

# P14416 P3 Arborloo Concrete Base Development Hole Size Test Plan

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

**Summary:** The following tests are designed to make sure the hole sizes for the base are the proper size. The sections consist of determining the squat hole diameter size and how well the base covers the arborloo hole. Make any notes or record any unusual/unique findings in the comments section. **This should be the second set of tests performed on the concrete bases.**

## Specifications Tested

Engr. Spec. #	Specification (description)	Unit of Measure	Marginal Value	Ideal Value	Pass/Fail/Marginal
ES3	Size of arborloo hole(diameter)	in	18	20	
ES4	Squat hole (diameter)- using a 5 gallon bucket to create this hole in the mold	in	9	10	

## Test Equipment

Check off	Equipment Description
	Concrete Base
	Tape measure
	Piece of plywood with 22" diameter hole
	Pencil

## Revision History

Revision	Description	Date
1	Created Document	12/5/13
2	Added Ideal Value, Pass/Fail Columns; Pass Fail Criteria	2/18/14
3	Changed procedure of Part I	3/8/14
4	Added pictures	3/18/14

## Sections

**Part I: Size of Hole Arborloo Covers Test**

**Part II: Squat Hole Test**

### Part I: Size of Hole Arborloo Covers Test

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

#### Procedure:

- \_\_\_ 1. Use tape measure to get dimensions of concrete base (OD, ID, inside thickness, outside thickness, height, width, plywood hole diameter ) and record these dimensions
- \_\_\_ 2. Set up sheet of plywood with 22" diameter hole in the center

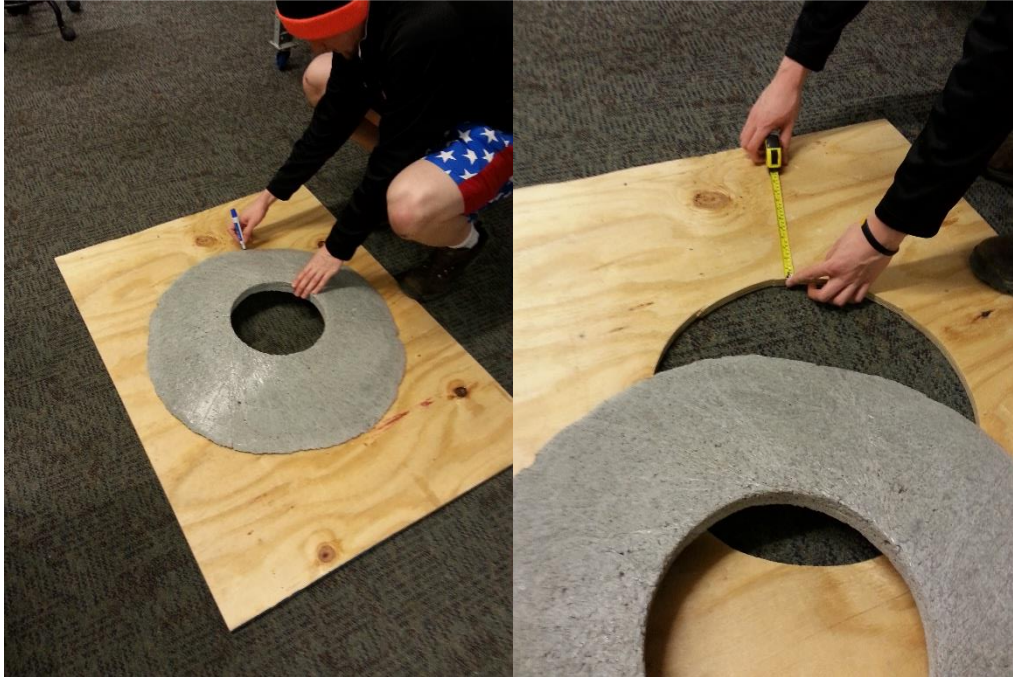
- \_\_\_ 3. Place and center concrete base over the center of the circle in plywood
- \_\_\_ 4. Take a pencil and mark the outer diameter in 6 spots (roughly 60 degrees apart) on the plywood
- \_\_\_ 5. Measure and record the distance from outer diameter of concrete base to the diameter of the 22" plywood circle after removing the base from the plywood
- \_\_\_ 6. Record these measurements below
- \_\_\_ 7. Once the measurements are recorded, erase the pencil marks on the plywood

**Summary of Data**

Base Number and Dome/Slab	Hole in Ground Diameter (in)	Squat Hole Diameter or ID (in)	Outside Diameter (in)	Height (in)	Width (in)	Inside Thickness (in)	Outside Thickness (in)	Distance from OD of Base to OD of plywood hole (in)

**Comments:**

Picture of “fully assembled” test:



Sign off on section completion before continuing: \_\_\_\_\_

## Part II: Squat Hole Test

Date Completed: \_\_\_\_\_

Performed By: \_\_\_\_\_

### Procedure:

- \_\_\_ 1. Take concrete base and lie flat on ground
- \_\_\_ 2. Use tape measure to obtain diameter of squat hole
- \_\_\_ 3. Take 6 diameter measurements (roughly 60 degrees apart)
- \_\_\_ 4. Record squat hole diameters in Summary of Data Table

Comments:

Picture of “fully assembled” test:



Sign off on section completion before continuing: \_\_\_\_\_

**Pass/Fail Criteria**

Rqmt. #	Engr. Requirement (metric)	Customer Req	Unit of Measure	Marginal Value	Ideal Value	Pass/Fail Criteria
S1	Purchase Cost for base	1	\$	25	25	Fails if purchase cost >\$25
S2	Load it can support (7 days)	3	lbs	270	450	Fails if load < 270 lbs
S3	Hole diameter it covers	2	in	18	20	Fails if clearance between outer edge of concrete base and diameter of plywood hole < 2"
S4	Squat hole widest point	3	in	9	10	Passes if diameter is between 9"-11"
S5	Static coefficient of friction against ground	3	-	0.5	0.6	Use scale to measure force it takes to move
S6	Tripping hazards	3	qty	0	0	N/A
S7	Time to assemble	5	hours	2	1	Fails if assembly time > 2 hours
S8	Hand tools needed to assemble	1,5	qty	3	0	Fails if tools needed quantity > 3
S9	Weight of heaviest assembled piece	4,5	lbs	100	80	Fails if weight of heaviest piece is > 100 lbs
S10	People needed to move heaviest assembled piece	5	qty	2	1	Fails if number of people > 2
S11	90% of Users find easy to clean	4,5	survey	90%	100%	Passes if within ± 5% of 90%
S12	Lifecycle	1,8	years	TBD	TBD	TBD
S13	90% of Users find comfortable	6	survey	90%	100%	Passes if within ± 5% of 90%
S14	90% of Users find visually appealing	7	survey	90%	100%	Passes if within ± 5% of 90%
S15	Pieces for available upgrade	9	qty	2	3	N/A

Customer Requirements	
1	Affordable
2	Covers Hole
3	Safe to Use
4	Moveable
5	Simple to Setup
6	Comfortable
7	"Modern" Aesthetics
8	Servicability
9	Allows Financing in Parts