

AGRICULTURAL WASTE MANAGEMENT SYSTEM
 NATURAL RESOURCES CONSERVATION SERVICE
 U. S. DEPARTMENT OF AGRICULTURE
DEAN POWERS
 SUSQUEHANNA COUNTY, PENNSYLVANIA

ADDRESS: 1254 POWERS ROAD, SUSQUEHANNA PA

PLEASE READ THE ENTIRE "SAFETY SECTION" OF THIS DESIGN PACKAGE.

NRCS TAKES SAFETY VERY SERIOUSLY, HOWEVER, THE SAFETY COMMITMENT AND THE JOB SITE PRACTICES OF THE CONTRACTOR ARE BEYOND CONTROL OF NRCS. IT IS STRONGLY RECOMMENDED THAT SAFE WORKING CONDITIONS AND ACCIDENT PREVENTION PRACTICES BE THE TOP PRIORITY OF ANY JOB SITE. LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS SHOULD ALWAYS BE FOLLOWED TO HELP INSURE WORKER SAFETY. MAKE CERTAIN ALL EMPLOYEES KNOW THE SAFEST AND MOST PRODUCTIVE WAY OF CONSTRUCTING THE DESIGNED PRACTICES. EMERGENCY PROCEDURES SHOULD BE KNOWN BY ALL EMPLOYEES. DAILY MEETINGS HIGHLIGHTING SAFETY PROCEDURES ARE ALSO RECOMMENDED. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE A SAFE WORK ENVIRONMENT FOR THEIR EMPLOYEES.

PROJECT LOCATION:

AS-BUILT/ DESIGN INFORMATION

QUALITY ASSURANCE STATEMENT					ENGINEER STATEMENT		
<i>To the best of my knowledge, I certify that the practices have been installed as per the attached drawings and specifications, based on the information provided to me and/or observations I have made.</i>					<i>In my professional opinion, I certify that the practices have been installed as per the attached drawings and specifications, based on the information provided to me and/or observations I have made.</i>		
Practice Code	CIN	Description	Planned Amount	Inspector (Initials)	As-Built Amount (by Inspector)	Certification (Engineer/JAA Signature)	Date Certified

GENERAL NOTES

1. FAILURE TO CONSTRUCT THIS FACILITY IN ACCORDANCE WITH THE NRCS DESIGN OR AUTHORIZED MODIFICATIONS WILL RESULT IN WITHDRAWAL OF NRCS TECHNICAL AND FINANCIAL ASSISTANCE.
2. ALL FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS GOVERNING THE CONSTRUCTION OF THIS FACILITY SHALL BE STRICTLY FOLLOWED. THE OWNER OR OPERATOR IS RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS.
3. IT IS THE RESPONSIBILITY OF THE EXCAVATING CONTRACTOR TO COMPLY WITH PA ACT 187 (1996) AND ALL ITS REVISIONS BEFORE PERFORMING ANY EXCAVATION. THE PA ONE-CALL PHONE NUMBER IS 1-(800)-242-1776. THE SERIAL NUMBER FOR DESIGN IS 20231350746 DATED 05/15/2023.
4. A MEETING BETWEEN THE LANDOWNER, CONTRACTOR, AND NRCS REPRESENTATIVE SHALL BE REQUIRED PRIOR TO ANY EXCAVATION OR CONSTRUCTION WORK.
5. A COPY OF THE NRCS SPECIFICATIONS AND DRAWINGS SHALL BE ONSITE DURING ALL PHASES OF CONSTRUCTION. A COPY OF THE DRAWINGS SHALL BE PROVIDED TO THE TRUSS MANUFACTURER.
6. OSHA REGULATIONS SHALL BE FOLLOWED AT ALL TIMES.
7. CERTIFICATION OF CONFORMANCE SHALL CERTIFY THAT ALL WORK WAS PERFORMED TO THE NRCS SPECIFICATIONS.

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DATE 7/23

PAS 7/23

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7/6/23

SUSQUEHANNA COUNTY PA

TOWNSHIPS

DEAN POWERS

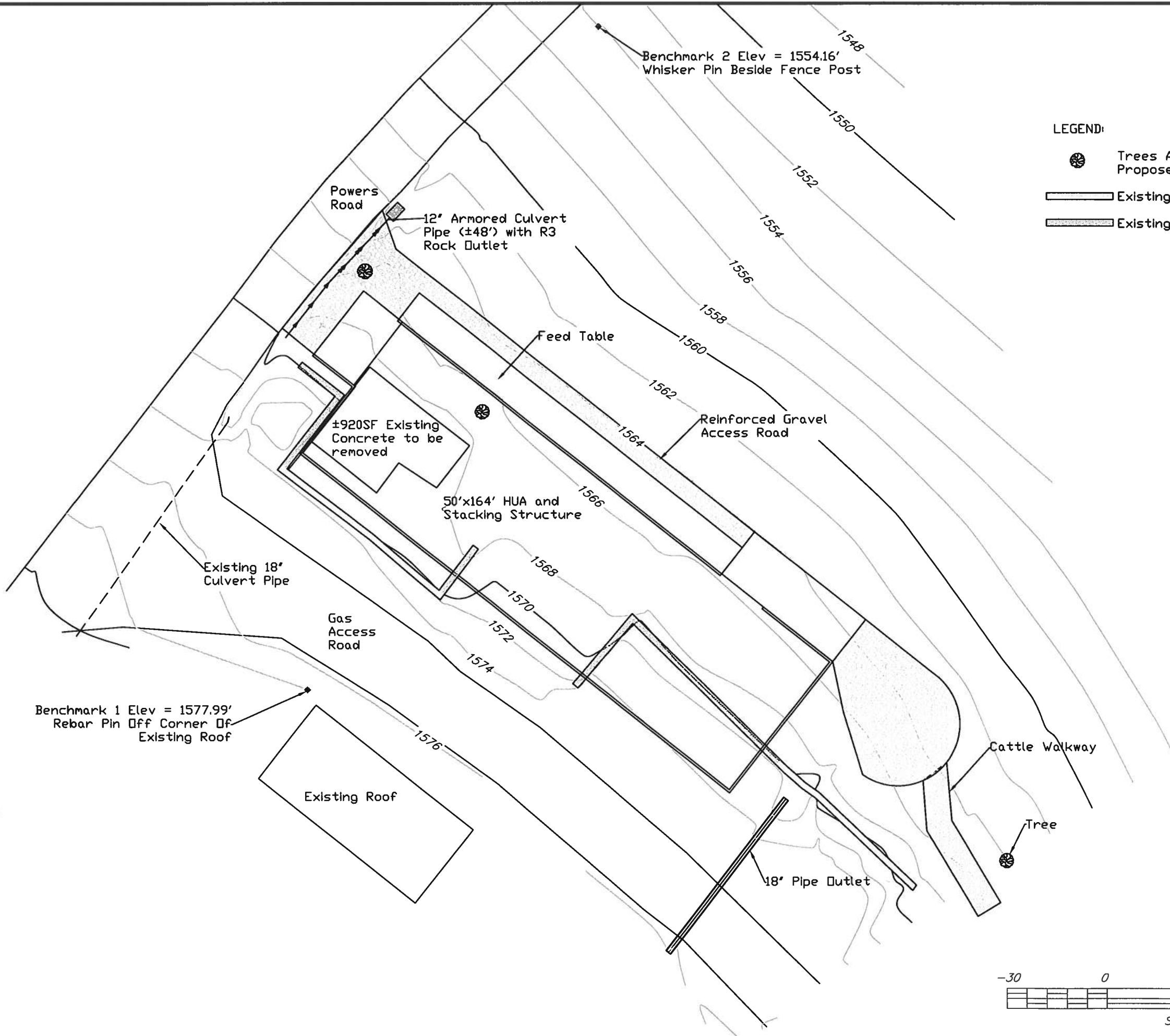
COVERSHEET

United States Department of Agriculture Natural Resources




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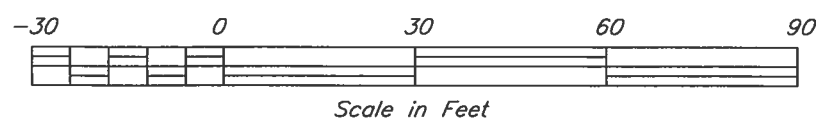
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SHEET 1 OF 3



LEGEND:

-  Trees Along Existing Rock Wall and Around Proposed Building are to be Removed
-  Existing Rock Wall (to Remain)
-  Existing Rock Wall (to be Removed)



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DEAN POWERS
PROPOSED PLANVIEW 1

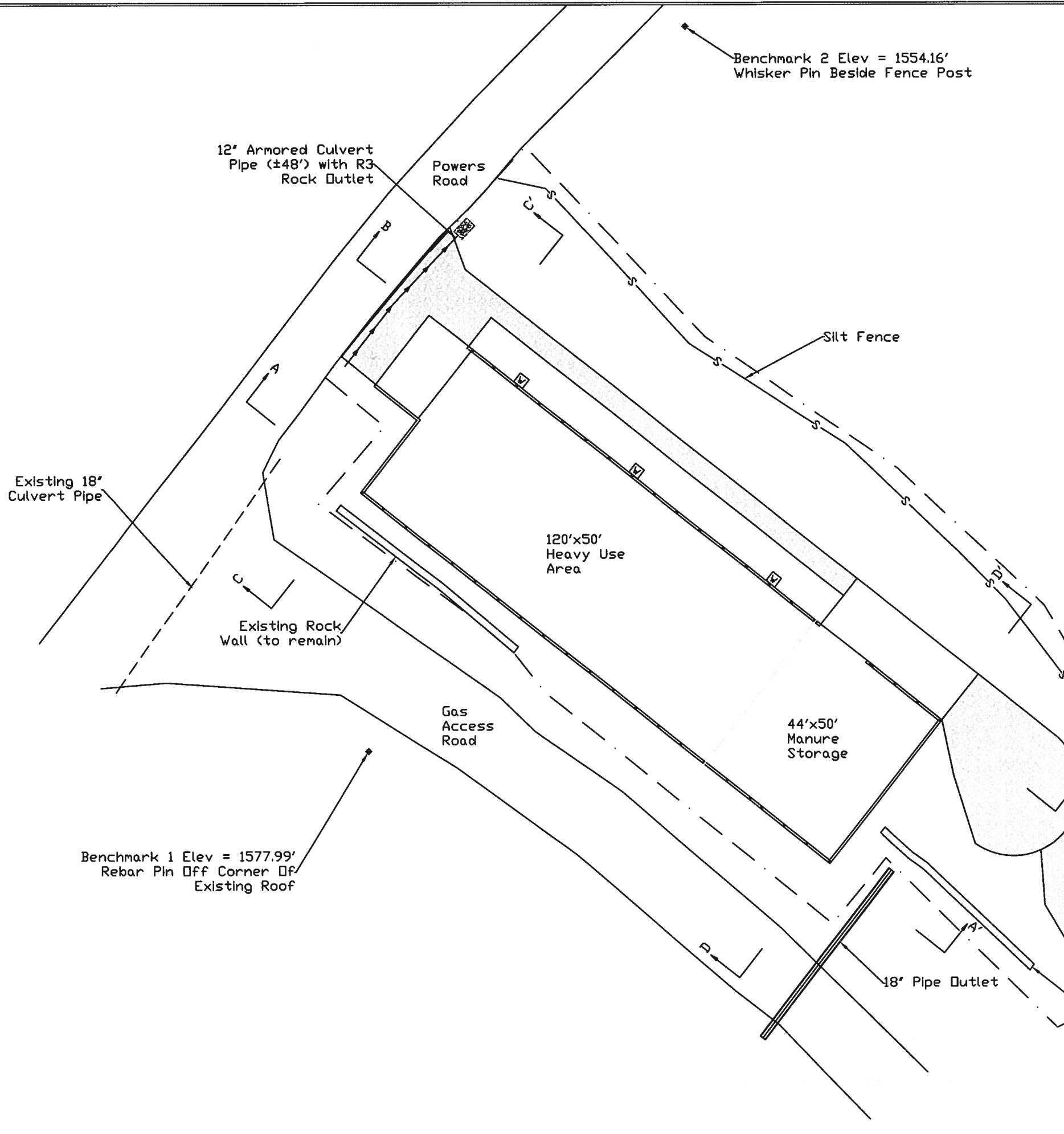
JACKSON TOWNSHIP SUSQUEHANNA COUNTY, PA



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DRAWING NO.

SHEET 2 OF 31



General Site Permitting Information

- 1) Proposed area of disturbance is less than 1 Ac. (Y) / N
(Includes excavation, spoil pile, footer drain, etc...)
- 2) Name of Receiving Water Body: Trib 29224 to Tunkhannock Creek
Stream Classification: __CWF__
Distance from Work Area to stream: __600'__
- 3) Are there any apparent wet lands within the project work area and/or receiving runoff from the area of disturbance? Y / (N)
- 4) Soil type(s) in area of disturbance __BfC2__.

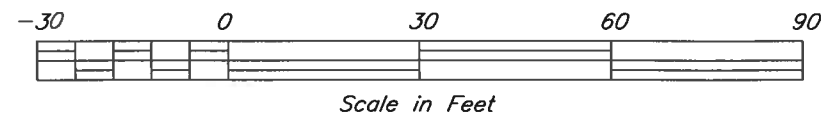
Additional Notes:

Area of Disturbance is 0.43 ac.

Certain practices like Heavy Use Areas can be discounted from disturbed area footprint when totaling acreage for NPDES permit purposes.
24,660 SF total area - 6,000 SF (HUA) = 18,660SF

Area of disturbance is not connected to the Waters of the Commonwealth. Footer drain outlets >50' from stream.

A waterline is required to supply water to the proposed heavy use area structure; the new waterline can come from an existing hookup location. This must be verified by the NRCS Inspector that the new waterline is adequate for the project. The waterline and troughs are up to the owner's discretion. It is recommended that a means of draining the pipeline is installed.



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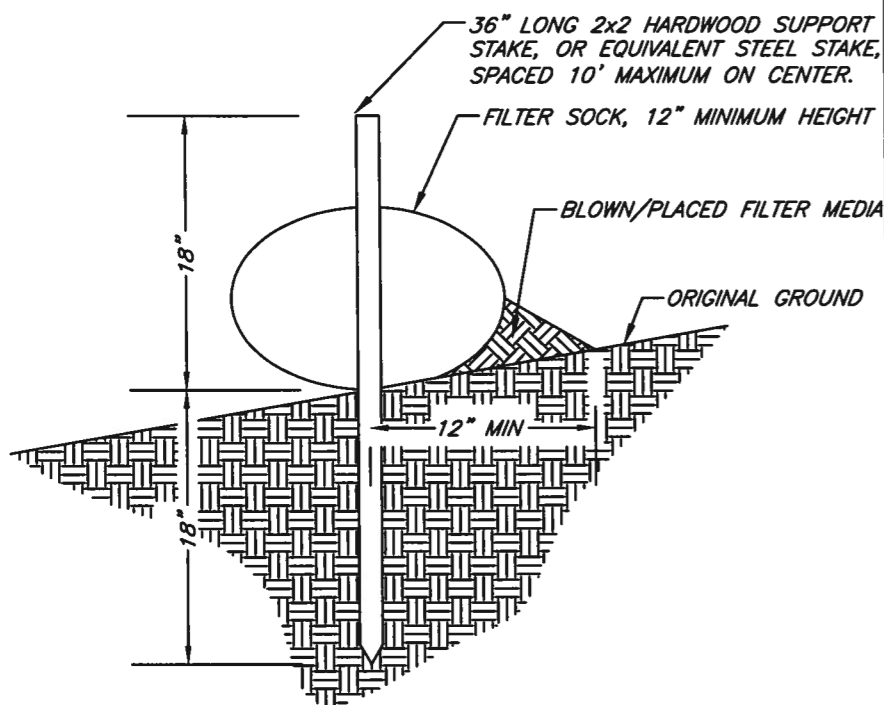
DEAN POWERS
PROPOSED PLANVIEW 2

JACKSON TOWNSHIP
SUSQUEHANNA COUNTY, PA



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SHEET 3 OF 31

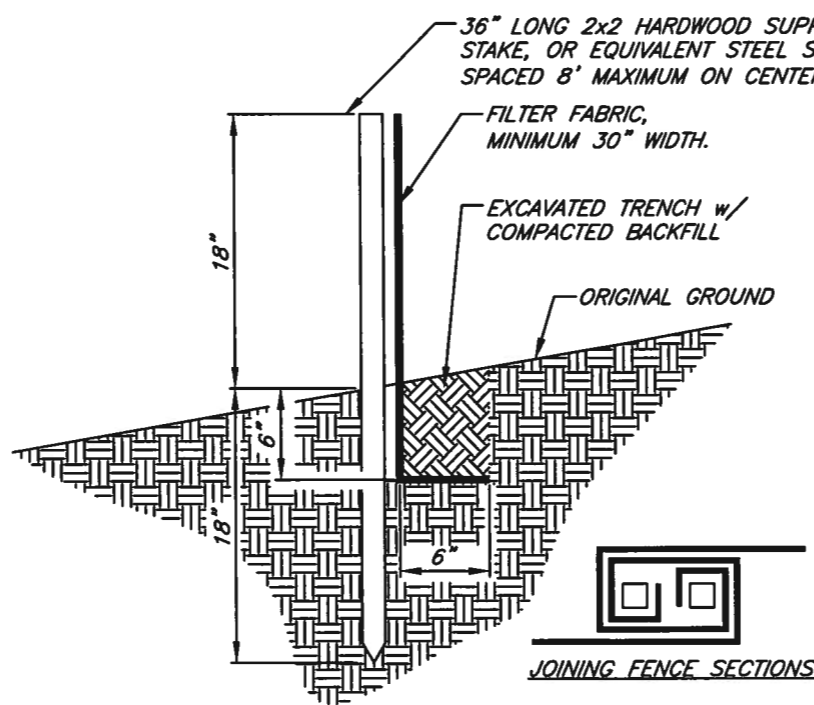
E&S POLLUTION CONTROL PLAN AND FINAL SEEDING RECOMMENDATIONS



FILTER SOCK

NOTES:

1. FILTER SOCK SHALL BE INSTALLED DOWN SLOPE OF THE DISTURBED AREAS OF THE CONSTRUCTION SITE.
2. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
3. FILTER SOCK SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8' UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
4. STAKES MAY BE INSTALLED IMMEDIATELY DOWN SLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
5. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVE GROUND HEIGHT OF THE SOCK.
6. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
7. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
8. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
9. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.



SILT FENCE

NOTES:

1. SILT FENCE SHALL BE INSTALLED DOWN SLOPE OF THE DISTURBED AREAS OF THE CONSTRUCTION SITE.
2. SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8' UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. FENCE SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED FENCE SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND REPLACED WITHIN 24 HOURS OF INSPECTION.
4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.
5. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET.
6. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

Seeding Recommendation

6. 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	90 lbs/acre PLS
Annual Rye	40 lbs/acre PLS

Permanent Stabilization:

Perennial Rye	40 lbs/acre PLS
PLUS	
Tall Fescue	80 lbs/acre PLS

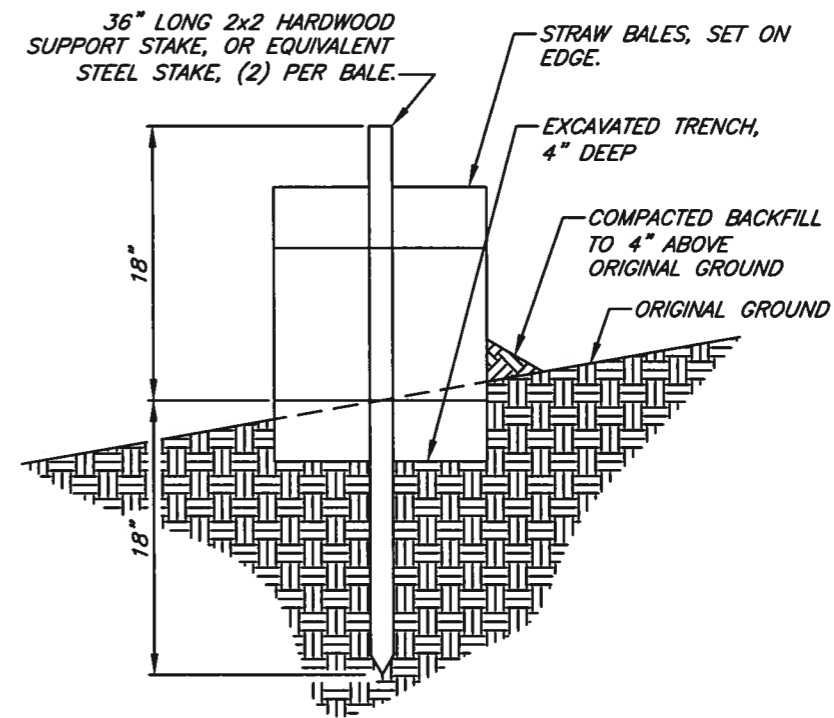
NOTE: This mixture is suitable for frequent mowing. Do not cut shorter than 4".

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-seeding.

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

1. When grading is finished, apply lime and fertilizer in accordance with soil test recommendations.
2. If soil test results are not available, apply 4 ton per acre of agricultural grade limestone and fertilizer at the rate of 1,000 lbs. Of 10-20-20 or equivalent per acre.
3. Lime and one-half (1/2) the amount of the fertilizer shall be incorporated 4 to 6 inches into the soil.
4. Work area with chisel plow or similar type equipment, making sure lime and fertilizer are worked well into the soil.
5. Follow with the balance of fertilizer and seed.



STRAW BALE BARRIER

NOTES:

1. STRAW BALES SHALL BE INSTALLED ACROSS SWALES, WATERWAYS, AND DIVERSIONS WHERE SEDIMENT LADEN RUNOFF COULD LEAVE THE CONSTRUCTION SITE.
2. STRAW BALE BARRIERS SHALL NOT BE USED FOR PROJECTS EXTENDING MORE THAN 3 MONTHS.
3. STRAW BALE BARRIERS SHALL BE PLACED AT EXISTING LEVEL GRADE WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE FIRST STAKE OF EACH BALE SHALL BE ANGLED TOWARD THE ADJACENT BALE TO DRAW THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE TOP OF THE BALE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8' UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.
4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH ONE THIRD THE ABOVE GROUND HEIGHT OF THE BALE. DAMAGED OR DETERIORATED BALES SHALL BE REPLACED IMMEDIATELY UPON INSPECTION.
5. ANY SECTION OF THE STRAW BALE BARRIER WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACES WITH A ROCK FILTER OUTLET.
6. BALES SHALL BE REMOVED WHEN THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED.

THIS EROSION AND SEDIMENTATION PLAN IS BASED ON THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, TECHNICAL GUIDANCE NUMBER 363-2134-008, MARCH 2012.

Planting Recommendation

Seed can be applied with a drill or broadcast seeder. Band seeding is not permitted. If broadcast, harrow or disk lightly to cover seed. Roll with cultipacker or similar roller in same direction as seeding. (Double drilling gives better distribution of seeding and helps to spread the water while plants are small. Drill first lengthwise and then crosswise (in a zig-zag pattern). Optimum planting time is early spring or mid summer. 7. 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.

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DEAN POWERS
EROSION AND SEDIMENT CONTROL PLAN

United States
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Agriculture
Natural Resources

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DRAWING NO.

SHEET 4 OF 3

OWNER RESPONSIBILITIES

ACCESS

1. The owner is responsible for ensuring that all livestock are removed from the work site and that livestock will remain excluded from the work site until the project has received final certification and is approved for use.
2. The owner is to provide reasonable access to the work site.

EXCAVATION NOTES

GENERAL

1. **No excavation shall begin until the excavator has complied with all PA One-Call requirements and any utility company responses.**
2. All erosion and sedimentation practices shall be installed prior to beginning excavation.
3. **OSHA standards shall be followed for all excavation.**
4. Topsoil shall be stripped and stockpiled to be re-distributed when the project is complete.
5. All manure-laden soil shall be removed and spread according to the landowner's nutrient management plan.
6. The site shall be excavated until good, stable soil is encountered.
7. In the event Rock, Unstable soils, or seeps are encountered during excavation, work shall be stopped and the NRCS shall determine how to proceed.
8. For Liquid Storage Structures: When hard material is encountered, over-excavate design subgrade by 1.0' and replace with a compacted impermeable layer (i.e. CL/ML) before installing bedding stone; consult with design engineer before doing so.
9. Excess material shall be disposed of as directed by the landowner and the NRCS inspector.
10. A uniform layer of 2B-stone (AASHTO #57), 4" thick shall be placed above subgrade to bed ALL concrete. Stone depth to be measure after compaction. Stone shall not be placed until earthen subgrade elevation and compaction is approved by NRCS inspector.
11. The contractor is responsible for verifying actual field measurements shown on the plan drawings.
12. The contractor is responsible for implementing all measures necessary to protect work in progress from environmental conditions such as temperature extremes, surface, and ground water.
13. The contractor is responsible for protecting the construction site until the work has been completed and certified by the design engineer. This includes dewatering the site as necessary, as well as preventing upslope runoff from entering the work area. It is strongly recommended that all planned diversions or swales be installed first and all perimeter drain outlets be installed before stone or concrete is placed, if possible.
14. Final grading shall provide positive drainage away from all structures. Swales shall be shaped as necessary along the heavy use area and manure storage to direct stormwater away from the structures.

EARTHFILL

1. Earthen backfill shall be placed in a manner that prevents damage to the structures and allows the structures to assume the loads from the earth backfill gradually and uniformly. The height of the earth backfill adjacent to the structure shall be increased at the same rate on all sides of the structure.
2. Backfill shall be placed in even, horizontal layers. If necessary, over-excavate to an approximately level surface and build subgrade in evenly compacted, horizontal lifts of specified thickness.
3. Backfill shall be placed at optimum moisture content. Backfilled material shall have enough moisture so that when formed into a ball, it will not break if struck sharply with a pencil. Backfilling newly poured walls may not begin until 14-days after the final concrete placement. Compact using the following equipment and lift thickness:

FOOTINGS AND STRUCTURE FLOOR:

-(3) passes of sheepsfoot or vibratory roller in 6-inch lifts

WITHIN 3 FEET OF WALLS:

-(3) passes by hand compactor or small, manually directed plate vibrator in 6-inch lifts

BEYOND 3 FEET OF WALLS:

*** Do not use a vibratory roller within distance equal to the wall height. A roller can be used beyond 3' of the wall without the vibratory function on.**

-(3) passes by track equipment (>4,000 lbs) in 6-inch lifts

-(4) passes by rubber tired equipment in 6-inch lifts

-(3) passes of vibratory roller in 6-inch lifts

4. Avoid backfill containing rocks or clods greater than 3" diameter, debris, roots, frozen soil, or other unsuitable material as determined by the NRCS inspector.
5. If seeps are encountered during excavation; provide clean AASHTO #57 stone 1' above that elevation and extend the stone a minimum of 4' left and right of the seep location.
6. Six inches of topsoil shall be incorporated into the final surface of the earthfill.
7. All areas top-dressed with topsoil and disturbed during construction will be seeded according to NRCS Critical Area Planting Specification and the E&S drawing provided in the drawings.

