



The City of Santa Barbara CAD Standards

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Version 1.0

Approval:



Pat Kelly, City Engineer

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Chapter 1 – Introduction

History of Change:

<i>Revision and Version</i>	<i>Author</i>	<i>Date</i>	<i>Change</i>
1	ALS &MR	12/3/10	Initial Release of Manual

This release of the Standard Procedures for Cad Users constitutes the first set of Cad Standards for the City of Santa Barbara. All previously recognized and/or developed CAD standards used are superseded by this set of CAD standards except those imposed by County, State, and Federal entities.

The Cad Users Standard Procedures is designed to maximize efficiency and quality of design for all City of Santa Barbara Staff and consultants. The unified approach to the Cad system and Cad procedures is intended to promote coordination between different departments and outside consultants. This is to allow the creation of high quality design products and to minimize the time spent on Cad tasks.

Development Team:

Autumn Smith
Malinda Reese

Chapter 2 – Cad Standards

History of Change:

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Section 1 – Naming Project Files

1.1 File Naming Procedure

Project files that represent the sheets of a plan set will begin with the sheet designator followed by a two digit sequence. If multiple sheets are within the same file, then the file name shall reflect the first and last sheets of the drawing.

Example Project File Name: C01-07 Garden St.

C01-07 Garden St.

The first (1) digit of the file name shall identify the sheet designator.

Refer to Section 1.2: Drawing Sheet Designators for selection of a designator.

C**01-07** Garden St.

The second (2) through sixth (6) digits of the file name shall identify the Sequence. This shall match the actual sequence number associated with the sheet(s) within the file.

C01-07 **Garden St.**

Following the required file name, a drawing description is optional and shall match either the major or minor information on the title block.

1.2 Drawing Sheet Designators

A	Architectural
B	Geotechnical
C	Civil
D	Process
E	Electrical
F	Fire Protection
G	General
H	Hazardous Materials
I	Interiors
L	Landscape
M	Mechanical
O	Operations
P	Plumbing
Q	Equipment
R	Resource
S	Structural
T	Telecommunications
V	Survey / Mapping
X	Other Disciplines
Z	Contractor / Shop Drawings

Section 2 – External Reference Files

2.1 Types of External Reference Files

There are two types of external reference files:

1. CAD Files: Any file generated by CAD software used as an external reference.
2. Non-CAD Files Any file **not** generated by CAD software used as an external reference. This includes images (bmp, jpg, tif), documents (doc, xls) or any non-CAD file that is being referenced into a CAD drawing.

Regardless of the file type, if it is being used as an external reference than it should be treated as such.

2.2 External Reference File Management

Reference files will be used exclusively to maintain the integrity of the drawing files throughout the design process. Reference files will be attached using the “**Overlay**” reference type rather than the “**Attachment**”, thus, eliminating Circular References and the unwanted display of “nested” reference files. Furthermore, the Path Type will be set to “**No Path**”, or “**Relative Path**” in certain circumstances, to insure that reference files display correctly if delivered to an outside source.

Note: Reference files must reside on layer *C-ANNO-REFR* in Model Space and locked to avoid accidental erasing, moving or modifying.

Section 3 – Layers/Levels

History of Change:

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See Appendix A for the standard layer examples.

The following is an excerpt from the ©*National CAD Standards* manual describing the layer naming format:

AIA CAD Layer Guidelines
U.S. National Cad Standard, version 4
©2002 The American Institute of Architects

Layer Name Format

Hierarchy of Data Fields

The layer name format is organized as a hierarchy. This arrangement allows users to select from a number of options for naming layers according to the level of detailed information desired. Layer names consist of distinct data fields separated from one another by dashes. A detailed list of abbreviations, or field codes, is prescribed to define the content of layers. Most field codes are mnemonic English abbreviations of construction terminology that are easy to remember.

There are four defined layer name data fields: **Discipline Designator**, **Major Group**, **two Minor Groups**, and **Status**. The Discipline Designator and Major Group fields are mandatory. The Minor Group and Status fields are optional. Each data field is separated from adjacent fields by a dash ("-") for clarity.

A I - W A L L - F U L L - D I M S - N

The complete U.S. National Cad Standard layer/level name format, showing the Discipline Designator, the Major Group, two Minor Groups, and the Status field:

Discipline Designator, Level 1

The Discipline Designator denotes the category of subject matter contained on the specified layer. The Discipline Designator is a two-character field. The first character is the discipline character, and the second is an optional modifier. The Discipline Designator is described in greater detail in the National Cad Standards.

Level 1 Discipline Designators

A	Architectural
B	Geotechnical
C	Civil
D	Process
E	Electrical
F	Fire Protection
G	General
H	Hazardous Materials
I	Interiors
L	Landscape
M	Mechanical
O	Operations
P	Plumbing
Q	Equipment
R	Resource
S	Structural
T	Telecommunications
V	Survey / Mapping
X	Other Disciplines
Z	Contractor / Shop Drawings

A typical layer/level name showing the required fields only:

C – P V M T – A S P H

Major Group

The major group is a four-character field that identifies a major building system. The prescribed Major Group field codes (four-character abbreviations) are logically grouped with specific discipline designators. Any reasonable combination of the prescribed Discipline Designators and Major Groups is permitted.

Note: User-defined Major Group field codes are not permitted.

*A typical layer/level name showing the required data fields only.
The mandatory Major Group field is highlighted:*

C – P V M T – A S P H

A typical layer/level name showing two optional Minor Group fields:

C – P V M T – A S P H – P A T T

Status Field

The status field is an optional single-character field that distinguishes the data contained on the layer/level according to the status of the work or the construction phase. The prescribed field codes for this field are as follows:

Status Field Codes

A	Items to be Abandoned
D	Items to be Demolished
M	Items to be Moved
T	Temporary Work

A typical layer/level name showing the location of the optional Status field:

C – P V M T – A S P H – P A T T – T

This concludes the excerpt from the ©*National CAD Standards* manual describing the layer/level naming format.

Layer Manipulation

Layers that are **not** required to be shown on a particular plan sheet should be “**Frozen**”. Turning layers “**On**” and “**Off**” interactively while editing a drawing file can save **REGEN** time and allow for easier editing. All layers/levels should be “**On**” before exiting or plotting a drawing file.

Note: Layers that are “**Frozen**” or turned “**Off**” do **not** require **REGEN** time; “**Thawing**” a Layer will cause ©AutoCAD to **REGEN**.

Section 4 – Project Elements

History of Change:

<i>Revision and Version</i>	<i>Author</i>	<i>Date</i>	<i>Change</i>
1	ALS &MR	12/3/10	Initial Release of Manual

4.1 Pen Assignments

The Pen Assignment for all drawings will be “SB Standard”. This Pen Setting is in the City of Santa Barbara Standard Template, available upon request. Refer to Appendix C for SB Standard Pen Setting Example.

