American Concrete Institute

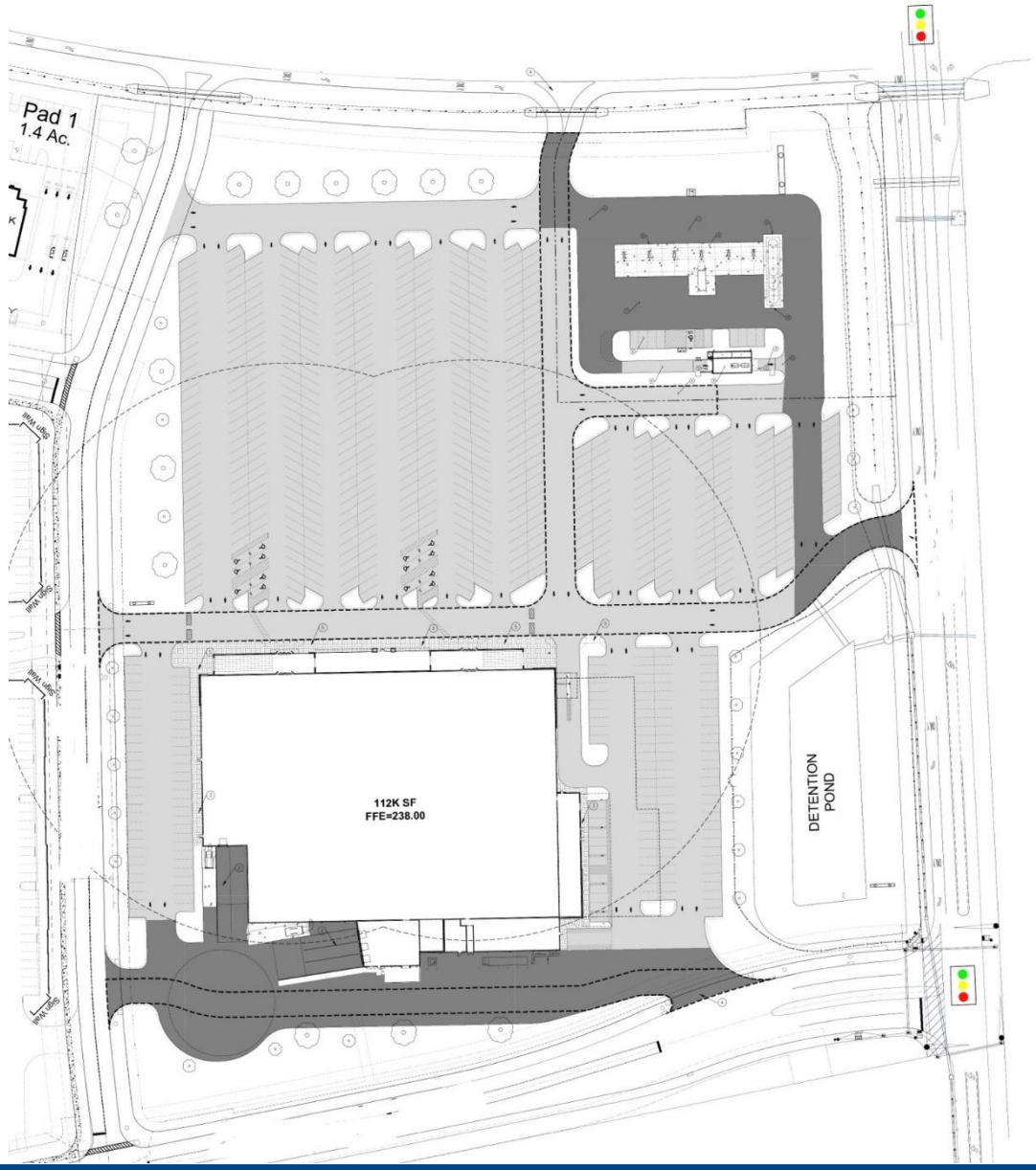
Pavement Concrete Thickness Study

Tim Manherz

ENCORE
CONCRETE CONSTRUCTION

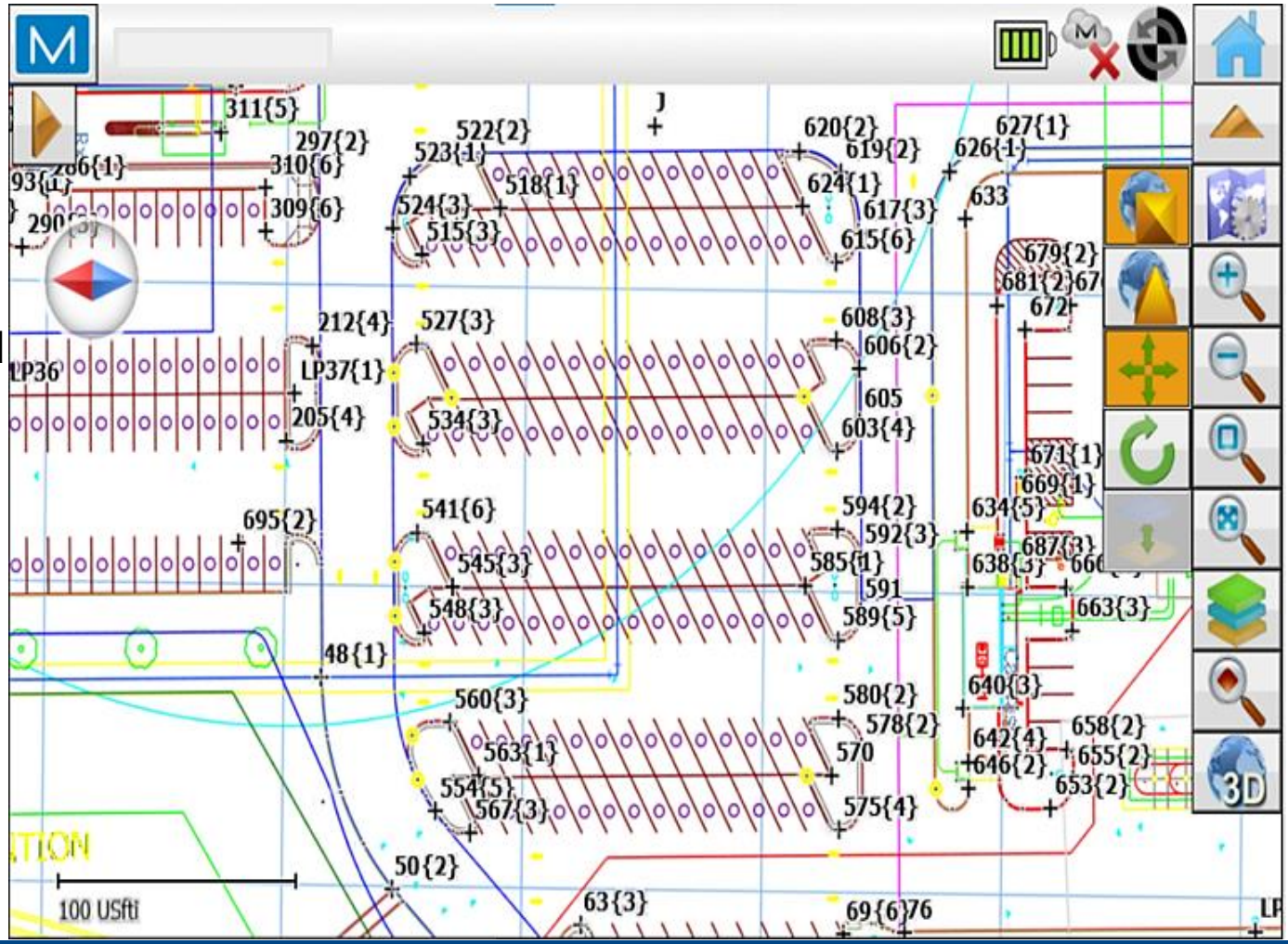
Pavement Pour Area

- We need an accurate and efficient method to test overall average thickness in any area of paving



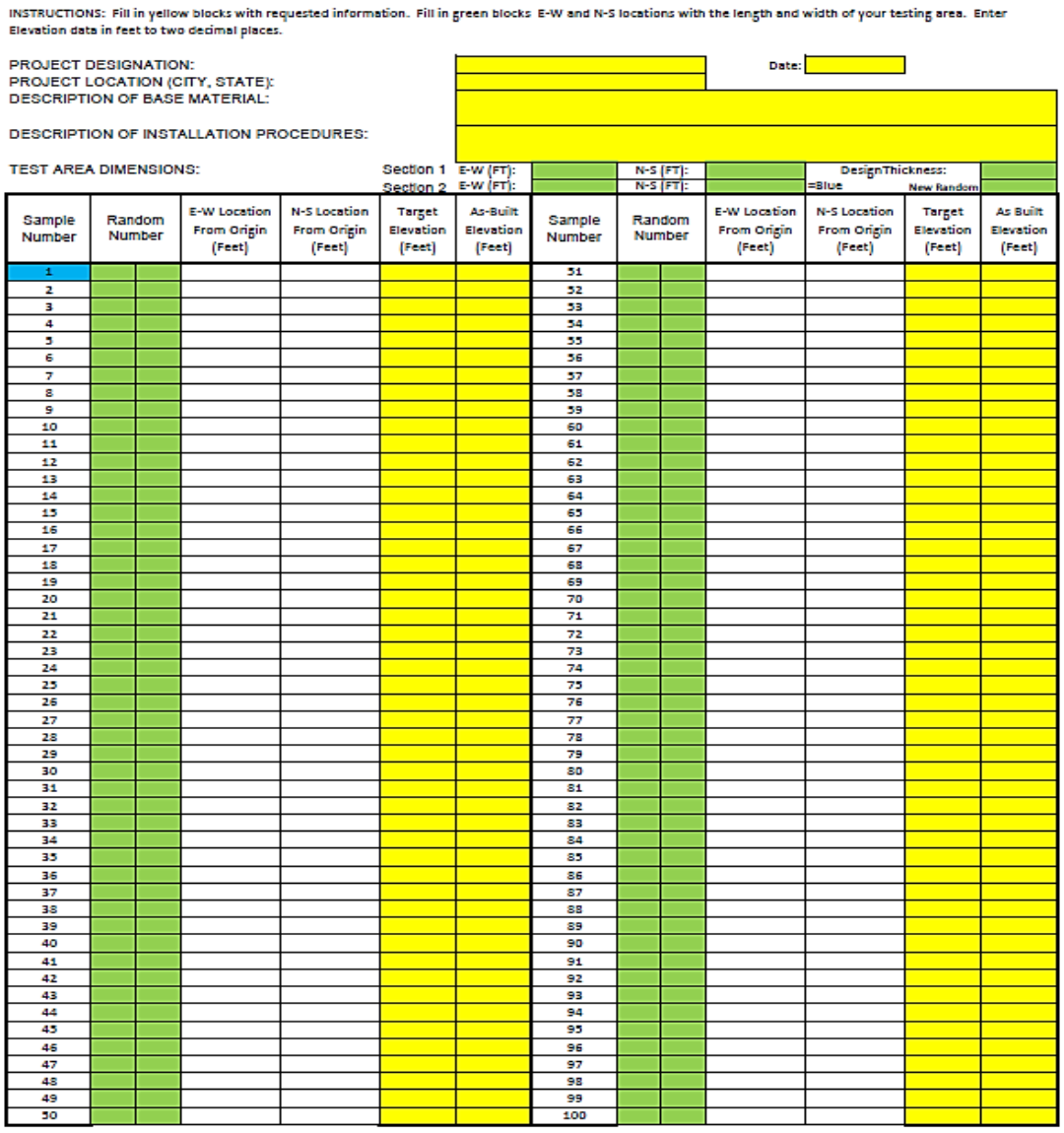
Pavement Pour Area

- Checking thickness using a grid and then writing down measurements is time consuming and leaves room for human error



