P14416 P3 Arborloo Concrete Base Development
Other Test Plans

Date Completed: _____

Performed By: _____

Summary: The following tests don't necessarily map to any engineering specifications directly, but will provide information about the slump, wet weight of the concrete specimen, and the breaking of the coconuts. The slump test measures the workability of fresh concrete. The wet weight test looks at how much the weight changes from when the concrete is wet to when it has cured for 7 days. The breaking of coconuts is crucial to our concrete mix. A lifecycle assessment is also part of these test plans.

Specifications Tested

Engr. Spec. #	Specification (description)	Unit of Measure	Marginal Value
N/A	Slump	in	
N/A	Wet weight	lbs	--
N/A	Breaking 15 lbs of coconuts	hours/person	5
ES12	Lifecycle	years	TBD
ES 15	Pieces for Available Upgrade	qty	2

Test Equipment

Check off	Equipment Description
	Cement
	Coconut
	Styrofoam
	Water
	Slump cone
	Scale
	Hammer/Rock
	½" mesh (chicken wire)
	Container to catch correct sized coconuts
	Cardboard (removable sheet/walls)
	SimaPro software

Revision History

Revision	Description	Date
1	Created Document	2/11/14
2	Added Breaking Coconut Test	2/13/14

Sections

Part I: SlumpTest
Part II: Wet Weight Test
Part III: Breaking Coconut Test
Part IV: Lifecycle Test
Part V: Pieces for Available Upgrade Test

Part I: Slump Test

Date Completed: _____

Performed By: _____

Procedure:

___ **1.** Refer to ASTM C143 for specific procedure to follow
___ **2.** Fill the slump cone with fresh concrete in 3 stages; “rodding” the mixture after each of the 3 stages
___ **3.** After each stage, it is packed using a rod of standard dimensions about 25 times
___ **4.** At the end of the 3rd stage, concrete is struck off flush to the top of the mold
___ **5.** The slump cone is then carefully removed vertically, not disturbing the concrete cone
___ **6.** Record the slump

Comments:

Picture of fully assembled test:

Sign off on section completion:_____

Part II: Wet Weight Test
Date Completed: _____

Performed By: _____

Procedure: (assuming all materials are measured out and mixed)

___ **1.** Lay up mold and place on scale when still wet
___ **2.** Record weight
___ **3.** Wait until concrete has set for 7 days and then place on scale
___ **4.** Record the dry weight as well

Comments: Mold= 30 lbs

Picture of fully assembled test:

Summary of Data

Mix	Slump (in)	Wet Weight (lbs)	Dry Weight (lbs)

Sign off on section completion:_____

Part III: Breaking Coconut Test
Date Completed: _____

Performed By: _____

Procedure: (assuming coconuts are collected)

___ **1.** Build “cage” with solid objects to keep the coconuts contained (ex: cardboard)
___ **2.** Place a removable sheet on the bottom of the “cage”
___ **3.** Put coconuts on the removable sheet and pick up hammer/rock

___ **4.** Break coconuts by hitting coconuts with hammer/rock into small pieces (roughly ½" in size)
___ **5.** Place ½" mesh over container to catch the correct sized coconuts
___ **6.** Pick up removable sheet with broken coconuts and dump onto the 1/2" mesh over the box
___ **7.** Repeat these steps until there is 15 lbs of coconuts which will make 1 arborloo

Comments:

Picture of fully assembled test:

Part IV: Lifecycle Test

Date Completed: _____

Performed By: _____

Procedure:

___ **1.** Open up SimaPro software on computer
___ **2.** Input necessary dimensions, properties, etc
___ **3.** Let software run its simulation

Comments:

Sign off on section completion:_____

Part V: Pieces for Available Upgrade

Date Completed: _____

Performed By: _____

Procedure: Options for handles, seat, etc.

___ **1.** Placing upgradable piece onto (or in) the base
___ **2.** Use the piece as it is intended (seat- sit on it; handles- carry the base)
___ **3.** Make observations based on any unique happenings or failures and even successes
___ **4.** Record the observations below in the comments section

Comments:

Sign off on section completion:_____