BID ADDENDUM NO. 2

To: All Plan Holders

From: Chris Swonke, PE
Mead & Hunt, Inc.

Date: July 10, 2025

Project: Ogden-Hinckley Airport
Construct West Apron
AIP No.: 3-49-0024-066-2025

The following modifications are to be made part of the Plans, Contract Documents, and Specifications for the subject project.

Questions:

Q1. Are these bid items federal funded?
A1. Yes, this project is federally funded under the FAA's Airport Improvement Plan (AIP) program. There are multiple sections in the Project Manual that detail the Federal requirements.

Q2. On the West Apron bid the ex storm drain overflow inlet structures (line item #17, detail #1 on sheet C-061) has an existing pipe invert in and out, do you know the pipe size?
A2. Detail 1/C-061 is the storm drain inlet removal and reconnect detail, not the stormdrain overflow inlet detail. For detail 1/C-061, the existing storm drainpipe is anticipated to be 24" reinforced concrete pipe and is bid under Item D-751-5.3 *Storm Drain Inlet Demolition and Reconstruction.* Item D-751-5.1 4x4 Grated Storm Drain Inlet with Splash Pad is Detail 3/C-311. The expected pipe diameter is also 24".

Q3. Also on the West Apron bid, the splash pad inlet boxes on sheet 20 (line item #18, detail #4 on sheet C-311) are there rim elevations available for our concrete contractors?
A3. Top of grate elevations are shown on Sheet C-100 and the splash and the splash pad dimensions are shown on Detail 3/C-312. Elevation information shown on Detail 3/C-312 is hereby deleted.

Q4. There is a survey monument shown on the West Apron on sheet C-051, (Keynote #3), other than the line item #4, to reestablish survey control point, will there be any additional costs for this survey monument?
A4. Contractor is responsible for procuring and setting the monument and providing the control information to the Owner. Owner will pay separately for any refiling or updating of published monument information.

Q5. The lighting vault adjustment in the West Apron bid (line item #5), is there any additional information on the hatch? The cast iron suppliers are not being very helpful. Can this be fabricated out of steel? Also need clarification on the load rating, should this be 100k lbs, 1 m lbs, or something in between?
A5. The intent is to lower the rim, protect the existing sub-structure, and upgrade the lid to support airfield traffic. The minimum load rating is 100,000 lbs as indicated in L-125. The structure shall be either ductile iron or cast iron. EJ 8218 is known to meet the dimensional and strength requirements of the spanned box; other manufacturers may be used provided they meet the performance and Buy America fabrication requirements.

Q6. For pavement markings, will this project be phased out? Or can the contractor come in and do our first coat (and then the following second coat)?
A6. The contract is phased as shown on the CSPP drawings. First coat is only intended to be used on new asphalt pavement. The second coat, at full application rate with beads, shall be applied on new asphalt over the first coat, or as the only coat on existing, original asphalt.

Q7. Will we be able to do the removal and the striping at the same time?
A7. No. Removal shall be done at the Start of Phase 1 to protect the work area. Markings shall be done prior to opening the area to aircraft at the end of Phase 3.

Q8. Will the TC be provided?
A8. No, traffic control is not provided by the airport. Contractor shall provide all traffic control and obtain all associated permitting.

Q9. Will there be staking tabs provided or surveyed for the new striping?
A9. Engineer will not have a surveyor on-site and will provide no staking or layout during construction. It is the Contractor's responsibility to verify tie-in locations, and layout all new markings.

Q10. Will the new striping need to be done during the night?
A10. Striping shall be completed during the work hours shown in the CSPP.

Q11. When is the striping scope of work anticipated to be done?
A11. Striping is expected to be completed near the completion of Phase 3.

Q12. Is there a soils report, geotech report, or boring logs available for the project?
A12. The geotechnical report is in progress and will be provided to the awarded contractor when completed. A project in close proximity on the airfield is provided in this addendum and may be used for bidding assumptions about the project site.

Q13. In the specifications it has a application rate of 15.12 lbs/acre PLS. This is typically a rate for drill seed, but the plans call out hydroseeding, which is typically double this rate. Is this the correct seed application rate?
A13. See R3. The rate and mix is revised.

Q13. With the P-620 specifications 620-4.1 in the Method of Measurements it states "The quantity of markings shall be measured by the number of square feet of painting**.** For markings requiring 2 coats, payment will be made at the unit price at 50% for the first coat, and 50% for the second coat." Does that mean that the quantities on the bid summaries are already doubled for accurate square foot quantities for 2 coats and each application is half quantities? If so the black quantities will greater than actual applications. Or if the bid summaries are 1 coat quantities we will need to double them so we are not short on materials, therefore doubling the U of M pricing?
A13. See C2.

Q14. Specifically, Item 6 – Unclassified Excavation Haul-off appears to require excavation of over 10 feet across the entire project area based on the stated volume, which seems excessive compared to the provided site plan. Similarly, the quantity listed for Item 7 – Embankment In Place Under Pavement also seems higher than expected. These concerns also apply to the same items listed in the Additive Alternate. We just want to confirm that the plans we are using for our take offs match the plans used for the bid schedule, incase there is additional areas being impacted that we aren't seeing in the site plan for the West Apron Project. Could you please confirm whether the quantities listed are accurate or if there might be a revision or clarification coming?
A14. See Revised Bid Sheet.

Clarifications:

C1 The construction drawings are laid-out assuming award of the base-bid and all bid alternates. As there are changes to the grades and markings between the existing and proposed conditions, a conformed "Issued-for-Construction" set of drawings will be issued prior to construction, removing any unawarded bid alternates. This may necessitate transition sections for the paving, grading, and marking limits from the proposed to existing conditions. Final surface DTMs will be regenerated and provided at this point. All work done as part of any transition will be paid at the contract unit price for the affected item, relative to the bid schedule in which it occurs.

C2. The measurement for the pavement marking quantity is based on the square footage of the completed product. For example, a 100 square foot yellow marking that requires an initial coat and then requires a final coat with beads applied to the same area would be paid as follows.

Item P-620-5.1 Pavement Marking with Reflective Media (Yellow – 2 Coats) – per square foot

Initial Coat: 100 SF Area X (1/2 Bid Unit Price) = 50 SF of Payment for Initial Coat
Final Coat: 100 SF Area X (1/2 Bid Unit Price) = 50 SF of Payment for Final Coat
Total: 100 SF Area X Unit Price = 100 SF of Payment for Completed, Final Product

For a 100 square foot black marking, it would be paid as:

Item P-620-5.2 Pavement Marking without Reflective Media (Black – 1 Coat) – per square foot

As the black paint only requires a single application (applied at the time of the final coat) and does not require a second coat, payment would be made as:

Single Coat: 100 SF Area X Unit Price = 100 SF of Payment for Final Product

C5. The Specifications make multiple references to "Acknowledgement of Bid Addendums." This is done on "Exhibit D – Addenda Acknowledgement."

C6. The gate guard is required to be a badged individual. The intent is to have personnel at the gate to keep an unlocked gate from being accessed by unauthorized personnel when construction is occurring. Guard shall be responsible for checking that only badged personnel enter the site or are under escort. Guard shall keep a log of incoming construction traffic. Guard is not required to be armed.

C7. Anticipated NTP for Mobilization is in September 2025, pending FAA approval of Bid.

C8. The project is occurring on an active Airport. The haul route accessing the project site requires going through areas that are shared between construction traffic, aircraft, vehicular traffic, and pedestrians. The CSPP is intended to limit these conflict points but they cannot be eliminated. Contractor is limited to 10 MPH and shall yield to aircraft, airport vehicles, and pedestrians. Construction traffic on the haul route entering the site will need to be badged or under escort.

C9. There is no location on-site for a batch-plant.

C10. Contractor is responsible for determining and obtaining all permits.

C11. Contractor will be required to monitor stockpiles to avoid excessive dust.

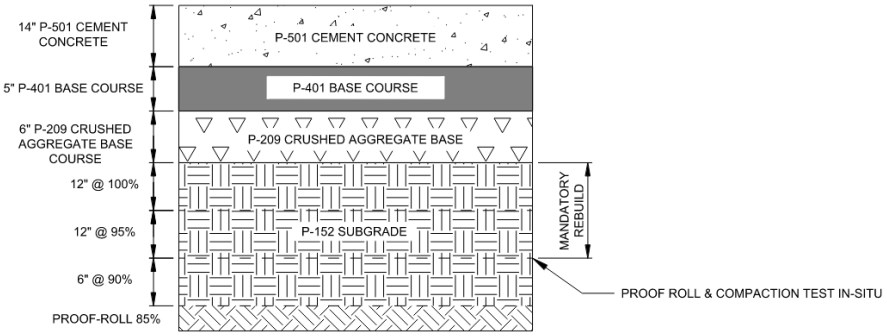
C12. Measurement for the payment of P-152 Embankment is by the square yard per each 12" compaction zone. The intent is that, since an entire 12" section is a mandatory rebuild to meet FAA compaction

requirements, each 12” section is paid for by the square yard. For example, for the section below, for a 100 square yard area, the measurements would be:

P-209 at 6” depth per square yard = 100 SY
P-152 Subgrade at 100% compaction at 12” depth per square yard = 100 SY
P-152 Subgrade at 95% Compaction at 12” depth per square yard = 100 SY

Payment would be made as:

P-209-5.1 Crushed Aggregate Base Course, 6-Inch Depth, per SY = 100 SY
P-152-4.2 Embankment In Place Under Pavement, per SY = 100 SY +100 SY = 200 SY.



NOTE:

1. CONTRACTOR SHALL REBUILD THE 100% AND 95% ZONES. IF IN-SITU SOILS DENSITIES ARE EXCEEDED IN THE 90% ZONE, THAT VOLUME SHALL BE LEFT IN-PLACE.

2 **PCC PAVEMENT SECTION**
NOT TO SCALE

Revisions:

R1. Replace the Bid Schedule. Updates are bolded.

R2. Replace the entire P-152 specification. Revisions are in red.

R3. Replace the Seed Properties and Rate of Application Table in Specification T-901 with the following:

Seed Properties and Rate of Application

Seed Common Name	Minimum Seed Purity (Percent)Botanical Name	Rate of Application lb/acre (pure live seed) (or lb/1,000 S.F.)
*Ephraim Crested Wheatgrass	*Agropyron Cristatium	*5.5
*Smooth Brome	*Bromus Inermis	*5.5
Intermediate Wheatgrass	Agropyron Intermedium	5.5
Great Basin Wildrye	Elymus Junceaus	4.5
Western Wheatgrass	Agropyron	2.0
Canada Wildrye	Elymus Canadensis	3.5
Slender Wheatgrass	Agropyron Trachyacalum	5.0
Regreen or Quickguard	Triticom Elongatus	22.0
TOTAL		57 lbs/acre PLS

Attachments:
Attachment 1: Bid Schedule
Attachment 2: P-152 Specification
Attachment 3: Geotechnical Report

BID SCHEDULE 0 – BASE BID

BID SCHEDULE 0						
NO.	**ITEM NO.**	**ITEM DESCRIPTION**	**UNIT**	**QTY**	**UNIT PRICE**	**TOTAL PRICE (FIGURES)**
1	C-102-5.1	Temporary Erosion Control	LS	1		
2	C-105-6.1	Mobilization (Max 10% of Base Bid + Bid Alt.)	LS	1		
3	P-101-5.1	Demolish Existing Markings (Water Blast)	SF	**2,800**		
4	P-101-5.2	Reestablish Survey Control Point	EA	1		
5	P-101-5.3	Adjust Valve to Grade	EA	1		
6	P-152-4.1	Unclassified Excavation Haul-off	CY	**23,000**		
7	P-152-4.2	Embankment In Place Under Pavement	SY	35,300		
8	P-152-4.3	Embankment In Place In Infield	SY	17,500		
9	**P-152-4.4**	**Remove Unsuitable Material and Replace with Select Material**	**CY**	**1,000**		
10	P-209-5.1	Crushed Aggregate Base Course, 6-inch Depth	SY	12,050		
11	P-209-5.2	Crushed Aggregate Base Course, 9.5-inch Depth	SY	5,600		
12	P-401-8.1	Asphalt Surface Course	TON	1,290		

BID SCHEDULE 0						
NO.	**ITEM NO.**	**ITEM DESCRIPTION**	**UNIT**	**QTY**	**UNIT PRICE**	**TOTAL PRICE (FIGURES)**
13	P-401-8.2	Asphalt Base Course	TON	5,080		
14	P-501-8.1	Concrete Pavement	SY	11,682		
15	P-605-5.1	Joint Sealing Filler	LF	**14,600**		
16	P-620-5.1	Pavement Marking with Reflective Media (Yellow - 2 Coats)	SF	3,900		
17	P-620-5.2	Pavement Marking without Reflective Media (Black - 1 Coat)	SF	6,800		
18	D-751-5.1	4X4 Grated Storm Drain Inlet With Splash Pad	EA	2		
19	D-751-5.2	Open Bottom Catch Basin with Splash Pad	EA	3		
20	D-751-5.3	Storm Drain Inlet Demolition and Reconnection	EA	1		
21	D-752-5.1	Basin Weir	EA	2		
22	L-125-5.1	Install L-853 Retroreflective Marker	EA	17		
23	L-125-5.2	Adjust Vault to Grade	EA	1		
24	T-901-5.1	Seeding	ACRE	9		
25	T-905-5.1	Topsoil (Obtained On Site)	ACRE	**8**		
					TOTAL SCHEDULE in Figures	

END OF BID SCHEDULE 0

BID SCHEDULE 1 – ADDITIVE ALTERNATE 1

BID SCHEDULE 1						
SEQ.	**ITEM NO.**	**ITEM DESCRIPTION**	**UNIT**	**QTY**	**UNIT PRICE**	**TOTAL PRICE (FIGURES)**
1	P-152-4.1	Unclassified Excavation Haul-off **Unit Price Must Match Base Bid**	CY	**3,550**		
2	P-152-4.3	Embankment In Place Under Pavement **Unit Price Must Match Base Bid**	SY	10,650		
3	P-209-5.1	Crushed Aggregate Base Course, 6-inch Depth **Unit Price Must Match Base Bid**	SY	**5,450**		
4	P-401-8.2	Asphalt Base Course **Unit Price Must Match Base Bid**	TON	1,550		
5	P-501-8.1	Concrete Pavement **Unit Price Must Match Base Bid**	SY	5,305		
6	P-605-5.1	Joint Sealing Filler **Unit Price Must Match Base Bid**	LF	**7,500**		
					TOTAL SCHEDULE in Figures	

END OF BID SCHEDULE 1

****

TOTAL SCHEDULE 0 + 1 (BASE BID + ADD. ALT 1) in Figures:_____

TOTAL SCHEDULE 0 + 1 (BASE BID + ADD. ALT 1) in Words:_____

ITEM P-152 EXCAVATION, SUBGRADE, AND EMBANKMENT

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

152-1.3 Unsuitable Excavation. Unsuitable material shall be disposed off-site. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of off-site. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports. Electronic copies of DTM files and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of offsite.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective Grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport. The cost is incidental to this item. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable, and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of Utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow Excavation. All unsuitable material shall be disposed of by the Contractor off site. There is no on-airport borrow pit.

152-2.4 Drainage Excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be disposed off site. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of Cut Areas or Areas Where Existing Pavement has Been Removed. In those areas on which a subbase or base course is to be placed, a minimum of the top 12 inches of subgrade shall be compacted to not less than 100 % of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318. See the plans for complete sub-grade compaction requirements.

152-2.6 Preparation of Embankment Area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a minimum depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of Embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D1557. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the contractor for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the Material has Greater than 30% Retained on the 3/4-inch (19.0 mm) Sieve, Follow AASHTO T-180 Annex Correction of Maximum Dry Density and Optimum Moisture for Oversized Particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D1557. Under all areas to be paved, the embankments shall be compacted to a minimum depth of 12 Inches and to a density of not less than 100 percent of the maximum density as determined by ASTM D1557. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor’s laboratory shall perform all density tests in the RPR’s presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones and fragmentary rock larger than 4 inches, and recycled pavement larger than 1 inch, in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

Payment for compacted embankment will be made under embankment in-place and no payment will be made for excavation, borrow, or other items.

152-2.9 Proof Rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, and after compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton) tandem axle dual wheel dump truck loaded to the legal limit with tires inflated to 80/100/150 psi (0.551 MPa/0.689 MPa/1.034 MPa) in the presence of the RPR. Apply a minimum of 1 coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch or show permanent deformation greater than 1 inch shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction Requirements. The subgrade under areas to be paved shall be compacted to a minimum depth of 12 inches and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D1557. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the procedures in AASHTO T180, ANNEX A, for correction of maximum dry density and optimum moisture for oversized particles. Tests for moisture content and compaction will be taken at a minimum of 3,000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and Protection of Subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches, reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor’s expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.

b. Grade. The grade, flowline, and crown shall be measured on a 50-foot grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

In safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil

at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

METHOD OF MEASUREMENT

152-3.1 Unclassified Excavation Haul-off shall be measured by the cubic yard, computed by software analysis based on contractor's topographical survey of initial and final elevations of subgrade. The area is that bound by the original ground line established by a 50-foot by 50-foot survey grid after the removal of all pavement and topsoil shall be considered the existing condition. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.2 The quantity of embankment shall be measured by the cubic yard, in its final and accepted position, with excavation and hauling incidental to the cost of embankment. Volume shall be calculated by the project limits and thickness of the placed material, established by embankment cross-sections shown on the plans, subject to verification by the Engineer. After completion of all embankment operations and prior to the placing of base or subbase material, the final elevation shall be verified by the Contractor with a 50-foot by 50-foot grid survey and provided to the engineer. No separate measurement will be made for verification survey. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed. Measurement for each embankment zone shall include the required scarification and compaction of the lower zone at no additional cost. Any non-mandatory rebuild embankment zone where the in-situ density exceeds the requirement on the plans may, at the direction of the engineer, be left in place and no payment will be made therefore.

152-3.3 Remove Unsuitable Material and Replace with Select Fill shall be measured by the cubic yard, in its final and accepted position. Areas are to be calculated by the area limits and the thickness of the excavated and replaced material. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed. Item shall only be used to remove and replace existing materials that cannot be made to pass compaction requirements after preparation of the material under the "Embankment In Place" requirements and agreement of the excavated limits with the RPR.

152-3.4 Stockpiled material will not be measured.

BASIS OF PAYMENT

152-4.1 Unclassified Excavation and Haul-off. Payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, off-hauling and disposing of excess materials from the site, and incidentals necessary to complete the item.

152-4.2 Embankment In Place Under Pavement. For embankment in place, payment shall be made at the contract unit price per square yard per each 12" compaction zone. This price shall be full compensation for furnishing all materials; labor; equipment; tools; proof-rolling; recompacting; final shaping to conform to the typical sections, lines, and grades as shown on the plans; and incidentals necessary to complete the item.

152-4.3 Remove Unsuitable Material and Replace with Select Material. Payment shall be made at the contract unit price per cubic yard. This price shall be full compensation for furnishing all materials, labor, equipment, tools, off-hauling and disposing of excess materials from the site, haul and compacting select material, proof-rolling; recompacting; final shaping to conform to the typical sections, lines, and grades as shown on the plans, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation and Haul-off – per cubic yard
Item P-152-4.2	Embankment In Place Under Pavement – per square yard
Item P-152-4.3	Remove Unsuitable Material and Replace with Select Material – per cubic yard

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2	Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

Attachment 3

CMT TECHNICAL SERVICES

ENGINEERING • ENVIRONMENTAL (ESA I & II)
MATERIALS TESTING • SPECIAL INSPECTIONS
ORGANIC CHEMISTRY

GEOTECHNICAL ENGINEERING STUDY

Ogden-Hinkley Airport

West Cargo Apron Design

About 3909 South Airport Road
Ogden, Utah
CMT Project No. 19421

FOR:
Mead & Hunt Inc.
1743 Wazee Street, Suite 400
Denver, Colorado 80202

December 6, 2022

Attachment 3

CMT TECHNICAL SERVICES

December 6, 2022

Mr. John Cessar, P.E.
Mead & Hunt Inc.
1743 Wazee Street, Suite 400
Denver, Utah 80202

Subject: Geotechnical Engineering Study
Ogden-Hinkley Airport West Cargo Apron Design
About 3909 South Airport Road
Ogden, Utah
CMT Project Number: 19421

Mr. Cessar:

Submitted herewith is the report of our geotechnical engineering study for the Ogden-Hinkley Airport West Cargo Apron Design in Ogden, Utah. This report contains the results of our findings, the laboratory testing and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project as well as pavement support recommendations.

A CMT Engineering Laboratories (CMT) geologist was on-site and supervised the drilling of 35 borings extending to depths of approximately 16.5 feet below the existing grade. Prior to starting each bore hole in existing pavement areas, the asphalt at each location was cored and DCP testing completed. Soil samples were obtained during the field operations and subsequently transported to our laboratory for further testing.

A detailed discussion of our findings, laboratory testing, and design and construction criteria is presented in this report.

We appreciate the opportunity to work with you at this stage of the project. CMT offers a full range of Geotechnical Engineering, Geological, Material Testing, Special Inspection services, and Phase I and II Environmental Site Assessments. With offices throughout Utah, Idaho, Colorado, Texas and Arizona, our staff is capable of efficiently serving your project needs. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 590-0394.

Sincerely,
CMT Engineering Laboratories

LICENSED PROFESSIONAL ENGINEER # 276478 BRYAN N. ROBERTS 12/6/2022 STATE OF UTAH

Bryan N. Roberts, P.E.
Senior Geotechnical Engineer

Reviewed by:

Andrew M. Harris, P.E.
Geotechnical Division Manager

Attachment 3

CMT TECHNICAL SERVICES

TABLE OF CONTENTS

APPENDIX

Attachment 3

1.0 INTRODUCTION

1.1 General

CMT Engineering Laboratories (CMT) was retained by Mead and Hunt, to conduct a geotechnical subsurface for the proposed Ogden-Hinkley Airport West Cargo Apron which will connect to a stub taxiway from Taxiway F, currently under construction. (See **Vicinity Map** below).

Vicinity Map

1.2 Objectives, Scope and Authorization

The objectives and scope of our study were planned in discussions between Mr. Chris Coons of Mead and Hunt Inc., and Mr. Andrew Harris of CMT Engineering Laboratories (CMT). In general, the objectives of this study were to define and evaluate the subsurface soil and groundwater conditions at the site, conduct field and laboratory testing of soils encountered, and provide appropriate earthwork and pavement recommendations to be utilized in the design and construction of new cargo apron(s).

