E&S POLLUTION CONTROL PLAN AND FINAL SEEDING RECOMMENDATIONS

1. Prior to ANY earthmoving, install silt fence, on the contour, down hill from all proposed earth disturbance.

2. Construct a temporary diversion immediately upslope from the area of disturbance. This will gently slope to the outlet and end at a place which will not cause flooding or other problems. This will be constructed prior to other earth disturbance.


4. Provide temporary or permanent seeding of all disturbed areas immediately.

5. All temporary diversions will be removed after re-establishing permanent vegetation.

SEEDING RECOMMENDATIONS

When grading is finished, apply lime and fertilizer in accordance with soil test recommendations. If soil test results are not available, apply 4 ton per acre of agricultural grade limestone and fertilize at the rate of 1,000 lbs. Of 10-20-20 or equivalent per acre.

Line and one-half (1/2) the amount of the fertilizer shall be incorporated 4 to 6 inches into the soil. Work area with chisel plow or similar type equipment, making sure lime and fertilizer are worked well into the soil.

Follow the balance of fertilizer and seed. The seed mixture shall be the following or similar if approved by the NRCS representative.

Nurse Crop (required with every permanent seed application):
- Oats: 64 lbs/acre PLS
- Wheat: 60 lbs/acre PLS
- Annual Rye: 40 lbs/acre PLS

Permanent Stabilization:
- Perennial Rye PLUS: 40 lbs/acre PLS
- Tall Fescue PLUS: 80 lbs/acre PLS

NOTE: This mixture is suitable for frequent mowing. Do not cut shorter than 4".

PLS means pure, live, seed. PLS is the product of the percentage of pure seed times percentage germination divided by 100. For example, to secure the actual planting rate for switchgrass, divide 12 lbs PLS by the PLS percentage shown on the seed tag. Thus, if the PLS content of a given seed lot is 35%, divide by .35 to obtain 34.4 lbs of seed, the amount of seed required to plant 1 acre.

If partial completion of any part of the project is accomplished, and this area will be disturbed again, but not for a period of 20 days or more, those areas must be seeded with a TEMPORARY cover-seed.

Temporary Seed and mulch will be applied at the following rates:
- Annual Ryegrass: 40 lbs/Acre
- Winter Rye: 3 Bu/Acre
- Winter Wheat: 3 Bu/Acre
- Spring Oats: 3 Bu/Acre

Seed can be applied with a drill or broadcast seeder. Band seeding is not permitted.

If broadcast, narrow or disk lightly to cover seed. Roll with cultipacker or similar roller in same direction as seeding. (Double drilling gives better distribution of seed and helps to spread the water while plants are small. Drill first north and then crosswise (in a zig-zag pattern). Optimum planting time is early spring or mid summer.

As soon as seeding is finished, mulch with 3 Tons/Acre of hay or straw, making a layer 1 to 1.5 inches deep. Set disk straight and go over mulch to press straw into the soil. Tackifiers can also be used for anchoring mulch.

OPTIONAL STRAW BALE BARRIER (NOT TO SCALE)

STRAW Bale BARRIERS SHOULD NOT BE USED FOR MORE THAN 3 MONTHS

* COMPOST OR MULCH FILLED GEOTEXTILE TUBES CAN ALSO BE USED INSTEAD OF THE STRAW BALES.
CONCRETE CONSTRUCTION NOTES

1. All steel shall have a tensile yield strength of 60 ksi (grade 60). Stab reinforcement for the structure shall be 6d x 2 1/2 x 2 1/2 (grade 50) welded wire fabric supported on steel chairs. Support shall be sufficient to allow concrete placement without significant deflection of the reinforcement.

2. Form oil shall not be sprayed on any rebar,止水带, or concrete. Stab reinforcement should be placed in the form oil to ensure proper concrete placement.

3. Vinyl stop oil will be used at all curbs/walls and slab joints. Curing compound shall not be sprayed at locations where a止水带 is required.

4. Concrete shall not be placed until the sub-grade, forms, and steel reinforcement have been inspected and approved by the NRCS. Notification shall be given for enough in advance to provide time for inspection.

5. The contractor(s) shall provide a design mix to the NRCS for approval prior to ordering concrete. All load tickets shall be provided to and approved by the inspector on site and shall reflect all materials and quantities including admixtures, amount of water, and true moisture in the aggregate, and total size of the batch. The batch ticket must indicate the amount of water that may be added on site while maintaining the design requirements or no water may be added.

6. All concrete shall have a minimum 28-day compressive strength of 4000 psi and a maximum water-cement ratio of 0.50.

7. Slump shall be 3 to 6 inches (without superplasticizers, if any), the air content shall be 5–7% of the volume of the concrete. Admixtures such as superplasticizers, water-reducers, and air entrainers may be used if approved by the NRCS concrete placement and are used in accordance with the manufacturer’s recommendations. Superplasticizers (ASTM C494, type F or G) may be added to concrete that has a 2 to 4 inch slump before the addition, and that is not warmer than 95°F. The slump shall not exceed 75% of the addition of superplasticizer.

8. No water in excess or the amount called for by the job design mix shall be added to the concrete. No water may be added after the superplasticizer.

9. Concrete shall not be dropped more than 5 feet vertically. Superplasticized concrete shall not be dropped more than 12 feet vertically.

10. Formed walls shall be placed in 2 layer footers unless superplasticizer is used, in which case the maximum layer shall be 5 feet. Each layer shall be consolidated to ensure a good bond with the preceding layer.

