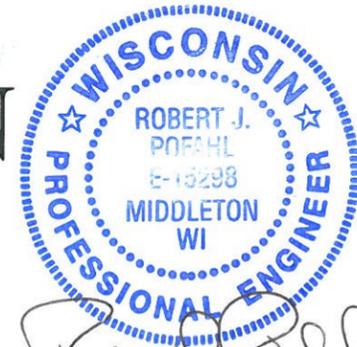


FACILITY DEVELOPMENT PLAN



Robert J. Pofahl
 PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION 7-16-12

To the best of my professional knowledge, judgement and belief, these plans meet the following applicable NRCS standards:

NRCS 313
 NRCS 634
 NRCS 629

CLIENT NAME, OWNER

PREPARED FOR:
GOLDEN SANDS DAIRY
JIM WYSOCKI
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

PREPARED BY:
RESOURCE ENGINEERING ASSOCIATES, INC
3510 PARMENTER ST., SUITE 100
MIDDLETON, WISCONSIN 53562
MAY 2012

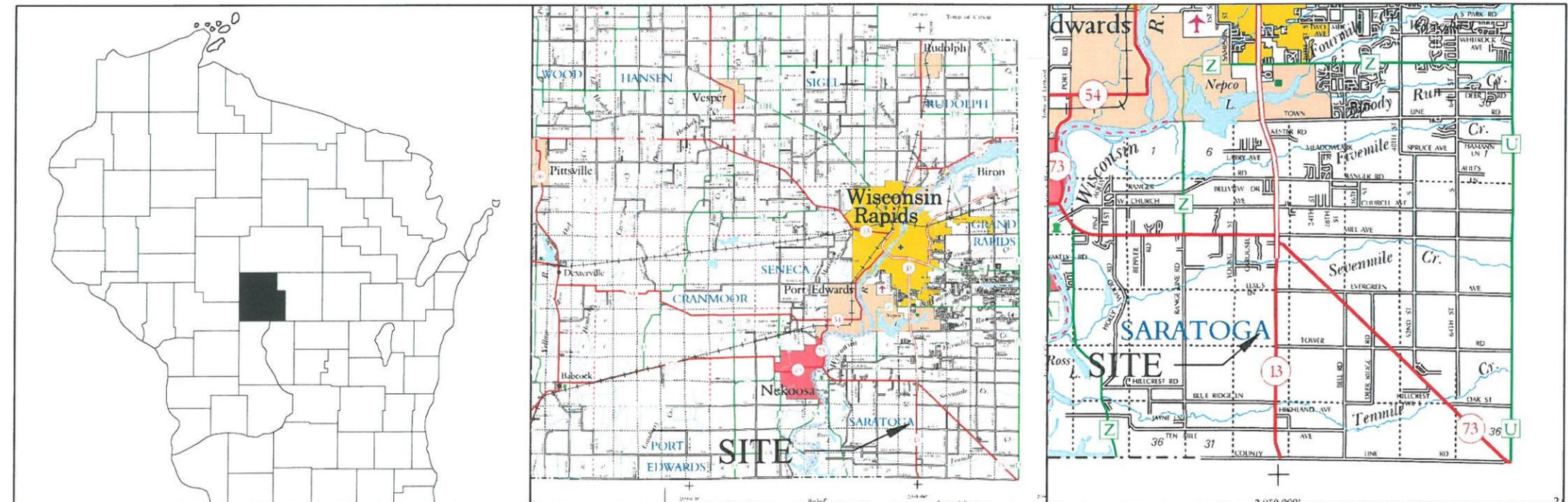
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Diggers Hotline: Wisconsin's One-Call Center

CALL 811 or (800) 242-8511 | (414) 259-1181 | (877) 500-9592 (emergency only)



STATE OF WISCONSIN
 WOOD COUNTY

WOOD COUNTY
 SARATOGA TOWNSHIP

SARATOGA TOWNSHIP
 SECTION 20, T21N, R6E



GENERAL NOTES AND SPECIFICATIONS

1. Construction shall be executed in accordance with the following:

- a. Design Plans & specifications:
- b. Wisconsin Field Office Technical Guidance. USDA-NRCS Wisconsin Conservation Practice Standards including:
 - Manure Transfer (634),
 - Waste Storage Facility (313),
 - Waste Treatment (629)

Copies of the Wisconsin Conservation Practice Standards and the Wisconsin Construction Specifications can be obtained from the WI NRCS website.

c. The term Technician as identified in the USDA-NRCS Specifications and Codes shall refer to a representative from Resource Engineering Associates, Inc. (REA) or other representative selected by owner.

2. Contractor shall verify profiles, heights and dimensions of project prior to fabrication of materials or layout and inform the owner of discrepancies or interferences. Grades are intended to be "rough" grades to be prepared by the excavator. Building grades shall be confirmed with the building contractor.

3. Earth, concrete, steel and other quantities provided are intended for preliminary information. The contractor shall independently determine quantities and lengths.

4. No structural alteration or work affecting a structural member shall be made unless approved in writing by the engineer and owner.

5. Shop drawings are required for special material applications. Required shop drawings will be reviewed by the owner or owners representative for conformance with the design concept. The shop drawings shall be returned within 7 working days. The drawings will be marked as follows:

- No exceptions taken, furnished as submitted;
- Furnish as modified;
- Revise and resubmit.

Project Benchmark for vertical & horizontal control is Benchmark #1 (BM#1). Contractor to confirm elevations from BM#1.

BM#1 = Survey disk in top of concrete monument DH5557 elev. 1010.09' located 0.25 mi east of Hwy 13 & Tower Rd intersection.

A. DESIGN LOADS

1. Design loads are as specified on the individual structural drawings. Minimum loads are as specified in NRCS Code 313

2. Minimum design soil bearing pressure is 3,000 psf. Soil with apparent bearing pressure less than this shall be removed and replaced with granular fill or gravel bedding material.

B. CLEARING

Clearing shall be in accordance with NRCS Construction Specification 1, Clearing. Topsoil from the excavated and fill areas shall be stockpiled for use as final grade material on areas to be seeded.

C. EXCAVATION

Excavation shall be in accordance with NRCS Construction Specification 2, Excavation. Material not required for construction of the embankments and specified site grading shall be placed as fill materials within 300' from the source as directed by the owner.

D. EARTHFILL

Earthfill shall be in accordance with NRCS Construction Specification 3, Earthfill. Compaction objectives are 95% Standard Proctor. Lenses or pockets of soil not meeting minimum construction requirements as specified in NRCS 313 shall be removed and replaced with the specified materials.

E. EARTHFILL FOR WASTE STORAGE FACILITIES

Earthfill shall be in accordance with NRCS Construction Specification 204, Earthfill For Waste Storage Facilities. Compaction objectives are 95% Standard Proctor. Lenses or pockets of soil not meeting minimum construction requirements as specified in NRCS 313 shall be removed and replaced with the specified materials.

F. CONCRETE

1. Design Loads

a. Design loads are as specified on the individual structural drawings. Minimum loads are as specified in NRCS Code 313.

b. Minimum design soil bearing pressure is 3,000 PSF unless specified on drawings. Soil with apparent bearing pressure less than this shall be removed and replaced.

2. Mixes

a. Use Wisconsin Construction Specification No. 4 Concrete.

b. Unless otherwise specified, concrete mix shall have minimum requirements including: 4 to 8% Air entrainment, minimum compressive strength at 28 days > 4000 psi, slump = 2 to 5 inches and requirements as stated in NRCS-WI Spec. 4, Design of Concrete Mix.

The design mix shall be selected in accordance with ACI 318 Chapter 5. Test data shall be provided for selection of the mix design. Batch tickets shall be issued confirming the concrete meets the selected mix requirements. Concrete cylinder tests shall be collected for at least every 150 cubic yards of concrete. Each test shall be laboratory cured. If temperatures within seven days after placement are anticipated to exceed 80 degrees F or drop below 40

degrees F, additional concrete cylinders shall be collected and cured under field conditions for comparison to laboratory cured samples.

3. Steel reinforcement shall meet ASTM A-615, Grade 60 billet steel.

- Minimum Splice Lengths
- #3 bar - 16"
 - #4 bar - 19"
 - #5 bar - 24"
 - #6 bar - 28"

4. Waterstops shall be 6 inch imbedded non-metallic, and joints shall be welded in accordance with manufacturing recommendations, in accordance with NRCS Spec. 4 - Concrete.

5. Expanding hydrophylic sealant shall be Greenstreak Hydrotite or equivalent, minimum 3/4" wide by 3/8" high.

6. Gravel bedding shall consist of a crushed stone base. The aggregates shall be GRADATION #2 as shown on Table 1.

F. PLASTIC PIPE - MANURE TRANSFER

1. Installation

a. The installation shall be in accordance with WI NRCS Construction Specification 15, Plastic Pipe Conduits and the manufacturer's recommendations.

b. Pipe bedding material shall be coarse grained material with less than 50% fines but greater than 10% fines. Bed and haunch according to manufacturer's recommendations.

c. Pipe penetration through precast water tight concrete structures shall be sealed with a flexible water tight boot similar to PSX-Positive Seal Gasket for pipe dia. specified. Pipe penetrations through cored holes in existing structures or cast-in-place holes shall be modular mechanical seals such as LinkSeal (Paul Anderson, Distributor 800-559-0477) with EDPM seals and stainless steel hardware. Install in accordance with manufacturer's recommendations.

2. Pipe

a. PE gravity pipe for manure transfer shall be smooth interior corrugated PE pipe meeting ASTM F-667 and D-3350 as applicable. An example product is ADS, N-12 pipe. Couplings and fittings shall be water tight bell coupler (min. 23 ft pressure rating) as approved by the pipe manufacturer.

b. PVC pressure plastic pipe for manure transfer shall be PVC pipe and fittings conforming to ASTM D-2241 (SDR 21) or D-1785 (SCH 80), rated at 160 psi with glued or gasket joints with restraint.

c. PVC gravity plastic pipe for manure transfer shall be SDR 35 PVC pipe and fittings conforming to ASTM D-3034 or F-679 with gasket or solvent weld joints in accordance

with manufacturer's recommendation and ASTM D-3212. Install fittings and joints in accordance with manufacturer's recommendations.

G. STORMWATER DRAINAGE

1. Installation

a. The installation shall be in conformance with WI NRCS Construction Specification 15, Plastic Pipe Conduits and the manufacturers recommendations.

b. Plastic pipe for culverts shall be smooth interior corrugated PE pipe meeting ASTM F-667 and D-3350 as applicable. An example product is ADS N-12 pipe. Couplings and fittings shall be water tight as approved by the pipe manufacturer.

c. Pipe bedding material shall be coarse grained material with less than 50% fines and greater than 10% fines unless otherwise specified. Bed and haunch according to manufacturers recommendations.

d. Culvert outlet transition to be graded with minimum 2:1 sideslopes as per owner.

I. PVC WATER PIPE POST-INSTALLATION TEST REQUIREMENTS

HYDROSTATIC TEST: A post-installation hydrostatic test shall be performed on the installation in accordance with AWWA C605. Lines shall be filled slowly with potable water at a maximum velocity of 1 ft/s (0.3 m/s) while venting air. Precautions shall be taken to prevent entrapping air in the lines.

No installation will be accepted if the make-up water is greater than that determined by the formula:

$$Q = \frac{LD\sqrt{P}}{148,000}$$

Where Q is the allowable make-up water, in gallons per hour; L is the length of pipe section being tested; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the test, in pounds per square inch (gauge).

The duration of the test shall be two hours, unless otherwise specified.

Other test methods may be considered by the owner. Provide alternative test procedures for approval.

J. PUMPS FOR MANURE TRANSFER PIPES

1. Pump shall not exceed pipe pressure recommendations. Verify with pump and pipe suppliers.

K. FENCING

Materials and installation of fencing shall be in accordance with NRCS Construction Specification 10, Fences.

REVISIONS:
DATE
DATE
DATE
DATE

Resource Engineering Associates, Inc.
3510 Parmenter St., Suite 100
Middleton, Wisconsin 53562-2507
Phone: 608-831-5522
Fax: 608-831-6564
Web: www.reaeng.com



GENERAL NOTES
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

DATE: MAY, 2012
DRAWN: RAN
CHECKED: RJP
APPROVED: RJP
DRAWING NAME: 1232cover.dwg
PROJECT NUMBER: 120032.1

L. SEEDING

Basin embankments, the drainage swales, and general grading to match existing grades shall be seeded with permanent grass cover to stabilize the soil from erosion. Seedbed preparation and seeding shall be in accordance with the NRCS Critical Area Planting Code 342. Seeded areas shall be mulched. Seeding mixture and pounds per acre are as summarized below:

Smooth Bromegrass	5 lbs/ac PLS
Creeping Red Fescue	2 lbs/ac PLS
Kentucky Bluegrass	2 lbs/ac PLS
Birdsfoot Trefoil	2 lbs/ac PLS

Seedbed Preparation: Seedbed preparation shall immediately follow construction activities. Prepare a fine, firm seedbed to a minimum depth of 4 inches.

Seeding: Inoculate legumes properly, according to manufacturer's recommendations. Seed grasses and legumes at 1/4 to 1/2 inch deep immediately after seedbed preparation. Seed may be broadcast or drilled as appropriate to the site. A cultipacker seeder works well.

Mulch: Spread mulch uniformly immediately after seeding at a rate of 1 1/2-2 T/A. This application results in a layer of 6-7 stems, 1 to 2 inches thick. Anchor mulch to the soil with a dull weighted disc set straight or other approved methods. Work waterways crosswise when possible.

GRAVEL BEDDING GRADATION TABLE			
SIEVE SIZE	GRADATION #1	GRADATION #2	GRADATION #3
3	100	-	-
2 1/2"	90-100	-	-
2"	-	-	-
1 1/2"	25-60	100	-
1"	-	70-100	-
3/4"	0-20	55-95	-
1/2"	-	-	-
3/8"	0-5	30-65	-
#4	-	25-55	100
#10	-	15-40	70-90
#40	-	-	30-70
#200	-	0-10	0-10

SAND DRAINAGE BLANKET GRADATION ASTM C-33	
SIEVE SIZE	FINE AGGREGATE
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-5

Design Criteria – Golden Sands Dairy

1. Storage quantities (30 million gallons) not including 1 foot of freeboard. Quantities are based on manure from 3,400 cows, 60,000 gpd waste water, and runoff from 313,932 sq. ft. Storage duration is approximately 180 days.

2. Cows are anticipated to be bedded with sand. Access to the manure basin via ramp will be provided for maintenance and solid manure disposal.

3. Concrete Manure Basin – Maintain NRCS Code 313 (table 5) requirements for "Concrete-soil composite. This includes 3 feet of soil with 20% fines, 4 feet of separation from saturation, and 3 feet of clearance from bedrock.

4. Available information indicates the manure basin is not in a documented floodplain, and is not within 300 feet of a documented navigable stream or waterway.

5. Topographic contours

6. Soil borings were advanced on May 9 & 10, 2012 and logged by REA, Inc.

HOW TO GET TO THE NRCS SPECIFICATIONS

- GO TO www.nrcs.usda.gov
- CLICK ON "FIELD OFFICE TECHNICAL GUIDE (FOTG)
- SELECT STATE OF WISCONSIN
- SELECT DESIRED COUNTY
- MUST HAVE JAVA INSTALLED ON YOUR COMPUTER
- CLICK ON SECTION IV
- CLICK ON "CONSERVATION PRACTICES" OR "SPECIFICATIONS"

PROJECT CONTACTS

Site Contact:
Jim Wysocki
Golden Sands Dairy
8550 Central Sands Road
Bancroft, WI 54921

ENGINEER/CONSULTANT:
REA, INC.
3510 Parmenter St – Suite 100
Middleton, WI 53562
Phone: 608-831-5522
Fax: 608-831-6564
Contact: Bob Pofahl, P.E.

REVISIONS:
DATE
DATE
DATE
DATE

Resource Engineering Associates, Inc.
3510 Parmenter St., Suite 100
Middleton, Wisconsin 53562-2507
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Fax: 608-831-6564
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GENERAL NOTES
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

DATE: MAY, 2012
DRAWN: RAN
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DRAWING NAME: 1232cover.dwg
PROJECT NUMBER: 120032.1

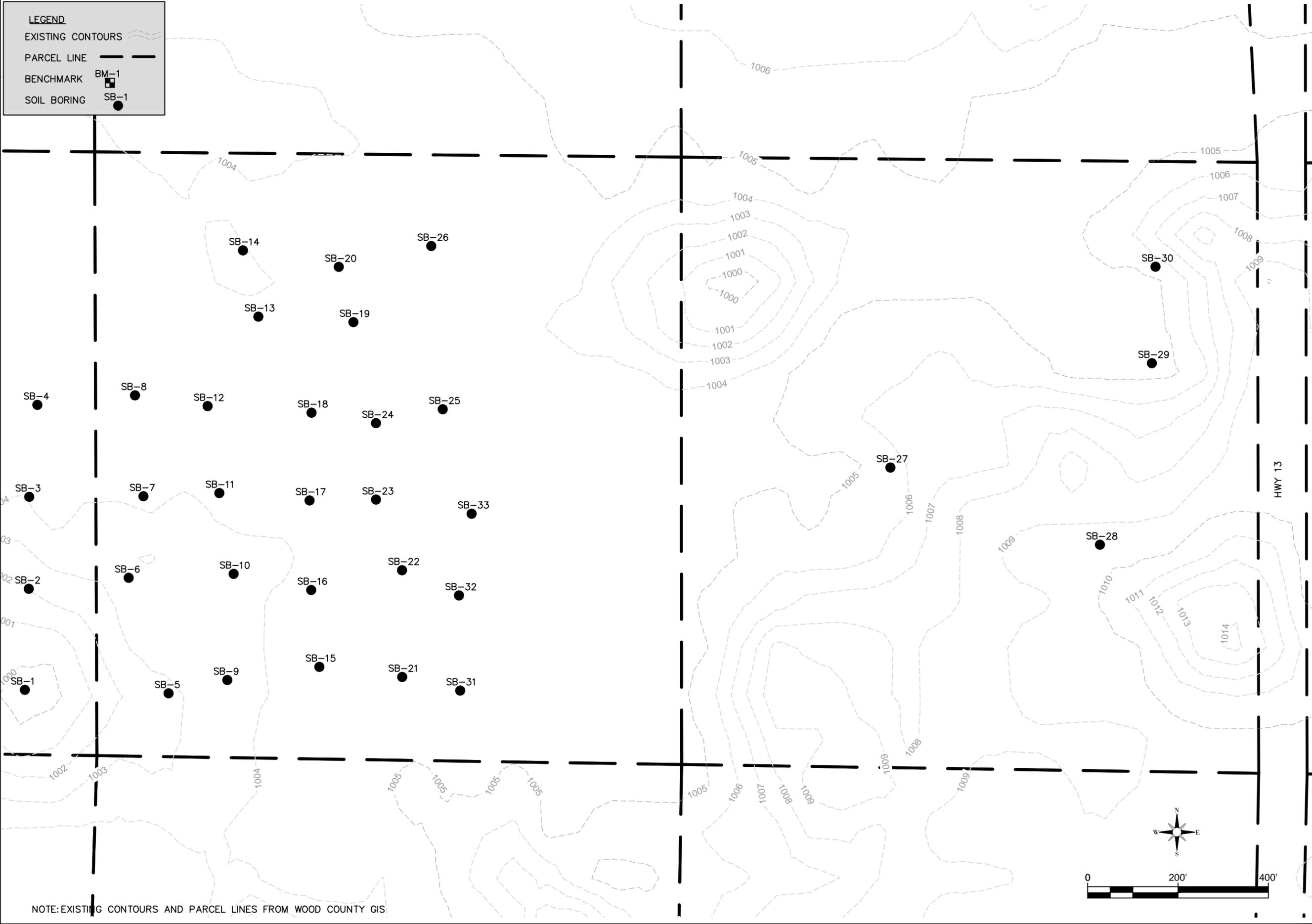
LEGEND

EXISTING CONTOURS 

PARCEL LINE 

BENCHMARK BM-1 

SOIL BORING SB-1 



NOTE: EXISTING CONTOURS AND PARCEL LINES FROM WOOD COUNTY GIS

REVISIONS:

DATE
DATE
DATE
DATE

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 3510 Parmenter St., Suite 100
 Middleton, Wisconsin 53562-2507
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**EXISTING CONDITIONS
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE: 5/12/12
DRAWN: DRW
CHECKED: RJP
APPROVED: RJP
DRAWING NAME: 1232site.dwg
PROJECT NUMBER: 120032.1

