

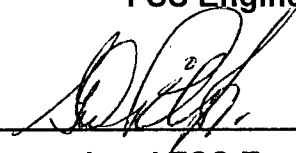
**Rancho Seco
Final Status Survey Summary Report**

March 21, 2008

Corridor of the Auxiliary Building, Elevation 20', (Room 206)

Survey Unit F8131351

Prepared By:  Date: 3/21/2008
FSS Engineer

Reviewed By:  Date: 3/24/08
Lead FSS Engineer

Approved By:  Date: 4-21-08
Dismantlement Superintendent, Radiological

FINAL STATUS SURVEY SUMMARY REPORT

Survey Unit:

F8131351, Corridor of the Auxiliary Building, Elevation 20', (Room 206)

Survey Unit Description:

Operating History: The Corridor of the Auxiliary Building on elevation 20' is located in the non-radiological controlled section of the Auxiliary Building.

Site Characterization: Mean gross activity levels for the non-radiological controlled sections of the Auxiliary Building ranged from 1,658 to 1,980 dpm/100 cm². Based on the classification procedure (DSIP-0020) and levels of gross activity reported, the interior surfaces of the Corridor of the Auxiliary Building on elevation 20' were determined to be a Class 3 area.

Survey Unit Design Information:

The Survey Unit Design Parameters are presented in Table 1 below. The survey unit and measurement locations are depicted on the maps in Attachment 1. Direct measurement locations were randomly determined and 30 m² were scanned for approximately 10% coverage. Samples of removable contamination were collected at each direct measurement location. The instrumentation used for the survey along with the MDC values are listed in Tables 2-1 and 2-2 in Attachment 2.

Table 1. Survey Unit Design Parameters

Survey Design Parameter	Value	Comment
Survey Area:	F813	Corridor of the Auxiliary Building, Elevation 20', (Room 206)
Survey Unit:	1351	Structure Surface
Class:	3	LTP Table 5-4.
SU Area (m²):	294	
Evaluator:	Michael Stein	
DCGL (dpm/100 cm²):	43000	Gross Activity DCGL
Area Factor:	N/A	Class 3
Design DCGL_{mc} (dpm/100 cm²):	N/A	Class 3
LBGR (dpm/100 cm²):	21500	Default = 50% DCGL
Design Sigma (dpm/100 cm²):	5461	
Type I Error:	0.05	
Type II Error:	0.05	
Predominant Nuclide:	Cs-137	
Sample Area (m²):	N/A	Class 3
Scan Area (m²):	30	
Scan Coverage (%):	10%	Class 3
Z_{1-α}:	1.645	
Z_{1-β}:	1.645	
Sign P:	0.99865	
Calculated Relative Shift:	3.9	
Relative Shift Used:	3	Uses 3.0 if Relative Shift is >3
N-Value:	11	
Design N-Value + 20%:	14	NUREG-1575 Table 5-5
Design Min Samples N:	14	Class 3
Grid Spacing L:	N/A	Class 3

Survey Results:

A total of 14 direct measurements were made in F8131351. The results including mean, median, standard deviation and range are shown in Table 2. All direct measurements were less than the DCGL. None of the scan measurements indicated areas of elevated activity. Scan activity ranged from 2758 to 6221 dpm/100 cm², based on a surveyor efficiency of 0.5 and no background subtracted. Samples for removable surface activity were all less than 10% of the DCGL as shown in Table 3. Removable surface activity samples were counted for alpha activity and none was detected at the MDC shown in Table 2-1 of Attachment 2.