Random Number Generator

- The Random Number Generator file takes your pour area and automatically generates random localized points for you to measure in a defined testing area



CONCRETE PAVING THICKNESS STUDY DATA TEMPLATE - BASE ELEVATIONS

INSTRUCTIONS: Fill in yellow blocks with requested information. Fill in green blocks E-W and N-S locations with the length and width of your testing area. Enter Elevation data in feet to two decimal places.

PROJECT DESIGNATION:
PROJECT LOCATION (CITY, STATE):
DESCRIPTION OF BASE MATERIAL:
DESCRIPTION OF INSTALLATION PROCEDURES:
Date:

TEST AREA DIMENSIONS: Section 1 E-W (FT): N-S (FT): DesignThickness:
Section 2 E-W (FT): N-S (FT): =Blue New Random

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
1							51						
2							52						
3							53						
4							54						
5							55						
6							56						
7							57						
8							58						
9							59						
10							60						
11							61						
12							62						
13							63						
14							64						
15							65						
16							66						
17							67						
18							68						
19							69						
20							70						
21							71						
22							72						
23							73						
24							74						
25							75						
26							76						
27							77						
28							78						
29							79						
30							80						
31							81						
32							82						
33							83						
34							84						
35							85						
36							86						
37							87						
38							88						
39							89						
40							90						
41							91						
42							92						
43							93						
44							94						
45							95						
46							96						
47							97						
48							98						
49							99						
50							100						

Project Information

- Fill in your project information, including installation procedures and base material description

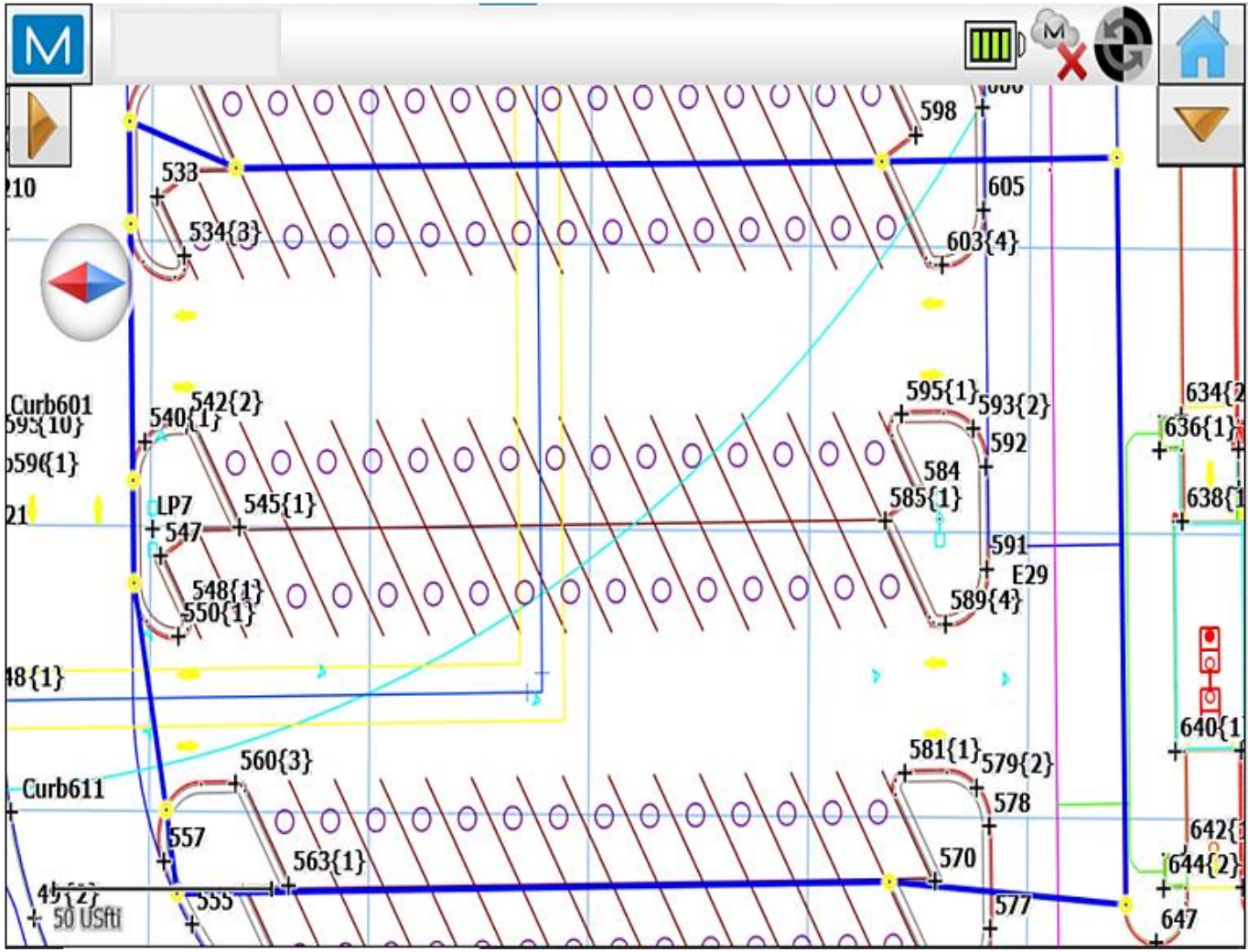
CONCRETE PAVING THICKNESS STUDY DATA TEMPLATE - BASE ELEVATIONS

INSTRUCTIONS: Fill in yellow blocks with requested information. Fill in green blocks E-W and N-S locations with the length and width of your testing area. Enter Elevation data in feet to two decimal places.

PROJECT DESIGNATION:		Date:	11/20/21
PROJECT LOCATION (CITY, STATE):	Magnolia, Texas		
DESCRIPTION OF BASE MATERIAL:	Lime soil		
DESCRIPTION OF INSTALLATION PROCEDURES:	Manually operated motor grader		

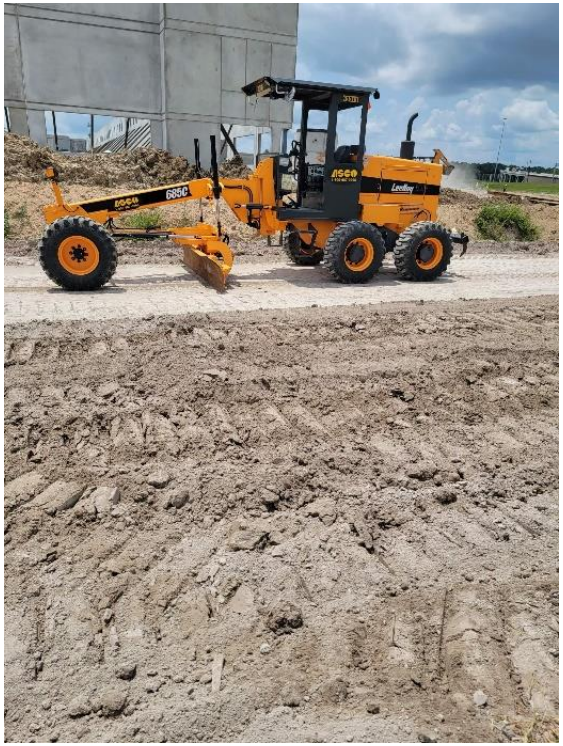
Defining Pour Location

- The area outlined in blue is the pour location we will use to measure concrete thickness
- Most paving pours are not a perfect square; with this file you can define a general area



Defining Pour Location

Checking subgrade elevation with string line and tape measure



Motor Grader

Checking subgrade elevation with string line and tape measure

Entering Test Dimensions

- The Random Number Generator needs set lengths and widths of the pour area to properly calculate point locations within the pour area

CONCRETE PAVING THICKNESS STUDY DATA TEMPLATE - BASE ELEVATIONS

INSTRUCTIONS: Fill in yellow blocks with requested information. Fill in green blocks E-W and N-S locations with the length and width of your testing area. Enter Elevation data in feet to two decimal places.

