

Before Proceeding with Construction,  
Call the Alabama Line Location Center  
ALABAMA ONE-CALL  
Dial 811 or 1-800-292-8525

THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS) MAKES NO REPRESENTATION AS TO THE EXISTENCE OR NONEXISTENCE OF ANY UTILITIES AT THE CONSTRUCTION SITE. IT IS THE RESPONSIBILITY OF THE LANDOWNERS, OPERATORS AND CONTRACTORS TO ASSURE THEMSELVES THAT NO HAZARD EXISTS OR DAMAGE WILL OCCUR TO UTILITIES.

**APPLICABLE NRCS CONSERVATION PRACTICE STANDARDS:**

- (Check all that apply)
- 442 - CENTER PIVOT IRRIGATION DESIGN
  - 430 - IRRIGATION PIPELINE
  - 533 - PUMPING PLANT

**GENERAL NOTES:**

THERE WILL BE NO CHANGES IN SPECIFICATION, DIMENSIONS, OR MATERIALS UNLESS APPROVED BY THE ENGINEER RESPONSIBLE FOR THIS DRAWING.

THE DRAWINGS ARE PREPARED COOPERATIVELY BY THE NATURAL RESOURCE CONSERVATION SERVICE FOR THE NAMED LANDOWNER. CONSTRUCTION FOUND NOT IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATIONS SHALL VIOLATE THE COOPERATIVE AGREEMENT AND ALL DRAWINGS, SPECIFICATIONS, AND QUANTITIES ESTIMATE SHALL IMMEDIATELY BE RETURNED TO THE LOCAL NRCS OFFICE.

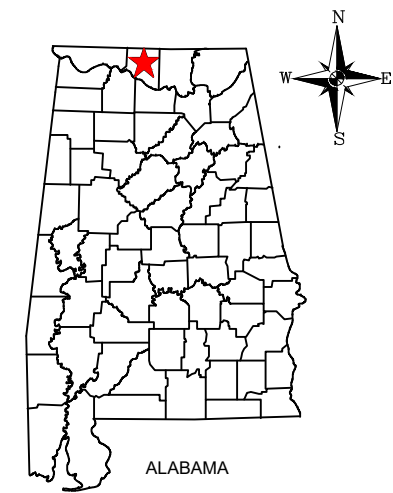
NRCS MUST BE CONTACTED MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION TO ARRANGE A PRE-CONSTRUCTION MEETING.

CLEARANCE AND PERMITS: IT SHALL BE THE RESPONSIBILITY OF THE COOPERATOR TO OBTAIN ALL NECESSARY CLEARANCES, PERMITS, RIGHTS OF WAY, AND TO COMPLY WITH ALL ORDINANCES AND LAWS PERTAINING TO THE CONSTRUCTION OF THIS PROJECT.

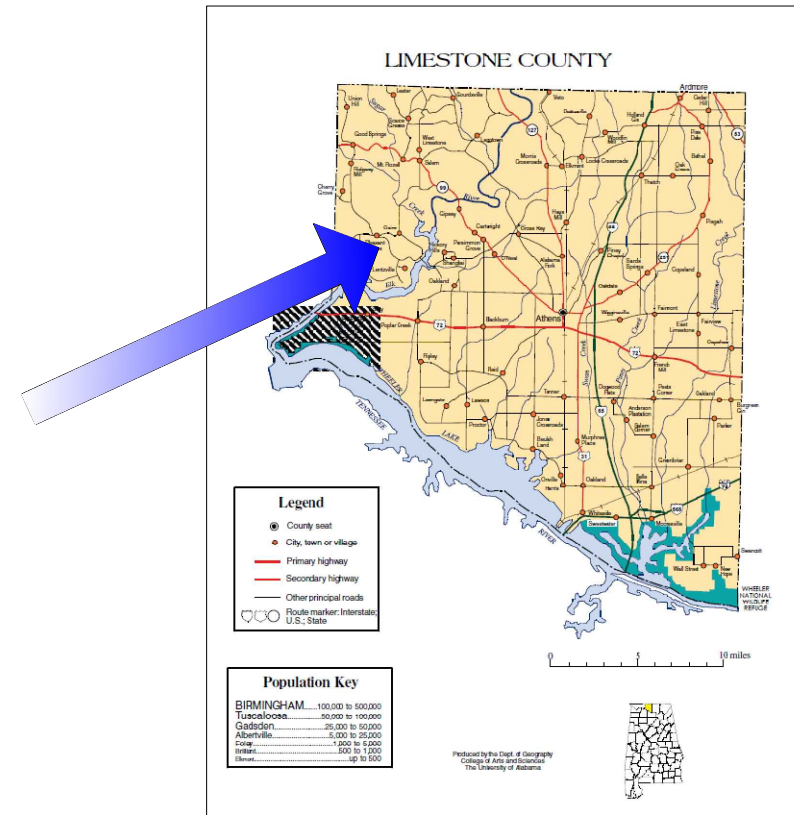
ALL EXCAVATION AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS.