PIPES

1. All pipes shall meet minimum material specifications:
 - 1.1. SCH 40 PVC shall meet ASTM-D1785
 - 1.2. SDR-35 shall meet ASTM-D3034
 - 1.3. Corrugated polyethylene tubing shall meet ASTM-F667 or AASHTO-M252 as detailed below.
 - 1.3.1 ASTM-F667 pipe and fittings may be used when the maximum cover over the pipe does not exceed 9.8'.
 - 1.3.2 AASTHO-M252 pipe and fittings shall be used when the cover over the pipe exceeds 9.8'.
 - 1.3.3 All corrugated polyethylene tubing shall be installed so bedding material is worked in and around the pipe by hand and "knifed" in with a shovel. Haunching and initial backfill material shall be placed with a high level of effort to ensure that the pipe is adequately supported. Compaction tests are not necessary for pipe installation.
2. All fittings for SCH 40 and SDR-35 pipe shall be watertight, and meet the minimum material specifications of the pipe. When pressure flow is necessary; applicable fittings will be defined in the NRCS supplied construction specifications.
3. Fittings for the corrugated polyethylene pipe do not need to be pressure-rated or watertight but must meet the minimum material specifications of the pipe. If fittings need to be pressure-rated or watertight; applicable fittings will be defined in the NRCS supplied construction specifications.
4. All fittings and connections for pipe shall be made with manufacturer-supplied components made for the intended purpose.
5. Pipes shall be installed to specified depth and to minimum design grade.
6. Trenches for pipelines shall be free of rocks and sharp-edged materials. A supply of AASHTO #57 bedding stone, or other suitable granular material, shall be available to bed pipelines in unstable soils or as directed by NRCS inspectors.
7. Pipes shall be backfilled as shown on design details. Any pipe to be placed in a traffic area is to be bedded as per design details and backfilled to the surface with 2A modified or 2RC aggregate. Any pipe not specifically detailed may be backfilled with moist earth, free of large clods or rocks, and hand compacted in 6-inch lifts. DO NOT drive machinery over recently backfilled pipes. Mound backfill 10% of trench depth to allow for settlement.

GEOTEXTILE

ACCESS ROAD USE:

1. Geotextile for roads with normal farm machinery use shall be WOVEN or NON-WOVEN with a minimum tensile strength of 200 pounds.
2. Geotextile for roads with heavy equipment shall be WOVEN or NON-WOVEN with a minimum tensile strength of 315 pounds.

ANIMAL WALKWAY USE:

3. Geotextile shall be WOVEN or NON-WOVEN with a minimum tensile strength of 160 pounds.

PLACED BELOW CONCRETE & ON TOP OF BEDDING STONE USE:

4. Geotextile shall be WOVEN with an Apparent Opening Size (AOS) between 20 and 100, inclusive.

ALL USES:

5. Geotextile installed on slopes greater than 8% shall be NON-WOVEN.
6. Geotextile installed where a wet subgrade is an issue shall be WOVEN or NON-WOVEN. The inspector shall have a discussion with the contractor to see which geotextile type the contractor recommends for the wet subgrade issues. The inspector shall then discuss with the design engineer.
7. Allow 1' overlap between adjacent panels of geotextile where applicable.

CONCRETE CONSTRUCTION NOTES

REINFORCEMENT

1. Reinforcing steel is to be Grade 60. Where 6"x6" w2.9xw2.9 (6 gage) is specified; the fabric shall be mats, not rolls, supported on steel chairs. NO CINDER OR CONCRETE BRICKS ARE PERMITTED. Support shall be often enough so reinforcement stays at the required location within the slab or footing. A 5' (MAX) chair spacing is required.
2. Form oil shall not be sprayed on any rebar, waterstops, or concrete.

CONCRETE

1. 4,000 psi 28-day compressive strength
2. MAXIMUM water-cement ratio 0.50
3. Air-content 5 to 7%, with air-entrainment
4. Max concrete temperature is 90°
5. Slump shall be 2 to 4 inches prior to addition of superplasticizing admixtures being added, 3 to 6 inches without use of superplasticizers.
6. Slump can be 7.5 inches MAX with the addition of superplasticizing admixtures.
7. Concrete admixtures shall meet ASTM-C260 for air entrainment, and ASTM C494 Type A, D, F or G for water-reduction and set-retardation and Types C or E for non-corrosive accelerators.
8. Admixtures shall be included in the design mix. Follow dosages and recommendations of manufacturer.
9. 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 (metered water and free 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.
10. **The concrete mix design may contain slag: Not to exceed 20% of the cementitious material.**

PLACEMENT

1. **Concrete shall only be placed in the presence of an NRCS inspector.**
2. Placement during hot or cold weather will require a written plan in advance detailing concrete conditions, placement provisions, and a curing plan.
3. Concrete shall not be placed until the subgrade, forms, and steel reinforcements have been inspected and approved by the NRCS. Notification shall be given far enough in advance to provide time for inspection.
4. No water may be added after a superplasticizer.
5. Concrete shall be conveyed from the mixer to the forms as rapidly as practical by methods that will prevent segregation of the aggregates or loss of mortar. Concrete shall be placed within 1.5 hours after the introduction of cement to the aggregate unless an approved set-retarding admixture is used in the mix; during periods of hot weather, it may be necessary to reduce this time.
6. Concrete shall not be dropped more than 5 feet vertically. Superplasticized concrete shall not be dropped more than 12 feet vertically.
7. Formed walls shall be placed in 2' layers unless superplasticizer is used, in which case the maximum layer shall be 5'. Each layer shall be consolidated to ensure a good bond with the preceding layer.
8. Concrete shall be consolidated by vibrating immediately after placement and extend a minimum of 6" into the previously consolidated layer.
9. Concrete shall be worked into corners, angles, and all around reinforcement and embedded items in a manner that prevents segregation or the formation of "honeycombing".
10. Vibration shall not be used to make concrete flow.
11. If the surface of a previously placed layer of concrete has taken a set to the degree that it will not mix with the preceding layer when vibrated, the contractor shall discontinue placing concrete and form a construction joint to avoid a "cold joint". **Vinyl waterstop and form material shall be on site prior to starting the placement of any concrete.**
12. The landowner has the option of having grooves floated or cut into the structure floor(s) for added traction for animals and equipment. This decision will be conveyed to the contractor(s) during price solicitation.

CURING

1. Concrete shall be allowed to cure at least 24 hours prior to beginning form or reinforcement placement for adjacent construction.
2. No equipment shall be allowed on concrete slabs or floors until the concrete has cured for a minimum of 7 days. This includes any motorized material handling equipment, pallets of forms, etc. Skid loaders used for transporting concrete into forms shall not be allowed on slabs or floors for a minimum of 14 days.
3. 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.
4. Curing compound shall be applied in a uniform layer over all surfaces requiring protection at a rate as designated by the manufacturer. Curing compound shall be reapplied if disturbed within 3 hours after being applied.
5. Walls shall be allowed to cure for a minimum of 7 days before installing "Drill set" post bracket anchors. Walls shall be allowed to cure for a minimum of 3 days before installing posts in/on "Wet set" brackets.
6. All wall ties, honey-combing, and air holes $> \frac{3}{4}$ " shall be parged with non-shrink grout.
7. Random cracking in the walls and floor shall be evaluated and determined if the concrete needs to be removed or repaired. Removal and repair shall be the responsibility of the contractor and at no increase in cost.
8. If major repairs are required, the contractor shall prepare a written repair plan with all materials and methods clearly stated and shall be approved by the NRCS engineer of authority before proceeding with the repair.

JOINTS

1. Before new concrete is placed on or against concrete that has set, the surface of construction joints shall be cleaned of all laitance and debris by high-pressure water cutting, washing and wire-brushing, or as approved by the engineer. The surface of the in-place concrete shall be cut to expose clean, sound aggregate, but not so deep to undercut the edges of the large aggregate. All construction joints shall be wetted for at least 1-hour prior to new placement and standing water shall be removed.
2. Slab control joints shall be saw-cut as soon as possible, but no later than 24 hours after placement of the concrete, at the intervals indicated on the drawings. All joints shall be water tight and as shown on the detail drawings. The saw-cuts shall be thoroughly cleaned and dried so the sealant and primer will bond to the concrete.
3. For the joints in the drawings that call for an elastomeric sealant, the sealant shall meet the requirements stated in the Construction Specification, included in this design package, and shall also meet the following: The sealant shall be Type S (Single Component), Class 25, and meet the requirement for Type I (Able to be immersed in liquid). Some sealants require a primer to be used before the sealant is applied; primers shall be used no matter if the joint is located in a "submerged" condition or not. It is recommended that the primer is supplied by the same manufacturer as the sealant, this will ensure that the sealant and primer are compatible.

TESTING REQUIREMENTS

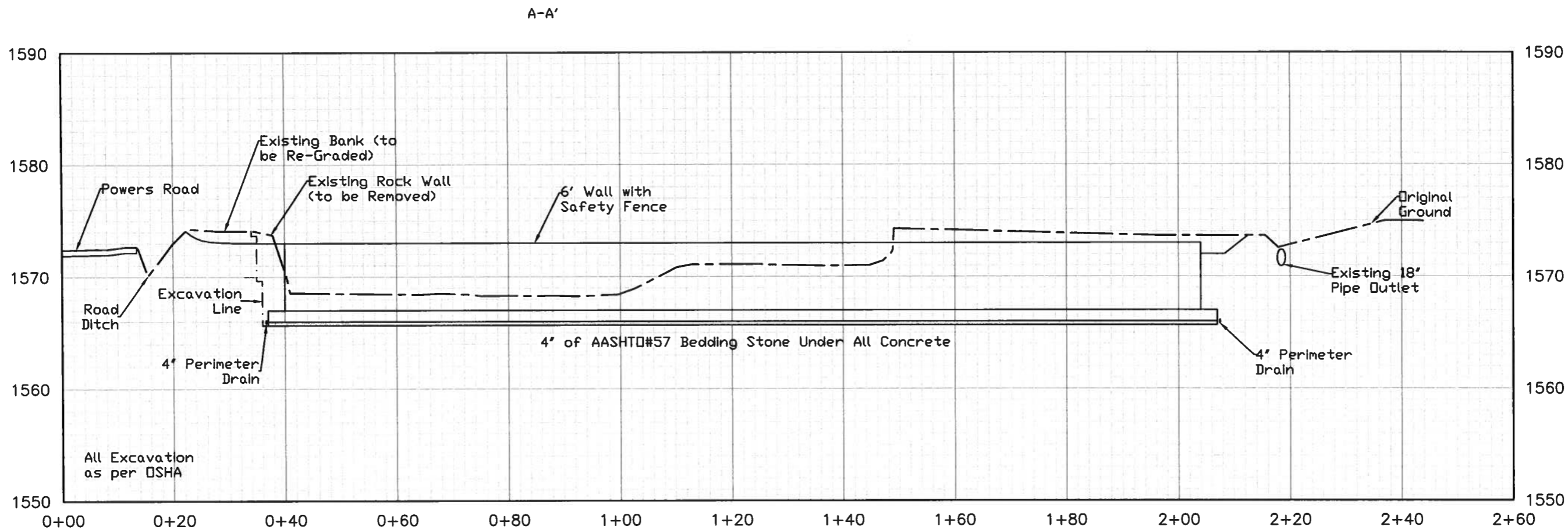
1. ~~The contractor is responsible for obtaining a 3rd party ACI Certified Technician for field testing of concrete. The concrete plant cannot test their own concrete. Slump, air entrainment, and concrete temperature shall be taken to ensure the concrete meets NRCS requirements.
-(4) concrete test cylinders shall be taken every 50 cu.yds.
-(3) cylinders to be broken at 28 days and (1) cylinder to be saved for a 56 day break, if necessary. This shall be done for every 50 cu.yds sampled.
-Slump, air entrainment, and concrete temperature shall be recorded for every 50 cu.yds as well.
-All concrete for testing or making cylinders shall be taken from the discharge end of the pump truck.
-All test results shall be provided to the inspector. The ACI technician shall be present from start of concrete placement until the last concrete truck leaves the site.~~
2. The contractor is responsible for ensuring that the concrete meets the design requirements. The contractor shall test the concrete as needed; slump, air entrainment, concrete temperature, and cylinders. All concrete for testing or making cylinders shall be taken from the discharge end of the pump truck. The NRCS, PACD, or Conservation District inspector may test the concrete as they feel the need to do so. The contractor is not to rely on the inspector to provide the testing service.

DATE 4/23
 4/23
 PAS PAS
 DESIGNED DRAWN CHECKED

DEAN POWERS
 SECTIONS A-A' AND B-B'

United States Department of Agriculture
 Natural Resources

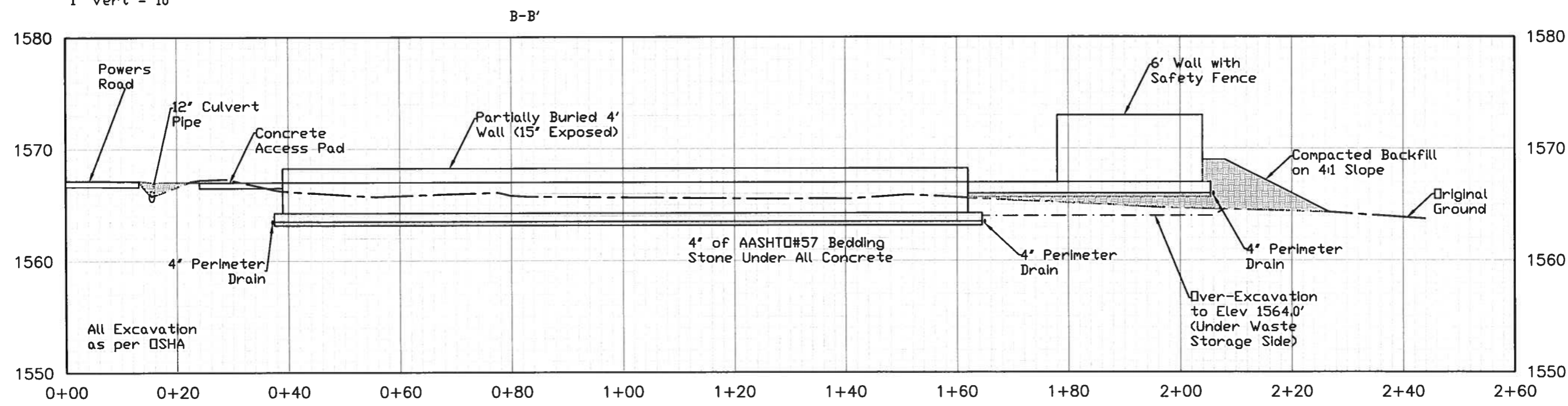
FILE NO. POWERS DESIGN_RECOVER.DWG
 DRAWING NO.
 SHEET 1 OF 3



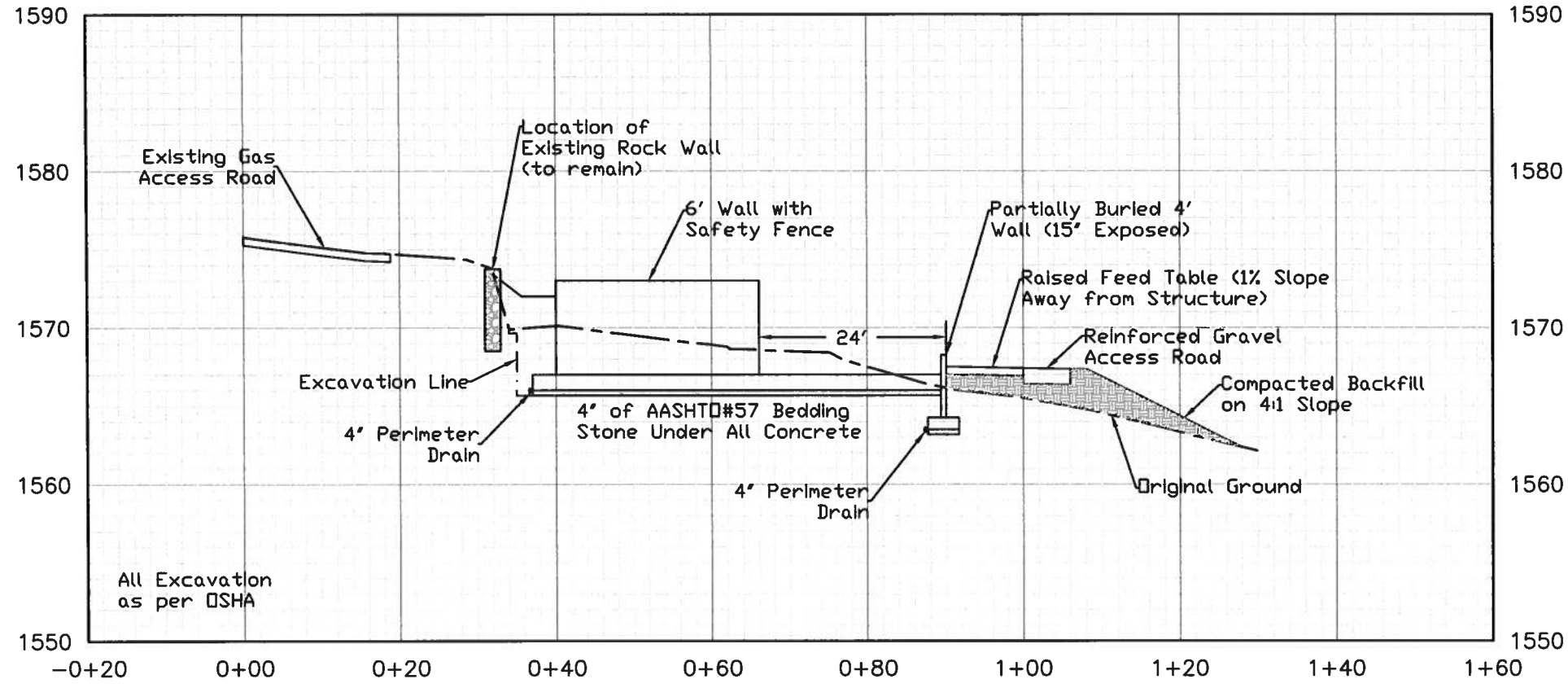
6' CRSI Wall:
 Top of Wall Elev = 1573'
 FF Elev = 1567'
 Bottom of Footer Elev = 1566'
 Subgrade Elev = 1565.67'

4' Partially Buried Wall:
 Top of Wall Elev = 1568.25'
 Bottom of Footer Elev = 1563.5'
 Subgrade Elev = 1563.17'

Scale:
 1" Horiz = 20'
 1" Vert = 10'



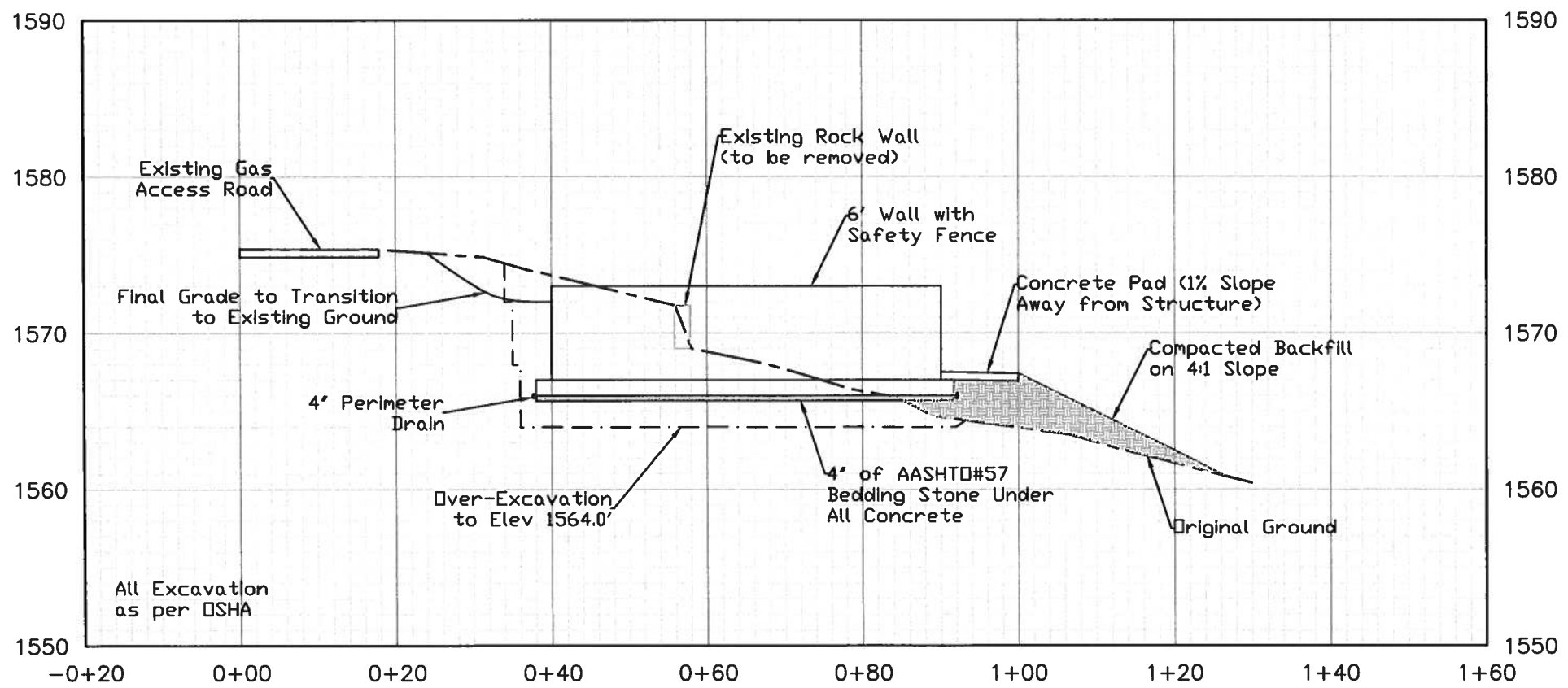
C-C'



6' CRSI Wall:
 Top of Wall Elev = 1573'
 FF Elev = 1567'
 Bottom of Footer Elev = 1566'
 Subgrade Elev = 1565.67'

4' Partially Buried Wall:
 Top of Wall Elev = 1568.25'
 Bottom of Footer Elev = 1563.5'
 Subgrade Elev = 1563.17'

D-D'



Scale:
 1" Horiz = 20'
 1" Vert = 10'

DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	
APPROVED	

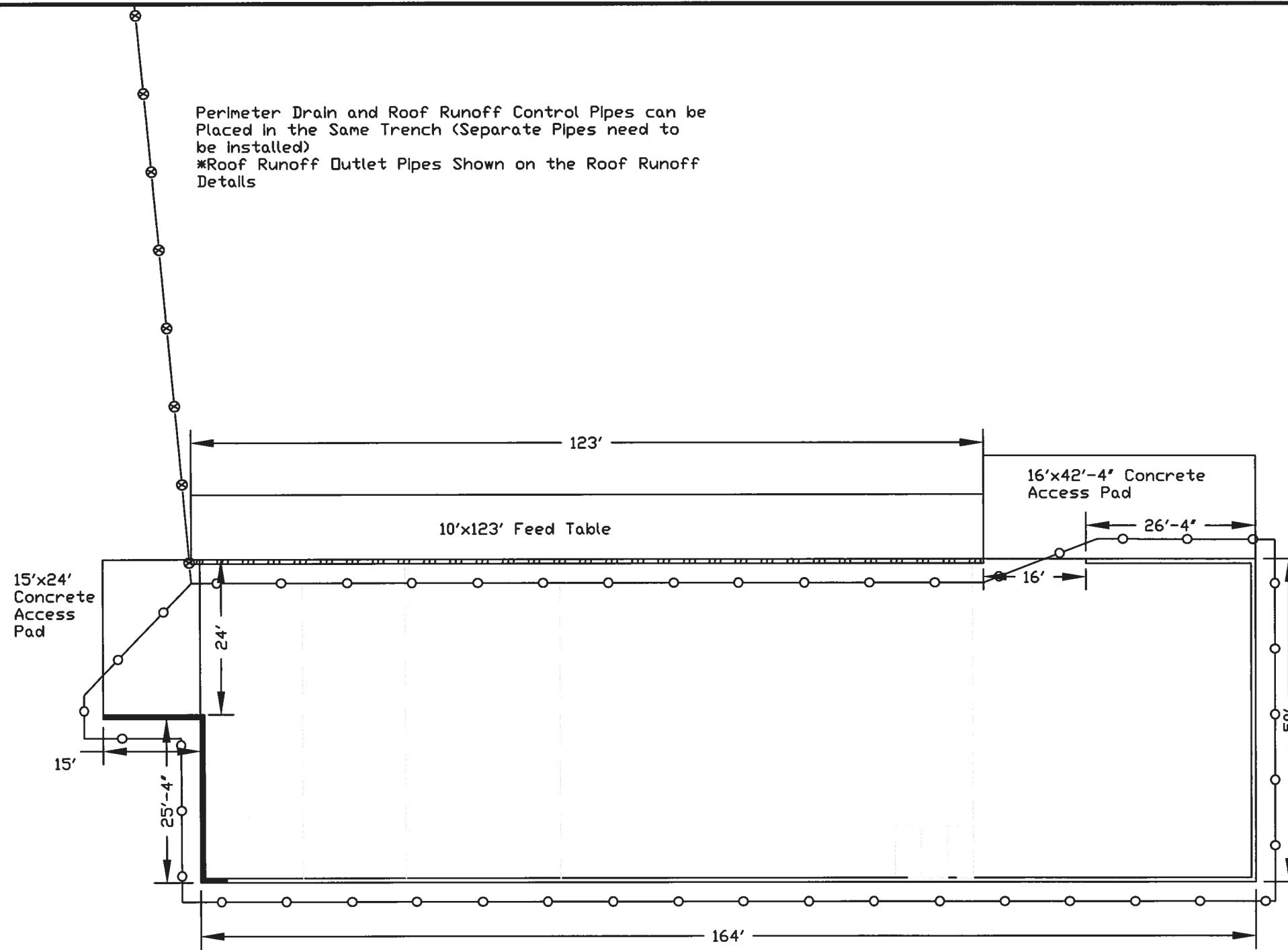
DEAN POWERS
 SECTIONS C-C' AND D-D'

JACKSON TOWNSHIP
 SUSQUEHANNA COUNTY, PA



FILE NO.
 POWERS
 DESIGN_RECOVER.DWG

DRAWING NO.



