

UDOT :: HOOPER MAINTENANCE STATION

Volume 1 of 2



:: Hooper Maintenance Station | Programming



October 2014

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1.1 Project Justification

Existing Maintenance Station History

UDOT currently owns a 6.7 acre property in Clinton located at 2057 West 1800 North where it currently operates a maintenance facility. UDOT has acquired 9.12 acres of property in Hooper located at 5600 W. 5500 South where the Utah Department of Transportation (UDOT) will be developing a new maintenance complex. The site is currently greenfield property used primarily for farming.

The existing station is no longer adequate for UDOT's needs. UDOT has the ability to operate out of the current station until funds become available to build a new facility. The main justification for building a new Maintenance complex is to address issues of functionality and security that could not be resolved through renovations of the existing buildings. Construction of a new complex will allow the site and structures 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 Hooper Maintenance Station Design-Build Summary

The new Utah 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, site work (including pavement and drainage ponds), utilities and perimeter fencing are required for a completed facility (more detailed explanation later in this document). Accessory structures including Salt Storage Building, Sander Racks (Min. of 10 bays), Wash Rack, Brine Mixing Area and Fuel Station are desirable program elements to be included in the completed complex 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.

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 Design/Build teams from proposing different exterior building envelope systems. Nonetheless, UDOT recognizes that various exterior envelope systems have differing initial costs, life cycle costs, performance characteristics and overall service life outcomes.

In order to help evaluate the relative merits of different solutions that may be proposed, UDOT is tasking each Design/Build team with providing UDOT and DFCM a facility with a building envelope service life of at least fifty (50) years. It will be incumbent on the Design/Build team to describe to UDOT and DFCM in their stage 2 proposal submittal, including narratives, drawings and specifications, how this requirement is being met by their specific response. The selection committee reviewing the submissions will, as part of their submittal evaluations, determine how well the Design/Build team has met this requirement.

Project Budget

The Owner is looking for the proposal that provides the most value for the funds provided. The state has allocated \$2,100,000.00 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. Bids submitted in excess of the stated budget amount are discouraged.

After the bidder has met the base bid requirements, any remaining funds beyond this amount should be utilized for the provision of additional desirable program elements as described herein.

Provide a fully functional facility

UDOT desires to obtain a new maintenance complex with their functional and programmatic needs fully met. The new Maintenance Station must result in a building 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 recent facilities (Kamas, Salina and Lehi) as reflected in this program document.

Project Schedule

In accordance with DFCM requirements.

Program Conformance

If the Design/Build team is not in conformance with any requirement of this program, the Design/Build team will be required to define each area of non-conformance in their RFP response.

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.

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.dfcu.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.dfcu.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 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	10	800	8000
Storage Bays	5	888	4440
Mechanical / Electrical	1	250	250
Janitorial Area	1	40	40
Exterior Waste Oil Storage	1	85	85
Net Total Square Footage			15280
Common Areas (net x 9.5%)			1452
TOTAL			16732

Salt Storage Building:

ROOM/SPACE	# OF ROOMS	S.F.	TOTAL S.F.
Salt Storage 52'x78'	1	4056	4056
Cold Patch Area 12'x15'	1	180	180
High Performance Mix 40'x15'	1	600	600
Total Square Footage			4836

2.1 Site Analysis

a. Site Background

The new Maintenance station will be located in Hooper City which is approximately 37.15 miles north of Salt Lake City, in Weber County.

Hooper was first called Muskrat Springs and later Hooperville for Captain William H. Hooper, an early delegate to Congress. The City has a total area of 11.7 square miles, with a population of 7,218. Hooper's elevation is set at approximately 4,242 feet.

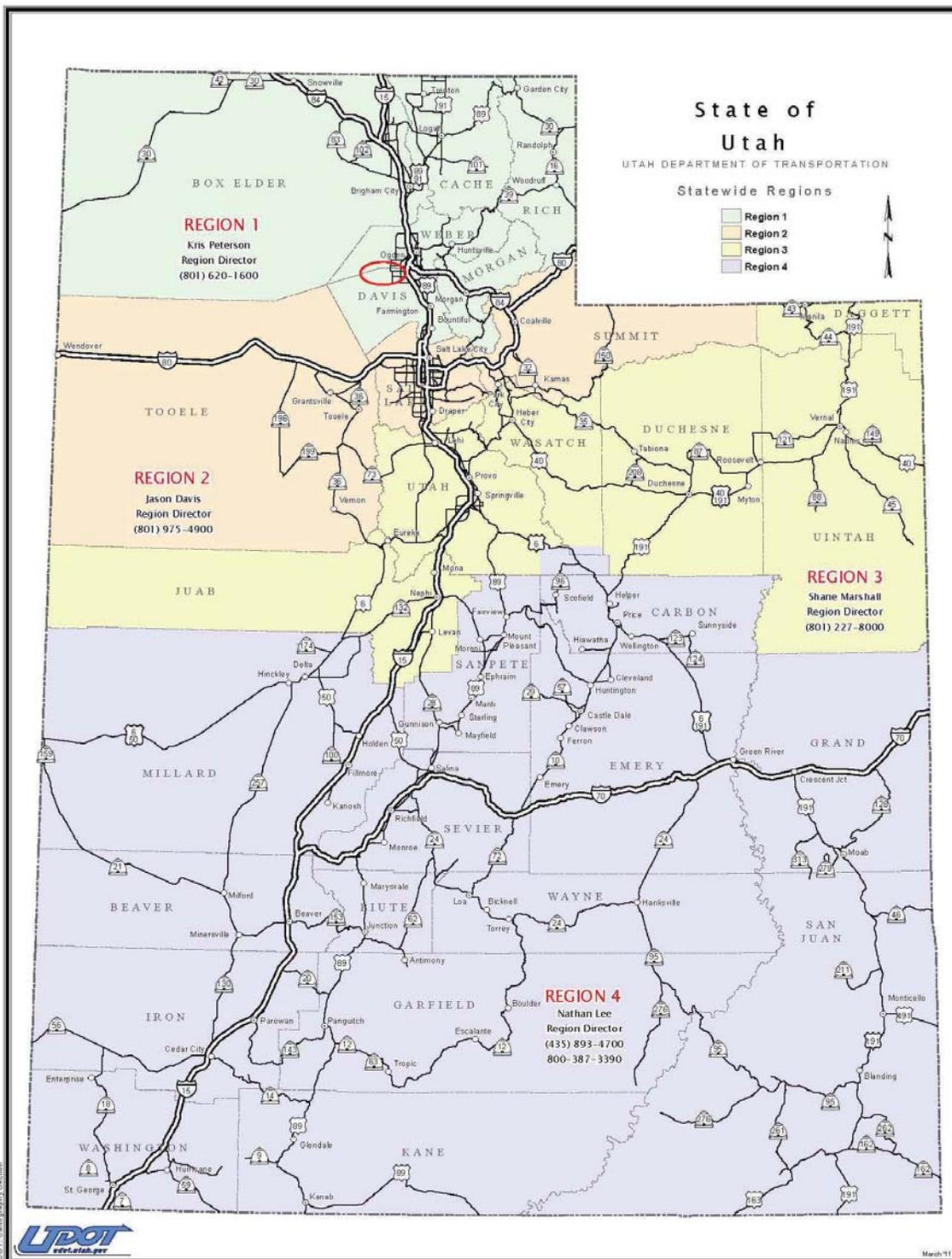
Hooper is located on part of the Western slope of the Alluvial Fan which was formed by Ancient Lake Bonneville during the ice age. Hooper is situated "downstream" between the mountains on the east and the lake on the west. Underground water, in an attempt to reach the lake, gives Hooper a high water table. Basements, as a rule, are not practical in Hooper. Man-made ditches were very important to the earlier settlers. In 1866 a petition was granted to build a canal. The canal was dug by hand labor.

William H. Hooper owned a large herd of cattle and built an adobe house as a shelter for his herdsmen about 1854. It consisted of four rooms on the ground floor and two rooms upstairs. It had a dirt floor, a porch on the south side, and a two-room lean on the north. This was the first building in Hooper. It was well built and sturdy and stood for many years and was used by early settlers for many purposes. Sagebrush, saluratus, salt grass, rabbits, ducks, sage hens and salt at the lake were plentiful here at the time. When permanent residents began moving into the area, the Hooper herd house was moved west to Skull Valley. Someone knowing of the greatness of William H. Hooper honored him by giving it his name.

The James Hale family was Hooper's first permanent family. With trouble brewing all around, in 1862, James took his family to Hooper. Among the first settlers to Hooper were Thomas Hull and Mary Benson and their family. They came from Franklin, Idaho.

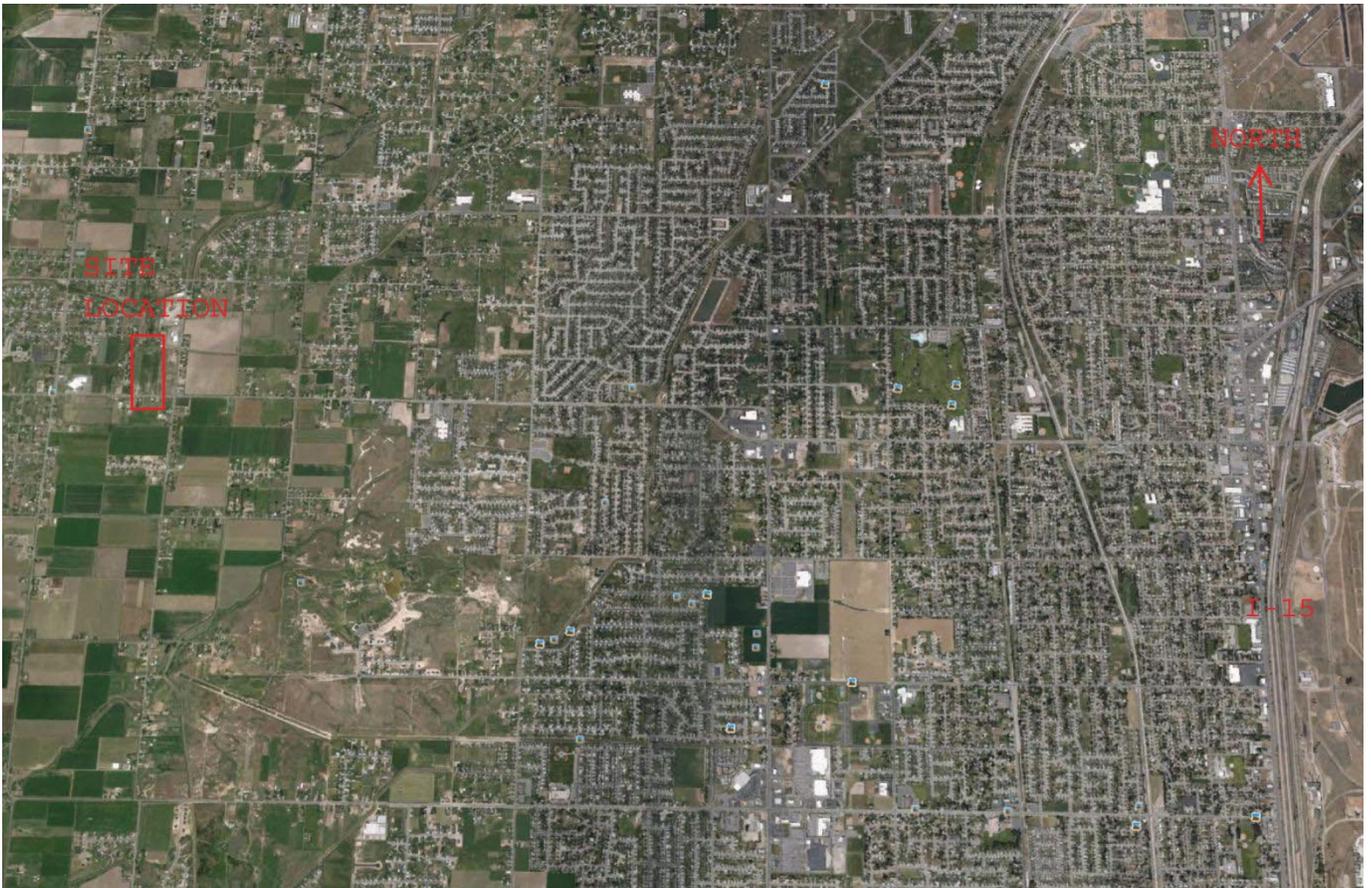
Farming was the main industry in the beginning. Chief crops at first were hay, grain, and vegetables. Beef and dairy cows were raised for meat, butter, milk and cheese. Horses were raised for work animals and riding stock. Soon they began planting trees for fruit and shade. Some planted trees, black willows and white willows, for wind breaks, to stop drifting of sand, and to protect the crops such as wheat, oats, barley, rye, corn and sugar cane. Most early settlers of Hooper purchased their section of ground from the Railroad.