Table 2. Direct Measurement Results

Measurement ID	Gross Activity (dpm/100 cm ²)
F8131351-C0001BD	1795
F8131351-C0002BD	1779
F8131351-C0003BD	1738
F8131351-C0004BD	1961
F8131351-C0005BD	1816
F8131351-C0006BD	1738
F8131351-C0007BD	1136
F8131351-C0008BD	1509
F8131351-C0009BD	1613
F8131351-C0010BD	1307
F8131351-C0011BD	1375
F8131351-C0012BD	1567
F8131351-C0013BD	1525
F8131351-C0014BD	1816
Mean:	1620
Median:	1675
Standard Deviation:	231
Range:	1136 - 1961

Table 3. Removable Surface Activity Results

Measurement ID	Surface Beta Activity (dpm/100 cm²)
F8131351C0001SM	1.64
F8131351C0002SM	-0.95
F8131351C0003SM	-2.24
F8131351C0004SM	-2.24
F8131351C0005SM	-3.53
F8131351C0006SM	-2.24
F8131351C0007SM	-2.24
F8131351C0008SM	-3.53
F8131351C0009SM	-2.24
F8131351C0010SM	-0.95
F8131351C0011SM	-2.24
F8131351C0012SM	-4.82
F8131351C0013SM	-4.82
F8131351C0014SM	-3.53
Mean:	-2.42
Median:	-2.24
Standard Deviation:	1.67
Range:	-4.82 to 1.64

Survey Unit Data Assessment:

The survey design required 14 direct measurements for the Sign Test. The critical value and the results of the Sign Test are presented in Table 4. The sample mean and median values were less than the DCGL. The sample standard deviation was less than the design standard deviation so no additional samples were required.

Table 4. Data Assessment Results

Survey Results Parameter	Value	Comment	
Material Background Used (dpm/100 cm ²):	N/A	Average Ambient BKG = 0	
Ambient Background Used (dpm/100 cm ²):	N/A		
Actual Direct Measurements (N):	14		
Median (dpm/100 cm ²):	1675		
Mean (dpm/100 cm ²):	1620		
Direct Measurement Standard Deviation (dpm/100 cm ²):	231		
Total Standard Deviation (dpm/100 cm ²):	231		Based on samples and backgrounds.
Maximum (dpm/100 cm ²):	1961		Background Subtract Not Applied
Material Type:	N/A		
Sign Test Final N Value:	14		Class 3
S+ Value:	14		
Critical Value:	10		
Sufficient Samples Collected:	Yes		
Maximum Value < DCGL:	Yes		
Median Value < DCGL:	Yes		
Mean Value < DCGL:	Yes		
Maximum Value < DCGL_{emc}:	N/A		
Total Standard Deviation <= Sigma:	Yes		
Pass the Sign Test?	Yes		
Reject the Null Hypothesis?	Yes		
Does the Survey Unit Pass All Criteria?	Yes		

Survey Unit Investigations and Results:

No investigations were required for either direct or scan measurements and no investigation results are reported.

ALARA Statement:

As stated in Chapter 4 of the LTP, as long as the residual activity within the survey unit is less than the DCGL (i.e. the survey unit average activity is less than the DCGL and the EMC criterion has been met), the ALARA criterion has been met.

Changes in Initial Survey Unit Assumptions:

The survey unit was designed as a Class 3 structure survey and the sample results are consistent with that classification. The variability of the survey results was less than the characterization data used for survey design. No potential areas of elevated activity were detected.

Conclusion:

The FSS of this survey unit was properly designed as a Class 3 survey based on Table 5-4 of the LTP. The required number of direct measurements was made and the scan coverage met the requirement of Table 5-6 of the LTP. No direct measurements exceeded the DCGL of 43000 dpm/100 cm² and none of the removable surface activity measurements exceeded 10% of the DCGL. No investigations were required.

The direct measurement data support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and that the data quality objectives were met.