Section 5 – Standard Construction Notes

History of Change:

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1	ALS &MR	12/3/10	Initial Release of Manual

5.1 Water Main Standard Construction Notes

See Appendix B for Water Main Standard Construction Notes.

5.2 Sewer Main Standard Construction Notes

See Appendix C for Sewer Main Standard Construction Notes.

Section 6 – Deliverables and Data Exchange

6.1 History of Change

<i>Revision and Version</i>	<i>Author</i>	<i>Date</i>	<i>Change</i>
1	ALS &MR	12/3/10	Initial Release of Manual

This chapter describes the standard deliverables and data exchange formats required to exchange digital data (drawing files and database information) between the City of Santa Barbara and consultants.

6.2 Delivery Media

Digital media shall be delivered according to Table 6-1.

Table 6-1	
Submittal	Media
Preliminary Design Report	CD-ROM or Flash Drive
Design Submittal 1	
Design Submittal 2	
Design Submittal 3	
Final Design Submittal	CD-ROM or Flash Drive
Conformed Drawings	CD-ROM or Flash Drive
Record Drawings	CD-ROM or Flash Drive

All digital media submissions will follow the City of Santa Barbara Cad Standards contained within this document. All digital plan files must be compatible with AutoCad 2009 or AutoDesk Civil 3D 2009.

If the files are provided zipped, they must be zipped using a current version of WinZip.

When digital media are exchanged, an external label must contain, at a minimum, the following information:

- Project Number and Bid Number (if applicable)
- Project Title
- Submittal Date

- Consultant Name and Contact Person
- Format and Version of the operating system on which the media was created.
- Sequence number (for multiple cd's, etc.)
- A short description of contents.

In addition, a transmittal sheet must accompany the media containing, at a minimum, the following information:

- Information included on the external label of each CD-ROM or Flash Drive.
- Total number of CD-ROMs being delivered.
- List of filenames and file descriptions on each CD-ROM/Flash Drive.
- Instruction for restoring/transferring the files from the media (if needed).
- Certification that all delivery media is free of known viruses, including the name of the virus scanning software used and the date the virus scan was performed.

Note: It shall be mutually understood that delivery of the digital data does not constitute a professional delivery of the contained drawing.

6.3 Data Format

All files necessary to produce the drawing set (base maps, project model files, etc.) shall be delivered in both native CAD format and as tiff images according to the

6.3.1 CAD Files

All CAD files shall be delivered in a format that is directly readable and compatible with the City of Santa Barbara's CAD Standards. Before a file is placed on a delivery media, the following procedures must be performed:

- Remove all extraneous graphics outside the border area.
- Make sure all reference (external reference) files are attached with the appropriate name variable and do not use device or directory specifications.
- Compress or purge all files using the appropriate utility. A digital media copy of the decompression utility should be provided with the deliverable media, if appropriate.
- Include all files, both graphic and non-graphic, required for the project (e.g., block libraries, user command files, etc.) All files should be created using the City of Santa Barbara CAD Standards (e.g., plot styles, color table, pen table, etc.). Prior authorization must be obtained from the Project Engineer to use non standard material.

- Include all standard sheets (i.e. abbreviation sheets, standard symbol sheets, etc.) necessary for a complete project set.

6.4 Documentation

Unless otherwise specified in the project scope of work, the following media types will be submitted with the appropriate submittal as listed in Table 6-2.

Table 6-2				
Submittal	Full Size/Media	Half Size/Media	CAD Files	PDF
Preliminary Design Report	Bond	Bond	X	X
Design Submittal 1	Bond	Bond		
Design Submittal 2	Bond	Bond		
Design Submittal 3	Bond	Bond		
Final Design Submittal	Bond	Bond	X	X
Conformed Drawings	Bond	Bond	X	
Record Drawings	Mylar	Bond	X	X

Hardcopy media types must meet the following specifications:

- Bond is to be 20# white.
- Vellum is to be 20# solvent-free rag vellum.
- Mylar is to be 4mil double matte, with the drawing plotted reverse read.

Section 7 – Record Drawings

All record drawings shall contain the following (Refer to Appendix D for example sheets):

- City Engineer Original Sign Date
- Record of Engineer Stamped and Signed
- “RECORD DRAWING” shall be located on each sheet. Text shall be Standard, Bold and 0.5” height.
- All revision clouds shall be removed for final record drawing. Revision clouds shall only be used for changes to construction drawings.

Appendix A – Standard Layers

LAYER	COLOR	LINETYPE	DESCRIPTION
?-ANNO-BRNG	Green (3)	Continuous	Annotation: Bearings and Distance Labels (Survey Coordinates)
?-ANNO-DIMS	Yellow (2)	Continuous	Annotation: Dimensions
?-ANNO-KEYM	Yellow (2)	Continuous	Annotation: Key Map
?-ANNO-KEYN	Cyan (4)	Continuous	Annotation: Keynotes
?-ANNO-LABL	Green (3)	Continuous	Annotation: Labels
?-ANNO-LEGN	Cyan (4)	Continuous	Annotation: Legend and Symbol Keys
?-ANNO-LOTN	Magenta (6)	Continuous	Annotation: Lot Numbers
?-ANNO-MASK	9	Continuous	Annotation: Mask
?-ANNO-MATC	Blue (5)	Continuous	Annotation: Match Lines
?-ANNO-NOTE	Cyan (4)	Continuous	Annotation: Notes
?-ANNO-NPLT	White (7)	Continuous	Annotation: Non-Plotting Graphic Information (Not Plotted)
?-ANNO-NRTH	Cyan (4)	Continuous	Annotation: North Arrow
?-ANNO-PATT	Red (1)	Continuous	Annotation: Pattern and Shadow Boxes
?-ANNO-RDME	White (7)	Continuous	Annotation: Read-me Layer (Not Plotted)
?-ANNO-REFR	White (7)	Continuous	Annotation: Reference and External Files
?-ANNO-REVC	252	Continuous	Annotation: Revision Clouds
?-ANNO-SCAL	Cyan (4)	Continuous	Annotation: Bar Scale
?-ANNO-SEAL	Yellow (2)	Continuous	Annotation: Engineers Seal
?-ANNO-TEXT	Green (3)	Continuous	Annotation: Text
?-ANNO-TITL	Green (3)	Continuous	Annotation: Drawing or Detail Titles
?-ANNO-TTLB	Green (3)	Continuous	Annotation: Border and Title Block
?-ANNO-VPRT	Yellow (2)	Continuous	Annotation: Viewport
?-CNTR-STAN	Green (3)	Continuous	Centerline: Stationing
?-SSWR-STAN	Green (3)	Continuous	Sanitary Sewer: Stationing
?-STRM-STAN	Green (3)	Continuous	Storm Sewer: Stationing
?-WATR-STAN	Green (3)	Continuous	Water: Stationing
C-AFLD-CRIT	Green (3)	Dashed	Airfield: Critical Area
C-AFLD-ERSA	Green (3)	Dashed	Airfield: End of Runway Safety Area (ERSA)
C-AFLD-PART	Yellow (2)	Hidden	Airfield: Part 77 Surface
C-AFLD-ROFA	Green (3)	Continuous	Airfield: Runway Object Free Area (OFA)
C-ARCH-LMTS	Cyan (4)	Dashed	Archeological Sensitive Area: Limits
C-BLDG-COLS	Red (1)	Hidden2	Buildings and Primary Structures: Columns
C-BLDG-OTLN	Blue (5)	Continuous	Buildings and Primary Structures: Outline
C-BNDY-CITY	White (7)	Dashdot2	Political Boundaries: City
C-BNDY-CNTY	White (7)	Dashdot2	Political Boundaries: County
C-BRDG-CNTR	Cyan (4)	Center2	Bridge: Centerline
C-BRDG-PATT	Red (1)	Continuous	Bridge: Pattern
C-CURB-FACE	Yellow (2)	Continuous	Curb: Face of Curb
C-GRAD-BRKL	Green (3)	Hidden	Grading: Break and Fault Lines
C-GRAD-LMTS	Blue (5)	Dashed	Grading: Daylight Lines or Limits
C-GRAD-PADS	Green (3)	Hidden	Grading: Pads
C-HTCH-ASPH	255	Continuous	Hatch: Asphalt
C-HTCH-CONC	254	Continuous	Hatch: Concrete
C-HTCH-PLNT	251	Continuous	Hatch: Plant