**INDEX OF DRAWINGS**

1. COVER SHEET AND LOCATION MAP
2. PLAN VIEW
3. TOPOGRAPHIC MAP
4. THRUST BLOCKS DETAILS



ALABAMA  
**VICINITY MAP**  
(Not to scale)



**SITE LOCATION**

\_\_ ° \_\_ ' \_\_ " N LAT.  
\_\_ ° \_\_ ' \_\_ " W LONG.

**LOCATION MAP**  
(Not to scale)

DESIGN COMPUTATIONS ARE AVAILABLE FROM THE STATE CONSERVATION ENGINEER AT:  
USDA-NRCS, 3381 SKYWAY DRIVE, AUBURN, AL 36830

Date \_\_\_\_\_

Designed \_\_\_\_\_

Drawn \_\_\_\_\_

Checked \_\_\_\_\_

Approved \_\_\_\_\_

**WILLIAM SMITH**  
COVER SHEET  
LIMESTONE COUNTY, ALABAMA

United States Department of Agriculture  
Alabama  
USDA  
Natural Resources Conservation Service

File No. \_\_\_\_\_

Drawing No. **AL-FNG-442B**

Sheet of \_\_\_\_\_

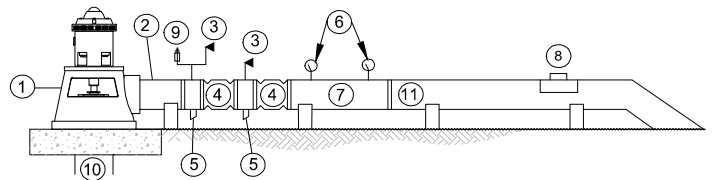


UNDERGROUND ELECTRIC LINE (3 PHASE)

**NOTES:**

1. A 2" AIRVENT SHALL BE INSTALLED AT ALL SUMMITS ALONG THE MAINLINE.
2. FOR ELEVATION DIFFERENCES, REFER TO TOPOGRAPHIC MAP.
3. ALL PLANNED PIPELINE SHALL HAVE A MINIMUM BURIED DEPTH OF COVER OF 30".
4. ANY OBSTRUCTIONS SHALL BE CLEARED PRIOR TO CONSTRUCTION.
5. LANDOWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS.
6. THE LANDOWNER SHALL PROVIDE THE LOCAL NRCS OFFICE WITH A COPY OF THE SPRINKLER PACKAGE PRIOR TO CONSTRUCTION (FOR ALL CENTER PIVOTS).
7. THE COEFFICIENT OF UNIFORMITY (CU) SHALL NOT BE LESS THAN 85% (76% DISTRIBUTION UNIFORMITY).
8. FOR LOCATION MAP, REFER TO CONSERVATION PLAN MAP.