C100

LEGEND

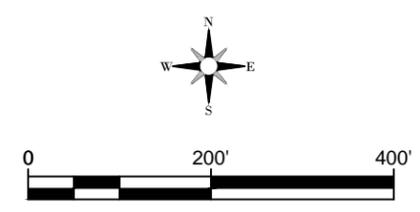
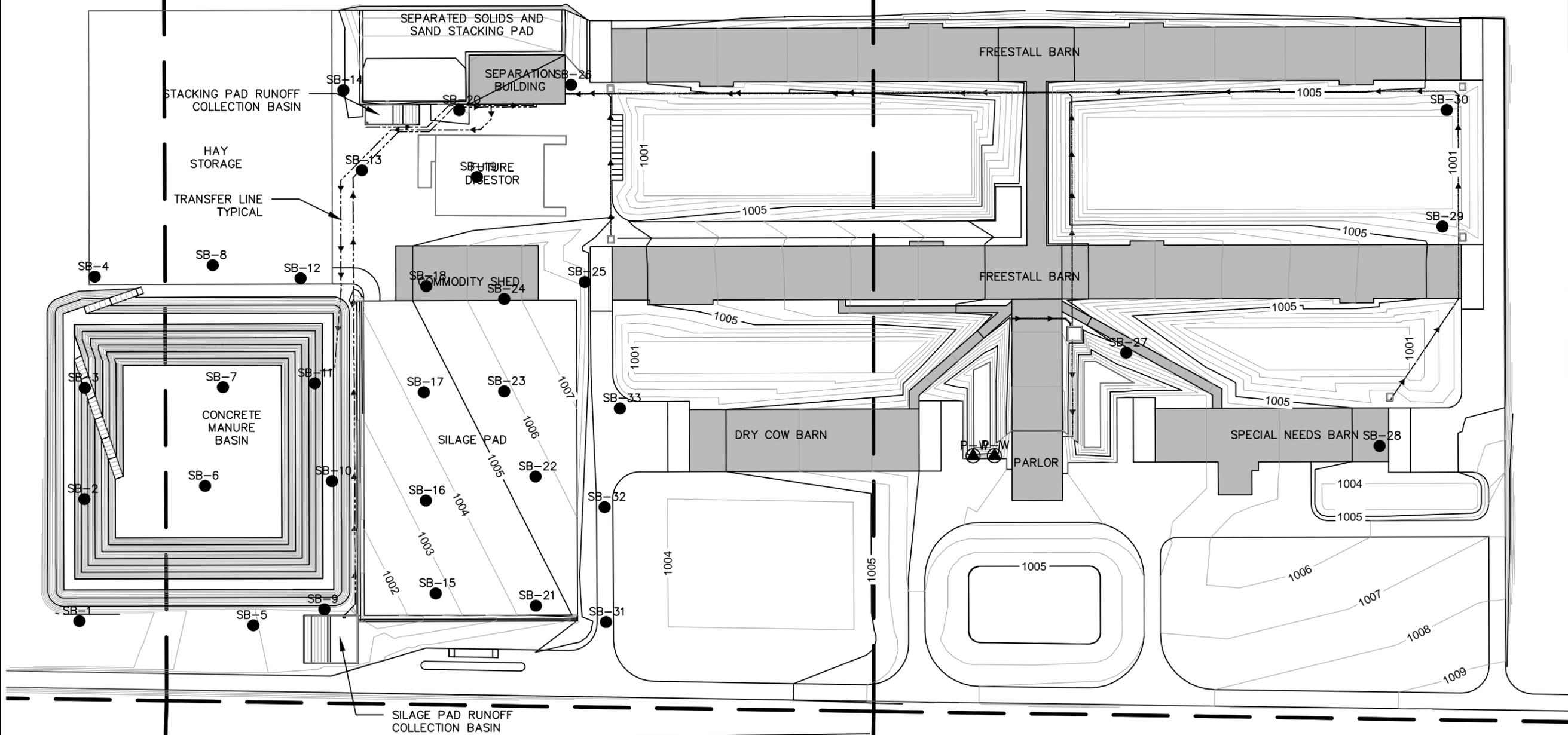
PROPOSED CONTOURS 

PARCEL LINE 

BENCHMARK  BM-1

SOIL BORING  SB-1

PROPOSED WELL  P-W



REVISIONS:

DATE
DATE
DATE
DATE

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**PROPOSED LAYOUT
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE: 5/12/12
DRAWN: DRW
CHECKED: RJP
APPROVED: RJP
DRAWING NAME: 1232site.dwg
PROJECT NUMBER: 120032.1

LEGEND

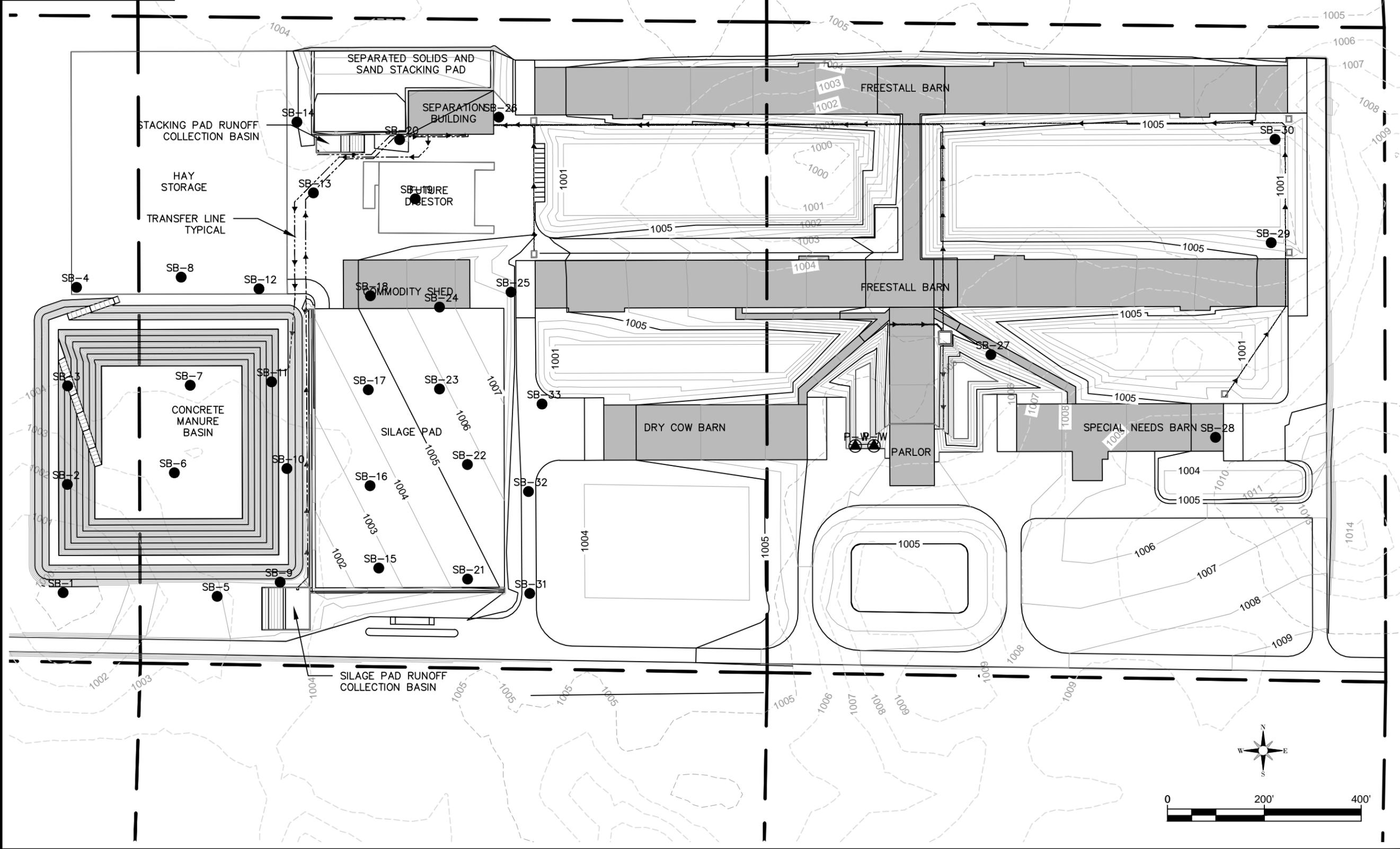
PROPOSED CONTOURS

PARCEL LINE

BENCHMARK

SOIL BORING

PROPOSED WELL



REVISIONS:

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DATE
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DATE

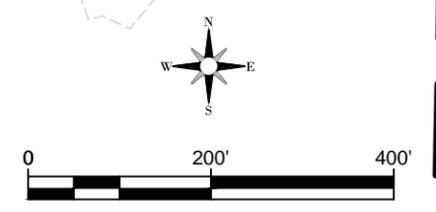
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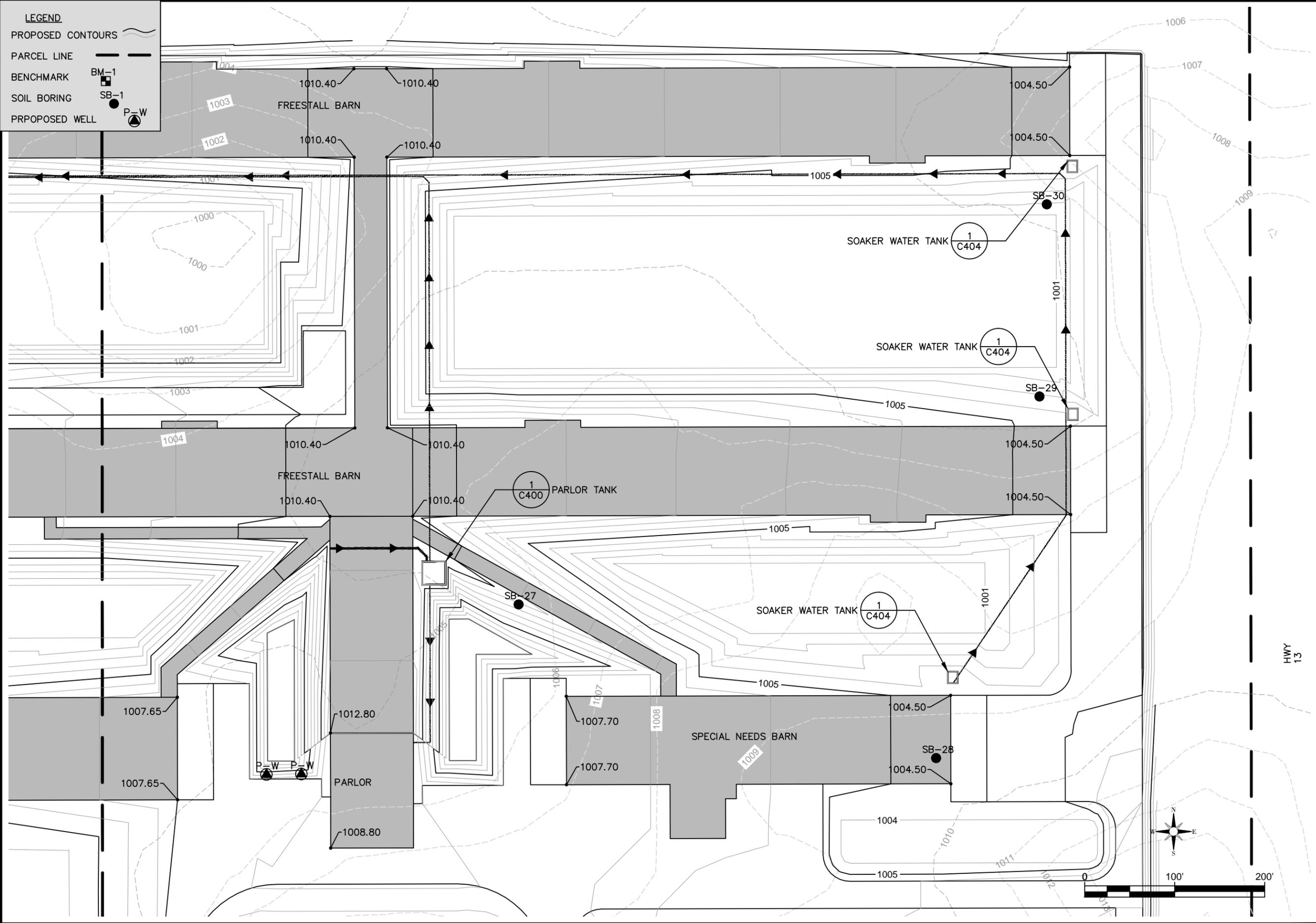


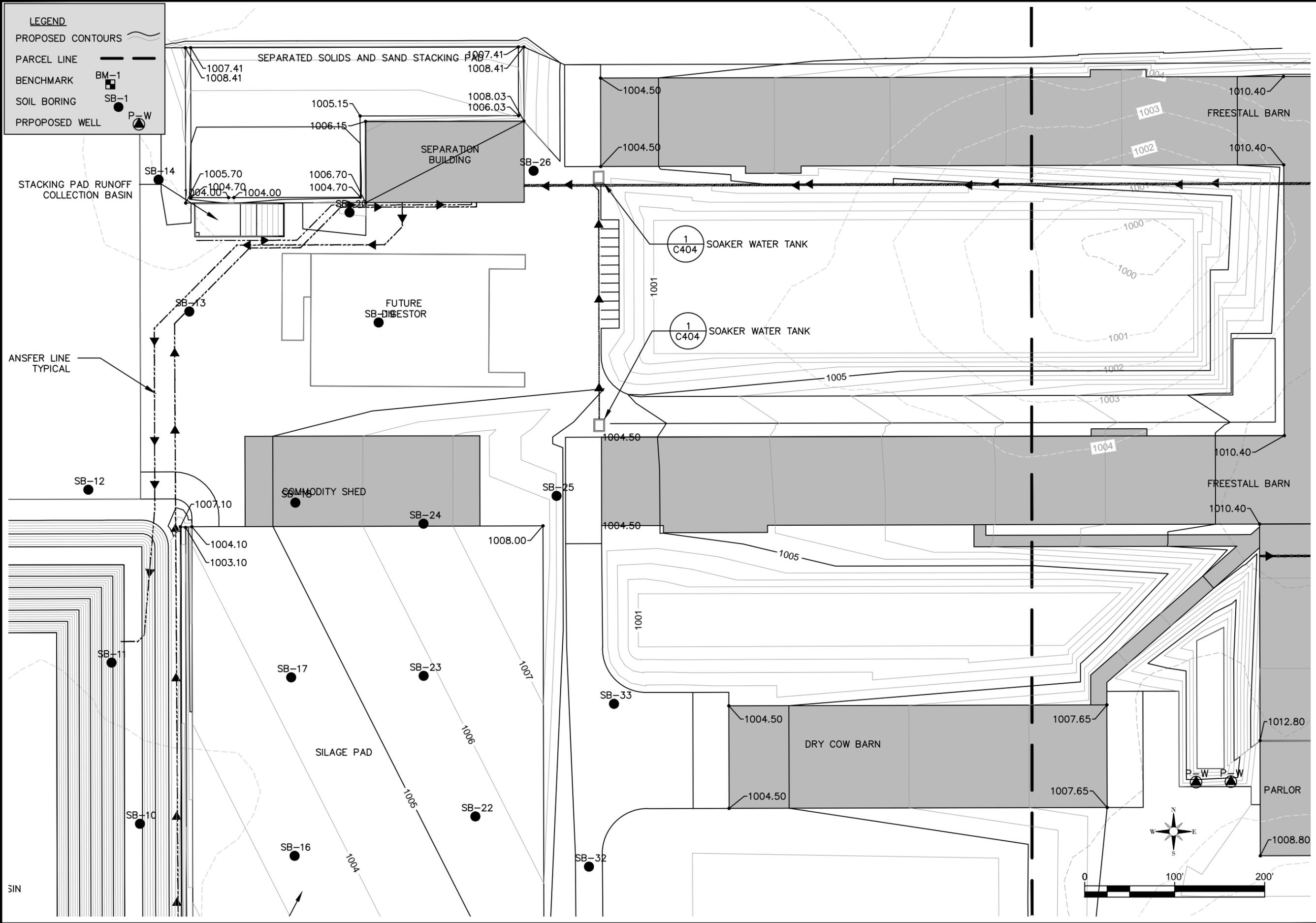
HWY 13

**GRADING PLAN - SITE
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE: 5/12/12
DRAWN: DRW
CHECKED: RJP
APPROVED: RJP
DRAWING NAME: 1232site.dwg
PROJECT NUMBER: 120032.1







LEGEND

PROPOSED CONTOURS

PARCEL LINE

BENCHMARK BM-1

SOIL BORING SB-1

PROPOSED WELL P-W

REVISIONS:

DATE	
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DATE	
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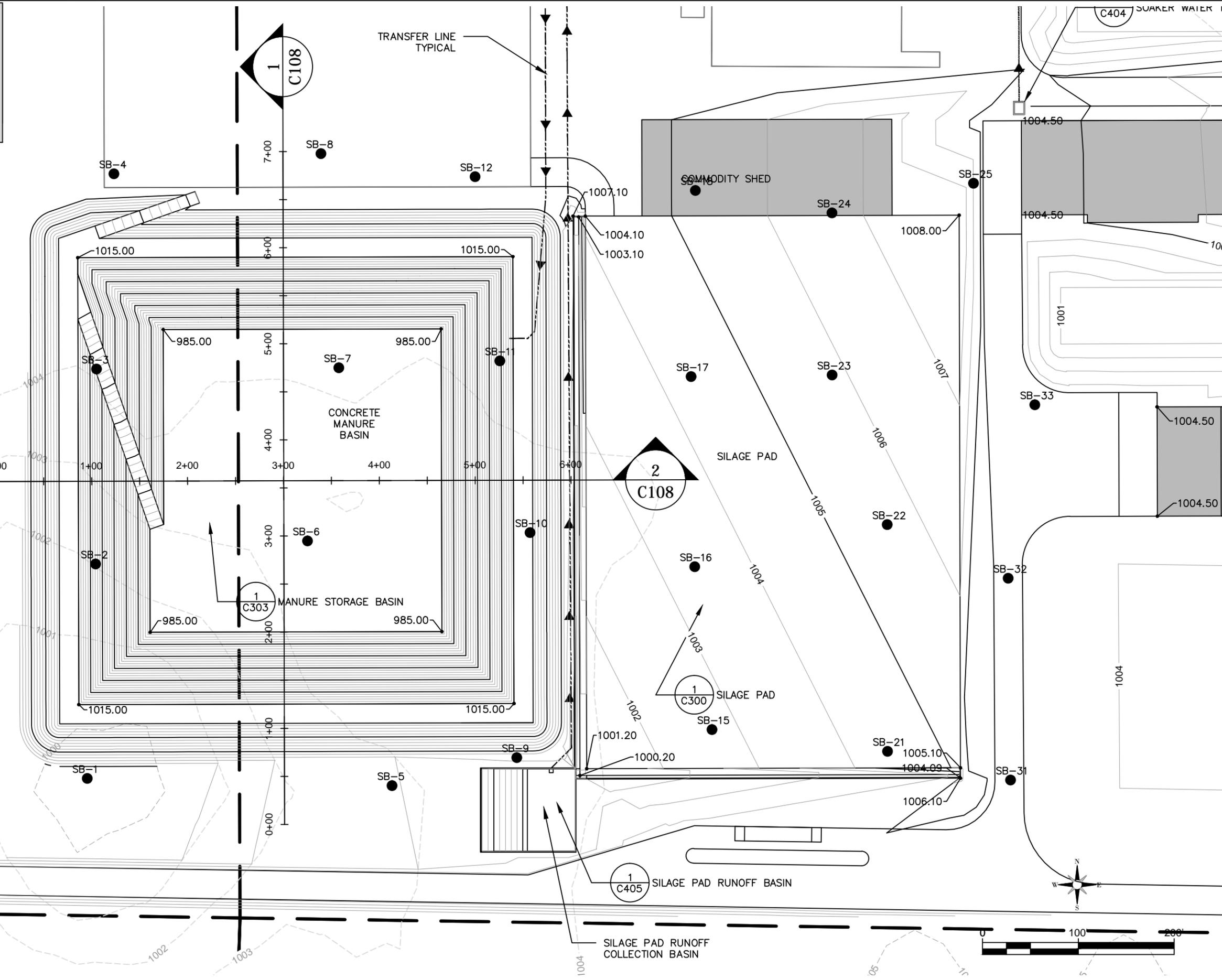
**GRADING PLAN - BARN WEST
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE:	5/12/12
DRAWN:	DRW
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APPROVED:	RJP
DRAWING NAME:	1232site.dwg
PROJECT NUMBER:	120032.1