In accomplishing these objectives, our scope of work has included performing field exploration, which consisted of the drilling/logging/sampling of 35 borings extending to depths of approximately 16.5 feet below the existing grade. DCP testing of the subgrade was also completed. Bore hole locations are provided on Figure 1. Site Map.

Following the field work an office program was completed consisting of the correlating available data, performing engineering analyses, and preparing this summary report. This scope of work was outlined in a request for proposal Dated August 5, 2022.

1.3 Description of Proposed Construction

We understand that a new cargo aircraft apron is currently being planned. The new apron will connect to a stub taxiway from Taxiway F, which is currently under construction. The site area is approximately 1,884,000 square feet. The apron is approximately 520,000 Square feet and will be designed to allow the construction of multiple aircraft hangars. The project will provide design of mass grading for future hangar locations. The project will not design the hangars nor building utilities.

A portion of the site is currently occupied by an abandoned runway which is paved with asphalt. Site development will require demolition of existing pavements as well as may require a moderate amount of earthwork in the form of minor cutting and filling. A site grading plan was not available at the time of this report, but we project that maximum cuts and fills may be on the order of 1 to 2 feet. Larger cuts or fills may be required in isolated areas.

Local codes for structures indicate a frost design depth is 30 inches for foundations. Based on the soil sample gradations for the predominately granular soils encountered within the field explorations and with respect to table 2-2 Soil Frost Groups, from within the Advisory Circular AC 150/5320-6G put out by the U.S Department of Transportation Federal Aviation Administration, the soil encountered best fit frost categories FG-2.

2.0 FIELD EXPLORATION

2.1 General

As previously mentioned, in order to define and evaluate the subsurface soil conditions at the site, 35 bore holes were drilled to depths of approximately 16.5 feet below the existing ground surface. Bore hole locations are provided on **Figure 1. Site Map**. Additionally, DCP testing was completed at many of the boreholes located within proposed pavement areas. Infiltration testing was also conducted including both a double ring infiltrometer test and a falling-head infiltration test at depths of about 1 foot and 5 feet, respectively, below the ground surface within in-situ granular soils.

Samples of the subsurface soils encountered in the borings were collected at varying depths. Disturbed samples were collected utilizing a standard split spoon sampler within the borings. The split spoon sampler was driven into the soils below the drill augers using a 140-pound hammer free-falling a distance of 30 inches. The number of hammer blows needed for each 6-inch interval was recorded. The sum of the hammer blows for the final 12 inches of penetration is known as a standard penetration test. The blow count provides a reasonable approximation of the relative density of sand/gravel soils but only a limited indication of the relative consistency of fine-grained soils (silt/clay) because their consistency is significantly influenced by the moisture content. The soil samples were placed in sealed plastic bags and containers prior to transport to the laboratory.

The subsurface soils encountered in the bore holes were logged and described in general accordance with ASTM[1] D-2488. Soil samples were collected as described above, and were classified in the field based upon visual and textural examination. These field classifications were supplemented by subsequent examination and testing of select samples in our laboratory. Logs of the explorations, including a description of the soil strata encountered, is presented on each individual Bore Hole Log, **Figures 2 through 36**, included in the Appendix. Sampling information and other pertinent data and observations are also included on the logs. In addition, a Key to Symbols defining the terms and symbols used on the logs is provided as **Figure 37** in the Appendix.

The bore holes were backfilled with auger cuttings and the core locations were patched with asphalt patch.

2.3 Measured Asphalt Thickness at Abandoned Asphalt Runway

Measured Asphalt Thickness	
Test Location	Observed Asphalt Thickness (inches)
Bore hole B-1	6.5
Bore hole B-4	6.5
Bore hole B-8	8.0
Bore hole B-11	7.0
Bore hole B-16	6.5
Bore hole B-19	7.0
Bore hole B-20	7.0

[1]American Society for Testing and Materials

2.4 Dynamic Cone Penetrometer (DCP) Testing

Following surface coring through the asphalt concrete DCP testing was completed within the underlying soils to depths of about 8 to 30 inches. Additional DCP testing was completed surrounding the existing asphalt paved area. The existing asphalt was in relatively poor to fair condition.

Dynamic Cone Penetrometer (DCP) testing was performed on the existing subgrade in order to ascertain in-situ California Bearing Ratio (CBR) values. The following table provides estimated CBR correlations within the upper about 10 to 15 inches.

Field DCP Testing

Test Location	Estimated Soil	Penetration Depth (inches)	Est. Field Correlated CBR	Factored/Corrected Field CBR
B-1*	Fill; GM-GC/SM-SC	Est. Average* upper 10 inches	10*	8*
B-3	GP	Est. Average upper 10 inches	15	10
B-4	Fill; GM	Est. Average upper 10 inches	18	12
B-5	GM-SM	Est. Average upper 10 inches	40	27
B-6	GP	Est. Average upper 10 inches	30	20
B-7	GP	Est. Average upper 10 inches	18	12
B-8	GP	Est. Average upper 10 inches	20	13
B-9	GM	Est. Average upper 10 inches	50	34
B-10	SM	Est. Average upper 10 inches	70	47
B-11	Fill; SM	Est. Average upper 10 inches	20	13
B-12	SM	Est. Average upper 10 inches	50	34
B-13	GP	Est. Average upper 10 inches	20	13
B-15	GP-GM	Est. Average upper 10 inches	30	20
B-16	Fill; SM-GM	Est. Average upper 10 inches	15	10

B-17	GP-GM	Est. Average upper 10 inches	50	34
B-18	GM-Fill	Est. Average upper 10 inches	70	47
B-19	Fill; GM-GP	Est. Average upper 10 inches	30	20
B-20	Fill; SC-GC	Est. Average upper 5-15 inches	20	13
B-21	GP	Est. Average upper 10 inches	60	40

* Subgrade appeared disturbed from initial coring of AC surfacing and not utilized in design consideration.

2.5 Infiltration Tests

A double ring infiltrometer test was completed at a depth of about 1 foot below the ground surface along with a falling head infiltration test at a depth of about 5 feet below the ground surface. Test locations are shown on Figure 1 Site Plan. The tests were conducted in granular soils comprised of silty sands and gravels with test results indicating an infiltration rate at these locations and depth of about 4.5 minutes per inch. An adequate safety factor should be applied to this rate for site infiltration design due to long term siltation.

3.0 LABORATORY TESTING

3.1 General

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties, as follows:

1. Moisture Content, ASTM D-2216, Percent moisture representative of field conditions
2. Dry Density, ASTM D-2937, Dry unit weight representing field conditions
3. Atterberg Limits, ASTM D-4318, Plasticity and workability
4. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis
5. Laboratory Compaction Characteristics of Soil, ASTM D1557
6. California Bearing Ratio, ASTM D-2937, Subgrade support properties
7. Chemical Testing (pH; soluble sulfate; resistivity)

3.2 Lab Summary

Laboratory test results are presented on the bore hole logs (**Figures 2 through 9**) and in the following Lab Summary Table and sections:

LAB SUMMARY TABLE

BORE HOLE	DEPTH (feet)	SOIL CLASS	SAMPLE TYPE	MOISTURE CONTENT(%)	DRY DENSITY (pcf)	GRADATION			ATTERBERG LIMITS		
						GRAV.	SAND	FINES	LL	PL	PI
B=1	5	GP-GM	SPT	3.7		56	38	6.4			
	15	GP	SPT	3.8		4	92	4.6			
B-2	2.5	SP-SM	SPT	1.4		45	46	9.2			
	5	SM-M	SPT	2.8		1	52	46.6			
	15	SM	SPT	3.5			85	15			
B-3	7.5	SM	SPT	6.3				27			
B-4	1.5	Fill/GM	SPT	7.1		49	30	21.3			
	2.5	Fill/GM	SPT	9.3				26.1			
B-5	2.5	GM-SM	SPT	1.8		44	39	17.6			
	15	SM	SPT	2.9		6	60	33.6			
B-6	7.5	GP	SPT	1.4		64	32	4.4			
B-7	15	SP-SM	SPT	4.1			89	10.9			
B-8	1.5	Fill GP-GM	SPT	3.6		58	35	7			
	5	GP	SPT	3.6		61	36	3.5			
B-9	2.5	GM	SPT					19.8	17	14	3
	5	SM	SPT				39	41			
B-10	2.5	SM	SPT	3.4				25			
	15	SM	SPT				87	13			
B-11	1	Fill/SM	SPT	8.1		35	43	22.1			
	15	SM	SPT	5.9				14.1			
B-12	2.5	SM	SPT	2.1		33	45	22.6			
	7.5	SP	SPT	2.7		25	70	4.9			
	15	GP-GM	SPT	1.8		59	34	7.3			
B-13	2.5	GP	SPT	1.9		56	40	4.5			
	10	SM	SPT	10.3		4	62	34.1			
	15	SM-SP	SPT	2.8		0	88	11.7			
B-14	5	GP-GM	SPT			55	38	6.7			
B-15	2.5	GP-GM	SPT						19	16	3
	5	GP-GM	SPT			51	40	8.6			
B-16	5	GP	SPT	2.1		60	35	4.5			
	15	SP-SM	SPT	2.1			94	5.8			
B-17	10	SP-SM	SPT	1		44	50	6.2			
B-18	2.5	Fill/GM	SPT								NP
	7.5	GP-GM	SPT	2.6		55	39	6.4			
B-19	2.5	Fill/GM-GC	SPT						17	13	4
	15	SM	SPT	5				13			
B-20	1	Fill/SC-GC	SPT					12	25	14	11
	7.5	GP	SPT	2				3			
B-21	2.5	SM-GM	SPT	3		34	37	29			
	10	SP-SM	SPT	2		0	94	6			
B-22	1	SM-SC	Bulk			33	34	33.4	21	15	6
	15	SP	SPT	3				4			

BORE HOLE	DEPTH (feet)	SOIL CLASS	SAMPLE TYPE	MOISTURE CONTENT(%)	DRY DENSITY (pcf)	GRADATION			ATTERBERG LIMITS		
						GRAV.	SAND	FINES	LL	PL	PI
B-23	5	GP	SPT	1		63	33	4			
	10	GP	SPT	2		60	35	5			
	15	SP	SPT	3		11	84	5			
B-24	5	GP	SPT			75	23	4.9			
	10	SP-SM	SPT	3			94	5.8			
B-25	2.5	GM-SM	SPT	1.4		44	43	13			NP
	7.5	SM	SPT	2.1		31	52	17			
	15	SP-SM	SPT			4	89	6.9			
B-26	7.5	SP	SPT	1.3		1	95	4.4			
B-27	5	SP-SM	SPT	2.1		42	51	7			
	15	SP-SM	SPT				89	11.2			
B-28	2.5	SM-GM	SPT	3		33	44	23.1			
	5	SM-GM	SPT	1.7		51	36	12.9			
	10	SM	SPT	2		3	76	21.3			
	15	SM	SPT	3.7			89	11.2			
B-29	2.5	SM	SPT	3.4		21	49	29.8			
	5	GP	SPT	1.1		6	29	4.7			NP
	7.5	GP	SPT	1.6		60	36	4.5			
	10	SP-SM	SPT			4	88	6.9			
B-30	2.5	SM	SPT	2.3		17	57	25.8			NP
	15	SP-SM	SPT	2.4		13	81	5.8			
B-31	2.5	GP-GM	SPT			55	36	8.3			
	7.5	GP	SPT	1.8		59	38	3			
	15	SM	SPT	3.9		4	76	19.9			
B-32	7.5	GP-SP	SPT	1.6		47	49	4			
	15	SM-ML	SPT	10.6		0	49	51.1			
B-33	5	SP	SPT	3.1		10	87	2.8			
	10	SC-CL	SPT	10.5			46	54			
B-34	7.5	SP	SPT	3.8		3	93	3.7			
B-35	5	SP-GP	SPT	2.9		45	50	5.1			
	7.5	GP	SPT			64	31	4.2			
	10	SM	SPT	7.8			76	24			

3.3 Full Gradation Tests

Location	Depth Feet	Percent Passing Sieve											Soil Classification*
		2.0"	1.5"	1"	3/4"	1/2"	3/8"	No. 4	No. 10	No. 16	No. 40	No. 100	No. 200	
B-9	0-1.0	100	99	95	85	73	69	61	58	57	48	27	19.8	SM
B-15	0.5-1.5	97	90	82	72	62	56	46	40	38	31	16	12.3	GM
B-22	0.5-1.0	100	100	94	86	77	73	67	65	64	54	39	33.4	SM-SC
B-28	1.0	90	86	77	67	57	51	43	39	38	32	14	8.8	GP-GM

3.4 Modified Proctor Tests

A bulk sample of the natural soils were taken at multiple bore holes and a compaction test and subsequent California Bearing Ratio (CBR) test was performed on each sample. The compaction test was completed in accordance with the (ASTM[2] D-1557) specifications.

Location	Approximate Sample Depth Feet	Optimum Moisture Content (percent)	Maximum Dry Density (pcf)	Plastic Index	USCS Soil Classification
B-9	0.5	5.2	137.7	3	SM
B-15	0.5	5.0	141.3	3	GM
B-22	0.5	7.0	130.4	6	SM-SC
B-28	1.0	6.0	136	0	GP-GM

3.5 California Bearing Ratio (CBR) Test

To determine subgrade characteristics and to provide data for design of the proposed pavements, a California Bearing Ratio (CBR) test was performed on the bulk clay soil sample described above in section 4.3 Compaction Test. The results of the CBR test are presented below:

2 American Society for Testing and Materials

Location and sample Depth Feet	Moisture Content at Compaction (%)	Compacted Dry Density (PCF)	Percent Compaction	Percent Swell	Measured CBR @ 0.1/0.2
B-9 @ 0.5	5.8	129.1	96.1	0.24	17/18
B-15 @ 0.5	4.8	130.7	96.8	---	21/22
B-22 @ 0.5	6.3	125.5	96	0.65	17/13
B-28 @ 1.0	[illegible]	130.7	69.8	---	40/57

3.6 Chemical Tests

To determine if the site soils will react detrimentally with concrete and/or steel, chemical tests were performed. The results of the chemical tests are tabulated below:

Boring No.	Depth (feet)	Soil Classification	pH	Total Water Soluble Sulfate (mg/kg-dry)	Resistivity (ohm-meters)
B-11	2.5	SM-Fill	8.4	<11	75.8
B-20	2.5	SC/GC-Fill	7.8	<11	196
B-27	2.5	GP-SP	7.8	<10	244

4.0 GEOLOGIC & SEISMIC CONDITIONS

4.1 Geologic Setting

The subject site is located in the south-central portion of Weber County in north-central Utah. The central portion of the site sits at an elevation of between approximately 4,430 to 4,458 feet above sea level. The site is located in a valley bound by the Wasatch Mountains on the east and Antelope Island (Great Salt Lake) and the Promontory Mountains to the west. The Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley was formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The Valley is located within the Intermountain Seismic Belt, a zone of ongoing tectonism and seismic activity extending from southwestern Montana to southwestern Utah. The active (evidence of movement in the last 10,000 years) Wasatch Fault Zone is part of the Intermountain Seismic Belt and extends from southeastern Idaho to central Utah along the western base of the Wasatch Mountain Range.

Much of northwestern Utah, including the valley in which the subject site is located, was also previously covered by the Pleistocene age Lake Bonneville. The Great Salt Lake, located along the western margin of the valley and beyond, is a remnant of this ancient freshwater lake. Lake Bonneville reached a high-stand elevation of between approximately 5,100 and 5,200 feet above sea level at between 18,500 and 17,400 years ago. Approximately 17,400 years ago, the lake breached its basin in southeastern Idaho and dropped relatively fast, by almost 300 feet, as water drained into the Snake River. Following this catastrophic release, the lake level continued to drop

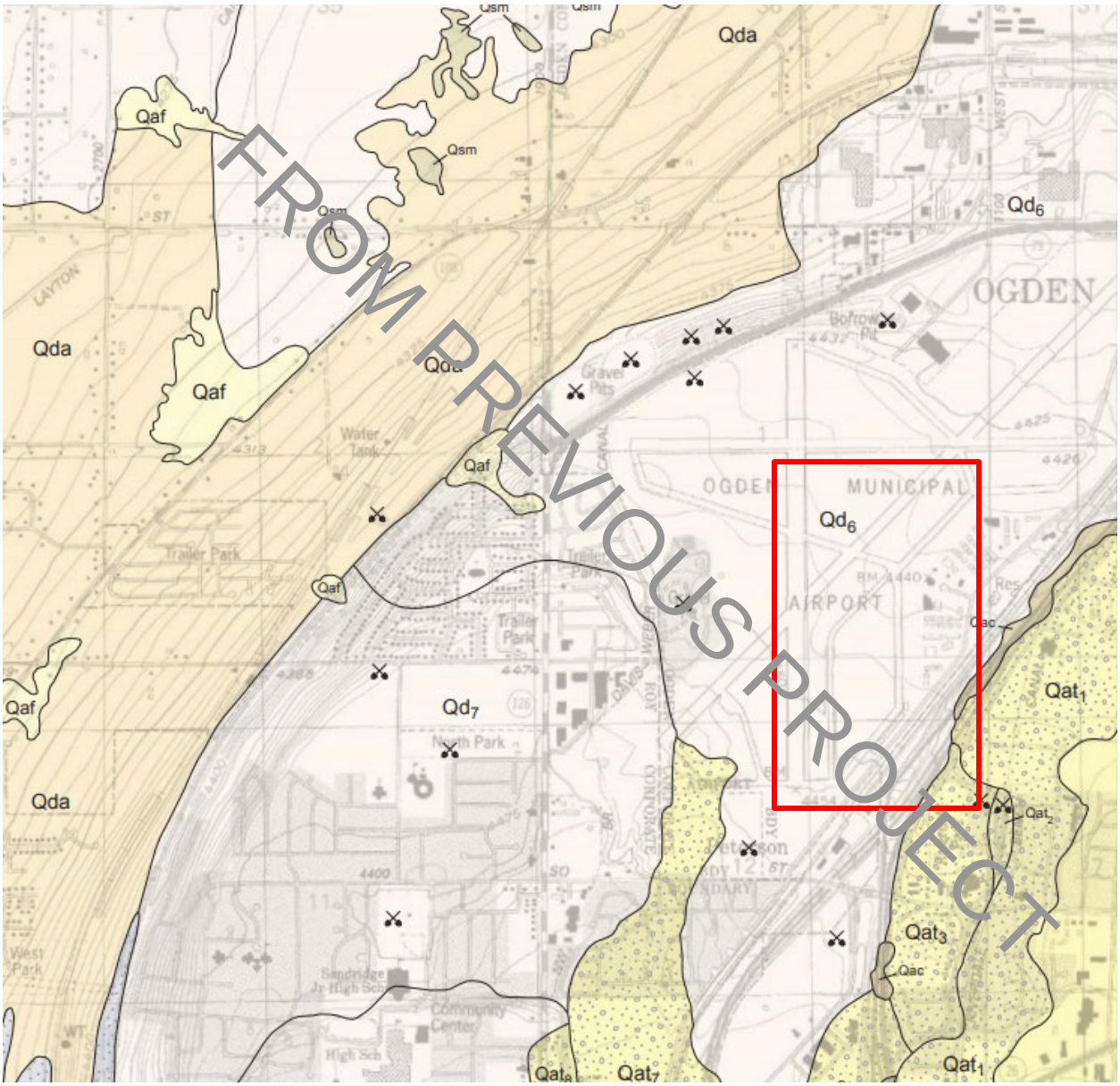
slowly over time, primarily driven by drier climatic conditions, until reaching the current level of the Great Salt Lake. Shoreline terraces formed at the high-stand elevation of the lake and several subsequent lower lake levels are visible in places on the mountain slopes surrounding the valley. Much of the sediment within the Valley was deposited as lacustrine sediments during both the transgressive (rise) and regressive (fall) phases of Lake Bonneville as well as in older, pre-Bonneville lakes that previously occupied the basin.

The geology of the USGS Roy, Utah 7.5 Minute Quadrangle, that includes the location of the subject site, has been mapped by Sack[3]. The surficial geology at much of the subject site and adjacent properties is mapped as "Sand-dominated deltaic deposits from the early and middle post-Provo regressive phase of Lake Bonneville" (Map Unit Qd_6) dated to be uppermost Pleistocene. The referenced geologic map describes Unit Qd_6 as "Primarily fine and medium sand, crossed by channel deposits of gravel or sand and gravel, deposited in six discrete delta components (6 = youngest) between about 14.0 and 12.2 ka. Maximum thicknesses range from 50 to 125 feet (15-38 m)." There is also a gravel pit mapped on the western portion of the site.

No active surface fault traces are shown on the referenced geologic map crossing, adjacent to, or projecting toward the subject site. The nearest active fault is the Weber Segment of the Wasatch fault zone, 3.9 miles to the east. No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site. The site is not located within a known or mapped potential debris flow, stream flooding[4], or rock fall hazard area. Refer to the **Geologic Map**., shown below.

[3]Sack, D., 2005, Geologic Map of the Roy 7.5' Quadrangle, Weber and Davis Counties, Utah; Utah Geological Survey Miscellaneous Publication, Map MP-05-03, Scale 1:24,000.

[4]https://msc.fema.gov/portal/search?AddressQuery=2812%20West%202900%20South%2C%20West%20Haven%2C%20Utah#searchresultsanchor



Geologic Map

4.2 Faulting

No active surface fault traces are shown on the referenced geologic map crossing, adjacent to, or projecting toward the subject site. The nearest active fault is the Weber Segment of the Wasatch fault zone, 3.9 miles to the east. Seismic design issues are addressed in **Section 4.3** below.

4.3 Seismicity

4.3.1 Site Class

Utah has adopted the International Building Code (IBC) 2018, which determines the seismic hazard for a site based upon 2014 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points). For site class definitions, IBC 2018 Section 1613.2.2 refers to Chapter 20, Site Classification Procedure for Seismic Design, of ASCE[5] 7-16, which stipulates that the average values of shear wave velocity, blow count and/or shear strength within the upper 100 feet (30 meters) be utilized to determine seismic site class. Based on average shear wave velocity data within the upper 30 meters ($V_{S,30}$) published by McDonald and Ashland[6], the subject site is located within unit description Q02, which has a log-mean $V_{S,30}$ of 256 meters per second (840 feet per second). Thus, it is our opinion the site best fits Site Class D – Stiff Soil Profile (with data), which we recommend for seismic structural design.

