# Pioneers Park Musical Fountain: Bill of Quantities

## Childrens Play Area: Rubber and Concrete Bases

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty.</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>PRELIMINARIES AND GENERAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>The client reserves the right to adjust the bill to meet the budgetary requirements of the project.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Note to tenderer</td>
</tr>
<tr>
<td>1.2</td>
<td>The contract will be governed by the Minor Works Agreement JBCC 2000 Series as prepared by the Joint Building Contract Committee, Code 2108, Edition 4.0 August 2007. 2007 edition.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Note to tenderer</td>
</tr>
<tr>
<td>1.3</td>
<td>The preliminaries are to be the JBCC Series 2000, as prepared by the Joint Building Contract Committee, latest edition, and shall be deemed to be incorporated herein.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Note to tenderer</td>
</tr>
<tr>
<td>1.4</td>
<td>Allowance for all necessary insurances, site establishment, protection of works and adhering to the requirements of OH&amp;SA.</td>
<td>sum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL: PRELIMINARIES AND GENERAL**

## Site Clearance and Preparation Works

Refer to Implementation Specifications Section 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty.</th>
<th>Rate</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2.0</td>
<td>SITE CLEARANCE AND PREPARATION WORKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Grading and final shaping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.1</td>
<td>Grade and shape areas as indicated by landscape architect on site.</td>
<td>m²</td>
<td>140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Removal of rubble</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.2</td>
<td>Rubble to be piled in measurable heaps for verification by landscape architect prior to removal off site to legal dump site.</td>
<td>m³</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL: SITE CLEARANCE AND PREPARATION WORKS**

## Construction

Refer to Implementation Specification Section 4

Refer to Typical Construction Details Sheet #1, Details A1 & A2 Drg # PPMF-CD- #1-REV00.

<table>
<thead>
<tr>
<th>Item</th>
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<th>Qty.</th>
<th>Rate</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>3.0</td>
<td>CONSTRUCTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Concrete bases under play equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.1</td>
<td>Sub-base Preparation: Concrete slab area preparation and compaction to 93% mod AASHTO density of a min depth of 150mm. (140m²x0.15mm)</td>
<td>m³</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2</td>
<td>Reinforced concrete slab: 140m²x100mm Thick In-situ cast 25 mPa reinforced concrete slabs on sub-base compacted sub-base (priced above) beneath all play equipment. Slope concrete slabs 2% in direction of natural gradient for drainage. Top of concrete slabs for play equipment to be 20mm beneath final level.</td>
<td>m³</td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared by Blueprint Landscape Architecture
12 April 2011

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Compaction Tests</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Provide density tests upon instruction by landscape architect. Payment for items 3.1.1 and 3.1.2 only on submission of test results with progress claim.</td>
</tr>
<tr>
<td></td>
<td>ea</td>
</tr>
<tr>
<td>3.3</td>
<td>Header Course to contain concrete and rubber</td>
</tr>
<tr>
<td>3.3.1</td>
<td><strong>Header course</strong>: Install an approved <em>precast concrete paver 100x220x50mm thick</em> colour “Tan” as a header course on concrete footing with concrete haunching as an edging around all concrete bases according to detail.</td>
</tr>
<tr>
<td></td>
<td>linear m</td>
</tr>
<tr>
<td>3.4</td>
<td>Wet-pour rubber matting (20mm thick)</td>
</tr>
<tr>
<td>3.4.1</td>
<td>Complete supply and installation by approved manufacturer of 20mm thick wet-pour rubber matting layer in various colours under play equipment. Heavy duty areas to be sealed with additional hard-wearing top coat.</td>
</tr>
<tr>
<td></td>
<td>m²</td>
</tr>
</tbody>
</table>

**TOTAL: CONSTRUCTION**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>SUB-TOTAL 1</td>
</tr>
<tr>
<td>5.0</td>
<td>CONTINGENCIES ALLOWED</td>
</tr>
<tr>
<td></td>
<td>The sum provided here is under the control of the Landscape Architect and may be deducted in part or in whole.</td>
</tr>
<tr>
<td></td>
<td>plus 5,000.00</td>
</tr>
<tr>
<td>6.0</td>
<td>SUB-TOTAL 2</td>
</tr>
<tr>
<td>7.0</td>
<td>Plus 14% VAT</td>
</tr>
<tr>
<td>8.0</td>
<td>TOTAL FOR THIS CONTRACT:</td>
</tr>
</tbody>
</table>

Prepared by Blueprint Landscape Architecture
Mounding

Feature

Timber Entrance
Detail A2: Saw cut expansion joint for concrete slabs

- In situ cast concrete slab 20mpa
- Saw cut expansion joint
- 20 Gauge steel reinforcing mesh

