



SMITH-EMERY LABORATORIES

An Independent Commercial Testing Laboratory

781 E. Washington Boulevard, Los Angeles, California 90021 ♦ (213) 745-5333 ♦ Fax (213) 749-7232

Project Number: 44419-1
Lab Number: L-17-0131B

February 28, 2017

Sri Varadaraj, PE
Sr. Water Resources Engineer
NDS INC.
2855 South East Avenue
Fresno, CA 93725
[o]: 1-559-443-6680, EXT 2915
[m]: 1-559-920-6888

Subject: **Compressive Strength Test on Permeable Pavers**
Brand Name: NDS Tuff Track TT24 and EZ Roll; Invisible Structures, Ins -
GravelPave2 and GrassPave2; TrueGrid - Proplus and Eco; Airpave -
GrassPave; PrestoGeo Geoblock 5150 and GeoPave.

Dear Mr. Varadaraj:

At your request, a series of tests were performed on samples you send and was received February 3, 2017. The purpose of our testing was to determine the compressive strength and deformation of the sample with and without in-fill materials in accordance to testing instruction.

The accompanying report, Report Number L-17-0131B, presents a description of the tests performed, the results of our testing, and our conclusions.

We appreciate this opportunity to be of service to you. If you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully Submitted,

SMITH EMERY LABORATORIES, INC.

Jerry M. Banzuela
Project Manager



Reviewed and Approved by,

G. Janeth Quintero, PE
Registered Civil Engineer No. C73066
Registration Expires 12/31/18

Attachments: Report No.L-17-0131B

cc: File

CELEBRATING 113-YEARS



1904-2017

SMITH - EMERY LABORATORIES, INC.

781 E. WASHINGTON BLVD. • LOS ANGELES, CA 90021
(213) 749-3411 – PHONE • (213) 741-8626 – FAX

REPORT OF: **COMPRESSIVE STRENGTH TEST ON PERMEABLE PAVERS**
Brand Name: NDS Tuff Track TT24 and EZ Roll;
Invisible Structures, Ins - GravelPave2 and GrassPave2;
TrueGrid - Proplus and Eco; Airpave - GrassPave;
and PrestoGeo Geoblock 5150 and GeoPave

PREPARED FOR: **NDS INC.**
2855 SOUTH EAST AVENUE
FRESNO, CA 93725
ATTN: SRI VARADARAJ, PE

PROJECT NUMBER: **44419-1**
REPORT NUMBER: **L-17-0131B**
REPORT DATE: **FEBRUARY 28, 2017**



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1.00 TEST REPORT

Proj./Job No.: 44419-1

February 28, 2017

Lab. No.: L-17-0131B

Client: **NDS, INC.**
2855 South East Avenue
Fresno, CA 93725
Attn: Sri Varadaraj, PE

Subject: **Compressive Strength Test**

Test Procedure: As per Client's Instruction

Source: Sample - NDS-Tuff Track TT24 and EZ Roll; Invisible Structures, Inc - GravelPave2 and GrassPave2; TrueGrid - ProPlus and Eco; PrestoGeo - Geoblock 5150 and GeoPave; and AirPave - GrassPave Submitted by Client;

Report of Test

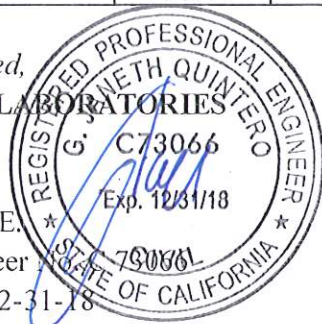
Compressive Strength Test: Paver Sample Without Fill Material

Sample was placed in the compression machine, with the steel base of the machine served as the base of the sample. A 12-in. x 12-in. steel plate was placed on to top of the sample and deflection measuring instrument, and load was applied at the rate of crosshead speed of the testing machine at ranged from 100 to 1,000 lbf. per second up to failure.

