



COOP LIVE
Q25 - SLAB/ SETT PAVING

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COOP LIVE DOCUMENT REVISIONS

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Co-op Live

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Tender 4B Update

17/06/2021

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Q25	~~SLAB/SETT~~<u>BLOCK/FLAG</u> PAVING	1
GENERAL		1
110	WORKS INCLUDED	1
111	APPLICABLE DESIGN RESPONSIBILITY	1
112	TENDER SUBMITTALS	1
113	SAMPLES	2
114	MOCK-UPS, PROTOTYPES AND QUALITY BENCHMARKS	2
115	TESTING	2
PRODUCTS		3
210	PERFORMANCE REQUIREMENTS	3
211	~~NATURAL STONE PAVINGS~~ <u>ARCHITECTURAL CONCRETE BLOCK/FLAG PAVING</u>	5
212	PRECAST CONCRETE PAVINGS	11
213	MISCELLANEOUS PAVING ITEMS	12
214	MATERIALS	13
215	ACCESSORIES	14
EXECUTION		15
310	LAYING PAVING	15
311	ADVERSE WEATHER	15
312	CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING	15
313	CEMENT MORTAR BEDDING	16
314	LEVELS OF PAVING	16
315	REGULARITY OF PAVED SURFACES	16
316	PROTECTION	16
<u>317</u>	<u>POST LAY CLEANING</u>	16

Q25 ~~SLAB/SETT~~BLOCK/FLAG PAVING

GENERAL

110 WORKS INCLUDED

1. Scope of Works: This section of the Specification, when read in conjunction with the Design Drawings, provides particular requirements with respect to the works, which include the following:
 - a. ~~Natural stone~~Architectural concrete block/flag paving.
 - b. Precast concrete paving.
 - c. Miscellaneous paving items.
2. Particular Interfaces
 - a. Complete the Detailed Design of all interfaces with adjoining trades prior to commencement of manufacture.
 - b. Ensure that all interfaces are fully co-ordinated prior to commencement.
3. Related Documents and Sections: Examine the Drawings and the Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:
 - a. The Preliminaries, general provisions of the Contract, including General and Supplementary Conditions, and Architectural General Requirements Specification Sections.

111 APPLICABLE DESIGN RESPONSIBILITY

1. Design & Build Procurement Routes
 - a. Appoint a specialist sub-contractor to complete the Detailed Design maintaining at all times the intent portrayed on the Design Drawings whereby the Architect's role post-novation or during subsequent design stages shall be limited to checking compliance with quality, design and visual intent only.

112 TENDER SUBMITTALS

1. Tender Response
 - a. Provide tender submittals in accordance with the requirements of SUBMITTALS clauses of the A Section of the Specification.
 - b. Submit a design response with the Tender proposal, to include all profiles of typical conditions, with dimensions.
 - c. The Tender design response shall include:
 - 1). Samples where specified.
 - 2). List of Tests included.
 - 3). QA/ QC programme.
 - 4). List of proposed Working Drawings.
 - 5). Summary of deviations from the Specification.
 - 6). Outline technical specifications reflecting proposed materials/ systems, etc.

- 7). A list of proposed suppliers and sub-contractors intended to be used.

113 SAMPLES

1. Pre-contract Samples: Sufficient samples of the following, including relevant trade literature and technical specifications, shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. A minimum of 6No. samples of minimum size 150mm x 150mm illustrative of potential tonal variations to aid selection.
2. Post Contract Samples: In accordance with SUBMITTALS clauses of the A Section, post contract samples of the following shall be provided:
 - a. A minimum of 4 No. samples 450mm x 300mm of each type of the selected stone showing tonal variation and proposed finish.

114 MOCK-UPS, PROTOTYPES AND QUALITY BENCHMARKS

1. Mock-ups: Provide mock-ups in accordance with SUBMITTALS clauses of the A Section as follows:
 - a. A dry lay mock-up of each discrete paving system comprising more than one type of unit modularity. The exact dimensions, location and time-frame shall be agreed with the Architect.
 - b. A fully bed, mortared and sealed representation of ~~granite~~block paving Type EXT-101 - 106 of minimum size 1m x 1m in a location on site to be agreed.
2. Prototype Requirements: Provide prototypes in accordance with SUBMITTALS clauses of the A Section as follows:
 - a. Not required.
3. Benchmark Requirements: The following quality benchmarks shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. The first delineated and fully completed area of each system type as accepted by the Architect.

