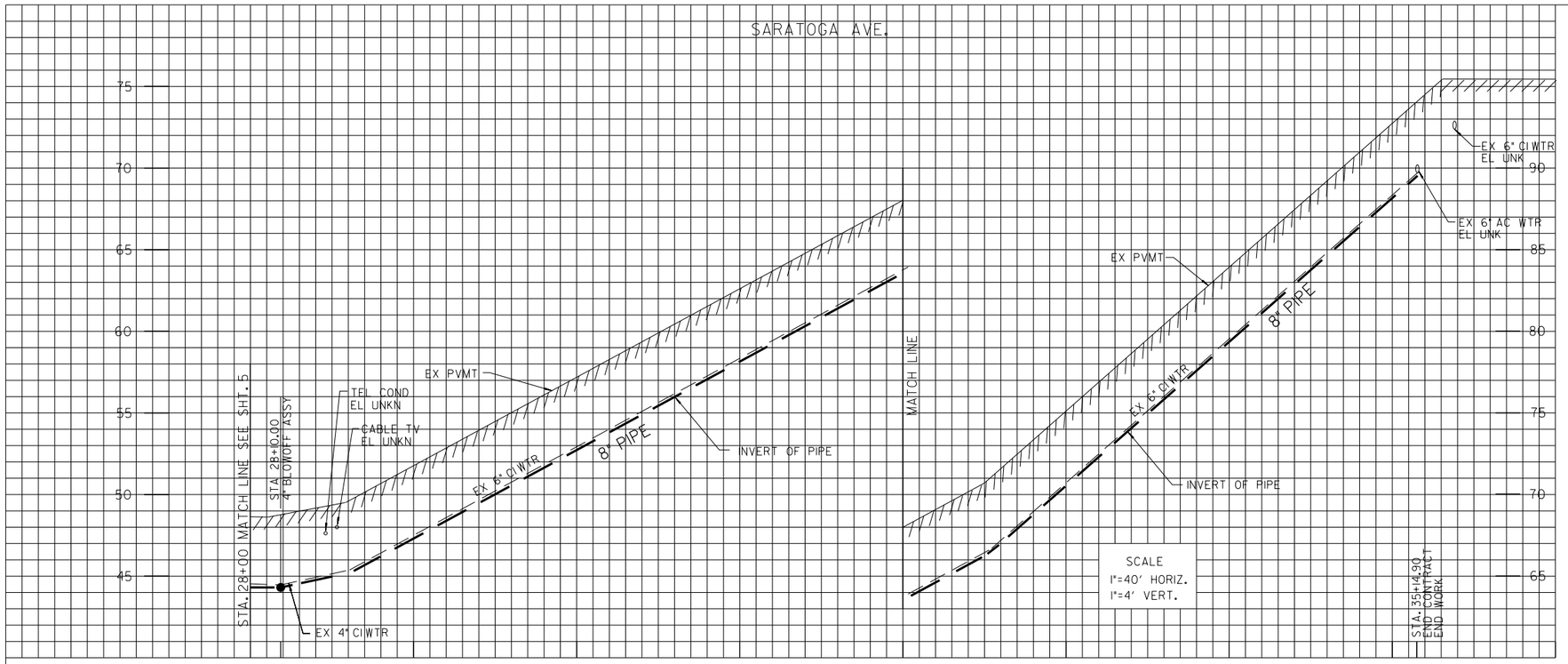
6. **CALL OUT FOR PROPOSED WATER INSTALLATIONS** – Shall be provided by the Project Engineer, placed in an organized manner on the plans, and shall be sequentially numbered per each sheet. Fittings shall be designated in the following order according to the direction of the survey line: BK (back), AHD (ahead), LT (left), RT (right).

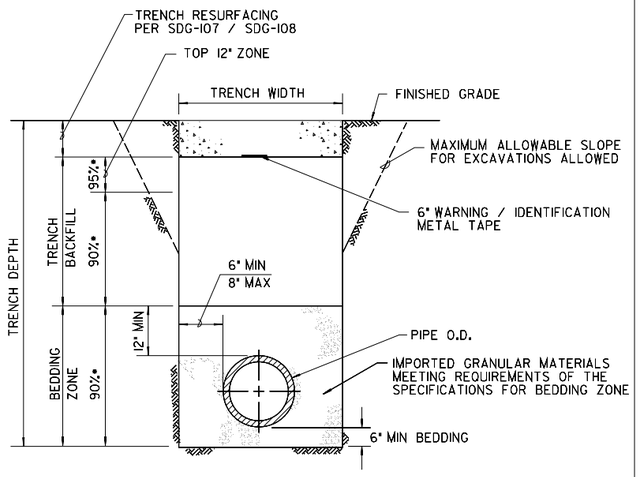
7. **CALL OUT FOR CITY FORCES / CONTRACTOR WORK** – Use appropriate cell to designate work to be done by City Forces or the Contractor.

8. **PROPOSED WATER WITH POINT NUMBERS CALLOUT** – This point number represents the northing and easting coordinates that is displayed on the Horizontal Alignment Coordinate Index Sheet in the plans and shall be placed as the last line of the construction note.

9. **PRESSURE ZONE** – Show the pressure zone boundaries and call out the names of the zones, where applicable. The pressure zones can be found on the water gate book pages for the project area.

10. **NON-STANDARD DETAILS** – should be placed on a specific sheet or on a separate detail sheet.





TRENCH SECTION

NOTE:

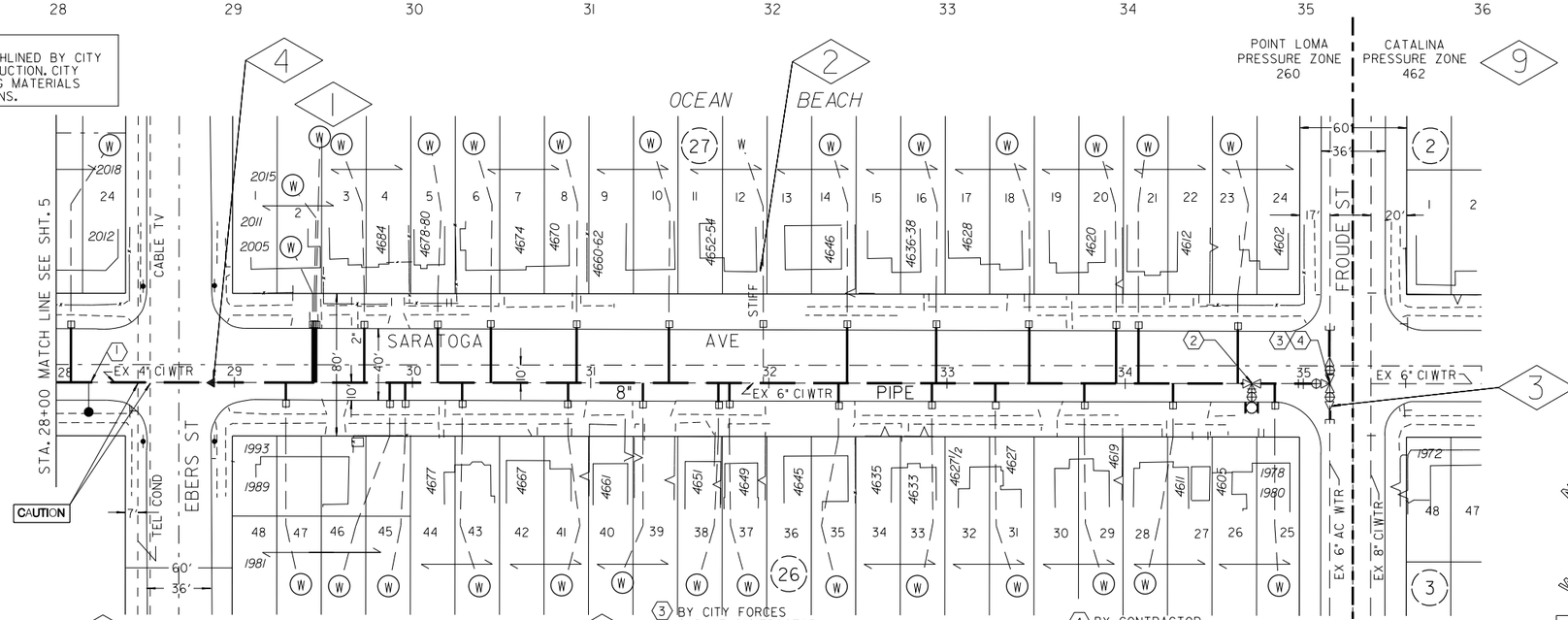
1. (•) INDICATES MINIMUM RELATIVE COMPACTION.

10

PIPE BEDDING AND TRENCH BACKFILL FOR WATER MAINS

NOT TO SCALE

NOTE:
SARATOGA AVE. TO BE HIGHLINED BY CITY FORCES PRIOR TO CONSTRUCTION. CITY TO FURNISH ALL HIGHLINING MATERIALS AND MAKE ALL CONNECTIONS.