C104

LEGEND

- PROPOSED CONTOURS
- PARCEL LINE
- BENCHMARK BM-1
- SOIL BORING SB-1
- PROPOSED WELL P-W



REVISIONS:

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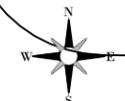
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 Fax: 608-831-6564
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**GRADING PLAN - BASIN/SILAGE PAD
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE: 5/12/12
 DRAWN: DRW
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 120032.1

C105



LEGEND

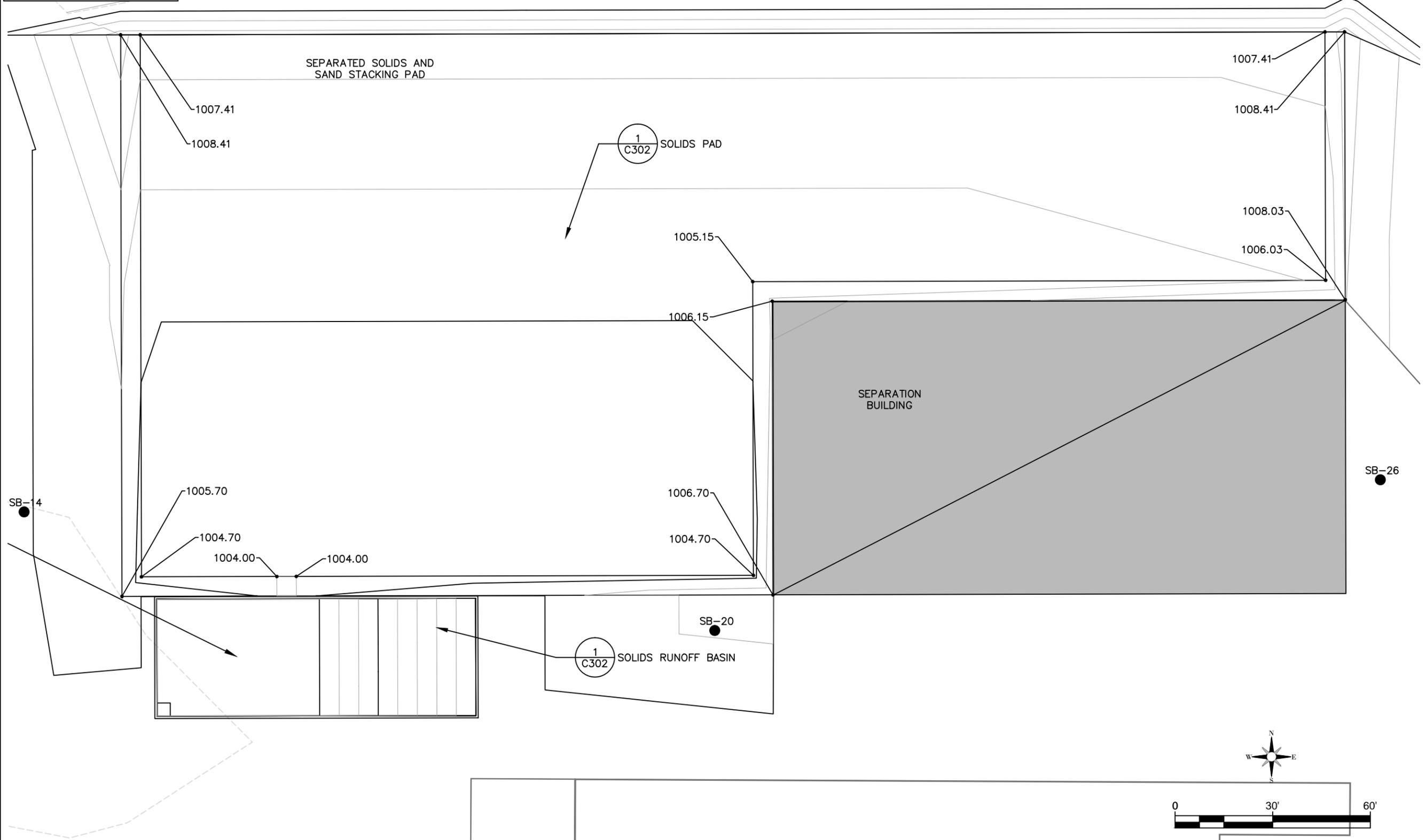
PROPOSED CONTOURS 

PARCEL LINE 

BENCHMARK 

SOIL BORING 

PROPOSED WELL 



REVISIONS:

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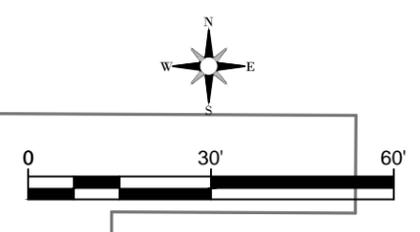
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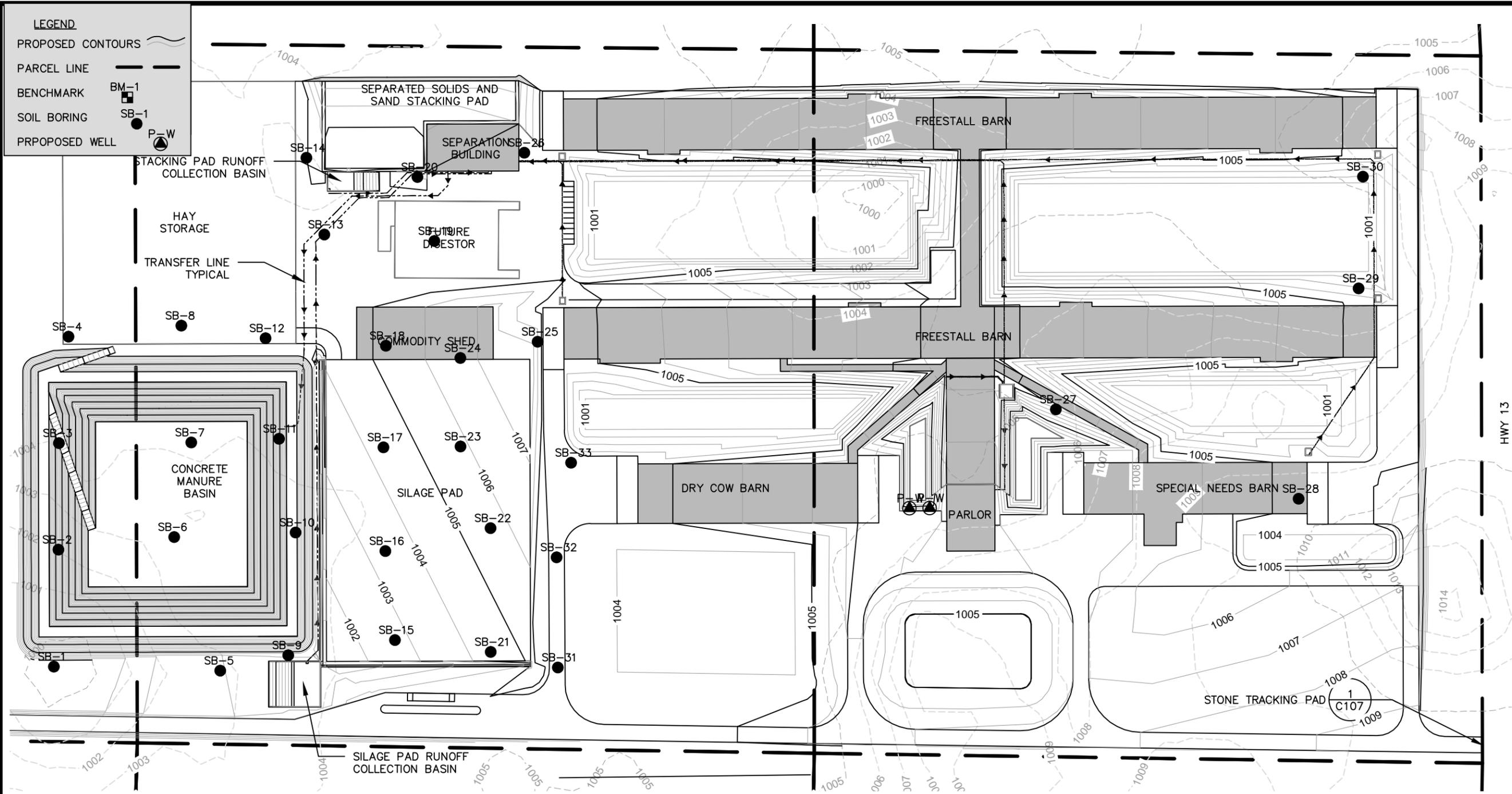


**GRADING PLAN - STACKING PAD
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921**

DATE: 5/12/12
 DRAWN: DRW
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 APPROVED: RJP
 DRAWING NAME:
 1232site.dwg
 PROJECT NUMBER:
 120032.1

C106





LEGEND

PROPOSED CONTOURS

PARCEL LINE

BENCHMARK BM-1

SOIL BORING SB-1

PROPOSED WELL P-W

REVISIONS:

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DATE	

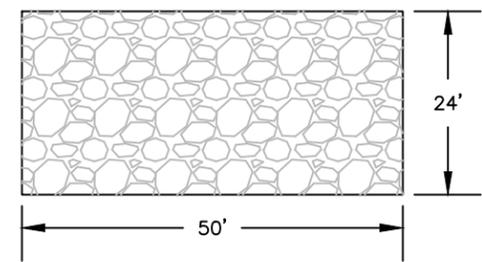
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EROSION CONTROL PLAN
FACILITY SITE PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS RD.
BANCROFT, WI 54921

DATE:	5/12/12
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C107



1 STONE TRACKING PAD DETAIL
 C107 NOT TO SCALE

EROSION CONTROL NOTES

ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED BY THE CONTRACTOR IN ACCORDANCE WITH DNR TECHNICAL STANDARDS.

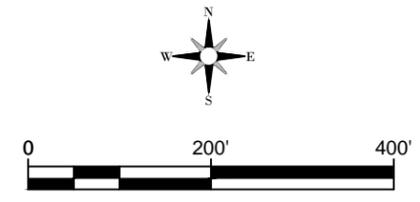
EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE WORK. THE STORMWATER BASIN SHALL BE CONSTRUCTED AS PART OF THE EROSION CONTROL MEASURES.

EROSION CONTROL MEASURES SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER A RAINFALL OF 1/2 INCH OR MORE WITHIN 24 HOURS. NECESSARY MAINTENANCE SHOULD FOLLOW THE INSPECTIONS WITHIN 24 HOURS. INSPECTION REPORTS SHALL BE PREPARED AND FILED AS REQUIRED BY THE DNR.

SOIL STOCKPILES SHOULD HAVE EROSION CONTROL MEASURES DOWNSTREAM OR BE SEEDED IF PLANNED TO BE LEFT FOR OVER 14 DAYS. SOIL STOCKPILES SHOULD NOT BE PLACED WITHIN 20 FEET OF A DRAINAGE WAY.

ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED WITHIN 14 DAYS OF FINAL GRADING

EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE AND SOIL SURFACES HAVE BEEN STABILIZED.



REVISIONS:
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DATE
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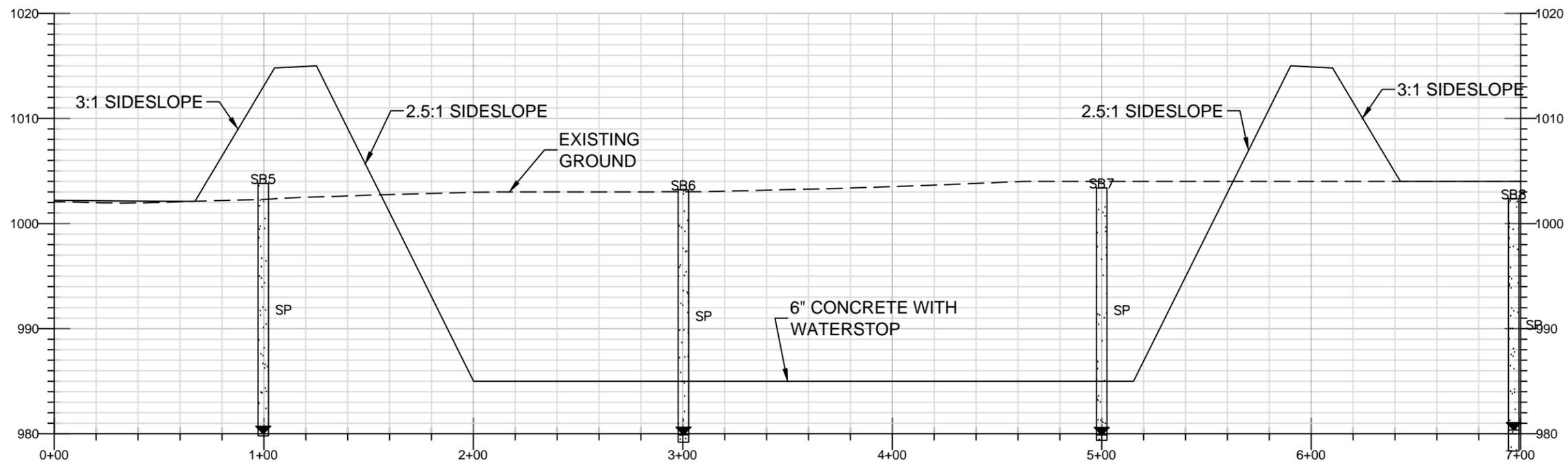
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MANURE BASIN SECTIONS
 FACILITY SITE PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS RD.
 BANCROFT, WI 54921

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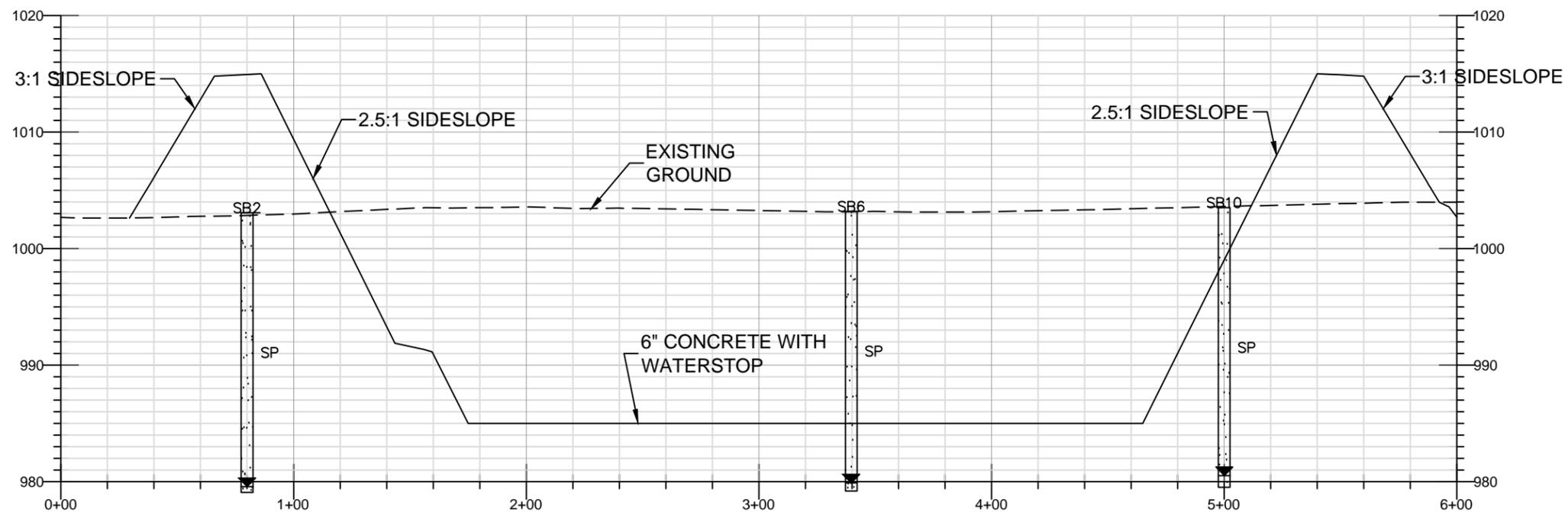
C108



▼ GROUNDWATER LEVEL TYPICAL
 EXCAVATING CONTRACTOR TO NOTIFY ENGINEER WHEN
 EXCAVATION IS WITHIN 2 FEET OF PROPOSED BOTTOM

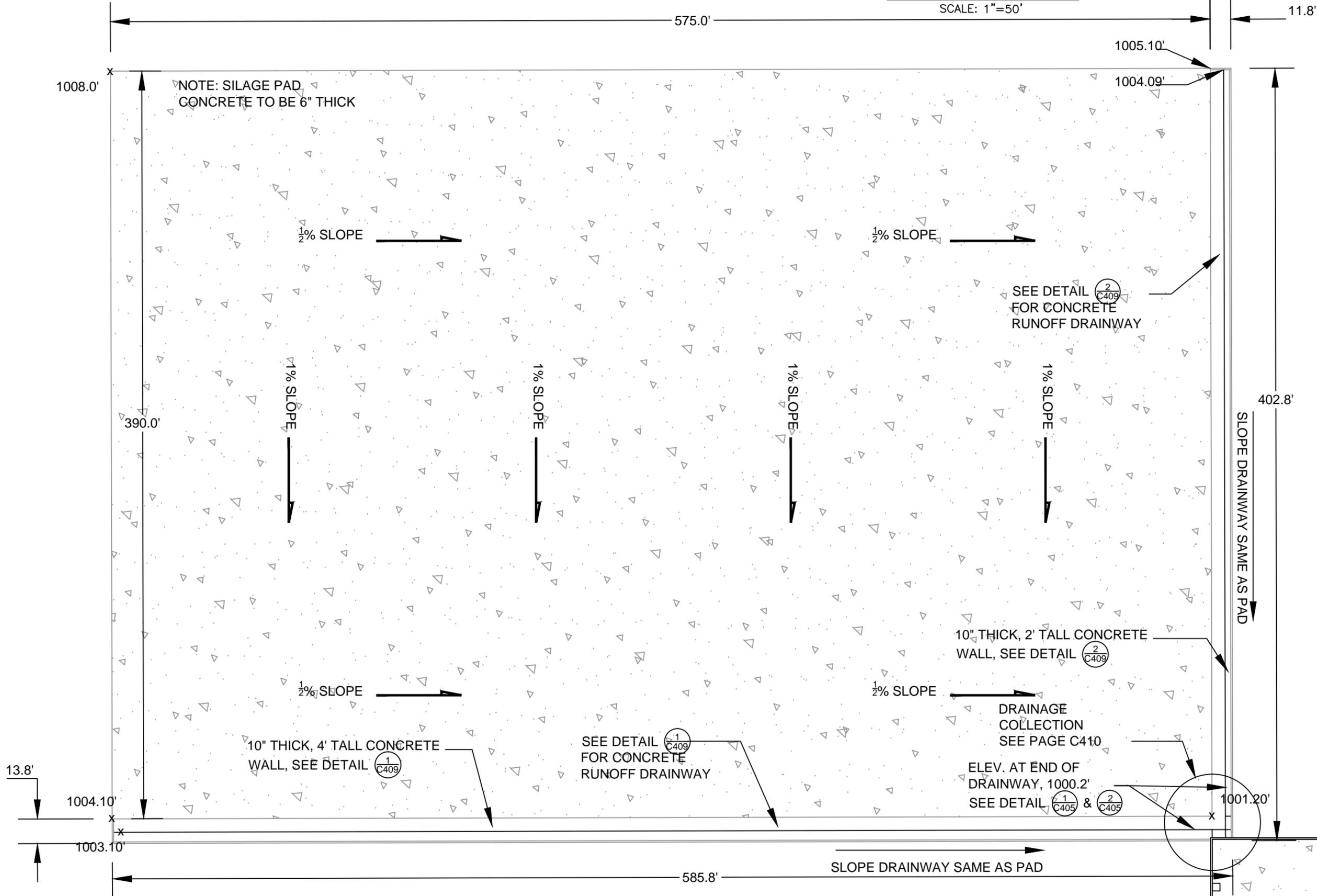
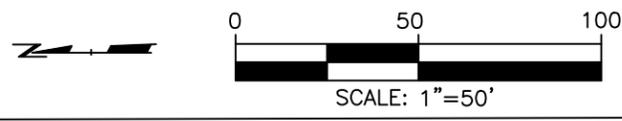
1 BASIN SECTION
 C108 SCALE 1"=60'

