



Customized Assessment Development Report

Interlocking Concrete Pavement Institute (ICPI)

Interlocking Concrete Paver Installer Certification Assessment

(Test Code 9135/9235)

August 2, 2021

Custom Assessment Development

This report contains a description of the process used and results of the face-to-face, custom assessment development workshop conducted for ICPI, Interlocking Concrete Paver Installer Certification Assessment, Test Code 9135. The workshop was held March 23-25, 2021. The three-day workshop was held at ICPI's headquarters in Chantilly, Virginia. The goal of the workshop was to create a Job and Task Analysis (JTA), an assessment blueprint, and develop a custom multiple-choice assessment.

The workshop was facilitated by Dr. Tina Koepf of Nocti Business Solutions and included a panel of subject matter experts (SMEs) provided by ICPI. Subject matter experts in the occupational area are recruited. Subject matter experts must have three years of experience in the occupational area (teaching the occupational area is considered as qualifying experience). Committees consist of representatives from business/industry and both secondary and/or post-secondary education. Geographical representation is also taken into consideration. The SMEs that attended the meeting included: Christian Boad - Uyeta Landscape & Maintenance, Renton, WA; Donald Duke – Arborgold, Fishers, IN; Merry Beth Hall, CAE - Director of Education and Workforce Development ICPI, Chantilly, VA; Bryan Horr, P.E. – ICPI, Chantilly, VA; Daniel Hughes - Segmental Systems, Inc., Otis Orchards, WA; Gary Stowe - Stowe Contracting, Inc., Marina, CA; Ryan Taylor - Decorative Paving, Inc., Loveland, OH; Harrison Woytko - Boulder Landscape, LLC, Berwick, PA.

Job and Task Analysis (JTA)

Because ICPI wanted to revise the current curriculum, the SMEs were asked to discuss critical components of the jobs and tasks they perform daily. The SMEs, with the assistance of the facilitator developed a list of competencies shown in *Table 1*.

**Table 1
Job and Task Analysis**

Job Task Analysis				
Interlocking Concrete Pavement Institute (ICPI) - Installer				
A				PAVER FUNDAMENTALS/INTRODUCTION
	1			Describe a paver system
		a		history
			--	<i>evolution</i>
		b		overview
			--	<i>flexible pavement</i>
			--	<i>definitions - paver terminology</i>
			--	<i>interlock</i>
			--	<i>vertical, horizontal, rotational interlock</i>
			--	<i>factors that affect interlock</i>
			--	<i>components</i>
			--	<i>aspect ratio and its effects on applications</i>
			--	<i>plan ratio and its effect on interlocking</i>
	2			Contrast types of concrete paver applications
		a		list types of concrete paver applications
			--	<i>describe pedestrian applications</i>
			--	<i>describe light vehicle</i>
			--	<i>recognize the differences between residential and commercial applications</i>
B				PROJECT OVERVIEW
	3			Determine site specifications
		a		size and design the pavement
			--	<i>sizing of the paver selection based on the application</i>
			--	<i>shape of pavement</i>
			--	<i>location/use of pavement</i>
	4			Obtain proper permits (if required)
		a		consult local building departments
		b		consult local building codes/HOA
	5			Ensure proper communication/planning prior to the job start
		a		job costing
		b		drawing approval from homeowner
		c		slopes and drainage
			--	<i>runoff</i>
			--	<i>drains</i>
		d		paver material and color approval

		e		edge restraint material
		f		joint materials
		g		sealing materials
		h		elevation approval from homeowner
		i		change order
	6			Evaluate logistics for the job
		a		proper equipment selection
		b		labor requirements
		c		site access
C				SUB-GRADE ELEVATION AND PREPARATION
	7			Identify location of utilities
		a		water, gas, phone, power, cable
	8			Calculate job layout dimensions
		a		establish benchmark
		b		establish sub-grade
		--		<i>stake perimeter</i>
		--		<i>measure/string</i>
		c		elevation/slope measuring equipment
		--		<i>laser level</i>
		--		<i>slope level</i>
		--		<i>transit</i>
		--		<i>string level</i>
	9			Identify proper tools/equipment for excavation/demolition
		a		tools/equipment selection
		--		<i>hand tools</i>
		--		<i>excavators</i>
		--		<i>skid steer</i>
		--		<i>mini skid steer</i>
	10			Evaluate the soil/sub-grade
		a		evaluation
		--		<i>field test</i>
		--		<i>inspection</i>
		--		<i>drainage</i>
	11			Demonstrate proper compaction techniques for the sub-grade
		a		types of equipment
		b		moisture content
		c		proper compaction techniques
		--		<i>soil amendments</i>
		--		<i>recognize unsuitable soil</i>

