Test Hole Log

Landscape Position: Glacial till — Date: Nov. 16, 2010

Location: NW1/4 Sec 13, T.4N-R.12W

Owner operator: Walnutdale — County:

Logged by Calvin Dyke — Field Office:

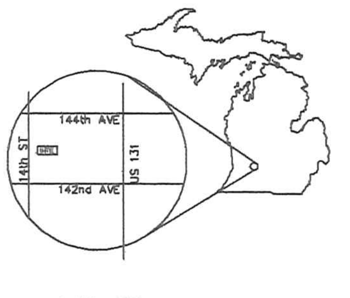
Equipment used: Excavator — Watershed:

Parlor settling tank — Soil Type: 16B

Bench Mark: 98.5 Floor at end of holding pen

Hole	Surface Elevation	Depth (ft)	Texture	Color	Unified	Redox Feature

LOCATION MAP



14th ST.
ALLEGAN COUNTY
DORR TWP.SECTION 13
T.4N.-R.12W.

WALNUTDALE DAIRY FARM

DORR, MICHIGAN

PARLOR WATER SETTLING TANK

GENERAL NOTES

1. The landowner shall arrange for a meeting between the contractor and the consulting engineer to review the plans, standards, and specifications prior to the start of construction. The design engineer cannot guarantee the design and construction of this facility if the above is not adhered to.
2. Excavated side slopes above the 3.5-foot depth shall be no steeper than 1 foot horizontal to 1 foot vertical in cohesive or dense fine grained soils and 1 ½ foot horizontal to 1 foot vertical in granular and/or saturated soils if someone is going to enter the excavation.
3. Suitable stripped material shall be stockpiled for use as topsoil. Stockpiled materials around the construction site shall not hinder subsequent construction operations.
4. To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of the permanent earth dike fill. All surplus excavated materials will be designated as waste and shall be disposed of at the location on the drawings or designated by the owner.
5. The materials placed in the fill shall be free of all sod, roots, frozen soil, or other objectionable material.
6. The landowner will operate the installed practice in accordance with the operation and maintenance plan.
7. During and/or immediately following construction, all disturbed areas will be prepared, fertilized, seeded and mulched in accordance with the following.
   A. All disturbed areas shall be covered with topsoil to a depth of 6 inches measured normal to the surface of the fill and placed to the neat lines shown on the drawings. After placement is completed, the topsoil surface shall be finished to a reasonably smooth surface.
   B. The seed shall be drilled, broadcast or hydraulically seeded by equipment that will insure uniform distribution of the seed. See mi-166 for seeding recommendations.
   C. The mulch shall be spread by any means that results in a uniform cover.
   D. Mulch shall be spread at a rate of 1 bale / 1000 sq-ft..

DESIGN NOTES

1. This settling tank is designed to the Natural Resources Conservation Service Technical Guide Standard Section IV 634 (11/ 2005).
2. This manure transfer system is designed to collect the wash and cleanup water from the parlor.
3. This settling tank will be used in conjuntion with a holding pen flush tank in the future.
4. The settling chambers are designed to settle out the sand. The chambers will be periodically cleaned out with a skid steer loader. 6:1 ramps are provided.
5. Parlor wash water will be drained to the tank via 8" SDR 35 @ 1% grade.
6. Waste from the bottom of the tank will be pumped to the existing SlurryStore at the site.
7. The top of the ramp will provide an emergency overflow to the waste water pond.
8. Concrete used shall use one of the mixes as listed in MI-158 or MI-159 as appropriate, and shall have a minimum 28-day compressive strength of 3,500 psi.
9. All reinforcing steel will shall be 60K.

GENERAL CONSTRUCTION NOTES

The land owner operator agrees to operate and maintain the practices shown in these plans in accordance with the attached operation and maintenance plan.

1. The landowner/operator is responsible for obtaining and complying with all permits and easements. This includes all federal, state and local permits.

2. The landowner operator is responsible for checking and complying with all local ordinances that may affect the project.

