

# UDOT :: SALINA MAINTENANCE STATION

Volume 1 of 2



:: Salina Maintenance Station | Programming



November 2013

## 01 EXECUTIVE SUMMARY

- 1.1 Project Justification
- 1.2 Design / Build Summary
- 1.3 Value Based Scoring Analysis
- 1.4 Program Summary
- 1.5 Program Objectives
- 1.6 Space Requirements Summary

## 02 SITE ANALYSIS

- 2.1 Site Analysis
  - a. Site Location
  - b. Site Summary
  - c. Regional Climate
  - d. Views of Project Site
  - e. Geotechnical Investigation Report
  - f. Alta Survey
- 2.2 Existing Site Utilities
  - a. Existing Utilities Summary
  - b. Temporary Utilities
- 2.3 Site Planning / Civil Design Criteria
  - a. Orientation
  - b. Access
  - c. Outdoor Spaces
  - d. Outdoor Structures

## 03 BUILDING REQUIREMENTS

- 3.1 Overview
  - a. Codes, Regulations, and Safety
- 3.2 Architectural Requirements
  - a. Concrete Masonry Unit (CMU) Scheme
  - b. Pre-engineered Metal Building Scheme
  - c. Sprung Structure / Fabric Scheme
  - d. Wood Framed Structure / EIFS Scheme
  - e. Interior Environments
  - f. Functional Design
- 3.3 Individual Space Requirements

- 3.4 Technical Design Requirements
  - a. Civil
  - b. Structural
  - c. Mechanical
  - d. Electrical
  - e. Plumbing
  
- 04 PROJECT COST ESTIMATE**
  - 4.1 Project Cost
  
- 05 PROJECT SCHEDULE**
  - 5.1 Project Schedule
  
- 06 PROJECT SPECIFICATIONS – SEE APPENDIX**
  - 6.1 Project Specifications
  
- 07 SITE TECHNICAL INFORMATION – SEE APPENDIX**
  - 7.1 Geotechnical Investigation Report
  - 7.2 Alta Survey

## 1.1 Project Justification

### Existing Maintenance Station History

UDOT currently owns 4.7 acres in Salina, which houses the existing maintenance station. It is located at 500 North State Street, Salina UT. This station is no longer adequate for their needs. UDOT acquired 11.8 acres of vacant ground north of I-70 on Industrial Road, through a land trade with Salina City. Both properties were appraised and it was a value for value exchange. UDOT retains the right to operate out of the current station until funds become available to build a new facility. At that time the existing station would be available to Salina for their road maintenance needs.

### Existing Maintenance Station Shortcomings

In general the site performs as needed as far as site flow and size. However the existing building has serious deficiencies.

- Existing building is too small to meet the ever growing size of snow removal trucks. The bay spacing is too narrow to accommodate trucks with snow plow wings attached. Also the depth of the existing building will not allow the trucks to be parked in each stall. The trucks have to be parked at an angle in the building thus taking up 2 stalls for each truck.
- Existing building does not have enough bays to accommodate the 8 trucks the station has on site.
- Station needs adequate storage space for all equipment, signage & misc. material stored on site. The station has more equipment than can fit in the existing building. Currently the staff is using an open storage structure that does not have the capability to keep these items secure.
- The existing station is located in a residential area. This can create problems with adjacent neighbors when the station personnel have to function at all hours of the day and/or night. UDOT receives complaints about noise when trucks are fired up in the middle of the night.

The main justification for building a new Maintenance Station is to address these issues of functionality and security that could not be resolved through renovations of the existing buildings. Construction of a new facility will allow the building to be designed properly and completely in a way that meets current UDOT needs, DFCM requirements, ADA standards and current applicable codes.



**Existing Site**



**Existing Maintenance Building and Station Access**

## 1.2 New UDOT Salina Maintenance Station Design-Build Summary

The new Utah Salina Department of Transportation (UDOT) Maintenance Station will be used to store, maintain and repair large trucks for snow removal and general road maintenance. Office, training room, storage room, toilet and mechanical areas in the facility will be utilized by employees working in the facility as well as utilizing roadway maintenance trucks. The maintenance bay will be utilized for minor repairs to the trucks and snow plows with a fixed lift to access under the trucks for repairs. At a minimum, the maintenance building, sitework (including pavement and drainage), utilities and perimeter fencing are required for a completed facility. Accessory structures including Salt Storage Building, Sander Racks and Wash Rack are desirable program elements to be included in the completed Station but are not part of the required base bid.

The Project must conform to DFCM Design Standards and all other applicable Federal, State and local codes.

### **Provide a fully functional facility**

UDOT desires to obtain a new maintenance station with their functional and programmatic needs fully met. The new Salina Maintenance Station must result in a facility that allows station personnel to perform general maintenance, park vehicles in bays overnight, provide adequate storage space & training area in order to respond to the demands of their year-around responsibilities. In order to assure that this will be achieved to UDOT's satisfaction, the new construction must be functionally consistent with the interior design and construction of their most recent facilities (Wellsville and Kamas) as reflected in this program document.

### **Design-Build Approach**

UDOT and DFCM have elected to utilize a Design-Build delivery system for this project. While developing responses that meet the project's prime programmatic and functional objectives previously described, UDOT wishes not to restrict bidders from proposing different exterior building envelope systems. Nonetheless, UDOT recognizes that various exterior envelope systems have differing initial costs, life cycle costs and performance characteristics. In order to help evaluate the relative merits of different solutions that may be proposed, UDOT will include and utilize a value based scoring analysis in the RFP to consider the responses received.

### **Project Budget**

The Owner is looking for the proposal that provides the most value for the funds required. The State has allocated \$2,262,000.00 towards the design and construction for this project. UDOT is looking for proposals that effectively utilize up to this amount of funds without exceeding the available funds. After the bidder has met the base bid requirements, any remaining funds beyond this amount can be utilized for the provision of additional desirable program elements as described herein. Value based scoring additions will be available for such responses. Bids submitted in excess of the stated budget amount are discouraged.

### **Project Schedule**

The substantial completion date for the project is December 1, 2014.

## 1.3 State of Utah Procurement Process

In order to select a design-build team, the State of Utah is issuing an RFP for a two stage Design-Build procurement process. Please refer to the officially posted DFCM RFP for details and the complete requirements. If any conflicts exist between the official RFP and the program document the official RFP will govern.

### **Stage I Selection Criteria:**

The selection criteria to determine the shortlist is anticipated to include the following:

#### **Selection Criteria**

The following criteria will be used in arriving at a shortlist of three teams. The short listed teams will be those that represent the best value for the state. The criteria are not listed in any priority order. The Selection Committee will consider all criteria in performing a comprehensive evaluation of the proposal. Weights have been assigned to each criteria in the form of points.

A. DFCM Past Performance Rating. **15 POINTS**. The lead construction firm and design firm for each Design/Build Team will be given a past performance rating. The rating will be based first on how well the team members did on past projects with DFCM. If a minimum of three DFCM past performance ratings are not available a rating will be established using any DFCM past performance ratings that are available, supplemented by references supplied by the Design/Build Teams at the time the Statement of Qualifications and Organization is submitted.

B. Strength of Team. **35 POINTS** Based on the Statements of Qualifications, Preliminary Management Plan, and the interview, the Selection Committee shall evaluate the expertise and experience of the team and the project lead as it relates to this project in size, complexity, quality, duration, etc. Consideration will also be given to the strength brought to the team by critical consultants/ subcontractors including how they were or will be selected and the success the team has had in the past in similar projects. The Selection Committee will also evaluate how the members of the Design/Build Team will work together to achieve project objectives. This will include any experience the team members have in working together.

C. Project Management Approach. **25 POINTS** Based on the information provided in the Preliminary Management Plan and information presented in the interview, the Selection Committee will evaluate how each team plans to design and construct the project in the location and time frames presented. The Selection Committee will also evaluate the degree to which risks to the success of the project have been identified and a reasonable solution has been presented.

The following criteria are project specific. They are added to the above criteria in determining the selection that represents the best value for the state.

D. Experience in the construction and/or design of similar buildings and facilities. **25 POINTS**

**TOTAL POINTS POSSIBLE: 100 POINTS.**

**Stage II Selection Criteria (applies to shortlisted teams only)** as follows:

The following criteria will be used in ranking each of the shortlisted Design/Build Teams. The team that is ranked the highest will represent the best value for the state. The criteria are not listed in any priority order. The Selection Committee will consider all criteria in performing a comprehensive evaluation of the proposal. Weights have been assigned to each criteria in the form of points.

A. Design Proposal. **10 POINTS**. The Design/Build Teams design as presented in the drawings and specifications and as clarified in the interviews will be evaluated as to how well it meets the objectives of the project.

B. Schedule. **30 POINTS**. The schedule will be evaluated as to how well it meets the objectives of the project. Unless other objectives are stated the shorter the design and construction duration that is evaluated to be feasible while maintaining safety and quality in conformance with the RFP is preferred. The team shall discuss during the interview the project schedule identifying major work items with start and stop dates that are realistic and critical subconsultants and subcontractors and if they have reviewed and agree to the schedule. The overall completion date shown on the schedule will be used in the contract as the contract completion date.

C. Project Management Approach. **10 POINTS**. Based on the information provided in the Final Management Plan and information presented in the interview, the selection team will evaluate how each team plans to design and construct the project in the location and time frames presented. The Selection Committee will also evaluate the degree to which risks to the success of the project have been identified and a reasonable solution has been presented. This will include how the Team proposes to keep the site safe and minimize disruption while moving material and people into and out of the site.

D. Project Value **50 POINTS**. The team's proposal will be considered with all other criteria to determine the ranking of the firm. This may include consideration of any cost and scope adjustment proposals.

Value base scoring of the Cost Proposal will be as follows:

- I. Site Build-out – Added Points
  - a. Include Salt Building **8 POINTS**
  - b. Include Sander Rack **1 POINTS**
  - c. Include Wash Rack **1 POINTS**
  
- II. Building System – Added Points
  - a. Concrete Based Exterior Walls **30 POINTS**
    - i. CMU / Precast / Concrete Tilt-up
  - b. Metal Building Exterior Walls **15 POINTS**
    - i. Pre-engineered Metal Building / Metal Framed and Sided Structures
  - c. Fabric Building Exterior Walls **2 POINTS**
  - d. Wood Structures **5 POINTS**
  
- III. Program Compliance –Deducted Point(s)
  - a. Complete Compliance **10 POINTS**

- b. One point deducted per each noncompliant program item

## **TOTAL POSSIBLE POINTS: 100 POINTS.**

In addition, the project must adhere to DFCM requirements. These requirements include DFCM General Conditions. Current copies of the DFCM General Conditions dated May 25, 2005, Design Manual, and all Supplemental General Conditions are available upon request at the DFCM office and on the DFCM web site at [www.dfc.utah.gov](http://www.dfc.utah.gov) - "Standard Documents" – "Reference Documents" – "Supplemental General Conditions", and are hereby made part of this program by reference. The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at [www.dfc.utah.gov](http://www.dfc.utah.gov).

## **1.4 Program Summary**

The program includes information on the project, site, building system narratives, individual space information for building spaces including the repair bays, office, storage, training, & break rooms. Possible site layout is also addressed in this program.

## **1.5 Program Objectives**

The purpose of this programming document is to assist the eventual design/build team in understanding the functionality of the project, understanding the end user's needs, and to provide the parameters and guidelines by which the new facility should be designed and built.

