

Engineering Drawing & Aperture Card Scanning and Indexing Specifications

San Francisco Public Utilities Commission
Central Records Management Center
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Project Summary

The San Francisco Public Utilities Commission's Engineering Management Bureau has a library of engineering drawings related to SFPUC engineering projects dating from 1900 to the present. This project's focus is to create a digital copy of the EMB library with detailed metadata for each drawing that is accessible to engineers in San Francisco and workers in the field. Providing high quality digital copies will reduce the use of the original drawings and allow them to be stored in the CRMC archive.

Phase 1

EMB's collection includes approximately 30,500 individual drawings ranging in size from 8.5 x 11 inch sheets to oversize profile rolls up to 40 feet in length. The drawings are printed on drafting cloth, drafting paper, tracing paper, and plastic film. There are a number of printing types in the collection, including: pen and pencil drawings, blueprints, van dyke brown prints, diazotype bluelines, and drawing printed using an ink or laser printer.

The drawings are housed in either the EMB library located on the third floor of 1155 Market or in the CRMC library located on the first floor of 1145 Market. The drawings in these libraries will be shipped for scanning grouped by their current locations in the drawing cabinets. The drawings in the EMB library will be shipped first and are considered Phase 1A of this project. The CRMC drawings will be scanned after the EMB drawings have been completed and are considered Phase 1B.

Location	Approx. Sheet Size (inch)	Closest ANSI Size	SFPUC Prefix	Total Sheet Counts
EMB Library	8.5 x 11	A	A-	1,435
EMB Library	9 x 14	-	"Very Old Sketches"	723
EMB Library	11 x 17	B	K-	23
EMB Library	15 x 21	C	B-	1,648
EMB Library	22 x 34	D	C-, E-	12,202
EMB Library	34 x 44	E	D-, F-	3,848
EMB Library	30 x 40	E	Historical Shop Drawings ("F" Folders)	1,364
EMB Library	Oversize Rolls	-	R-, P-	467
EMB Library	Various / Misc.	-	Various / None	1,185
CRMC Library	34 x 44	E	C-, D-, E-, F-	7,551
CRMC Library	Oversized Rolls	-	R-, P-	67
Totals				
EMB Total				22,895
CRMC Total				7,618
Combined Total				30,513

Phase 2

In addition to the full sized drawings described above, EMB also has sets of aperture cards created in the 1970s and 1980s that duplicate the drawing collection in EMB's flat files at that time. Some of the original drawings may have been lost or damaged since the creation of the aperture cards. Phase 2 of this project includes sorting the aperture cards to determine if any of the cards contain copies of drawings that do not have paper versions, and then scanning and indexing those cards.

Location	SFPUC Prefix	Orange Cards: Set 1	Manila Cards: Set 2	WD Cards: Set 3	Total Cards: All Sets
EMB Library	A-	2,000	1,456	1,268	4,724
EMB Library	K-	211	0	0	211
EMB Library	B-	1,500	1,000	4,215	6,715
EMB Library	C-	6,500	5,400	1,158	13,058
EMB Library	D-	2,000	2,188	1,628	5,816
EMB Library	E-	750		5,135	5,885
EMB Library	F-	750		452	1,202
EMB Library	Historical Shop Drawings ("F" Folders)	0	2,000	0	2,000
EMB Library	R- & P-	2,000	1,100	1,370	4,470
EMB Library	X-	0	47	8,832	8,879
	Total Cards	15,711	13,191	24,058	52,960

Technical Specifications

Resolution: 300 dpi

Format: B&W, Uncompressed TIFF

Index ASCII. Comma delimited with the following structure:

Data: "<Field 1>", "<Field 2>", "<Field 3>", "<Field 4>", "<Field 5>","<Field 6>", "<Field 7>", "<Field 8>", "<Field 9>", "<Field 10>", "<Field 11>"

Commas will separate all fields. The field contents will be surrounded by double quotes to escape the data in field. Each record will be terminated with ENTER. All fields must be filled in.

Delivery Medium: To be determined. Probably via hard drives supplied by the SFPUC.

