GENERAL NOTES:

DESIGN SPECIFICATIONS:

–THE RETAINING WALL AND FOUNDATION DESIGN IS IN ACCORDANCE WITH ULTIMATE STRENGTH DESIGN REQUIREMENTS DETAILED IN ACI 318–05, AND SUPPLEMENTED BY USDA, SCS, TECHNICAL RELEASE No. 67 AND TECHNICAL RELEASE No. 74.

DESIGN LOADS:

A. MANURE LOAD: UNIT WEIGHT = 0.060 KIP/FT^3
EFP = 0.060 KIP/FT^2
B. SOIL BACKFILL LOAD: UNIT WEIGHT = 0.140 KIP/FT^3 (ADEQUATELY DRAINED).
Φ = 28°
C. LIVE LOAD: 100 LB/FT^2 (LATERAL IMPACT)
D. MAXIMUM AND MINIMUM BACKFILL HEIGHT IS 2FT ABOVE THE TOP OF FOOTING.
E. HOOP ROOF STRUCTURE REACTIONS SHOWN IN DESIGN LOADING TABLE.

HOOP ROOF STRUCTURE REACTION TABLE (KIPS)

LOAD TYPE		ROOF SPAN (FT)			
		30	40	50	60
SNOW	V	2.20	3.00	3.70	4.20
	H	1.40	2.40	2.90	3.80
WIND WINDWARD	V	–1.40	–1.70	–2.00	–2.70
	H	1.10	1.70	2.00	2.40
WIND LEEWARD	V	–1.70	–2.10	–2.70	–3.30
	H	0.20	0.40	0.60	0.70
WIND PARALLEL	V	–2.00	–2.60	–3.20	–4.10
	H	0.50	1.00	1.40	1.50
ROOF DEAD LOAD	V	0.40	0.50	0.65	0.80
	H	0.12	0.18	0.17	0.17

– LOADS BASED ON 10'–0" BAY SPACING
– NEGATIVE VALUES INDICATE UPLIFT

GENERAL CONSTRUCTION NOTES:

1. ALL CONSTRUCTION METHODS SHALL MEET OSHA REGULATIONS.

2. WHERE SPECIFICATIONS ARE NOT COVERED HEREIN, ALL CONSTRUCTION SHALL CONFORM TO NRCS CONSERVATION PRACTICE CONSTRUCTION SPECIFICATION PA313S.

3. STANDARDS AND SPECIFICATIONS SUBSIDIARY TO THIS WORK ARE, BUT NOT LIMITED TO:
A. SUBSURFACE DRAIN (PA606)
B. CRITICAL AREA PLANTING (PA342)

4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHALL BE IDENTIFIED IN THE FIELD BEFORE CONSTRUCTION BEGINS.

CONCRETE:

1. THE STORAGE STRUCTURE SHALL BE AS SHOWN ON THE STANDARD DRAWINGS. OTHER SHAPES MAY BE PROPOSED, PROVIDED THE SITE LIMITATIONS AND STORAGE REQUIREMENTS ARE MET. DESIGNS MUST BE SUBMITTED TO AND APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE BEFORE INSTALLATION.

2. ALL CONCRETE SHALL HAVE A MINIMUM 28–DAY COMPRESSIVE STRENGTH OF 4000 PSI WITH MAXIMUM WATER–CEMENT RATIO OF 0.49. THE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER/NRCS REPRESENTATIVE PRIOR TO PLACEMENT.

3. CONCRETE SHALL NOT BE DROPPED FROM A HEIGHT GREATER THAN 5'; WHEN USING A PLASTICIZING ADMIXURE, DROP HEIGHT MAY BE INCREASED TO 12'

4. REINFORCING STEEL SHALL HAVE A TENSION YIELD POINT OF Fy=60,000 PSI.

5. CONCRETE COVER FOR REINFORCEMENT BARS SHALL CONFORM TO THE FOLLOWING UNLESS INDICATED OTHERWISE ON THE DRAWINGS:
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH___ 3 INCHES
B. CONCRETE EXPOSED TO EARTH OR WEATHER:
No. 6 THROUGH No. 18 BARS_____ 2 INCHES
No. 5 BAR, W31 OR D31 WIRE AND SMALLER _____ 1 1/2 INCHES

