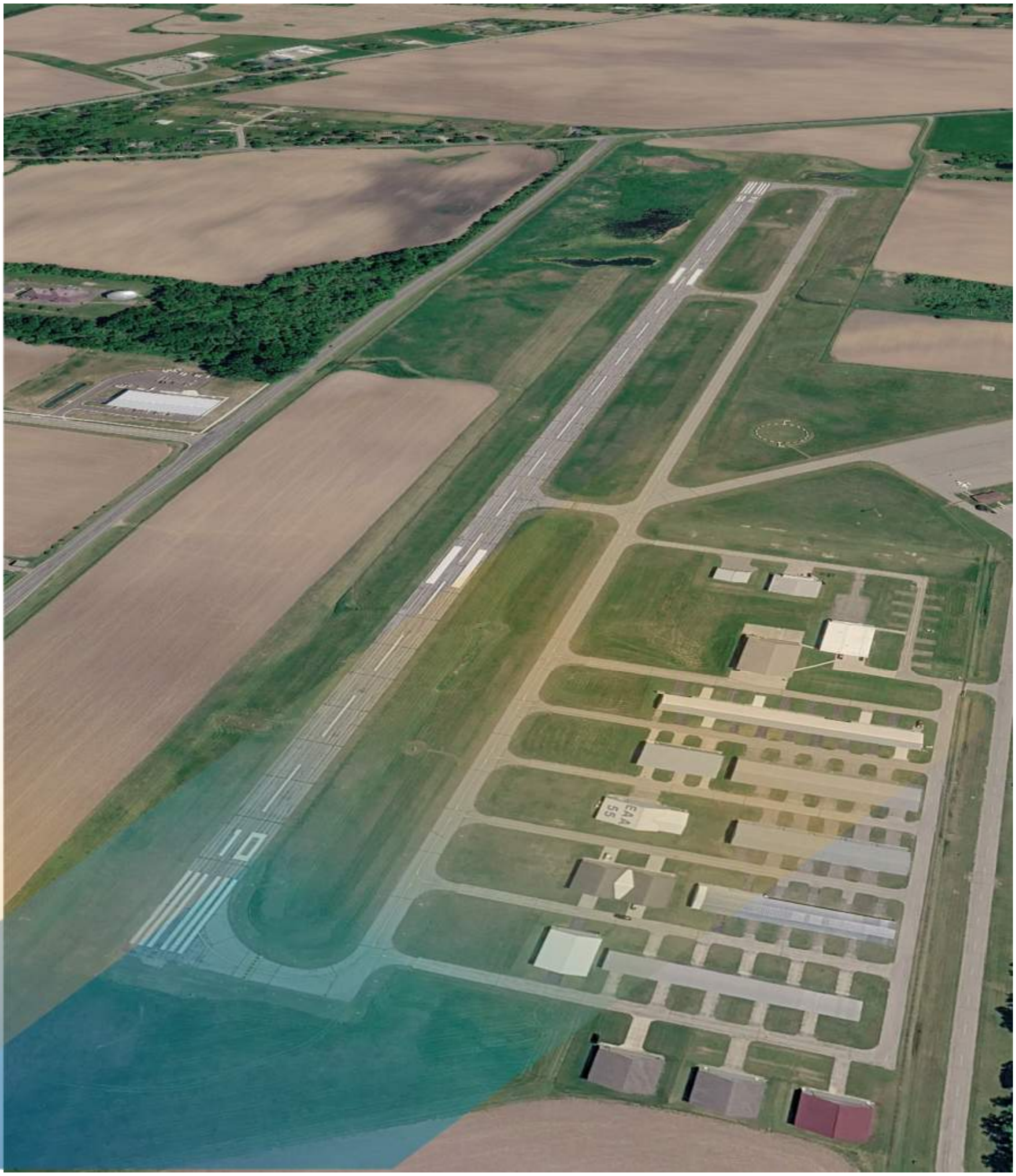
RS&H

Mason Jewett Field Airport

Runway 10-28 and Taxiway B Improvement Program

Preliminary Engineering Evaluation Report



Mason Jewett Field Airport

Preliminary Engineering Evaluation Report

June 2026

Capital Region Airport Authority
Mason, Michigan

RS&H No.: 1010-5186-002

Prepared by RS&H Michigan, Inc. at the
direction of the Capital Region Airport Authority

Table of Contents

List of Figures

List of Tables

Appendix

1 Introduction

1.1 Background

Mason Jewett Field Airport (TEW or "Airport") is a non-primary, general aviation airport located in Mason, Michigan. The airport serves as a general aviation reliever airport for Capital Region International Airport (LAN) located approximately 17 miles to the northwest. TEW is owned and operated by the Capital Region Airport Authority (CRAA). Their role in maintaining the airfield assets including runways, taxiways, aprons and associated systems is vital to preserving the operational efficiency and safety of aircraft and passengers utilizing the facility.

TEW is a single-runway airport served by a full-length parallel taxiway. Runway 10-28 is the Airport's sole runway and accommodates all aircraft operations. The runway is asphalt paved and measures 4,002 feet in length by 75 feet in width. No paved shoulders or blast pads are provided.

Taxiway B is the full-length parallel asphalt taxiway to Runway 10-28 and is 35 feet wide and offset approximately 240 feet from the runway centerline. Taxiway B does not have paved shoulders.

Runway 10-28 and Taxiway B support all aircraft operations at the Airport and are identified as pavements to remain on the current Airport Layout Plan (ALP). The location of Runway 10-28 and Taxiway B is shown in **Figure 1**.

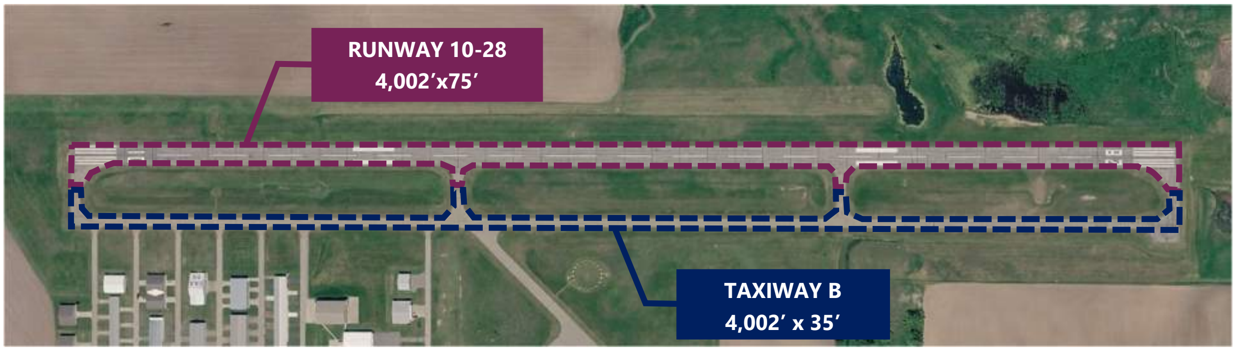


Figure 1 - Runway 10-28 and Taxiway B

CRAA has identified the need to reconstruct or rehabilitate Runway 10-28 and Taxiway B and the associated lighting and guidance sign systems based on the latest Pavement Condition Index (PCI) survey and observations made by CRAA maintenance staff. CRAA has therefore initiated a capital improvement program to improve Runway 10-28, Taxiway B and associated lighting and guidance sign systems with support from the Michigan Department of Transportation – Office of Aeronautics (MDOT-Aero) and the Federal Aviation Administration (FAA).

1.2 Program Schedule

Improvements to Runway 10-28, Taxiway B, connector taxiways, and associated electrical systems are currently shown on the Airport's Capital Improvement Plan (ACIP) as a phased initiative between 2026 and 2029. Planning-level construction estimates have been generated for these projects and assume federal, state, and local participation including discretionary funding.

Obtaining state and federal discretionary funding for airport improvement projects remains competitive, but runway improvement projects continue to profile well for discretionary funding. CRAA has identified the current design and construction schedule for this program, but the timing of the project(s) may be expedited or packaged as a single runway-taxiway improvement program depending on the availability of discretionary funding streams. Therefore, the following dates are subject to change.

Year	Projects
2026	Reconstruct Runway 10-28 - Design
2027	Reconstruct Runway 10-28 Pavement – Construction Reconstruct Runway 10-28 Lighting – Construction
2028	Reconstruct Taxiway B – Design
2029	Reconstruct Taxiway B Pavement – Construction Reconstruct Taxiway B Lighting - Construction

Table 1 – Program Schedule

1.3 Scope and Purpose

The scope of this Preliminary Engineering Evaluation included the following:

- Limited geotechnical investigation
- Topographic survey of the anticipated project limits
- Visual site inspection.
- Limited record drawing review

Preliminary findings from the visual site inspection and data collected during the geotechnical investigation and topographic survey were analyzed by RS&H and used to develop the various exhibits, considerations and recommendations provided in this report.
The purpose of this report is to provide engineering context for the proposed pavement and lighting improvements of Runway 10-28 and Taxiway B, discuss key preliminary design considerations, provide updated estimates of probable construction cost for programming

purposes, and explain key program outcomes for stakeholders and supporting agencies. This effort is intended to improve project readiness and financial planning as the Runway 10-28 and Taxiway B improvement program advances into the design phase.

1.4 Report Limitations

This evaluation is based on available existing subsurface data, preliminary field observations, and available historical information. Certain assumptions were required, particularly regarding the limits of geotechnical conditions, condition of airfield electrical systems, and aircraft activity. As a result, all findings, recommendations, and cost estimates presented herein are considered preliminary in nature and subject to change during subsequent design phases of the project

2 Airport Classification and Eligibility

2.1 Airport Classification and Pavement Width Determination

In 2025, MDOT-Aeronautics reviewed the airport's classification and validated the current Runway Design Code (RDC) and Taxiway Design Group (TDG) of TEW consistent with FAA Advisory Circular (AC) 150/5000-17, *Critical Aircraft and Regular Use Determination* and AC 150/5325-4B, *Runway Length Requirements for Airport Design*.

TEW is currently a Tier 1, regional airport with an Airport Reference Code (ARC) of B-I – indicating the largest runway justified for the airport. During their review, MDOT-Aero concluded that 578 total annual adjusted operations have occurred at the airport supporting the continued need for a runway meeting B-I Runway Design Code (RDC) standards. Runwway Design Code standards the last 12 months of aircraft traffic data indicated 83 based aircraft and 578 total annual adjusted aircraft operations and. This also supports the continued needs for a full length parallel taxiway whose width corresponds to the airport's critical aircraft group.

MDOT-Aero confirmed that the following aircraft have the most activity and would be considered the airport's critical aircraft group:

- Cirrus SR-22
- Piper PA-28
- Piper Cherokee

These aircraft are all classified as Taxiway Design Group (TDG)-1A aircraft.

2.2 Eligible Dimensions for Runway 10-28 and Taxiway B

TEW is eligible to receive federal funding for maintaining Runway 10-28 and Taxiway B at current B-I and TDG-1A standards. Airfield pavement width standards are provided in AC

150/5300-13B, *Airport Design*. Runways classified as B-I are to be 60 feet wide, and taxiways classified as TDG-1A are to be 25 feet wide.

It should be noted that ADG-II and TDG-2 aircraft are based at the Airport, specifically the Beechcraft 18 and Aeromot AMT-200. Reconstructing Runway 10-28 and Taxiway B to a reduced width may adversely affect the operational efficiency and maneuverability of these aircraft at TEW. This is especially relevant for tailwheel (tail-dragger) aircraft operating on taxiways, which require additional pavement width to accommodate their larger swing paths during taxi operations.

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design* provides the eligible runway length driven by the documented critical group, airport elevation, and mean max daily temperature. Using various standard formulas and figures, MDOT-Aero concluded that the runway at TEW is eligible up to 3,900 feet long.

Table 2 shows the existing pavement lengths and widths compared to the dimensions eligible for funding.

Pavement	Current Dimensions (LxW)	Eligible Dimensions (LxW)
Runway 10-28	4,002′ x 75′	3,900′ x 60′
Taxiway B	4,002′ x 35′	3,900′ x 25′

Table 2 – Eligible Runway 10-28 and Taxiway B Dimensions

2.3 FAA Minimum Standards Met

All projects receiving federal funding must comply with current airport design standards contained within published Advisory Circulars (AC's), as mandated by Airport Improvement Program (AIP) Handbook. The AIP Handbook also defines the allowable outcomes of certain types of construction projects. A 'rehabilitation' project is a "comprehensive restoration of existing functionality that results in a pavement with an approximate useful life of 10 years". In contrast, a 'reconstruction' project is defined as a complete restoration of functionality that produces a virtually new pavement with an expected useful life of at least 20 years.

In general, federally funded projects must meet all applicable FAA minimum design standards established in current Advisory Circulars. When a project results in pavement dimensions that exceed these minimum standards, the AIP Handbook permits the use of federal funding only if the work is classified as rehabilitation. Reconstruction projects, however, must conform to current standards, as they are considered equivalent to new construction (AIP Handbook, Table 3-18).

The evaluation of reconstruction versus rehabilitation alternatives for Runway 10-28 and Taxiway B is presented in subsequent sections of this report. It is important to note, however, that the existing runway and taxiway dimensions exceed current FAA design standards. Therefore, if a reconstruction alternative is pursued, these pavements would need to be reduced to their eligible widths and lengths unless the Capital Region Airport Authority (CRAA) or other local stakeholders elect to fund the non-eligible portions.

Exceptions to FAA minimum standards are limited. For pavement improvement projects, deviations are generally permissible only under a rehabilitation approach and require the project sponsor to demonstrate a continued operational need for the expanded pavement area. This justification must include documentation supporting operations by aircraft larger than the designated critical aircraft and must be formalized through a Benefit-Cost Analysis in accordance with FAA requirements.

3 Evaluation of Existing Conditions

The existing conditions within the project area were documented through review of record drawings, analysis of available Pavement Condition Index (PCI) data, a preliminary geotechnical investigation and topographic survey, and a visual site inspection.

3.1 Existing Pavement Composition

The existing pavement composition of Runway 10-28 and Taxiway B was evaluated using pavement section data obtained from record drawings and boring logs collected during the preliminary geotechnical investigation conducted by RS&H in March 2026. Additional details regarding the geotechnical investigation are provided in the following sections of this report.

Runway 10-28

The runway pavement section consists of an asphalt surface course underlain by a granular base course. The asphalt surface course averages approximately 3 to 3.5 inches thick, with isolated boring locations indicating thicknesses ranging from as little as 2.5 inches to as much as 7 inches. See photograph provided in **Figure 2** for a pavement core extracted from Runway 10-28 during the geotechnical investigation.

Figure 2 - Runway 10-28 Pavement Core

The granular base averages approximately 8 inches in thickness but also exhibits significant variability in material composition. Boring logs indicate that the base course is predominantly composed of fine gravel, with varying amounts of asphalt millings, sand, and silt depending on location. The presence of clay and silt within the base is likely the result of upward migration of fine-grained soils from the underlying subgrade. This migration reduces the structural integrity of the base layer, as fine-grained soils tend to retain moisture. Elevated moisture within the base increases susceptibility to expansion and contraction during freeze-thaw cycles, accelerating pavement deterioration.

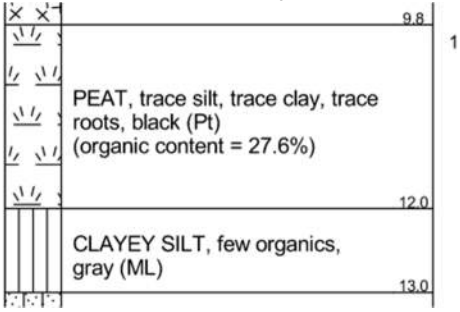


Figure 3 - Boring Log Description of Subgrade Soil at Great Depth

At the east end of the runway, the subsurface exploration identified soil conditions at great depth (>10’ below the surface) that are characteristic of low-lying, poorly drained, and previously vegetated environments (see Figure 3 for exact description provided in borings logs). These soils were not preliminarily observed at the west end of the runway or taxiway, suggesting that they are in-situ, hydric or organic soils that were not removed during the original construction of these pavements. These conditions likely correspond to historic ponded areas now situated north and south of the runway and taxiway. See **Figure 4** for assumed limit of historically ponded area). The presence of organic soils – particularly if located within or near the pavement structure - reduces load-bearing capacity and increases the potential for long-term pavement settlement and degradation.

Figure 4 – Assumed Limit of Historically Ponded Areas

Taxiway B

The pavement section of Taxiway B is generally consistent with that of Runway 10-28, with minor variations. Taxiway B is composed of an asphalt pavement surface generally 3 inches thick, with few borings indicating as little as 2.5 inches, but in no case exceeding 3 inches. The underlying granular base exhibits a similar composition to that of the runway, including a mix of aggregate materials with varying amounts of fine-grained soils.

The boring log from Boring TH-07, located on Taxiway B just east of the easternmost infield connector taxiway, identified a markedly different pavement structure. At this location, a 2.5-inch asphalt surface course overlies a 7-inch Portland cement concrete (PCC) layer, underlain by granular fill (see **Figure 5** for the pavement core extracted from Boring TH-07). Beneath the concrete, an approximately 48-inch-thick expanded polystyrene (EPS) foam block layer was encountered. Below the EPS foam lies an approximately 5-foot-thick deposit of highly organic peat and marl.