**CENTER PIVOT IRRIGATION PLAN VIEW**



- ① PUMP AND MOTOR 600\_GPM AT 36.8\_PSI @ PUMP DISCHARGE
- ② PUMP DISCHARGE PIPE: DIAMETER 6\_INCHES
- ③ AIR-VACUUM RELEASE VALVE: TYPE COMBO DIAMETER 3\_INCHES
- ④ CHECK VALVE ⑤ LOW PRESSURE DRAIN ⑪ CHEMICAL INJECTION POINT
- ⑥ PRESSURE GAUGE
- ⑦ FILTER TYPE \_\_\_\_\_
- ⑦ FLOW METER
- ⑧ PRESSURE RELEASE VALVE: DIA 2\_INCH, PRESSURE SET AT 115\_PSI
- ⑨ SOURCE OF WATER\_GROUNDWATER \_\_\_\_\_

**PUMP SCHEMATIC**  
n.t.s.

MATERIALS							
Nominal Pipe Size in.	PIP or IPS	SDR No.	Material (PVC 1120, etc.)	Pressure Rating (psi)	Inside Diam. (in.)	Total Length, (ft.)	Minimum Depth of Cover (in.)
6	IPS	26	PVC 1120	160	6.115	100	30

**LEGEND**

- WELL:
- PLANNED PIPELINE:
- THRUST BLOCK:

Date \_\_\_\_\_

Designed \_\_\_\_\_

Drawn \_\_\_\_\_

Checked \_\_\_\_\_

Approved \_\_\_\_\_

**WILLIAM SMITH**  
Plan View

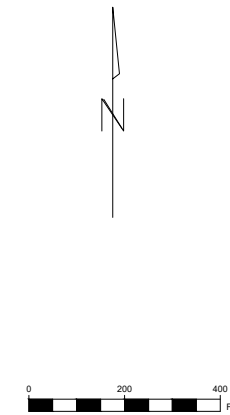
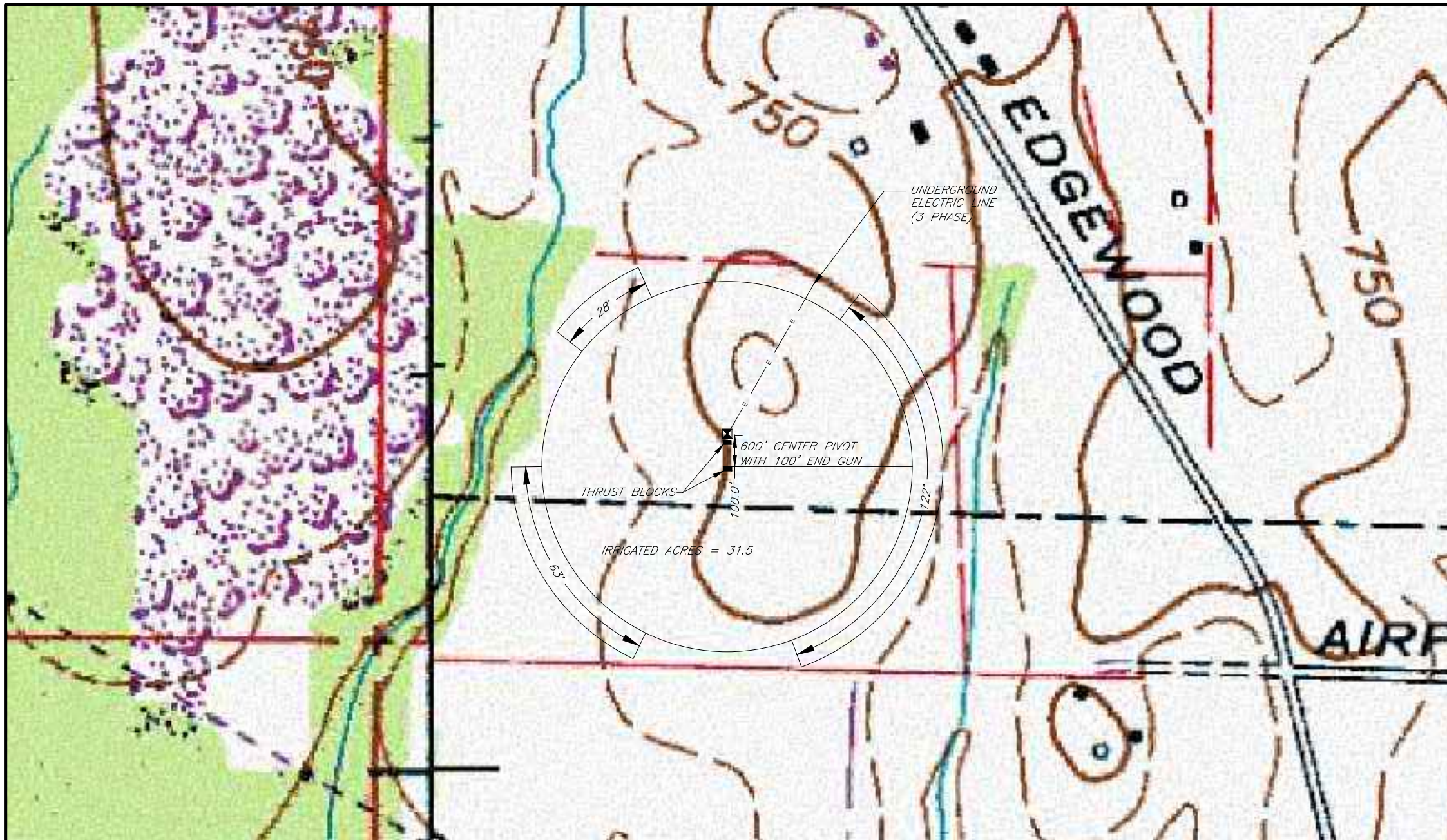
Limestone County, Alabama



