

United States Department of Agriculture



Natural Resources Conservation Service
101 South Main
Temple, TX 76501

November 12, 2008

Rodney Gooch
Universal Forest Products, Inc.
320 N. Burleson Blvd.
Burleson, Texas 76028

**Re: Standard Drawing for Poultry Litter Storage Shed with Wooden Trusses
TX-EN-0525**

Dear Mr. Gooch:

Thank you for submitting the standard design and drawings for a poultry litter storage shed using wooden trusses. The construction drawings, specifications, and design report were prepared by Bill Erion, P.E. of M&E Consultants along with a certification statement that the design meets the criteria for Texas Conservation Practice Standard – Code No. 313 for Waste Storage Facilities.

I have reviewed and accepted the litter storage design as a standard drawing for use in the State of Texas in accordance with 210-V-NEM §505.03(a). This design is not to be used in the northwest portion of the state bound by IH-20 on the south and IH-35 on the east (see Sheet 4 of construction drawings).

The construction drawings, design report, and specifications will be placed in the Field Office Technical Guide and available on the NRCS website until further notice. If changes are needed to any of these documents, please let me know as soon as possible.

Thank you for your assistance in providing another alternative for the construction of poultry litter storage barns in Texas by the local producers. If you have any questions, please contact me at john.mueller@tx.usda.gov or 254-742-9910.

Sincerely,

A handwritten signature in cursive script that reads "John W. Mueller".

JOHN W. MUELLER, P.E.
State Conservation Engineer

cc: Bill Erion, M&E Consultants, Crowley, TX
Noller Herbert, Director, Conservation Engineering Division, Washington, DC
Zone Engineers, NRCS, TX

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Design Report

Poultry Dry Litter Storage Building

M&E Consultants was engaged by Universal Forest Products, Western Division, Inc. to Design and develop plans for a Wood Frame Poultry Litter Storage Building. The building has a clear open span of 40 feet, with an eave height of 11 feet. The length of the building is variable with the length determined by the litter storage volume required. Minimum building length is 50 feet. The building consists of wood truss with wood truss legs (columns), wood purlins, sheet steel roofing material and exterior wall of sheet steel siding. The truss legs are attached to a concrete wall 2 feet above the interior floor level. A concrete floor slab is optional. A 4 foot height of treated plywood is attached to the interior side of the wall girts above the 2 foot high concrete wall to allow for litter to be stacked against the wall and not come in contact with the exterior siding. The exterior metal siding extends up to within two feet of the eave level to provide a 2 ft high opening for ventilation. One end of the building is open. The opposite end is closed with an optional 12 ft x 12 ft door opening. The design does not include the truss design. Commercially available trusses with a minimum design loading of 16 psf live load (20 psf for components and cladding) and 5 psf dead load are to be used.

Loads

The structural design of the foundation elements and anchorages for the truss legs considers loading combinations of section 2 ASCE Standard 7 – 02, Minimum Design loads for Buildings and Other Structures. Wind loads were determined based on requirements of ASCE 7-02. A basic wind speed of 100 mph was used for this design. Wind loads are computed for building risk category 1 (agricultural buildings), exposure category of open farmland, and a rigid structure resulting in a gust factor of 0.85. The building is assumed to not be located on an escarpment or ridge. The magnitude and sense of the internal pressures due to wind loading are for “partially enclosed” enclosure classification. This is based on the location and size openings.

The unit weight of the litter was estimated to be 30 lbs per cu ft and the ratio of vertical to lateral stress assumed to be about 1/3 resulting in a lateral load of the stacked material of 10 lb /sq ft per ft hydrostatic type loading.

The snow load for the central portion of east Texas is 5 psf. This is also equivalent to 1 inch of ice. Although ice loading is not specifically applicable to buildings, historically collapse of poultry buildings due to ice has been experienced in east Texas. Five psf uniformly distributed over the roof, representing 1 inch of ice, produced a greater reaction than the unbalanced snow load computed by provisions of ASCE 7-02 and was used for the snow load in load combinations evaluated. In addition the structure is designed to be stable for the “minimum roof live load” of 16 psf , which accounts for unspecified live loads.

Component and cladding loads and pressures were used to design the purlins. Attachment of the sheet metal roofing and siding is to be as recommended by the manufacturer.

Analysis

The foundation elements are designed to accommodate a truss configured as a rigid frame, consisting of a connection at the ridge capable of carrying moment as well as the leg to gable connection capable of carrying moment. The two legged rigid frame is assumed to be hinged at the bases and is statically indeterminate. The reactions were determined using charts from the *Structural Engineering Handbook* by Gaylord and Gaylord. For the range of relative stiffness of legs and gables expected the horizontal reaction is approximately $\frac{1}{2}$ of the vertical reaction. The horizontal reaction is resisted partially by passive resistance of the soil outside of the wall and by the floor slab where the slab is specified. Where a floor slab is not used a counterfort or a pier created by drilling a 16 inch diameter hole and filling with concrete are used to assist in resisting the lateral thrust at the truss locations. The counterfort may be constructed in a short trench perpendicular to the foundation wall. The floor slab is tied to the wall by reinforcing bars enabling the dead weight and friction between subgrade and underside of the slab to be utilized to resist the lateral thrust. Lateral loads on the foundation, in addition to the thrust from truss loading, are produced by the loading of the stored litter against the wall and by wind. The wind may produce horizontal loading either inward or outward depending on orientation of the wind direction. A loading combination in which the lateral load of the litter, horizontal reaction due to vertical load and the wind are additive was included in the load combinations evaluated. It can be assumed the loading operation, in which additional lateral load may be put on the wall, does not take place concurrently with the maximum wind or snow load.

Lateral soil loads and resistance is assumed to be that from a soil material with a moist unit weight of 110 lb/cu ft, active lateral coefficient of 0.5 and passive lateral coefficient of 2.0. which are conservative values for granular soils and relatively conservative for low plasticity fine grained soils and soils consisting of mixture of coarse grained and low plasticity fine grained materials.

The requirements of NRCS Conservation Practice Standard 313, Waste Storage Facility, indicate a maximum control joint spacing in the slab of 10 feet for installations such as this. However, the joint spacing may be increased if steel reinforcing is added based on subgrade drag theory. Alternative joint spacing of 20 and 40 feet are provided in this design proportioning the reinforcing steel based on the subgrade drag theory. The equipment anticipated to be operating on the slab is small to medium farm tractors and equipment with axel loads not exceeding 5000 pounds. For structural requirements this range of loading is considered to be lightly loaded slab on grade as classified by Corps of Engineers design methodology. This design conforms to the recommendations of Army TM 5-809-2/AFM 88-2, *Structural Design Criteria For Buildings* Chap 2 and appendix B and C for lightly loaded slab subject to typical exposure and subgrade conditions. Typical subgrade conditions are characterized by the absence of frost penetration, a wet environment and expansive soils and where volume changes due to change in moisture content are limited. Typical subgrade conditions also include only USCS classified soils ML, any of the S and G groups or CL and CM where the modulus of subgrade reaction is grater than 100 lb/in³. Appendix A of this design report is a copy of Table c-2 from the

TM 5-809-2 appendix c and may be used as a guide to estimating the modulus of subgrade reaction.

Roof purlins were designed for gravity roof live load and for internal pressure due to wind. The purlins are oriented perpendicular to the roof slope thus the vertical gravity loads result in bending about both axis of the beam. The roofing provides lateral support to the compression face for bending due to gravity loads, however for loading due to internal pressure the compression face of the beam is not laterally supported and allowable stress was reduced accordingly.

Anchors for the connection of the truss legs at the top of the wall were evaluated for combined shear and normal forces in accord with ACI 318-02, Building Code Requirements for Structural Concrete, Appendix D.

Materials

Steel sheet used as roof covering and the exterior sidewalls is 29 ga or heavier. Fasteners shall be as recommended by the manufacturer. Purlins and wall girts are to be dimension lumber. The plywood interior wall is to be of treated plywood to protect against decay from contact with the litter. It is reported that CCA (chromated copper arsenate) wood treatment is being phased out and being replaced by alternative treatments not containing arsenic. There are reports the new alternative treatments are more corrosive to metals in contact with the wood, particularly in the presence of high moisture in the wood. High quality galvanized or other high quality corrosion protected fasteners should be used in attaching the treated plywood.

Concrete shall be minimum 3000 psi. design strength. Reinforcing bar steel shall be grade 40, 50 or 60. Welded wire reinforcement shall be manufactured from 65,000 psi or 70,000 psi yield strength wire.

Lumber shall be standard dimensioned finished four sides. Requirements for the purlins are:

10 ft. truss spacing	2x6	#2 or better	Southern Pine
	2x4	select structural	Southern Pine
8 ft truss spacing	2x4	#2 or better	Southern Pine

Wall girts and closed end of the building shall be constructed of #2 or better of dimensions shown on the drawings.

This standard drawing is fully applicable when foundation soil is granular or low plasticity fine grained material. This includes USCS soil types GW, GP, SW, SP, AND SM, GM, SC, GC, ML AND CL with Plasticity Index less than 20. It is anticipated these materials possess only limited volume changes with changes in moisture content.

In no case should a foundation of highly organic soils, or very loose, compressible low density soil foundations used. Also care should be taken not have abrupt changes in foundation characteristics.

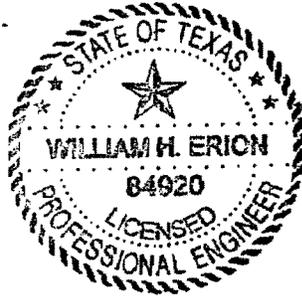
High Shrink –Swell foundation soils

Since the building is not rigid and does not have masonry walls it can withstand some differential movement with little or no distress, with the exception of the floor slab. It is likely not economically feasible to provide a stiffened concrete floor slab, either post tensioned or conventionally reinforced, for this application. Specific recommendations for high shrink swell soil foundations should not be made without the assistance of a qualified geotechnical engineer and site specific information. A general recommendation which can be made is extending the wall deeper below grade will place the foundation lower in the soil profile and subject to less changes in moisture content. Minimizing the change in moisture content reduces potential volume change and will result in less movement of the foundation thus enhancing the stability of the building. Conditions which maintain uniform moisture content in the foundation soils will also help prevent severe foundation movements.