C-HTCH-RMVE	251	Continuous	Hatch: Remove Existing Hardscape
C-MRKG-WHIT	White (7)	Continuous	Pavement Markings: White
C-MRKG-YELO	Yellow (2)	Continuous	Pavement Markings: Yellow
C-PHAS-LINE	White (7)	Continuous	Phasing: Phase Lines
C-PROP-LINE	Blue (5)	Phantom2	Property: Property Lines
C-PROP-LOTL	Cyan (4)	Continuous	Property: Lot Lines
C-PVMT-SAWC	Blue (5)	Phantom	Pavements: Sawcut
C-PVMT-ADCF	Cyan (4)	Dashed2	Pavements: Additional Conform
C-PVMT-ASPH	Cyan (4)	Continuous	Pavements: Asphalt Surface
C-PVMT-CONC	Cyan (4)	Continuous	Pavements: Concrete Surface
C-RAMP-OUTL	Magenta (6)	Continuous	Ramp: Outline
C-RAMP-TRDM	Red (1)	Continuous	Ramp: Truncated Domes
C-RCLM-EQPM	Yellow (2)	Continuous	Reclaimed Water: Equipment
C-RCLM-MHOL	Green (3)	Continuous	Reclaimed Water: Manhole
C-RCLM-STAT	Cyan (4)	Continuous	Reclaimed Water: Booster Station
C-RCLM-STRC	Green (3)	Continuous	Reclaimed Water: Structure
C-RCLM-TANK	Green (3)	Continuous	Reclaimed Water: Tank
C-RCLM-UNDR	Yellow (2)	Use correct Size	Reclaimed Water: Underground Lines
C-ROAD-ASPH	Cyan (4)	Continuous	Roadways: Asphalt Surface
C-ROAD-CONC	Cyan (4)	Continuous	Roadways: Concrete Surface
C-SSWR-CLNO	Cyan (4)	Continuous	Sanitary Sewer: Cleanout
C-SSWR-EQPM	Yellow (2)	Continuous	Sanitary Sewer: Equipment
C-SSWR-FORC	Green (3)	Forc	Sanitary Sewer: Force Main
C-SSWR-LATL	Yellow (2)	Continuous	Sanitary Sewer: Lateral or Service
C-SSWR-MHOL	Cyan (4)	Continuous	Sanitary Sewer: Manhole
C-SSWR-OVHD	Magenta (6)	Ovhd	Sanitary Sewer: Overhead Piping
C-SSWR-STRC	Cyan (4)	Continuous	Sanitary Sewer: Structure
C-SSWR-UNDR	Green (3)	Sswr	Sanitary Sewer: Underground Piping
C-STRM-CNTR		Hidden	Storm Sewer: Centerline
C-STRM-DETB	Blue (5)	Continuous	Storm Sewer: Detention Basin
C-STRM-DRNB	Blue (5)	Continuous	Storm Sewer: Drainage Basin or Watershed Delineation
C-STRM-EQPM	Yellow (2)	Continuous	Storm Sewer: Equipment
C-STRM-HWAL	Cyan (4)	Continuous	Storm Sewer: Headwall
C-STRM-HYGL	Yellow (2)	Hidden2	Storm Sewer: Hydraulic Grade Lines
C-STRM-MHOL	Cyan (4)	Continuous	Storm Sewer: Manhole
C-STRM-STRC	Cyan (4)	Continuous	Storm Sewer: Structure
C-STRM-UNDR	Cyan (4)	Continuous	Storm Sewer: Underground Piping
C-SWLK-ASPH	Cyan (4)	Continuous	Sidewalk: Asphalt Surface
C-SWLK-CONC	Cyan (4)	Continuous	Sidewalk: Concrete Surface
C-SWLK-GRVL	Green (3)	Hidden	Sidewalk: Gravel Surface
C-SWLK-PATT		Continuous	Sidewalk: Pattern
C-SWLK-RAMP	Yellow (2)	Continuous	Sidewalk: Handicap Ramp
C-TRAF-EQPM	Yellow (2)	Continuous	Traffic: Equipment
C-TRAF-POLE	Yellow (2)	Continuous	Traffic: Pole
C-TRSH-STRC	Cyan (4)	Continuous	Trash: Structure
C-VHCL-OTLN	Cyan (4)	Continuous	Vehicle Turning Movements: Outline
C-VHCL-SWEP	Red (1)	Hidden	Vehicle Turning Movements: Swept Path

