

50% PROGRESS REPORT

Arrowhead Development Project

Project ID: CEEEn-2017CPST-005

KAM Engineering

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Introduction

The Arrowhead center in Spanish Fork, Utah has housed several different businesses since its construction in 1920's. What began as a cannery now houses several small businesses including Habitat for Humanity. Today, Spanish Fork is preparing to expand to the south in the area surrounding this center and the city council expresses great hopes for additional development. The purpose of this project is to present a development plan that is affordable, has a reasonable return on investment and will be a benefit to both the developer and the City of Spanish Fork.

Proposed Changes

Several capstone teams have been assigned to evaluate the feasibility of the proposed urban designs. KAM Engineering will be taking a management position alongside another team. Management roles include devising a weighing scheme to select an appropriate development plan, working with the sustainable infrastructure class design proposals at Brigham Young University and any other oversight tasks. After evaluating several ideas from the sustainable infrastructure class, the two teams have chosen three strong proposals. Each proposal is described in detail below.

The first proposal is Mr. Tandler's proposed plan which was presented to the capstone class at Brigham Young University in September 2017. The plan includes high density 3-plex community on parcels A and B and single family homes on parcels C and D. Figure one below shows the detailed home layout for each community. After observing the rapid expansion of Spanish Fork, Fritz Realty decided the best investment would be to install housing. There is very little high density housing within the city limits therefore Fritz Realty saw this plot of land as an opportunity to bring some in. They also recognized the growing need for single family housing, so they have also proposed several single family lots to accommodate the predicted growth. The 3-plex housing will have 141 units contained within 47 buildings. The units will range from 1300 to 1850 square ft as shown in figure 2 below. Single family homes will be 95 lots within 28 Acres. The properties range from about 7000- 13500 square feet as shown for parcel D in figure 3 below.