3. MISS DIG (1-800-482-7171) must be contacted at least 3 working days before construction begins if (1) the construction equipment will not be able to maintain at least a 10 foot clearance from any overhead electric lines within the work area, or if (2) the construction activities involve any excavation, drilling or boring operations, or discharge of explosives in or adjacent to a street highway, other public place, in private easement for a public utility or near the location of utility facilities.

4. For sites where miss dig must be contacted, the landowner operator is responsible to insure that the excavator/contractor contacts MISS DIG and the excavator/contractor must be able to provide the MISS DIG ticket number within 24 hours upon request by the engineer.

5. The landowner/operator is responsible for locating any buried utilities (water lines, electric lines, telephone lines, gas lines, sewer lines, etc.) In the work areas that are not covered by the MISS DIG program.

6. The engineer makes no representation of the existence of utilities. The presence or absence of utilities on the construction drawings does not assure that there are or are not utilities in the work area.

7. For sites where MISS DIG must be contacted, the landowner/operator is responsible to inform the excavator/contractor of their responsibilities by providing them a copy of the cover sheet. The excavator contractor must sign the cover sheet acknowledging that they understand their responsibilities and the landowner/operator must return the signed cover sheet to the engineer. The landowner/operator shall arrange for a meeting between the contractor and the engineer to review the construction drawings and specifications prior to construction.

8. The excavator/contractor is responsible for knowing and following the appropriate safety standards required by the Michigan Occupational Safety And Health Act.

9. Hard hats must be worn by anyone on the site who may be exposed to falling objects of flying debris and anyone within the operating range of overhead construction equipment. Overhead construction equipment includes, but is not limited to, backhoe, cranes, draglines and front-end loaders. Equipment operators within enclosed cabs and individuals in enclosed vehicles are not required to wear hard hats.

10. The landowner/operator shall notify the designer at least one week prior to when construction is to start and at the times specified in the construction plan. Telephone number is 616-837-6861.

Any deviation from these construction drawings and specifications without written approval from the engineer may result in the practice not conforming to NRCS specifications.

To the best of my professional knowledge, judgement and belief, the design, construction drawings and specifications meet applicable NRCS standards and specifications.

Designer ____________ Date ____________

To the best of my professional knowledge, judgement and belief, these practices are installed "AS BUILT" in accordance with the construction drawings and specifications and meet NRCS standards.

Designer ____________ Date ____________

THESE CONSTRUCTION DRAWINGS AND SPECIFICATIONS HAVE BEEN REVIEWED AND ALL PARTIES UNDERSTAND

LANDOWNER/OPERATOR ____________

EXCAVATOR/CONTRACTOR ____________

DESIGN ENGINEER ____________

AS-BUILT

Waste Storage Structure

Operation and Maintenance

1. Do not enter a tank without a mask and airline for breathing. Attach a safety line to person entering tank and have a person standing by with equipment that can lift the person from the tank.
2. Waste should be spread on the fields, at the time, and at the rate specified in the Waste Utilization Plan. Have waste tested to determine actual nutrient content.
3. Do not operate loaded feed wagons, trucks, manure spreaders, or other heavy equipment within five feet of tank walls.
4. Inspect concrete sumps, slabs, walls, ramps and floors often for separations and or cracks, which would indicate potential failure. Repairs should be made immediately. A thorough inspection should be made when the structure is empty. Refer to Safety items.
5. All appurtenances - pipes, pumps, manure ramps, valves, gates etc., should be inspected at least twice a year to make sure they are functional, structurally sound, and are not cracked, broken, and/or a safety hazard to the operator or the animals.
6. Check backfill areas around concrete structures often for unusual settlement. Contact the Soil Conservation Service if problems are suspected with storage structures.
7. Outlets of foundation and subsurface drains should be checked frequently and kept open. The outflow from these drains should be checked when the structure contains manure to see if there is leakage from the storage structure into these drains. If leakage is detected, repairs should be planned and made when the facility is empty.
8. Check frequently for burrowing animals around structures. Remove pest when they are found and fill holes.
9. A good vegetative cover of recommended grasses should be maintained on earth berms and backfill around structures. If the vegetative cover is damaged it should be reestablished as soon as possible. The vegetative cover should be mowed on a regular basis to stimulate growth.
10. Check frequently the channels and berms of the clean water diversions around the barnyard, buildings and storage structure. Channels should be protected from erosion and berms must be maintained at proper height so diversion channels have adequate capacity.
11. Do not allow runoff from loading areas from the storage structure to flow into streams or road ditches.