4.3.2 Ground Motions

The 2014 USGS mapping utilized by the IBC provides values of peak ground, short period and long period spectral accelerations for the Site Class B/C boundary and the Risk-Targeted Maximum Considered Earthquake (MCE_R). This Site Class B/C boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions at site grid coordinates of 41.2896 degrees north latitude and -111.9918 degrees west longitude. The following table and response spectra summarizes the peak ground, short period and long period accelerations for the MCE_R event, and incorporates appropriate soil correction factors for a Site Class D (with data) soil profile:

[5]American Society of Civil Engineers

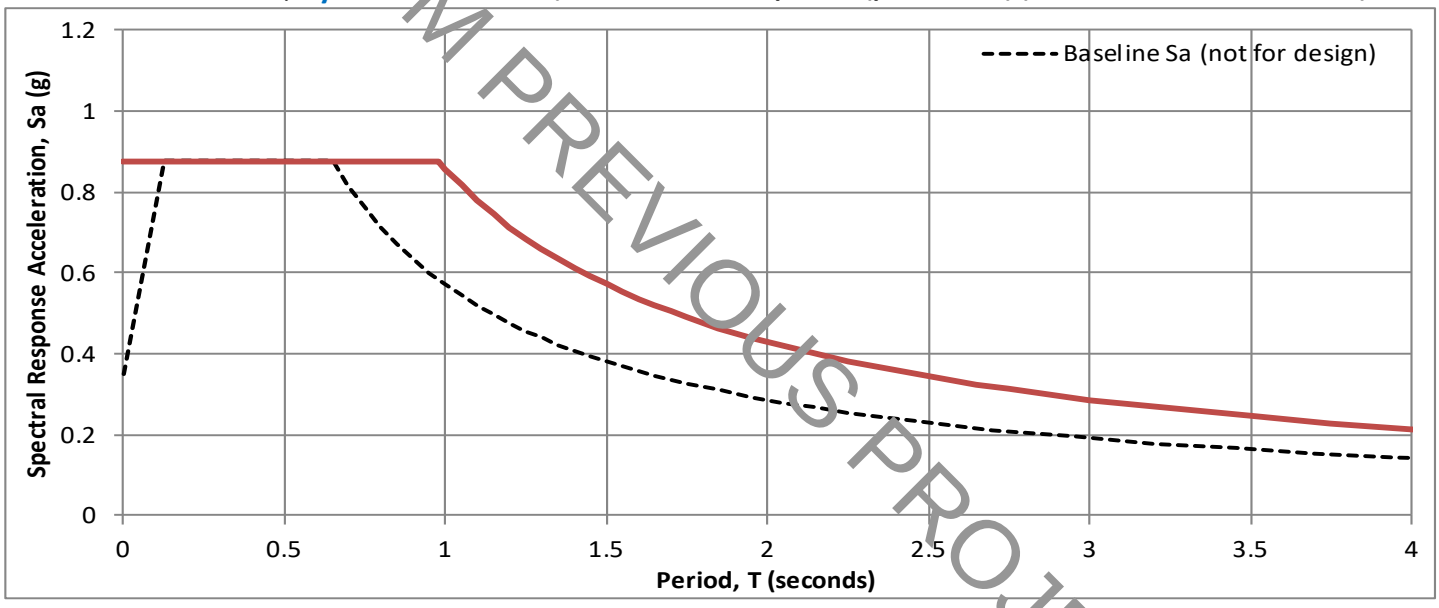
[6] McDonald, G.N. and Ashland, F.X., 2008, "Earthquake Site-Conditions Map for the Wasatch Front Urban Corridor, Utah," Utah Geological Survey Special Study 125, 41 pp.

SPECTRAL ACCELERATION PERIOD, T	SITE CLASS B/C BOUNDARY [mapped values] (g)	SITE COEFFICIENT	SITE CLASS D* [adjusted for site class effects] (g)	MULTI-PLIER	DESIGN VALUES (g)
Peak Ground Acceleration	PGA = **0.590**	F_{pga} = 1.100	PGA_M = 0.649	1.000	PGA_M = 0.649
0.2 Seconds (Long Period Acceleration)	S_S = **1.316**	F_a = 1.000	S_{MS} = 1.316	0.667	S_{DS} = 0.877
	(no exceptions needed)	F_a = (N/A)	S_{MS} = (N/A)	0.667	S_{DS} = (N/A)
1.0 Second (Long Period Acceleration)	S_1 = **0.468**	F_v = N/A	S_{M1} = N/A	0.667	S_{D1} = N/A
	(Exception 2:)	F_v = (1.832)	S_{M1} = (0.857)	0.667	S_{D1} = (0.572)

NOTES: 1. TL (seconds): **8** * **Site Class D With Data**

2. Site Class: **D** **4. ASCE 7-16 Requires Site-Specific Ground Motion Hazard Analysis (Since S1≥0.2 sec) - OR Can Use Exception 2 (per §11.4.8) (Sa/Cs Plot Assumes R=Ie=1.0)**

3. Have data to verify? **yes**



As indicated in the above table, S_1 is greater than 0.2 seconds and a site-specific ground motion hazard analysis (GMHA) is required for the site, unless the Exception 2 values shown are used for seismic design. If a site-specific GMHA is desired instead of using the higher exception values for design, please contact CMT for a proposal to perform the GMHA.

4.3.3 Liquefaction

The site is located within an area designated by the Utah Geologic Survey[7] as having "moderate" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, sandy soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event. With groundwater anticipated to be deeper than 20 feet and the moderate dense to dense granular soils encountered, it is our opinion that liquefaction at the site is unlikely.

[7] Utah Geological Survey, "Liquefaction-Potential Map for a Part of Weber County, Utah," Utah Geological Survey Public Information Series 27, August 1994. https://ugspub.nr.utah.gov/publications/public_information/pi-27.pdf

4.4 Other Geologic Hazards

No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site. The site is not located within a known or mapped potential debris flow, stream flooding[8], or rock fall hazard area.

5.0 SITE CONDITIONS

5.1 Surface Conditions

The majority of the site is vacant with the exception of an east-west section of an abandoned asphalt paved runway. The unpaved portions of the site are blanketed with various grasses, weeds and small brush. The site area is relatively flat and based on aerial photos, readily available on the internet, dating back to 1997, has had minimal change. The runway appeared to be abandoned in 2007. Please see **Vicinity Map** in **Section 1.1** above and Figure 1 in the appendix for more detail.

5.2 Subsurface Soils

Bore holes B-1, B-4, B-8, B-11, B-16, B-19 and B-20 were blanketed with asphalt concrete ranging about 6.5 to 7.0 inches thick overlying granular fills extending to depths of about 0.5 to 3.0 feet thick. The granular fill soils encountered ranged from loose to dense, contained varying fines content, generally of silt, were dry to slightly moist, and brown in color. A thin topsoil layer was observed at the surface of most of the other bore holes about 2 to 3 inches thick. Natural soils encountered below the fill and topsoil consisted of SANDS and GRAVELS with varying fines content (SM, SP, GM, GP, SC) and a mixture of these soils extending down to the full depth penetrated, about 16.5 feet. The native soils ranged from loose to dense, were light brown to brown in color and dry to slightly moist.

5.3 Groundwater

Groundwater was not encountered within the depth penetrated, up to 16.5 feet below the surface, and based on prior studies is anticipated to be deeper than 20 feet below the ground surface. Groundwater is not anticipated to affect planned construction.

Factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors, may influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

[8]https://msc.fema.gov/portal/search?AddressQuery=2812%20West%202900%20South%2C%20West%20Haven%2C%20Utah#searchresultsanchor

5.4 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations.

6.0 SITE PREPARATION AND GRADING

6.1 General

Initial site preparation is anticipated to consist of the demolition and removal of the existing asphalt concrete as well as the removal of any existing vegetation and topsoil, and any deleterious material. Existing in-situ fills may remain below new pavements if free of deleterious materials and large, non-deleterious debris, and if properly prepared. Proper preparation shall consist of scarifying the upper 18 inches, moisture conditioning and recompacting to the requirements for structural fill. Similarly, native soils shall be scarified to about 8 inches, and recompacted to the requirements outlined is section **6.4 Fill Placement and Compaction** below.

The existing asphalt may be milled/pulverized and reutilized as subbase provided it is blended with granular soils at no more than one-quarter milled asphalt to three-quarters soil. Milled asphalt is not recommended within the footprint of future hangar structures.

Subsequent to stripping and prior to the placement of structural site grading fill and pavements, the prepared subgrade must be proof rolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or otherwise unsuitable soils are encountered beneath footings, they must be completely removed. If removal depth required is greater than 2 feet below footings, CMT must be notified to provide further recommendations. In pavement, floor slab, and outside flatwork areas, unsuitable natural soils should be removed to a maximum depth of 2 feet and replaced with compacted granular structural fill.

6.2 Temporary Excavations

The soils encountered were primarily granular, cohesionless soil. For cohesionless (sandy/gravelly) soils, temporary construction excavations not exceeding 4 feet in depth should be no steeper than one-half horizontal to one vertical (0.5H:1V). For excavations up to 8 feet and above groundwater, side slopes should be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated or very clean and loose cohesionless soils will be very difficult to maintain and will require very flat side slopes and/or shoring, bracing and dewatering.

In cohesive (clayey) soils, temporary construction excavations not exceeding 4 feet in depth may be constructed with near-vertical side slopes. Temporary excavations up to 8 feet deep, above or below groundwater, may be

constructed with side slopes no steeper than one-half horizontal to one vertical (0.5H:1V). Excavations deeper than 8 feet are not anticipated at the site.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated. All excavations should be made following OSHA safety guidelines.

6.3 Fill Material

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by pavements, etc. Structural fill will be required as site grading fill, pavement support and possibly as backfill over utilities. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials.

All fill materials, existing or imported to the project site, must meet the requirements of the project specifications, the recommendation of this report and the applicable portions of the FAA AC 150/5370 -10H.

The natural soils are predominately sand and gravel soils which may be reutilized if they are processed to meet the requirements for such as outlined in this report.

6.4 Flexible Pavement Support Material

6.4.1 Future Commercial/Airplane Hangar Building Access Roads

Untreated base course (UTBC) should conform to graduation 1-inch-minus UDOT specifications for A–1-a/NP, and have a minimum CBR value of 70%. Subbase shall consist of a granular soil with a minimum CBR of 30 percent. Roadbase and subbase material should be compacted to a minimum of 96 percent of the modified Proctor density ASTM D-1557 (AASHTO T-180). Asphalt material should generally conform to APWA requirements, having a ½-inch maximum aggregate size, a 75-gyration Superpave mix containing no more than 15% of recycled asphalt (RAP) and a PG58-28 binder.

Site concrete should typically utilize Type I/II cement and have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent ±1 percent air-entrainment.

6.4.2 Proposed Pavement Aprons

Material properties for pavement construction is dictated by **AC150-5370-10H** with consideration of traffic loading.

- Asphalt pavement shall meet the requirements for P-401.
- Base course material placed beneath asphalt concrete pavements shall meet the requirements outlined for P-209. Reduced limit based on local frost characteristics. The material finer than 0.075 mm shall be limited to a maximum of 5%.

- Cement-treated base course material, if placed beneath asphalt concrete pavements, shall meet the requirements outlined for P-304.

6.4.3 Fill Placement and Compaction

Compaction shall meet the requirements of P-152, P-154, and P209 as outlined in the AC 150/5370-10H specification under pavements. The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions, can achieve compaction at 8 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557 (or AASHTO[9] T-180) in accordance with the following recommendations:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Site Grading Fills	0 to 5 5 to 8	95 98
Site grading fill outside area defined above	0 to 5 5 to 8	92 95
Utility trenches within structural areas	--	96
Base Course (commercial/airplane hangar)	--	96
Subbase and Base Course (Aprons, taxiway/taxi lanes)	--	100
Prepared Natural Subgrade		95
Select Structural Fill below hangar/new structures	0 to 5 5 to 8	95 98

For best compaction results, we recommend that the moisture content for structural fill/backfill be within 2% of optimum. Field density tests should be performed on each lift as necessary to verify that proper compaction is being achieved.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade shall be prepared as discussed in Section 6.1, Site Preparation, of this report. In confined areas, subgrade preparation should consist of the removal of all loose or disturbed soils.

Non-structural embankment fill (outside of pavement and/or structural areas) may be placed in lifts not exceeding 8 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

[9] American Association of State Highway and Transportation Officials

To stabilize soft soil conditions, coarse angular gravel and cobble mixtures (stabilizing fill) may be utilize and spread to a maximum loose lift thickness of 15 inches and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the stabilizing fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment at least twice. Subsequent fill material placed over the coarse gravels and cobbles shall be adequately compacted so that the "fines" are "worked into" the voids in the underlying coarser gravels and cobbles. Utilization of a structural filter fabric, such as Mirafi 280i or equivalent, over soft subgrade may also be advantageous.

7.0 PAVEMENTS

7.1 Proposed Cargo Aprons

A pavement design section was completed by CMT using FAARFIELD 2.0.3 design software. The design provided is based on airplane traffic as provided to us by Mead and Hunt Inc. and the subsurface soil conditions encountered during this study. We understand that a final pavement design analysis will be completed by Mead and Hunt Inc. The airplane traffic criteria, based on information provided, is summarized on FAARFIELD design output attached in the appendix.

For the design given herein, a CBR value of 10 percent was conservatively utilized to accommodate the soil variance between sand, sand with gravel and gravel soils encountered within our bore hole completed across the site. Based on the traffic loading the minimum pavement sections calculated using the Fairfield design program is summarize in the following tables. Fairfield output from our analysis is provided in the appendix.

The following minimum calculated pavement section is summarized below.

MATERIAL	PAVEMENT SECTION THICKNESS (inches)	
P-401/P-403 HMA Surface	**4**	**4**
P-401/P-403 HMA Stabilized	**----**	**5**
P-304 Cement Treated Base	**8.0**	**----**
P-209 Crushed Aggregate	**----**	**9**
Total Thickness	**12.0**	**18**

8.0 QUALITY CONTROL

Our recommendations in this report are based on the assumption that adequate quality control testing and observations will be conducted by CMT during construction to verify compliance. This may include but not necessarily be limited to the following:

8.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, subgrade compaction, structural fill and asphalt placement.

8.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Proctor-ASTM 1557/698) tests should be requested by the contractor immediately after delivery of any granular fill materials. The maximum density information should then be used for field density tests on each lift as necessary to ensure that the required compaction is being achieved.

8.3 Quality Control

All excavation procedures and processes should be observed by a geotechnical engineer from CMT. In addition, all backfill and structural fill placed in trenches and all pavements should be density tested by CMT.

9.0 LIMITATIONS

The recommendations provided herein were developed by evaluating the information obtained from the subsurface explorations and soils encountered therein. The exploration logs reflect the subsurface conditions only at the specific location at the particular time designated on the logs. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

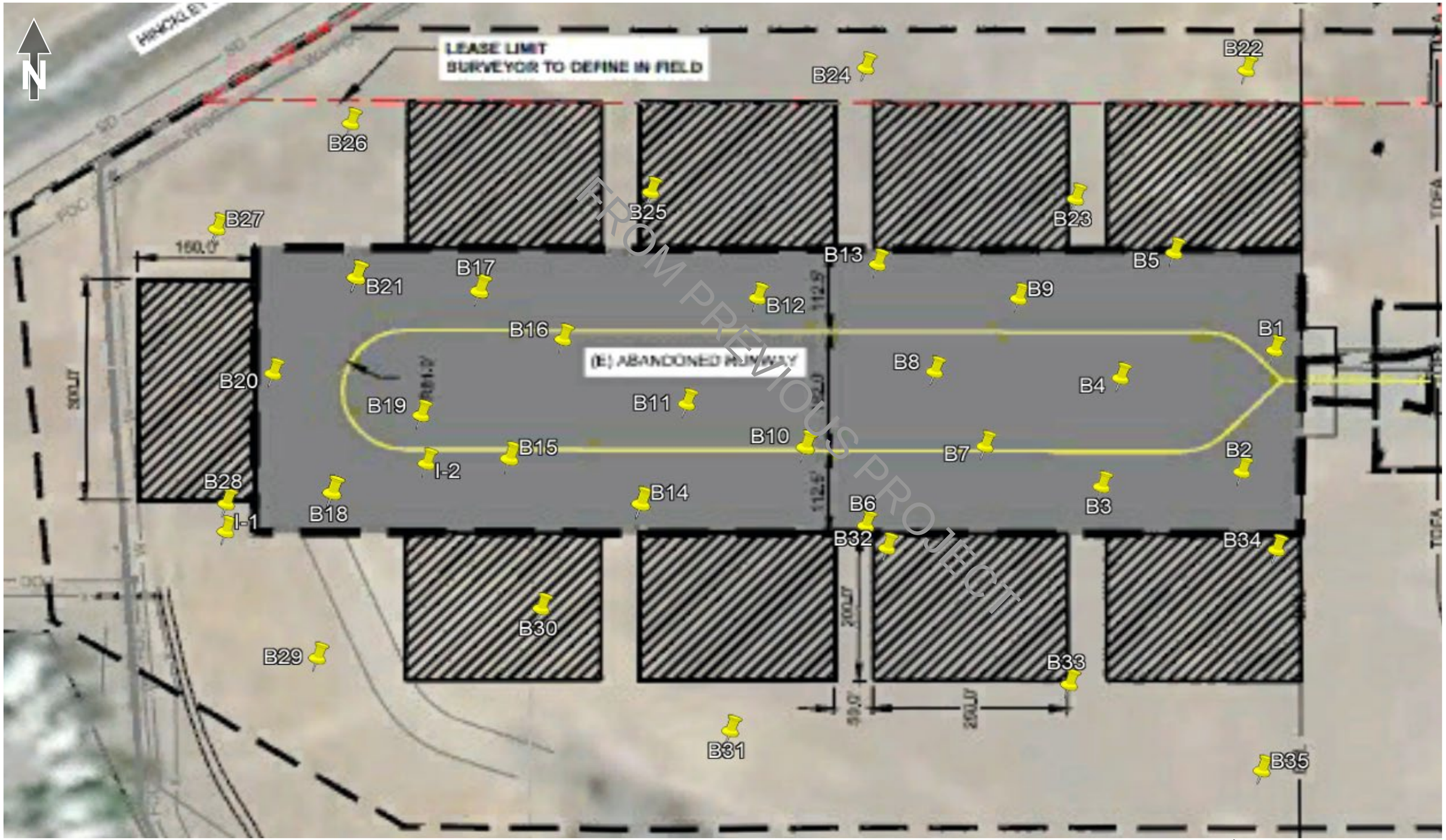
Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 590-0394. To schedule materials testing, please call (801) 381-5141.

APPENDIX

SUPPORTING
DOCUMENTATION

Attachment 3



CMT TECHNICAL SERVICES	**Ogden-Hinkley Airport West Cargo Apron Design** About 3909 South Airport Road, Ogden, Utah	**Site Plan**	Date: 14-Oct-2022 CMT No.: 19421	Figure: 1

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-1

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		6.5" Asphalt with sealant												
		Fill; brown silty clayey sandy gravel — moist, loose		1	7 4 1	5								
		medium dense		2	2 5 8	13								
4		GRAVEL (GP-GM) with sand and some silt — slightly moist, medium dense		3	7 12 13	25	4		56	38	6			
8		dense		4	10 16 19	35								
		grades with more sand — medium dense		5	4 10 7	17								
12														
16		SAND (SP) with trace gravel and silt — slightly moist, loose		6	4 4 5	9	4		3.7	91.7	4.6			
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

CMT TECHNICAL SERVICES

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

Figure: 2

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-2

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI
0		4" Fill: brown silt sand and gravel with organics												
		Brown Sandy Gravel/Gravelly Sand (GP-GM/SP-SM) with silt dry, dense												
				94	10 15 15	30	1		45	46	9			
4														
		Brown Silty Sand/Sandy Silt (SM-ML)		95	9 14 21	35	3		1	52	47			
8		Brown Silty SAND (SM) with calcification slightly moist, medium dense		96	6 7 8	15								
		grades with oxidation		97	3 4 6	10								
12														
		grades less fines loose		98			4		0	85	15			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 3

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-3

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		3" Fill: silt sand gravel with organics											
		Brown Sandy GRAVEL (GP) slightly moist, medium dense											
				11	7 8 9 (17)								
4													
				12	6 10 11 (21)								
8		Brown Silty SAND (SM) with oxidation and seams of fines slightly moist, medium dens		13	5 6 6 (12)	6				27			
		grades less oxidation and fines		11	5 8 12 (20)								
12													
		grades more oxidation and fines		15	7 4 8 (12)								
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 4

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-4

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		6.5" Asphalt												
		Fill; dark brown silty gravel with sand, moist, loose		16	3 2 3	5	7		49	30	21.3		NP	NP
				17	2 2 1	3	9.3				26.1			
4		Brown Silty GRAVEL (GM) with sand, slightly moist, medium dense		18	6 8 11	19								
8				19	2 4 7	11								
				20	7 9 20	29								
12		Tan SAND (SP) with silt and oxidiation												
16				21	6 8 6	14								
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 5

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-5

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silty sand with organics, roots and grass											
		Brown Silty Sandy GRAVEL (GM/SM) slightly moist, medium dense											
				22	15 15 13	2		44	38	18			
4		grades less silt		23	3 8 10	18							
8		grades tan		24	10 8 7	15							
				25	6 12 18	30							
12													
16		Tan Silty SAND (SM) with some gravel and oxidation		26	6 9 12	21	3	6	60	34			
		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 6

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-6

About 3909 South Airport Road, Ogden, Utah

Total Depth: 15.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI
0		3" Topsoil: silty sand with organics, roots , weeds and gravel												
		Sandy GRAVEL (GP) with trace to some silt dry, medium dense												
				27	9 11 12	23								
4														
		grades with more sand		28	9 12 11	23								
8		slightly moist		29	10 15 15	30	1		64	32	4			
				30	4 10	14								
12														
		SAND (SP) with gravel and trace fines		31	22 12 11	23								
16		REFUSAL AT 15.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 7

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-7

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5' | Water Depth: (see Remarks) | Date: 10/20/22 | Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Sand %	Fines %	Atterberg: LL	PL	PI
0		3" Topsoil; sand gravel silt with organics												
		Brown Sandy GRAVEL (GP) dry, medium dense												
				32	8 12 12	24								
4														
				33	4 7 11	18								
8		slightly moist		34	4 12 14	26								
		Brown SAND (SP-SM) with some silt and gravel												
				35	3 6 9	15								
12														
		grades no gravel loose		36	4 5 5	10	4			89	11			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °

Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"