	12			Explain the use of geotextile in hardscaping projects
		a		proper selection of geotextile
		b		how to install geotextile
		c		common uses
	13			Discuss proper disposal of construction spoils
		a		concrete
		b		soil haul-off
D				AGGREGATE BASE
	14			Summarize ASTM standards for proper aggregate base material selection
		a		select proper material
			--	<i>approved DOT materials/requirements</i>
			--	<i>sieve analysis / proper base selection (#200 sieve)</i>
	15			Explain techniques for the installation of aggregate base
		a		proper installation equipment
		b		installing in lifts
		c		extend 6" beyond outside of edge restraint
		d		proper grading
			--	<i>tool selection/usage</i>
	16			Determine proper compaction/moisture content of aggregate base
		a		proper grading and tolerances
		b		moisture content/remediation
		c		proper compacting equipment
		d		compaction testing
E				BEDDING SAND
	17			Summarize the ASTM standard for bedding sand
		a		size, shape, and hardness
	18			Discuss proper storage of bedding sand on the jobsite
	19			Verify proper moisture content for bedding sand
		a		moisten dry sand
		b		do not lay pavers on saturated sand
	20			Identify the proper screeded depth of bedding sand
		a		1 inch nominal sand thickness
			--	<i>do not fill base voids with bedding sand</i>
		b		tolerances
		c		to maintain moisture, do not screed more than what you can use in half a day
			--	<i>preferred method is a rigid, metal pipe 1" OD</i>
	21			Explain proper installation techniques for bedding sand
		a		tools and equipment
			--	<i>screed bars</i>

		b		How and when to pre compact bedding sand
			--	<i>for proper bedding layer compaction, set screed pipe to allow for settlement</i>
F				INSTALLATION OF CONCRETE PAVERS
	22			Determine the starting point for installing concrete pavers
		a		start from low point and work uphill
		b		establish final orientation of layout lines to known surface
	23			Discuss proper material handling/staging during the installation process
		a		hand vs mechanical
			--	<i>vacuum</i>
			--	<i>hand clamps/grabbers</i>
		b		verify quality of materials and defective materials
	24			Establish bond lines using string lines/chalk lines
		a		every 6 to 12 feet
		b		verify square (3-4-5 triangle)
		c		method of crossing tape measures
		d		laser layout stations
	25			Describe the ergonomics of installation
		a		lay pavers from the standing position
	26			Employ the click and drop method for installing pavers
	27			Construct interlocking concrete pavements using specified patterns/spacing
		a		consult manufacturer and follow patterns
		b		more waste when using intricate patterns/curves
		c		borders, inlays, customizing
		d		blending colors
	28			Straighten bond lines
		a		use alignment bar or persuader to straighten lines
	29			Demonstrate proper techniques for cutting/shaping pavers
		a		joint width
		b		marking and cutting pavers
		c		do not dry cut
			--	<i>use OSHA Table 1 when cutting</i>
	30			Ensure proper construction tolerances in the installation
		a		finish grade should be between 1/8" and 1/4" above rigid structures for future settlement
		b		3/8" finish surface
		c		¼" lippage to hard surfaces
		d		1/8" lippage between pavers
		e		½" bond lines within 50 feet
	31			Demonstrate proper compaction techniques for pavers
		a		straighten bond lines