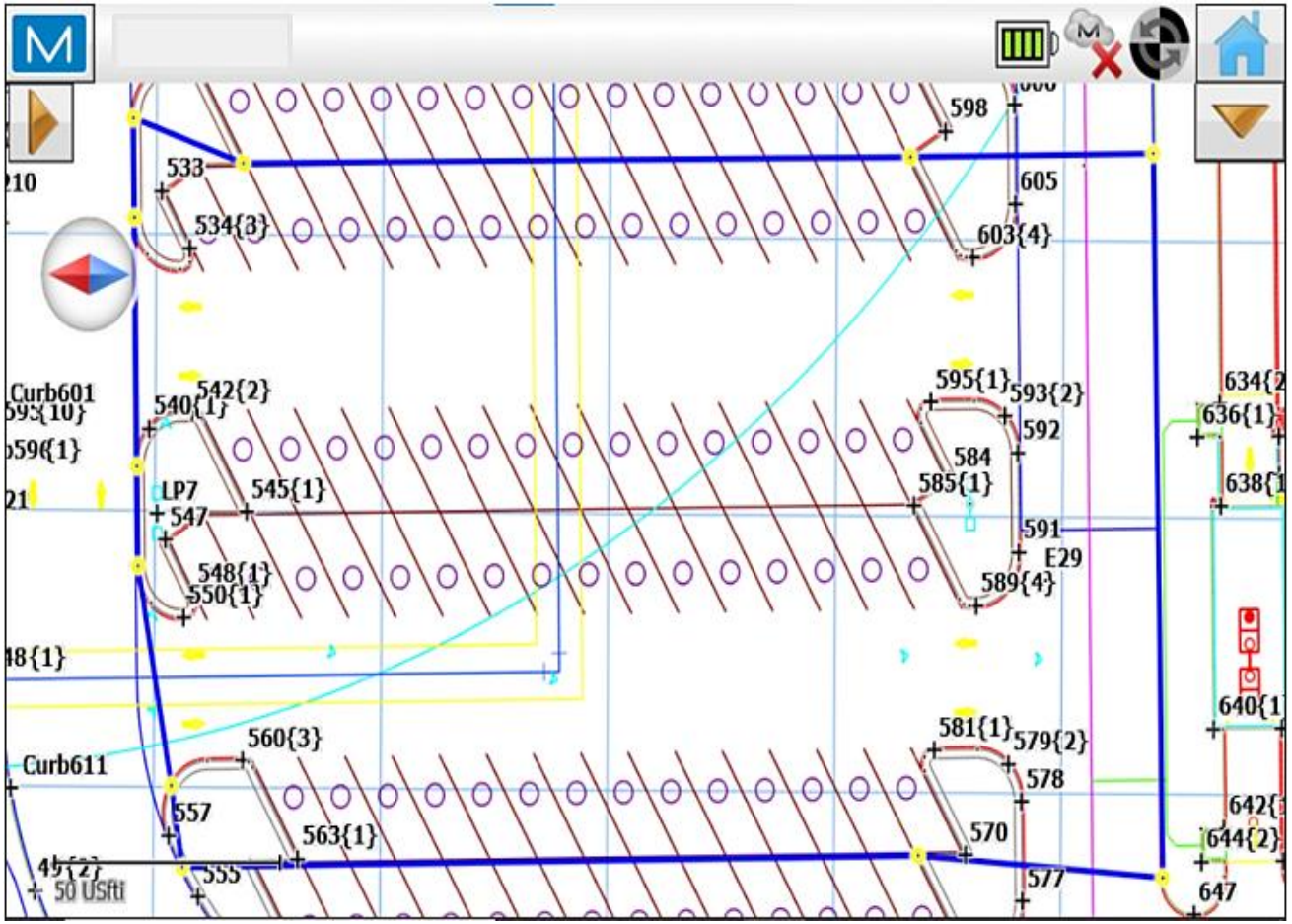
PROJECT DESIGNATION:
PROJECT LOCATION (CITY, STATE):
DESCRIPTION OF BASE MATERIAL:
DESCRIPTION OF INSTALLATION PROCEDURES:
Date:

TEST AREA DIMENSIONS:
Section 1 E-W (FT): N-S (FT): DesignThickness:
Section 2 E-W (FT): N-S (FT): =Blue New Random

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
1							51						
2							52						
3							53						
4							54						
5							55						
6							56						
7							57						
8							58						
9							59						
10							60						
11							61						
12							62						
13							63						
14							64						
15							65						
16							66						

Generating Point Locations

- Define Section One
  - 300 ft east to west
  - 100 ft north to south



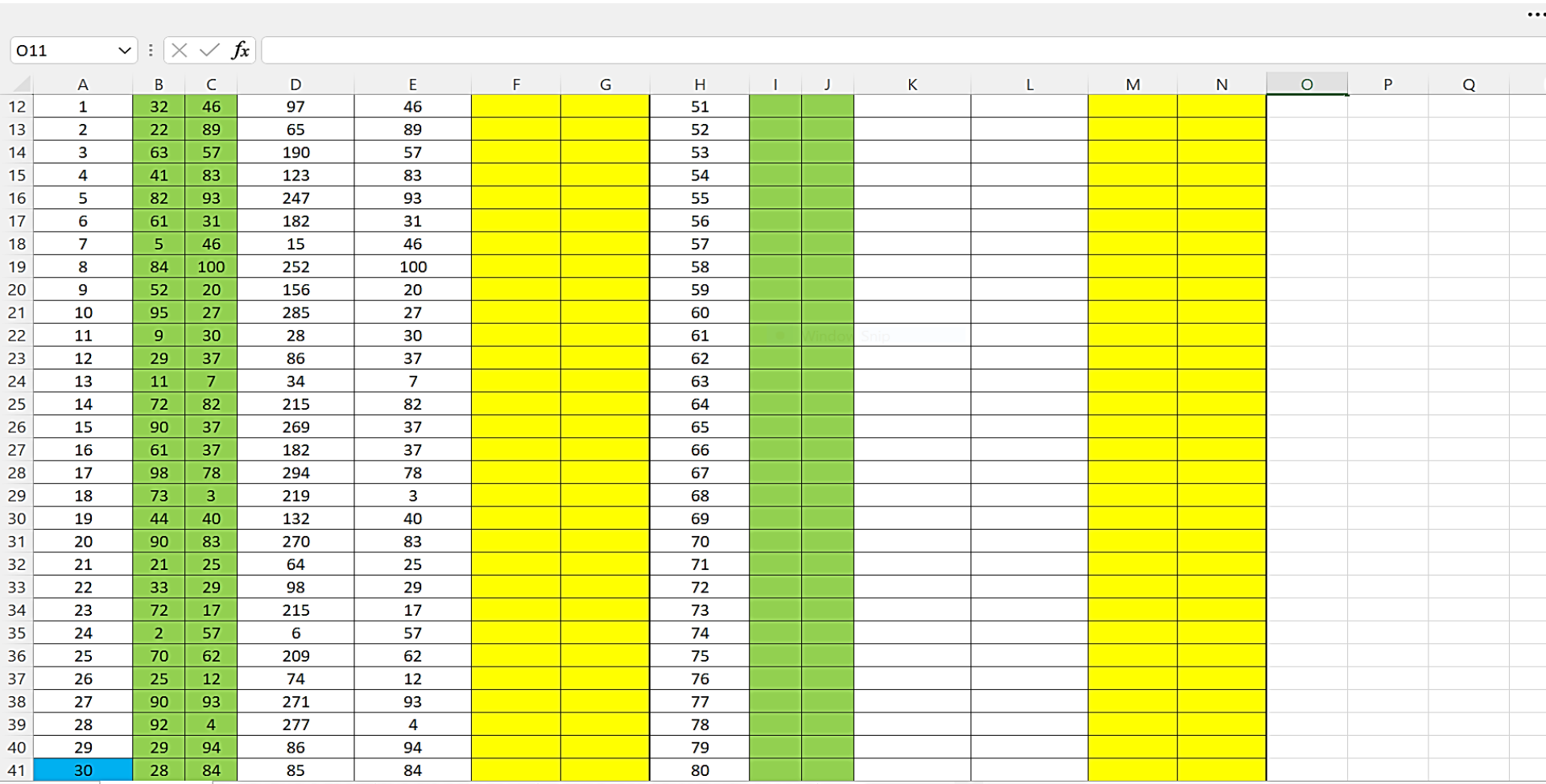
Generating Point Locations

- After entering lengths and widths for our area, the file has automatically generated one point per 1,000 sq. ft
- We can now enter these locations into the data collector

PROJECT DESIGNATION:										Date:	11/20/21			
PROJECT LOCATION (CITY, STATE):						Magnolia,TX								
DESCRIPTION OF BASE MATERIAL:						Lime soil								
DESCRIPTION OF INSTALLATION PROCEDURES:						Motor grader								
TEST AREA DIMENSIONS:				Section 1	E-W (FT):	300	N-S (FT):	100		DesignThickness:				5
				Section 2	E-W (FT):		N-S (FT):			=Blue	New Random			
Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)	
1	32	46	97	46			51							
2	22	89	65	89			52							
3	63	57	190	57			53							
4	41	83	123	83			54							
5	82	93	247	93			55							
6	61	31	182	31			56							
7	5	46	15	46			57							
8	84	100	252	100			58							
9	52	20	156	20			59							
10	95	27	285	27			60							
11	9	30	28	30			61							
12	29	37	86	37			62							
13	11	7	34	7			63							
14	72	82	215	82			64							
15	90	37	269	37			65							
16	61	37	182	37			66							
17	98	78	294	78			67							
18	73	3	219	3			68							

BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Complete List-Random Locations