11. Concrete shall be consolidated by vibrating immediately after placement. Concrete shall be worked into corners and angles and around all reinforcement and embedded items in a manner that prevents segregation or the formation of "honeycomb". Excessive vibration will result in segregation of materials.

12. Curing compound shall be applied in a uniform layer over all surfaces requiring protection at a rate of not less than one gallon per 150 square feet of surface. Curing compound shall be reapplied if disturbed within 3 hours after being applied.

13. Concrete shall be covered to cure at least 24 hours prior to breaking form or reinforcement placement for adjacent construction.

14. Forms for walls shall not be removed for at least 24 hours after placing the concrete. If forms are removed in less than 7 days, the exposed concrete shall be sprayed with curing compound.

15. "Dry-set" brackets for attaching the posts to the walls are specified in this design. "Dry-set" brackets can be anchored to the top of the concrete walls unless the concrete has been allowed to cure for at least 7 days.

16. The landowner has the option of having grooves floated into the stacking structure floor for added traction. This decision will be conveyed to the contractor(s) during price solicitation.

17. Control joints shall be saw-cut as soon as possible but no later than 24 hours after placement of concrete, at the intervals indicated on the drawings, not to exceed 30' in any direction. All joints shall be water tight and as shown on the detail drawings. The saw-cuts shall be thoroughly cleaned so the sealant can bond to the concrete. Some sealants require that a primer be used before the sealant is installed.

18. All wall ties, honeycombing, and air holes >1/4" shall be parged with non-shrink grout.

19. Random cracking in the walls and floor shall be evaluated and determined if the concrete needs removed or repaired. Removal and repair shall be the responsibility of the contractor at no increase in cost. The contractor shall consult with the building design engineer to decide on a remedy.
Roof Structure Design & Construction Notes

1. Mono slope trusses shall be used for this roof (2 3/12 pitch).
   Shop drawings shall be provided to the NRCS design engineer. For approval prior to ordering the trusses and "PE" (Professional Engineer) sealed shop drawings or plans shall be supplied by the Truss Plate Institute certified manufacturer at the time of truss delivery.
   (Truss and stringer configuration shown in the drawings is for illustration purposes only; NRCS does not design roof trusses.)
   - Make the truss designer aware of knee bracing being used
   - Make the truss designer aware trusses shall be design for partially enclosed bldg.
   - Make the truss designer aware the bearing area is 8 3/4' (post with girders).

2. All nails used for structural connections shall be ring, spiral, or screw shank hardened nails. Full head size 16d or larger.

3. All nails and bolts used with pressure treated wood shall be hot-dip galvanized nails that meet the minimum galvanizing coating requirements for the most restrictive wood preservative treatment method. i.e. CCA treated wood requires a minimum coating rating of G-90 however ACD treated wood requires a coating rating of G-125. When the wood types are mixed, use the G-90 connectors. Consult with individual fastener, hardware manufacturer for recommendations.

4. All nailing for general framing can be common, full head size 16d or larger, smooth nails. General framing includes purlins, diagonal braces, lateral braces, etc.

5. Bolts, screws, or metal plate connectors may be used instead of nails. Such substitutions shall provide a connection of equal or greater strength and durability, according to the National Forest Products Association's (NFPA) National Design Specification. Alternate connectors must be approved by the design engineer.

6. All wood in contact with the ground or moisture shall be pressure treated as per American Wood Preservers Association Standard (posts shall be treated to 0.8 #/cu ft and all other wood shall be treated to 0.4 #/cu ft)

7. All structural members which include: All wyre and knee bracing, bearing blocks, truss support blocks, and girders/headers (excluding microlam girders/headers) shall be Southern Yellow Pine or Douglas Fir-Larch No. 2 Grade (Surface dry, using 100% moisture content).
   All secondary members such as permanent or continuous bracing shall be C58P Southern Pine No. 3, S5P Spruce-Pine-Fir No. 2 or better.
   Purlins shall be SYP No. 3 or better if spaced at 2' centers
   Purlins shall be SYP No. 3 or better if spaced at 1 1/2' centers

8. All posts are to be fully pressure treated.
   Posts shall be 4 PLY 2" x 8" GLU-LAM HAVING THE FOLLOWING MIN PROPERTIES
   - Bending Fb = 2250 psi
   - Shear Fc = 2250 psi
   - E = 170000 psi

9. Galvanized angle iron (1/4" thick x 3" wide both ways) can be installed on the corners of the posts at entrance locations. Other means of post protection may be used if approved by the design engineer.

10. Girders and Headers
    - Girders are to be (2) 1 3/4" x 9 1/4" E0E LVL'S
    - having the following min properties
    - Bending Fb = 2900 psi
    - Moment = 4287 Ft-lbs
    - Shear Fc = 3450ft-lbs E0DPS0
    - E = 2,000,000 psi

11. Knee and Wye bracing are required for the posts and girders as shown.
    - Wye bracing shall be installed AFTER all roof framing is complete.
    - Knee bracing shall be installed on the "inside" of the entrance locations.

12. Permanent continuous lateral bracing is required, according to the truss MFG drawings. Continuous lateral bracing must be installed with staggered side by side overlap connections (no butt to butt connections).
    - The ends of the braces must extend fully past the truss and allow a 2-nil connection without using toenails.

13. Permanent diagonal bracing is required at each end of the building and at intervals not to exceed what is shown in the drawings. All bracing shall be installed as Per the Truss Plate Institute B511-93 and the detailed drawing.