115 TESTING

1. Test Requirements: Provide details of all tests undertaken on materials supplied for use within the works and supply copies of test results to the Architect immediately they become available and not less than 10 days prior to commencement of the works.
2. Where testing has not previously been carried out on products/ materials proposed, arrange for tests to be carried out to comply with the requirements of the Specification to the acceptance of the Architect.
3. The provision of testing data or the carrying out of tests does not relieve the Contractor of his responsibilities regarding the performance requirements.
- ~~4. Testing Natural Stone~~
 - ~~a. BS EN 1468.~~
- ~~5. Preliminary testing: The stone shall have current and specific testing criteria against the following standards:~~
 - ~~a. BS EN 12407.~~
 - ~~b. BS EN 12372 based on project specific thicknesses.~~
 - ~~c. BS EN 13161 based on project specific thicknesses.~~

- d. ~~BS EN 13755.~~
- e. ~~BS EN 1925.~~
- f. ~~BS EN 1936.~~
- g. ~~BS EN 12371.~~
- h. ~~BS EN 14066.~~
- i. ~~BS EN 12524.~~
- j. ~~BS EN 14157.~~

6. Slip resistance testing

- a. The following documents shall be complied for the determination of slip resistance testing:
 - 1). Current edition of 'Assessing the Slip Resistance of Flooring' – HSE.
 - 2). 'The Assessment of Floor Slip Resistance – The UK Slip Resistance Group Guidelines published by UKSRG.
- b. All testing to be undertaken by an independent and accredited UKAS laboratory.
- c. Pendulum Test: A pendulum test value (PTV) shall be obtained for the paving area to ensure that it meets the requirements of the Architectural Specification. The test shall be carried out on paving areas in both dry and wet conditions using the TRL Pendulum Tester in accordance with BS 7976 or in the case of natural stone, BS EN 14231.
- d. Where the system is destined to sealed, tests shall be carried out with the surface dressing applied.

PRODUCTS

210 PERFORMANCE REQUIREMENTS

- 1. Comply with the general performance of PERFORMANCE REQUIREMENTS AND DATA clauses of the A Section and the following specific performance requirements.
- 2. Structural
 - a. Specific Movements
 - 1). The works shall be designed, fabricated and installed to withstand all movements under all design loads or combination of loads without damage or any reduction in the performance of the works.
 - 2). The works shall not deflect under loading in any way that is detrimental to any elements of the works or adjacent structural or building elements.
 - 3). The works shall accommodate the following movements without any permanent deformation or reduction in the specified performance:
 - a). Deflection under design loads.
 - b). The effects of wind loadings.
 - c). Changes in dimension and shape of components arising from building movements, including settlement, creep, twisting and racking.
 - d). Movement of any joint whether designed to permit movement or not.

b. Specific Dead Loads

- 1). The works shall be capable of accommodating the following dead loads without any reduction in performance and without sustaining non-repairable damage:
 - a). The works' own dead load.
 - b). Permanent fixtures or services attached to the works.
- 2). When calculating loads the worst combination shall be considered, taking account of the fact that the pressure coefficients at various locations may determine more than one design criterion.

c. Specific Live Loads

- 1). The works shall be capable of accommodating the following live loads without any reduction in performance and without sustaining non-repairable damage:
 - a). Proposed static and dynamic usage and accidental loads during the service life of the works.
 - b). Loads applied through maintenance and cleaning operations.
 - c). Impact loads, or transferred impact loads, that occur during the service life of the works.
 - d). Loads imposed during replacement.
- 2). When calculating loads the worst combination shall be considered, taking account of the fact that the pressure coefficients at various locations may determine more than one design criterion.

3. Environmental

a. Thermal Movement

- 1). The works shall be capable of accommodating changes in dimension and shape of their components resulting from varying surface temperatures, without any reduction in the specified performance and appearance.
- 2). Thermal movements shall not result in audible noise.

b. Moisture Movement: The works shall withstand movement without permanent deformation or any reduction in the specified performance:

- 1). Due to changes in the moisture content of their components, resulting from variations in the moisture content of the air.
- 2). Due to the expansion of absorbed or retained moisture caused by freezing.