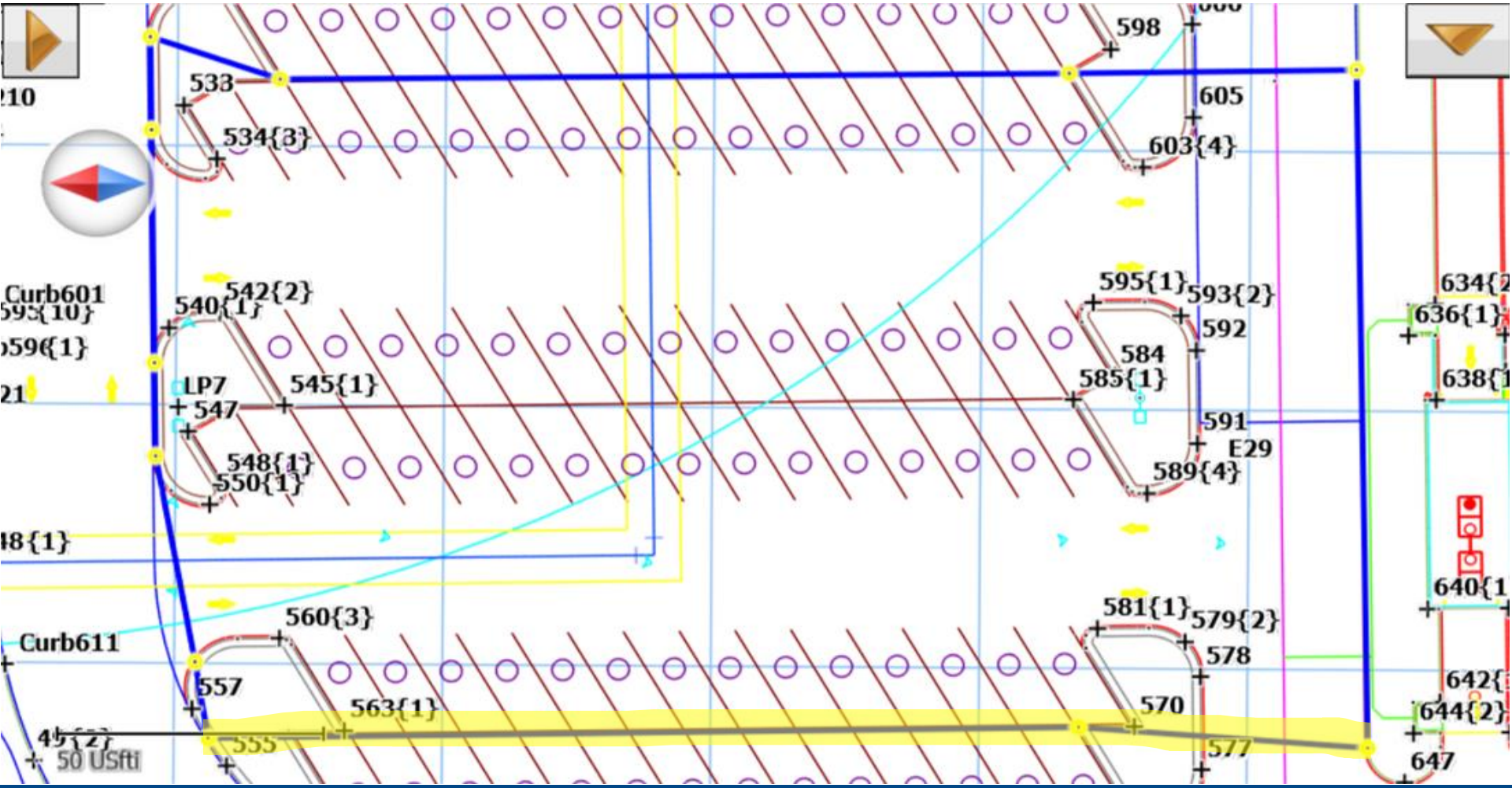


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
12	1	32	46	97	46			51									
13	2	22	89	65	89			52									
14	3	63	57	190	57			53									
15	4	41	83	123	83			54									
16	5	82	93	247	93			55									
17	6	61	31	182	31			56									
18	7	5	46	15	46			57									
19	8	84	100	252	100			58									
20	9	52	20	156	20			59									
21	10	95	27	285	27			60									
22	11	9	30	28	30			61									
23	12	29	37	86	37			62									
24	13	11	7	34	7			63									
25	14	72	82	215	82			64									
26	15	90	37	269	37			65									
27	16	61	37	182	37			66									
28	17	98	78	294	78			67									
29	18	73	3	219	3			68									
30	19	44	40	132	40			69									
31	20	90	83	270	83			70									
32	21	21	25	64	25			71									
33	22	33	29	98	29			72									
34	23	72	17	215	17			73									
35	24	2	57	6	57			74									
36	25	70	62	209	62			75									
37	26	25	12	74	12			76									
38	27	90	93	271	93			77									
39	28	92	4	277	4			78									
40	29	29	94	86	94			79									
41	30	28	84	85	84			80									

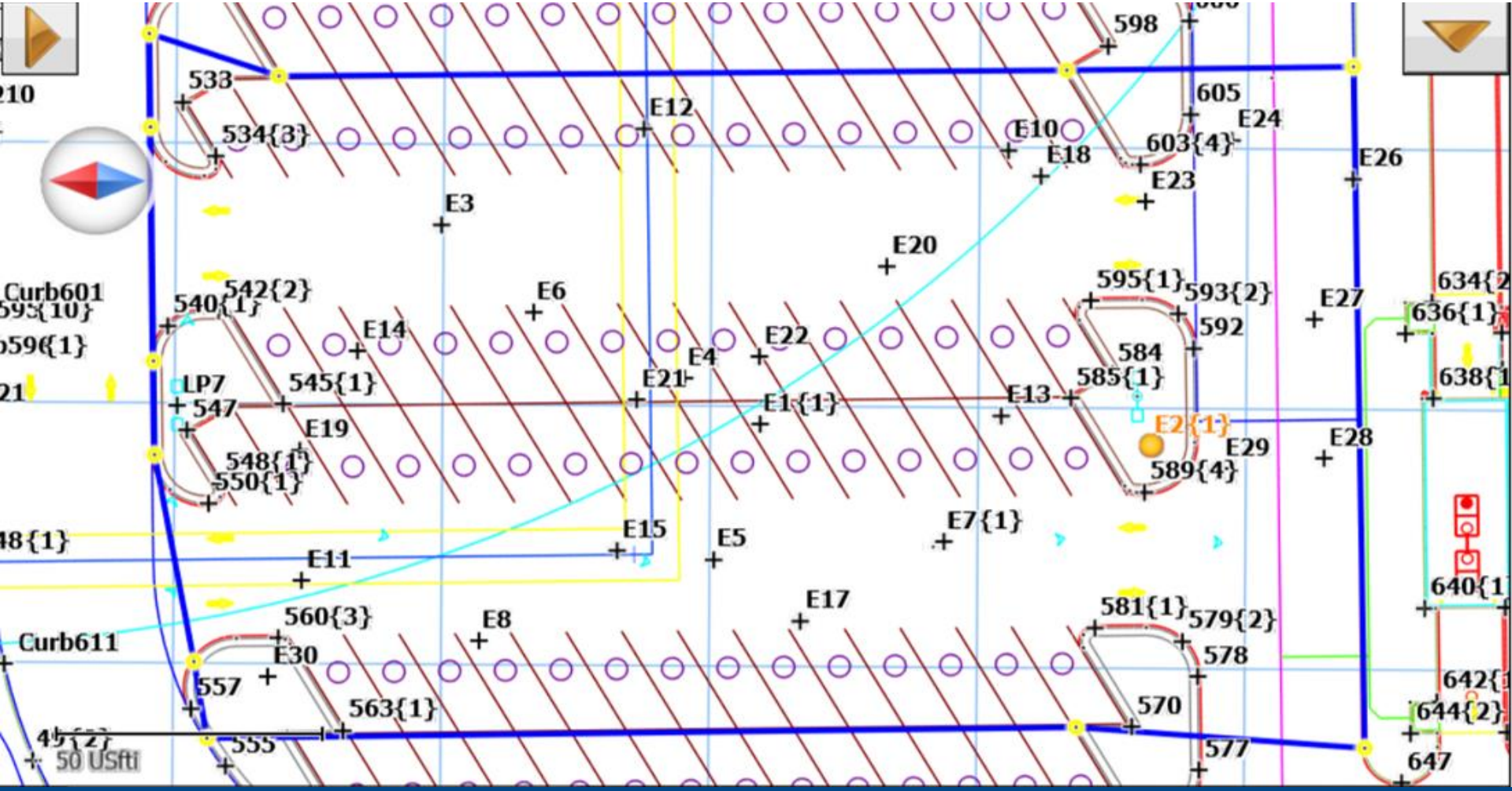
BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Map of Test Area

We can use the highlighted line as a base to enter the northing and easting offsets given to us by the file

