
Findlay Toyota OHV Park

CENE 486C
Project Status Presentation #2

4 RUNNER

Presented By:
William Gil

Other Members:
Abdulmalik Alajlan
Trandon Struck
Miranda Aakre

In Partnership With:



February 21st, 2017

Project Recap



5130 N. Test
Dr
Flagstaff, AZ

Project:

OHV Demonstration Park

Client:

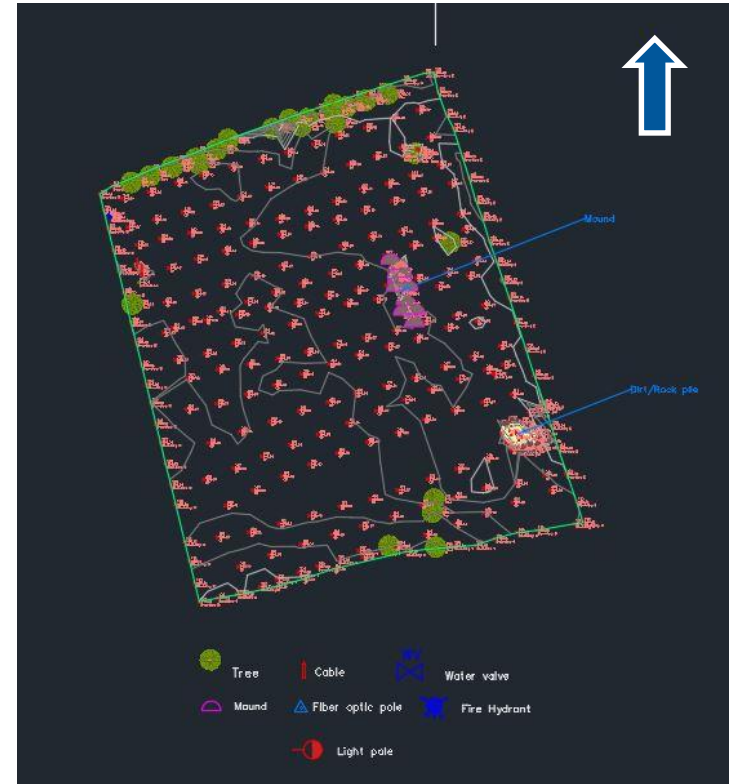


Schedule Status

#	Title	Due Date	Team Lead
1.0	Site Analysis	2/15/17	Malik
2.0	Code Review	2/13/17	Trandon
3.0	Geotechnical Testing/Analysis	2/13/17	Miranda
4.0	Drainage Analysis	3/6/17	William
5.0	Project Site Design	3/25/17	Miranda
6.0	Park Feature Design	3/25/17	Trandon
7.0	Deliverables and Project Management	Varies	William

1.0 Site Analysis

- Field Visit
- Test Drive
- Site Survey (2/24/2017)
- Topo Map



2.0 Code Review

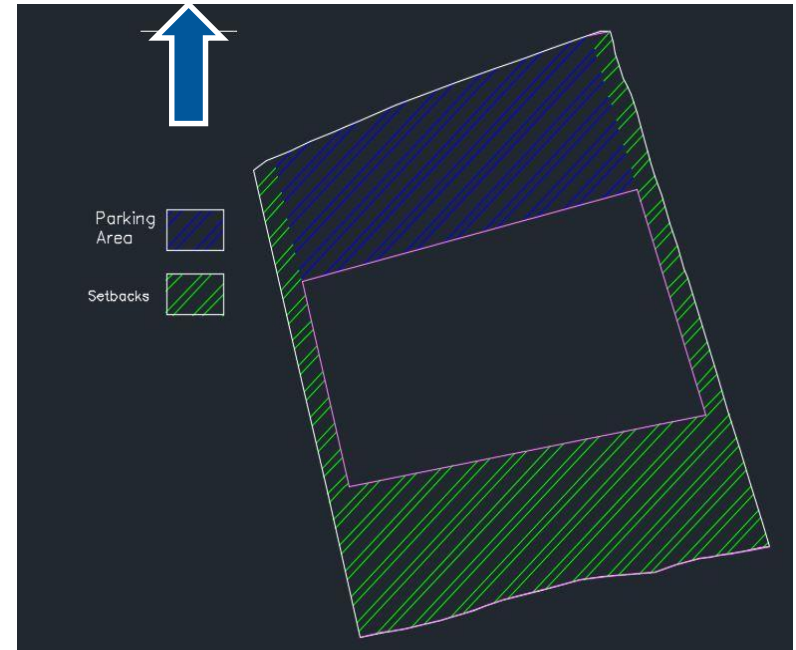
- ADA
- Water, Sewer, Utilities
- Parking
- SW Management
- Fire Safety
- Lighting
- Landscaping