The Hooper Maintenance Station is located in UDOT Region 1.



b. Site Location

The new UDOT site is located approx. 4.8 miles west of the I-15 Roy Exit 338. The site is accessed off of 5500 South street at approx. 5500 West. There are residential lots on each side of the property as well as across the street to the South. There are currently no sidewalks for pedestrian access on the North side of 5500 South. Low overhead power lines currently stretch across the property entrance, with a power pole at the center of the access.



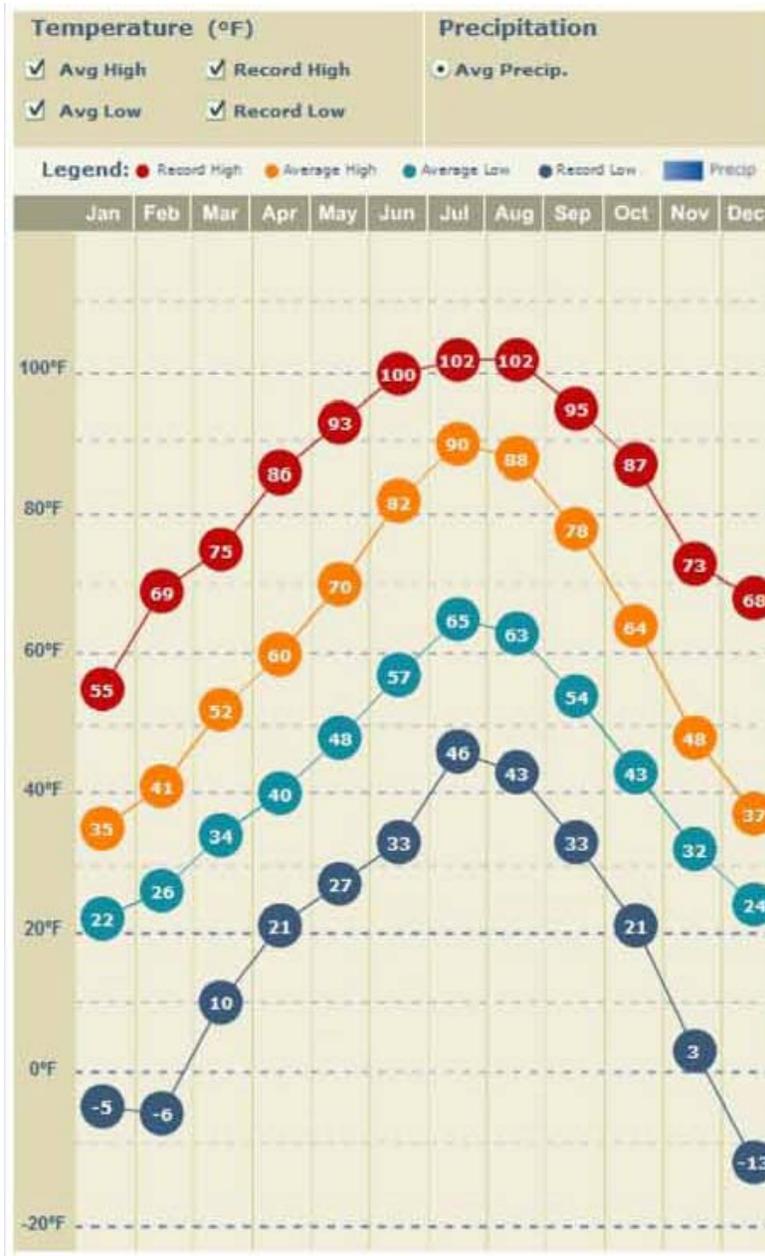
Area Map



Site Location Map

c. Regional Climate

The project site for Hooper, UT is positioned at: 41° 09' 50" N, 112° 07' 21" W. The elevation is: 4,242 feet above sea level.



Average Monthly Temperature

d. Views of Project Site

The site has virtually unobstructed views in all directions, with small residential structures on the East and West sides. The existing property is currently being used to grow onions by a local farmer. UDOT's site is fairly flat but does have a drop of approx. 4' from the south end of the lot with an elevation of approx. 4241 at the street to the north end, elevation of approx. 4237. The cross slope of the site from east to west is virtually level.



North View



South View



East View



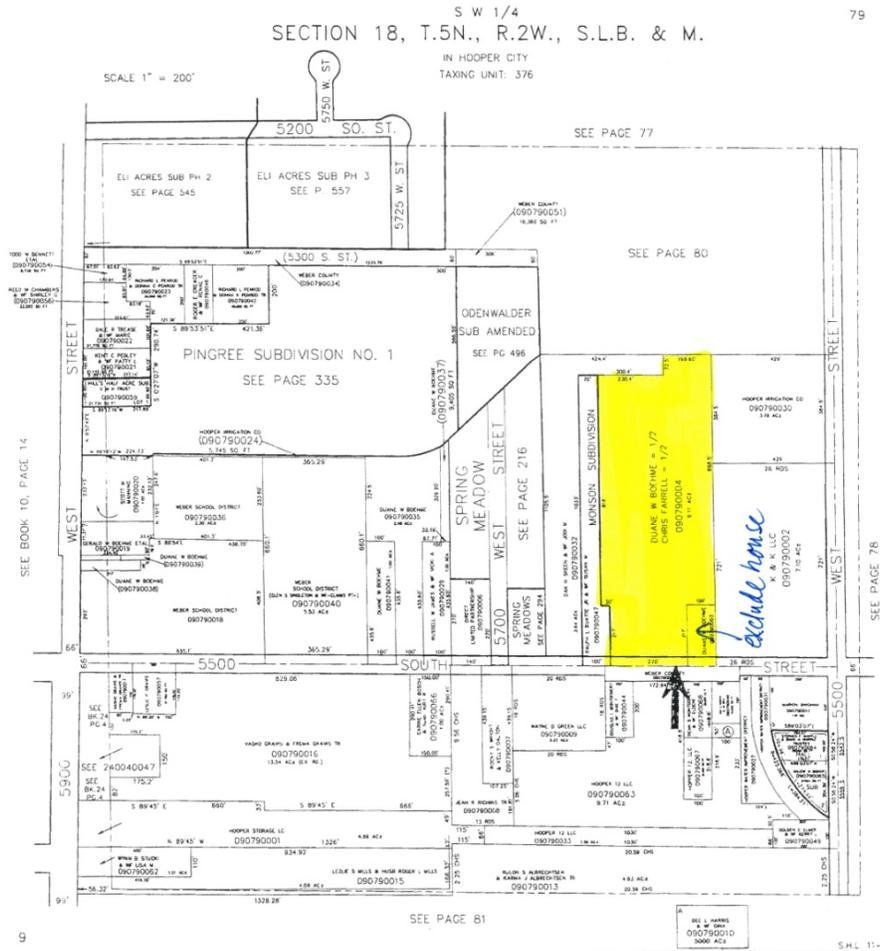
West View

02 | SITE ANALYSIS & REQUIREMENTS

e. 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.

"DFCM has had an ALTA survey prepared, but they are not part of the programming/performance specification documents. The ALTA survey presents limited site information. The ALTA survey document is not a warrant of site conditions. The document was not intended to define site conditions in sufficient detail for the Contractor proposals and bidding. The Contractor must draw its own conclusions and perform additional site surveys as necessary. The DFCM will not be responsible for interpretations or conclusions drawn by the Contractor concerning the site from the information contained in the ALTA survey prepared for DFCM."



f. Geotechnical Investigation Report

See the recently provided geotechnical information attached to this document in the appendix.

"DFCM has had a geotechnical report prepared, but they are not part of the programming/performance specification documents. The geotech report presents limited site information. The geotech report document is not a warrant of site conditions. The document was not intended to define site conditions in sufficient detail for the Contractor proposals and bidding. The Contractor must draw its own conclusions and perform additional geotechnical investigations as necessary. The DFCM will not be responsible for interpretations or conclusions drawn by the Contractor concerning the site from the information contained in the geotechnical report prepared for DFCM."

2.2 Existing Site Utilities

a. Existing Utilities Summary

General Note:

All utility connections and storm water requirements will need to meet Hooper Standards and requirements. They shall be installed per manufacturer'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 Hooper Improvement District, the locally available municipal culinary water system. A 12" water main is located on the south side of 5500 South Street. Impact fees are anticipated to be a one-time fee of \$5772.80 for a 2" connection, which covers the Weber Basin Hook-up Fee.

Gas:

A 4" Steel IHP Gas line is available and located just south of the south edge of asphalt on 5500 South Street. No gas impact fees will be charged to this project. Installation costs are anticipated to be approximately \$2,000 to \$3,000.

Sewer:

The maintenance station will need a 4" Schedule 40 PVC sanitary sewer service. This service shall be connected to the available municipal sewer system in 5500 South Street. An existing 3" vacuum sewer line is located in 5500 South Street 8". This development will be required to install a Vacuum Valve Pit set at an elevation to provide adequate slope from the building to the Vacuum Valve Pit.

Sewer impact fees will be approximately \$2300.00 to \$2600.00 paid to Central Weber Sewer District and the sewer connection fees are anticipated to be \$8800.00 paid to Hooper City.

Storm Drain:

The site will be required to detain/retain additional storm water runoff caused by this development. Hooper City requires storm water system with piping based on a 10 year – 1 hour storm and detention based on a 100-year frequency rate, with an allowable discharge of 0.15cfs per acre. The nearest Hooper City storm water collection system is at the intersection of 5700 West and 5500 South, approximately 385 feet West of the south west corner of the proposed project. This will require a detention/retention pond and 12" to 24" RCP storm drain piping. According to Hooper Public Works Department, there are no impact fees at this time.

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. Impact / connection fees are anticipated to be around \$25,000.00.

Irrigation:

The nearest available irrigation system is through Hooper Irrigation company, located in 5500 West Street. Irrigation water is anticipate to be supplied through Culinary Water Company,

Fire Protection:

The site needs to have a fire hydrant installed. The maintenance building will require fire sprinklers. This service will require a 6" Schedule 40 PVC water line. Fire impact fees for commercial developments are \$240.97 per 1000 s.f. of building. If project is determined to be an industrial development, the impact fees will be \$122.03 per s.f.

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 Development / Civil Design Criteria

a. **Project Development Requirements Summary:**

Minimum site and building development requirements pertain to this Design-Build project:

- i. **Maintenance Building with ten (10) bays for vehicle storage and five (5) bays for additional vehicle and/or material storage as described in detail in this program;**
- ii. **Continuous Perimeter Fencing with automatic entrance gate(s) to be electric, remote controlled with keypad. Minimum of one gate remote controller per vehicle storage bay;**
- iii. **Utility connections;**

- iv. Asphalt paved maneuvering area of at least eighty feet (80') minimum wide, one hundred feet (100') preferred, around all sides of the maintenance building with garage doors. Eleven (11) staff stalls are also required and should be in close proximity to the building.
- v. Detention pond for temporary storage of site run-off, connected to storm drainage system. One hundred year storm event shall be used to calculate pond size.
- vi. Zero-void asphalt pavement for storage of salt and to accommodate salt operations to fully control salt water run-off to the salt. To be sized sufficiently to allow for 2,000 tons of salt pile storage plus maneuvering space for salt loading and unloading operations plus space for a future wash rack;
- vii. Lined retention pond (HDPE double lined) for salt runoff, with sump and pump, to be directly connected to the zero void asphalt area to receive all storm water run-off from this area and to keep salt water run-off from leaving the pond once captured. One hundred year storm event shall be used to calculate pond size;
- viii. Gravel lay-down area of at least one half acre (1/2 AC) for yard storage;
- ix. Utility line extensions terminating at future structure locations not provided;
- x. Area lighting as required for operations (either building or pole mounted).