6. PROVIDE EXPANSION JOINTS EVERY 90' (MAX.) IN WALL.

NOTE:
THIS WALL WAS DESIGNED TO BE COMPATIBLE WITH LOADS AND ROOF CONNECTORS FOR CALHOUN SUPER STRUCTURE ROOFS. ANY OTHER ROOF SYSTEM MAY BE USED IF THE LOAD REACTIONS DO NOT EXCEED THOSE IDENTIFIED ON THIS DRAWING. IF CONNECTORS ARE OTHER THAN THOSE FOR CALHOUN SUPER STRUCTURE ROOFS, THE ROOF DESIGNER SHALL APPROVE THEM AS A COMPONENT OF THE ROOF SYSTEM USED

Date
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Drawn NAA 06/17/08
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Approved
Title

REINFORCED CONCRETE WALL
FOR HOOP ROOF MEMBRANE ENCLOSURE
(SOLID MANURE STORAGE)
GENERAL NOTES

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File Name
NRCS.DWG
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GENERAL NOTES CON'T:

FOUNDATIONS AND BACKFILL:

1. THE MINIMUM REQUIRED SOIL BEARING CAPACITY SHALL BE 1.0 TSF AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER/NRCS REPRESENTATIVE PRIOR TO CONSTRUCTION. THE ACTUAL MAXIMUM BEARING PRESSURES ARE LISTED IN THE TABLE BELOW:

ACTUAL MAXIMUM BEARING PRESSURES (SERVICE LOADS) (TSF)		
ROOF SPAN (FT)	FOOTING HEEL	FOOTING TOE
30	0.52	0.005
40	0.49	0.035
50	0.52	0.025
60	0.49	0.040

2. THE BACKFILL MATERIAL SHOULD BE FREE OF ORGANIC MATTER, FROZEN MATERIALS, OR ANY FOREIGN MATERIALS. ON-SITE MATERIALS MAY BE USED TO MEET THE GRADING REQUIREMENTS FOR THE STRUCTURE PROVIDED THEY MEET GRADATION REQUIREMENTS AS APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE. MOISTURE SHOULD BE UNIFORMLY ADDED TO THE FILL MATERIAL SO THAT THERE IS NO VISIBLE DUST DURING COMPACTION. LIFT THICKNESS AND COMPACTION SHALL BE AS FOLLOWS:

COMPACTION EQUIPMENT	LIFT THICKNESS (IN)	PASSES/COVERAGES
A. SHEEPSFOOT ROLLER	6	6
B. RUBBER TIRE ROLLER	8	6
C. SMOOTH WHEEL ROLLER	8	6

3. EROSION AND SEDIMENTATION CONTROLS MUST PROVIDE CONTAINMENT AND FILTRATION OF RUNOFF FROM THE DISTURBED AREA.

4. THE SUB-GRADE FOR THE WASTE STORAGE FACILITY SHALL BE APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE PRIOR TO THE PLACEMENT OF THE BEDDING STONE.

5. BEDDING STONE SHALL BE 3" TO 6" THICKNESS OF AASHTO #57 DRAIN FILL BENEATH THE CONCRETE FLOOR SLAB OF THE STORAGE STRUCTURE. BEDDING STONE SHALL BE 6" MINIMUM THICKNESS OF AASHTO #57 DRAINFILL BENEATH THE WALL FOUNDATION. STONE SHALL BE GRADED TO WITHIN 1" OF PROPOSED GRADE SHOWN WITHIN THE CONTRACT DRAWINGS.

6. INSTALLATION OF THE PERIMETER DRAIN SHALL CONFORM TO SUBSURFACE DRAIN CONSTRUCTION SPECIFICATION PA606. THE 6" DIAMETER PERFORATED POLYETHYLENE PERIMETER DRAIN SHALL CONFORM TO AASHTO M294-01 OR ASTM F-405 SPECIFICATIONS. THE PERIMETER DRAIN SHALL BE INSTALLED IN A MANNER SUCH THAT THE PIPE IS NOT CRUSHED OR KINKED AND SLOPED TO A POSITIVE OUTLET.