CONTRACTOR'S NOTE:
USE EXTREME CAUTION WHEN WORKING DUE TO LOW OVERHEAD UTILITY LINES.

5

8

(1) BY CONTRACTOR
FURNISH & INSTALL
STA. 28+10.00
1 - 4" BLOWOFF ASSY
(614)

7

(2) BY CONTRACTOR
FURNISH & INSTALL
STA. 34+71.00
1 - 8" x 6" TEE (MJ, MJ, F)
1 - 6" FH ASSEMBLY
(615)

(3) BY CITY FORCES
AHD OF CONTRACTOR
STA. 35+14.90
CUT AND PLUG:
EX 6" AC PIPE, 30'±LT, 15'±RT
AFTER NEW MAIN HAS BEEN
ACCEPTED. RECONNECT TO
EXISTING PIPE.

6

(4) BY CONTRACTOR
FURNISH & INSTALL
STA. 35+14.90
1 - 8" TEE (F)
1 - 8" VALVE (MJ, F) BK
2 - 8" VALVES (F, MJ) LT, RT
2 - 8"X 6" REDUCER (F, MJ) LT, RT
(616)

0 40 80 120
SCALE 1" = 40'

REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, 621
THOMAS BROS.: 1250
HGL: 260/462

RETIREMENTS:

715' - 6" CI - 1961
FH (2-PORT) - 1
1" SERVICE - 30 - COPPER

C-99

SEWER & WATER GROUP 000

SARATOGA AVE.

EBERS STREET TO FROUDE STREET

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER
DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

WATER WBS 0-00000
SEWER WBS 0-00000
SUBMITTED:
PROJECT MANAGER
CHECKED:
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
28473-04-D

SARATOGA AVE.

PROFILE VIEW

11. **WATER STATION CALLOUT** – Use appropriate cell to designate station call-outs. Examples of where to use the station callouts are: at the beginning and ending of contract work, City forces, Air & Vacuum, blow-off valves, Tees, Crosses, etc.

    - **BEGIN AND END CONTRACT WORK**- Shall have a station callout and either the words **BEGIN** or **END CONTRACT**. This is typically used only on proposed water installations by the Contractor.

    - **BEGIN AND END CITY FORCE WORK** – Shall have a station callout and either the words **BEGIN** or **END WORK**. This is typically used only on proposed water installations by City Forces.

12. **INVERT OF WATER PIPE** – Place callout "INVERT OF PIPE" with leader to the proposed pipe.

    - For a pipe diameter of less than 12 inches, only the pipe invert need be shown.

    - For pipes 12 inches in diameter and larger, the pipe invert and the top of the pipe should be shown.

13. **PROPOSED WATER PIPE** – Any class of pipe other than CL 235 should be called out. For example: **8" PIPE CLASS 305**.

14. **BLOW-OFFS** – Use the proper symbol and callout on the plan and profile views. Refer to the Water Department Design Guide for locations.

15. **AIR VALVES** – Use the proper symbol and callout on the plan and profile views. Refer to the Water Department Design Guide for locations.

16. **PROPOSED TEES / CROSSES** - Call out the station and proposed invert elevation of the Tee or Cross. The elevations at that point need only be carried out to one decimal point.

17. **PERPENDICULAR WATER MAINS** - When connecting the proposed water main to an existing / proposed the water main it should tie in at the center line of the pipe not the invert of the pipe.

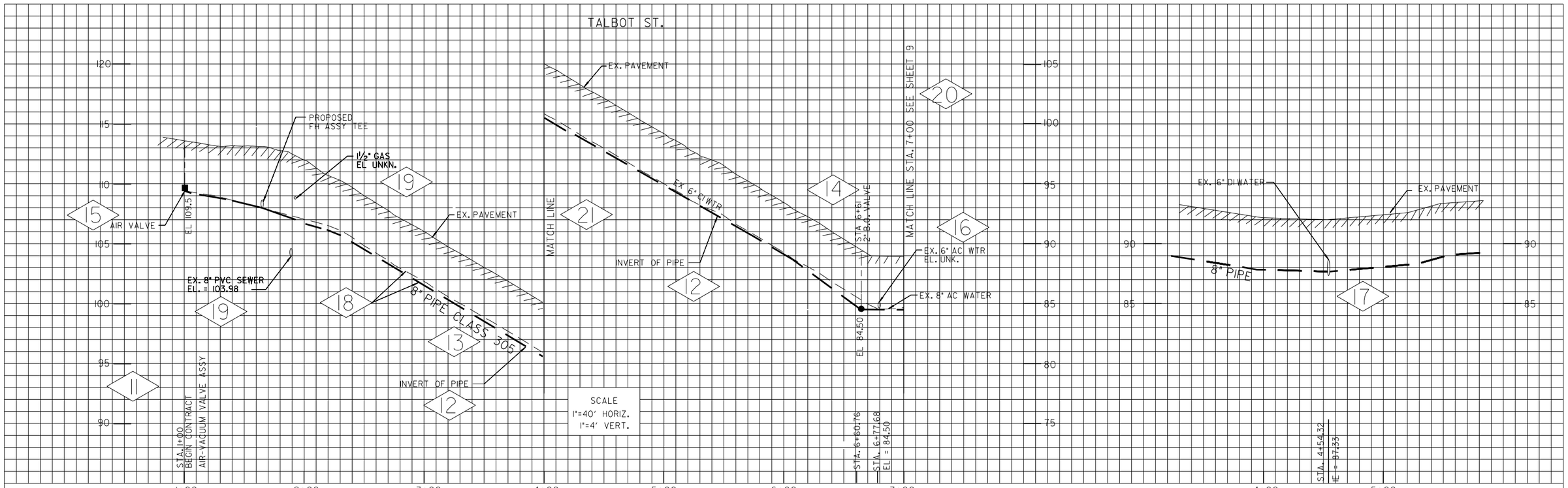
18. **REPLACING IN-PLACE (WATER)** – When replacing in-place, the existing pipe shall be shown at its proper elevation on the profile (if known).

19. **EXISTING UTILITIES** – Existing Utilities that are crossed by the proposed pipe or connected to the proposed pipe shall be shown. The elevation for each will be called out if known from as-built drawings or if the elevation was obtained from potholing. Otherwise if no elevation is known, then **EL UNK** shall be specified. EL UNK shall be the callout for all outside utility companies. We are responsible for locating their utilities for the Contractor.

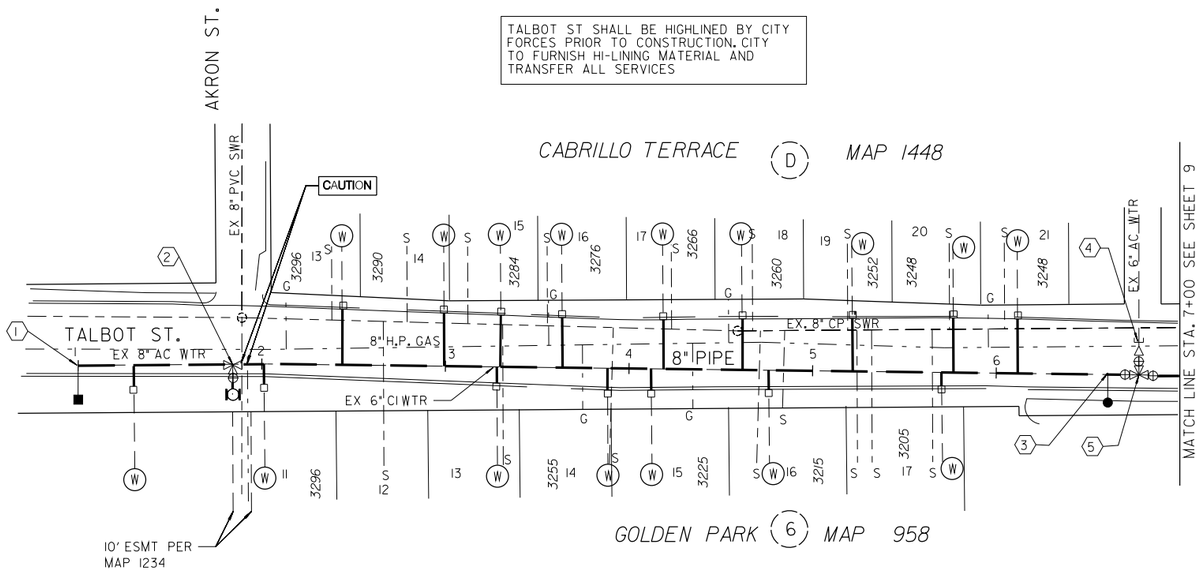
20. **SHEET LIMITS FOR PROPOSED PIPE**
MATCH LINE (WATER) – The proposed pipe shall have limits at the beginning and ending of a sheet at 50 or 100-foot stationing whenever possible. For example, 5+00, 7+50. If this is not possible, the break may occur at the nearest 10-foot station. Example, 7+40, 8+60. Match lines shall be used where the 50 or 100-foot stations occur. The match line shall be weight 3, style 0. Include text indicating the location of the continued proposed pipe. The text size shall be 5.6 and a weight of 2. For example: **MATCH LINE STA. 7+00 SEE SHEET 9**.