14. Roof Fasteners shall be a combination of zinc coated steel and neoprene washer. Double stitch the seams of the roof edges. Typical aluminum roof shall have fasteners on a 9" spacing on the purlins 24' on center. Aluminum roofing shall have nominal thickness of 0.019 inches and coated steel of a 29 gauge minimum or better. Resolute panels may also be used as the roofing material. Fasteners for the Resolute panels shall be as recommended by the manufacturer.

15. End trusses shall be faced with 3/4" structural plywood, corrugated 29 gauge galvanized steel roofing, or equivalent or better. Resolute panels may also be used. The grade of Resolute panels shall be approved by the design engineer before ordering.

16. Ventilation shall be provided at the peak of the mono slope roof by leaving a 3' gap between the roofing material and fascia board.

17. Earth backfill around posts shall be placed to compacted 8' lifts.

18. Put 1/2" thick expansion joint material or 2 layers of felt paper between the posts/permastack and floor concrete.

19. The roof area was designed to carry a combined loading of 40 psf (DEAD + LIVE LOAD) on the entire roof surface and a uniform uplift of 14.5 psf under the entire roof. 'LIVE LOAD' is the ground snow load after reduction factors have been applied = what load this roof is designed for no enclosed sides. Sides shall remain open; major structural changes may be needed if any of 'open' sides are enclosed. Trusses shall be designed for partial enclosure. Consult with the design engineer if curtains or other means of siding is being considered.
NRCS takes safety very seriously; safety signage is required as follows:

- Unloading/Agitation Pad Location (1) Surface is not solid sign, (2) Warning during agitation sign, and (3) No dumping over fence sign. All to hang from the chainlink fence.
- Push off Pad Location (1) Deadly manure gas possible sign on chainlink fence.

Nothing shall be dumped over the fence at tank wall. There have been cases where sludges and tractors have fallen into tanks causing injury or death to the operator. The fence around the tank structure will not hold back waste of equipment. Additionally NRCS recommends that a gas detection meter/device is used during agitation and/or unloading of the manure tank.

See the "safety" section of this design package for sign types and ordering info.
ANCHOR WALKWAY.
WALKWAY SLOPE OF 7:1 OR FLATTER RECOMMENDED.
APPROXIMATE LENGTH = 10'.
WIDTH ACCORDING TO LANDOWNER.

LIVESTOCK GATES REQUIRED.
GATE LOCATION/CONFIGURATION/TYPE
SHALL BE DETERMINED BY
THE OWNER/OPERATOR.

ROLL CURB PROFILE
APPROXIMATELY 70'

FILL UNDER SCRAPE
LANE REQUIRED

UNLOADING PAD ELEVATION = 935'.
20"X20"X8" UNLOADING PAD.
#4 BAR 1/2" O.C. BOTH WAYS.

PUSH OFF WITH TRACTOR
SAFETY GUARD.
SEE PUSH OFF DRAWING FOR
STEEL SCHEDULE.
NOTE: PUSH OFF RAMP SITS
ON TOP OF EXISTING TANK WALL.

TO ELIMINATE WATER COLLECTING
IN THE AREA BETWEEN THE NEW
UNLOADING PAD AND THE EXISTING
WALL, INSTALL 4" PVC SDR 40 DRAIN PIPE
ON TOP OF EXISTING UNLOADING PAD
AS CLOSE TO THE TANK AS POSSIBLE.
PROTECT OUTLET WITH R3 RIPRAP.

EXISTING LIQUID
MANURE STORAGE.
BACKFILL SURFACE CAPPED WITH A LAYER OF ASHTO #1. SHAPE SURFACE OF BACKFILL SO THAT RUNOFF FLOWS EVENLY TO EACH SIDE OF BUILDING. RUN OFF FLOWING TO THE EAST SHALL ENTER THE 10' X 10' PIPE. RUN OFF FLOWING WEST SHALL BE ROUTED TO THE RIPRAP PROTECTED OUTLET.

70' X 10' DIAMETER R3 PIPE ON APPROXIMATELY 8% SLOPE TO CARRY SURFACE RUN OFF THRU BACK FILL. PROTECT INLET WITH R3 RIPRAP.

EXISTING LIVESTOCK BUILDING

PERIMETER DRAIN AND 10' X 10' PIPE PROTECTED OUTLET. R3 RIPRAP REQUIRED.

FINISHED FLOOR ELEVATION = 939.5

APPROXIMATELY FROM EXISTING BLDG
TRUSSES 4' CC UNLESS OTHERWISE NOTED

WYE AND KNEE BRACING REQUIRED. KNEE BRACING REQUIRED AT EACH LOCATION WHERE A TRUSS FALLS ON A POST

37' 1 1/4' OUTSIDE TRUSS
1 3/4' X 9 1/4' LVL 20E

1 1 1/4' X 9 1/4' LVL 20E

8 3/4' TRUSS DECKING INCLUDES 2X6'S

1 3/4' X 9 1/4' LVL 20E

4' 8" WALL EXTENDED 6" TO PROVIDE ADEQUATE CONCRETE COVER FOR ATTACHING BRACKET TO TOP OF WALL

4PLY 2" X 6" GULAM POST ON 6' T-WALL

9' 6" K BRACE LOCATION

12' OUTSIDE POST TO OUTSIDE POST

FLOOR ELEVATION = 937.5'
14" CLEARANCE FROM FINISHED FLOOR TO BOTTOM CORO TRUSS

36' 8" 4PLY 2" X 6" GULAM POST INSTALLED IN GROUND

12' 0" 12' 0" 12' 0"
WALL AND FLOOR JOINT LOCATED CENTER OF BUILDING

WALL EXTENDED 6'

FLOOR ELEVATION = 937.5'

4PLY 2"X6" GLULAM POST

36'

37' 4"
A-A MORTALITY BLDG PROFILE

EXISTING SURFACE MATERIAL MAY BE USED AS FILL. EXCAVATION IN THE FORM OF LIGHT GRADES LEVEL SUBGRADE. EXCAVATION AND FILL IS MINIMAL.