Submitted:



William H. Erion, P.E.
M&E Consultants



September 30, 2008

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS**

POULTRY LITTER STORAGE BUILDING

(No.)

TX-EN-0525

1. SCOPE

The work covered by this specification shall consist of the clearing and grubbing, excavation, backfill, concrete, reinforcing steel, timber, fasteners, and other appurtenances required for the construction of poultry litter storage buildings.

Construction shall be carried out in such a manner that erosion, air, water and noise pollution will be minimized and held with legal limits established by local, state and federal regulations. All structures shall be constructed in accordance with approved plans, local building codes and industry standards.

2. CLEARING AND GRUBBING

All trees, brush, stumps, boulders, rubbish and manure shall be removed from the foundation, storage and spoil area(s) before excavation is performed. All material cleared from the area shall be disposed by burning or burying on-site or hauling to an appropriate landfill. All burning shall conform to state and federal laws and regulations. Trees and other cleared vegetation will be cut flush with the ground surface in spoil areas. The foundation and/or storage area will have all stump, roots and vegetation removed. The general area around buildings will also require grubbing as necessary to remove roots which interfere with the installation of the foundation.

3. EXCAVATION

Topsoil excavated from the site shall be stockpiled for later placement around the completed structure. Soil containing excessive organic material shall be removed from the foundation area. The excavation shall be completed to the specified lines and grades shown on the plans and staked in the field. Spoil shall be spread and placed to generally blend with the existing terrain and not pond water. Excavation and spoil placement shall be accomplished so as to divert runoff from the foundation area.

4. EARTHFILL

Earth material placed for pads, or foundations shall be of the type material specified and free of detrimental amounts of sod, roots, stones or other debris. Placing of earthfill shall begin at the lowest point of the foundation and be brought up in approximately horizontal lifts not exceeding eight inches in thickness. Hauling and compacting equipment shall be routed over each lift a minimum of three passes or so that specified compaction is obtained.

Moisture control: All fill material shall have a moisture content sufficient for the required compaction. Fill material which is too dry shall be moistened by adding water and/or thoroughly mixing with moist fill until an acceptable moisture level is obtained. Fill material which is too wet shall be allowed to dry out naturally or by machine rolling and/or shall be thoroughly mixed with dry fill material until an acceptable moisture level is obtained.

The moisture content of the fill shall be maintained within the limits to:

1. Prevent bulking or dilatence of the material under the action of the hauling or compacting equipment.
2. Prevent adherences of the fill material to the equipment.
3. Ensure the crushing and blending of the soil clods and aggregation into a homogeneous mass.
4. Contain adequate moisture so that a sample will remain formed when molded in the hand without soil or water squeezing though the fingers.

5. TIMBER FABRICATION AND INSTALLATION

The structure shall be constructed on a firm foundation to the lines and grades shown on the plans. In no case will the dimensions and spacings be modified in a way which would reduce the strength of the structure. All framing shall be true and exact. Timber shall be accurately cut and assembled to a close fit.

Appropriate bracing for safety and structural stability during construction shall be practiced in accordance with applicable building codes.

Wood and Timber: All material shall be sound wood, free from decay, and of good quality. All lumber shall be graded in accordance with the Standard Grading Rules for Southern Pine Lumber, with a minimum grading of Number 2 (No. 2 non-dense grading is not acceptable). Unless otherwise specified, all material shall be furnished in American Standard dressed sizes. All sizes specified are nominal sizes. All structural timber and lumber, except, purlins, shall be pressure treated. Treated timber and lumber shall be impregnated with the specified type and quantity of preservative and conform to Federal Specification TT-W-571. The minimum net retention of the common preservative, chromated cooper arsenate, shall be 0.4 pcf for dimension lumber used above ground in contact with manure and 0.6 pcf for structural posts or timbers in contact with the ground.

Handling and Storing: All timber and lumber stored at the site of the work shall be neatly stacked on supports at least twelve inches above ground surface and protected for the weather by suitable covering. Untreated material shall be so stacked and stripped as to permit free circulation of air between the tiers and courses. Treated timber may be close-stacked. The ground underneath and in the vicinity of all stacks shall be cleared of weeds and rubbish. The use of cant hooks, peavies, or other pointed tools, except end hooks, will not be permitted in the handling of structural timber, lumber, or trusses. Treated timber shall be handled with rope slings or other methods which will prevent the breaking or bruising of outer fibers, or penetration of the surface in any manor.

Fasteners: Connections between wood members requiring bolts may be initially done with appropriately sized nails until such time as it is expedient to add the bolts, unless specified otherwise in the drawings. Bolts shall be added as soon as practicable, before the building is declared structurally sound, and before being accepted as complete. Nails and spikes shall be driven with just sufficient force to set the heads flush with the surface of the wood. Holes for machine bolts shall be minimum of 1/32" larger than the bolt but no more than 1/16" larger. Appropriately sized washers shall be used in contact with all bolt heads and nuts that would otherwise be in contact with the wood.

Hot-dipped zinc coated nails or screws shall be used in all structural farming and all connections containing pressure treated lumber. Spiral or annular ring shank nails shall also be used in these connections to provide a higher withdrawal resistance.

Roofing: Roofing shall be galvanized metal in standard lengths and widths. Roofing material shall be a minimum twenty-nine (29) gauge with ¼" ribs. Roofing shall be installed in accordance with manufactures recommendations. If any other type of roofing material is desired, it must first be approved by the engineer. Nails used to attach roofing material to the purlins shall be lead-headed nails, aluminum nails with neoprene washers, or other type as approved by the NRCS engineer.

6. STEEL REINFORCEMENT

Reinforcement steel and welded wire fabric shall be new, clean, and free of oil, grease, paints and flaky rust. Steel bars for concrete reinforcement shall be deformed billet-steel bars, conforming to ASTM Specification A-615, Grade 40 or 60. Welded wire fabric shall conform to the requirements of ASTM Specification A-185.

Reinforcement steel shall be accurately placed as specified and secured in position in a manner which will prevent its displacement during placement of the concrete. If reinforcing steel is spliced, the splices shall provide an overlap equal to 30 times the diameter of the smaller bar in the splice and shall be tied at both ends of the splice. Field bending of the steel will be permitted. Heating of steel for bending will not be permitted.

Reinforcement steel and welded wire fabric shall be suspended off the ground and other concrete contact surfaces by using chairs or concrete bricks, concrete blocks or prices of blocks, wire strands, or other approved method prior to the placing of concrete. Use of stones, wood materials, earth, earth clods, clay bricks, scrap metal and other unapproved materials will not be permitted. Unless otherwise specified, welded wire fabric shall be spliced in the following manner:

1. Adjacent section shall be spliced end to end (longitudinal lap) by overlapping a minimum of one full mesh plus two inches, plus the length of the two end overhangs. The splice length is measured from the end of the longitudinal wire in one pieces of fabric to the end of the longitudinal wires in the lapped piece of fabric.
2. Adjacent sections shall be spliced side to side (transverse lap) by overlapping a minimum of one full mesh plus two inches. The splice length shall be measured from the center of the first longitudinal wire in one piece of fabric to the center line of the first longitudinal wire in the lapped piece of fabric.

7. CONCRETE

Design Mix: The concrete mixture shall be no less than five bags of cement per cubic yard mix. The water content shall not exceed six gallons per bag of cement in the mixture. Any mix used shall have a designed minimum 28-day compressive strength of 3,000 pounds per square inch (psi). The concrete shall contain a standard known brand of Portland cement with washed sand and gravel. Clean water shall be used in the mix. Calcium Chloride and other chemical admixtures for concrete will not be accepted unless expressly specified in the drawings or specifications.

Consistency: The amount of water used in the concrete shall be the minimum necessary to obtain the required workability. The consistency of the concrete shall be such that it can be worked readily into the corners and angles of the forms and around reinforcement but without permitting the materials to segregate or excess free water to collect on the surface. The slump shall be between two and five inches as tested by "The Test for Slump for Portland Cement Concrete", ASTM Specification C-143.

Forms: Forms shall be of wood, steel, or other approved material.

Forms shall be true to line and grade, mortar tight, and sufficiently rigid to prevent objectionable deformation under load. Form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed surfaces. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, metal will not be less than one inch from any concrete surface. Forms for walls and vertical sections two (2) feet high and over shall be stabilized with adequate tie rods, walers, cat-heads and sufficient bracing to prevent shifting or movement of forms during placing of concrete.

Forms for exposed surfaces shall be coated with a non-staining form release agent applied before the concrete is placed. All excess release agent on the form surfaces and any on surfaces requiring bonding with concrete shall be removed.

All form removal shall be accomplished in such a manner as to prevent injury to the concrete. Forms for floor slabs and similar work may be removed after a minimum of 24-hours. Forms for walls shall be left in place for a minimum of three (3) days. All repair work must be done immediately after removal of forms.

Timing and Temperature: Concrete shall be placed within one-and-one-half (1-1/2) hours after introduction of water to the cement and aggregates. Concrete shall not be placed when the outside temperature is expected to fall below 40 degrees F. at the time the concrete is delivered and placed at the work site. Concrete shall not be exposed to freezing temperatures during the curing period. Concrete, when deposited in forms during hot weather, will have a temperature not greater than 90 degrees F., at the time of placement. Ice may be used as a portion of the mixing water to control temperature provided all ice is melted in the mixing process. When the outside temperature reaches or exceeds 90 degrees F., the concrete shall be placed within 45 minutes after batching.

Conveying and Placing: No concrete shall be placed until the approving official has given approval of the in-place sub-grade, form, reinforcing steel, and any other items involved or affected by the concrete placement.

Concrete shall be conveyed from mixer to forms as rapidly as practicable by methods which will prevent segregation or loss of ingredients. Hoppers and chutes, pipes, or "elephant trunks" may be used. There shall be no vertical drop greater than five feet.

Unless otherwise authorized, all concrete shall be placed upon clean, damp surfaces free from frost, ice, standing and running water, and never upon soft mud, dried portions of earth, or fill that does not meet specified compaction requirements. Soft mud or other unacceptable foundation material shall be removed and replaced with gravel or other approved material.