A site master plan is required of all submitters illustrating how these requirements are being met. Additional program elements are requested but not mandatory. In order of priority:

1. Wash Rack
2. Sander Racks
3. Brine Mixing
4. Salt Storage Building
5. Dumpster Enclosure
6. Fuel Station

b. Orientation

It is the Owner's desire to orient the building with the main entrance facing South 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.

c. 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' minimum to 100' around the maintenance building garage door sides. All ADA requirements for access to the building as well as the building functions must be met.

d. Outdoor Spaces

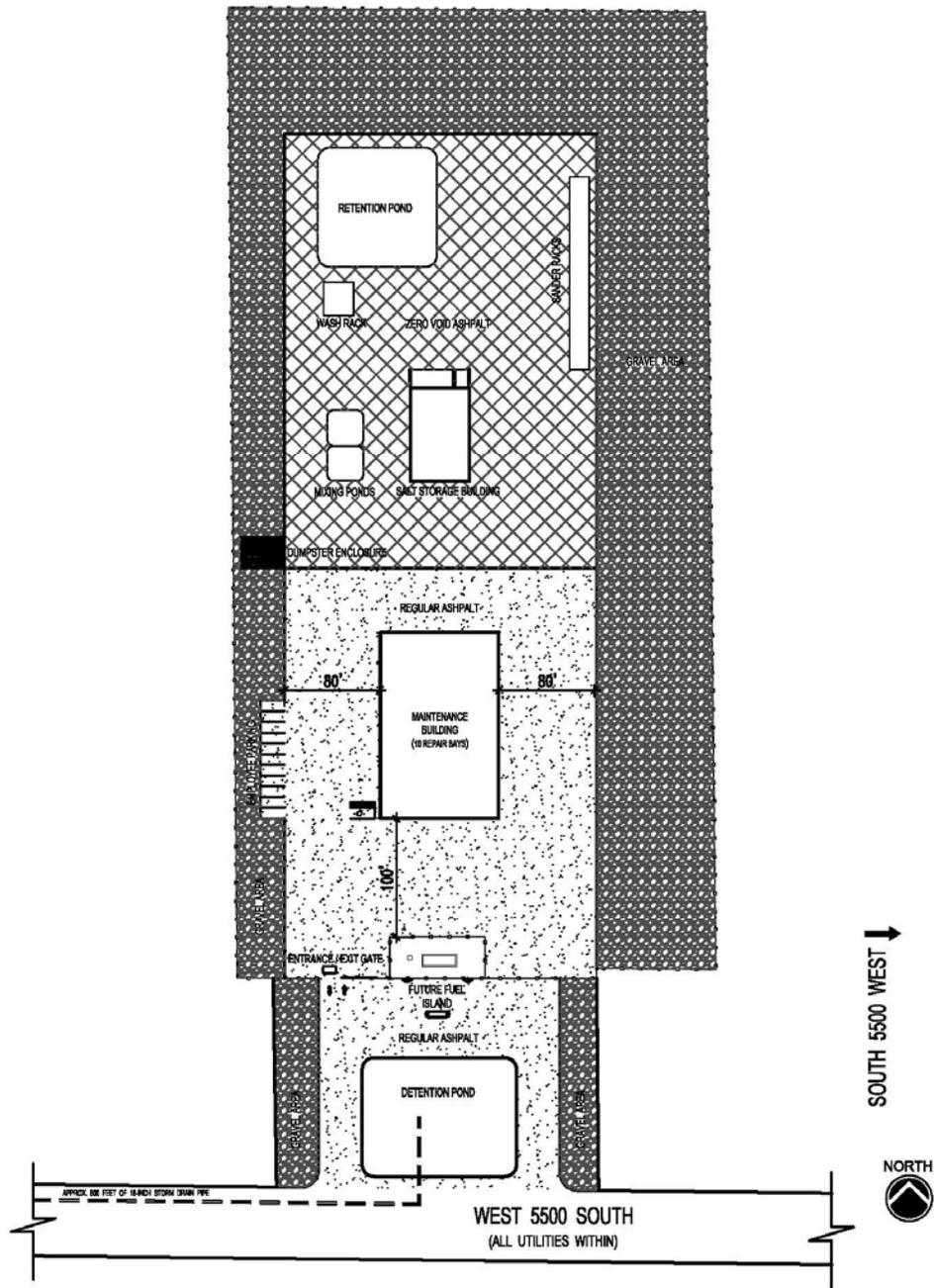
Public and staff parking areas are required. 1 ADA accessible stall, next to main entrance without crossing traffic paths shall be provided. 11 staff stalls are required and should be in close proximity to the building.

For security reasons, UDOT requires the entire site to be fenced. A 6' high fence with (1) motorized dual pivot gate shall be included with the base bid.

e. Outdoor Structures

Outdoor structures are required to provide a fully functioning Maintenance Station to UDOT. A 52' x 78' (2,000 ton) Salt Building, Ten (10) Sander racks, a "U" shaped Wash rack, Brine Mixing Area, Dumpster Enclosure and Fuel Station 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 generic potential site plan on next page:



A1 GENERALIZED PROGRAMMATIC SITE PLAN
SCALE

Site Requirements:

Site Item: Perimeter Fencing and Gate

REQUIRED ITEM

Function: Site Security

Quantity: Surrounding the UDOT Complex Site

Finishes: Galvanized

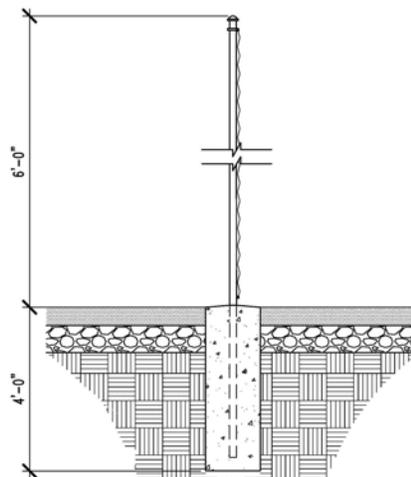
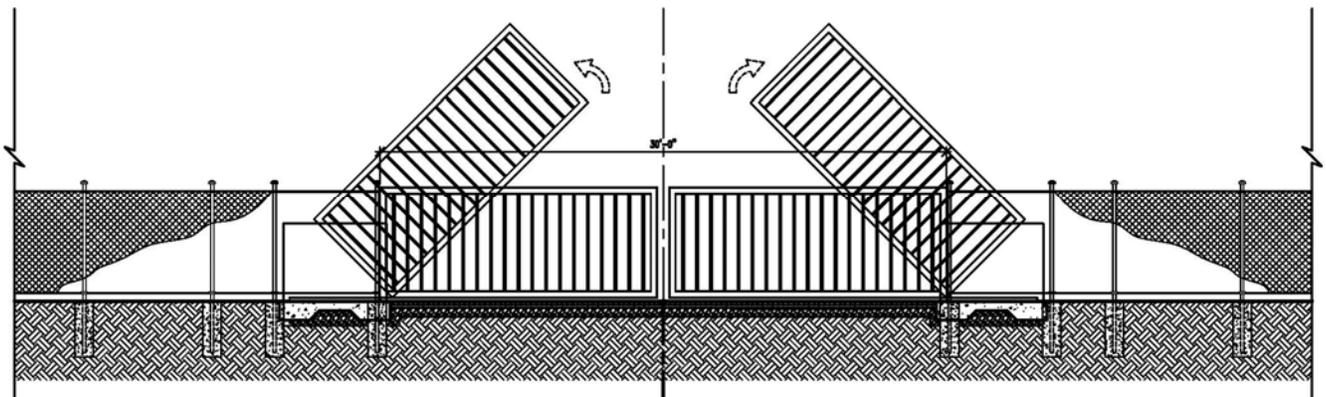
Notes:

Chain Link Mesh: 72" high, 2" mesh 9-gauge wire, galvanized finish

Posts: for line posts 2.875" OD steel pipe (2 1/2" NPS)

Gate: electrically operated, pivot type, 30 foot clear entry, lockable

Basic dimensions as shown below:



02 | SITE ANALYSIS & REQUIREMENTS

Site Item: Wash Rack

OPTIONAL ITEM: PRIORITY 1

Function: Vehicle Wash Platform

Quantity: 1

Net Area: N.A.

Occupants: N.A.

Finishes:

Floor: Asphalt

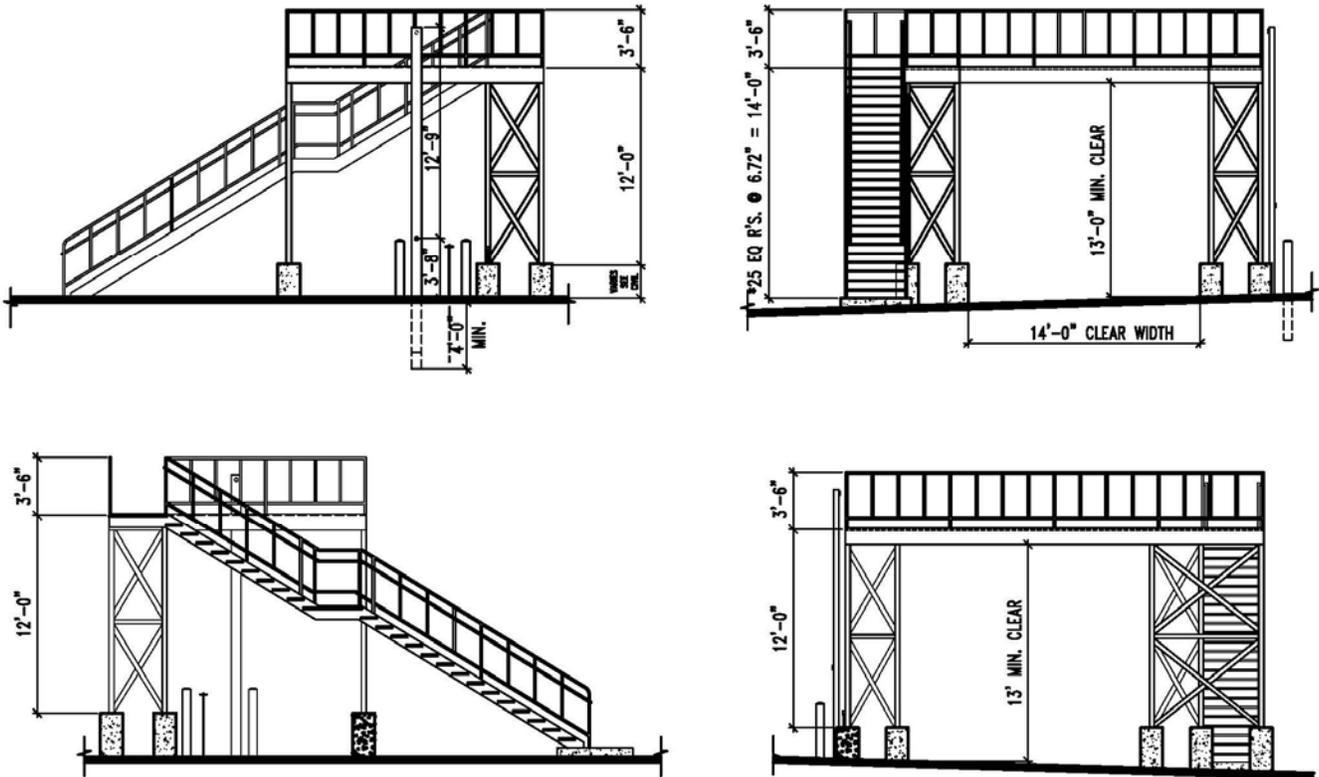
Foundations & Piers: Concrete

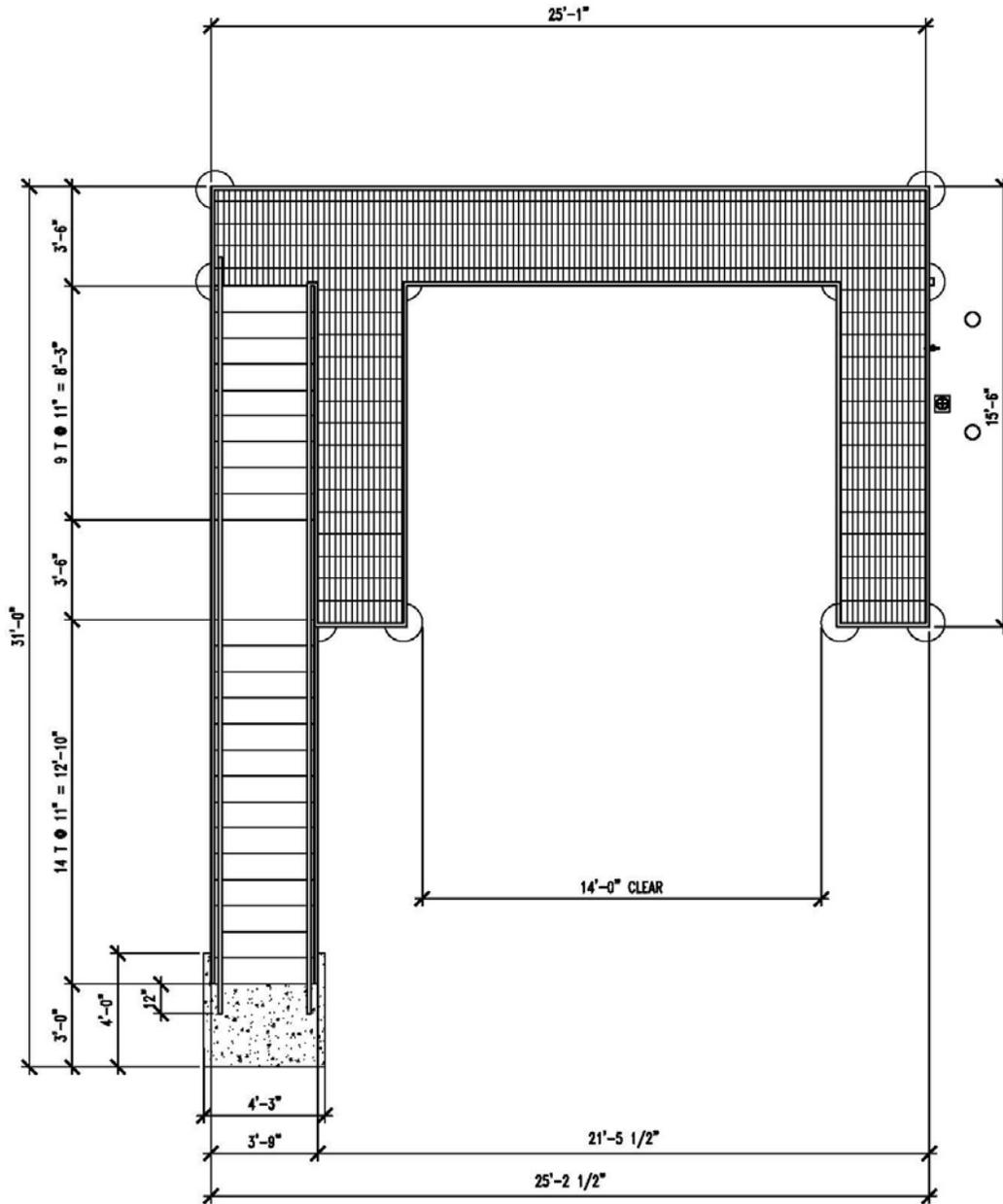
All Exposed Steel Elements: Galvanized Steel

Utilities: 2" Strong Pressure Water Line with valve box located below the frost line

Notes:

Dimensions as shown below:





02 | SITE ANALYSIS & REQUIREMENTS

Site Item: Sander Racks

OPTIONAL ITEM: PRIORITY 2

Function: Suspended Storage of Sanders

Quantity: 10 Bays required (8 shown in diagram below)

Net Area: N.A.

Occupants: N.A.

Finishes:

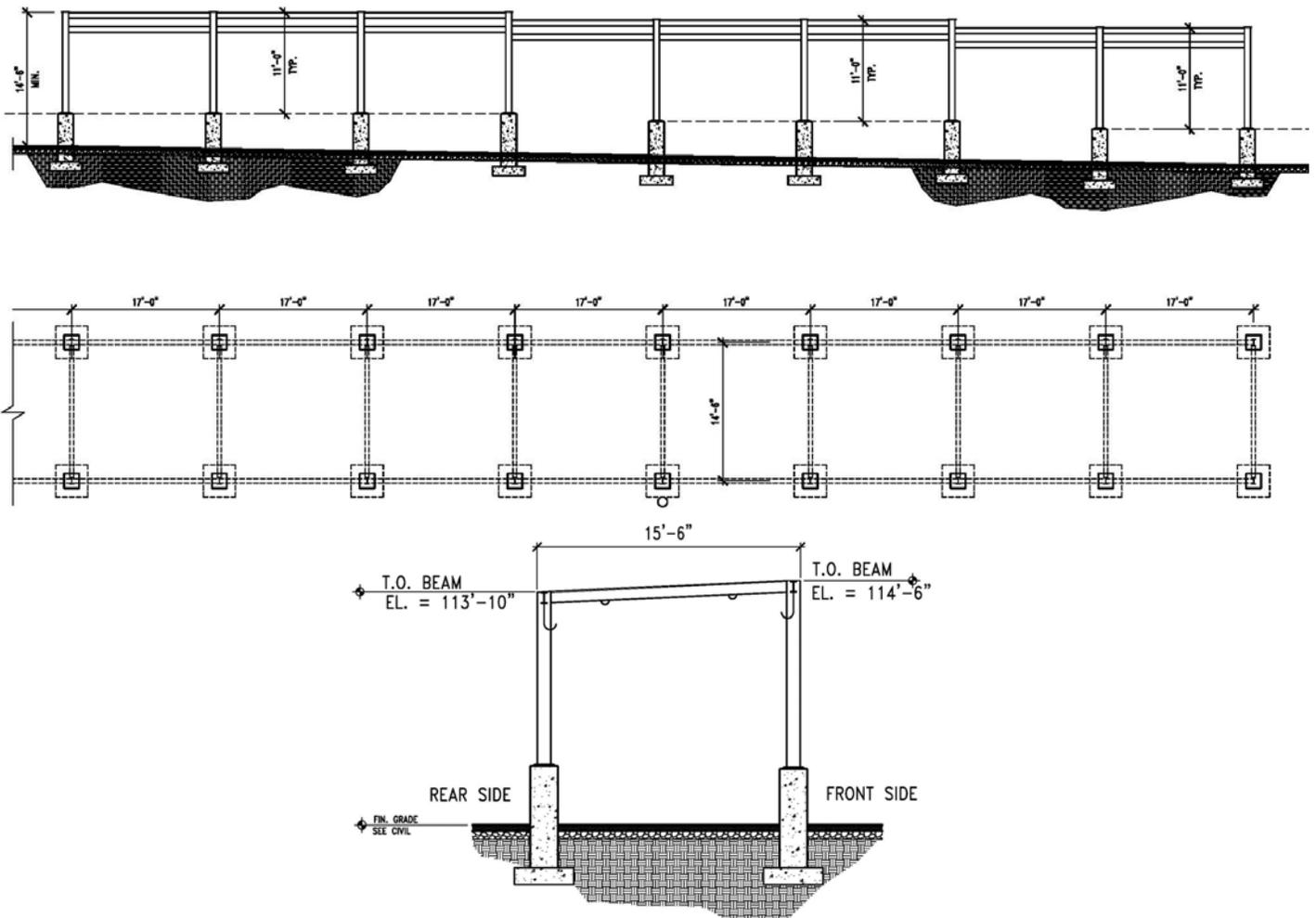
Floor: Asphalt

Foundations and Piers: Concrete

All exposed steel elements: Galvanized Steel

Utilities:

Provide conduits mounted to overhead steel for future electrical use, extend to main panel.



Site Item: Brine Mixing Area

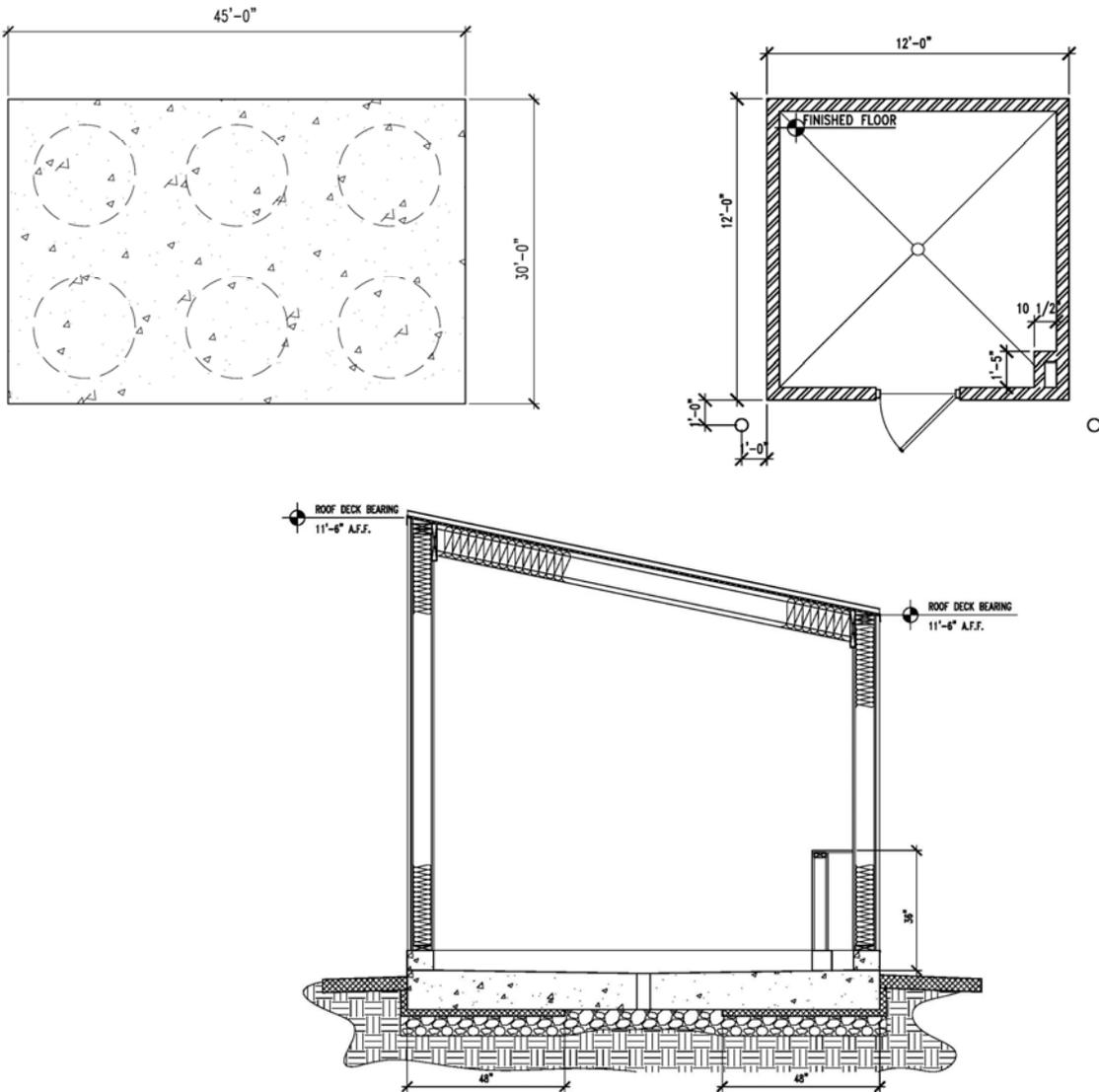
OPTIONAL ITEM: PRIORITY 3

02 | SITE ANALYSIS & REQUIREMENTS

Function: Concrete platforms to elevate brine storage tanks & pump house

Quantity: 1

Utilities: Provide LED lights, convenience GFCI outlets and power to other equipment as required.