NOTE: SEE TYPICAL DETAIL 2/C413 FOR EMBANKMENT
 CORE TRENCH



2 BASIN SECTION
 C108 SCALE 1"=60'

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NOTE: SILAGE PAD CONCRETE TO BE 6" THICK

1/2% SLOPE

1/2% SLOPE

1% SLOPE

1% SLOPE

1% SLOPE

1% SLOPE

1/2% SLOPE

1/2% SLOPE

10" THICK, 4' TALL CONCRETE WALL, SEE DETAIL (1) C409

SEE DETAIL (1) C409 FOR CONCRETE RUNOFF DRAINWAY

10" THICK, 2' TALL CONCRETE WALL, SEE DETAIL (2) C409

DRAINAGE COLLECTION SEE PAGE C410

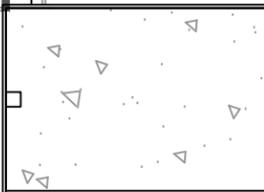
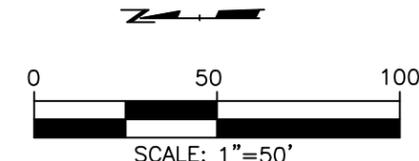
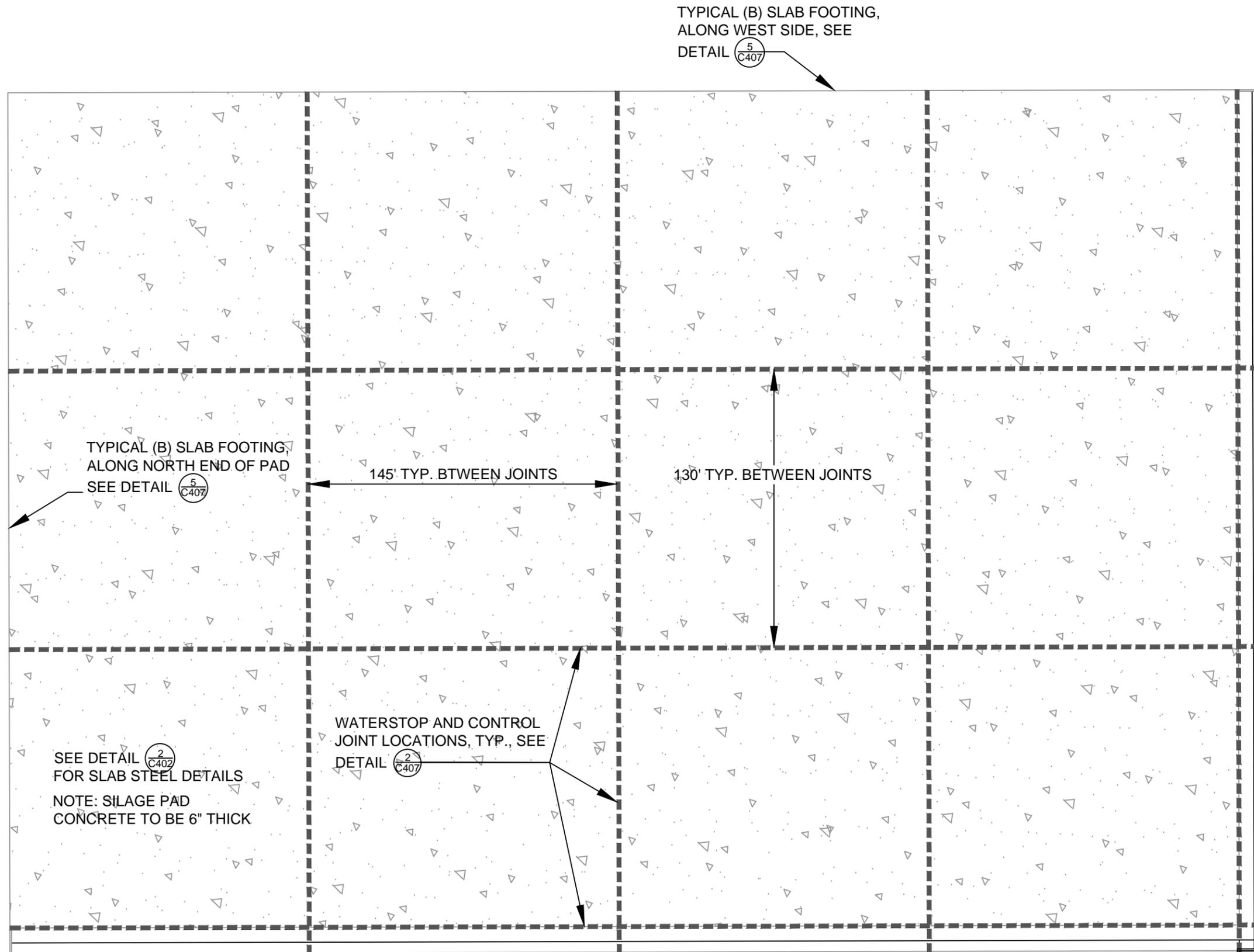
ELEV. AT END OF DRAINWAY, 1000.2' SEE DETAIL (1) C405 & (2) C409

SEE DETAIL (2) C409 FOR CONCRETE RUNOFF DRAINWAY

SLOPE DRAINWAY SAME AS PAD

SLOPE DRAINWAY SAME AS PAD

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RESOURCE ENGINEERING ASSOCIATES, INC.
SILAGE PAD GRADING PLAN FACILITY DEVELOPMENT PLAN GOLDEN SANDS DAIRY 8550 CENTRAL SANDS ROAD BANCROFT, WI 54921
Date: MAY 2012 Drawn: RAN Checked: RJP Approved: RJP Drawing: 1232layouts.dwg Project #: 120032.1 C300



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RESOURCE ENGINEERING ASSOCIATES, INC. REA
SILAGE PAD WATERSTOP & CONTROL JOINTS FACILITY DEVELOPMENT PLAN GOLDEN SANDS DAIRY 8550 CENTRAL SANDS ROAD BANCROFT, WI 54921
Date: MAY 2012 Drawn: RAN Checked: RJP Approved: RJP
Drawing 1232layouts.dwg
Project # 120032.1
C301

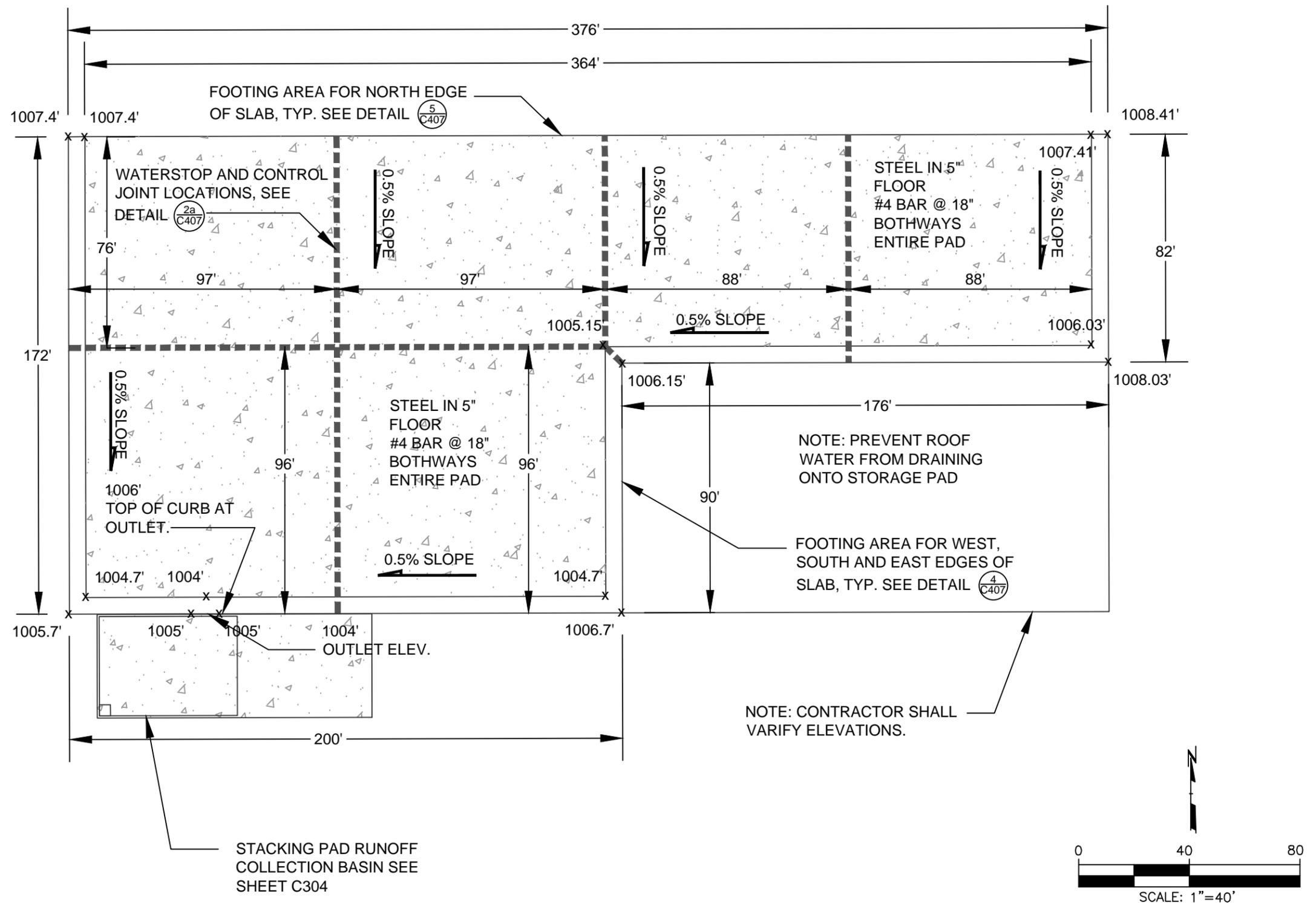
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SEPARATED SOLIDS & SAND STACKING PAD
WATERSTOP AND CONTROL JOINTS
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP
Approved: RJP
Drawing
1232layouts.dwg
Project #
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C302



REVISIONS:

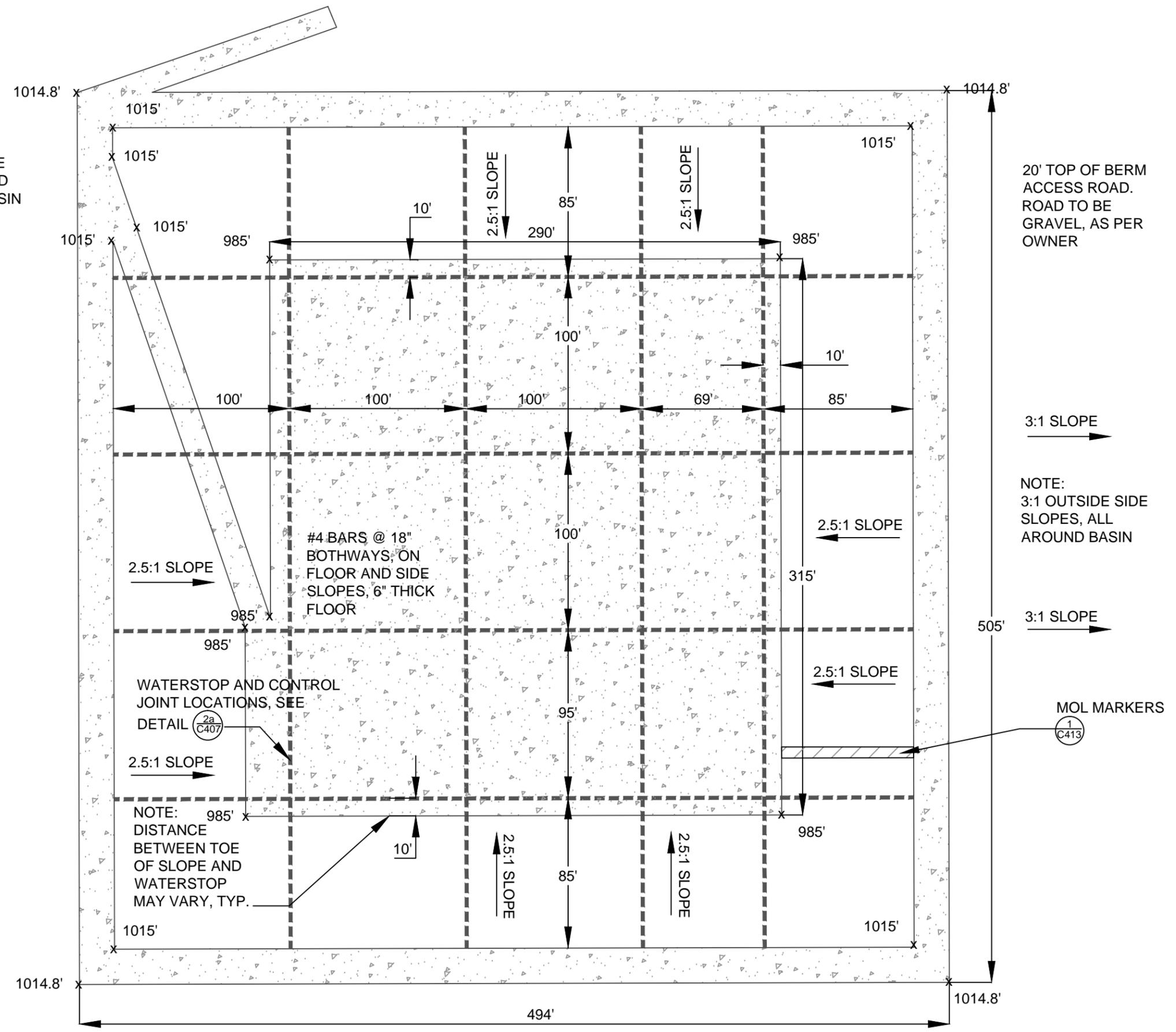
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MANURE BASIN
WATERSTOP & CONTROL JOINTS
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP
Approved: RJP
Drawing
1232layouts.dwg
Project #
120032.1
C303



14' CONCRETE
ACCESS ROAD
INSIDE OF BASIN

20' TOP OF BERM
ACCESS ROAD.
ROAD TO BE
GRAVEL, AS PER
OWNER

3:1 SLOPE

3:1 SLOPE

3:1 SLOPE

3:1 SLOPE

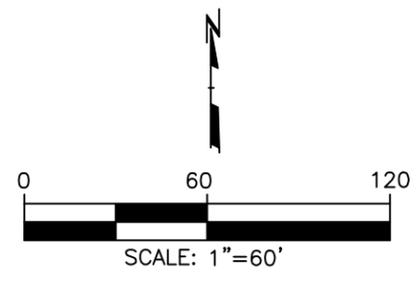
NOTE:
3:1 OUTSIDE SIDE
SLOPES, ALL
AROUND BASIN

#4 BARS @ 18"
BOTHWAYS, ON
FLOOR AND SIDE
SLOPES, 6" THICK
FLOOR

WATERSTOP AND CONTROL
JOINT LOCATIONS, SEE
DETAIL (2a)
C407

MOL MARKERS
(1)
C413

NOTE:
DISTANCE
BETWEEN TOE
OF SLOPE AND
WATERSTOP
MAY VARY, TYP.



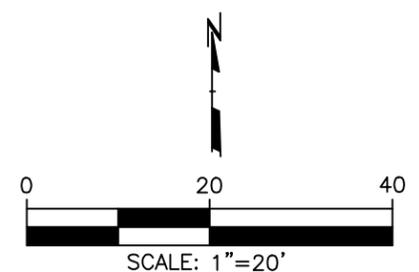
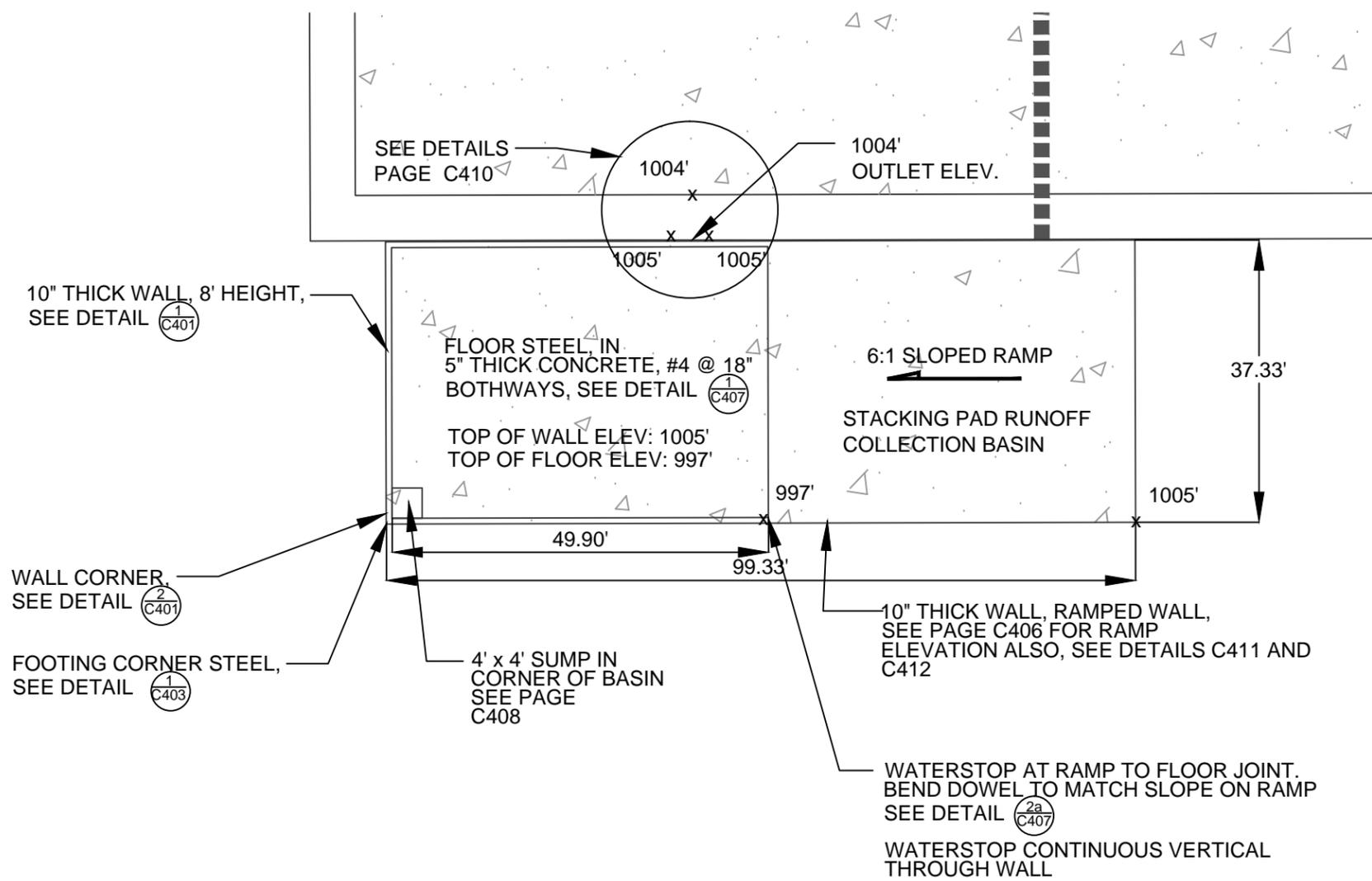
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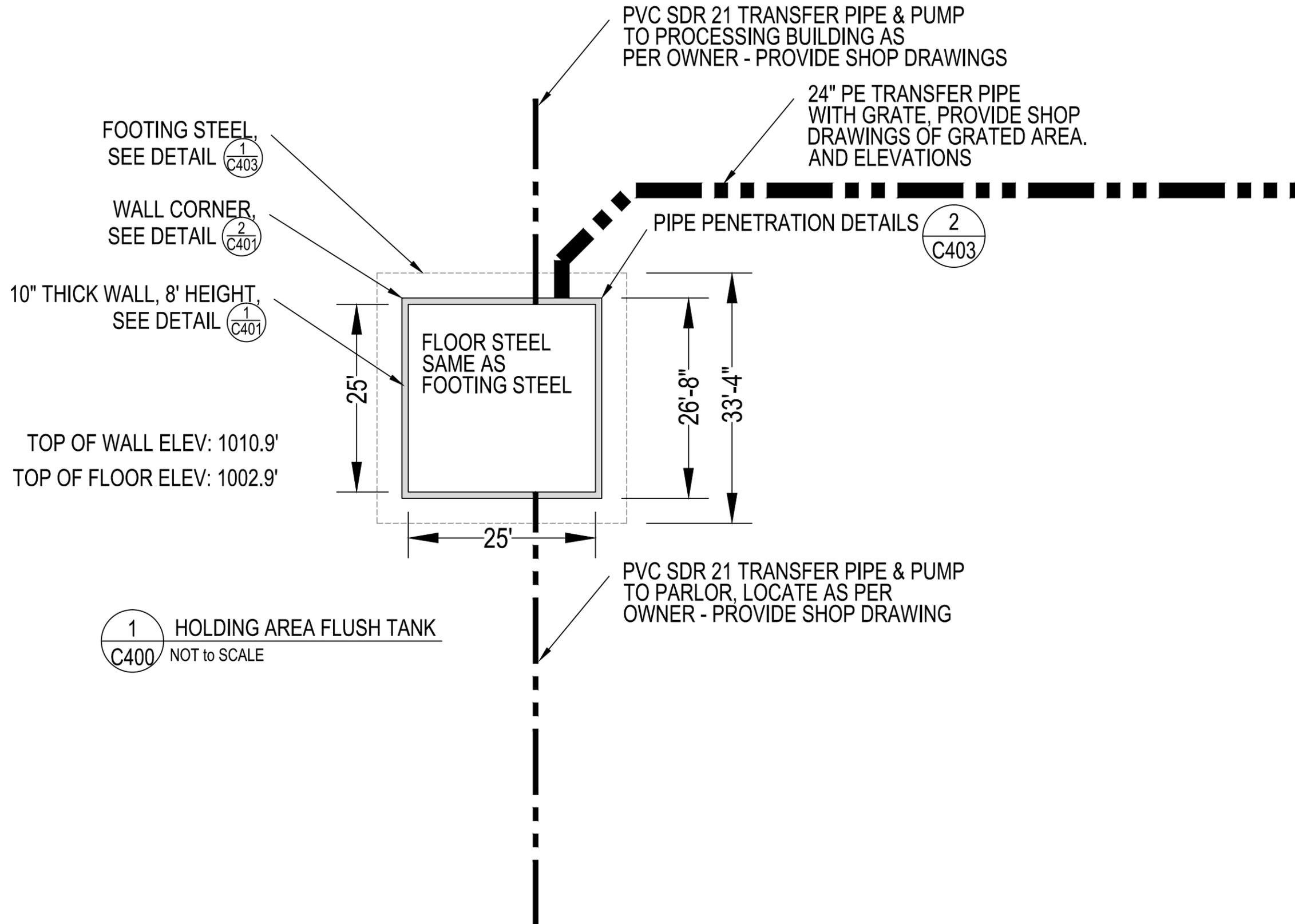
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SEPARATED SOLIDS & SAND STACKING PAD
RUNOFF COLLECTION BASIN
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP
Approved: RJP
Drawing
1232layouts.dwg
Project #
120032.1
C304