File No. AL-ENG-442B.dwg

Drawing No. \_\_\_\_\_

Revisions		
Date	Approved	Title

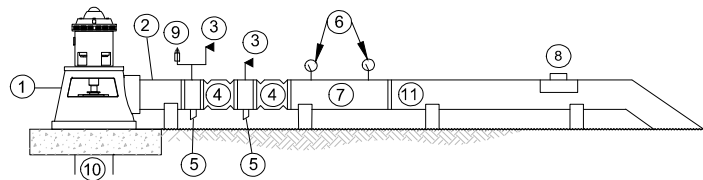


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- ⑦ FILTER TYPE \_\_\_\_\_
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- ⑧ PRESSURE RELEASE VALVE: DIA 2 INCH, PRESSURE SET AT 115 PSI
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**PUMP SCHEMATIC**  
n.t.s.

MATERIALS							
Nominal Pipe Size in.	PIP or IPS	SDR No.	Material (PVC 1120, etc.)	Pressure Rating (psi)	Inside Diam. (in.)	Total Length, (ft.)	Minimum Depth of Cover (in.)
6	IPS	26	PVC 1120	160	6.115	100	30

**LEGEND**

- WELL: ---
- PLANNED PIPELINE: ---
- THRUST BLOCK: ---

Date \_\_\_\_\_

Designed \_\_\_\_\_

Drawn \_\_\_\_\_

Checked \_\_\_\_\_

Approved \_\_\_\_\_

Limestone County, Alabama

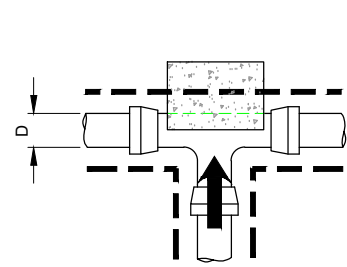
**WILLIAM SMITH**  
Topographic Map

United States Department of Agriculture  
**USDA**  
Natural Resources Conservation Service