Excavated By: Direct Push

Logged By: Trevor Durrant

Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 8

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-8

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI
0		8" Asphalt with sealant												
		4" Fill: sandy gravel												
		Brown GRAVEL (GP) with sand slightly moist, medium dense		37	6 10 14	24	3		58	35	7			
				38	8 10 9	19								
4				39	5 6 9	15	3		61	36	4			
		SAND (SP-SM) with gravel and trace to some silt slightly moist, loose		40	3 5 5	10								
8		grades with trace fines, gravel and oxidation		41	3 4 6	10								
12														
		Gravelly SAND (SP) with silt medium dense		42	7 8 5	13								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 9

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-9

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silt sand gravel with weeds, grass and organics											
		Gray Brown Silty GRAVEL (GM) with some sand dry, medium dense											
				43	5 8 12 (20)					20	17	14	3
4													
		Brown Silty SAND (SM) slightly moist		44	4 4 9 (13)	1			39	41			
8				45	6 10 8 (18)								
		Light Brown SAND (SP) with gravel		46	6 7 8 (15)								
12													
		loose		47	5 4 4 (8)								
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 10

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-10

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5' | Water Depth: (see Remarks) | Date: 10/20/22 | Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Sand %	Fines %	Atterberg: LL	PL	PI
0		Topsoil; silt sand with some gravel, roots and organics											
		Brown Silty SAND (SM) with gravel, slightly moist, medium dense											
				48	6 9 10	19	3			25			
4													
		Tan to Gray Poorly Graded GRAVEL (GP) with sand, slightly moist, dense		49	16 19 18	37							
8				50	12 14 10	24							
		Tan to Light Brown Silty SAND (SM) with gravel, slightly moist, loose											
				51	3 3 3	6							
12		grades no gravel, moist, medium dense											
				52	6 9 9	18	4		0	87	13		
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °

Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"

Excavated By: Direct Push

Logged By: Trevor Durrant

Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 11

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-11

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		7" Asphalt												
		Fill; dark brown silty sand with gravel, moist, loose		53	5 4 2	6	8		35	43	22			
		more sand		54	4 2 3	5								
4		Tan Sandy GRAVEL (GP-GM) with silt, slightly moist, medium dense		55	7 7 7	14								
8				56	8 11 16	27								
		dense		57	10 20 17	37								
12														
16		Tan Silty SAND (SM), medium dense		58	3 6 7	13	6				14			
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 12

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-12

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N) Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		4" Topsoil; silty gravel with organics, roots and weeds											
		Brown Silty SAND (SM) with gravel slightly moist, medium dense											
				59	8 11 12	23	2	33	44	23			
4													
		Brown SAND (SP) with gravel medium dense		60	5 14 12	26							
8				61	3 12 15	27	3	25	70	5			
		grades with more gravel		62	5 8 12	20							
12													
		Brown Sandy GRAVEL (GP-GM) with some silt slightly moist, dense		63	6 14 17	31	2	59	34	7			
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 13

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-13

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N) Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI
0		2" Topsoil: silty gravel with organics, weeds and roots											
		Brown Gravel and Sand (GP) with trace silt slightly moist, medium dense											
				64	6 14 12	26	2		56	40	5		
4													
				65	4 11 8	19							
		dense		66	13 16 20	36							
8													
		Brown Silty SAND (SM) with oxidation and seams of fines slightly moist, medium dense		67	8 14	22	10		4	62	34		
12													
		grades less fines		68	8 11 12	23	3			88	12		
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 14

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-14

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/25/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; silty fine sand with gravel, roots and organics												
		Light Brown to Gray Poorly Graded GRAVEL (GP-GM) with sand and some silt — slightly moist, medium dense to very dense												
				69	13 29 34	63								
4														
				70	10 13 12	25	1		55	38	7			
8				71	5 9 9	18								
				72	9 11 8	19								
12														
		Light Brown Poorly Graded SAND (SP) — moist, loose												
16														
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Sterling Howell
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 15

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-15

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/25/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil: silty sand with gravel, roots and organics												
		Brown Sandy GRAVEL (GP-GM) with some silt slightly moist, medium dense												
				73	13 7 18	25						19	16	3
4														
				74	13 17 15	32	1		51	40	9			
		Tan Poorly Graded GRAVEL (GP) with sand slightly moist, medium dense												
8				75	12 11 10	21								
				76	9 6	15								
12		Light Brown to Brown Poorly Graded SAND (SP) moist, medium dense												
				77	5 6 5	11								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Sterling Howell

CMT TECHNICAL SERVICES

Figure: 16

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-16

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI
0		6.5" Asphalt												
		Fill; dark brown silty gravelly sand — moist, loose		78	6 3 2	5								
				79	6 8 10	18								
4		Tan Sandy GRAVEL (GP) — slightly moist, medium dense		80	9 10 11	21	2		60	35	5			
				81	7 8 9	17								
8				82	4 8 6	14								
12		Tan SAND (SP-SM) with some gravel — slightly moist, dense		83	9 14 14	28	2.1			94	6			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 17

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design Bore Hole Log B-17

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/25/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N) Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil: silty gravel with sand, roots and organics											
		Light Brown to Tan Poorly Graded Sandy GRAVEL (Gp-GM) with trace to some silt moist to slightly moist, medium dense to dense											
				84	17 22 19	41							
4													
				85	9 9 7	16							
8				86	10 9 7	16							
		Brown Gravelly SAND (SP-SM) with some silt dry, medium dense		87	11 11 11	22	1		44	50	6		
12													
		Brown to Light Brown Poorly Graded SAND (SP) slightly moist to moist, medium dense											
				88	6 7 7	14							
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Sterling Howell
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 18

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-18

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/25/22
Job #: 19241

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Fill; silty gravel slightly moist, medium dense											
			■	89	10 9 6 (15)							NP	NP
4													
			■	90	8 11 12 (23)								
		Light Brown to Brown Poorly Graded Sandy GRAVEL (GP-GM) with some silt slightly moist, medium dense											
8			■	91	10 13 14 (27)	3		55	39	6			
		dense	■	92	32 21 16 (37)								
12		Light Brown to Gray Poorly Graded SAND (SP) with gravel moist, medium dense											
			■	93	8 6 5 (11)								
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Sterling Howell
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 19

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-19

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		7" Asphalt												
		Fill; dark brown silty/clayey sandy gravel, moist, loose		1	10 4 2	6								
				2	4 2 1	3						17	13	4
4		very loose												
		GRAVEL (GP) with sand, loose		3	4 5 4	9								
8		slightly moist		4	3 3 4	7								
		Tan Silty SAND (SM) with gravel, medium dense		5	8 14 14	28								
12														
		loose		6	8 4 3	7	5				13			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 20

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-20

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		7" Asphalt												
		Fill; dark brown clayey sand/gravel mix, moist		7	7 19 20	39	5				12	25	14	11
				8	5 3 6	9								
4		GRAVEL (GP) with sand, slightly moist, dense		9	8 20 29	49								
8		medium dense		10	7 11 10	21	2				3			
				11	6 6 4	10								
12		Brown Silty SAND (SM) with gravel, slightly moist, medium dense		12	6 6 9	15								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 21

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-21

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/25/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil; silty sand with gravel, roots and organics												
		Light Brown Poorly Graded GRAVEL (GP) with sand slightly moist, dense to very dense												
		Brown Silty Sand and Gravel (SM-GM)												
				13	27 21 20	41	3		34	37	29			
4														
				14	10 12 22	34								
8				15	12 16 15	31								
		Light Brown to Brown Poorly Graded SAND (SP-SM) with some silt moist, loose to medium dense												
				16	6 5 6	11	2		0	94	6			
12														
				17	5 5 5	10								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Sterling Howell
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 22

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-22

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)

Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		6" Topsoil; silty sand with long grass and sage brush												
		Brown Silty GRAVEL (GM) with sand dry												
		medium dense		18	8 7 8	15								
4														
				19	1 7 8	15								
8		GRAVEL (GP) with sand medium dense		20	4 5 7	12								
				21	7 6 7	13								
12														
		Tan SAND (SP) slightly moist, loose to medium dense		22	5 5 5	10	3				4			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 23

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-23

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		3" Topsoil; silty sand with organics, weeds and roots												
		Brown Silty/Clayey SAND (SM-SC) with gravel												
		dry, medium dense												
				23	7 9 11	20	1		63	33	4			
4														
		loose		24	4 5 3	8								
8				25	2 3 5	8								
		slightly moist, medium dense		26	13 11 10	21	2		60	35	5			
12														
		Light Brown SAND (SP) with some gravel and trace silt		27	6 7 14	21	3		[illegible]	[illegible]	5			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 24

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-24

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silty sand with organics and trace sage brush												
		Tan SAND (SP) with gravel												
		slightly moist, loose		28	4 5 4	9								
4		Tan Sandy GRAVEL (GP)												
		dry												
		medium dense		29	3 5 6	11			72	23	5			
8				30	5 5 7	12								
		Brown SAND (SP-SM) with some silt and oxidation												
		slightly moist, medium dense												
				31	5 5 6	11	3			94	6			
12		grades trace gravel												
				32	6 8 7	15								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 25

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-25

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		4" Topsoil; silty sand with weeds, organics and roots												
		Brown Silty Sand and Gravel (SM-GM) dry, medium dense												
		dense		33	8 20 23	43	1		44	43	13		NP	NP
4														
				34	15 16 14	30								
		Brown Silty SAND (SM) with gravel slightly moist, dense		35	9 14 15	29	2		31	52	17			
8														
		Brown Gravel and Sand (GP-SP) with silt		36	10 15 14	29								
12														
		Brown SAND (SP-SM) with trace gravel and some silt		37	4 6 7	13	2			83	7			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 26

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-26

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/27/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		4" Topsoil; silty sand with weeds, organics and sage brush												
		Brown Silty SAND (SM) with gravel, dry												
		Brown GRAVEL (GP-GM) with sand and some silt, dense		38	12 15 17	32								
4				39	11 14 12	26								
8		Tan SAND (SP) with trace fines and oxidation, slightly moist, loose		40	4 4 5	9	1		1	95	4			
		medium dense		41	5 6 7	13								
12														
16				42	6 6 9	15								
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 27

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-27

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
					Total			Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil; silty loam with weeds, organics and roots											
		Brown Gravel and Sand (GP-SP)											
		Brown Gravelly SAND (SP-SM) with some silt slightly moist, dense		43	16 16 15 / 31								
4		fines grade out medium dense		44	10 13 16 / 29	2		42	51	7			
8		dense		45	18 30 26 / 56								
		medium dense		46	6 6 5 / 11								
12		grades no gravel											
16				47	6 6 8 / 14	4		[illegible]	85	11			
		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 28

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-28

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brown Sandy GRAVEL (GP-GM) with silt dry												
		Brown Silty Sand and Gravel (SM-GM) dense		48	23 24 24	48	3		33	44	23			
4				49	10 16 20	36	2		51	36	13		NP	NP
8		medium dense		50	11 11 11	22								
		Tan Silty SAND (SM) with trace gravel		[illegible]	7 10 12	22	2		3	76	21			
12														
		grades with trace oxidation		52	6 7 8	15	4		[illegible]	89	11			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 29

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-29

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
					Total			Gravel %	Sand %	Fines %	LL	PL	PI
0		Brown Sandy GRAVEL (GP) with silt dry											
		Brown Silty SAND (SM) with gravel slightly moist, medium dense		53	9 7 10 17	3		21	49	30			
4													
		Brown Sandy Gravel GP)		54	9 12 19 31	1		67	29	5		NP	NP
		grades with more gravel		55	9 14 12 26	2		60	35	5			
8													
		Brown SAND (SP-SM) with some silt and trace gravel loose		56	3 4 5 9	3		4	89	7			
12													
		grades with trace gravel medium dense		57	3 6 8 14								
16		END AT 16.5'											
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 30

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-30

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2-3" Topsoil; silty sand with weeds, organics and roots												
		Brown Silty SAND (SP) with gravel												
		slightly moist, dense		58	10 18 21	39	2		17	57	26		NP	NP
4														
		Brown Silty Gravel and Sand (GM-SM)		59	13 17 17	34								
		medium dense		60	2 3 8	11								
8														
		grades with less fines, more sand		61	5 4 3	7								
12														
		Brown SAND (SP-SM) with some gravel and silt												
		slightly moist, loose to medium dense		62	6 6 7	13	2		13	81	6			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 31

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-31

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silty sand with organics and trace sage brush												
		Brown Sandy GRAVEL (GP-GM) with some silt												
		dry, dense		63	15 19 14	33	1		55	37	8			
4				64	12 18 30	48								
		Brown Sandy GRAVEL (GP)												
		slightly moist, medium dense		65	8 8 11	19	2				3			
8														
				66	6 7 8	15								
12														
		Brown Silty SAND (SM) with trace gravel and oxidation		67	8 10 13	23	4			76	20			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant

CMT TECHNICAL SERVICES

Figure: 32

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-32

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil; silty sand with gravel, roots and organics												
		Brown Sandy Gravel/Gravelly Sand (GP-SP)												
		dry, medium dense		68	7 8 8	16								
4				69	5 6 6	12								
8				70	6 14 13	27	2		47	49	4			
		Brown SAND (SP) with some oxidation and occsional clay seams		71	6 8 6	14								
12		Brown Silty Sand/Sandy Silt (SM-ML)												
		loose moist		72	4 4 5	9	11			40	51			
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 33

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Bore Hole Log B-33

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silty sand with organics and trace sage brush												
		Brown Gravel and Sand (GP-SP) with silt												
		dry, medium dense		73	7 9 8	17								
4														
		Brown SAND (SP) with some gravel												
		slightly moist, loose		74	2 3 4	7	3		10	87	3			
		grades no gravel, trace fines												
8				75	4 4 5	9								
		Brown Clayey Sand/Sandy Clay (SC-CL)												
		moist, loose		76	2 2 4	6	11		0	46	54			
12														
		grades with some fines		77	3 4 5	9								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 34

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-34

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5' | Water Depth: (see Remarks) | Date: 10/20/22 | Job #: 19421

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0	2" Topsoil; silty sand with organics and trace sage brush												
	Brown Sandy GRAVEL (GP) with trace silt												
	grades no silt — slightly moist, dense		78	8 12 19	31								
4													
	medium dense		79	11 10 8	18								
8	Brown SAND (SP) — loose		80	3 4 4	8	4		3	93	4			
	grades with some fines — medium dense		[illegible]	6 6 5	11								
12													
	fines grade out		82	4 5 6	11								
16	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °

Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"

Excavated By: Direct Push

Logged By: Trevor Durrant

Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 35

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design — Bore Hole Log — B-35

About 3909 South Airport Road, Ogden, Utah

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 10/20/22
Job #: 19421

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		2" Topsoil; silty sand with organics and trace sage brush												
		Brown Sandy GRAVEL (GP) with trace silt												
		dry, loose		83	5 5 4	9								
4		Brown Sand and Gravel (SP-GP)												
		slightly moist, medium dense		84	7 7 6	13	3		45	50	5			
		Brown Sandy GRAVEL (GP)												
8				85			1		64	31	4			
		Brown Silty SAND (SM)												
		moist, medium dense		86	6 6 6	12	8		0	76	24			
12														
		grades with some oxidation and clay seams, no gravel												
16		loose		87	3 4 4	8								
		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Trevor Durrant
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 36

Attachment 3

Ogden-Hinkley Airport West Cargo Apron Design

Key to Symbols

About 3909 South Airport Road, Ogden, Utah

Date: 10/27/22
Job #: 19421

① Depth (ft)	② GRAPHIC LOG	③ Soil Description	④ Sample Type	⑤ Sample #	⑥ Blows(N) Total	⑦	⑧ Moisture (%)	⑨ Dry Density(pcf)	⑩ Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI

COLUMN DESCRIPTIONS

Depth (ft.): Depth (feet) below the ground surface (including groundwater depth - see below right).

Graphic Log: Graphic depicting type of soil encountered (see below).

Soil Description: Description of soils, including Unified Soil Classification Symbol (see below).

Sample Type: Type of soil sample collected; sampler symbols are explained below-right.

Sample #: Consecutive numbering of soil samples collected during field exploration.

Blows: Number of blows to advance sampler in 6" increments, using a 140-lb hammer with 30" drop.

Total Blows: Number of blows to advance sampler the 2nd and 3rd 6" increments.

Moisture (%): Water content of soil sample measured in laboratory (percentage of dry weight).

Dry Density (pcf): The dry density of a soil measured in laboratory (pounds per cubic foot).

Gradation: Percentages of Gravel, Sand and Fines (Silt/Clay), from lab test results of soil passing No. 4 and No. 200 sieves.

Atterberg: Individual descriptions of Atterberg Tests are as follows:

LL = Liquid Limit (%): Water content at which a soil changes from plastic to liquid behavior.

PL = Plastic Limit (%): Water content at which a soil changes from liquid to plastic behavior.

PI = Plasticity Index (%): Range of water content at which a soil exhibits plastic properties (= Liquid Limit - Plastic Limit).

STRATIFICATION	
Description	**Thickness**
Seam	Up to ½ inch
Lense	Up to 12 inches
Layer	Greater than 12 in.
Occasional	1 or less per foot
Frequent	More than 1 per foot

MODIFIERS
Trace
<5%
Some
5-12%
With
>12%

MOISTURE CONTENT
Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp / moist to the touch, but no visible water.
Saturated: Visible water, usually soil below groundwater.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS SYMBOLS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	**GRAVELS** The coarse fraction retained on No. 4 sieve.	**CLEAN GRAVELS** (< 5% fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		GRAVELS WITH FINES (≥ 12% fines)	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS The coarse fraction passing through No. 4 sieve.	**CLEAN SANDS** (< 5% fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (≥ 12% fines)	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.	**SILTS AND CLAYS** Liquid Limit less than 50%		ML	Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
			OL	Organic Silts and Organic Silty Clays o f Low Plasticity
	SILTS AND CLAYS Liquid Limit greater than 50%		MH	Inorganic Silts, Micacious or Diatomacious Fine Sand or Silty Soils with Plasticity (Elastic Silts)
			CH	Inorganic Clays of High Plasticity, Fat Clays
			OH	Organic Silts and Organic Clays of Medium to High Plasticity
HIGHLY ORGANIC SOILS			PT	Peat, Humus, Swamp Soils with High Organic Contents

Note: Dual Symbols are used to indicate borderline soil classifications (i.e. GP-GM, SC-SM, etc.).

SAMPLER SYMBOLS

- Block Sample
- Bulk/Bag Sample
- Modified California Sampler 3.5" OD, 2.42" ID
- D&M Sampler
- Rock Core
- Standard Penetration Split Spoon Sampler
- Thin Wall (Shelby Tube)

WATER SYMBOL

- Encountered Water Level
- Measured Water Level (see Remarks on Logs)

1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.
2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.
3. The information presented on each log is subject to the limitations, conclusions, and recommendations presented in this report.

CMT TECHNICAL SERVICES

Figure: 37

Attachment 3

DCP TEST DATA

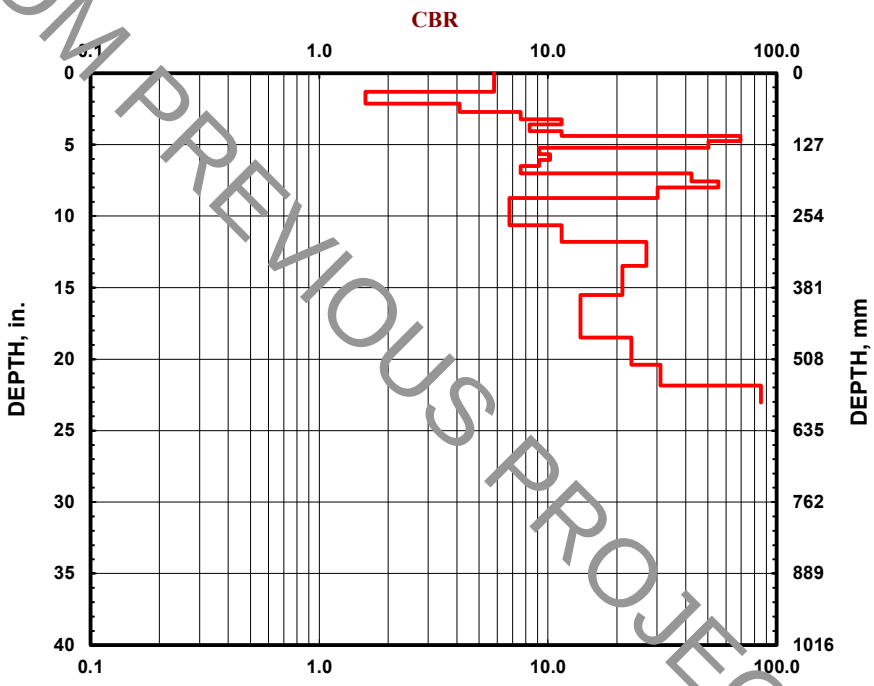
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

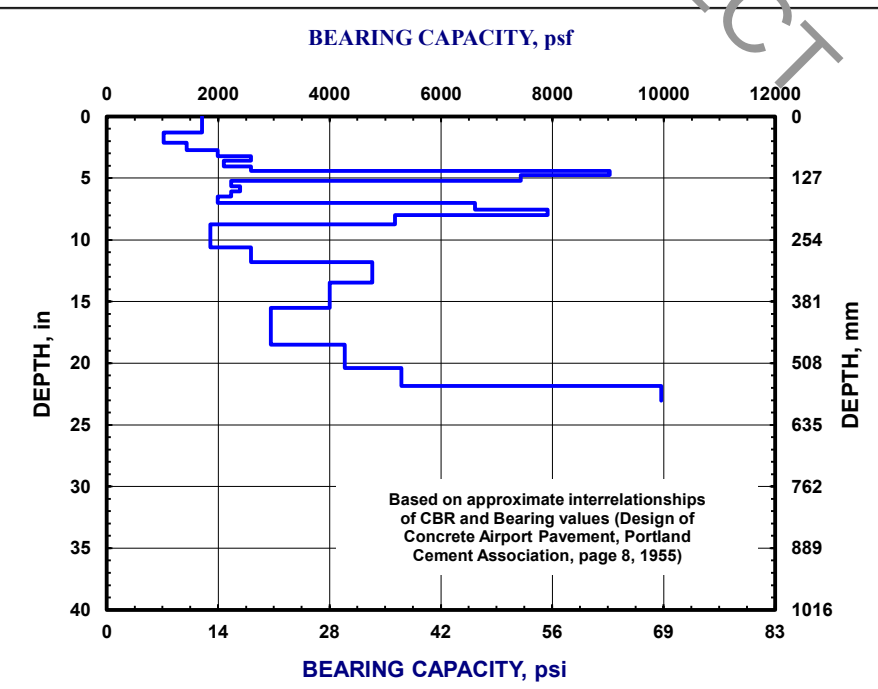
Location: B-1 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	33	5
1	54	3
1	69	2
1	82	2
1	91	2
1	103	2
1	112	2
5	121	2
5	133	2
1	144	2
1	154	2
1	165	2
1	178	2
5	192	2
5	203	2
5	222	3
5	270	3
5	300	1
5	342	1
5	394	1
5	470	1
5	518	1
5	555	1
5	570	1
5	585	1
5		
5		
5		
5		
5		
5		
0	0	
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