Detail A1: Concrete base to receive rubber surface for play equipment

- In situ material
- To 93% MOD AASHTO
- 150mm layer in-situ sub-base layer compacted
- 150mm thick 25mpa concrete footing
- Paying not wider than 50mm at the surface
- 15mpa concrete handchining along edge of course bond
- Back fill to level with header course by Intrerset (or similar approved) in header
- 220x110x50mm tan Masonique pavers applied by approved specialist sub-contractor
- 20mm wet pour recycled rubber surface
- To receive recycled rubber surface
- 100mm 25mpa in-situ cast concrete slab
- 20 Gauge steel reinforcing mesh
DEVELOPMENT OF PIONEERS PARK MUSICAL FOUNTAIN AREA,
WEMMER PAN, JOHANNESBURG

IMPLEMENTATION SPECIFICATIONS:
BASE FOR CHILDREN’S PLAY AREA

Issued for Tender Purposes Only

April 2011

Compiled by:
Tania du Plessis
Blueprint Landscape Architecture
P O Box 39864
MORELETA PARK
0044

On behalf of:
Johannesburg City Parks Agency
Project Management Unit
P O Box 2824
J OHANNESBURG
2000

Greener. Conserved. Yours.
SECTION ONE – NOTES TO TENDERERS

1.1 TECHNICAL CONTRACT DOCUMENTS

.1 The technical contract documents include the following:

1. The Implementation Specifications
2. Bill of Quantities
3. Pioneers Park Musical Fountain: Children’s Play Area Sketch Plan (drw no: PPMF-CPA-NTS-REV00)
4. Typical Construction Details Sheet # 1 (drw no: PPMF_CD_01_REV00)

.2 The drawings included in the tender documents shall only be used for tender purposes. Drawings for construction shall be issued to the successful CONTRACTOR at site-handover.

.3 The latest revision shall be referred to at all times, and it shall be the CONTRACTOR’S responsibility to ensure that he has the latest revision of all construction drawings.

1.2 CLIENT REQUIREMENTS

.1 The client reserves the right to reduce or omit items in this schedule of quantities.

1.3 SERVICES ON SITE

.1 Even though the PROJECT MANAGER will point out the possible areas where services exist, the PROJECT MANAGER cannot guarantee the location of existing services or that unknown services are not present on the site.

.2 It shall be the responsibility of the CONTRACTOR to ensure that areas where work will be undertaken is safe for construction and the CONTRACTOR shall take all due care while excavating not to damage any existing services in the park.

1.4 PROTECTION OF THE WORKS

.1 It shall be the CONTRACTOR’S responsibility to ensure that the new works are protected against damage to wet concrete or rubber and work in progress.

.2 Open trenches or excavations shall be barricaded or taped with danger tape at all times to ensure safety on the premises.

.3 Wherever possible, the CONTRACTOR shall ensure the safety of the public still using the site.

1.5 OCCUPATIONAL HEALTH AND SAFETY ACT (OHSA) REQUIREMENTS

The CONTRACTOR shall also adhere to the requirements of the Occupational Health and Safety Act, and provide all the necessary safety equipment, correct operating equipment and personal protective clothing as necessary to complete the works.

The actions below are listed for assistance to the CONTRACTOR only, and are NOT the only requirements in terms of the OHSA that the contractor must adhere to:
It is the CONTRACTOR’s responsibility to compile a safety plan for the works and submit this to JCP for approval.

The CONTRACTOR shall ensure that all workers are issued with the appropriate Personal Protective Equipment (PPE) as identified in the SAFETY PLAN.

The CONTRACTOR shall ensure that all equipment and material that will be used for the contract have a RISK ASSESSMENT on file, and are in good and safe operational condition at all times.

The CONTRACTOR shall compile a SAFETY FILE with all necessary documentation, which must be kept in good order and on site at all times.

The CONTRACTOR shall appoint a SAFETY REPRESENTATIVE who has undergone certified First Aid training for the duration of the project.

The CONTRACTOR shall ensure that all workers are provided with induction training addressing the scope of work and all safety requirements of the work, prior to commencing with any work on site. Safety talks shall be held every morning by the SAFETY REPRESENTATIVE prior to commencement with work.

Safety meetings shall be held every two weeks and minuted.

A register shall be kept of all accidents, including remedial action taken and date of resolution.

The CONTRACTOR shall ensure he is registered with the Department of Labour and has all the required insurances in place.

The CONTRACTOR shall ensure that a first aid box is available on site and stocked in accordance with the OHSA. At least one person trained in First Aid shall be on site for every 50 workers employed.

