

SPECIFICATIONS

CEMSEAL TURFPAVE

○ GRASS & GRAVEL STABILIZATION

1 GENERAL

All work in this Section shall comply with the requirements of the Contract Documents. Supply and install grass pavers as shown on the drawings or specified herein.

2 MATERIALS

The grass pavers shall be TURFPAVE structural and porous interlocking plastic pavers supplied by Cemseal Industries Sdn Bhd (Tel: +607-558 3320, Fax: +607-556 9127, E-mail: info@cemseal.com.my) or approved equivalent.

GENERIC SPECIFICATION

The grass pavers shall be interlocking structural plastic porous pavers manufactured with high impact UV-stable 100% recycled plastics with Singapore Green Label certification. In addition, the grass pavers shall meet the following requirements:

- a) Load bearing capacity of $>80 \text{ N/cm}^2$ ($\sim 80 \text{ t/m}^2$) for fire engine access as stipulated in the Singapore Civil Defence Force Code of Practice for Fire Precaution in Buildings 2002.
- b) The individual cells shall be evenly spaced to ensure even distribution of loads.
- c) The grass pavers shall have an open base design for minimal hindrances to root growth and drainage and side openings to allow for runner and root growth between cells.

Typical properties of the grass pavers are:

PROPERTY	VALUE
Material	Polypropylene
Dimensions	500 (L) x 500 (W) mm
Height	40 mm
Cell size (diagonal)	70 mm
Weight	$\geq 4.3 \text{ kg/m}^2$
Compressive strength (unconfined)	$>200 \text{ tonne/m}^2$
Compressive strength (confined)	$>2000 \text{ tonne/m}^2$
Biological resistance	Unaffected by moulds and algae
Chemical properties	Resistant to rot, oils, acids, alkalis, bitumen and naturally occurring soil chemicals
Service temperature	-30°C to 80°C

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- 3.1** The proprietary materials specified herein shall be provided / installed in accordance to the project requirement as approved by the Superintending Officer.
- 3.2** Proprietary materials supplied shall be identified clearly with the product name and description. Packaged materials shall be stored in manufacturer's wrappings and containers with the manufacturer's labels and seals intact.
- 3.3** Prior to installation, the Contractor shall submit Method Statements and / or Shop Drawings for the installation of the grass pavers. The latter shall be on at least A3 size paper or larger and in a CAD-recognisable format.
- 3.3** Sub-grade preparation
- (a) Excavate and level the area where the grass pavers are to be installed according to the recommendations under the section *Base Course Preparation* (below).
 - (b) Compact the excavated or levelled area using a mechanical plate compactor or light compactor roller according to the Engineer's specifications.
 - (c) Proprietary sub-surface drainage and irrigation systems and utility lines should be installed in the sub-grade. Disturbed areas should be lightly compacted after installation.
- 3.4** Base course preparation
- Lay down and compact a sandy gravel or recommended granite aggregate base course that meets road base construction specifications or according to Engineer's specifications.
- 3.5** Grass paver installation
- (a) Place connected grass pavers on the sandy gravel mix ensuring that the open cells are facing upwards.
 - (b) Unless otherwise specified, fill and cover the cells with an 80% sand and 20% organic sandy soil mix. Clay or heavy loam soil mixes that can adversely affect turf establishment shall not be used.
 - (c) Level off the surface and lightly compact the area using water sprayed evenly across the surface.

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- (d) The top of the grass pavers must be covered with 10 mm of the sandy soil mix if the area is to be turfed, and by 20 mm if the area is to be hydro-seeded.
- (e) Ensure that vehicles are not driven over newly installed grass pavers.
- (f) All installed grass pavers shall be joined with no gaps in between.

3.6 Turf establishment

Lay sprigs or washed rolled turf onto the sandy soil layer. Turfed areas should be protected from traffic except for emergency vehicles until the root system becomes established. Only grass species that are hardy and suitable for local growing conditions should be used.

