

Low Impact Design Implementation

~ lessons learned ~



Libbey Bell

November 2, 2009



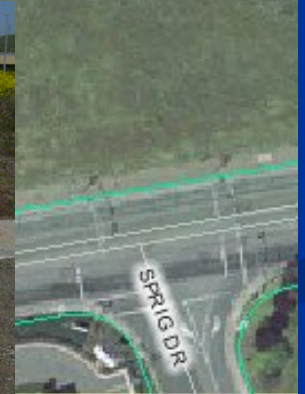
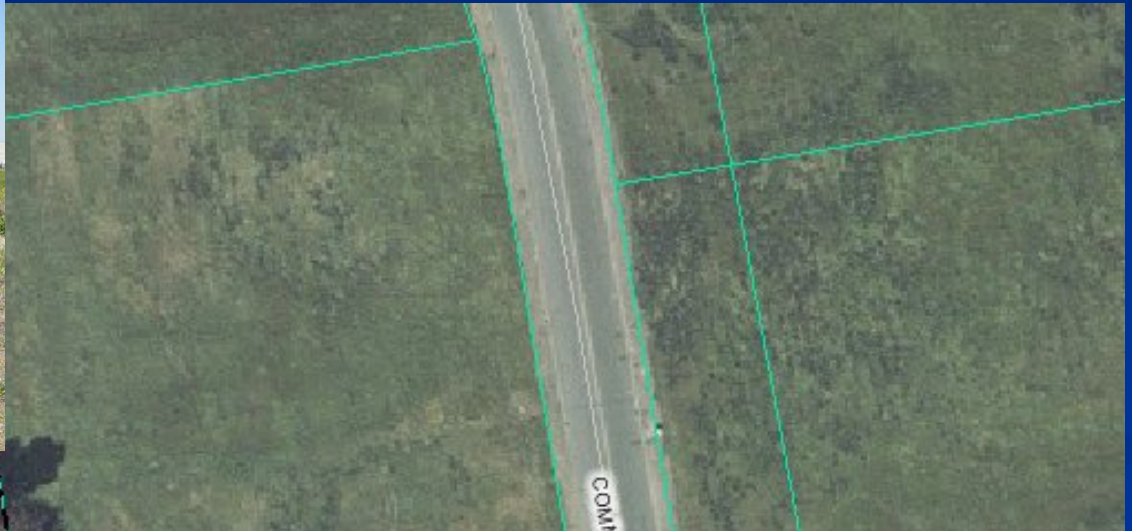
Belmont Terrace