C-VHCL-TIRE	Red (1)	Hidden2	Vehicle Turning Movements: Tire Path
C-VHCL-WING	Red (1)	Hidden	Vehicle Turning Movements: Wing Path
C-WALL-RTWL	Cyan (4)	Continuous	Walls: Retaining
C-WATR-ENCS	Yellow (2)	Hidden2	Water: Encasement or Duct Bank
C-WATR-EQPM	Yellow (2)	Continuous	Water: Equipment
C-WATR-LATL	Yellow (2)	Continuous	Water: Lateral or Service
C-WATR-STRC	Cyan (4)	Continuous	Water: Structure
C-WATR-TANK	Cyan (4)	Continuous	Water: Storage Tank
C-WATR-UNDR	Blue (5)	Watr	Water: Underground Lines
C-WATR-WELL	Cyan (4)	Continuous	Water: Well
C-WETL-LMST	Blue (5)	Dashed	Wetlands: Limits
?-DETL-CNTR	Cyan (4)	Center2	Detail: Centerline
?-DETL-MBND	Yellow (2)	Hidden2	Detail: Material Beyond
?-DETL-MCUT	Green (3)	Continuous	Detail: Material Cut
?-DETL-OTLN	Blue (5)	Continuous	Detail: Outline
?-DETL-PATT	253	Continuous	Detail: Pattern
?-ELEV-CNTR	Cyan (4)	Center2	Elevation: Centerline
?-ELEV-MBND	Yellow (2)	Hidden2	Elevation: Material Beyond
?-ELEV-MCUT	Green (3)	Continuous	Elevation: Material Cut
?-ELEV-OTLN	Blue (5)	Continuous	Elevation: Outline
?-ELEV-PATT	253	Continuous	Elevation: Pattern
?-SECT-CNTR	Cyan (4)	Center2	Section: Centerline
?-SECT-MBND	Yellow (2)	Hidden2	Section: Material Beyond
?-SECT-MCUT	Green (3)	Continuous	Section: Material Cut
?-SECT-OTLN	Blue (5)	Continuous	Section: Outline
?-SECT-PATT	Red (1)	Continuous	Section: Pattern
C-ANNO-EXST	Red (1)	Continuous	Profile: Existing Annotation
C-ANNO-GRID	Red (1)	Continuous	Profile: Grid Annotation
C-PROF-EXST	Yellow (2)	Hidden	Profile: Existing Grade
C-PROF-FNSH	Blue (5)	Continuous	Profile: Finished Grade
C-PROF-GRID	253	Continuous	Profile: Grid Lines

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Appendix B
Standard Water Resources Construction Notes

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Standard Sewer Main Construction Notes

Laterals		
Rehabilitation	1.00	RECONNECT EXISTING ACTIVE SEWER LATERAL TO PROPOSED SEWER MAIN PER SPECIFICATIONS. (TYP. X)
	1.10	
	1.20	
	1.30	RECONNECT EXISTING ACTIVE SEWER MAIN TO PROPOSED SEWER MAIN PER SPECIFICATIONS. (TYP. X)
	1.40	
Replacement	1.50	TIE OVER EXISTING ACTIVE SEWER LATERAL TO PROPOSED SEWER MAIN PER CITY CONSTRUCTION STANDARD DETAIL 5-004.0. (TYP. X)
	1.60	REROUTE EXISTING SEWER LATERAL FROM R/W TO PROPOSED SEWER MAIN PER SPECIFICATIONS. (TYP. X)
	1.70	
	1.80	RECONSTRUCT LATERAL CONNECTION TO EXISTING SEWER MAIN PER SPECIFICATIONS (TYP. X)
	1.81	RECONNECT EXISTING LATERALS TO AN EXISTING CIPP REHABILITATED VCP MAIN LINE PER SPECIFICATIONS (TYP. X)
	1.90	
<hr/>		
Point Repair		
	2.00	POINT REPAIR PER SPECIFICATIONS. (TYP. X)
	2.10	
	2.20	
	2.30	
	2.40	
	2.50	ACCESS SEWER MANHOLE XXX-XXX THROUGH (PROPERTY ADDRESS) WITH APPROVAL OF HOMEOWNER AND WASTEWATER COLLECTION SYSTEM SUPERINTENDENT.
	2.60	ACCESS SEWER CLEANOUT XXX-XXX THROUGH (PROPERTY ADDRESS) WITH APPROVAL OF HOMEOWNER AND WASTEWATER COLLECTION SYSTEM SUPERINTENDENT.
<hr/>		
Manhole		
Rehabilitate	3.00	REHABILITATE EXISTING MANHOLE PER SPECIFICATIONS. (TYP. X)
	3.10	REHABILITATE EXISTING DROP SEWER MANHOLE IN-PLACE. (TYP. X)
	3.20	RECONSTRUCT EXISTING MINI-SEWER MANHOLE PER DETAIL. (TYP. X)
	3.30	RECONSTRUCT FLOOR OF MANHOLE TO REDIRECT FLOW PER DETAIL X.
	3.31	LINE THROUGH SEWER MANHOLE. (TYP. X)
	3.32	RECONSTRUCT FLOOR OF MANHOLE TO ACCOMMODATE PROPOSED SEWER MAIN. (TYP. X)
	3.33	BULKHEAD AND REPAIR MANHOLE FOR PROPOSED ABANDONED INLET (TYP. X.)
	3.40	PROTECT EXISTING SEWER MANHOLE IN-PLACE. (TYP. X)
Remove and Replace	3.50	REMOVE EXISTING SEWER MANHOLE. REPLACE WITH A PRECAST CONCRETE SEWER MANHOLE PER CITY CONSTRUCTION STANDARD DETAILS 5-001.0 & 5-001.1. (TYP. X)
	3.60	REMOVE SEWER MANHOLE, BACKFILL AND REPLACE STREET STRUCTURAL SECTION PER SPECIFICATIONS. (TYP. X)
New Construction	3.70	INSTALL NEW SEWER MANHOLE PER CITY STANDARD DETAILS 5-001.0 & 5-001.1. (TYP. X)
	3.71	PER DETAIL X.
Abandon	3.80	INSTALL NEW MINI-SEWER MANHOLE PER DETAIL X. (TYP. X)
	3.90	ABANDON EXISTING SEWER MANHOLE, BACKFILL, COMPACT, AND REPLACE STRUCTURAL SECTION PER SPECIFICATIONS. (TYP. X)
	3.91	SLIP-LINE THROUGH SEWER MANHOLE. ABANDON EXISTING SEWER MANHOLE IN PLACE. BACKFILL, COMPACT, AND REPLACE STRUCTURAL SECTION PER SPECIFICATIONS.
	3.92	ABANDON EXISTING SEWER MANHOLE, BREAK UP BOTTOM, REMOVE CONE, GRADE RINGS AND COVER, BACKFILL, COMPACT, AND REPLACE STREET SECTION. (TYP. X)
<hr/>		
4" Pipe		
Rehabilitate	4.00	REHABILITATE XXX LF OF EXISTING 4-INCH VCP SEWER PIPE.
	4.10	REHABILITATE XXX LF OF EXISTING 4-INCH CI SEWER PIPE.
	4.20	
	4.30	
	4.40	
Remove and Replace	4.50	REMOVE EXISTING 4-INCH SEWER MAIN AND REPLACE WITH 4-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS.
	4.51	REMOVE EXISTING 4-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER
New Construction	4.60	
	4.70	
	4.80	
	4.90	

Notes to the Contractor

- 5.00 RECONSTRUCT TRAFFIC LOOPS DAMAGED BY CONSTRUCTION PER SPECIFICATIONS. (TYP. X)
- 5.10 ABANDON EXISTING SEWER MAIN PER SPECIFICATION
- 5.15 ABANDON EXISTING SEWER LATERAL PER SPECIFICATIONS
- 5.20 PROTECT EXISTING SEWER MAIN IN-PLACE.
- 5.30
- 5.40
- 5.50 INCHES.