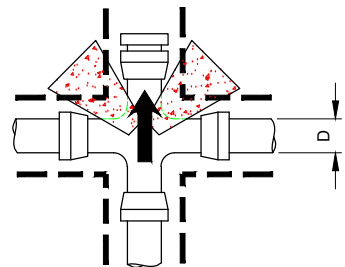
File No. AL-ENG-442B.dwg

Drawing No. \_\_\_\_\_

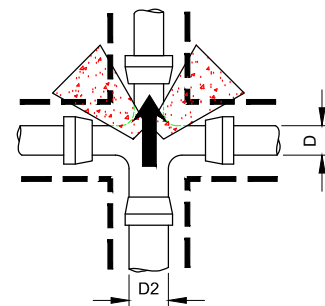
Revisions		
Date	Approved	Title



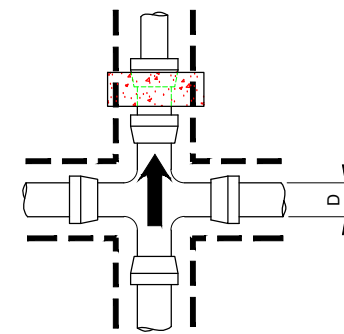
**TYPE A**  
(SEE SECTION A)  
n.t.s.



**TYPE B**  
(SEE SECTION A)  
n.t.s.



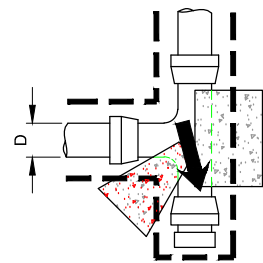
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n.t.s.



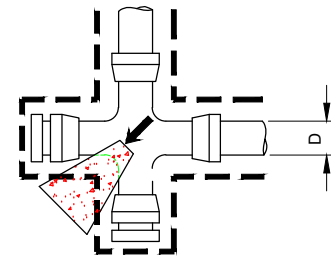
**TYPE D**  
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n.t.s.

**General Notes**

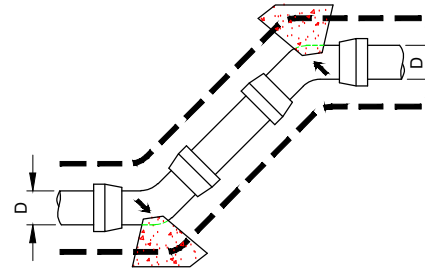
1. Thrust block must be formed against a solid hand excavated trench wall undamaged by mechanical equipment.
2. All thrust blocks shall be constructed of concrete, and the space between the pipe and trench wall shall be filled with concrete to a height not less than the outside diameter of the pipe or as specified by manufacturer.
3. The concrete shall have a compression strength of at least 2000 psi.
4. The concrete mix shall be one part cement, two parts washed sand and four parts gravel.
5. The thrust blocks shall be constructed so that the bearing surface is in direct line of anticipated thrust.



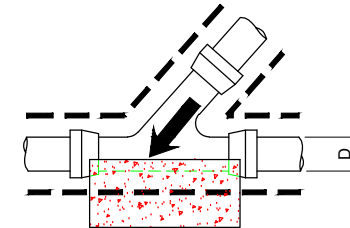
**TYPE E**  
(SEE SECTION A)  
n.t.s.



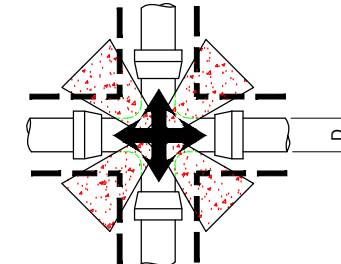
**TYPE F**  
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n.t.s.



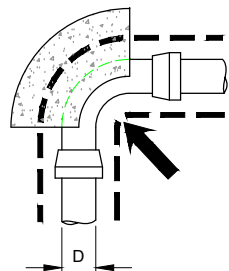
**TYPE G**  
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n.t.s.



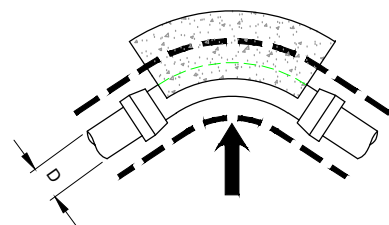
**TYPE H**  
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n.t.s.