		b		start at the perimeter, work toward interior with at least two passes, overlapping 4 inches
		c		mark and remove damaged pavers during compaction BEFORE SANDING JOINTS
		d		use the proper size and type compactor
		--		<i>use protective pad as needed</i>
		e		stay 6 feet away from unrestrained edges
G				EDGE RESTRAINTS
	32			Discuss the purpose of edge restraints
		a		prevent movement and maintain interlock
		b		bedding sand containment
		c		use of geotextile to eliminate bedding sand loss along edge restraint
	33			Select proper edge restraints for paver installation
		a		concrete curbs
		b		manufactured edge
		c		use products made for pavers
		d		mortar edge
	34			Install edge restraints
		a		remove excess bedding sand
		b		install on the base
		--		<i>backfill as soon as practical</i>
	35			Determine the correct length and material of spike
		a		use spike holes as recommended by manufacturer
	36			Construct the base past the edge restraint by a minimum of 6 inches
H				JOINT SAND
	37			Discuss the purpose of joint sand
		a		load transfer
	38			Summarize the ASTM standard for joint sand
		a		hardness
		b		size/shape of sand
	39			Identify the maximum joint size
		a		1/16 to 3/16 inch maximum
	40			Install joint sand
		a		ensure compaction prior to joint sand installation
		b		spread with lute rake
		c		leave consistent surplus of sand on top of pavers
	41			Explain proper techniques for vibrating/consolidating the joints
		a		vibrate sand into joints using a 5,000-pound compactor
		--		<i>work from the outside toward the middle, alternating directions, two passes minimum</i>

			--	<i>verify that joints are full, within 1/2" from bottom of the chamfer</i>
			--	<i>remove excess sand/clean surface</i>
I				CARE AND MAINTENANCE
	42			Discuss proper applications for sealers
		a		problem areas
		b		sealers are not required
		c		change appearance
		d		purpose of sealer
		e		sealing is not permanent
		f		follow all manufacturer's instructions for pavers, sealers, and cleaners
	43			Describe joint sand stabilization
		a		not permanent
		b		positive reasons to use joint sand stabilization
			--	<i>slows down erosion process</i>
	44			Outline methods for cleaning pavers
		a		follow all manufacturer's instructions for pavers, sealers, and cleaners
	45			Outline paver maintenance and repair techniques
		a		identify problem areas
			--	<i>identify damaged pavers</i>
			--	<i>inspect edge restraints</i>
			--	<i>inspect joint sand depth</i>
			--	<i>inspect joint width</i>
			--	<i>inspect surface deviation or settlement</i>
			--	<i>inspect for bedding sand loss</i>
		b		repair problem area
			--	<i>remove paver</i>
			--	<i>remove bedding sand</i>
			--	<i>repair base</i>
			--	<i>reinstall paver</i>
J				SAFETY
	46			Perform a job hazard analysis
		a		administrative controls
		b		engineering controls
		c		PPE (boots, gloves, mask, hearing, eye protection)
			--	<i>tool familiarization and training</i>
	47			Identify resources for mitigating silica in construction
		a		cutting (dry cutting, vacuum system...)
			--	<i>OSHA Table 1</i>
	48			Identify typical hazards on a hardscape installation project

		a		back injuries
		b		muscle pulls
		c		finger abrasion
		d		skin rashes or burns
		e		lung and respiratory injuries
		f		eye injuries
		g		heat exhaustion
		h		impact injuries
		i		vibration-related injuries
		j		hearing loss
		k		knee injuries
K				CONSTRUCTION TIPS
	49			Describe tips for more efficient paver construction
		a		cutting curves/undercutting
		b		marking
		c		drainage referring to paver size
		d		too small compactors
		e		troubleshooting
		f		poor effort in edge restraint construction
		g		efficiency
		h		proper tools
		i		right equipment
		j		staging
		k		material flow
		l		material ordering
		m		subcontracting
		n		over excavating
		o		paver removal
		p		cuts towards the inside (soldier course)
		q		new construction (settlement)
		r		sleeving (utility)
		s		installing edge restraints between pavers and other materials

Upon the completion of the JTA, the SMEs were asked to rate the domain areas for frequency, importance, and expertise level. The average ratings are below in *Table 2*.