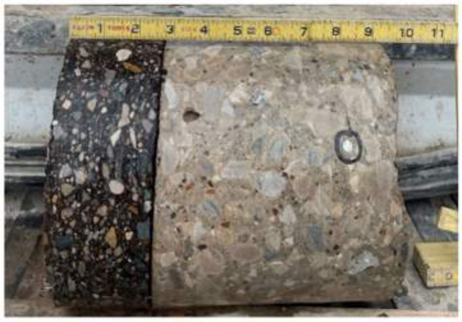


Figure 5 - Taxiway B Pavement Core (Boring TH-07)

Due to the limited scope of the geotechnical investigation, the full extent of the pavement area containing concrete pavement and EPS foam block was not delineated. However, based on available record drawings, this condition is believed to be the full width of Taxiway B for a length of approximately 113 feet, as illustrated in **Figure 6.**

3.2 Review of Record Drawings

RS&H conducted a limited review of available record drawings and historical project documentation for the site. A phased reconstruction of Taxiway B was completed between 2007 and 2011, which included reconstruction and realignment of approximately 3,100 feet beginning at the west end of the taxiway. Available record drawings from this project were limited; however, construction field notes indicate that significant subgrade challenges were experienced during construction. Various mitigation measures appear to have been implemented to address isolated areas of subgrade instability – as in the case of the area containing concrete pavement and EPS foam block. These mitigation efforts were more prevalent along the eastern portion of the runway and taxiway.

Figure 6 illustrates the identified subgrade remediation areas from the Taxiway B reconstruction program in relation to the borings performed as part of the current investigation.

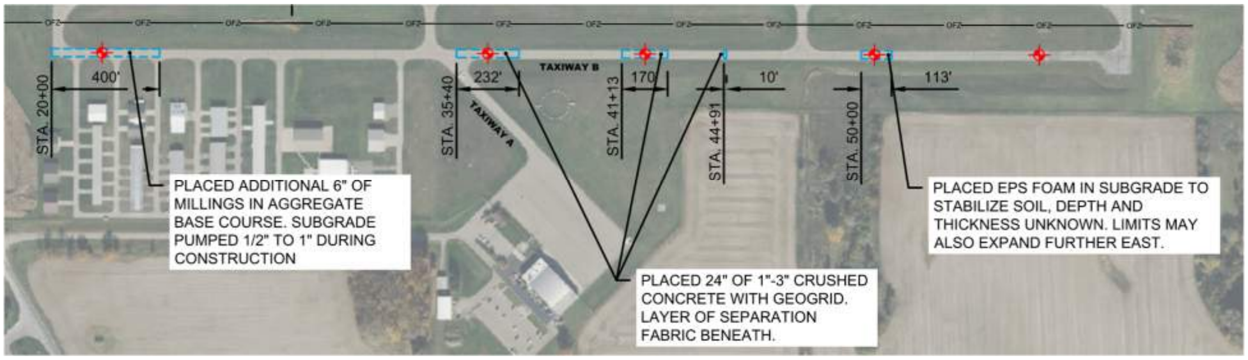


Figure 6 - Historical Taxiway B Subgrade Mitigation Map and 2026 Taxiway Boring Locations

In 2016, RS&H understands that an asphaltic liquid seal coat was applied to Runway 10-28 and the east end of Taxiway B. The seal coat was applied to preserve the remaining functional life and reduce the infiltration of water into early-stage pavement cracks. Evidence of the seal coat remains visible today, but the protective nature of original seal coat has largely depleted. Aerial imagery from October 2016 shows the limits of the seal coat application – see **Figure 7**

Figure 7 - 2016 Seal Coat Application

The last reconstruction of Runway 10-28 and Taxiway B occurred prior to 2005 making the pavement within the project area 20+ years old and past its useful life.

3.3 Geotechnical Investigation and Subsurface Findings

A preliminary geotechnical investigation of the project site was performed by Somat Engineering in March 2026. A limited number of pavement cores and soil borings were distributed across Runway 10-28 and Taxiway B to obtain sample-size pavement section data to develop a reasonable representation of subsurface conditions beneath Runway 10-28 and Taxiway B. Boring locations were distributed strategically. Some soil borings were placed within historical troublesome subgrade areas, others at a regular interval to maximize coverage. This investigation was preliminary in nature. A more detailed geotechnical investigation should be conducted in accordance with FAA Advisory Circular (AC) 150/5320-6G, *Airport Pavement Design and Evaluation* during the design phase of the project.

In addition to the pavement section data obtained and previously discussed in this report, several other subsurface findings were discovered.

Groundwater Level Observations

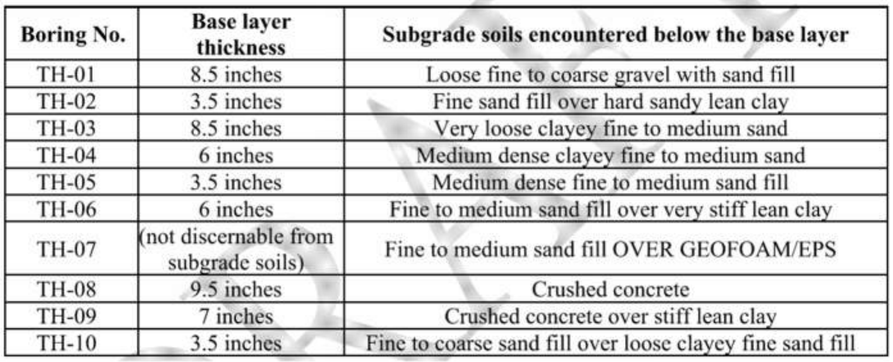
Groundwater was encountered at depths ranging between 3 to 13 feet below grade. Groundwater elevations vary seasonally and are typically highest during the spring due to snowmelt and increased precipitation. Groundwater located above the regional frost depth - approximately 42 inches in this region – adversely affects pavement performance.

This is particularly damaging to the pavement section when subgrade soils above the frost depth consist of non-free-draining materials and have not been chemically stabilized. The clay-and silt-rich soils identified beneath Runway 10-28 and Taxiway B above frost depth are considered expansive and are susceptible to volume changes associated with freeze-thaw cycles, which likely has, and may continue to accelerate pavement deterioration.

Characterization of Existing Subgrade Soil

The existing pavement structure transitions to subgrade soils at approximately 6 to 8 inches below the surface. The soils at this depth are characterized as very loose to medium dense clayey sand and stiff to hard lean clays, with anomalous materials encountered in previous subgrade mitigation areas. See **Figure 8** for a description of the existing subgrade soils discovered at their corresponding depths.

The existing clayey subgrade material was sampled and laboratory tested to evaluate its engineering properties, including its ability to support airfield pavements. In general, the subgrade soils sampled across the project site would typically be considered suitable for structural support of airfield pavement. However, due to the significant amount of fine-grained material, the sampled subgrade soils are highly sensitive to moisture and would become unworkable when saturated and could lead to project delays if construction occurred during the spring when heavy rainfall is common. Silty and clayey soils in a loose condition are also not suitable for supporting pavement. These loose soils should be properly compacted, if possible, before constructing new pavement overtop. This soil is also not free-draining and ultimately should be removed and replaced with engineered fill that would provide adequate drainage of the pavement section.



Boring No.	Base layer thickness	Subgrade soils encountered below the base layer
TH-01	8.5 inches	Loose fine to coarse gravel with sand fill
TH-02	3.5 inches	Fine sand fill over hard sandy lean clay
TH-03	8.5 inches	Very loose clayey fine to medium sand
TH-04	6 inches	Medium dense clayey fine to medium sand
TH-05	3.5 inches	Medium dense fine to medium sand fill
TH-06	6 inches	Fine to medium sand fill over very stiff lean clay
TH-07	(not discernable from subgrade soils)	Fine to medium sand fill OVER GEOFOAM/EPS
TH-08	9.5 inches	Crushed concrete
TH-09	7 inches	Crushed concrete over stiff lean clay
TH-10	3.5 inches	Fine to coarse sand fill over loose clayey fine sand fill

Figure 8 - Description of Existing Subgrade Soil

Subgrade Bearing Capacity and California Bearing Ratio (CBR) Determination

The subgrade soils were strength tested to determine their bearing capacity. The bearing capacity of soil is numerically calculated through a series of lab tests and referred to as the soil's California Bearing Ratio (CBR). The CBR is a ratio of the soil's bearing strength to the strength of a typical California limestone. Higher CBR values indicate greater load-bearing capacity.

FAA AC 150/5320-6G recommends subgrade improvement when CBR values are at or below 5 percent and requires improvement when CBR values fall below 3 percent. Improvement methods may include chemical stabilization or complete removal and replacement. Laboratory testing indicates that subgrade soils within the project limits have an average CBR of approximately 4 percent at anticipated subgrade depth. This value suggests that subgrade improvement would likely be necessary to provide continued support of the pavement section.

The Report on Geotechnical Investigation, including boring logs and additional information regarding boring locations, pavement sections, and subsurface conditions is provided in **Appendix A** of this report.

3.4 Current Pavement Condition Index (PCI)

As part of CRAA's ongoing Pavement Management Program (PMP), airfield pavements at TEW are regularly evaluated to assess surface distress conditions. Pavement Condition Index (PCI) surveys are conducted in accordance with FAA Advisory Circular (AC) 150/5380-7B, *Airport Pavement Management Program*. During each survey, the type, severity, and quantity of visible pavement distresses are documented, and pavement areas are delineated and grouped together based on pavement type, historical construction limits, and similar distress levels. Standardized evaluation procedures are then used to calculate a PCI value for each grouping.

The PCI is a numerical indicator of the structural integrity and surface condition of a pavement. PCI values range from 0 to 100 where 0 indicates a failed pavement and 100 represents a new pavement.

In general:

- Pavements with a PCI value above 70 are considered to be in good condition and typically require routine maintenance
- Pavements with PCI values between 70 and 55 may be effectively rehabilitated to extend their service life.
- Pavements with PCI values below 55 generally exhibit more advanced deterioration and are better suited for full-depth reconstruction rather than rehabilitation (*FAA AC 150/5320-6G, Chapter 4*).

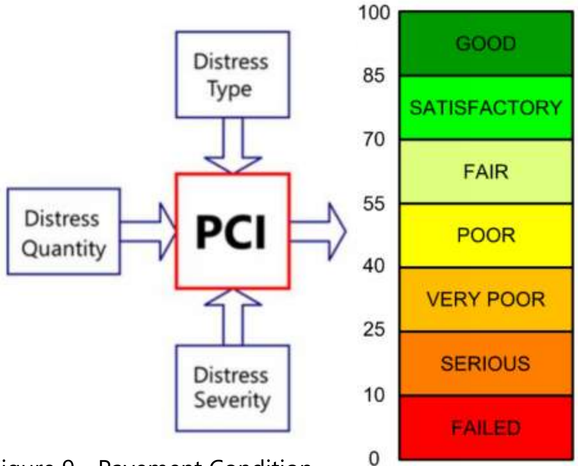


Figure 9 - Pavement Condition Index (PCI) Legend

The most recent PCI inspection at TEW was completed in May 2023 and the pavements were assigned the following PCI values:

- Runway 10-28 PCI = **50**
- Taxiway B PCI = **40 to 50**

Forecasted PCI values for 2027 – the earliest anticipated construction timeframe – are approximately:

- Runway 10-28: PCI = **48**
- Taxiway B: PCI = **28 to 43**

3.5 Observed Pavement Distresses - 2023 PCI Survey

The type of pavement distress typically indicates the primary contributing factors leading to the pavement's degradation. Asphalt pavement distress types are typically characterized as "load-related," "climate/durability-related", and "other". **Table 3** shows typical asphalt pavement distress types grouped mode of failure.

Distress Category	Typical Asphalt Pavement Distresses
Load-Related (bearing/structural deficiency)	Alligator Cracking; Depression; Rutting
Climate/Durability-Related (typically material deficiencies)	Weathering; Raveling; Block Cracking
Other (combination of many factors)	Longitudinal and Transverse Cracking

Table 3 - Typical Asphalt Pavement Distresses by Mode of Failure

There were several types of pavement distresses identified on Runway 10-28 and Taxiway B during the 2023 Pavement Management Inspection, with varying degrees of severity. **Table 4** lists the pavement distresses recorded during the last pavement inspection of Runway 10-28 and Taxiway B.

Pavement Area	Observed Pavement Distress
Runway 10-28	Alligator Cracking; Rutting; L&T Cracking; Patching; Raveling; Weathering
Taxiway B	Alligator Cracking; Depression; L&T Cracking; Raveling; Weathering

Table 4 - Pavement Distresses Noted during 2023 PCI Survey - Runway 10-28 and Taxiway B

Load-related pavement distresses are the most severe type of pavement distress. This is because load-related distresses can be attributed to loss of subgrade support, internal failure within the base course, or a combination of both. Load-related pavement distresses cannot be corrected by simply replacing the asphalt surface or wearing course. A pavement showing evidence of load-related issues requires strengthening of the subgrade, and/or base course – usually accomplished by replacement of the entire pavement profile.

3.6 Observed Pavement Distresses - 2026 Visual Site Inspection

RS&H conducted a Visual Site Inspection of Taxiway B and Runway 10-28 in April 2026. The purpose of the visual inspection was to confirm the existence of the pavement distresses noted during the 2023 PCI survey, document any further pavement degradation or unforeseen site conditions that may impact design, and take preliminary photographs of the project site. A select few images showing observed pavement distresses are provided in **Figure 10 and 11**.

Figure 10 – Significant L&T Cracking on Runway

Figure 11 – Alligator & Block Cracking on Runway

During the site inspection, RS&H prepared a map which generalizes pavement areas as high, medium and low pavement degradation areas based on the severity and frequency of pavement distresses observed. A map showing the runway and taxiway pavement areas grouped by level of degradation is provided in **Appendix B** of this report and further discussed below.

A pattern of varying deterioration across Runway 10-28 was observed during the site inspection. The eastern half of the runway appears to be experiencing the highest rate of degradation, consistent with the weaker subsurface conditions identified in the soil borings. The western half exhibits comparatively less severe distresses, however the quantity and broad distribution of the observed cracking and pavement deformations still warrant a high-severity classification. The center section of the runway showed a reduction in distress severity and as such was categorized as medium severity.

The east end of Taxiway B contained a variety of high-severity pavement distresses, consistent with the same deficiencies identified on the east end of the runway. There was a clear delineation of high severity distresses once aligned with the easternmost historical subgrade improvement limit, as illustrated in **Appendix B**. The pavement distresses located west of this zone, before the intersection of Taxiway A, fluctuated but were not significant enough to warrant a high severity rating. The remaining pavement West of Taxiway A showed the least amount of pavement distress within the project limits and was classified as low severity.

Figure 12 – Depression on Taxiway B

Figure 13 – L&T Cracking on Taxiway B

3.7 Surface Gradient Evaluation

The existing surface gradients were assessed for compliance against the FAA standards provided in AC 150/5300-13B, Change 1, *Airport Design*. Surface gradients represent the rate of slope change along a pavement surface; transverse grades are measured perpendicular to the pavement centerline and longitudinal grades are measured along the centerline of the airfield pavement. Allowable slopes are governed by critical aircraft group. At Mason Jewett Field, Aircraft Approach Category (AAC) B slope criteria apply.

The results of this assessment are summarized below and graphically shown in an exhibit provided in **Appendix C**. Applicable FAA Advisory Circular standards are listed on the exhibit for ease of comparison between measured and allowable surface gradients.

Transverse Grades

Transverse grades are intended to provide positive lateral drainage away from runway and taxiway surfaces. After evaluation of obtained topographic survey data, the on-pavement transverse grades appear to meet current FAA slope requirements for runway and taxiway pavements classified as AAC-B. However, discrepancies were identified off-pavement in several areas along both the runway and taxiway. The applicable transverse grade requirements are summarized via the table below.

FAA TRANSVERSE GRADE REQUIREMENTS (AAC-B)		
	TAXIWAY	RUNWAY
Full-Strength Pavement	1% - 2%	1% - 2%
10 Feet Beyond Pavement	4.5% - 5.5%	3% - 5%
Within Safety Area (TSA/RSA)	1.5% - 5%	1.5% - 5%

Table 5 - FAA Transverse Grade Requirements (AAC-B)

The off-pavement transverse grades, particularly those measured 10 feet beyond the pavement edge, were found to be consistently outside the allowable tolerance limits, as depicted in **Appendix C**. In most instances, these areas exhibited slopes steeper than the maximum allowable grade, except for areas adjacent to Taxiway B which showed some areas with shallow slopes. Although steeper slopes can enhance surface drainage away from the pavement structure, such conditions pose safety risks for aircraft that may wander off paved surfaces during abnormal operations. Beyond the 10-foot offset, grades continued to exceed allowable limits.

Longitudinal Grade & Runway Safety Areas

Longitudinal grading plays a critical role in ensuring proper drainage on airfield pavements and maintaining smooth vertical transitions for aircraft operations. Adequate longitudinal grades are imperative for controlling vertical curves along the runway, which if ignored could result in bumps or dips capable of causing structural damage to aircraft during arrivals and departures. Based on preliminary evaluations of obtained topographic survey data, the existing longitudinal grade of Runway 10-28 and Taxiway B appear to comply with AAC-B longitudinal slope criteria.

However, both runway safety areas (RSAs) located beyond the runway ends exhibit longitudinal grading deficiencies that require corrective action.

- Runway 28 RSA: The slope beyond the pavement rises to an elevation higher than the runway end, penetrating the clearway (see Figure 9 below). This condition represents a significant safety hazard for aircraft that may overrun the runway during abnormal or emergency operations.

Figure 14 – Photo of Runway 28 Longitudinal Grade within Runway Safety Area (RSA)

- Runway 10 RSA: The slope immediately beyond the pavement edge exceeds the maximum allowed negative slope of 5%. The grade change allowed within this area surpasses the allowable 2% per 100 feet. Both these conditions fall outside FAA standards and need to be remediated.