Sample Id	Max. Load, Lbs.	Area, Sq. In.	Max. Load, PSI	Remarks
Roll Pavers				
NDS EZ Roll	53,683	144	373	Paver samples deformed on top
ISI GrassPave2	40,623	144	282	Paver samples deformed on top
ISI GravelPave2	35,682	144	248	Paver samples deformed on top
Panel Pavers				
NDS Tuff Track TT24	86,563	144	601	Paver samples deformed on top
TrueGrid ProPlus	64,361	144	447	Paver samples deformed on top
TrueGrid Eco	53,797	144	374	Paver samples deformed on top
GeoPave	35,682	144	248	Paver samples deformed on top
Geoblock 5150	35,220	144	245	Paver samples deformed on top
Airpave GrassPave	23,910	144	166	Paver samples deformed on top

Respectfully Submitted,

SMITH - EMERY LABORATORIES



G. Janeth Quintero, P.E.

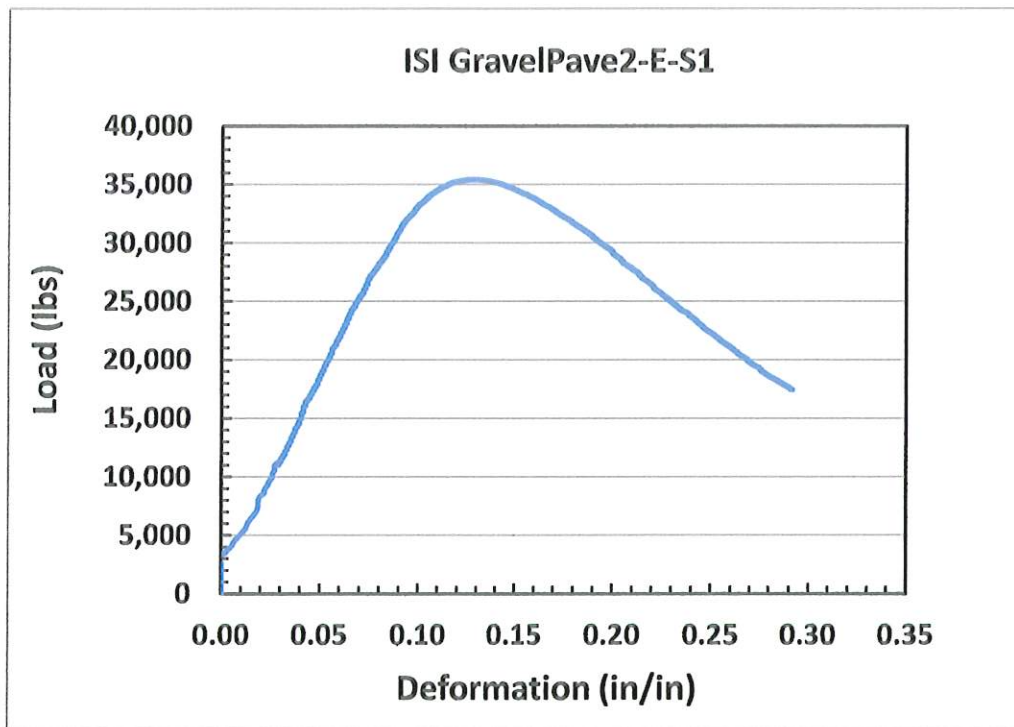
Registered Civil Engineer

Registration Expires: 12-31-18

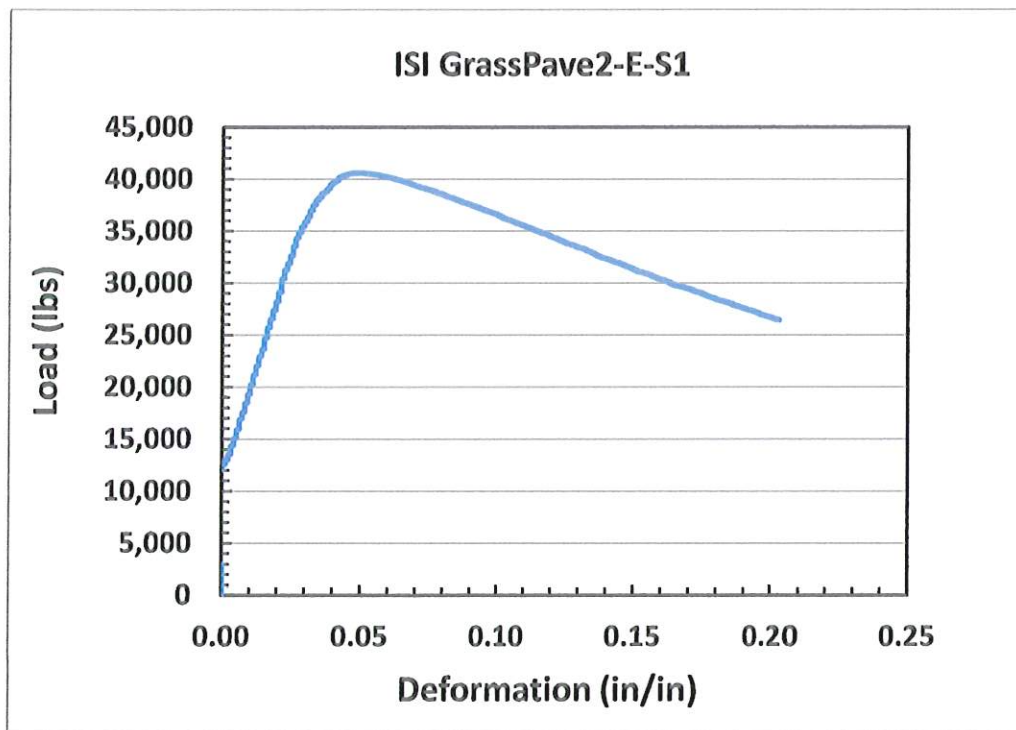
- Materials Tested Comply With Specifications.
- Materials Tested Did Not Comply With Specifications.
- No Established Criteria for Acceptable Limits.
- For Information Only