Table 2
SME Domain Ratings

			Day, Week, Month	5=High1=Low	5=Expert, 1=Novice
A		PAVER FUNDAMENTALS/ INTRODUCTION	Frequency	Importance	Expertise Level
	1	Paver System	D	4.6	4.3
	2	Applications	W	4.3	4.2
B		PROJECT OVERVIEW	Frequency	Importance	Expertise Level
	3	Site Specifications	W	4.4	4.3
	4	Obtain proper permits (if required)	M	2.4	3.3
	5	Communication/Planning	D	4.9	4.4
	6	Logistics	D	4.7	4.4
C		SUB-GRADE ELEVATION AND PREPARATION	Frequency	Importance	Expertise Level
	7	Determine location of utilities	W	4.4	3.2
	8	Layout dimensions	W	4.3	4.0
	9	Excavation/Demolition	D	4.0	3.6
	10	Soil/Sub-Grade	D	4.3	4.6
	11	Compaction	D	4.7	3.0
	12	Geotextile	W	2.7	3.0
	13	Disposal	W	2.6	2.4
D		AGGREGATE BASE	Frequency	Importance	Expertise Level
	14	ASTM - proper material selection	W	4.3	3.7
	15	Installation	D	4.7	3.7
	16	Compaction/Moisture Content	D	4.1	3.9
E		BEDDING SAND	Frequency	Importance	Expertise Level
	17	ASTM Standards	M	4.3	3.9

	18	Storage on Jobsite	W	3.0	2.4
	19	Moisture Content	W	3.4	3.3
	20	Screeded Depth	D	3.7	3.1
	21	Installation	D	4.1	3.9
F		INSTALLATION OF CONCRETE PAVERS	Frequency	Importance	Expertise Level
	22	Starting point	W	3.7	4.6
	23	Material handling/staging	W	3.6	3.1
	24	String lines/chalk lines to establish bond lines	D	4.0	4.0
	25	Ergonomics of installation	D	3.7	3.3
	26	Click and drop	D	3.9	3.1
	27	Pattern/spacing	D	4.1	3.4
	28	Straighten bond lines	D	3.9	3.7
	29	Cutting/shaping	D	4.1	4.3
	30	Compacting the pavers	D	4.4	3.1
G		EDGE RESTRAINTS	Frequency	Importance	Expertise Level
	31	Material selection	W	4.6	4.1
	32	Installation	D	4.1	3.3
	33	Length or material of spike	M	2.9	2.1
	34	Extension of base past edge restraint, minimum 6 inches	D	4.3	2.6
H		JOINT SAND	Frequency	Importance	Expertise Level
	35	Purpose of joint sand	W	4.3	3.1
	36	ASTM / material selection	M	4.0	3.4
	37	Joint size	D	3.7	3.4
	38	Installation methods/compaction	D	4.4	3.4

	39	Vibrating/consolidating the joints	D	4.3	3.1
	40	Construction tolerances	D	4.1	3.9
I		CARE AND MAINTENANCE	Frequency	Importance	Expertise Level
	41	Sealer	M	1.9	4.3
	42	Joint sand stabilization	W	3.0	3.6
	43	Cleaning	M	2.3	2.6
	44	Protecting the pavers	M	2.3	2.4
	45	Maintenance/repair	M	3.4	3.7
J		SAFETY	Frequency	Importance	Expertise Level
	46	PPE (boots, gloves, mask)	D	4.6	2.4
	47	Silica awareness	D	5.0	3.6
	48	Administrative controls	D	3.7	3.7
	49	Typical hazards on a hardscape installation project	D	4.0	3.7
K		CONSTRUCTION TIPS	Frequency	Importance	Expertise Level
	50	Describe tips for paver construction	D	3.3	4.8

Blueprint Development

Always conscious of content and construct validity, NBS provides strict guidelines for determining test content. SMEs are also relied upon to reference standards in their field. If a current and complete nationally validated task list is not available for an occupation, a job and task analysis is performed and validated by the committee. The resulting critical core competencies, tasks and steps are then ranked and quantified to create a blueprint for the assessment being developed.

Once the blueprint is developed, written test questions are developed or revised to reflect the stated specifications. Committee members are asked to determine which critical core competencies are best illustrated on the written assessment. *Table 3* contains the weighting and item allocation for the assessment.