Pipe Bursting

6" Pipe

- | | | |
|--------------------|------|---|
| Rehabilitate | 6.00 | REHABILITATE XXX LF OF EXISTING 6-INCH VCP SEWER PIPE. |
| | 6.10 | REHABILITATE XXX LF OF EXISTING 6-INCH CI SEWER PIPE. |
| | 6.20 | |
| | 6.30 | MECHANICALLY CLEAN XXX LF OF 6-INCH CI SEWER MAIN BEFORE SLIP LINING. |
| | 6.40 | |
| Remove and Replace | 6.50 | REMOVE EXISTING 6-INCH SEWER MAIN AND REPLACE WITH 6-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 6.51 | REMOVE EXISTING 4-INCH SEWER MAIN AND REPLACE WITH 6-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 6.60 | |
| New Construction | 6.70 | INSTALL 6-INCH PVC SDR-35 SEWER PIPE. BACK FILL PER SPECIFICATIONS. |
| | 6.80 | |
| | 6.90 | |

Sewer Cleanout

- 7.00 REMOVE EXISTING SEWER CLEANOUT. (TYP. X)
 - 7.10 INSTALL PROPOSED 8-INCH SEWER CLEANOUT PER CITY STANDARD DETAIL 5-003.0. (TYP. X)
 - 7.15 INSTALL PROPOSED 4-INCH RESIDENTIAL SEWER CLEANOUT PER SPECIFICATIONS.
 - 7.20 LINE THROUGH SEWER CLEAN OUT. (TYP. X)
 - 7.30 REMOVE EXISTING SEWER CLEANOUT AND INSTALL PROPOSED 4-INCH HDPE RESIDENTIAL SEWER CLEANOUT PER DETAIL ON THIS SHEET. (TYP. X)
 - 7.40
- | | | |
|----------|------|--|
| Fittings | 7.50 | |
| | 7.60 | |
| | 7.70 | |
| | 7.80 | |
| | 7.90 | |

8" Pipe

- | | | |
|--------------------|------|--|
| Rehabilitate | 8.00 | REHABILITATE XXX LF OF EXISTING 8-INCH VCP SEWER PIPE. |
| | 8.10 | REHABILITATE XXX LF OF EXISTING 8-INCH CI SEWER PIPE. |
| | 8.20 | |
| | 8.30 | MECHANICALLY CLEAN XXX LF OF 8-INCH CI SEWER MAIN BEFORE SLIP LINING. |
| | 8.40 | |
| Remove and Replace | 8.50 | REMOVE EXISTING 8-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 8.51 | REMOVE EXISTING 6-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 8.52 | REMOVE EXISTING 4-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 8.53 | |
| | 8.54 | |
| | 8.55 | |
| | 8.60 | REMOVE EXISTING SEWER MAIN AS NECESSARY TO INSTALL 8-INCH HDPE SDR-26 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| New Construction | 8.70 | INSTALL 8-INCH PVC SDR-35 SEWER PIPE. BACK FILL PER SPECIFICATIONS |
| | 8.80 | INSTALL 8-INCH SDR-26 HDPE SEWER PIPE. BACK FILL PER SPECIFICATIONS |
| | 8.90 | |

10" Pipe

- | | | |
|--------------------|-------|---|
| Rehabilitate | 10.00 | REHABILITATE XXX LF OF EXISTING 10-INCH VCP SEWER PIPE. |
| | 10.10 | REHABILITATE XXX LF OF EXISTING 10-INCH CI SEWER PIPE. |
| | 10.20 | |
| | 10.30 | MECHANICALLY CLEAN XXX LF OF 10-INCH CI SEWER MAIN BEFORE SLIP LINING. |
| | 10.40 | |
| Remove and Replace | 10.50 | REMOVE EXISTING 10-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 10.51 | REMOVE EXISTING 8-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 10.52 | REMOVE EXISTING 4-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 10.53 | REMOVE EXISTING 12-INCH SEWER MAIN AND REPLACE WITH 8-INCH PVC SDR-35 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| | 10.60 | REMOVE EXISTING SEWER MAIN AS NECESSARY TO INSTALL 10-INCH HDPE SDR-26 SEWER PIPE. BACKFILL PER SPECIFICATIONS. |
| New Construction | 10.70 | INSTALL 10-INCH PVC SDR-35 SEWER PIPE. BACK FILL PER SPECIFICATIONS |
| | 10.80 | INSTALL 10-INCH SDR-26 HDPE SEWER PIPE. BACK FILL PER SPECIFICATIONS |
| | 10.90 | |