B-B MORTALITY BLDG PROFILE

3' ASHTO #1 UNDER FOOTERS AND SLAB
5' REINFORCED CONCRETE
4' CORRUGATED PERFORATED PERIMETER DRAIN ALONG ALL 6' WALLS

ORIGINAL GRADE RESHAPE SO THAT WATER FLOWS AROUND AND AWAY FROM STRUCTURE.
FASTENER REQUIREMENTS AT GIRDER & POST CONNECTIONS

1.75" X 9.25" 2.0E LVL GIRDERS

STAGGER BUTT JOINTS; NO POST SHALL HAVE A GIRDER BUTT JOINT ON BOTH SIDES

CONTINUOUS SPAN

TRUSS CONNECTION BETWEEN POSTS

SAME AS POST

BEARING BLOCK DETAIL

4.13" diameter x 3.5" HOT DP GALVANIZED
RING SHANK NAILS PER SIDE
NAILS: POWER DRIVEN = YES

2" x 6" x 12" BEARING BLOCK
(RIPPED TO FIT)

4 PLY 2" x 6" GLU LAM Treated Post

NOTCH POSTS
TO BEAM TRUSSES
(Top of notch to be flush with top of girders)

NOTCH POSTS
TO BEAM TRUSSES
(Top of notch to be flush with top of girders)

(6) .131 diameter x 3.5" HOT DP GALVANIZED
RING SHANK NAILS PER SIDE
NAILS: POWER DRIVEN = YES

2" x 6" x 12" BEARING BLOCK
(DRIED TO FIT)

4 PLY 2" x 6" GLU LAM Treated Post

(6) .131 diameter x 3.5" HOT DP GALVANIZED
RING SHANK NAILS PER SIDE
NAILS: POWER DRIVEN = YES

NON-CONTINUOUS SPAN

4.13" diameter x 3.5" HOT DP GALVANIZED
RING SHANK NAILS PER SIDE
NAILS: POWER DRIVEN = YES

LVL'S NEED LATERAL SUPPORT BLOCKING EVERY TWO FEET

4.13" diameter x 3.5" HOT DP GALVANIZED
RING SHANK NAILS PER SIDE
POWER DRIVEN
POST ON WALL INSTALLATION

STURDI-WALL SW64GL DRY SET BRACKET OR EQUIVALENT.
EPoxy OR SCREW TYPE ANCHORS RECOMMENDED FOR DRY SET INSTALLATION. 5/8" EXPANSION BOLTS ARE NOT PERMITTED FOR USE.

4ply 2' x 6'
4' T-WALL
3' AASHTO #57

EMBEDDED POST
SINGLE POST INSTALLATION

PLY'S TO FACE THE OUTSIDE OF THE BLDG. (PLY'S RUN PARALLEL WITH THE TRUSSES)

4ply 2' x 6' GLULAM POST

1/2" EXPANSION JOINT MATERIAL BETWEEN POST AND CONCRETE FLOOR

FINISHED FLOOR

3' AASHTO #57

CONCRETE COLLAR POURLED TO TOP OF AASHTO #57 24" DIAMETER

CONCRETE FOOTING PAD 8" THICK 24" DIAMETER

* 1/2" (#4) REBAR BOTH WAYS THROUGH BOTTOM OF POST. ALLOW 3' CONCRETE COVER AT ENDS OF REBAR.

NO SCALE
TABLE 2

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**NUMBER OF NAILS REQUIRED**

**BUILDING WIDTH OVERHANG TO OVERHANG**

2. The truss support blocks, at locations between posts, can be notched sections of posts or 2x boards. Notches shall be cut, and the block positioned in the same fashion as the notches in the posts, described above.

3. The wye and knee braces shall be installed at a 45° degree angle from the treated posts. Install the wye braces after the trusses are set.


5. Nails in contact with pressure-treated wood shall be galvanized.

6. Trusses are measured from outside of bearing area to outside of bearing area.

**THE 16d POWER DRIVEN NAILS ARE BASED ON USING .131 DIAMETER X 3 5/8" LONG SPIRAL OR RING SHANK NAILS.**

**THE 16d HAND DRIVEN NAILS ARE BASED ON USING .162 DIAMETER X 3 5/8" LONG SPIRAL OR RING SHANK NAILS.**

**THE 20d HAND DRIVEN NAILS ARE BASED ON USING .192 DIAMETER X 4" LONG SPIRAL OR RING SHANK NAILS.**
CORD AND DIAGONAL BRACING

CONTINUOUS LATERAL BRACING ("RAT RUNS")
(2-16d NAILS @ EACH BRACE / TRUSS CONNECTION)

S O T H E Y D O N O T L I N E U P W I T H T H E N E X T T R U S S.
T O A L L O W F O R A T W O N A I L C O N N E C T I O N.
S H O W N O N T H E T R U S S D E S I G N.