388 ft

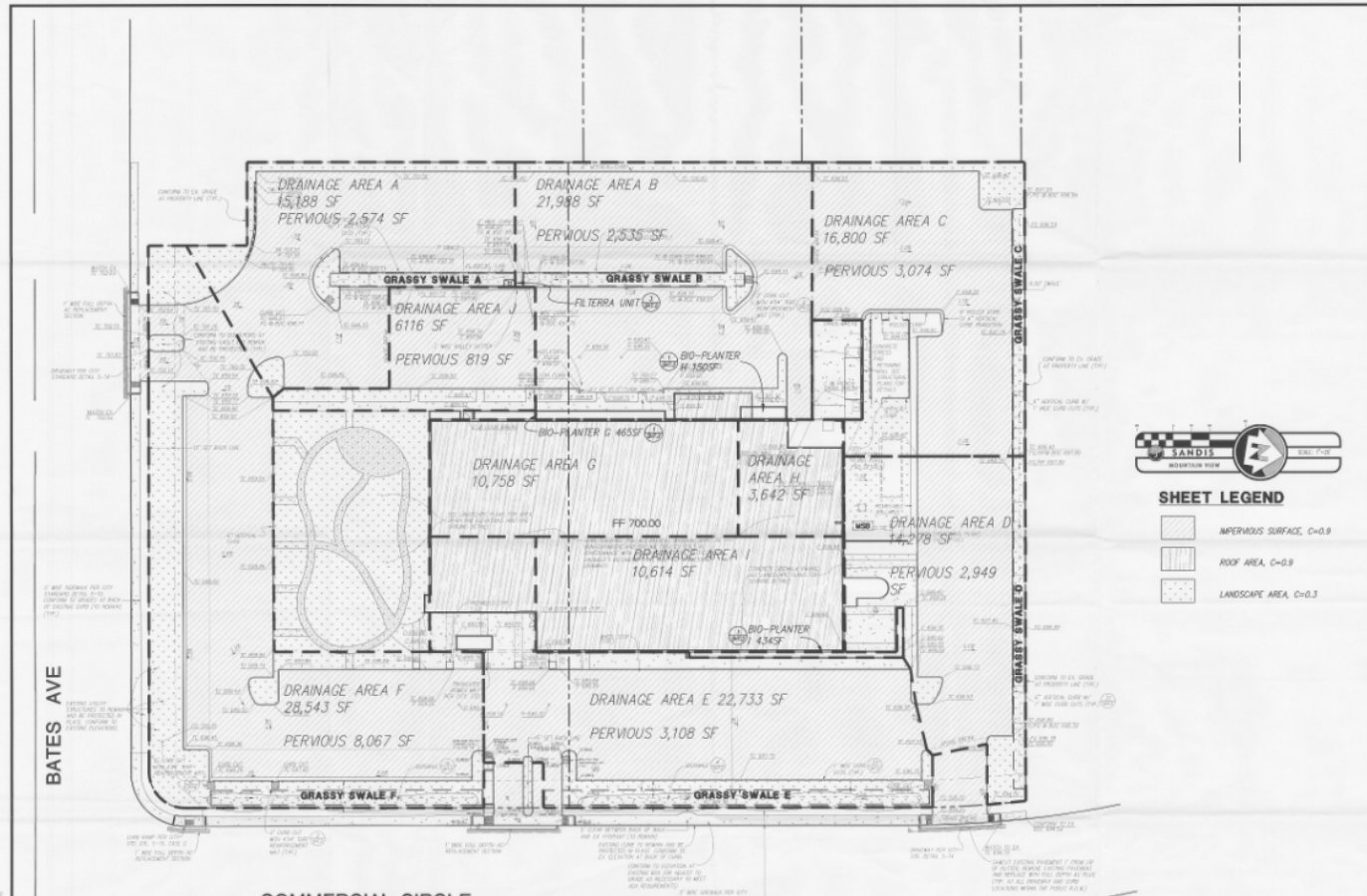
Proposed project



Existing Conditions



Stormwater Control Plan



SANDIS
 HOUSTON, TEXAS
 281.416.1000
 www.sandis.com

SHEET LEGEND

- IMPERVIOUS SURFACE, C=0.9
- ROOF AREA, C=0.9
- LANDSCAPE AREA, C=0.3

COMMERCIAL CIRCLE

SITE STATISTICS

TOTAL PERVIOUS AREA:	35,593 SF	0.83AC