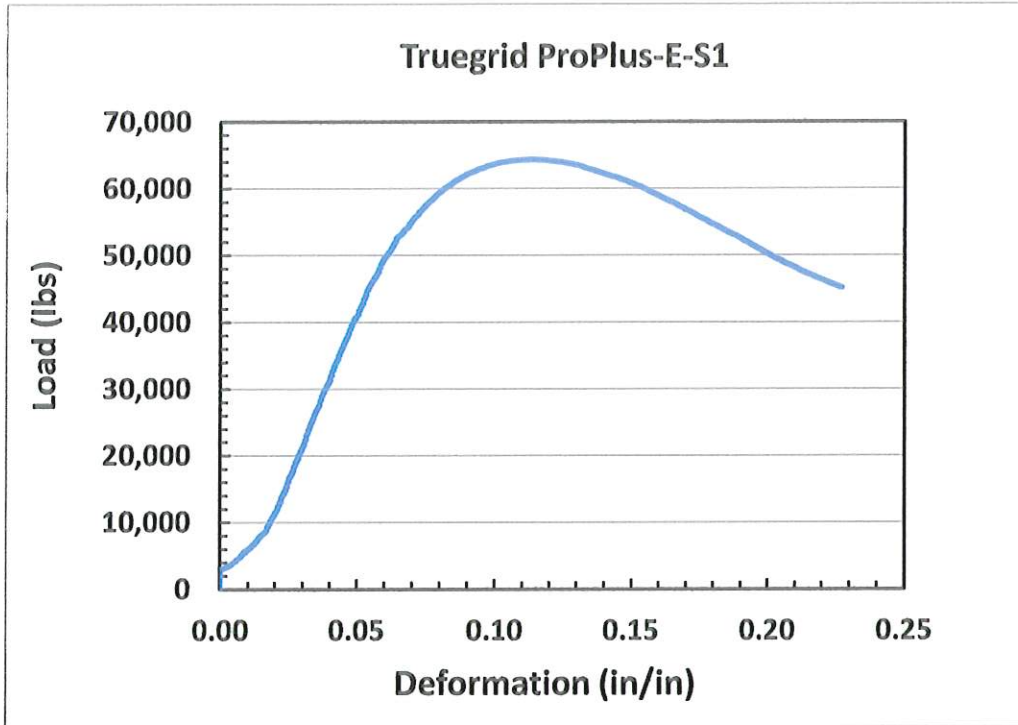
2.00 GRAPHS



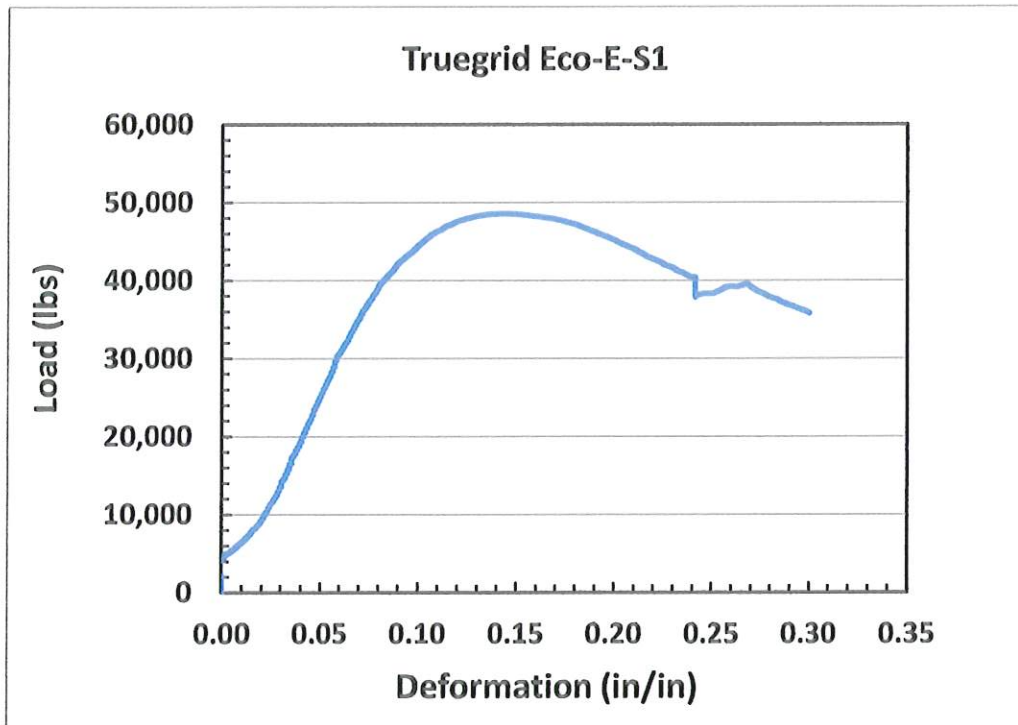
Invisible Structures, Inc. - GravelPave2 