SAFETY

1. Waste storage structures should be posted with signs telling type of structure.
2. Deep, covered storage structures should be considered "High Hazard Areas." The biodegradation of the waste releases a number of gases, which could be explosive or suffocative. Extreme care should be taken when entering these structures after clean out.

PUMPING PLANT
OPERATIONS AND MAINTENANCE

Operations and maintenance are required to achieve the intended function, benefit, and life of the practice. The landowner/operator is responsible to establish and implement an inspection and maintenance program. Items to inspect and maintain during the 10-yr design life of the practice include, but are not limited to, the following:
1. Inspect after significant storm events and at least annually to identify repair and maintenance needs.
2. Inspect and/or test all pumping plant components and appurtenances (safety features, valves, pressure regulators, pumps, switches, etc.) and devices as applicable.
3. Promptly repair or replace damaged or inoperable components in accordance with the manufacturer's recommendations.
4. Perform routine maintenance for the operation of the pumping plant in accordance with the manufacturer's recommendations.
5. Follow start-up procedures for the operation of the pumping plant in accordance with the manufacturer's recommendations.
6. Check for debris, sediment, minerals, algae and other materials which may restrict flow.
7. Protect components from damage by farm equipment and livestock.
8. Maintain erosion at outlets.
9. Repair any settlement or erosion that occurs around the pumping plant and reseed as needed.
10. Check the grout around the outlet pipe for cracking or breaking to prevent leaking.

SPECIFICATIONS

SPEC. NO.
MI-150 SITE PREPARATION
MI-152 EXCAVATION
MI-154 EARTHFILL
MI-158 REINFORCED CONCRETE CONSTRUCTION

TABLE OF ESTIMATED QUANTITIES

QUANTITIES ARE FOR REFERENCE ONLY

INDEX OF SHEETS

1 TITLE SHEET
2 SITE PLAN VIEW
3 TANK PLAN VIEW
4 SECTIONS
5 WALL DETAILS

CJD FARM CONSULTING, INC.
9273 GARFIELD ST.
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REVISION	DATE
AS-BUILT	03-28-2011