Metadata Indexing Specifications

The CRMC drawing profile is designed to capture detailed information about individual drawings. Although the ideal profile field will be filled out in its entirety, we anticipate that many drawings will only have partial information available. Supplemental information may need to be provided by CRMC or EMB staff. Information available on drawings will vary depending on the age of the drawing.

The metadata profile fields that should be captured during the scanning and indexing process are outlined in the table below.

Field Number	Field Name	Data Type	Default Data
Field 1	Name	varchar2 (500)	
Field 2	Title	varchar2 (500)	
Field 3	Sub-Title	varchar2 (500)	NONE
Field 4	Drawing No.	varchar2 (30)	NONE
Field 5	Date Org. Created	Date (MM/DD/YYYY)	11/11/2111
Field 6	Revision No.	varchar2 (3)	000
Field 7	Revision Date	Date (MM/DD/YYYY)	Date Org. Created
Field 8	Sheet No.	varchar2 (15)	1
Field 9	Contract No.	varchar2 (20)	NONE
Field 10	Originating Org.	varchar2 (100)	SFPUC
Field 11	Scanned Drawing Path & File Name	<no limit>	

Fields that must have unique data are highlighted in bold. Each field must be field out either with the defaults given above or with data found on the drawings. All metadata that can be captured in these elements should be noted. In addition, **a file path with the digital copy's location & name should be associated with each drawing.**

Appendix A: Metadata Fields

Field 1: Name

Type: varchar2 (500)

The name field is the name for the profile itself rather than the title of the drawing. The name field is what is listed as part of search results in Hummingbird. Therefore it needs to have more information than the Title or Sub-Title fields.

The name field should read as:

SFPUC Drawing # **[Drawing Number]** Revision **[Revision Number]** - **[Title]:**
[Subtitle]; [Contract Number]

Leave out any information not found on the drawing or supplied by SFPUC staff. If the name created as described here goes over 500 characters, use abbreviations or delete unnecessary words in the drawing title and sub-title.

Examples:

SFPUC Drawing # B-1648 Revision 0 - Bryant Storage Facility: Mounting Details – High-Bay Lighting Fixtures; HH-675R

SFPUC Drawing #A-869 22 - K.V. Pole Line Armor Rods and Clips for 1/0 A.C.S.R.

Field 2 & 3: Title & Sub-Title

Type (for both): varchar2 (500)

Drawing titles are often a combination of the project's title and the specific title for the drawing. The project title will be printed as part of the title for all drawings created as part of a project. The project title will generally be printed in a different font or slightly separated section for the drawing's individual information. In the context of our metadata profile, this project information is considered the **Title**. The drawing's information is considered the **Sub-Title**.

For drawings where the Title and Sub-Title information are not clearly separated, put all drawing title information in the Title field and add NONE to the Sub-Title field. If the drawing's title or sub-title go over 500 characters, use abbreviations or delete unnecessary phrases to shorten them.

Examples:

CITY AND COUNTY OF SAN FRANCISCO					
PUBLIC UTILITIES COMMISSION					
UTILITIES ENGINEERING BUREAU					
METER AND VALVE TESTING/CALIBRATION FACILITY AND ASSOCIATED IMPROVEMENTS					
WATER TANK BUILDING					
EXHAUST FAN CONTROL DIAGRAM					
RECOMMENDED	DATE	DESIGNED BY	DR.	SCALE	

Title: Meter and Valve Testing / Calibration Facility and Associated Improvements
Sub-Title: Water Tank Building Exhaust Fan Control Diagram

ONLY SEE DIMS & DETAILS.