**CONTRACTOR’S TEMPORARY STORAGE CAMP**

The CONTRACTOR will be allowed to store plant material and shall provide a chemical toilet inside an approved area on site. The CONTRACTOR shall ensure that the chemical toilet is cleaned on a regular basis. The CONTRACTOR must ensure that its workers make use of this chemical toilet to protect the area against contamination. The CONTRACTOR shall accommodate all sub-contractors and their workers by allowing them full use of the chemical toilets while working on site.

The storage area must be fenced off securely and have a lockable vehicular gate and must be kept tidy.

The CONTRACTOR shall provide storage space to all specialist nominated sub-contractors within this site camp should they so require.

At the end of the contract, the CONTRACTOR shall remove all fencing, toilets and remaining materials at his own expense and ensure the area is left tidy and clean and to the satisfaction of the LANDSCAPE ARCHITECT.
1.7 ELECTRICITY AND WATER

.1 The CONTRACTOR shall be responsible for providing his own electricity generator as required, unless otherwise advised by the client.

.2 A metred water connection will be installed by the CLIENT, which will be made available to the CONTRACTOR for the duration of the contract solely for the purposes of construction of the Works. No wastage of water will be allowed.
2.0 SECTION TWO - CLEARING OF THE SITE

Clearing of THE SITE of trees, shrubs and eradication of lawn/grasses, weeds and rubble shall be in accordance with SANS 1200 b & c. It would also include the following:

2.1 LAWN & GRASSES

.1 The application of appropriate and effective herbicides to the manufacturer's instructions, as well as the mechanical or manual removal of these lawns and grasses once the herbicides have clearly taken effect.

.2 All persons participating in Clearing of Vegetation as specified above must be wearing the appropriate protective clothing, masks and goggles.

.3 The square metre RATE, must allow for all costs of all herbicide applications and re-application if necessary, purchases, protective clothing, specialist sub-contractors (if required), as well as the removal and dumping of all debris and dead plant material associated with the above.
3.0 SECTION THREE - EARTHWORKS

3.1 SETTING OUT

.1 The design and levels shall be set out according to the Setting Out Plan or as instructed. Before any earthworks commence, all levels are to be checked by the LANDSCAPE ARCHITECT on site. The CONTRACTOR must therefore inform the LANDSCAPE ARCHITECT once setting out is complete, to facilitate the above-mentioned inspection.

.2 The CONTRACTOR shall set out with the use of dumpy level or theodolite in additional to the standard setting out practises.

.3 In the event of any conflicts or obstructions being encountered in the setting out process, alternative positions will be selected by the LANDSCAPE ARCHITECT, but still staying true to the overall landscape design.

.4 The RATE for setting out shall be included in the earthworks cost.

3.2 CUT TO FILL

.1 The CONTRACTOR shall excavate soil as indicated or required in areas and haul to a maximum distance of 500m on site to use as fill.

.2 The CONTRACTOR shall spread the transported soil and compact in layers of 150mm to a density of 90% MOD AASHTO or as otherwise specified by the LANDSCAPE ARCHITECT.

.3 The CONTRACTOR shall build up sub-layers to the desired finished level as surveyed.

.4 The RATE per cubic metre shall allow for all costs of equipment and labour to excavate, haul and spread the material to the satisfaction of the LANDSCAPE ARCHITECT.

3.3 CUT TO SPOIL

.1 The CONTRACTOR shall excavate un-usable soil/rock or rubble as indicated or required in areas and stockpile for measurement.

.2 The CONTRACTOR shall load the rubble / spoil and remove off site to a suitable and licensed dump site. The CONTRACTOR to indicate which landfill site will be used.

.3 The RATE per cubic metre shall allow for all costs of equipment, transport and labour to excavate, load and transport the material off site to an approved dumping site.

3.4 COMPACTION TESTS

.1 The CONTRACTOR shall allow for testing of compaction of sub-layers by approved method for walkways, sports fields, beneath concrete slabs or foundations or other specified areas by an approved testing laboratory, to be conducted upon request by the LANDSCAPE ARCHITECT.

.2 The RATE per compaction test shall allow for all costs of call-out, specialist fees and equipment to complete each compaction test.
3.5 **GRADING AND FINAL SHAPING (Trimming)**

1. The CONTRACTOR shall grade and cross-grade over the site to achieve final grades. All finished gradients are to be smooth flowing, marrying with existing levels, eliminating abrupt angles and changes of levels. All earth shaping works are to be carried out in consultation with the LANDSCAPE ARCHITECT on site.