21. **VERTICAL BREAKS** - The proposed pipe and existing pavement / ground shall break at an even station. If this is not possible, the break may occur at the nearest 10-foot station. The match line shall be weight 3, style 0. The text size shall be 5.6 and a weight of 2. For example: **MATCH LINE**.

22. **VERTICAL DEFLECTIONS (GRADE BREAK) FOR PROPOSED TRANSMISSION WATER MAINS** – Are designated at any deflection of the pipe at the joints. Abrupt vertical grade breaks resulting in upward thrust should be avoided. The elevations at that point need only be carried out to one decimal point.



TALBOT ST SHALL BE HIGHLINED BY CITY FORCES PRIOR TO CONSTRUCTION. CITY TO FURNISH HI-LINING MATERIAL AND TRANSFER ALL SERVICES



1 BY CONTRACTOR FURNISH & INSTALL:
STA. 1+00.00
1 - AIR & VACUUM VALVE ASSY
(616)

2 BY CONTRACTOR FURNISH & INSTALL:
STA. 1+84.19
1 - 8"X6"TEE (MJ, MJ, F)
1 - 6" FH ASSEMBLY & MARKER
(617)

3 BY CONTRACTOR FURNISH & INSTALL:
STA. 6+60.76
FURNISH & INSTALL:
1 - 2" B.O. ASSY
(618)

4 BY CITY FORCES AHD OF CONTRACTOR
STA. 6+77.68 40'± LF
CUT & PLUG EX 6" AC WTR
RECONNECT AFTER NEW MAIN HAS BEEN ACCEPTED.

5 BY CONTRACTOR FURNISH & INSTALL:
STA. 6+77.68
1 - 8" TEE (F)
3 - 8" VALVES (F, MJ) BK, AHD, LT
1 - 8" X 6" REDUCER, 40' LT
40' - 8" CLASS 200 PIPE, LT
(619)

REFERENCE:

WATER: 12345-6-D, 23456-7-D
SEWER: 12345-6-D
STORM DRAIN: 12345-6-D
GAS: 11-271
ELECTRIC: 210-1725A
CABLE TV: 210-1725
TELEPHONE: MAP 1220
IMPROVEMENTS: 1234-L
100' SCALE/FIELD BOOK: 214-1719, 621
THOMAS BROS.: 1250
HGL: 256

RETIREMENTS:

577' - 6" CI - 1941
FH (2-PORT) - 1
1" - 16 - COPPER

0 40 80 120
SCALE 1" = 40'

C-99

ARKON STREET TO ALLEY BLOCK D

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

WATER WBS 0-00000
SEWER WBS 0-00000
RW NUMBER (IF):
PROJECT MANAGER
CHECKED:
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED
31463-19-D

TALBOT ST.

SECTION V

MISCELLANEOUS PLAN SHEETS

MISCELLANEOUS PLAN SHEETS

1. **WORK BY CITY FORCES** –

   - Show right-of-way (street) lines, street names, address hundred block numbers, existing and proposed water mains and fire hydrants.

   - Call out the appropriate locations, edit the numbers to reflect what work needs to be done (see construction notes).

   - For FH symbols use the cells, but for the proposed FH cell change the weight to 4 so the Fire Department can distinguish the difference.

   - Show the pressure zone boundaries and call out the names of the zones, where applicable. The pressure zones can be found on the water gate book pages for the project area.

   - Fill out the table for materials to be supplied by Contractor to City Force.

2. **SEWER ABANDONMENT SHEET** – Call out the I.E. and the rim of the manholes to be abandoned, length, size, type of material of pipe and show the locations of the concrete plugs. The information will be used for Capitalization of the group job.

3. **REHABILITATED SEWER MAIN SHEET** – Call out the I.E. and the rim of the manholes and the length, size of the sewer mains to be rehabilitated. No need to provide profile view.

4. **WATER POLLUTION CONTROL SITE PLAN** – This sheet is used for projects with less than one (1) acre in disturbed soil areas.

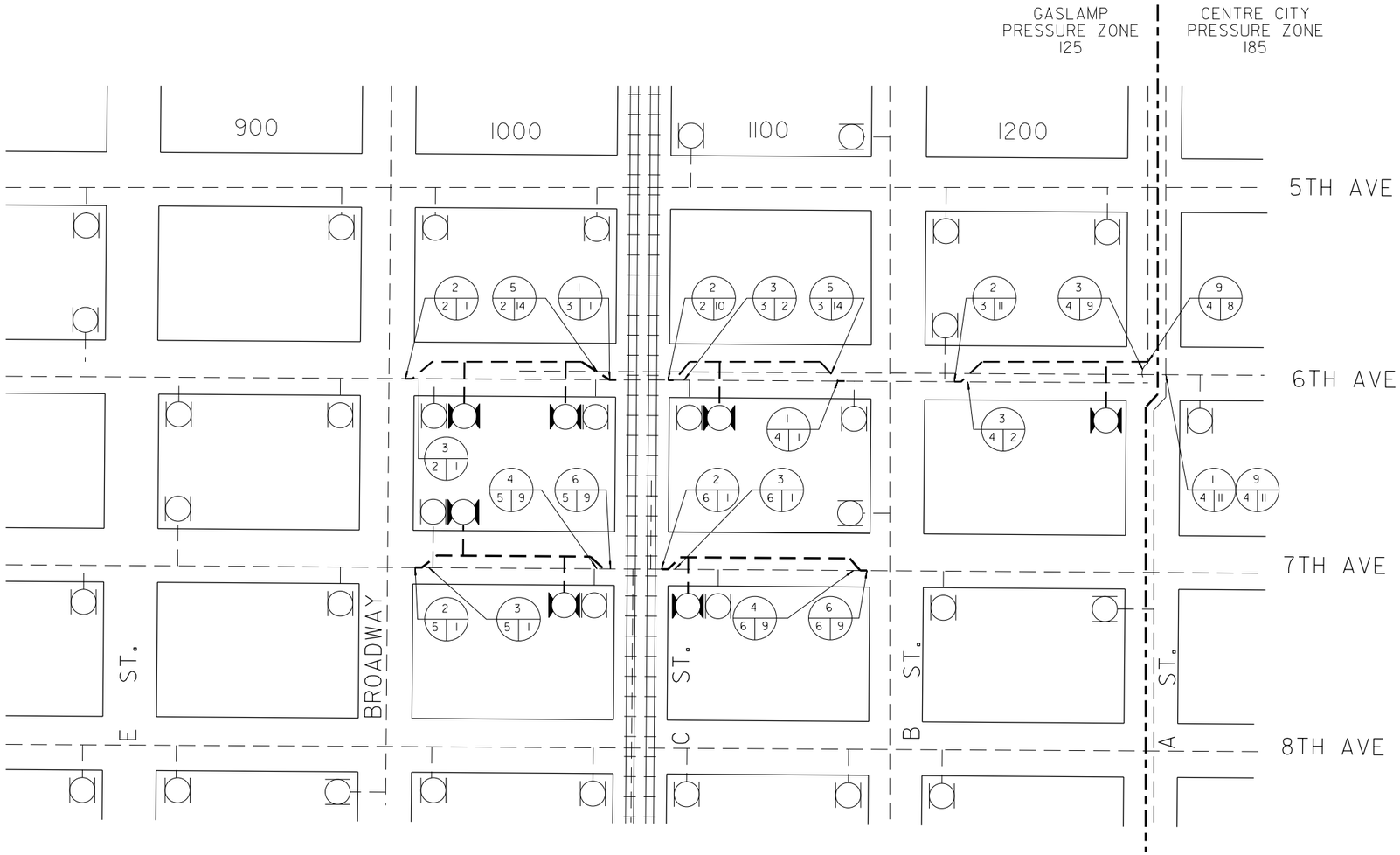
5. **CURB RAMP SHEET** – Call out the locations of the proposed curb ramps and list the type of curb ramps in the table.

6. **STREET RESURFACING SHEET** – Show the areas of resurfacing/slurry and list the limits in the table.

7. **HORIZONTAL ALIGNMENT COORDINATE INDEX REPORT** –

8. **REPLUMB DETAIL SHEET –** The detail drawing of each property location to be replumbed, and should be enlarged enough to see the proposed lateral alignment.

9. **FIRE DEPARTMENT INFORMATION SHEET** – This is showing an example of information that the Fire Department wants when submitting the Fire Protection Review for the project area by the engineer.



LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PRESSURE ZONE

- FIRE HYDRANT TO REMAIN IN SERVICE DURING CONSTRUCTION
- PROPOSED FIRE HYDRANT

- X — CITY FORCES NOTE NUMBER (THIS SHEET)
- XX|X — CITY FORCES NOTE NUMBER (PLAN & PROFILE SHT.)
- PLAN & PROFILE "D" SHEET NUMBER

BC --- BEFORE CONTRACTOR

AC --- AFTER CONTRACTOR

WORK BY CITY FORCES

1. BC - CLOSE EX VALVE (REPLACE IF NEEDED)
   AC - OPEN EX VALVE
2. BC - CUT & PLUG
   AC - RECONNECT
3. BC - CUT AND PLUG FOR ABANDONMENT BY CONTRACTOR
4. AC - CUT AND PLUG FOR ABANDONMENT BY CONTRACTOR
5. AC - CONNECTION
6. AC - CUT AND PLUG AND RECONNECT
7. AC - CUT AND ABANDON
8. AC - INSTALL
9. BC - INSTALL

CONTRACTOR FURNISH MATERIALS FOR CITY FORCE WORK						
SHT NO.	12" TEE	12" VALVE	12" X 10" REDUCER	12" BLIND FLANGE	8" BLIND FLANGE	12" CLASS 200 PIPE
3	1	2	1	1		20'
4	1	2			1	20'

SCALE 1" = 40'

C–99

WORK BY CITY FORCES

WATER GROUP 000

WORK BY CITY FORCES

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED:
FOR CITY ENGINEER DATE

BY:
PROJECT MANAGER

CHECKED:
PROJECT ENGINEER

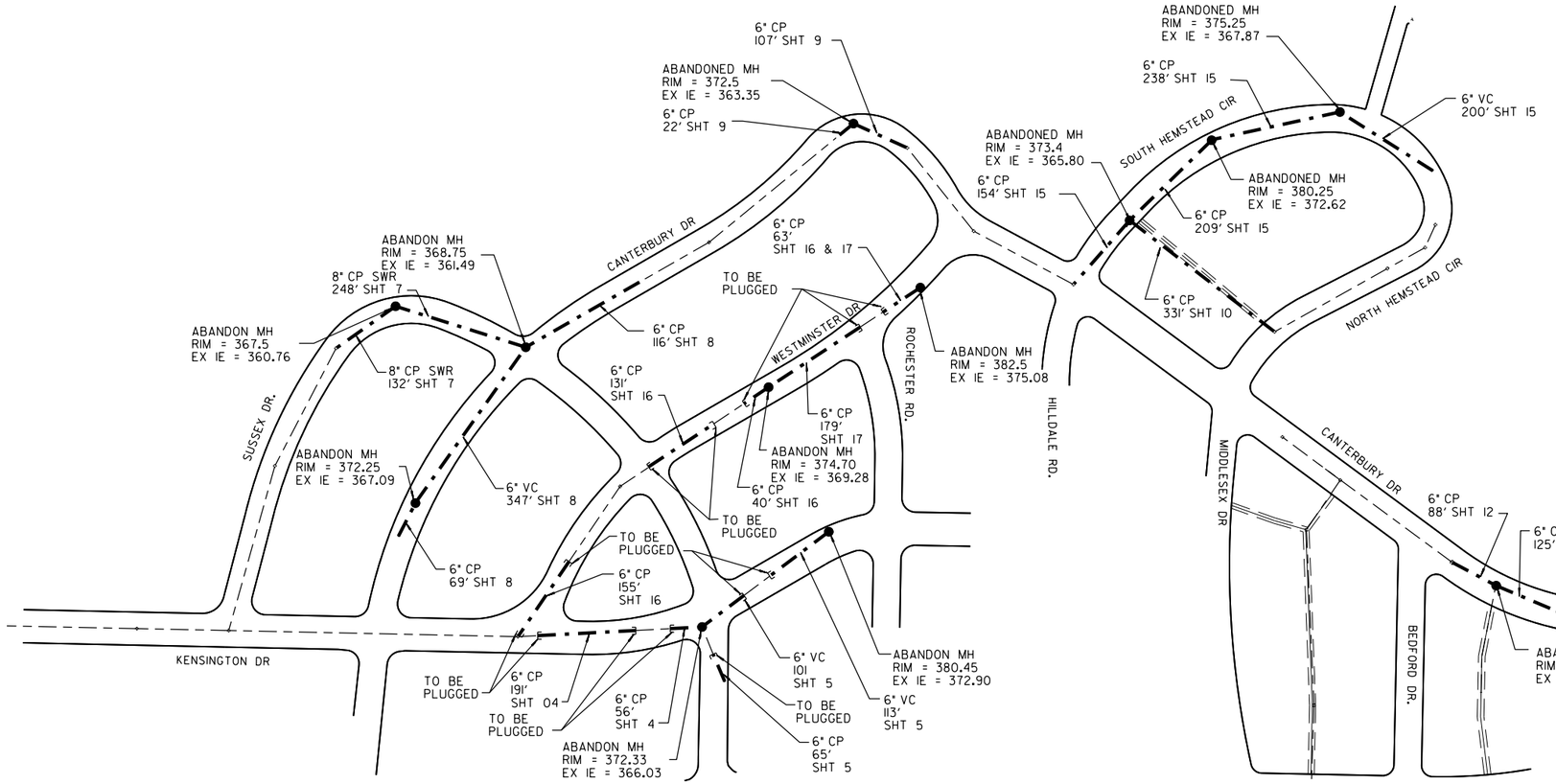
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

000-0000
CCS27 COORDINATE

0000000-0000000
CCS83 COORDINATE

CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

19905–01–D



LEGEND

- SEWER MAIN TO BE ABANDONED
- EXISTING SEWER MAIN
- MANHOLE TO BE ABANDONED

N W E S

0 40 80 120

SCALE 1" = 40'

2

C–99

SEWER & WATER GROUP 000

SEWER ABANDONMENT

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED
FOR CITY ENGINEER
DATE

BY MITE: (IN)
PROJECT MANAGER

CHECKED: (IN)
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

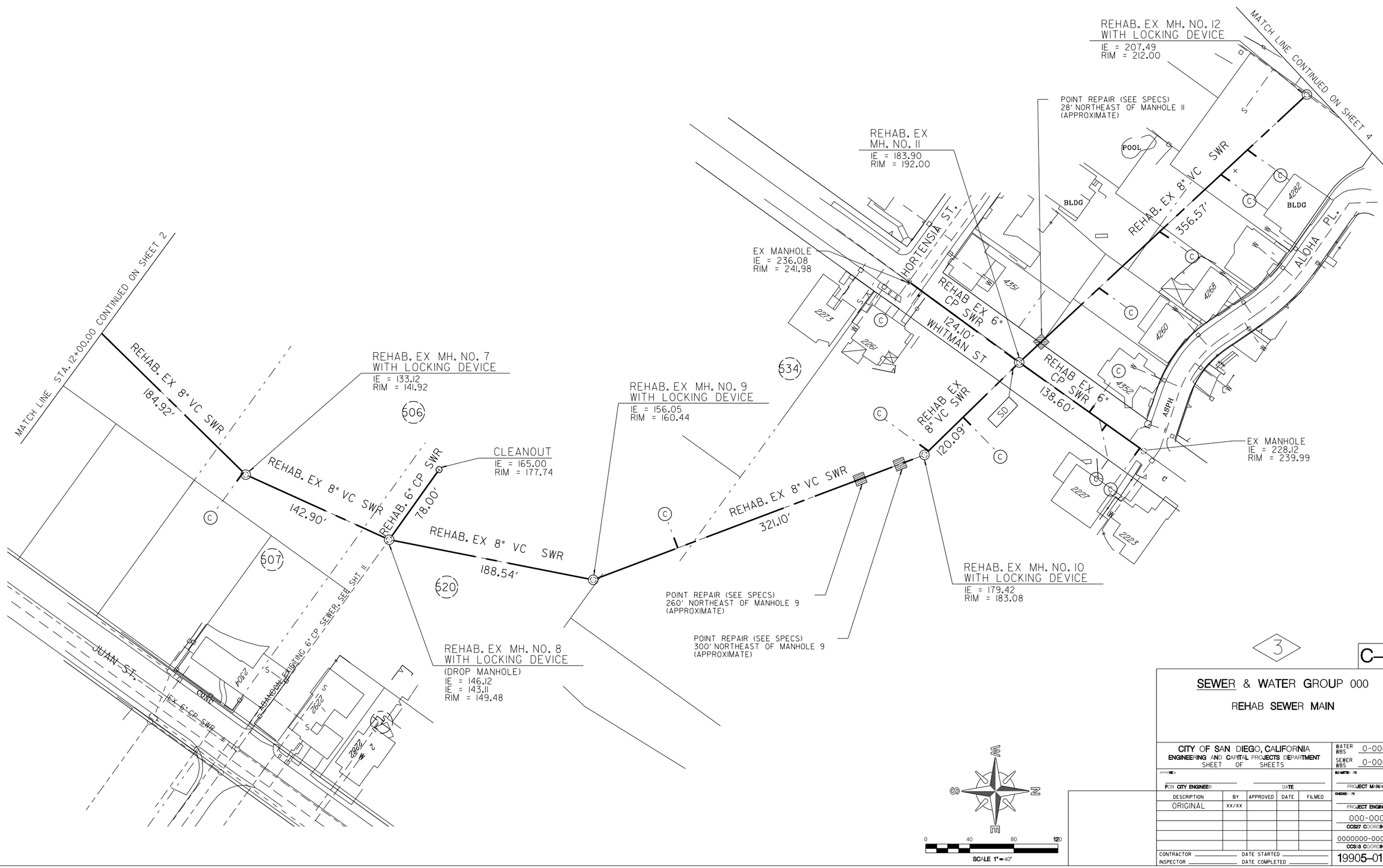
000-0000
CCS27 COORDINATE

0000000-0000000
CCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

19905-01-D

SEWER ABANDONMENT



MAIN

REHAB SEWER MAIN

3

C-99

SEWER & WATER GROUP 000

REHAB SEWER MAIN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:

FOR CITY ENGINEER _____ DATE _____

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

WATER WBS 0-00000
SEWER WBS 0-00000

SUBMITTED:

PROJECT MANAGER

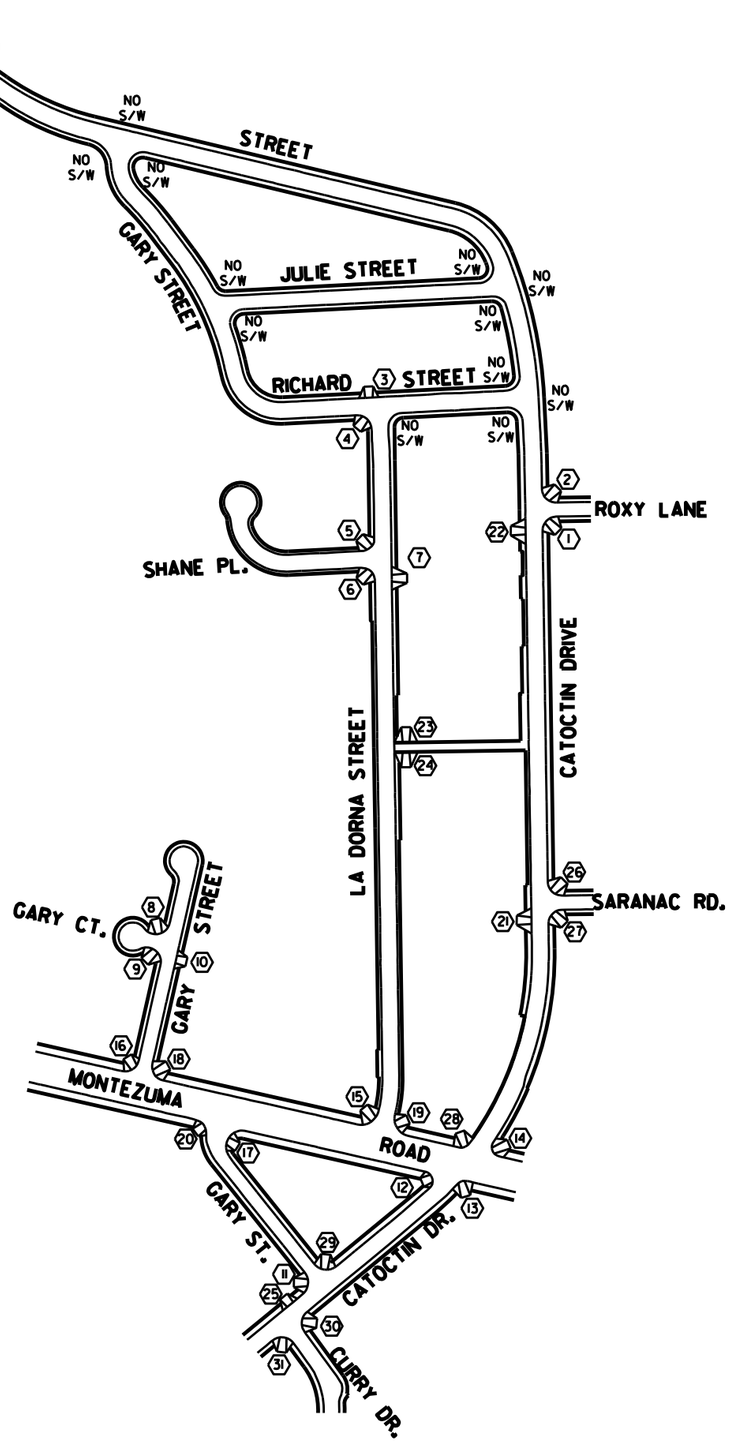
CHECKED:

PROJECT ENGINEER

000-0000
CCS27 COORDINATE

0000000-0000000
CCS83 COORDINATE

19905-01-D



NO SCALE

CURB RAMP NOTES TABLE

LOCATION NO.	RAMP TYPE	NEW	REPLACEMENT	HISTORIC STAMPS	TRUNCATED DOME MATERIAL • STAINLESS STEEL	TRUNCATED DOME MATERIAL • OTHER	CONSTRAINTS	COMMENTS / MODIFICATIONS
1	A	X						
2	A	X						
3	CI							
4	CI							
5	CI							
6	CI							
7	CI							
8	CI							
9	CI							
10	A							
11	A		X					REPLACE EXISTING SUB-STANDARD
12	CI		X					REPLACE EXISTING SUB-STANDARD
13	CI		X					REPLACE EXISTING SUB-STANDARD
14	CI		X					REPLACE EXISTING SUB-STANDARD
15	CI		X					REPLACE EXISTING SUB-STANDARD
16	CI		X					REPLACE EXISTING SUB-STANDARD
17	CI		X					REPLACE EXISTING SUB-STANDARD
18	CI		X					RETROFIT EX. STANDARD CURB RAMP WITH TRUNCATED DOME
19	CI		X					RETROFIT EX. STANDARD CURB RAMP WITH TRUNCATED DOME
20	CI		X					RETROFIT EX. STANDARD CURB RAMP WITH TRUNCATED DOME
21	CI							
22	CI							
23	D	X						
24	D	X						
25	A							
26	---							NEW EXISTING CURB RAMP - NO ACTION
27	---							NEW EXISTING CURB RAMP - NO ACTION
28	---							NEW EXISTING CURB RAMP - NO ACTION
29	---							NEW EXISTING CURB RAMP - NO ACTION
30	---							NEW EXISTING CURB RAMP - NO ACTION
31	---							NEW EXISTING CURB RAMP - NO ACTION

• THE DETECTABLE WARNING TILES SHALL BE PER THE CITY'S APPROVED MATERIALS LIST

NOTE:
CONTRACTOR TO NOTIFY SURVEYING 30 DAYS PRIOR TO REMOVAL OF SIDEWALK FOR CURB RAMP CONSTRUCTION TO RELOCATE ANY SURVEY MARKERS.

LEGEND

- (8) CURB RAMP NO's
- EX UTILITY POLE
- EX FIRE HYDRANT
- EX STREET LIGHT
- EX TREE
- EX STREET SIGN
- EX CURB RAMP

PROPOSED CURB RAMPS PER STANDARD DRAWINGS:

A & B	SDG-132
C1	SDG-134
C2	SDG-135
D	SDG-136
TRUNCATED DOMES	SDG-130
CURB RAMP DETAILS	SDG-137
EX STAMP/IMPRESSION PLACEMENT	SDG-115
ISLAND REFUGE/PASSAGEWAY DETAILS	SDG-138