Parking

- Space Width: 9'
- Space Length: 19'
- Spaces required: 1 per 1500 gsf
- Placement: 90 degrees to curb
- Aisle Length: 24'
- Must have ADA compliant parking
- 1 for 1-25 parking spaces
- Cars spaces must have 60" access aisle
- Van spaces must have 96" access aisle

Building setbacks

- Highway Commercial Area
- 1 acre to the south(per client request)
- 20 ft. from “back” to avoid conflict with ADOT building
- 20 ft. from front due to existing utilities & frontage



3.0 Geotechnical Analysis

- ~~Acquire equipment~~
- ~~Plan/conduct sampling~~
- Determine soil suitability through soil testing
- Sampling Date: February 25th, 2017
- Bluestake completed



 - APPROXIMATE SOIL BORING LOCATIONS



SOIL BORING LOCATION PLAN

PM: MA | REV: 0 | DATE: 1/20/17

5130 N. Test Dr
Flagstaff, AZ

CENE 486
SPRING 2017



Geotechnical Testing

Test	Number of Trials	Result
Direct Shear	5	Shear Strength
Triaxial (CU)	5	CD strength, friction angle
Proctor Compaction	5	Dry density, Optimal moisture content
Swell Tests	5	Pressure when compacted and wet
Hydraulic conductivity	5	How fast does it drain
Sieve	5	Identification of soil
Atterberg Limits	5	Shrink limit, liquid limit and plastic limit

4.0 Drainage Analysis

- Stormwater Collection Design
- Sewer Drainage Design

Impervious Areas:

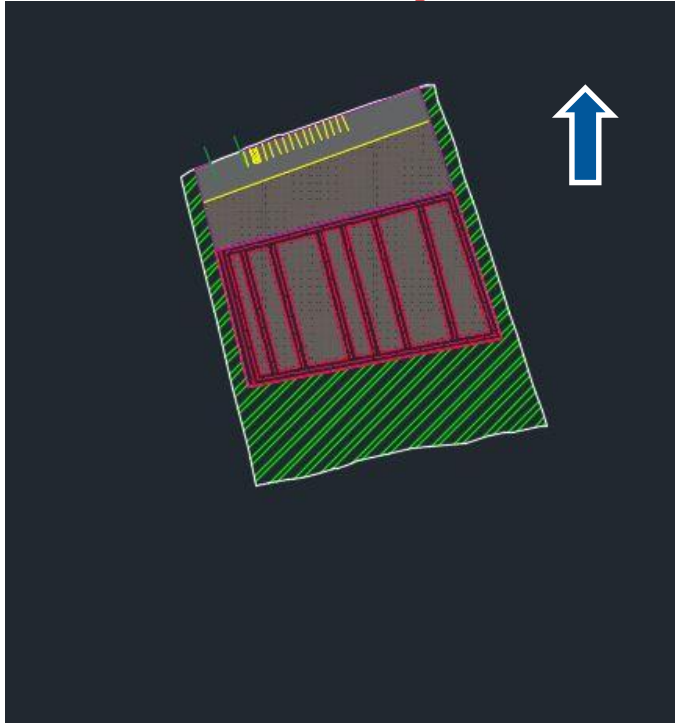
- Parking Lot = 12969.2 sq. ft.
- Track=TBD