2. The CONTRACTOR shall be responsible for the setting up and protection of level pegs, datum levels, grid references and profiles - in accordance with the CONTRACT and must allow therefore in his RATES.

3. The CONTRACTOR shall grade the site to levels and contours in accordance with the Setting Out Plan and notify the LANDSCAPE ARCHITECT immediately of any discrepancies or problematic conditions arising from the above.

4. Minor fillings and excavations are necessary to bring the grass and planting areas to smooth running levels between paths and kerbs. The grading shall be evenly carried out to 75mm below finished level (or if imported or stored topsoil is called for see specification for alternative depth) to all falls and gradients, eliminating all depressions and bumps by using either machinery or hand labour, suitable for the physical condition of the soil and the extent of the grading.

5. The CONTRACTOR shall ensure that all areas drain positively, unless otherwise instructed in writing. All areas shall be protected against erosion, surface runoff and loss of soil. The CONTRACTOR shall be held responsible if this was not done in accordance with SANS 1200. The CONTRACTOR shall be held responsible for the rectification / reinstatement of approved soil at no extra cost to the CLIENT.

6. The RATE shall allow for all costs (including machinery, labour, equipment and supervision) of loading, depositing and grading of soil in areas indicated on appropriate plans, in layers not exceeding 150mm consolidated and the light compaction thereof to 80% mod AASHTO.

3.6 **REMOVAL OF RUBBLE**

1. During the finishing off stage, rubble (large stones and other undesirable material) is to be piled in measurable volumes for the LANDSCAPE ARCHITECT to check before removal off SITE. Rubble will be disposed of in an approved waste pit. Dumping cost and distance to waste pit must be determined during the compulsory Site Inspection and be included in the quoted RATES.

2. Rubble will not include rubble generated by the CONTRACTOR i.e. plant containers, fertilizer bags, etc.

3. The RATE for the removal of rubble must include all the costs for transport, machinery, labour, supervision and equipment for gathering the rubble into measurable piles, loading and removing it to an acceptable dumping site, including all costs of dumping.

4. During the earthworks stage, boulders and large stones could be worked into the mounds so that they can be covered with a minimum of 600mm of soil to make up the final shape levels as per the drawings and the LANDSCAPE ARCHITECT'S instruction.
4.0 SECTION FOUR - CONSTRUCTION

4.1 HEADER COURSE EDGING
Refer to Typical Construction Details A1 and A2 on Sheet #1, Drw no: PPMF_CD_1_REV00.

.1 The CONTRACTOR shall construct brick header courses on 150x220mm 25mPa concrete footings on the outside edges of the children’s play area.

.2 The header courses shall be set out on site in accordance with the landscape setting out plan, for approval by the LANDSCAPE ARCHITECT, prior to any construction or excavation commencing.

.3 In-situ material shall be excavated 350mm below the final level and one (1) layer of 150mm in-situ material shall be compacted to 93% MOD AASHTO. (The remainder of the excavated in-situ material shall be placed on site in areas as indicated by the LANDSCAPE ARCHITECT to create mounding).

.4 All header courses shall be installed on 150mm thick 25mPa concrete footings and provided with 15mPa continuous concrete haunching to hold the paving in place.

.5 All header courses shall consist of a single row of Infraset “Masonique” (or similar approved) pre-cast bevel concrete pavers (50x110x220mm) colour: Tan as indicated on the details & Setting Out Plans. (Infraset Midrand, 012 652 0000).

.6 The RATE per linear metre shall allow for all costs of materials, transport, equipment and labour to complete the header courses to the satisfaction of the LANDSCAPE ARCHITECT.

4.2 COORDINATION OF INSTALLATION OF CHILDREN’S PLAY EQUIPMENT

.1 The CONTRACTOR shall be responsible for ordering and coordination of delivery and installation of additional children’s play equipment by PLANTWISE (Contact Jenneth Prinsloo on Tel 011 953 4540 or Cell 082 411 8812 or plantwise@yebo.co.za).

.2 The play equipment shall be set out in accordance with the Setting Out Plans, for approval by the LANDSCAPE ARCHITECT, and installed in concrete footings. The CONTRACTOR must liaise with Plantwise as to their requirements but shall provide a level surface for each play equipment element.

.3 The CONTRACTOR shall be responsible for backfilling or providing infill soil to provide level surface after removal of the play equipment. Infill soil or backfill shall be compacted and levelled.

.4 Upon acceptance of the play equipment by the LANDSCAPE ARCHITECT, the concrete bases shall be completed as per item 4.3 below.

4.3 IN-SITU CAST CONCRETE SLABS UNDER CHILDREN’S PLAY EQUIPMENT
Refer to Typical Construction Details A1 and A2 on Sheet #1, Drw no: PPMF_CD_1_REV00.