Sample: No Fill



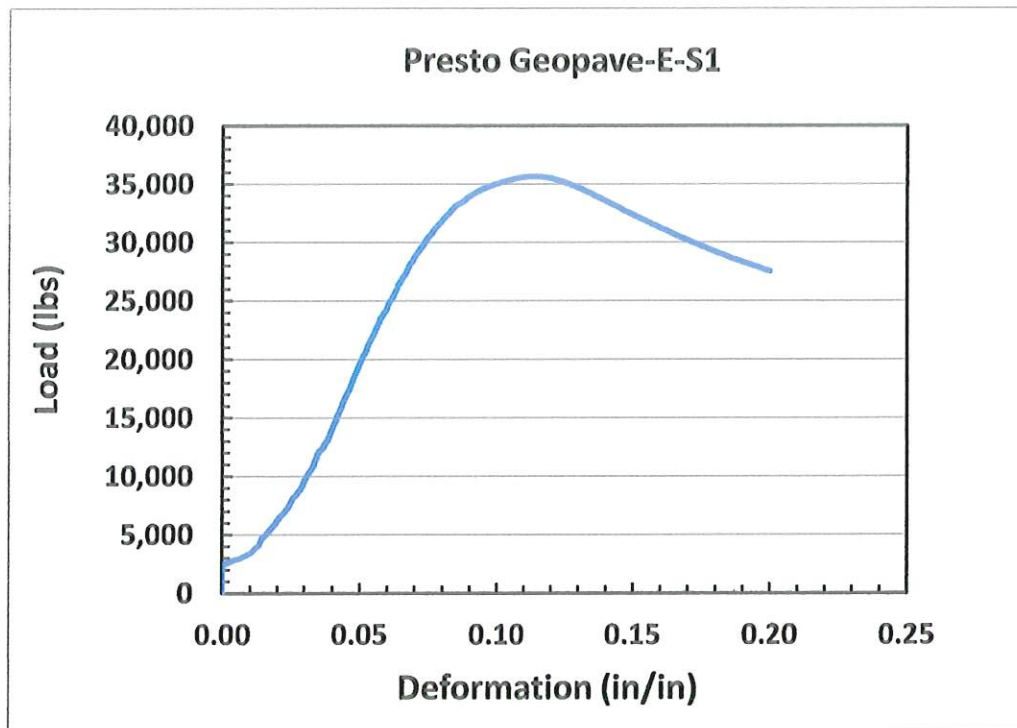
Invisible Structures, Inc. - GrassPave2 Sample: No Fill