Perimeter Drain and Roof Runoff Control Pipes can be Placed in the Same Trench (Separate Pipes need to be installed)
 *Roof Runoff Outlet Pipes Shown on the Roof Runoff Details

- 6' CRSI Wall (Vehicle Loading) ($\pm 44'$)
- 6' CRSI Wall ($\pm 200'$)
- 4' Partially Buried 4' Wall (123')
- Roll Curb ($\pm 40'$)
- 4' CPT Foundation Drain ASTM-f-667 ($\pm 470'$)
- 4' SCH-40 ASTM-D-1785 ($\pm 110'$)

DESIGNED	PAS	DATE	4/23
DRAWN	PAS		4/23
CHECKED			
APPROVED			

DEAN POWERS
 DETAILED CONCRETE PLAN VIEW

JACKSON TOWNSHIP SUSQUEHANNA COUNTY, PA



FILE NO. POWERS DESIGN_RECOVER.DWG

DRAWING NO.

SHEET 9 OF 31

DATE 4/23
 DESIGNED PAS
 DRAWN PAS
 CHECKED
 APPROVED

JACKSON TOWNSHIP
 SUSQUEHANNA COUNTY, PA

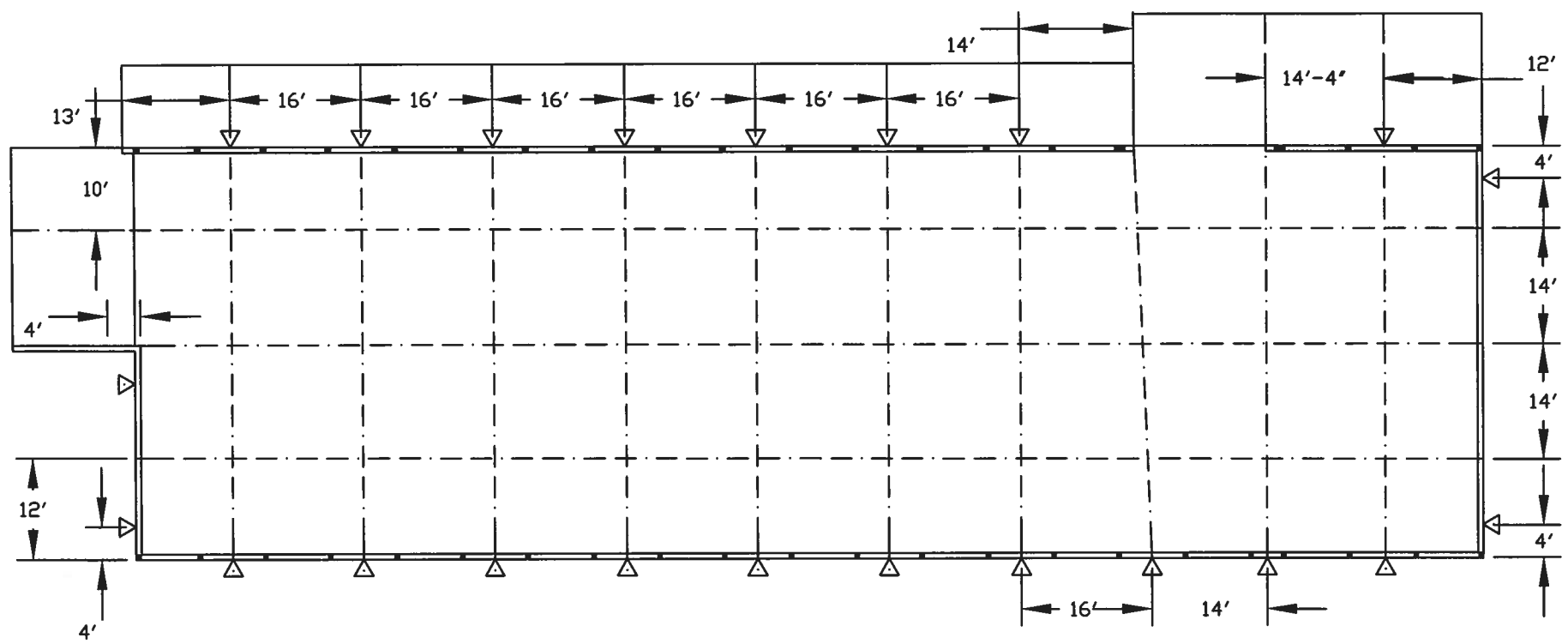
DEAN POWERS
 CONTROL JOINT PLAN VIEW

United States
 Department of
 Agriculture
 USDA
 Natural Resources
 Conservation Service

FILE NO. POWERS
 DESIGN_RECOVER.DWG

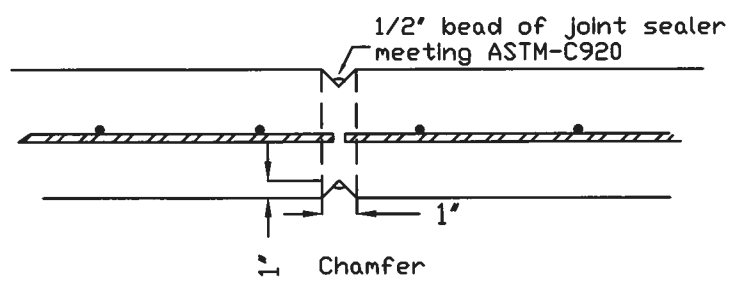
DRAWING NO.

SHEET 10 OF 31



----- Floor Joint Location
 △ Wall Joint Location

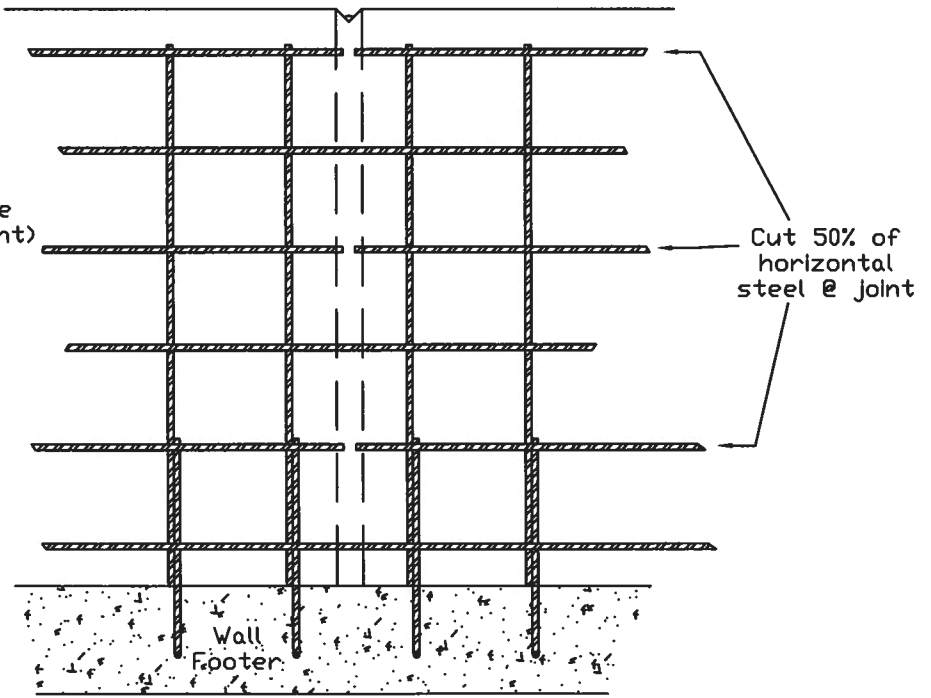
TYPICAL
 WALL JOINT - Top View



- * Place Primer Before Sealer
- * Chamfer to extend across top of wall

TYPICAL
 WALL JOINT - Side View

(5' wall shown;
 number of horizontal
 bars to be cut will be
 determined by wall height)

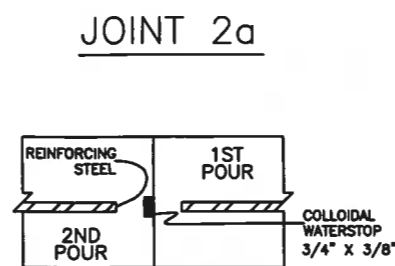
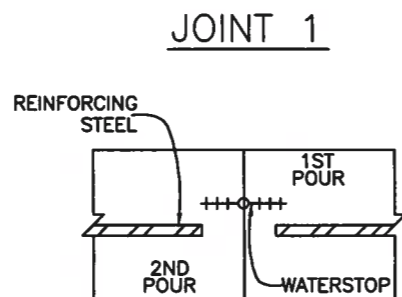


LIQUID TIGHT SLAB JOINTS CROSS SECTIONS (NOT TO SCALE)

LIQUID TIGHT SLAB/FLOOR JOINTS

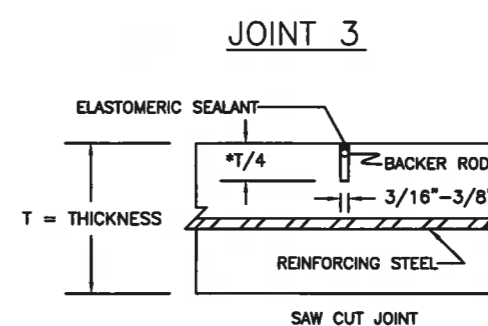
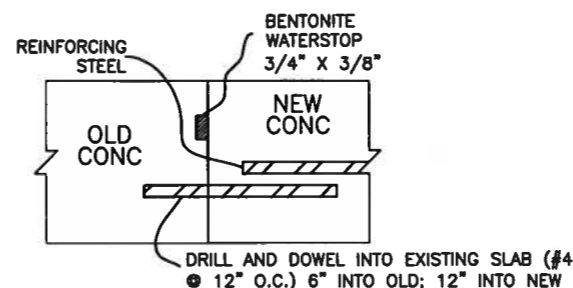
GENERAL NOTES:

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.



CONSTRUCTION CONTROL

JOINT 2b

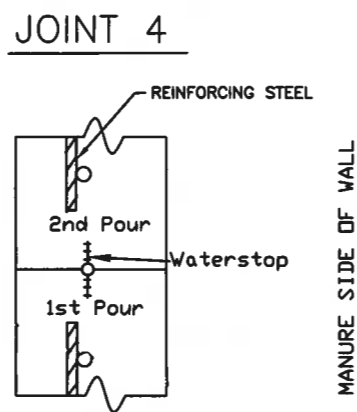


LIQUID TIGHT WALL JOINTS PLAN VIEW (NOT TO SCALE)

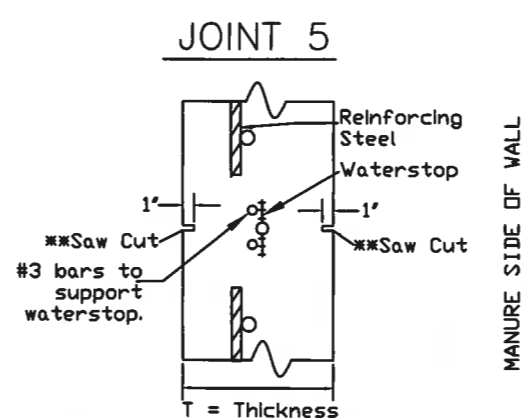
LIQUID TIGHT WALL JOINTS

GENERAL NOTES:

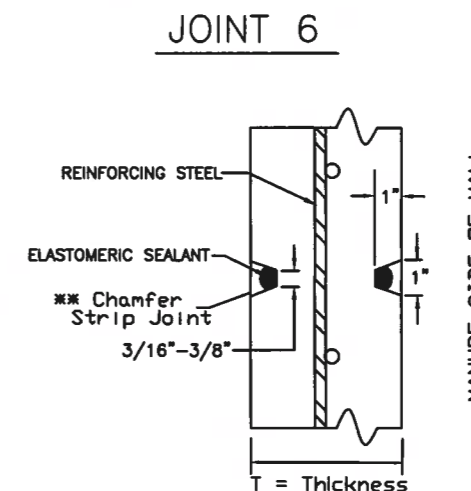
1. **BE SURE TO CUT EVERY OTHER HORIZONTAL REINFORCING STEEL REBAR DIRECTLY AT THE JOINT.**
2. SEALANT DEPTH SHALL BE 1/4" OR SLIGHTLY LESS THAN JOINT WIDTH, WHICHEVER IS LESS.
3. USE JOINT 4 FOR TWO POURS AND JOINTS 5 FOR CONTINUOUS POURS.



MANURE SIDE OF WALL



MANURE SIDE OF WALL



MANURE SIDE OF WALL

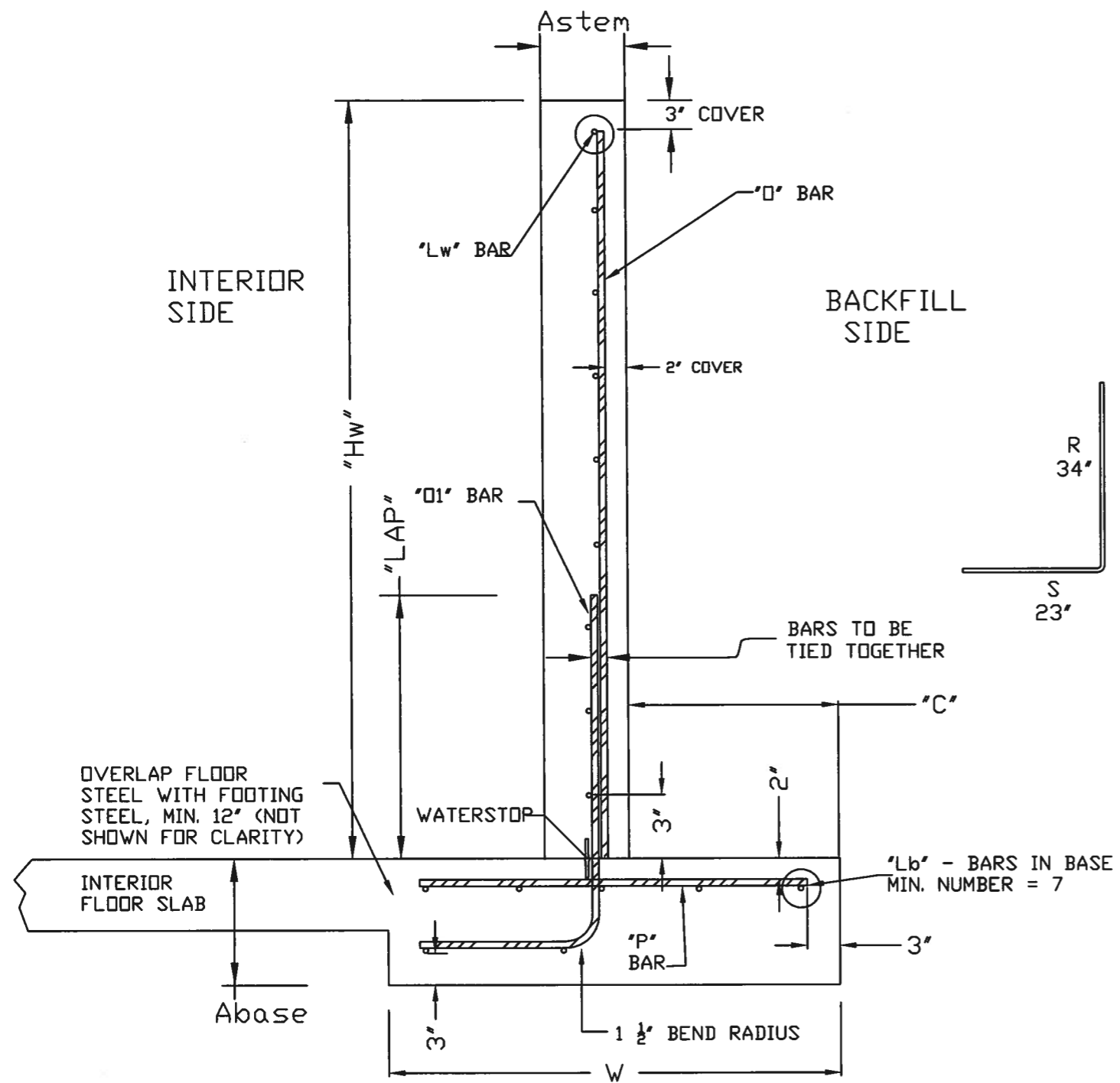
* Saw cut need not be greater than 1" for walls thicker than 8".

** Joint former or chamfer strip optional, both sides and across top of wall. Backer Rod and Elastomeric sealant needed in a saw cut joint, as shown in Joint #3 above. Elastomeric sealant needed if a chamfer strip is used.

DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	

DEAN POWERS
CONTROL JOINT DETAILS

CRSI CANTILEVERED RETAINING WALL-6' HEIGHT
 CRSI DESIGN GUIDE FOR CANTILEVERED RETAINING WALLS,
 1ST EDITION & CRSI DESIGN HANDBOOK 2008, 10TH EDITION
 (USE 8' ROW TO ACCOUNT FOR VEHICLE LOADING)



DIMENSIONS	
Hw	6'
Astem	8'
C	3'
W	5'-4"
Abase	12"
Lap ('O1' bar height above footer)	25"

STEM REINFORCEMENT	
'O'	#4 @ 9"
'O1'	#4 @ 9"
'Lw'	#4 @ 11"

BASE REINFORCEMENT	
'P'	#4 @ 9"
'Lb'	7-#4 BARS
'HEADED'	NONE

SOIL PROPERTIES	
μ	0.45
γ	130 pcf
ϕ	30 deg.
BACKFILL SLOPE	LEVEL

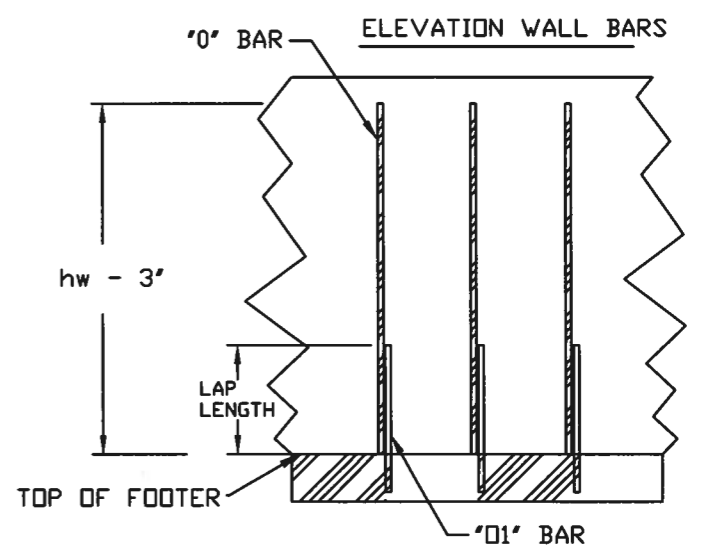
'O1' BAR REQUIREMENTS:

BAR SIZE	BEND DIAMETER (D) INCHES
#4	3
#5	3-3/4
#6	4-1/2

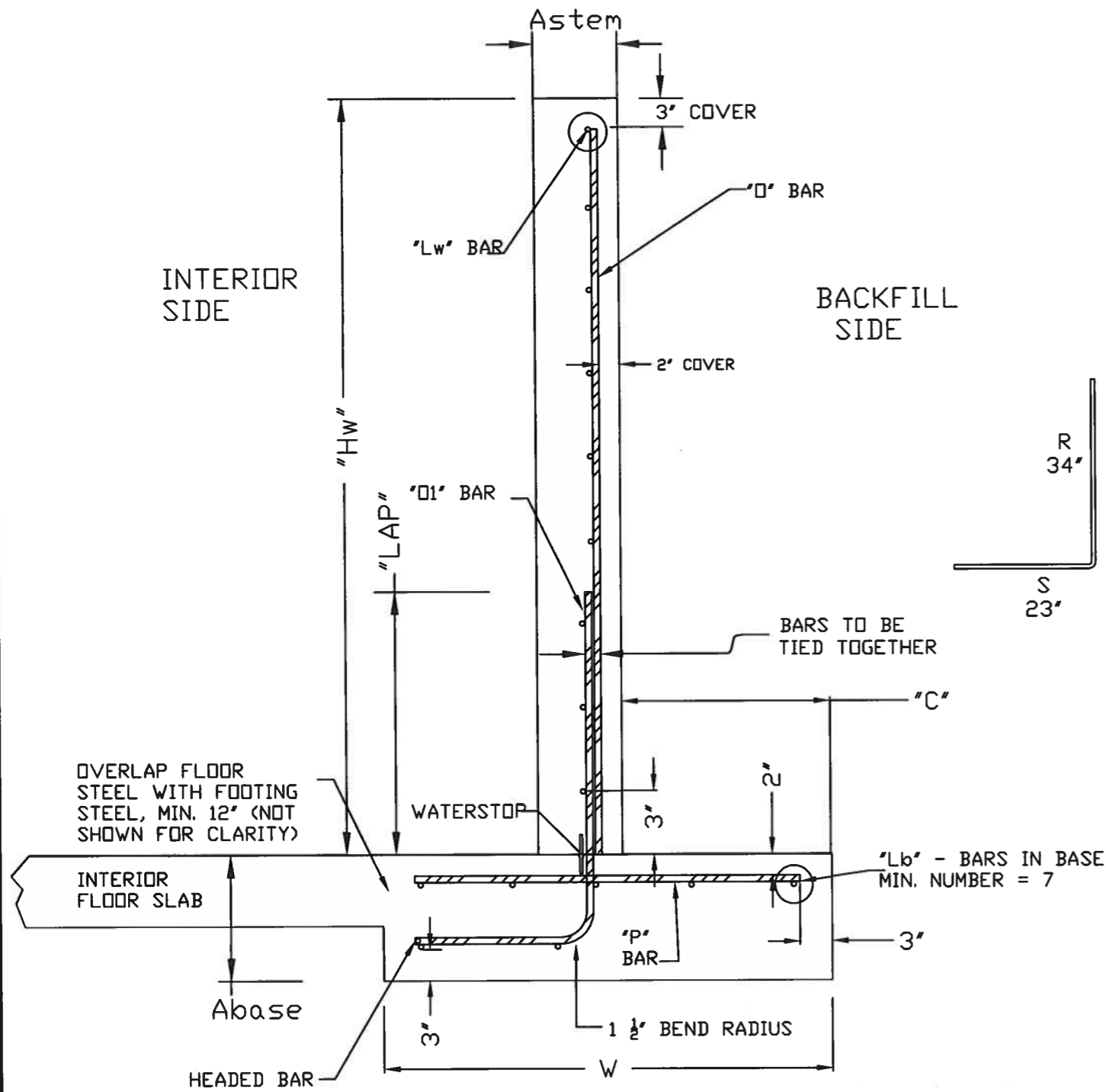
LAP SPLICE LENGTH FOR ALL #4 BARS SHALL BE 25".
 LAP SPLICE LENGTH FOR ALL #5 BARS SHALL BE 31".
 LAP SPLICE LENGTH FOR ALL #6 BARS SHALL BE 37".

NOTES

1. ALL CONCRETE IS 4,000 psi,
2. ALL STEEL IS 24,000 psi (GRADE 60)
3. FOUNDATION SHALL BE APPROVED PRIOR TO FLOOR INSTALLATION
4. WATER TABLE MUST BE BELOW THE FOOTING ELEVATION.
4' PERMINER DRAIN REQUIRED WITH FREE OUTLET AND ANIMAL GUARD.
5. STAGGER ALL JOINT SPLICES
6. WATERSTOP SHALL BE 4' VINYL-BULB TYPE
7. FOOTING AND FLOOR CONCRETE TO BE PLACED ON MIN. OF 4' OF AASHTO #57 STONE



CRSI CANTILEVERED RETAINING WALL-6' HEIGHT
 CRSI DESIGN GUIDE FOR CANTILEVERED RETAINING WALLS,
 1ST EDITION & CRSI DESIGN HANDBOOK 2008, 10TH EDITION



DIMENSIONS	
Hw	6'
Astem	8"
C	1'-8"
W	3'-7"
Abase	12"
Lap ('O1' bar height above footer)	25"

STEM REINFORCEMENT	
'O'	#4 @ 9"
'O1'	#4 @ 9"
'Lw'	#4 @ 11"

BASE REINFORCEMENT	
'P'	#4 @ 9"
'Lb'	5-#4 BARS
'HEADED'	#4 @ 9"

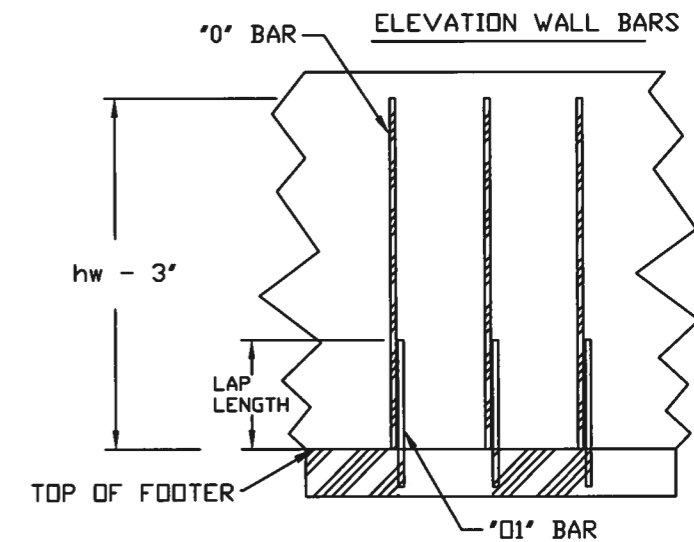
SOIL PROPERTIES	
μ	0.45
γ	130 pcf
ϕ	30 deg.
BACKFILL SLOPE	LEVEL

'O1' BAR REQUIREMENTS:



BAR SIZE	BEND DIAMETER (D) INCHES
#4	3
#5	3-3/4
#6	4-1/2

- LAP SPLICE LENGTH FOR ALL #4 BARS SHALL BE 25".
- LAP SPLICE LENGTH FOR ALL #5 BARS SHALL BE 31".
- LAP SPLICE LENGTH FOR ALL #6 BARS SHALL BE 37".