- Grading Required: TBD

5.0 Project Site Design

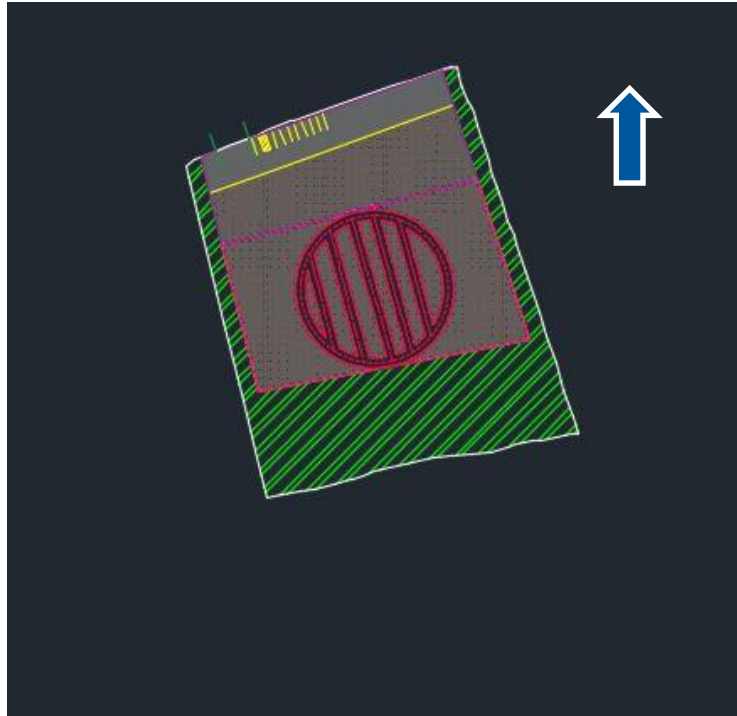
- ~~Site Location~~
- ~~Site Layout~~
- Track Alignments
- Track Profiles
- ~~Parking Plan~~
- Ingress/Egress Plan
- Safety Plan

Site Layout: Segment



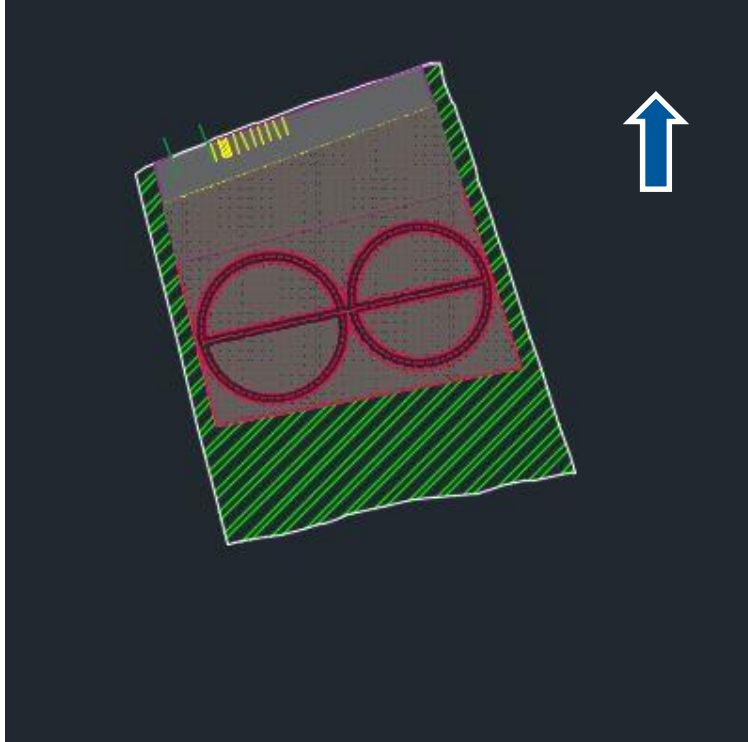
- Area: 24020.2 sq ft
- Number of Features: 6
- Track Length: 1915 LF
- Parking Spaces: 14