5

C-1

PROJECT TITLE

CURB RAMP LOCATION

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED
FOR CITY ENGINEER
DATE

SUBMITTED BY
PROJECT MANAGER

CHECKED BY
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

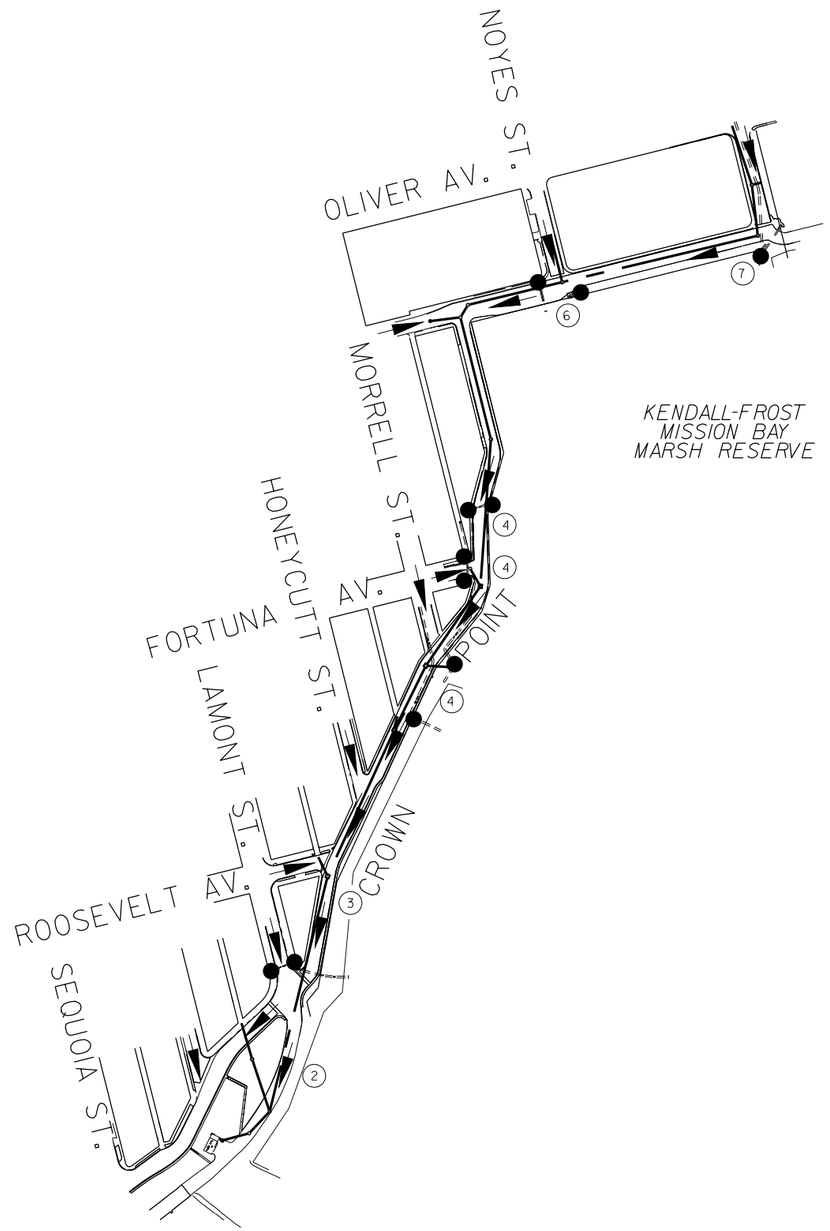
SEE SHEETS
OCS27 COORDINATE

SEE SHEETS
OCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

19905-01-D

CURB RAMP LOCATION



NOTES

1. THE INFORMATION ON THIS SITE PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTOR TO INSTALL WATER POLLUTION CONTROL DEVICES AT GENERAL LOCATIONS THROUGHOUT THE PROJECT SITE. THIS SITE PLAN IS TO BE USED IN CONJUNCTION WITH THE NARRATIVE SECTION OF THE WATER POLLUTION CONTROL PLAN (WPCP) AND WATER POLLUTION CONTROL SPECIFICATIONS.
2. INLET PROTECTION REQUIRED AT ALL STORM DRAINS RECEIVING RUNOFF FROM DISTURBED SOIL AREAS.
3. CONTRACTOR TO UPDATE/REVISE SHEET AS NECESSARY.
4. THE INFORMATION ON THE SITE PLAN IS ACCURATE FOR WATER POLLUTION CONTROL PURPOSES ONLY.

LEGEND

SURFACE FLOW TO STORM DRAIN ARROWS	→
STORM DRAINS AFFECTED BY CONSTRUCTION	●
NEW SEWER MAIN	— —
SHEET NO's	○

ADDITIONAL NOTES SUPPLIED BY CONTRACTOR

STAGING/STOCKPILE AREA	X

N W E S

0 40 80 120

SCALE 1" = 40'

4

C-99

SEWER GROUP JOB 000
WATER POLLUTION CONTROL SITE PLAN

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

APPROVED:
FOR CITY ENGINEER — DATE

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

WATER WBS 0-00000
SEWER WBS 0-00000
SUBMITTED BY:
PROJECT MANAGER
CHECKED BY:
PROJECT ENGINEER
000-0000
CCS27 COORDINATE
0000000-0000000
CCS83 COORDINATE
19905-01-D

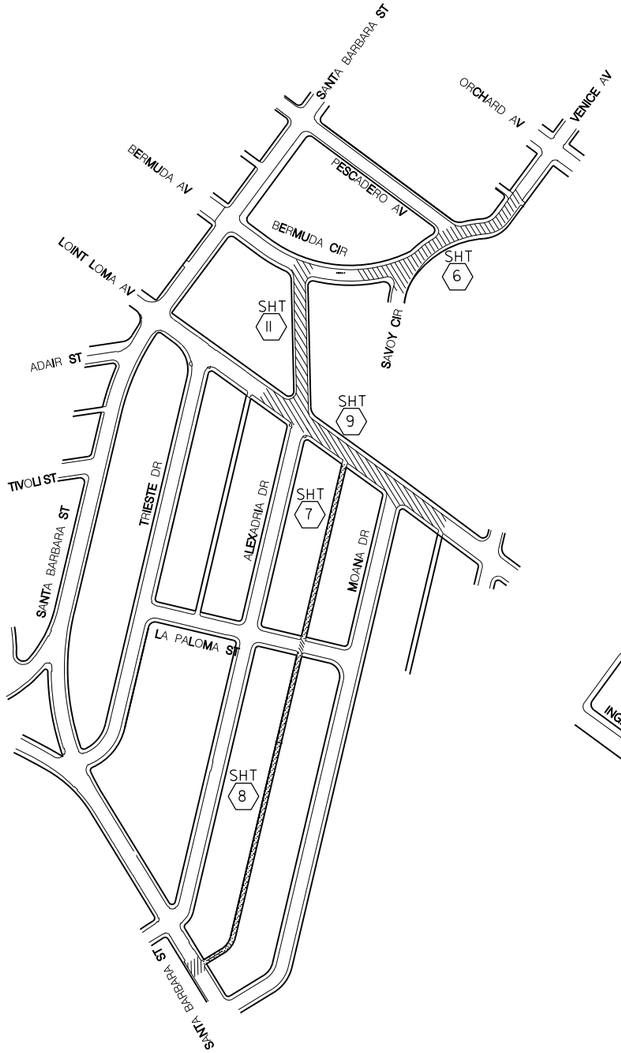
CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

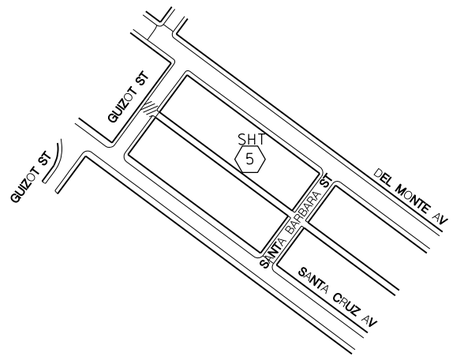
WATER POLLUTION CONTROL SITE PLAN

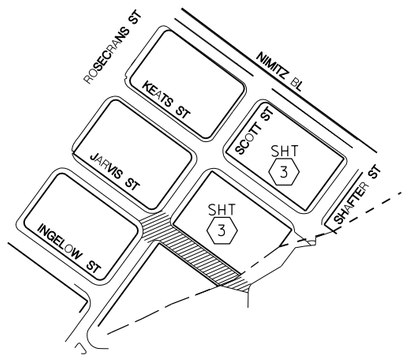
STREET RESURFACING

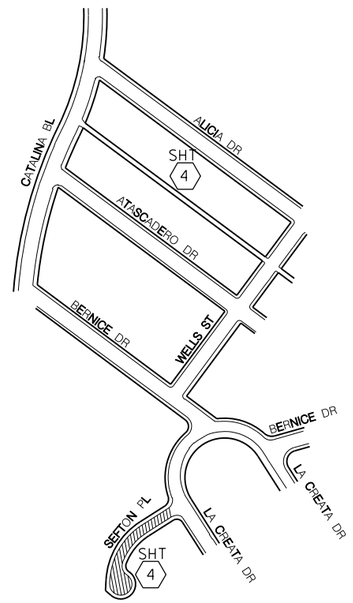
LEGEND

- APPROXIMATE LOCATION OF SLURRY SEAL
- APPROX. LIMITS OF RESURFACE AC OVERLAY
- LOCATION PER PAVING SCHEDULE NOTES (THIS SHEET)
- COLD MILLING ASPHALT CONCRETE PAVEMENT; SDG-139