Concrete shall be deposited as close as possible to its final position in the forms. Concrete shall be thoroughly consolidated by rodding or mechanically vibrating the concrete in place supplemented by hand-spading and tamping to remove air voids. Vibrating equipment shall be used when pouring walls and other thin sections.

Concrete for floor sections shall be placed in one continuous layer, however, all sections of the floor do not have to be poured at one time. Construction joints shall be placed where needed and may be at locations specified for control joints. The joint may be formed into a key way by using a metal or wood form. A smooth, vertical construction joint will not be permitted. Control joints shall be placed as shown on the plans.

Finishing: Defective concrete, honeycombed areas, voids left by the removal of tie rods, and unacceptable ridges left on concrete surfaces shall be repaired immediately after the removal of forms unless otherwise authorized and directed. Voids left by the removal of tie rods shall be completely filled with mortar.

Curing: Concrete shall be prevented from drying for a curing period of at least seven days after it is placed. All exposed surfaces of concrete shall be protected from the direct rays of the sun for at least these first seven days. All concrete shall be cured by keeping continuously moist for the entire curing period, or until curing compound is applied. Moisture shall be maintained by sprinkling, flooding, fog spraying, or by covering with materials kept continuously moist such as canvas, cloth mats, straw, sand polyethylene, or other approved material. Wood forms (except plywood) left in place during the curing period shall be kept wet. Formed surfaces shall be thoroughly wetted immediately after forms are removed and shall be kept wet until patching and repairs are completed. Water or covering shall be applied in such a way that the concrete surface is not eroded or otherwise damaged.

If a curing compound is used, two coats of it will be applied to all concrete surfaces except construction joints and surfaces to which other concrete will be bonded. The compound shall be sprayed on the moist concrete surfaces as soon as free water has disappeared, but shall not be applied to any surface until patching, repairs and finishing of the surface are complete. Curing compound shall meet the requirements of ASTM Specification C-309, Type 2, white pigmented.

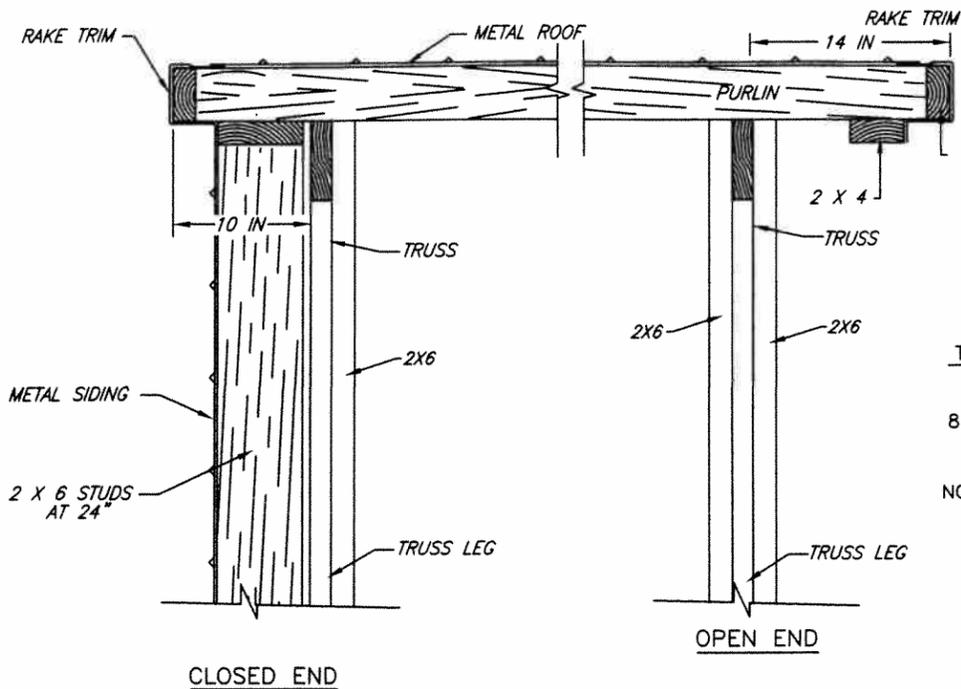
8. FINAL GRADING AND SEEDING

The area adjacent and in the immediate vicinity of the structure shall be shaped to blend with the natural surrounding and to compliment the structure and work area around it. Shaping shall be in such a way as to drain or divert all overland and roof runoff safely away from the structure and surrounding work area.

All disturbed area around the structure, including spoil areas, shall be vegetated and/or surfaced with gravel, chert, or some other acceptable covering as permitted by the NRCS approving authority. Spoil areas not used for any other purpose shall be vegetated.

Permanent vegetation will be established using plant species, and by methods, prescribed by the approving official. All vegetating of disturbed areas will be done as critical area planting and shall include liming, fertilizing, seedbed preparation, seeding and mulching. Temporary vegetation may be used when conditions are not appropriate for establishing permanent vegetation. Disturbed areas shall be mulched regardless of seeding dates.

If farm animals will have access to the vegetated area, it shall be appropriately fenced until vegetation is well established.

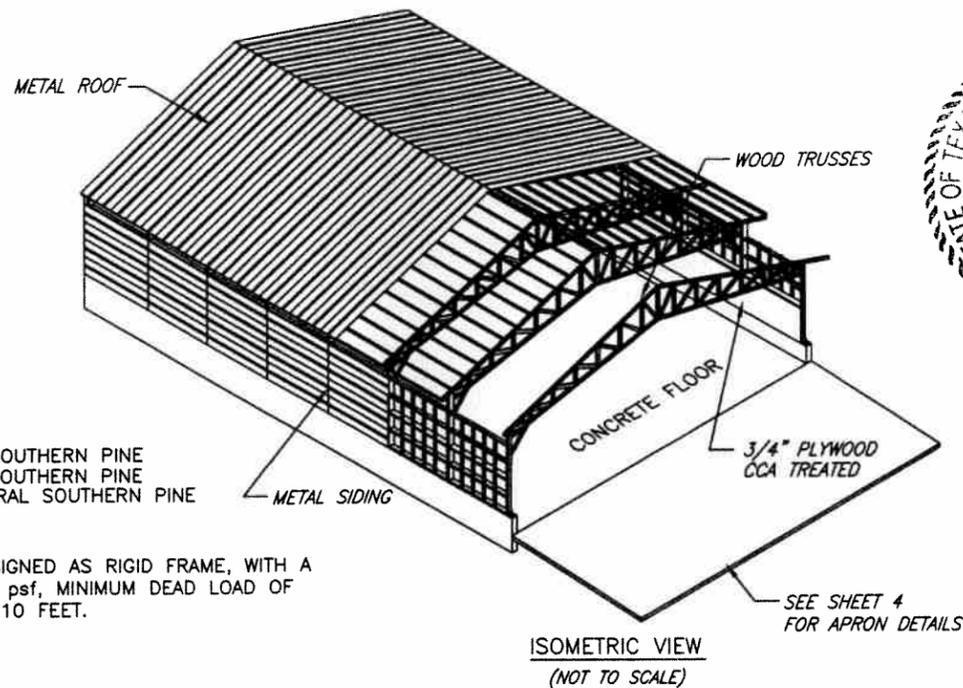
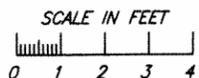