.1 Concrete slabs for wet-pour rubber matting shall be provided under all the play equipment.

.2 In-situ cast concrete slabs for wet-pour rubber matting shall be set out on site in
accordance with the Setting Out Plan for approval by the LANDSCAPE ARCHITECT prior to commencement of excavation and construction.

.3 Upon approval by the LANDSCAPE ARCHITECT, the area shall be excavated 270mm below the final level to accommodate the concrete slab and rubber matting, as per the construction details. One (1) layer of 150mm in-situ material shall be compacted to 90% MOD AASHTO. (The remainder of the excavated in-situ material shall be placed on site in areas as indicated by the LANDSCAPE ARCHITECT to create mounding).

.4 The play equipment shall be assembled and installed by the specialist supplier within the frame of the concrete base as per the Setting Out Plan, set into individual concrete footings, prior to the casting of the concrete slabs.

.5 The pattern/shape of the concrete slab around the play equipment element shall be edged with the brick header courses to hold the pattern in place while casting the concrete base.

.6 The concrete base shall be edged with by Infraset “Masonique” precast concrete bevel pavers (or similar approved) 220x110x50mm in Tan as a header course, (Infraset Midrand, 012 652 0000) set into a concrete footing as per detail A1, to provide a 20mm deep recess (maximum variance of 2mm above or below) on the concrete slab, which must accommodate a wet-pour rubber matting. The top of the header course edging shall be flush with existing ground level. (Priced separately).

.7 All header courses shall be installed on 150mm thick 25mPa concrete footings and provided with 15mPa continuous concrete haunching to hold the paving in place. (Priced separately).

.8 The CONTRACTOR shall provide full rubber tyres – one placed under each side of the see-saw – and excavate these to be set into the subsoil and extend one-third of the size of the tyre above the finished level of the rubber mat surface, prior to casting the concrete slab. (Priced separately). Tyres are required to protect rubber surfaces from damage by the see-saw and act as shock absorber.

.9 The concrete slab shall be cast in-situ, to 25mPa, at a thickness of 100mm and finished to a smooth surface with a wooden trowel. The concrete slab shall be reinforced with 20 gauge steel reinforcing mesh to details.

.10 Expansion joints shall be saw-cut 25mm deep into the concrete slabs in two directions (at right angles to each other) every 3000mm (i.e. concrete blocks shall not exceed 9m² without an expansion joint). The expansion joints shall be fill with poly sulphide expansion joint sealant or a similar approved bitumen sealant. Refer to detail A2.

.11 The main CONTRACTOR shall liaise his programme with the LANDSCAPE ARCHITECT to ensure a seven-day minimum curing period prior to the wet-pour of the rubber matting being undertaken. The concrete shall be cured by wetting the surface thoroughly three times a day and keeping the slab covered with a plastic sheet for the seven-day minimum curing period.

.12 The main CONTRACTOR shall allow the specialist SUB-CONTRACTOR access to the site, and provide the necessary storage of materials the SUB-CONTRACTOR may require.

.13 The main CONTRACTOR shall allow for hoarding or screening off of the area once the slab has been cast, as well as when the pouring of the rubber has been done, to ensure no damage is inflicted on the wet material.
.14 The CONTRACTOR shall be responsible for submitting signed delivery notes for all concrete brought to site, with all invoices to confirm quantity of concrete used.

.15 The RATE per cubic metre for construction of the concrete slab, shall allow for all costs of excavation, compaction, materials, transport or delivery to site, hoarding or screening around the wet concrete and again around the wet rubber matting, and labour to provide a concrete slab for use by the specialist SUB-CONTRACTOR.

4.4 INSTALLATION OF WET-POUR RUBBER MATTING UNDER PLAY EQUIPMENT (by approved specialist supplier)

.1 The wet-pour rubber matting shall be 20mm thick.

.2 The colour of the rubber matting shall be a combination of various colours as specified by the LANDSCAPE ARCHITECT.

.3 Rubber matting shall be installed under all the play equipment.

.4 The rubber matting shall be supplied and installed by the approved manufacturer, to a depth of 20mm, as a wet-poured rubber surface. The heavy-duty areas shall be sealed with an additional hard-wearing topcoat.

.5 The finished level of the rubber matting shall be flush with the top of the header course edging and flush with the existing ground level.

.6 The RATE per square metre for installation of the wet-pour rubber matting shall allow for all costs of materials, equipment transport to site and labour to install the rubber matting as per the construction details and manufacturer’s specifications.

.7 A five (5) year latent defects warranty period is to apply to the rubber matting.