It is of critical importance that the design/build team understand that although this programming document highlights some specific information and requirements that are unique to this building, they must also comply with DFCM Design & Construction Standards as well as those requirements pertaining to ADA and Federal, State and Local Code.

The Design-Build Team must also submit the final construction documents to the DFCM through their EDMS (Electronic Document Management System) for review by the State Building Official. This will also include a structural review. It should also be noted that DFCM will provide all inspections.

This facility is being paid for by funds through DFCM replacement funding. UDOT is also providing a portion of the funds required from Region 4 annual funds. This will be a State owned property and building.

DFCM intends to issue this project as a Design-Build proposal utilizing this programming document as a basis of design.

# 01 | EXECUTIVE SUMMARY

## 1.6 Space Requirements Summary

### Maintenance Building:

ROOM/SPACE	# OF ROOMS	S.F.	TOTAL S.F.
Office	1	210	210
Locker Room	1	125	125
Storage	1	300	300
Restroom (Unisex)	1	90	90
Break Room	1	480	480
Maintenance Bay	1	1260	1260
Repair Bays	8	800	6400
Storage Bays	5	870	4350
Mechanical / Electrical	1	250	250
Janitorial Area	1	40	40
Exterior Waste Oil Storage	1	85	85
<b>Net Total Square Footage</b>			13590
<b>Common Areas (net x 9.5%)</b>			1291
<b>TOTAL</b>			14881

### Salt Storage Building:

ROOM/SPACE	# OF ROOMS	S.F.	TOTAL S.F.
Salt Storage 50'x80'	1	4000	4000
<b>Total Square Footage</b>			4000

### 2.1 Site Analysis

#### a. Site Location

The new Maintenance station will be located in Sevier County just outside of Salina City which is approximately 140 miles south of Salt Lake City, in Sevier County.

The City has a total area of 6.2 square miles. Salina's elevation is set at approximately 5,161 feet. Salina's annual precipitation averages around 7.82 inches, which causes the area to be classified as desert. Salina is surrounded by national forests. Fish Lake National Forrest to the south, Manti-La Sal National Forrest to the East, Uinta-Wasatch-Cache National Forests to the North. West of Salina is primarily desert area.

The first permanent settlers (about 30 families) moved into the area in 1864 at the direction of leaders of the Church of Jesus Christ of Latter-day Saints. They found abundant salt deposits nearby and named the area "Salina".

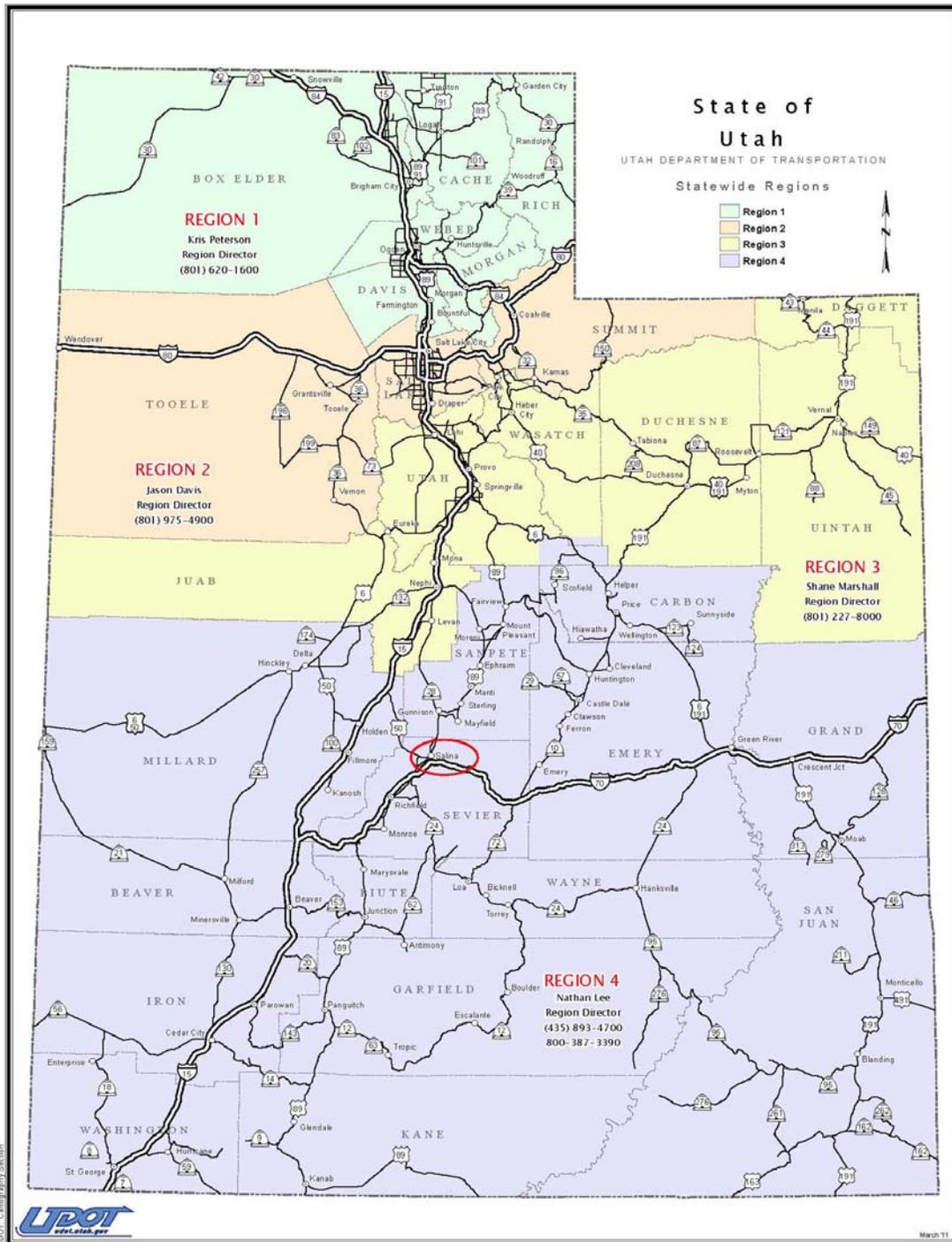
The primary economy of the area with the first settlers was agriculture, primarily to sustain themselves. However, other commercial activities were soon started. In the 1870's a telegraph line, regular postal service and coal mines were operating.

In June of 1891 the settlement was connected to the state's railroad system, and that year the central area was incorporated as a town. It soon became the shipping terminal between the area settlements and the rest of the state. In 1913 the town was re-incorporated as a city.

In the 1940's the Salina Livestock Auction and the Salina Turkey Plant were established, both of which are still in operation today. The Convulsion Canyon mine continued to grow, and became part of the SUFCO Mine.

Salina is currently supporting development of a 400 acre commercial / industrial park south of town, very near the intersection of I-70 and US 89. The effort is being funded by the City and by a grant from the US Economic Development Administration. It consists of 50 lots ranging from 1.5 to 30 acres. This is the location of the proposed new Salina Maintenance station.

The UDOT maintenance division is responsible for maintaining 5,900 miles of interstate, primary, and secondary roads throughout Utah. Regions 1, 2 and 3 have 1 maintenance crew. Region 4 has 3 maintenance crews. Salina Maintenance Station is located in Region 4.



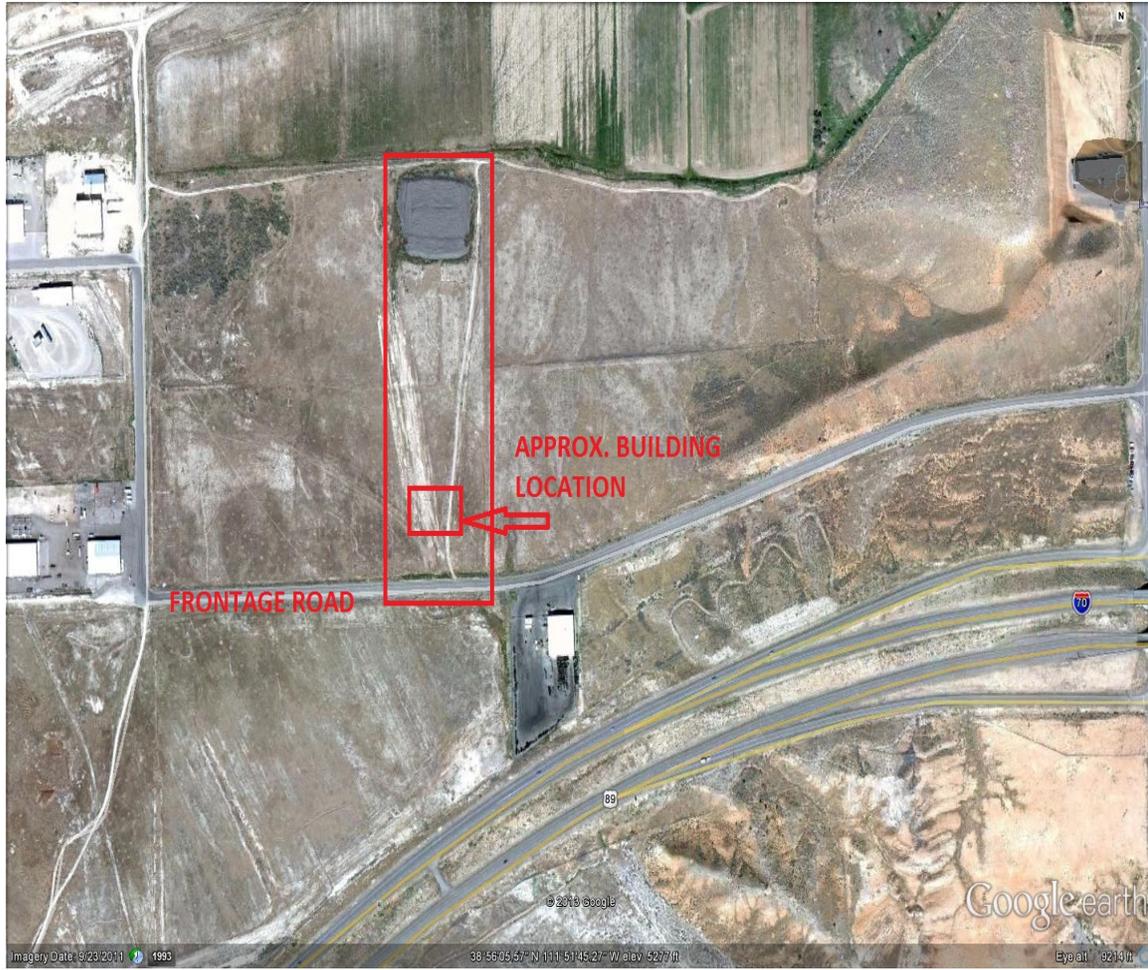
## 02 | SITE ANALYSIS

### b. Site Summary

The new UDOT site is located approx. 1.5 miles south of Salina, Utah in the new industrial park. Site is accessed by the north frontage road (1620 So. Street) of Interstate 70. There is currently a dirt road that runs along the east and north side of the site. There are currently no sidewalks for pedestrian access on either side of Frontage road. This property is located in a very remote area, all pedestrian activity occurs on the shoulder of the frontage road.



Area Map



**Site Location Map**

c. Regional Climate

The project site near Salina City, UT is positioned at: 38° 56' 08.29" N, 111° 51' 52.38" W  
 The elevation is: 5,261 feet above sea level.