TOTAL IMPERVIOUS AREA:	130,293 SF	2.98AC
TOTAL SITE AREA:	165,886 SF	3.81AC

GENERAL CONTRACTOR: SANDIS DISTRICT REF. APPLICATION 40-28

DATE: 06-20-09

HAWLEY PETERSON & SNYDER
 A R C H I T E C T S
 1000 WEST 10TH AVENUE
 DENVER, CO 80202

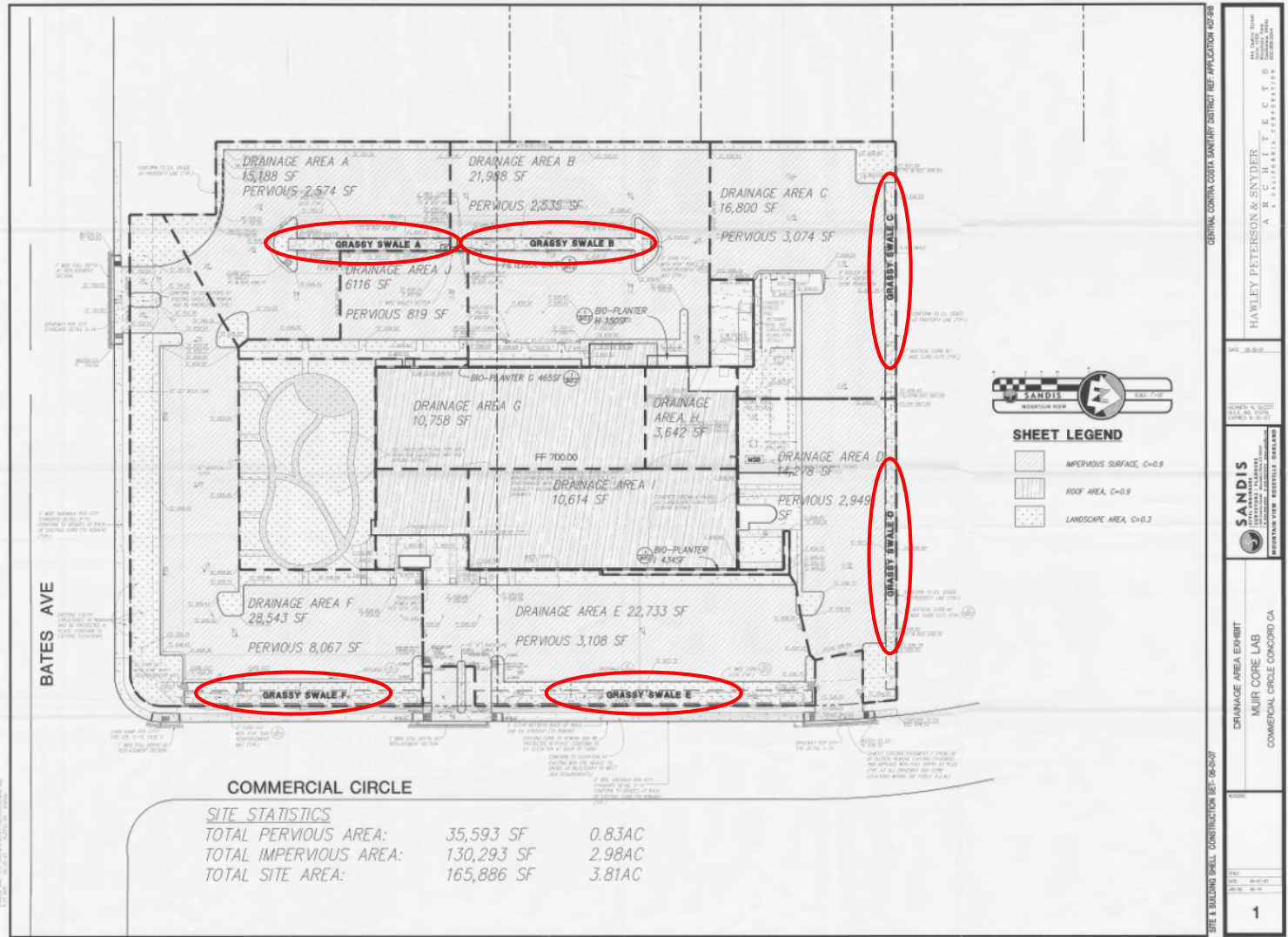
SANDIS
 HOUSTON, TEXAS
 281.416.1000
 www.sandis.com