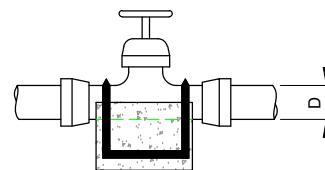
**TYPE I**  
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n.t.s.



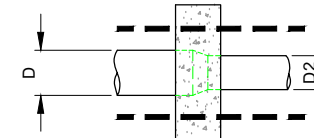
**TYPE J**  
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n.t.s.



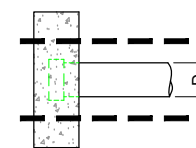
**TYPE K**  
(SEE SECTION A)  
n.t.s.



**TYPE L**  
(SEE SECTION A)  
n.t.s.



**TYPE M**  
(SEE SECTION B)  
n.t.s.

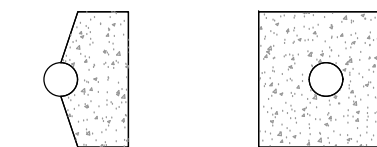


**TYPE N**  
(SEE SECTION B)  
n.t.s.

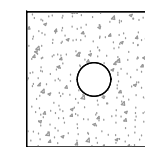
Note: This standard drawing requires supporting technical documentation prior to use and must be adapted to the specific site. Arrows indicate direction of anticipated thrust.

Thrust Block Specifications				
Location	Type	D(in.)	D2(in.)	A(ft <sup>2</sup> )

Type A.	Thru line connection, tee
Type B.	Thru line connection, cross used as tee
Type C.	Change line size, cross used as reducer
Type D.	Change line size, reducer
Type E.	Direction change, tee used as elbow
Type F.	Direction change, cross used as elbow
Type G.	Direction change
Type H.	Thru line connection, wye
Type I.	Direction varies, cross used
Type J.	Direction change, 90 degree elbow used
Type K.	Direction change, 45 degree elbow used
Type L.	Valve
Type M.	Change line size, reducer
Type N.	End cap



**SECTION A**  
n.t.s.



**SECTION B**  
n.t.s.

**Legend**

--- Trench Walls

**Thrust Block Details**

Standard DWG. No. AL-ENG-442B.dwg

Date 5/31/2013 Sheet 2 of 2

Revisions		
Date	Approved	Title
1/11	J.T. Wilson	St. Con. Eng.

Date	Designed	Drawn	Checked	Approved

**WILLIAM SMITH**  
Thrust Block Details

United States  
Department of  
Agriculture  
**USDA**  
Natural Resources  
Conservation Service

File No.  
AL-ENG-442B.dwg

Drawing No.

5/31/2013

Sheet of

# Computation Sheet

NRCS-ENG-523A Rev. 6-2002

U.S. Department of Agriculture  
Natural Resources Conservation Service

State	Project	Date	Job No.
By <i>MC</i>	Checked by	Date	
Subject	Sheet _____ of _____		

## THRUST BLOCK CALCULATION

$$A = 98 HD^2 \sin \frac{a}{2}$$

WHERE A = BEARING AREA OF THRUST BLOCK  
REQUIRED.

H = MAXIMUM WORKING PRESSURE IN FEET

D = INSIDE DIAMETER OF PIPE IN FEET

B = ALLOWABLE PASSIVE PRESSURE OF SOIL  
IN LBS. PER SQ FT.

$$A = 98 HD^2 \sin \frac{90^\circ}{2} \quad D = 6.115$$

$$A = 98 \left( \frac{369.6}{1100} \right) (0.512) \sin 45^\circ$$

$$A = 8.565 \sin 45^\circ$$

$$A = 8.565 (0.707) = 6.1 \text{ Sq Ft}$$

$$A \text{ For "7" } = 0.7 (0.1) = 4.3 \text{ Sq Ft}$$