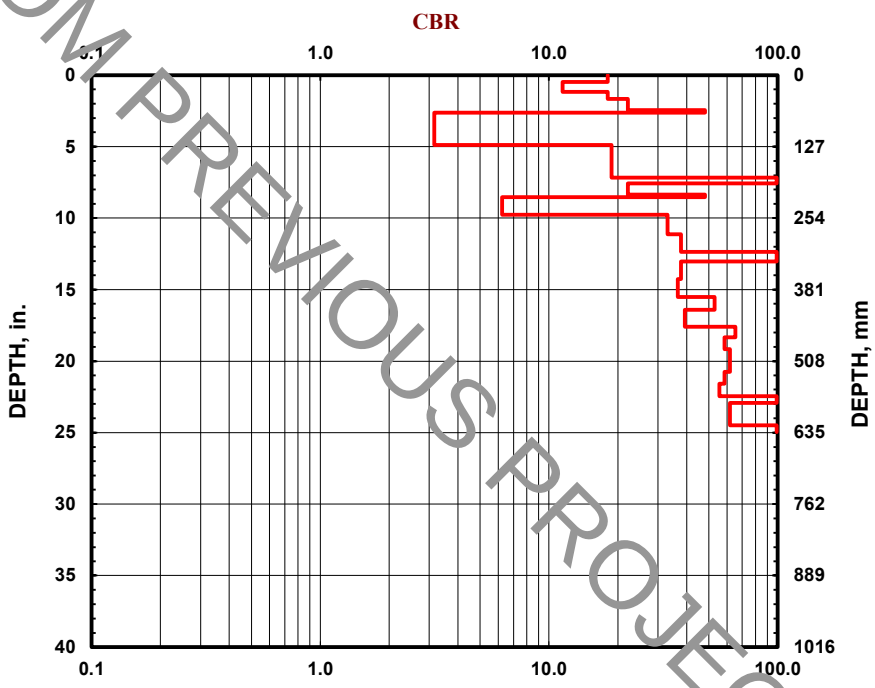
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

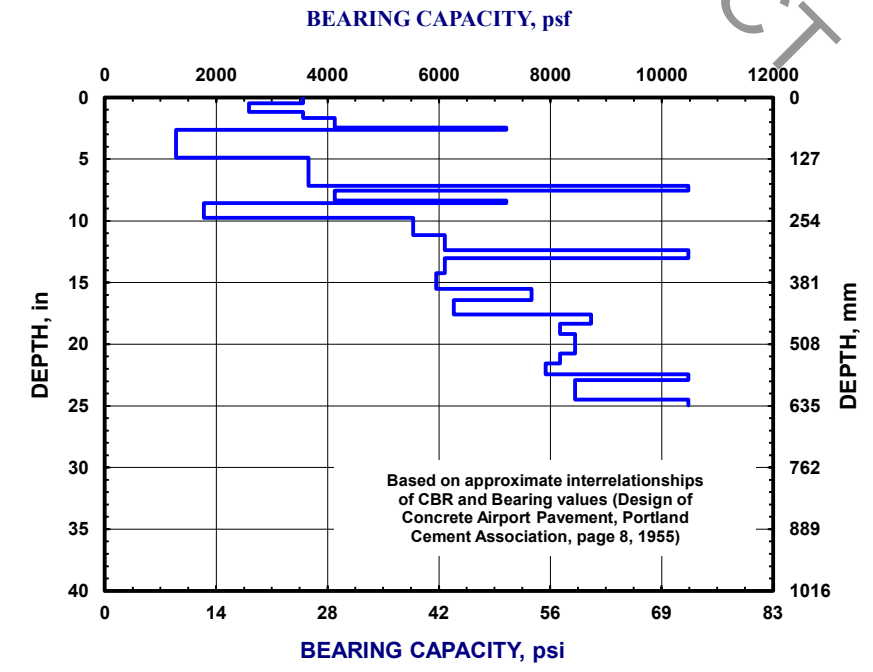
Location: B-3 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	12	1
1	30	1
1	42	1
1	52	1
1	62	1
1	67	1
1	124	1
5	182	1
5	192	1
1	202	1
1	212	1
1	217	1
1	248	1
5	283	1
5	314	1
5	324	1
5	331	1
5	362	1
5	394	1
5	417	1
5	447	1
5	466	1
5	487	1
5	507	1
5	527	1
5	548	1
5	570	1
5	582	1
5	602	1
5	622	1
5	634	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

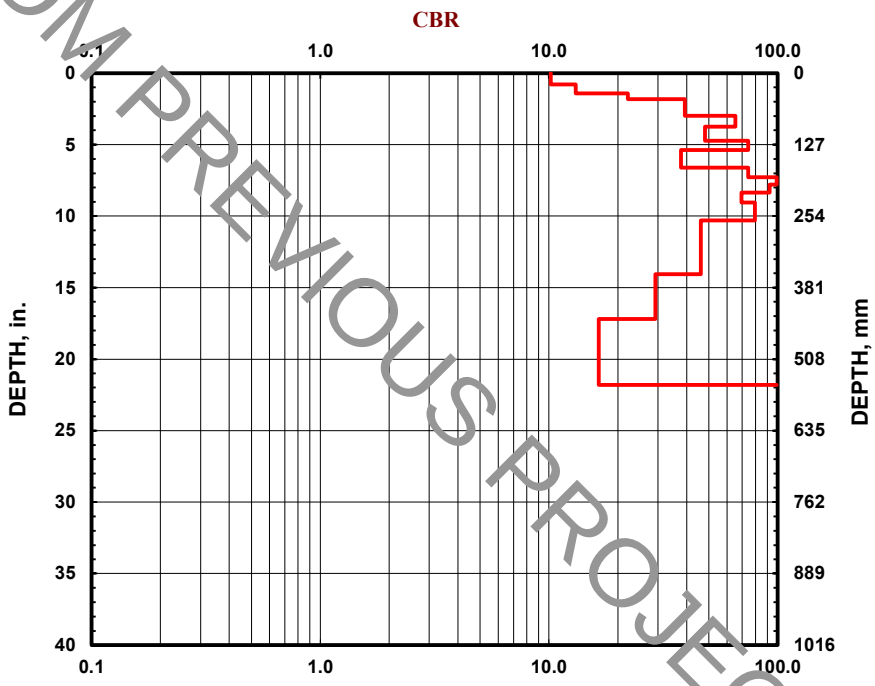
Project: *Ogden Airport West Cargo Area* **Date:** 21-Oct-22

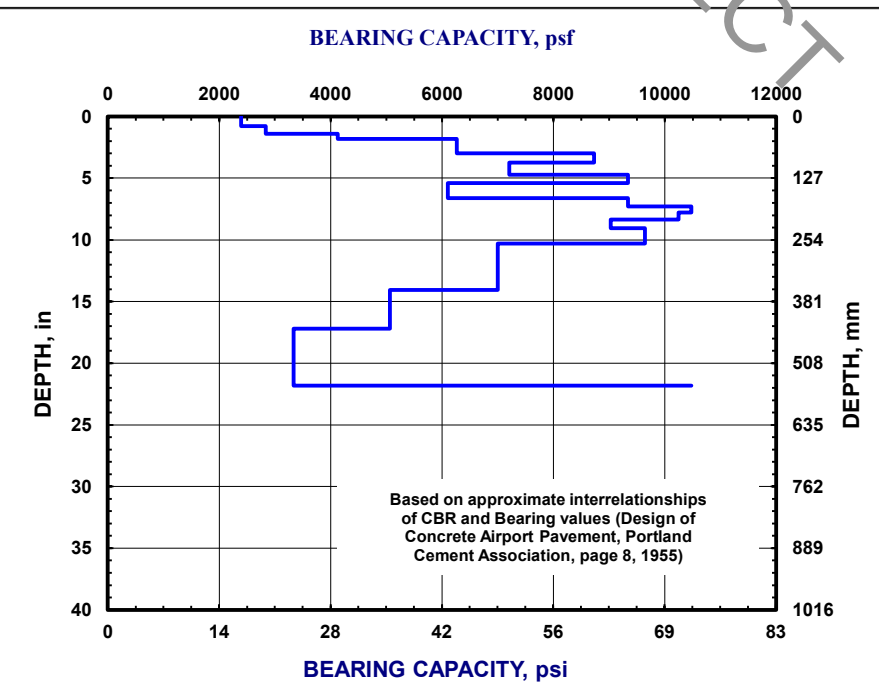
Location: B-4 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	20	1
1	36	1
1	46	1
5	76	1
5	95	1
5	120	1
5	137	1
5	168	1
5	185	1
5	198	1
5	212	1
5	230	1
5	246	1
5	262	2
5	275	2
0	289	2
0	300	2
0	321	2
0	340	2
0	357	3
0	380	3
0	416	3
0	437	5
0	451	5
0	470	5
0	496	5
0	527	5
0	538	5
0	547	5
0	554	5
0		
0		
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

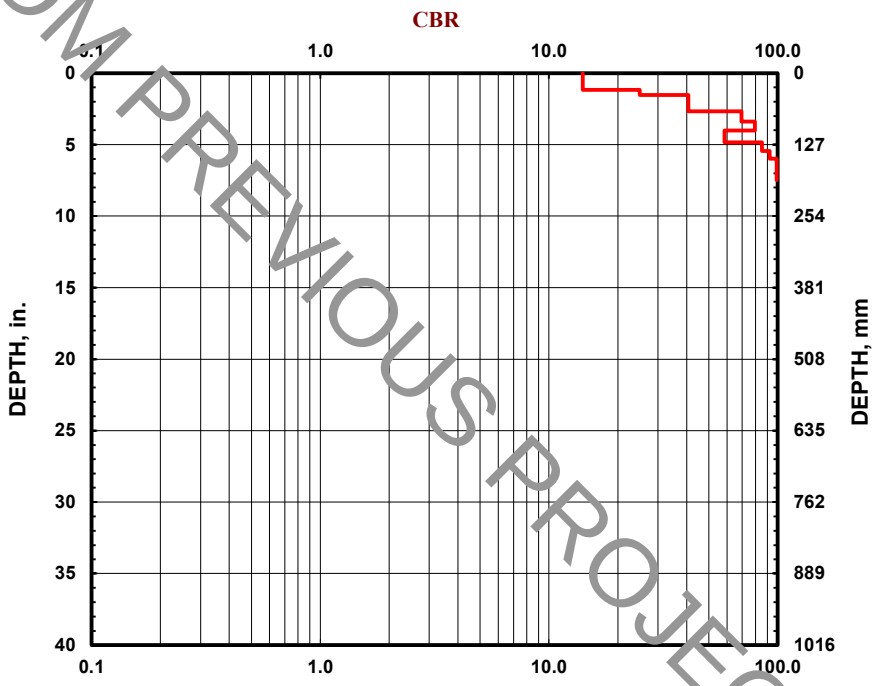
Project: *Ogden Airport West Cargo Area* **Date:** 21-Oct-22

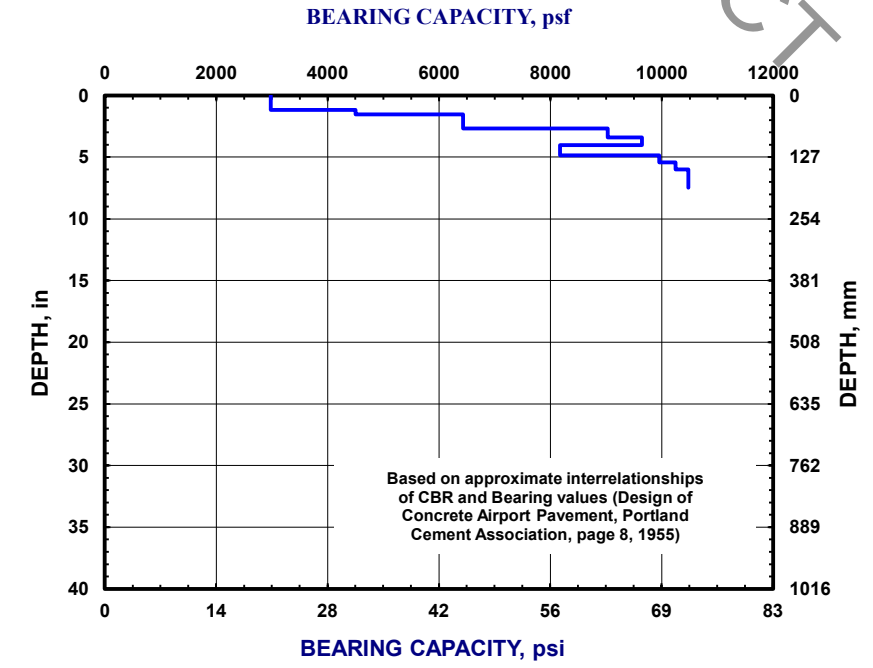
Location: B-5 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	15	1
1	30	1
1	39	1
5	68	1
5	86	1
5	102	1
5	123	1
5	138	1
5	152	1
5	162	1
5	170	1
5	176	1
5	183	1
5	187	1
5	190	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

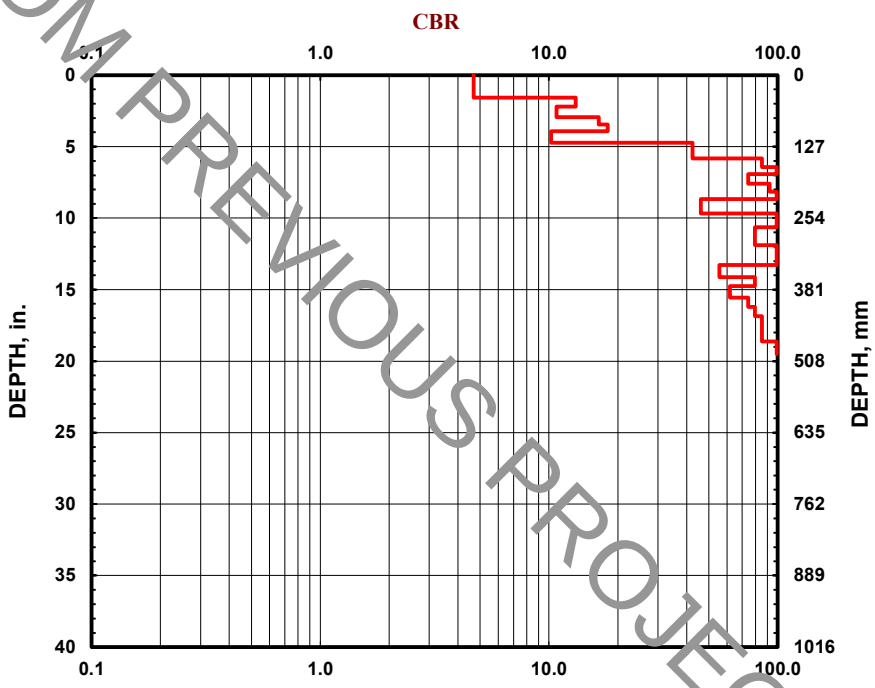
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

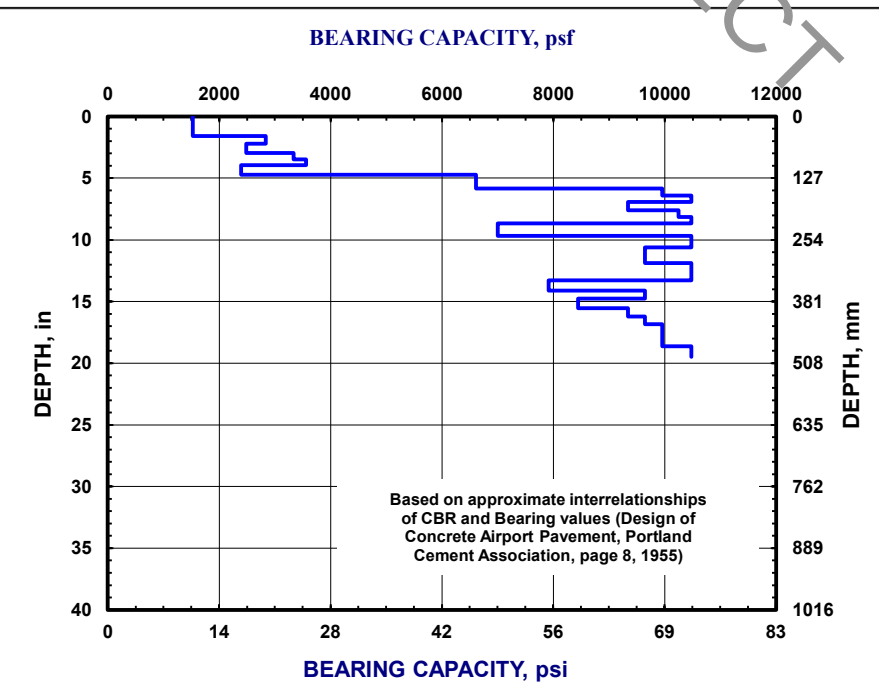
Location: B-6 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	40	1
1	56	1
1	75	1
1	88	1
1	100	1
1	120	1
5	148	1
5	163	1
5	176	1
5	193	1
5	207	1
5	220	1
5	246	1
5	258	1
5	270	1
5	286	1
5	302	1
5	314	1
5	325	1
5	337	1
5	359	1
5	375	1
5	395	1
5	412	1
5	428	1
5	443	1
5	458	1
5	473	1
5	486	1
5	495	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

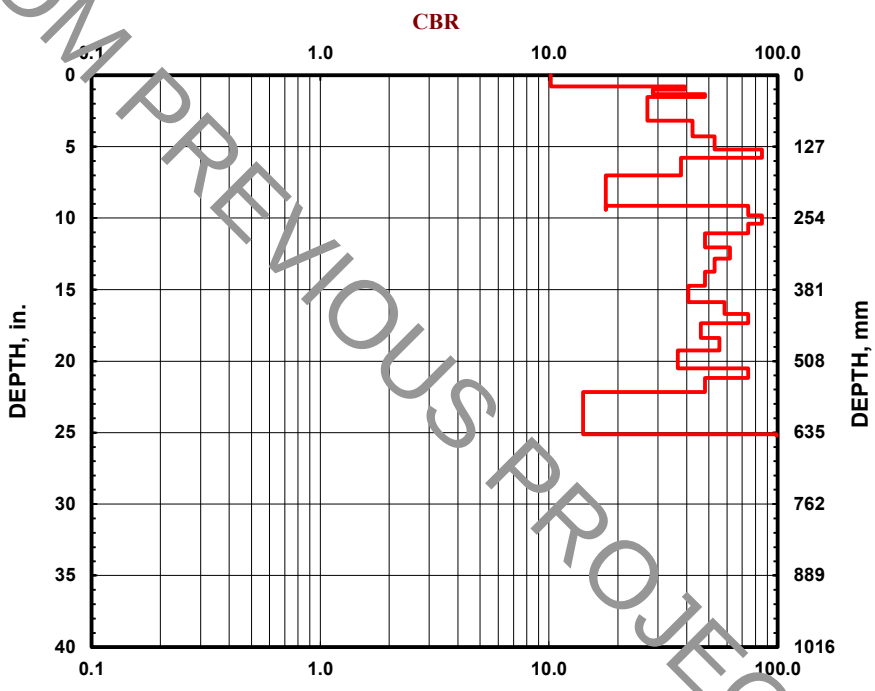
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

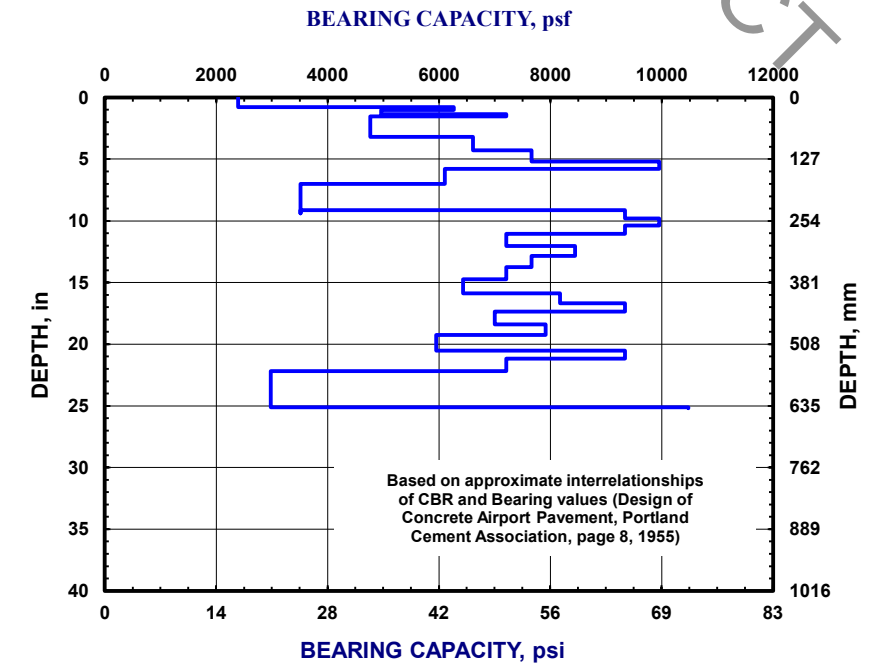
Location: B-7 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	20	1
1	26	1
1	34	1
1	39	1
5	81	1
5	109	1
5	132	1
5	147	1
5	178	1
5	239	1
5	232	1
5	249	1
5	264	1
5	281	1
5	306	1
5	326	1
5	349	1
5	374	1
5	403	1
5	424	1
5	441	1
5	467	1
5	489	1
5	521	1
5	538	1
5	563	1
5	638	1
5	640	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