02 | SITE ANALYSIS & REQUIREMENTS

Site Item: Salt Storage Building

OPTIONAL ITEM: PRIORITY 4

Function: Salt Storage

Quantity: 1

Net Area: 4000 S.F.

Occupants: N.A.

Finishes:

Floor: Zero Voids Asphalt (slope out to opening for drainage)

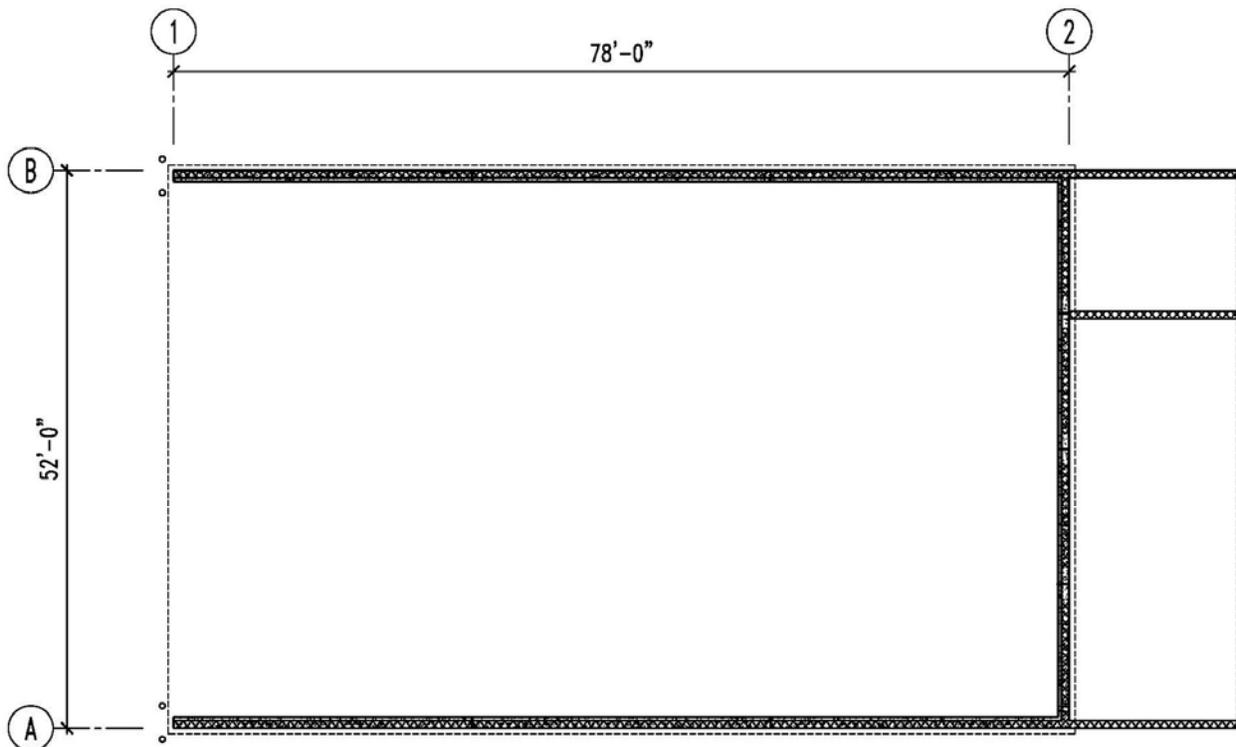
Foundations and Walls: Concrete stem walls ten feet (10') high, vertical surfaces sealed with anti-hydro.

Roof: In compliance with roofing specification requirements.

Utilities: Interior and exterior LED lighting: three overhead interior fixtures (one in mixing area and two in slat area) and four exterior wall packs (one on each side) for area lighting. Provide proper occupancy sensor to control the lighting inside the building. Run the circuits for exterior lighting through Lighting Control Panel.

Notes:

One end of the building is completely open to facilitate loader access. Entry side is protected by bollards. Adjacency to salt pond retention area for proper design management of surface brine flow is essential.



02 | SITE ANALYSIS & REQUIREMENTS

Site Item: Dumpster Enclosure

OPTIONAL ITEM: PRIORITY 5

Function: Dumpster Screen

Quantity: 1

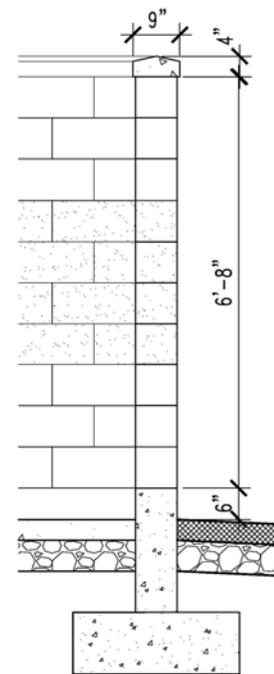
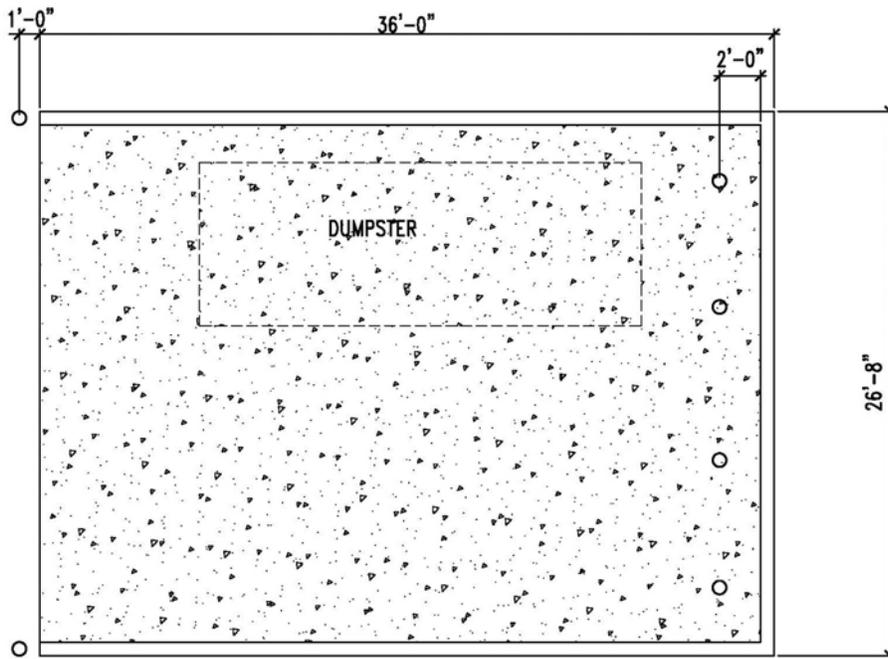
Finishes:

Floor: Concrete (slope out to opening for drainage)

Foundations and Walls: Concrete stem walls, CMU w/ precast concrete cap.

Roof: N.A.

Utilities: None.



02 | SITE ANALYSIS & REQUIREMENTS

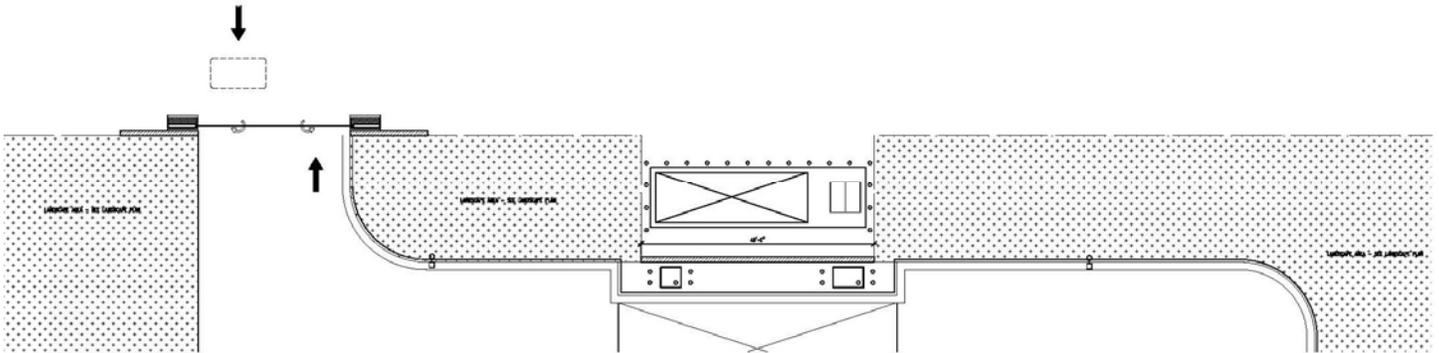
Site Item: Fuel Station

OPTIONAL ITEM: PRIORITY 6

Function: Turnkey fueling facility for State and Municipal Vehicles in accordance with State Fleet requirements.

Quantity: 1

Utilities: Run (1) 2" and (2) 1" conduits to the main building. Coordinate exact locations and termination with the owner.

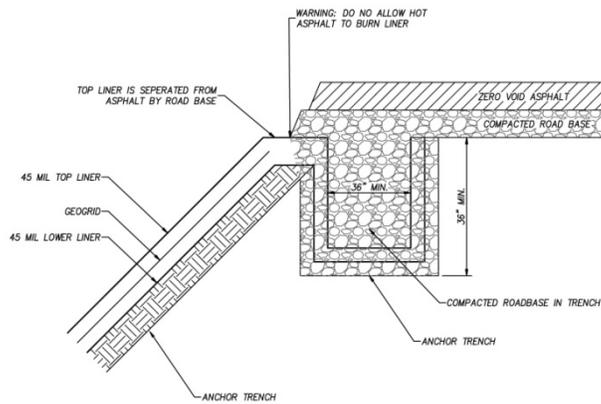


Site Item: Salt Pond Liner

REQUIRED ITEM:

Function: Contain water run-off from Salt Storage Building, Wash Rack and Sander racks.

Quantity: Double layer membrane



POND ANCHOR/PAVING DETAIL

NOT TO SCALE

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) and 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 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 Design/Build teams from proposing different exterior building envelope systems.

UDOT recognizes that various exterior envelope systems have differing initial costs, life cycle costs, performance characteristics and overall service life outcomes. In order to help evaluate the relative merits of different solutions that may be proposed, UDOT is tasking each Design/Build team with providing UDOT and DFCM a facility with a building envelope service life of at least fifty (50) years.

BUILDING EXTERIOR ENVELOPE FIFTY (50) YEAR SERVICE LIFE REQUIREMENT:

UDOT is seeking a completed building envelope with a service life of at least fifty (50) years. Service life can be defined as the period of time after installation during which a building, building product, building component, or building system meets or exceeds the specified performance requirements. The exterior envelope required service life is fifty (50) years. Service Life is characterized as a minimum level of performance that may be extended with regular maintenance and/or repair. Service Life ends with replacement and/or removal.

UDOT wishes to avoid the use of exterior building materials that have service life that is based upon planned obsolescence. This is a policy of deliberately planning or designing a product with a limited useful life so it will become obsolete or nonfunctional after a period of time shorter than the serviceability of the product would otherwise allow.

It will be incumbent on the Design/Build team to explain to UDOT and DFCM in their stage 2 proposal submittal how this requirement is being met by their specific response in the project narrative, drawings and specifications. The selection committee reviewing the submissions will, as part of their submittal evaluations, determine the degree to which the Design/Build team has met this requirement. IF THIS OR ANY OTHER PROGRAMMATIC REQUIREMENTS ARE NOT BEING MET, IT IS INCUMBENT UPON THE PROPOSERS TO CLEARLY INDICATE NON-COMPLIANCE WITH ANY PROGRAM REQUIREMENTS INCLUDING THE EXTERIOR ENVELOPE SERVICE LIFE. A specification is included in this program document which outlines a basis by which this determination can be considered.