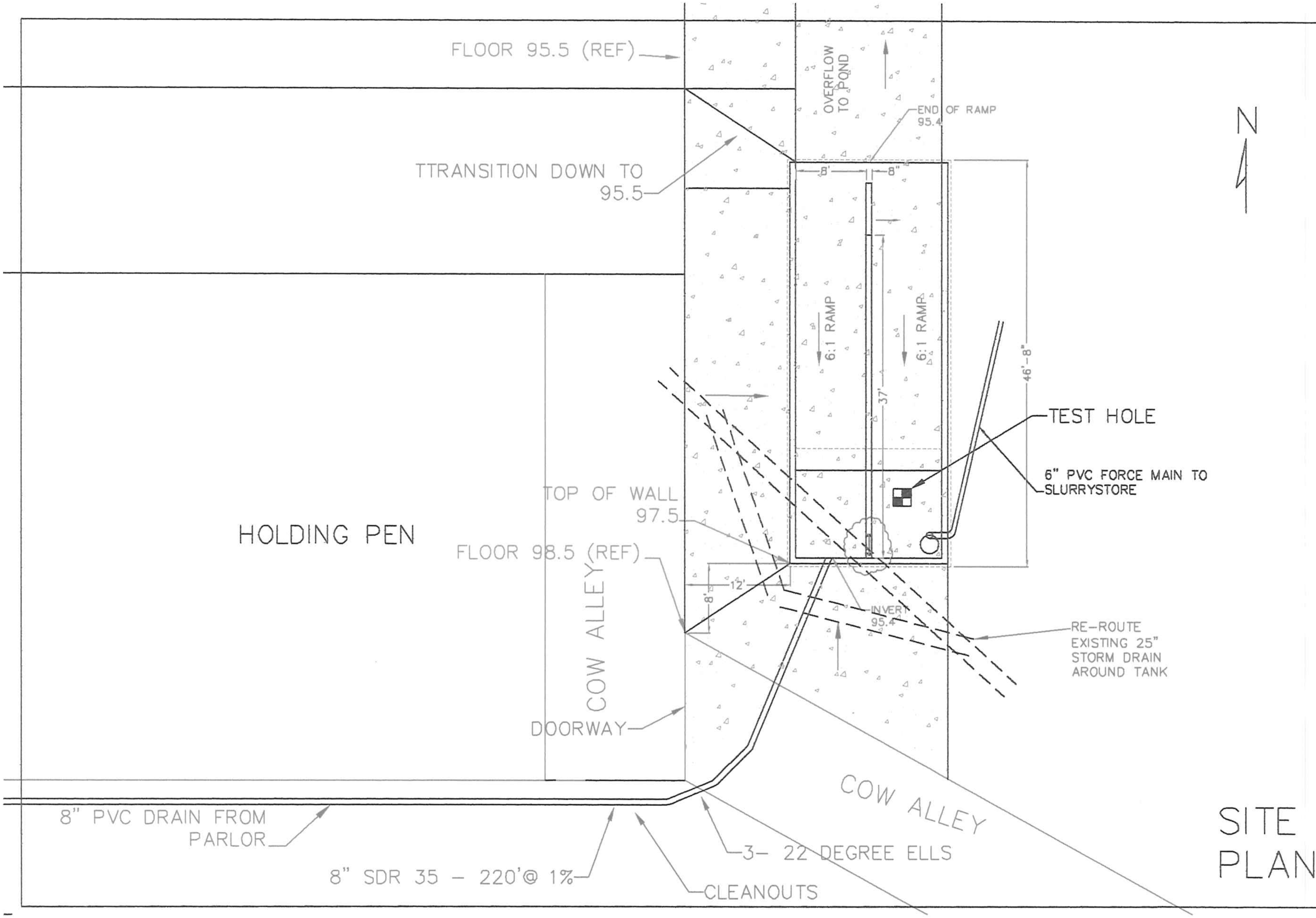
A MANURE SYSTEM FOR:
WALLNUTDALE DAIRY
DORR, MICHIGAN

DRAWN BY: CALVIN DYKE

PLOTTED: 03-28-2011

SCALE:

SHEET # 1



SITE PLAN

CID FARM CONSULTING, INC.
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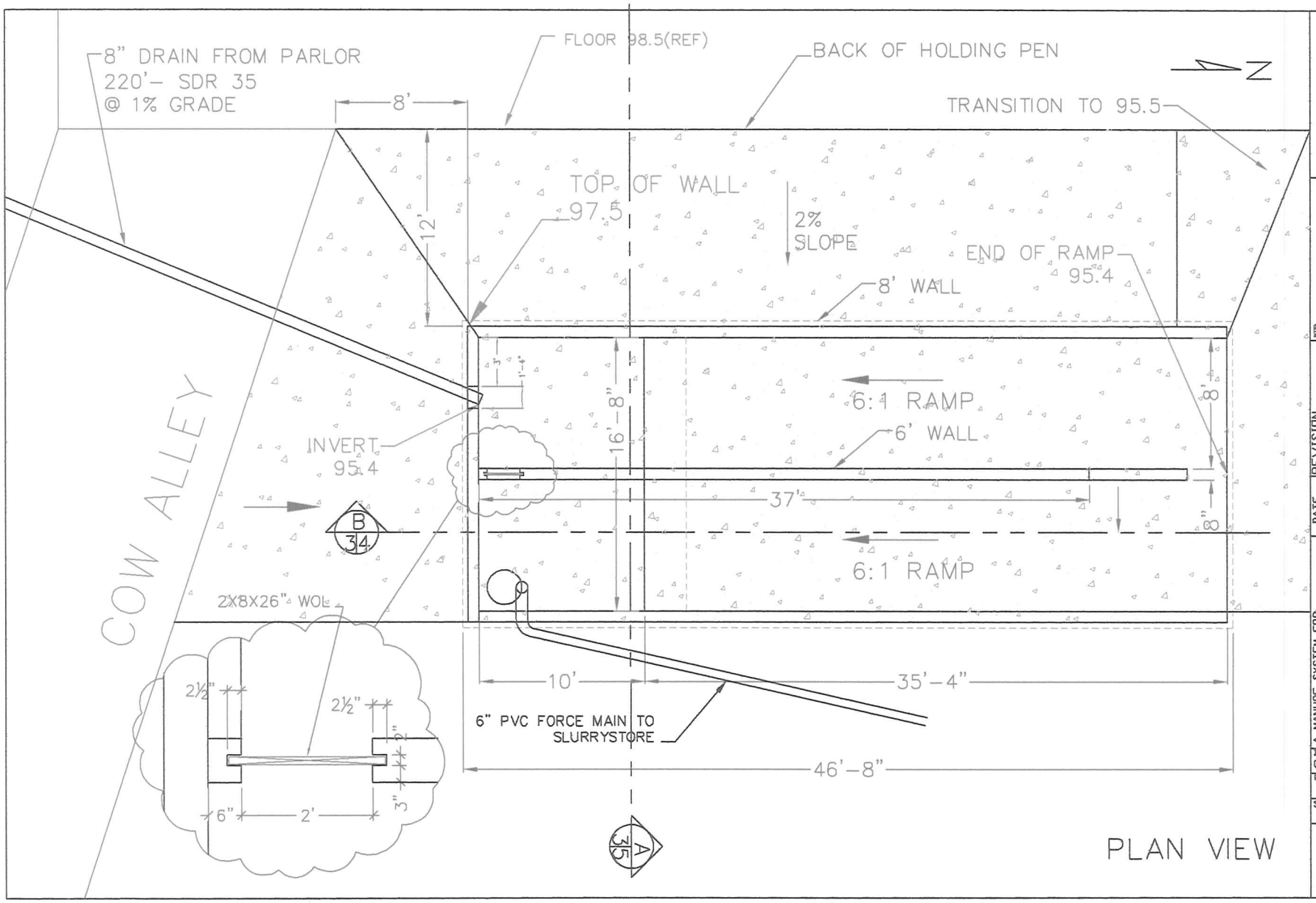
DATE	REVISION
03-28-2011	AS-BUILT

