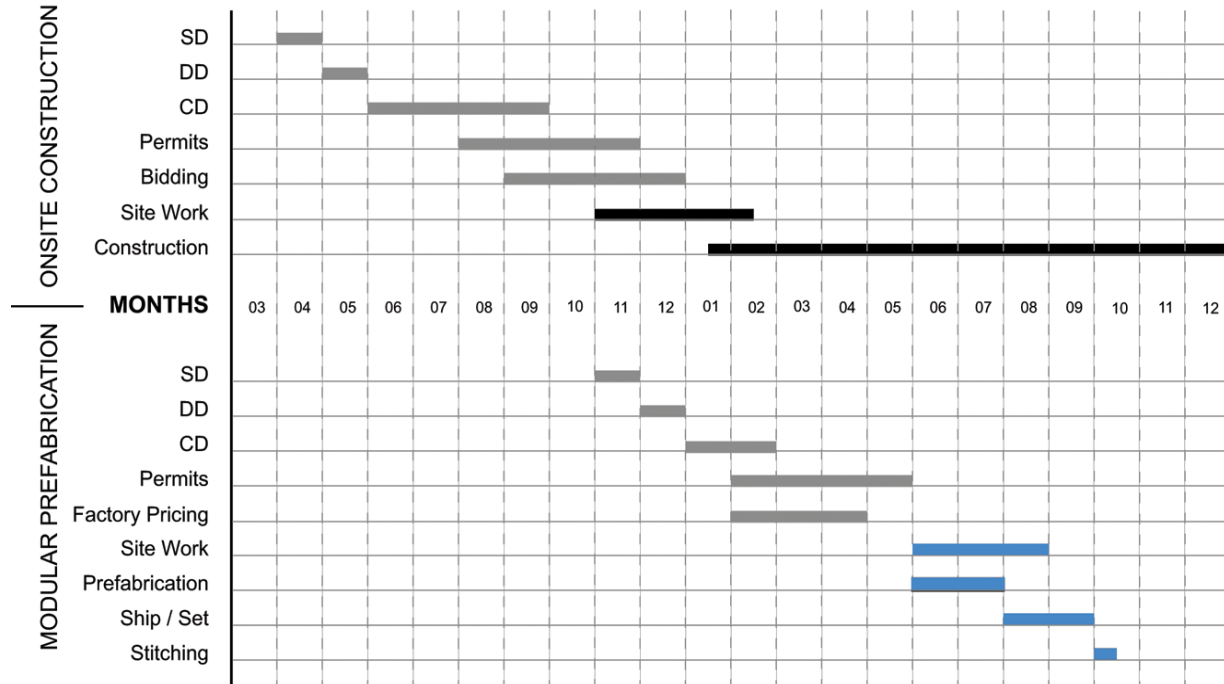


# Offsite Construction

Comparative Study of Panelized and Modular Construction for Rio Mesa Facilities

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**Abstract:** This research is to evaluate the opportunities of prefabricated construction for remote rural sites. The test bed for this study is an evaluation of prefabrication for Rio Mesa facilities, specifically, in relation to future bathhouses. The research question is as follows: What is the optimal prefabricated solution for Rio Mesa facilities development? This study will focus on comparing modular and panelized prefabrication.



**Significance and Merit :** Besides exploring the logistics of prefab construction on the Rio Mesa site, we hope that this project will shed light on the many benefits and difficulties of offsite construction. Prefab construction is a type of construction where whole assemblies (modules), panels or components of the assembly are constructed off-site and then transported to the site for installation. The promises of prefab compared to traditional, on-site construction include: improvements in the quality and efficiency of construction, reductions in material waste, and lower lifecycle costs. However, prefab is not a catchall solution, requiring a critical investigation into its capabilities and culpabilities for a given condition. The research will broaden our own understanding of the process and nuances of prefabrication to develop an understanding and capacity for this innovative type of building evaluation and design for future education and career in architecture. Below is an outline of our proposed research to compare modular and panelized prefabrication for Rio Mesa facilities:

**1. Transportation:** Turning radii of long truck beds as well as their ability to access the site via unpaved roads will be investigated. A crane is often necessary to place the modules onto the foundation, so we will also evaluate the restrictions that may be faced when bringing a

crane to the site. Our findings in this portion of the research will allow us to determine what type of prefab construction among modular and panelized options is optimal for Rio Mesa.

**2. Foundation Types and Code Restrictions:** Building on remote sites requires intrusive site disruption due to transport and excavation. Therefore, alternative foundations that include less intrusive excavation and temporary footings will be explored as options. However, because this is considered commercial construction, strict building codes would likely apply. Our research will investigate the problems that one may encounter as a result of those codes regarding alternative foundation systems.

**3. Assembly:** Prefabricated construction is considered novel, requiring trained labor to assemble the modules or panels, often resulting in increased labor costs. We will research the possible solutions to this problem, including designing a kit of parts intuitive assembly process, training a local labor force, or investigating the possibilities of collaborating with the University of Utah to set up a student program to aid the assembly process.