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HOLDING AREA FLUSH TANK
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS ROAD
 BANCROFT, WI 54921

Date: MAY 2012

Drawn: RAN

Checked: RJP

Drawing #
 1232details.dwg

Project #
 120032.1

C400

CONDITIONS OF USE
 BACKFILL: 3 TO 8 FEET 0 - 100% FINES
 MANURE: 65 PSF/FT, EQUIVALENT FLUID PRESSURE
 REQUIRES STRUCTURAL SLAB, NON-STRUCTURAL
 SLAB OR NO EQUIPMENT LOADING

DESIGN VALUES
 EARTH BACKFILL: 85 PSF/FT, EQUIVALENT FLUID PRESSURE
 110 PCF (SOIL WEIGHT)
 VERTICAL WALL LOAD FOR SLABS BEARING ON WALLS AND
 PUSH-OFFS = 1000 LBS./FT.

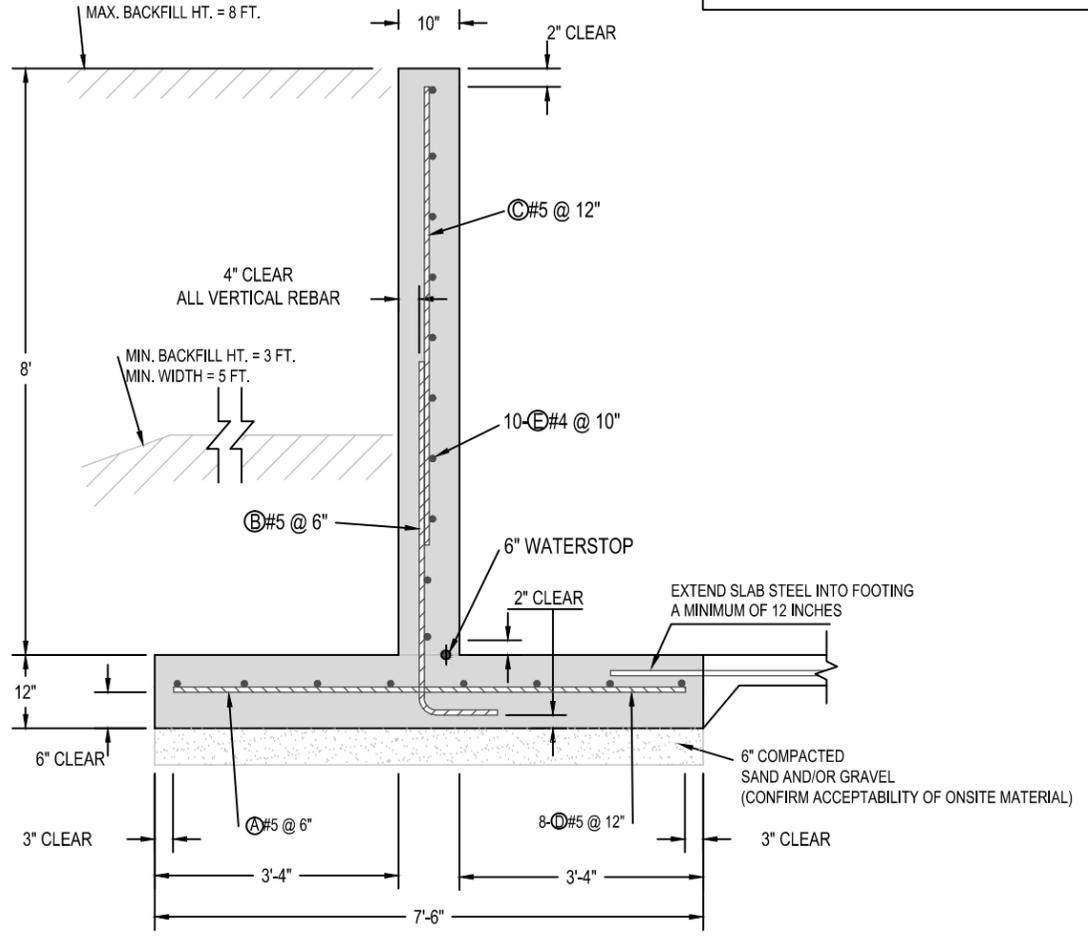
STEEL SCHEDULE (GRADE 60)

MARK	SIZE	TYPE	R	S	LENGTH
A	#5	STR	---	---	7'-0"
B	#5	2	4'-0"	1'-0"	5'-0"
C	#5	STR	---	---	6'-0"
D	#5	STR	---	---	
E	#4	STR	---	---	
N	#4	2	2'-0"	2'-0"	4'-0"

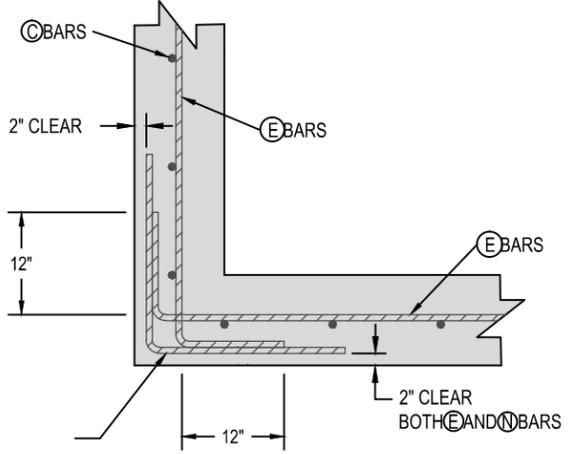
STEEL DETAILS

BAR SIZE	BEND DIAMETER (D) INCHES	SPLICE LENGTH INCHES (MIN.) *
#4	3	19
#5	3-3/4	24

* IF TWO BARS OF DIFFERENT DIAMETER ARE SPLICED, USE THE LONGER SPLICE LENGTH.



1
C401 STORAGE BASIN
 T-WALL SECTION
 NOT TO SCALE



2
C401 STORAGE BASIN
 CORNER WALL

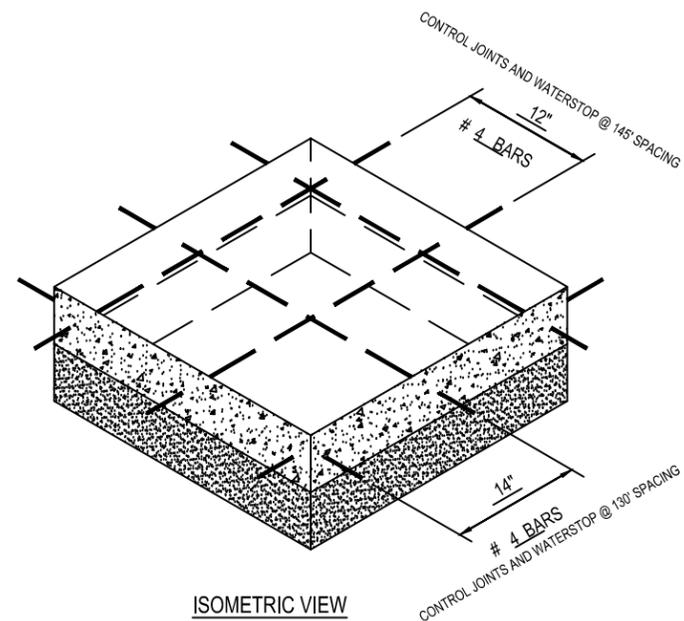
- CORNER NOTES**
1. PLACE FIRST VERTICAL BAR AT WALL CORNER OR NO FURTHER THAN ONE-HALF BAR SPACING FROM THE INSIDE CORNER.
 2. HOOK CAN BE SEPARATE FROM C BARS, PROVIDED THAT MINIMUM LAP SPLICE OF 19" FOR #4 BARS IS MET.
 3. SEE WALL SECTION FOR LOCATIONS OF C AND E BARS.

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VERTICAL WALL SECTION DETAILS
 STORAGE BASIN, TYP.
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 BANCROFT, WI 54921

Date: MAY 2012
 Drawn: RAN
 Checked: RJP
 Drawing # 1232details.dwg
 Project # 120032.1
 C401

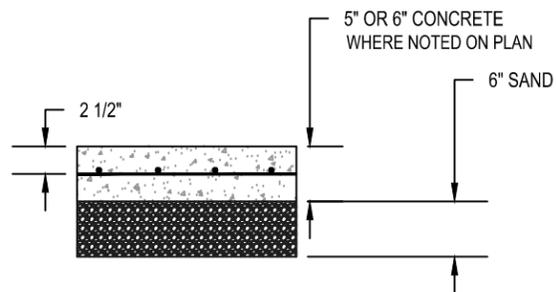


2 SLAB STEEL DETAIL
C402 NOT TO SCALE

NOTES:

1. SEE SHEET C407 FOR JOINT DETAILS.
2. BAR SPLICES SHALL BE 19 INCHES MINIMUM.

THIS STANDARDIZED DESIGN MUST BE ADAPTED TO THE SPECIFIC SITE.
IT WAS PREPARED AT THE NRCS STATE OFFICE, 6515 WATTS ROAD,
MADISON, WI. 53719-2726.



NOTES:

1. TIE LONG LEG OF L CORNER BAR TO WALL SECTION T&S STEEL WHERE THE SPACING MATCHES.
2. SHORT LEG OF MARK L BARS SHALL BE SUPPORTED WITH VERTICAL WALL SUPPORT BAR L .
3. 26- L BARS PER CORNER.
4. PLACE FIRST VERTICAL BAR AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.
5. BACKFILL WITH GRANULAR MATERIAL, P200 < 5% WASHED SAND OR STONE (TYP) AS PER NRCS 313, TABLE B.

NRCS REF. # WI-565 400

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VERTICAL WALL & FLOOR STEEL DETAILS
STORAGE BASIN, TYP.
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
BANCROFT, WI 54921

Date: MAY 2012

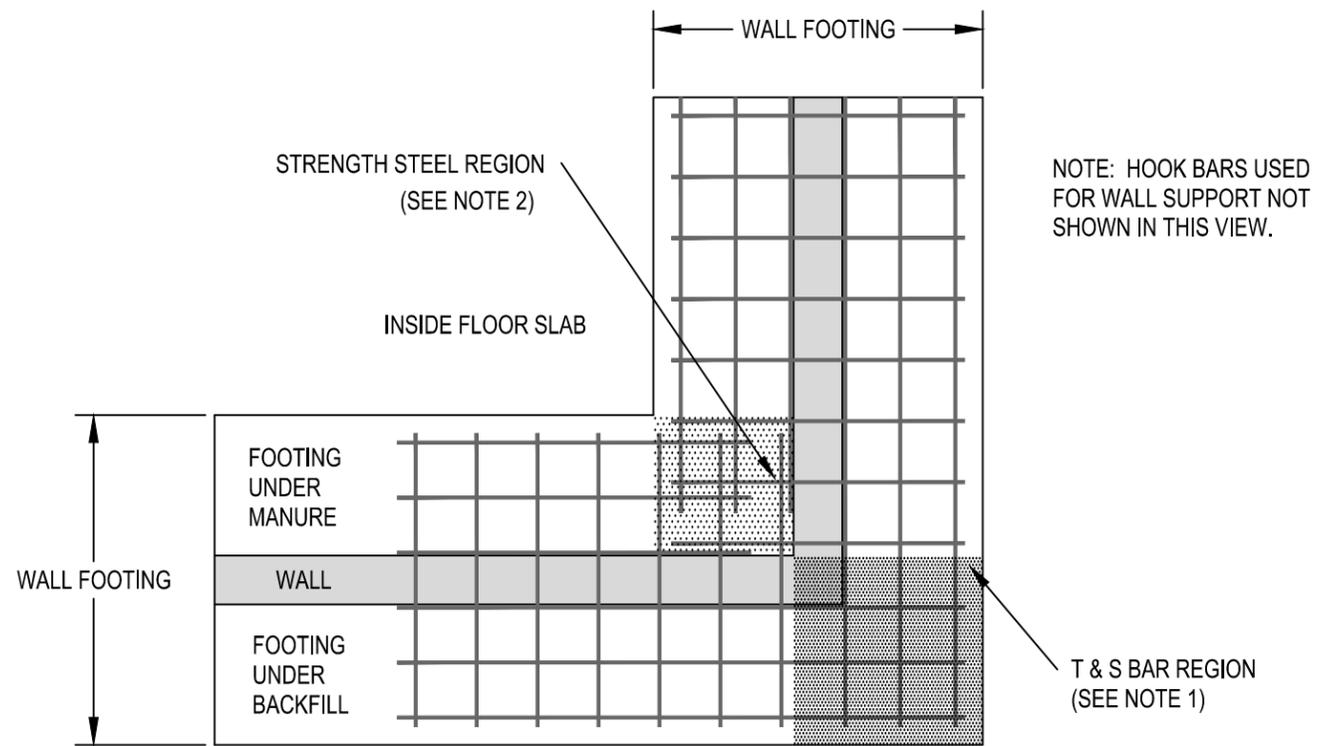
Drawn: RAN

Checked: RJP

Drawing #
1232details.dwg

Project #
120032.1

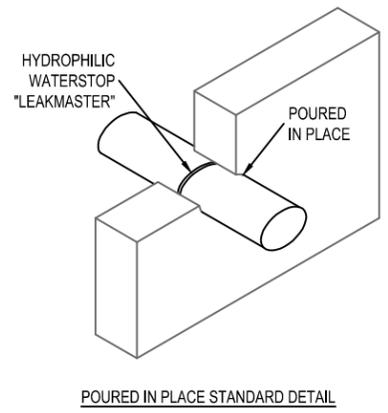
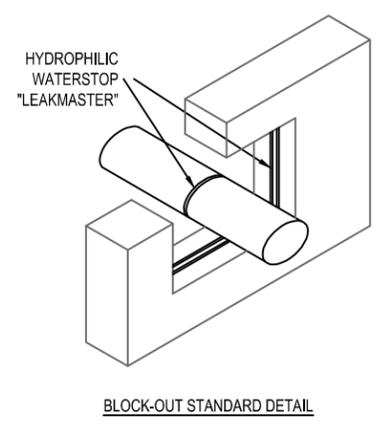
C402



1 SLAB FOOTING CORNER DETAIL
 C403

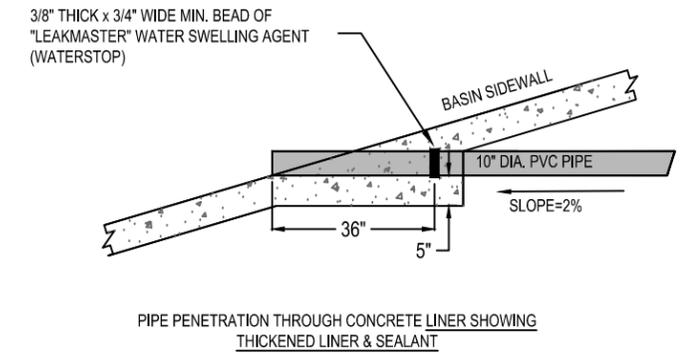
NOTES FOR FOOTING STEEL PLACEMENT

- 1.) FOOTING TEMPERATURE AND SHRINKAGE STEEL (T&S) TO BE EXTENDED INTO THIS REGION FROM BOTH SIDES OF CORNER. REGION IS OUTSIDE EXTENSION OF WALLS INCLUDING WALL THICKNESS.
- 2.) STRENGTH STEEL IS EXTENDED INTO THIS REGION FROM BOTH SIDES OF CORNER. REGION IS INSIDE EXTENSION OF THE WALLS. FOOTING SLAB T&S STEEL OUTSIDE THE CORNER REGION TO LAP SPLICE WITH THE STRENGTH STEEL 16 INCHES.
- 3.) IN BOTH CORNER REGIONS, STRENGTH STEEL AND T&S STEEL WILL REQUIRE SWITCHING POSITIONS FROM TOP TO BOTTOM AND VICE VERSA.