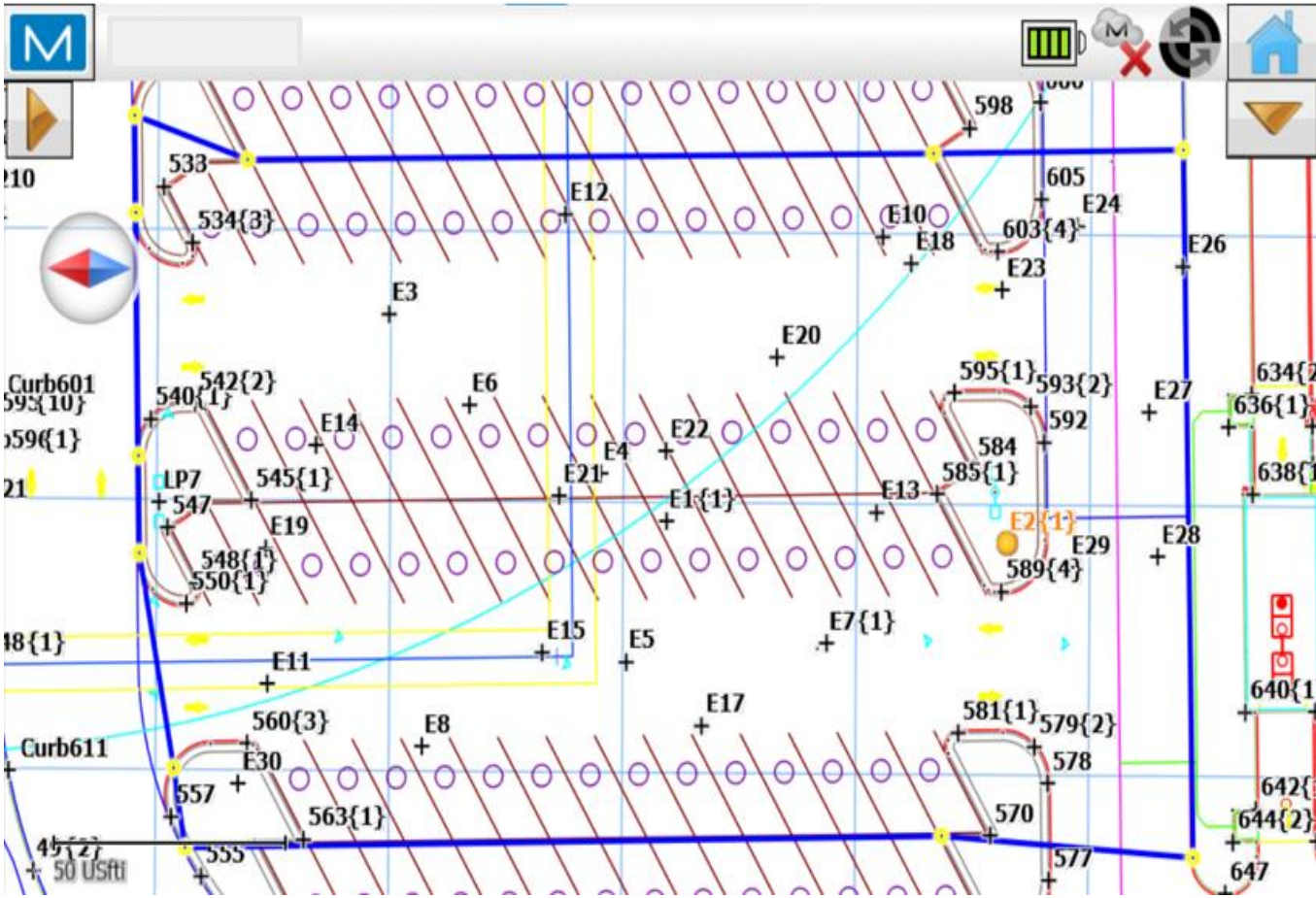


Random Locations Entered



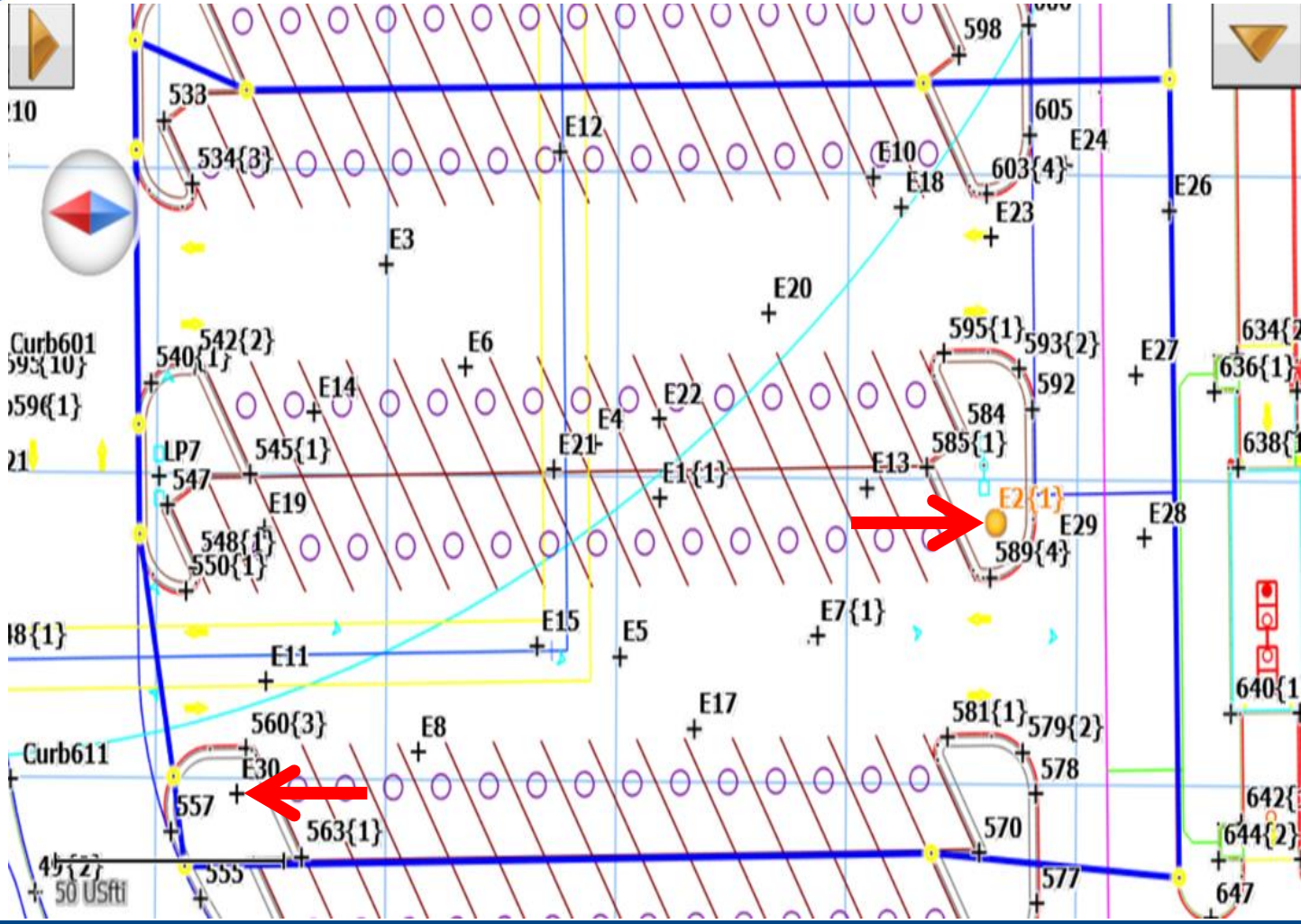
Measuring Point Locations

- Completely randomized points
- Entirely unbiased – eliminates human error and favoritism of picking a spot that looks best
- Can be recalculated if a point is outside the area



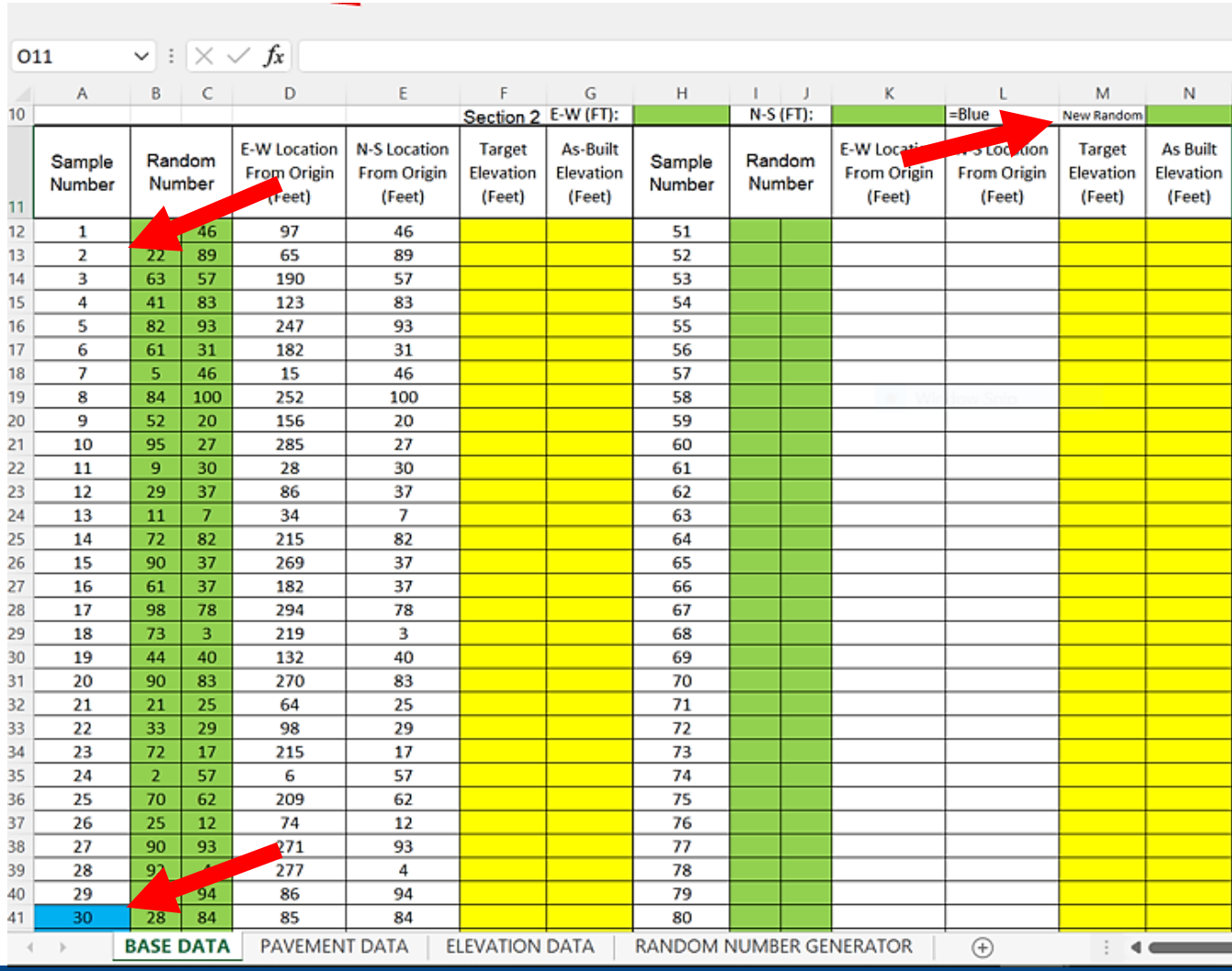
Recalculating Bad Point Locations

- Points E2 and E30 are outside the test area
- We can change out these two points in the Random Number Generator file



Recalculating Bad Point Locations

- Enter the matching number in the cell labeled **New Random**
- The file will calculate a new location without affecting the rest of the file