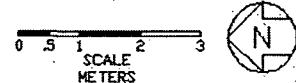
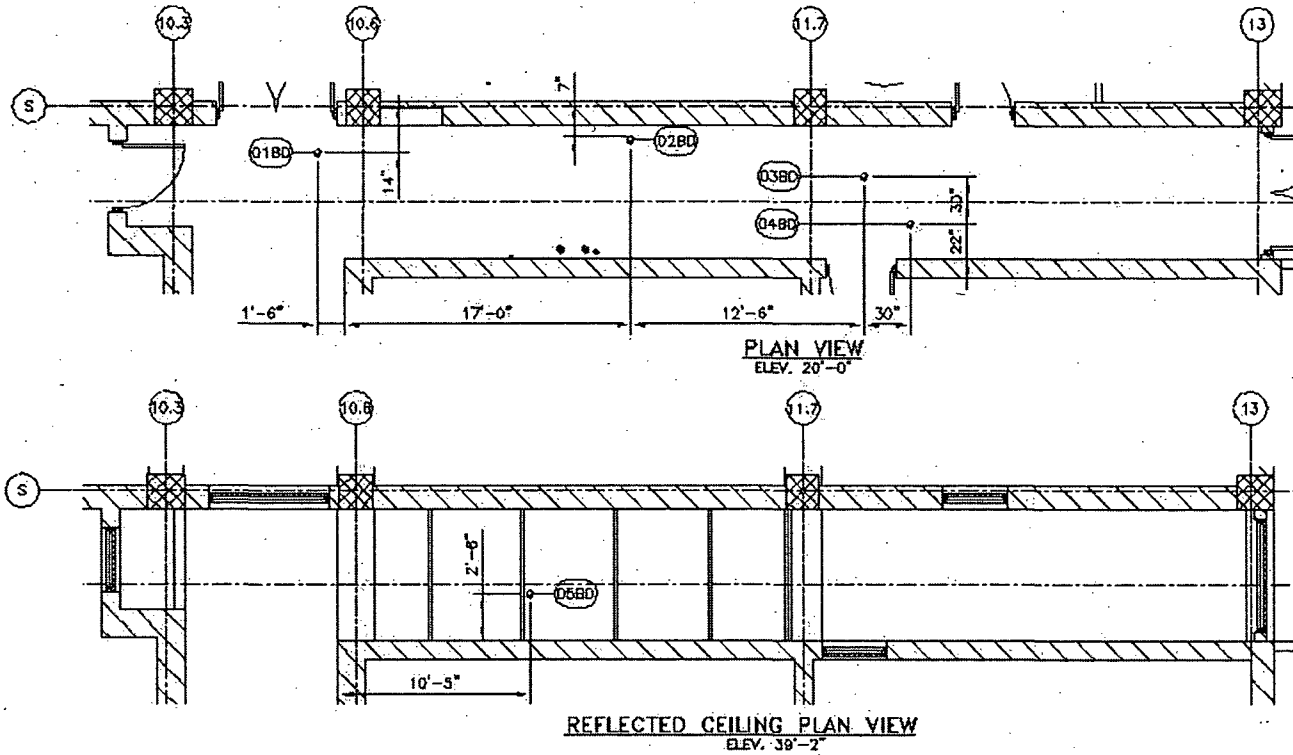
It is concluded that survey unit F8131351 meets the release criteria of 10CFR20.1402.

Attachment 1

Maps

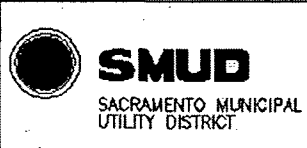
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Survey Unit F8131351