4. Durability

- a. The works shall perform throughout its design life without failure resulting from defects in design, materials or workmanship. Failure shall be defined as breakage, disengagement of components, reduction in performance or unacceptable change in appearance.
- b. Electro-chemical corrosion or staining resulting from water running from one material to another shall be prevented.

5. Slip Resistance

- a. When tested using the Pendulum Tester as described in the Testing Section, walkable surfaces, inclusive of surface treatment, shall achieve the following pendulum test value (PTV):
 - 1). Dry: Not less than 45 PTV.
 - 2). Wet: Not less than 45 PTV.
 - b. When tested using the surface roughness meter, walkable surfaces shall achieve the following surface roughness (Rz) value:
 - 1). Not less than 20 µm Rz.
6. Sustainability
- a. Refer to Section A.600 series SUSTAINABILITY clause, determine and evaluate the applicability of the specified requirements including BREEAM Credit Requirements to the works specified in this Section of the Specification. Comply with all relevant requirements.

211

~~NATURAL STONE PAVINGS~~ ARCHITECTURAL CONCRETE BLOCK/FLAG PAVING

1. Type EXT-101 ~~Natural Stone Slab/Sett~~ Concrete Block/Flag Paving ~~–Granite~~ Type 1
 - a. Description: ~~Natural granite slabs/setts~~ Concrete block/flag paving laid over reinforced concrete base/sub-base to form bound pedestrian paving construction.
 - b. Bound system.
 - c. Conformance: BS EN ~~1341~~1338, BS EN ~~1342~~1339 and BS 7533.
 - ~~d. Material: Granite.~~
 - e. Nominal Size:
 - 1). ~~400~~200mm x ~~200~~200mm x 80mm.
 - 2). ~~300~~200mm x ~~200~~300mm x 80mm.
 - 3). ~~200~~300mm x ~~200~~300mm x 80mm (flag product).
 - f. Finish: ~~Flamed~~Textured.
 - g. Colour: ~~Black~~ Charcoal.
 - ~~h. Factory-applied sealer.~~
 - i. Joint: 6mm recessed.
 - j. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.
 - k. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
 - l. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
 - m. Indicative Product:
 - 1). ~~Slabs~~Block paving:
 - a). Manufacturer: ~~BBS Natural Stone Specialists, or acceptable equivalent~~ Aggregate Industries.

- b). Reference: ~~Mongolian Black~~Andover Textured Anthracite Charcoal.
- 2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.
- 3). Grout: Steintec tufftop non-permeable Type B jointing mortar.
- n. ~~Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~
- 2. Type EXT-102 ~~Natural Stone Slab/Sett~~Concrete Block Paving ~~Granite~~-Type 2
 - a. Description: ~~Natural granite slabs/setts~~Concrete block paving laid over reinforced concrete base/sub-base to form bound pedestrian paving construction.
 - b. Bound system.
 - c. Conformance: BS EN ~~1341,1338 and~~ BS ~~EN 1342 and BS~~ 7533.
 - d. ~~Material: Granite.~~
 - e. Nominal Size:
 - 1). ~~400 x 200 x 80mm.~~
 - 2). ~~300~~200mm x ~~200~~600mm x 80mm.
 - 3). ~~200 x 200 x 80mm.~~
 - 4). 300mm x 200mm x 80mm.
 - 5). 200mm x 200mm x 80mm.
 - f. Finish: ~~Bush Hammered~~Unpolished.
 - g. Colour: ~~Black~~Dark Grey.
 - h. Factory-applied sealer.
 - i. Joint: 6mm recessed.
 - j. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.
 - k. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
 - l. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
 - m. Indicative Product:
 - 1). Slabs:
 - a). Manufacturer: ~~BBS Natural Stone Specialists or acceptable equivalent~~Aggregate Industries.
 - b). Reference: ~~Mongolian Black~~Andover Textured.
 - 2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.
 - 3). Grout: Steintec tufftop non-permeable Type B jointing mortar.

~~n. Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~

3. Type EXT-103 ~~Natural Stone Slab/Sett~~ Concrete Block/Flag Paving ~~–Granite~~ Type 3

a. Description: ~~Natural granite slabs/setts~~ Concrete block/flag paving laid over lightweight concrete base/sub-base to form non-permeable pedestrian paving construction.

b. Bound system.

c. Conformance: BS EN ~~1341~~ 1338, BS EN ~~1342~~ 1339 and BS 7533.