7. IN SITUATIONS WHERE THE PERIMETER DRAIN OR ANY EXTENSIONS REQUIRED FOR OUTLETTING PURPOSES WILL BE INSTALLED IN HEAVY TRAFFIC AREAS THE PIPE TYPE AND MATERIAL SHALL BE SELECTED FROM THE SUBSURFACE DRAIN CONSTRUCTION SPECIFICATIONS PA606 AND APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE.

8. GRADE AND COMPACT ALL BACKFILL TO PROVIDE POSITIVE SURFACE DRAINAGE. NO ROCK OVER 6 INCHES ON THE SURFACE SHOULD BE PRESENT IN THE FINAL BACKFILL MATERIAL. THE FOLLOWING TABLE GIVES THE MAXIMUM LIFT THICKNESS FOR THREE (3) PASSES OF THE COMPACTION EQUIPMENT.

	LIFT MAXIMUM LOOSE THICKNESS IN INCHES
A. WITHIN 3 FEET OF CONCRETE WALL:	
HAND COMPACTORS:	
JUMPING JACK OR VIBRATORY PLATE	4
SMALL VIBRATORY ROLLER	8
B. BEYOND 3 FEET FROM CONCRETE WALL:	
TRACK EQUIPMENT-	6
RUBBER-TIRED EQUIPMENT-	12
VIBRATORY ROLLER-	18

9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT DEWATERING SO THAT THE EXCAVATION IS DRY ENOUGH TO BE INSPECTED BY THE ENGINEER/NRCS REPRESENTATIVE. DEWATERING OF THE SITE SHALL BE UNTIL THE INSTALLATION IS COMPLETE.

10. ALL DISTURBED AREAS SHALL BE SEEDED ACCORDING TO THE CRITICAL AREA PLANTING SPECIFICATION 342.

RETAINING WALL DIMENSIONS

1. OBTAIN FINAL GRID CENTERLINE AND BASE PLATE DIMENSIONS FROM HOOP ROOF BUILDING MANUFACTURER.

2. COORDINATE LOCATION OF BASE PLATES AND GRID WITH THE HOOP ROOF BUILDING MANUFACTURER TO DETERMINE THE CENTERLINE OF THE SUPPORTING WALLS.

Date
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Drawn NAA 08/17/09
Checked SAH 08/17/09
Approved
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REINFORCED CONCRETE WALL
FOR HOOP ROOF MEMBRANE ENCLOSURE
(SOLID MANURE STORAGE)
GENERAL NOTES CON'T

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File Name
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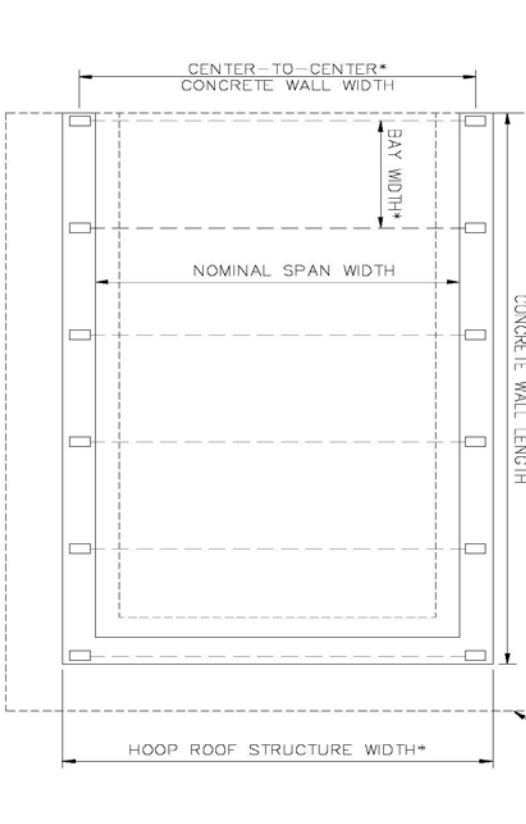
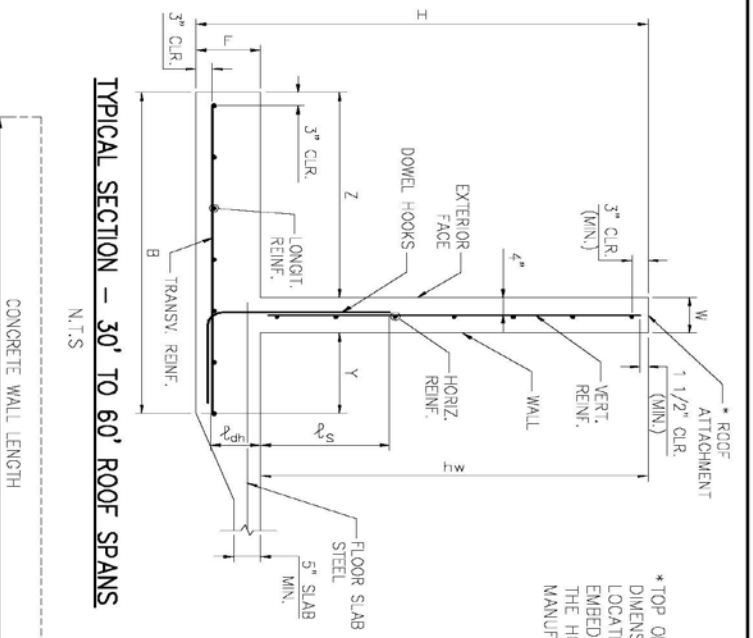