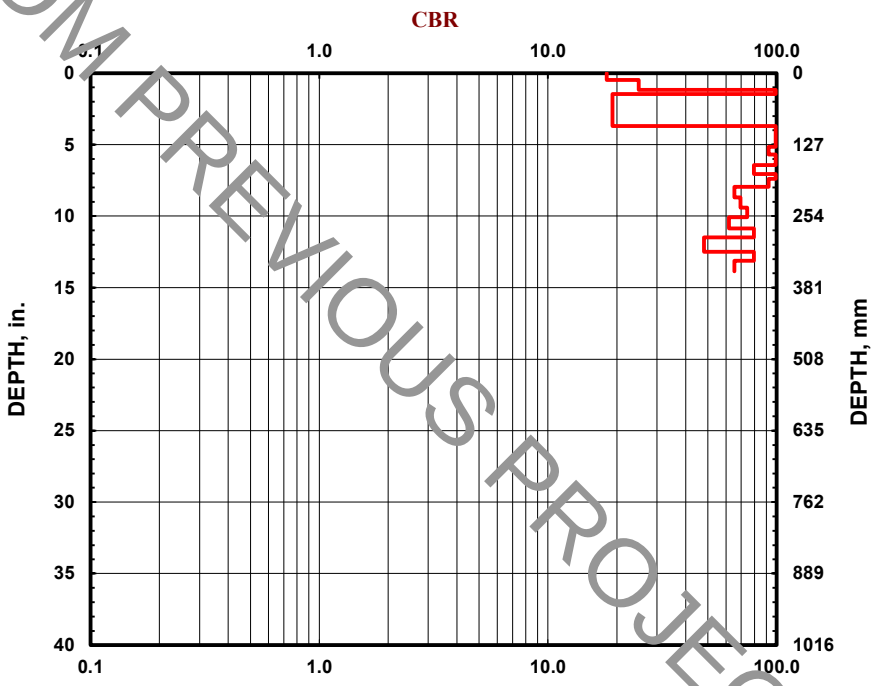
Project: *Ogden Airport West Cargo Area* **Date:** 21-Oct-22

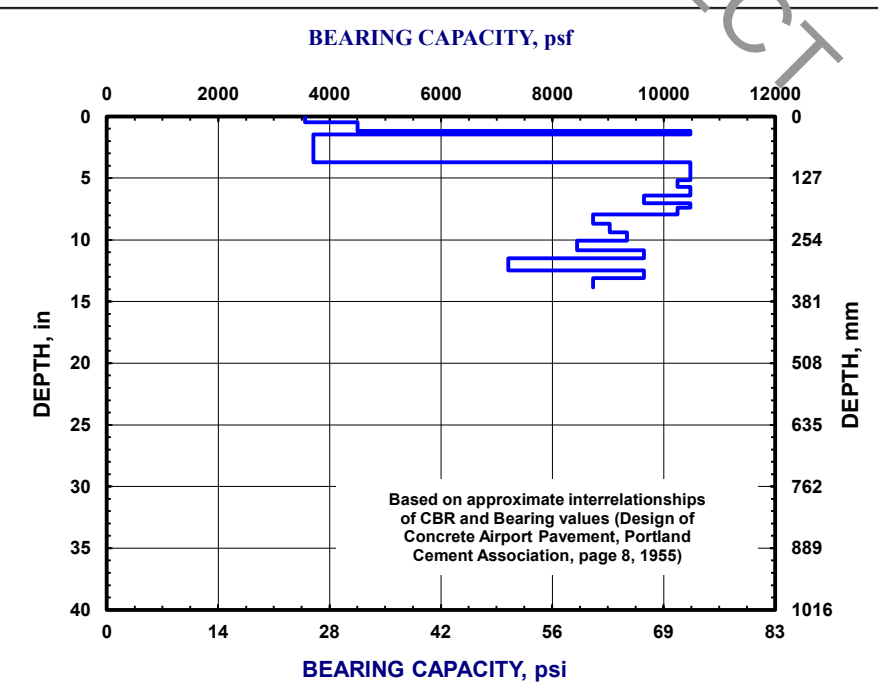
Location: B-8 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	12	1
1	21	1
1	30	1
5	37	1
5	94	1
5	101	1
5	112	1
5	123	1
5	131	1
5	145	1
5	153	1
5	163	1
5	179	1
5	188	1
5	202	1
5	221	1
5	239	1
5	256	1
5	276	1
5	292	1
5	317	1
5	333	1
5	352	1
5		1
5		1
5		1
5		1
5		1
5		1
5		1
5		1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

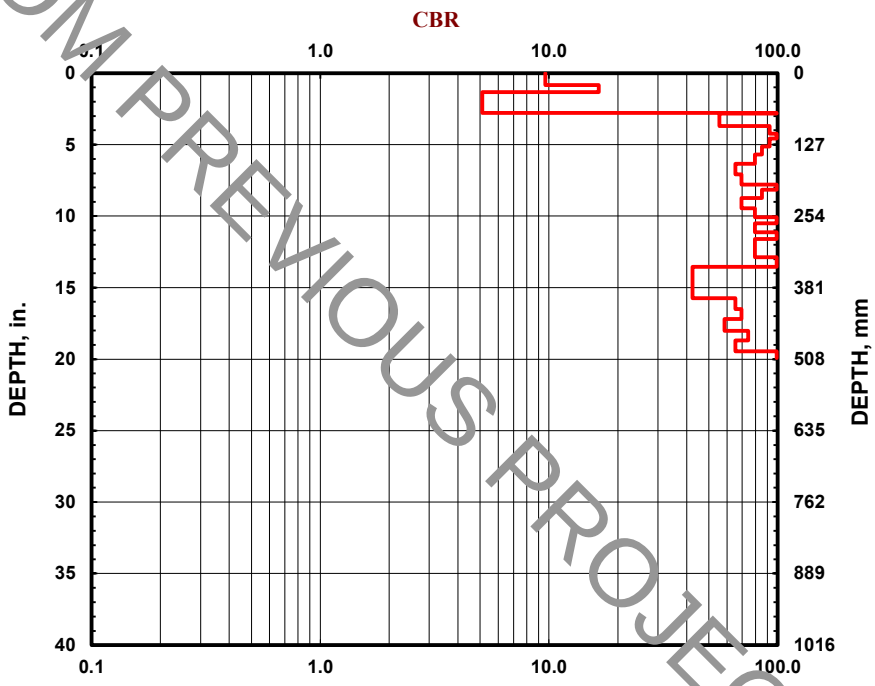
Project: *Ogden Airport West Cargo Area* **Date:** 21-Oct-22

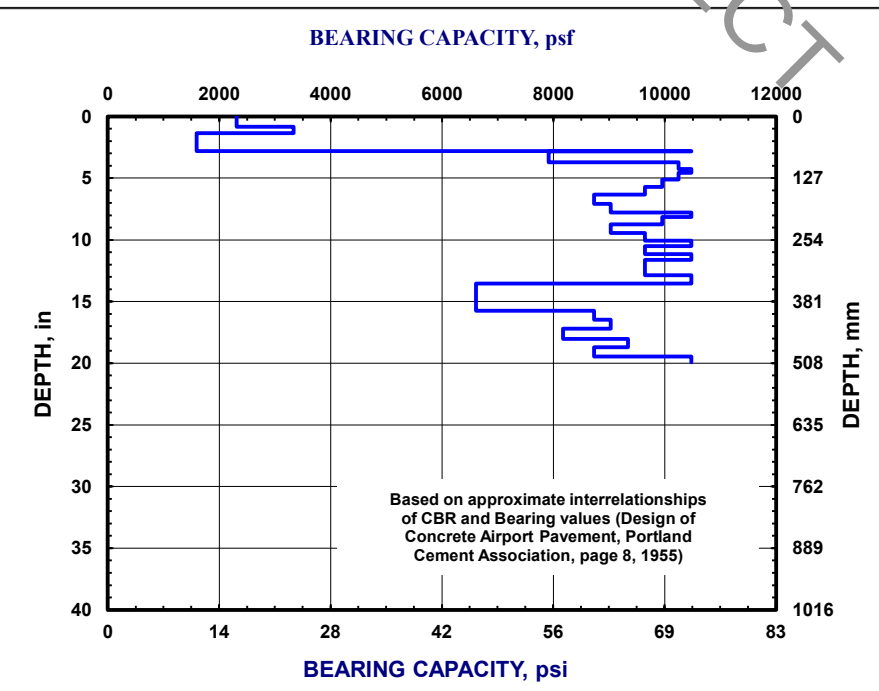
Location: B-9 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	21	1
1	34	1
1	71	1
5	72	1
5	94	1
5	108	1
5	116	1
5	130	1
5	145	1
5	161	1
5	180	1
5	198	1
5	207	1
5	222	1
5	240	1
5	256	1
5	267	1
5	283	1
5	295	1
5	311	1
5	327	1
5	334	1
5	344	1
5	372	1
5	400	1
5	419	1
5	437	1
5	458	1
5	475	1
5	494	1
5	506	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

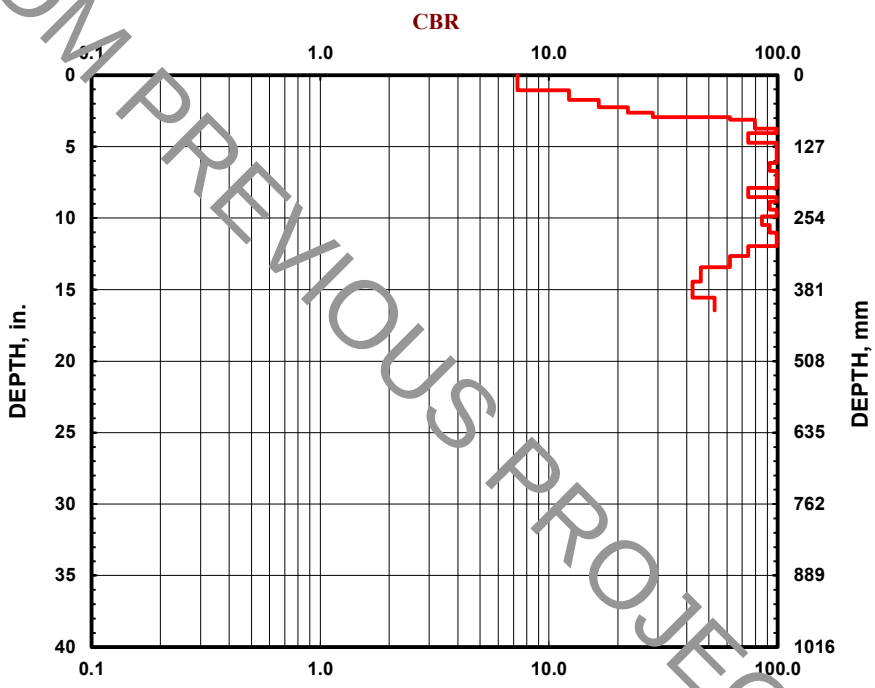
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

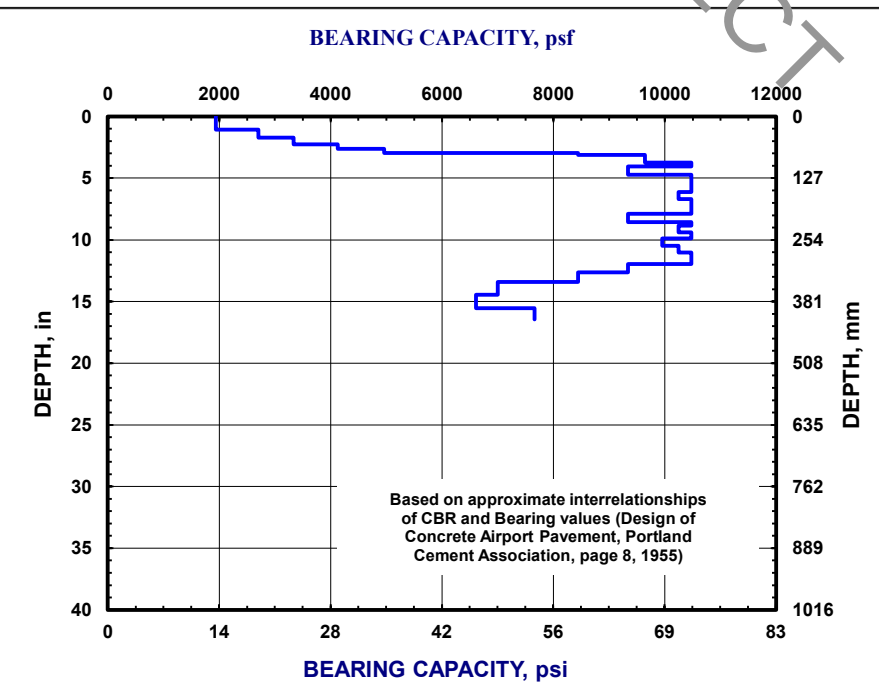
Location: B-10 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	27	1
1	44	1
1	57	1
1	67	1
1	75	1
1	79	1
5	95	1
5	103	1
5	120	1
5	132	1
5	143	1
5	156	1
5	170	1
5	179	1
5	188	1
5	190	1
5	195	1
5	200	1
5	217	1
5	225	1
5	239	1
5	251	1
5	266	1
5	280	1
5	291	1
5	304	1
5	321	1
5	341	1
5	367	1
5	395	1
5	418	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

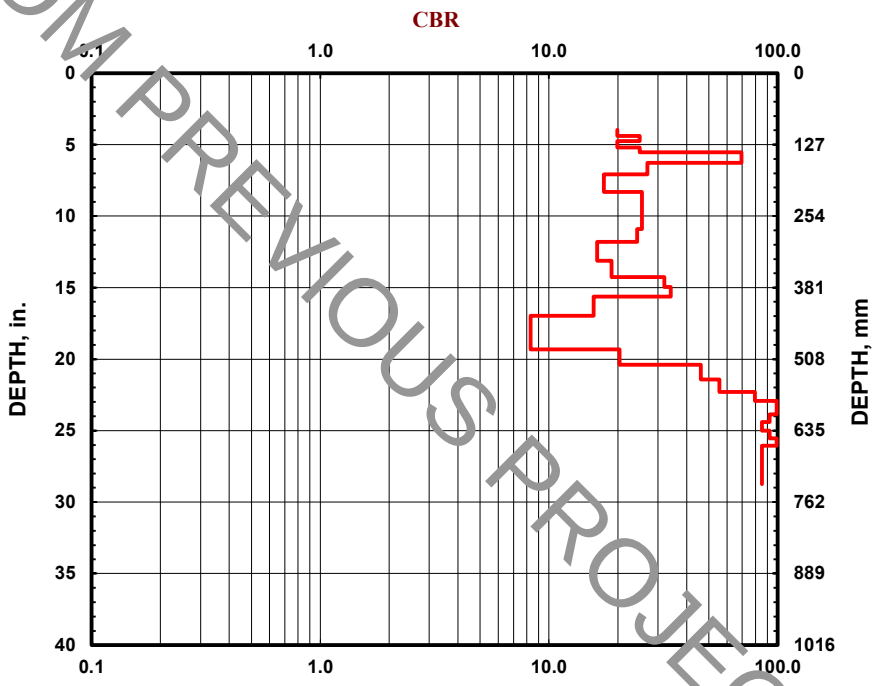
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

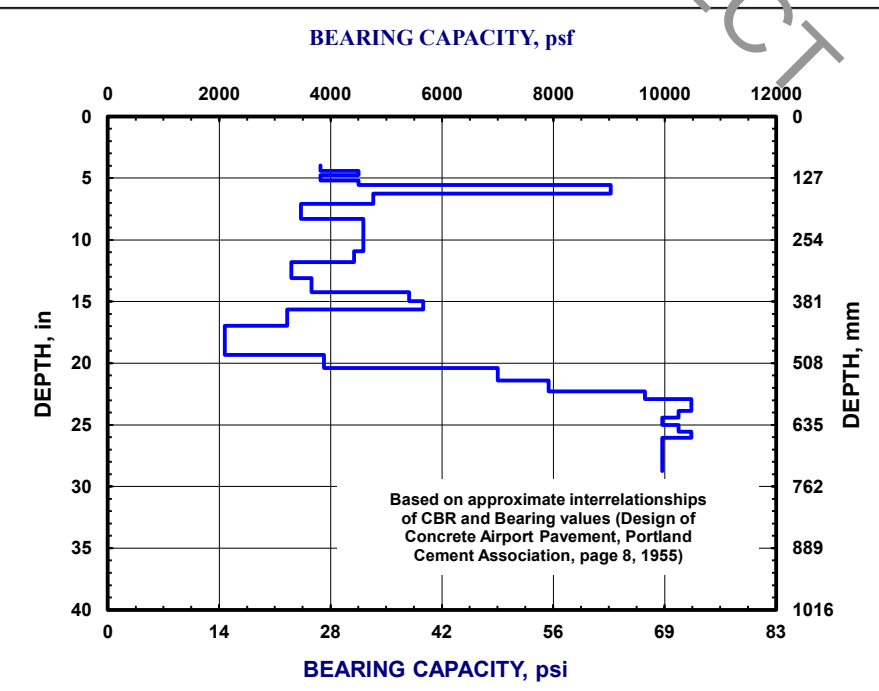
Location: B-11 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17.6 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	101	0
1	112	1
1	121	1
1	132	1
1	141	1
5	159	2
5	180	2
5	211	2
5	233	2
5	255	2
5	277	2
5	300	2
5	333	2
5	362	2
5	380	2
5	397	2
5	431	2
5	491	2
5	518	1
5	544	1
5	566	1
5	582	1
5	594	1
5	606	1
5	620	1
5	635	1
5	649	1
5	662	1
5	677	1
0	698	1
0	715	1
0	730	1
0		1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

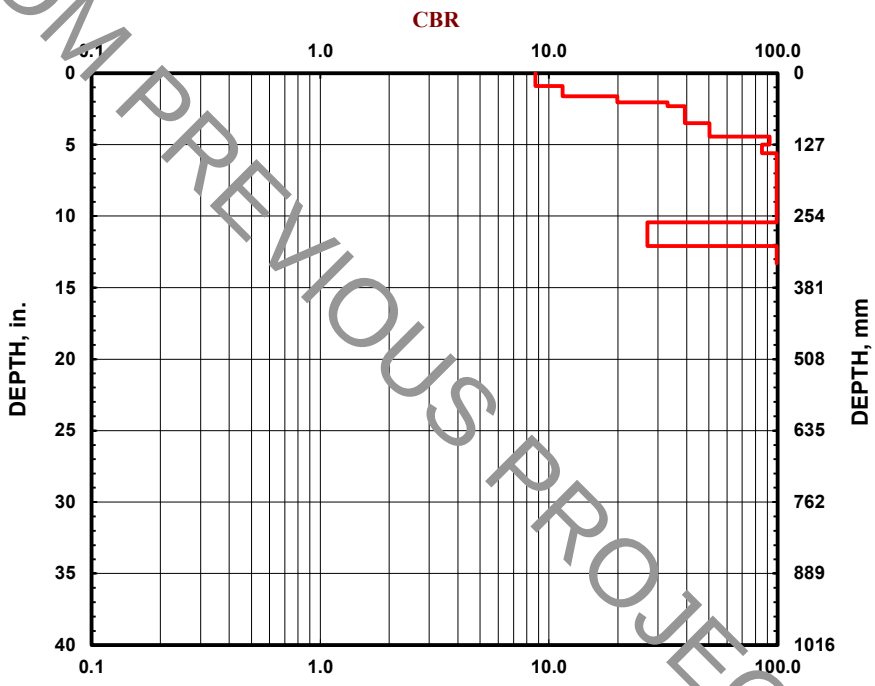
Project: *Ogden Airport West Cargo Area* **Date:** 20-Oct-22

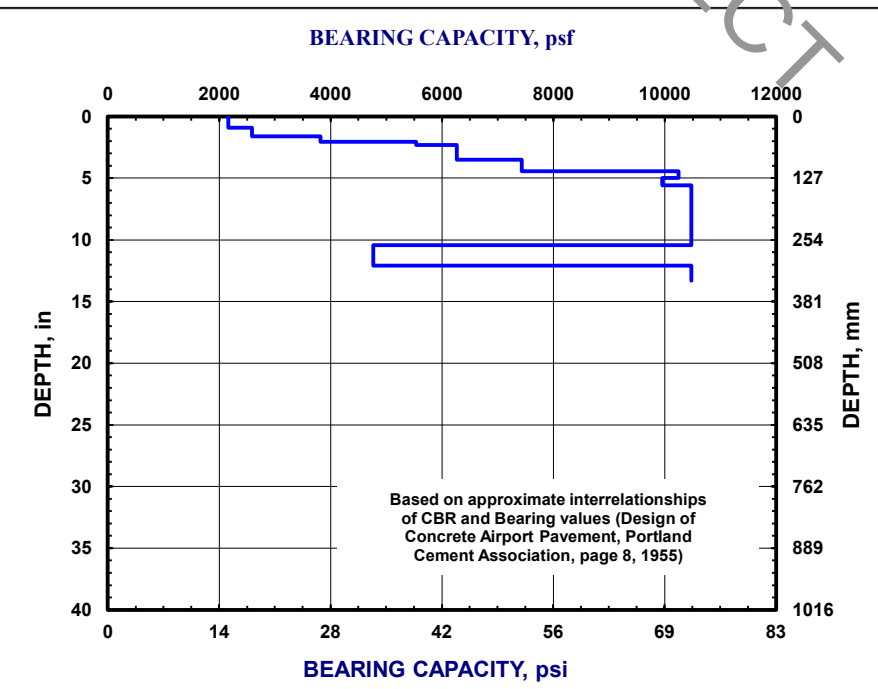
Location: B-12 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	23	1
1	41	1
1	52	1
1	59	1
5	89	1
5	113	1
5	127	1
5	142	1
5	153	1
5	163	1
5	170	1
5	178	1
5	185	1
5	193	1
5	201	1
5	209	1
5	218	1
5	227	1
5	237	1
5	247	1
5	256	1
5	265	1
5	307	1
5	316	1
5	322	1
5	328	1
5	333	1
5	338	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