2 X 4 OR 2 X 6

PURLIN REQUIREMENTS

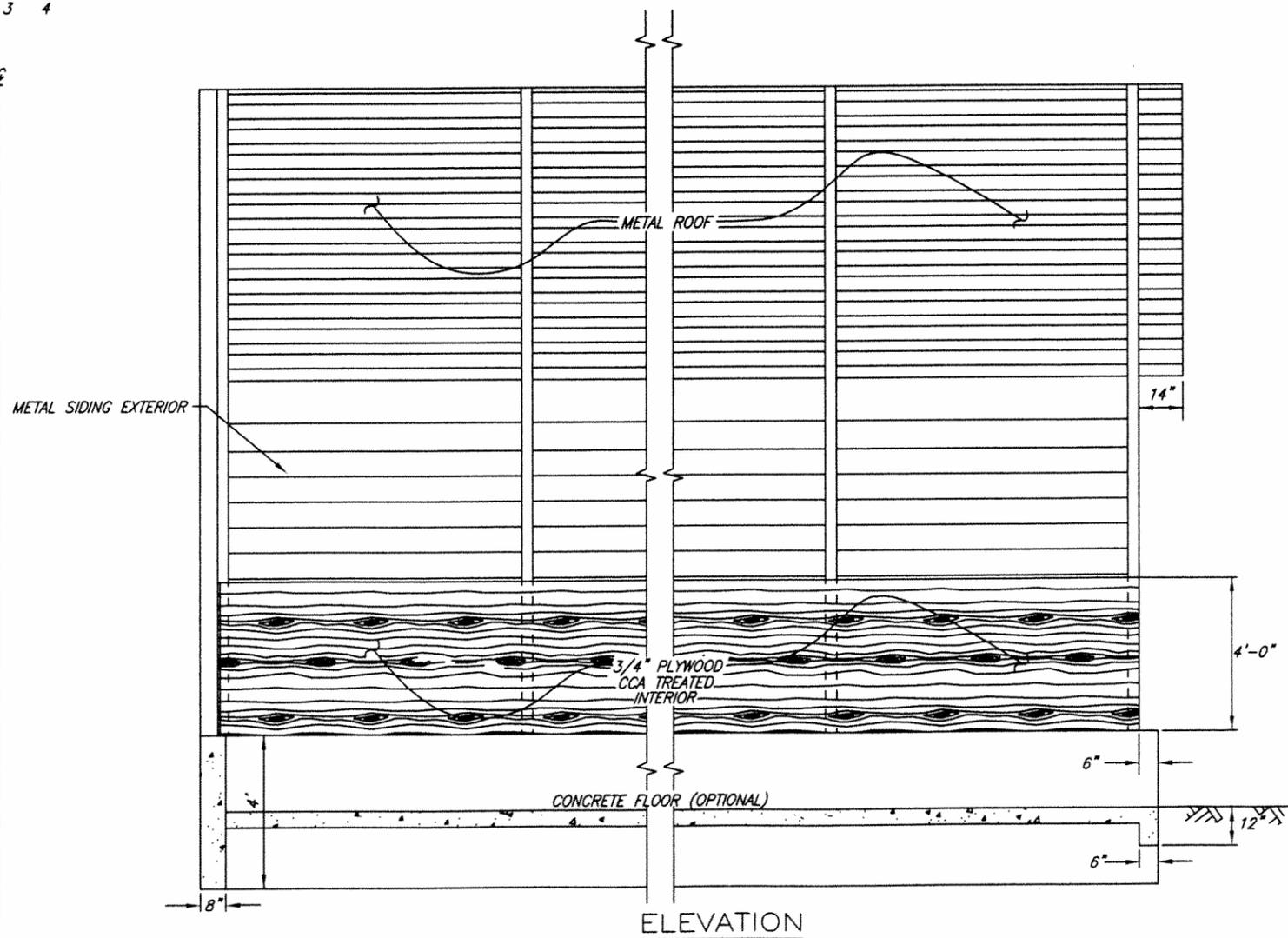
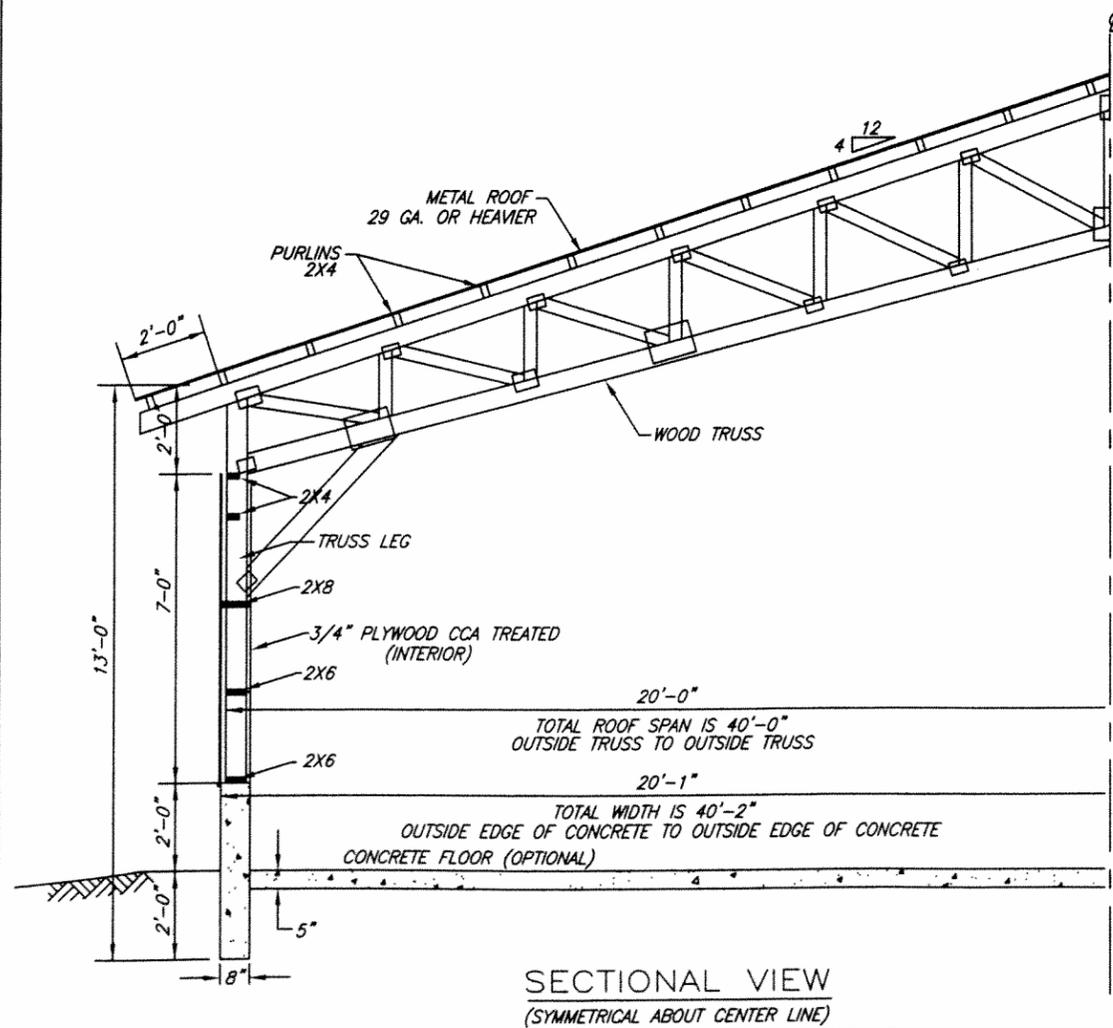
TRUSS SPACING	PURLINS	WOOD TRUSSES
8 FT	2X4	#2 OR BETTER SOUTHERN PINE
10 FT	2X6	#2 OR BETTER SOUTHERN PINE
8 FT OR 10 FT	2X4	SELECT STRUCTURAL SOUTHERN PINE

NOTE: FURNISHED TRUSS SHALL BE DESIGNED AS RIGID FRAME, WITH A MINIMUM ROOF LIVE LOAD OF 16 psf, MINIMUM DEAD LOAD OF 5 psf, AT MAXIMUM SPACING OF 10 FEET.