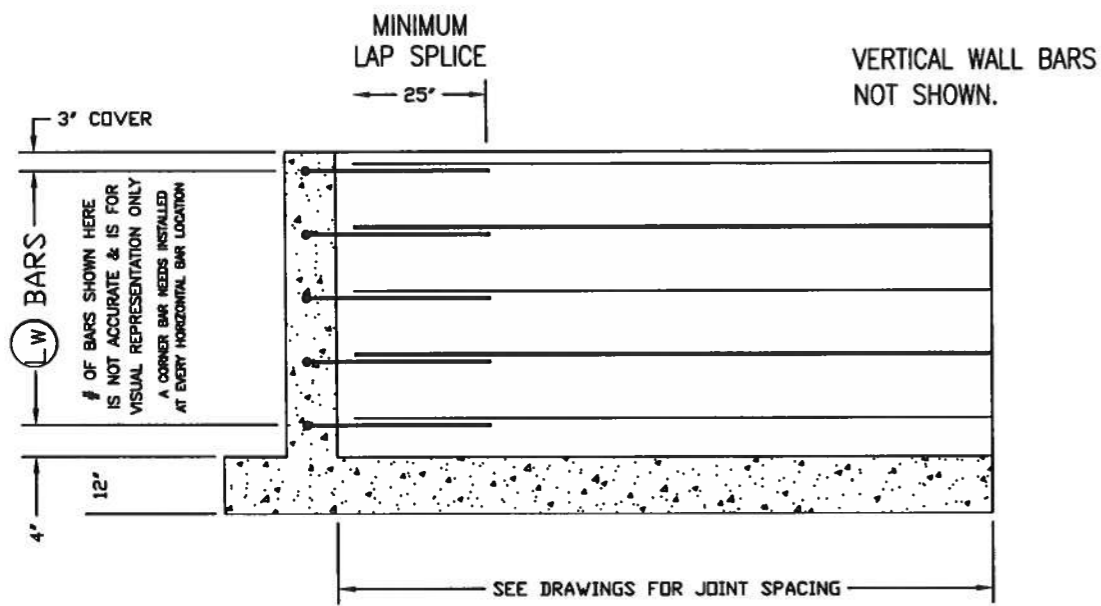


NOTES

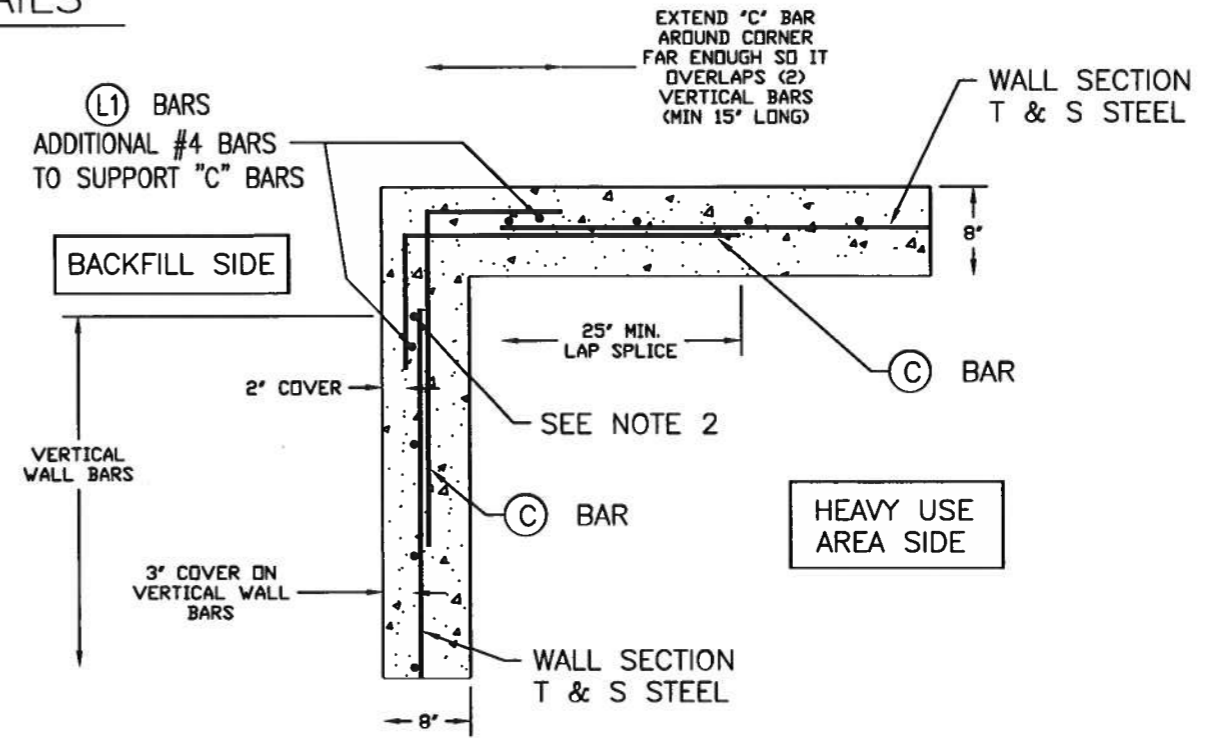
- ALL CONCRETE IS 4,000 psi,
- ALL STEEL IS 24,000 psi (GRADE 60)
- FOUNDATION SHALL BE APPROVED PRIOR TO FLOOR INSTALLATION
- WATER TABLE MUST BE BELOW THE FOOTING ELEVATION.
4" PERMINER DRAIN REQUIRED WITH FREE OUTLET AND ANIMAL GUARD.
- STAGGER ALL JOINT SPLICES
- WATERSTOP SHALL BE 4" VINYL-BULB TYPE
- FOOTING AND FLOOR CONCRETE TO BE PLACED ON MIN. OF 4" OF AASHTO #57 STONE

DEAN POWERS
 6' CRSI WALL DETAIL
 (NO VEHICLE LOADING)
 MISSISSIPPI COUNTY, MO

6' WALL CORNER DETAILS



WALL ELEVATION
SHOWING CORNER DETAIL



PLAN VIEW
WALL CORNER DETAIL

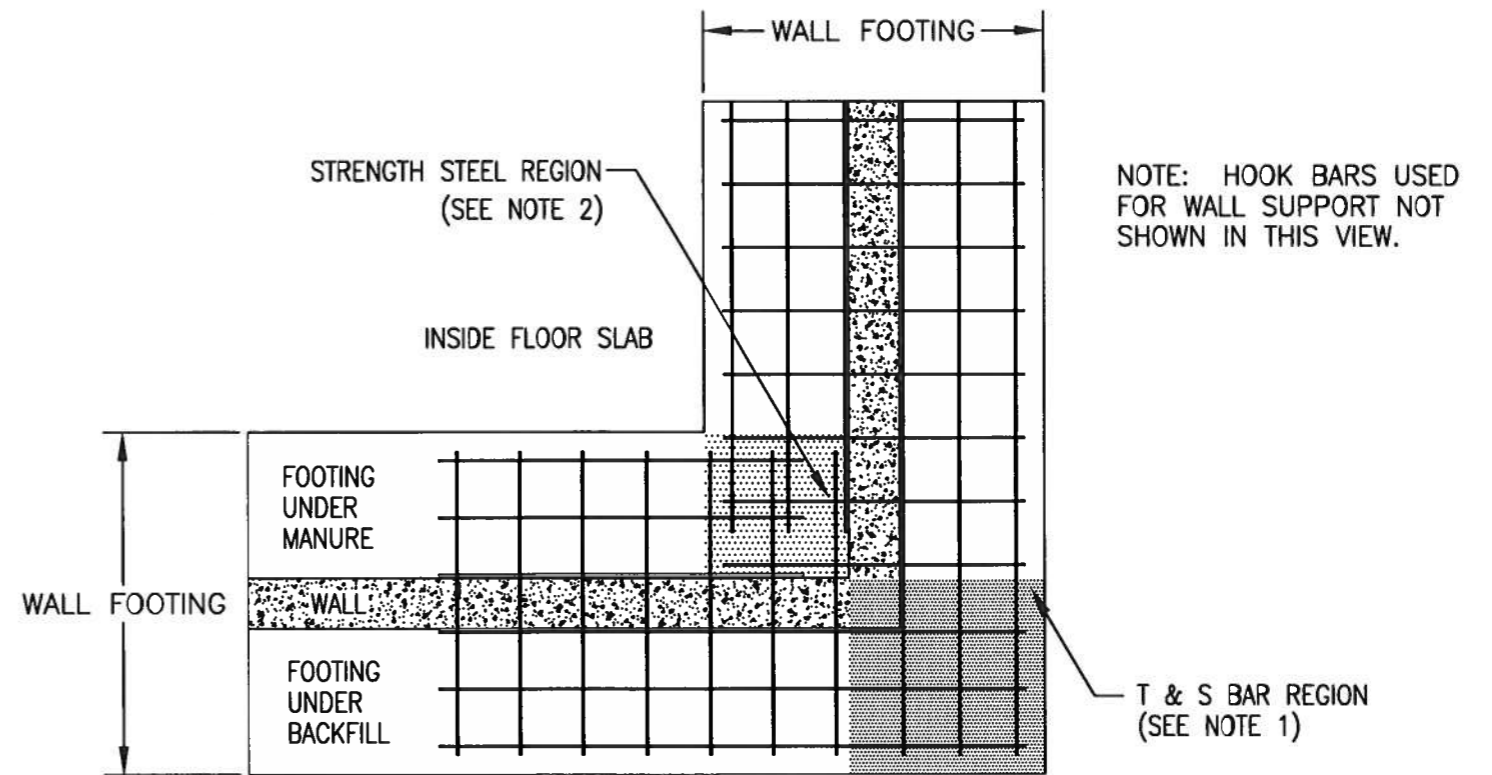
ADAPTED AND MODIFIED FROM STANDARD DRAWING # PA-027A

NOTES:

1. (C) BARS SHALL BE PLACED AT EVERY (Lw) BAR LOCATION SEE WALL DRAWINGS FOR BAR SIZE AND SPACING.
2. PLACE FIRST VERTICAL BAR (SEE PLAN VIEW) AT WALL CORNER, OR NO FARTHER THAN ONE-HALF THE VERTICAL BAR SPACING FROM THE CORNER.

NOTES FOR FOOTING STEEL PLACEMENT

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



SLAB FOOTING CORNER DETAIL

DRAWING ADAPTED & MODIFIED FROM STANDARD DRAWING # PA-023

DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	

DEAN POWERS
6' WALL CORNER DETAIL
SULLYVILLE, OHIO

United States
Department of
Agriculture
USDA
Natural Resources

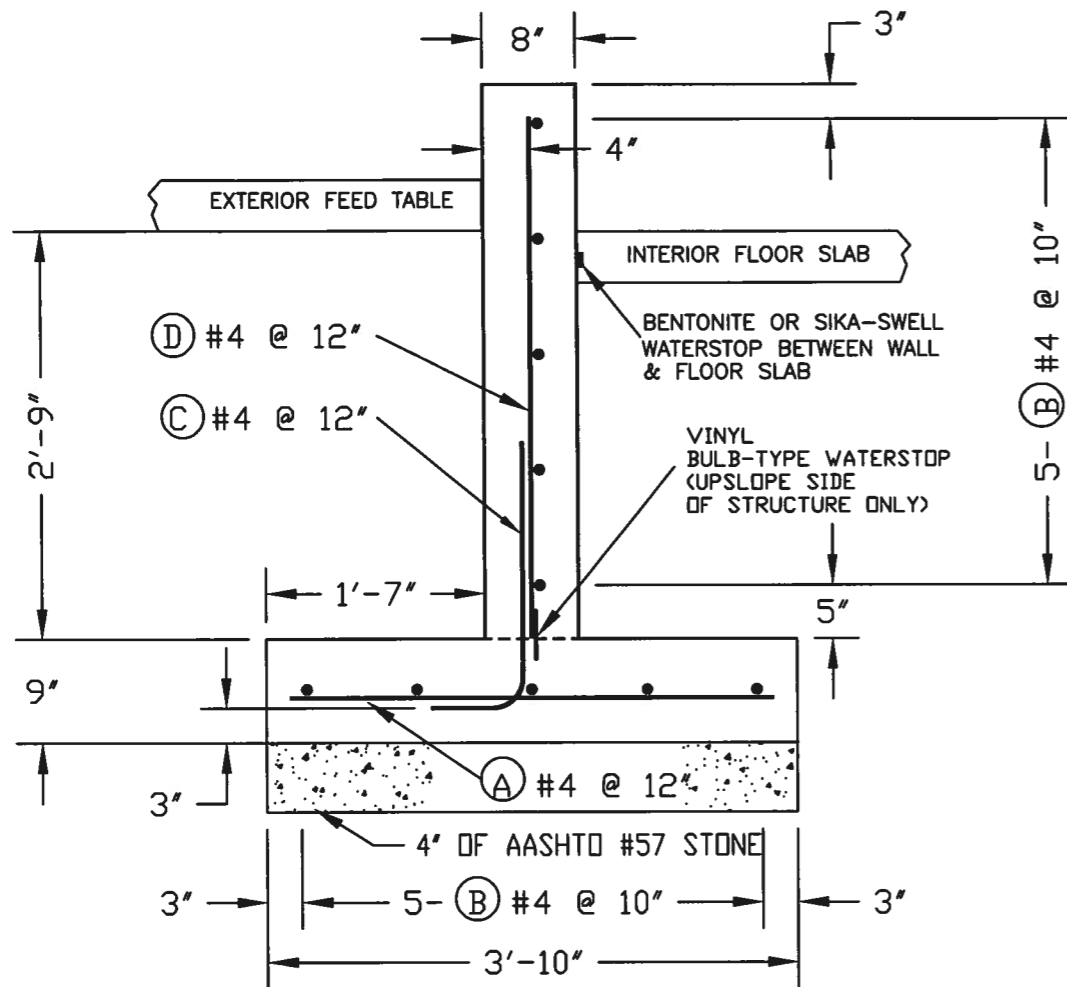
FILE NO.
POWERS
DESIGN_RECOVER.DWG

DRAWING NO.

SHEET 14 OF 3

4' WALL IS TO BE BURIED 2'-9", LEAVING 15" OF CURB HT ABOVE INTERIOR FLOOR SLAB.

ROOF SUPPORT POSTS TO BE ANCHORED TO TOP OF WALL



ESTIMATED QUANTITIES

CONCRETE (0.21 CU.YDS./LIN.FT.)	_____	CU. YDS.
STEEL (20.67 FT./LIN. FT.)	_____	FT.
STEEL (35.0 FT./CORNER)	_____	FT.

- CONCRETE SHALL MEET PA 313 OR 561 SPECIFICATION REQUIREMENTS.
- MINIMUM SPLICE LENGTH FOR ALL #4 BARS IS 16".
- STEEL QUANTITY DOES NOT INCLUDE SPLICE LENGTHS.
- REBAR SHALL BE GRADE 60.

GENERAL DESIGN NOTES:

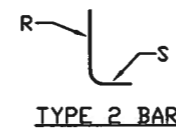
- DRAINAGE SHALL BE AWAY FROM THE WALL.
- THE MINIMUM TOP WIDTH OF THE BACKFILL AGAINST THE WALL SHALL BE EQUAL TO OR GREATER THAN THE BACKFILL HEIGHT.
- MAXIMUM FOOTING CONTACT PRESSURE IS 900 psf/ft.

DESIGN STRENGTHS: WORKING STRESS DESIGN

CONCRETE $f_c = 4,000$ psi STEEL $f_s = 24,000$ 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. AND 85 psf/ft.
- NO HORIZONTAL SURCHARGE ADDED.
- SOIL BACKFILL DENSITY = 110 pcf.
- WATER TABLE MUST BE BELOW THE FOOTING ELEVATION



STEEL SCHEDULE

MARK	SIZE	TYPE	R	S	LENGTH
A	4	STR	---	---	3'-6"
B	4	STR	---	---	
*C	4	2	2'-0"	9'	2'-9"
*D	4	STR	---	---	3'-9"
L	4	2	2'-0"	9'	2'-9"
L1	4	STR	---	---	3'-9"

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

NOTES:

1. FOR FROST PROTECTION, A 2-FOOT BACKFILL IS REQUIRED.
2. DIMENSIONS ARE TO THE REINFORCING BAR SURFACE.

ADAPTED AND MODIFIED FROM STANDARD DRAWING # PA-020D

DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	

DEAN POWERS
4' PARTIALLY BURIED WALL DETAIL

United States
Department of
Agriculture
Natural Resources

FILE NO.
POWERS DESIGN.DW

DRAWING NO.

SHEET 15 OF 3

Roof Structure Design & Construction Notes

1. Trusses shall be used for this roof. Shop drawings shall be provided to the NRCS design engineer for approval prior to ordering the trusses and "PE" (Professional Engineer) sealed shop drawings 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.
 2. All nails shall have full heads; Clipped heads are not acceptable.
 3. All nails and bolts used with pressure treated wood shall be hot-dip galvanized nails that meet the minimum galvanized coating requirements for the most restrictive wood preservative treatment method. (i.e. CCA treated wood requires a minimum coating rating of G-90 however ACQ treated wood requires a coating rating of G-185. When the wood types are mixed, use the G-185 connectors. Consult with individual fastener, hardware manufacturer for recommendations)
- CAUTION:** New wood preservative treatment methods require special fasteners and connectors. All plates and fasteners used with ACQ, CBA or CA treatment formulas must conform to ASTM standards; ASTM A153 for Hot-dip fasteners, and A653 for Hot-dip connector and sheet products. This change increases the galvanized coating requirements to a designation of G-185. Stainless steel fasteners and connections may be used in place of Hot-dip galvanized products. Electro Galvanized fasteners/connectors are not permitted for use.
4. Nails for structural connections shall be galvanized or stainless steel, and ring shank. Nails 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 manure shall be pressure treated as per American Wood Preserver's Association Standard (posts shall be treated to 0.6 #/cu.ft. and all other wood shall be treated to 0.4 #/cu.ft.)
 7. All structural members which includes; All posts, wye and knee bracing, bearing blocks, truss support blocks, and girders/headers; (excluding microlam girders/headers) shall be Southern Yellow Pine No. 2 Grade (Surface dry, used at 19% maximum moisture content). All secondary members such as permanent or continuous bracing shall be (SYP) Southern Pine No. 3, (SPF) Spruce-Pine-Fir No. 2 or better.
Purlins shall be SYP No. 2, SPF No. 2, or better if spaced at 2' centers
Purlins shall be SYP No. 3 or better if spaced at 1.5' centers
 8. Post and Girder/Header Requirements:
 - 8.1. Posts are to be 4-ply 2"x8" and 5-ply 2"x8" in size & pressure treated, Glue Laminated. Posts are to be fully pressure treated the entire height. If landowner decides to enclose gable end of structure, posts are to be 4-ply 2"x6" in size & pressure treated.
 - 8.2. Girders: Twin 1.75"x9.75" 2.0E LVL (M=6,271ft-lb; Fb=2900psi; Fv=320psi)
Headers: 7"x16" 2.0E PSL Beam (M=69,905ft-lb; Fb=2900psi; Fv=290psi)

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. Knee and Wye bracing are required for the posts and girders as shown. Wye bracing shall be installed AFTER all roof framing is complete. No Wye bracing shall be installed on the "inside" of the entrance locations.
11. 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-nail connection without using toenails.
12. 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 BCSI-B3 and the detailed drawing.
13. Roofing material shall be steel or aluminum. Steel shall be galvanized steel, painted galvanized steel, or painted steel. Type of roofing to be discussed with landowner prior to bid solicitation. Steel roofing material shall be 29 gauge minimum. Aluminum roofing material shall have a minimum nominal thickness of .018 inches. Galvalume roofing is not permitted for use.
14. Roof fasteners shall be a combination of zinc coated steel and neoprene washer. Double stitch the seams of the roof edges. Typical steel roof shall have fasteners on a 9' spacing on the purlins 24' on center.
15. End trusses shall be faced with roofing material, as specified above. This shall be discussed with the landowner prior to bid solicitation.
16. Ventilation shall be provided at the ridge or through the openings in the end trusses. Ventilation shall be provided to offer at least 2' of opening per 10' of building width.
17. ~~Earth backfill around posts shall be placed in compacted 8' lifts.~~
18. Add a barrier membrane (15 pound roof felt) between post and bracket.
19. The roof was designed to carry a combined loading of 40 psf, according to ASCE-7 (Most Conservative Combined Load Formula), on the entire roof surface. The roof was also designed for a uniform uplift of 16 psf under the entire roof. This roof is design for curtains on (3) sides of the structure. Consult with the design engineer if other means of siding is being considered.

DATE	4/23	4/23	
DESIGNED	PAS	DRAWN	PAS
CHECKED		APPROVED	

DEAN POWERS
ROOF DESIGN AND CONSTRUCTION NOTES

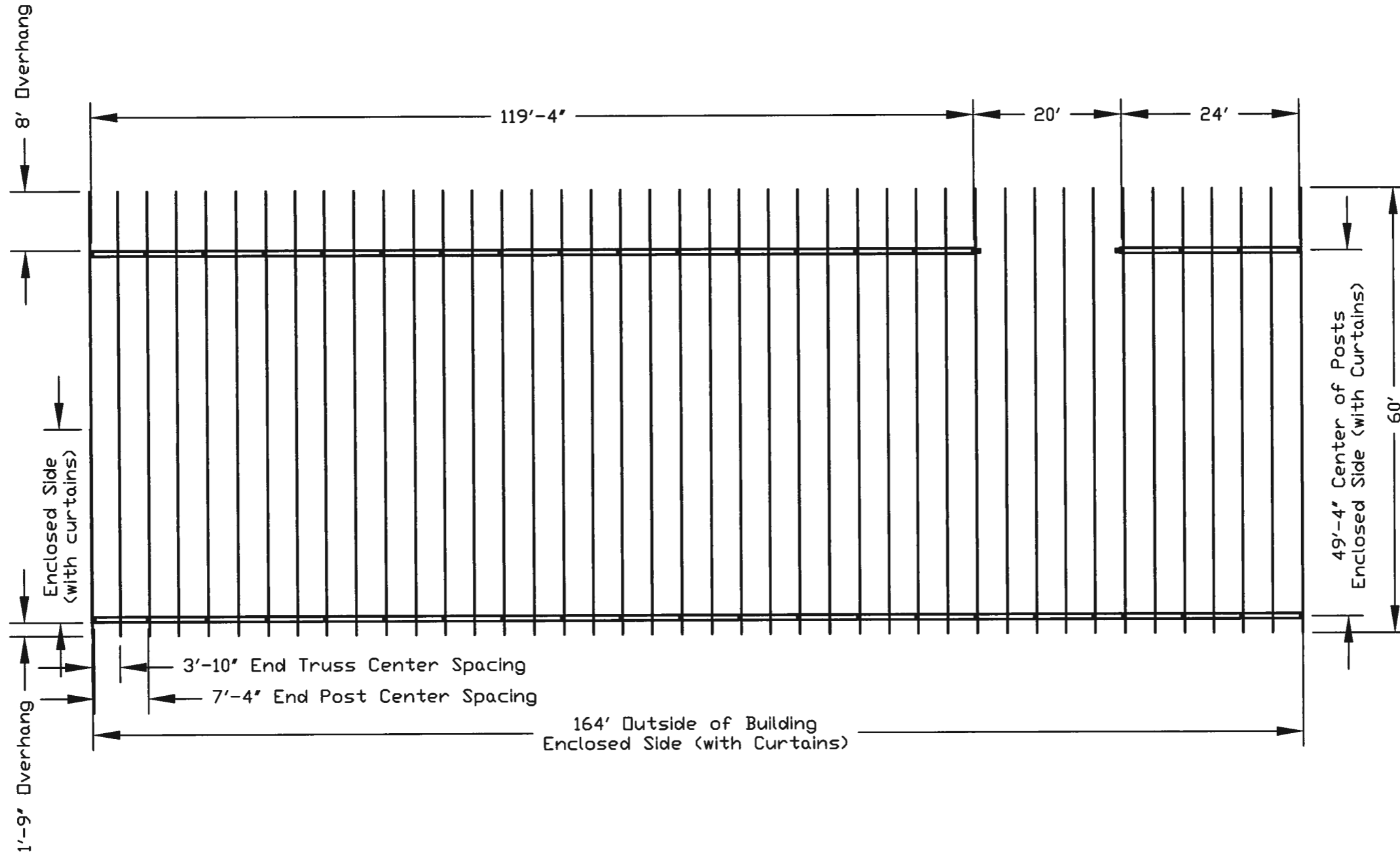
JACKSON TOWNSHIP
SUSQUEHANNA COUNTY, PA

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Natural Resources
Conservation Service

FILE NO.
POWERS DESIGN.DWG

DRAWING NO.