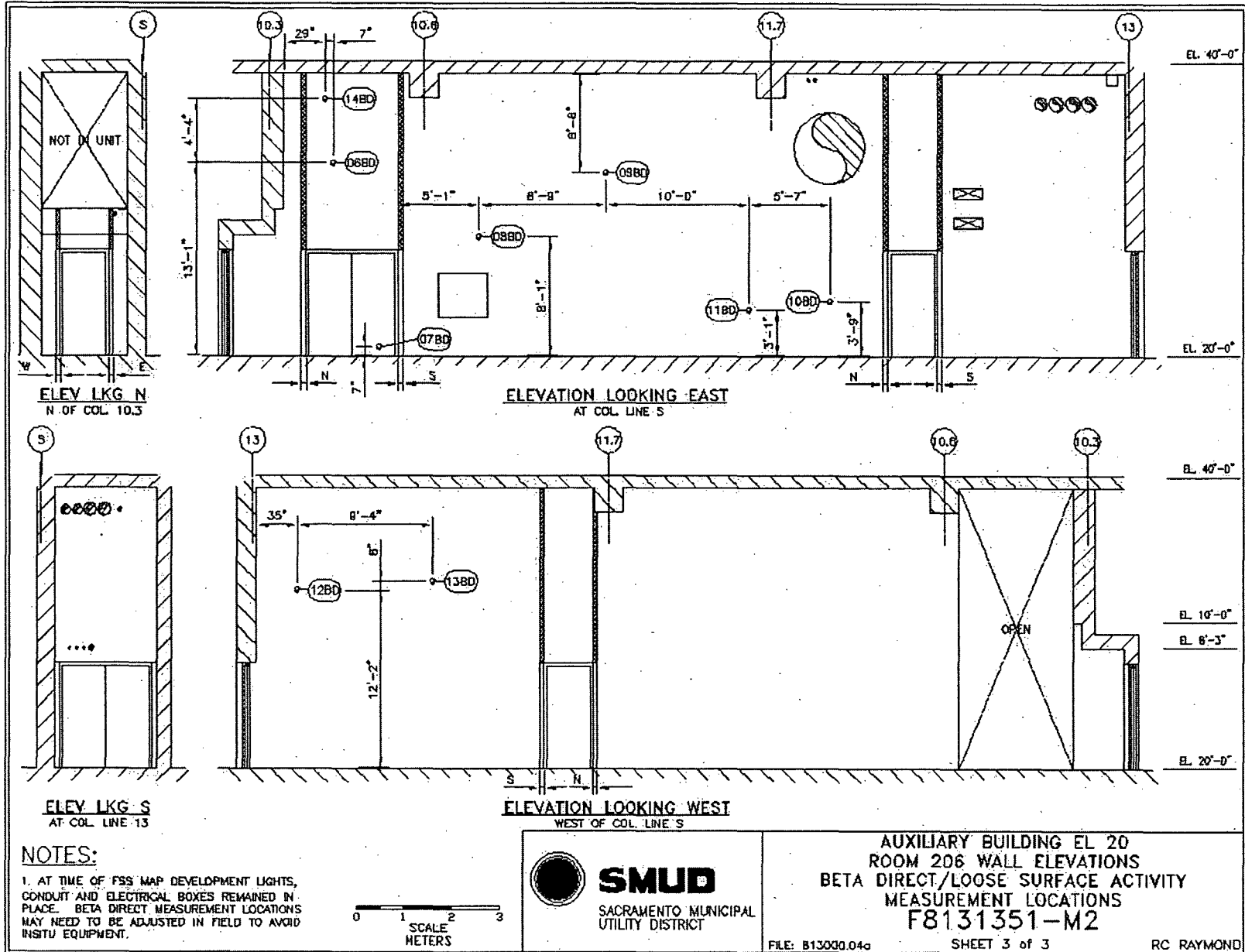


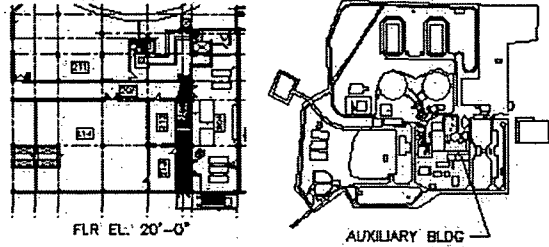
NOTES:

1. AT TIME OF FSS MAP DEVELOPMENT LIGHTS, CONDUIT AND ELECTRICAL BOXES REMAINED IN PLACE. BETA DIRECT MEASUREMENT LOCATIONS MAY NEED TO BE ADJUSTED IN FIELD TO AVOID INSITU EQUIPMENT.