The longitudinal grades of the existing connecting taxiways were not reviewed as part of this report. A full evaluation would be required during the design phase of this program to ensure compliance to FAA standards. The existing non-standard RSA grade conditions should be corrected as part of this project to ensure the continued safety of aircraft operations at TEW.

3.8 Summary

Based on the preliminary existing conditions investigation of the pavement and underlying subsurface conditions, the observed distresses, if not remediated, may accelerate under continued aircraft loading and adverse weather conditions. If remediation is delayed, these deficiencies could lead to foreign object debris (FOD), reduced load-bearing capacity, and operational limitations. This evaluation confirms the need for Mason Jewett to plan for improvements to these areas to maintain proper pavement performance and ensure a safe operating environment for all tenants.

4 Program Recommendations

The following sections are intended to provide justification for the improvement of Runway 10-28 and Taxiway B pavement and lighting systems and recommendations for project programming and budgetary purposes.

4.1 Recommendation for Runway 10-28 and Taxiway B Pavement

Current PCI values for Runway 10-28 and Taxiway B support the need to completely restore the pavement to a like-new condition. Observed pavement distresses indicating loss of subgrade strength, evidence of upward migration of fine-grained, moisture-prone soils within the base course layers, and overall age of the existing runway and taxiway pavement also justifies the need to replace the pavements at their full depth. A full-depth pavement replacement project would allow for necessary subgrade improvements and the installation of a drainage layer and integral underdrain system to mitigate the effects of frost heave.

Pavement at the west end of Taxiway B is exhibiting the least amount of pavement distress at the surface. A limited amount of extended service life could be provided to these pavements by replacing only the wearing course. However, weakness within the subgrade and base course layers would likely cause premature cracking of the new wearing course in only a few years. The future programmed construction of adjacent taxilane fillet pavement in this area would also be impactful to the narrowed and fragile existing taxiway pavement that would remain. The addition of taxilane fillet pavement at the west end of Taxiway B and reconstruction of existing full-strength Taxiway B pavement should occur simultaneously as part of this program.

4.2 Recommendation for Improvements to Airfield Electrical System

When Taxiway B and Runway 10-28 are narrowed to standard widths, the associated edge light systems and guidance sign systems would be located too far from the narrowed pavement edges. These fixtures would need to be relocated closer to the pavement edges and likely re-spaced to meet new standards. The existing edge light and guidance sign systems have surpassed their useful life and reusing the aged and mixed (stake-mounted/base can) lighting system with non-LED fixtures would not be fiscally reasonable when considering long-term maintenance costs. New edge light, threshold light and guidance sign systems should be programmed into this project.

4.3 Preliminary Pavement Section and Subsurface Considerations

4.3.1 Preliminary Aircraft Fleet Mix

RS&H used the fleet mix previously generated during design of the 2024 Apron Reconstruction Project to determine a preliminary pavement section capable of supporting typical airport traffic at TEW. A thorough study of current aircraft operational data was outside the scope of this preliminary engineering evaluation and was not performed. **Table 6** shows the aircraft fleet mix and associated departure counts used to produce the preliminary pavement sections presented in this report.

AIRCRAFT FLEET MIX		
Aircraft	MTOW (Maximum Takeoff Weight)	Annual Departures
Beechcraft King Air B200	12,590	10
Cessna Citation M2 C525	10,500	20
Cessna 414/414A Chancellor	6,200	10
Beechcraft Baron 55	5,424	15
Cessna C210 Centurion	4,100	50
PA-28R-200 Cherokee Arrow	2,500	180
Truck Single Axle	60,000 (8 axle)	10

Table 6 - Preliminary Aircraft Fleet Mix

Only minimal growth in aircraft operations is expected at TEW over the next 20 years. Additionally, the introduction of significantly larger or heavier based aircraft at the airport is unlikely. Therefore, RS&H assumed no operational growth for the purposes of pavement section design. Even if a minor increase in aircraft operations occurred during the service life of the pavement, it would likely not cause any adverse effects.

A standard live-bottom asphalt trailer (60,000+ lbs) was added to the aircraft fleet mix to simulate the effects of heavy construction traffic on these pavements during initial construction and subsequent rehabilitation projects. This is because heavy construction traffic is expected to outweigh any aircraft flying into TEW and the pavement section would need to support this construction traffic in addition to the aircraft fleet mix.

4.3.2 Recommended Subgrade Improvement

As previously mentioned, the subgrade soils should be improved within the project limits before the installation of the new pavement section. These subgrade soils could be improved by chemical means (i.e. lime or cement treatment) or physically removed and replaced with engineered fill. In the past, favorable results have been achieved through chemical stabilization with cement. However, organic soils cannot be chemically stabilized and need to be removed and replaced. For the purposes of preliminary pavement design, RS&H assumed that the subgrade beneath both the runway and taxiway would be chemically improved via cement stabilization – similar to the 2024 Terminal Apron Reconstruction Project – which would yield an estimated CBR of 7%. Approximately 3% more than their current in-situ strength.

4.3.3 Recommended Pavement Section

Asphalt and Aggregate Base Course

Using the assumed aircraft fleet mix and projected subgrade soil strength after improvement, RS&H performed several iterations of pavement section simulations using *FAARFIELD*, a software developed by the FAA for designing airfield pavement. RS&H concluded that the minimum allowable asphalt pavement and aggregate base course layer thickness would provide adequate support.

RS&H recommends programming the pavement section and layer thicknesses for Runway 10-28 and Taxiway B:

- 4” P-403 Asphalt Surface Course
- 6” P-209 Crushed Aggregate Base Course
- 18” Drainable Base Layer (runway only)
- Subgrade

Drainage Layer and Underdrain System

To reduce the amount of available free moisture in the runway pavement structure, an 18-inch drainable base (sand) layer is recommended beneath the aggregate base course of the runway pavement. At this depth, the effects of frost would be limited, generally less than 1-inch of frost heave or less. The FAA supports including a drainage layer in airfield pavement at general aviation airports when recommended by the geotechnical engineer. Taxiway B may benefit from a drainage layer, but taxiway pavement is less critical than runway pavement.

An underdrain and edge drain system should be installed beneath both the runway and taxiway pavement to promote drainage of the pavement section at subgrade depth. The existing swales on the north and south sides of the runway and taxiway could be used as free-underdrain outlet locations. Electrical base cans and junction structures could also connect to the underdrain system to promote drainage of these structures.

4.3.4 Geometric and Gradient Standardization

Runway and Taxiway pavement geometry will need to be narrowed to meet current FAA geometric design standards. The existing radii-based taxiway intersection geometry will need to be standardized to meet current fillet-based taxiway intersection design standards. Previously discussed on-pavement and off-pavement gradients will need to be reconstructed to meet current transverse and longitudinal gradient design, including the existing non-standard grades within the Runway Safety Area (RSA) off both ends of Runway 10-28.

5 Updated Opinion of Probable Construction Costs

RS&H reviewed and updated the Airport Capital Improvement Program (ACIP) construction cost estimates to incorporate the additional recommendations provided in this report.

Key additions to the ACIP estimates as a result of this preliminary evaluation report include:

- 18″ Drainable Base Course – Runway 10-28
- Underdrain and edge drain system – Runway 10-28 and Taxiway B
- Additional removal of unsuitable soils within organically rich subgrade soil areas
- Additional RSA standardization and earthwork

The addition of a drainable base layer, new underdrain and edge drain systems, and additional removal of unsuitable soils and earthwork improvements, the total program cost for the construction of runway and taxiway pavement projects increased by approximately $400,000 and $550,000, respectively. This additional work is being recommended based on the new data available. Programmed contingency in the updated ACIP estimates still seems reasonable at this stage of the project. Contingency typically decreases throughout design. The total cost for both the taxiway and runway lighting improvement projects remained unchanged.

Table 7 shows the updated total program cost including the considerations shown above.

Updated ACIP Estimates of Probable Construction Cost	
Reconstruct Runway 10-28 Pavement	$4,647,416
Reconstruct Runway 10-28 Lighting	$911,600
Reconstruct Taxiway B Pavement	$3,274,114
Reconstruct Taxiway B Lighting	$1,035,280

Table 7 – Updated ACIP Budgetary Construction Costs

Separate budgetary estimates of pavement and lighting projects between Runway 10-28 and Taxiway B are being provided to meet the requirements of MDOTs programming procedures. As previously stated, there is a possibility that the proposed pavement improvement projects of the runway and taxiway will occur in the same year, within the same bid package(s), depending on the availability of discretionary-type funding. If the projects are bid as a single bid package, further cost efficiencies can be expected.

The updated ACIP Estimates of Probable Construction Cost are provided in **Appendix D** of this report.

Appendix A

2026 Report on Geotechnical Investigation

Infrastructure Consulting Engineers

4039 40th Street SE • Suite 4 • Grand Rapids • Michigan • 49512

REPORT ON GEOTECHNICAL INVESTIGATION

PRELIMINARY EVALUATION OF RUNWAY 10/28 AND TAXIWAY B PAVEMENT

MASON JEWETT FIELD
MASON, MICHIGAN

Prepared for:

RS&H

436 South Main Street
Plymouth, Michigan 48170

May 7, 2026
2026035B

Somat Engineering, INCORPORATED

Somat Engineering, INCORPORATED

May 7, 2026
2026035B

Mr. Alex DeHaan, PE
RS&H
436 S. Main Street
Plymouth, Michigan 48170

RE: Report on Geotechnical Investigation
Preliminary Evaluation of Runway 10/28 and Taxiway B Pavement
Mason Jewett Field
Mason, Michigan

Dear Mr. DeHaan:

We have completed the geotechnical investigation for the proposed preliminary pavement evaluation project at the Mason Jewett Field located in Mason, Michigan. This report presents the results of our observations as well as preliminary geotechnical recommendations and construction considerations.

The soil samples collected during our field investigation will be retained in our laboratory for 90 days from the date of the final geotechnical report, at which time these samples will be discarded unless otherwise directed by you.

It was a pleasure working with you on this project. If you have any questions regarding this report, please do not hesitate to contact us.

Sincerely,
Somat Engineering, Inc.

Jennifer S. Schmitzer
Project Manager

JSS/CRH/JDH

REPORT ON GEOTECHNICAL INVESTIGATION
PRELIMINARY EVALUATION OF RUNWAY 10/28 AND TAXIWAY B PAVEMENT
MASON JEWETT FIELD
MASON, MICHIGAN

TABLE OF CONTENTS

APPENDICES

REPORT ON GEOTECHNICAL INVESTIGATION
PRELIMINARY EVALUATION OF RUNWAY 10/28 AND TAXIWAY B PAVEMENT
MASON JEWETT FIELD
MASON, MICHIGAN

1.0 INTRODUCTION

1.1 GENERAL

Upon authorization from RS&H, Somat Engineering, Inc. (Somat) has conducted a geotechnical investigation for the preliminary evaluation of Runway 10/28 and Taxiway B pavement at the Mason Jewett Field airport in Mason, Michigan. This investigation was performed in accordance with Somat Proposal No. P260014A, dated January 20, 2026.

The following sections of this report provide our understanding of the project, a description of our field investigation, the results of the field and laboratory tests, the logs of test borings, our interpretation of subsoil and groundwater conditions, preliminary recommendations related to the geotechnical aspects of design for new/rehabilitated pavement, and construction considerations based on the soil and groundwater conditions disclosed by our investigation.

1.2 PROJECT AND SITE INFORMATION

Mason Jewett Field is located at 655 Aviation Drive in Mason, Michigan, which is generally located off of Jewett Airport Road east of East Kipp Road and south of Eden Road. The hangar area of the airport is located on the far west end of the airport just north of Jewett Airport Road. The existing runway and taxiway are asphalt-paved.

As we understand, at this stage of the project, the pavement along both Runway 10/28 and parallel Taxiway B is being evaluated for either rehabilitation or reconstruction.

Based on a review of historical images, the general site of this runway and taxiway consisted primarily of farmland. It appears over the years there have been significant changes in grade within the farmland in and around this runway/taxiway, with low area/detention ponds shifting locations.

It appears the original runway was constructed in the mid-1970s, and extended further east in the 1990s. Significant fill soils were placed to construct the runway/taxiway extension; estimated at about 9 to 10 feet under the runway extension.

2.0 SUBSURFACE INVESTIGATION

2.1 FIELD EXPLORATION

The field exploration for this project consisted of performing a total of ten (10) soil borings; with five soil borings performed within the existing runway pavement and five soil borings within the existing taxiway pavement. The soil borings were designated as TH-01 through TH-10 and extended to a depth of 10 feet below existing grade, with the exception of TH-05 and TH-07. These borings extended to 14 feet and 16 feet, respectively. Pavement cores were performed at each location prior to drilling.

The number and locations of the borings were selected by RS&H and also staked in the field by RS&H. The as-drilled locations were measured using a Trimble Geo7X with submeter accuracy. Ground surface elevations were not determined for the boring locations and therefore depth is referenced from the existing ground surface at each boring location at the time of the geotechnical investigation. A soil boring location diagram is presented in Appendix A for reference.

2.1.1 Drilling Operations

The drilling operations were performed on April 13, 2026. A portable coring machine was used to core all of the locations prior to drilling. Each core was measured and photographed for documentation. A Geoprobe rig was used to perform the soil borings, advancing 3¼ inch inside diameter, hollow stem augers and an auto-hammer used to perform standard penetration tests (SPTs).

The soil borings were backfilled with cuttings, the cores were placed back into the hole, and the surface was patched with an asphalt cold patch material.

2.1.2 Sampling

Soil samples were recovered from the soil borings using split-spoon sampling procedures in accordance with ASTM Standard D1586 ("Standard Method for Penetration Tests and Split Barrel Sampling of Soils"). Sampling was performed in the soil borings using an 18-inch long split-spoon sampler. Samples were generally taken at a semi-continuous interval of every 2.5 feet to the termination depth of the soil borings.

Bulk samples of the base layers were collected from each boring and stored in zippered plastic bags.

In addition, discrete bulk samples were obtained at four (4) boring locations (TH-02, TH-04, TH-06, and TH-10) in order to perform laboratory California Bearing Ratio (CBR) tests. Sufficient amount of sample for the tests (and associated Proctor tests) were collected in 5-gallon buckets.

The SPT samples obtained during drilling were sealed in glass jars in the field to protect the soil and maintain the soil's natural moisture content. All soil samples for the geotechnical investigation were transported to Somat's laboratory for further analysis and testing and will be retained in our laboratory for a period of 90 days from the date of the final report, after which they will be discarded, unless we are notified otherwise.

2.1.3 Standard Penetration Test (SPT)

Soil samples collected during the drilling portion of the subsoil exploration were labeled with the soil boring designation and a unique sample number. Soil boring samples were obtained by Standard Penetration Tests in accordance with ASTM D1586 procedures, whereby a conventional 2-inch O.D. split-spoon sampler is driven into the soil with a 140-pound hammer repeatedly dropped through a free-fall distance of 30 inches. The sampler is generally driven three to four successive 6-inch increments, with the blows for each 6-inch increment being recorded. The number of blows required to advance the sampler through 12 inches after an initial penetration of 6 inches, is termed the Standard Penetration Test resistance (N-value) and is presented graphically on the individual Logs of Test Borings. As added information, the number of blows for each 6-inch increment is also presented on the boring logs.

2.1.4 Groundwater Level Observation Procedures

Whenever possible, groundwater level observations were made during the drilling operations and immediately after completion of drilling, and are shown on the individual Logs of Test Borings. During drilling, the depth at which free water was observed, where drill cuttings became saturated or where saturated samples were collected, was indicated as the groundwater level during drilling. In granular, pervious soils, the indicated water levels are considered relatively reliable when solid or hollow-stem augers are used for drilling. However, in cohesive soils, groundwater observations are not necessarily indicative of the static water table due to the low permeability rates of the soils, and due to the sealing off of natural paths of groundwater flow during drilling operations.

It should be noted that seasonal variations and recent precipitation conditions may influence the level of the groundwater table significantly. Groundwater observation wells are generally used if precise groundwater table information is needed, however the installation of groundwater monitoring wells was not included in the scope of the investigation. Therefore, the discussion and recommendations provided within the report are based on our knowledge of the soil and groundwater conditions in this area, which should provide for a reasonable approximation of the groundwater level.

2.2 LABORATORY TESTING

All soil samples were classified in accordance with the Unified Soil Classification System (USCS). Representative samples of cohesive soils were subjected to laboratory tests consisting of moisture content determinations and hand penetrometer tests.

Grain size analyses (consisting of sieve and loss-by-wash) were performed on select base samples obtained from the soil borings.

Laboratory CBR tests (soaked) were performed on the bulk subgrade samples obtained from the field. The moisture-density relationships for each sample were determined through Modified Proctor tests.

The results of the laboratory classification and testing are included in Appendix B on the respective logs of test borings. All laboratory tests were performed in accordance with their applicable ASTM procedures. Graphical results of laboratory testing are presented in Appendix D. Brief descriptions of each test are also presented following the test results.

2.3 LIMITATIONS

The scope of our services was strictly geotechnical and did not include any environmental assessment, or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater or air, on, below or around this site.

Some soils have been identified on the Logs of Test Borings as “fill” if a soil deposit is suspected to have been placed by human activity, versus having been deposited by natural means. These designations were based on our professional engineering judgment considering factors such as our visual classification, the presence of foreign materials (i.e. bricks, concrete, plastic, etc.), and/or site topography, among many other possibilities. As such, the “fill” descriptions should be considered as secondary information to the standardized soil classification. Due to the large variation of types of fill, methods of fill placement, potential changes of historical use of the site, and soil sample size, it is difficult to discern whether the subject soil sample is native to this site, or fill material based on visual classification alone. As such, the designation of “fill” may not be reliable and hence should be considered as informational only. Conversely, where a soil is not designated as “fill” on the boring logs, it does not necessarily mean it is not a fill soil, only that there were no apparent observations indicating a fill material. Therefore, we cannot guarantee that our description of “fill” soils is accurate, or that we have identified all types of fill material encountered with our sampling on the site.