DIAGONAL BRACING ON TOP SIDE OF BOTTOM CHORD
AT LOCATIONS SHOWN IN DRAWINGS
(2-16d NAILS @ EACH BRACE TRUSS CONNECTION)

DIAGONAL BRACING ON BOTTOM SIDE OF TOP CHORD
AT LOCATIONS SHOWN IN DRAWINGS
(2-16d NAILS @ EACH BRACE TRUSS CONNECTION)
CROSS BRACING
TO BE INSTALLED AT INTERVALS NOT TO EXCEED 20’
ALONG CONTINUOUS LATERAL BRACING

CROSS BRACING IS REQUIRED ON TRUSS WEBS
THAT HAVE A CONTINUOUS LATERAL BRACE

OPTION #1

2x4 BLOCK OVER ALL BRACES

AT JOINT LOCATIONS, INSTALL LATERAL BRACE
SO IT EXTENDS PAST TRUSS WEB MEMBER TO
ENABLE A (O) NAIL CONNECTION TO THE WEB MEMBER

OUTSIDE CROSS BRAKE SHALL CONNECT
(3) OR (4) TRUSSES.
THE INSIDE CROSS BRACE SHALL CONNECT
(3) TRUSSES MINIMUM. ONLY (2) SHOWN
HERE FOR DRAWING CLARITY.
(2-16d NAILS @ EACH MEMBER/BLOCK)

* ALL CROSS BRACES SHALL BE
INSTALLED AT LESS THAN OR
EQUAL TO 45 DEGREE ANGLES

CROSS BRACING IS REQUIRED ON TRUSS WEBS
THAT HAVE A CONTINUOUS LATERAL BRACE

OPTION #2

2x4x1.2 BLOCK UNDER OUTSIDE BRACE

AT JOINT LOCATIONS, INSTALL LATERAL BRACE
SO IT EXTENDS PAST TRUSS WEB MEMBER TO
ENABLE A (O) NAIL CONNECTION TO THE WEB MEMBER

OUTSIDE CROSS BRAKE
THE CROSS BRAKE SHALL CONNECT
AT LEAST (3) TRUSSSES.
(2-16d NAILS @ EACH MEMBER/BLOCK)

* ALL CROSS BRACES SHALL BE
INSTALLED AT LESS THAN OR
EQUAL TO 45 DEGREE ANGLES

CROSS BRACING IS REQUIRED ON TRUSS WEBS
THAT DO NOT HAVE A CONTINUOUS LATERAL BRACE
AT LOCATIONS SHOWN IN THE DRAWINGS.

OPTION #3

INSTALL "CONTINUOUS" CROSS BRACING
ON THE OPPOSITE SIDE OF THE TRUSS WEB MEMBER AS THE LATERAL BRACE.
THE CROSS BRACING MUST RUN THE
ENTIRE LENGTH OF THE BUILDING.
ON THOSE WEB MEMBERS WITH LATERAL
BRACING SPECIFIED IN THE TRUSS DESIGN
AND AT OTHER LOCATIONS DICTATED BY
THE BUILDING DESIGN ENGINEER.
(2-16d NAILS @ EACH MEMBER)

* ALL CROSS BRACES SHALL BE
INSTALLED AT LESS THAN OR
EQUAL TO 45 DEGREE ANGLES
CONTINUOUS LATERAL BRACING
AS PER TRUSS MFG. RECOMMENDATIONS

TCO-TCO-TCO
TOP CHORD DIAGONAL BRACING

BCO-BCO-BCO
BOTTOM CHORD DIAGONAL BRACING

WEB MEMBER CROSS BRACING

NOTES:
1. CONTINUOUS LATERAL BRACING SHOWN IS FOR A VISUAL REPRESENTATION ONLY;
   CONTINUOUS LATERAL BRACING LOCATIONS & SPACING ARE REQUIRED BY THE TRUSS
   MFG & SHOWN ON THE TRUSS DESIGN DRAWING.
2. ALL BRACING IS 2" X 4" GRADE MARKED LUMBER.
3. ALL CONNECTIONS SHOULD BE MADE WITH 2 - 16d NAILS.
   2-16d NAILS. NO BUTT JOINTS.

"DRAWING IS NOT TO SCALE"
"K" BRACING DETAIL

(DIAGONAL BRACE FOR POSTS ON TOP OF CONCRETE WALL)

Option 1

2'' wide x 1/4'' thick x 24'' long strap coated steel plate (Each side)
1/8'' thru bolts.
OR

Pressure treated post as per roof designer requires

Option 2

2'' x 6'' nailed slat plate
16d Power-Driven Nails Can be used.
Number of nails shall be determined by the design engineer.

Option 3

5/8'' thru bolt
Notch for bolt

TYPICAL "K" BRACE LOCATION

1. 'K' bracing is needed when posts are anchored to top of walls.
2. Will need a 'K' brace at the corners of the building.
   A 'K' brace should also be considered on both sides of openings.
3. Other 'K' brace configurations may be used.
4. K brace same size as support post.

"Not To Scale"
CONSTRUCTION JOINT OPTIONS

1. If slab and wall are poured separately, the slab surface must be thoroughly cleaned with water and a wire brush. The surface of the joint shall be kept moist for at least 1 hour prior to placement of new concrete.