DRAINAGE AREA EXHIBIT
 MUIR CORE LAB
 COMMERCIAL CIRCLE CONCORD CA

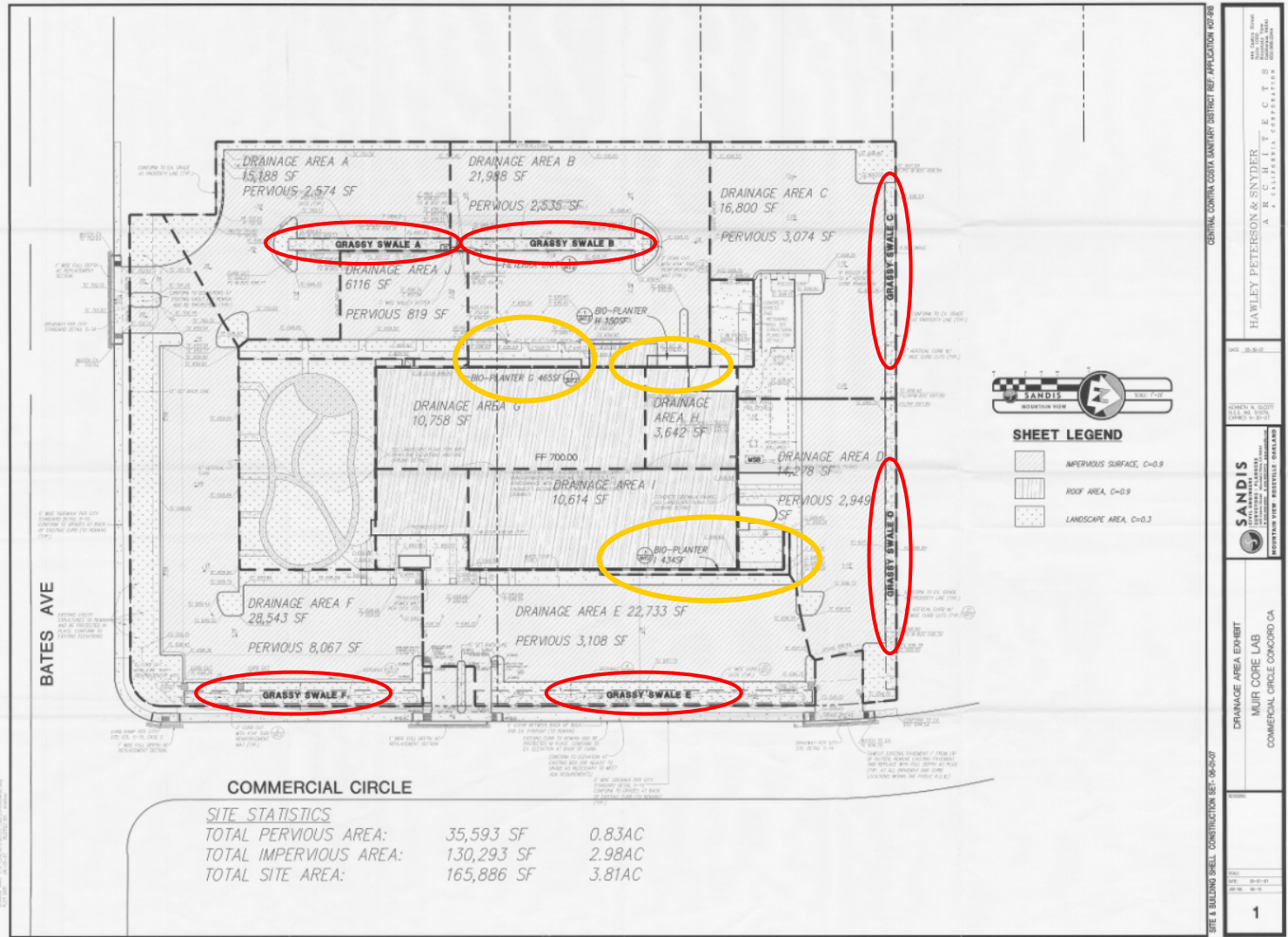
DATE: 06-20-09

SHEET: 1

Stormwater Control Plan

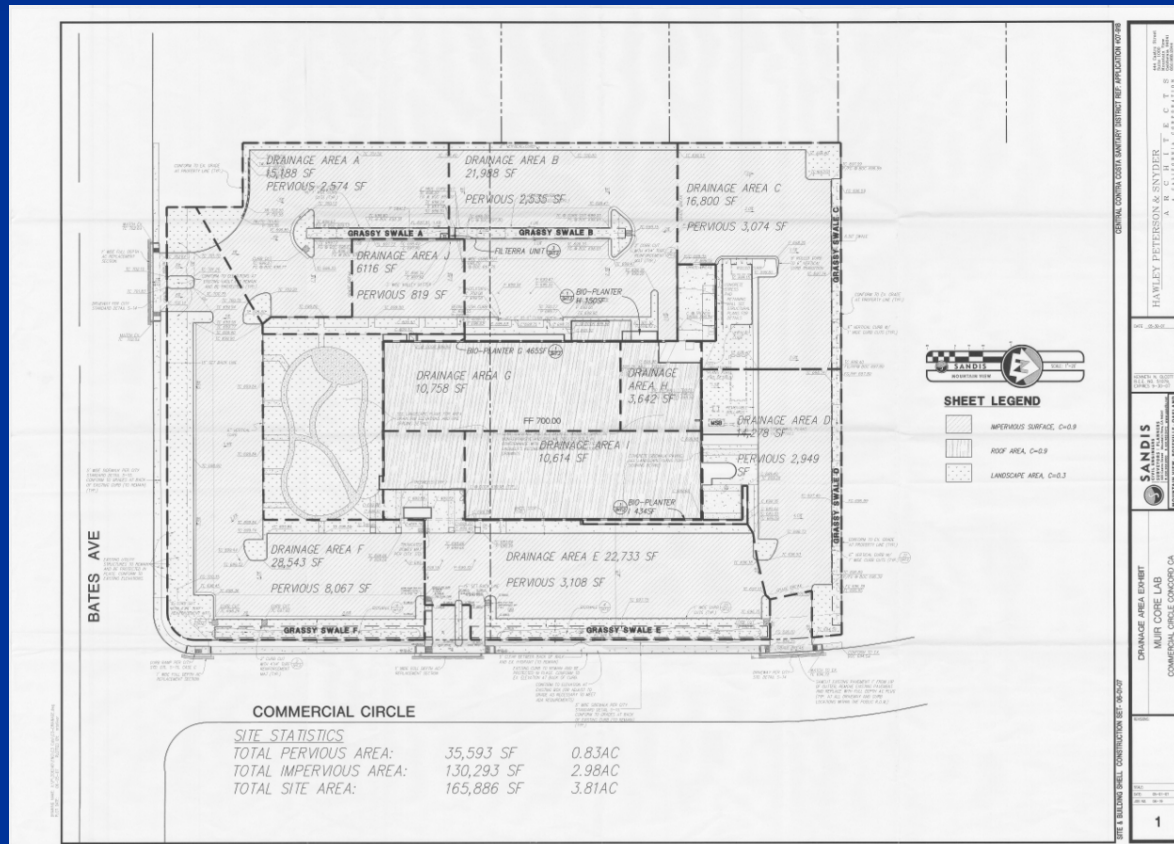


Stormwater Control Plan



Lessons learned during Plan Review

- Consistency
 - Between plan and calculations



Project Name: John Muir Core Lab
 Project Type: River Quality
 Location: Concord, CA
 APN: 156-481-02 155 481 01
 Drainage Area: 165,886 SQ
 Mean Annual Precipitation: 15 (in)

Drainage Management Areas Draining to IMPS

Name	Type	Soil Group	Width	Depth	Porosity	Min. Slope	Max. Area	Soil Factor	Min. Infiltration
Swale A	Grassy Swale	A	12	12	0.33	0.01	3000	1	10
Swale B	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale C	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale D	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale E	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale F	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale G	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale H	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale I	Grassy Swale	C	12	12	0.33	0.01	3000	1	10
Swale J	Grassy Swale	C	12	12	0.33	0.01	3000	1	10