Standard Water Main Construction Notes

1" Assembly Notes		
1.00	TIE OVER EXISTING 1-INCH WATER SERVICE TO PROPOSED MAIN. (TYP. X)	
1.01	TIE OVER EXISTING 1-INCH WATER SERVICE. (TYP. X)	
1.10	INSTALL NEW 1-INCH WATER SERVICE, RELOCATE METER AND INSTALL TRAFFIC RATED BOX PER	
1.11	INSTALL NEW 1-INCH WATER SERVICE, METER AND BOX WITH RESPECT TO PROPOSED FINISH GRADE PER CITY STANDARD DETAILS 6-005.0, 6-005.1, 6-006.0 AND 6-006.1. (TYP. X)	
1.20	INSTALL NEW SERVICE CONNECTION FROM PROPOSED WATER METER BOX TO EXISTING PRIVATE	
1.30	DO NOT RECONNECT EXISTING SERVICE. (TYP. X)	
1.40	REMOVE EXISTING WATER METER AND BOX COMPACT AND REPLACE EXISTING SURFACE TO MATCH.	
1.50	INSTALL 1-INCH TYPE "K" COPPER WATER MAIN.	
1.60	RELOCATE WATER METER, INSTALL TRAFFIC RATED METER BOX AND LID, RECONNECT PRIVATE	
1.70	CONTRACTOR TO USE PRECAUTION NEAR AN ABANDONED WATER SERVICE.	
1.80		
1.90		
2" Assembly Notes		
2.00	TIE OVER EXISTING 2-INCH WATER SERVICE TO PROPOSED MAIN. (TYP. X)	
2.01	TIE OVER EXISTING 2-INCH WATER SERVICE. (TYP. X)	
2.10	INSTALL NEW 2-INCH WATER SERVICE, METER AND BOX PER CITY STANDARD DETAILS 6-005.0, 6-	
2.20	ABANDON EXISTING 2-INCH WATER SERVICE. (TYP. X.)	
2.30	RELOCATE WATER METER, INSTALL TRAFFIC RATED METER BOX AND LID, RECONNECT PRIVATE	
2.40	INSTALL 2-INCH VALVE. (TYP. X)	
2.50	INSTALL 2-INCH TYPE "K" COPPER WATER MAIN.	
2.60	INSTALL 2-INCH BALL VALVE AND VALVE CAN PER CITY STANDARD DETAIL 6-004.0. (TYP. X)	
2.70	INSTALL 2-INCH CONNECTION TO MAIN PER CITY STANDARD DETAIL 6-005.0 (TYP. X)	
2.80		
2.90		
Fire Hydrant Notes		
Installation	3.00	INSTALL NEW 6-INCH RESIDENTIAL FIRE HYDRANT AND ASSEMBLY PER CITY STANDARD DETAILS 6-
	3.01	INSTALL NEW 6-INCH COMMERCIAL FIRE HYDRANT AND ASSEMBLY PER CITY STANDARD DETAILS 6-
	3.02	INSTALL 6-INCH RESIDENTIAL FIRE HYDRANT AND ASSEMBLY PER CITY STANDARD DETAILS 6-001.0 AND 6-001.1. REUSE EXISTING FIRE HYDRANT. (TYP. X)
	3.03	INSTALL 6-INCH COMMERCIAL FIRE HYDRANT AND ASSEMBLY PER CITY STANDARD DETAILS 6-001.0 AND 6-001.1. REUSE EXISTING FIRE HYDRANT. (TYP. X)
	3.04	REMOVE EXISTING FIRE HYDRANT AND ASSEMBLY, REPLACE WITH NEW 6-INCH RESIDENTIAL FIRE HYDRANT AND ASSEMBLY. (TYP. X)
Optional: Installation note for Rural Areas	3.05	REMOVE EXISTING FIRE HYDRANT AND ASSEMBLY, REPLACE WITH NEW 6-INCH COMMERCIAL FIRE HYDRANT AND ASSEMBLY. (TYP. X)
	ADD	MODIFY CITY STANDARD DETAIL FOR FIRE HYDRANT INSTALLATION DISTANCE TO BE 4.5' FROM CF/EP.
Removal	3.20	REMOVE EXISTING FIRE HYDRANT AND ASSEMBLY, BREAK BURY 24 INCHES BELOW GRADE, CAP PIPE WITH CONCRETE AND REPLACE WITH MATERIAL TO MATCH EXISTING SURFACE. (TYP. X)
	3.21	DO NOT RECONNECT EXISTING FIRE HYDRANT.
Hydrant with Guard Posts	3.30	
	3.40	INSTALL 6-INCH RESIDENTIAL FIRE HYDRANT AND ASSEMBLY WITH GUARD POSTS PER CITY STANDARD DETAILS 6-001.0, 6-001.1, AND 6-003.0. (TYP. X)
	3.41	INSTALL 6-INCH COMMERCIAL FIRE HYDRANT AND ASSEMBLY WITH GUARD POSTS PER CITY STANDARD DETAILS 6-001.0, 6-001.1, AND 6-003.0. (TYP. X)
	3.50	PROTECT IN PLACE EXISTING FIRE HYDRANT. (TYP. X)
	3.60	
	3.70	
	3.80	
3.90		

**4" Assembly
Notes**

Pipe Material	4.00	INSTALL 4-INCH PVC C900 CLASS 200 WATER PIPE.
	4.01	INSTALL 4-INCH DI CLASS 350 WATER PIPE.
Valve	4.10	INSTALL 4-INCH MJ WATER VALVE WITH LOCKING RETAINER GLANDS. (TYP. X)
	4.11	INSTALL 4-INCH MJ WATER VALVE WITH LOCKING RETAINER GLANDS AND 1.5+/- LF 4-INCH DI PIPE BETWEEN THE VALVE AND TEE. (TYP. X).
	4.12	INSTALL 4-INCH MJ WATER VALVE WITH LOCKING RETAINER GLANDS AND 1.5+/- LF 4-INCH DI PIPE BETWEEN THE VALVE AND CROSS. (TYP. X).
Tee	4.20	INSTALL 4-INCH x 4-INCH DI MJ TEE WITH LOCKING RETAINER GLANDS AND THRUST BLOCK. (TYP. X)
	4.21	REMOVE EXISTING TEE, INSTALL 4-INCH x 4-INCH DI MJ TEE WITH LOCKING RETAINER GLANDS AND
Cross	4.30	INSTALL 4-INCH x 4-INCH DI MJ CROSS WITH LOCKING RETAINER GLANDS. (TYP. X)
Bend	4.40	INSTALL 4-INCH x 45 DEGREE DI MJ BEND, WITH LOCKING RETAINER GLANDS AND THRUST BLOCK.
	4.41	INSTALL 4-INCH x 22.5 DEGREE DI MJ BEND, WITH LOCKING RETAINER GLANDS AND THRUST BLOCK.
	4.42	INSTALL 4-INCH x 11.25 DEGREE DI MJ BEND, WITH LOCKING RETAINER GLANDS AND THRUST BLOCK.
Coupling	4.50	INSTALL 4-INCH x 12-INCH LONG SOLID SLEEVE COUPLING WITH LOCKING RETAINER GLANDS. (TYP. X)
	4.51	INSTALL 4-INCH x 12-INCH LONG SOLID SLEEVE COUPLING WITH LOCKING RETAINER GLANDS AND 1.5+/- LF 4-INCH DI PIPE BETWEEN COUPLING AND VALVE. (TYP. X)
	4.52	INSTALL 1.5+/- LF OF 4-INCH DI PIPE OR AN APPROVED EQUAL, BETWEEN VALVE AND TEE. (TYP. X)
	4.53	INSTALL 1.5+/- LF OF 4-INCH DI PIPE OR AN APPROVED EQUAL, BETWEEN VALVE AND CROSS. (TYP. X)
	4.54	INSTALL 1.5+/- LF OF 4-INCH DI PIPE OR AN APPROVED EQUAL, BETWEEN VALVE AND REDUCER.
	4.55	INSTALL 1.5+/- LF OF 4-INCH DI PIPE OR AN APPROVED EQUAL, BETWEEN VALVE AND BEND. (TYP. X)
Reducer	4.60	
	4.61	
	4.62	
	4.70	
	4.80	
	4.90	