Average Monthly Temperature

### d. Views of Project Site

The site has virtually unobstructed views in all directions. The existing industrial park is relatively flat and has few existing structures. Most of the land in this area is undisturbed and has native growth. UDOT's site is fairly flat but does have a drop of approx. 28' from the south end of the lot with an elevation of approx. 5,275 to the north end, elevation of approx. 5,247. The cross slope of the site is approx. 5' with the elevation on the west side of approx. 5,256 sloping up to approx. 5,261 at the east side of the property.



North View



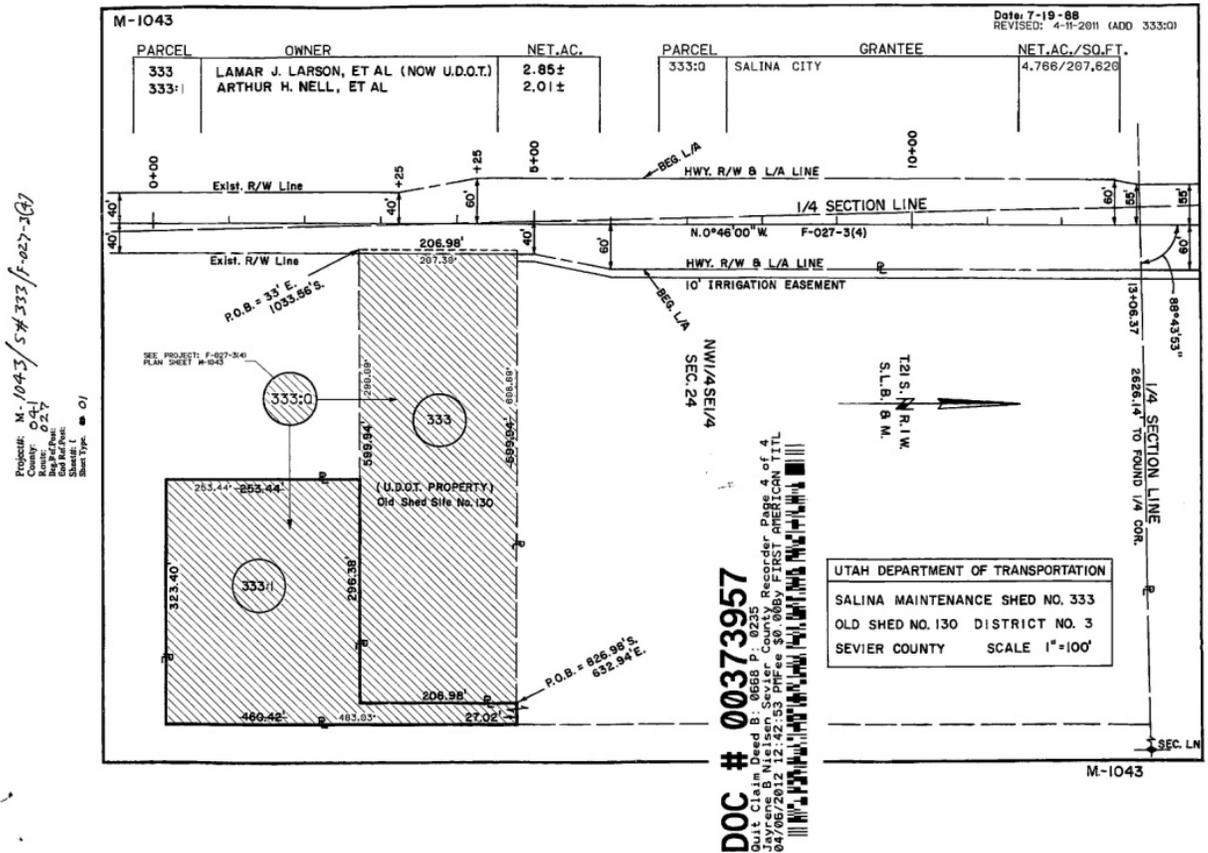
South View

**e. Geotechnical Investigation Report**

See the recently completed Geotechnical Report attached to this document in the appendix. The Design/Build team must comply with all the recommendation contained therein.

**f. Alta Survey**

See the appendix for the recently completed Alta Survey. This survey provides site utilities, easements, parcel lines, topography and existing conditions etc. This document will be used as the base for site drawing for the project. See below for the recorded deed.



### 2.2 Existing Site Utilities

#### a. Existing Utilities Summary

##### **General Note:**

All utility connections and storm water requirements will need to meet Salina City Standards and requirements. They shall be installed per manufacture's recommendations. The Design-Build Contractor is responsible for all utility fees and all fees are to be independently verified by the Design-Build Contractor.

##### **Water:**

The site will need a 2" PVC Schedule 80 water lateral for the maintenance building, sander racks, and wash rack. This service will be provided by the locally available municipal culinary water system. An 8" water main is located in the road fronting the property. Impact fees are anticipated to be a one-time fee of \$6,200.00. The water connection fees are anticipated to be \$1,500.00.

##### **Gas:**

Local natural gas service is available.

##### **Sewer:**

The maintenance station will need a 4" PVC SDR-35 sanitary sewer service. This service shall be connected to the available municipal sewer system. An 8" sewer main is located in the road fronting the property. Sewer impact fees will be approximately \$1,000.00 and the sewer connection fees are anticipated to be \$175.00.

##### **Storm Drain:**

The site will be required to detain/retain additional storm water runoff caused by this development. This will likely require a detention/retention pond and 12" to 24" RCP storm drain piping.

##### **Communications:**

Internet and phone service is available through Century Link with VDSL2 fiber optic.

##### **Electrical:**

Electrical service is available through Rocky Mountain Power. It is likely that 3-phase power is available.

##### **Fire Protection:**

The site needs to have a fire hydrant installed. The maintenance building will require fire sprinklers. This service will require a 6" PVC C900 water line. No impact fees or connection fees are anticipated.

#### b. Temporary Utilities

The contractor is responsible for putting all temporary utilities that are needed during construction under their name, and paying for such utilities during construction. At Substantial Completion, utilities will be transferred to the responsible party.

### 2.3 Site Planning / Civil Design Criteria

#### a. Orientation

It is the Owner's desire to orient the building with the main entrance facing East or South East to provide a view of the main entrance from the office. The Design-Build team should also lay out the building to take advantage of preferred clerestory windows and day lighting opportunities wherever possible.

#### b. Access

Accessibility to and around the site to all the exterior structures should be well planned and should consider the specific requirements of a functioning maintenance station. Vehicle access and turning radius should be considered when laying out the access to all exterior structures. As a rule UDOT prefers free area for maneuvering of 80' to 100' around the maintenance building access door sides. All ADA requirements for access to the building as well as the building functions must be met.

#### c. Outdoor Spaces

Public and staff parking areas are required. 1 ADA accessible stall, next to main entrance without crossing traffic paths shall be provided. 11 staff stalls are required and should be in close proximity to the building.

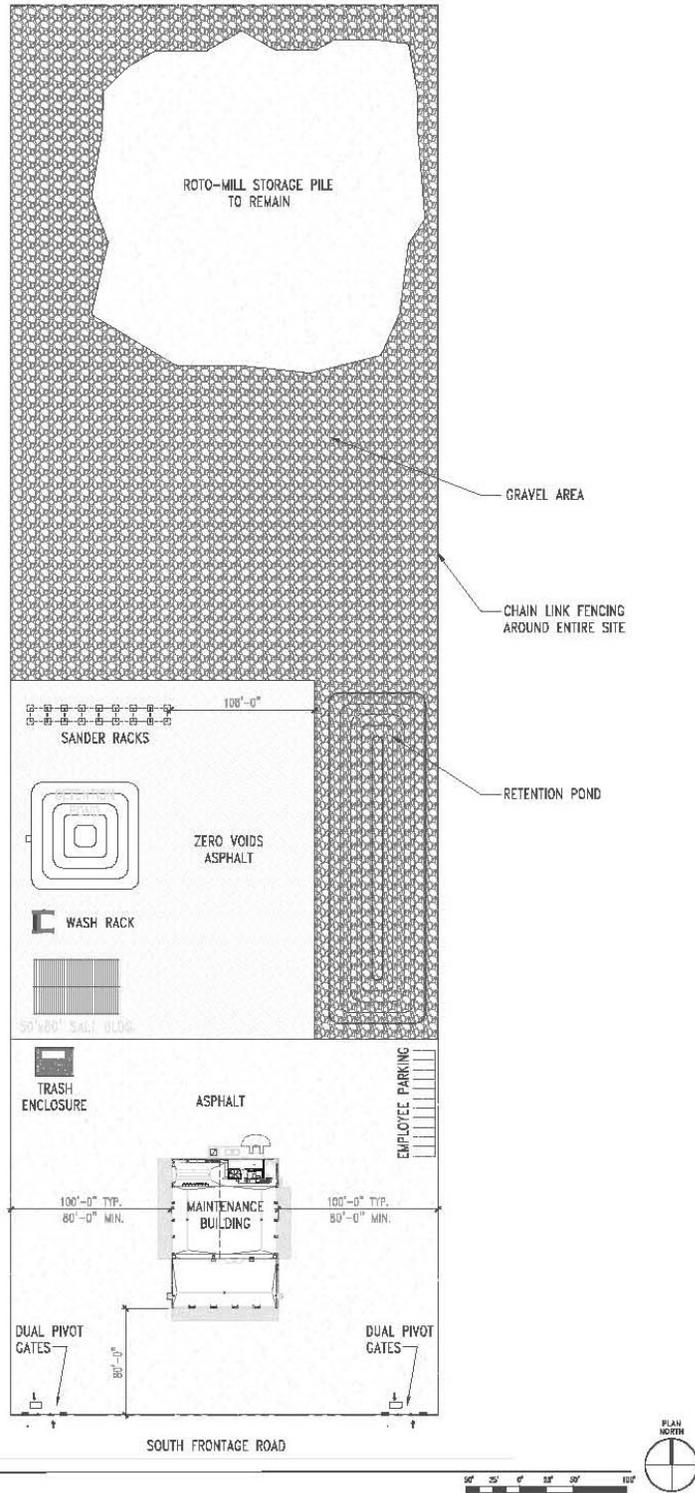
For security reasons, UDOT requires the entire site to be fenced. A 6' high fence with 2 motorized dual pivot gates shall be included with the base bid.

Existing roto-mill storage pile located to the north of the site shall be left as undisturbed. No work will be required for this element.

#### d. Outdoor Structures

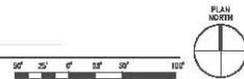
Outdoor structures are required to provide a functioning Maintenance Station to UDOT. A 50' x 80' (2,000 ton) Salt Building, Eight (8) Sander racks and a "U" shaped wash rack are desired for a full site build-out. Depending on the scope included in the Design-Build proposals received these structures may be provided at a later date. Regardless, the Design-Build team must allow for proper placement and access to future structures.

See proposed site plan on next page.



A2 | SALINA SITE PLAN

REV. 1 SCALE: 1" = 50'



### 3.1 Overview

The following portion of this report outlines the spaces needed for this facility based on UDOT's determination.

#### Building Description

The building will consist of offices, training rooms, unisex restroom, mechanical and storage rooms as described in this program document. A mezzanine area is typically provided for mechanical and storage areas, accessible by a concrete filled metal pan stair. The remainder of the building will be shared by a single maintenance bay and multiple vehicle storage bays. The building is intended to be insulated and fully sprinklered. The building will need to accommodate natural lighting in addition to artificial lighting systems.