PLAN VIEW – 30' TO 60' ROOF SPANS
N.T.S



TYPICAL SECTION – 30' TO 60' ROOF SPANS
N.T.S

* TOP OF WALL FINISH, BASE PLATE DIMENSIONS AND ANCHOR BOLT LOCATION, SIZE, AND MINIMUM EMBEDMENT SHALL BE CONFIRMED WITH THE HOOP ROOF BUILDING MANUFACTURERS SPECIFICATIONS

DIMENSION AND REINFORCEMENT SUMMARY				
WALL/FOOTING DIMENSIONS	30' ROOF SPAN	40' ROOF SPAN	50' ROOF SPAN	60' ROOF SPAN
B	6'-0"	6'-6"	6'-6"	7'-0"
F	1'-0"	1'-0"	1'-2"	1'-2"
H	7'-0"	7'-0"	7'-2"	7'-2"
hw	6'-0"	6'-0"	6'-0"	6'-0"
w	0'-8"	0'-8"	0'-8"	0'-8"
y	1'-6"	1'-6"	1'-6"	1'-6"
z	3'-10"	4'-4"	4'-4"	4'-10"
FOOTING REINF. SIZE				
Transv. reinf.	#4 @ 6 in.	#4 @ 6 in.	#5 @ 7 1/2 in.	#5 @ 7 in.
Longit. Reinf.	#4 @ 8 in.	#4 @ 8 in.	#5 @ 10 in.	#5 @ 10 in.
Dowel Hooks	#5 @ 6 in.	#5 @ 6 in.	#6 @ 7 1/2 in.	#6 @ 7 in.
ℓs	24 in.	24 in.	28 in.	28 in.
ℓdh	9 in.	9 in.	11 1/2 in.	11 1/2 in.
WALL REINF. SIZE				
Vert. Reinf.	#5 @ 6 in.	#5 @ 6 in.	#6 @ 7 1/2 in.	#6 @ 7 in.
Horiz Reinf.	#4 @ 12 in.	#4 @ 12 in.	#4 @ 12 in.	#4 @ 12 in.

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REINFORCED CONCRETE WALL
FOR HOOP ROOF MEMBRANE ENCLOSURE
(SOLID MANURE STORAGE)
PLAN AND TYPICAL SECTION – 30' TO 60' SPANS

		Date
Designed	SAH	JUNE 2008
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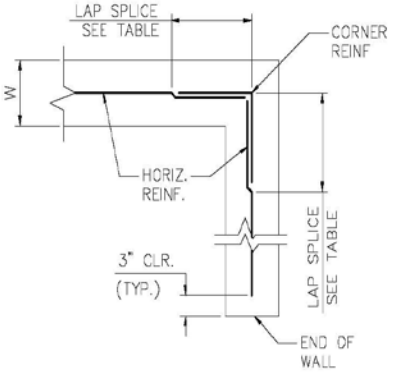