**General
Notes To
Contractor**

	5.00	CONTRACTOR SHALL CONTACT WATER RESOURCES BEFORE CUTTING AND CAPPING EXISTING
	5.10	CONTRACTOR SHALL SUBMIT A HIGH-LINE PLAN TO THE CITY OF SANTA BARBARA WATER RESOURCES DEPARTMENT PRIOR TO CONSTRUCTION.
	5.11	CONTRACTOR SHALL HIGH-LINE ALL SERVICES TO BE WITHOUT WATER BEYOND NORMAL WORK
	5.20	ABANDON EXISTING WATER MAIN IN PLACE.
	5.21	PROTECT IN PLACE, TO REMAIN IN SERVICE UNTIL PROPOSED MAIN HAS BEEN TIED-OVER
Remove	5.30	REMOVE EXISTING VALVE BOX, BACKFILL, COMPACT, AND REPLACE PAVEMENT SECTION TO MATCH EXISTING SURFACE. (TYP. X)
	5.31	REMOVE AND REPLACE PLASTIC SERVICE CONNECTION WITH COPPER. (TYP. X)
	5.32	REMOVE EXISTING MAIN AS NECESSARY FOR INSTALLATION OF PROPOSED MAIN, CAP EXISTING
	5.33	REMOVE EXISTING VALVE, PLUG TEE, BACKFILL, COMPACT, AND REPLACE PAVEMENT SECTION TO
	5.40	REMOVE EXISTING MAIN AND INSTALL PROPOSED IN THE EXISTING MAIN ALIGNMENT
Landscape	5.50	PROTECT IN PLACE EXISTING LANDSCAPING.
	5.51	PROTECT IN PLACE EXISTING SURVEY MONUMENT.
	5.52	
	5.60	REMOVE CONCRETE GUTTER BACK TO 1.5 FEET FROM CURB FACE FOR WATER MAIN INSTALLATION. REPLACE THE REMOVED CONCRETE GUTTER WITH A.C.
	5.61	RECONSTRUCT SURFACE TO MATCH EXISTING MATERIAL AND CROSS-SECTION.
Special Backfill	5.70	USE A FULL DEPTH 2-SACK SLURRY BACKFILL FOR ALL TRENCH WORK IN THE HATCHED AREA.
Water / Sewer Seperation	5.80	RECONSTRUCT SEWER MAIN TO COMPLY WITH CITY STANDARD DETAILS 7-003.1 & 7-003.2.

Appendix C
SB Standard Pen Assignments

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City of Santa Barbara

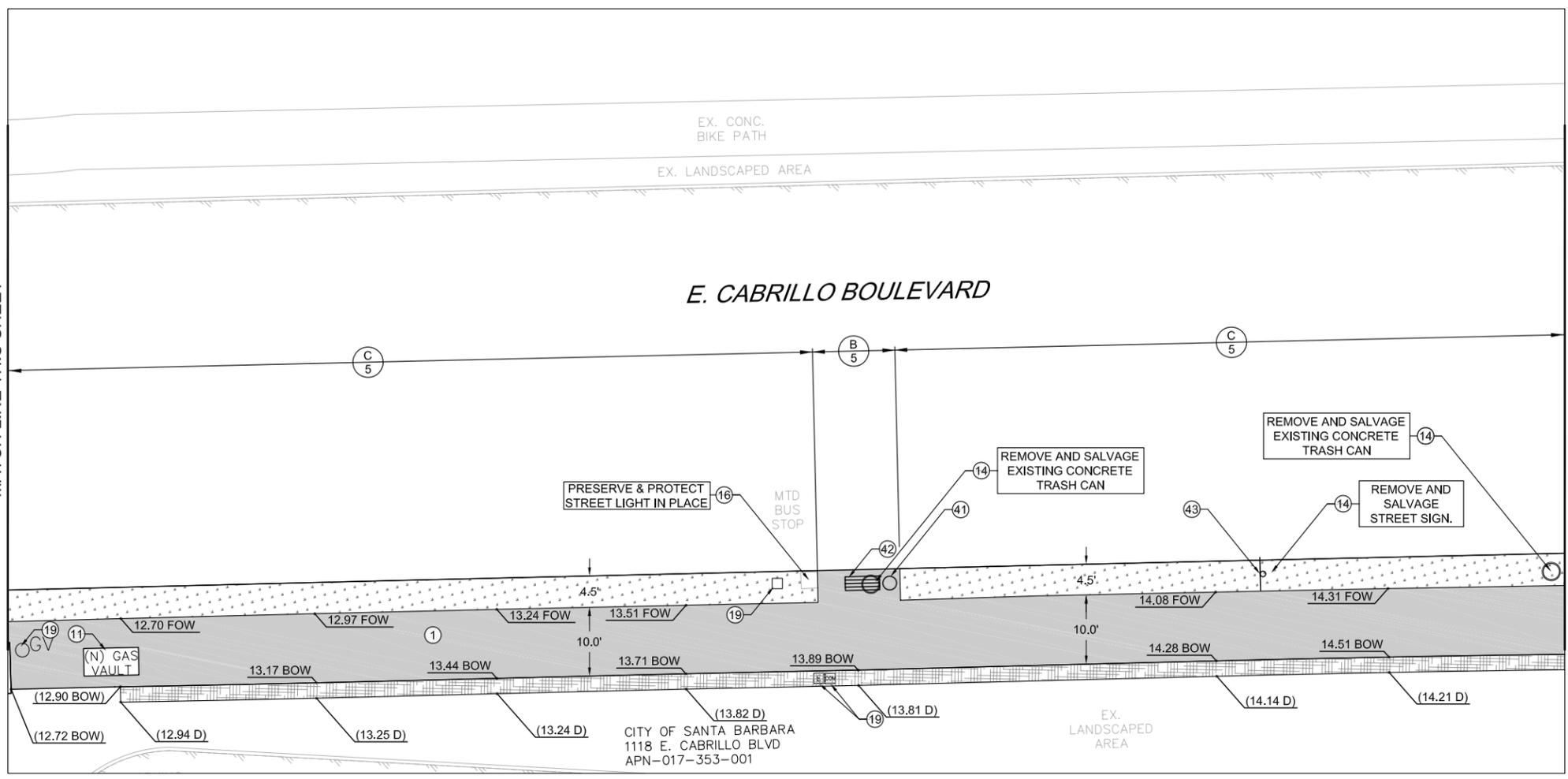
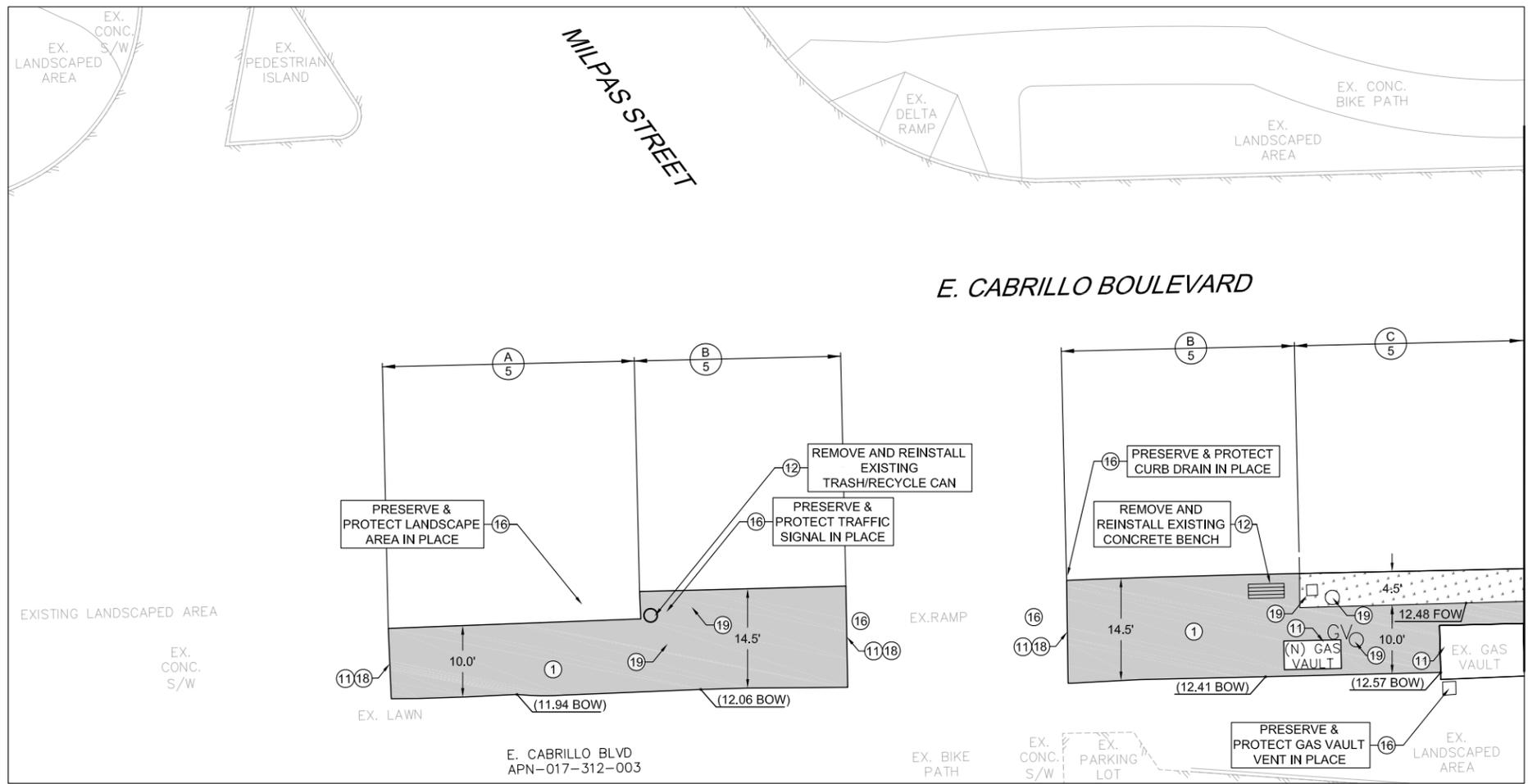
Pen Settings (SB STANDARD.ctb)