GENV. EXTENSION BAR (SEE DETAIL) ITEM (28)

ARMED CHUCKLE (0-8 CAT. # 79608, OR EQUAL) ITEM (28)

PLAN OF UPPER & LOWER X-ARMS

SCALE: P = 5'-0"

PREPARED BY
SVERDRUP & PARCEL, INC.
 ENGINEERS - ARCHITECTS
 SAN FRANCISCO, CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPROV.
REVISIONS				

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
 UTILITIES ENGINEERING BUREAU

HETCH HETCHY WATER SUPPLY
 CANYON-CHERRY POWER DEVELOPMENT
 CHERRY POWERHOUSE-TRANSMISSION
 LINES


REVISED DETAILS FOR TOWER NO. 13 W

BY <i>[Signature]</i>	DATE APRIL 27, 1959
BY <i>[Signature]</i>	DATE APRIL 27, 1959
BY <i>[Signature]</i>	DATE APRIL 27, 1959


DRAWING NO. **B-1125**

Title: Cherry Powerhouse Transmission Lines
Sub-Title: Revised Details For Tower No. 13 W

Title / Sub-Title Examples (Cont.):



25mm



William J. Muller

11TING
255)

CONTRACT NO. HH-675R

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
UTILITIES ENGINEERING BUREAU

BRYANT STORAGE FACILITY
MOUNTING DETAILS-HIGH-BAY
LIGHTING FIXTURES

RECOMMENDED BY <i>[Signature]</i>	DESIGNED BY WTH/TM	DR. CH	SCALE NONE
APPROVED BY <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>	TR.	DATE 3-7-85
APPROVED <i>[Signature]</i> DEPUTY GENERAL MANAGER PUBLIC UTILITIES COMMISSION		APPROVED <i>[Signature]</i> GENERAL MANAGER	

NO.	DATE	DESCRIPTION	BY	APPR'D.
REVISIONS				

SHEET 1 OF 1

DRAWING NO. B-1648
REVISION NO. 0

Title: Bryant Storage Facility
Sub-Title: Mounting Details – High-Bay Lighting Fixtures

NO.	DATE	DESCRIPTION	BY	APPR'D.
REVISIONS				
CAUTION: CHECK WITH TRACING TO SEE IF YOU HAVE LATEST REVISION				
CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN FRANCISCO WATER DEPARTMENT				
REVOCABLE PERMIT TO CITY OF FREMONT FOR STREET RECONSTRUCTION, LIGHTING AND UNDERGROUND CONDUITS B.D.P.L. NOS. 1 & 2 R/W PARCEL NO. 1212 ALA CO.				
RECOMMENDED	BY G.F.	DR	DATE 6-22-78	
APPROVED	REVIEWED	<i>[Signature]</i>	SCALE AS SHOWN	
APPROVED GENERAL MANAGER AND CHIEF ENGINEER			DRAWING NO. C-1125	

W. D. SPECIFICATION NO. SHEET OF

Title: Revocable Permit To City Of Fremont For Street Reconstruction, Lighting and Underground Conduits
Sub-Title: B.D.P.L. Nos. 1 & 2 R / W Parcel No. 1212 Ala Co.

Field 4: Drawing No.

Type: varchar2 (30)

Each SFPUC drawings have unique drawing numbers. All SFPUC drawing numbers begin with a single letter prefix and end with one or more numbers. Possible SFPUC prefixes are: A, B, C, D, E, F, K, R, and P, and X.

Drawing numbers are typically printed in the drawing's title block under a section titled "Drawing Number". However, on occasion the drawing number is printed below the lower right-hand corner of the title block and a non-SFPUC number will be printed in the title block. Record the drawing number that most closely matches a normal SFPUC number. If both numbers appear to be valid SFPUC numbers, record the number located within the title block.

Older drawings may have SFPUC numbers hand written in the corners or back of the drawing. If a drawing is dated from the 1930s or before and does not have a SFPUC number noted with the rest of the drawing information, look for it in other locations on the drawing.

Sometimes drawings are created by design firms contracting with the SFPUC and do not have a regular PUC number. In this case, record any drawing number available.

Record the drawing numbers as they are printed on the document. If no drawing number can be located, add NONE to the field.