2. The slab and wall may be poured at the same time, eliminating the need for a construction joint.

GENERAL DESIGN NOTES:

- Drainage shall be away from the wall.
- The minimum width of the backfill against the wall shall be equal to or greater than the backfill height.
- Maximum footing contact pressure is 510 psf/ft.

DESIGN STRENGTHS: WORKING STRESS DESIGN

- Concrete f_c = 4,000 psi
- Steel f_y = 60,000 psi (Grade 60)

WALL DESIGN LOADING: 3.1.3 STANDARD - LATERAL EARTH PRESSURE VALUES, SEE SECTION IV OF THE FIELD OFFICE TECHNICAL GUIDE.

- Manure load inside = 55 psf/ft.
- Soil backfill load outside = 75 psf/ft.
- No surcharge load.
- Soil backfill density = 110 pcf.
- Water table must be below the footing elevation.

ADAPTED & MODIFIED FROM STANDARD DRAWING # PA-018D
CONSTRUCTION JOINT OPTIONS

1. If slab and wall are poured separately, the slab surface must be thoroughly cleaned with water and a wire brush. The surface of the joint shall be kept moist for at least 1 hour prior to placement of new concrete.

2. The slab and wall may be poured at the same time, eliminating the need for a construction joint.

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.
- Maximum footing contact pressure is 800 psf/ft.

DESIGN STRENGTHS: WORKING STRESS DESIGN
- Concrete: f_c = 4,000 psi  Steel: f_y = 60,000 psi (Grade 60)
- 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. or 85 psf/ft.
- No horizontal surcharge added.
- Soil backfill density = 110 pcf.
- Water table must be below the footing elevation.

STEEL SCHEDULE

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<td>A</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>STR</td>
<td>2'-0&quot;</td>
<td>0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>STR</td>
<td>3'-0&quot;</td>
<td>2'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>L</td>
<td>4</td>
<td>STR</td>
<td>2'-0&quot;</td>
<td>0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>LI</td>
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<td>STR</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
</tbody>
</table>

* MARK C & D BARS MAY BE COMBINED TO AVOID SPICE. THEN MARK C BAR IS 4'-3" x 9".

NOTES:
- For frost protection, a 2-foot backfill is recommended.
- Dimensions are to the reinforcing bar surface.
- Concrete shall meet PA 313 or 561 specification requirements.
- Minimum splice length for all #4 bars is 18".

(Adapted and Modified from Standard Drawing PA-020A)
WALL ELEVATION
SHOWING CORNER DETAIL

NOTES:
1. TIE LONG LEG OF MARK 1 CORNER BAR TO WALL SECTION T&B MARK 6 BAR AS SHOWN.
2. SHORT LEG OF MARK 1 BARS SHALL BE SUPPORTED WITH VERTICAL WALL SUPPORT BAR 1.
3. 10 MARK 1 BARS PER CORNER. SEE APPROPRIATE WALL DRAWING FOR BAR DIMENSIONS AND QUANTITIES.
4. PLACE FIRST VERTICAL BAR (SEE PLAN VIEW) AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.

(ADAPTED AND MODIFIED FROM STANDARD DRAWING PA-025)
C.J. = CONSTRUCTION JOINT

LIQUID-TIGHT JOINT _X_ YES __ NO

LIQUID-TIGHT JOINT OPTIONS
1) PVC VINYL WATERSTOP

CONSTRUCTION JOINT OPTIONS
1. IF SLAB AND WALL ARE POURED SEPARATELY, THE SLAB SURFACE MUST BE THOROUGHLY CLEANED WITH WATER AND A WIRE BRUSH. THE SURFACE OF THE JOINT SHALL BE KEPT MOIST FOR AT LEAST 1 HOUR PRIOR TO PLACEMENT OF NEW CONCRETE.

2. THE SLAB AND WALL MAY BE POURED AT THE SAME TIME, ELIMINATING THE NEED FOR A CONSTRUCTION JOINT.

OVERLAP FOOTING STEEL WITH FLOOR STEEL MINIMUM 12"

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.
- MAXIMUM FOOTING CONTACT PRESSURE IS 1220 psf/ft.

DESIGN STRENGTHS: WORKING STRESS DESIGN
CONCRETE $f_c = 4,000$ psi | STEEL $f_y = 60,000$ psi (GRADE 60)

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.
- NO HORIZONTAL SURCHARGE ADDED.
- SOIL BACKFILL DENSITY = 110 pcf.
- WATER TABLE MUST BE BELOW THE FOOTING ELEVATION

CONCRETE SHALL MEET PA 313 OR 561 SPECIFICATION REQUIREMENTS.
MINIMUM SPlice LENGTH FOR ALL #4 BARS IS 16”.
MINIMUM SPlice LENGTH FOR ALL #5 BARS IS 17”.