#### Building Expansion

Future expansion beyond the complete site build-out providing all preferred outdoor structures (Maintenance Building, Salt Building, Sander Racks and Wash Rack) is not anticipated and should not be considered in this program.

#### a. Codes, Regulations, and Safety

##### Codes and Regulations

- **2012 International Building Code (IBC) or current DFCM requirements**
- **Occupancy Type = S1 & B**
- **Construction Type = VB (NFPA wet sprinkler system included)**
- **Occupancy Load = 15 Maximum based on actual maximum number of employees**
- **Plumbing Fixtures =**
  - Water closets = 1**
  - Lavatories = 1**
  - Emergency eye wash = 1**
  - Drinking Fountain = 1 Dual**
- **ADA Accessibility: Conformance with Federal Standards and Guidelines is required (DFCM Enhanced Accessibility is not required)**
- **Parking Requirements = Listed in Section 2.3.d above**

### 3.2 Architectural Requirements

#### Exterior Materials

UDOT has extensive experience operating and maintaining many buildings of different construction types. For this RFP, UDOT is leaving open the issue of which building type Bidders may utilize. Nonetheless, UDOT recognizes that various exterior envelope systems have differing initial costs, life cycle costs and performance characteristics and a weighting system will be used to evaluate the relative merits of each system proposed (see Section 1.3 Stage II Selection Criteria).

There are basic programmatic minimums that each exterior system must incorporate:

1. At least 32" of continuous permanent concrete perimeter barrier wall exclusive of vehicle doors and man doors;
2. Continuous thermal insulation as required by IBC 2012;
3. Three hundred (300) square feet of Natural daylighting into the vehicle maintenance and repair bays (not including doors and no skylights will be allowed);
4. Vehicle Storage Bay Spacing: 16'-0" wide minimum with garage doors centered on the 16' width;
5. Vehicle Bays Interior Wall Protection: 6" concrete curb with additional 10' plywood wall protection.
6. Snow Melting Systems: 4' minimum depth roof surface heat trace plus heat race in gutters and downspouts required on North and East oriented roof surfaces only.

Some of the building systems UDOT is open to are:

#### a. Concrete Masonry Unit (CMU) Scheme:

CMU exterior wall system is the building system used most frequently by UDOT in the last five (5) years. This is a construction system for which there is a significant skilled workforce and it is well utilized in rural areas of the State. It has excellent fire resistance. It can be expanded easily and has historically and recently performed well on UDOT maintenance facilities. Usually considered a fifty (50) year system, it often has a service life beyond this.

System Performance Requirements are as follows:

- Unit masonry system must meet an installed compressive strength ( $f'm$ ) as follows:  $f'm = 2,000$  psi.
- Provide integral water-repellent admixtures that provide the following performance:
  - Water permeance of masonry: ASTM E 514, "Standard Test method for Water Penetration and Leakage through masonry".
  - Bond Strength of Masonry: ASTM C 1357, "Standard Test Method for Evaluating Masonry Bond Strength."
  - Compressive Strength of Masonry Prisms: ASTM C 1314, "Standard Test Method for Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of

- Masonry.”
- Drying Shrinkage of Mortar: ASTM C 1148, “Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar.”
  - Drying Shrinkage of CMU: ASTM C 426, “Standard Test Method for Drying Shrinkage of Concrete Masonry Units.”
- All materials and construction shall comply with the International Building Code, 2012, Chapter 21, Masonry.
- Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.
- Integral CMU water-repellent admixture shall be warranted by admixture manufacturer to be free of defects and to meet manufacturer’s published physical and chemical properties.
- Special shapes are to be used in the following locations:
- Lintels, bond beams, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
  - Square edged units for outside corners unless noted otherwise.
- Size:
- Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths.
- Mortar and Grout Materials.
- Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce required mortar color.
  - Hydrated Lime: ASTM C 207, Type S.
  - Aggregate for Mortar: ASTM C 144, except for joints less than 1/4 inch use aggregate graded with 100 percent passing the No. 16 sieve.
  - Colored Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with record of satisfactory performance in masonry mortars.
- Reinforcing Steel.
- Steel Reinforcing Bars: Grade 60.
  - Deformed Reinforcing Wire: ASTM A 496.
  - Plain Welded Wire Fabric: ASTM A 185.
- Ties and Anchors.
- Galvanized Carbon Steel Wire: ASTM A 82, coating class as required by referenced unit masonry standard for application.
  - Anchor Bolts: Steel bolts complying with A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length required.
- Mortar Bedding and Jointing – Lay hollow CMU as follows:
- With full mortar coverage on horizontal and vertical face shells.
  - Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.

- For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- Cavities / Air Spaces.
  - Keep cavities/air spaces clean of mortar droppings and other materials during construction. Strike joints facing cavities/air spaces flush.
- Control Joints.
  - Install control joints in unit masonry as required to avoid surface cracks. Build in related items as the masonry progresses. Do not form a continuous span through control joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

### b. Pre-engineered Metal Building Scheme:

The prefabricated metal building scheme has been widely viewed as the most cost effective solution for this type of maintenance facility structure. Market trends at various times have made cementitious systems more closely competitive with metal buildings. Nonetheless, the metal building still has unique attributes that bear consideration before proceeding with this alternative:

- It has a less durable exterior than the cementitious systems;
- The interior finish utilizes an exposed vapor barrier and batt insulation blanket that is less durable than that of the other systems where the insulation is protected;
- The lack of durability of the insulation system, the thinness of the metal skin and the potential for thermal bridging across the steel make this system less energy efficient than others;
- There are issues that sometimes arise relating to engineering preferences occasionally imposed by the metal building suppliers that require a redesign or compromise of UDOT's functional requirements;
- The State of Utah DFCM EDMS permit process is extended by the time it takes the pre-engineering to be completed for code review and approval as a permit will not be issued without final engineering provided by the metal building supplier.
- The metal building supplier has to provide structural steel drawings, based on their unique product after the bid; causing a possible delay in construction start by approximately 2 months.
- Design-Builders may face potential additional costs due to increases in steel price as the order typically does not get placed until the engineering is completed.

System Performance Requirements are as follows:

- Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior. Include primary and secondary framing, roof and wall panels, and accessories complying with all necessary requirements.
- Metal Building System Design:
  - Primary Frame Type shall be a rigid clear span, solid member

structural framing system with interior columns as required. Framing member design must withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

- End-Wall Framing fabricated for field-bolted assembly to comply with the following.
  - End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.125 inch.
  - End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.0598 inch.
- Secondary Framing consists of purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Fabricate framing from cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet pre-painted with coil coating, unless otherwise indicated, to comply with the following:
  - Purlins: C- or Z-shaped sections; fabricated from minimum 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes; minimum 2-1/2-inch wide flanges.
  - Girts: C- or Z-shaped sections; fabricated from minimum 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 45 to 50 degrees to flange and with minimum 2-1/2-inch wide flanges.
  - Eave Struts: Unequal-flange, C-shaped sections; fabricated from 0.0598-inch thick steel sheet, built-up steel plates, or structural-steel shapes; to provide adequate backup for both roof and wall panels.
  - Flange and Sag Bracing: Minimum 1-5/8-by-1-5/8-inch structural-steel angles, with a minimum thickness of 0.0598 inch, to stiffen primary frame flanges.
  - Base or Sill Angles: Minimum 3-by-2-by-0.0747-inch zinc-coated (galvanized) steel sheet.
  - Secondary End-Wall Framing: Manufacturer's standard sections fabricated from minimum 0.0747-inch thick, zinc-coated (galvanized) steel sheet.
  - Framing for Openings: Channel shapes; fabricated from minimum 0.0598-inch thick, cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings, and head, jamb, and sill of other openings.
- Vehicle Bay Spacing: 16'-0" min.
- Roof Slope: 1" per 12" min.
- Roof System: Structural Standing-Seam Roof Panels complying with the following:
  - Ribbed Roof Panels: Fabricate from galvanized unpainted alloy coated steel sheets, factory formed to provide 24-inch coverage;

with 3-inch high (including seam), raised trapezoidal major ribs at panel edges, and intermediate stiffening ribs symmetrically spaced between major ribs for full length of panel with concealed fasteners as manufactured by MBCI, Model Double-Lok or prior approved equal. Comply with the following:

- Material: Zinc-Coated (Galvanized) Steel Sheet ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality.
  - Yield Strength: 50 ksi.
  - Metal Thickness: 0.0239 inch minimum.
  - Joint Type: Folded, mechanically seamed type.
  - Surface: Smooth, flat, mill finish.
  - Clip System: Floating to accommodate thermal movement (high clip system).
- Exterior Wall System: Manufacturer's standard field-assembled wall panels to comply with the following:
    - Architectural wall panel, 36" wide, 24 gauge minimum, with ribs at 12" o.c.
      - Material: Zinc-coated (galvanized) steel.
      - Yield Strength: 50 ksi.
      - Metal Thickness: 22 gauge minimum or as required for wind exposure.
      - Panel Thickness: 1.5 inches.
      - Surface: Smooth, flat, mill finish.
  - Canopy Framing: Construct using standard secondary framing members indicated above.
  - Snow Guards: Provide as necessary.
  - Flashing and Trim: Form from 0.0179-inch thick, zinc-coated (galvanized) steel sheet steel sheet pre-painted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent roof or wall panels.
  - Bracing: Provide adjustable wind bracing as required, no cable bracing will be allowed.

**c. Fabric Scheme (including Sprung Structure):**

Fabric Structures have been typically utilized as temporary, movable exterior enclosures that offer Owners flexibility in placement, speedy erection and low cost for large span coverages. In recent years, they have been marketing and expanding their product into the realm of permanent structures. The Fabric Structure approach has unique considerations for use as a UDOT maintenance structure. It is the least proven for this type of use and it is the most susceptible to damage by natural forces, UDOT vehicles or vandalism. Pre-engineered solutions such as the Fabric Structure are limited as to custom adaptation when required.

System Performance Requirements are as follows:

- Substructure: Extruded aluminum arches engineered to withstand local wind and snow loads.
- Membrane: All weather engineered stress membrane integrally connected to substructure. Must be a certified flame retardant membrane. Must have rip stop construction to prevent tearing of membrane if punctured.
- Metal panel to 8' above finish floor.
- Light transmission: Must allow 300 s.f. min. light transmission to maintenance bays.
- Insulation: Must meet required insulative properties per code.
- HVAC: Must meet required HVAC codes.

**d. Wood Framed Exterior Wall w/ EIFS Scheme:**

To utilize a wood framing approach it is highly recommended that a 10' high cementitious perimeter wall be incorporated. The 10' high wall is necessary to protect the wood framing from possible impact loads of large trucks. In order to provide the clear height needed in these facilities glu-lam beams with TJI purlins will be used overhead. This system is less common to this type of building but has occasionally been used by UDOT in some of their salt storage facilities. The EIFS exterior is not very durable but by placing it 10' high this is less of a concern. Wood framing is less precise than other types due to the imperfections inherent in lumber. When the life cycle costs are considered, the lack of durability of the EIFS exterior adds to the maintenance replacement costs and overall the scheme is less cost-effective than others.