Site Layout: Ellipse



- Area: 17745.2 sq ft
- Number of Features: 5
- Track Length: 1302.44 LF
- Parking Spaces: 9

Site Layout: Figure 8



- Area: 14231.2 sq ft
- Number of Features: 4
- Track Length: 1220.76 LF
- Parking Spaces: 8

Decision Matrix and Choice

Track Type	Conflict Points		Visibility		Overall Safety		Economy		Access Points		Features per Area		Total
	Weight	Score	Weight	Score	Weight	Score	Weight	Score	Weight	Score	Weight	Score	
Figure 8	20	9	15	1	30	1	20	9	5	1	10	3	440
Ellipse	20	3	15	3	30	3	20	3	5	3	10	9	360
Segment	20	1	15	9	30	9	20	1	5	9	10	3	520

Final Decision: Segment

6.0 Park Features Design

- Steep and Sand Hills
- Off-camber Turns
- Mud and Sand Pits
- Boulder Garden
- Materials Schedule

Vehicle Specifications are primary limiting factors for these features

Vehicle Specifications: Tacoma

MEASUREMENTS

	SR 4dr Access Cab 6.1 ft. SB (2.7L 4cyl 6A) SR 4dr Access Cab 6.1 ft. SB (2.7L 4cyl 6A) MSRP from \$23,660	SR 4dr Access Cab 4WD 6.1 ft. SB (2.7L 4cyl 5M) SR 4dr Access Cab 4WD 6.1 ft. SB (2.7L 4cyl 5M) MSRP from \$25,185	SR5 4dr Access Cab 6.1 ft. SB (3.5L 6cyl 6A) SR5 4dr Access Cab 6.1 ft. SB (3.5L 6cyl 6A) MSRP from \$27,355
Angle Of Approach	29.0 degrees	29.0 degrees	29.0 degrees
Angle Of Departure	23.5 degrees	23.0 degrees	23.5 degrees
Curb Weight	3980 lbs.	4195 lbs.	4060 lbs.
Gross Weight	5600 lbs.	5600 lbs.	5600 lbs.
Ground Clearance	9.4 in.	9.4 in.	9.4 in.
Height	70.6 in.	70.6 in.	70.6 in.
Length	212.3 in.	212.3 in.	212.3 in.
Maximum Payload	1620 lbs.	1405 lbs.	1370 lbs.
Maximum Towing Capacity	3500 lbs.	3500 lbs.	6800 lbs.
Wheel Base	127.4 in.	127.4 in.	127.4 in.
Width	74.4 in.	74.4 in.	74.4 in.

Vehicle Specifications: 4Runner

MEASUREMENTS	SR5 Premium 4dr SUV 4WD (4.0l ▾) <small>SR5 Premium 4dr SUV 4WD (4.0L 6cyl 5A)</small> MSRP from \$38,565	Limited 4dr SUV 4WD (4.0L 6cyl ▾) <small>Limited 4dr SUV 4WD (4.0L 6cyl 5A)</small> MSRP from \$44,360	SR5 4dr SUV 4WD (4.0L 6cyl 5A) ▾ <small>SR5 4dr SUV 4WD (4.0L 6cyl 5A)</small> MSRP from \$35,885
Angle Of Approach	33.0 degrees	33.0 degrees	33.0 degrees
Angle Of Departure	26.0 degrees	26.0 degrees	26.0 degrees
Cargo Capacity, All Seats In Place	47.2 cu.ft.	46.3 cu.ft.	47.2 cu.ft.
Curb Weight	4675 lbs.	4805 lbs.	4675 lbs.
Gross Weight	6300 lbs.	6300 lbs.	6300 lbs.
Ground Clearance	9.6 in.	9.6 in.	9.6 in.
Height	71.5 in.	71.5 in.	71.5 in.
Length	190.2 in.	190.7 in.	190.2 in.
Maximum Cargo Capacity	89.7 cu.ft.	88.8 cu.ft.	89.7 cu.ft.
Maximum Payload	1625 lbs.	1495 lbs.	1625 lbs.
Maximum Towing Capacity	5000 lbs.	4700 lbs.	5000 lbs.
Wheel Base	109.8 in.	109.8 in.	109.8 in.
Width	75.8 in.	75.8 in.	75.8 in.