Additionally, 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. Snow Melting Systems: 4' minimum depth roof surface heat trace plus heat trace in gutters and downspouts required on North and East oriented roof surfaces only.
5. Snow fences: required on all roofs that are pitched to an eave drip line.
6. Maintenance Facility must incorporate (10) bays.
7. Twenty year (20) roof warranty per DFCM requirements.

In the event submitters intend to propose on one of the following exterior envelope systems, the following minimum performance requirements apply. Any other systems proposed must meet industry best practices for materials and installation and the fifty year UDOT envelope criteria shall similarly apply.

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 typically 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. Tilt-up Precast Concrete Envelope

Similar in performance to the CMU exterior wall system

System Performance Requirements are as follows:

1.1 REFERENCES

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)
ACI 302.1R (2004; Errata 2006; Errata 2007) Guide for Concrete Floor and Slab Construction
ACI 551.1R (2005) Tilt-up Concrete Construction Guide
ACI CP-50 (2007) Tilt-Up Supervisor & Technician Reference Guide
AMERICAN WELDING SOCIETY (AWS)
AWS D1.1/D1.1M (2010; Errata 2011) Structural Welding
ASTM INTERNATIONAL (ASTM)
ASTM C494/C494M (2013) Standard Specification for Chemical Admixtures for Concrete

1.2 Pre-Installation Meetings

No later than 30 days after Contract Award, the Contractor will schedule a pre-installation meeting. Submit the following for review and approval:

a. Submit Fabrication Drawings in accordance to specifications, with reference to contract drawings. Show connection details, reinforcing details, and lifting devices on the installation drawings, used for the following items:

- (1) Panels
- (2) Reinforcement and Embedded Items, submit certificates for the following items showing conformance with referenced standards contained in this section:
 - (a) Facing Aggregate
 - (b) Concrete Aggregates
 - (c) Chemical Admixtures
 - (d) Release Agent
 - (e) Pick-Up Inserts
 - (f) Bracing Inserts
 - (g) Reglets

1.3 Submittals

Submittal Procedures:

Provide: Shop Drawings (Include dimensions of panels and size and location of openings for concrete formwork on the Fabrication Drawings); Fabrication Drawings; Panels Drawings; Reinforcement and Embedded Items; Samples; Concrete Aggregates; Chemical Admixtures; Release Agent; Pick-Up Inserts; Bracing Inserts; Reglets.

1.4 Quality Assurance

1.4.1 Erector Qualifications

Provide an experienced supervisor for panel construction and erection having at least 2 years of successful experience in tilt-up construction, similar to the size and amount required for this project. Personnel working pursuant to this section, may at the Contracting Officer's option, be required to demonstrate technical competence by performing sample work.

1.4.2 Tolerances

Apply the following tolerances to this work:

- a. Dimensional tolerances: Plus or minus 1/8 inch in

- length and height, 3/16 inch across diagonals
- b. Bowing or warpage tolerance: Plus or minus 1/2 inch in 10 feet
- c. Thickness tolerance: Plus 1/2, minus 1/8 inch

Part 2 Products

2.1 Release Agent

Use resin type release agent, containing no materials that could affect bond of subsequent finishes or natural appearance of exposed concrete surfaces.

2.2 Cast-In Accessories

2.2.1 Pick-Up Inserts

Provide [double] [single] type inserts.

Provide [corrosion-resistant steel] [hot-dip galvanized] inserts.

2.2.2 Bracing Inserts

Provide [corrosion-resistant steel] [hot-dip galvanized] inserts with a height corresponding to the thickness of the panel.

2.2.3 Reglets

Provide [corrosion-resistant] [hot-dip galvanized-] steel, 0.48 millimeter 28-gauge, metal reglets with styrofoam rigid filler.

Provide extruded polyvinylchloride reglets with styrofoam rigid filler.

2.2.4 Sleeves

Provide pipe sleeves, size as indicated.

Provide sheetmetal sleeves, size as indicated.

2.2.5 Lifting Devices

Provide hot-dipped galvanized [angle] [swivel] type lifting devices.

2.3 Water Absorption

Ensure water absorption of facing aggregates is not less than the percentage obtained by testing the facing aggregates in the approved sample panel.

2.4 Concrete Aggregates

Provide concrete aggregates conforming to industry standards, limit coarse aggregate ranges from 1-1/4 to 3/8 inch in size.

2.5 Chemical Admixtures

Provide admixture conforming to ASTM C494/C494M, Type B for retarder.

Provide admixture conforming to ASTM C494/C494M, Type C for accelerator.

2.6 Form Liners

Provide plywood panel form liners using C-D plywood with C side towards the finished surface.

Part 3 Execution

3.1 Preparation

Cast a 4 by 4 foot sample Concrete Panel on a casting slab to demonstrate releasing ability of release agent and architectural effects. Also provide three test panels, 12 by 12 inches of Exposed Aggregate. Clean forms and the casting slab of extraneous materials. Locate the casting area for the panel in an area where floor joints are preferably avoided or at least minimize the impact to the panel being casted. Spackle and/or caulk floor joints and temporarily patch floor openings that occur in the casting area. Treat casting slab with a release agent before placing reinforcing and embedded items. Use care not to scuff the release agent when placing reinforcing and embedded items. Retreat scuffed areas with the release agent, using care not to coat reinforcing and embedded items. Repair holes and spalling within the slab surface from previous cast and allow to cure before applying a new coat of releasing agent. Field verify and correct any errors

in the footings and foundations such as levelness, imbed locations, etc. prior to lifting.

3.2 Reinforcement And Embedded Items

Accurately locate reinforcing and items to be embedded in the panels in accordance with approved drawings and place into forms. Extend horizontal reinforcing rods at sides of panels a minimum of 12 inches into column forms.

3.3 Casting

Cast Panels individually on a temporary casting slab or on the concrete floor slab of the building at the Contractor's option. Vibrate concrete to produce the maximum density without voids throughout the entire panel thickness. Do not displace reinforcement or inserts, or cause scoring of forms, liners, or the casting slab. Install 3/4 inch cant strip along edges of formwork. Install strong backs at locations where panel legs are less than 48 inches width or as required by structural engineer, whichever is more stringent. Furnish plastic or plastic tipped steel chairs for placement of reinforcing.

3.4 Finishes

Finish exposed face surfaces of panels to match the approved sample panel. Provide exposed panels with a smooth trowel or light broom finish. Provide architectural accents and reveals per construction drawings. Provide unexposed panel backs with a smooth float or broom finish. Cracks, voids, protrusions, spalls, or nonuniform color or texture are not acceptable. Patch and repair minor defects from casting to match adjacent final finish.

3.5 Curing

After casting, form-cure panels until sufficient strength has developed to permit handling the units without damage. After removal of forms, moist-cure panels for a minimum of 6 calendar days.

3.6 Field Quality Control

Do not start erection of panels until representative concrete test cylinders have a minimum compressive strength as specified on the drawings. Locate pickup points in concrete panels so that concrete tensile stresses during erection do not exceed 10 percent of the cylinder compressive strength at time of erection.

3.7 ERECTION

Level setting bed for wall panels using high-strength mortar so that the panel in place will have a level tolerance within 1 to 500. Erect panels using spreader bars, chockers with equalizer sheaves, adjustable bracing, and other erecting accessories required to place panels in location. Ensure bracing equipment meets applicable codes. Tilt panels from the casting platform to slope within 1 horizontal to 6 vertical ratio. Plumb initial setting of panels within 75 millimeter 3 inches of true. Plumb final setting of panels with adjustable braces to vertical tolerance of 1 to 500, leaving braces in place until panels are secured in their final location as indicated. Bolt panels to the supporting structure with high-strength bolts as specified by structural engineer. Weld panels to the supporting structure. Ensure welding meets the requirements of AWS D1.1/D1.1M. Before welding, clean surfaces of loose scale, slag, rust, grease, and other foreign substances that could affect the strength of the welds. Weld connections with weld materials that correspond to the steel being welded. Use and maintain shielded metal arc welding. Provide inspection gauges for checking the size, length, and quality of welds. Correct or replace welds having cracks, surface porosity, slag accumulation, insufficient throat, or concavity. Remove weld splatter from steel

surfaces to be painted. Brace panels with adjustable turnbuckle pipe braces or timber braces. Pack joints between wall panels and foundation and wall panels and columns with plastic mortar.

3.8 Patching

Dry -pack holes in panels left after lifting rigging has been removed with nonshrink mortar to match adjacent surfaces. Wet stained surfaces, coat surfaces with a thick mortar mixture, and rub the area with burlap pads to remove the excess mortar and fill surface voids. Remove surface stains with environmentally approved product(s), scrubbing with stiff brushes and flushing with clean water.

c. 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: 24 gauge 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: 24 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 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.

d. 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.

e. **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.

f. **Interior Environment:**

There are several interior program items that must be incorporated:

1. Vehicle Bay Spacing: 16'-0" wide minimum a minimum of 50' deep with 14'X14' garage doors centered on the 16' width;
2. Five Bay Storage Bay must be attached to Maintenance Building a minimum of 45' deep and 16' clear height accessed by 14'X14' garage doors;
3. Vehicle Bays Interior Wall Protection: 6" concrete curb with additional 10' plywood wall protection.

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.

g. **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).

If the budget cannot provide all the structures described in this program, there must be an area designated on the plan for the storage of salt. As the budget will allow, a priority of the site structures is as follows in order of importance:

1. Wash Rack
2. Sander Racks
3. Brine Mixing
4. Salt Storage Building
5. Dumpster Enclosure
6. Fuel Station

h. **Owner Furnished Equipment:**

Proposal shall include an allowance of \$75,000 for purchase by the State of a mobile lift, office furniture and telecommunications.

03 | BUILDING REQUIREMENTS

3.3 Individual Space Requirements

No. 1

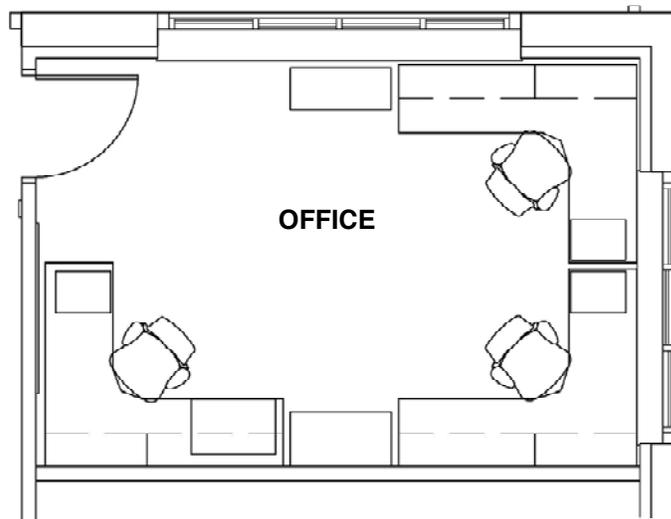
ROOM DATA

Office

General Information	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
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control	Two level occupancy sensor (w/ photocell if lit)
	Electrical	Outlets Per Code

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	Mechanical	Heating & Cooling with Thermostat control
	Plumbing	None
	Fire Protection	Required
	Security	None
Technology	Voice	Required – 3 stations
	Data	Required – 3 stations
	TV	Two outlets high on wall
	Other Technology	None
FFE	Fixed Equipment	3' x 5' White Board
	Movable Equipment	Systems Furniture supplied by Owner
	Window Treatment	1" Louver Blinds