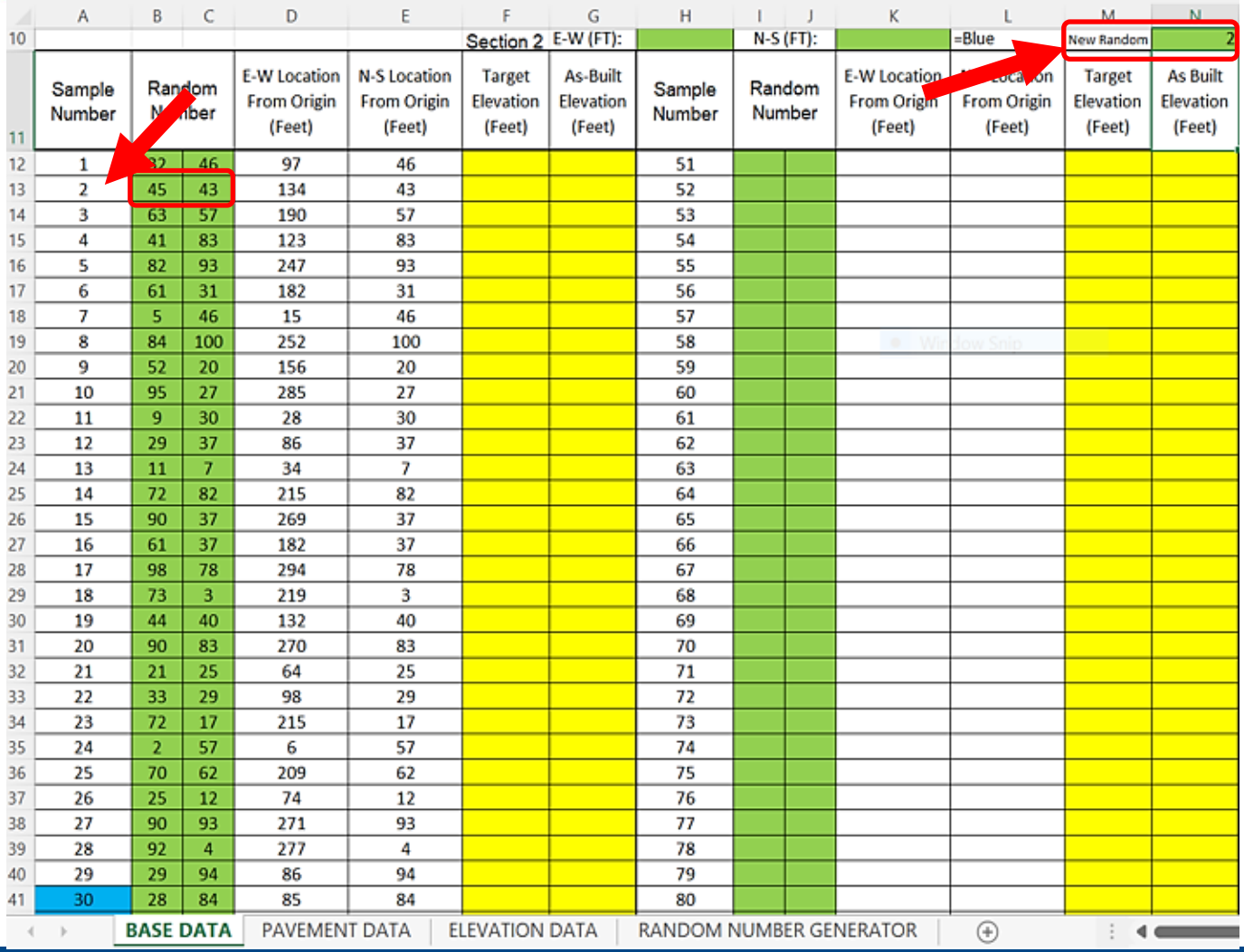
O11

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
10						Section 2	E-W (FT):		N-S (FT):			=Blue	New Random	
11	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
12	1		46	97	46			51						
13	2	22	89	65	89			52						
14	3	63	57	190	57			53						
15	4	41	83	123	83			54						
16	5	82	93	247	93			55						
17	6	61	31	182	31			56						
18	7	5	46	15	46			57						
19	8	84	100	252	100			58						
20	9	52	20	156	20			59						
21	10	95	27	285	27			60						
22	11	9	30	28	30			61						
23	12	29	37	86	37			62						
24	13	11	7	34	7			63						
25	14	72	82	215	82			64						
26	15	90	37	269	37			65						
27	16	61	37	182	37			66						
28	17	98	78	294	78			67						
29	18	73	3	219	3			68						
30	19	44	40	132	40			69						
31	20	90	83	270	83			70						
32	21	21	25	64	25			71						
33	22	33	29	98	29			72						
34	23	72	17	215	17			73						
35	24	2	57	6	57			74						
36	25	70	62	209	62			75						
37	26	25	12	74	12			76						
38	27	90	93	271	93			77						
39	28	92	4	277	4			78						
40	29		94	86	94			79						
41	30	28	84	85	84			80						

BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Recalculating Bad Point Locations

- Change in location value when 2 is entered in the **New Random** cell
- All other values remained the same

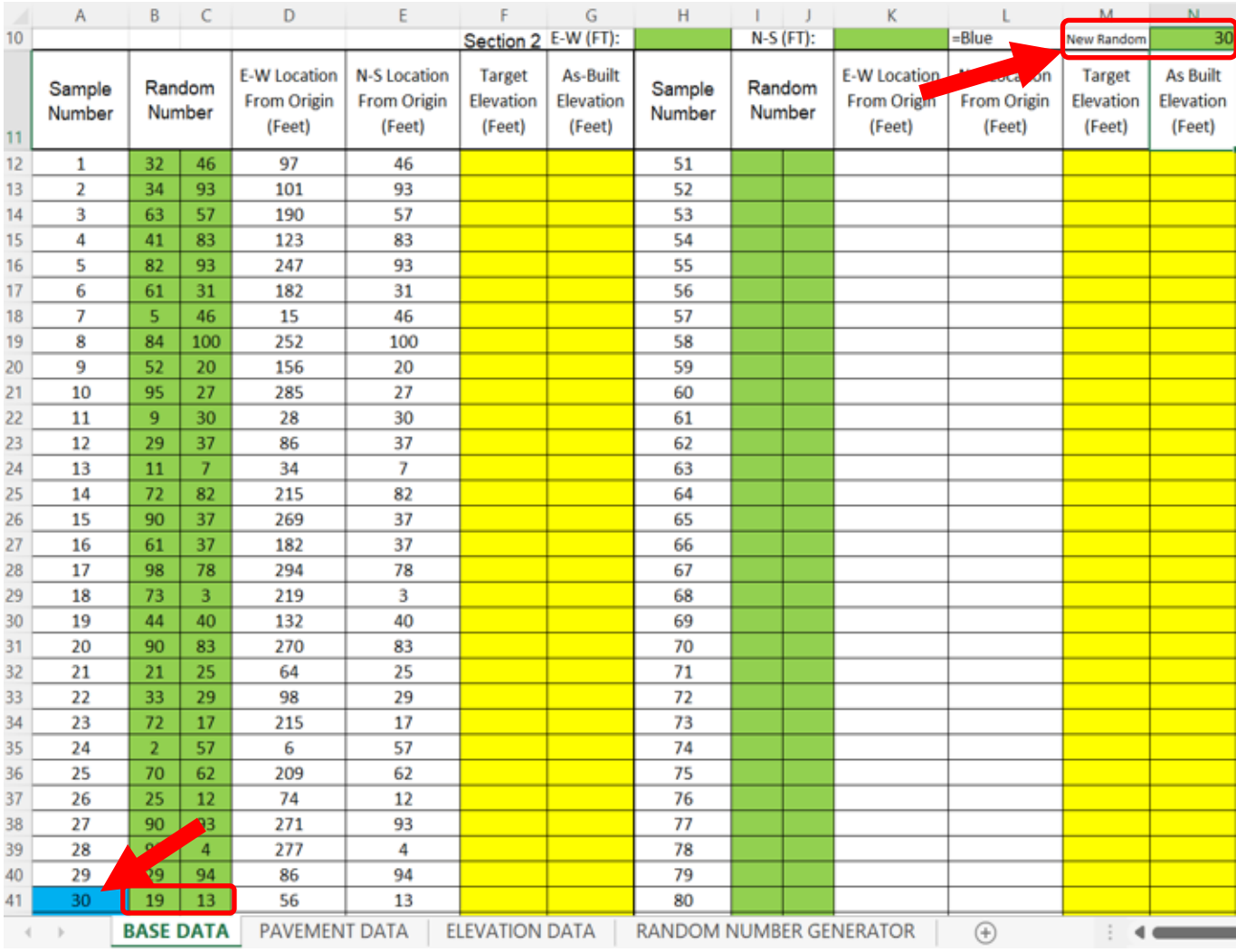


	A	B	C	D	E	F	G	H	I	J	K	L	M	N
10						Section 2	E-W (FT):		N-S (FT):			=Blue	New Random	2
11	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
12	1	32	46	97	46			51						
13	2	45	43	134	43			52						
14	3	63	57	190	57			53						
15	4	41	83	123	83			54						
16	5	82	93	247	93			55						
17	6	61	31	182	31			56						
18	7	5	46	15	46			57						
19	8	84	100	252	100			58						
20	9	52	20	156	20			59						
21	10	95	27	285	27			60						
22	11	9	30	28	30			61						
23	12	29	37	86	37			62						
24	13	11	7	34	7			63						
25	14	72	82	215	82			64						
26	15	90	37	269	37			65						
27	16	61	37	182	37			66						
28	17	98	78	294	78			67						
29	18	73	3	219	3			68						
30	19	44	40	132	40			69						
31	20	90	83	270	83			70						
32	21	21	25	64	25			71						
33	22	33	29	98	29			72						
34	23	72	17	215	17			73						
35	24	2	57	6	57			74						
36	25	70	62	209	62			75						
37	26	25	12	74	12			76						
38	27	90	93	271	93			77						
39	28	92	4	277	4			78						
40	29	29	94	86	94			79						
41	30	28	84	85	84			80						

BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Recalculating Bad Point Locations

- Change in location value when 30 is entered in the **New Random** cell
- We can now enter these new values into the data collector