3.0 SUBSURFACE CONDITIONS

3.1 PAVEMENT THICKNESS AND SOIL STRATIFICATION

Pavement and soil conditions encountered at the soil boring locations have been evaluated and are presented in the form of Logs of Test Borings. The Logs of Test Borings presented in Appendix B include approximate soil stratification with detailed soil descriptions and selected physical properties for each stratum encountered in the test borings. In addition to the observed subsoil stratigraphy, the boring logs present information relating to sample data, Standard Penetration Test results, groundwater level conditions observed in the boring, personnel involved, and other pertinent data. For information, and to aid in understanding the data as presented on the boring logs, General Notes defining nomenclature used in soil descriptions are presented immediately following the Logs of Test Borings in Appendix B. It should be noted that the Logs of Test Borings included with this report have been prepared on the basis of laboratory classification and testing as well as field logs and observations made during drilling.

A generalized description of the pavement and soils encountered in all of the borings performed for this project (TH-01 through TH-10), beginning at the existing ground surface, is provided below:

> **Pavement.** Asphaltic cement concrete was encountered at the surface of all of the soil borings in thicknesses ranging from about 2.5 to 7 inches. At TH-07, 2.5 inches of asphalt was underlain by 7 inches of Portland cement concrete. An apparent base layer was encountered in all of the soil borings except TH-07 below the pavement in thicknesses ranging from about 3 to 9 inches. The base material consisted of various percentages of fine to coarse gravel and fine to coarse sand containing 4 to 10 percent silt (where tested). Varying amounts of asphalt pieces were encountered in the samples of the base material, indicating a possible asphalt reclamation operation was performed previously.
>
> In borings TH-08 and TH-09, a geotextile was encountered at the bottom of the pavement base layer, situated on top of a layer of crushed concrete.
>
> Photographs of the pavement cores are presented in Appendix C.
>
> **Fill.** Below the pavement layers, fill soils were encountered in several soil borings and extended to depths ranging from about 1 to 10 feet below existing grades. (In borings, TH-05 and TH-07, where the fill extended to a depth of about 10 feet, the borings were extended deeper than planned to 14 feet and 16 feet, respectively.) The fill soils consisted of loose to medium dense gravel, clayey sand, and sand, as well as, crushed concrete.

Below the fill soil in TH-07, lightweight geofoam blocks (expanded polystyrene, or EPS) were encountered. A plastic sheet was observed at the surface of the EPS. The foam blocks were encountered at about 2 feet below grade and extended to an estimated depth of 6 feet, although it was difficult to determine the bottom depth of the blocks. Below the geofoam, sand fill soil was encountered to an estimated depth of 10 feet.

Crushed concrete was encountered below the pavement base in borings TH-08 and TH-09 and extended to depths of 3 feet and 2 feet, respectively. (Based on information provided, we understand that 1”x 3” crushed concrete with a geogrid and a layer of geotextile separator was placed during previous sitework and paving operations.)

Peat/Marl. Peat was encountered below the fill soils in two borings, TH-05 and TH-07, from about 10 to 14 feet. The organic content of the peat was 27 to 28 percent and the moisture content was 83 to 112 percent. In these borings, an approximately 1-foot thick layer of clayey silt/marl having an organic content of about 9 percent and a moisture content of approximately 73 percent (based on test results from a sample obtained from TH-07) was encountered below the peat.

Various Native Soil Layers. Below the fill materials or peat, different native soils were encountered depending on the soil boring location. These layers varied in soil type and thickness and included lean clay, sandy lean clay, gravel, sand, clayey sand, silty sand, sandy silt, and clayey silt.

Please refer to the individual boring logs for the soil conditions at the specific boring locations. It is emphasized that the stratification lines shown on the Logs of Test Borings are approximate indications of change from one soil type to another at the locations of the boreholes. The actual transition from one stratum to the next may be gradual, and may vary within the area represented by the test boring.

3.2 GROUNDWATER LEVEL OBSERVATIONS

Groundwater was encountered during drilling in eight of the ten soil borings at depths below grade of about 3 to 13 feet. Upon drilling completion, groundwater was encountered in some borings at 3 to 8.5 feet below grade. Note that groundwater could not be measured upon completion in multiple borings due to cave-in/collapse of the boreholes.

In granular soils, observed groundwater levels are usually indicative of the current groundwater levels. Based on the soil color change from brown to gray observed in borings TH-01, TH-02, and TH-08 through TH-10, which is an indication of oxidation, we estimate the long-term groundwater level may be situated below a depth of about 6 feet to greater than 10 feet below existing grades. Though with the presence of sand layers situated above less permeable clay layers, it is likely that perched water is present above the long-term level.

It should be noted that the elevation of the natural groundwater table is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation and percolation in the area, as well as on the water level of surface water bodies in the vicinity affecting the groundwater flow pattern.

4.0 ANALYSIS AND RECOMMENDATIONS

The purpose of this investigation was to obtain subsurface information for the preliminary evaluation of either a reconstructed or rehabilitated pavement section(s) for Runway 10/28 and Taxiway B. We anticipate an asphalt pavement section will be selected and that proposed grades will be similar to existing grades (within 1± foot).

We have provided preliminary geotechnical design considerations in the sections below for new pavement construction and for rehabilitation. We have provided general design considerations in the discussion below for both a mill and overlay option as well as for a full-depth reclamation option; these alternatives are frequently considered in airport pavement rehabilitation projects. Mill and overlay is considered a temporary fix while the full depth reclamation may provide a relatively longer design life of the rehabilitated pavement section. The full depth reconstruction of the pavement consisting of new pavement, new base material, and modified subgrade soils is considered the ultimate reconstruction option of any pavement and also the most expensive. The engineer preparing the final pavement design for reconstruction or rehabilitation of existing pavement should consider multiple factors when determining the pavement rehabilitation approach, including the intended service life of the pavement, the observed thickness and condition of the existing asphalt, site drainage, and anticipated loading conditions.

4.1 PAVEMENT RECOMMENDATIONS

4.1.1 Anticipated Subgrade Soils for New Pavement

Based on the existing pavement section, we anticipate a new asphalt pavement section could consist of a similar 4 inches of asphalt over 6 inches of base material, or could be designed with a thicker section up to about 18 inches in depth. We expect proposed grades will closely match existing grades (within ±1 foot). Based on the borings performed, we anticipate the subgrade soils will primarily consist of loose fine to coarse gravel with sand fill, medium dense sand fill, crushed concrete fill, very loose to medium dense clayey sand, and stiff to hard lean clays. While these soils would typically be considered suitable for structural support of new pavement (provided they are properly prepared as described in section 4.1.2), proper drainage would need to be included in the overall design due to the significant content of fine-grained soils (i.e., clayey sand, clay).

Typically, we do not recommend placement of new pavement over undocumented fill soils, however, we assume that due to budget constraints it may not be possible to entirely remove all fill soils. We did not visually observe any deleterious materials within the fill, so if the owner is willing to accept the risk of unquantifiable pavement distress, then the fill below the recommended undercut depths may remain in place.

Peat and marl were encountered in borings TH-05 and TH-07 at depths of about 10 to 15 feet below existing grade. Typically, we would recommend these organic soils be removed in their entirety below proposed pavement areas. However, given the depth below grade, it will require a relatively large excavation and significant backfill effort, and add notable cost to the project.

Further discussion will be needed on the best way to deal with the presence of the EPS and peat/organic soils. Options include completely removing the peat/organic soils and backfilling with engineered fill; "bridging over" the entire area of peat using geogrid, aggregate, or a combination; or doing nothing. The final decision will require further investigation into the lateral extents of the EPS and organic soils.

The design team and owner may want to consider the pavement distress that the organic soils may have caused over the existing pavement life, and determine if the risk of leaving these soils in place is tolerable in terms of settlement at the surface and pavement service life.

It should be noted that the EPS encountered at the TH-07 location was compromised during the soil boring operation (i.e. a hole was drilled through it). We estimate the bottom of the EPS is situated at a depth below grade of about 6 feet, but the lateral extents are unknown. Typically, when EPS is placed, it is covered in a protective membrane since EPS is highly soluble when exposed to gasoline/petroleum products. This membrane was also compromised during drilling. If it is decided to leave the EPS in place for a temporary fix, consideration should be given to patching/repairing this hole in the event there is a fuel spill on or near the taxiway.

Silty and clayey soils, while structurally adequate, are frost susceptible and do not promote adequate drainage for the pavement. Lack of drainage (i.e. saturated subgrade) is a significant contributor to pavement distress and deterioration. We recommend that if the subgrade is undercut for construction of a thicker pavement section than existing that the undercut be backfilled with a properly compacted, clean sand (engineered) fill prior to constructing the new pavement section; especially considering these subgrade soils are above the minimum recommended depth for frost protection in this area (3.5 feet below grade for lower Michigan). This would improve the drainability of the subgrade soils and reduce the negative effects that freeze/thaw cycles can have on poorly drained pavements.

4.1.2 Subgrade Preparation Recommendations for New Pavement

After removal of the existing pavement and excavating to the rough subgrade level, and prior to placement of fill, pavement, or pavement base, the exposed pavement subgrade along the entire sections of runway and taxiway should be visually inspected for the presence of debris, organic matter, and other unsuitable materials. If significant organic soils (organic content over 3% by weight) or significant debris or disturbed soils are encountered at subgrade level during earthwork operations, these soils should be removed to full-depth and replaced with engineered fill. The actual conditions should be assessed by the on-site geotechnical engineer to determine the depth and extent of the remediation.

The pavement subgrade areas should be thoroughly compacted before placement of new fill, base material or pavement. The purpose of the compaction is to uniformly compact the subgrade surface. The subgrade areas to be paved shall be compacted to not less than the Federal Aviation Administration Advisory Circular 150/5320-6G requirements. The maximum density will be as determined by ASTM D698 (Standard Proctor) for areas as designated for aircrafts with gross weights of 60,000 pounds or less.

The subgrade should be thoroughly proofrolled before placement of new subbase, base, or pavement layers. The purpose of the proofrolling is to locate overly loose or soft areas as well as to uniformly compact the subgrade surface. Proofrolling should be performed using a fully-loaded, tandem axle dump truck, rubber-tired loader, or other suitable piece of pneumatic-tired construction equipment. Localized areas of loose or soft areas revealed during compaction or during the proofrolling should either be suitably compacted (or aerated if necessary) or removed and replaced with properly compacted granular engineered fill.

Site work performed during the wet spring and fall months may result in loose and unstable surface soils, which will make earthwork operations difficult. On-site clay soils with relatively high moisture contents (more than 4 percent over optimum moisture) may tend to become disturbed by construction traffic and may be difficult to compact. It may be necessary to disc and aerate the clay subgrade soils during earthwork operations to achieve the desired amount of compaction in some areas of the site. This may also require stabilization of the subgrade soils for placement of fill, aggregate base, or for support of paving equipment. This is especially a concern if the soils are wetter than encountered in the borings due to precipitation. Thus, site earthwork should preferably be performed during the typically drier May to August construction season, if possible.

4.1.3 Mill and Overlay

For a milling operation, it should be noted that the pavement thickness along the runway borings was found to be 2.5 to 7 inches; along the taxiway, it was found to be about 2.5 to 3 inches. As such, the milling operation may result in complete removal of the asphalt in the areas with thinner sections, and also leave thin sections of asphalt in place in the thicker areas. Past performance of the subgrade and overall pavement section should be considered during design discussions. If the pavement deterioration appears to be age-related and specific structural or drainage issues with subgrade soils do not appear to play a significant role in the deterioration, then a mill and overlay operation could provide a temporary extension to the service life until a complete full-depth reconstruction effort is needed. As a rule of thumb, the reflective cracks propagate through the new overlay at a rate of 1 inch per year. Depending on the project budget and if this anticipated design life of the overlay is not acceptable, then consideration may be given to full-depth reclamation to further extend the design life of the pavement.

After milling a minimum of 2 inches, the remaining pavement should be visually inspected for existing cracks and deterioration. If there are full-depth vertical cracks through the existing asphalt to remain in place after milling, repair or additional reinforcements should be considered to reduce or retard reflective cracking. The use of a paving fabric or interlayer could be considered. These paving interlayers can provide extra strength and waterproofing protection. Though the costs associated with the various pavement fabric/interlayer options should be considered and compared to the added benefit.

4.1.4 Full-Depth Reclamation

Full-depth reclamation consisting of pulverizing the asphalt layer and mixing with the existing base and adding a new asphalt pavement layer is a feasible rehabilitation option.

In assessing a pulverization operation, there a couple of items to consider:

- Swell/volumetric change is estimated about 5 to 10% (i.e. this grade change must be acceptable or removal of some of the pulverized asphalt should be considered as compensation);

- If there is rutting or cracking distress thought to be caused by localized soft or loose subgrade or base failures/drainage problems, localized subsurface repairs should be performed prior to placing the new HMA layer.

In general, this option is feasible from a geotechnical standpoint. The existing soil layers below the pavement appear to be suitable for continued support of the new taxiway and runway pavement, provided that localized subgrade modification (undercutting and replacement of granular fill soils) is performed where needed, and an adequate and functional drainage system is installed or retrofitted. Based on our soil borings, the following base and subgrade soils were encountered within the upper 3 feet:

Boring No.	**Base layer thickness**	**Subgrade soils encountered below the base layer**
TH-01	8.5 inches	Loose fine to coarse gravel with sand fill
TH-02	3.5 inches	Fine sand fill over hard sandy lean clay
TH-03	8.5 inches	Very loose clayey fine to medium sand
TH-04	6 inches	Medium dense clayey fine to medium sand
TH-05	3.5 inches	Medium dense fine to medium sand fill
TH-06	6 inches	Fine to medium sand fill over very stiff lean clay
TH-07	(not discernable from subgrade soils)	Fine to medium sand fill OVER GEOFOAM/EPS
TH-08	9.5 inches	Crushed concrete
TH-09	7 inches	Crushed concrete over stiff lean clay
TH-10	3.5 inches	Fine to coarse sand fill over loose clayey fine sand fill

Subgrade soils in a very loose or loose condition are not considered suitable for supporting the new pavement, however we expect that proper compaction of the pulverized pavement section will help improve the density of the underlying subgrade soils and moreover, the pulverized section should also help to bridge over these areas.

Most of these existing subgrade soils were found to contain significant clay percentages. These soils are frost susceptible and may not promote adequate drainage of the subgrade soils. Therefore, drainage enhancement should be incorporated into the design (discussed further in Section 4.1.3).

Once the pulverized asphalt has been mixed with the base/subgrade soils and has been properly compacted in accordance with project specifications, the new subgrade should be thoroughly proofrolled before placement of new asphalt pavement layer. Proofrolling should be performed as described in section 4.1.2. Alternatively, geogrid placed above the any poor subgrade area identified by the site geotechnical engineer and below the pulverized material will help bridge over these localized areas.

As stated previously, site work performed during the wet spring and fall months may result in loose and unstable surface soils, which will make earthwork operations difficult. Refer to section 4.1.2.

Once prepared, the new reclaimed subgrade should not be exposed to the elements for a long period of time before paving.

4.1.5 Pavement Drainage Considerations

The subgrade soils encountered in the soil borings were found to containing varied amounts of clay which lower the permeability of the subgrade. These soils are considered susceptible to frost action. Any areas where water is not allowed to drain freely either due to subsoil conditions, site grades, or other factors, will have a detrimental effect on the pavement condition over time. Significant groundwater or soil saturation was not observed at the time of our drilling, however, groundwater conditions can fluctuate during the year. The existing drainage system should be evaluated to verify it is still effective, otherwise a new system should be installed or retrofitted.

4.1.6 Pavement Design Considerations

Four (4) bulk samples were obtained for soaked CBR tests. Each of the bulk soil samples were collected in/adjacent to the specified borings at depths ranging between 2 and 5 feet below existing grades. Each of the samples was attempted to be compacted to 100% of the maximum dry density and within approximately 0.5% of the optimum moisture determined, and then submerged in water and soaked for 96 hours. This procedure attempts to simulate a saturated subgrade condition (i.e. “worst case” condition).

The CBR test results are summarized below:

Laboratory CBR Test Results				
Sample/ Boring No.	**Maximum Dry Density**	**Unit Weight of Compacted Sample**	**Optimum Moisture Content**	**In-situ Moisture Content (before soaking)**
TH-02	115.2 pcf	115.4 pcf	15.3%	15.0%
TH-04	139.8 pcf	138.2 pcf	6.7%	6.9%
TH-06	132.2 pcf	132.1 pcf	8.8%	8.5%
TH-10	131.0 pcf	130.8 pcf	9.0%	8.8%

Laboratory CBR Test Results		
Sample/Boring No.	**Sample Description**	**CBR Result (%)**
TH-02	Sandy clay	4.3
TH-04	Gravelly sand with clay	14.1
TH-06	Sandy clay	4.8
TH-10	Clayey sand	4.5

For final pavement design, we recommend the following subgrade resilient modulus (M_R) and CBR value. The recommendations for the existing subgrade soils are based on the laboratory CBR test results as well as our experience with similar soils.