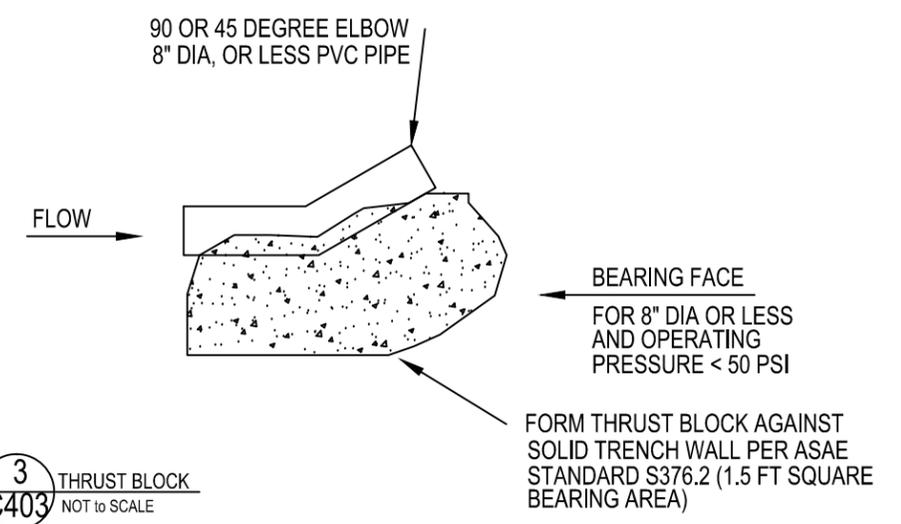


CONSTRUCTION NOTES

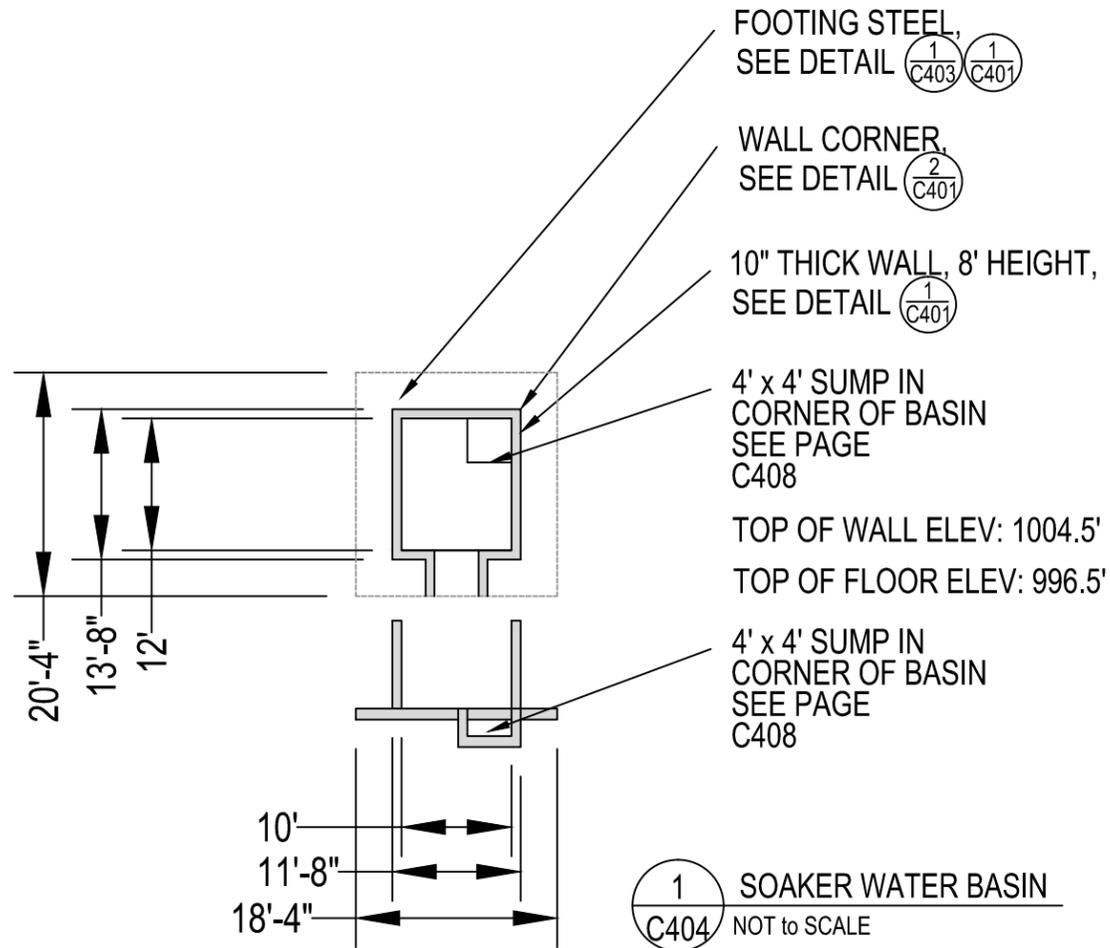
1. WATERSTOP DIMENSIONS SHALL BE BASED ON MANUFACTURER'S REQUIREMENTS FOR MINIMUM COVER.
2. THE WATERSTOP SHALL BE APPLIED TO EVEN SURFACES, FREE OF DIRT, OIL, OR LAITANCE.
3. THE WATERSTOP MUST BE BONDED TO THE CONCRETE AND/OR PIPE PRIOR TO PLACEMENT OF ADJOINING CONCRETE.
4. THE MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE FOLLOWED FOR WATERSTOP SPLICING AND ADDITIONAL INSTALLATION REQUIREMENTS.



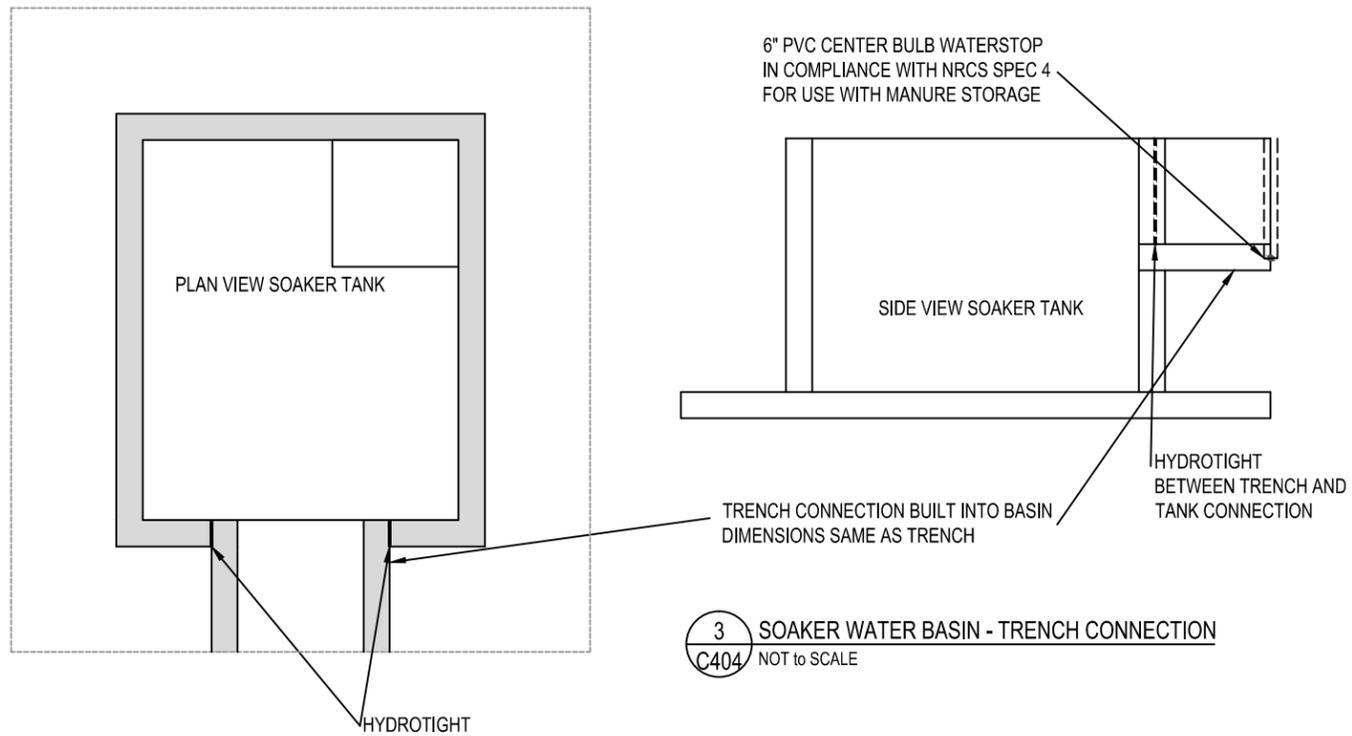
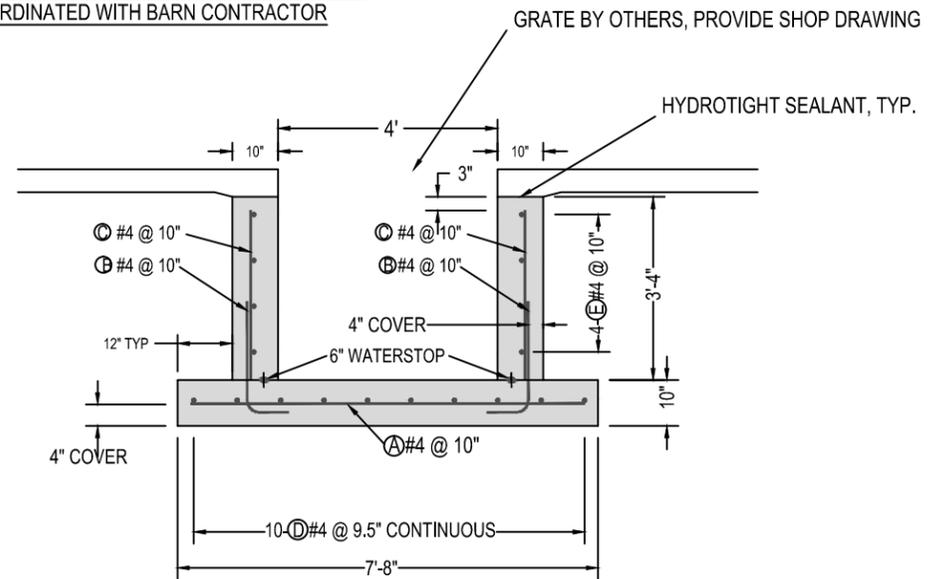
2 LIQUID TIGHT PVC PIPE PENETRATIONS THROUGH CONCRETE
 NOT TO SCALE
 C403



3 THRUST BLOCK
 NOT TO SCALE
 C403



NOTE: SPECIFIC LOCATION OF TRENCH TO BE COORDINATED WITH BARN CONTRACTOR



STEEL SCHEDULE (GRADE 60) - 4' WALL & CORNER

MARK	SIZE	TYPE	R	S	LENGTH
A	#4	STR	--	--	7'-2"
B	#4	2	2'-3"	9"	3'-0"
C	#4	STR	--	--	3'-1"
D	#4	STR	--	--	--
E	#4	STR	--	--	--
L	#4	2	2'-3"	9"	3'-0"
L1	#4	STR	--	--	3'-9"

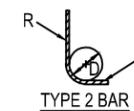
STEEL DETAILS

BAR SIZE	BEND DIAMETER (D) INCHES	SPLICE LENGTH INCHES (MIN.) *
#4	3	19
#5	3-3/4	24

* IF TWO BARS OF DIFFERENT DIAMETER ARE SPLICED, USE THE LONGER SPLICE LENGTH.

NOTES:

1. TIE LONG LEG OF MARK (D) CORNER BAR TO WALL SECTION T&S MARK (E) BAR AS SHOWN.
2. SHORT LEG OF MARK (D) BARS SHALL BE SUPPORTED WITH VERTICAL WALL SUPPORT BAR (C).
3. 10 MARK (D) BARS PER CORNER. SEE APPROPRIATE WALL DRAWING FOR BAR DIMENSIONS AND QUANTITIES.
4. PLACE FIRST VERTICAL BAR (SEE PLAN VIEW ON BACK) AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.
5. 10 MARK L BARS PER CORNER. SEE APPROPRIATE WALL DRAWING.
6. WALLS NOT DESIGNED FOR PUSHING



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SOAKER WATER BASIN AND TRENCH, TYP.
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP
Drawing # 1232details.dwg
Project # 120032.1
C404

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SILAGE PAD RUNOFF COLLECTION BASIN
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

Date: MAY 2012
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Drawing #
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Project #
120032.1
C405

WATERSTOP AT RAMP TO FLOOR JOINT.
BEND DOWEL TO MATCH SLOPE ON RAMP
SEE DETAIL (2a)
C407

WATERSTOP CONTINUOUS VERTICAL
THROUGH WALL

10" THICK WALL, RAMPED WALL,
SEE DETAIL (1)
C412 & (2)
C412 & (1)
C405

10" THICK WALL, RAMPED WALL,
SEE PAGE C406 FOR RAMP
ELEVATION ALSO, SEE DETAIL (2)
C411 & (1)
C411

4' x 4' SUMP IN
CORNER OF BASIN
SEE PAGE
C408

SILAGE PAD DRAIN
INLET AREA, SEE (2)
C405

10" THICK WALL, 8' HEIGHT,
SEE DETAIL (1)
C401

TOP OF WALL ELEV: 1002.2'
TOP OF FLOOR ELEV: 994.2'

WALL CORNER,
SEE DETAIL (2)
C401

FOOTING CORNER STEEL,
SEE DETAIL (1)
C403

FLOOR STEEL, IN
5" THICK CONCRETE, #4 @ 18"
BOTHWAYS, SEE DETAIL (1)
C407

6:1 SLOPED RAMP

87.7' 86.0'

48.9'

98.7'

99.7'

EL. 1002.2'

EL. 1000.2'

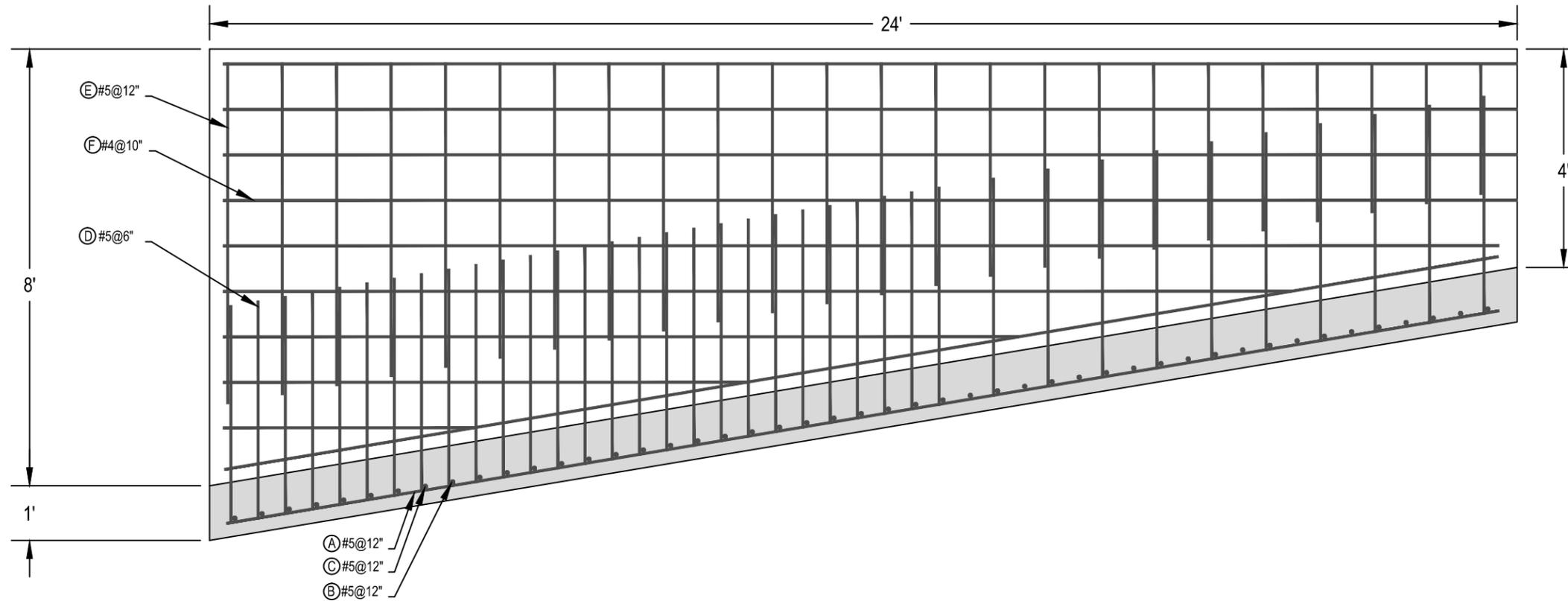
2'

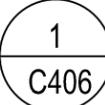
3'

(2)
C405 SILAGE PAD DRAIN INLET
NOT TO SCALE

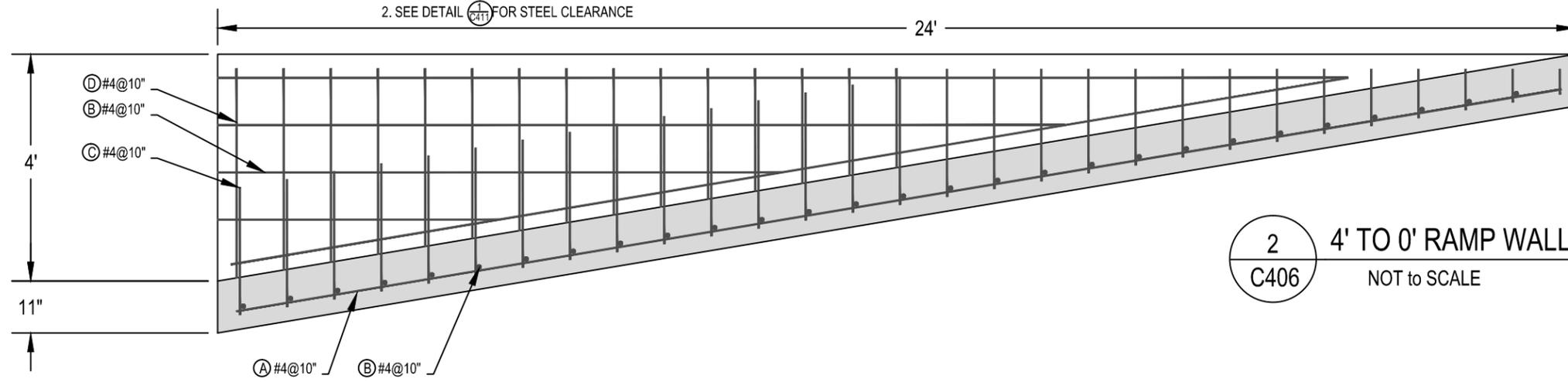
(1)
C405 SILAGE PAD RUNOFF COLLECTION BASIN
NOT TO SCALE

NOTE:
 1. SEE DETAIL  FOR STEEL SCHEDULE
 2. SEE DETAIL  FOR STEEL CLEARANCE



 **8' TO 4' RAMP WALL/FLOOR SECTION**
 C406 NOT to SCALE

NOTE:
 1. SEE DETAIL  FOR STEEL SCHEDULE, (SIMILAR)
 2. SEE DETAIL  FOR STEEL CLEARANCE



 **4' TO 0' RAMP WALL/FLOOR SECTION**
 C406 NOT to SCALE

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VERTICAL RAMP WALL STEEL DETAILS
 STORAGE BASIN, TYP.
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 BANCROFT, WI 54921

Date:	MAY 2012
Drawn:	RAN
Checked:	RJP
Drawing #	1232details.dwg
Project #	120032.1
	C406

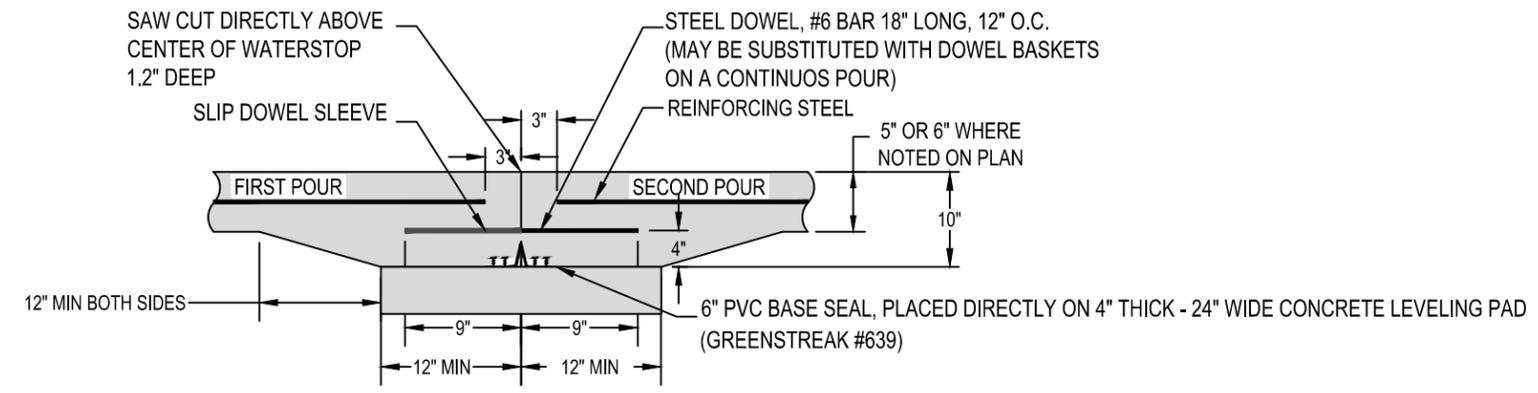
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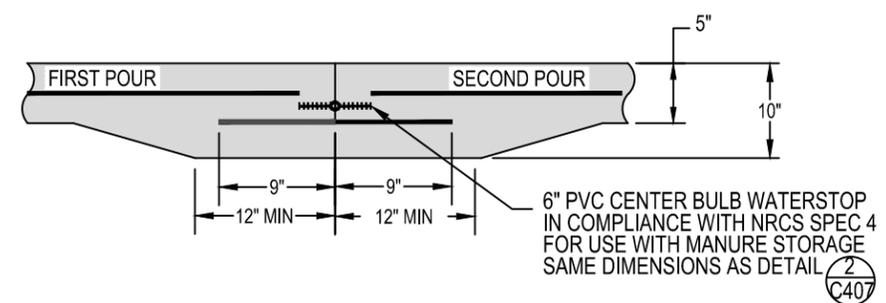