Soil-Testing DMA

DMA Name: Area 104
 DMA: 104

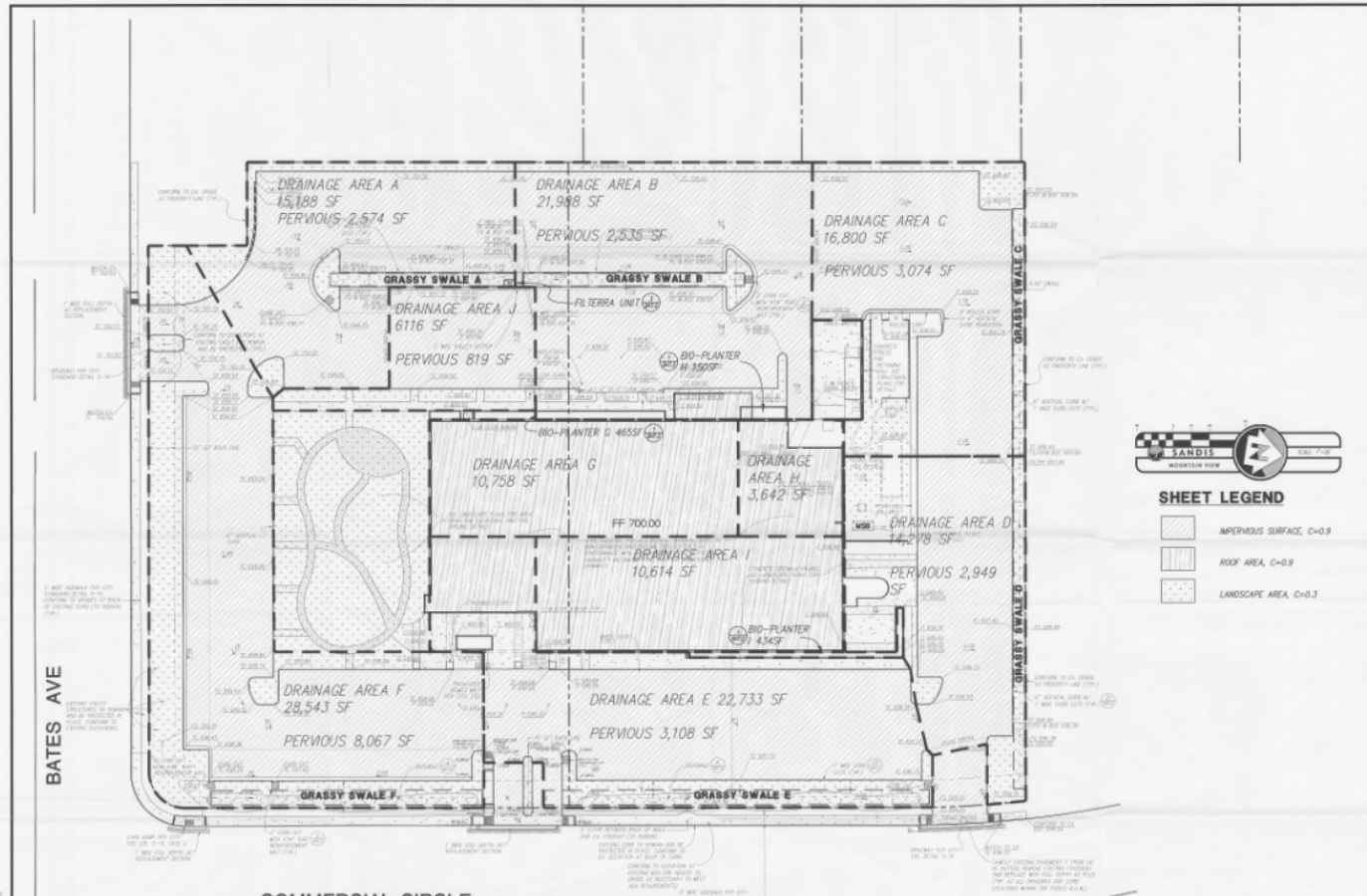
Software Tool Warnings

Warning Type	Source	Description	Suggestion
IMP	IMP	The IMP value for this area is 1.0, which is not recommended.	Use the recommended IMP value of 0.5.
IMP	IMP	The IMP value for this area is 1.0, which is not recommended.	Use the recommended IMP value of 0.5.
IMP	IMP	The IMP value for this area is 1.0, which is not recommended.	Use the recommended IMP value of 0.5.

Lessons learned during Review

- Consistency
 - Between plan and calculations
 - Between grading plan and Stormwater Control Plan

Stormwater Control Plan



SANDIS
 HOUSTON, TEXAS
 281.462.1000
 www.sandis.com

SHEET LEGEND

- IMPERVIOUS SURFACE, C=0.9
- ROOF AREA, C=0.9
- LANDSCAPE AREA, C=0.3

COMMERCIAL CIRCLE

SITE STATISTICS

TOTAL PERVIOUS AREA:	35,593 SF	0.83AC
TOTAL IMPERVIOUS AREA:	130,293 SF	2.98AC
TOTAL SITE AREA:	165,886 SF	3.81AC

GENERAL CONTRACTOR: SANDIS SANITARY DISTRICT REF. APPLICATION 40-28
 DATE: 06-20-09
 SHEET: 1 OF 1
 SITE: 165-00-01
 SHEET: 1 OF 1
 SITE: 165-00-01
 REF: 06-20-09