~~d. Material: Granite.~~

e. Nominal Size:

1). ~~400~~ 200mm x ~~200~~ 200mm x 80mm.

2). ~~300~~ 200mm x ~~200~~ 300mm x 80mm.

3). ~~200~~ 300mm x ~~200~~ 300mm x 80mm (flag product).

f. Finish: ~~Flamed~~ Textured.

g. Colour: ~~Black~~ Charcoal.

h. Factory-applied sealer.

i. Joint: 6mm recessed.

j. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.

k. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.

l. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.

m. Indicative Product:

1). Slabs:

a). Manufacturer: ~~BBS Natural Stone Specialists, or acceptable equivalent~~ Aggregate Industries.

b). Reference: ~~Mongolian Black~~ Andover Textured Anthracite Charcoal.

2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.

3). Grout: Steintec tufftop non-permeable type B jointing mortar.

~~n. Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~

4. Type EXT-104 ~~Natural Stone Slab/Sett~~ Concrete Block Paving ~~–Granite~~ Type 4

a. Description: ~~Natural granite slabs/setts~~ Concrete block paving laid over lightweight concrete base/sub-base to form non-permeable pedestrian paving construction.

b. Bound system.

c. Conformance: BS EN ~~1341~~ 1338 and BS ~~EN 1342 and BS~~ 7533.

d. ~~Material: Granite.~~

e. Nominal Size:

- 1). ~~400 x 200 x 80mm.~~
- 2). ~~300~~200mm x ~~200~~600mm x 80mm.
- 3). ~~200 x 200 x 80mm.~~
- 4). 300mm x 200mm x 80mm.
- 5). 200mm x 200mm x 80mm.

f. Finish: ~~Bush Hammered~~Unpolished.

g. Colour: ~~Black~~Dark Grey.

h. Factory-applied sealer.

i. Joint: 6mm recessed.

j. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.

k. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.

l. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.

m. Indicative Product:

1). Slabs:

a). Manufacturer: ~~BBS Natural Stone Specialists, or acceptable equivalent~~Aggregate Industries.

b). Reference: ~~Mongolian Black~~Andover Textured.

2). Bedding: Steintec tuffbed 2-pack permeable type B bedding mortar with Steintec tuffbond priming mortar.

3). Grout: Steintec tufftop Non-permeable Type B Jointing Mortar.

n. ~~Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~

5. Type EXT-105 ~~Natural Stone Slab/Sett~~Concrete Block/Flag Paving - ~~Granite~~Type 5

a. Description: ~~Natural granite slabs/setts~~Concrete block/flag paving laid over permeable concrete base/sub-base to form permeable pedestrian paving construction.

b. Bound system.

c. Conformance: ~~BS EN 1341~~, BS EN ~~1342~~1338, BS EN 1339 and BS 7533.

d. ~~Material: Granite.~~

e. Nominal Size:

- 1). ~~400~~200mm x ~~200~~200mm x 80mm.
- 2). ~~300~~200mm x ~~200~~300mm x 80mm.

- 3). ~~200~~300mm x ~~200~~300mm x 80mm.
 - f. Spacer nibs of the paving block shall be no less than 5mm.
 - g. Finish: ~~Flamed~~Textured.
 - h. Colour: ~~Black~~Charcoal.
 - i. Factory-applied sealer.
 - j. Joint: 10mm wide.
 - k. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.
 - l. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
 - m. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
 - n. Indicative Product:
 - 1). Slabs:
 - a). Manufacturer: ~~BBS Natural Stone Specialists, or acceptable equivalent~~Aggregate Industries.
 - b). Reference: ~~Mongolian Black~~Andover Textured Anthracite Charcoal.
 - 2). Bedding: Steintec tuffbed 2-pack permeable type B bedding mortar with Steintec tuffbond priming mortar.
 - 3). Grout: Steintec Tuffflow Permeable Jointing Mortar.
 - 4). ~~Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~
6. Type EXT-106 ~~Natural Stone Slab/Sett~~Concrete Block Paving ~~Granite~~-Type 6
- a. Description: Natural granite slabs/setts laid over permeable concrete base/sub-base to form permeable pedestrian paving construction.
 - b. Bound system.
 - c. Conformance: ~~BS EN 1341~~, BS EN ~~1342~~1338 and BS 7533.
 - d. ~~Material: Granite.~~
 - e. Nominal Size:
 - 1). 600mm x 200mm x 80mm.
 - 2). ~~400~~200mm x ~~200~~200mm x 80mm.
 - 3). ~~300~~300mm x ~~200~~200mm x 80mm.
 - 4). ~~200 x 200 x 80mm.~~
 - f. Spacer nibs of the paving block shall be no less than 5mm.
 - g. Finish: ~~Bush Hammered~~Unpolished.
 - h. Colour: ~~Black~~Dark Grey.
 - i. Factory-applied sealer.