FOOTING, FLOOR SLAB, JOINT
 & DRAIN INLET DETAILS
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 BANCROFT, WI 54921

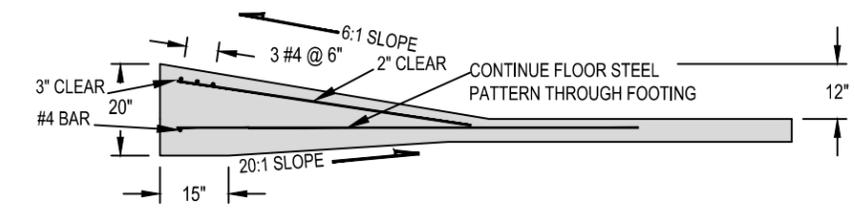
Date: MAY 2012
 Drawn: RAN
 Checked: RJP
 Drawing #
 1232details.dwg
 Project #
 120032.1
 C407



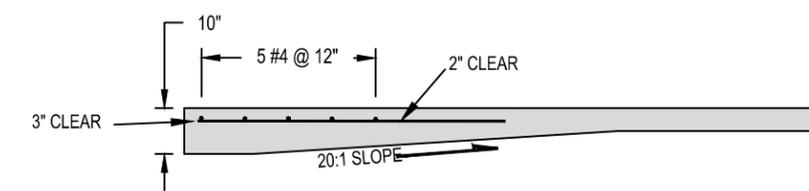
2 CONSTRUCTION/CONTROL JOINT
 C407 NOT to SCALE NOTE: THIS DETAIL **2** MAY BE CONSTRUCTED AS A COLD JOINT OR A CONTINUOUS POUR



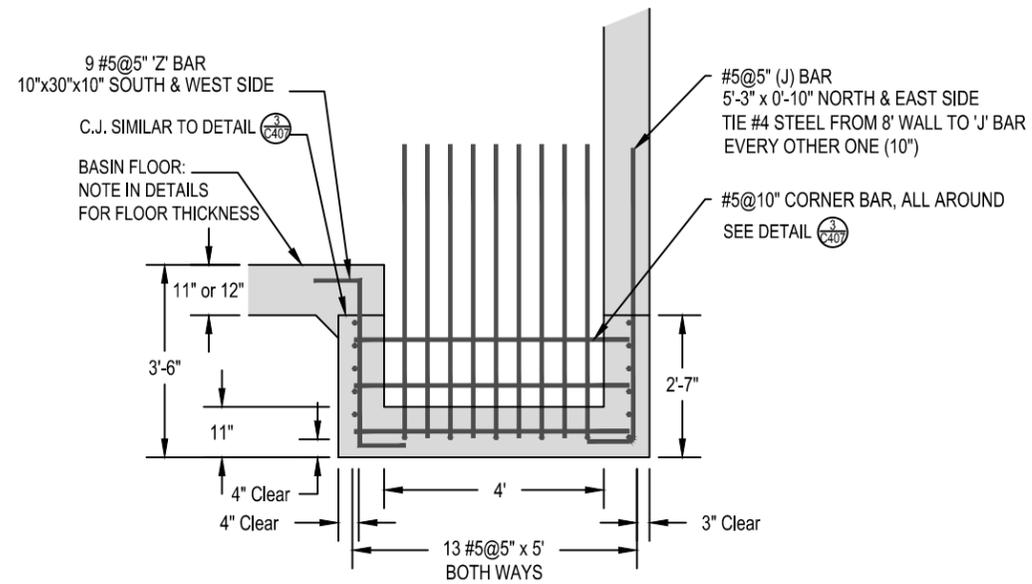
2a CONSTRUCTION/CONTROL JOINT - FOR MANURE BASIN
 C407 NOT to SCALE



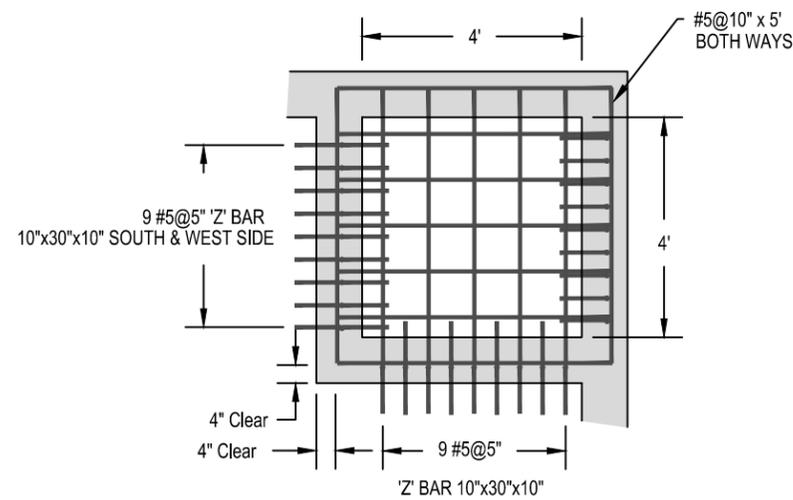
4 TYPICAL 6:1 SLAB FOOTING
 C407 NOT to SCALE



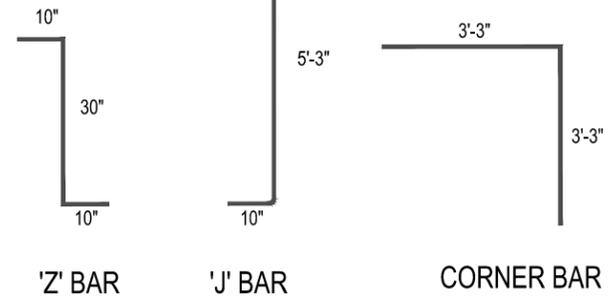
5 TYPICAL (B) SLAB FOOTING
 C407 NOT to SCALE



1 SUMP WALL SECTION
C408 NOT to SCALE



2 SUMP PLAN VIEW
C408 NOT to SCALE



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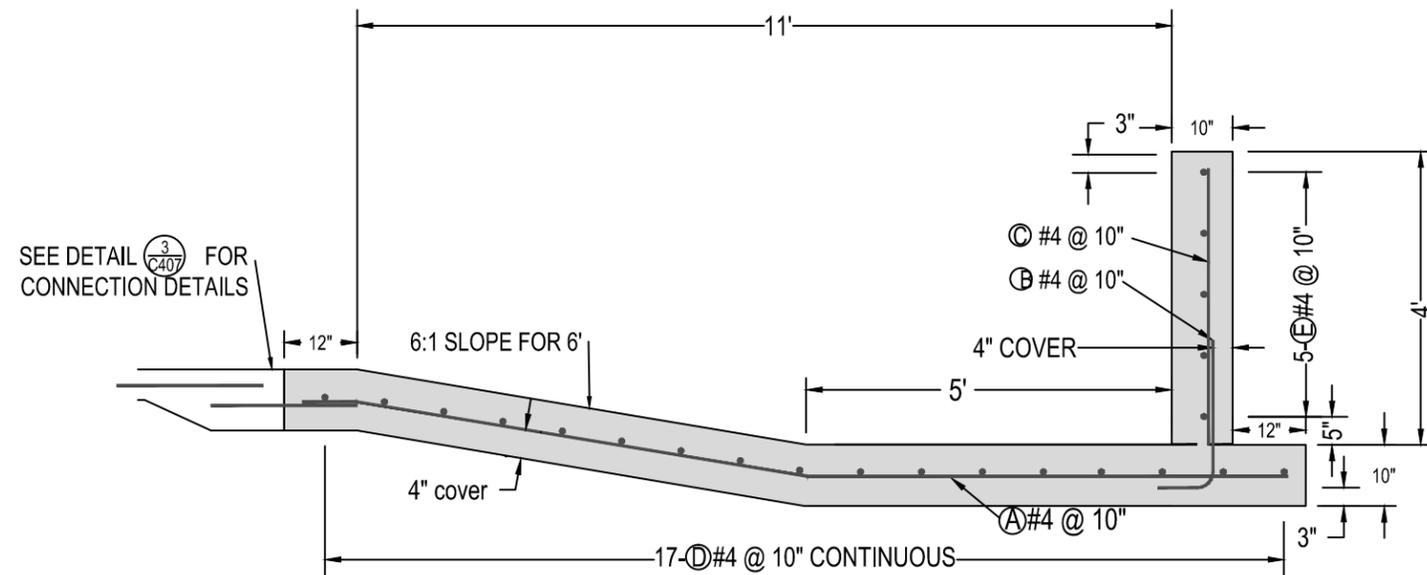
SUMP STEEL DETAILS
SILAGE RUNOFF BASIN
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP

Drawing #
1232details.dwg

Project #
120032.1

C408



1 EAST CONCRETE DRAINWAY (4' WALL)
C409 NOT TO SCALE

STEEL SCHEDULE (GRADE 60) - 4' WALL & CORNER

MARK	SIZE	TYPE	R	S	LENGTH
A	#4	STR	--	--	13'-0"
B	#4	2	2'-3"	9"	3'-0"
C	#4	STR	--	--	3'-9"
D	#4	STR	--	--	
E	#4	STR	--	--	
L	#4	2	2'-3"	9"	3'-0"
L1	#4	STR	--	--	3'-9"

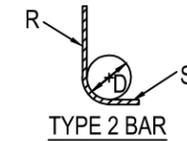
STEEL DETAILS

BAR SIZE	BEND DIAMETER (D) INCHES	SPLICE LENGTH INCHES (MIN.) *
#4	3	19
#5	3-3/4	24

* IF TWO BARS OF DIFFERENT DIAMETER ARE SPLICED, USE THE LONGER SPLICE LENGTH.

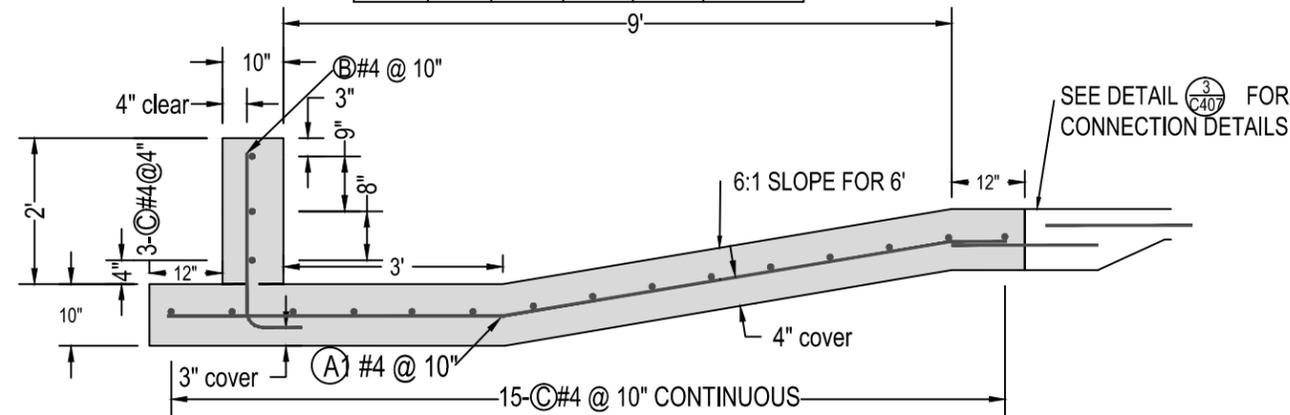
NOTES:

1. TIE LONG LEG OF MARK \odot CORNER BAR TO WALL SECTION T&S MARK \oplus BAR AS SHOWN.
2. SHORT LEG OF MARK \odot BARS SHALL BE SUPPORTED WITH VERTICAL WALL SUPPORT BAR \odot .
3. 10 MARK \odot BARS PER CORNER. SEE APPROPRIATE WALL DRAWING FOR BAR DIMENSIONS AND QUANTITIES.
4. PLACE FIRST VERTICAL BAR (SEE PLAN VIEW ON BACK) AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.
5. 10 MARK L BARS PER CORNER. SEE APPROPRIATE WALL DRAWING.
6. WALLS NOT DESIGNED FOR PUSHING

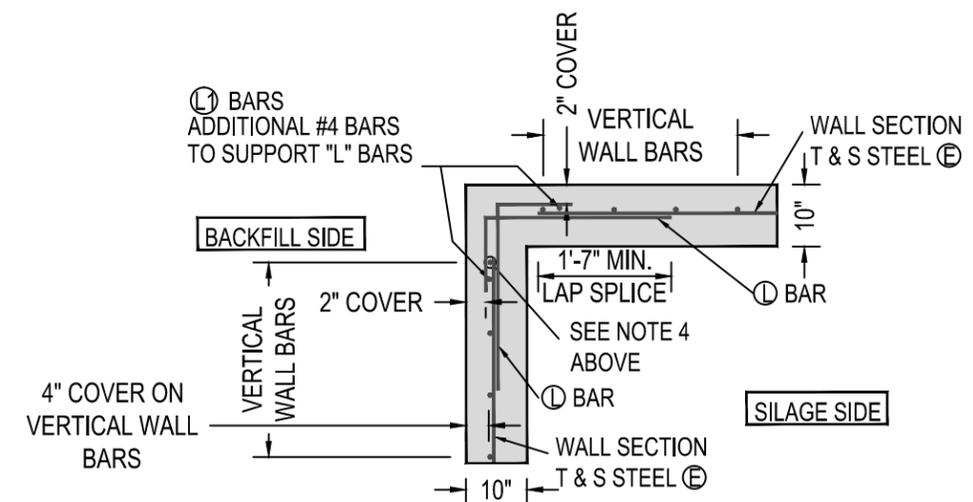


STEEL SCHEDULE (GRADE 60) - 2' WALL

MARK	SIZE	TYPE	R	S	LENGTH
A1	#4	STR	--	--	11'-0"
B	#4	2	2'-4"	0'-9"	3'-1"
C	#4	STR	--	--	--



2 SOUTH CONCRETE DRAINWAY (2' WALL)
C409 NOT TO SCALE



3 WALL CORNER DETAIL
C409 USE FOR BOTH 2' & 4' WALL NOT TO SCALE

Resource Engineering Associates, Inc.
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SILAGE PAD EAST & SOUTH DRAINWAYS
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

Date: MAY 2012
Drawn: RAN
Checked: RJP
Drawing # 1232details.dwg
Project # 120032.1
C409

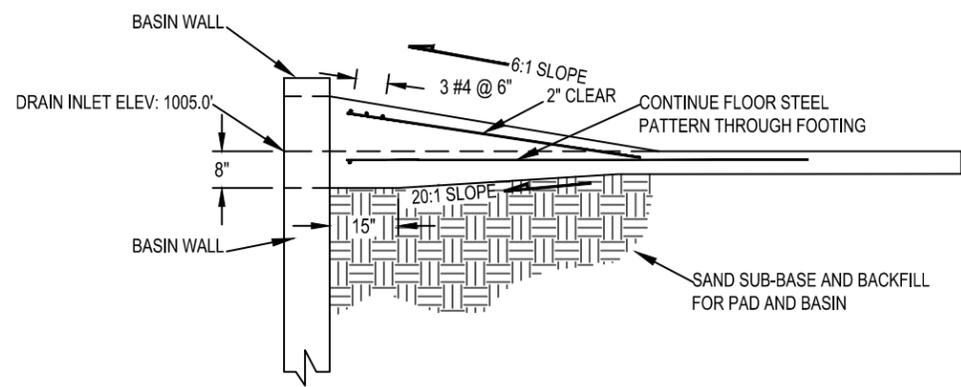
REVISIONS:

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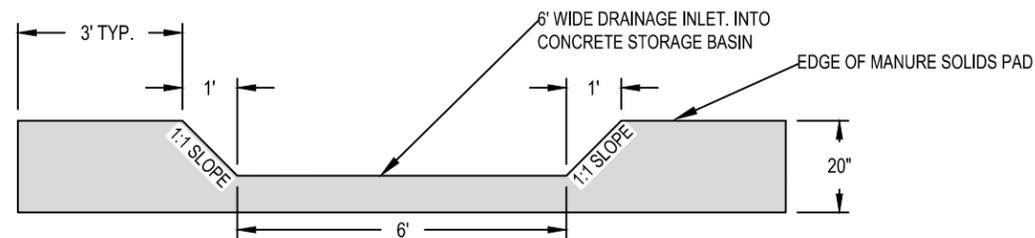


SAND & SOLIDS PAD BASIN INLET
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS ROAD
 BANCROFT, WI 54921

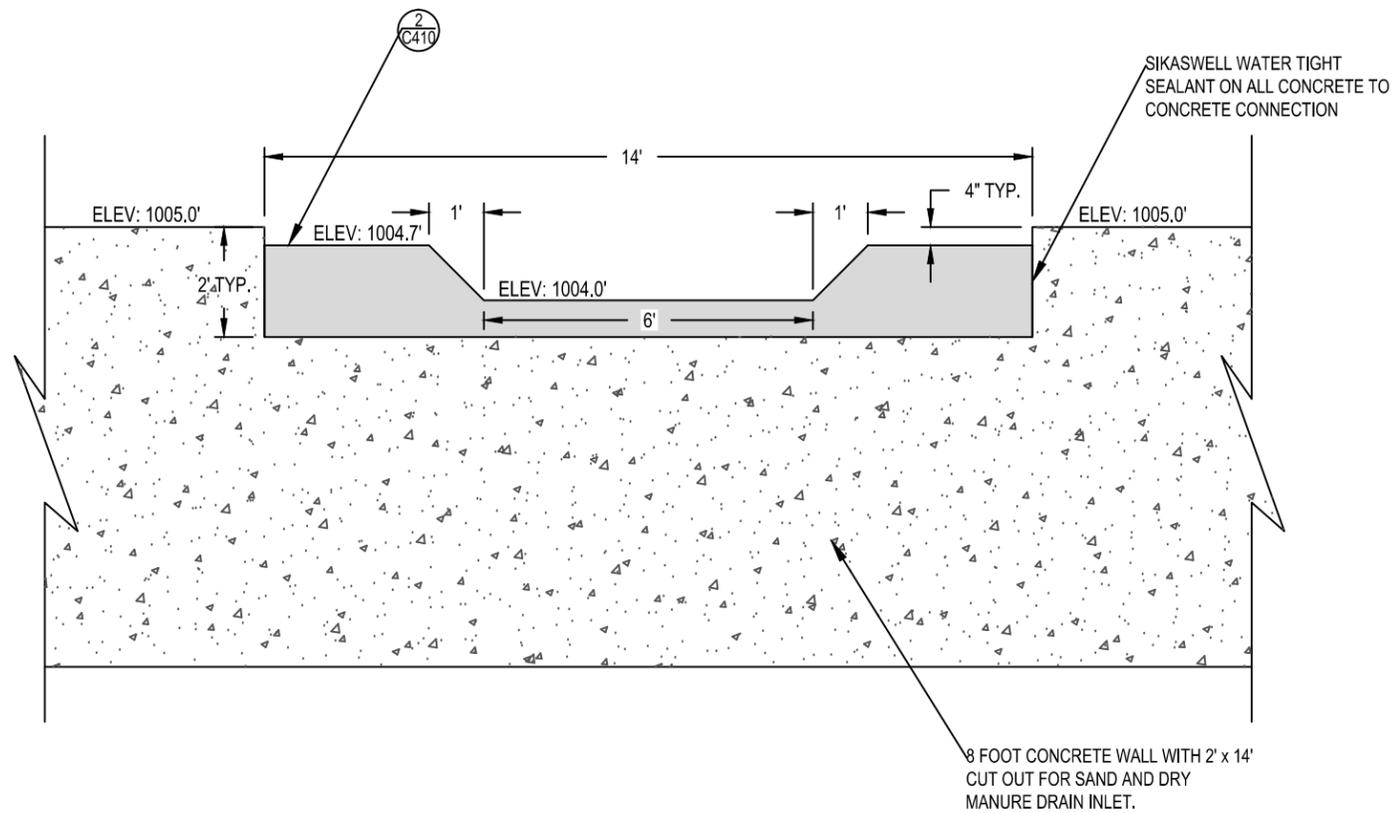
Date: MAY 2012
 Drawn: RAN
 Checked: RJP
 Drawing #
 1232details.dwg
 Project #
 120032.1
 C410



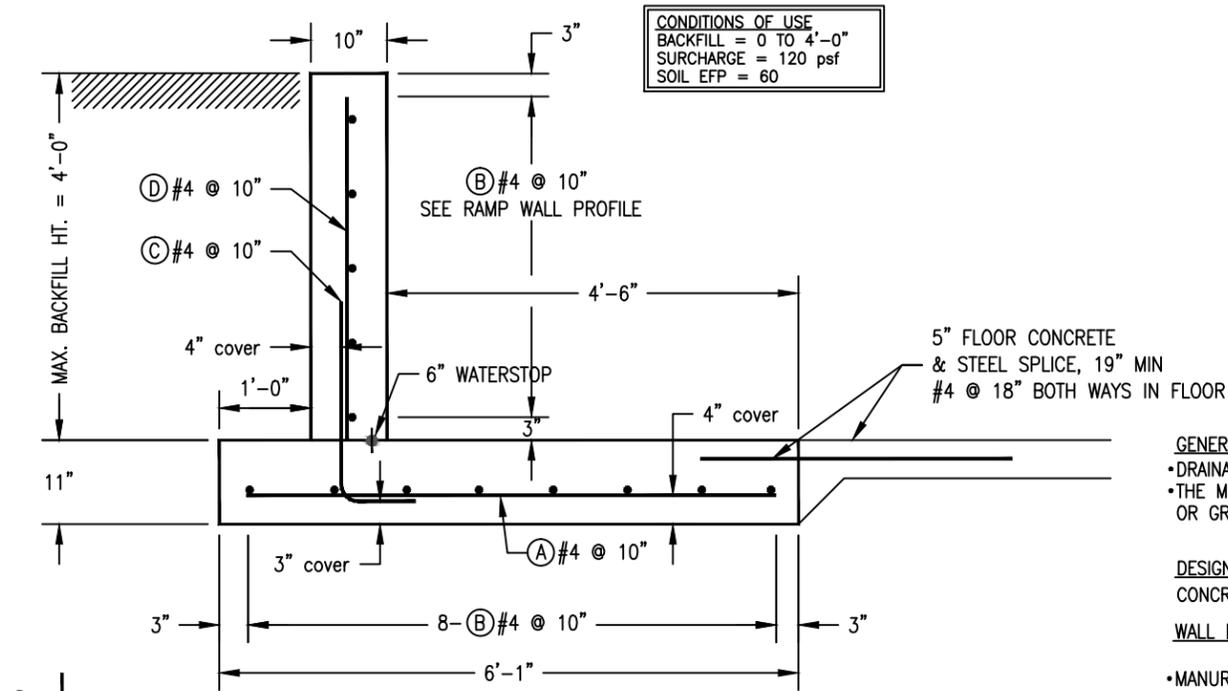
1 SIDE VIEW SOLIDS PAD BASIN INLET
 C410 NOT to SCALE



2 FRONT VIEW SOLIDS PAD BASIN INLET
 C410 NOT to SCALE



3 FRONT VIEW SOLIDS PAD BASIN INLET WITH BASIN WALL
 C410 NOT to SCALE



CONDITIONS OF USE
 BACKFILL = 0 TO 4'-0"
 SURCHARGE = 120 psf
 SOIL EFP = 60

GENERAL DESIGN NOTES:
 • DRAINAGE SHALL BE AWAY FROM THE WALL.
 • THE MINIMUM TOP WIDTH OF THE BACKFILL AGAINST THE WALL SHALL BE EQUAL TO OR GREATER THAN THE BACKFILL HEIGHT.