System Performance Requirements are as follows:

- Load Bearing Walls: Construction or No. 2 grade lumber for exterior walls and interior load bearing walls.
  - Species: Species to be approved by owner / architect.
  - Grade: Select grade with a modulus of elasticity of at least 1,500,000 psi and an extreme fiber stress in bending of at least 1,000 psi for 2-inch nominal thickness and 12-inch nominal width for single-member use.
- Non-Load Bearing Interior Partitions: Construction or No. 2 grade lumber. Lumber species to be approved by owner / architect.
  - Species: Species to be approved by owner / architect.
- Ceiling Joists: Glu-lam beams with TJI purlins engineered for required spans and loads and as required to meet all necessary codes.
- Rim Boards: Product designed to be used as a load-bearing member and to brace wood joists at bearing ends, complying with research/evaluation reports for Glu-lam beams.
- Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB Sheathing.
- Fasteners: Provide fasteners of size and type indicated that comply with the requirements for the materials being used. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or

in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

- Nails, Brads, and Staples: ASTM F 1667.
  - Power-Driven Fasteners: NES NER-272.
  - Wood Screws: ASTM B18.6.1.
  - Lag Bolts: ASTM B18.2.1.
  - Bolts: Steel bolts complying with ASTM A 307, Grade A with ASTM A 563 hex nuts and, if required, flat washers.
- Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.
- Bolt Diameter: 5/8 inch.
  - Width: 2-1/2 inches.
  - Body Thickness: 0.108 inch.
  - Base Reinforcement Thickness: 0.108 inch.
- Exterior Insulation and Finish System (EIFS): EIFS shall comply with ASTM E 2568 and ICC-ES AC219. EIFS shall be resistant to uncontrolled water penetration from exterior, with a means to drain water entering EIFS to the exterior. EIFS shall meet uniform wind loads acting inward or outward per all required codes.
- Primer/Sealer: EIFS manufacturer's standard substrate conditioner designed to protect substrates from moisture penetration and to improve the bond between substrate and insulation adhesive.
  - Water-Resistive Coatings: EIFS manufacturer's standard formulation and accessories for use as water-resistive barriers; compatible with substrate and complying with physical and performance criteria of ASTM E 2570.
  - Flexible-Membrane Flashing: Cold-applied, self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
  - Drainage Mat: Three-dimensional, nonwoven, entangled filament, nylon or plastic mat designed to drain incidental moisture by gravity; EIFS manufacturer's standard with manufacturer's standard corrosion-resistant mechanical fasteners suitable for intended substrate.
  - Molded, Rigid Cellular Polystyrene Board Insulation: Comply with ASTM C 578, Type I; and EIFS manufacturer's requirements for most stringent requirements for material performance and qualities of insulation, including dimensions and permissible variations.
  - Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multi-end strands with retained mesh tensile strength of not less than 120 lbf/in. according to ASTM E 2098.

### e. Interior Environment

Selection of interior finishes and materials should be responsive to the use of each of the spaces as outlined in this document. Consideration must be given to texture, color, acoustics, sustainability, and light reflectance.

In regard to durability and maintenance, generally the selection of materials should correspond to the amount of traffic and anticipated use of each space.

Interior wall finished surface must be sufficient to not degrade with anticipated wear and tear and cannot be in direct contact with floor surfaces. All walls exposed to the vehicle bays must be protected from the floor by a 6" minimum elevated water resistant base or curb.

The various systems of the building are discussed in the following sections. These structural, mechanical, and electrical systems have an aesthetic impact and should be designed to complement the architecture of the building.

### f. Functional Design

The specific requirements of all of the individual spaces of this facility are outlined in the Individual Room Data Sheets (Section 3.3 of this report).

## 03 | BUILDING REQUIREMENTS

### 3.3 Individual Space Requirements

#### No. 1

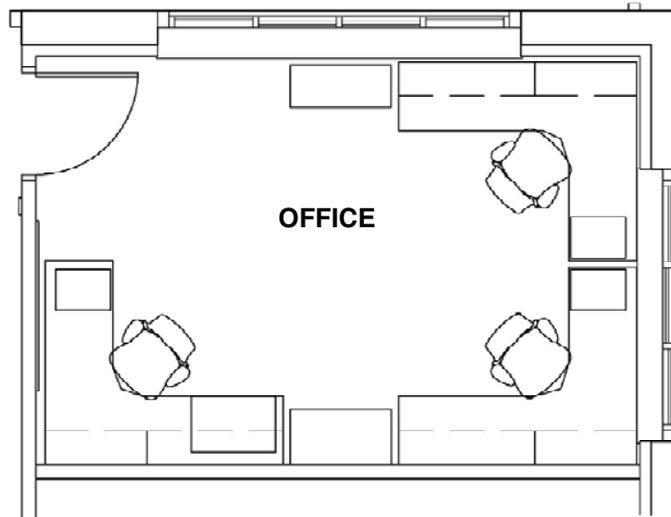
#### ROOM DATA

Office

<b>General Information</b>	Uses/Function	Station Manager Office
	Assignable Area	210 +/- sq. ft.
	Capacity	Per Code: 3 persons
	Ceiling Height	8'-6" min.
	Adjacencies	Stair to Mezzanine
	Accessibility	ADA
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	VCT
	Base	Rubber Base
	Walls	Painted Gypsum Board
	Ceiling	2' x 4' Lay-in Acoustical Ceiling
	Doors	Hollow Metal Door & Frame w/ vision panel
	Door Hardware	Lockable Door Hardware w/closure
	Windows	Yes – 2 Insulated Fiberglass w/solid surface sills approx. 17 lin. ft.
	Acoustics	None required
	Signage	Room Signage required
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent – fixture count as required.
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling with Thermostat control

## 03 | BUILDING REQUIREMENTS

	Plumbing	None
	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	Required – 3 stations
	Data	Required – 3 stations
	TV	Two outlets high on wall
	Other Technology	None
<b>FFE</b>	Fixed Equipment	3' x 5' White Board
	Movable Equipment	Systems Furniture supplied by Owner
	Window Treatment	1" Louver Blinds



## 03 | BUILDING REQUIREMENTS

### No. 2

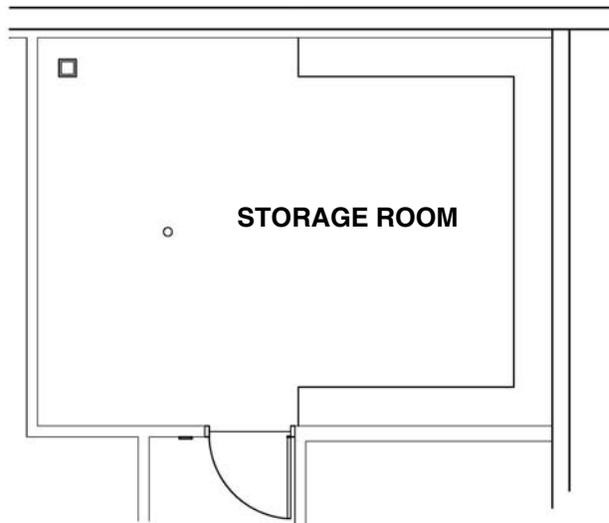
#### ROOM DATA

#### Storage Room

<b>General Information</b>	Uses/Function	Storage Room
	Assignable Area	300 +/- sq. ft.
	Capacity	Per Code: 3
	Ceiling Height	8'-6" min
	Adjacencies	None
	Accessibility	ADA
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	VCT
	Base	Rubber Base
	Walls	Painted Gypsum Board
	Ceiling	Painted Gypsum Board
	Doors	3'-6" Hollow Metal Door & Frame w/ half glass vision panel.
	Door Hardware	Lockable Door Hardware w/closure
	Windows	None
	Acoustics	None
	Signage	Room Signage required
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling w/exhaust fan
	Plumbing	Floor Drain
	Fire Protection	Required – Fire Riser Location

## 03 | BUILDING REQUIREMENTS

	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	30' of P. Lam. Adjustable shelving
	Movable Equipment	None
	Window Treatment	None



## 03 | BUILDING REQUIREMENTS

### No. 3

#### ROOM DATA

#### Locker Room

<b>General Information</b>	Uses/Function	Locker Room
	Assignable Area	125 +/- sq. ft.
	Capacity	Per Code: 2
	Ceiling Height	8'-6" min.
	Adjacencies	Restroom
	Accessibility	ADA
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	VCT
	Base	Rubber Base
	Walls	Painted Gypsum Board
	Ceiling	Painted Gypsum Board
	Doors	Hollow Metal Door & Frame
	Door Hardware	Lockable Door Hardware w/closure
	Windows	None
	Acoustics	None
	Signage	Room Signage required
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling
	Plumbing	None
	Fire Protection	Required

## 03 | BUILDING REQUIREMENTS

	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	Folding Bench Seat
	Fixed Equipment	10 Full Height lockers – 1 ADA locker required
	Movable Equipment	None
	Window Treatment	None



**With ADA compliant  
breakroom added (See  
Room 5)**

## 03 | BUILDING REQUIREMENTS

### No. 4

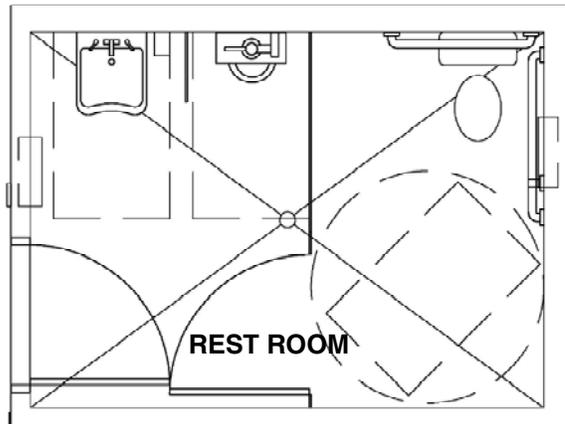
#### ROOM DATA

#### Unisex Restroom

<b>General Information</b>	Uses/Function	Restroom
	Assignable Area	90 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	8'-6" min.
	Adjacencies	Locker Room
	Accessibility	ADA
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	2" x 2" Ceramic Tile w/marble threshold
	Base	Ceramic Tile Cove Base
	Walls	Painted Gypsum Board above 4'-0"
	Walls	Ceramic Tile Wainscot below 4'-0"
	Ceiling	Painted Gypsum Board
	Doors	Hollow Metal Door & Frame
	Door Hardware	Privacy Lock door hardware w/closure
	Windows	None
	Acoustics	None
	Signage	Room Signage required
	Special Requirements	ADA Clear floor requirements
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling w/exhaust fan
	Plumbing	1 toilet, 1 urinal, 1 sink & floor drain

## 03 | BUILDING REQUIREMENTS

	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	All required toilet accessories
	Movable Equipment	None
	Window Treatment	None



