Outdoor Track and Field/Multi-Purpose Stadium Facility

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(From left to right)

Why We Chose This Project?

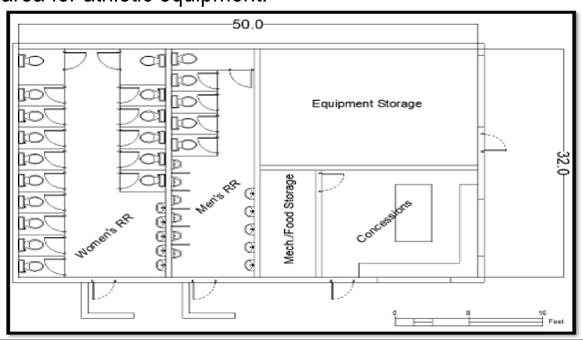
According to the Trine University website, there are currently 27 varsity sports teams and 9 additional club teams. The university has been on the trend of adding a new sports team every year for that last half decade. The campus has also seen an upgrade as there is a new building constructed every year for the last 5 years as well. Trine has always shown commitment to their students including their athletic aspirations. A new outdoor track and field stadium in partnership with lacrosse and soccer to sponsor a turf infield would be the next feasible addition to athletic excellence at Trine. The soccer team has recently won a conference championship and NCAA playoff spot. The track team has had numerous conference championships in the last 4 years, and the lacrosse team is within grasp of a championship as they are competitive with a winning record every year. The new facility will also serve as a host site for many playoff caliber competitions at the high school and college level. Therefore, the potential revenue flow and success of the sports teams would be benefit to selling the project idea to the university.

Proposed Site

The first step in designing this facility was to determine the location. While the location we decided upon created some constraints to the amount of space, it made the most sense to keep all athletic facilities in a general area. This project will develop a lot of the greenspace behind the athletic fields but will also leave some grass areas for recreational use. The turf field will also be a recreational space when athletic teams are not using it for practice or competition. The track will also be available to anyone for exercise when the track team is not using it for practice or competitions. These facilities will also be capable of hosting high school and collegiate tournament events as another source of income and an added selling point to campus visitors.

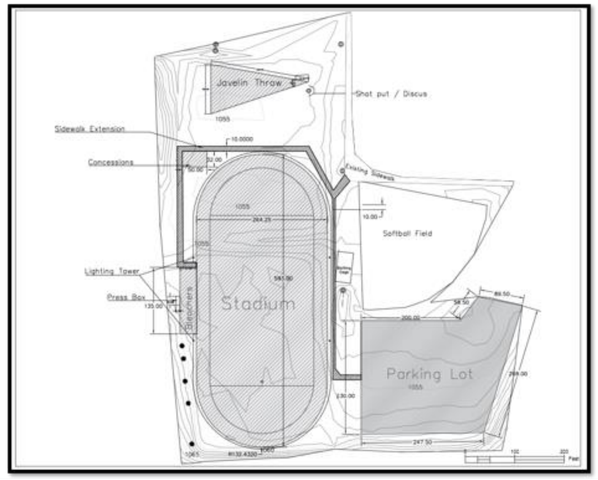
Structural Components

To accommodate the spectators of the multiple sporting events JAAS was tasked with implementing a few structures with the stadium design. A raised press box was necessary for comfort of the coaches and officials, so JAAS decided on a pre-fabricated kit and designed the support structure. Pre-fabricated bleachers for spectators were also chosen and JAAS designed the concrete slab these bleachers will rest on. A concessions building was designed for accessible restrooms, refreshments area, and a storage area for athletic equipment.



Site Layout

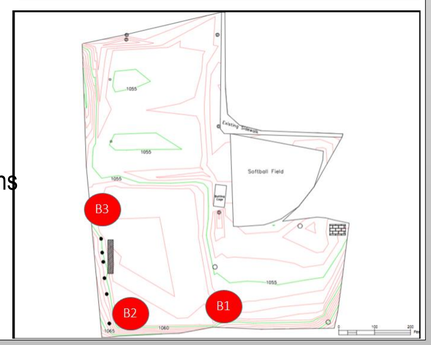
JAAS created a site layout using AutoCAD after we collected over 600 points of the existing contours and item locations using a Topcon GPS rover. The layout includes the track surface, bleacher location, press box location, concessions building, parking lot, throwing area, drainage basins, and new sidewalks connected to existing facilities.



Data Collection

Existing Topography

Soil Boring Locations



Cost Estimate

JAAS was able to create an itemized budget for the project after our completion of design. Most of the cost is in this project is attributed to the track and field. This is due to the amount of construction time for grading the subbase below the surface. There will also be a lot of detailing on the surface for lane painting and turf surface connections. The parking lot will also be a larger cost because of the subbase preparation and stripe detailing.

Category	Cost
Data Collection	$ 16,570.00
Site Development	$ 820,077.11
Track & Field	$ 2,735,094.90
Bleachers	$ 255,964.25
Press Box	$ 82,223.56
Lighting Tower	$ 50,817.56
Concession Building	$ 116,182.30
Parking Lot	$ 579,941.20
Sub Total	$ 4,656,870.87
Contingency Fee (5%)	$ 232,843.54
Engineering Fee (3%)	$ 139,706.13
Total	**$ 5,029,420.54**

Foundations

Using the soil analysis JAAS was able to design proper footings for multiple structures on the project. The press box support system will rest on square footings 2'-6" in size. The concessions building will have load bearing walls, meaning those walls will support the roof of the structure. The load bearing walls will sit atop a continuous footing 1'-6" in width. The lighting towers will require the largest foundation because the structure is 60 ft in height. The weight is not an issue, but wind will create an overturning effect if not anchored properly. This requires a 3' square footing,10' in depth to closely resemble the football lighting.