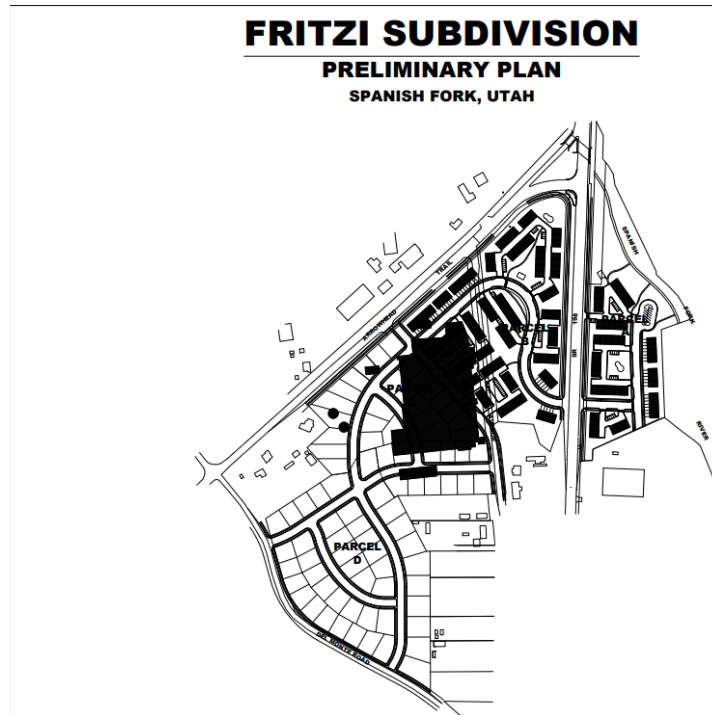


Figure 1: Proposed Parcel division, courtesy of Fritzi Realty

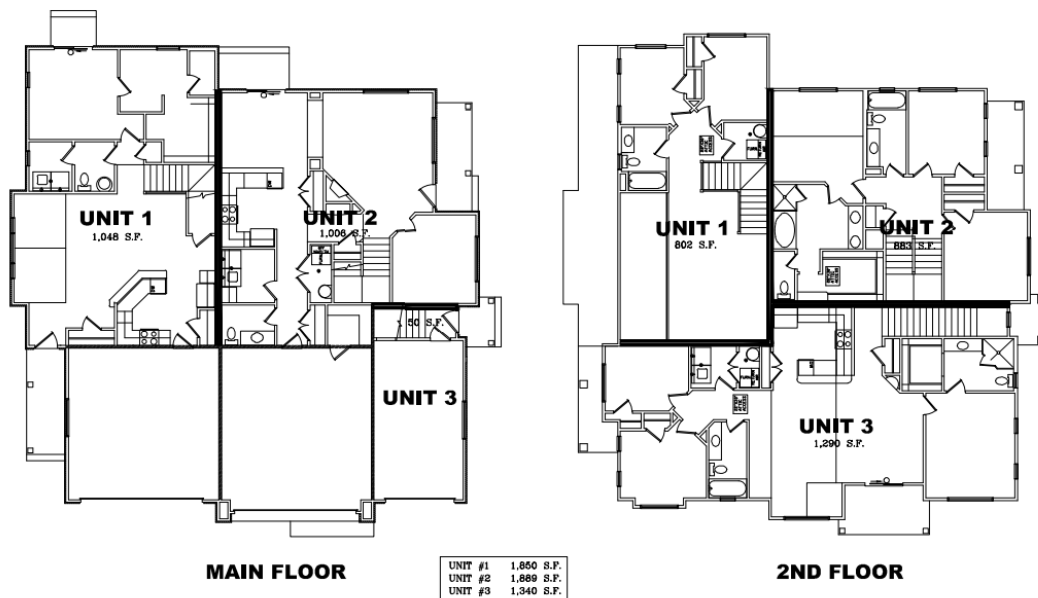


Figure 2: Proposed 3-plex floor plan, courtesy of Fritzi Realty

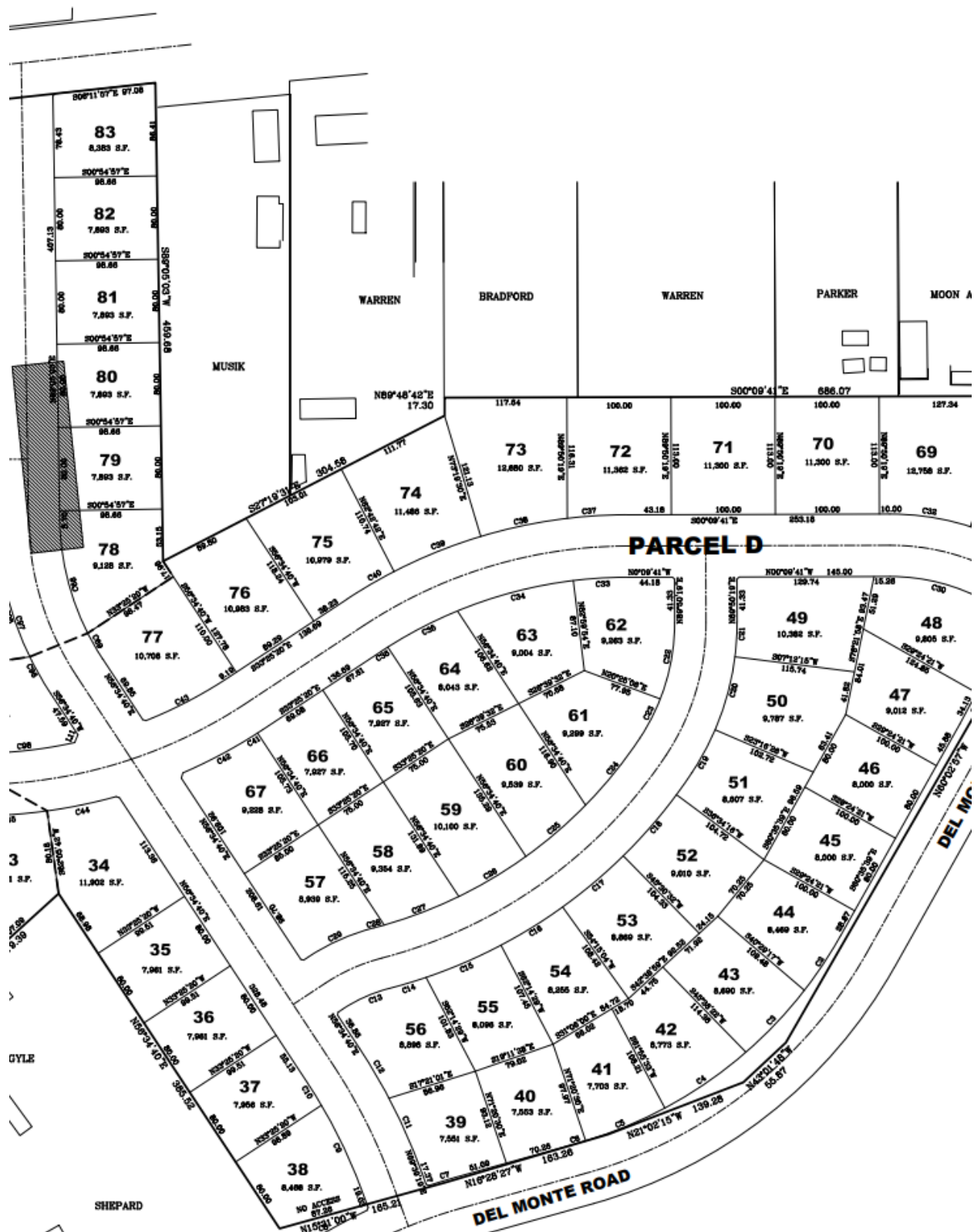


Figure 3: Single Family lot sizes, courtesy of Fritz Realty

The second proposal is to make Parcel 1 a green space by cleaning it up and providing a recreational river walk for the citizens of Spanish Fork. Parcel 2 would be used to construct a grocery store. Parcels 3 and 4 would contain single family housing on medium sized lots. KAM engineering chose this layout is to build a community. There will be a park, a grocery store, a hospital down the road and a school nearby. The additional homes will allow other families to join in this new community. Figure 4 below shows the division of the parcels.