DESIGN STRENGTHS: WORKING STRESS DESIGN
 CONCRETE $f' = 4,000$ psi STEEL (60 GRADE)

WALL DESIGN LOADING: 313 STANDARD - LATERAL EARTH PRESSURE VALUES,
 SEE SECTION IV OF THE FIELD OFFICE TECHNICAL GUIDE.

- MANURE LOAD INSIDE = 65 psf/ft.
- SOIL BACKFILL LOAD OUTSIDE = 60 psf/ft.
- 120 psf HORIZONTAL SURCHARGE OR A 2:1 SLOPING BACKFILL IS ALLOWED.
- SOIL BACKFILL DENSITY = 110 pcf.

TYPE 2 BAR

STEEL SCHEDULE For 4' Wall

MARK	SIZE	QUAN	TYPE	R	S	LENGTH	TOTAL LENGTH
A	4		STR	---	---	5'-10"	
B	4		STR	---	---		
* C	4	2	2	2'-3"	9"	3'-0"	
* D	4		STR	---	---	3'-9"	

• CONCRETE WILL MEET WISCONSIN SPEC 4 REQUIREMENTS.
 • MINIMUM SPLICE LENGTH FOR ALL #4 BARS IS 19".

* MARK C & D BARS MAY BE COMBINED TO AVOID SPLICE
 THEN MARK C BAR IS 4'-5" x 9".
 CUT C & D BAR LENGTH TO PROVIDE 2" TO 3"
 END COVER OVER BARS ALONG RAMP SLOPE

4'-FOOT L WALL
 FOR MISTER WATER STORAGE BASIN

NOTE: Drawing modified by
 REA, Inc.
 Drawing similar to NRCS
 WI-541

NOTES:
 1. DIMENSIONS ARE TO THE REINFORCING BAR SURFACE.

1 STORAGE BASIN 4'-0' RAMP WALL
 C411 NOT to SCALE

REVISIONS:

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6:1 RAMP STORAGE 4' RAMP WALL
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS ROAD
 BANCROFT, WI 54921

Date: MAY 2012

Drawn: RAN

Checked: RJP

Drawing #
 1232details2.dwg

Project #
 120032.1

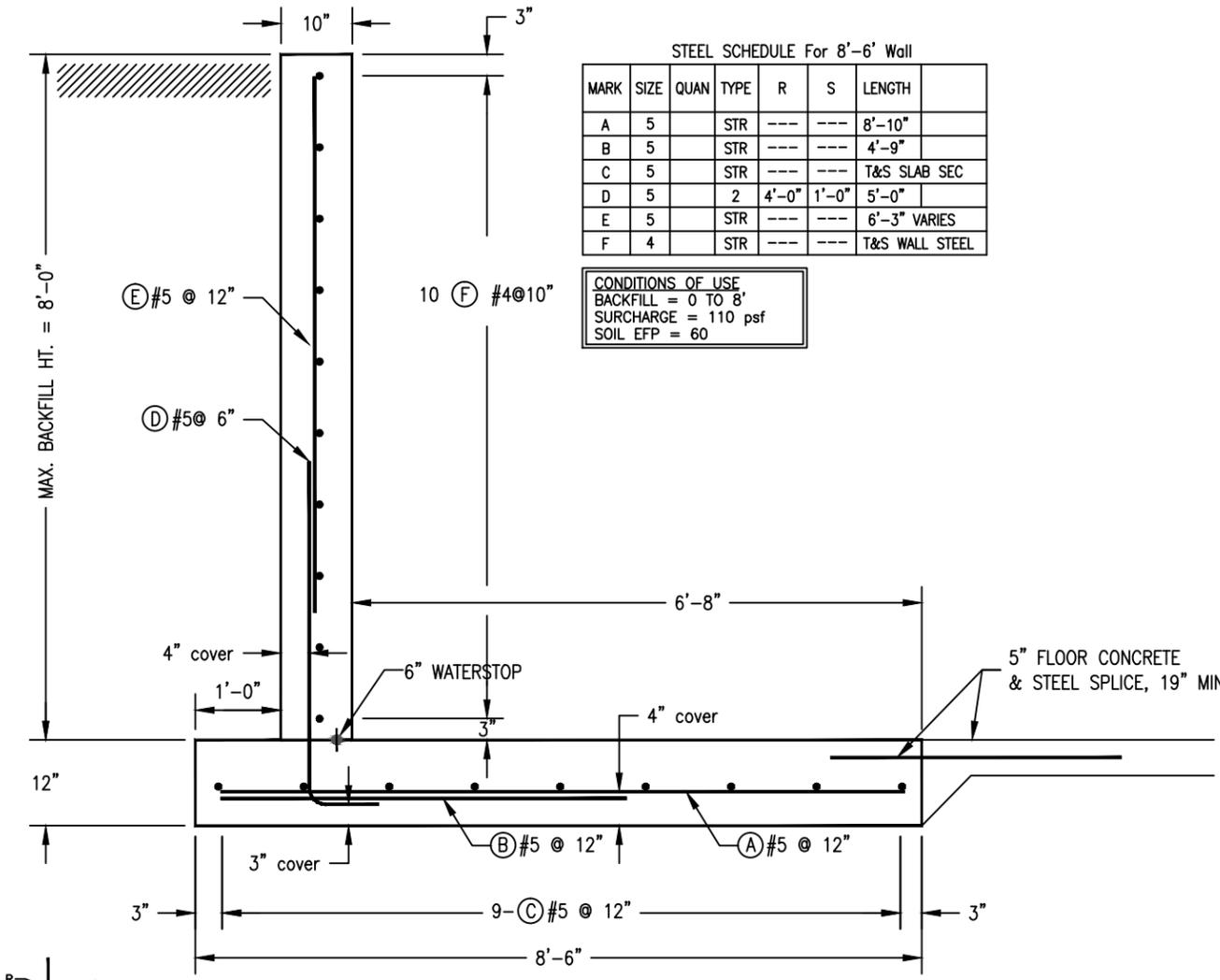
C411

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6:1 RAMP STORAGE 8' & 6' RAMP WALL
 FACILITY DEVELOPMENT PLAN
 GOLDEN SANDS DAIRY
 8550 CENTRAL SANDS ROAD
 BANCROFT, WI 54921

Date: MAY 2012
 Drawn: RAN
 Checked: RJP
 Drawing # 1232details2.dwg
 Project # 120032.1
 C412

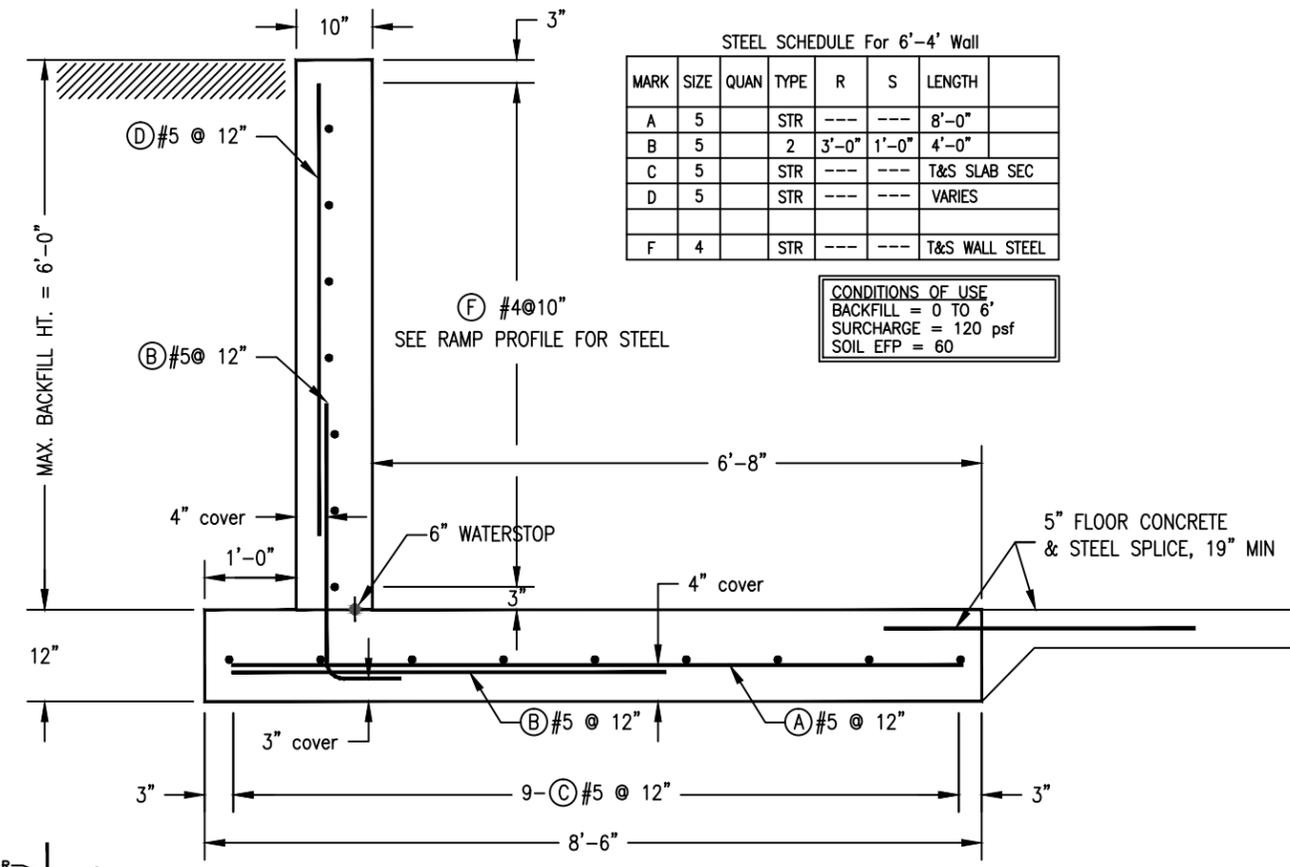


STEEL SCHEDULE For 8'-6" Wall

MARK	SIZE	QUAN	TYPE	R	S	LENGTH
A	#5	5	STR	---	---	8'-10"
B	#5	5	STR	---	---	4'-9"
C	#5	5	STR	---	---	T&S SLAB SEC
D	#5	2	STR	4'-0"	1'-0"	5'-0"
E	#5	5	STR	---	---	6'-3" VARIES
F	#4	4	STR	---	---	T&S WALL STEEL

CONDITIONS OF USE
 BACKFILL = 0 TO 8'
 SURCHARGE = 110 psf
 SOIL EFP = 60

1 STORAGE BASIN 8'-6" RAMP WALL
 C412 NOT to SCALE



STEEL SCHEDULE For 6'-4" Wall

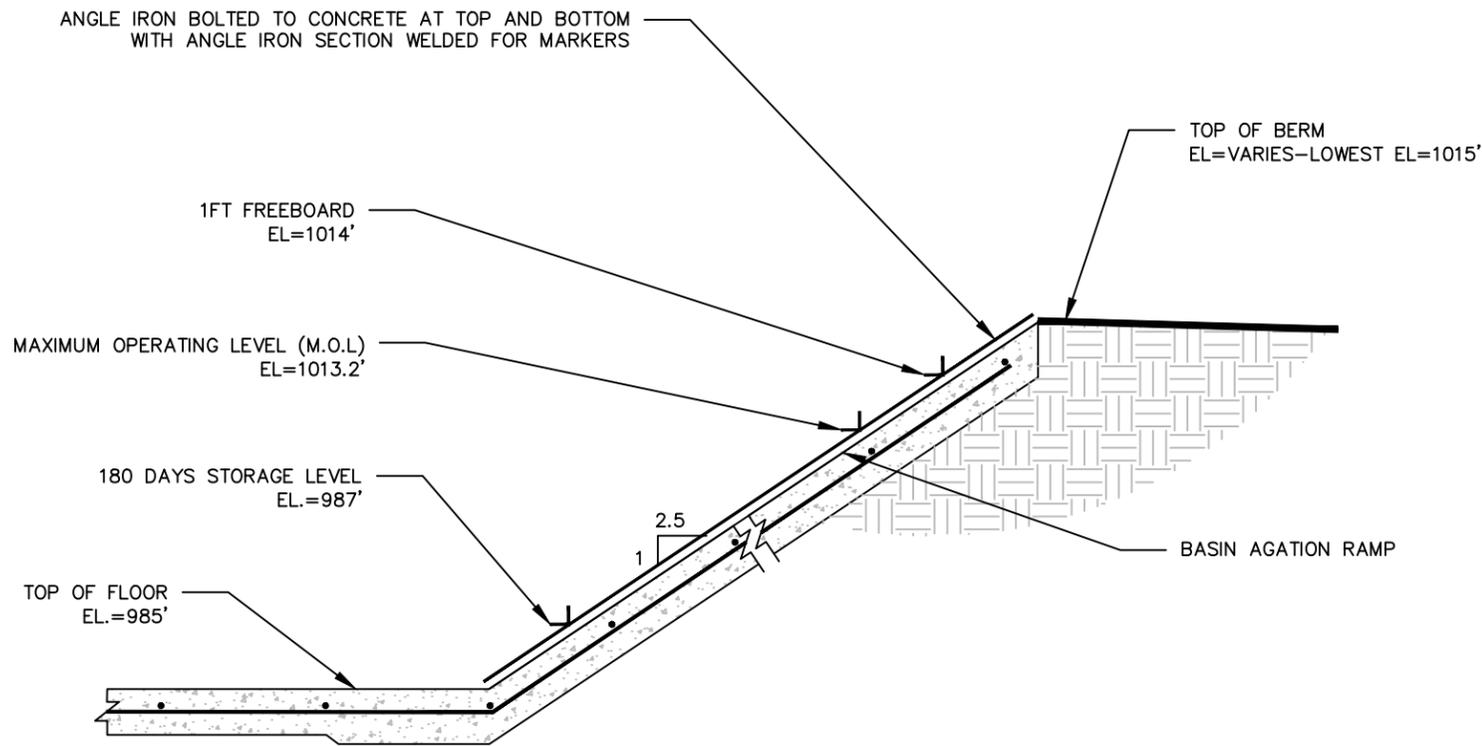
MARK	SIZE	QUAN	TYPE	R	S	LENGTH
A	#5	5	STR	---	---	8'-0"
B	#5	2	STR	3'-0"	1'-0"	4'-0"
C	#5	5	STR	---	---	T&S SLAB SEC
D	#5	5	STR	---	---	VARIES
F	#4	4	STR	---	---	T&S WALL STEEL

CONDITIONS OF USE
 BACKFILL = 0 TO 6'
 SURCHARGE = 120 psf
 SOIL EFP = 60

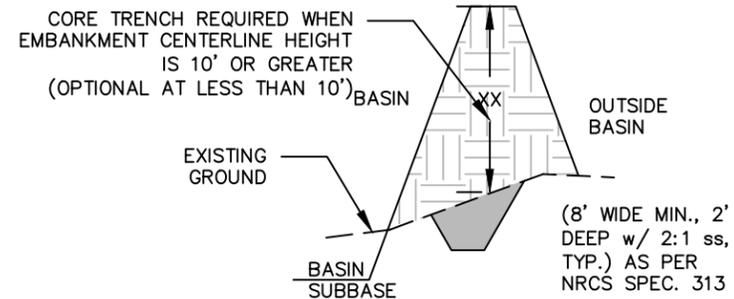
2 STORAGE BASIN 6'-4" RAMP WALL
 C412 NOT to SCALE

TYPE 2 BAR

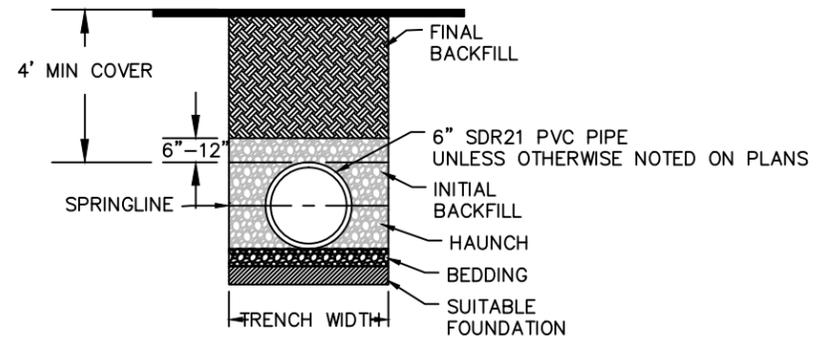
TYPE 2 BAR



1 BASIN OPERATING LEVEL MARKERS
C413 NOT TO SCALE



2 BASIN EMBANKMENT CORE TRENCH DETAIL
C413 NOT TO SCALE



NOTES:

1. PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321
2. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED AND REPLACE WITH SUITABLE MATERIAL .
3. BEDDING: SUITABLE MATERIAL SHALL BE CLASS III (GM, GC, SM, SC). MINIMUM BEDDING THICKNESS SHALL BE 4".
4. NO PARTICLES LARGER THAN 1½ INCHES SHALL BE USED IN THE PIPE EMBEDMENT.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE.
6. COMPACT EMBEDMENT IN 6 INCH MAXIMUM LAYERS, WORK AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT.

3 PIPE ENBEDMENT
C413 NTS

REVISIONS:
DATE
DATE
DATE
DATE

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MOL MARKERS DETAILS
FACILITY DEVELOPMENT PLAN
GOLDEN SANDS DAIRY
8550 CENTRAL SANDS ROAD
BANCROFT, WI 54921

DATE: JUNE, 2012
DRAWN: RAN
CHECKED: RJP
APPROVED: RJP
DRAWING NAME:
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