## 03 | BUILDING REQUIREMENTS

### No. 5

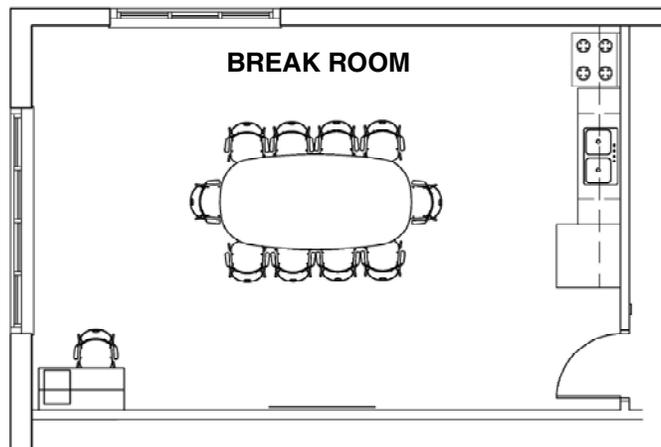
#### ROOM DATA

#### Break Room

<b>General Information</b>	Uses/Function	Break Room
	Assignable Area	480 +/- sq. ft.
	Capacity	Per Code: 5
	Ceiling Height	8'-6" min.
	Adjacencies	None
	Accessibility	ADA compliant fixtures and millwork required. If provided on mezzanine a comparable accommodation must be provided on the main level
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	VCT
	Base	Rubber Base
	Walls	Painted Gypsum Board
	Ceiling	2' x 4' Lay-in Acoustical Ceiling
	Doors	Hollow Metal Door & Frame w/ half glass
	Door Hardware	Passage Lock door hardware w/closure
	Windows	Yes – 2 Insulated Fiberglass w/solid surface sills approx. 17 lin. ft.
	Acoustics	None
	Signage	Room Signage required
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code Provide power for equipment listed below
	Mechanical	Heating & Cooling w/thermostat

## 03 | BUILDING REQUIREMENTS

	Plumbing	(1) dual sink and a connection for refrigerator water line
	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	Yes, at workstation
	Data	Yes, at workstation
	TV	One outlet
	Other Technology	None
	<b>FFE</b>	Fixed Equipment
	Movable Equipment	Systems Furniture supplied by Owner
	Window Treatment	1" Louver Blinds



## 03 | BUILDING REQUIREMENTS

### No. 6

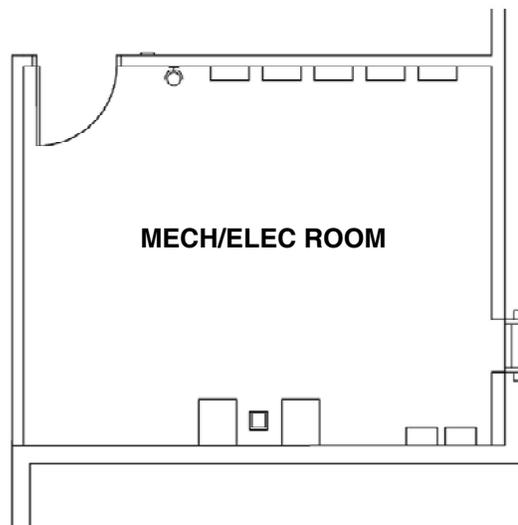
#### ROOM DATA

#### Mech./Elec. Room

<b>General Information</b>	Uses/Function	Mech./Elect. Equipment
	Assignable Area	250 +/- sq. ft.
	Capacity	Per Code: 3
	Ceiling Height	Open to structure above
	Adjacencies	None
	Accessibility	None required
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	Sealed Concrete
	Base	Rubber Base
	Walls	Painted Gypsum Board
	Ceiling	None
	Doors	Hollow Metal Door & Frame
	Door Hardware	Keyed lock hardware w/closure
	Windows	None
	Acoustics	None
	Signage	Room Signage required
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code, Location of Main Distribution Panel
	Mechanical	Heating & Cooling system for the office area and water heater
	Plumbing	Floor Sink and floor drains for the equipment

## 03 | BUILDING REQUIREMENTS

	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	None besides Elect. & Mech Equipment
	Movable Equipment	None
	Window Treatment	None



## 03 | BUILDING REQUIREMENTS

### No. 7

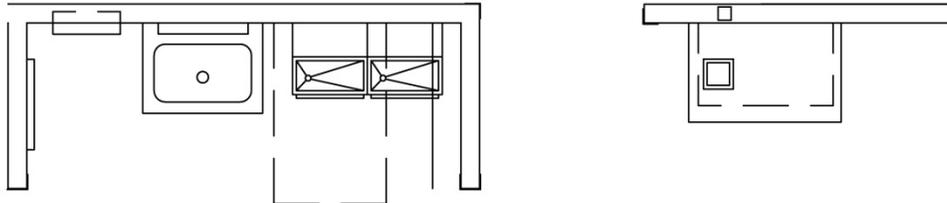
#### ROOM DATA

#### Janitorial Area

<b>General Information</b>	Uses/Function	Janitorial
	Assignable Area	40 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	Open to structure above
	Adjacencies	Repair Bays
	Accessibility	ADA
	Occupancy Type	B
<b>Finishes/Treatments</b>	Floor	Sealed Concrete
	Base	6" Concrete Curb
	Walls	Painted A/C grade plywood
	Ceiling	None
	Doors	None
	Door Hardware	None
	Windows	None
	Acoustics	None
	Signage	None
	Special Requirements	None required
<b>Engineering Systems</b>	Lighting	Fluorescent – wall fixture
	Electrical	Convenience Outlet required
	Mechanical	Heating & Cooling
	Plumbing	Utility Sink and Dual Level Drinking Fountain
	Fire Protection	Required

## 03 | BUILDING REQUIREMENTS

	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
	<b>FFE</b>	Fixed Equipment
	Fixed Equipment	Commercial Ice maker
	Movable Equipment	None
	Window Treatment	None



**JANITORIAL AREA AND ICEMAKER**

## 03 | BUILDING REQUIREMENTS

### No. 8

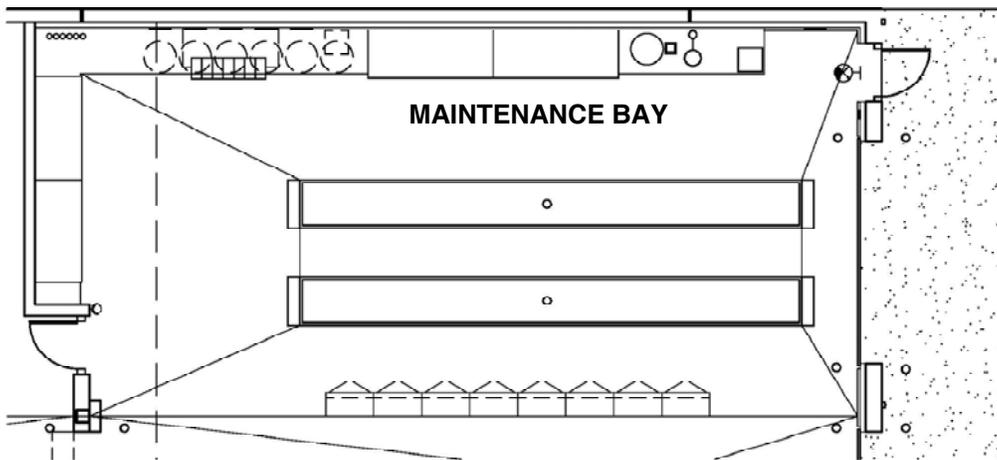
#### ROOM DATA

#### Maintenance Bay

<b>General Information</b>	Uses/Function	Truck Maintenance/Repair
	Assignable Area	1264 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	20' minimum clear of all obstructions above lift Open to structure above
	Adjacencies	Repair Bays
	Accessibility	ADA
	Occupancy Type	S1
	<b>Finishes/Treatments</b>	Floor
Base		6" Concrete Curb
Walls		Painted A/C grade plywood
Ceiling		None
Doors		Hollow Metal Door & Frame w/vision panel 14' H x 14' W Overhead Door
Door Hardware		Keyed Lock w/closure
Windows		High Bay Windows or Clerestory
Acoustics		None
Signage		Room Signage Required
Special Requirements		None required
<b>Engineering Systems</b>		Lighting
	Electrical	Outlets Per Code 2, 4 plex outlets at each workbench Connection to fixed lift 50 amp special purpose outlet

## 03 | BUILDING REQUIREMENTS

	Mechanical	Low intensity gas fired radiant tube heating Air Compressor Air Line on Hose Reel Lubrication Equipment Ventilation per code.
	Plumbing	Emergency Shower/Eye Wash Floor drains Water line on Hose Reel
	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
	<b>FFE</b>	Fixed Equipment
	Movable Equipment	None
	Window Treatment	None



## 03 | BUILDING REQUIREMENTS

### No. 9

#### ROOM DATA

#### Repair Bays

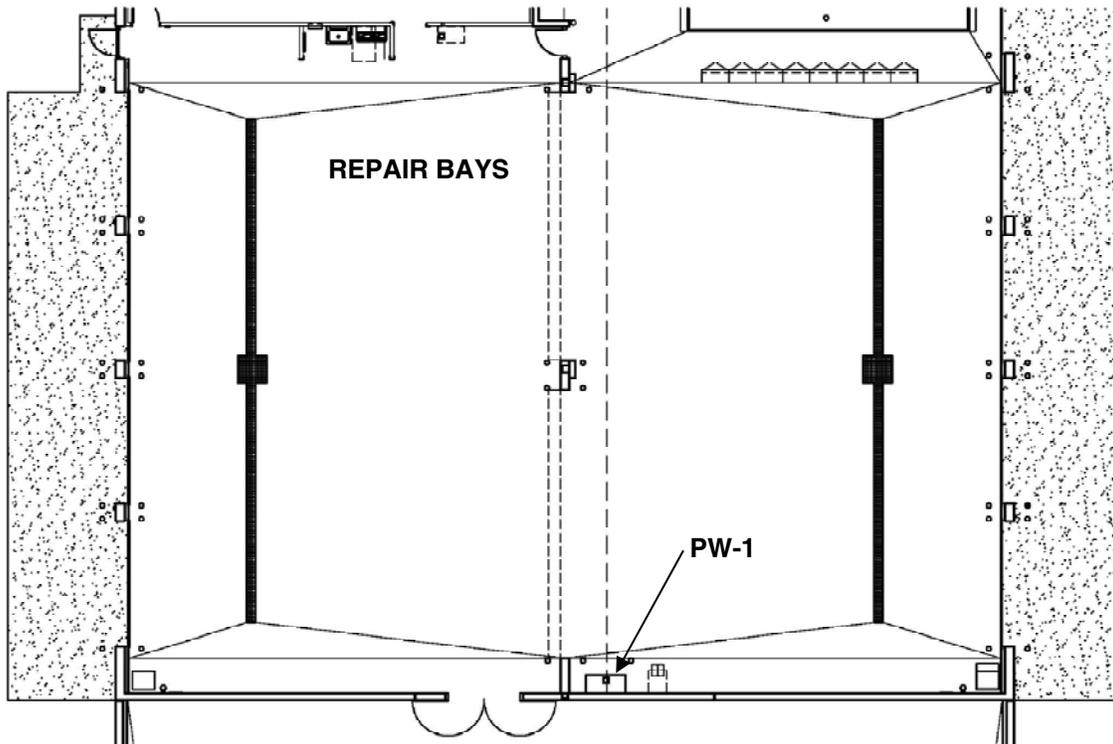
<b>General Information</b>	Uses/Function	Truck Repair
	Assignable Area	812 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	16' minimum clear of all overhead obstructions Open to structure above
	Adjacencies	Maintenance Bay, Storage Bays
	Accessibility	ADA
	Occupancy Type	S1
	<b>Finishes/Treatments</b>	Floor
Base		6" Concrete Curb
Walls		Painted A/C grade plywood
Ceiling		None
Doors		14' H x 14' W Overhead Door
Door Hardware		Standard OH Door hardware
Windows		High Bay Windows or Clerestory
Acoustics		None
Signage		None
Special Requirements		None
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	Outlets Per Code 50 amp special purpose outlet
	Mechanical	Low intensity gas fired radiant tube heating Air Line on Hose Reel
	Plumbing	3' x 3' Catch Basin w/trench drains