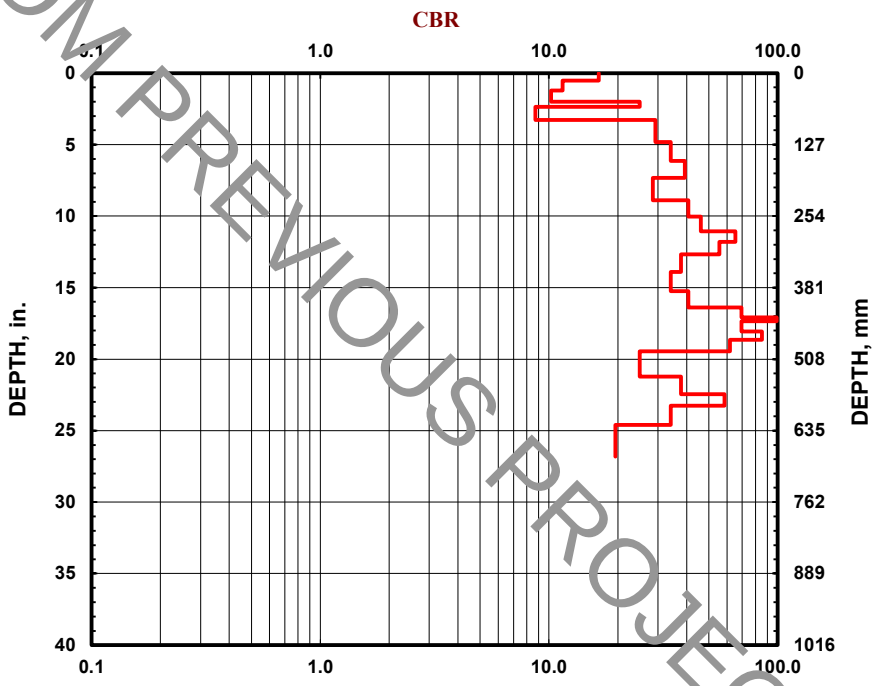
Project: *Ogden Airport West Cargo Area* **Date:** 21-Oct-22

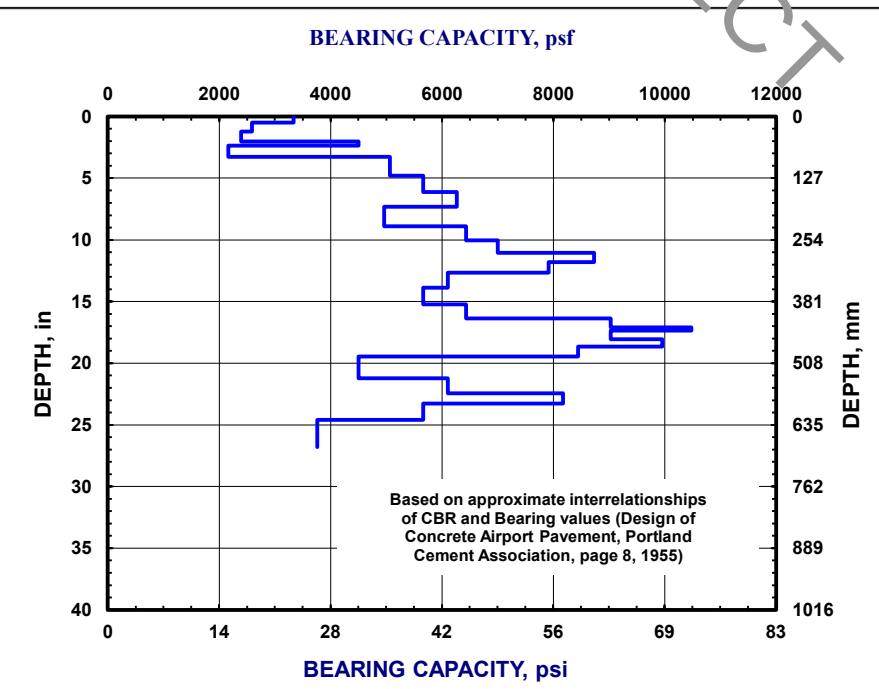
Location: B-13 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	13	1
1	31	1
1	51	1
1	60	1
1	83	1
5	122	1
5	156	1
5	186	1
5	226	1
5	255	1
5	281	1
5	300	1
5	322	1
5	353	1
5	387	1
5	416	1
5	434	1
5	441	1
5	459	1
5	474	1
5	494	1
5	539	1
5	570	1
5	591	1
5	625	1
5	681	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

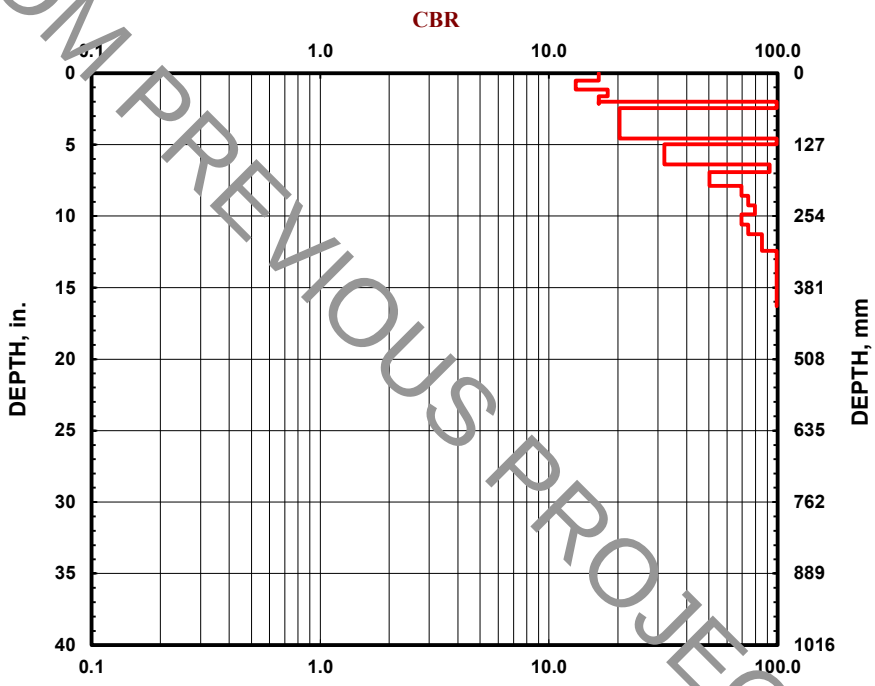
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

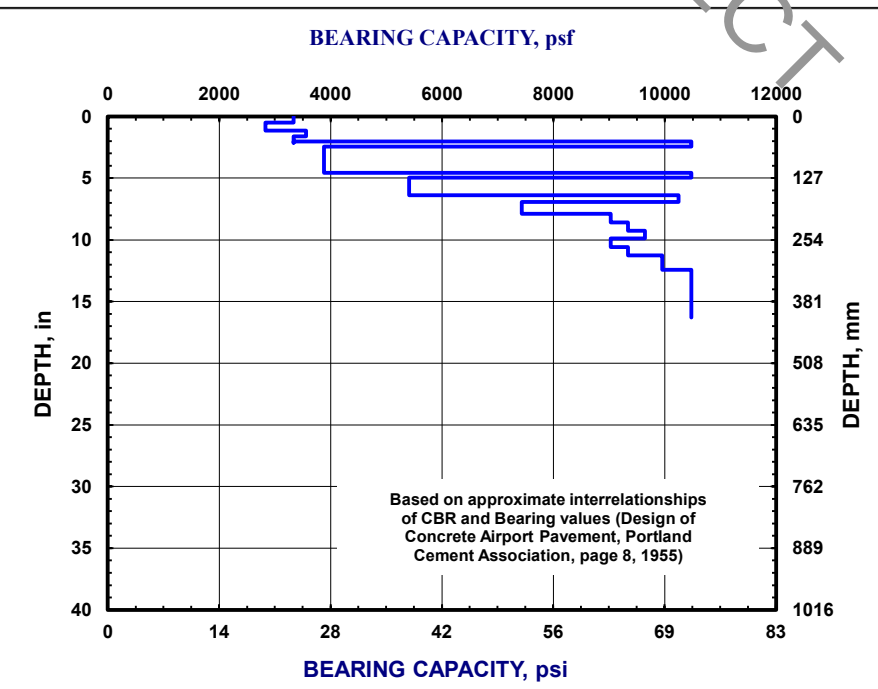
Location: B-15 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	13	1
1	29	1
1	41	1
1	54	1
1	51	1
5	62	1
5	116	1
5	126	1
5	162	1
5	176	1
5	200	1
5	218	1
5	235	1
5	251	1
5	269	1
5	286	1
5	301	1
5	316	1
5	329	1
5	333	1
5	346	1
5	353	1
5	359	1
5	365	1
5	371	1
5	379	1
5	386	1
5	394	1
5	403	1
5	414	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

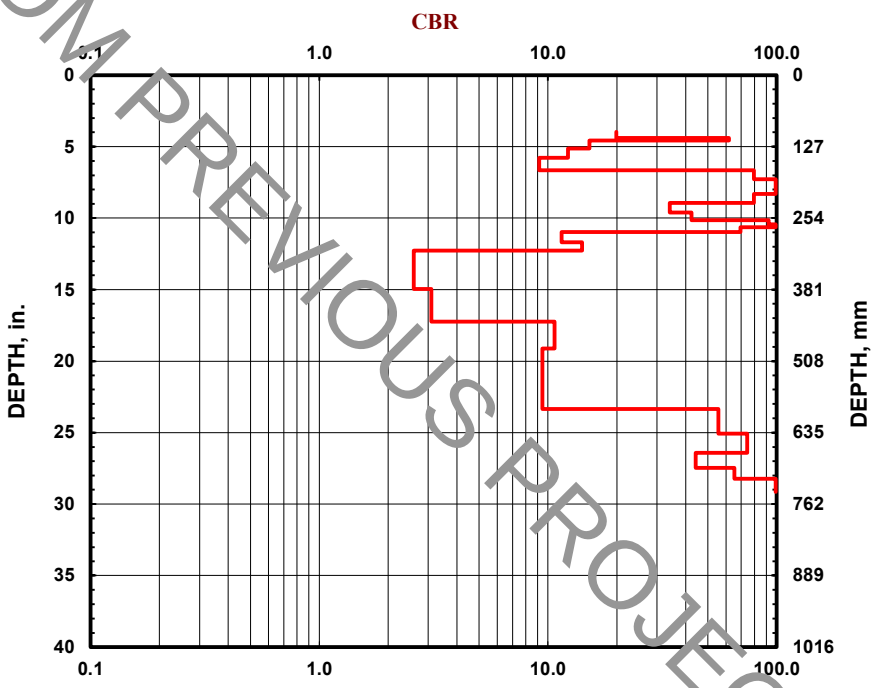
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

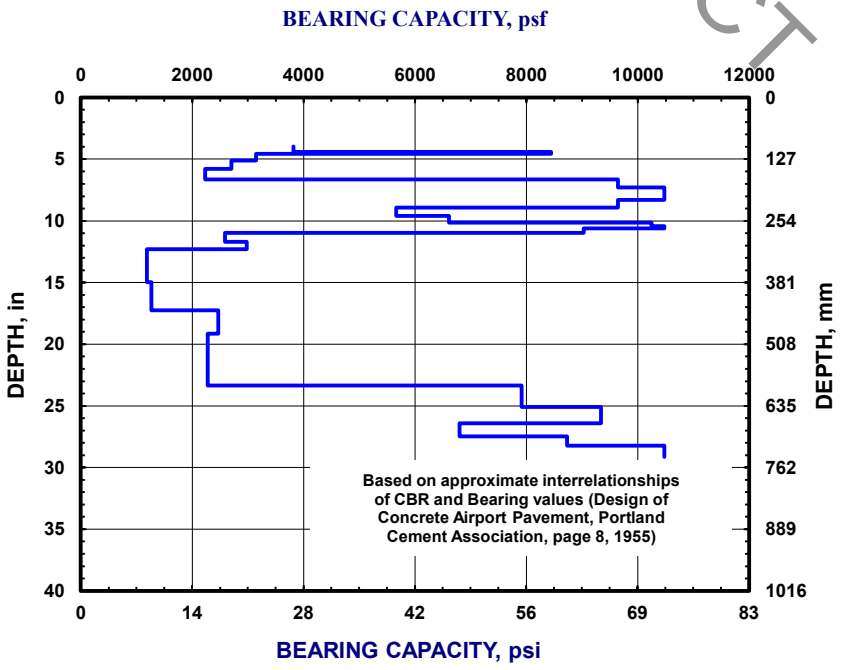
Location: B-16 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	101	1
1	112	1
1	116	1
1	130	1
1	147	1
1	169	1
5	185	1
5	194	1
5	203	1
5	211	1
5	227	2
5	244	2
5	258	2
5	265	2
5	270	2
5	279	5
5	297	5
5	312	5
5	380	5
5	438	2
5	486	1
5	593	1
5	615	1
5	637	1
5	654	1
5	671	1
5	698	1
5	717	1
5	727	1
5	734	1
5	740	1
5	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

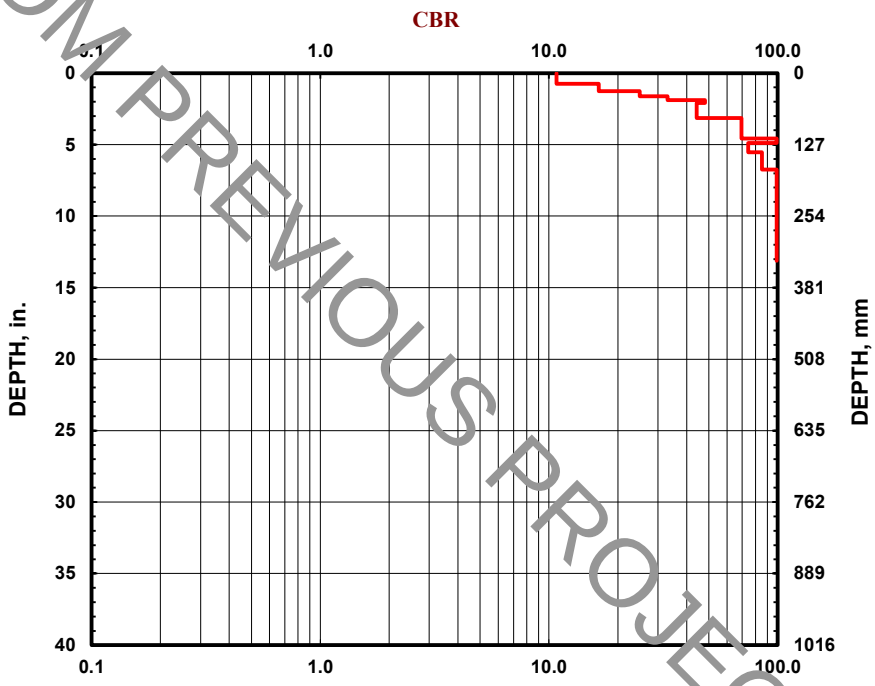
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

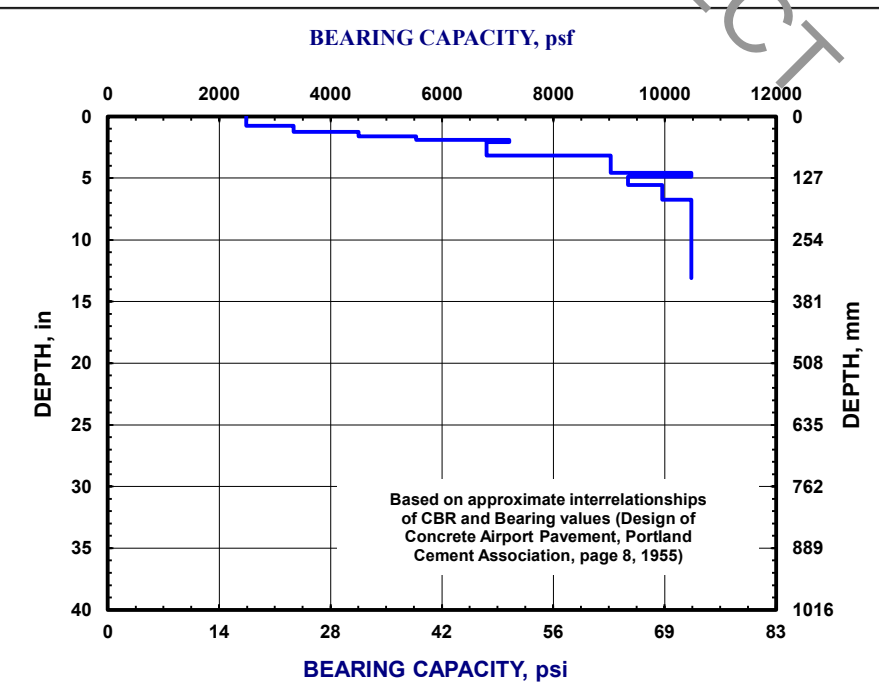
Location: B-17 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	19	1
1	32	1
1	41	1
1	48	1
1	53	1
5	80	1
5	98	1
5	116	1
5	124	1
5	141	1
5	156	1
5	171	1
5	183	1
5	193	1
5	204	1
5	214	1
5	219	1
5	225	1
5	234	1
5	246	1
5	255	1
5	261	1
5	270	1
5	279	1
5	285	1
5	293	1
5	300	1
5	309	1
5	318	1
5	325	1
5	333	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

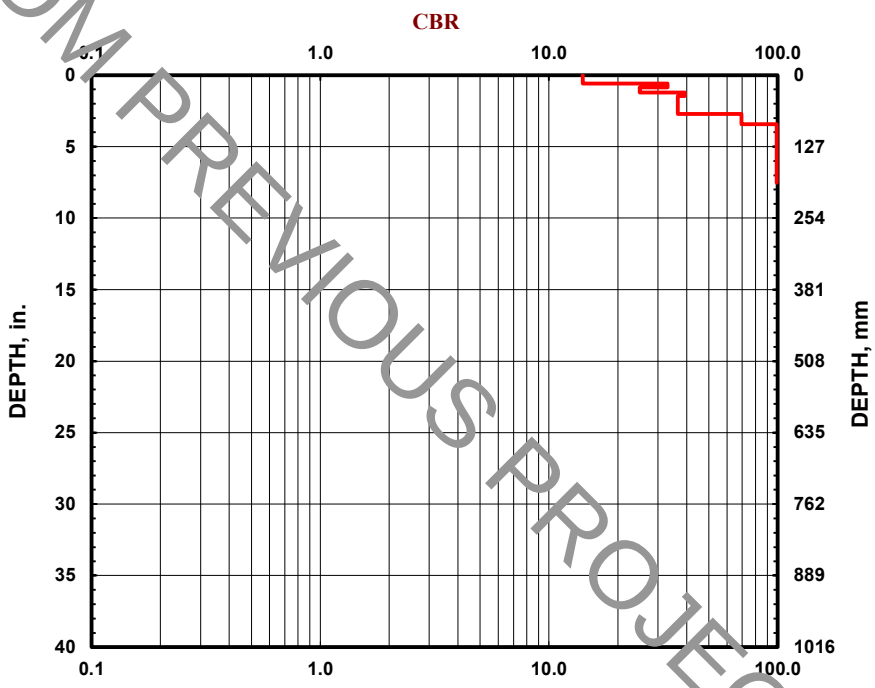
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

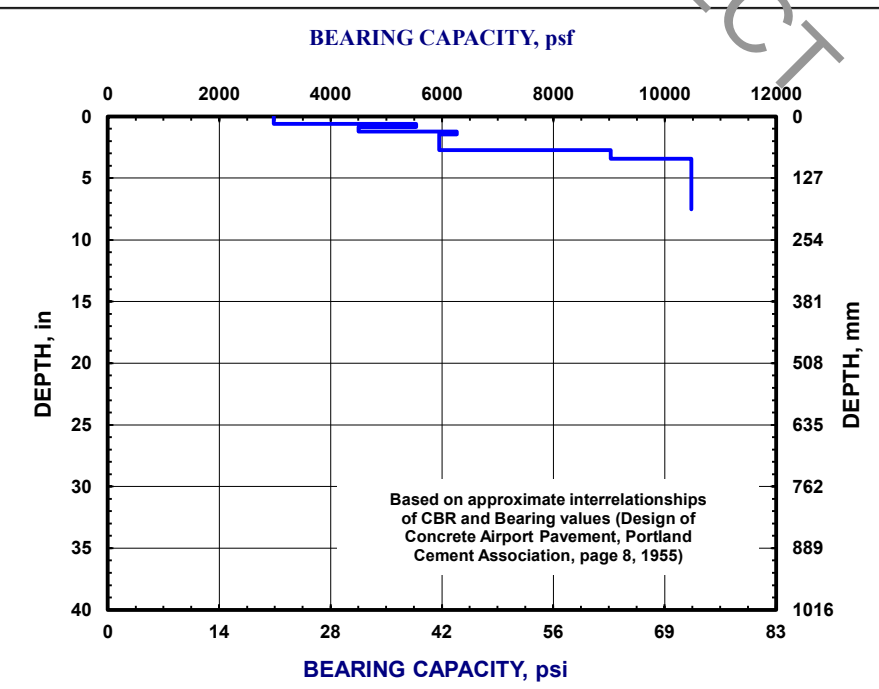
Location: B-18 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	15	1
1	22	1
1	31	1
1	37	1
5	69	1
5	87	1
5	96	1
5	106	1
5	117	1
5	128	1
5	137	1
5	145	1
5	152	1
5	161	1
5	172	1
5	177	1
5	184	1
5	186	1
5	191	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

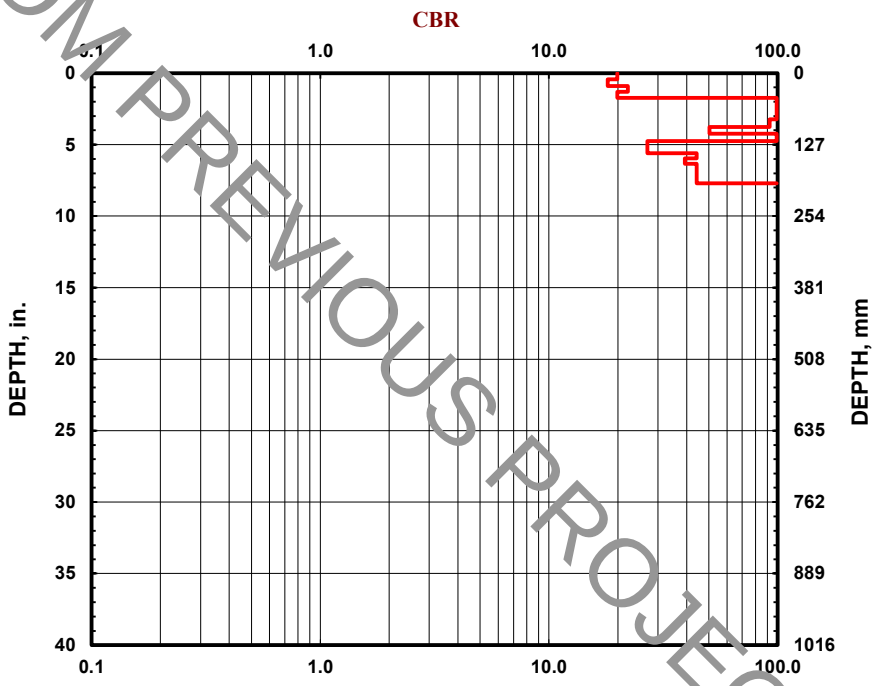
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