Table 3
Written Assessment Blueprint including Weight

	Interlocking Cement Paver Installer, Pre-Pilot Blueprint	Weight	Items
A	PAVER FUNDAMENTALS/INTRODUCTION	15	18
B	PROJECT OVERVIEW	11	13.2
C	SUB-GRADE ELEVATION AND PREPARATION	16	19.2
D	AGGREGATE BASE	18	21.6
E	BEDDING SAND	7	8.4
F	INSTALLATION OF CONCRETE PAVERS	17	20.4
G	EDGE RESTRAINTS	3	3.6
H	JOINT SAND	6	7.2
I	CARE AND MAINTENANCE	2	2.4
J	SAFETY	5	6
K	CONSTRUCTION TIPS	0	0

	Interlocking Cement Paver Installer, Pre-Pilot Blueprint	
A	PAVER FUNDAMENTALS/INTRODUCTION	18
	1 Paver System	13
	2 Applications	5
B	PROJECT OVERVIEW	13.2
	3 Site Specifications	3
	4 Obtain proper permits (if required)	1
	5 Communication/Planning	7
	6 Logistics	3
C	SUB-GRADE ELEVATION AND PREPARATION	19.2
	7 Determine location of utilities	1
	8 Layout dimensions	2
	9 Excavation/Demolition	4
	10 Soil/Sub-Grade	5
	11 Compaction	5
	12 Geotextile	2

	13	Disposal	1
D		AGGREGATE BASE	21.6
	14	ASTM - proper material selection	4
	15	Installation	12
	16	Compaction/Moisture Content	5
E		BEDDING SAND	8.4
	17	ASTM Standards	2
	18	Storage on Jobsite	1
	19	Moisture Content	1
	20	Screeded Depth	1
	21	Installation	4
F		INSTALLATION OF CONCRETE PAVERS	20.4
	22	Starting point	2
	23	Material handling/staging	2
	24	String lines/chalk lines to establish bond lines	3
	25	Ergonomics of installation	1
	26	Click and drop	1
	27	Pattern/spacing	3
	28	Straighten bond lines	2
	29	Cutting/shaping	4
	30	Compacting the pavers	3
G		EDGE RESTRAINTS	3.6
	31	Material selection	1
	32	Installation	1
	33	Length or material of spike	1
	34	Extension of base past edge restraint, minimum 6 inches	1
H		JOINT SAND	7.2
	35	Purpose of joint sand	1
	36	ASTM / material selection	1
	37	Joint size	1

	38	Installation methods/compaction	2
	39	Vibrating/consolidating the joints	2
	40	Construction tolerances	1
I		CARE AND MAINTENANCE	2.4
	41	Sealer	0
	42	Joint sand stabilization	1
	43	Cleaning	0
	44	Protecting the pavers	0
	45	Maintenance/repair	1
J		SAFETY	6
	46	PPE (boots, gloves, mask)	2
	47	Silica awareness	2
	48	Administrative controls	0
	49	Typical hazards on a hardscape installation project	2
K		CONSTRUCTION TIPS	0
	50	Describe tips for paver construction	0

Assessment Development

NBS staff members serve as the test development facilitators. Facilitators are not expected to be experts on test subject matter. They are, however, trained in testing practices and counsel committee members on test item writing, assist with consistency in grammar and distracter composition, and encourage the committee to stay on task.

When developing test items, committee members are advised that certain practices, although current, may not be used uniformly or consistently across the country. Also, some practices which have been used for a long time may still be widely applied in the field. The goal is to assess the critical core competencies. This supersedes all other criteria. The facilitator will train the SME group the best practices for item writing.

The following items are developed for each assessment.

- Assessment blueprint
- Task weighting (rating of tasks on importance and on the number of items needed to accurately assess the task)
- Written assessment organized by duty categories

- Written answer key

Bias Review

Once the draft test is assembled, a bias review is performed on all items in the new test and appropriate revisions are made. Each test item is read and reviewed to verify that the following categories of bias do not exist:

- Language usage (use of slurs, slang, reference pronouns, etc.)
- Stereotyping (cultural, minority, gender, etc.)
- Representational unfairness (gender, ethnicity, etc.)

If any of the above are found, the item is flagged for revision. If the item can be reworded to eliminate bias without affecting the content, it is rewritten internally. If the content is subject to change with a rewrite, a SME is consulted for assistance.

Item Statistics

The new assessment is pilot tested on a sample of individuals to ensure that items on the test are functioning properly. The sample includes representation from various areas of the country. The results of the pilot test are compiled and analyzed through an item analysis. The results of the item analysis indicate item difficulty and discrimination, mean, standard deviation, range of scores, Kuder-Richardson 20 or Cronbach's Alpha reliability index, and the standard error of measurement. Also indicated is the number of test takers giving each response, broken down by group performance and the proportion of test takers who gave the correct answer. These statistics are provided to the team at the cut score workshop.