# 03 | BUILDING REQUIREMENTS

		Water line on Hose Reel
	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	Pressure Washer – locate along exterior wall 5 ton trolley hoist - overhead

PRESSURE WASHER PW													
PLAN CODE	INPUT (BTUH)	FUEL	GPM	FUEL TYPE	DIMENSIONS			POWER				MANUFACTURER & MODEL NO.	COMMENTS
					WIDTH	LENGTH	HEIGHT	VOLTS	AMPS	PHASE	HP		
PW-1	350,000	P	4.0	TYPE B	24"	53"	48"	208	27	3	8	LANDA #VHGH-30024	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

- ① INSTALL PER MANUFACTURER'S RECOMMENDATIONS ② TIME DELAY SHUTDOWN ③ ELECTRONIC IGNITION ④ STAINLESS STEEL COIL WRAP  
 ⑤ 4-PANEL STAINLESS SKIRT & COVER ⑥ HOSE REEL RECEPTACLE ⑦ CONTROL PANEL & GAUGES ⑧ 420 STAINLESS STEEL NOZZLE ⑨ BACKFLOW PREVENTION WATER SUPPLY SYSTEM ⑩ INSULATED TRIGGER SPRAY GUN ⑪ 150' OF 3/8" ID DOUBLE BRAIDED STEEL HOSE MEETING SAE100R2



## 03 | BUILDING REQUIREMENTS

### No. 10

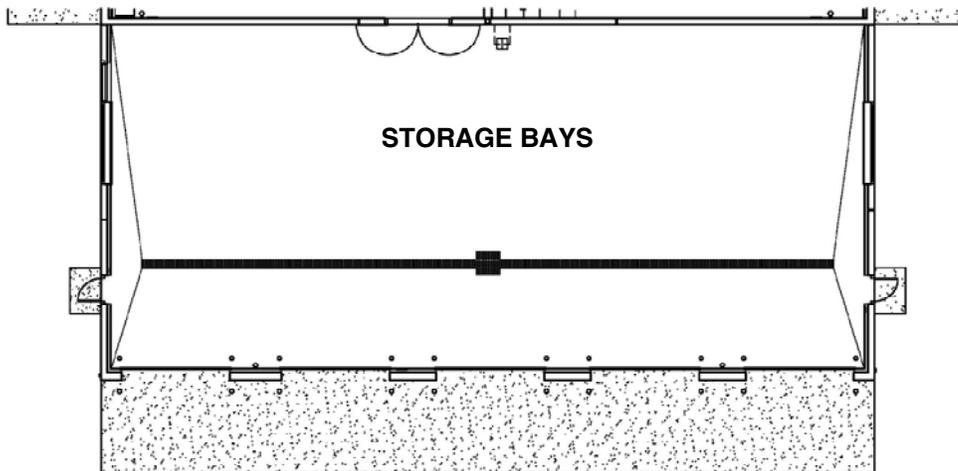
#### ROOM DATA

#### Storage Bays

<b>General Information</b>	Uses/Function	Misc. Storage
	Assignable Area	872 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	16' minimum clear of all overhead obstructions Open to structure above
	Adjacencies	Repair Bays
	Accessibility	ADA
	Occupancy Type	S1
	<b>Finishes/Treatments</b>	Floor
Base		6" Concrete Curb
Walls		Painted A/C grade plywood
Ceiling		None
Doors		14' H x 14' W Overhead Door 8' W x 8' man doors
Door Hardware		Standard OH Door hardware Hold Open w/fusible links
Windows		Yes – 2 Insulated Fiberglass w/plywood sills
Acoustics		None
Signage		None
Special Requirements		None
<b>Engineering Systems</b>		Lighting
	Electrical	Outlets Per Code 50 amp special purpose outlet

## 03 | BUILDING REQUIREMENTS

	Mechanical	Low intensity gas fired radiant tube heating Air Line on Hose Reel
	Plumbing	3' x 3' Catch Basin w/trench drains Water line on Hose Reel
	Fire Protection	Required
	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
<b>FFE</b>	Fixed Equipment	None
	Movable Equipment	None
	Window Treatment	None



## 03 | BUILDING REQUIREMENTS

### No. 11

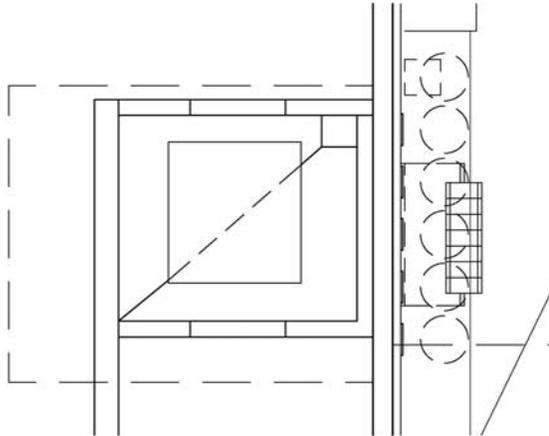
#### ROOM DATA

#### Exterior Waste Oil Storage

<b>General Information</b>	Uses/Function	Used Oil Storage
	Assignable Area	85 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	Varies
	Adjacencies	Maintenance Bays
	Accessibility	N.A.
	Occupancy Type	S1
<b>Finishes/Treatments</b>	Floor	Concrete w/Xypex & Oliophobic Sealer
	Base	Concrete w/Xypex
	Basin Walls	Concrete w/Xypex
	Ceiling	Covered Canopy
	Doors	None
	Door Hardware	None
	Windows	None
	Acoustics	None
	Signage	None
	Special Requirements	None
<b>Engineering Systems</b>	Lighting	Fluorescent
	Electrical	None
	Mechanical	None
	Plumbing	None
	Fire Protection	None

## 03 | BUILDING REQUIREMENTS

	Security	None
<b>Technology</b>	Voice	None
	Data	None
	TV	None
	Other Technology	None
	<b>FFE</b>	Fixed Equipment
	Movable Equipment	None
	Window Treatment	None



**EXTERIOR WASTE OIL STORAGE**

### 3.4 Technical Design Requirements

#### A. Civil

##### Civil Overview

Civil design shall meet standards set forth in the DFCM Design Manual as applicable to this project.

##### Codes and Standards

Comply with Federal, State and local codes including the 2012 International Building Code and ADA regulations.

##### Site Standards

The site will be designed to meet the needs of the development. Roads will be planned to maintain sufficient accessibility and mobility for the site. Parking will be planned for the minimum number of stalls needed for the site with handicap stalls meeting ADA regulations. The standard size for parking stalls will be 9' wide by 20' long or 18' long with a 2' overhang.

##### Pavement Standards

A geotechnical report for the proposed building site has been completed by GEM Engineering Inc, dated May 10, 2011. Pavement will be designed and constructed in accordance with the parameters specified in the geotechnical report. Areas that will have excessive amounts of salt from storage and washing will be designed with zero-void asphalt.

##### Grading Standards

The grading will be designed to meet the development requirements, maintain drainage, and provide safety under all site conditions. Special consideration will be given for all types of weather and lighting. Finished floor elevations will be given for each building. Areas that will have excessive amounts of salt from storage and washing will flow towards a retention basin. The following grading standards will be followed.

##### Concrete:

- 0.50% Minimum Slope
- Maximum Slope is recommended to be under 5.00% unless otherwise necessary.

##### Asphalt:

- 1.50% Minimum Slope
- Maximum Slope is recommended to be under 5.00% unless otherwise necessary.

### Utility Piping

All piping to be installed per manufacturers recommendations. A minimum of 10' separation between water and sewer mains will be required. A sand/oil separator and sampling manhole will be required for floor and/or trench drains prior to connection to the sewer. The following materials will be used for the design. More detailed information shall be provided with the project specifications.

#### Culinary Service Laterals:

- ¾" Diameter to 2" Diameter: Copper Tube ASTM B, Type K, Soft Temper.
- 2.5" Diameter to 3" Diameter: HDPE PW3408 Poly Pipe, DR9.
- 4" Diameter and Greater: AWWA C-900 Class 200 Pipe.

#### Irrigation Water Lines:

- AWWA C-900 Class 200 Pipe.

#### Water Main Lines and Fire Lines:

- AWWA C-900 Class 200 Pipe or
- Class 350 Ductile Iron Pipe.

#### Sanitary Sewer Lines and Service Laterals:

- PVC Sewer Pipe, ASTM D-3034 Type PSM, SDR-35.

#### Storm Drain and Roof Drain Lines:

- 10" and Smaller: PVC Sewer Pipe, ASTM D-3034 Type PSM, SDR-35.
- 12" to 21" Pipes: Concrete Pipe, ASTM C14, Class III (up to 13' cover).
- 24" and Greater: Reinforced Concrete Pipe, ASTM C76, Class III (up to 13' cover).

Utilities will be designed with the following slopes.

#### Sanitary Sewer Lines and Service Laterals:

- 4": 2.00% Minimum Slope
- 6": 1.00% Minimum Slope
- 8": 0.40% Minimum Slope
- All sizes: 8.00% Maximum Slope

#### Storm Drain and Roof Drain Lines:

- 0.50% Minimum Slope unless otherwise necessary.
- No maximum slope specified.

### Testing and Inspections

DFCM's selected special inspector, shall perform periodic testing, and special inspections. Costs for special inspections and testing services will be paid for directly by DFCM.

The Design-Build A/E shall provide construction observations as outlined in section 4.6 of the DFCM Design Criteria for Architects and Engineers and the Design-Build agreement and shall list all required special inspections on the contract drawings.

### B. Structural

#### Structural Overview

The structural system is to be designed based upon the exterior envelope approach taken. Concrete spread footings and foundation walls are typical but analysis of proper support system and cost efficiencies will be required for envelope used in the teams approach.

#### Structural/Service Coordination

Layout of the structural grid will be adjusted to correspond to the efficient component layout selected, keeping in mind that column spacing cannot be less than 16'-0". Consideration of the doorway openings shown in the architectural drawings is important.

#### Codes and Standards

The building structure shall be designed in accordance with the 2012 International Building Code (IBC 2012) as an Occupancy Category II building.

#### Geotechnical Criteria

A geotechnical report for the proposed building site has been completed by GEM Engineering Inc, dated May 10, 2011. The foundations of the building shall be designed and constructed in accordance with the parameters specified in the geotechnical report.

The report indicates that conventional concrete spread footings bearing on structural fill can be used to support the building. Soft and collapsible soils are to be expected so the report recommends that the foundations be supported on a minimum of 24" structural fill over suitable native materials. The minimum depth would be the larger of 24" below the existing ground level or 24" below the bottom of the footings. The structural fill is to extend at least 5' on either side of the footings. For example, if the footing is 2' wide, the width of the 24" structural fill would be 12'; centered under the footing. The on-site soils are expected to be suitable for reuse as structural fill. The allowable soil bearing pressure is stated as 1500 psf.

#### Loading Criteria

The following minimum requirements should be anticipated when designing the structural system(s):

- Wind: 90 MPH Exposure C, I=1.0
- Seismic:  $S_s=0.687$ ,  $S_1=0.216$ , Site Class D ( $SD_s=0.572$ ,  $SD_1=0.284$ )
- Roof Live Loads: 20 psf (Unreducible)
- Snow Loads: 43 psf ground snow, I=1.0,  $C_t=1.2$ ,  $C_e=0.9$

### Future Building Expansion

Future expansion or changes in use are not anticipated, but this topic must be discussed and decided upon by the design team in the early phases of the design process so that any required provisions can be included into design requirements. (Presently, the building is specified as a Occupancy Category II building which would allow for a change in use. Under the current anticipated use with a small number of users we could possibly justify the building to be an Occupancy Category I building which would have  $I=0.87$  for wind and  $I=0.8$  for Snow loads)..