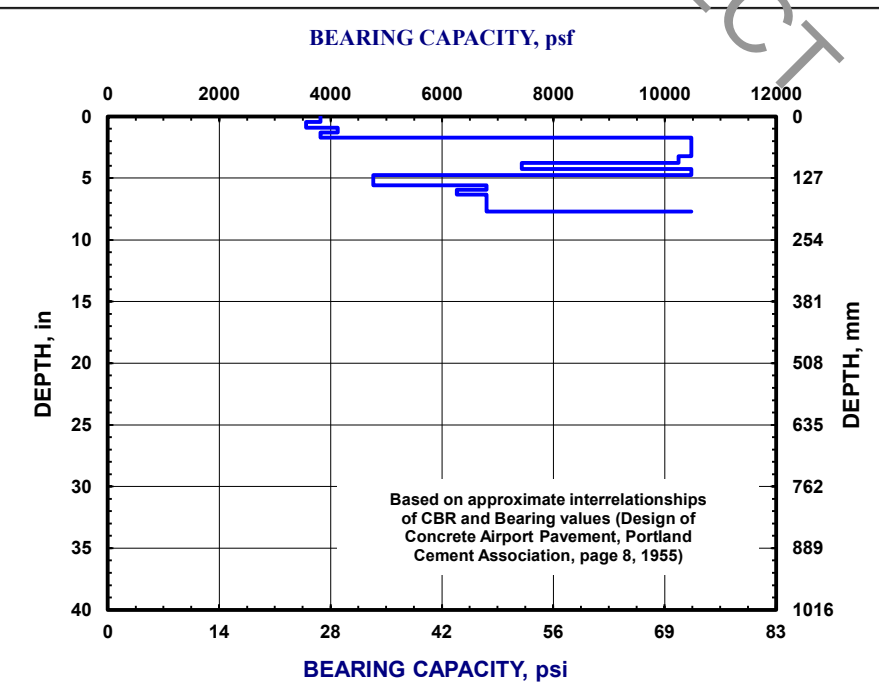
Location: B-19 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	11	1
1	23	1
1	33	1
1	44	1
5	54	1
5	63	1
5	68	1
5	75	1
5	82	1
5	96	2
5	108	2
5	111	2
5	117	2
5	121	2
5	142	3
5	151	3
5	161	3
5	170	3
5	179	3
0	196	3
0	196	3
0		
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

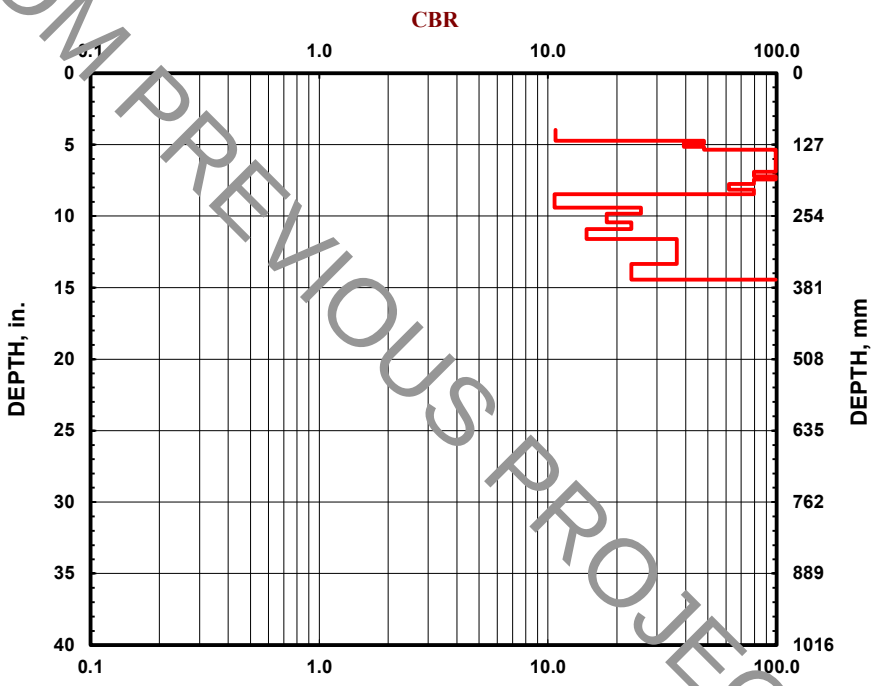
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

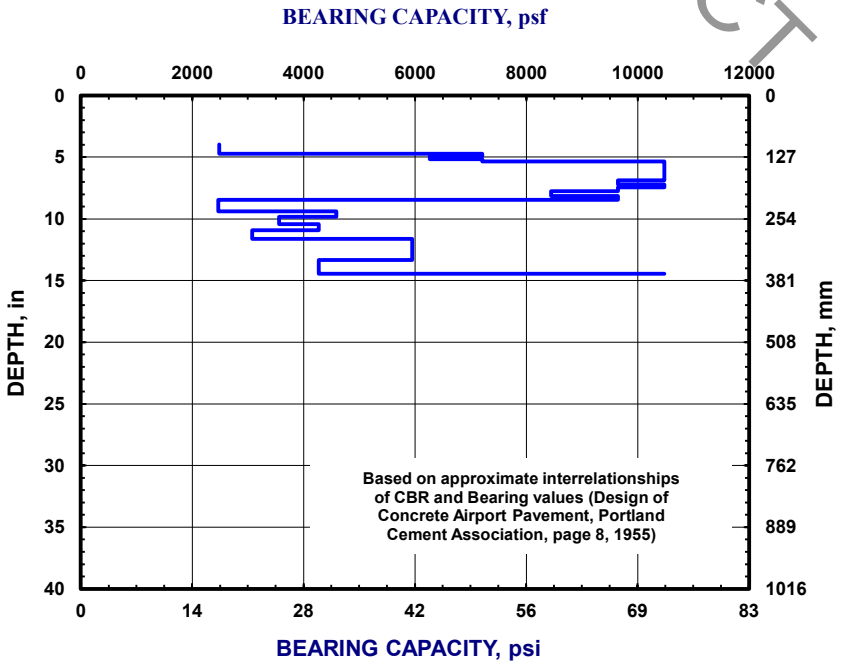
Location: B-20 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	101	1
1	120	1
1	125	1
1	131	1
1	136	1
5	142	1
5	153	1
5	163	1
5	175	2
5	183	2
5	189	2
5	197	2
5	207	2
5	215	4
5	239	4
5	250	4
5	265	4
5	277	4
5	295	4
5	303	4
0	315	4
0	339	6
0	356	6
0	365	6
0	367	6
0		
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

DCP TEST DATA

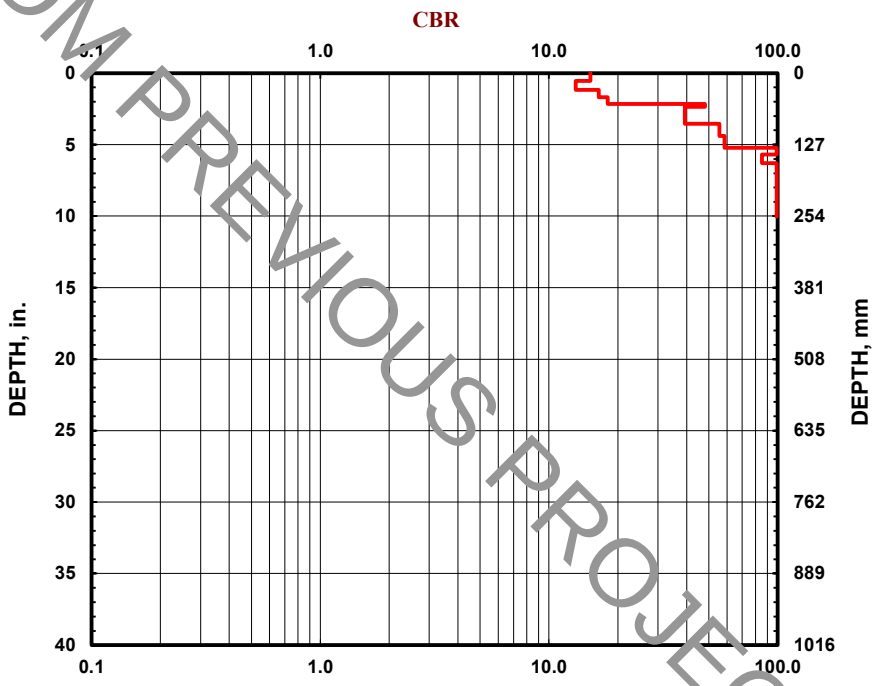
Project: *Ogden Airport West Cargo Area* **Date:** 25-Oct-22

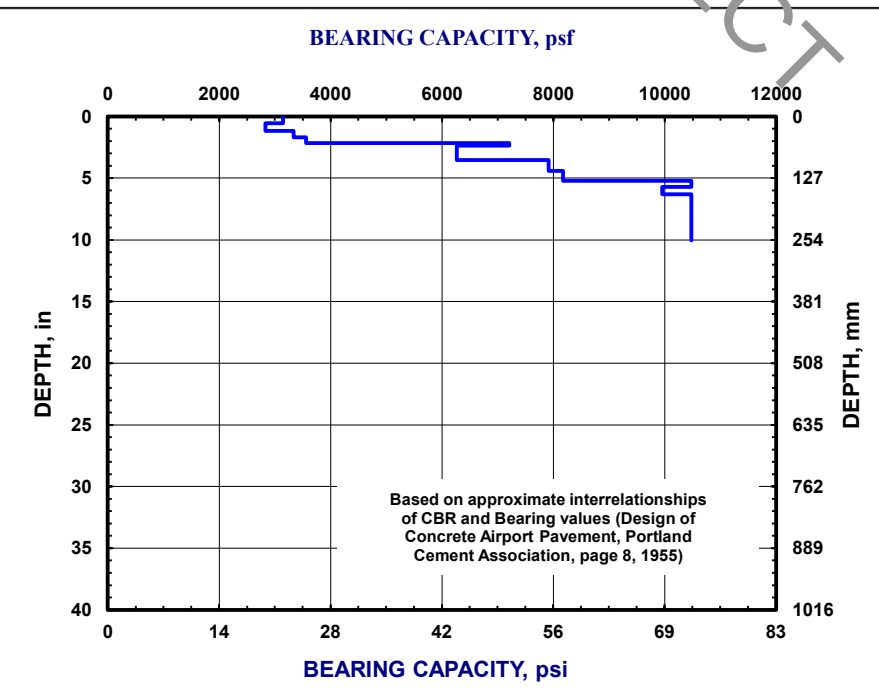
Location: B-21 **Soil Type(s):**

Hammer
- 0.1 lbs.
- 17 lbs.
- Both Hammers used

Soil Type
- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	14	1
1	30	1
1	43	1
1	55	1
1	60	1
5	90	1
5	112	1
5	133	1
5	145	1
5	160	1
5	172	1
5	185	1
5	196	1
5	205	1
5	215	1
5	225	1
5	232	1
5	240	1
5	245	1
5	250	1
5	255	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1
0	0	1





Attachment 3

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.3 (Build 04/30/2021)

Job Name: OGD - CTB-new loading

Section: Apron - Hanger

Analysis Type: New Flexible

Last Run: Thickness Design 2023-02-24 14:20:47

Design Life = 20 Years

Total thickness to the top of the subgrade = 11.9in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Surface	4.0	200000	0.35	0
2	P-304 Cement Treated Base	7.9	500000	0.35	0
3	Subgrade	0	15000	0.35	0

Attachment 3

Airplane Information

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Gulfstream G-V/G500/G550	90900	14	4
2	Learjet 35/36/35A/36A	18000	28	4
3	C-130	155000	160	4
4	Learjet 45/55B	21500	10	4
5	A320-200 opt	172850	104	4
6	Hawker-800/800XP	28120	40	4
7	B737-800	174700	208	4
8	ERJ-140	46738	6	4
9	F/A-18C	56000	3	4
10	S-25	25000	2	4
11	D-20	20000	70	4
12	D-25	25000	4	4
13	D-25	25000	31	4
14	D-25	25000	10	4
15	D-30	30000	35	4
16	D-40	40000	6	4
17	D-40	40000	34	4
18	D-40	40000	24	4
19	D-40	40000	10	4
20	D-75	75000	8	4
21	D-75	75000	18	4
22	D-100	100000	4	4
23	D-100	100000	4	4
24	D-100	100000	16	4
25	D-100	100000	3	4
26	D-100	100000	8	4

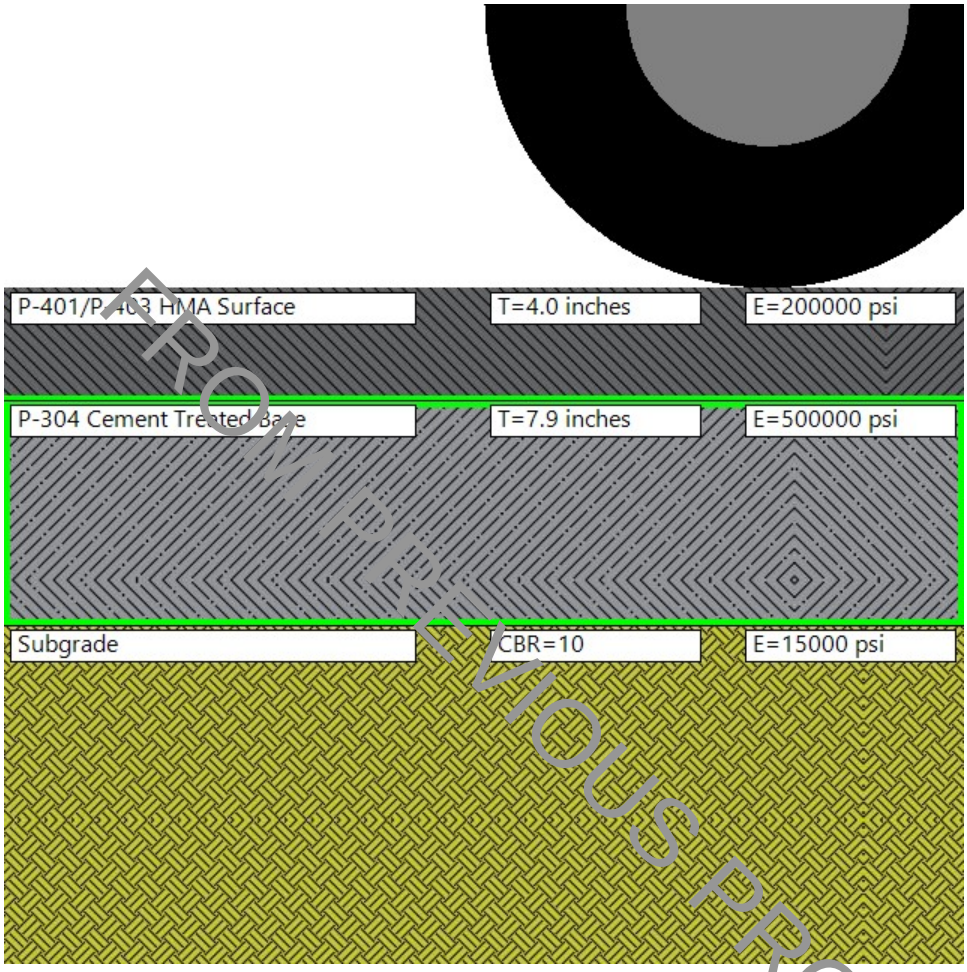
Attachment 3

Additional Airplane Information

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Gulfstream G-V/G500/G550	0.00	0.00	2.06
2	Learjet 35/36/35A/36A	0.00	0.00	2.77
3	C-130	0.00	0.00	2.79
4	Learjet 45/55B	0.00	0.00	2.76
5	A320-200 opt	0.22	0.30	1.9
6	Hawker-800/800XP	0.00	0.00	2.55
7	B737-800	0.78	0.79	1.85
8	ERJ-140	0.00	0.00	2.16
9	F/A-18C	0.00	0.00	3.29
10	S-25	0.00	0.00	3.6
11	D-20	0.00	0.00	2.56
12	D-25	0.00	0.00	2.34
13	D-25	0.00	0.00	2.34
14	D-25	0.00	0.00	2.34
15	D-30	0.00	0.00	2.32
16	D-40	0.00	0.00	2.27
17	D-40	0.00	0.00	2.27
18	D-40	0.00	0.00	2.27
19	D-40	0.00	0.00	2.27
20	D-75	0.00	0.00	1.88
21	D-75	0.00	0.00	1.88
22	D-100	0.00	0.00	1.81
23	D-100	0.00	0.00	1.81
24	D-100	0.00	0.00	1.81
25	D-100	0.00	0.00	1.81
26	D-100	0.00	0.00	1.81

User Is responsible For checking frost protection requirements.

Attachment 3



Attachment 3

Federal Aviation Administration FAARFIELD 2.0 Section Report

FAARFIELD 2.0.3 (Build 04/30/2021)

Job Name: OGD - HMA-209-Nloading

Section: Apron - Hanger

Analysis Type: New Flexible

Last Run: Thickness Design 2023-02-24 14:10:5[illegible]

Design Life = 20 Years

Total thickness to the top of the subgrade = 18.3in.

Pavement Structure Information by Layer

No.	Type	Thickness in.	Modulus psi	Poisson's Ratio	Strength R psi
1	P-401/P-403 HMA Surface	4.0	200000	0.35	0
2	P-401/P-403 HMA Stabilized	5.0	400000	0.35	0
3	P-209 Crushed Aggregate	9.3	46543	0.35	0
4	Subgrade	0	15000	0.35	0

Attachment 3

Airplane Information

No.	Name	Gross Wt. lbs	Annual Departures	% Annual Growth
1	Gulfstream G-V/G500/G550	90900	14	4
2	Learjet 35/36/35A/36A	18000	28	4
3	C-130	155000	160	4
4	Learjet 45/55B	21500	10	4
5	A320-200 opt	172850	104	4
6	Hawker-800/800XP	28120	40	4
7	B737-800	174700	208	4
8	ERJ-140	46738	6	4
9	F/A-18C	56000	3	4
10	S-25	25000	2	4
11	D-20	20000	70	4
12	D-25	25000	4	4
13	D-25	25000	31	4
14	D-25	25000	10	4
15	D-30	30000	35	4
16	D-40	40000	6	4
17	D-40	40000	34	4
18	D-40	40000	24	4
19	D-40	40000	10	4
20	D-75	75000	8	4
21	D-75	75000	18	4
22	D-100	100000	4	4
23	D-100	100000	4	4
24	D-100	100000	16	4
25	D-100	100000	3	4
26	D-100	100000	8	4

Attachment 3

Additional Airplane Information

Subgrade CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Gulfstream G-V/G500/G550	0.00	0.00	1.82
2	Learjet 35/36/35A/36A	0.00	0.00	2.29
3	C-130	0.00	0.00	2.32
4	Learjet 45/55B	0.00	0.00	2.29
5	A320-200 opt	0.21	0.28	1.52
6	Hawker-800/800XP	0.00	0.00	2.16
7	B737-800	0.79	0.81	1.48
8	ERJ-140	0.00	0.00	1.88
9	F/A-18C	0.00	0.00	2.63
10	S-25	0.00	0.00	2.82
11	D-20	0.00	0.00	2.17
12	D-25	0.00	0.00	2.01
13	D-25	0.00	0.00	2.01
14	D-25	0.00	0.00	2.01
15	D-30	0.00	0.00	2
16	D-40	0.00	0.00	1.96
17	D-40	0.00	0.00	1.96
18	D-40	0.00	0.00	1.96
19	D-40	0.00	0.00	1.96
20	D-75	0.00	0.00	1.69
21	D-75	0.00	0.00	1.69
22	D-100	0.00	0.00	1.63
23	D-100	0.00	0.00	1.63
24	D-100	0.00	0.00	1.63
25	D-100	0.00	0.00	1.63
26	D-100	0.00	0.00	1.63

Attachment 3

HMA CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Gulfstream G-V/G500/G550	0.00	0.00	2.99
2	Learjet 35/36/35A/36A	0.00	0.00	4.58
3	C-130	0.00	0.00	1.90
4	Learjet 45/55B	0.00	0.00	4.56
5	A320-200 opt	0.00	0.00	2.79
6	Hawker-800/800XP	0.00	0.00	3.85
7	B737-800	0.00	0.00	2.70
8	ERJ-140	0.00	0.00	3.46
9	F/A-18C	0.00	0.00	4.86
10	S-25	0.00	0.00	5.61
11	D-20	0.00	0.00	3.41
12	D-25	0.00	0.00	3.36
13	D-25	0.00	0.00	3.36
14	D-25	0.00	0.00	3.36
15	D-30	0.00	0.00	3.29
16	D-40	0.00	0.00	3.05
17	D-40	0.00	0.00	3.05
18	D-40	0.00	0.00	3.05
19	D-40	0.00	0.00	3.05
20	D-75	0.00	0.00	2.67
21	D-75	0.00	0.00	2.67
22	D-100	0.00	0.00	2.66
23	D-100	0.00	0.00	2.66
24	D-100	0.00	0.00	2.66
25	D-100	0.00	0.00	2.66
26	D-100	0.00	0.00	2.66

Attachment 3

P-401/P-403 HMA Stabilized CDF

No.	Name	CDF Contribution	CDF Max for Airplane	P/C Ratio
1	Gulfstream G-V/G500/G550	0.00	0.00	2.20
2	Learjet 35/36/35A/36A	0.00	0.00	3.06
3	C-130	0.00	0.00	1.54
4	Learjet 45/55B	0.00	0.00	3.06
5	A320-200 opt	0.01	0.01	2.15
6	Hawker-800/800XP	0.00	0.00	2.79
7	B737-800	0.02	0.02	2.09
8	ERJ-140	0.00	0.00	2.43
9	F/A-18C	0.00	0.00	3.73
10	S-25	0.00	0.00	4.14
11	D-20	0.00	0.00	2.80
12	D-25	0.00	0.00	2.53
13	D-25	0.00	0.00	2.53
14	D-25	0.00	0.00	2.53
15	D-30	0.00	0.00	2.51
16	D-40	0.00	0.00	2.44
17	D-40	0.00	0.00	2.44
18	D-40	0.00	0.00	2.44
19	D-40	0.00	0.00	2.44
20	D-75	0.00	0.00	2.03
21	D-75	0.00	0.00	2.03
22	D-100	0.00	0.00	2.03
23	D-100	0.00	0.00	2.03
24	D-100	0.00	0.00	2.03
25	D-100	0.00	0.00	2.03
26	D-100	0.00	0.00	2.03

User Is responsible For checking frost protection requirements.

Attachment 3