Cut Score

The cut score workshop was held online on July 13, 2021, 11:00 – 3:00 am (EST). The workshop was facilitated by Dr. Tina Koepf of Nocti Business Solutions and included a panel of subject matter experts (SMEs) provided by ICPI. These SMEs included: Christian Boad - Uyeta Landscape & Maintenance, Renton, WA; Donald Duke – Arborgold, Fishers, IN; Merry Beth Hall, CAE - Director of Education and Workforce Development ICPI, Chantilly, VA; Bryan Horr, P.E. – ICPI, Chantilly, VA; Daniel Hughes - Segmental Systems, Inc., Otis Orchards, WA; Gary Stowe - Stowe Contracting, Inc., Marina, CA; Ryan Taylor - Decorative Paving, Inc., Loveland, OH; Harrison Woytko - Boulder Landscape, LLC, Berwick, PA.

The Angoff method was used for the cut score workshop. This method requires the panel to make judgments on each individual item on the assessment, determining which percent of items minimally competent examinees should be able to answer correctly. This method also depends on pilot data to strengthen the defense of the cut score. The Angoff method requires that a panel adopt a criterion question to serve as the basis for making judgments on the criticality of the items on the test. The criterion question used for this assessment, which was determined by the SME team, was: "What percentage of minimally competent candidates would pass each item on the ICPI Installer Assessment?"

The cut score setting purpose and process was explained to the panel. In the Angoff method, in addition to reviewing the assessment items, the panel is also presented with data from a sample group of test takers. This data provides the panel with a source of information on the difficulty of the item (i.e., how many examinees answered the item correctly, and how commonly the other distractors were selected). The panel then reviews and rates the items in one or two rounds. After the first round of reviews, the preliminary cut score is computed, and the information is presented to the panel. If a second round is needed, the panel views the preliminary information and is given an opportunity to re-assess their judgments based on that information.

During the workshop, the panel was asked to rate each item by providing a difficulty percentage judgment about the item in relation to the criterion question. A high percentage response indicated that the item content was less difficult, resulting in a high number of employees marking the correct answer. A low percentage response indicated that the item content was difficult, resulting in a low number of employees marking the correct answer. The appendix of this report contains the item-by-item average ratings for the written assessment. The facilitator summarized the SME ratings to calculate the percentage required for passing the test.

The results of the first round of review and ratings are shown in *Table 4* below.

Table 4
Results of First Round of Panel Review to Determine the Passing Score

Number of Test Questions	Cut Score	Percent of Students Meeting Benchmark
121	98 (80.1%)	59%

The facilitator presented the participants with the above results, cut score of 80.1%. The SMEs felt that the score was acceptable and therefore they approved the Round 1 cut score. From the pilot testing data, with a cut score set at 80.1%, 5 of 17 (29%) of the pilot test-takers would have passed. Because the SMEs were confident with Round 1 cut score results, a second round was not needed.

After the cut score was set, partial credit was given to the pilot test-takers for selected items that were deleted and edited during the cut scores meeting. This increased the number of passing pilot test-takers increased to 10 of 17 (59%).

Table 5 contains a summary of the items that were edited or deleted during the cut score meeting, the average Angoff ratings, and the p-values from the 17 pilot test-takers.

Table 5
Written Assessment Pilot Data and Angoff Panel Rating Averages

#	Domain	Comment (Edit/Delete)	Average Angoff Rating	Pilot Data P (N=17)
1	Paver Fundamentals/Introduction		88.1	1
2	"		82.5	0.94
3	"		86.0	0.94
4	"		83.8	1