- j. Joint: 10mm wide.
- k. Configuration: Refer to Design Drawings for geometric mixture of variant sizes and finishes used in the different locations.
- l. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
- m. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
- n. Indicative Product:
 - 1). Slabs:
 - a). Manufacturer: ~~BBS Natural Stone Specialists, or acceptable equivalent~~ [Aggregate Industries](#).
 - b). Reference: ~~Mongolian Black~~ [Andover Textured](#).
 - 2). Bedding: Steintec tuffbed 2-pack permeable type B bedding mortar with Steintec tuffbond priming mortar.
 - 3). Grout: Steintec tuffflow permeable jointing mortar.

7. Type EXT-107 Concrete Flag Paving Type 1

- a. Description: Concrete flag paving laid over reinforced concrete base/sub-base to form bound pedestrian paving construction.
- b. Bound system.
- c. Conformance: BS EN 1338, BS EN 1339 and BS 7533.
- d. Nominal Size: 200mm x 600mm x 80mm.
- e. Finish: Textured.
- f. Colour: Charcoal.
- g. Factory-applied sealer.
- h. Joint: 6mm recessed.
- i. Configuration: Refer to Design Drawings for geometric mixture of variant sizes used in the different locations.
- j. Paving shall be neatly cut to fit radius of lighting column and HVM bollards as indicated on the Design Drawings to prescribed tolerances stated hereunder with no breakaway.
- k. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
- l. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
- m. Indicative Product:
 - 1). Block paving:
 - a). Manufacturer: Aggregate Industries.
 - b). Reference: Andover Textured Anthracite Charcoal.
 - 2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.

3). Grout: Steintec tufftop non-permeable Type B jointing mortar.

8. Type ~~EXT-107 Natural Stone Slab/Setting~~ EXT-118 Concrete Block Paving ~~–Granite–~~
Type 7
- a. Description: ~~Natural granite slabs~~ Concrete block paving laid over reinforced concrete base/sub-base to form bound pedestrian paving construction.
 - b. Bound system.
 - c. Conformance: BS EN ~~1341~~ 1338 and BS 7533.
 - ~~d. Material: Granite.~~
 - e. Nominal Size:
 - 1). ~~300~~ 200mm x ~~450~~ 200mm x 50mm.
 - 2). ~~300~~ 200mm x ~~300~~ 300mm x 50mm.
 - f. Finish: ~~Bush Hammered~~ Textured.
 - g. Colour: ~~Black~~ Charcoal.
 - h. Factory-applied sealer.
 - i. Joint: 6mm recessed.
 - j. Configuration: Refer to Design Drawings for geometric mixture of variant sizes ~~and finishes~~ used in the different locations.
 - k. Paving shall be neatly cut to fit radius of lighting column and HVM bollards as indicated on the Design Drawings to prescribed tolerances stated hereunder with no breakaway.
 - l. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
 - m. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
 - n. Indicative Product:
 - 1). Slabs:
 - a). Manufacturer: ~~BBS Natural Stone Specialists or acceptable equivalent~~ Aggregate Industries.
 - b). Reference: ~~Mongolian Black~~ Andover Textured Anthracite Charcoal.
 - 2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.
 - 3). Grout: Steintec tufftop non-permeable Type B jointing mortar.
 - ~~o. Surface sealer: Waterbased impregnator for stain prevention renewed every 4-5 years.~~

212 PRECAST CONCRETE PAVINGS

1. Type EXT-112 Precast Concrete Slab Paving
 - a. Description: Precast concrete slabs laid over base/sub-base to form pedestrian paving construction.
 - b. Conformance: BS EN 1339 and BS 7533.

