




Specification – Kiosk Concrete Pads

Standard Number: HPC-8MJ-09-0001-2015

Document Control		
Author	Name: Nathan Spencer Position: URI Engineering Pty Ltd	
Document Owner <i>(May also be the Process Owner)</i>	Name: Paul Savig Position: Senior Standards Engineer	
Approved By *	Name: Justin Murphy Position: Manager Asset Management Services	
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* Shall be the Process Owner and is the person assigned authority and responsibility for managing the whole process, end-to-end, which may extend across more than one division and/or functions, in order to deliver agreed business results.

** This person will have the power to grant the process owner the authority and responsibility to manage the process from end to end.

*** Frequency period is dependent upon circumstances– maximum is 5 years from last issue, review, or revision whichever is the latest. If left blank, the default shall be 1 year unless otherwise specified.

Revision Control		
Revision	Date	Description
0	20/07/2015	First Issue

STAKEHOLDERS	
The following positions shall be consulted if an update or review is required:	
Manager Engineering & Project Services	Regional Asset Managers
Manager Capacity Management Services	
Manager Assets Management Services	

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1 SCOPE

This specification covers Horizon Power's technical requirements for the manufacture, supply, testing and delivery of Kiosk Concrete Pads for Ring Main Unit and LV switchgear kiosks

Tests prescribed will evaluate the performance of the Concrete Pad and shall comply with this specification.

Approval in terms of this specification shall be obtained by one or a combination of the following:

- a) Proof through calculations that a specific pad has equivalent capabilities in terms of this specification
- b) Successful completion of the appropriate tests required by this specification by an independent and accredited test authority.
- c) Provision of test certificates from an independent and accredited test authority based upon an alternative specification, with test requirements at least equivalent to this specification.

NOTE: Verification of accreditation of the test authority shall be provided by NATA (National Association of Testing Authorities) accredited test house or by a test house possessing accreditation from a NATA MRA (Mutual Recognition Agreement) partner.

2 NORMATIVE REFERENCES

2.1 Standards

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent editions of the documents listed below. Information on currently valid national and international standards and specifications can be obtained from SAI Global – Standards On-Line data base or equivalent standards database.

Table 1: List of Applicable Standards

STANDARD	DESCRIPTION
AS 1012 – (set)	Methods of Testing Concrete
AS 1379 - 2007	Specification and Supply of Concrete
AS 2758.1 - 2014	Aggregates and Rock for Engineering Purposes – Concrete aggregates
AS 3582 – (set)	Supplementary cementitious materials for use with portland and blended cement.

STANDARD	DESCRIPTION
AS 3600 - 2009	Concrete Structures.
AS 3972 - 2010	Portland and Blended Cements

2.2 Definitions and Abbreviations

For the purposes of this specification the following definitions apply:

2.2.1 Definitions

- 1) **Formwork:** Containment structure used to maintain the concrete in the correct shape during curing, normally made out of pieces of timber or steel.
- 2) **Mould:** One-piece, usually plastic structure that provides an alternative containment method to formwork.

2.2.2 Abbreviations

- 1) **AAR/ASR:** Alkali Aggregate Reaction / Alkali Silica Reaction
- 2) **F'c:** Characteristic compressive strength of concrete
- 3) **kg:** kilograms
- 4) **MPa:** Mega Pascal
- 5) **rpm:** revolutions per minute

2.3 Drawings

The following drawings show the details of the street lamp poles currently used in the Horizon Power network:

- 1) Drawing No: HPA-SD-S-00002-01

3 GENERAL REQUIREMENTS

3.1 Environmental Conditions

The Equipment shall be suitable for use throughout the state of Western Australia in conditions where a wide range of solar radiation, pollution (salt bearing and industrial), humidity and wind velocities are experienced. The Equipment shall be suitable for continuous operation under the environmental conditions stated in **HPC-9EJ-01-0001-2013 Horizon Power Environmental Conditions** for the duration of its design life.

3.2 Carbon Emission

The Vendor shall determine and quantify the following:

- 1) CO₂ emissions (Tonnes),
- 2) NO_x emissions (Tonnes),
- 3) SO_x emissions (Tonnes),

In undertaking the production of a singular pad and provide in the proposal, calculations detailing the methodology employed to determine the above.