No. 2

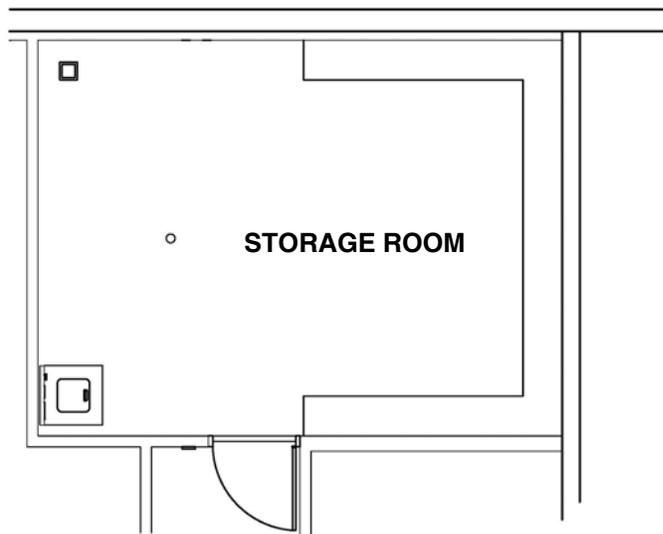
ROOM DATA

Storage Room

General Information	Uses/Function	Storage Room
	Assignable Area	300 +/- sq. ft.
	Capacity	Per Code: 3
	Ceiling Height	8'-6" min
	Adjacencies	None
	Accessibility	ADA
	Occupancy Type	S
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control:	Occupancy sensor
	Electrical	Outlets per code, power to clothes washer
	Mechanical	Heating & Cooling w/exhaust fan
	Plumbing	Floor drain, water to clothes washer & drain

03 | BUILDING REQUIREMENTS

	Fire Protection	Required – Fire Riser Location
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	30' of P. Lam. Adjustable shelving. Clothes washer (N.I.C.)
	Movable Equipment	None
	Window Treatment	None



03 | BUILDING REQUIREMENTS

No. 3

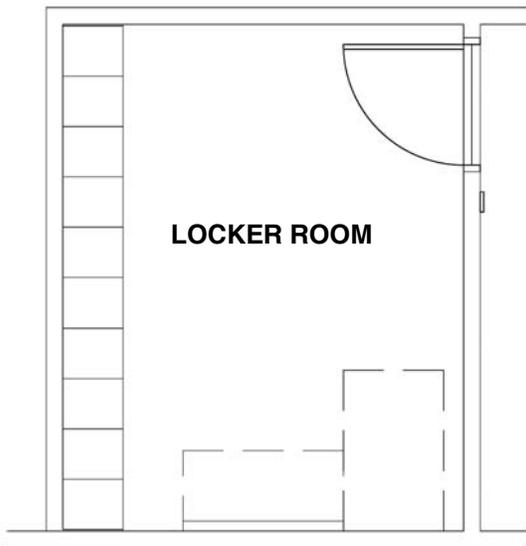
ROOM DATA

Locker Room

General Information	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
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control:	Two level occupancy sensor
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling
	Plumbing	None

03 | BUILDING REQUIREMENTS

	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	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

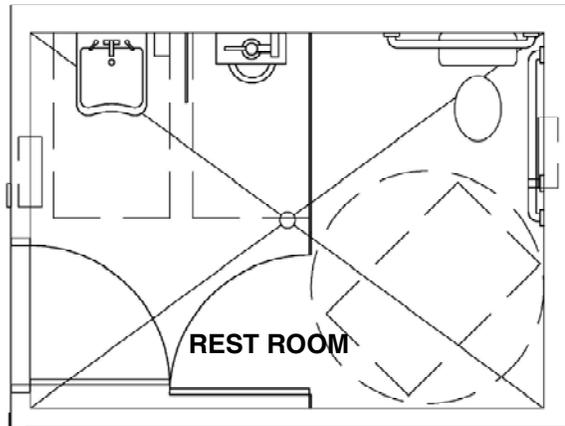
ROOM DATA

Unisex Restroom

General Information	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
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control:	Occupancy sensor
	Electrical	Outlets Per Code
	Mechanical	Heating & Cooling w/exhaust fan

03 | BUILDING REQUIREMENTS

	Plumbing	1 toilet, 1 urinal, 1 sink & floor drain
	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	All required toilet accessories
	Movable Equipment	None
	Window Treatment	None



No. 5

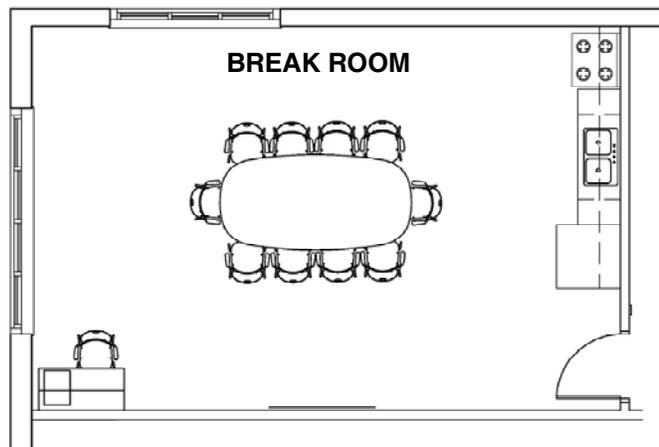
ROOM DATA

Break Room

General Information	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
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control:	Two level occupancy sensor
	Electrical	Outlets Per Code

03 | BUILDING REQUIREMENTS

		Provide power for equipment listed below
	Mechanical	Heating & Cooling w/thermostat
	Plumbing	(1) dual sink and a connection for refrigerator water line
	Fire Protection	Required
	Security	None
Technology	Voice	Yes, at workstation
	Data	Yes, at workstation
	TV	One outlet
	Other Technology	None
FFE	Fixed Equipment	3' x 5' White Board Microwave – supplied by owner Electrical Stove – supplied by owner Refrigerator – supplied by owner Millwork Upper & Base Cabinets
	Movable Equipment	Systems Furniture supplied by Owner
	Window Treatment	1" Louver Blinds



03 | BUILDING REQUIREMENTS

No. 6

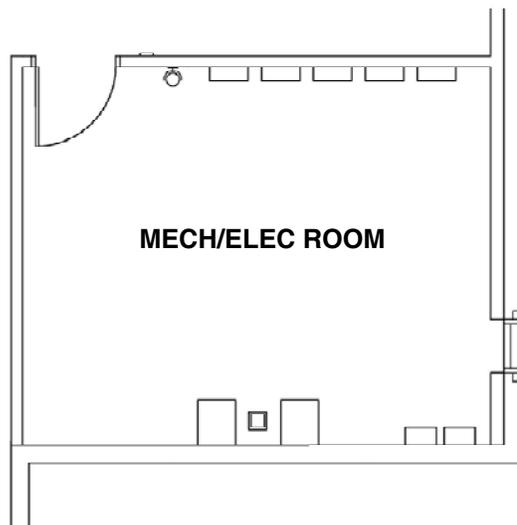
ROOM DATA

Mech./Elec. Room

General Information	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	S
Finishes/Treatments	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
Engineering Systems	Lighting	LED
	Control:	Wall switch
	Electrical	Outlets Per Code, Location of Main Distribution Panel
	Mechanical	Heating & Cooling system for the office area and water heater

03 | BUILDING REQUIREMENTS

	Plumbing	Floor Sink and floor drains for the equipment
	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	None besides Elect. & Mech Equipment
	Movable Equipment	None
	Window Treatment	None



03 | BUILDING REQUIREMENTS

No. 7

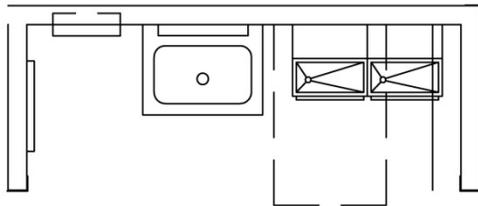
ROOM DATA

Janitorial Area

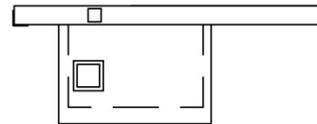
General Information	Uses/Function	Janitorial
	Assignable Area	40 +/- sq. ft.
	Capacity	Per Code: 1
	Ceiling Height	Open to structure above
	Adjacencies	Repair Bays
	Accessibility	ADA
	Occupancy Type	B
Finishes/Treatments	Floor	Sealed Concrete
	Base	6" Concrete Curb
	Walls	Painted A/C grade plywood
	Ceiling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

03 | BUILDING REQUIREMENTS

	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	Janitorial accessories
	Fixed Equipment	Commercial Ice maker
	Movable Equipment	None
	Window Treatment	None



JANITORIAL AREA



ICE MAKER

03 | BUILDING REQUIREMENTS

No. 8

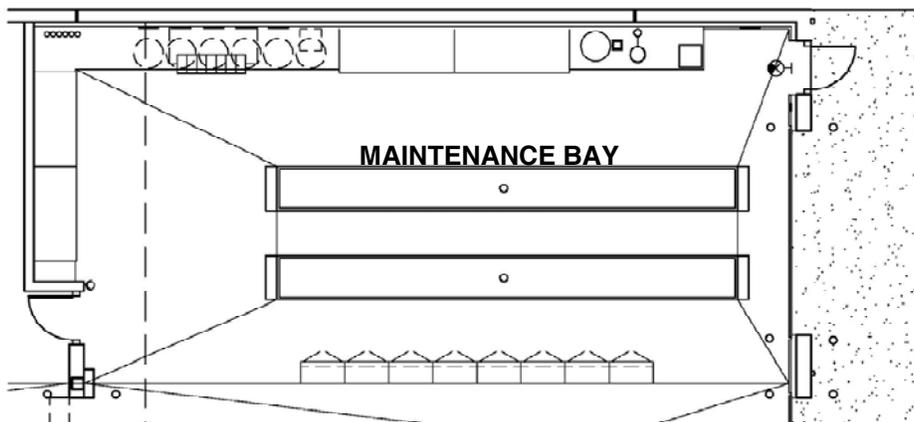
ROOM DATA

Maintenance Bay

General Information	Uses/Function	Truck Maintenance/Repair
	Assignable Area	1264 +/- sq. ft. (50' deep min.)
	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
Finishes/Treatments	Floor:	Concrete w/Xypex or Hycrete Admixtures & Oliophobic Sealer
	Base Walls	6" Concrete Curb 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
Engineering Systems	Lighting	LED
	Control:	Two level switching as required + Daylight harvesting to be continuous dimming type
	Electrical	Outlets Per Code 2, 4 plex outlets at each workbench

03 | BUILDING REQUIREMENTS

		Connection to fixed lift 50 amp special purpose outlet
	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 Water (hose bibs) and compressed air (quick connects) drops around perimeter
	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	Fixed truck lift – owner provided 4 Workbenches 8 Metal storage lockers 5 ton trolley hoist - overhead
	Movable Equipment	None
	Window Treatment	None



03 | BUILDING REQUIREMENTS

No. 9

ROOM DATA

Repair Bays

General Information	Uses/Function	Truck Repair
	Assignable Area	812 +/- sq. ft. per bay (50' deep each)
	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
Finishes/Treatments	Floor:	Concrete w/Xypex or Hycrete Admixtures & Oliophobic Sealer
	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
Engineering Systems	Lighting	LED
	Control:	Two level switching as required + Daylight harvesting in day lit area to be continuous dimming type
	Electrical	Outlets Per Code 50 amp special purpose outlet Two (2) 10' diameter large low velocity circulating fans (such as those manufactured by the "Big Ass Fan" company)