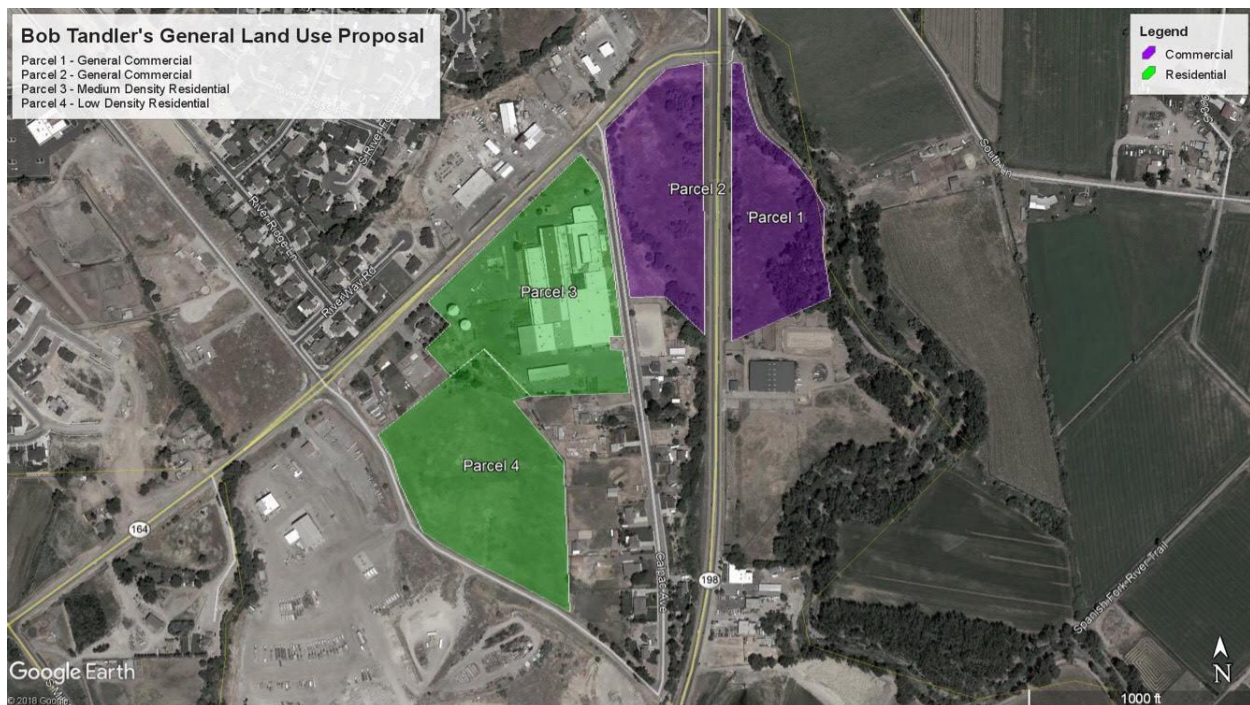


Figure 4: Proposal 2

The proposed plans have been sent to the evaluation teams so that the feasibility can be analyzed through all scopes of civil engineering such as transportation, structural renovation and environmental impact.

Proposal Evaluation

While feasibility is being evaluated, KAM Engineering has begun designing a weighting scheme in order to optimize the project choices. Several aspects of the land use will be evaluated in order to present Fritz Realty with the best option. A full economic analysis will be performed to evaluate both costs and benefits to the developer, and the community. Table 1 below shows the main criteria that concerns this project and the specific factors that fall under the respective criteria.

Table 1: Evaluation Factors

Social	Economical	Environmental	Feasibility
City Council Desires City resident's preferences Increased population creates busier streets/stores	Cost Return on investment Total additional output of all industries in the area Total number of new jobs created Total value added (the sum of all goods and services produced) Total amount of additional personal income (wages, profits, dividends, interest, rents, transfer payments) Total amount of additional labor income Total amount of additional city and county tax revenue	Water contamination Air quality	Zoning requirements Construction limitations

These factors have been chosen based on the suggestions from Mr. Tandler's presentation to the capstone class at Brigham Young University in September 2017 and the textbook used by the Sustainable Infrastructure class, also at Brigham Young University. Changes may occur as KAM engineering does further research in the coming months.

Future work

Within the next month, KAM Engineering plans on narrowing down the design factors and assigning weight values to each factor. As the evaluation teams send in their analysis, each plan will be evaluated using the design scheme. Additionally, an in depth economic analysis will also be provided. Then the best development plan will be presented to Mr. Tandler, to the Civil Engineering Seminar class at Brigham Young University and to students in an informational gala about the capstone class in April 2018.

Conclusion

KAM engineering has proposed a development plan for the property on Arrowhead road in Spanish Fork, Utah. This plan includes developing a park along the river, adding a grocery store and additional residential housing. The plans have been given to analysis teams in order to assess the feasibility and functionality of the proposed plan. Meanwhile, KAM engineering is developing an evaluation table which will allow them to assess the proposed plan as well as compare to Mr. Tandler's plan which was proposed to the Capstone class at BYU in September 2017. This firm plans to fine tune the evaluation table, provide an economic analysis and present their findings by April 2018.