- c. Material: Semi-dry process manufactured precast concrete ~~blocks~~ flags.
- d. Nominal Size: 400 x 400 x 80mm.
- e. Finish: Textured.
- f. Colour: Grey.
- g. Joint: 5mm recessed.
- h. Configuration: Refer to Design Drawings.
- i. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
- j. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
- k. Indicative Product:
 - 1). Manufacturer: Charcon Hard Landscaping - Aggregate Industries, or acceptable equivalent.
 - 2). Reference: Reference: Andover Washed - Grey (Silver/ Light/ Mid/ Dark). To be confirmed.

2. Type EXT-115 Precast Concrete Tactile Slab Paving

- a. Description: Blistered top precast concrete slabs laid over concrete base/sub-base to form non-permeable/ bound pedestrian 'warning' paving construction.
- b. Conformance: BS EN 1339 and BS 7533.
- c. Material: Hydraulically pressed concrete.
- d. Nominal Size: 400 x 400 x 80mm.
- e. Finish: Smooth finish with standard tactile blister.
- f. Colour: ~~Natural~~ Light Grey.
- g. Joint: 6mm recessed.
- h. Configuration: Refer to Design Drawings.
- i. Laying Course: Lay on 40mm Steintec mortar according to the manufacturer's recommendation.
- j. Base/ Sub-Base: Refer to the Civil Engineer's Documentation/ Structural Engineer's Documentation.
- k. Indicative Product:
 - 1). Slabs:
 - a). Manufacturer: Marshalls, or acceptable equivalent.
 - b). Reference: Tactile Blister Paving.
 - 2). Bedding: Steintec tuffbed 2-pack permeable Type B bedding mortar with Steintec tuffbond priming mortar.
 - 3). Grout: Steintec tufftop non-permeable type B jointing mortar.

213 MISCELLANEOUS PAVING ITEMS

~~1. Type EXT-108 Tactile Hazard Warning Studs~~

- ~~a. Description: Stainless steel 'dome' shaped studs suitable for insertion into any paving.~~
- ~~b. Material: Grade 1.4404 (316L) austenitic stainless steel.~~
- ~~c. Nominal Size: 25mm wide.~~
- ~~d. Finish: Slip resistant.~~
- ~~e. Configuration: Refer to Design Drawings.~~
- ~~f. Fixing: 15mm dia x 30mm deep aperture with system compatible mortar fixative to manufacturer's recommendations.~~
- ~~g. Indicative Product:~~
 - ~~1). Manufacturer: Kent Stainless, or acceptable equivalent.~~
 - ~~2). Reference: KTWS/25/5/FDG.~~

2. Type EXT-191 Tactile Hazard Warning Strip

- a. Description: Stainless steel 'linear' shaped studs suitable for insertion into any paving.
- b. Material: Grade 1.4404 (316L) austenitic stainless steel.
- c. Nominal Size: 25mm wide.
- d. Finish: Slip resistant.
- e. Configuration: Refer to Design Drawings.
- f. Fixing: Surface fixed on the paving/decking according to the manufacturer's recommendation.
- g. Indicative Product:
 - 1). Manufacturer: Kent Stainless, or acceptable equivalent.
 - 2). Reference: Tactile Warning Strip.

3. Type EXT-194 Floor Box

- a. Description: Metal floor box with recessed cover, for power, data and water.
- b. Material: Grade 1.4404 (316L) austenitic stainless steel.
- c. Nominal Size: 730 x 532 x 250mm.
- d. Finish: Slip resistant.
 - 1). Recessed cover shall receive material to match and align with adjacent paving.
- e. Configuration: Refer to Design Drawings.
- f. Fixing: Comply with the manufacturer's recommendation.
- g. Indicative Product:
 - 1). Manufacturer: GIFAS Electric, or acceptable equivalent.
 - 2). Reference: To be confirmed.