HAWLEY PETERSON & SNYDER
 A R C H I T E C T S
 1000 WEST 10TH AVENUE
 DENVER, CO 80202

SANDIS
 HOUSTON, TEXAS
 281.462.1000
 www.sandis.com

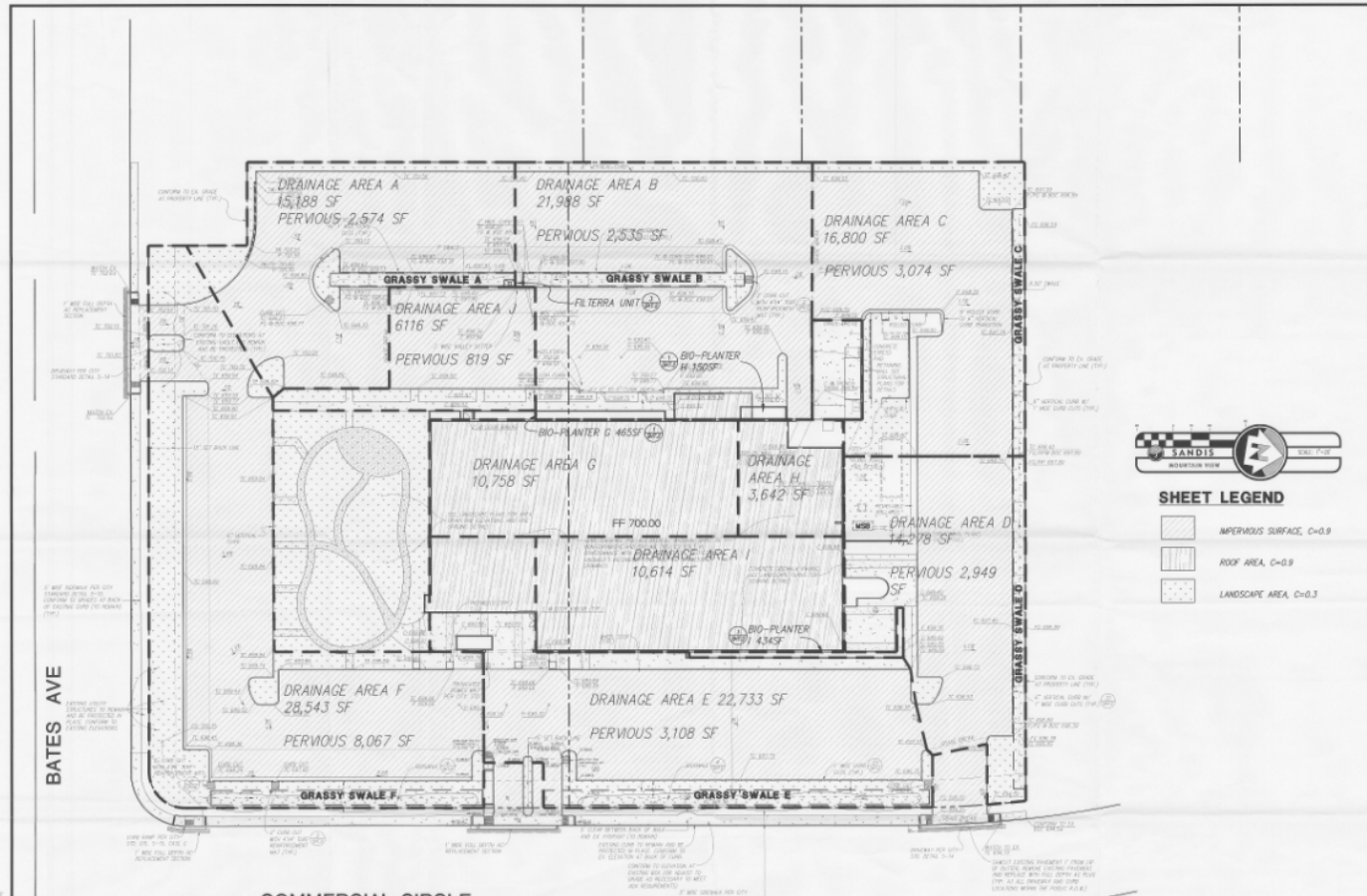
DRAINAGE AREA EXHIBIT
 MUIR CORE LAB
 COMMERCIAL CIRCLE CONCORD, CA

1

Lessons learned during Plan Review

- Consistency:
 - between plan and calculations
 - between grading plan and Stormwater Control Plan
 - between roof plan and Stormwater Control Plan
- Verify:
 - no conflicts on landscaping plans, utility plans, lighting plans, joint trench plans