Examples:

Typical drawing:

CITY AND COUNTY OF SAN FRANCISCO		PUBLIC UTILITIES COMMISSION			
UTILITIES ENGINEERING BUREAU					
HETCH HETCHY WATER SUPPLY					
22 KV. POLE LINE					
ARMOR RODS AND CLIPS FOR 1/0 A.C.S.R.					
BY R.E.C.	TR.	APPROVED <i>Jun Perini</i>	SCALE NONE	DATE May, 1950	LATEST REVISION
DR. C.D.L.	CH. A.G.	APPROVED <i>W. Olson</i>	DRAWING NO. A-869		REVISION NO.
RECOMMENDED <i>W. Hetchy</i>		MANAGER AND CHIEF ENGINEER			
SHEET 19 OF 27 SHEETS					

Drawing Number: A-869

Drawing Number Examples (Cont.):

Problem Drawing 1:

CONTRACT NO. WD 2060			
CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION UTILITIES ENGINEERING BUREAU			
SAN ANDREAS WATER TREATMENT PLANT EXPANSION NO. 2			
MCC II SINGLE LINE AND ELEVATION			
RECOMMENDED <i>J. Lim</i>	DESIGNED BY DKS	DR SHM	SCALE NTS
APPROVED <i>[Signature]</i>	CHECKED BY RRR	TR	DATE 6/90
APPROVED <i>[Signature]</i> MANAGER UTILITIES ENGINEERING BUREAU		APPROVED <i>[Signature]</i> GENERAL MANAGER WATER DEPARTMENT	
SHEET 218 of 225		DRAWING NO NSC-20	REVISION NO.

F-742

Drawing Number: F-742

Drawing Number Examples (Cont.):

Problem Drawing 2:

CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION UTILITIES ENGINEERING BUREAU			
METER AND VALVE TESTING/CALIBRATION FACILITY AND ASSOCIATED IMPROVEMENTS			
WATER TANK BUILDING EXHAUST FAN CONTROL DIAGRAM			
RECOMMENDED <i>[Signature]</i>	DESIGNED BY SD/CF	DR. JS/MS	SCALE NONE
APPROVED <i>[Signature]</i>	CHECKED BY MR	TR.	DATE SEP. 2000
APPROVED <i>[Signature]</i> MANAGER UTILITIES ENGINEERING BUREAU		APPROVED <i>[Signature]</i> MANAGER CITY DISTRIBUTION DIVISION SAN FRANCISCO WATER DEPARTMENT	
SHEET 47 of 61		DWG. No. E-9229	REVISION NO.

E-13

Drawing Number: E-9229

Field 5: Date Org. Created

Type: Date (MM/DD/YYYY)

Drawings are typically dated with both the first version's date and the dates of any subsequent revisions. The Date Org. Created field is for the first version's date. This is typically located in the title block below drawing's title. If the drawing lacks a title block or the date is not noted in the title block, check the back or other sections of the drawing and note any dates located there. If the day of the month is not specified, record the day as 01. If the month is not specified, record the month as 01. If there is no date anywhere on the drawing, use 11/11/2111 as a placeholder.

Record the date in MM/DD/YYYY format.

CITY AND COUNTY OF SAN FRANCISCO				
PUBLIC UTILITIES COMMISSION				
SAN FRANCISCO WATER DEPARTMENT				
PORTION OF PARCEL 61 & 65				
TO BE LEASED				
292 -- ACRES			ALAMEDA CO.	
APPROVED	SCALE <i>As Shown</i>	BY <i>8-1891</i>	DR. <i>D.J.S</i>	DRAWING NO.
APPROVED		TR. <i>D.J.S</i>	CH.	B-2647
GENERAL MANAGER AND CHIEF ENGINEER		DATE <i>7-18-61</i>	REVISED <i>11-29-61 D.J.S</i>	

ALA_LAND

2-28-64 D.J.S
 3-20-64 A.O.
 5-11-64 D.J.S

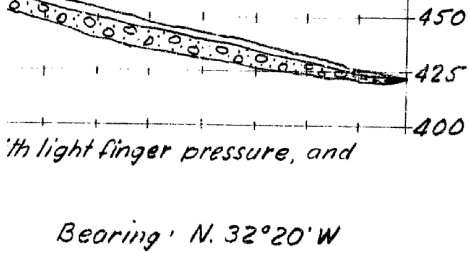
Date Org. Created: 09/18/1961

Field 6: Revision No.