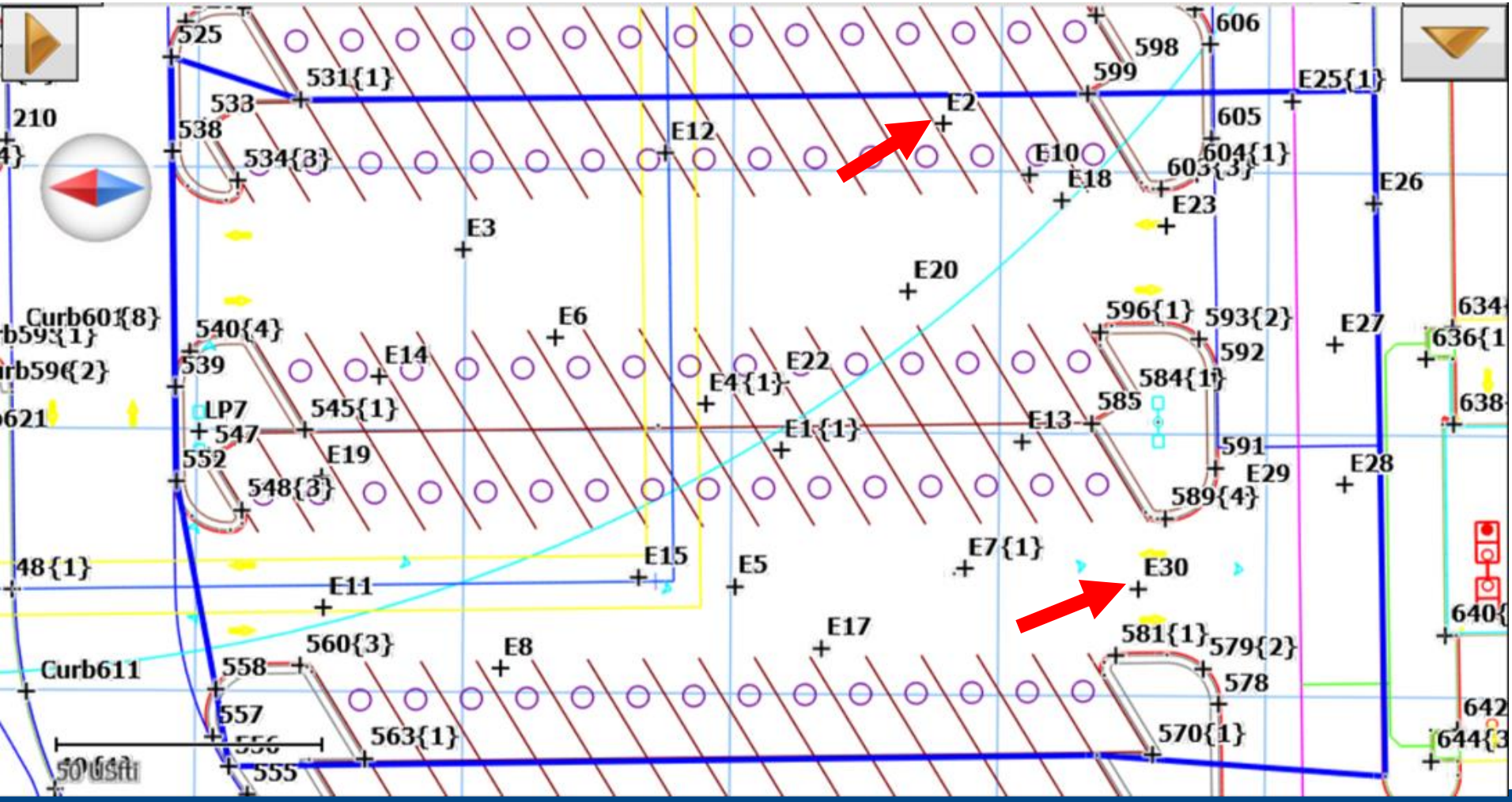


	A	B	C	D	E	F	G	H	I	J	K	L	M	N
10						Section 2	E-W (FT):		N-S (FT):			=Blue	New Random	30
11	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
12	1	32	46	97	46			51						
13	2	34	93	101	93			52						
14	3	63	57	190	57			53						
15	4	41	83	123	83			54						
16	5	82	93	247	93			55						
17	6	61	31	182	31			56						
18	7	5	46	15	46			57						
19	8	84	100	252	100			58						
20	9	52	20	156	20			59						
21	10	95	27	285	27			60						
22	11	9	30	28	30			61						
23	12	29	37	86	37			62						
24	13	11	7	34	7			63						
25	14	72	82	215	82			64						
26	15	90	37	269	37			65						
27	16	61	37	182	37			66						
28	17	98	78	294	78			67						
29	18	73	3	219	3			68						
30	19	44	40	132	40			69						
31	20	90	83	270	83			70						
32	21	21	25	64	25			71						
33	22	33	29	98	29			72						
34	23	72	17	215	17			73						
35	24	2	57	6	57			74						
36	25	70	62	209	62			75						
37	26	25	12	74	12			76						
38	27	90	93	271	93			77						
39	28	[illegible]	4	277	4			78						
40	29	[illegible]	94	86	94			79						
41	30	19	13	56	13			80						

BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Corrected Locations

Map of test area with new locations for E2 and E30 inside the area with concrete



Measuring Elevations

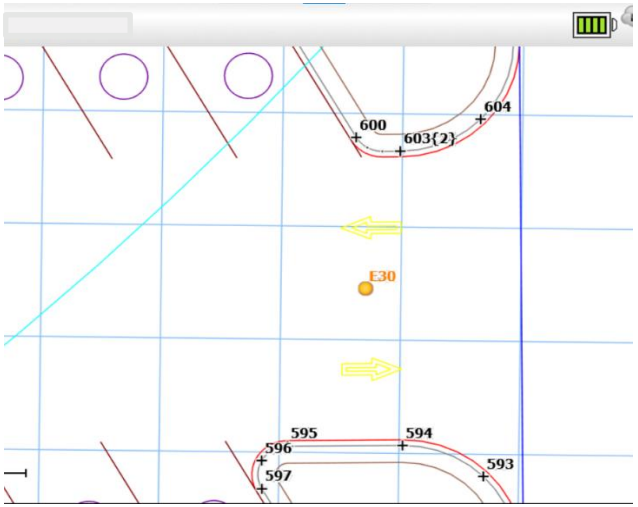
After entering all points in the CAD file, you can now measure the elevation of your subgrade at the given locations

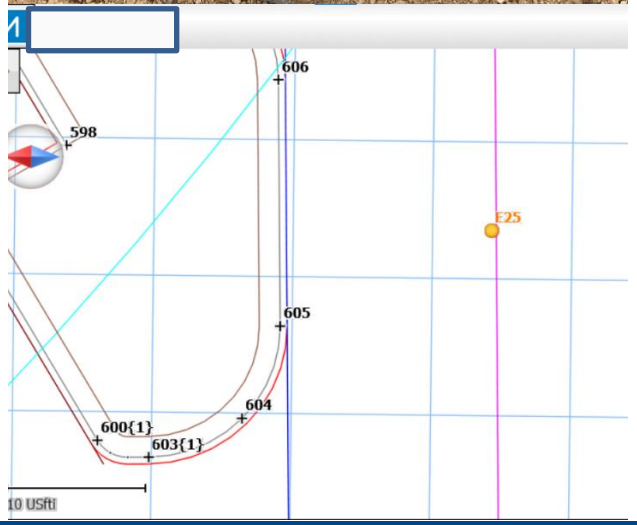
Total station set up

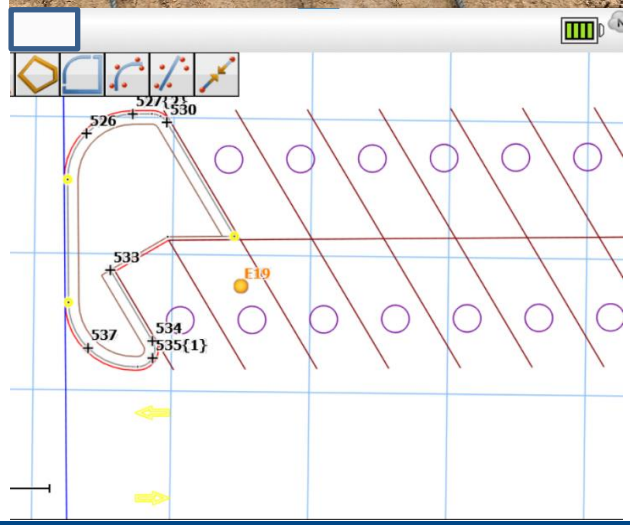
Elevation benchmark set up

Measuring Elevations

Point locations being measured in the field







Completed Base Data Sheet

- Once we have real elevations of each point, insert the data into the file
- When entering subgrade elevations, enter your anticipated concrete thickness in the **Design Thickness** cell

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
9	TEST AREA DIMENSIONS:					Section 1	E-W (FT):	300	N-S (FT):		65	DesignThickness:		5
10						Section 2	E-W (FT):	100	N-S (FT):		150	=Blue	New Ra	
11	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
12	1	72	75	215	49		234.74	51						
13	2	22	89	65	58		234.66	52						
14	3	63	57	190	37		234.67	53						
15	4	41	83	123	54		234.74	54						
16	5	82	93	247	61		234.55	55						
17	6	61	31	182	20		234.86	56						
18	7	64	73	192	48		234.50	57						
19	8	84	100	252	65		234.45	58						
20	9	52	20	156	13		234.39	59						
21	10	95	27	285	18		234.43	60						
22	11	9	30	28	20		234.16	61						
23	12	29	37	86	24		234.74	62						
24	13	11	7	34	5		234.80	63						
25	14	72	82	215	53		234.70	64						
26	15	90	37	269	24		234.06	65						
27	16	61	37	182	24		234.95	66						
28	17	98	78	294	51		234.78	67						
29	18	73	3	219	2		234.12	68						
30	19	44	40	132	26		234.24	69						
31	20	90	83	270	54		234.32	70						

Chart1 | BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Pavement Data

Now we move on to the Pavement Data sheet

File Home Insert Draw Page Layout Formulas Data Review View Help

N10

9	TEST AREA DIMENSIONS:					Section 1	E-W (FT):	300	N-S (FT):		65	DesignThickness:		5
10						Section 2	E-W (FT):	100	N-S (FT):		150	=Blue	New Random	
11	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As-Built Elevation (Feet)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation (Feet)	As Built Elevation (Feet)
12	1	72	75	215	49		234.74	51						
13	2	22	89	65	58		234.66	52						
14	3	63	57	190	37		234.67	53						
15	4	41	83	123	54		234.74	54						
16	5	82	93	247	61		234.55	55						
17	6	61	31	182	20		234.86	56						
18	7	64	73	192	48		234.50	57						
19	8	84	100	252	65		234.45	58						
20	9	52	20	156	13		234.39	59						
21	10	95	27	285	18		234.43	60						
22	11	9	30	28	20		234.16	61						
23	12	29	37	86	24		234.74	62						
24	13	11	7	34	5		234.80	63						
25	14	72	82	215	53		234.70	64						
26	15	90	37	269	24		234.06	65						
27	16	61	37	182	24		234.95	66						
28	17	98	78	294	51		234.78	67						
29	18	73	3	219	2		234.12	68						
30	19	44	40	[illegible]	26		234.24	69						
31	20	90	83	270	54		234.32	70						

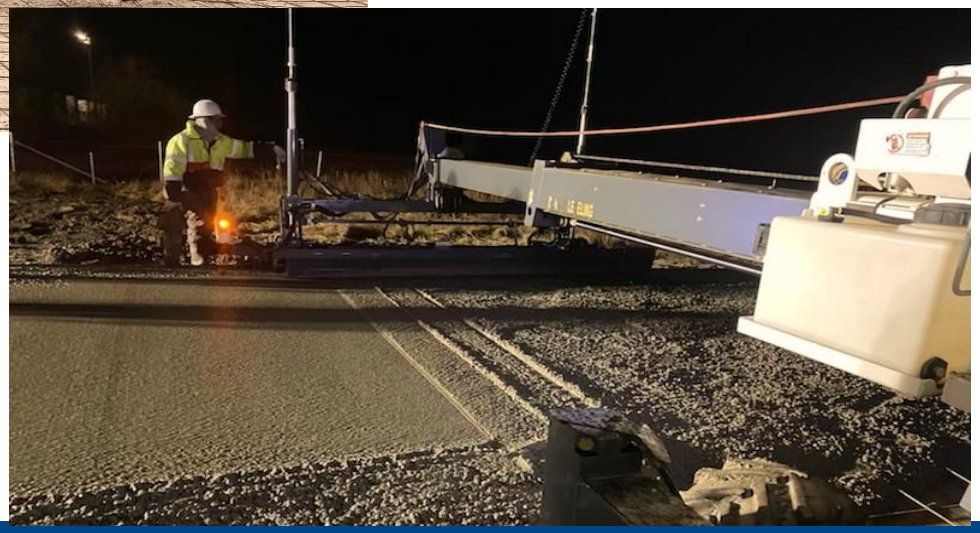
Chart1 | BASE DATA | PAVEMENT DATA | ELEVATION DATA | RANDOM NUMBER GENERATOR