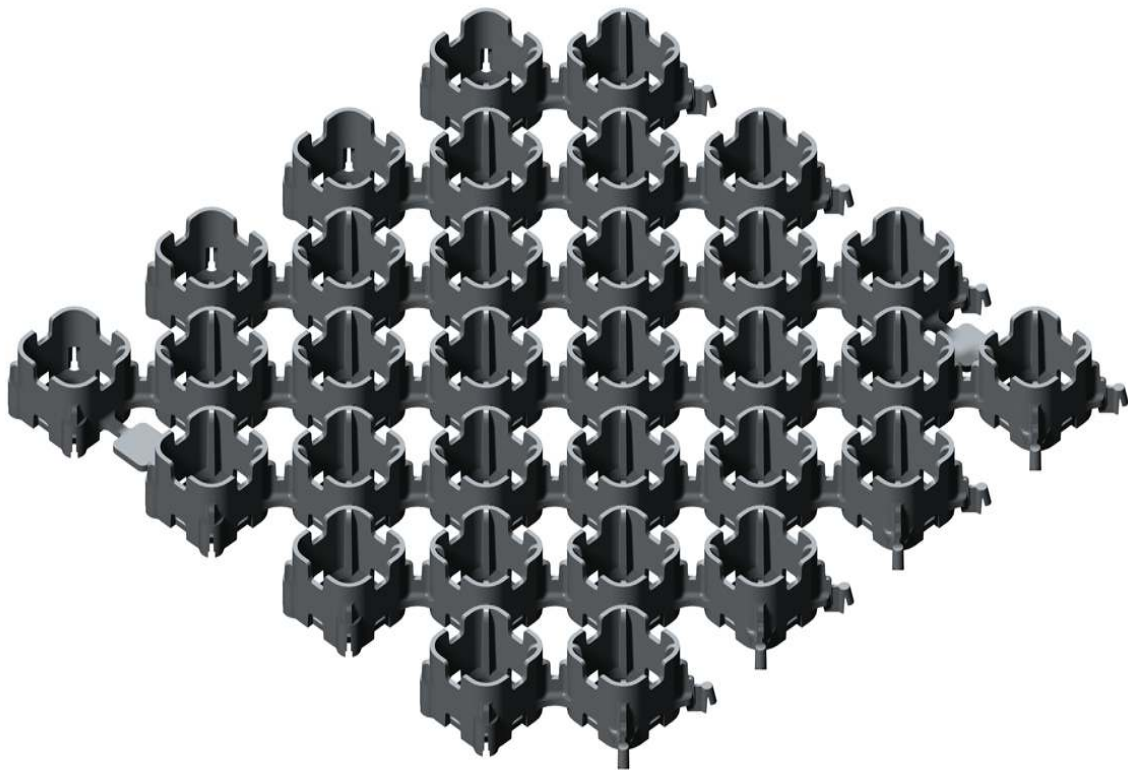
3.7 Hydro-seeding

Apply grass seed and mulch over the soil filled cells. Poorly germinated areas should be re-seeded immediately.

3.9 Protection and maintenance

Seeded areas must be protected from traffic, other than for emergency vehicles, for a period of 6 to 8 weeks, or until the grass can withstand traffic. Implement regular water regimes and apply recommended fertilizer applications and topsoil dressing, as needed.

SPECIFICATIONS



CEMEAL TURFPAVE XD

500 x 500 x 40 mm

PROJECT REFERENCES

Residential Projects

8@ MT. SOPHIA *APCO Architects*
ADAM PARK CONDOMINIUM *P.T.Wijaya Tribwana International*
BALMORAL CRESCENT CONDOMINIUM *Site Concepts International*
BELMOND GREEN CONDOMINIUM *Sitetectonix*
BELVEDERE CONDOMINIUM *RSP Architects Planners & Engineers*
THE BOTANIC CONDOMINIUM *Sitetectonix*
BUTTERWORTH 8 CONDOMINIUM *Belt Collins International*
HDB BEDOK TOWN INTERIM UP-GRADING *Group Design Architects*
CALROSE CONDOMINIUM *Site Concepts International*
CHESTERVALE CONDOMINIUM *Cicada*
CLEARWATER CONDOMINIUM *ACL*
D'DALVEY CONDOMINIUM *Chung Architects*
DOMAIN 21 CONDOMINIUM *Salad Dressing*
DRAYCOTT EIGHT CONDOMINIUM *Sitetectonix*
DRAYCOTT PARK CONDOMINIUM *RSP Architects Planners & Engineers*
DUET CONDOMINIUM *Peridian Asia*
EDELWEISS CONDOMINIUM *Ong & Ong Architects*
ESPARIS CONDOMINIUM *Team Design Architects*
FREESIA WOODS CONDOMINIUM *Site Concepts International*
GARDENVISTA CONDOMINIUM *DP Architects*
HERITAGE VIEW CONDOMINIUM *Belt Collins International*
HILLBROOKS CONDOMINIUM *Site Concepts International*
HONOLULU TOWER CONDOMINIUM *Serfert Asia Architects*
JALAN BESAR RESIDENTIAL DEVELOPMENT *Tay Kheng Guan Architects*
JALAN MUTIARA RESIDENTIAL DEVELOPMENT *RSP Architects Planners & Engineers*
KENG LEE ROAD CONDOMINIUM *SAA Partnership*
KERRISDALE CONDOMINIUM *Belt Collins International*
KIM YAN HEIGHTS CONDOMINIUM *SAA Partnership*
KOVAN MELODY CONDOMINIUM *Sitetectonix*
LAKEHOMZ CONDOMINIUM *Site Concepts International*
LEONIE HILL CONDOMINIUM *Sitetectonix*
LE CRESENDO CONDOMINIUM *Peridian Asia*
MALVERN SPRING CONDOMINIUM *Peridian Asia*