CORNER DETAIL

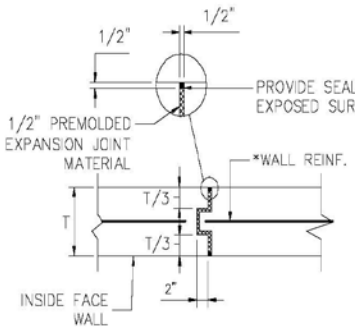
N.T.S

JOINT NOTES:

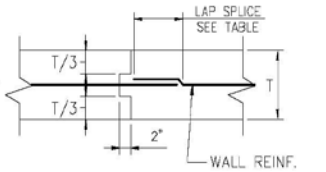
1. EXPANSION JOINT MATERIAL SHALL CONSIST OF SPONGE RUBBER AND CORK TYPE OR SELF EXPANDING CORK TYPE PER ASTM D1752.

2. BOND BREAKER SHALL CONSIST OF PRESSURE SENSITIVE TAPE RECOMMENDED BY SEALENT MANUFACTURER TO SUIT APPLICATION.

3. SEALANT SHALL CONSIST OF A NON-SAG POLYURETHANE SEALANT CONFORMING TO ASTM C920, GRADE NS, CLASS 25 USES NT, M, G, O; MULTI COMPONENT, CHEMICAL CURING, NON-STAINING, NON-BLEEDING, CAPABLE OF CONTINUOUS WATER IMMERSION, NON-SAGGING TYPE.



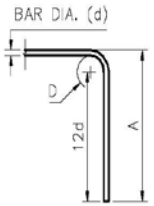
EXPANSION JOINT DETAIL



CONSTRUCTION JOINT DETAIL

N.T.S

* PROVIDE 3" MIN. CLEAR BETWEEN WALL REINF. AND EXPANSION JOINT



90 DEGREE HOOK

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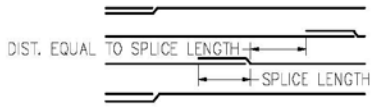
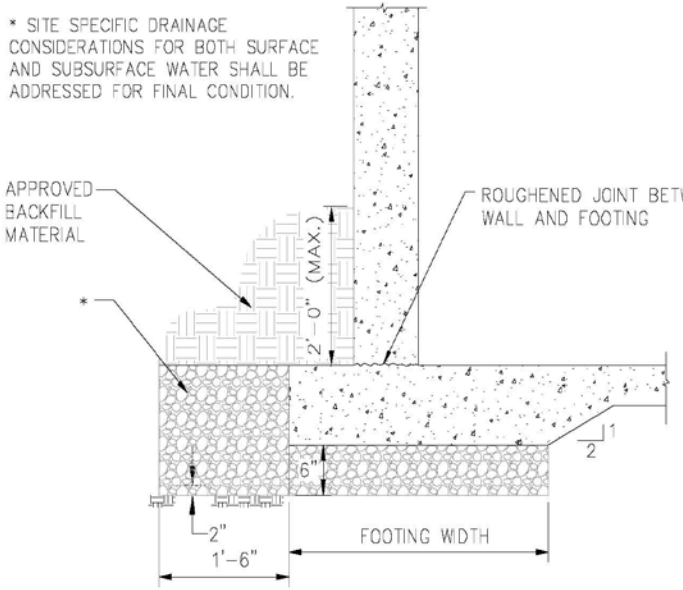


SPLICE DETAIL FOR WALL AND FOOTING REINF. STEEL

N.T.S



BACKFILL DETAIL

N.T.S

REINFORCING STEEL LAP SPLICES, EMBEDMENTS AND STANDARD HOOKS

BAR SIZE	MIN. LAP SPLICE LENGTH (IN)		MIN. EMBEDMENT LENGTH (IN)		90° STANDARD HOOKS (IN)	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	A	D
3	22	16	13	12	6	2 1/4
4	29	21	17	12	8	3
5	36	26	21	15	10	3 3/4
6	43	31	26	18	12	4 1/2
7	54	39	32	23	14	5 1/2
8	71	51	42	30	16	6

NOTES:
1. TABLE BASED ON A.C.I. 318-05 WITH F'C=4,000 PSI AND FY=60,000 PSI.
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES DEPTH OF CONCRETE CAST BELOW THE REINFORCEMENT.
3. HORIZONTAL WALL REINFORCEMENT IS CONSIDERED A TOP BAR.