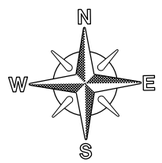




PAVING SCHEDULE							
SHT NO.	STREET	RESTORATION REQUIRED	FROM	TO	WIDTH	APPROX. AREA	
3	KEATS STREET	CONCRETE	STA. 1+00	STA. 5+00	3′		
3	JARVIS STREET	SLURRY SEAL	STA. 1+00	STA. 3+90	53′	15,370 SF	
4	SEFTON PLACE	SLURRY SEAL	STA. 1+00	STA. 2+74	36′	6,264 SF	
4	ALLEY ALICIA DRIVE ATASCADERO DRIVE	CONCRETE	STA. 1+00	STA. 5+69	3′		
5	ALLEY DEL MONTE AVEUNE SANTA CRUZ AVEUNE	CONCRETE	STA. 1+00	STA. 6+07	3′		
6	VENICE AV, SAVOY CIR, BERMUDA CIR	SLURRY SEAL	STA. 1+00	STA. 6+19	35′	18,165 SF	
7	ALLEY ALEXANDRIA DRIVE MOANA DRIVE	CONCRETE	STA. 1+00	STA. 10+00	3′		
8	ALLEY ALEXANDRIA DRIVE MOANA DRIVE	CONCRETE	STA. 10+00	STA. 17+42	3′		
9	POINT LOMA AVEUNE	SLURRY SEAL	STA. 1+00	STA. 7+39	47′	30,033 SF	
10	ALLEY ALEXANDRIA DRIVE MOANA DRIVE	CONCRETE	STA. 1+00	STA. 8+50	3′		
11	ALLEY ALEXANDRIA DRIVE MOANA DRIVE	CONCRETE	STA. 8+50	STA. 17+10	3′		
12	ALEXANDRIA AV	SLURRY SEAL	STA. 1+00	STA. 5+68	37′	17,316 SF	
				SLURRY SEAL TOTAL		87,148 SF	

NOTE:

THE ACTUAL AREA WILL BE DETERMINED IN THE FIELD BY THE RESIDENT ENGINEER



SCALE: NONE

6

C–99

WATER REPLACEMENT
GROUP JOB 000

STREET RESURFACING

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET 17 OF 20 SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED:
FOR CITY ENGINEER ____ DATE ____

SUBMITTED BY:
PROJECT MANAGER

CHECKED BY:
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	FV/JW			

CCS27 COORDINATE
SEE SHEETS
CCS83 COORDINATE

CONTRACTOR ____ DATE STARTED ____
INSPECTOR ____ DATE COMPLETED ____

33122–17–D

Report Results

```
•                          Horizontal Alignment Report
•Project Name: w3c3lc                                    Alignment: 3lstcl
Pt #  Station       Point      Northing (Y)  Easting (X)
100     0+00.0000    POB         1841765.9677    6291783.3775
   Tangent=      74.5711 Bearing=S   0° 00'00.0000" E
101  0+74.5711  PI    1841691.3966    6291783.3775

101  0+74.5711  PI    1841691.3966    6291783.3775
   Tangent=     21.9819  Bearing=S  30° 15'39.2491" W
102     0+96.5530    POE         1841672.4100    6291772.3000

Project Name: w3c3lc                                     Alignment: 3lstc2
Pt #  Station       Point      Northing (Y)  Easting (X)
103     1+00.0000    POB         1841767.1689    6291451.5126
   Tangent=     331.8671 Bearing=S  89° 47'33.4185" E
104     4+31.8671  PI    1841765.9677    6291783.3775

104     4+31.8671  PI    1841765.9677    6291783.3775
   Tangent=     132.6773  Bearing=S  89° 47'14.4959" E
105     5+64.5444    POE         1841765.4753    6291916.0539

Project Name: w3c3lc                                     Alignment: 3lstc3
Pt #  Station       Point      Northing (Y)  Easting (X)
106     0+00.0000    POB         1841765.4753    6291916.0539
   Tangent=     355.0000  Bearing=N   0° 08'23.7515" E
107     3+55.0000    PI    1842120.4742    6291916.9209

107     3+55.0000    PI    1842120.4742    6291916.9209
   Tangent=      44.0000  Bearing=N  54° 56'08.6539" W
108     3+99.0000    POE         1842145.7520    6291880.9065

Project Name: w3c3lc                                     Alignment: 3lstc4
Pt #  Station       Point      Northing (Y)  Easting (X)
109     1+00.0000    POB         1842146.9084    6291430.9080
   Tangent=     348.4717  Bearing=S  89° 51'08.1066" E
110     4+48.4717    PI    1842146.0098    6291779.3785

110     4+48.4717    PI    1842146.0098    6291779.3785
   Tangent=     101.5283  Bearing=S  89° 51'16.2533" E
108     5+50.0000    POE         1842145.7520    6291880.9065

Project Name: w3c3lc                                     Alignment: 3lstc5
Pt #  Station       Point      Northing (Y)  Easting (X)
111  0+00.0000    POB         1842146.0098    6291779.3785
   Tangent=     190.0951 Bearing=N   0° 07'25.6349" E
112     1+90.0951  POE         1842336.1045    6291779.7892

Project Name: w3c3lc                                     Alignment: 3lstc6
Pt #  Station       Point      Northing (Y)  Easting (X)
113     1+00.0000    POB         1842337.0132    6291458.2563
   Tangent=     321.5342  Bearing=S  89° 50'17.0664" E
114     4+21.5342    POE         1842336.1045    6291779.7892
```

HORIZONTAL ALIGNMENT REPORT

7

C–99

SEWER & WATER GROUP 000

HORIZONTAL ALIGNMENT
COORDINATE INDEX REPORT

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

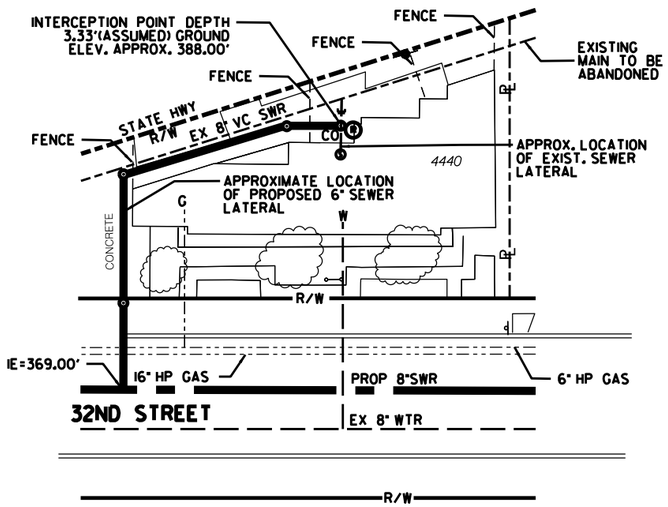
APPROVED:
FOR CITY ENGINEER — DATE
RECOMMENDED:
PROJECT MANAGER
CHECKED:
PROJECT ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

000-0000
CCS27 COORDINATE
SEE SHEETS
CCS83 COORDINATE

CONTRACTOR _____ DATE STARTED _____
INSPECTOR _____ DATE COMPLETED _____

19905-01-D

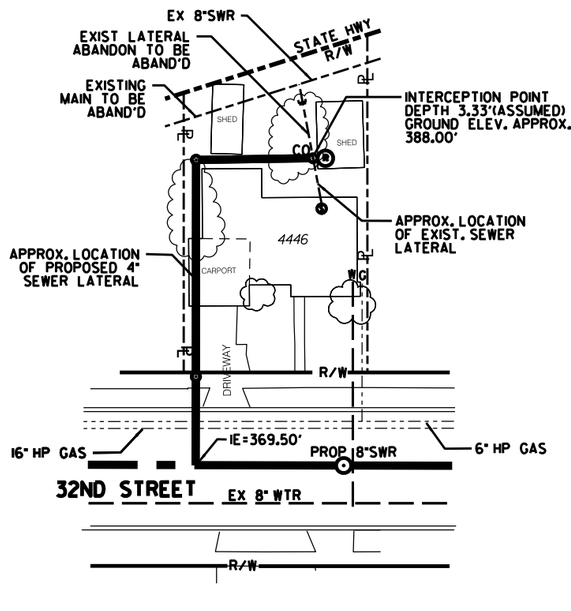


NO SCALE

(SEWER LATERAL REPLUMB WORK)

ADDRESS: 4440 32ND STREET

SEE SHEET NO. 9

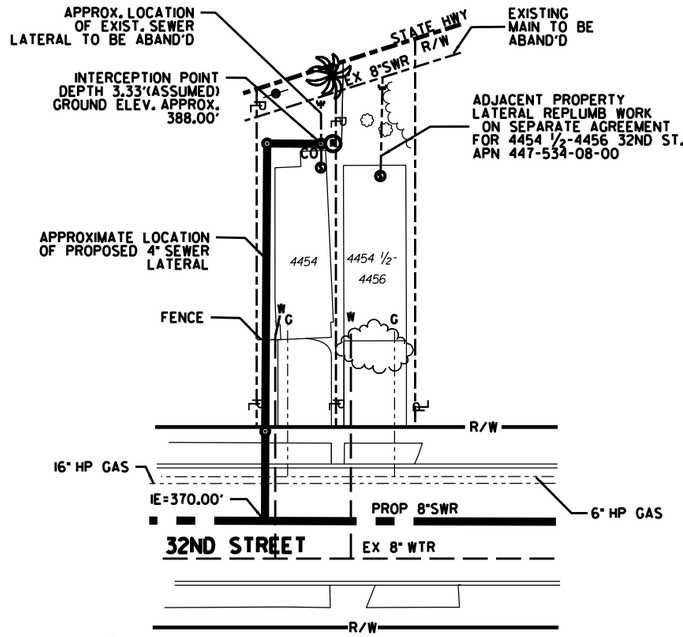


NO SCALE

(SEWER LATERAL REPLUMB WORK)