1 (red)	0.10 mm, 0.004 in	<hr/>
2 (yellow)	0.20 mm, 0.008 in	<hr/>
3 (green)	0.30 mm, 0.012 in	<hr/>
4 (cyan)	0.40 mm, 0.016 in	<hr/>
5 (blue)	0.50 mm, 0.020 in	<hr/>
6 (magenta)	0.60 mm, 0.024 in	<hr/>
7 (white)	0.70 mm, 0.028 in	<hr/>

Screened

8		<hr/>
9		
251		<hr/>
252		<hr/>
253		<hr/>
254		<hr/>

Appendix D
Example Sheets



CONSTRUCTION NOTES

CONCRETE CONSTRUCTION:

- ① CONSTRUCT CONCRETE SIDEWALK PER CITY STANDARD DETAILS
- ② CONSTRUCT CONCRETE ACCESS RAMP PER CITY STANDARD DETAILS
- ③ CONSTRUCT CONCRETE DRIVEWAY PER CITY STANDARD DETAILS
- ④ CONSTRUCT CONCRETE CURB PER CITY STANDARD DETAILS
- ⑤ CONSTRUCT CONCRETE CROSS GUTTER AND SPANDREL PER CITY STANDARD DETAILS
- ⑥ CONSTRUCT FOUR-INCH CONCRETE RETAINING CURB
- ⑦ INSTALL ASPHALT CONCRETE CONFORM
- ⑧ INSTALL PORTLAND CEMENT CONCRETE CONFORM
- ⑨ THRU ⑩ NOT USED
- ⑪ MEET & MATCH EXISTING STRUCTURE
- ⑫ REMOVE & REINSTALL
- ⑬ REMOVE & DISPOSE
- ⑭ REMOVE & SALVAGE TO THE CITY
- ⑮ REMOVE & REPLACE
- ⑯ PRESERVE & PROTECT IN PLACE
- ⑰ REMOVE & RELOCATE
- ⑱ SAWCUT OR REMOVE TO JOINT
- ⑲ ADJUST BOX, FRAME, OR COVER TO GRADE
- ⑳ THRU ⑳ NOT USED

STREET TREES & LANDSCAPE:

- ① REMOVE & DISPOSE EXISTING TREE/SHRUB
- ② TRIM EXISTING TREE/SHRUB PER CITY ARBORIST (805)564-5435
- ③ PRUNE ROOTS TO EDGE OF SIDEWALK PER CITY ARBORIST
- ④ GRADE SOIL AND PLACE LANDSCAPE PER SPECIFICATIONS
- ⑤ THRU ④ NOT USED

MISCELLANEOUS:

- ① FURNISH AND INSTALL TRASH/RECYCLING CAN PER DETAIL F, SHEET C4
- ② FURNISH AND INSTALL CONCRETE BENCH PER DETAIL G, SHEET C5
- ③ FURNISH AND INSTALL NEW REGULATORY STREET SIGN R2-1 PER CITY STANDARD DETAILS
- ④ INSTALL BICYCLE HITCHING POST PER DETAIL D, SHEET C4
- ⑤ FURNISH AND INSTALL STATE STREET STYLE STANDARD NEWS STAND BOXES PER DETAIL H, SHEET C6
- ⑥ THRU ⑥ NOT USED.

LEGEND

- CONCRETE CONSTRUCTION
- CONSTRUCT ASPHALT CONCRETE
- GRADE TO MATCH
- PLACE LANDSCAPE PER SHEET L1
- EXISTING WHITE STRIPING
- EXIST. TREE
- CURB RAMP BID ITEM



PUBLIC WORKS
DEPARTMENT
ENGINEERING DIVISION

APPROVED: _____ DATE _____

CITY ENGINEER ORIGINAL SIGNED DATE _____

NO.	DATE	APPROVED	DESIGN	DRAWN	CHECKED	TC	REVISIONS

EAST CABRILLO BLVD SIDEWALK REPLACEMENT PROJECT PHASE II
EAST CABRILLO BOULEVARD
STA. 01+00 TO STA. 05+35



SCALE: 1"=10'



2010-01227
PBW. NO.
3613 C1
BID NO. SHT. DES.
C-1-4619
DWG. NO.
SHT. 2 OF 9