DESIGNED BY: WHE
 DRAWN BY: DS - UFTI
 CHECKED BY: DEG
 FILE NAME: DETAILS
 DATE PLOTTED: 9/5/08

POULTRY LITTER STORAGE BUILDING
 40 FT. SPAN - MAX. 11 FT. EAVE HT.
 FARM COUNTY, TEXAS

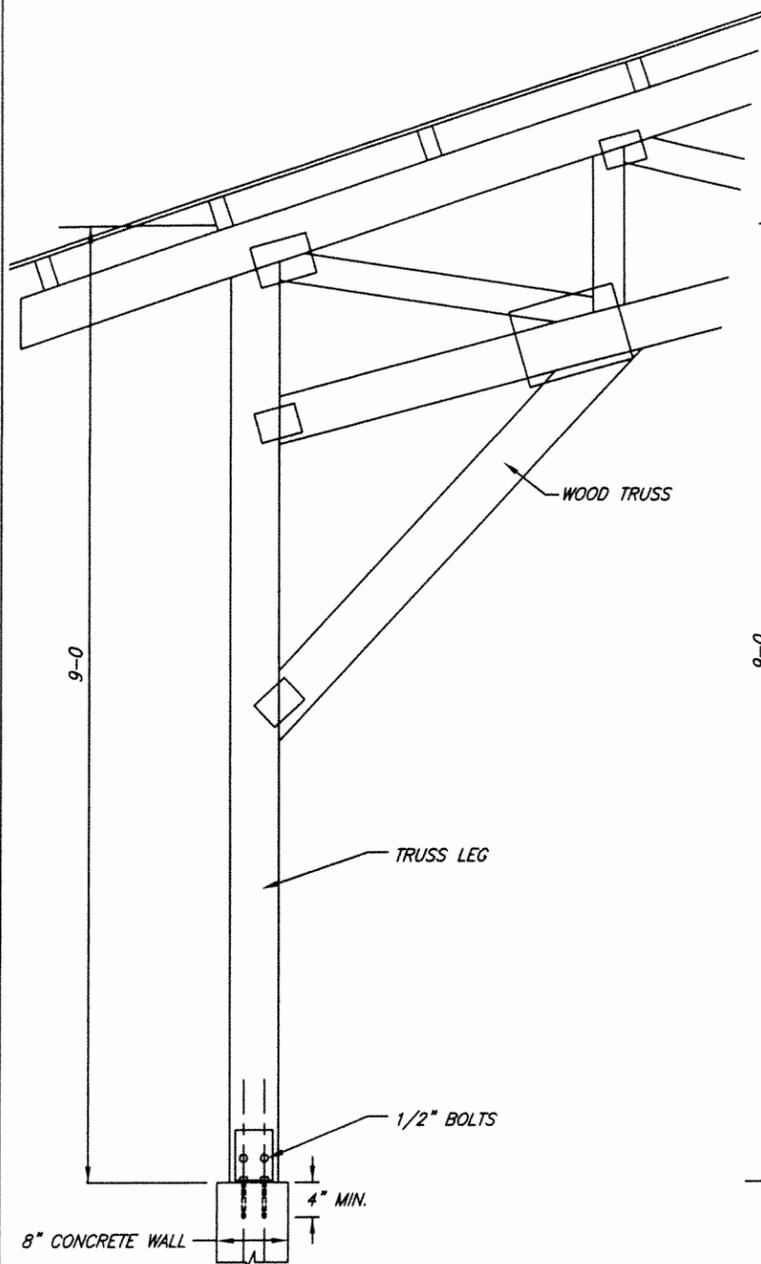


NRCS Drawing No. TX-EN-0525

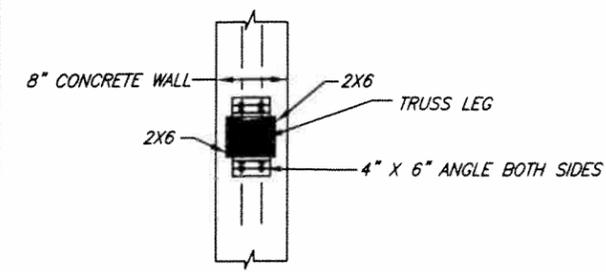
REVISIONS	DATE

DRAWING NO. PLS-1.0
 SHEET

1



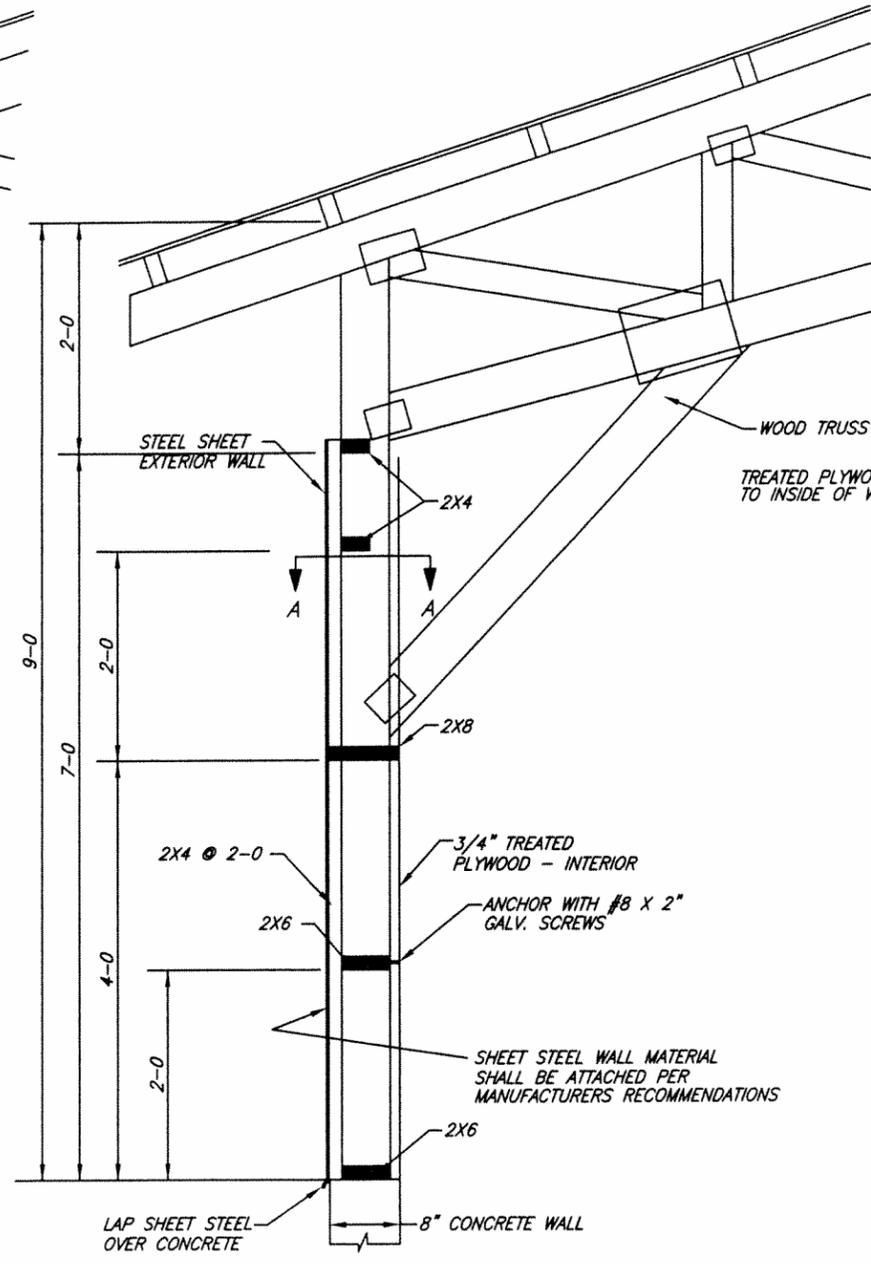
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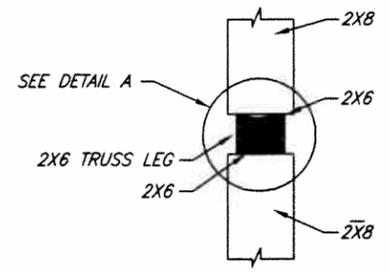
PLAN

ANCHOR DETAIL

(ANCHOR BOLTS TO BE 5/8" EMBEDDED INTO CONCRETE WALL A MIN OF 4".)



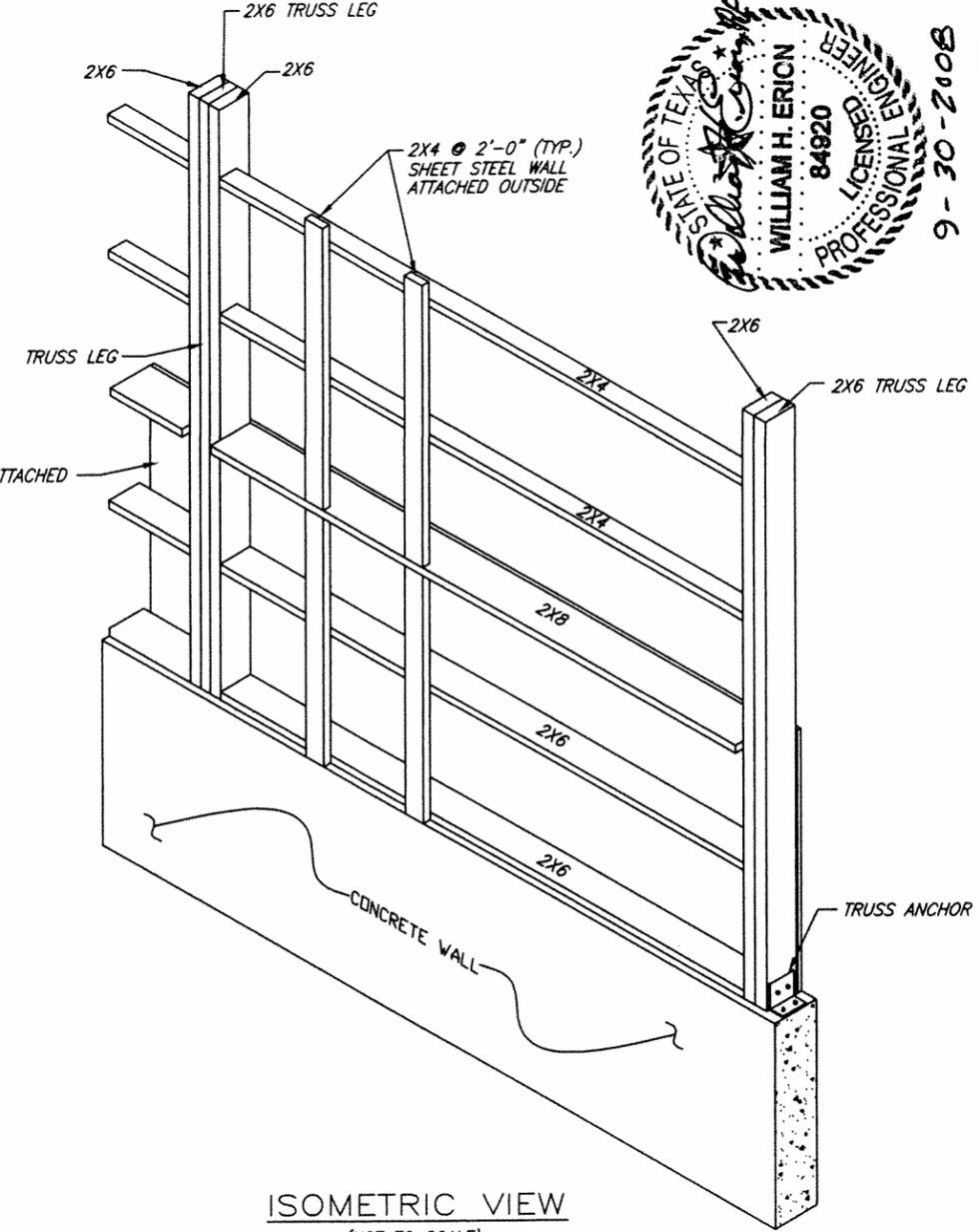
SECTION THROUGH WALL



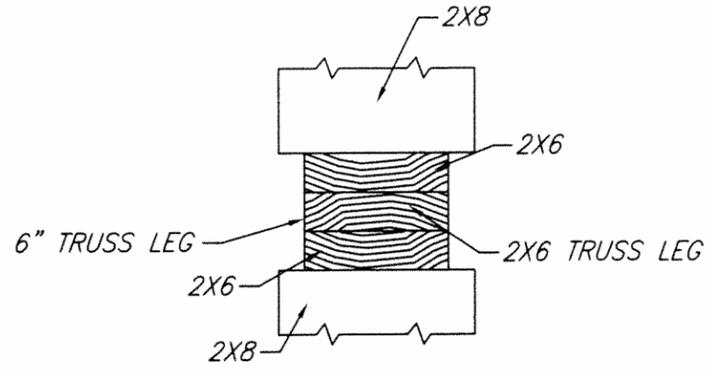
SECTION A-A

WALL DETAIL

NOTE: CROSS BRACING IN WALL SHALL BE INSTALLED PER MANUFACTURES RECOMMENDATIONS.



ISOMETRIC VIEW
(NOT TO SCALE)