Soil Type	**Subgrade Resilient Moduli* (M_R)**	**CBR (%)**
Existing subgrade soils (encountered in our soil borings)	6,000 psi	4

* FAA AC 150/5320-6F Section 3.13.5.3

The recommended design values provided above assume the soil conditions encountered in the borings are representative of the soil conditions within the proposed pavement construction areas, and also assume that *any recommendations for improvements discussed in previous sections have been performed.* If during construction, the subgrade is found to vary from the expected soil conditions, we should be contacted so we may re-evaluate our subgrade resilient modulus value.

Moreover, if the final grades are expected to differ from our assumptions, then the values presented above may require modifications.

For new bituminous pavements, final pavement elevations should be designed to provide positive surface drainage. The minimum surface slope of should be in accordance with project specification, typically a minimum 1.5 percent is recommended. The pavement surface should be smooth, free of roller marks or depressions, and should not contain any irregularities which would pond or impede water flow.

The engineer preparing the final pavement design should consider other factors in addition to the CBR or subgrade modulus values. These factors may include, but are not limited to, adequate subgrade preparation, adequate placement of engineered fill and pavement layers, and surface and subsurface drainage. Somat's services related to pavement design and construction on this project were limited to preparing general guidelines for subgrade conditions and estimation of modulus values from the surficial soils encountered at the soil boring locations.

4.2 GROUNDWATER CONTROL CONSIDERATIONS

We anticipate the long-term groundwater table is situated deeper than the anticipated excavations for this pavement project *except where the deeper organic soils may be removed and replaced*. As such, we do not anticipate significant issues with groundwater infiltration into excavations extending to a depth of 6 feet below existing grade or less. Perched water conditions should be expected to possibly be present during construction at various depths, depending on the amount of precipitation at that time. In general, we anticipate the surface water run-off and the groundwater seepage into the excavations may be controlled by standard sump pit and pumping techniques.

If it is decided to completely remove the buried organic soils encountered in borings TH-05 and TH-07, the long-term groundwater level may be encountered and standard sump pit and pumping techniques may not be adequate to sufficiently dewater the excavation to allow for proper removal and compaction of the organic soils.

It should be noted that the elevation of the natural groundwater table is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation and percolation in the area, as well as on the water level of surface water bodies in the vicinity affecting the groundwater flow pattern.

4.3 ENGINEERED FILL REQUIREMENTS

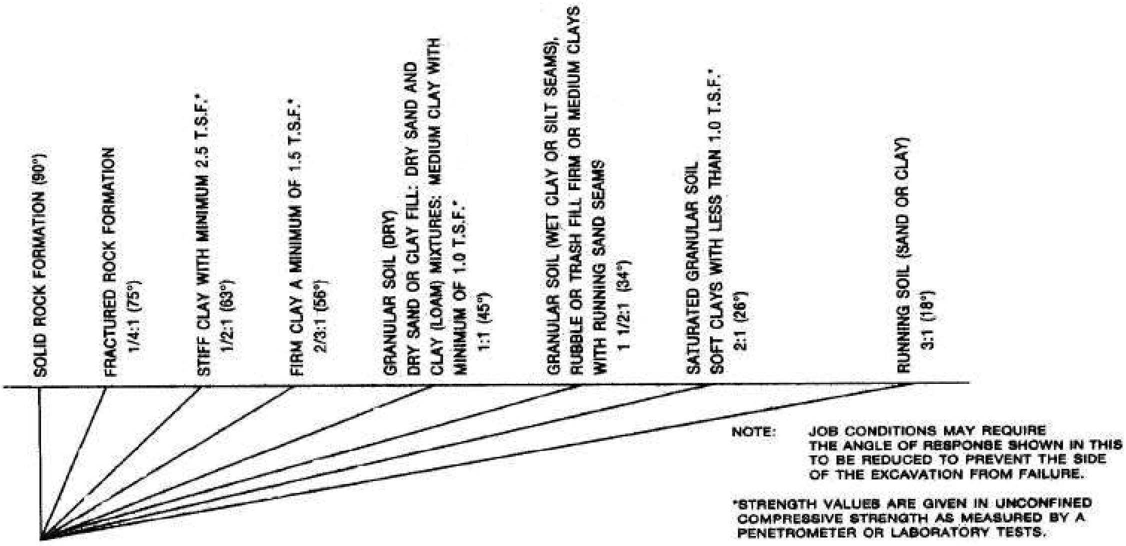
Any fill used should be an approved, engineered material, free of frozen soil, organics, or other deleterious material. Unless otherwise stated in the project specifications, engineered fill should be spread in level layers, not exceeding 9 inches in loose thickness, and be compacted to a minimum of 95 percent of the maximum dry density as determined in accordance with ASTM D1557 (Modified Proctor). Below landscaped (unpaved) areas, the fill should be compacted to a minimum of 90 percent of the maximum dry density as determined in accordance with ASTM D1557 (Modified Proctor). Fill should not be placed on frozen subgrades. Soils containing greater than 3% (by weight) organics are considered unsuitable for use as engineered backfill.

4.4 CONSTRUCTION CONSIDERATIONS

Excavation is recognized as one of the most hazardous construction operations. An excavation is any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal. Trenching and excavation hazards are addressed in specific standards for the general industry in OSHA Part 1926 Subpart P “Excavations”, specifically 29 CFR 1926.650, .651, and .652. The project must comply with the most stringent trenching and excavation requirements of these standards, MIOSHA Construction Safety Standard Part 9 “Excavation, Trenching, and Shoring”, or other OSHA approved requirements.

We anticipate excavations in site fill and very loose or loose sand soils will be prone to caving and sloughing of the excavation sidewalls, especially in areas where the soil conditions are in a loose condition (N value of 9 or less). Appropriate measures will be required to maintain the stability of excavation sidewalls. The required measures will depend on the subsurface materials encountered for the full depth of the excavation, the depth and width of excavation, and groundwater conditions at specific locations. In general, excavation walls should be sloped back to a stable angle in accordance with published MIOSHA guidelines. The side of an excavation more than 5 feet deep shall be sloped as prescribed in the following MIOSHA table (from Part 9), unless the excavation is made entirely in stable rock or supported by a protective system as prescribed in the referenced standards. An excavation less than 5 feet may also require protection if a competent person determines that hazardous earth movement is anticipated.

MAXIMUM ALLOWABLE ANGLE OF REPOSE FOR THE SIDE OF AN EXCAVATION IN EXCESS OF 5' DEPTH



NOTE: JOB CONDITIONS MAY REQUIRE THE ANGLE OF RESPONSE SHOWN IN THIS TO BE REDUCED TO PREVENT THE SIDE OF THE EXCAVATION FROM FAILURE.

*STRENGTH VALUES ARE GIVEN IN UNCONFINED COMPRESSIVE STRENGTH AS MEASURED BY A PENETROMETER OR LABORATORY TESTS.

Sloping or benching systems for excavations less than 20 feet deep shall be in accordance with maximum allowable slopes and based on the soil or rock type encountered as prescribed in the standards. If sufficient room is not available for sloping the excavation walls, then shoring, by means such as trench boxes, sliding trench shields or sheeting, will be required to maintain the stability of the sidewalls. The design of support systems, shield systems, and other protective systems shall be in accordance with OSHA 29 CFR 1926.652.

Construction traffic, stockpiles of soil and construction materials should be kept away from the edges of the excavations for a distance equal to the depth of the excavation. If such clearances cannot be maintained, the resulting surcharge loads should be considered in the design of the shoring system. However, no loads shall be placed within 2 feet of an excavation edge for any unsupported excavation in which a worker is required to enter (unless a proper shoring system is in place).

Care should be exercised when excavating near existing pavement, utilities, and structures that are to remain, to protect them from damage. Mechanical excavations near existing utilities may also pose a physical hazard to workers if the utility is damaged. The contractor should be aware of existing utility locations before excavating and be prepared to expose them for verification and to support or brace them, as required.

5.0 GENERAL QUALIFICATIONS

All earthwork and below grade construction activities, including testing and observation of pavement subgrade and engineered fill should be monitored by a qualified engineering inspector, under the direction of a qualified geotechnical engineer, to verify conditions are as presented in this report. Earthwork operations around the proposed project area and in the vicinity of existing structures should also be closely monitored.

This report and the attached Logs of Test Borings are instruments of service, which have been prepared in accordance with generally accepted soil and foundation engineering practices. We make no warranties either expressed or implied as to the professional advice included in this report.

The contents of this report have been prepared in order to aid in the evaluation of expected subsoil properties to assist the engineer in the design of *this* project at the site specified herein. The contents of this report should not be relied upon for other projects or purposes. In the event that any changes are made in the geotechnically related aspects of this project, however slight, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions of this report are modified in writing by our office.

Since the information obtained from the soil borings is specific to the exact test locations, soil and water conditions could be different from those occurring at other locations of the site. This report does not reflect variations which may occur between the soil borings. The nature and extent of these variations may not become evident until the time of construction. If significant variations become evident, it may be necessary for us to reevaluate the recommendations provided in this report.

This report and the associated Logs of Test Borings should be made available to bidders prior to submitting their proposals and to the successful contractor and subcontractors for their information only, and to supply them with facts relative to the subsurface investigation, laboratory tests, etc.

Somat is not responsible for failure to provide services that other project participants, apart from our client, have assigned to Somat either directly or indirectly. Somat is not responsible for failing to comply with the requirements of design manuals or other documents specified by other project participants, that impart responsibilities to the geotechnical engineer without our knowledge and written consent. We are not liable for services related to this project that are not outlined in our scope of services, detailed in our project proposal.

The discussions and recommendations submitted in this report are based on the soil information contained in the Logs of Test Borings and test results appended to this report. We expect that the Logs of Test Borings included in this report along with our discussions and conclusions will assist you in the design of the proposed project. If you have any questions regarding this report, please contact us.

Please review the important information regarding geotechnical reports included in Appendix E.

REPORT PREPARED BY:

Corey R. Hostetter, PE
Senior Project Engineer

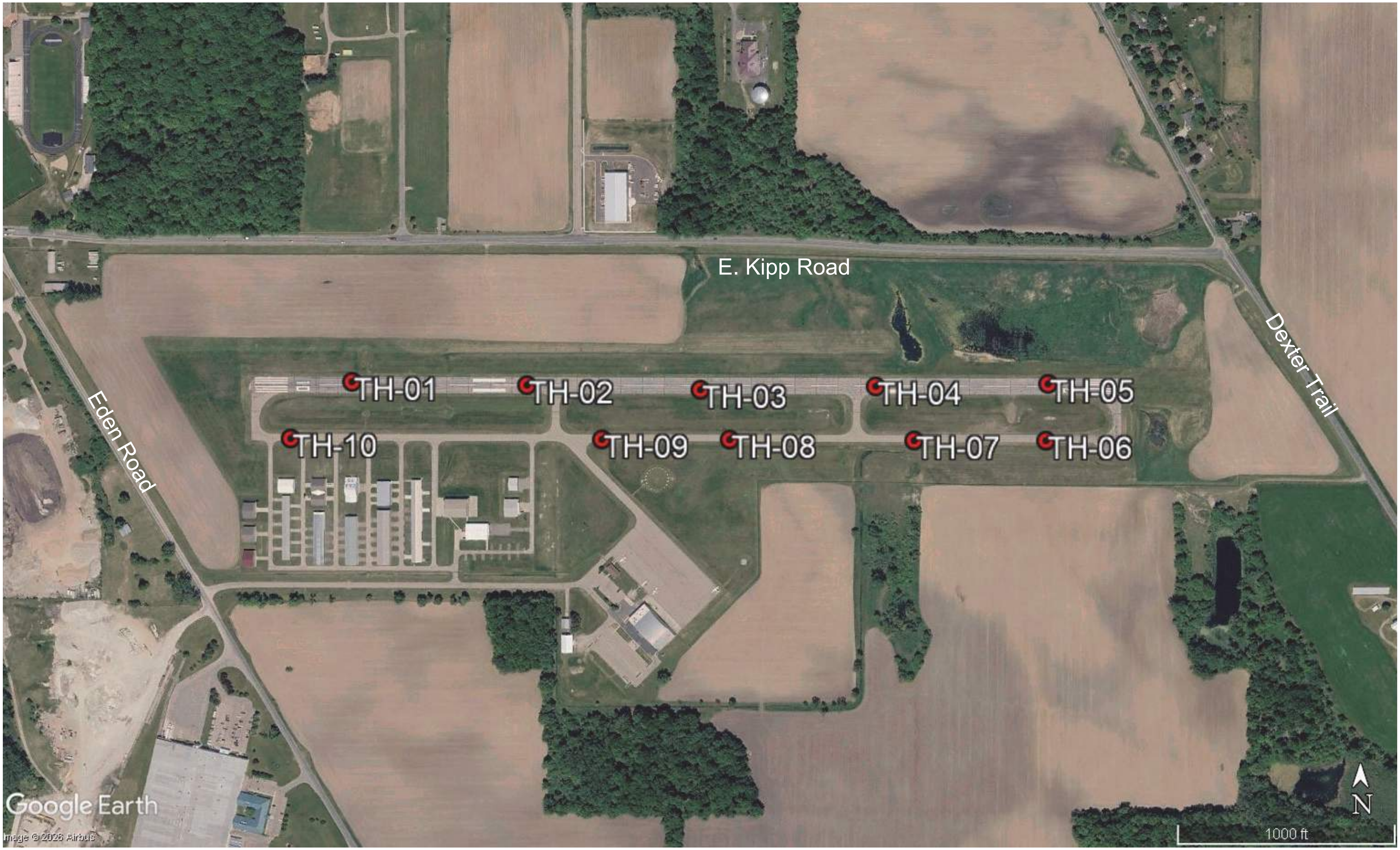
REPORT REVIEWED BY:

Jennifer S. Schmitzer
Project Manager

JD Hoksbergen, PE
Senior Project Engineer

APPENDIX A

SOIL BORING LOCATION DIAGRAM



Adapted from Google Earth satellite imagery

Drawing Scale as noted

Legend:

● Approximate Soil Boring Locations

SOIL BORING LOCATION DIAGRAM

Preliminary Evaluation of Runway 10/28 and Taxiway B Pavement
Mason Jewett Airport
Mason, Michigan

Somat Project No.: *2026035B*

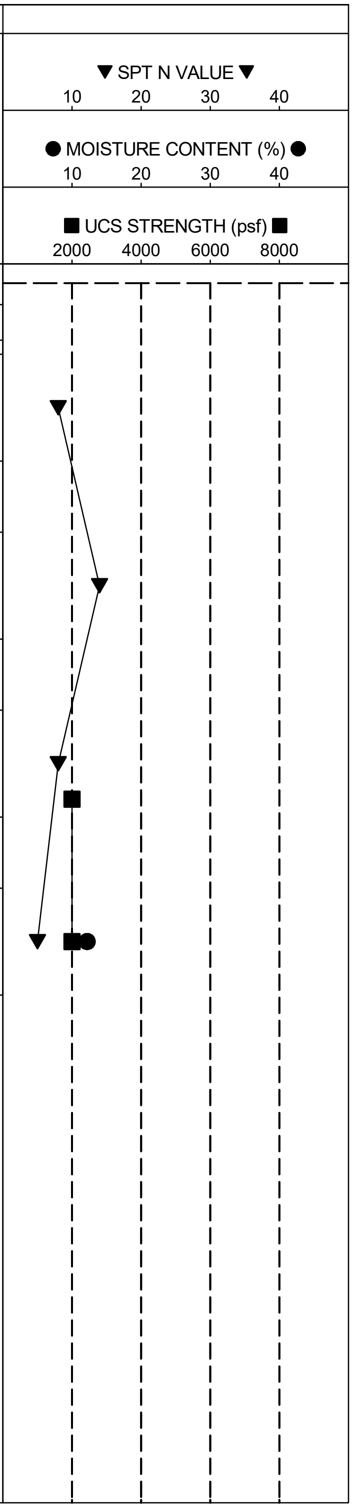
APPENDIX B

LOGS OF TEST BORINGS AND GENERAL NOTES

LOG OF TEST BORING
TH-01

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

	LOG OF SOIL PROFILE			FIELD DATA					LABORATORY DATA					
ELEVATION ft			DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
		Ground Surface Elevation	0											
		3.5 inches of ASPHALTIC CEMENT CONCRETE	0.3											
		FILL - FINE GRAVEL and FINE TO COARSE SAND with silt, frequent asphalt pieces, brown, moist (GP-GM) / (SP-SM) (base)	1.0	BS				0.8						9
		FILL - Loose poorly graded FINE TO COARSE GRAVEL with sand, brown, moist (GP) (sample taken from auger cuttings)	3.0	SS1	0	4-4-4	8	2.5						
		FILL - Medium dense CLAYEY FINE TO COARSE SAND, few gravel, occasional clay layers, brown, moist (SC)	6.0	SS2	15	3-7-7	14	5.0						
		Loose poorly graded FINE TO MEDIUM SAND with silt, trace gravel, brown, wet (SP-SM) (Drilled reported sand heave. Water added to augers.)	7.0	SS3	18	4-5-3	8	7.5	2000*					
		Stiff SANDY LEAN CLAY, trace gravel, brown (CL)	10.0	SS4	18	3-3-2	5	10.0	2000*	12.2				
		End of Boring at 10 feet												



GROUNDWATER READINGS
First Encountered: 6 feet
Upon Completion: N/A

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
\# Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: PC
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:
Wet collapse at 4 ft.