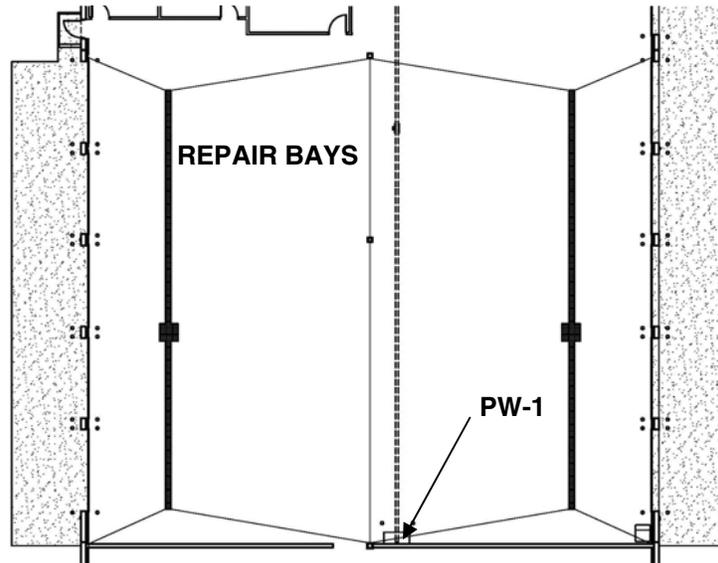
03 | BUILDING REQUIREMENTS

	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 Water (hose bibs) and compressed air (quick connects) drops around perimeter. Minimum 1 per bay
	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	Pressure Washer – locate along exterior wall 5 ton trolley hoist – overhead – coord. power requirements w/ building power available

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

WATER SUPPLY SYSTEM



03 | BUILDING REQUIREMENTS

No. 10

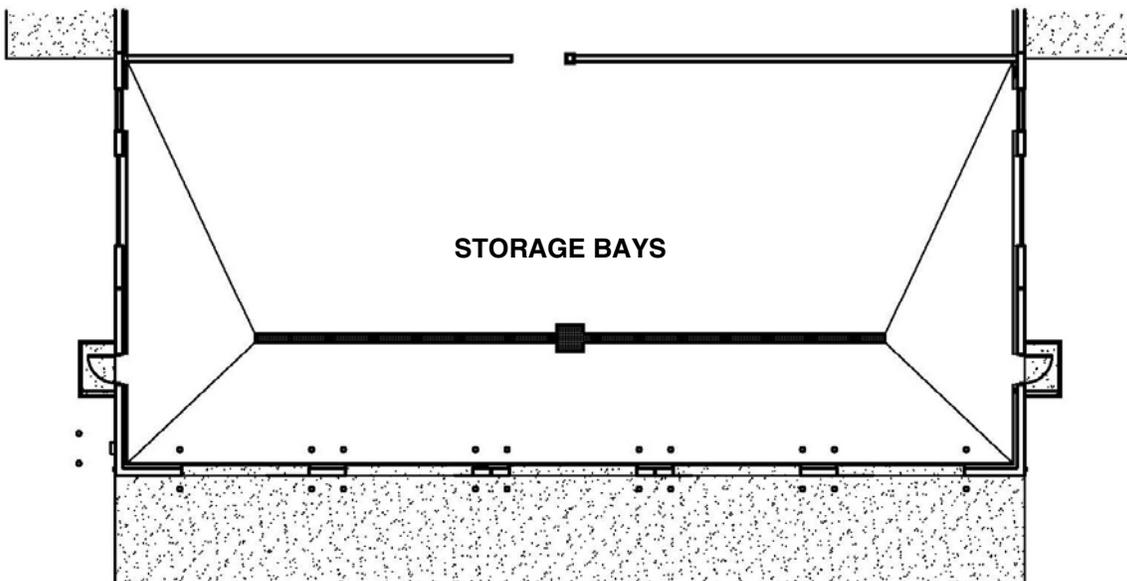
ROOM DATA

Storage Bays

General Information	Uses/Function	Misc. Storage
	Assignable Area	872 +/- sq. ft. per bay (45' deep each)
	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
Finishes/Treatments	Floor:	Concrete w/Xypex or Hycrete Admixtures & Oliophobic Sealer
	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
Engineering Systems	Lighting	LED
	Control:	Occupancy sensor

03 | BUILDING REQUIREMENTS

	Electrical	GFCI 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 Water line on Hose Reel
	Fire Protection	Required
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	None
	Movable Equipment	None
	Window Treatment	None

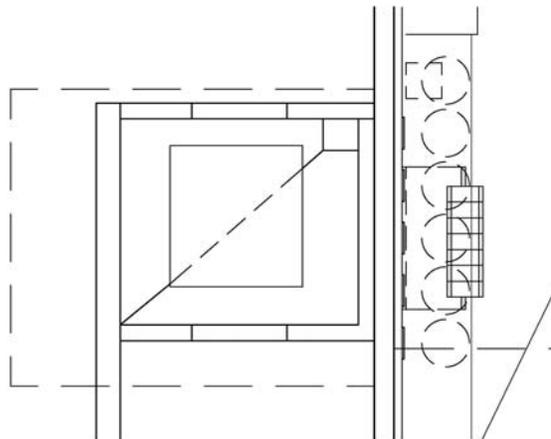


No. 11**ROOM DATA****Exterior Waste Oil Storage**

General Information	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
Finishes/Treatments	Floor:	Concrete w/Xypex or Hycrete Admixtures & Oliophobic Sealer
	Base	Concrete w/Xypex or Hycrete Admixtures
	Basin Walls	Concrete w/Xypex or Hycrete Admixtures
	Ceiling	Covered Canopy
	Doors	None
	Door Hardware	None
	Windows	None
	Acoustics	None
	Signage	None
	Special Requirements	None
Engineering Systems	Lighting	LED
	Control:	Time Clock / Lighting control panel
	Electrical	None
	Mechanical	None
	Plumbing	None

03 | BUILDING REQUIREMENTS

	Fire Protection	None
	Security	None
Technology	Voice	None
	Data	None
	TV	None
	Other Technology	None
FFE	Fixed Equipment	Waste Oil Tank - 600 gallon provided by G.C.
	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. A concept meeting with Hooper City should be scheduled prior to beginning design to coordinate utility connections.

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. The salt pond shall incorporate a double liner system as required by DEQ.

Pavement Standards

A geotechnical report for the proposed building site has been completed by Western Technologies Inc, dated October 2014. 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 manufacturer's 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:

- Schedule 40 PVC Pipe and Vacuum Valve Pit (because of vacuum sewer system)

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.

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 Western Technologies, Inc, dated October 2014. 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 liquefiable soils are to be expected so the report recommends that the foundations be supported on structural fill over suitable native materials. 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 not expected to be suitable for reuse as structural fill. The allowable soil bearing pressure is stated as 1500 psf.

"DFCM has had a geotechnical report prepared, but they are not part of the programming/performance specification documents. The geotech report presents limited site information. The geotech report document is not a warrant of site conditions. The document was not intended to define site conditions in sufficient detail for the Contractor proposals and bidding. The Contractor must draw its own conclusions and perform additional geotechnical investigations as necessary. The DFCM will not be responsible for interpretations or conclusions drawn by the Contractor concerning the site from the information contained in the geotechnical report prepared for DFCM."

Loading Criteria

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

- Wind: 115 MPH Risk Category II, Exposure C
- Seismic: $S_s=1.049$, $S_1=0.353$, Site Class E ($SD_s=0.629$, $SD_1=0.659$)
- Dead Loads: As calculated by Design Team (15 psf Minimum)
- Collateral Loads: 5 psf
- Roof Live Loads: 20 psf (Unreducible)
- Snow Loads:
 - Maintenance Building: 43 psf ground snow, $I=1.0$, $C_t=1.0$, $C_e=0.9$
 - Salt Storage Building: 43 psf ground snow, $I=1.0$, $C_t=1.2$, $C_e=0.9$
 - Sander Rack/Wash Rack: 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. It must 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 76 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, minimum 95% AFUE, and DX Cooling, minimum 16 SEER, with 7 day auto change-over programmable thermostat to control 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. Provide industrial ceiling fans in Repair Bays to circulate the air and limit stratification in heating.

Due to the type of building, and the use of high efficiency equipment, this project shall be exempt from complying with the additional requirements in the current version of the DFCM High Performance Building Standard (HPBS).

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 IECC 2012 Standards and comply with Efficient Lighting System in accordance with Section C406.3 of IECC 2012.

Utilize LED light fixtures for interior and exterior lighting.

LED light fixtures shall have a minimum of 5 year warranty on the entire fixture (Not just the LED's). The LED manufacture shall provide a letter indicating the 5 year warranty for each type of fixture used on the project. The light fixtures shall have Minimum of 50,000 lamp life and be tested with LM 79 and LM 80 testing procedure. The light fixtures shall also be listed in DLC (Design Lights Consortium).

Indoor light fixtures shall have a minimum of 80 CRI and outdoor fixtures shall have a minimum of 70 CRI.

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	30~50
Conference/Meeting Rooms	40~60
Corridors	10~20
Toilet Rooms	20
Stock /Storage/Equipment Rooms	30
Maintenance and Garage Bays	30~40
Site Lighting	1 (with Av. To min of 4 or better)

A relay based Lighting Control Panel (LCP) with over-ride push button shall be provided to control interior and exterior lighting. The LCP shall have a digital astronomical time clock. Coordinate with the project manager for scheduling of each relay and over-ride button. Re-programming may be required after occupancy. Provide minimum of two zones for the exterior lighting. Light fixtures controlled by occupancy sensors are not required to be tied to the lighting control panel.

Exterior Lighting Systems: Site lighting shall be compatible with the levels and type in the surrounding area and adequate for security of the building perimeter. 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.

Building gates lighting to be provided using 25' poles 25,000 lumen LED 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 LED fixtures with battery back-up at each exiting man door. Provide a central inverter for interior and exterior emergency lighting, if budget allows.

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. Properly size the Main Distribution and the branch panels to handle the building load.

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

Power receptacles are to be located in accordance with the National Electrical

03 | BUILDING REQUIREMENTS

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.

Coordinate and provide power to the motorized gate.

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. Coordinate with the project manager during design phase. Provide a Manual Transfer Switch (MTS) and feed the Emergency panel through the MTS. Coordinate with the project manager during design phase.

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. Do not share neutral conductor in home runs. Run a separate neutral conductor for each 120 volt phase conductor.

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 alarm 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.

Gutter Melt System: Gutter / downspout snow melting shall be provided for North and East sides of the building. Provide self regulating heat cables, a simple control panel and temperature sensor. Heat cable system shall only turn on when the temperature drops below 40 degrees. Provide an over-ride switch with pilot light.

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, or solid core PVC or ABS DWV pipe, below grade and ASTM A 888 cast iron 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.

03 | BUILDING REQUIREMENTS

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 water and drains as needed for wash rack, sander rack, brine storage and salt storage areas.

Provide fire protection as required by DFCM, NFPA 13 and International Building Code requirements. Design build contractor shall include an engineer's water supply analysis, as well as flow tests and any other investigative work required for the infrastructure feeding this building.

4.1 Project Cost:

The Owner is looking for the proposal that provides the most value for the funds provided.

The state has allocated \$2,100,000.00 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. Bids submitted in excess of the stated budget amount are discouraged.

After the bidder has met the base bid requirements, any remaining funds beyond this amount should be utilized for the provision of additional desirable program elements as described herein.

5.1 Project Schedule:

Refer to RFP issued by DFCM.

* DFCM's web site address is www.dfc.utah.gov.

6.1 Project Specifications

SEE APPENDIX.

7.1 Geotechnical Investigation Report

"DFCM has had a geotechnical report prepared, but they are not part of the programming/performance specification documents. The geotech report presents limited site information. The geotech report document is not a warrant of site conditions. The document was not intended to define site conditions in sufficient detail for the Contractor proposals and bidding. The Contractor must draw its own conclusions and perform additional geotechnical investigations as necessary. The DFCM will not be responsible for interpretations or conclusions drawn by the Contractor concerning the site from the information contained in the geotechnical report prepared for DFCM."

SEE APPENDIX.

07 | SITE TECHNICAL INFORMATION

7.2 Alta Survey

"DFCM has had an ALTA survey prepared, but they are not part of the programming/performance specification documents. The ALTA survey presents limited site information. The ALTA survey document is not a warrant of site conditions. The document was not intended to define site conditions in sufficient detail for the Contractor proposals and bidding. The Contractor must draw its own conclusions and perform additional site surveys as necessary. The DFCM will not be responsible for interpretations or conclusions drawn by the Contractor concerning the site from the information contained in the ALTA survey prepared for DFCM."

SEE APPENDIX.

