SECTION 32 14 00

UNIT PAVING

TERREWALKS® interlocking modular paving system made of 100% recycled plastic

PART 1 GENERAL

1.1 SECTION INCLUDES

A. **TERREWALKS®** interconnected (open grid) modular paving system made of 100% recycled waste plastics (Polyethylene)

1.2 RELATED SECTIONS

A. Section 03 30 00 – Cast-in-Place Concrete.

B. Section 31 00 00 – Earthwork.

C. Section 31 05 19 – Geotextiles.

D. Section 32 11 00 – Bases Courses.

E. Section 32 11 16 – Sub base Courses.

1.3 REFERENCES

A. Americans with Disabilities Act (ADA) 2010 Standards for Accessible Design.

B. ASTM B117: Standard Test Method for Salt Spray.

C. ASTM C1026: Standard Test Method for Resistance of Freeze – Thaw Cycling.

D. ASTM C1028: Standard Test Method for Determining the Static Coefficient of Friction.

E. ASTM E303: Dynamic Slip Resistance CTIOA Pendulum Method.

F. ASTM D3884: Standard Guide for Abrasion Resistance.

G. ASTM D4762: Standard Guide Testing Compression Tolerance of Polymer Matrix Composite Materials.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Selection Samples: For each finish product specified, one set of samples representing manufacturer's range of available product.

D. Certificate of Compliance: Submit manufacturer's certificate of compliance indicating materials comply with specified requirements.

E. Manufacturer's Project References:
   1. Submit list of successfully completed projects.
   2. Include project name and location, name of customer official, or engineer, landscape architect, architect, etc. and type and quantity of surfacing furnished.

F. Installer's Project References:
   1. Submit list of successfully completed projects.
   2. Include project name and location, customer official, or engineer, landscape architect, architect, etc., and type and quantity of surfacing installed.

G. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

H. Warranty: Submit manufacturer's standard warranty.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
   1. Continuously engaged in manufacturing of surfacing products of similar type to that specified, with a minimum of nine years successful experience based on protocols and precedent with a minimum of 120 projects completed within last 5 years, and specifically 30 TERREWALKS®' projects within last 2 years.

B. Installer's Qualifications:

   1. Successful experience in installation of interlocking modular pavement.
   2. Employ persons trained for installation of surfacing interlocking modular products. (ICPI accredited preferred.)
      Approved by manufacturer.

C. Installation Quality Assistance

   1. Contractor shall contact Representative or TERRECON, Inc. to arrange oversight and assistance with site preparation and installation of product. Contractor shall make contact 10 working days prior to TERREWALKS®' related work is scheduled to provide adequate time for scheduling of proper oversight and assistance.

   2. Additional preparatory training or on-site support/ training may be requested, or deemed necessary, with incurred costs to be assumed by installer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage: Store materials in accordance with manufacturer's instructions. Cut steel binding straps if product will be stored more than 14 days.

C. Handling: Protect materials during handling and installation to prevent damage. Do not stack on uneven surfaces. Stack top-to-top and bottom-to-bottom.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Materials and Workmanship: TERREWALKS shall be warranted for defects in materials and workmanship for twenty-five (25) years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: TERRECON, Inc. which is located at: 10061 Talbert Ave. #200, Fountain Valley, CA 92708; Tel: 714-064-1400; Fax: 714-964-8600; Email: info@terrecon.com; Web: www.terrecon.com.

B. Substitutions: Not permitted. No equivalent.

C. Supplier:
TERRECON, Inc,'10061 Talbert Avenue #200
Fountain Valley, CA 92708
Phone: 714 964 1400
Contact: Jose Jasso
Email: Jose@terrecon.com

D. Applications: Sidewalks, walkways, pathways, plazas, courtyards, roof walkways, malls, shopping centers, etc. all pedestrian pavement applications. TERREWALKS® have not been tested or approved for vertical applications. TERREWALKS® are not intended for under-equipment playground applications.

2.2 MODULAR INTERCONNECTED PAVER TILES

A. Product: TERREWALKS® are modular interconnected paving tiles.
1. Material: 100% waste polyethylene plastic (postconsumer) molded under compression. (No polyurethane, no EPDM, no PVC, no PET.)
2. Size: 2' x 2.5' x 1.75". Tabs extend additional 1.5" per side on all sides. Design allows installation of minimum 4' wide sidewalks.
3. Weight: 5 lbs per square foot (25 lbs. per paving tile).
4. Colors: Gray Beige (concrete color)
5. Texture: Coarse finish
6. Under-base: Patented channel design system to facilitate water storage, drainage and accommodate tree root growth, and provide shock attenuation.

B. Material Characteristics:

1. Hardness: Shore A 93
2. Coefficient of Friction: ASTM C 1028: Dry=0.72; Wet=0.62
OSHA guidelines require that all walking surfaces satisfy a 0.5 Static Coefficient of Friction rating wet and dry. In new construction and alterations, ADA specifies that all walkways be stable, firm and slip resistant.

3. Coefficient of Friction: ASTM E303 Dynamic Slip Resistance CTIOA Pendulum Method; Wet = 60 (36 or higher indicates low slip). (E303 is a Wet Only test) OSHA guidelines require that all walking surfaces satisfy a 0.5 Static Coefficient of Friction rating wet and dry. In new construction and alterations, ADA specifies that all walkways be stable, firm and slip resistant.

4. Taber-Abrasion: ASTM C 1353: 1,000g weight load, H-22 (high abrasion) wheels at 12,000 cycles. Material loss of 5.06% indicates high wear property.