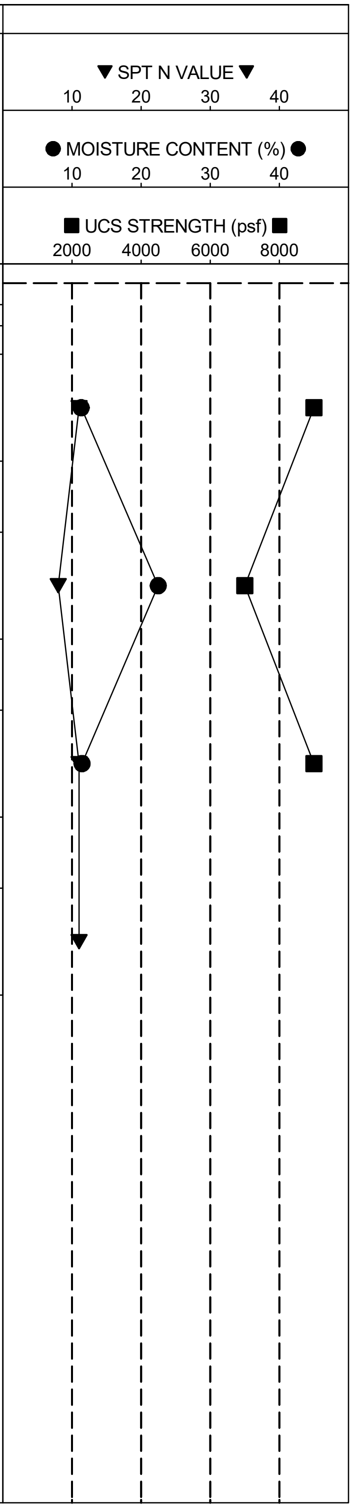
Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

LOG OF TEST BORING
TH-02

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

		LOG OF SOIL PROFILE		FIELD DATA					LABORATORY DATA					
ELEVATION ft			DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
		Ground Surface Elevation	0											
		3 inches of ASPHALTIC CEMENT CONCRETE	0.3											
		FILL - Poorly graded FINE TO COARSE SAND with gravel, with silt, trace asphalt pieces, dark brown (SP-SM) (base)	0.6	BS				0.6						
		FILL - Poorly graded FINE SAND, trace silt, trace gravel, brown, moist (SP)	1.0											
		Very stiff to hard SANDY LEAN CLAY, few gravel, brown (CL)		SS1	18	3-4-7	11	2.5	9000*	11.3				
			5	SS2	18	3-3-5	8	5.0	7000*	22.5				
				SS3	18	3-5-6	11	7.5	9000+*	11.5				
				SS4	18	3-4-7	11	10.0	<>					
			10.0											
		End of Boring at 10 feet	10											
			15											



GROUNDWATER READINGS

First Encountered: none
Upon Completion: none

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

KEY
\# Torvane
* Penetrometer
<> Disturbed Sample

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

LOG OF TEST BORING
TH-03

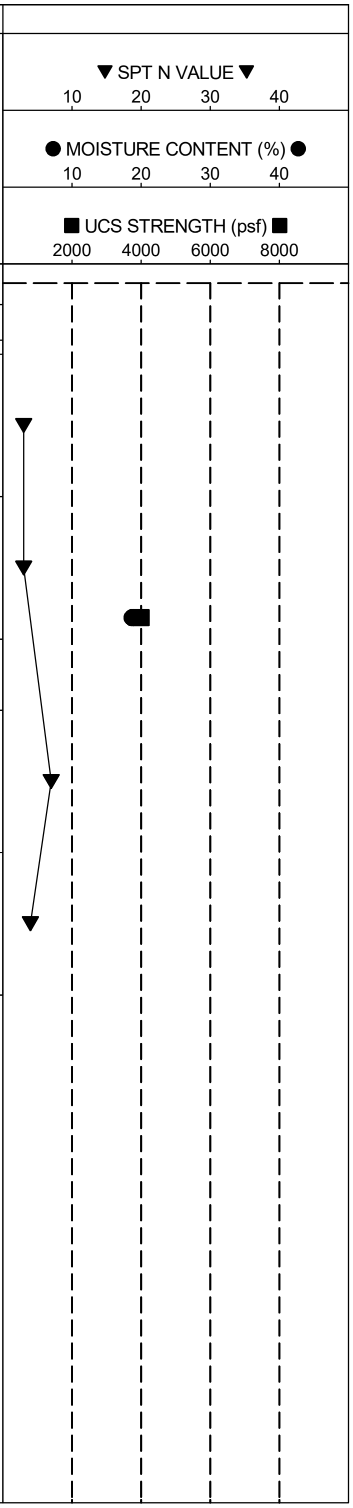
PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF SOIL PROFILE

ELEVATION ft			DEPTH (ft)
		Ground Surface Elevation	0
		3 inches of ASPHALTIC CEMENT CONCRETE	0.3
		FILL - FINE TO COARSE GRAVEL and ASPHALT PIECES with sand, with silt, brown, moist (GP-GM) (base)	1.0
		Very loose CLAYEY FINE TO MEDIUM SAND, trace gravel, brown, moist (SC)	4.5
		Very stiff LEAN CLAY with sand, trace organics, dark gray (CL) (organic content = 2.3%)	7.5
		CLAYEY FINE TO MEDIUM SAND, trace gravel, gray/brown, moist (SC)	8.5
		Very loose SILTY FINE SAND, trace gravel, brown, wet (SM)	10.0
		End of Boring at 10 feet	

FIELD DATA / **LABORATORY DATA**

SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
BS				0.8						8
SS1	18	2-1-2-2	3	3.0						
SS2	24	1-1-2-1	3	5.0						
					4000*	18.7				
SS3	24	1-3-4-5	7	8.0	<>					
SS4	24	4-2-2-2	4	10.0						



GROUNDWATER READINGS

First Encountered: 8.5 feet
Upon Completion: 8.5 feet

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
- # Torvane
- * Penetrometer
- <> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

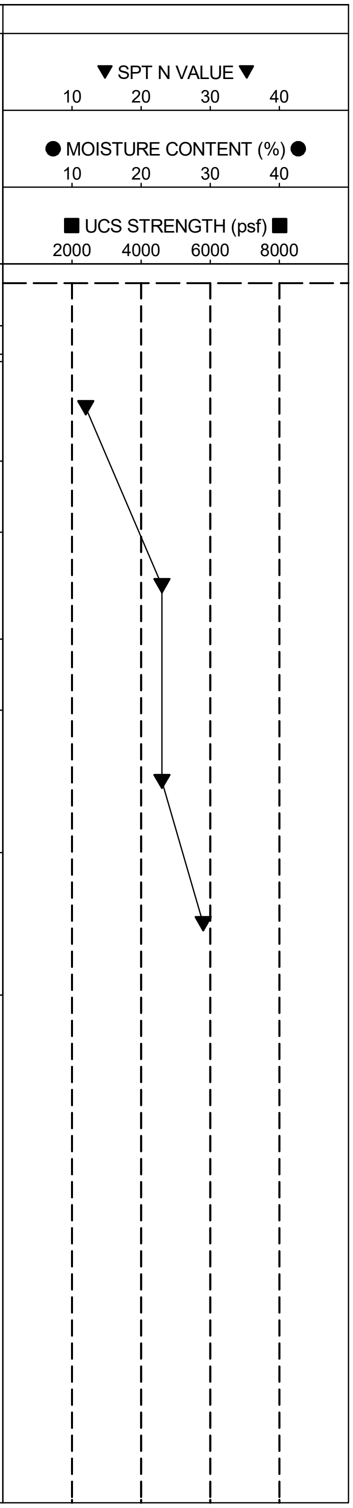
Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF TEST BORING
TH-04

ELEVATION ft	LOG OF SOIL PROFILE	DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
	Ground Surface Elevation	0											
	7 inches of ASPHALTIC CEMENT CONCRETE 0.6												
	FILL - GRAVEL with fine to coarse sand, with silt, trace asphalt pieces, brown (GP-GM) (base) 1.1		BS				1.1						
	FILL - Medium dense CLAYEY FINE TO MEDIUM SAND, few gravel, brown, moist (SC) 4.0		SS1	18	3-4-8	12	2.5						
	Medium dense poorly graded FINE TO COARSE SAND with silt, few gravel, brown, moist (SP-SM) 7.0	5	SS2	12	9-12-11	23	5.0						
	Medium dense CLAYEY FINE TO MEDIUM SAND, frequent gravel layers, brown, moist (SC) 8.0		SS3	20	7-11-12-12	23	8.0						
	Medium dense poorly graded FINE TO COARSE GRAVEL with clay, few sand, brown, wet (GP-GC) 10.0		SS4	3	11-14-15-12	29	10.0						
	End of Boring at 10 feet	10											
		15											



GROUNDWATER READINGS

First Encountered: 8 feet
Upon Completion: N/A

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
\# Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:
Cave at 7 ft.

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

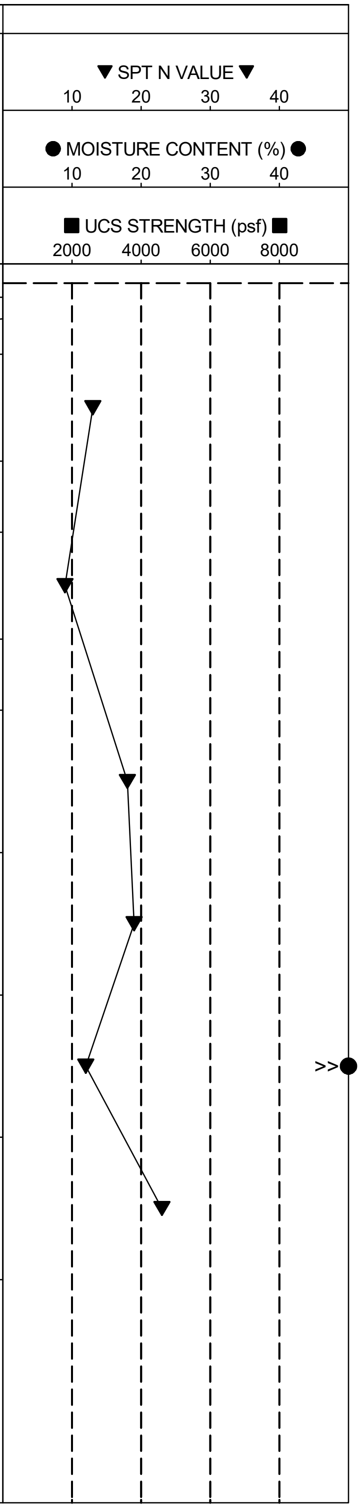
LOG OF TEST BORING
TH-05

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF SOIL PROFILE

ELEVATION ft			
		Ground Surface Elevation	0
		2.5 inches of ASPHALTIC CEMENT CONCRETE	0.2
		FILL - FINE TO COARSE SAND with gravel, with silt, brown, moist (SP-SM) (base)	0.5
		FILL - Medium dense poorly graded FINE TO MEDIUM SAND with silt, trace gravel, brown, moist (SP-SM)	3.0
		FILL - Loose to medium dense CLAYEY FINE TO MEDIUM SAND, trace gravel, dark brown, moist (SC)	9.8
		PEAT, trace silt, trace clay, trace roots, black (Pt) (organic content = 27.6%)	12.0
		CLAYEY SILT, few organics, gray (ML)	13.0
		Medium dense SILTY FINE SAND, gray, wet (SM)	14.0
		End of Boring at 14 feet	

FIELD DATA					LABORATORY DATA					
SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
BS				0.5						10
SS1	18	3-5-8	13	2.5						
SS2	14	13-4-5	9	5.0						
SS3	24	6-10-8-6	18	8.0						
SS4	24	8-10-9-7	19	10.0						
SS5	24	7-6-6-6	12	12.0		83.5				
SS6	24	7-12-11-12	23	14.0						



GROUNDWATER READINGS
First Encountered: 13 feet
Upon Completion: N/A

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
- # Torvane
- * Penetrometer
- <> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:
Dry cave at 8 ft.

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

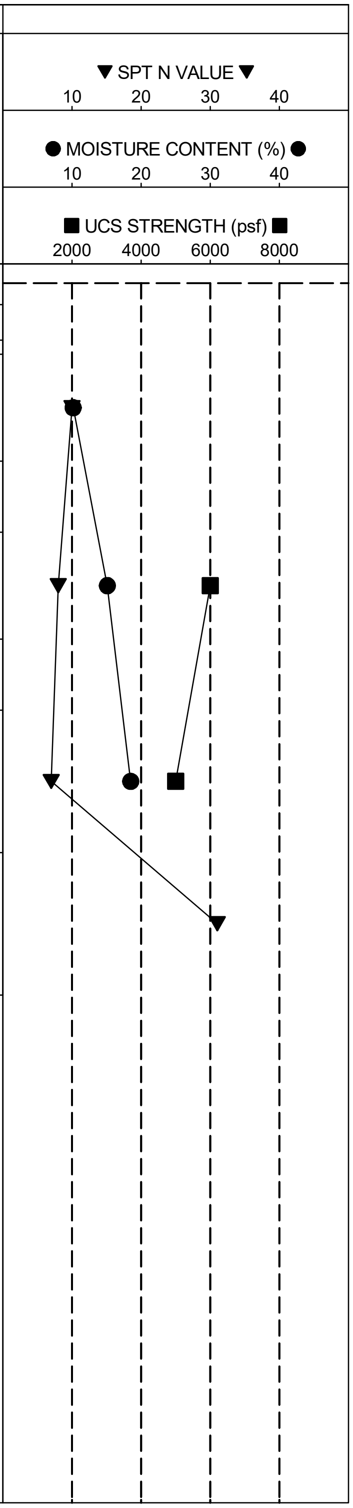
LOG OF TEST BORING
TH-06

LOG OF SOIL PROFILE

ELEVATION ft	LOG OF SOIL PROFILE	DEPTH (ft)
	Ground Surface Elevation	0
	3 inches of ASPHALTIC CEMENT CONCRETE	0.3
	FILL - Poorly graded FINE TO COARSE SAND with gravel, with silt, brown, moist (SP-SM) (base)	0.8
	FILL - Poorly graded FINE TO MEDIUM SAND with silt, brown, moist (SP-SM)	1.5
	Very stiff LEAN CLAY with sand, trace gravel, occasional sand and silt partings, gray (CL)	8.5
	Dense SILTY FINE SAND, trace gravel, gray, wet (SM)	10.0
	End of Boring at 10 feet	

FIELD DATA / **LABORATORY DATA**

SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
BS				0.8						
SS1	18	3-5-5	10	2.5	<>	10.2				
SS2	6	13-4-4	8	5.0	6000*	15.1				
SS3	24	2-3-4-6	7	8.0	5000*	18.5				
SS4	24	6-13-18-18	31	10.0						



GROUNDWATER READINGS

First Encountered: 8.5 feet
Upon Completion: 8.5 feet

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

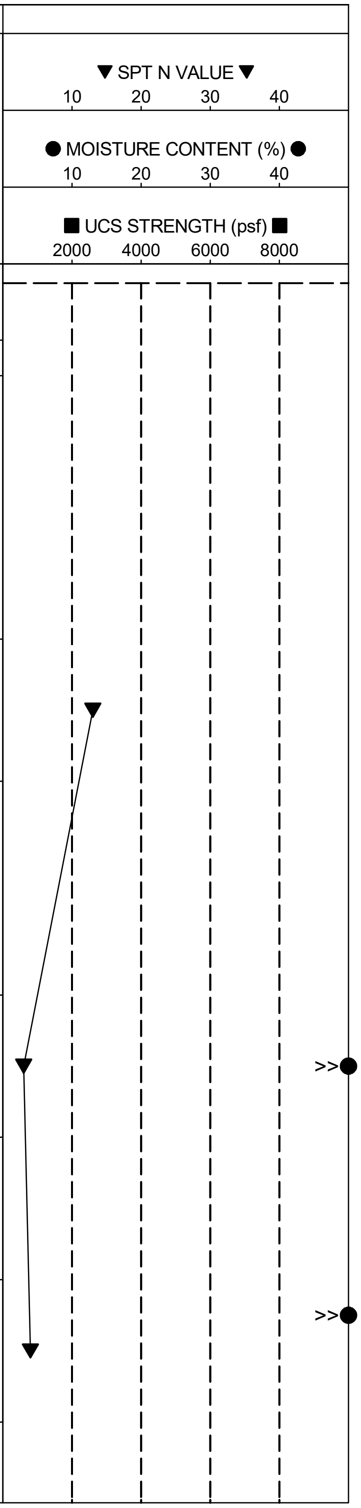
SE Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

LOG OF TEST BORING
TH-07

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

ELEVATION ft	LOG OF SOIL PROFILE		DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
	Ground Surface Elevation		0											
	2.5 inches of ASPHALTIC CEMENT CONCRETE	0.2												
	7 inches of PORTLAND CEMENT CONCRETE	0.8												
	FILL - Poorly graded FINE TO MEDIUM SAND, few gravel, trace silt, brown, moist (SP)	2.0		BS				1.3						5
	GEOFOAM BLOCKS (EPS) (plastic sheet observed at the top of the EPS) Note: Advanced using split spoon. Split spoon punched through foam resulting in sand heave. Difficult to determine bottom depth of foam.	6.0	5											
	FILL - Poorly graded FINE SAND with silt, trace gravel, brown, wet (SP-SM)	10.0		SS1	12	6-6-7-4	13	7.0						
	PEAT, few silt, trace roots, black, wet (Pt) (organic content = 28.1%)	14.0	10	SS2	12	1-2-1-2	3	12.0		111.8				
	CLAYEY SILT, few organics, trace sand, trace shells, gray (OL) (marl) (organic content = 9.2%)	15.0								73.2				
	Field reported as CLAYEY FINE TO MEDIUM SAND, gray, wet (SC)	16.0	15	SS3		2-2-2-4	4	16.0						
	End of Boring at 16 feet													