### C. Mechanical

The Mechanical system design shall be in accordance with the DFCM Design Manual as applicable to this project. Comply with Federal, State and local codes including the 2012 International Building Code, International Mechanical Code, International Energy Conservation Code and the International Fuel Gas Code.

#### Office Area Design:

Winter Temperature: 70 to 74 Deg. F., RH = 25-30%  
Summer Temperature: 72 to 74 Deg. F., RH = 40 to 60%

#### Truck Maintenance Repair and Storage:

Winter Temperature: 60 to 65 Deg. F.

Heat and Cool office areas with a high efficiency gas fired system and DX Cooling with thermostat control of the system as defined in the room data sheets. Provide outside air ventilation to each system and ventilate toilet rooms per code.

Provide a low intensity gas fired radiant tube system for the maintenance, repair and storage areas. Ventilate the repair and maintenance areas per code using CO detection with an override ventilation switch to activate make-up and exhaust air.

### D. Electrical

#### Overview

Electrical design shall meet standards set forth in the DFCM Design Manual as applicable to this project.

#### Codes and Standards:

Codes directly applicable to design of the electrical system are the 2011 National Electrical Code. Current adopted International Building Code, Life Safety Code and National Fire Codes.

## Lighting Systems

Lighting systems for the facility will maximize energy efficiency while providing adequate illumination for performance of specified tasks. Lighting levels will be in conformance with recommended Luminance categories and luminance Values for Lighting Design, IES Lighting Handbook. Total lighting load and control for the facility shall meet the calculated lighting and power budget and requirements of ASHRAE/IES 90.1 Standards.

Lighting System Comparison. Initial and life cycle costs will be compared for major system types , with emphasis on maximizing efficiencies of light sources and utilizing the most efficient luminaires suitable for he task involved. Generally, sources should be fluorescent. Where appropriate, for larger spaces with high ceiling, or exterior areas high intensity discharge sources will be utilized.

Ballast for fluorescent Systems. Ballast for full-sized fluorescent lamps (not compact fluorescent) will be electronic type Class P A rated with a total harmonic current distortion of less than 20% with a power factor of 90% or greater. Lighting regulation shall be limited to +/- 10% with +/- input voltage fluctuation. Ballast for compact fluorescent lamps (when utilized) should be of high power factor. Low temperature ballast will be provided when installed in unheated spaces or in an outdoor environment.

Lamps: Full-sized fluorescent lamps will be T-8 low mercury program start or rapid start type with color rendering index greater than 80. Kelvin rating on lamps shall be 3500K unless specific application warrants warmer or cooler colors.

When determined and appropriate for task or accent lighting incandescent lamps may be used.

Foot Candle levels as listed below are minimum maintained averages for typical spaces. Variations to these levels may be required to accommodate specific space needs.

<u>Space Category</u>	<u>Lighting Level (FC)</u>
Offices	50~65
Conference/Meeting Rooms	50~60
Corridors	10~20
Toilet Rooms	30
Stock /Storage/Equipment Rooms	30
Maintenance and Garage Bays	30~40
Site Lighting	Flood Lighting
Building Lighting	3~5 FC at task area

Exterior Lighting Systems: Site lighting shall be compatable with the levels and lamp type in the surrounding area and adequate for security of the building perimeter. Lighting control shall be either dusk to dawn operation via a

contactor controlled from a photocell or dust to timed off via a contactor and time clock function. Flood lighting controlled by local switches with pilot indication.

**Emergency and Exit Lighting:** Emergency lighting will be provided in accordance with requirements of the Life Safety Code NFPA 101 and installed in accordance with NEC. Source of emergency lighting shall be from Exit Signs with two adjustable heads. Source of emergency lighting shall be from unit battery packs in the Exit sign fixtures or mounted on the walls.

This facility shall be illuminated with fluorescent fixtures in the general garage and maintenances using industrial fixtures other spaces will also utilize fluorescent lamp sources. HID source wall brackets will be used for building lighting to provide security lighting. Building gates lighting to be provided using 25' poles with 400watt metal halide fixtures. Emergency lighting will be via wall packs and fixture intergraded battery packs. All exit signs will be self contained battery type. Exterior Egress Lighting shall be provided from wall mounted fluorescent fixtures with battery back-up at each exiting mandoor.

### **Power Distribution Systems:**

Electrical Service to be provided via a power company owned pad mounted transformer with metering on the exterior of the building in accordance with the Power Companies requirements

Service entrance equipment shall utilize a fused or circuit breaker main with circuit breaker type branch feeds.

Branch circuits will be provided on circuit breakers routed underslab for power circuits and above ceilings for lighting circuits.

Power receptacles are to be located in accordance with the National Electrical Code as a minimum. Additional power receptacles will be located at specific work stations as required for computer and extra equipment requirements.

Mechanical and owner furnished equipment are to be coordinated and powered from the building system based on information provided.

This facility will be designed with duplex convenience outlets on the perimeter walls and additional outlets at the office area.

Special Purpose 50Amp outlets are to be provide in the Maintenance Bays. Exact locations to be coordinated with the Station Manager.

Outdoor outlets may be required for use of Block Heaters on the trucks. Coordination with the Station Manager will be required.

Provisions shall be made to provide a point of input and connection to a portable generator. Generator is likely to be a single phase type.

Distributions system and circuiting shall be made to provide power to all single phase loads.

### **Raceways:**

Electrical metallic tubing (EMT) will be used for branch circuits in dry wall locations and above ceilings.

Galvanized Rigid Conduit (GRC) will be used in all hazardous locations as required by NEC. Rigid conduit shall be used in all underground installations where conduit bends exceed 22 ½ degrees.

Intermediate Metal Conduit (IMC) will be used for main and subfeeders in all areas subject to physical damage.

Metal Clad Cable” (MC) can be used only in dry areas in walls and above ceiling. All MC cables shall be supported in accordance with NEC. All multiple circuit home runs shall change to EMT and run to the branch panel. MC cable only to be used as approved during bidding.

Rigid Plastic Conduit – Schedule 40 PVC will be used for main service feeds, subfeeders and branch circuits where run below grade or under slabs.

Minimum conduit size to be ¾” except ½” may be used for HVAC control circuits.

### **Conductors:**

All conductors shall be copper 600volt rated with THHN/THWN or XHHW insulation. All conductors shall be sized in accordance with NEC ampacity tables. Conductor temperature ratings shall be 75 Degree C unless noted otherwise.

### **Special Systems:**

Telephone/Data: A system of telephone/data outlets, raceways, backboxes, grounding etc. will be provided throughout the building for a completed telephone/data raceway system. Each outlet shall have a dedicated ¾” run to the Telephone Terminal Board. Telephone service shall via a 4” Conduit from a ground junction box per State IT Department Standards

Fire Alarm System: A fully addressable fire alarms system will be installed in accordance with NFPA 72 and in accordance with requirements of the State Fire Marshal’s Office. The system is to comply with current NFPA standards.

## **E. Plumbing**

### **Overview:**

The Plumbing system design shall be in accordance with the DFCM Design Manual as applicable to this project.

### **Codes and Standards:**

Comply with Federal, State and local codes including the 2012 International Building Code, International Mechanical Code, International Plumbing Code, International Energy Conservation Code and the International Fuel Gas Code.

### **Plumbing Systems:**

Roof drain, sanitary sewer and sanitary vent shall be cast iron meeting ASTM A 74 extra heavy pipe below grade and ASTM A 888 pipe above grade. Waste drainage in the repair and maintenance bays shall be through a sand, oil and gas trap.

Domestic hot water shall be generated with a high efficiency water heater.

Hot and cold water piping shall meet ASTM A 53, Type L copper, hard drawn with wrought copper fittings. Install freeze proof hose bibs on each orientation of the building.

Provide plumbing fixtures as identified. Fixtures shall be commercial grade with tank type water closets. Provide 12" wide trench drain and a 36" x 36" catch basin rated for truck traffic in the repair and maintenance bays. The trench drain and catch basin shall be easily cleanable.

Provide compressed air and lubrication system complete with hose reels and pumps fluids and waste oil system as required by UDOT and identified in the room data sheets. Compressed air piping shall meet ASTM B 88, type L copper tube with wrought fittings.

Provide fire protection as required by DFCM, NFPA 13 and International Building Code requirements.

### 4.1 Project Cost:

**The maximum funds available are \$2,262,000.00.**

It is the intent of the State of Utah that the Bidders utilize the maximum funds available to provide the maximum project quality, scope and adherence to functional requirements within this spending allocation. Bids received in excess of this amount are highly discouraged.

# 05 | PROJECT SCHEDULE

## 5.1 Project Schedule:

PROJECT NAME: UDOT Maintenance Facility, Salina, Utah DFCM PROJECT NO. 12335900				
Event	Day	Date	Time	Place
RFP for Design/Build Teams Stage I Available	Tuesday	November 26, 2013	2:00 p.m.	DFCM website *
<b>Mandatory</b> Pre-submittal Meeting	Tuesday	December 3, 2013	10:00 a.m.	<b>DFCM</b> 4110 State Office Bldg. SLC, UT Conf. Room 4112
Last Day to Submit Questions	Friday	December 6, 2013	10:00 a.m.	Brent Lloyd - DFCM Email: brentlloyd@utah.gov
Addendum Deadline (exception for bid delays)	Wednesday	December 11, 2013	2:00 p.m.	DFCM website *
Management Plans, References, and Statements of Qualifications, and Termination / Debarment Certifications Due	Tuesday	December 17, 2013	12:00 Noon	DFCM 4110 State Office Bldg. SLC, UT ATTN: Denise Austin
Short Listing - Stage I	Friday	December 20, 2013	<b>T.B.A.</b>	DFCM website *
Announcement of Finalists	Monday	December 23, 2013	4:00 p.m.	DFCM website *
Stage II RFP Documents Available	Monday	December 30, 2013	2:00 p.m.	DFCM website *
<b>Mandatory Stage II Meeting</b>	Monday	January 6, 2014	2:00 p.m.	<b>DFCM</b> 4110 State Office Bldg. SLC, UT Conf. Room 4112
Last Day to Submit Stage II Questions	Tuesday	January 7, 2014	11:00 a.m.	Brent Lloyd - DFCM Email: brentlloyd@utah.gov
Addendum Deadline (Stage II)	Thursday	January 9, 2014	3:00 p.m.	DFCM website *
Stage II Submittals Due	Wednesday	January 29, 2014	12:00 Noon	DFCM 4110 State Office Bldg. SLC, UT ATTN: Denise Austin
Team Interviews	Wednesday	February 5, 2014	<b>T.B.A.</b>	<b>T.B.A.</b>
Announcement of Selected Team	Thursday	February 6, 2014	12:00 noon	DFCM website *
<b>Substantial Completion Date</b>	Monday	December 1, 2014		

\* DFCM's web site address is [www.dfc.utah.gov](http://www.dfc.utah.gov).



**6.1 Project Specifications**

**SEE APPENDIX.**

## 07 | SITE TECHNICAL INFORMATION

### 7.1 Geotechnical Investigation Report

SEE APPENDIX.