Steep Hill(s) and Sand Hill

- Height : 8'
 - Length: 19'
 - Angle of Approach and Departure: 23 degrees (42% grade)
 - Break Over Angle: 19 degrees
- Height: 3.5'
 - Length: 25'
 - Angle of Approach/Departure: 8 degrees
 - Maintenance: After Each use

In comparison...

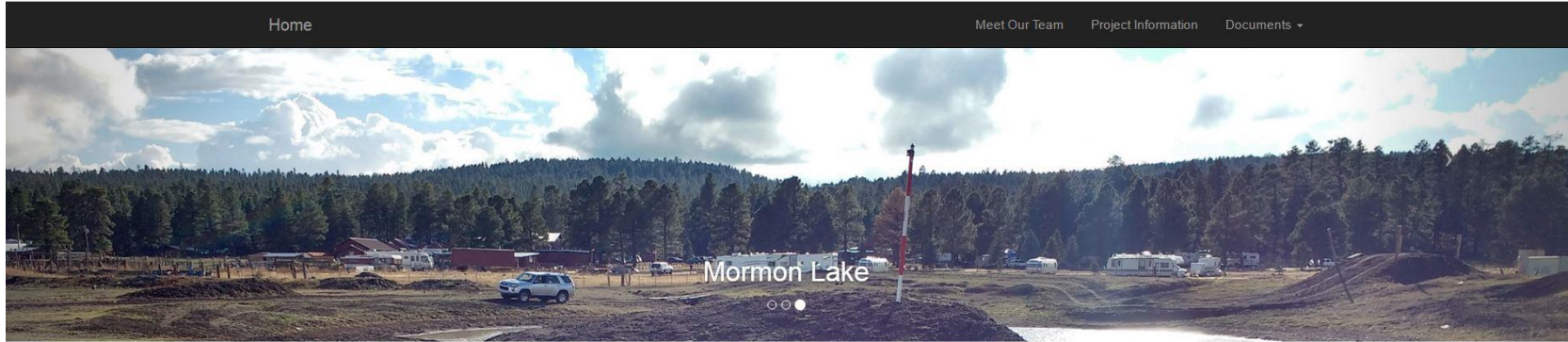


- Baldwin Street, in Dunedin, New Zealand has a 35% grade

7.0 Project Deliverables

- 50% Report
- Final Report
- Website
- Final Presentation
- Plan Set
- Meetings
- Scheduling
- Budgeting

Website



Welcome to NAU's Findlay Toyota Capstone

<p>✓ Meet our Team</p> <p>Click here to find out more about our team , "The Four Runners" and all of our members.</p> <p>Learn More</p>	<p>📁 Project Information</p> <p>Here you will find general information about our project, schedule and design.</p> <p>Learn More</p>	<p>📄 Project Documents</p> <p>Click to see all of the deliverables for team, such as reports, presentations and other files.</p> <p>Learn More</p>
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Project Purpose

The NAU Findlay Toyota Team will be designing an Off Highway Vehicle (OHV) course for our client's, Findlay Toyota in Flagstaff, Arizona. This course will allow potential vehicle buyers to test the features and capabilities of 4x4 vehicles without the need to drive out of town. This will make Findlay Toyota the first dealership to have a course like this in town. Some of the obstacles that will be designed for this course will be :