GROUNDWATER READINGS
First Encountered: 6 feet
Upon Completion: 6 feet

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

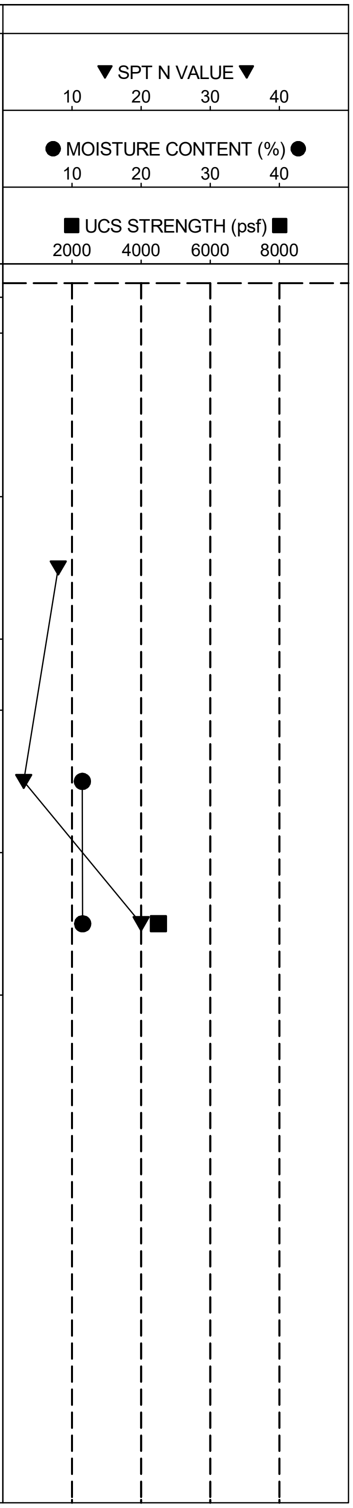
Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF TEST BORING
TH-08

ELEVATION ft	LOG OF SOIL PROFILE		DEPTH (ft)	FIELD DATA					LABORATORY DATA					
				SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
		Ground Surface Elevation	0											
		2.5 inches of ASPHALTIC CEMENT CONCRETE	0.2											
		FILL - Poorly graded FINE TO COARSE SAND with gravel and asphalt pieces, with silt, brown, moist (SP-SM) (base) (geotextile at 12 inches)	1.0	BS				0.7						6
		Crushed concrete FILL	3.0											
		Loose to very loose CLAYEY FINE SAND, trace gravel, brown, wet (SC)		SS1	3	2-3-5-5	8	5.0						
			8.0	SS2	24	3-1-2-1	3	8.0		11.5				
		Very stiff LEAN CLAY with sand, trace gravel, brownish gray (CL)	10.0	SS3	24	10-10-10-10	20	10.0	4500*	11.5				
		End of Boring at 10 feet												



GROUNDWATER READINGS
First Encountered: 3 feet
Upon Completion: 3 feet

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

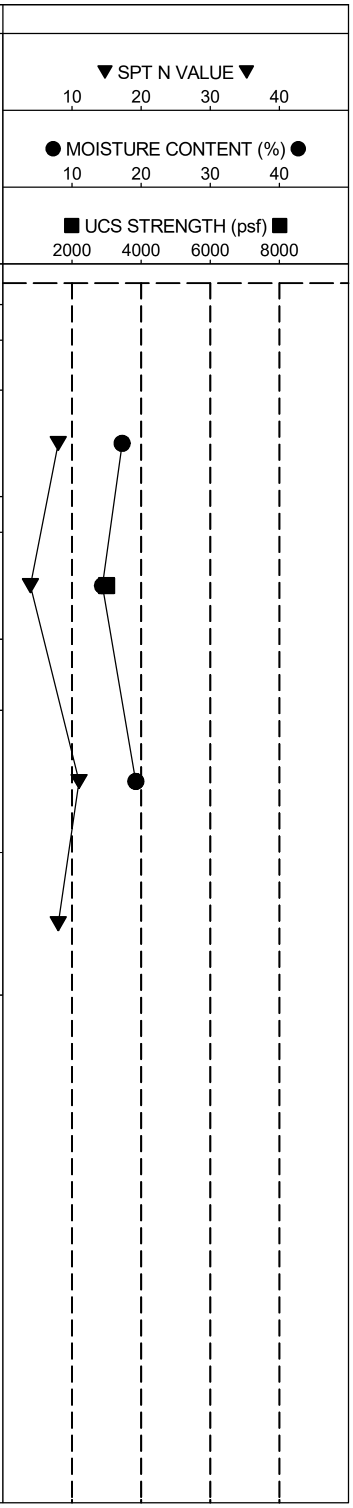
Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF TEST BORING
TH-09

	LOG OF SOIL PROFILE			FIELD DATA					LABORATORY DATA					
ELEVATION ft			DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
		Ground Surface Elevation												
	■	3 inches of ASPHALTIC CEMENT CONCRETE 0.3	0											
		FILL - Poorly graded FINE TO COARSE SAND with silt, trace gravel, dark brown (SP-SM) (base) (Geotextile at 11 inches) 0.9		BS				0.8						
		FILL - CRUSHED CONCRETE 2.0		SS1	12	3-4-4	8	3.0	<>	17.3				
	▨	Stiff LEAN CLAY with sand, trace gravel, brown (CL) 7.0	5	SS2	18	2-1-3	4	5.0	3000*	14.4				
				SS3	24	2-4-7-9	11	8.0		19.2				
		Loose SANDY SILT, brown, wet (ML) 10.0		SS4	24	7-6-2-6	8	10.0						
		End of Boring at 10 feet	10											
			15											



GROUNDWATER READINGS
First Encountered: 4 feet
Upon Completion: 5 feet

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
\# Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

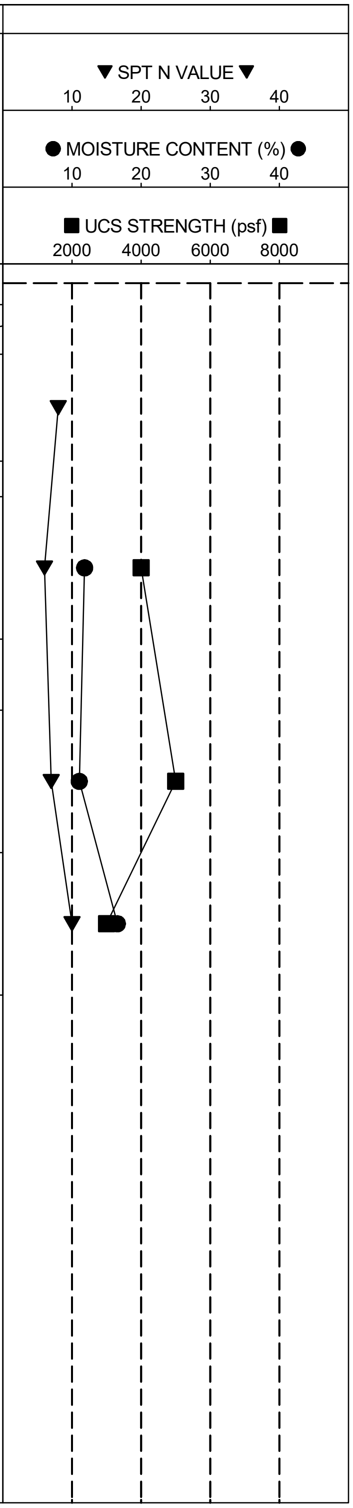
Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

PROJECT NO. 2026035B **DATE STARTED:** 4/13/2026 **DATE COMPLETED:** 4/13/2026

LOG OF TEST BORING
TH-10

	LOG OF SOIL PROFILE		FIELD DATA					LABORATORY DATA					
ELEVATION ft		DEPTH (ft)	SAMPLE NO.	SAMPLE RECOVERY (in)	NO. OF BLOWS FOR 6-inch DRIVE	N VALUE	SAMPLE TIP DEPTH (ft)	UNCONFINED COMP STRENGTH (psf)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200
	Ground Surface Elevation	0											
	3 inches of ASPHALTIC CEMENT CONCRETE	0.3											
	FILL - Poorly graded FINE TO COARSE SAND with gravel and asphalt pieces, trace silt, brown, moist (SP) (base)	0.6	BS				0.6						4
	FILL - Poorly graded FINE TO COARSE SAND with gravel, trace silt, brown, moist (SP)	1.0											
	FILL - Loose CLAYEY FINE SAND, trace gravel, dark brown, moist (SC)	4.0	SS1	14	1-2-6	8	2.5						
	Very stiff LEAN CLAY with sand, brown (CL)	6.0	SS2	24	3-3-3-5	6	5.0	4000*	11.8				
	Very stiff LEAN CLAY with sand, gray (CL)	8.0	SS3	24	3-4-3-4	7	8.0	5000*	11.1				
	Stiff LEAN CLAY, few sand, trace gravel, gray (CL)	9.5	SS4	24	4-4-6-12	10	10.0	3000*	16.6				
	Poorly graded FINE TO MEDIUM SAND, trace silt, brown, moist (SP)	10.0											
	End of Boring at 10 feet												



GROUNDWATER READINGS
First Encountered: none
Upon Completion: none

BORING LOCATION INFORMATION

Coordinates/GSE determined by:

KEY
\# Torvane
* Penetrometer
<> Disturbed Sample

Drilling Company: Job Site Services
Drill Rig: Geoprobe 7822DT (ID 10070; ER=90.2%)
Logged By: JDH
Drilling Method: 2 1/4 inch HSA
Method Notes: ----
Hammer Type: Automatic
Backfilled With: Cuttings/Patch
Checked By: JSS
QA/QC By: JDH
Remarks:

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

GENERAL NOTES

Unified Soil Classification System (USCS)
ASTM D2488 (Modified)

DRILLING & SAMPLING SYMBOLS:

SS: Split Spoon – 1 3/8" I.D., 2" O.D. (standard)
S: Split Spoon – non-standard size, as noted
ST: Thin-Walled Tube – 3" O.D., (unless otherwise noted)
LS: Liner Sample
PA: Power Auger
HA: Hand Auger
AU: Auger Sample
BS: Bulk Sample
HSA: Hollow Stem Auger
DP: Direct Push
PS: Piston Sample
PT: Pitcher Sample
WS: Wash Sample
RC: Rock Core with diamond bit, NX size, (unless otherwise noted)
RB: Rock Bit/Roller Bit
WR: Wash Rotary
NR: No Recovery
VS: Vane Shear Test
ER: Hammer Energy Ratio

Standard Penetration Test Resistance, N-Value: Sum of 2nd and 3rd 6-inch increments, in blows per foot of a 140-pound hammer falling 30 inches and driving an 18-inch to 30-inch long, 2-inch OD split spoon.

WATER LEVEL MEASUREMENT:

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. In pervious soils, the indicated levels may reflect the location of a groundwater table. In low permeability soils (clays and silts), the accurate determination of groundwater levels may not be possible with only short-term observations. Groundwater levels at times and locations other than when and where individual borings were performed could vary.

DESCRIPTIVE SOIL CLASSIFICATION:

Soil classification is based on the Unified Soil Classification (USC) System and ASTM Standards D-2487 and D-2488. Coarse-grained soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are generally described as: clays, if they are plastic, and silts, if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their apparent in-place density and fine-grained soils on the basis of their apparent in-place density (silty soils) or consistency (clayey soils).

CONSISTENCIES OF COHESIVE SOILS:

The pocket penetrometer, pocket torvane, and in-situ vane shear tests are converted into an estimated unconfined compressive strength, in pounds per square feet (psf), for presentation on the logs. The unconfined compressive strength is estimated to be about two time the shear strength.

DESCRIPTORS OF MINOR CONSTITUENTS

Primary Constituent	Fine-Grained (Silt & Clay)	Coarse-Grained (Sand & Gravel)	
Descriptor of Other Constituents	**Relative Portion of Coarse Grained Soils as a % of Dry Weight**	**Relative Portion of Fine Grained Soils as a % of Dry Weight**	**Relative Portion of Coarse Grained Soils as a % of Dry Weight**
Trace	<5%	<5%	<5%
Few	≥5% - <15%	N/A	≥5% - <15%
With	≥15% - <30%	≥5% - 12%	≥15%
Modifier	≥30%	>12%	N/A

FINE-GRAINED SOILS

COARSE-GRAINED SOILS

Unconfined Compressive Strength Qu, psf	Consistency	N-Value	Apparent Density
< 500	Very Soft	0 – 4	Very Loose
500 - <1,000	Soft	5 – 9	Loose
1,000 - <2,000	Medium	10 – 29	Medium Dense
2,000 - <4,000	Stiff	30 – 49	Dense
4,000 - <8,000	Very Stiff	50 – 80	Very Dense
≥ 8,000	Hard	>80	Extremely Dense

DEFINITIONS OF PAVEMENT CONDITION

Condition		Description
Good	ACC	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks and transverse cracks (open ¼ inch). No patching or very few patches in excellent condition.
	PCC	Moderate scaling in several locations. A few isolated surface spalls. Shallow reinforcement causing cracks. Several corner cracks, tight or well sealed. Open (¼ inch wide) longitudinal or transverse joints.
Fair	ACC	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (½ inch deep or less).
	PCC	Severe polishing, scaling, map cracking, or spalling over 50% of the area. Joints and cracks show moderate to severe spalling. Pumping and faulting of joints (½ inch with fair ride). Several slabs have multiple transverse or meander cracks with moderate spalling.
Poor	ACC	Alligator cracking (over 25% of surface). Severe distortions (over 2 inches deep) Extensive patching in poor condition. Potholes.
	PCC	Extensive slab cracking, severely spalled and patched. Joints failed. Patching in very poor condition. Severe and extensive settlement or frost heaves.

DEFINITIONS OF STRUCTURAL AND DEPOSITIONAL FEATURES

Term	Definition
Parting	≤ 1/16 inch (1.6 mm) thick
Seam	> 1/16 inch (1.6 mm) → ½ inch (12.7 mm) thick
Layer	> ½ inch (12.7 mm) to ≤ 12 inches (305 mm) thick
Pocket	Small, erratic deposits of limited lateral extent
Lens	Lenticular deposit
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay
Varved	Alternating partings or seams (1 mm – 12 mm) of silt and/or clay and sometimes fine sand
Stratified	Alternating layers of varying material or color with layers ≥ 6 mm thick
Laminated	Alternating layers of varying material or color with layers < 6 mm thick
Fissured	Contains shears or separations along planes of weakness
Slickensided	Shear planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Homogeneous	Same color and appearance throughout
Occasional	One or less per foot (305 mm) of thickness
Frequent	More than one per foot (305 mm) of thickness
Interbedded	Applied to strata of soil lying between or alternating with other strata of a different nature

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Size Range
Boulders	≥ 12" (300 mm)
Cobbles	< 12" - 3" (300 mm – 75 mm)
Gravel - Coarse	< 3" - ¾" (75 mm – 19 mm)
Gravel – Fine	< ¾" - #4 (19 mm – 4.75 mm)
Sand – Coarse	< #4 - #10 (4.75 mm – 2 mm)
Sand – Medium	< #10 - #40 (2 mm - 0.425 mm)
Sand – Fine	< #40 - #200 (0.425 mm -0 .074 mm)
Silt	< 0.074 mm - 0.005 mm
Clay	<0 .005 mm

GENERAL NOTES

Unified Soil Classification System (USCS)
ASTM D2487

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^{A}				Soil Classification	
				Group Symbol	Group Name ^{B}
COARSE-GRAINED More than 50 % retained on No. 200 sieve	**Gravels** (More than 50 % of coarse fraction retained on No. 4 sieve)	**Clean Gravels**	Cu ≥ 4 and 1 ≤ Cc ≤ 3^{D}	GW	Well-graded gravel ^{E}
		(Less than 5% fines ^{C})	Cu < 4 and/or [Cc < 1 or Cc > 3]^{D}	GP	Poorly graded gravel ^{E}
		Gravels with Fines	Fines classify as ML or MH	GM	Silty gravel ^{E,F,G}
		(More than 12 % fines ^{C})	Fines classify as CL or CH	GC	Clayey gravel ^{E,F,G}
	Sands (50 % or more of coarse fraction passes No. 4 sieve)	**Clean Sands**	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^{D}	SW	Well-graded sand ^{I}
		(Less than 5 % fines ^{H})	Cu < 6 and/or [Cc < 1 or Cc > 3] ^{D}	SP	Poorly graded sand ^{I}
		Sands with Fines	Fines classify as ML or MH	SM	Silty sand ^{F,G,I}
		(More than 12 % fines ^{H})	Fines classify as CL or CH	SC	Clayey sand ^{F,G,I}
FINE-GRAINED SOILS 50 % or more passes the No. 200 sieve	**Silts and Clays** Liquid limit less than 50	**inorganic**	PI > 7 and plots on or above "A" line ^{J}	CL	Lean clay ^{K,L,M}
			PI < 4 or plots below "A" line ^{J}	ML	Silt ^{K,L,M}
		organic	(Liquid Limit - oven dried) / (Liquid Limit - not dried) < 0.75	OL	Organic clay ^{K,L,M,N}
					Organic silt ^{K,L,M,O}
	Silts and Clays Liquid limit more than 50	**inorganic**	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}
			PI plots below "A" line	MH	Elastic silt ^{K,L,M}
		organic	(Liquid Limit - oven dried) / (Liquid Limit - not dried) < 0.75	OH	Organic clay ^{K,L,M,P}
					Organic silt ^{K,L,M,Q}
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			Pt	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12 % fines require dual symbols:
- GW-GM well-graded gravel with silt
- GW-GC well-graded gravel with clay
- GP-GM poorly graded gravel with silt
- GP-GC poorly graded gravel with clay

[D] $Cu = D_{60}/D_{10}$ $\quad Cc = (D_{30})^2/(D_{10} \times D_{60})$

[E] If soil contains ≥15 % sand, add "with sand" to group name.