~~1. Natural Stone Paving~~

- ~~a. Conformance: BS EN 1341.~~
- ~~b. Type: Igneous granite.~~
- ~~c. Density: Circa 2300 kg/m³.~~
- ~~d. Traffickable surface slip resistance: PTV 45 to BS 7976.~~

2. Hydraulically Pressed Paving
 - a. Conformance: BS EN 1339.
 - b. Type: Pigmented and unpigmented concrete with pimpled surface.
 - c. Density: Circa 2300 kg/m³.
 - d. Traffickable surface slip resistance: PTV 45 to BS 7976.
3. Hydraulically Pressed Tactile Paving
 - a. Conformance: DD CEN/TS 15209.
4. Concrete Paving Blocks
 - a. Conformance: BS EN 1338.
 - b. Type: Vehicular and Non-vehicular modular concrete pavers.
 - c. Base material: Pigmented and un-pigmented concrete.
 - d. Type: Solid.
 - e. Traffickable surface slip resistance: PTV 45 to BS 7976.
5. Premixed Bedding Mortar
 - a. Conformance: BS 7533: Part 4, BS 7533: Part 7 and BS 7533: Part 12.
 - b. Flexural strength: 4.5N/mm².
 - c. Adhesion strength: Between the range 1-2N/mm².
 - d. Modulus of elasticity: Between the range 14,000-18,000N/mm².
6. Concrete:
 - a. Conformance: BS EN 206 and BS 8500: Part 1.
7. Aggregates for concrete
 - a. Conformance: BS EN 12620.
8. Mortar: BS EN 998: Part 2.
 - a. Aggregates for mortar: BS EN 13139.

215 ACCESSORIES

1. Geotextiles:
 - a. Conformance: BS EN 15381, BS EN 13251 and BS EN 13249.
2. Stain Protection Coating
 - a. All natural stone hardscape shall be subject to a waterbased stain inhibiting coating applied upon completion within a time window defined by the manufacturer.

- b. The coating shall be fully absorbed and not adversely affect slip resistance requirements.
- c. The coating shall be re-applied at 4-5 years intervals - Refer to the project O+M Manual which additionally defines guidance on appropriate cleaning materials.
- d. An indicative system shall be Weiss Stain Protect Profi by Steintec.

EXECUTION

310 LAYING PAVING

1. Competence
 - a. The works shall be undertaken by specialists with a demonstrable track record of installing natural stone hardscape over a period of not less than 10 years. Block paving subcontractors are unlikely to possess the expertise to deliver the desired outcome.
 - b. The specialist sub-contractor's supervisor shall be required to receive full on-site training from the bedding/grout manufacturer prior to work commencing.
2. Compliance
 - a. A prerequisite of the natural stone paving shall be the strict adherence to the bedding and mortar specification which has been developed with the manufacturer to address specific demands of the project.
3. Appearance:
 - a. Smooth and even with regular joints and accurate to line.
 - b. Unless stated to the contrary, laid to falls to prevent ponding.
 - c. Bedding: Firm such that there is no rocking or subsidence.
4. Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
5. Slopes: Lay paving units upwards from the bottom of slopes.
6. Paving units: Free of mortar and sand stains.
7. Cutting:
 - a. Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.
 - b. No paving to be cut beyond 1/3 of paving size (width and length) and instead enlarged piece shall be used.

311 ADVERSE WEATHER

1. Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer.
2. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

312 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

1. In accordance with BS 8500: Part 2.
2. Designated mix: Not less than GEN0 or Standard Mix ST1.

313 CEMENT MORTAR BEDDING

1. Refer to Section Z21 – Mortars generally.

314 LEVELS OF PAVING

1. Allowable deviation:
 - a. Level: +/-6mm.
2. Acceptable variance above features:
 - a. At gullies: +6-10mm.
 - b. At drainage channels and kerbs: +3-6mm.
3. Scribing around posts, bollards and lighting columns:
 - a. Maximum 5mm variance from any one point circumferentially.

315 REGULARITY OF PAVED SURFACES

1. Maximum undulations in the surface of pavings (except tactile paving surfaces) under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 3 mm.
2. Joints between paving units or utility access covers:
 - a. Joints flush with the surface: difference in level between adjacent units to be no more than twice the joint width (with a 5 mm max difference in level).
 - b. Recessed, filled joints: difference in level between adjacent units to be no greater than 2 mm; the recess to be no deeper than 5 mm.
 - c. Unfilled joints: difference in level between adjacent units to be no greater than 2 mm.

316 PROTECTION

1. Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. Protect cementitious bases and sub-bases from moisture loss, if not covered by another pavement course within 2 hours of completion.

317 POST LAY CLEANING

1. Upon completion and at a time once the jointing regime has stabilised sufficiently, the paving shall be cleaned in accordance with the manufacturer's recommendations.
2. High pressure washers liable to degrade the jointing and surface texture shall not be used.