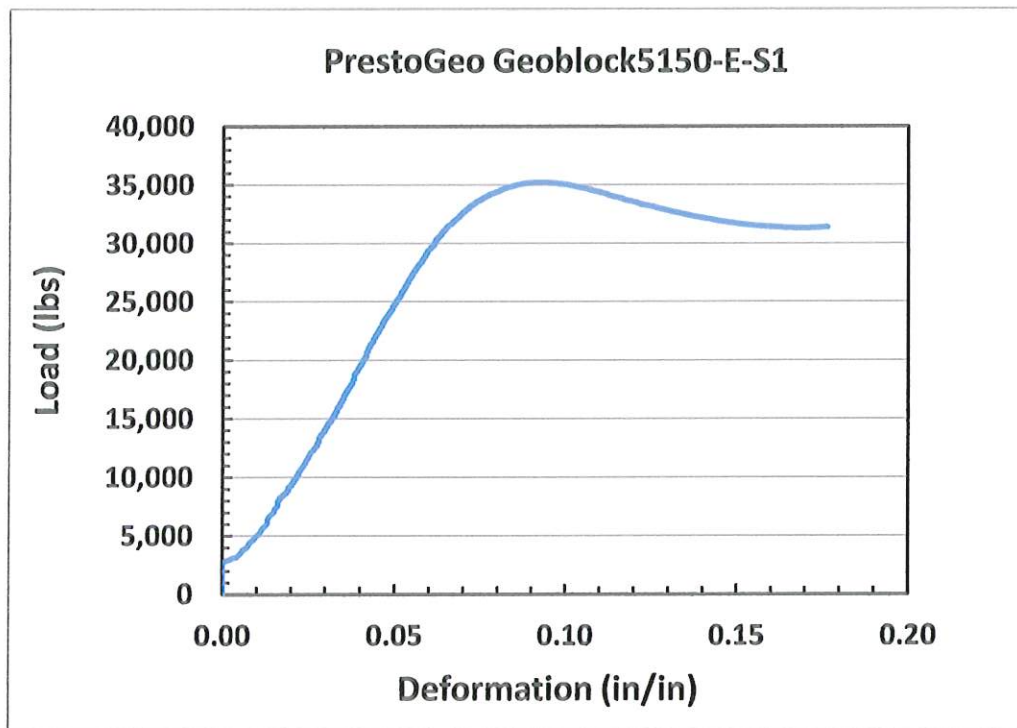
TrueGrid - ProPlus Sample: No Fill



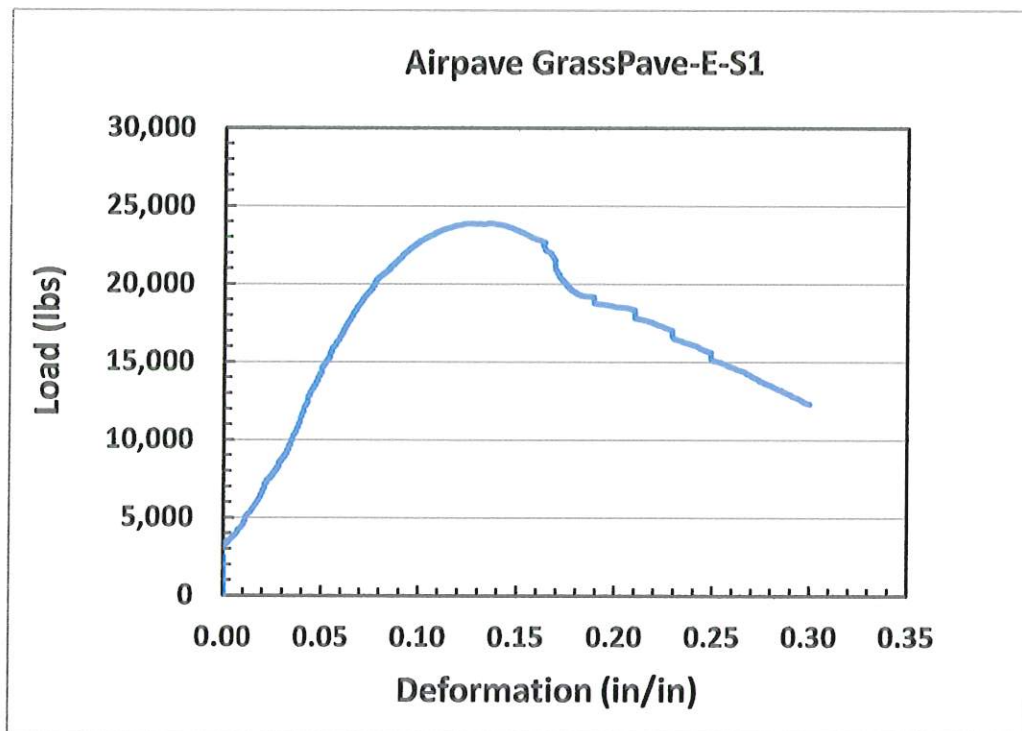
TrueGrid - Eco Sample: No Fill



PrestoGeo - Geopave Sample: No Fill