PROJECT REFERENCES

Residential Projects

MARTIA ROAD RESIDENTIAL DEVELOPMENT *Sitetectonix*
MOONSTONE CONDOMINIUM *Site Concepts International*
ONE DGREE 15 MARINA CLUBHOUSE @ COVE DRIVE *Maps Studio*
ONE FORT CONDOMINIUM *LandArt*
PAPILLION CONDOMINIUM *Martin Lee Design*
PARC PALAIS CONDOMINIUM *Ong & Ong Architects*
PINEVALE CONDOMINIUM *Sitetectonix*
SANCTUARY GREEN CONDOMINIUM *Peridian Asia*
SELETAR SPRINGS CONDOMINIUM *Site Concepts International*
SELETARIS CONDOMINIUM *Site Concepts International*
SIMEI GREEN CONDOMINIUM *Sitetectonix*
ST MARTIN DRIVE CONDOMINIUM *Martin Lee Design*
STERLING CONDOMINIUM *DP Architects*
SUMMERVILLA CLUSTER HOUSES *DLQ Design*
THE BAYWATER CONDOMINIUM *TAA Architects*
THE EDGEWATER CONDOMINIUM *Site Concepts International*
THE BOTANIC CONDOMINIUM *Sitetectonix*
THE CARPMAELINA CONDOMINIUM *Peridian Asia*
THE EDGEWATER CONDOMINIUM *Site Concepts International*
THE NATHAN PLACE CONDOMINIUM *Tierra Design*
THE PEARL CONDOMINIUM *Design Link Architects*
THE VINES CONDOMINIUM *Green Ink Landscapes*
THE YADLEY *Design Link Architects*
THOMSON EURO ASIA CONDOMINIUM *DCA Architects*
TREVOSE CRESCENT CONDOMINIUM *Colin K. Okashimo and Associates*
TWIN REGENCY *DPA*
TRUMPH CONDOMINIUM *William Lim Associates*
WHITEWATER CONDOMINIUM *OTLA Design Partnership*
WOODLANDS AVE 6 DEVELOPMENT *Housing & Development Board*
WOODLANDS D&B RESIDENTIAL DEVELOPMENT *Housing & Development Board*
YEW MEI GREEN CONDOMINIUM *Site Concepts International*

PROJECT REFERENCES

Institutional Projects

ALEXANDRA HILL PRIMARY SCHOOL *PWD Consultants*
ANG MO KIO SECONDARY SCHOOL *PWD Consultants*
BALESTIER PRIMARY SCHOOL *PWD Consultants*
CATHOLIC HIGH PRIMARY SCHOOL *Andrew Tan Architects*
CATHOLIC HIGH SECONDARY SCHOOL *Andrew Tan Architects*
CHANGKAT CHANGI SECONDARY SCHOOL *PWD Consultants*
CHANGKAT CHANGI PRIMARY SCHOOL *CPG Consultants*
CHEN SU LAN METHODIST CHILDREN *ECP Architects International*
CHESTNUT DRIVE PRIMARY SCHOOL *PWD Consultants*
CHIJ PRIMARY & SECONDARY SCHOOL *Team Design Architects*
CHOA CHU KANG PRIMARY SCHOOL *CPG Consultants*
CHONG BOON SECONDARY SCHOOL *PWD Consultants*
FOWLIE PRIMARY SCHOOL *PWD Consultants*
GREENRIDGE PRIMARY SCHOOL *PWD Consultants*
GREENDALE PRIMARY SCHOOL *CPG Consultants*
INNOVA JUNIOR COLLEGE *CPG Consultants*
MILLENIA INSTITUTE *CPG Consultants*
PAYA LEBAR METHODIST GIRL SCHOOL *CPG Consultants*
JINGSHAN PRIMARY SCHOOL *PWD Consultants*
JURONG WEST SECONDARY SCHOOL *PWD Consultants*
KENT RIDGE PRIMARY SCHOOL *PWD Consultants*
KUO CHUAN PRESBYTERIAN SECONDARY SCHOOL *CPG Consultants*
MANDALE HEIGHT *Peridian Asia*
MORTFORT JUNIOR SCHOOL *PWD Consultants*
NANYANG GIRLS HIGH SCHOOL *Ong & Ong Architects*
NAVAL BASE SECONDARY SCHOOL *Architects Team 3*
NGEE ANN PRIMARY SCHOOL *PWD Consultants*
NGEE ANN POLYTECHNIC *CPG Consultants*
NORTH VIEW SECONDARY SCHOOL *Architects Team 3*
NUS CENTRAL LIBRARY *CPG Consultants*
NUS LAW FACULTY EXTENSION *PWD Consultants*
PASIR RIS JUNIOR COLLEGE *PWD Consultants*