DETAIL A



DESIGNED BY: WHE
 DRAWN BY: DS - UFPI
 CHECKED BY: DEG
 FILE NAME: WALLANCHOR DETAILS
 DATE PLOTTED: 9/5/08/04

POULTRY LITTER STORAGE BUILDING
 40 FT. SPAN - MAX. 11 FT. EAVE HT.
 FARM COUNTY, TEXAS



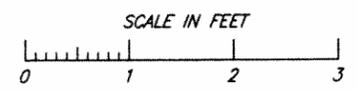
NRCS Drawing No. TX-EN-0525

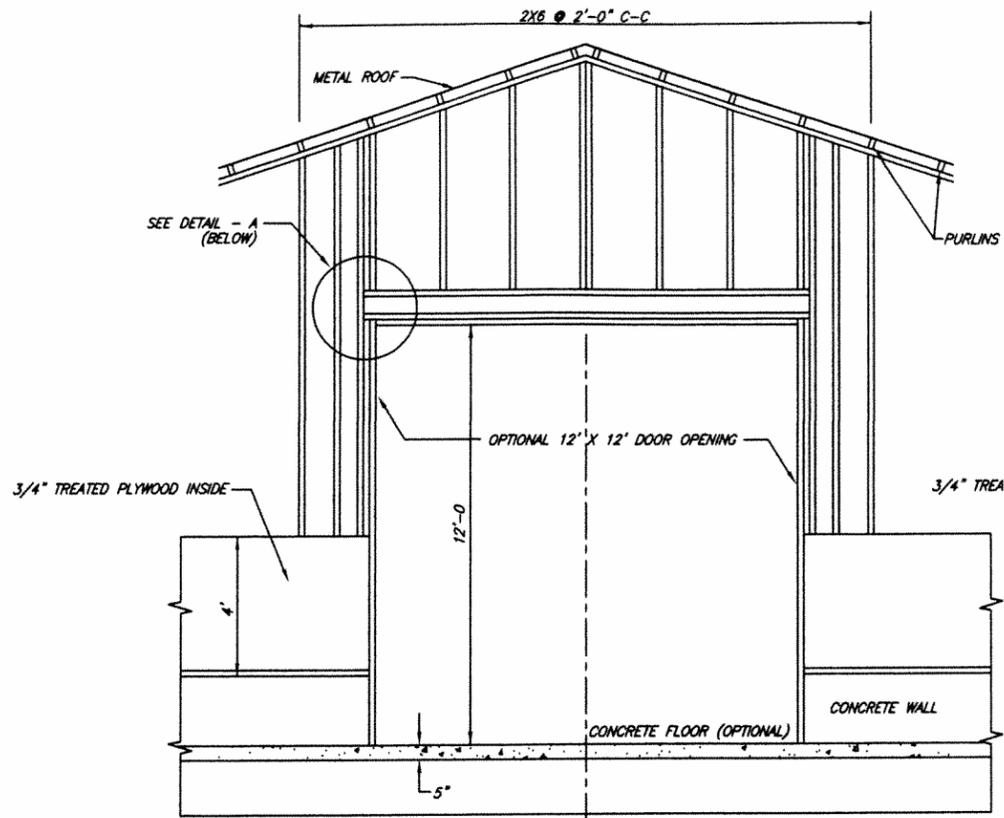
REVISIONS DATE

DRAWING NO. PLS-2.0

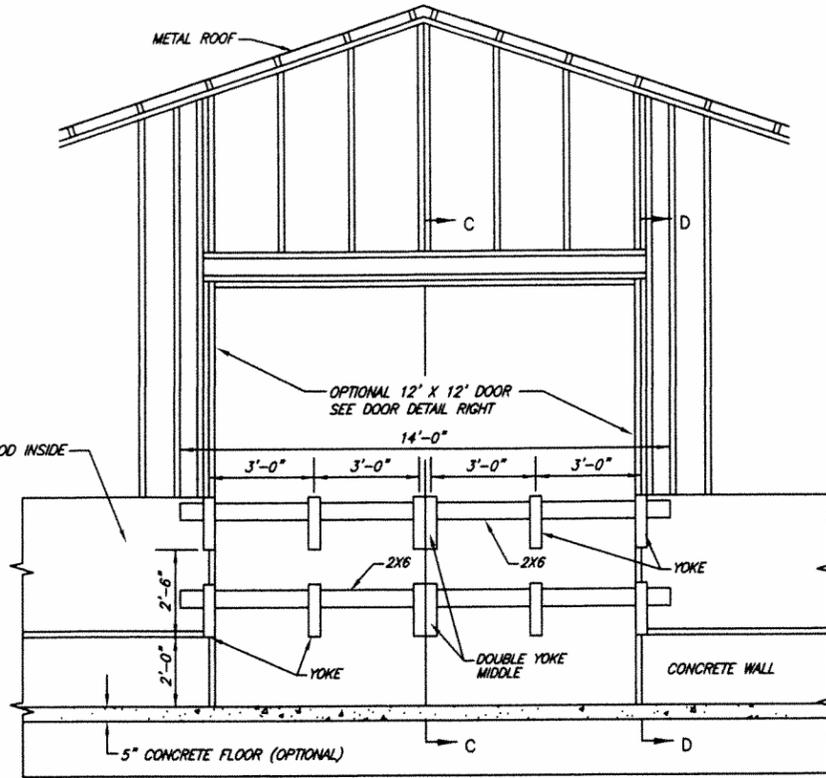
SHEET

2

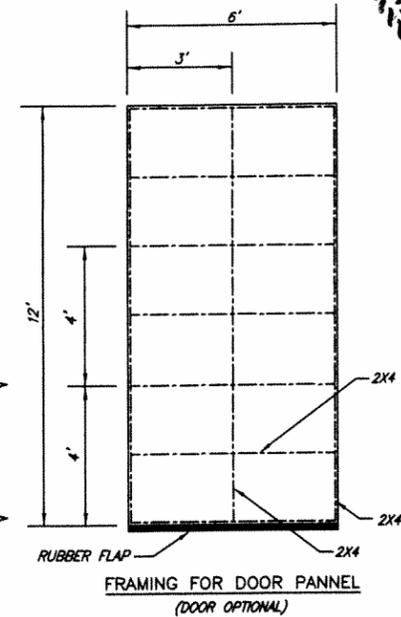




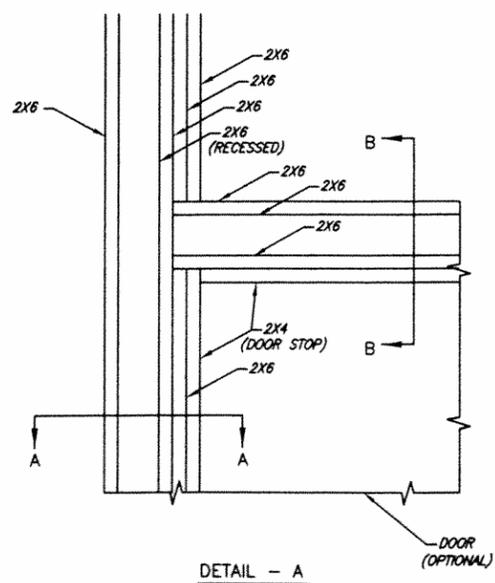
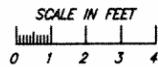
FRAMING DETAIL - CLOSED END WALL
(LOOKING INSIDE)



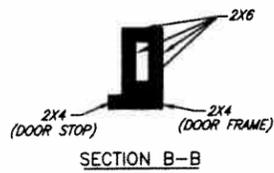
DOOR DETAIL - CLOSED END WALL
(LOOKING INSIDE)



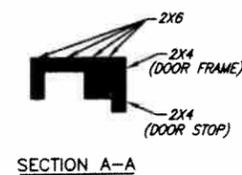
NOTE: DOOR INTERIOR FACED WITH 3/4" TREATED PLYWOOD. EXTERIOR FACED WITH MIN. 29 GA. SHEET STEEL SIDING. DOOR TO BE HUNG WITH 5 HEAVY DUTY GALVANIZED STEEL 3" BUTT HINGES. THE DOOR CAN ONLY OPEN TO THE OUTSIDE. INSTALL A RUBBER FLAP ONTO THE BOTTOM OF DOOR TO PREVENT WATER FROM ENTERING.



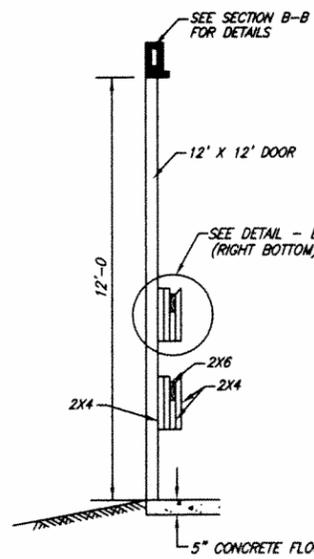
DETAIL - A



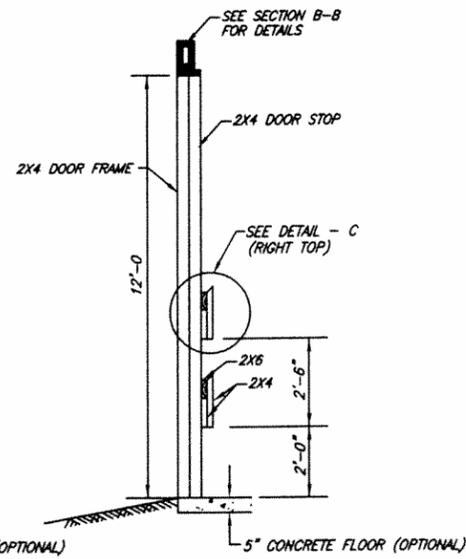
SECTION B-B



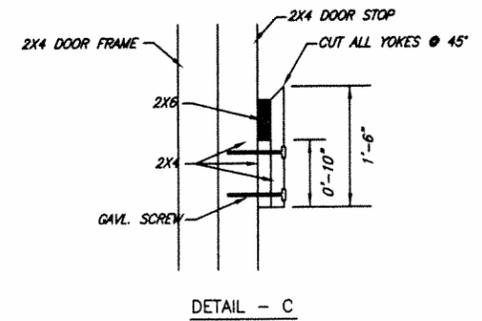
SECTION A-A



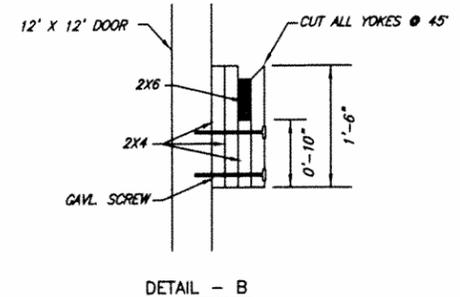
SECTION C-C



SECTION D-D



DETAIL - C



DETAIL - B

NOTE: ANCHOR WITH #8 X 10" GALV. SCREWS. USE FOUR PER YOKE, OFFSETTING EACH SCREW.