SHEET 16 OF 31



All Posts on North (front) of Structure are 5-Ply 2"x8" Glu-Lam
 All Posts on South (rear) of Structure are 4-Ply 2"x8" Glu-Lam

Enclosed Sides: To Be Enclosed with Curtains

Post Spacing 8' o.c. Except Where Shown
 Install Double Posts on Both Sides of Opening
 Posts to be Installed in Center of Concrete Wall

Twin Girders: 1.75"x9.25" LVLs
 Beam at Opening = 7"x16" PSL

Use SW84GL, SW85GL, SW80 Universal, and SW60 Corner Brackets

Trusses 4' o.c. Except Where Shown

DESIGNED	PAS	DATE	4/23
DRAWN	PAS		4/23
CHECKED			

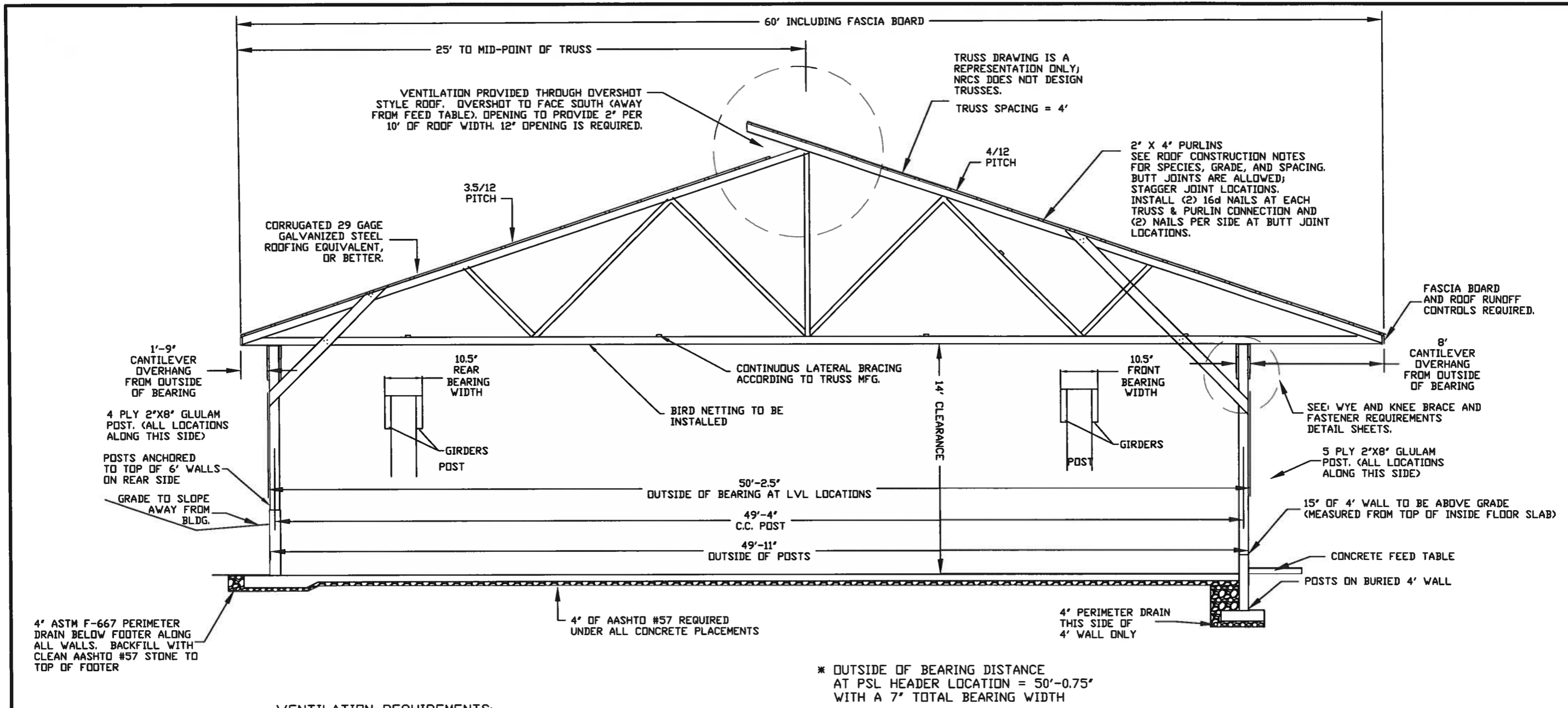
DEAN POWERS
 DETAILED ROOF PLAN VIEW
 MISSOURI TOWNSHIP
 MISSOURI COUNTY, MO

United States
 Department of
 Agriculture
 Natural Resources

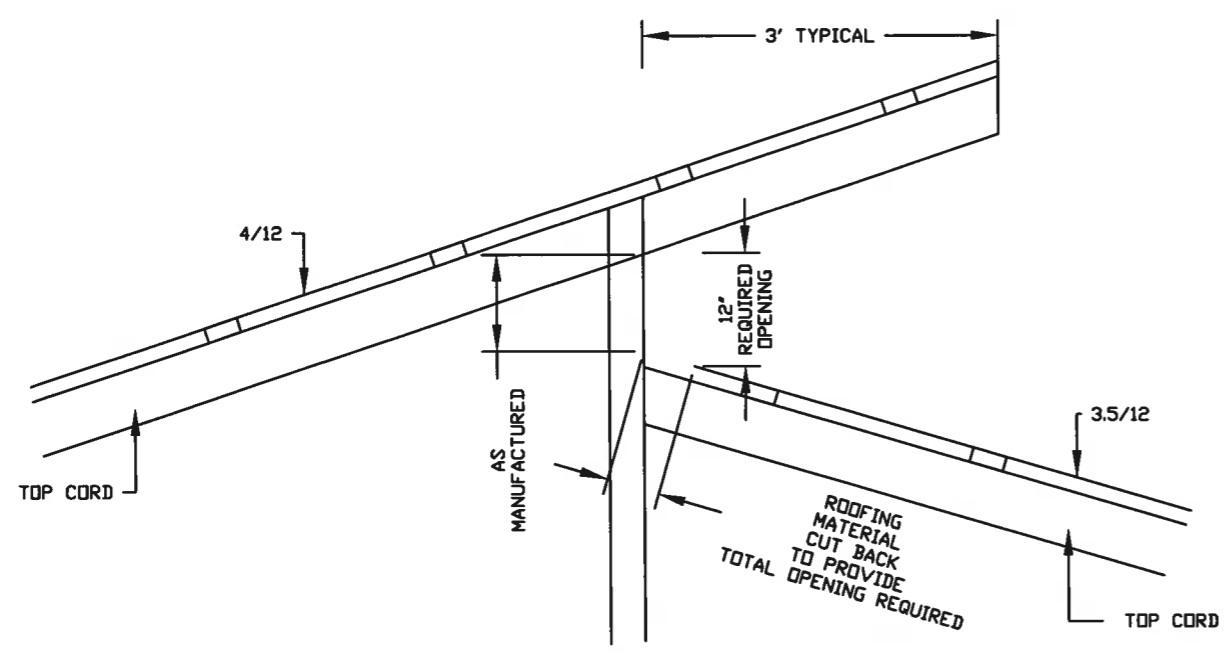
FILE NO.
 POWERS
 DESIGN_RECOVER.DW

DRAWING NO.

SHEET 17 OF 31



VENTILATION REQUIREMENTS:



GENERAL NOTES:

- TRUSS SHOP DRAWINGS SHALL BE PROVIDED TO THE NRCS DESIGN ENGINEER FOR APPROVAL PRIOR TO THE TRUSSES BEING MADE.
- TRUSS SHALL BE DESIGNED WITH THE FOLLOWING PARAMETERS:
 - IMPORTANCE FACTOR: CAT. II (I=1.00)
 - BUILDING CLASSIFICATION: PARTIALLY ENCLOSED
 - UNBALANCED SNOW LOAD SHALL BE INCLUDED
 - THERMAL FACTOR (Ct)=1.2, EXPOSURE FACTOR (Ce)=1.0 (TERRAIN 'C', PARTIALLY EXPOSED)
 - GRAVITY REACTIONS MUST YIELD A MINIMUM OF: 40 PSF (TCLL + TC DL + BCDL) COMBINED LOADING
 - UPLIFT REACTIONS MUST YIELD A MINIMUM OF: 16 PSF UNIFORM UPLIFT
- KNEE BRACES SHALL BE INSTALLED ON 45 DEGREES AND SHALL EXTEND TO THE TOP CHORD OF THE TRUSS.
- TRUSS SHALL HAVE 'CANTILEVERED' OVERHANGS; NO 'TAILED/SLOPING' OVERHANGS ALLOWED.

POST ON WALL INSTALLATION

ALL BRACKETS TO BE STURDI-WALL MODELS

SKETCHES ARE NOT TO SCALE

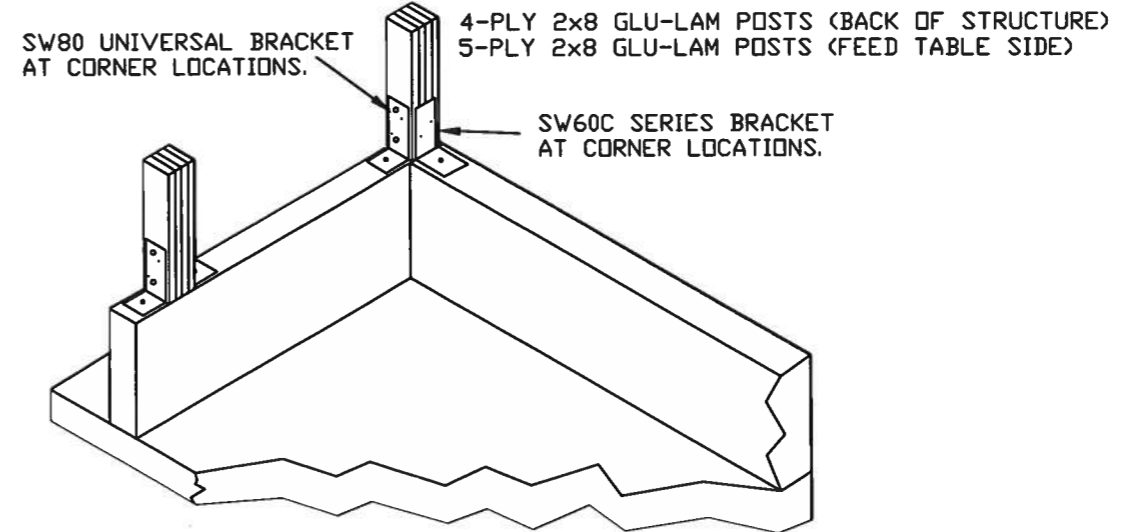
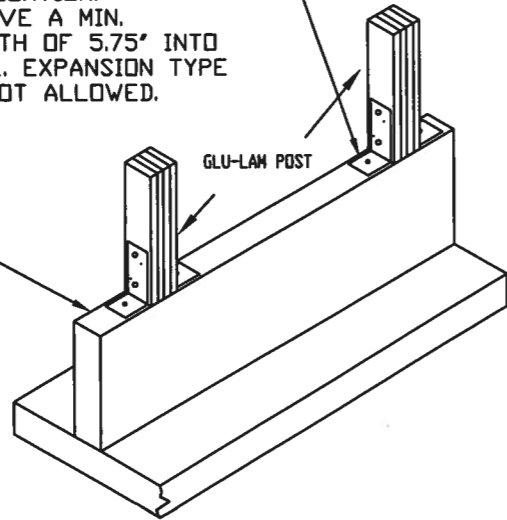
4-PLY POSTS SHOWN, BUT THERE ARE BOTH
4-PLY & 5-PLY POSTS REQUIRED

POST PLY'S TO RUN PARALLEL WITH TRUSSES

ADD A BARRIER MEMBRANE (15 POUND ROOF FELT)
BETWEEN POST AND BRACKET TO PROVIDE
CORROSION PROTECTION

STURDI-WALL SW84GL AND
SW85GL DRY SET BRACKETS ARE
REQUIRED.
5/8" EPOXY OR SCREW TYPE
ANCHORS REQUIRED FOR
DRY SET INSTALLATION.
ANCHORS TO HAVE A MIN.
EMBEDMENT DEPTH OF 5.75" INTO
CONCRETE WALL. EXPANSION TYPE
ANCHORS ARE NOT ALLOWED.

EXTEND WALL 1' BEYOND
POST TO INSTALL BRACKET



DESIGNED	PAS	DATE	4/23
DRAWN	PAS		4/23
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DEAN POWERS
POST ON WALL DETAILS

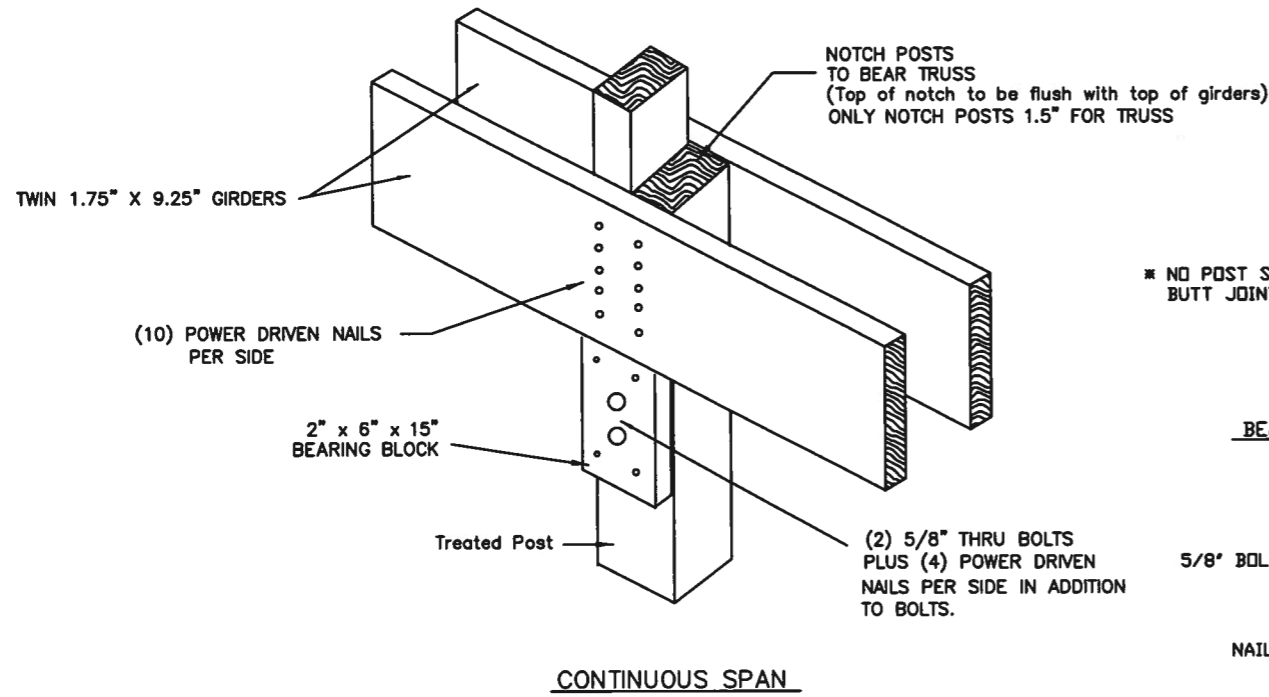
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FILE NO.
POWERS DESIGN.DWG

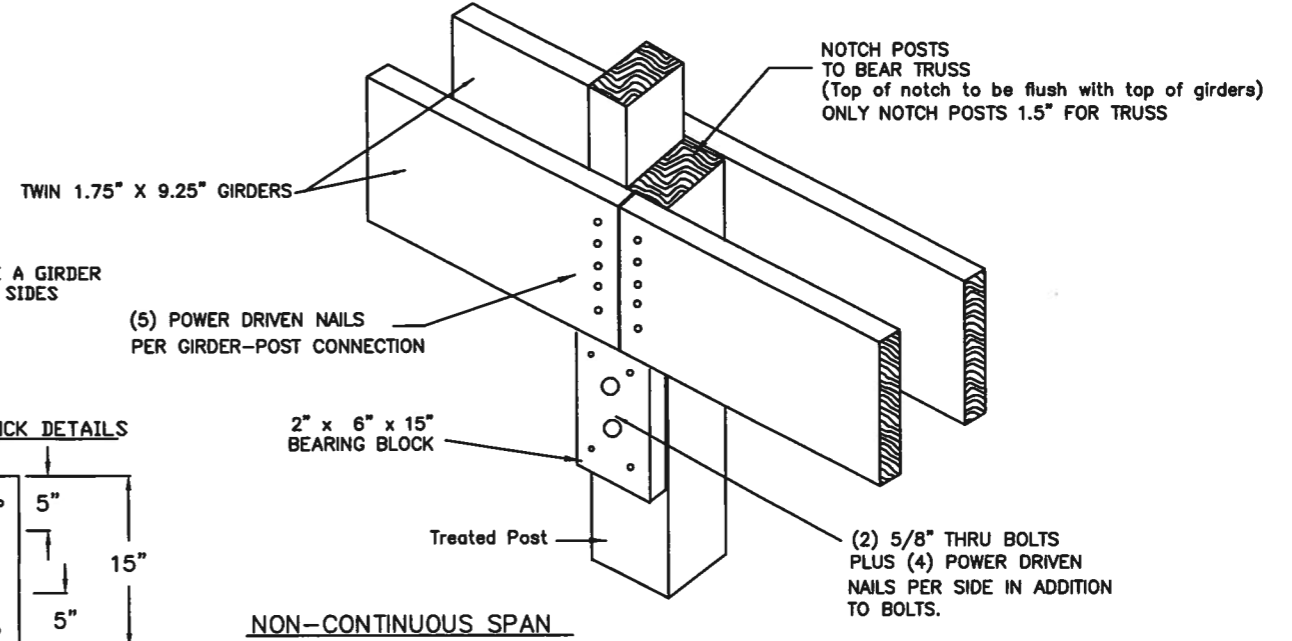
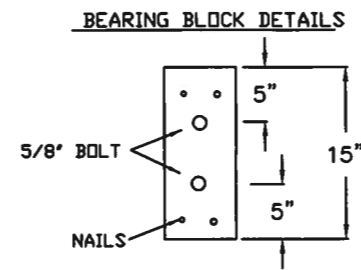
DRAWING NO.

SHEET 19 OF 3

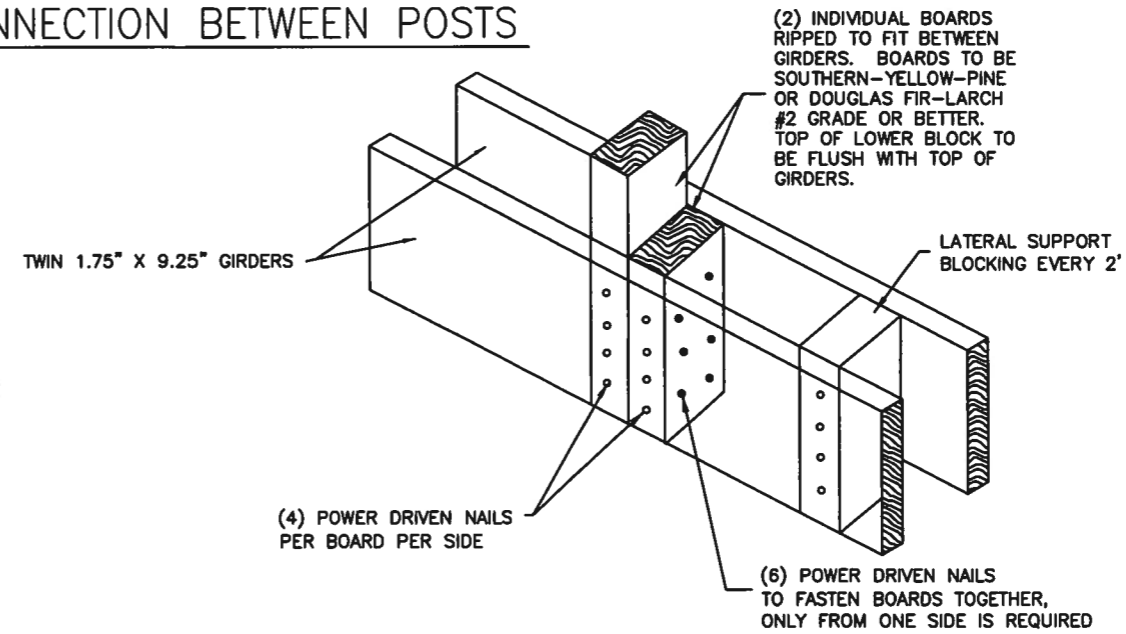
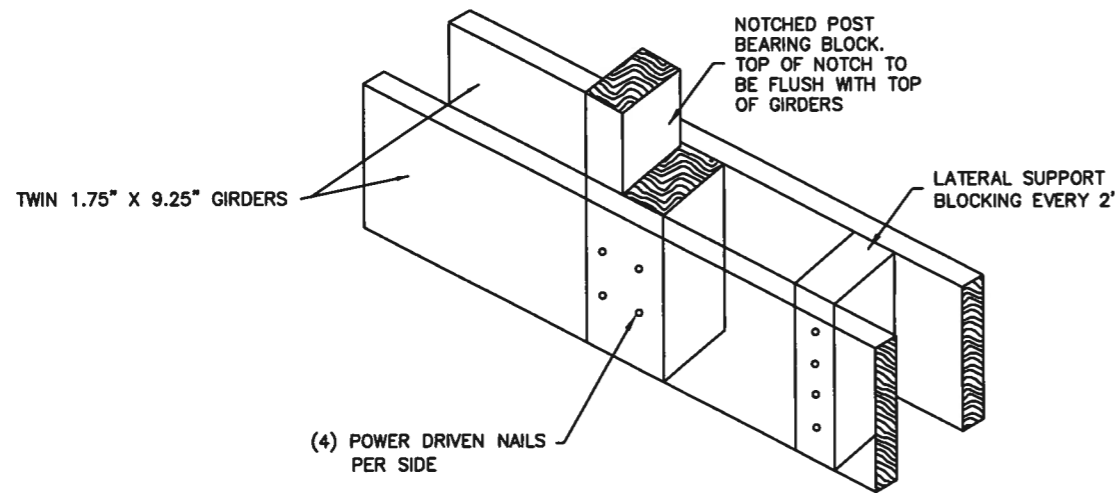
FASTENER REQUIREMENTS AT GIRDER & POST CONNECTIONS



* NO POST SHALL HAVE A GIRDER BUTT JOINT ON BOTH SIDES



OPTIONS FOR TRUSS CONNECTION BETWEEN POSTS



CONSTRUCTION NOTES

1. Bolts shall be installed in the middle of the support block.
2. All nails shall be .131" Diameter x 3.25" Long (Min.), galvanized, and ring shank.
3. LVL's need to be supported every 2' as per the LVL Manufacturer; A single block, ripped to fit, between the LVL's will suffice. Install (4) power driven nails per side from LVL into the blocking.

DATE 4/23

PAS

DESIGNED

PAS

DRAWN

CHECKED

DEAN POWERS

FASTENER REQUIREMENTS AT GIRDER AND

POST CONNECTIONS

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Department of
Agriculture

USDA

FILE NO.

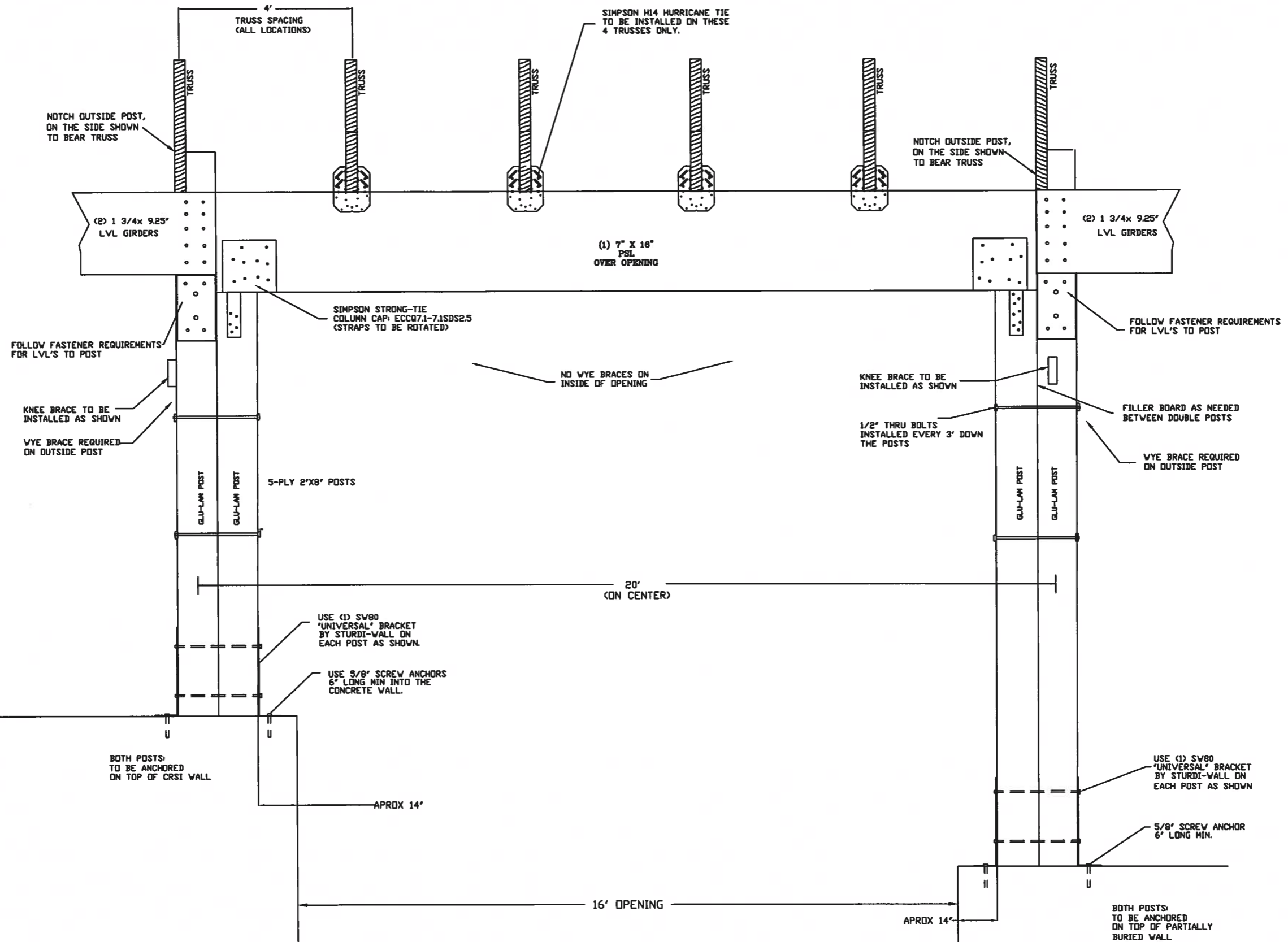
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SHEET 20 OF 3

Natural Resources

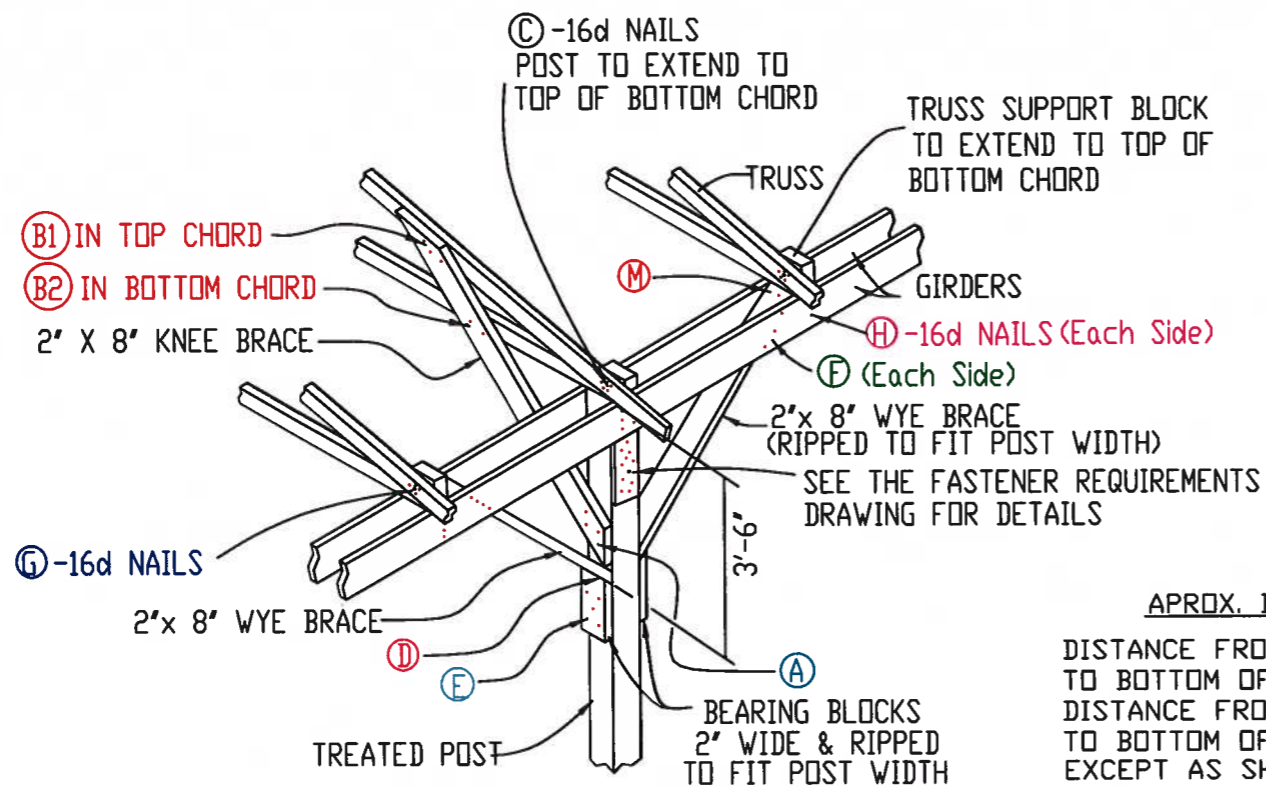
FASTENER REQUIREMENTS AT ENTRANCE LOCATION



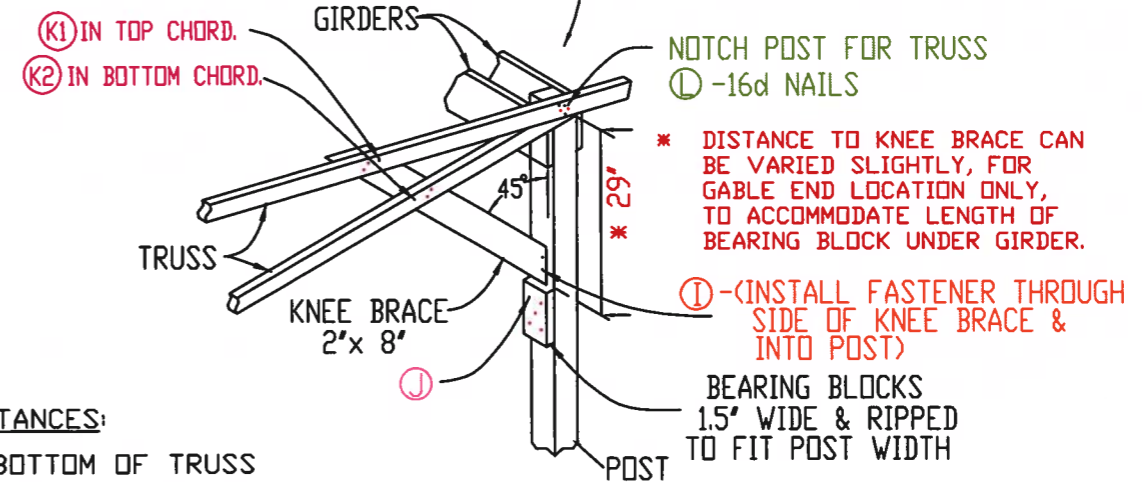
DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	

DEAN POWERS
PSL BEAM DETAILS AT OPENING

United States Department of Agriculture
USDA Natural Resources



GIRDER SUPPORT BLOCK IS REQUIRED BUT NOT SHOWN, FOR DRAWING CLARITY.