3.3 Disposable Strategy

The Vendor shall provide details of its end-of-life strategy for the Equipment or in part thereof as part of the proposal. Horizon Power has preference for a recycling scheme offered by the Vendor. The recycling scheme shall have the following as a minimum:

- Point of Collection
- Transport
- Buy back value (i.e. scrap value)
- Other

4 CONCRETE PAD REQUIREMENTS

4.1 General

4.1.1 *Structural Dimensions*

Except where otherwise shown, all dimensions are overall finished surface dimensions +/- 1%. Pad shall be 500 x 250 x 40 mm as per attached drawing No. HPA-SD-S-00002-01 in Appendix E. Total weight is approximately 12.25 kg.

4.1.2 *Capacity*

The pads shall be rated to carry a maximum of 500 kg.

4.1.3 *Markings*

Each Slab shall be clearly marked:

- 1) Manufacturer
- 2) Year
- 3) HP Stock Number

4.2 Reinforcement

The pads shall be reinforced with 6 kg/m³ of Radmix RAD47 synthetic fibres. Other fibres may be used if approved in writing by Horizon Power.

4.3 Concrete

4.3.1 *Strength*

Concrete shall have a minimum compressive strength F_c at 28 days of 50 MPa unless otherwise specified in writing by Horizon Power. It is preferred that the concrete be supplied and delivered by a recognised ready mix concrete supplier.

4.3.2 *Proportions and Consistency*

The proportions of aggregate and cement for any concrete shall be such as to produce a mix which will work readily into corners of forms and around reinforcement consistent with the method of placing employed on the work, but without permitting the materials to segregate or excess water to collect on the surface.

The proportioning shall also ensure that the resultant concrete, when constructed in accordance with other sections of this Specification will be durable, sound, dense and of the strength and other properties specified.

4.3.3 *Materials for Concrete*

4.3.3.1 *Water*

Water used for concrete work shall be free from matter harmful to concrete and its reinforcement and shall be potable.

4.3.3.2 Cement

Cement used shall be a fresh Portland cement of Western Australia manufacture complying with the requirements of AS 3972. The cement shall be removed from the manufacturer's bags (if stocked in bags) only as it is being loaded into the concrete mixer.

Blended cements shall be considered by Horizon Power only if they are batched at a commercial batching plant, and shall contain a minimum of 50% Portland cement. Written approval by Horizon Power is required for blended cements.

4.3.3.3 Aggregate

The maximum aggregate size must be 10 mm. Aggregate must be angular and not susceptible to AAR/ASR issues.

4.3.3.4 Admixtures

Additives shall not be used unless approved in writing by Horizon Power.

4.4 Compaction

Compaction of concrete shall be by means of a vibration table. Each table shall operate at a frequency of at least 1,000 rpm and shall only be used to level the concrete in the mould. Vibration should stop before bleed water begins to separate at the surface, and before settlement of aggregate. Generally, vibration should last for no longer than 30 seconds.

4.5 Curing

Exposed concrete surfaces shall be kept wet for at least 7 days after placing (unless using option (a) below, in which case there is no need for any additional curing after the initial application). One of the following methods shall be employed in each case:

- a) Application of approved colloidal silica such as Lockwell CP or approved equivalent, applied at least 2 hours after pouring in accordance with manufacturers specification.
- b) Continuous sprinkling system.
- c) Water ponding.

4.6 Formwork / Mould

When formwork or moulds are removed sooner than 3 days after the concrete is poured, the newly exposed surface shall be treated with colloidal silica as per option (a) above.

4.7 Finishing

Surfaces not against the formwork/mould shall be floated.

Formed/Moulded surfaces shall be smooth and free from boniness and from sharp edges that may cause safety issues. The wide faces of the pads must have no more than 2 bug holes, with a maximum size of 10 mm each, and more than 100 mm apart in the long length of the pad.

Where possible the edges of the pad shall be rounded to a radius of no more than 3 mm to allow for easier handling.

5 STORAGE

The Pad shall be capable of being stored without deterioration within the temperature range of -10 °C to + 45 °C for at least 24 months.

6 RELIABILITY

Vendors shall provide information on the reliability of the Pad and the performance of the materials offered over operational life under the specified field of application and conditions of service.

Information provided shall evidence the claimed reliability and performance for the Pad offered, including information on Failure Mode and Effect Analysis.

7 SAFETY

Material Safety Data Sheets (MSDS) applicable for each different Concrete Pad or chemical ingredient in the Concrete Pad which is considered harmful to personnel or environment in any manner shall be supplied with the Proposal.