ADDRESS: 4446 32ND STREET

SEE SHEET NO. 9

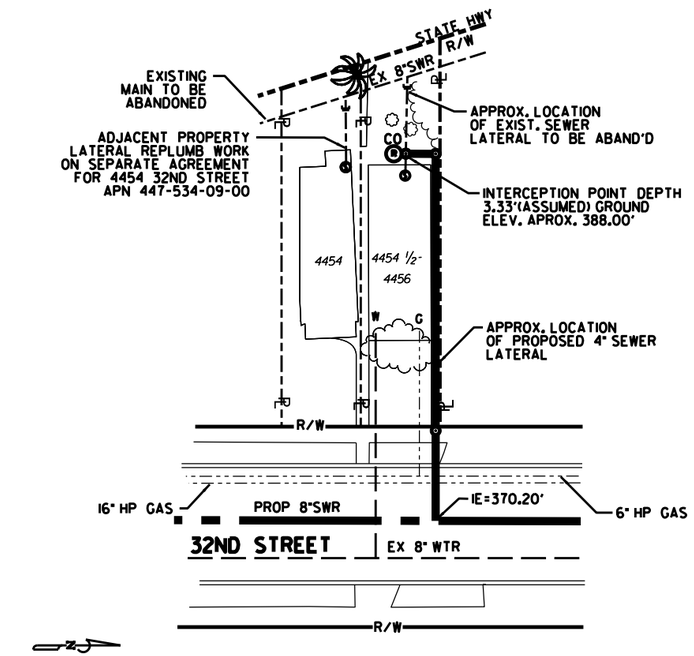


NO SCALE

(SEWER LATERAL REPLUMB WORK)

ADDRESS: 4454 32ND STREET

SEE SHEET NO. 9

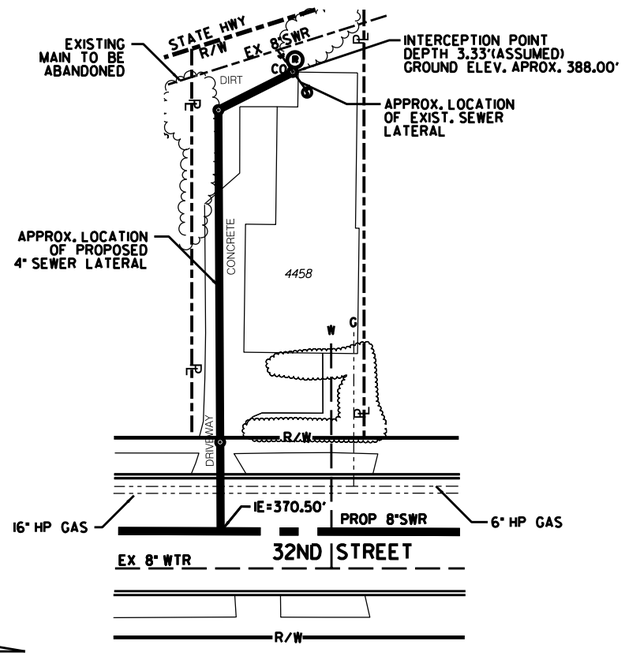


NO SCALE

(SEWER LATERAL REPLUMB WORK)

ADDRESS: 4454 1/2 - 4456 32ND STREET

SEE SHEET NO. 9



NO SCALE

(SEWER LATERAL REPLUMB WORK)

ADDRESS: 4458 32ND STREET

SEE SHEET NO. 9

8

C-99

SEWER GROUP JOB 000

REPLUMB DETAILS

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING AND CAPITAL PROJECTS DEPARTMENT
SHEET OF SHEETS

WATER WBS 0-00000
SEWER WBS 0-00000

APPROVED
FOR CITY ENGINEER
DATE

SUBMITTED BY
PROJECT MANAGER

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	XX/XX			

CHECKED BY
PROJECT ENGINEER

SEE EACH SHEET
OCS27 COORDINATE

SEE EACH SHEET
OCS83 COORDINATE

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

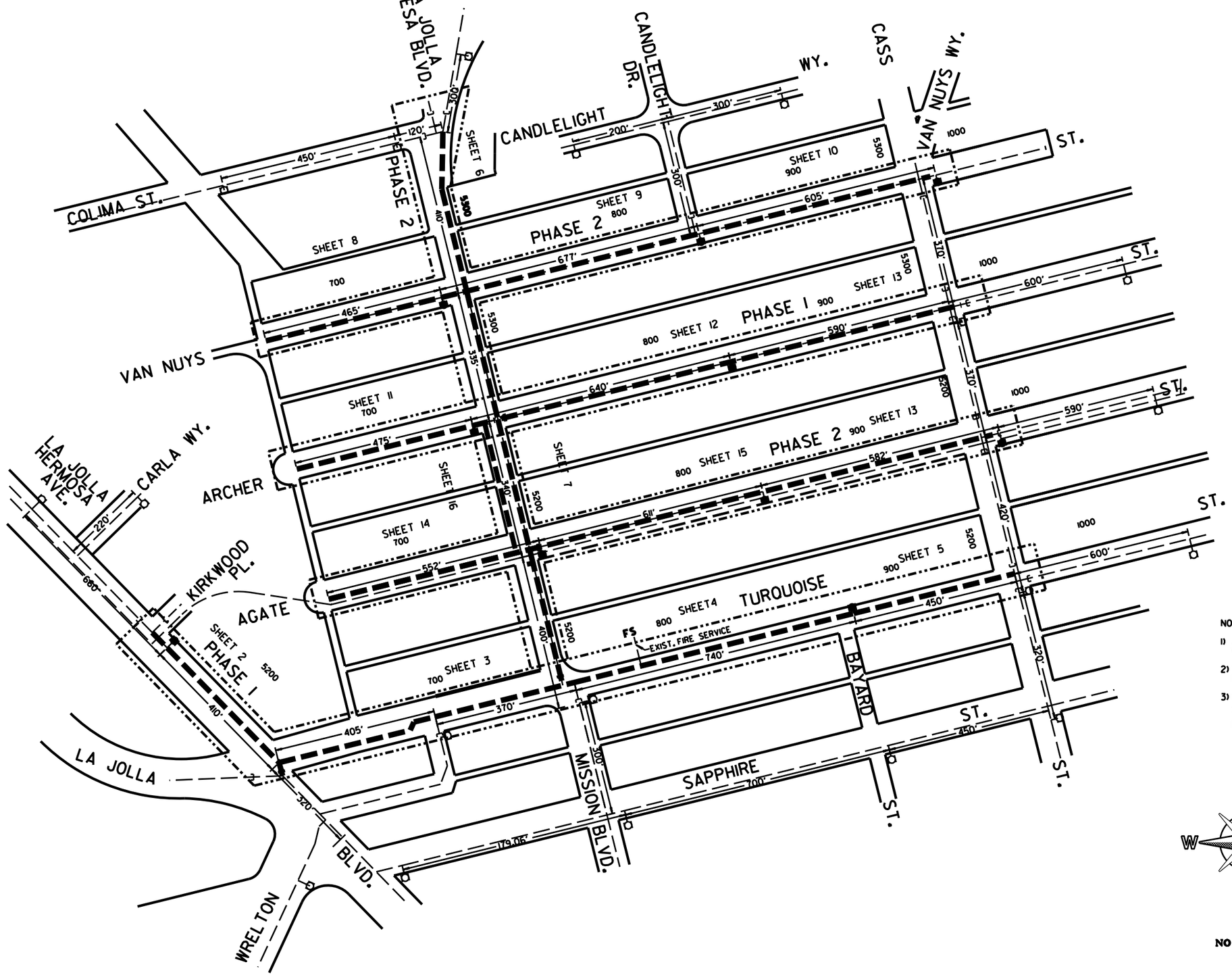
19905-01-D

REPLUMB DETAILS

$1234567890123456789012345678901234567890123456789012345678901234567890$

$plot$date$time$$ $user$

FIRE DEPARTMENT INFORMATION SHEET



LEGEND

LEGEND

- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- 4000 HUNDRED BLOCKS
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT

AREA TO BE HIGHLINED IN PHASES

- PHASE 1
- PHASE 2

NOTE:

1) ALL FIRE SERVICES SHALL BE HIGHLINED WITH DUAL 2-2" HIGHLINE.

2) THERE WILL BE A MAXIMUM DELAY OF 30 DAYS BETWEEN CONSTRUCTION OF EACH HIGHLINE PHASE.

3) NO STRUCTURESHALL BE MORE THAN 1000 FEET FROM A "LIVE FIRE HYDRANT AT ANY TIME DURING CONSTRUCTION. THE DISTANCES SHALL BE MEASURED USING STREETS, PRIVATE ROADS, OR OTHER ROUTES DRIVEN BY EMERGENCY VEHICLES.

N W E S

NO SCALE

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FIRE DEPT. INFORMATION SHEET
WATER MAIN REPLACEMENT
GROUP 000