A MANURE SYSTEM FOR:
WALLNUTDALE DAIRY
DORR, MICHIGAN

DRAWN BY: CALVIN DYKE
PLOTTED: 03-28-2011
SCALE: 1"=10'
SHEET # 2



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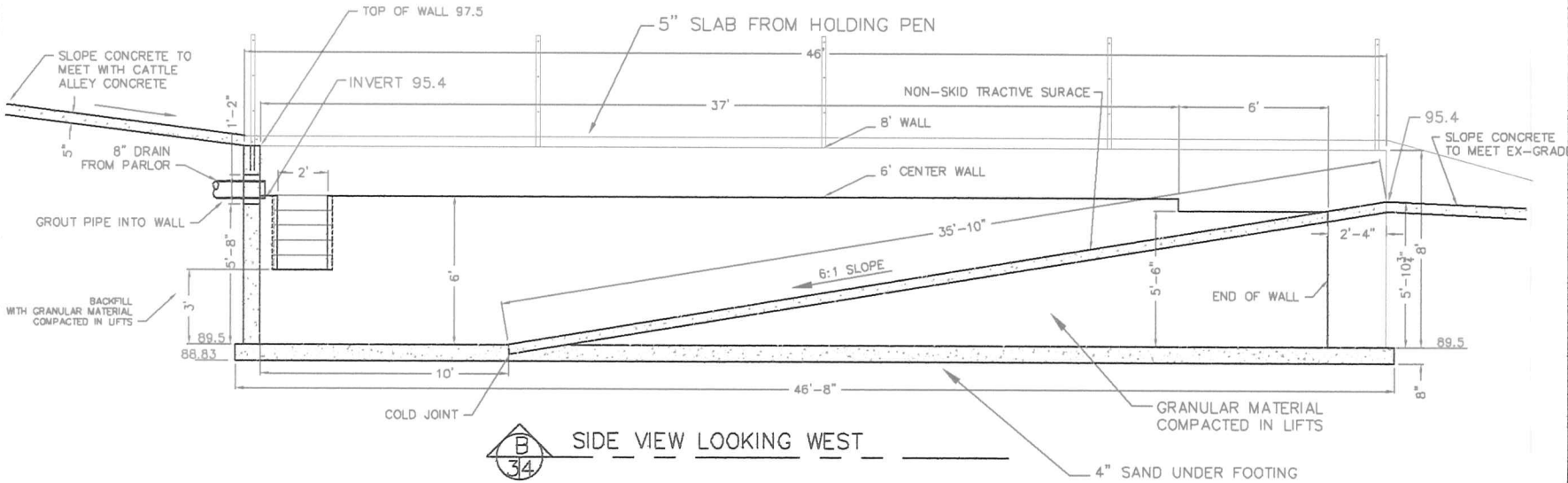
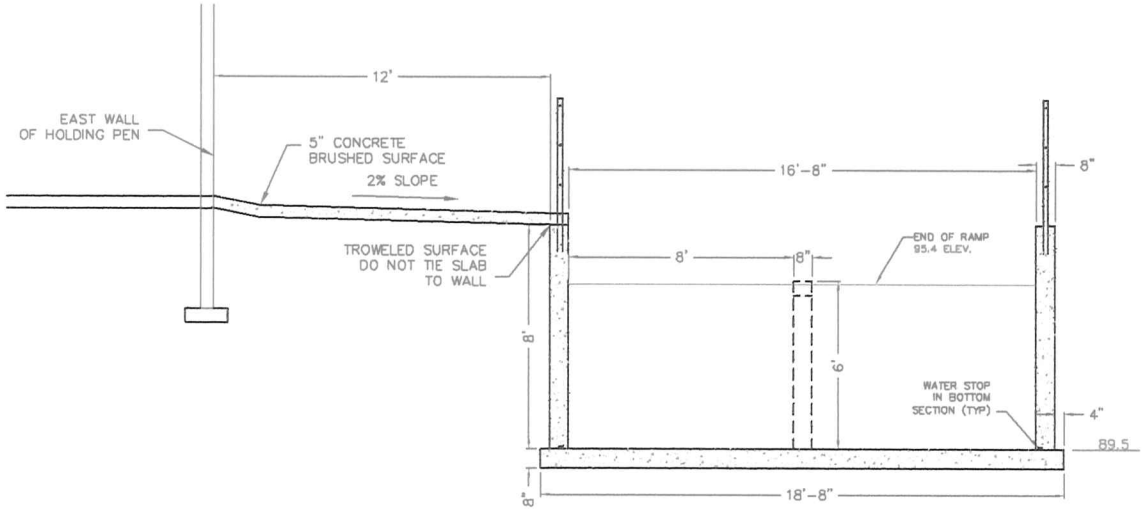
DATE	REVISION
03-28-2011	AS-BUILT