Stormwater Control Plan



SANDIS
 HOUSTON, TEXAS
 281.462.1000
 www.sandis.com

SHEET LEGEND

- IMPERVIOUS SURFACE, C=0.9
- ROOF AREA, C=0.9
- LANDSCAPE AREA, C=0.3

COMMERCIAL CIRCLE

SITE STATISTICS

TOTAL PERVIOUS AREA:	35,593 SF	0.83AC
TOTAL IMPERVIOUS AREA:	130,293 SF	2.98AC
TOTAL SITE AREA:	165,886 SF	3.81AC

GENERAL CONTRACTOR SANITARY DISTRICT REF. APPLICATION 40-28

DATE: 05-20-20

HAWLEY PETERSON & SNYDER
 A R C H I T E C T S
 1000 WEST 10TH STREET
 AUSTIN, TEXAS 78703

SANDIS
 HOUSTON, TEXAS
 281.462.1000
 www.sandis.com

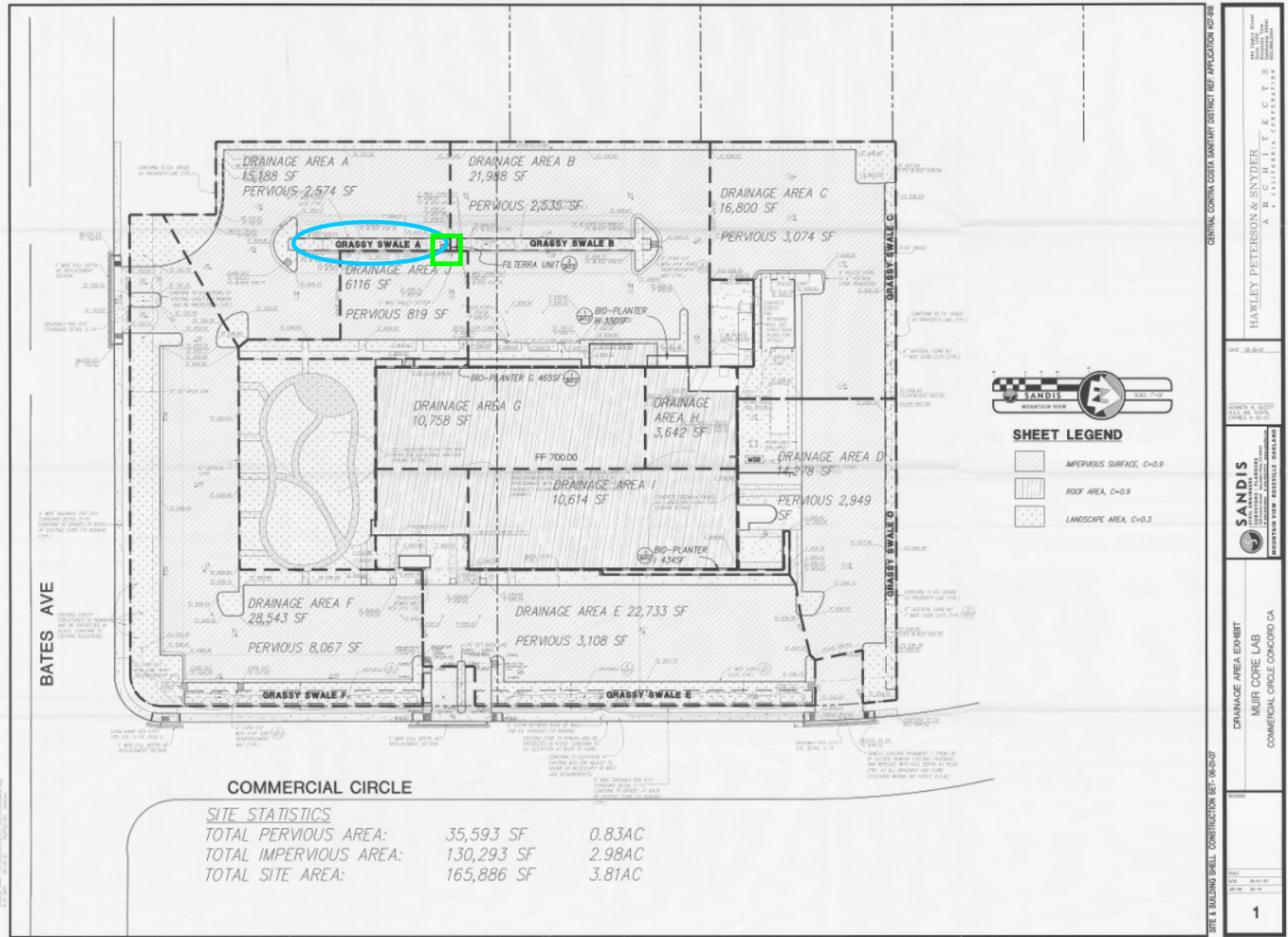
DRAINAGE AREA EXHIBIT
 MUIR CORE LAB
 COMMERCIAL CIRCLE CONCORD, CA

DATE: 05-20-20

SHEET NO. 1

SITE & BUILDING SHELL CONSTRUCTION REF. 05-20-20

Stormwater Control Plan



Filterra Unit



Lessons learned during Construction

During Construction



Map created with ArcIMS - Copyright (C) 1992-2009 ESRI Inc.

During Construction



















← Deliveries





UV-PLS
8/27/2007

FILTERRA TOP SLAB
0290492/106356-2



AF



Significant Rain Event

~ October 13, 2009 ~

Rain Event – October 13, 2009



Rain Event – October 13, 2009



Rain Event – October 13, 2009



Rain Event – October 13, 2009



Rain Event – October 13, 2009



Rain Event – October 13, 2009



Questions?