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DETAILS 1

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NOTES:

1. JOINTS SHALL BE CUT AS SOON AS AGGREGATE IS SET, BUT NO LATER THAN 24 HOURS AFTER THE CONCRETE PLACEMENT

2. JOINT LAYOUT, DESIGN AND SEALANT SHALL BE APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE.

3. THE SAW CUT DEPTH SHALL BE A MINIMUM OF 1/4 THE THICKNESS OF THE SLAB, TO A MAXIMUM OF 2".

4. SEALANT SHALL NOT BE USED WHEN TEMPERATURE IS BELOW 40 F OR ABOVE 100 F UNLESS APPROVED BY THE ENGINEER/NRCS REPRESENTATIVE.

5. A PRIMER MAY BE REQUIRED FOR JOINTS THAT WILL BE SUBJECT TO IMMERSION AFTER CURE. USE AS SPECIFIED BY THE SEALANT MANUFACTURER.

6. A BACKER ROD SHALL BE USED TO SET THE DEPTH OF THE SEALANT AND SHALL BE SLIGHTLY LARGER THAN THE WIDTH OF THE SAW CUT.

7. SEALANT DEPTH SHALL BE A MINIMUM OF 1/4" AND NOT MORE THAN 1/2", EXCEPT THAT IN TRAFFIC ARES, THE MINIMUM DEPTH OF SEALANT IS 1/2".

8. CUT 50% OF THE REINFORCING STEEL DIRECTLY UNDER THE JOINT.

PLACEMENT PROCEDURE:

A) JOINTS SHALL BE DRY AND FREE FROM DIRT, GREASE, LOOSE MORTAR OR ANY FOREIGN MATTER.

B) PRIME JOINT SURFACES AS RECOMMENDED BY THE MANUFACTURER. ALLOW REQUIRED DRYING TIME BEFORE APPLYING SEALANT.

C) INSTALL APPROVED BACKER ROD UNIFORMLY TO THE DESIGNED DEPTH. GENERALLY 1/4" TO 3/8"

D) INSTALL SEALANT INTO THE PREPARED JOINT. PLACE THE NOZZLE OF THE GUN TO THE BACKER ROD AND FILL THE ENTIRE JOINT. KEEP THE TIP OF THE NOZZLE IN THE SEALANT, CONTINUE ON WITH A STEADY FLOW OF SEALANT PROCEEDING THE NOZZLE TO AVOID AIR ENTRAPMENT. AVOID OVERLAPPING THE SEALANT TO ELIMINATE THE ENTRAPMENT OF AIR.

E) TOOL, AS REQUIRED, TO PROPERLY FILL THE JOINT.

F) PROVIDE CURING TIME, AS REQUIRED BY THE MANUFACTURER, BEFORE ALLOWING TRAFFIC OR SUBJECTING TO IMMERSION.

FLOOR STEEL TABLE *		
DISTANCE BETWEEN JOINTS	FOR 5" THICK FLOOR	
	As	EXAMPLE
≤ 30'	0.029	6x6–W1.4xW1.4 (10ga.)
> 30' ≤ 60'	0.058	6x6–W2.9xW2.9 (6ga.)
> 60' ≤ 90'	0.087	#3 @ 15"
> 90' ≤ 140'	0.120	#4 @ 18"
> 140' ≤ 200'	0.190	#4 @ 12"

* THIS TABLE IS FOR FLOORS ON COARSE GRANULAR OR COHESIVE MATERIAL. FOR FLOORS ON SAND OR PERVIOUS GOTEXTILE, As MAY BE REDUCED BY 50%

FLOOR SLAB SAW CUT DETAIL

N.T.S

SAW CUT LAYOUT

N.T.S

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DETAILS 2

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