A MANURE SYSTEM FOR
WALLNUTDALE DAIRY
DORR, MICHIGAN

DRAWN BY: CALVIN DYKE
PLOTTED: 03-28-2011
SCALE: 1"=5'
SHEET # 3



B 3/4 SIDE VIEW LOOKING WEST



A 3/4 SECTION LOOKING NORTH

SEE WALL DETAILS PAGE 5

SECTIONS

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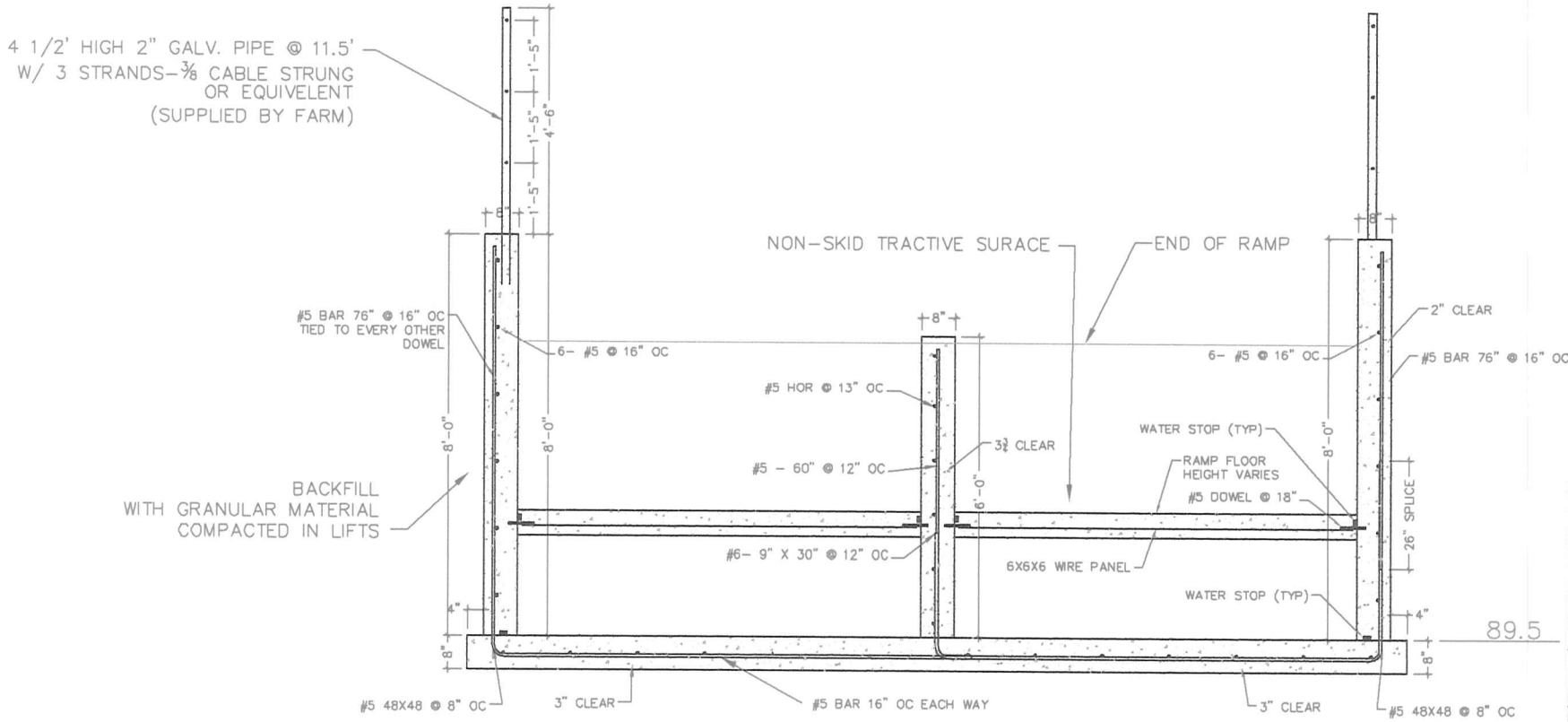
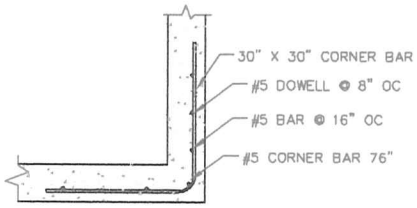
REVISION	DATE
AS-BUILT	03-28-2011

A MANURE SYSTEM FOR:
WALLNUTDALE DAIRY
DORR, MICHIGAN

DRAWN BY: CALVIN DYKE
PLOTTED: 03-28-2011
SCALE: 1"=4'
SHEET # 4



8' WALL AND RAMP DETAIL



CORNER BAR DETAIL

WALL DETAILS

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A MANURE SYSTEM FOR:
WALNUTDALE DAIRY
DORR, MICHIGAN

DRAWN BY: CALVIN DYKE
PLOTTED: 03-28-2011
SCALE: 1"=2'
SHEET # 5