Type: varchar2 (3)

Revision numbers can be found in two sections of a drawing title's block. The revision number can be found either in the main title section next to the Drawing Number, or in a separate revision information section. The revision information section sometimes has more than one set of revision notes. **Record the most recent revision number.** If there is no revision number noted, record the number as 000.

Example:



RES

2		4/62	ISSUED FOR CONSTRUCTION	RAS	HAS	CSC	17
Δ	JAN 67		REVISED, RENUMBERED AND ISSUED FOR CONSTRUCTION BIDS	RAS			
0	4/2/62		ISSUED FOR SUPPLEMENTAL DESIGN REPORT	RAS	HAS	CSC	17
NO.	DATE		REVISIONS	BY	CHK'D	ENGR.	PRV. CHIEF ENGR.
BECHTEL CORPORATION							
SAN FRANCISCO							
CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN FRANCISCO WATER DEPARTMENT							
SAN ANTONIO DAM PROJECT EXPLORATIONS							
SPILLWAY AREA DOZER TRENCH LOGS NO.2							
APPROVED:		DESIGNED HAS	ENGR. E.C.M.	PROJ. ENGR. J.S.	CHIEF ENGR. [Signature]		
[Signature]		DRAWN J.H. [Signature]	JOB NO.	SCALE As Noted	DRAWING NO.	REV.	
DATE JAN 11 1963		CHECKED HAS	3964-2	SHEET 8	E-2999	2	
		DATE 11-12-62		OF 64			
W. D. SPECIFICATION NO 1099							

Revision No.: 2

Field 7: Revision Date

Type: Date (MM/DD/YYYY)

On more recent drawings, the revision dates are generally noted in a separate revision title section. Older drawings have a section in the regular title block for revision date. If the day of the month is not specified, record the day as 01. If the month is not specified, record the month as 01. If there is no revision date, duplicate the Date Org. Created date in the Revision Date field.

Record the date in MM/DD/YYYY format.

Example:

CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN FRANCISCO WATER DEPARTMENT				
PORTION OF PARCEL 61 & 65 TO BE LEASED				
292 -- ACRES			ALAMEDA CO.	
APPROVED	SCALE <i>As Shown</i>	BY <i>E-1891</i>	DR. <i>D.J.S</i>	DRAWING NO.
APPROVED		TR. <i>D.J.S</i>	CH.	B-2647
GENERAL MANAGER AND CHIEF ENGINEER		DATE <i>7-18-61</i>	REVISED <i>11-29-61 D.J.S</i>	

ALA_LAND

*2-28-64 D.J.S
3-20-64 A.O.
5-11-64 D.J.S*

Revision Date: 05/11/1964

Field 8: Sheet No.

Type: varchar2 (15)

Sheet numbers are typically found either inside the regular title block or just below the rest of the drawing information. Record the sheet number as **X of X**. If there is no total sheet number information available, record the sheet number by itself. Use 1 as the default sheet number.

Example:

The drawing includes a technical sketch of a lighting fixture with a circular top and a vertical stem. To the right is a title block with the following text:

CONTRACT NO. HH-675R
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
UTILITIES ENGINEERING BUREAU
 BRYANT STORAGE FACILITY
 MOUNTING DETAILS-HIGH-BAY
 LIGHTING FIXTURES

Below the title block is a table with the following fields:

DESIGNED BY <i>WTH/TM</i>	OR <i>CH</i>	SCALE <i>NONE</i>
CHECKED BY <i>[Signature]</i>	TR.	DATE <i>3-7-85</i>
APPROVED <i>[Signature]</i> DEPUTY GENERAL MANAGER PUBLIC UTILITIES COMMISSION	APPROVED <i>[Signature]</i> GENERAL MANAGER	
DRAWING NO. <i>B-1648</i>		REVISION NO. <i>0</i>

Below the title block is a table with the following header:

NO.	DATE	DESCRIPTION	BY	APPR'D.
REVISIONS				

Other elements include a circular professional seal for a Licensed Civil Engineer, the text "LITING (255)", and the text "SHEET 1 OF 1".