(NRCS 9’ HIGH 8’ WALL WALL (W/O SUBSURFACE))

STEEL SCHEDULE

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE</th>
<th>QUAN</th>
<th>TYPE</th>
<th>R</th>
<th>S</th>
<th>TOTAL LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>5’-3”</td>
<td>TOTAL LENGTH</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>5’-3”</td>
<td>TOTAL LENGTH</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>2</td>
<td>2’-3”</td>
<td>5’-0”</td>
<td>8’-3”</td>
<td>TOTAL LENGTH</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>5’-0”</td>
<td>TOTAL LENGTH</td>
</tr>
<tr>
<td>L</td>
<td>4</td>
<td>2</td>
<td>2’-0”</td>
<td>9’</td>
<td>2’-9”</td>
<td>TOTAL LENGTH</td>
</tr>
<tr>
<td>L1</td>
<td>4</td>
<td>STR</td>
<td>---</td>
<td>---</td>
<td>5’-9”</td>
<td>TOTAL LENGTH</td>
</tr>
</tbody>
</table>

#4 BARS, TOTAL LENGTH

#5 BARS, TOTAL LENGTH

NOTES:
1. NO MINIMUM OF BACKFILL IS REQUIRED, BUT A 2-FOOT BACKFILL IS RECOMMENDED FOR FROST PROTECTION.
2. DIMENSIONS ARE TO THE REINFORCING BAR SURFACE.

(ADAPTED AND MODIFIED FROM STANDARD DRAWING PA - 0220)
WALL ELEVATION
SHOWING CORNER DETAIL

NOTES:
1. TIE LONG LEG OF MARK 1 CORNER BAR TO WALL SECTION T & S STEEL WHERE THE SPACING MATCHES.
2. SHORT LEG OF MARK 1 BARS SHALL BE SUPPORTED WITH VERTICAL WALL SUPPORT BAR 1.
3. 18 MARK 1 BARS PER CORNER.
4. PLACE FIRST VERTICAL BAR (SEE PLAN VIEW) AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.

(ADAPTED AND MODIFIED FROM STANDARD DRAWING PA - 027A)
NOTE: 18" CURB AND 6' ROLL CURB ARE SUPERIMPOSED ON THE PROFILE

18' CURB EACH SIDE OF SCRAPE LANE
6' ROLL CURB AT ACCESS ROAD
6' REINFORCED CONCRETE SLAB/SCRAPE LANE, SLOPE SCRAPE LANE
CONCRETE THICKNESS INCREASE TO 8" AT ACCESS ROAD CROSSING LOCATION
STEEL SCHEDULE FOR SCRAPE LANE SHALL FOLLOW THE STEEL SCHEDULE FOR THE PUSH OFF RAMP SHOWN ON THE PUSH OFF RAMP DETAIL SHEET
STEEL SCHEDULE FOR SCRAPE LANE SHALL BE STEEL MESH \( \geq 2" \times 4" \) OR \#4 REBAR 18" SPACING BOTH WAYS.

16'5"

PUSH OFF SITS ON TOP OF EXISTING TANK WALL

PUSH OFF RAMP SHOWN ON THE PUSH OFF RAMP DETAIL SHEET

PUSH CITY REQUIRED

EXISTING SUPPORT WALL

EXISTING ENLARGING PAD

2'X2'X6' PRECAST BLOCK AT END OF EXISTING SLAB TO SUPPORT PUSH OFF RAMP

FILL

ORIGINIAL GRADE

C-C SCRAPE LANE PROFILE PROFILE

10 SCALE
ROLL CURB CROSS SECTION DETAIL

18" L-WALL

EXTEND STEEL SCHEDULE FROM 18" L-WALL INTO ROLL CURB.
NOTE: WHERE ACCESS ROAD CROSSES SCRAPE LANE, "THE REINFORCED CONCRETE STEEL SCHEDULE SHALL FOLLOW THE SAME 14" SPAN STEEL SCHEDULE AS THE PUSH OFF RAMP SHOWN IN THE STEEL SCHEDULE CHART BELOW.

SECTION A-A

RAMP WIDTH = 10' (10' max)
WIDTH REBAR
LENGTH REBAR
RAMP THICKNESS = 8" 8"
3" Cover
4" Vinyl Waterstop
4" x 6" L bar
20" x 20"
4" x 8" o.c.
4" x 6" o.c.

EXISTING UNLOADING PAD
Support Structure Wall
Compacted Backfill in 6" lifts with a wacker
Bond Breaker between Ramp and Wall

### ADDITIONAL NOTES
1. PROVIDE MANUFACTURED SAFETY GUARD ACCORDING TO PUSH OFF SAFETY GUARD DETAIL SHEET
2. PUSHOFF SLOPE OF 1/8" PER FOOT TOWARDS/AWAY STRUCTURE
3. SEE SPEC. 313 FOR MATERIALS SPECIFICATIONS
4. SEE PLAN VIEW FOR LOCATION
5. (2) 2" x 2" x 6" PRECAST BLOCKS REQUIRED AT END OF EXISTING UNLOADING PAD
6. SEE SCRAPE LANE PROFILE DRAWING

### TABLE 1 PUSHER DETAILS
**TRACTOR/TANKER LOADS** (10,000 lb axle load at 4' spacing)

<table>
<thead>
<tr>
<th>RAMP SPAN (ft)</th>
<th>RAMP LENGTH Minimum (ft)</th>
<th>RAMP THICKNESS (in)</th>
<th>LENGTH REBAR (in)</th>
<th>WIDTH REBAR (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>14</td>
<td>4</td>
<td>48 @ 8&quot; o.c.</td>
<td>44 @ 12&quot; o.c.</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>4</td>
<td>48 @ 8&quot; o.c.</td>
<td>44 @ 12&quot; o.c.</td>
</tr>
<tr>
<td>14</td>
<td>16</td>
<td>8</td>
<td>58 @ 7&quot; o.c.</td>
<td>44 @ 12&quot; o.c.</td>
</tr>
</tbody>
</table>

ADAPTED AND MODIFIED FROM STANDARD DRAWING PA-058
OPTION 1: MANUFACTURED GUARD

1. Adjacent fencing should accommodate c-c width of guard (w) so that no space greater than 4" is left on either side of the installed guard.