PrestoGeo - Geoblock 5150 Sample: No Fill



Airpave GrassPave Sample: No Fill



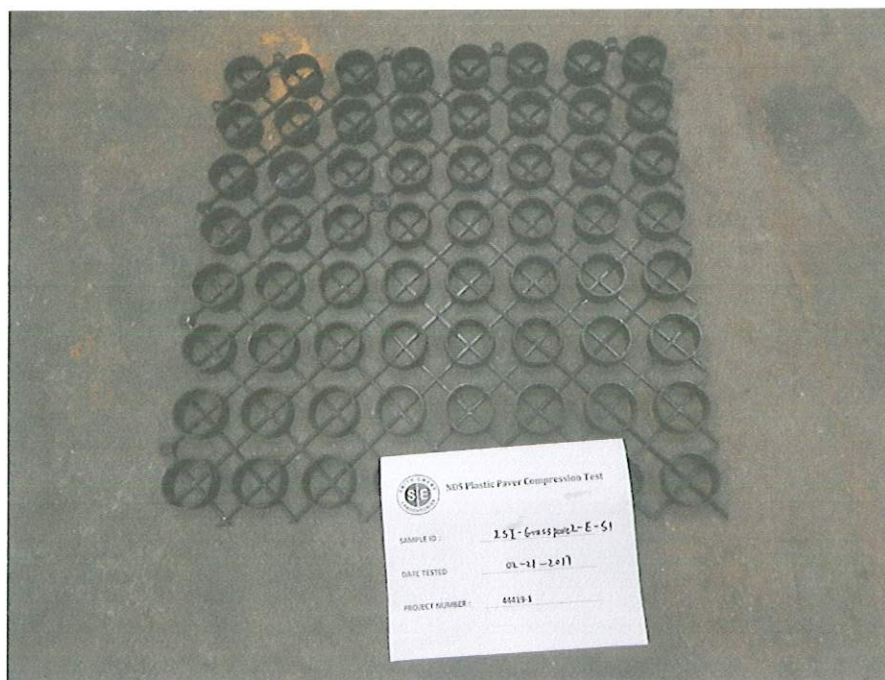
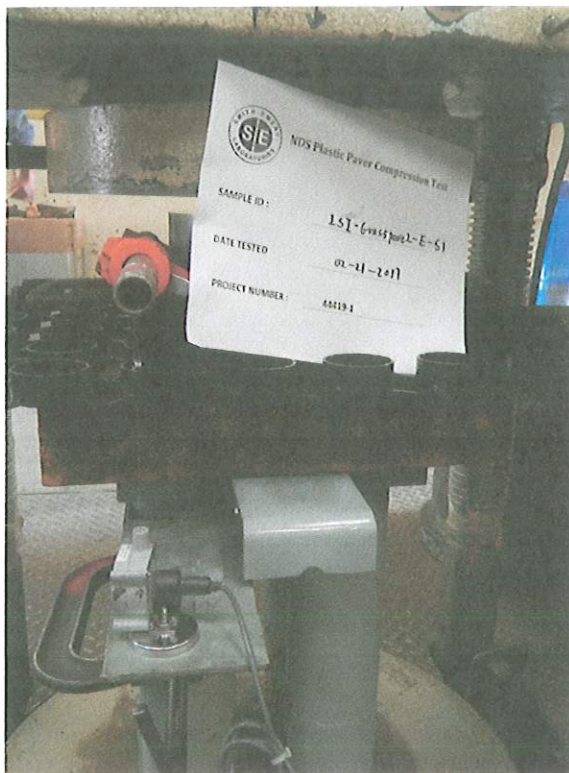
3.00 PHOTOGRAPHS