Sheet No.: 1 of 1

Field 9: Contract No.

Type: varchar2 (20)

Contract numbers are important for grouping together work done as part of the same project. Contract numbers will have a two letter prefix and then a number. Most of the contract numbers will begin with either HH or WD. Contract numbers are located either above or directly below the regular title block. **Record the contract number as the letter prefix, a dash, and then the number.** (Ex. WD-837 or HH-5309) Use this format even when the number is written in different way. If there is no contract number use NONE in the field.

Examples:

TO DRAIN BOX (TYP.)

SCALE: 1/8" = 1'-0"

PLUMBING PLAN

CONTRACT NO. HH-792

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
 UTILITIES ENGINEERING BUREAU

REPLACE STREET LIGHT YARD
 BUREAU OF LIGHT, HEAT & POWER

PLUMBING PLAN & SCHEMATICS

DESIGNED BY <i>P. Paraguya</i>	OR S. Serrano	SCALE AS SHOWN
CHECKED BY <i>R. DePaola</i>	TR.	DATE 9/27

APPROVED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
DEPUTY GENERAL MANAGER PUBLIC UTILITIES COMMISSION	DEPUTY GENERAL MANAGER PUBLIC UTILITIES COMMISSION

SHEET 5 OF 7

DRAWING NO. C-6644

REVISION NO.

M-1

Contract Number: HH-792

box to be painted

roved

e determined

me size

rwise specified

ss otherwise shown

back pipe.

if box to be

one coat

DETAIL C.S.D. NOZZLE FOR CONCRETE PIPE... 11 1007

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT

PIPE LINE DETAILS
ARRANGEMENT OF BLOW-OFFS
IN PRIVATE RIGHT OF WAY.

SCALE <i>As shown</i>	BY <i>N. Belkin.</i>	OR <i>N B</i>	DATE <i>June 1933</i>
APPROVED <i>J. E. Flinn.</i>	TR. <i>A. J. D</i>	CH. <i>C. A. Lorenstein</i>	REVISED <i>Nov. 1945</i>

APPROVED
[Signature]

GENERAL MANAGER AND CHIEF ENGINEER

D-1125

SPECIFICATION W.D. 410 SHEET 14 OF 32

Contract Number: WD-410

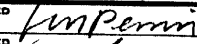
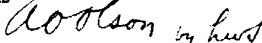
Field 10: Originating Org.

Type: varchar2 (100)

Unless otherwise noted on the drawing, the SFPUC is the Originating Organization. A small number of drawings have been created by other government agencies, equipment vendors, or other design firms. The Originating Organization should be clearly marked on the title block of the drawing. If there are drawings with both the SFPUC and another firm's name, note the SFPUC as the Originating Org.

The San Francisco Public Utilities Commission can be abbreviated to SFPUC. All other agencies, vendors, or firms should be noted with their full names. Departments within the SFPUC (Hetch Hetchy Water Supply, Engineering Management Bureau, etc.) should be noted as **SFPUC – [Department Name]**. SFPUC is the default originating org., use this name when no organization is noted. If another organization is noted on the drawing in addition to the SFPUC, use SFPUC. If two non-SFPUC organizations are noted, use the name most prominently written.

Example:

CITY AND COUNTY OF SAN FRANCISCO		PUBLIC UTILITIES COMMISSION				
UTILITIES ENGINEERING BUREAU						
HETCH HETCHY WATER SUPPLY 22 K.V. POLE LINE ARMOR RODS AND CLIPS FOR 1/0 A.C.S.R.						
BY	R.E.C.	TR.	APPROVED	SCALE	DATE	LATEST REVISION
DR.	C.D.L.	CH.	A.G.	APPROVED	May. 1950	REVISION
RECOMMENDED	  MANAGER AND CHIEF ENGINEER			DRAWING NO.	A-869	REVISION NO.
SHEET 19 OF 27 SHEETS						

Originating Org.: SFPUC – Utilities Engineering Bureau