APPROX. DISTANCES:
 DISTANCE FROM BOTTOM OF TRUSS TO BOTTOM OF WYE BRACE = 42"
 DISTANCE FROM BOTTOM OF TRUSS TO BOTTOM OF KNEE BRACE = 36", EXCEPT AS SHOWN ON END POSTS.

BRACING AT END OF BUILDING

* KNEE BRACE SHALL BE ATTACHED TO SIDE OF POST BUT CAN BE ATTACHED AS SHOWN ON END POST ONLY.

BRACING DETAIL

TABLE 1

		*NUMBER OF NAILS REQUIRED		
		BASED ON THE 'LENGTH' OF ROOF CONTRIBUTING TO THAT CONNECTION		
	JOINT	22.5' MAX (TRIBUTARY LENGTH)	27.5' MAX (TRIBUTARY LENGTH)	38' MAX (TRIBUTARY LENGTH)
SCREWS	A	SEE KNEE BRACE DETAILS DRAWING		
SCREWS	B1 & B2	SEE KNEE BRACE DETAILS DRAWING		
Power Driven 16d *See Note #5*	C	7	8	9
SCREWS	D	SEE WYE BRACE DETAILS DRAWING		
SCREWS	E	SEE WYE BRACE DETAILS DRAWING		
SCREWS	F	SEE WYE BRACE DETAILS DRAWING		
Power Driven 16d *See Note #5*	G	7	8	9
Power Driven 16d *See Note #3*	H	4	4	4
SCREWS	I	SEE KNEE BRACE DETAILS DRAWING		
SCREWS	J	SEE KNEE BRACE DETAILS DRAWING		
SCREWS	K1 & K2	SEE KNEE BRACE DETAILS DRAWING		
Power Driven 16d	L	6	7	7
SCREWS	M	SEE WYE BRACE DETAILS DRAWING		

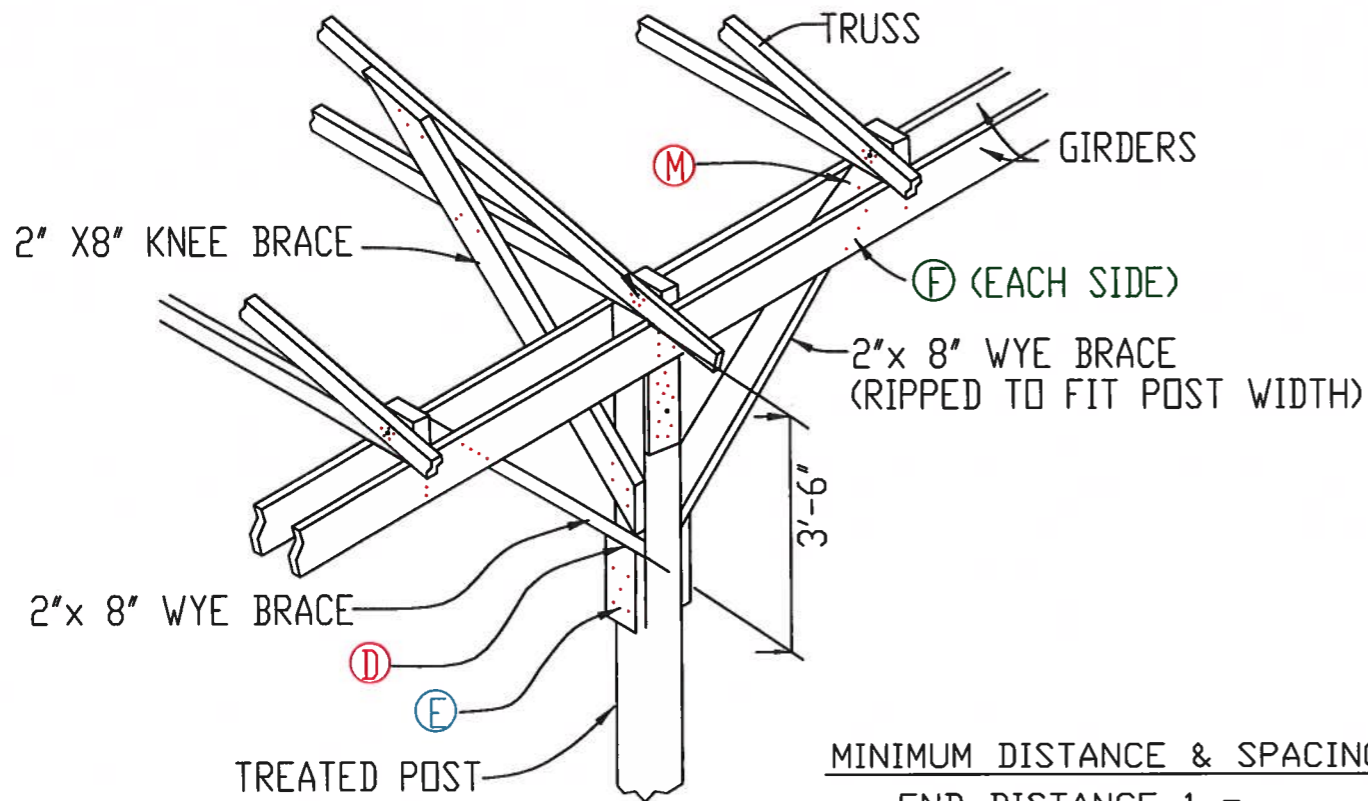
NOTES:

- POSTS SHALL BE NOTCHED TO ACCOMMODATE TRUSSES. THE NOTCH SHALL BE CUT FLUSH WITH THE TOP OF THE GIRDER SO THE TRUSSES SIT ON THE NOTCH AND ON TOP OF BOTH GIRDERS EQUALLY. ONLY NOTCH THE POST 1.5' FOR THE TRUSS.
 NOTCH THE SIDE OF THE POST, NOT THE CENTER.
- 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).
- JOINT H; IF TWO BOARDS ARE USED INSTEAD OF A POST SECTION THEN EACH BOARD SHALL HAVE (4) NAILS PER SIDE. THE BOARDS SHALL ALSO BE NAILED TOGETHER WITH (6) NAILS.
 ALL NAILS FOR THIS CONNECTION CAN BE POWER DRIVEN 16D.
 ALL BLOCKS SHALL BE SOUTHERN YELLOW PINE #2.
- HURRICANE (TIE DOWN) STRAPS CAN ALSO BE USED TO ANCHOR TRUSSES TO GIRDERS. THERE SHALL BE A STRAP(S) INSTALLED TO ANCHOR THE TRUSSES TO EACH GIRDER. IF THIS OPTION IS CHOSEN, DISCUSS WITH THE DESIGN ENGINEER IN ADVANCE.
- JOINT C & G: THE AMOUNT OF NAILS LISTED CAN BE DISTRIBUTED BETWEEN BOTH TRUSS CHORDS.
- THE WYE AND KNEE BRACES SHALL BE INSTALLED AT A 45 DEGREE ANGLE FROM THE TREATED POST. INSTALL THE WYE BRACES AFTER THE TRUSSES ARE SET.
- DRILL PILOT HOLES AS NEEDED TO PREVENT SPLITTING. SCREWS IN SPLIT HOLES DO NOT COUNT TOWARD CONNECTION.
- NAILS IN CONTACT WITH PRESSURE-TREATED WOOD SHALL BE GALVANIZED.
- THE 16d POWER DRIVEN NAILS ARE BASED ON 0.131 DIAMETER X 3.25' LONG (GALVANIZED OR STAINLESS STEEL & RING SHANK)
- THE SCREWS SHALL BE LEDGER-LOK LL358 WITH HEX WASHER STYLE HEAD (BY FASTEN-MASTER). OTHER SCREW TYPES CAN BE CONSIDERED IF THE DESIGN TABLES, SUPPLIED BY THE SCREW MFG, ARE SUBMITTED TO THE DESIGN ENGINEER FOR CONSIDERATION PRIOR TO CONSTRUCTION.

Date 1/2023
 Designed BTO STD DRAWING
 Drawn RGD
 Checked 1/2023

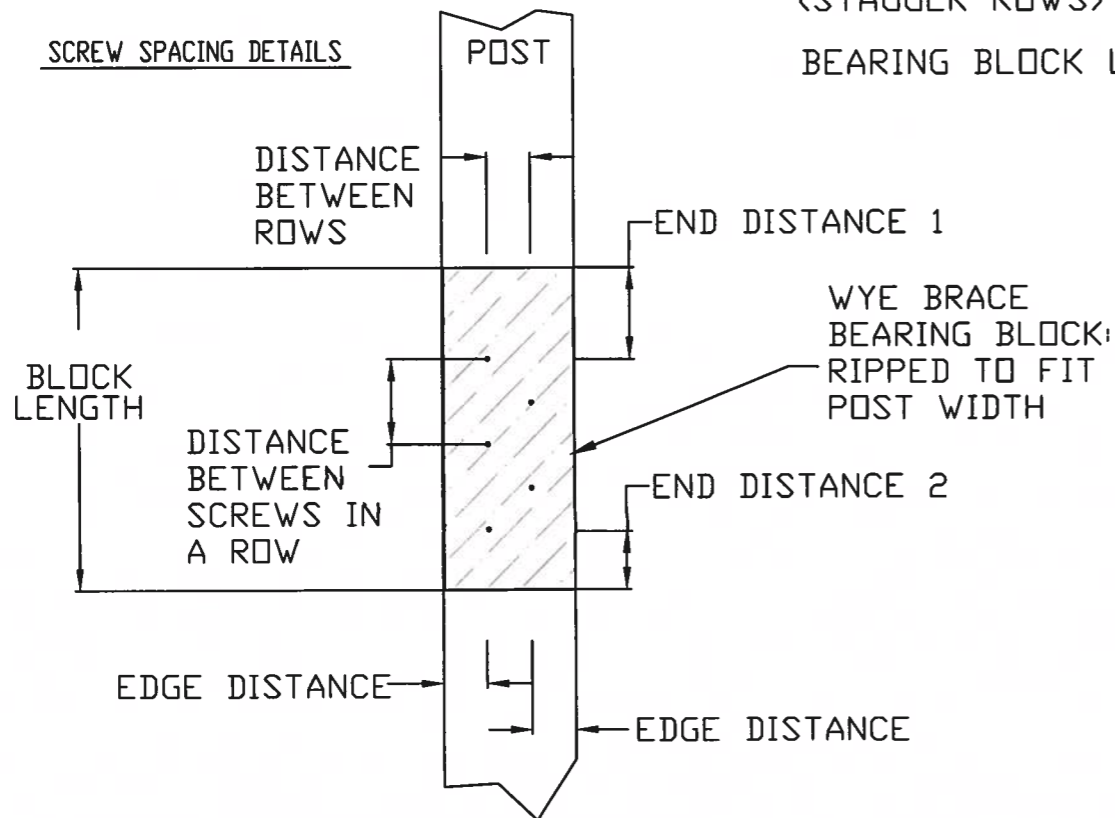
FASTENER REQUIREMENTS

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 USDA
 File No.
 Drawing No.
 Sheet 22 of



MINIMUM DISTANCE & SPACING (INCHES)

- END DISTANCE 1 = 3 3/4
- END DISTANCE 2 = 2 3/8
- EDGE DISTANCE = 1 3/4
- SPACING BETWEEN SCREWS IN A ROW = 3 1/2
- SPACING BETWEEN ROWS (STAGGER ROWS) = 1 1/4
- BEARING BLOCK LENGTH = 14



EACH END OF WYE BRACE IS TO BE MITERED & BEVELED SO THAT IT FITS SNUG AGAINST THE POST AND THE INTERMEDIATE TRUSS SUPPORT BLOCK.

TABLES BELOW ARE SHOWING THE NUMBER OF LEDGERLOK LL358 SERIES SCREWS REQUIRED. LEDGERLOK IS A PRODUCT OF FASTEN-MASTER.

SCREWS SHALL HAVE A HEX WASHER HEAD, NOT A FLAT HEAD. OTHER SCREW TYPES MAY BE CONSIDERED FOR USE; SCREW MFG DESIGN TABLES SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONSIDERATION.

PILOT HOLES ARE REQUIRED IN JOINT D, F, AND M. PILOT HOLES MAY BE REQUIRED IN JOINT E IF SPLITTING OCCURS. SCREWS IN JOINT M SHALL BE INSTALLED PERPENDICULAR TO THE SURFACE OF THE WYE BRACE; SO THAT THE SCREWS ARE NOT INSTALLED TOO CLOSE TO THE TOP OF THE BLOCK UNDER THE TRUSS.

"NO WYE" IS ONLY FOR SIDES ENCLOSED WITH STEEL SIDING. IF A SIDE IS ENCLOSED WITH CURTAINS; WYE BRACES ARE NEEDED.

JOINT	MINIMUM SCREW LENGTH	50' SPAN 8' OVERHANG (OPEN SIDE)	50' SPAN 2' OVERHANG (CLOSED SIDE)	50' SPAN 2' OVERHANG (OPEN SIDE)
D	3 5/8"	3	NO WYE	2
E	3 5/8"	4	NO WYE	3
F	3 5/8"	3	NO WYE	3
M	3 5/8"	2	NO WYE	0

Date 1/2023
 Designed BTO STD DRAWING
 Drawn RGD
 Checked 1/2023

WYE BRACE DETAILS

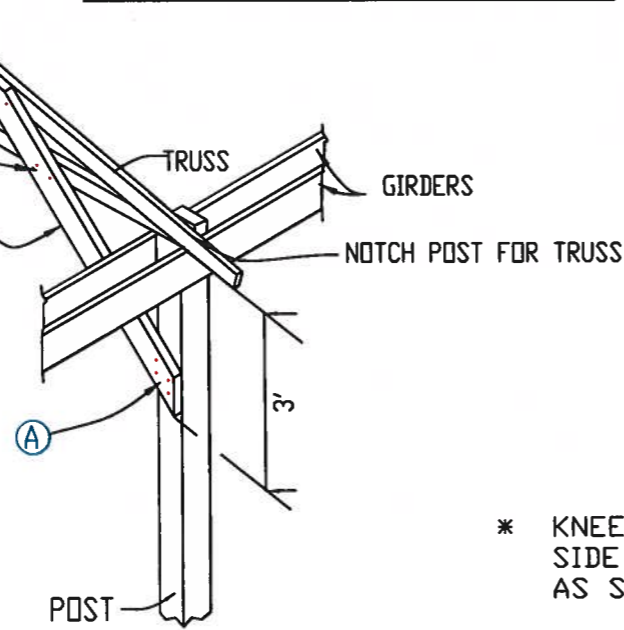
FASTEN KNEE BRACE TO TOP AND BOTTOM CHORDS OF TRUSS USING

(B1) IN TOP CHORD

(B2) IN BOTTOM CHORD

KNEE BRACE, 2'x 8'

KNEE BRACE AT MIDSPAN POSTS



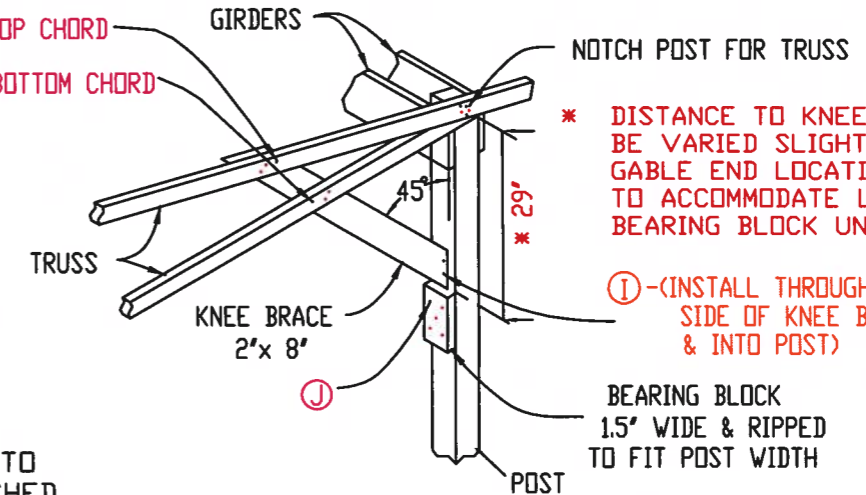
WYE BRACES & BEARING BLOCKS ARE REMOVED FROM THIS DRAWING, FOR DRAWING CLARITY BUT ARE STILL REQUIRED IN THE BUILDING CONSTRUCTION, UNLESS OTHERWISE SHOWN IN THE DRAWINGS.

* KNEE BRACE SHALL BE ATTACHED TO SIDE OF POST, BUT CAN BE ATTACHED AS SHOWN AT THE END POSTS ONLY.

KNEE BRACE AT END POSTS

(K1) IN TOP CHORD

(K2) IN BOTTOM CHORD

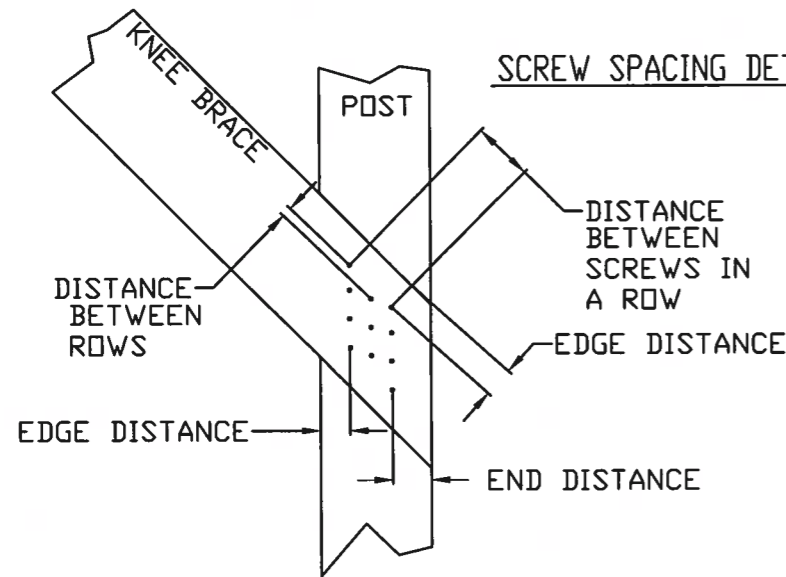


* DISTANCE TO KNEE BRACE CAN BE VARIED SLIGHTLY, FOR GABLE END LOCATION ONLY, TO ACCOMMODATE LENGTH OF BEARING BLOCK UNDER GIRDER.

(I) - (INSTALL THROUGH SIDE OF KNEE BRACE & INTO POST)

BEARING BLOCK 1.5' WIDE & RIPPED TO FIT POST WIDTH

SCREW SPACING DETAILS



SPACING REQUIREMENTS APPLY TO ALL KNEE BRACE & BEARING BLOCK LOCATIONS WHERE SCREWS ARE SPECIFIED FOR.

MINIMUM DISTANCE & SPACING (INCHES)

END DISTANCE = 2 3/8

EDGE DISTANCE = 1 3/4

SPACING BETWEEN SCREWS IN A ROW = 3 1/2

SPACING BETWEEN ROWS (STAGGER ROWS) = 5

TABLES ARE SHOWING THE NUMBER OF LEDGERLOK LL358 SERIES SCREWS REQUIRED. LEDGERLOK IS A PRODUCT OF FASTEN-MASTER. SCREWS SHALL HAVE A HEX WASHER HEAD, NOT A FLAT HEAD.

OTHER SCREW TYPES CAN BE CONSIDERED IF THE DESIGN TABLES, FROM THE SCREW MFG, ARE SUBMITTED TO THE DESIGN ENGINEER FOR CONSIDERATION PRIOR TO CONSTRUCTION. PILOT HOLES ARE NOT REQUIRED IN MOST CONNECTIONS UNLESS SPLITTING OCCURS. PILOT HOLES ARE REQUIRED IN JOINT J.

* TABLES ARE BASED ON USING DRILL SET TYPE POST TO WALL BRACKETS. WET SET BRACKETS SHALL NOT BE USED.

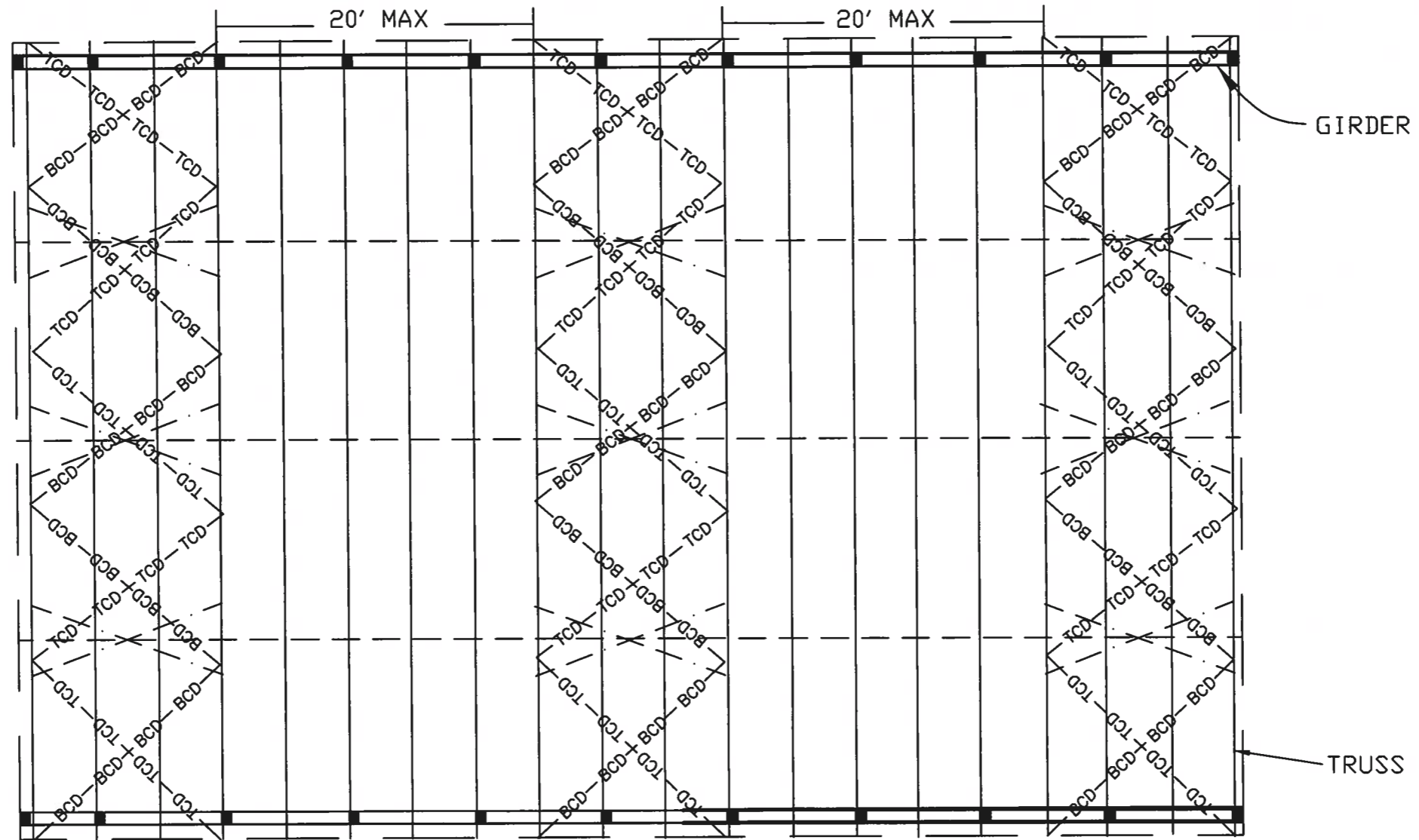
JOINT	MINIMUM SCREW LENGTH	50' SPAN 8' OVERHANG (OPEN SIDE)	50' SPAN 2' OVERHANG (CLOSED SIDE)	50' SPAN 2' OVERHANG (OPEN SIDE)
A	3 5/8"	10	7	8
B1/K1	3 5/8"	6	4	5
B2/K2	3 5/8"	6	4	5
I	3 5/8"	3	3	3
J	3 5/8"	5	4	4

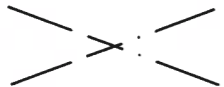
Date 1/2023
Designed BTO STD DRAWING
Drawn RGD
Checked 1/2023

KNEE BRACE DETAILS

United States Department of Agriculture
USDA
National Resources

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- CONTINUOUS LATERAL BRACING
AS PER TRUSS MFG. RECOMMENDATIONS
- TCD - TCD - TCD - TOP CHORD DIAGONAL BRACING
- BCD - BCD - BCD - 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"