PROJECT REFERENCES

Institutional Projects

PASIR RIS PRIMARY SCHOOL *PWD Consultants*
PASIR RIS SECONDARY SCHOOL *PWD Consultants*
QUEENSWAY SECONDARY SCHOOL *PWD Consultants*
RADIN MAS PRIMARY SCHOOL *PWD Consultants*
RAFFLES JUNIOR COLLEGE *CPG Consultants*
RED SWASTIKA PRIMARY SCHOOL *CPG Consultants*
REPUBLIC POLYETCHNIC *DP Architects*
SEMBAWANG CRESENT SECONDARY SCHOOL *PWD Consultants*
SEMBAWANG PRIMARY SCHOOL *PWD Consultants*
SIMEI ITE CAMPUS *RSP Architects Planners & Engineers*
SINGAPORE SPORTS SCHOOL *ECP Architects*
SINGAPORE AMERICIAN SCHOOL *CLLA Architects*
ST. ANDREW VILLAGE *DP Architects*
TECK WHYE PRIMARY SCHOOL *PWD Consultants*
UNITED WORLD COLLEGE OF SEA *RSP Architects Planners & Engineers*
VICTORIA JUNIOR COLLEGE *PWD Consultants*
YANGZHENG PRIMARY SCHOOL *CPG Consultants*
YIO CHU KANG SECONDARY SCHOOL *PWD Consultants*
YUMIN PRIMARY SCHOOL *PWD Consultants*
ZHONGDE PRIMARY SCHOOL *CPG Consultants*
ZHONGHWA PRIMARY SCHOOL *PWD Consultants*

Commercial Projects

AMARA RESORT HOTEL @ SENTOSA ADDP
BIOPOLIS *Jurong Consultants*
BUKIT GOMBAK INDOOR STADIUM *DP Architects*
CHANGI MERIDIAN HOTEL UPGRADING *Belt Collins International*
CHANGI NAVAL TRAINING BASE *ST Architects & Engineers*
FORT CANNING PARK *National Park Board*
HDB CENTRE *RSP Architects Planners & Engineers*
HYATT HOTEL *Kumpulan Akitek*
IMBIAH WALK @ SILOSO BEACH *Tan+Tsakonias Architects*
ISTANA PARK *National Park Board*
THE JTC SUMMIT *Jurong Town Corporation*
KOMOCO MOTOR SHOWROOM *Architects 61*
KRANJI CAMP LOGISTICS CLUSTER *DSTA*
L&C DISTRI PARK *Mega Design Architects*
LAGUNA NATIONAL GOLF & COUNTRY CLUB *Laguna NGCC*
LAW ENFORCEMENT ACADEMY OF SINGAPORE *CPG Consultants*
LABONE *Design Connection International*
MANDAI CREMATORIUM & COLUMBARIUM *CPG Consultants*
MARINA BARRAGE *CDM / Arch Team 3*
NATIONAL KIDNEY FOUNDATION *RSP Architects Planners & Engineers*
NATIONAL MUSEUM *Studio Steed*
NATIONAL MUSEUM BUILDING @ STAMFORD ROAD *CPG Consultants*
NEE SOON COMMUNITY CENTRE *PWD Consultants*
NOVENA SQUARE *Belt Collins International*
ORCHID COUNTRY CLUB *Executive Decision Inc & Partners*
ONE GEORGE *RSP Architects Planners & Engineers*
PFIZER SINGAPORE *Jacob Land Lease*
RIA BINTAN GOLF COURSE *Keppel Land*
ROBERTSON QUAY HOTEL *P&T Consultants*
SENGKANG SPORTSCOMPLEX *LT&T Architects*

PROJECT REFERENCES

Commercial Projects

SINGAPORE POLO CLUB *JGP Architecture*

SINGAPORE HISTORY MUSEUM *Studio Steed*

ST ANDREW'S VILLAGE *DP Architects*

SINGAPORE ISLAND COUNTRY CLUB *SICC*

STAMFORD GREEN *ICN*

THE EIGHTRIUM *AC Consortium*

WOODLANDS SPECTRUM *Jurong Consultants*

SUNGEI GEDONG CAMP *DSTA*