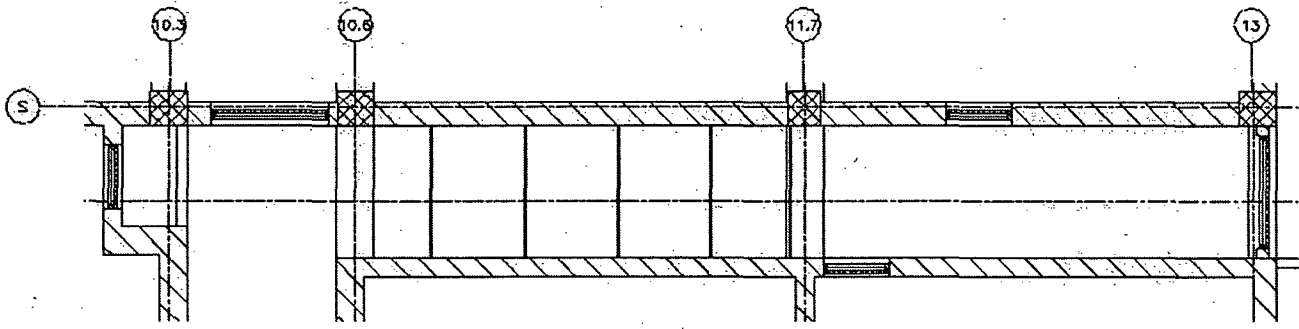
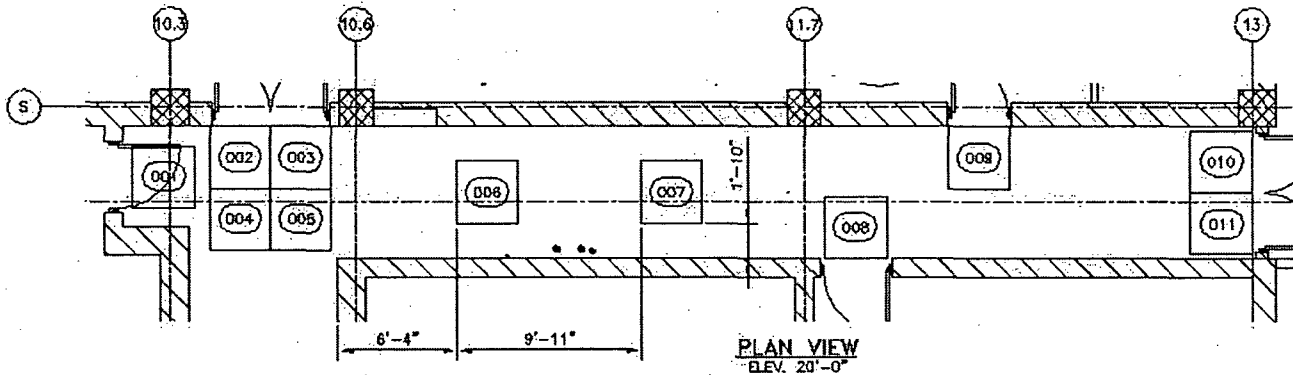


AUXILIARY BUILDING EL 20
 ROOM 206 FLOOR & REFLECTED CEILING PLAN
 BETA DIRECT/LOOSE SURFACE ACTIIVITY
 MEASUREMENT LOCATIONS
F8131351-M2



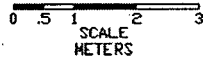


KEY PLANS



NOTES:

1. AT TIME OF FSS MAP DEVELOPMENT LIGHTS, CONDUIT AND ELECTRICAL BOXES REMAINED IN PLACE. SCAN MEASUREMENT LOCATIONS MAY NEED TO BE ADJUSTED IN THE FIELD TO ACCOMMODATE INSITU EQUIPMENT.