5	"		81.9	0.88
6	"		64.5	0.71
7	"		60.0	0.41
8	"		89.4	1
9	"		76.9	0.65
10	"		63.8	0.71
11	"	Edit	66.3	0.76
12	"	Edit	66.4	0.41
13	"		81.3	0.82
14	"	Edit	83.8	0.59
15	"		85.6	0.88
16	"		85.0	0.82
17	"	Edit	73.6	1
18	"		89.4	0.71
19	Project Overview	Edit	86.3	0.76
20	"		63.8	0.82
21	"	Edit	80.0	0.88
22	"		78.8	0.65
23	"	Delete		1
24	"		84.4	0.82
25	"		81.9	1
26	"	Edit	91.9	1
27	"	Edit	86.3	1
28	"		83.8	0.82
29	"		86.1	0.94
30	"		84.4	1
31	"		83.8	0.82
32	"		74.4	0.88
33	Sub-Grade Elevation and Preparation		83.8	0.94

34	"		81.9	1
35	"		74.4	0.94
36	"		54.6	0.47
37	"		93.1	1
38	"		85.3	0.65
39	"		73.8	0.88
40	"		71.9	0.59
41	"		62.3	0.53
42	"		75.0	0.65
43	"		81.9	0.88
44	"		78.8	0.76
45	"		81.9	0.82
46	"		88.1	0.88
47	"		81.5	0.82
48	"	Edit	70.0	0.29
49	"		88.8	0.94
50	"		78.1	0.65
51	"		85.0	0.59
52	"		83.8	0.94
53	Aggregate Base		72.6	0.71
54	"		76.3	0.71
55	"		64.4	0.35
56	"	Delete		0.88
57	"		84.4	0.82
58	"		85.6	0.65
59	"	Edit	59.9	0.24
60	"		85.6	0.94
61	"		89.4	0.88
62	"		78.8	0.65
63	"		66.5	0.47

64	"		81.3	0.76
65	"		87.3	0.88
66	"		67.5	0.41
67	"		71.9	0.41
68	"		83.1	0.47
69	"	Edit	76.3	0.24
70	"		83.8	1
71	"		85.6	0.94
72	"		86.9	1
73	"	Edit	71.3	0.65
74	Bedding Sand	Edit	62.0	0.41
75	"		89.4	0.76
76	"		90.0	0.88
77	"		87.5	0.88
78	"		91.9	0.82
79	"		83.8	0.82
80	"		85.9	0.82
81	"		81.3	0.65
82	"		86.3	0.82
83	Installation of Concrete Pavers		84.4	0.76
84	"		91.8	0.94
85	"		86.3	0.71
86	"	Edit	88.1	0.59
87	"		83.1	0.76
88	"	Edit	70.0	0.29
89	"		70.6	0.12
90	"		82.8	0.82
91	"	Edit	92.9	1
92	"		83.8	0.94
93	"		87.5	0.94

94	"		79.4	0.94
95	"		84.4	0.94
96	"	Edit	76.9	0.29
97	"		68.1	0.29
98	"		92.5	0.82
99	"	Edit	80.1	0.76
100	"		91.3	0.94
101	"		84.4	0.65
102	"	Edit	80.0	0.53
103	"		73.8	0.59
104	Edge Restraints		85.0	0.88
105	"	Edit	85.0	0.76
106	"		88.1	1
107	"		85.6	0.76
108	Joint Sand		89.8	0.88
109	"		80.0	0.65
110	"		76.9	0.88
111	"		79.4	0.59
112	"		75.8	0.71
113	"	Edit	73.8	0.24
114	"		87.5	1
115	"		82.5	0.65
116	Care and Maintenance		80.0	0.59
117	"	Edit	71.1	0.59
118	Safety	Edit	91.9	0.94
119	"	Edit	91.9	0.94
120	"	Edit	88.8	1
121	"		88.4	0.82
122	"		82.5	0.94
123	"	Edit	90.6	1

Additional Comments

Throughout the test development process, the assessment is given a test code at the infancy during pilot testing, then a new test code to signify the final, production test. For the Interlocking Concrete Paver Installer Certification Assessment, the pilot test code number is 9135 and the final test code is 9235.

The original blueprint weighting and rating specifies a 100-item assessment. Throughout the assessment development process, additional items were developed in case some items would perform poorly and therefore be deleted after pilot testing. During the cut score workshop, many items were edited to improve clarity. Two items were deleted. The group decided to keep the additional items, therefore resulting in an assessment that contains 121 items.

A final note regarding the low number of pilot test-takers not passing with the cut score that was set. The rationale is that many of the poor-performing items were edited for clarification, but more importantly, the curriculum will soon be revised and will offer the test-takers up-to-date curriculum.