Special loading requirements shall be clearly stated.

8 ENVIRONMENTAL CONSIDERATIONS

Vendors shall provide information on the environmental soundness of the design and the materials used in the manufacture of the Concrete Pad offered. In particular, information should address such issues as recyclability and disposability at the end of service life as well as disposability of materials supplied.

9 TESTS

9.1 Design Qualification Testing

9.1.1 *Approved Testing Lab*

Design Qualification Testing shall be performed in a NATA (National Association of Testing Authorities) approved testing lab and when a major design change has been implemented on an existing design. Testing performed by an accredited test house or by a test house possessing accreditation from a NATA MRA (Mutual Recognition Agreement) partner shall be acceptable. A formal report covering the outcome of the testing shall be made available to Horizon Power.

9.1.2 *Number of Samples*

Test samples shall be evenly distributed over the number of batches being poured in any one day.

The minimum frequency of sampling of the concrete on any day shall be as follows:

5 m ³ or less	1 sample
6-20 m ³	2 samples
21-40 m ³	3 samples
41-70 m ³	4 samples

9.1.3 Testing Data

All concrete tests shall be carried out in accordance with AS 1012. Testing data shall be submitted to Horizon Power after testing is complete. Product submittals shall be accompanied by product specification sheets or other documentation that includes the design parameters as detailed in this specification.

9.1.4 Slump Test

Slump tests shall be carried out on the first batch of concrete to be placed and at least once for every 10 cubic metres of concrete placed thereafter on each day.

9.1.5 Compression Test

Compression tests shall be evenly distributed over the number of batches being poured in any one day. From each sample three 150 mm x 300 mm cylinder specimens shall be made, one to be tested at seven days and two at twenty-eight days.

9.1.6 Record of Tests

The Vendor shall keep accurate records of all concrete tests. A certified record of the results of all authorised tests shall be forwarded to Horizon Power upon request.

9.1.7 Right to Reject

The passing of such tests shall not prejudice the right of Horizon Power to reject the Concrete Pad if it does not comply with the specification when installed.

9.2 Production Quality Testing

Horizon Power reserves the right to witness an agreed program of routine tests to be assured of the competence of the manufacturing facility to deliver consistently conforming Concrete Pads. The Vendor shall in all cases make all necessary provisions with the testing and/or manufacturing facilities to enable witnessing to take place. An Inspection and Test Plan (ITP) shall be provided to Horizon Power prior to witnessing of tests.

Prior to first delivery of Concrete Pads, the Vendor shall submit to Horizon Power all production quality tests performed on that batch of Concrete Pads.

10 DOCUMENTATION AND SAMPLES

10.1 Type Test Certificates/Reports/Computer Models

Test certificates, test reports or any other supporting documents supplied as evidence for compliance to relevant standards shall be made available in English for review by Horizon Power.

10.2 Samples

Any deviations between the supplied as a sample to Horizon Power and the Concrete Pad offered in the Proposal shall be detailed by the Vendor.

10.2.1 **Test Samples**

For the purpose of evaluation, test samples of the Concrete Pad may be requested by Horizon Power. Each sample shall be labelled with a robust tag stating:

- 1) Vendor Name;
- 2) Batch Number; and
- 3) Stock Code.

When requested, the Vendor shall supply Horizon Power test samples free of charge and within 4 weeks of the request.

11 **PACKAGING REQUIREMENTS**

The Concrete Pads shall be suitably packaged, such that it is “fit for use” at any location in Horizon Power’s operational area. Packaging shall be capable of preventing damage whilst in storage and during transit to remote locations. The Vendor is required to nominate standard pack quantities and standard packs shall be clearly marked with the following information:

- 1) Manufacturer’s name
- 2) Manufacturer’s part reference number
- 3) Batch Number
- 4) Horizon Power Order Number
- 5) Horizon Power Stock Number

APPENDIX A – REVISION INFORMATION

Informative - for Horizon Power use only.


Horizon Power has endeavoured to provide standards of the highest quality and would appreciate notification if any errors are found or even queries raised.

Each Standard makes use of its own comment sheet which is maintained throughout the life of the standard, which lists all comments made by stakeholders regarding the standard.

A comment sheet **HPC-8MJ-09-0001-COMM** found in **CS10#: 3326213** can be used to record any errors or queries found in or pertaining to this standard, which can then be addressed whenever the standard gets reviewed.