9-30-2008



DESIGNED BY: WHE
DRAWN BY: DS - UFPJ
CHECKED BY: DEG
FILE NAME: DOORBDETAILS-CON
DATE PLOTTED: 9/3/08

POULTRY LITTER STORAGE BUILDING
40 FT. SPAN - MAX. 11 FT. EAVE HT.
FARM
COUNTY, TEXAS



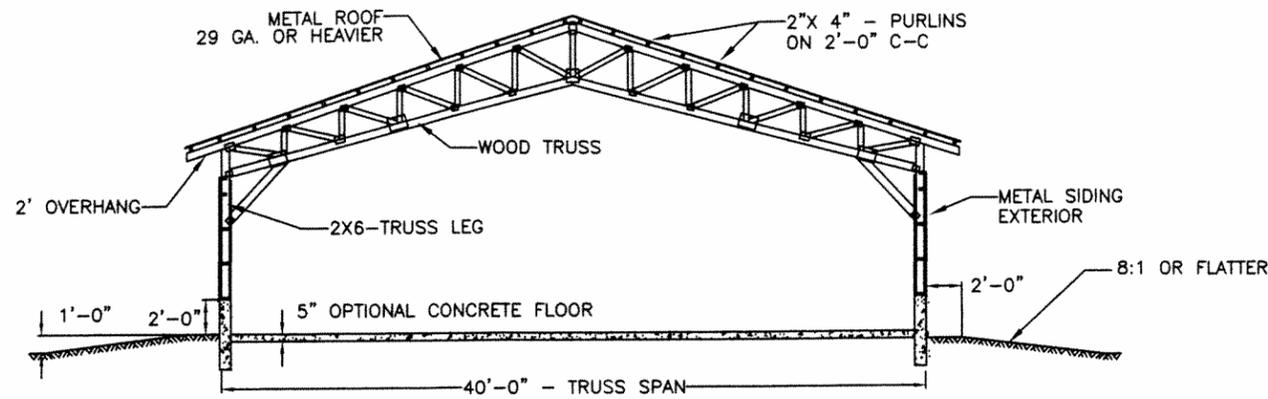
NRCS Drawing No.
TX-EN-0525

REVISIONS DATE

DRAWING NO.
PLS-3.0

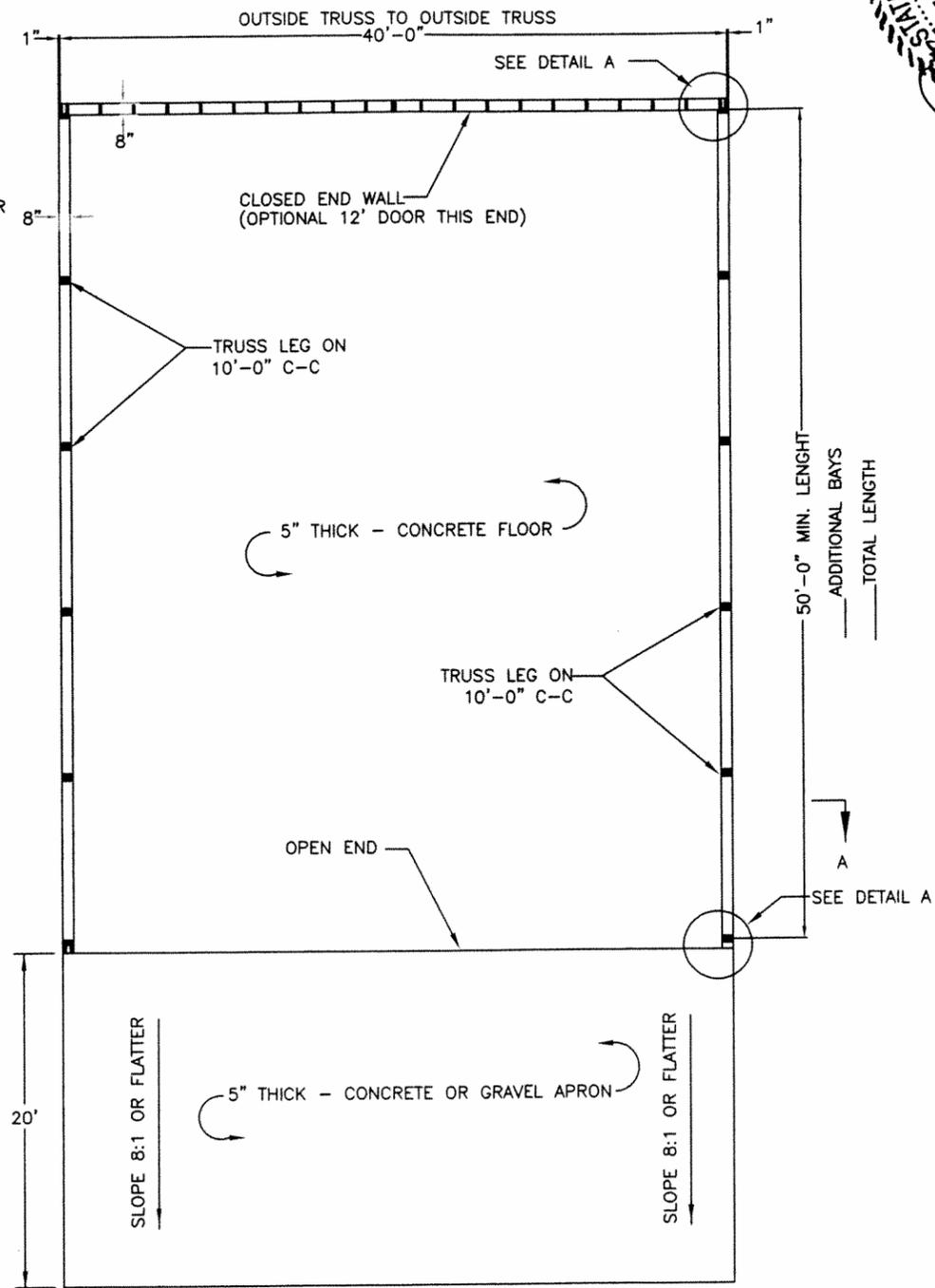
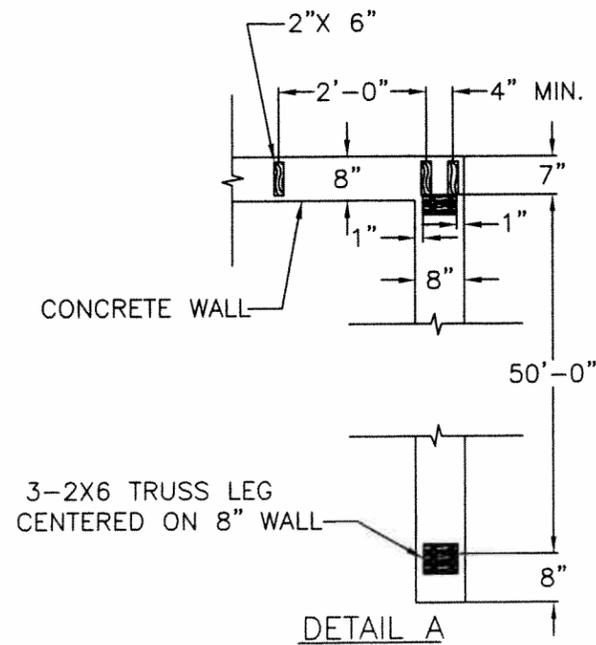
SHEET

3



SECTION A-A

NOTE: FOR WALL DETAILS SEE SHEET 2.



FLOOR SLAB - PLAN VIEW

NOTE: ADDITIONAL BAYS SHALL BE IN INCREMENTS OF 10 FT.



9-30-2008



DESIGNED BY: MHE
 DRAWN BY: DS - UFTI
 CHECKED BY: DEG
 FILE NAME: DRY STACK-CONCRETE
 DATE PLOTTED: 9/5/08

POULTRY LITTER STORAGE BUILDING
 40 FT. SPAN - MAX. 11 FT. EAVE HT.
 FARM COUNTY, TEXAS



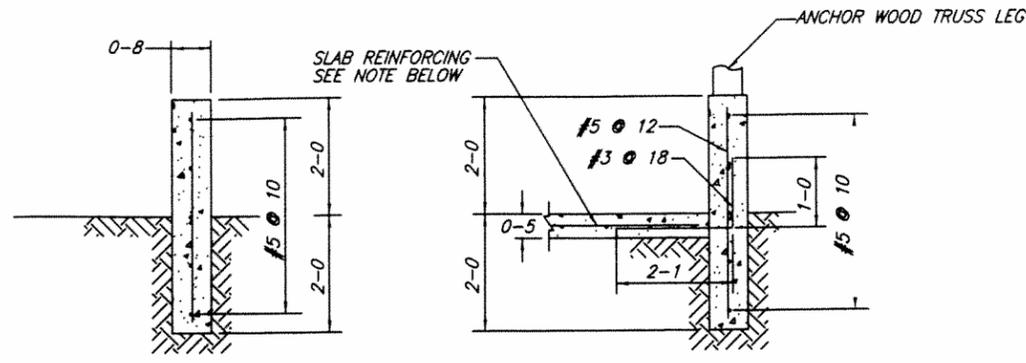
NRCS Drawing No. TX-EN-0525

REVISIONS DATE

DRAWING NO. PLS-4.0
 SHEET

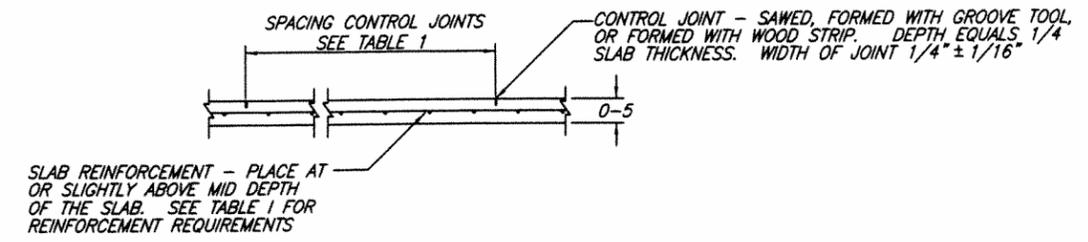
4

NOTES:
 THIS DRAWING DOES NOT APPLY TO NORTHWEST TEXAS BOUND BY IH20 ON THE SOUTH AND IH35 ON THE EAST.
 SITE PREPARATION PRIOR TO CONSTRUCTION SHALL INCLUDE FOUNDATION STRIPPING, CONSTRUCTION OF A PAD WITH A MIN. 1' THICKNESS AND 2' EXTENSION BEYOND THE LIMITS OF THE CONCRETE SLAB AND 8:1 SIDE SLOPES OR FLATTER AWAY FROM THE DRY STACK BUILDING. COMPACTION FOR THE PAD WILL BE SPECIFIED BY THE NRCS TECHNICAL REPRESENTATIVE BEFORE CONSTRUCTION STARTS.
 THIS BUILDING SHALL NOT BE MODIFIED BY ADDING ADDITIONAL STRUCTURES OR CHANGING THE DIMENSIONS.
 THERE SHALL BE A 2-FOOT AIR SPACE PROVIDED BETWEEN THE TOP OF THE WALL AND GIRDER.
 THE METAL ROOF SHALL HAVE A MIN. 2' OVERHANG ON SIDES. FASTENER MATERIALS AND LOCATIONS FOR THE METAL ROOF SHALL BE ACCORDING TO MANUFACTURES RECOMMENDATIONS.
 ALL NAILS, BOLTS, NUTS AND WASHERS, WHICH WILL BE IN CONTACT WITH WASTE MATERIALS SHALL BE GALVANIZED.
 CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. SEE SHEET 5 FOR REINFORCMENT AND CONTROL JOINT DETAILS.