DATE 4/23
DESIGNED PAS
DRAWN PAS
CHECKED

DEAN POWERS
ADDITIONAL BRACING REQUIREMENTS

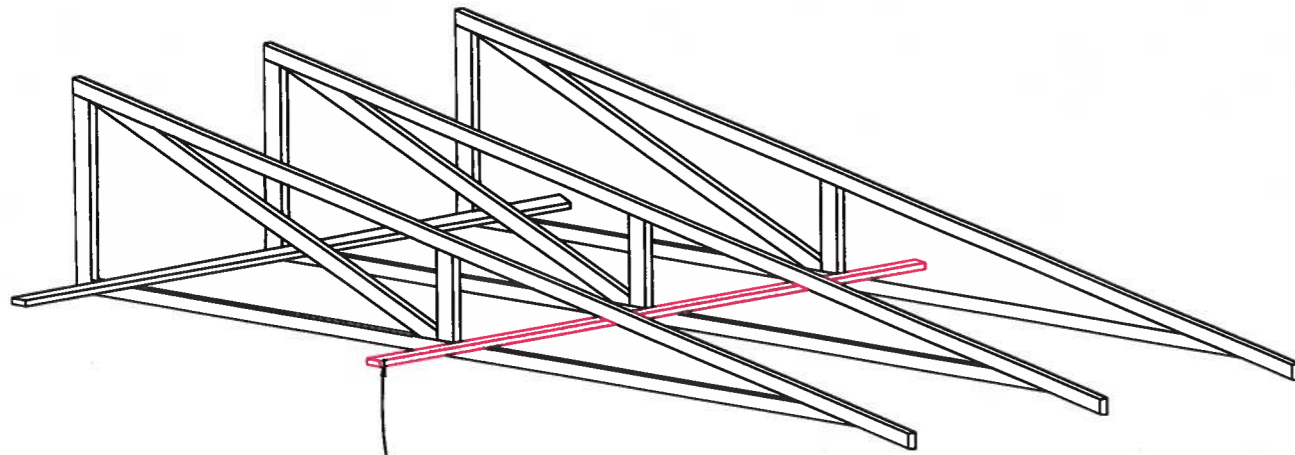


FILE NO. POWERS DESIGN.DW

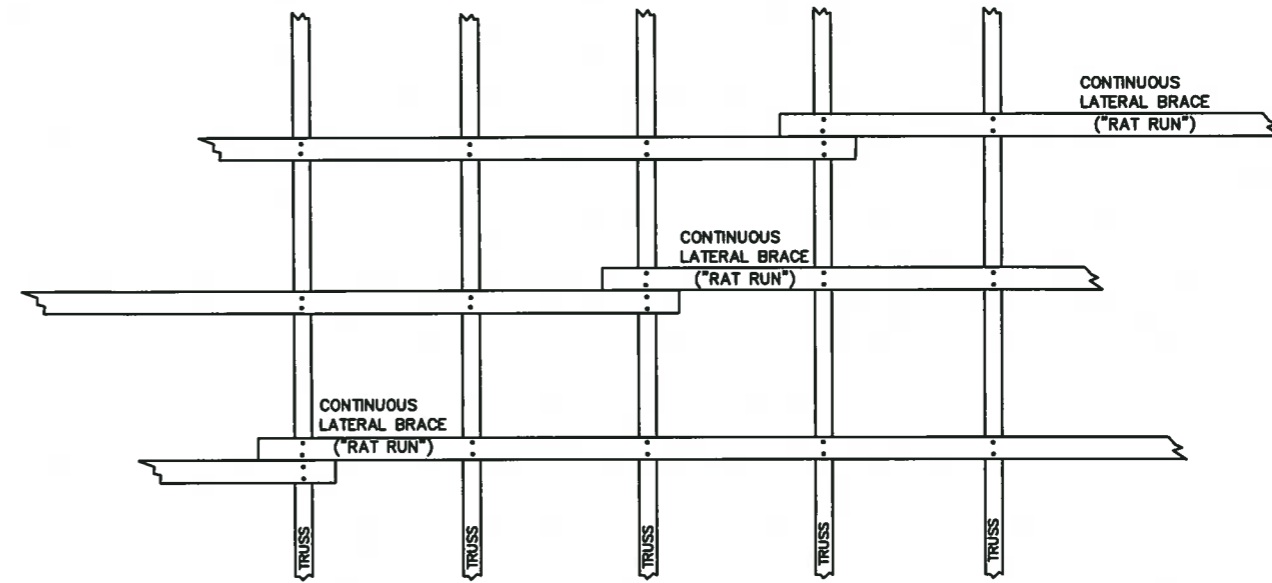
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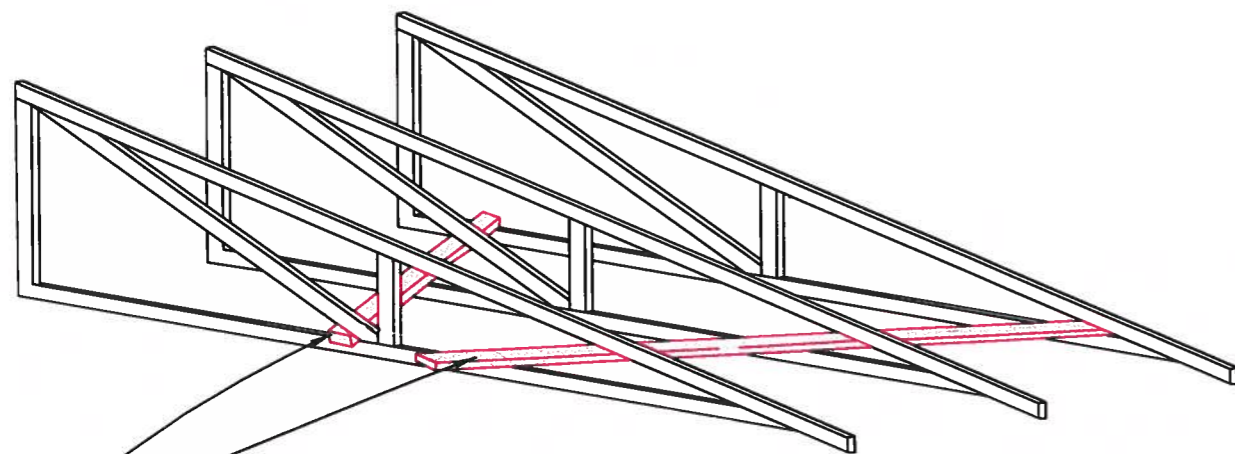
CHORD AND DIAGONAL BRACING



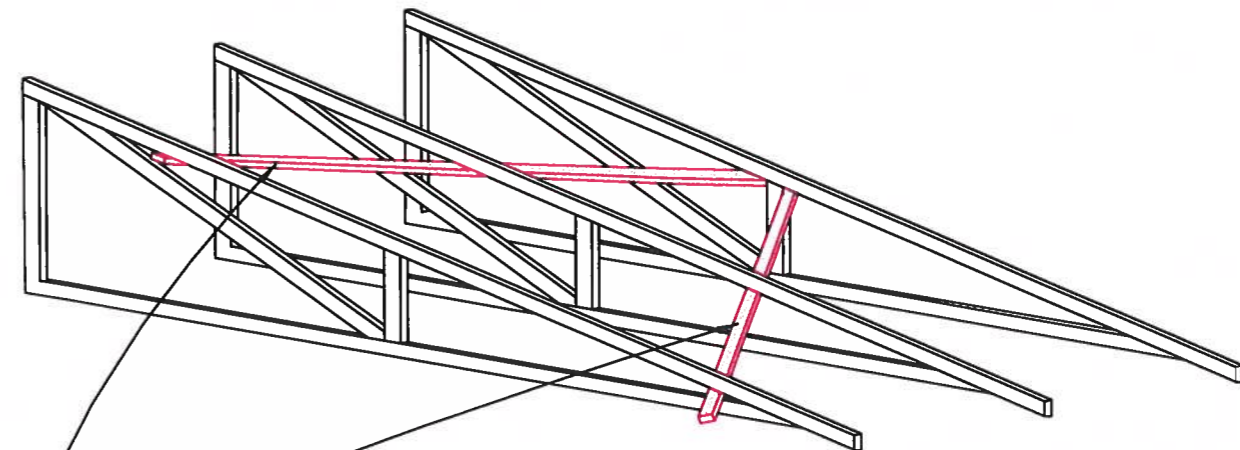
CONTINUOUS LATERAL BRACING ("RAT RUNS")
(2-16d NAILS @ EACH BRACE / TRUSS CONNECTION)



JOINTS IN CONTINUOUS LATERAL BRACES SHALL BE STAGGERED, SO THEY DO NOT LINE UP WITH THE NEXT TRUSS.
AT A JOINT, EACH BOARD SHALL EXTEND FULLY PAST THE TRUSS, TO ALLOW FOR A TWO NAIL CONNECTION.
THESE BRACES ARE AS PER TRUSS MFG. REQUIREMENTS, SHOWN ON THE TRUSS DESIGN.



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)

Date: 4/22
Designed: ETO STD. DFC
Drawn: _____
Checked: RCD
Approved by: _____

CHORD AND DIAGONAL BRACING



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Drawing No. _____
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CROSS BRACING

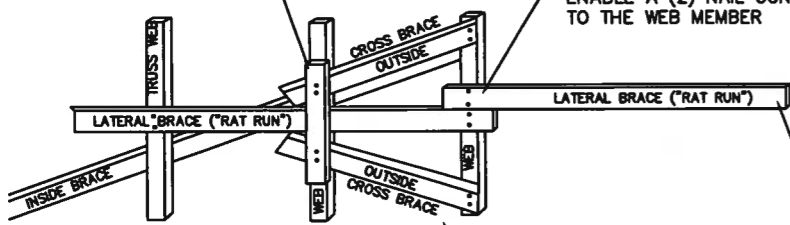
TO BE INSTALLED AT INTERVALS NOT TO EXCEED 20'
ALONG CONTINUOUS LATERAL BRACING

Date: 5/20
 Drawn: _____
 Checked: RCD
 Approved by: _____
 Designed: BTJ, STD, DIE

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

OPTION #1

2X4 BLOCK OVER ALL BRACES



OUTSIDE CROSS BRACE SHALL CONNECT (3) TRUSSES MINIMUM; ONLY (2) SHOWN HERE FOR DRAWING CLARITY.

AT JOINT LOCATIONS; INSTALL LATERAL BRACE SO IT EXTENDS PAST TRUSS WEB MEMBER TO ENABLE A (2) NAIL CONNECTION TO THE WEB MEMBER

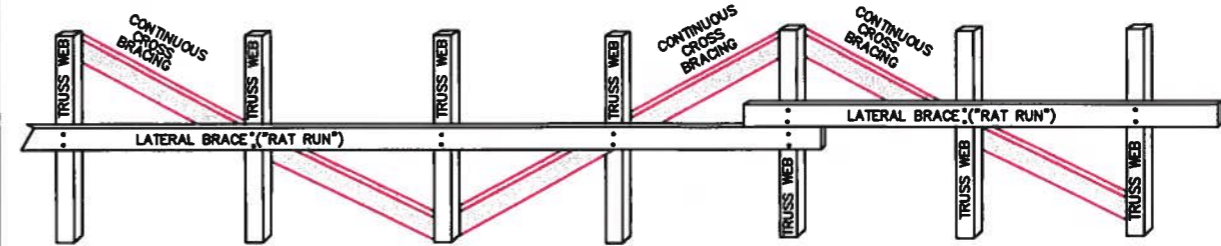
THE INSIDE CROSS BRACE SHALL CONNECT (3) OR (4) TRUSSES. THE OUTSIDE CROSS BRACE SHALL CONNECT (3) TRUSSES MINIMUM. ONLY (2) SHOWN HERE FOR DRAWING CLARITY. (2-16d NAILS @ EACH MEMBER/BLOCK)

THIS BRACE LOCATION IS SHOWN ON THE TRUSS DESIGN.

* 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 #3



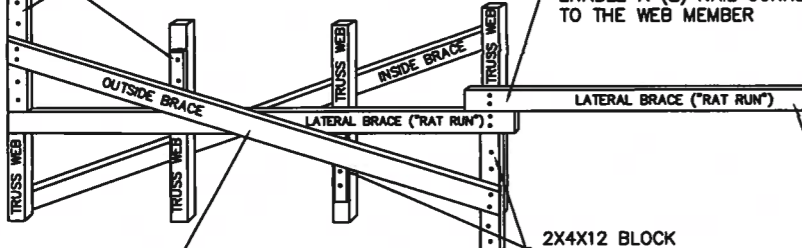
INSTALL "CONTINUOUS" CROSS BRACING ON THE OPPOSITE SIDE OF THE TRUSS WEB MEMBER AS THE LATERAL BRACE. THE CROSS BRACING MUST RUN THE ENTIRE LENGTH OF THE BUILDING ON THOSE WEB MEMBERS WITH LATERAL BRACING SPECIFIED IN THE TRUSS DESIGN AND AT OTHER LOCATIONS DICTATED BY THE BUILDING DESIGN ENGINEER. (2-16d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

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

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

OPTION #2

2X4X12 BLOCK UNDER BRACE



AT JOINT LOCATIONS; INSTALL LATERAL BRACE SO IT EXTENDS PAST TRUSS WEB MEMBER TO ENABLE A (2) NAIL CONNECTION TO THE WEB MEMBER

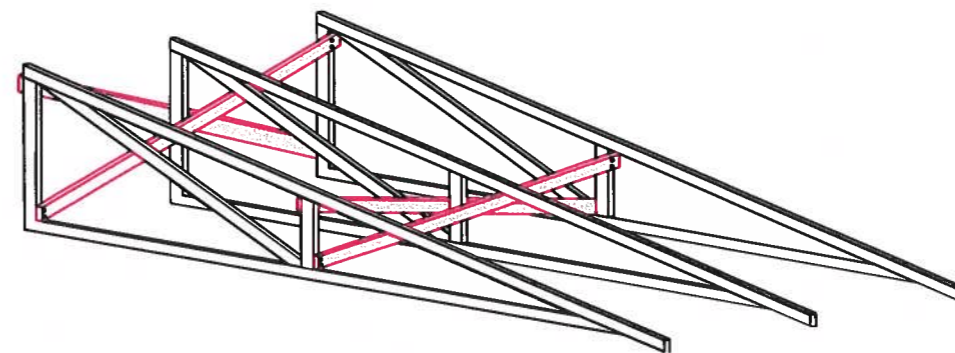
THE CROSS BRACE SHALL CONNECT AT LEAST (3) TRUSSES, (2-16d NAILS @ EACH MEMBER/BLOCK)

THIS BRACE LOCATION IS SHOWN ON THE TRUSS DESIGN.

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

WHEN THE TRUSS DESIGN DOES NOT SHOW ANY CONTINUOUS LATERAL BRACES (RAT RUNS) WITHIN THE TRUSS WEBS, THIS OPTION OF CROSS BRACING SHALL BE USED.

OPTION #4



CROSS BRACING SHALL BE LOCATED ON BOTH SIDES OF ALL VERTICAL WEB MEMBERS AS WELL AS ADDITIONAL LOCATIONS AS DETERMINED BY THE BUILDING DESIGN ENGINEER.

THE CROSS BRACE SHALL CONNECT AT LEAST (3) TRUSSES, (2-16d NAILS @ EACH MEMBER/BLOCK)

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

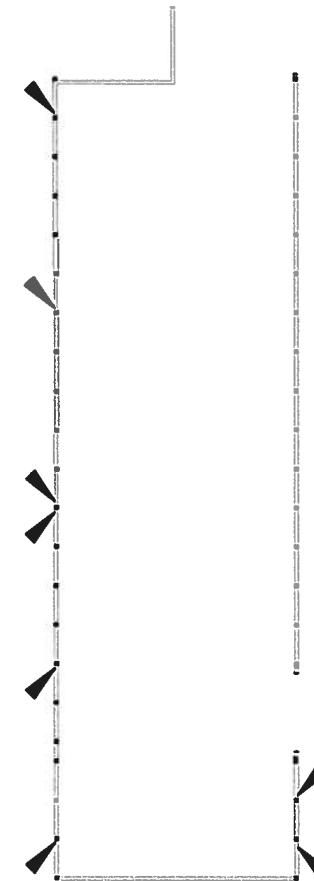
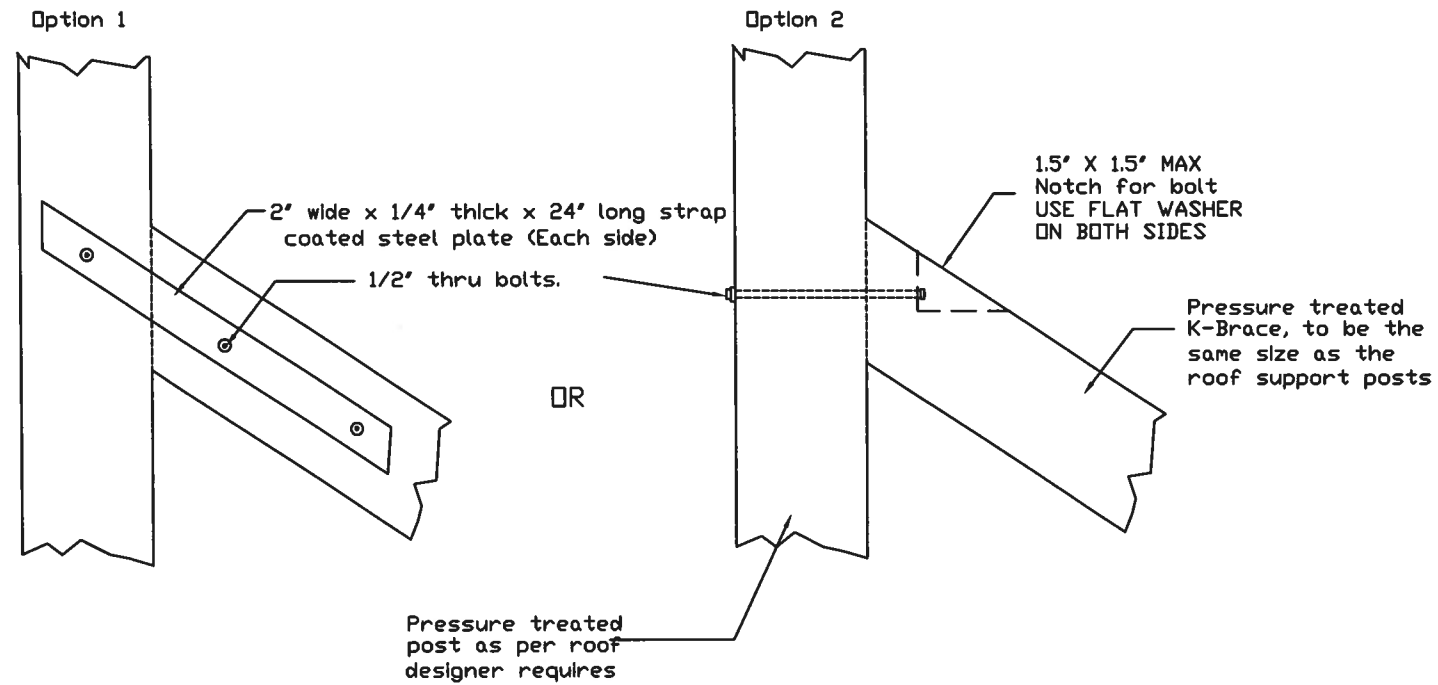
CROSS BRACING



File No. _____
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"K" BRACING DETAIL

(FOR POSTS ON TOP OF CONCRETE WALL)



TYPICAL "K" BRACE LOCATION

NOTES:

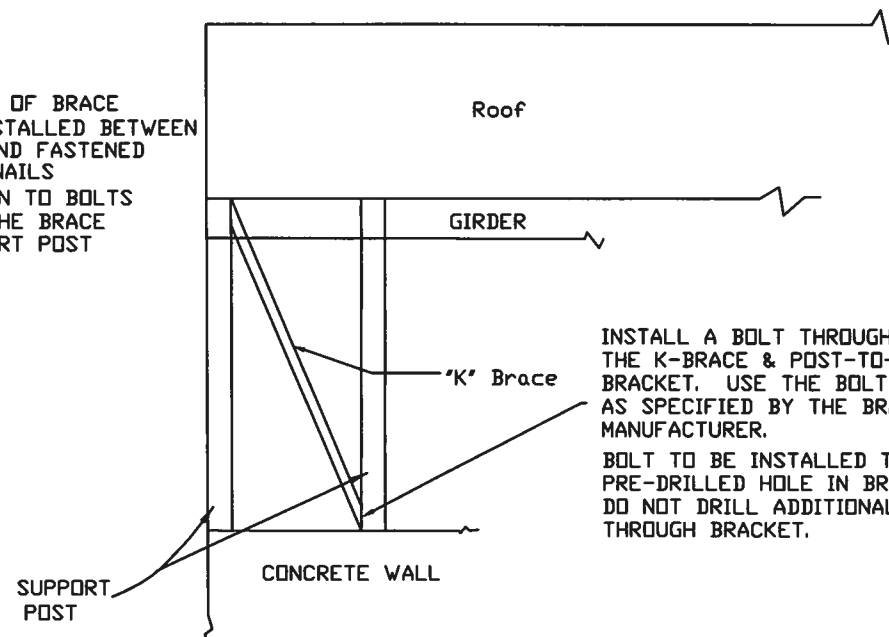
- 1). "K" bracing is needed when posts are anchored to top of walls.
- 2). Will need a "K" brace at the corners of the building.
A "K" brace should also be considered on both sides of openings.
- 3). Other "K" brace configurations may be used if approved by the designer.

*** IF THE ENCLOSED SIDES ARE ENCLOSED WITH STEEL PANELS THEN "K" BRACES ARE NOT REQUIRED.
IF THE ENCLOSED SIDES ARE ENCLOSED WITH CURTAINS THEN "K" BRACES ARE REQUIRED.
IF ALL SIDES ARE LEFT OPEN THEN "K" BRACES ARE REQUIRED.

K-BRACE SHALL BE THE SAME SIZE AS THE SUPPORT POSTS. ORDER ENOUGH POSTS FOR K-BRACING.

"Not To Scale"

UPPER END OF BRACE CAN BE INSTALLED BETWEEN HEADERS AND FASTENED WITH 16d NAILS IN ADDITION TO BOLTS THROUGH THE BRACE AND SUPPORT POST



INSTALL A BOLT THROUGH THE K-BRACE & POST-TO-WALL BRACKET. USE THE BOLT DIAMETER AS SPECIFIED BY THE BRACKET MANUFACTURER.

BOLT TO BE INSTALLED THROUGH PRE-DRILLED HOLE IN BRACKET. DO NOT DRILL ADDITIONAL HOLES THROUGH BRACKET.