Date	Rev No.	Notes
20/07/2015	0	First Issue

APPENDIX B – QUALITY ASSURANCE (TO BE COMPLETED BY STORES)

DOCUMENT NUMBER		HPC-8MJ-09-0001-2015					QUALITY ASSURANCE		CS NUMBER	
DEVICE DESCRIPTION		LABEL MATERIAL NO.					CONCRETE PAD PURCHASE			ASSET OWNER
		ASSET ID/ STOCK NO		MANUFACTURER						DIMENSION
ITEM	OPERATION/EQUIPMENT/FACILITY		DOCUMENT REF.	WHO CHECKS	INITIAL	DATE/TIME	QUALITY ASSURANCE CRITERIA	PASS Y/N	COMMENTS	
1										
1.1	Name of Manufacturer						*****			
1.2	Week & Year of Manufacture						*****			
1.3	Horizon Power Order Number						*****			
1.4	Horizon Power Stock Number						*****			
1.5	Physical Appearance									
2	DOCUMENTATION									
2.1	Material Safety Data Sheets						Clear, Legible and in English			
2.3	Test and Inspection Reports						Clear, Legible and in English			

SYMBOLS AND ABBREVIATIONS								
H = HOLD POINT	S = SUPERVISOR							
W = WITNESS POINT	T = TECHNICIAN, EL = ELECTRICIAN	REVISION						
V = VERIFICATION POINT	E = ENGINEER	DATE						
S/C = SUBCONTRACTOR	PM = PROJECT MANAGER	APPROVED BY						

APPENDIX C – COMPLIANCE DOCUMENT

The Vendor shall indicate below whether this offer is fully compliant with the nominated clause in this Specification. A YES shall ONLY be indicated if the offer is 100% compliant with the relevant Clause. If NO is indicated and supporting documents are submitted, then mark the ATT box with the attachment number

CLAUSE NUMBER		YES	NO	ATT.
1.	SCOPE			
2.	NORMATIVE REFERENCES			
3.	GENERAL REQUIREMENTS			
3.1	Environmental Conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2	Carbon Emission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3	Disposable Strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	CONCRETE PAD REQUIREMENTS			
4.1	General			
4.1.1	<i>Structural Dimensions</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.2	<i>Capacity</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.3	<i>Markings</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.2	Reinforcement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3	Concrete			
4.3.1	<i>Strength</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3.2	<i>Proportions and Consistency</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3	<i>Materials for Concrete</i>			
4.3.3.1	<i>Water</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.2	<i>Cement</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.3	<i>Aggregate</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.3.3.4	<i>Admixtures</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.4	Compaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.5	Curing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.6	Formwork/Mould	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.7	Finishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	STORAGE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	RELIABILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