Ready Calculate

Pavement Data

- Enter the description of the technique used to pour the concrete
- We poured this area of concrete using the 3D laser screed for precise elevations

- Close up of the 3D laser screed in action



Measuring Points After the Pour

Prism and rod actively measuring a location from the data collector

Elevation benchmark set up

Completed Pavement Data Sheet

- Enter the point measurements in the Pavement Data sheet
- Once you have entered both base data and pavement data elevations, the file will automatically calculate the thickness at each location

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

E-W (FT): N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation	As Built Elevation	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Target Elevation	As Built Elevation
1	86	97	257	97		235.67	51						
2	4	82	13	82		233.95	52						
3	23	21	69	21		234.86	53						
4	47	51	140	51		234.68	54						
5	74	54	223	54		235.22	55						
6	37	32	111	32		235.04	56						
7	73	84	218	84		234.56	57						
8	87	25	260	25		235.84	58						
9	51	62	153	62		234.79	59						
10	13	92	38	92		233.95	60						
11	77	2	232	2		236.03	61						
12	9	47	27	47		234.31	62						
13	53	91	159	91		234.46	63						
14	42	10	127	10		235.46	64						
15	73	82	219	82		234.61	65						
16	73	42	220	42		235.44	66						
17	84	66	253	66		235.00	67						
18	17	96	50	96		233.95	68						
19	57	2	172	2		235.68	69						
20	31	77	92	77		234.34	70						
21	49	45	148	45		235.08	71						
22	43	60	130	60		234.68	72						
23	13	53	39	53		234.34	73						
24	70	17	210	17		235.91	74						
25	79	38	237	38		234.09	75						
26	68	24	204	24		234.08	76						
27	59	3	176	3		234.27	77						
28	29	14	86	14		233.94	78						
29	6	45	18	45		233.76	79						
30	77	16	232	16		233.90	80						

Completed Elevation Data Sheet

- The file automatically colors the individual cells based on the target thickness
- The difference between the overall average thickness and targeted thickness is also calculated automatically

CONCRETE PAVING THICKNESS STUDY DATA TEMPLATE - BASE, PAVING, AND THICKNESS STATISTICS

PROJECT DESIGNATION: 10096 HEB
PROJECT LOCATION (CITY, STATE): Magnolia,TX
Date: 11/23/21

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

Results: Average (Inches) 5.23 | Thickness Error (Inches) 0.23 | E-W (FT): | N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)
1	86	97	257	97			5.08	51							
2	4	82	13	82			5.11	52							
3	23	21	69	21			5.30	53							
4	47	51	140	51			5.39	54							
5	74	54	223	54			4.60	55							
6	37	32	111	32			5.35	56							
7	73	84	218	84			5.12	57							
8	87	25	260	25			5.35	58							
9	51	62	153	62			5.23	59							
10	13	92	38	92			5.40	60							
11	77	2	232	2			4.74	61							
12	9	47	27	47			5.32	62							
13	53	91	159	91			5.11	63							
14	42	10	127	10			5.70	64							
15	73	82	219	82			5.12	65							
16	73	42	220	42			5.32	66							
17	84	66	253	66			5.11	67							
18	17	96	50	96			5.39	68							
19	57	2	172	2			4.82	69							
20	31	77	92	77			5.21	70							
21	49	45	148	45			5.24	71							
22	43	60	130	60			5.58	72							
23	13	53	39	53			4.97	73							
24	70	17	210	17			4.48	74							
25	79	38	237	38			4.70	75							
26	68	24	204	24			5.29	76							
27	59	3	176	3			6.10	77							
28	29	14	86	14			5.59	78							
29	6	45	18	45			6.10	79							
30	77	16	232	16			5.10	80							

Thickness Samples +/- ¼”

Green indicates samples within tolerance

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

Results: Average (Inches) 5.23 | Thickness Error (Inches) 0.23 | E-W (FT): | N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)
1	86	97	257	97			5.08	51							
2	4	82	13	82			5.11	52							
3	23	21	69	21			5.30	53							
4	47	51	140	51			5.39	54							
5	74	54	223	54			4.60	55							
6	37	32	111	32			5.35	56							
7	73	84	218	84			5.12	57							
8	87	25	260	25			5.35	58							
9	51	62	153	62			5.23	59							
10	13	92	38	92			5.40	60							
11	77	2	232	2			4.74	61							
12	9	47	27	47			5.32	62							
13	53	91	159	91			5.11	63							
14	42	10	127	10			5.70	64							
15	73	82	219	82			5.12	65							
16	73	42	220	42			5.32	66							
17	84	66	253	66			5.11	67							
18	17	96	50	96			5.39	68							
19	57	2	172	2			4.82	69							
20	31	77	92	77			5.21	70							
21	49	45	148	45			5.24	71							
22	43	60	130	60			5.58	72							
23	13	53	39	53			4.97	73							
24	70	17	210	17			4.48	74							
25	79	38	237	38			4.70	75							
26	68	24	204	24			5.29	76							
27	59	3	176	3			6.10	77							
28	29	14	86	14			5.59	78							
29	6	45	18	45			6.10	79							
30	77	16	232	16			5.10	80							

Thickness Samples +/- ¼” to ½”

Orange indicates samples slightly over tolerance

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

Results Average (Inches) 5.23 Thickness Error (Inches) 0.23 E-W (FT): N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)
1	86	97	257	97			5.08	51							
2	4	82	13	82			5.11	52							
3	23	21	69	21			5.30	53							
4	47	51	140	51			5.39	54							
5	74	54	223	54			4.60	55							
6	37	32	111	32			5.35	56							
7	73	84	218	84			5.12	57							
8	87	25	260	25			5.35	58							
9	51	62	153	62			5.23	59							
10	13	92	38	92			5.40	60							
11	77	2	232	2			4.74	61							
12	9	47	27	47			5.32	62							
13	53	91	159	91			5.11	63							
14	42	10	127	10			5.70	64							
15	73	82	219	82			5.12	65							
16	73	42	220	42			5.32	66							
17	84	66	253	66			5.11	67							
18	17	96	50	96			5.39	68							
19	57	2	172	2			4.82	69							
20	31	77	92	77			5.21	70							
21	49	45	148	45			5.24	71							
22	43	60	130	60			5.58	72							
23	13	53	39	53			4.97	73							
24	70	17	210	17			4.48	74							
25	79	38	237	38			4.70	75							
26	68	24	204	24			5.29	76							
27	59	3	176	3			6.10	77							
28	29	14	86	14			5.59	78							
29	6	45	18	45			6.10	79							
30	77	16	232	16			5.10	80							

Thickness Samples +/- ½” or more

aci CONCRETE CONVENTION

Red indicates samples out of tolerance

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

Results Average (Inches) 5.23 Thickness Error (Inches) 0.23 E-W (FT): N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)
1	86	97	257	97			5.08	51							
2	4	82	13	82			5.11	52							
3	23	21	69	21			5.30	53							
4	47	51	140	51			5.39	54							
5	74	54	223	54			4.60	55							
6	37	32	111	32			5.35	56							
7	73	84	218	84			5.12	57							
8	87	25	260	25			5.35	58							
9	51	62	153	62			5.23	59							
10	13	92	38	92			5.40	60							
11	77	2	232	2			4.74	61							
12	9	47	27	47			5.32	62							
13	53	91	159	91			5.11	63							
14	42	10	127	10			5.70	64							
15	73	82	219	82			5.12	65							
16	73	42	220	42			5.32	66							
17	84	66	253	66			5.11	67							
18	17	96	50	96			5.39	68							
19	57	2	172	2			4.82	69							
20	31	77	92	77			5.21	70							
21	49	45	148	45			5.24	71							
22	43	60	130	60			5.58	72							
23	13	53	39	53			4.97	73							
24	70	17	210	17			4.48	74							
25	79	38	237	38			4.70	75							
26	68	24	204	24			5.29	76							
27	59	3	176	3			6.10	77							
28	29	14	86	14			5.59	78							
29	6	45	18	45			6.10	79							
30	77	16	232	16			5.10	80							

Average Thickness

File automatically calculates the overall average thickness of the concrete and thickness error

TEST AREA DIMENSIONS: E-W (FT): 300 N-S (FT): 100 DesignThickness: 5

Results: Average (Inches) 5.23; Thickness Error (Inches) 0.23; E-W (FT): ; N-S (FT):

Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)	Sample Number	Random Number		E-W Location From Origin (Feet)	N-S Location From Origin (Feet)	Base Departure from Target (Inches)	Pavement Departure from Target (Inches)	Thickness (Inches)
1	86	97	257	97			5.08	51							
2	4	82	13	82			5.11	52							
3	23	21	69	21			5.30	53							
4	47	51	140	51			5.39	54							
5	74	54	223	54			4.60	55							
6	37	32	111	32			5.35	56							
7	73	84	218	84			5.12	57							
8	87	25	260	25			5.35	58							
9	51	62	153	62			5.23	59							
10	13	92	38	92			5.40	60							
11	77	2	232	2			4.74	61							
12	9	47	27	47			5.32	62							
13	53	91	159	91			5.11	63							
14	42	10	127	10			5.70	64							
15	73	82	219	82			5.12	65							
16	73	42	220	42			5.32	66							
17	84	66	253	66			5.11	67							
18	17	96	50	96			5.39	68							
19	57	2	172	2			4.82	69							
20	31	77	92	77			5.21	70							
21	49	45	148	45			5.24	71							
22	43	60	130	60			5.58	72							
23	13	53	39	53			4.97	73							
24	70	17	210	17			4.48	74							
25	79	38	237	38			4.70	75							
26	68	24	204	24			5.29	76							
27	59	3	176	3			6.10	77							
28	29	14	86	14			5.59	78							
29	6	45	18	45			6.10	79							
30	77	16	232	16			5.10	80							

American Concrete Institute

Pavement Concrete Thickness Study

Tim Manherz

tmanherz@encoreconcrete.com

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