2. All metal to be dipped galvanized or powder coated.

3. Latch required to hold in closed position.

4. Maximum opening in closed position not to exceed 4" x 4".

5. Several brands of guard are available. If another configuration is selected, obtain NRCS approval and follow manufacturer's installation guides.

CONSTRUCTION NOTES
(apply to all options):

NOTE:
1. These safety guards are intended to deter accidental entry when scraping manure and not prevent it.

2. Other comparable safety guards may be used, if approved by the engineer.

3. All pipe shall be galvanized dipped or powder coated and painted. On-site damage to be coated with equal protection throughout life of the facility.
ADDITIONAL NOTES

1. SEE SPEC. 313 FOR MATERIALS SPECIFICATIONS
2. SEE PLAN VIEW FOR LOCATION

ADAPTED AND MODIFIED FROM STANDARD DRAWING PA-068
LIQUID TIGHT SLAB JOINTS
CROSS SECTIONS
(NOT TO SCALE)

JOINT 1

LIQUID TIGHT SLAB/FLOOR JOINTS

GENERAL NOTES:
1. BACKER ROD SHALL BE A LARGER WIDTH
   THAN THE WIDTH OF THE SAW CUT.
2. SAW CUT OR JOINT FORMER
   IS ACCEPTABLE FOR JOINT 2.
3. SEALANT DEPTH SHALL BE 1/4" OR SLIGHTLY
   LESS THAN JOINT WIDTH, WHICHEVER IS LESS.
4. CUT 50% OF THE REINFORCING STEEL
   DIRECTLY UNDER THE JOINT.
5. USE JOINT 1 OR 2 FOR TWO POURS AND
   JOINT 3 FOR CONTINUOUS POURS.

LIQUID TIGHT CURB & WALL JOINTS
PLAN VIEW
(NOT TO SCALE)

CONSTRUCTION
CONTROL

JOINT 2

JOINT 3

REINFORCING STEEL

LIQUID TIGHT WALL JOINTS

GENERAL NOTES:
1. BE SURE TO CUT EVERY OTHER HORIZONTAL
   REINFORCING STEEL REBAR DIRECTLY AT THE JOINT.
2. SEALANT DEPTH SHALL BE 1/4" OR SLIGHTLY
   LESS THAN JOINT WIDTH, WHICHEVER IS LESS.
3. USE JOINT 4 FOR TWO POURS AND
   JOINTS 5 OR 6 FOR CONTINUOUS POURS.

REINFORCING STEEL

#3 Saw Cut

#3 bars to support waterstop.

Saw cut need not be greater than
1" for walls thicker than 8".

Joint former or chamfer strip
both sides of wall and across top of wall.
Backer Rod and Elastomeric sealant needed in
saw cut joint, as shown in Joint #2 above.

MAUDE SIDE OF WALL

1st Pour

2nd Pour

WATERSTOP

T = Thickness

MAUDE SIDE OF WALL

Reinforcing Steel

Waterstop

MAUDE SIDE OF WALL

Reinforcing Steel

Elastomeric Sealant

3/16"-3/8"
REINFORCED CONCRETE DETAIL

6' x 6'-W29 X W29
WELDED WIRE FABRIC,
PLACED 2' FROM
TOP OF SLAB.

NOT TO SCALE

STEEL CHAIRS CONCRETE NOTES;
1. CONCRETE SHALL BE 4000 PSI.
2. STEEL SHALL BE GRADE 60.

CONCRETE BRICK

5.0'
Concrete

3.0'
AASHTO #57

Access Road Detail
(Typical)

2A MODIFIED
AASHTO #1

Notes:
1. Geotextile shall be Class IV, Type A. Non-woven. Placement shall provide a one-foot (1') overlap between adjacent panels.
2. Stone depth shall be measured after compaction.
3. All stone shall be compacted with a smooth drum, vibratory roller.
4. Surfacing material will be 2A modified.

Perimeter Drain Detail

NOT TO SCALE

Mound for settlement
(10% of trench depth)

Native Soil
Backfill

4'
AASHTO #57

4" Diameter Drainage Tubing
Semi-Circular bedding groove with depth = 1/3 pipe diameter.

Walkway Detail

SLOPE SURFACE @ 1%

2A MODIFIED
AASHTO #1

Notes:
1. Geotextile shall be Class IV, Type A non-woven. Placement shall provide a one-foot (1') overlap between adjacent panels.
2. Stone depth shall be measured after compaction.
3. All stone shall be compacted with a smooth drum, vibratory roller.

1.) Pipe used for drainage tubing shall be perforated corrugated polyethylene, ASTM 405. The pipe will outlet into solid sch40 PVC ASTM D-1758 w/min. of 1% slope.

3.) Bedding groove may be substituted with a 2' depth of AASHTO #57 beneath the pipe.
DISTANCE BETWEEN SUPPORT BRACKETS = 8" TO 10"

ANGLE BRACKET ATTACHED TO POST WITH 3/8" THRU BOLTS EVERY 18" (A SCAB BOARD MAY NEED TO BE NAILED TO THE INSIDE OF THE POST TO SUPPORT THE INTERIOR BOLT)

REMOVABLE 2"X6" OR 2"X8" PRESSURE TREATED PLANKS SUPPORTED BY ANGLE BRACKET