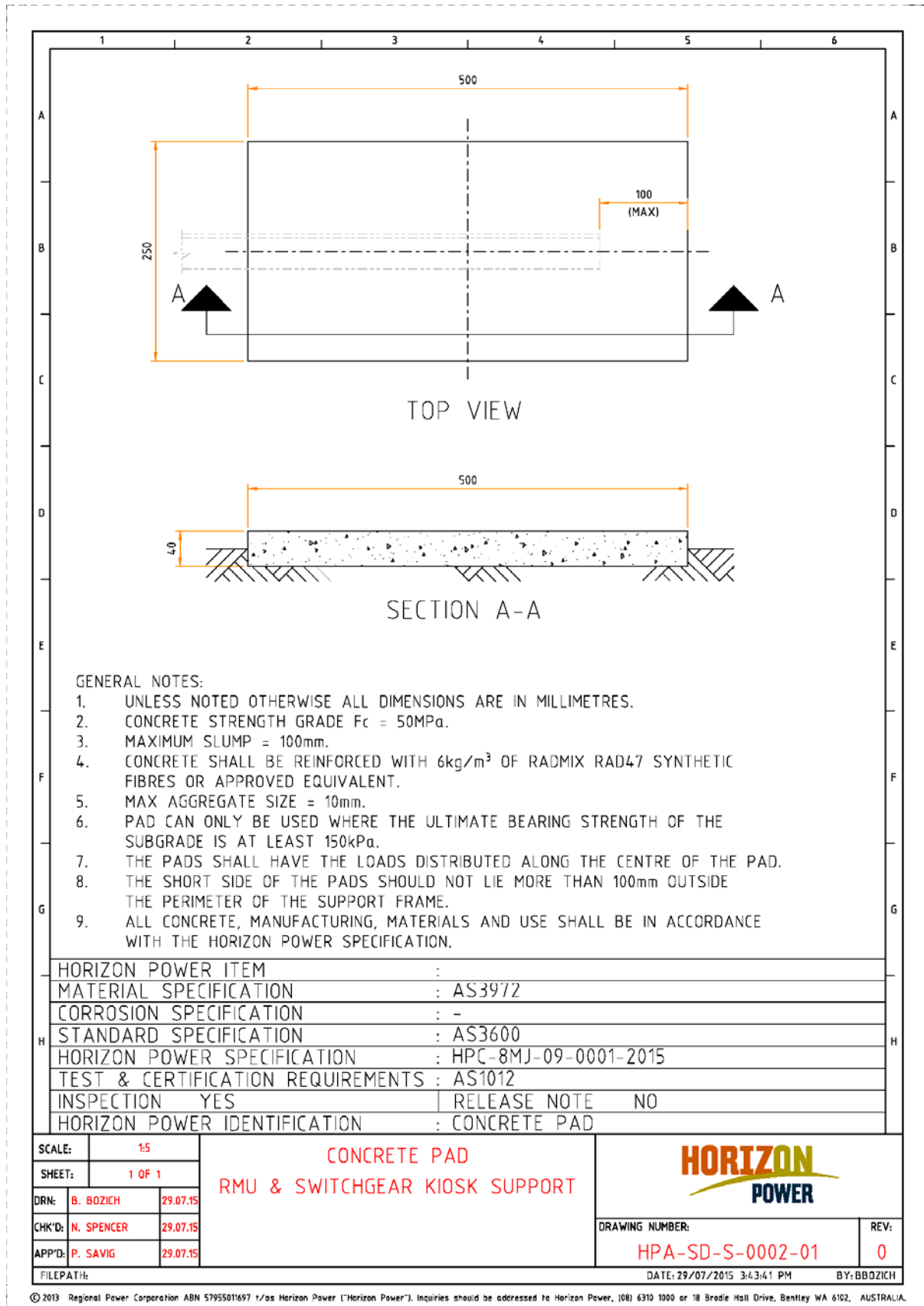
CLAUSE NUMBER		YES	NO	ATT.
7.	SAFETY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	ENVIRONMENTAL CONDITIONS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	TESTS			
9.1	Design Qualification Testing			
9.1.1	<i>Approved Testing Lab</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.2	<i>Number of Samples</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.3	<i>Testing Data</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.4	<i>Slump Test</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.5	<i>Compression Test</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.6	<i>Record of Test</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1.7	<i>Right to Reject</i>			
9.2	Production Quality Testing			
10.	DOCUMENTATION AND STANDARDS			
10.1	<i>Type Test Certificates/Reports</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2	<i>Samples</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2.1	<i>Test Samples</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	PACKAGING REQUIREMENTS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX D – DEPARTURES FROM TECHNICAL SPECIFICATION


The Vendor shall nominate the Clause and describe the departure:

CLAUSE NO	DEPARTURE

APPENDIX E – SPECIFICATION DRAWING



APPENDIX F – IMPACT ASSESSMENT

	Impact Assessment		
	Document Title:	Kiosk Concrete Pad Specification	
	Document No:	HPC-8MJ-09-0001-2015	Revision No: 1
	CS No:		
Activity		Detail	
1. What training is required to implement this specification?		None	
2. Who will require training?		N/A	
3. What equipment will be required for training?		None	
4. What special tools/equipment will be required for training?		None	
5. Time period for training to be completed		N/A	
6. Does the document affect the budget?		No	
7. Time period for implementation of requirements after training is completed.		Nil	
8. Were the critical points in the document determined?		N/A	
Business Change Control		Total Implementation period	N/A
		Total training cost	None
		Total cost of tools/equipment	None
		Total cost involved	Zero
Comments: This specification is for Tendering purposes, as there are already similar equipment in the field			
Documentation will be minimal.			
Assessment Compiled by:		Recommended by (Functional Responsibility)	
Name:	Paul Savig	Name:	
Designation:	Senior Standards Engineer	Designation:	
Department:	Asset Management Services	Department:	
Date:		Date:	