5. Compression Tolerance: ASTM D 4762: 50,000 5149 PSI Recovered 94%

6. Instron® Compression: 1471 PS-1276 PSI at material temperature ranging from -20° to +120°.

7. Salt/Chloride & Magnesium Chloride Exposure: ASTM B117: Product exposed for 24 hours. No change in surface; no stain or residue.

8. Xenon Arc Weathering ASTM E162: 200 hours UV testing. Lighting equivalent to outdoor daylight conditions and temperatures not exceeding 140 degrees Fahrenheit. No change after exposure to sunlight two-year equivalent.

9. Water Infiltration ASTM C1701 Infiltration: 420"/hr; Percentage Open Space: 20%; Run-off Coefficient: 0; Percentage void base: 75%; Percentage void entire paver: 43%.

10. Freeze-Thaw: ASTM C 1026: Product exposed to 15 cycles of freeze-thaw at 0 Degrees. No change. No facial defects. No signs of crazing, chipping, spailing or cracking.

11. Freeze Impact: ASTM D 6944: Product frozen at 0 degrees was subjected to missile impact with no change.

12. R-Value: ASTM C518: Thermal Resistance 1.480; Thermal Resistance/inch .822; Thermal Conductivity 1.215

13. LEED® and SITES™ Credit: Contributes to LEED© and SITES™ certification in areas of recycled content, storm water drainage, heat island effect, innovative design, and regional materials.

14. Sound: TERREWALKS® reduces sound of pedestrian or wheeled traffic.

15. ADA Compliance: Low vibration; concrete-to- TERREWALKS® transition non-affective; paver to paver transition non-affective (tab interlock prevents both sideways and lateral movement); high coefficient of friction both dry and wet; Shore A hardness supports all pedestrian and wheeled traffic, and transition on and off concrete or other hardscape. Maximum joint seam .25". Product designed for 4 foot minimum width.

16. Modularity: TERREWALKS® is a modular system. Pavers are interconnected with patented design and can be opened by professional contractors for tree root maintenance, utilities access, seismic adjustment, relocation, etc.

17. Maintenance: Sweep, hose-down, mop, steam clean.

18. Trench Requirement 4” total with 2.25” permeable aggregate base material, for vehicle traffic 6” total with 4.25” base material.

19. Other: Non-toxic. All components inert solids. No volatile organic compounds. No latex content.

C. Base (material to be included and paid for under a separate item):

1. Paver base/base course angular aggregate with good drainage and minimum fines, consistent with sandy gravel material from local sources commonly used for road base construction, passing the following sieve analysis:

Sieve	%Passing
1”	100
3/4"	90-100
3/8”	70-80
#4	55-70
#10	45-55
#40	25-35
#200	3-8

2. Sources of material can include either "pit run" or "crusher run.” Crusher run material generally requires sharp sand be added to mixture (33% by volume) to ensure long-term porosity. If unable to find an alternative mixture can be created by mixing 2/3 crushed drainage rock (0.75” diameter) with 1/3 coarse, well-draining sand (AASHTO M6 or ASTM C-33)

3. Alternative materials such as crushed shell, lime rock, and/or crushed lava may be considered provided they are mixed with 33% sharp sand; crushed shell and lime rock alone can set up like concrete without sand added

4. Base material to be brought to proper compaction of 90-95%, by placing in 1” layers, and compacting, using a vibratory compactor as needed. (Refer to FHA Chapter 4, Designing Sidewalks Guidelines; refer to ICPI tech specifications for applicable sub base applications)

5. Nonwoven pervious geotextile fabric

D. Accessories provided by product manufacturer:

1. 10” Permaloc Spiral Steel Spikes

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly laid and compacted per 2.2 C, and inspected by an authority approved by the City’s or Customer’s Authorized Representative.

B. If substrate preparation is the responsibility of another installer, do not begin installation until substrates have been properly laid and compacted according to manufacturer’s

instructions, and inspected by an authority approved by the City's or Customer's Authorized Representative.

C. Consulting arborist recommended for tree root inspection. Roots can be left intact up to 1.75" from grade (flush to base of paver) and any tree root trimming should be approved and supervised by a consulting arborist.

D. Place 2-1/4" of base course permeable aggregate compacted as described in 2.2 C and in the manufacturer's installation manual. Base material shall be paid for and included in the separate bid item titled Install Aggregate Base.

E. Place and secure geotextile fabric to create leveling layer as described in the manufacturer's installation instructions. Geotextile material shall be paid for and included in the separate bid item titled Install Aggregate Base.

3.2 PREPARATION

A. Prepare surfaces in accordance with manufacturer's instructions and protocol.

3.3 INSTALLATION

A. Install paving system in accordance with manufacturer's instructions, and paying attention to proper joint spacing as determined by climate conditions at time of installation.

B. Walk on each paver checking for base stability, compaction, even height between pavers and existing hardscape, and proper joint spacing

C. Make corrections by resetting, filling, and compacting base material as needed; do not use a vibratory compactor on top of pavers.

D. Do not place infill material into seams.

3.4 CLEANING

A. Clean surface in accordance with manufacturer's instructions. Cleaning not required.

MEASUREMENT & PAYMENT

TERREWALKS® will be measured and paid for at the contract unit price per square foot. The unit price paid per square foot includes all costs associated with subgrade preparation and compaction, removal of existing tree roots as necessary for installation, placement and compaction of paver base, geotextile fabric, installation of TERREWALKS® including steel spikes and miscellaneous concrete-fill necessary to provide the TERREWALKS® path, complete and in place.

END OF SECTION