DESIGNED	PAS	DATE	4/23
DRAWN	PAS		
CHECKED			
APPROVED			

DEAN POWERS
"K" BRACING DETAIL

SUSQUEHANNA COUNTY, PA

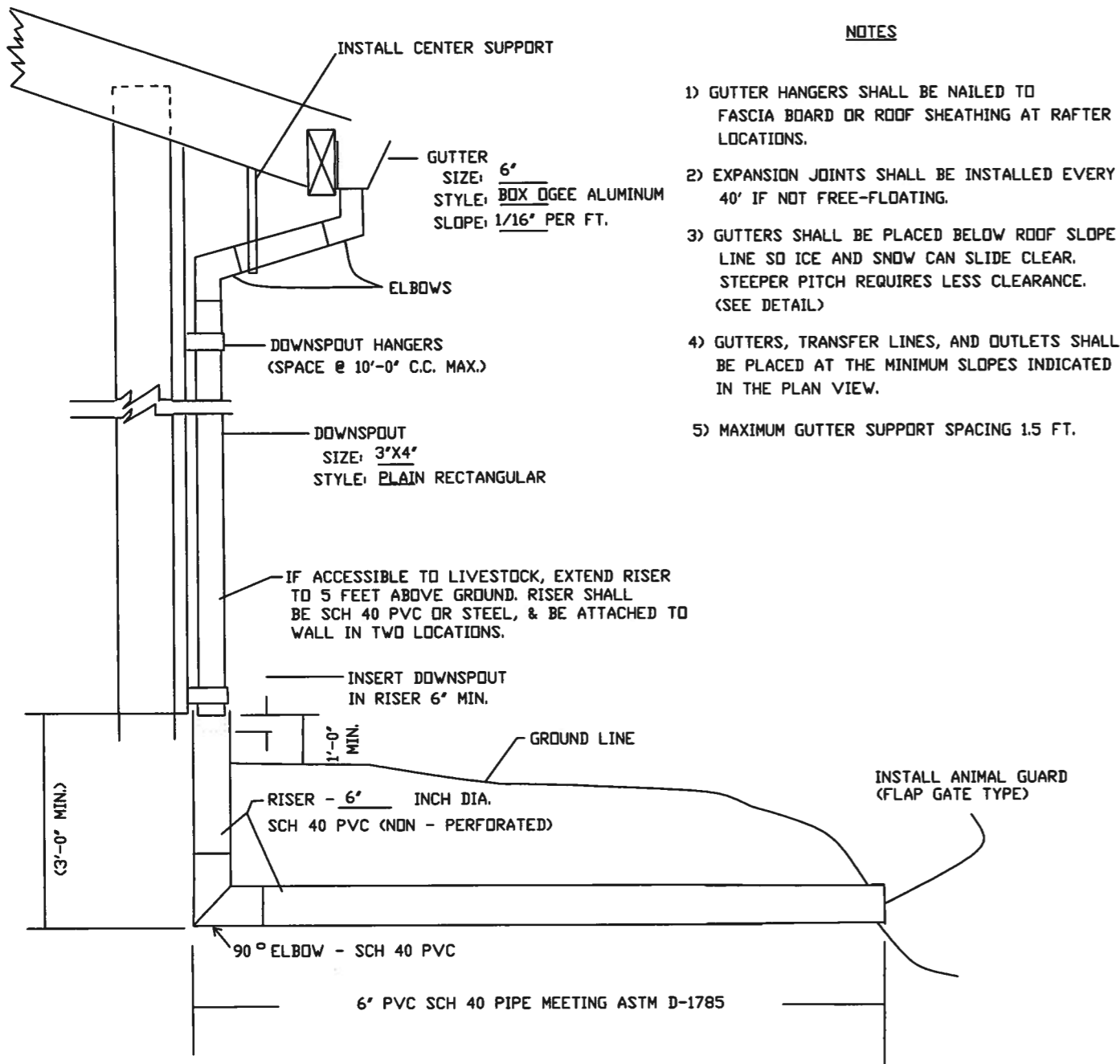
JACKSON TOWNSHIP

United States Department of Agriculture
 Natural Resources Conservation Service

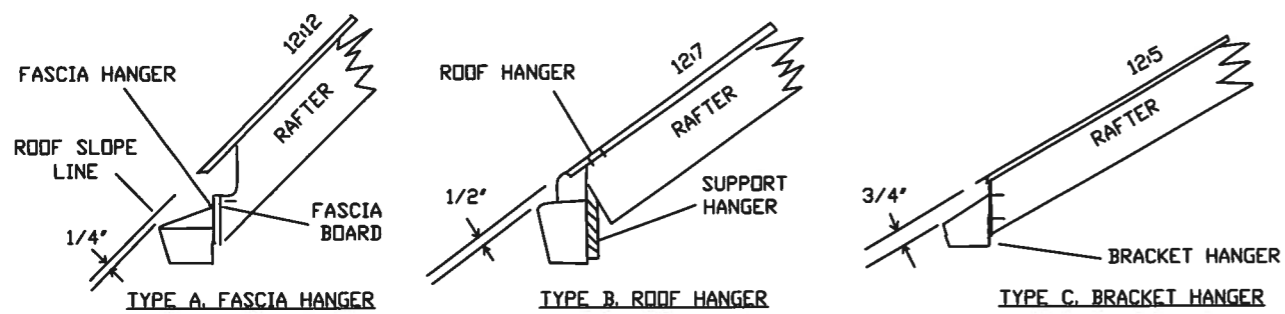
FILE NO. POWERS DESIGN_RECOVER.DWG

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SHEET 28 OF 31

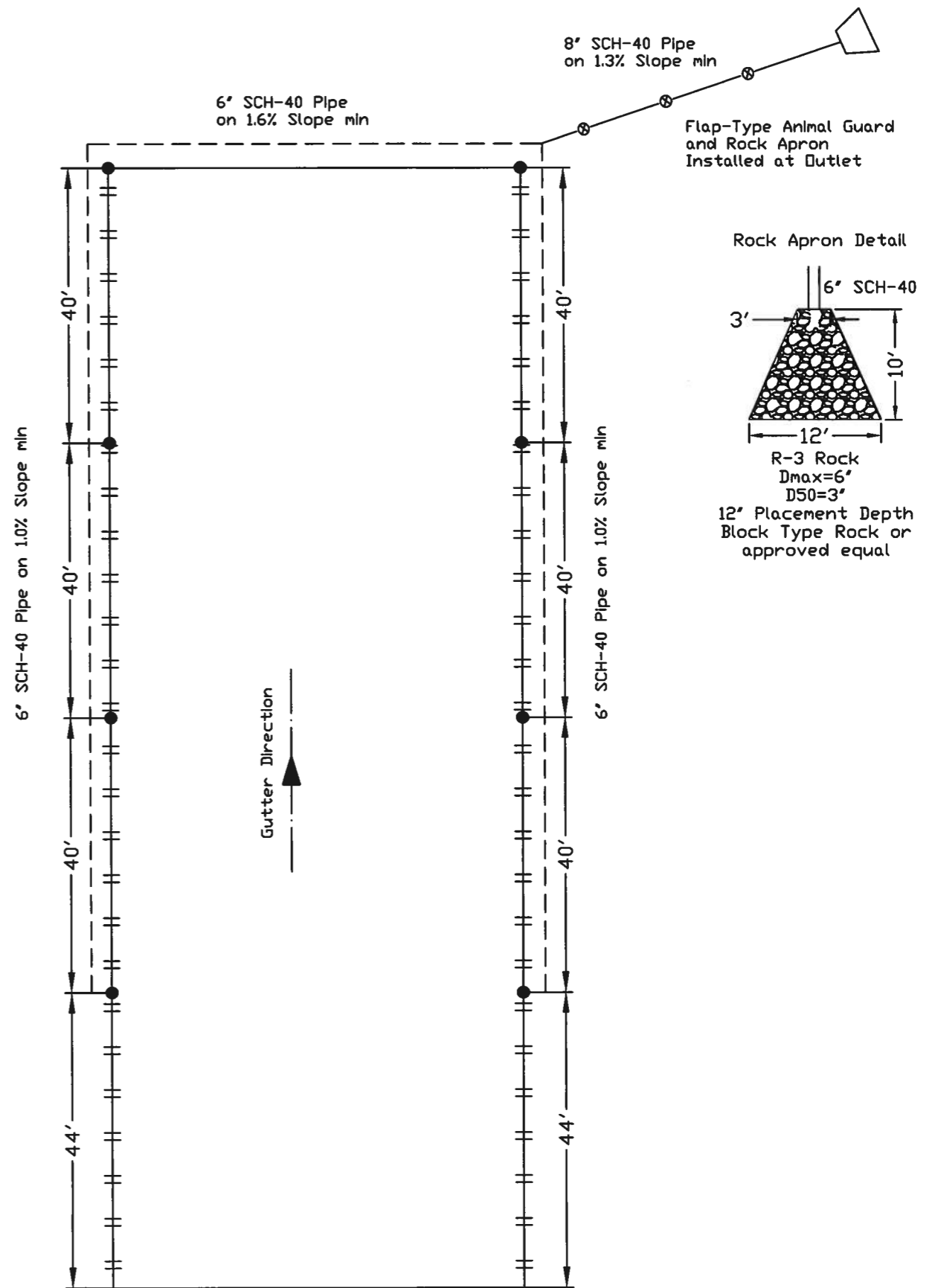


- NOTES**
- 1) GUTTER HANGERS SHALL BE NAILED TO FASCIA BOARD OR ROOF SHEATHING AT RAFTER LOCATIONS.
 - 2) EXPANSION JOINTS SHALL BE INSTALLED EVERY 40' IF NOT FREE-FLOATING.
 - 3) GUTTERS SHALL BE PLACED BELOW ROOF SLOPE LINE SO ICE AND SNOW CAN SLIDE CLEAR. STEEPER PITCH REQUIRES LESS CLEARANCE. (SEE DETAIL)
 - 4) GUTTERS, TRANSFER LINES, AND OUTLETS SHALL BE PLACED AT THE MINIMUM SLOPES INDICATED IN THE PLAN VIEW.
 - 5) MAXIMUM GUTTER SUPPORT SPACING 1.5 FT.



GUTTER HANGING DETAILS

(Clearances shown are guides for typical roof slopes,)
(regardless of hanger type.)



- 3"x4' Downspout Locations
- |—|— 6' Gutter (±328')
- — — 6' SCH-40 Pipe (±320')
- — — 8' SCH-40 Pipe (±110')

DATE	4/23
DESIGNED	PAS
DRAWN	PAS
CHECKED	PAS

DEAN POWERS
ROOF RUNOFF DETAILS



FILE NO. POWERS DESIGN_RECOVER.DWG

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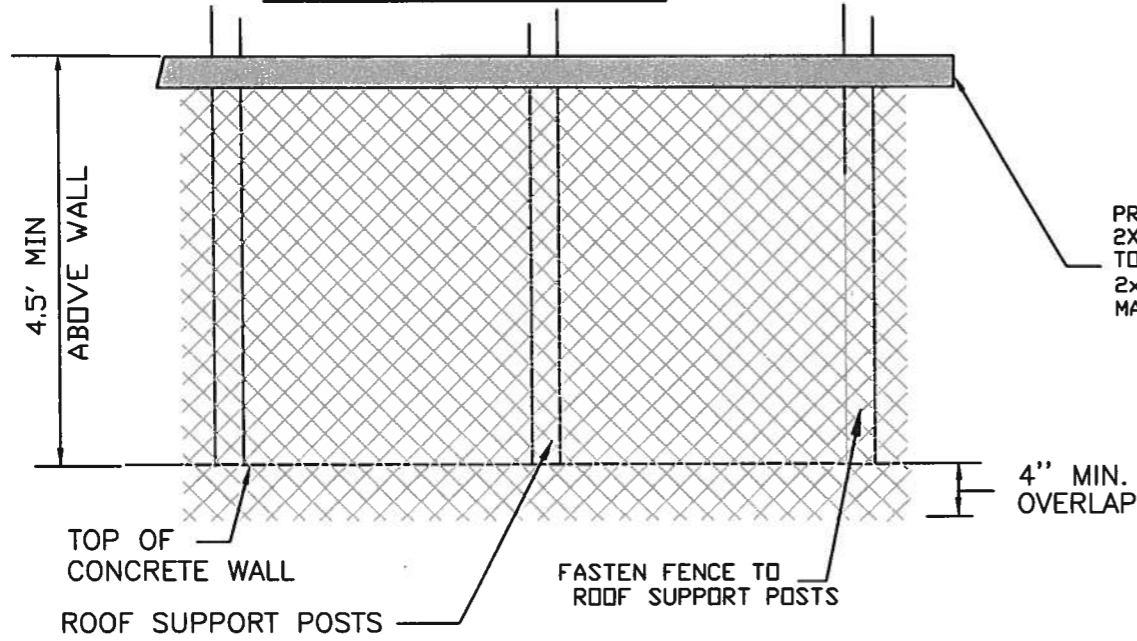
SHEET 29 OF 3

SAFETY FENCE OPTIONS

ALONG TOP OF HEAVY USE AREA OR STACKING STRUCTURE WALLS WITH DROPS EXCEEDING 3.5'
THESE DETAILS DO NOT APPLY FOR LIQUID STORAGEES

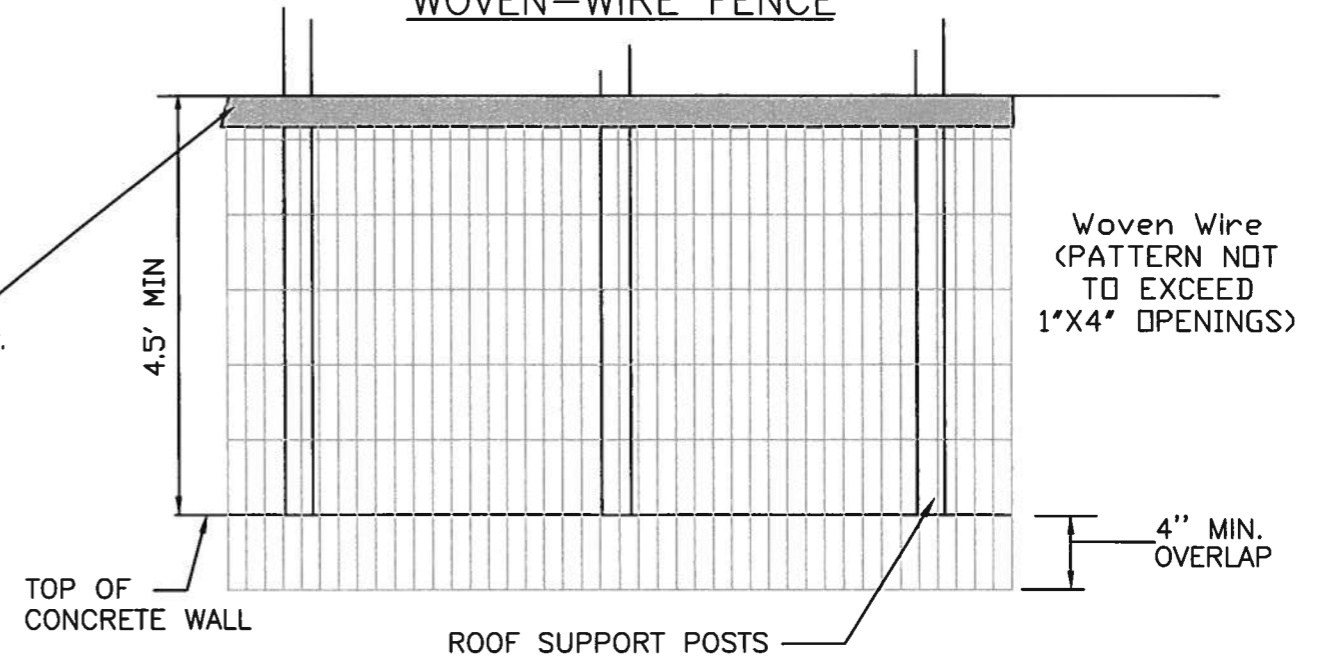
SAFETY FENCE OPTION #1

CHAIN-LINK FENCE



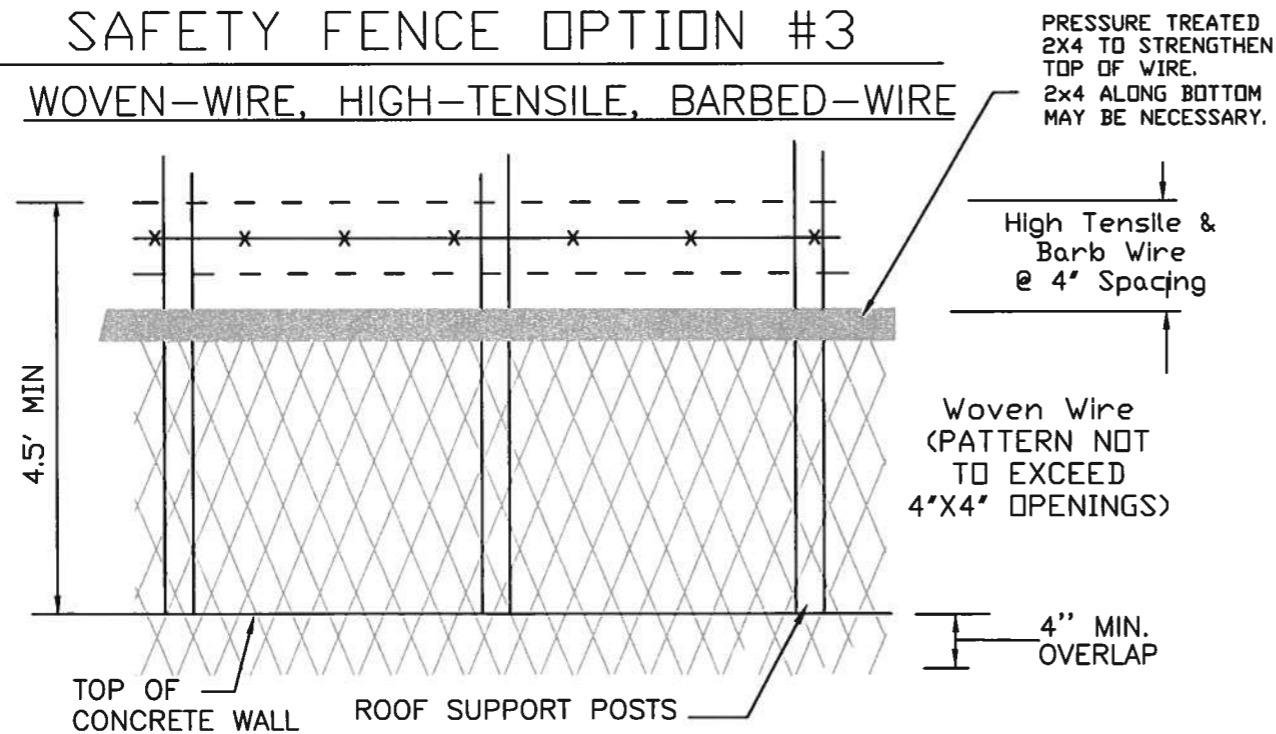
SAFETY FENCE OPTION #2

WOVEN-WIRE FENCE



SAFETY FENCE OPTION #3

WOVEN-WIRE, HIGH-TENSILE, BARBED-WIRE



CONSTRUCTION NOTES

1. THE FENCE IS ONLY INTENDED TO EXCLUDE HUMANS FROM FALLING OFF OF THE WALL.
2. ATTACH FABRIC TO OUTSIDE FACE OF ROOF SUPPORT POSTS AND CONCRETE WALLS.
3. A TOP AND BOTTOM RAIL MAY BE REQUIRED TO TIGHTEN FENCE ADEQUATELY.
4. FENCE SHALL BE FASTENED TO RAILS EVERY 24" (MAXIMUM SPACING).
5. FOR ALL OPTIONS; THE FENCE MUST BE TIGHT ENOUGH SO THAT IT CAN NOT BE PULLED AWAY FROM THE SUPPORTS MORE THAN 4".
6. ALL FASTENERS, CLAMPS, ETC. SHALL BE GALVANIZED OR STAINLESS STEEL.
7. WARNING SIGNS FOR ELECTRIC FENCE SHALL BE INSTALLED IN SEVERAL LOCATIONS ON THE STRUCTURE.

OPTION #1:

1. TOP "STIFFENER" BOARD CAN BE REPLACED WITH A GALVANIZED RAIL. IF THE GALVANIZED RAIL IS CHOSEN, IT SHALL BE 1 1/8" MIN. DIAMETER AND 16 GAUGE MIN.
2. TOP/BOTTOM RAIL TO BE GALVANIZED WITH ZINC COATING INSIDE AND OUT, SCH-40 COMBINED COATING 1.8oz./SF MEETING ASTM A123 OR MT-40, 90% ZINC INTERIOR, 1 oz. ZINC EXTERIOR PLUS CHROMATE AND CLEAR ACRYLIC OR MIN. 50,000 PSI.
3. CHAIN-LINK FABRIC SHALL BE 9 GAUGE GALVANIZED STEEL WITH ZINC COATING (ASTM A392 CLASS II) (2oz. per SF), 2" WIRE MESH WITH A MIN. TENSILE STRENGTH OF 1290 LBS.
4. REPAIR GALVANIZED COATING WITH MATERIALS MEETING ASTM A-780

OPTION #2 & #3:

1. THE MINIMUM FENCE HEIGHT SHALL BE 4.5' ABOVE TOP OF CONCRETE WALL. BARBED WIRE OR HIGH TENSILE WIRE CAN BE USED ABOVE THE WOVEN WIRE FABRIC AS LONG AS THE SPACING DOES NOT EXCEED 4" BETWEEN ADDITIONAL WIRES AND 4" FROM TOP OF WOVEN WIRE FABRIC TO FIRST ADDITIONAL WIRE.
- 2a. IF ONLY ONE ADDITIONAL WIRE IS NEEDED ON TOP OF THE WOVEN WIRE FABRIC THEN IT SHALL BE BARBED WIRE.
- 2b. IF (2) ADDITIONAL WIRES ARE REQUIRED AND HIGH TENSILE WIRES (ONLY) ARE USED, THEN AT LEAST ONE STRAND MUST BE ELECTRIFIED
- 2c. IF MORE THAN 2 ADDITIONAL WIRES ARE USED AND THEY ARE HIGH TENSILE THEN EVERY OTHER STRAND MUST BE ELECTRIFIED.
- 2d. IF USING 3 ADDITIONAL WIRES, AS SHOWN IN OPTION #3, THEN THE MIDDLE STRAND MUST BE BARBED WIRE.
- 2e. OTHER OPTIONS SHALL BE DISCUSSED WITH THE DESIGN ENGINEER.
3. WOVEN WIRE TO BE 12.5 GAUGE MIN, AND GALVANIZED. WELDED WIRE IS NOT ALLOWED.
4. REPAIR GALVANIZED COATING WITH MATERIALS MEETING ASTM A-780
5. HIGH TENSILE OR BARBED WIRE SHALL BE 12.5 GAUGE MIN., 180,000 PSI FOR ELECTRIFIED WIRE (MIN.) AND 200,000 PSI FOR NON-ELECTRIFIED WIRE.
6. FENCE MUST BE GROUNDED ACCORDINGLY.

Date 1-2023
Designed BTO STANDARD DWG
Drawn
Checked
Approved

SAFETY FENCE OPTIONS--NON LIQUID PRACTICES

United States
Department of
Agriculture
USDA
Natural Resources
Conservation Service

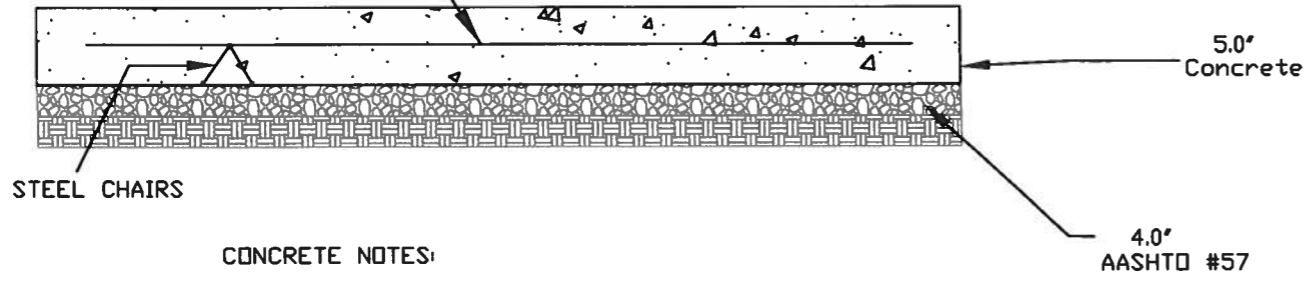
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Drawing No.

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REINFORCED CONCRETE DETAIL

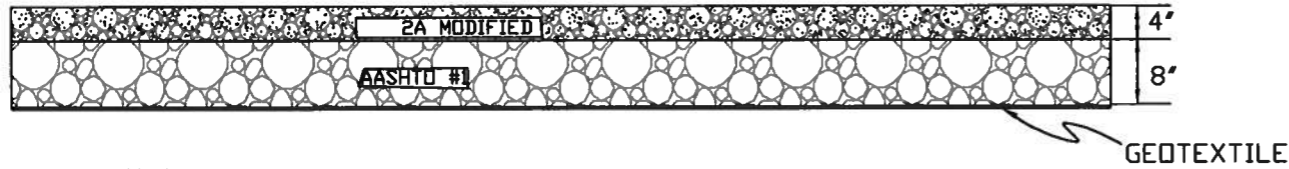
6' X 6'-W2.9 X W2.9
(6-GAUGE) WELDED
WIRE FABRIC, PLACED
2" FROM TOP OF SLAB.



CONCRETE NOTES:

1. CONCRETE SHALL BE 4000 PSI.
2. STEEL SHALL BE GRADE 60.

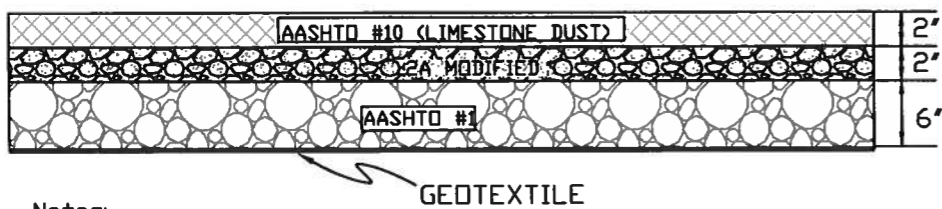
Access Road Detail (Typical)



Notes:

1. See 'General Construction Notes' drawing for geotextile types. 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.

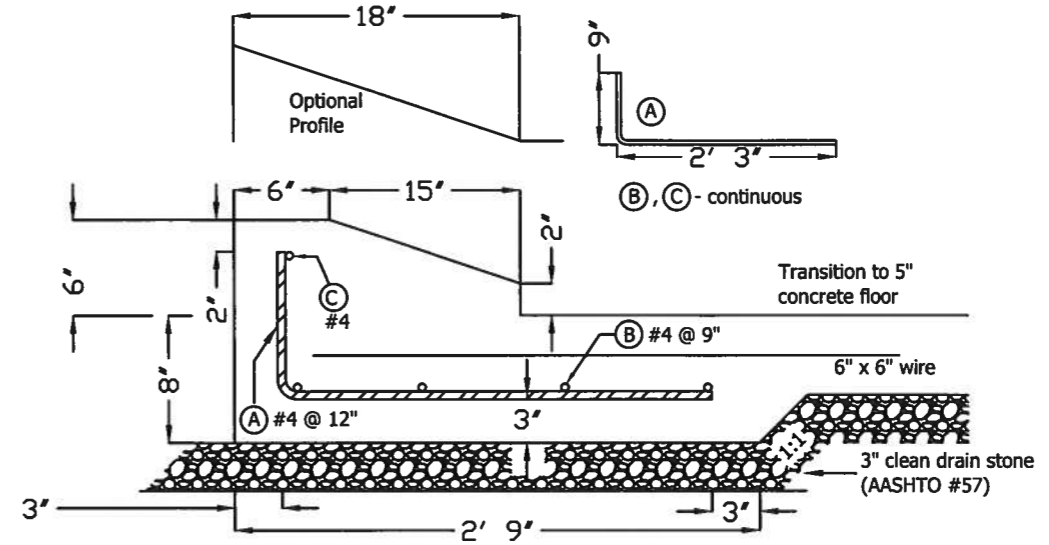
Walkway Detail



Notes:

1. See 'General Construction Notes' drawing for geotextile types. 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. Surface may be crowned or pitched at 1% in the direction of the existing surface slope.

6"H x 18"W Roll Curb

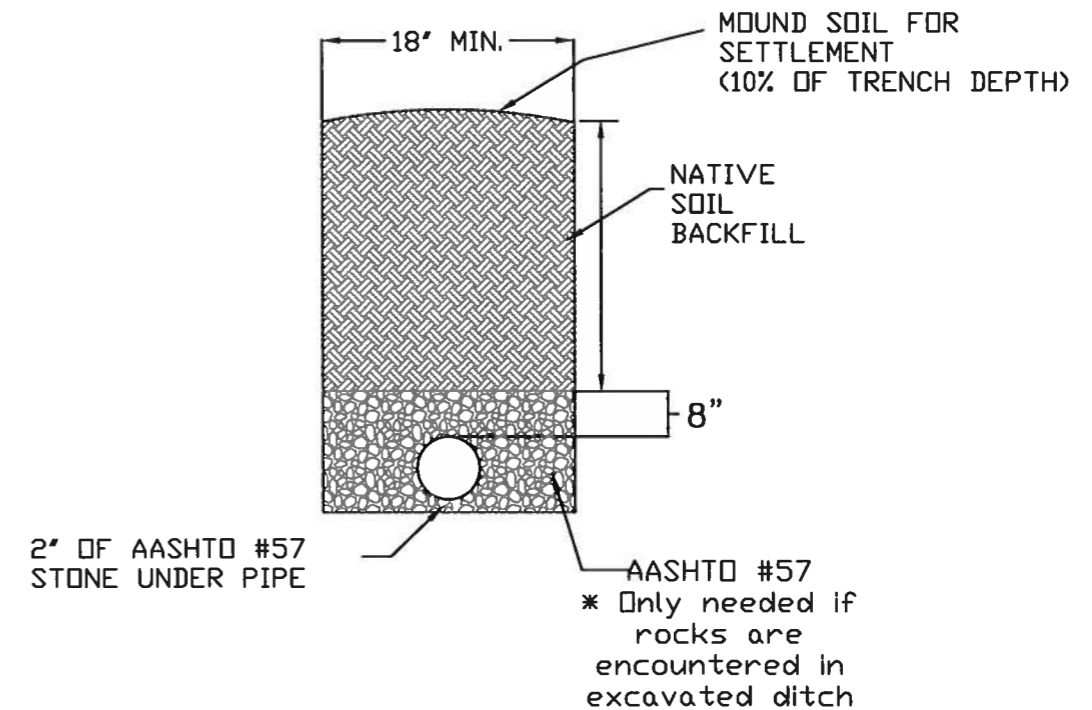


NOTES:

- use all #4 reinforcing steel, Grade 60
- all 4,000 psi concrete
- minimum 15" splice on all #4 bars
- support footer steel on 3" chairs
- install during floor/footer concrete placement

This Style of Roll Curb was Chosen to be Installed at Entrance Locations. Other Options can be Considered Prior to Construction.

PIPE INSTALLATION DETAIL



DATE 4/23
DESIGNED PAS
DRAWN PAS
CHECKED

DEAN POWERS
MISCELLANEOUS DETAILS

United States
Department of
Agriculture
USDA
Natural Resources

FILE NO. POWERS
DESIGN_RECOVER.DWG

DRAWING NO.

SHEET 31 OF 31