Typical Test Setup (Empty)



Invisible Structures, Inc. - GravelPave2 Sample: Before and After Test



Invisible Structures, Inc. - GrassPave2 Sample: Before and After Test



TrueGrid - Proplus Sample: Before and After Test



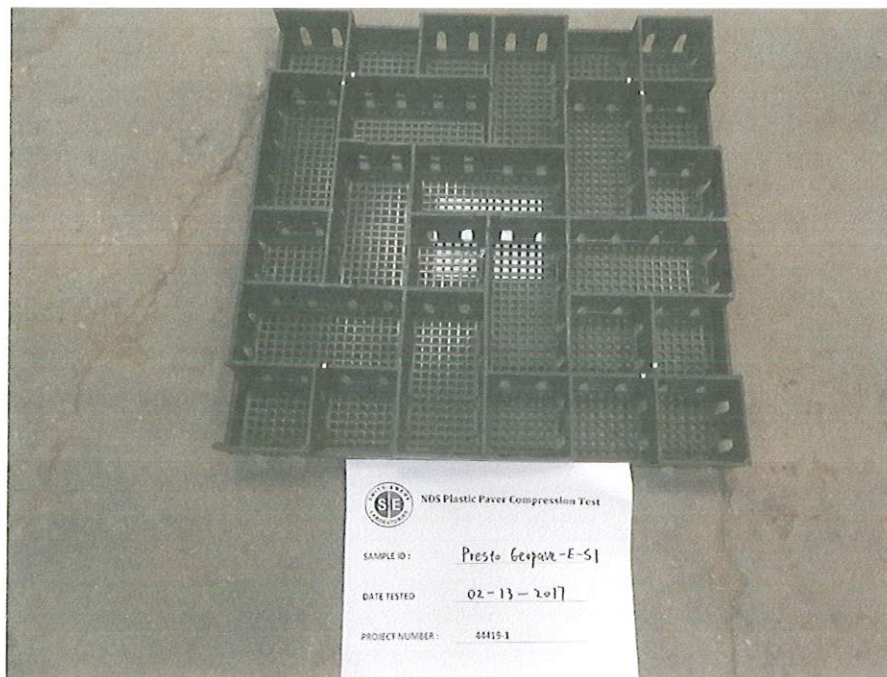
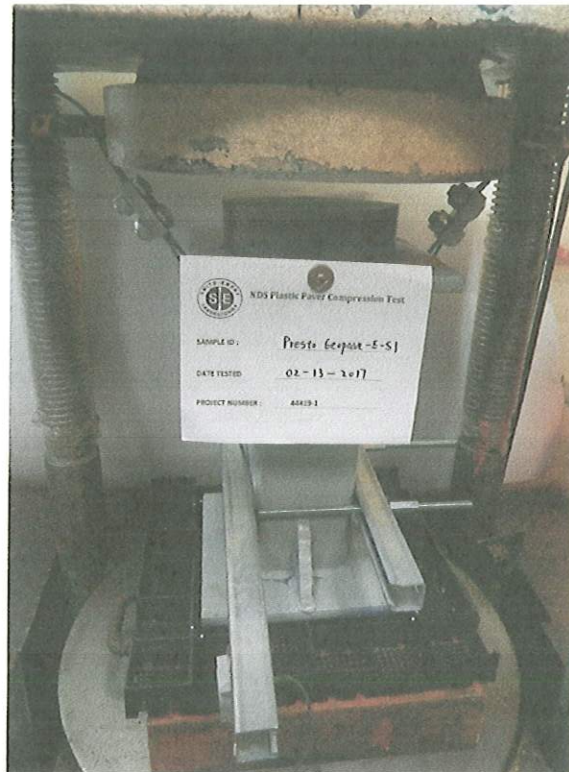
TrueGrid - Eco Sample: Before and After Test



Airpave - GrassPave Sample: Before and After Test



PrestoGeo - Geoblock 5150 Sample: Before and After Test



PrestoGeo - Geopave Sample: Before and After Test



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END OF REPORT