SMUD

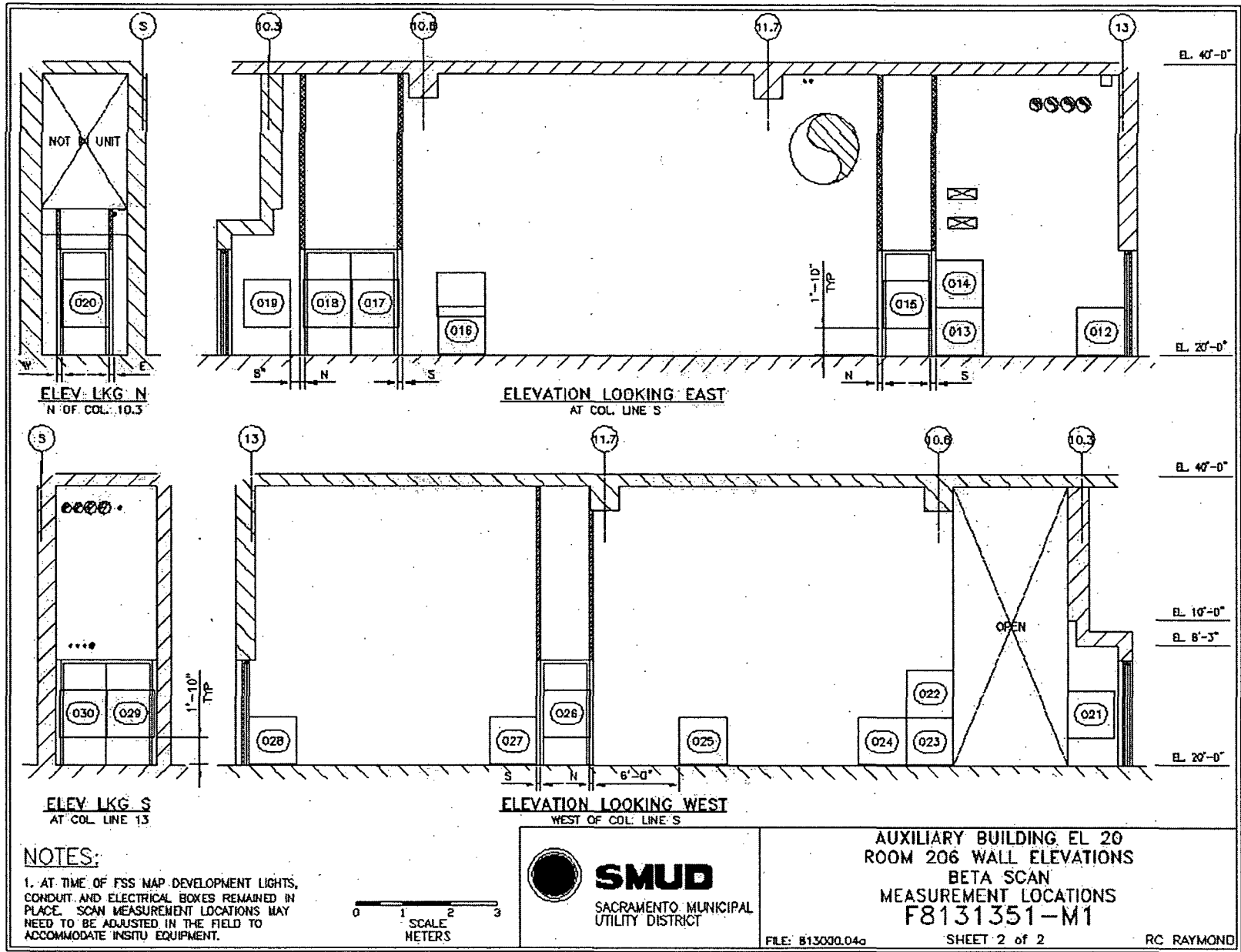
SACRAMENTO MUNICIPAL UTILITY DISTRICT

AUXILIARY BUILDING EL 20
ROOM 206 FLOOR & REFLECTED CEILING PLAN
BETA SCAN
MEASUREMENT LOCATIONS
F8131351-M1

FILE: B13000.04a

SHEET 1 of 2

RC RAYMOND



Attachment 2

Instrumentation

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Survey Unit F8131351

Table 2-1. Survey Unit Instrumentation

Instrument Model; Serial No.	Detector Model; Serial No.	MDC Static (dpm/100 cm²)	MDC Scan (dpm/100 cm²)
M2350; 149794	43-68/5B; 149103	433	1033
Tennelec; 0401171	N/A	5.9 dpm α , 11.7 dpm β	N/A

Table 2-2. Investigation Criteria and DCGL

Parameter	Value (dpm/100 cm²)
Investigation Criteria - Direct	21500
Investigation Criteria – Scan	43000
DCGL _w	43000
DCGL _{EMC}	N/A

Attachment 3

Investigation

March 21, 2008

Survey Unit F8131351

(none required)

Attachment 4

Data Assessment

March 21, 2008

Survey Unit F8131351