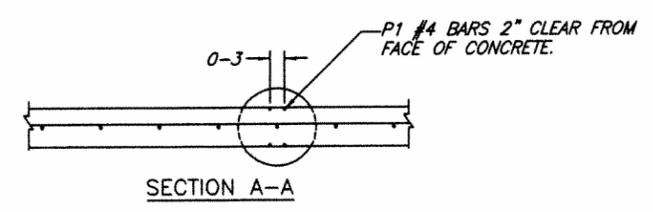


WALL SECTION

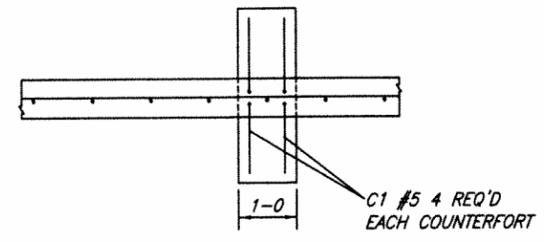
SECTION WITH SLAB



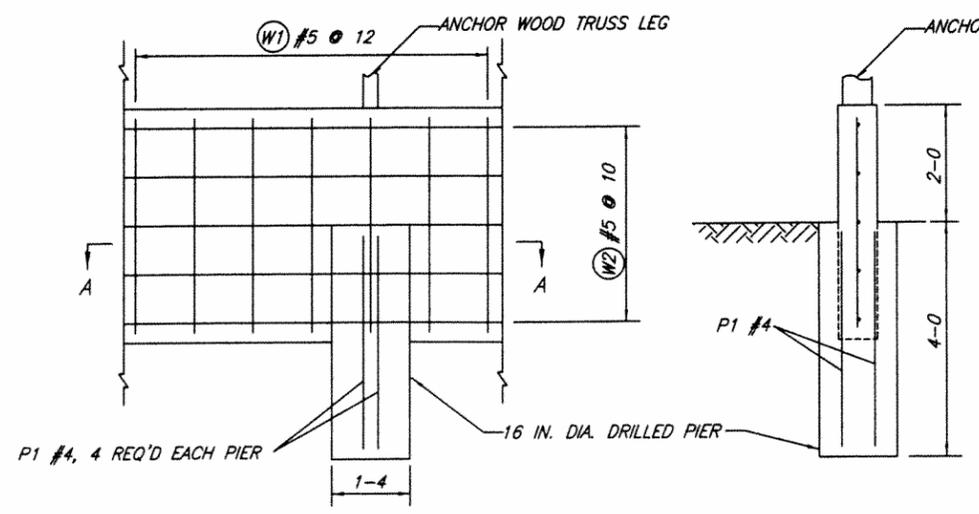
SLAB DETAILS



SECTION A-A

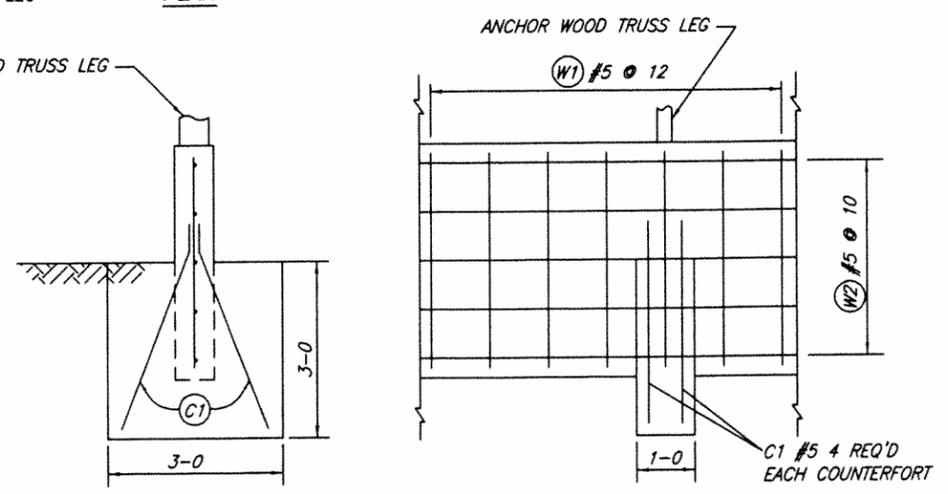


PLAN



ELEVATION

SECTION THROUGH WALL AND PIER

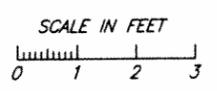


SECTION THROUGH WALL AND COUNTERFORT

ELEVATION

DETAILS DRILLED PIER
(COUNTERFORT OR DRILLED PIER REQUIRED WHEN FLOOR SLAB NOT USED)

DETAILS COUNTERFORT
(COUNTERFORT OR DRILLED PIER REQUIRED WHEN FLOOR SLAB NOT USED)



STEEL SCHEDULE									
MARK	SIZE	QUANTITY	LENGTH	TYPE	B	C	LENGTH PER UNIT	NUMBER OF UNITS	TOTAL LENGTH
W1	5	A/	3'-8"	1	-	-			
W2	5	B/	-	1	-	-			
C1	5	4	4'-0"	SP-1	0'-9"	3'-3"	16'-0"		
P1	4	4	3'-8"	1	-	3'-3"	14'-8"		
F1	3	C/	3'-1"	21	1'-0"	2'-1"			

A/ QUANTITY = TOTAL WALL LENGTH IN FT. + 2
 B/ TOTAL WALL LENGTH + 8% FOR LAPS
 C/ QUANTITY = TOTAL WALL LENGTH IN FT./1.5 + 2

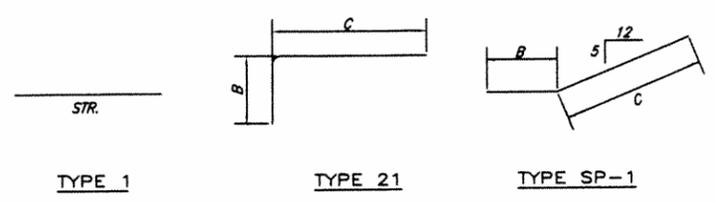


TABLE 1		
SPACING OF CONTROL JOINTS	REINFORCING BARS	WELDED WIRE REINFORCEMENT
20 FEET		6"X6" - W1,4/W1,4
40 FEET	#3 @ 18"	6"X6" - W2,9/W2,9
		12"X12" - W4,5/W4,5



9-30-2008

BILL OF MATERIALS		
MATERIAL	QUANTITY	UNIT
BASIC 50 FT. BUILDING		
CONCRETE - WALL	13.96	CU. YDS.
APRON - CONCRETE/GAVEL	12.40	CU. YDS.
METAL ROOFING	2402	SQ. FT.
METAL SIDING	1,203.3	SQ. FT.
INTERIOR 3/4" PLYWOOD	555	SQ. FT.
PURLINS - 11'-2"	24	EACH
PURLINS - 10'-9"	24	EACH
PURLINS - 10'-0"	72	EACH
2" X 4" - HORIZONTAL	20	EACH
2" X 4" - VERTICAL	40	EACH
2" X 6" - HORIZONTAL	30	EACH
2" X 6" - VERTICAL	60	EACH
2" X 8" - HORIZONTAL	10	EACH
2" X 4" - RAKE TRIM	12	EACH
2" X 6" - CLOSED END TRIM	4	EACH
WOOD TRUSS FRAME	6	EACH
TRUSS ANCHOR	24	EACH
TRUSS ANCHOR BOLTS	48	EACH
TRUSS ANCHOR NUTS	48	EACH
TRUSS ANCHOR WASHERS	48	EACH
OPTION ITEMS		
12' X 12' DOOR		
2" X 4" - FRAMING	6	EACH
2" X 6" - FRAMING	12	EACH
2" X 4" - DOOR FRAMING	13	EACH
3/4" - PLYWOOD INSIDE	144	SQ. FT.
METAL SIDING - OUTSIDE	144	SQ. FT.
6" - RUBBER FLAP	2	EACH
GALV. STEEL 3" BUTT HINGES	10	EACH
DOOR YOKES		
2" X 4" - YOKES	1	EACH
2" X 6" - YOKE LATCH	2	EACH
QUANTITIES FOR 10 FT. EXTENSIONS		
CONCRETE - WALL	1.98	CU. YDS.
METAL ROOFING	462	SQ. FT.
METAL SIDING	140	SQ. FT.
INTERIOR 3/4" PLYWOOD	80	SQ. FT.
PURLINS - 10'-0"	24	EACH
2" X 4" - HORIZONTAL	4	EACH
2" X 4" - VERTICAL	8	EACH
2" X 6" - HORIZONTAL	4	EACH
2" X 6" - VERTICAL	6	EACH
2" X 8" - HORIZONTAL	2	EACH
WOOD TRUSS FRAME	1	EACH
TRUSS ANCHOR	2	EACH
TRUSS ANCHOR BOLTS	4	EACH
TRUSS ANCHOR NUTS	4	EACH
TRUSS ANCHOR WASHERS	4	EACH
QUANTITIES FOR 10 FT. EXTENSIONS (continued)		
CONCRETE - COUNTERFORT	0.57	CU. YDS.
CONCRETE - DRILLED PIER	0.29	CU. YDS.
CONCRETE - SLAB	6.00	CU. YDS.

DESIGNED BY: WHE
 DRAWN BY: DS - UFPI
 CHECKED BY: DEG
 FILE NAME: FOUNDATION
 DATE PLOTTED: 9/25/08

POULTRY LITTER STORAGE BUILDING
 40 FT. SPAN - MAX. 11 FT. EAVE HT.
 FARM COUNTY, TEXAS



NRCS Drawing No. TX-EN-0525

REVISIONS DATE

DRAWING NO. PLS-5.0

SHEET

5