[F] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[G] If fines are organic, add "with organic fines" to group name.

[H] Sands with 5 to 12 % fines require dual symbols:
- SW-SM well-graded sand with silt
- SW-SC well-graded sand with clay
- SP-SM poorly graded sand with silt
- SP-SC poorly graded sand with clay

[I] If soil contains ≥15 % gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to <30 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥30 % plus No. 200, predominantly sand, add "sandy" to group name.

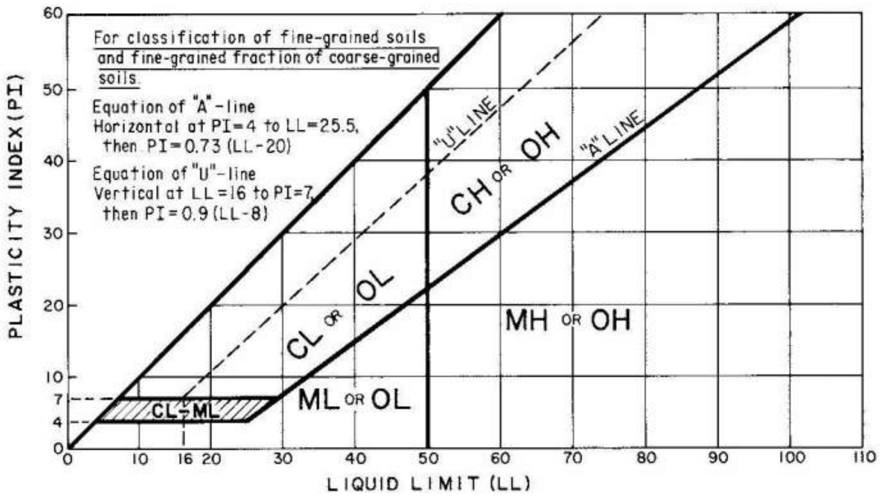
[M] If soil contains ≥30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Order of Classification: 1) Consistency or Apparent Density, 2) Type of Soil, 3) Minor Soil Type(s), 4) Inclusions, 5) Layered Soils, 6) Color, 7) Water Content, 8) USCS Symbol, 9) Geological Name

APPENDIX C

PAVEMENT CORE PHOTOGRAPHS

TH-01

TH-02

TH-03

TH-04

TH-05

TH-06

TH-07

TH-08

TH-09

TH-10

APPENDIX D

LABORATORY TEST RESULTS

Somat Engineering, Inc.

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

PROJECT NO. 2026035B

Borehole	Top Depth of Test Sample (ft)	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Class-ification	Water Content (%)	Dry Density (pcf)	UCS (psf)	Organic Content (%)
TH-01	0.3				38.1	9					
TH-01	7.3									2000*	
TH-01	8.5							12.2		2000*	
TH-02	1.0							11.3		9000*	
TH-02	3.5							22.5		7000*	
TH-02	6.0							11.5		9000+*	
TH-02	8.5									<>	
TH-03	0.3				38.1	8					
TH-03	4.7							18.7		4000*	2.3
TH-03	6.0									<>	
TH-05	0.2				19.1	10					
TH-05	10.0							83.5			27.6
TH-06	1.0									<>	
TH-06								10.2			
TH-06	3.5							15.1		6000*	
TH-06	6.0							18.5		5000*	
TH-07	0.8				19.1	5	SP				
TH-07	10.0							111.8			28.1
TH-07								73.2			9.2
TH-08	0.2				25.4	6					
TH-08	6.0							11.5			
TH-08	8.0							11.5		4500*	
TH-09	1.5									<>	
TH-09								17.3			
TH-09	3.5							14.4		3000*	
TH-09	6.0							19.2			
TH-10	0.3				25.4	4	SP				
TH-10	3.0									4000*	
TH-10								11.8			
TH-10	6.0							11.1		5000*	
TH-10	8.0							16.6		3000*	

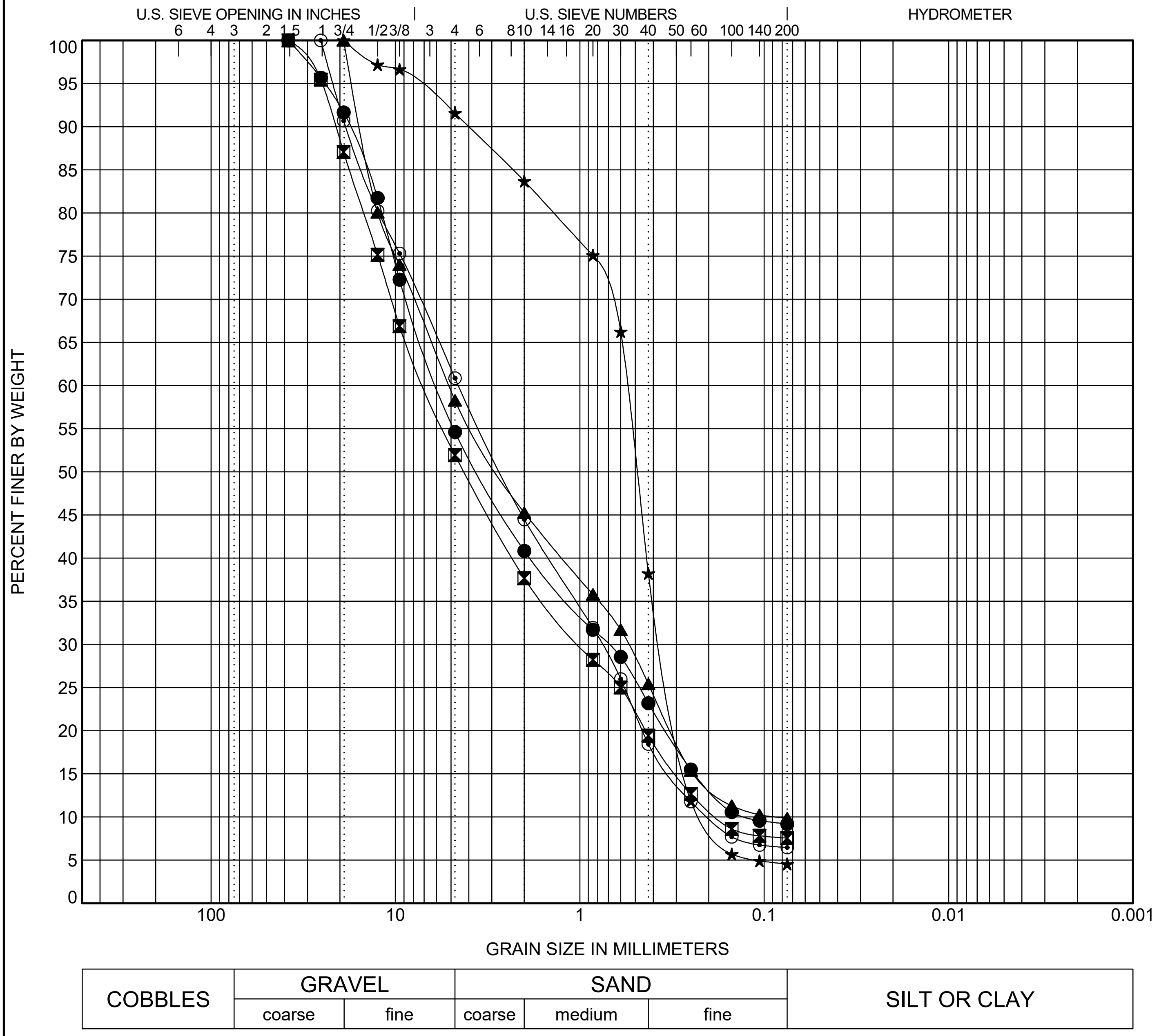
Torvane
* Pocket Penetrometer
<> Disturbed Sample

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

GRAIN SIZE DISTRIBUTION

PROJECT NO. 2026035B



Specimen Identification		Depth ft.	Remarks	LL	PL	PI	Cc	Cu
●	**TH-01**	**0.3**					**0.69**	**47.63**
☒	**TH-03**	**0.3**					**0.81**	**38.65**
▲	**TH-05**	**0.2**					**0.69**	**60.41**
★	**TH-07**	**0.8**					**1.09**	**2.59**
⊙	**TH-08**	**0.2**					**0.63**	**22.68**

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TH-01**	**0.3**	**38.1**	**5.869**	**0.705**	**0.123**	**45.4**	**45.4**	**9.2**	
☒	**TH-03**	**0.3**	**38.1**	**6.907**	**0.999**	**0.179**	**48.1**	**44.4**	**7.5**	
▲	**TH-05**	**0.2**	**19.1**	**5.125**	**0.547**	**0.085**	**41.7**	**48.4**	**9.9**	
★	**TH-07**	**0.8**	**19.1**	**0.556**	**0.36**	**0.214**	**8.4**	**87.0**	**4.5**	
⊙	**TH-08**	**0.2**	**25.4**	**4.541**	**0.759**	**0.2**	**39.1**	**54.4**	**6.5**	

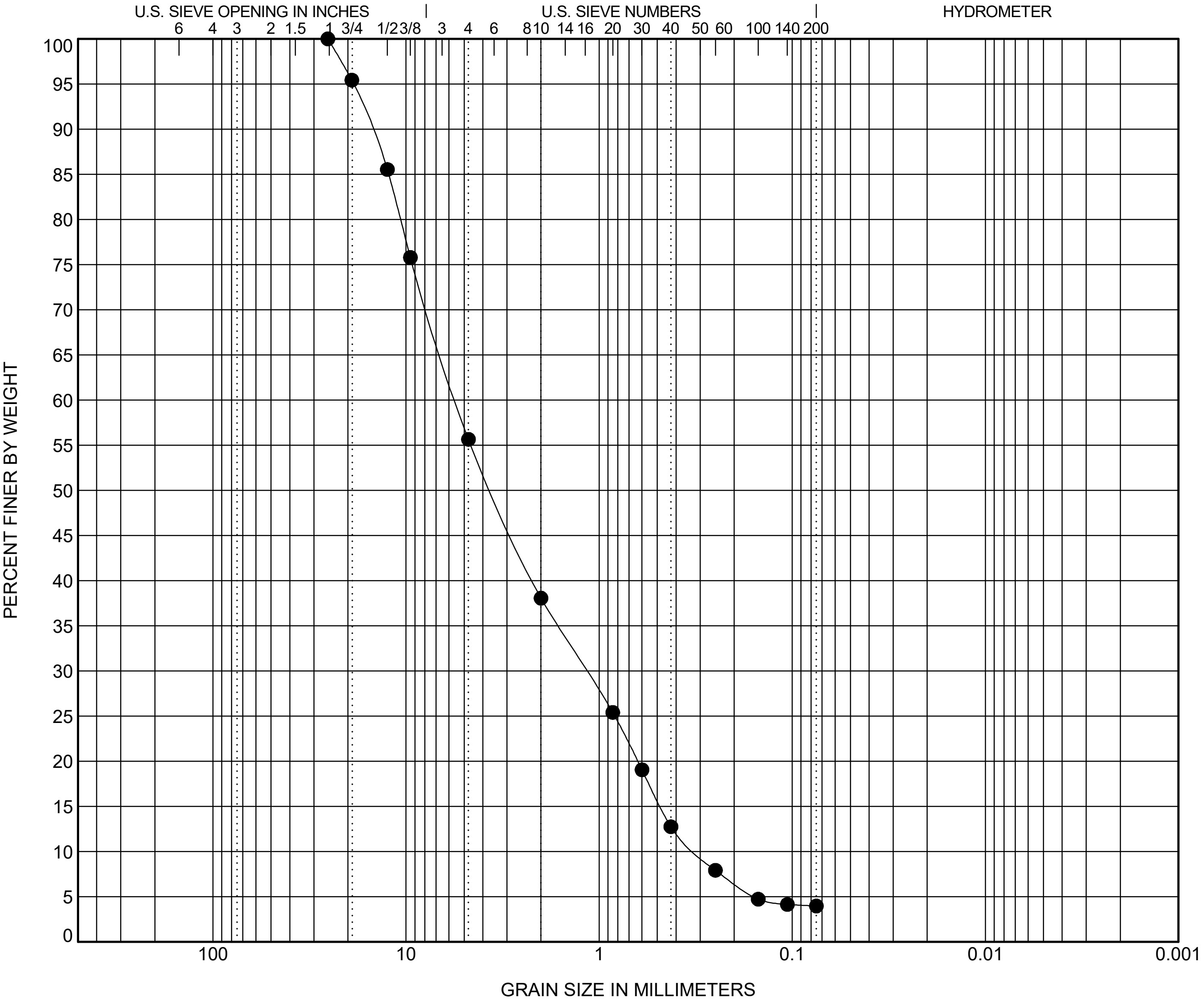
GRAIN SIZE 2026035B MASON JEWETT FIELD.GPJ SOMAT.GDT 4/27/26

Somat Engineering

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

GRAIN SIZE DISTRIBUTION

PROJECT NO. 2026035B



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Depth ft.	Remarks	LL	PL	PI	Cc	Cu
● **TH-10**	**0.3**					**0.78**	**17.56**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TH-10**	**0.3**	**25.4**	**5.517**	**1.16**	**0.314**	**44.4**	**51.7**	**4.0**	

GRAIN SIZE 2026035B MASON JEWETT FIELD.GPJ SOMAT.GDT 4/27/26

Somat Engineering, Inc.

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

MOISTURE-DENSITY RELATIONSHIP

PROJECT NO. 2026035B

Source of Material **_TH-02 BULK**

Description of Material **Sandy Clay**

Test Method **ASTM D698 Method B**

Remarks

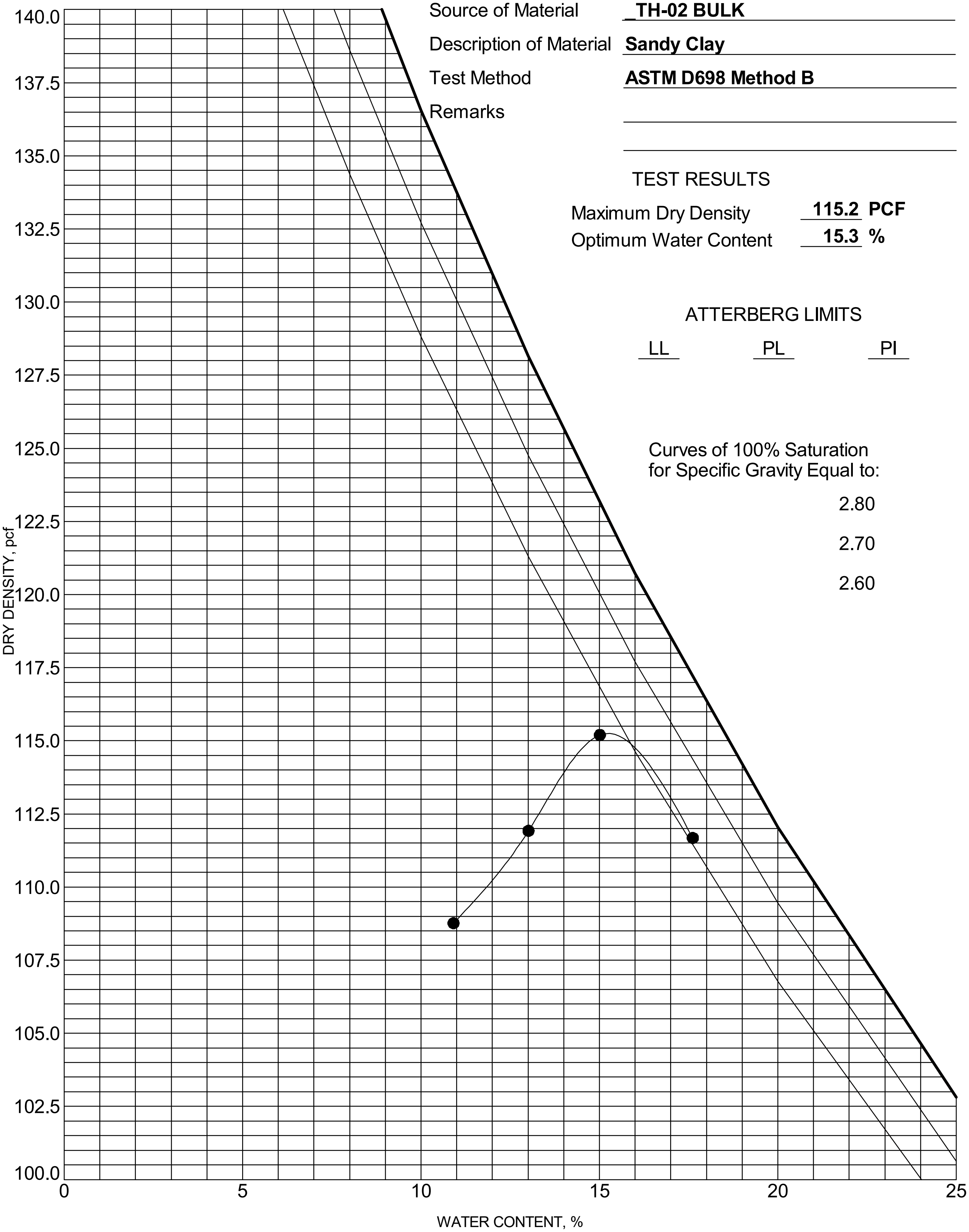
TEST RESULTS

Maximum Dry Density **115.2** **PCF**

Optimum Water Content **15.3** **%**

ATTERBERG LIMITS

LL	PL	PI



Somat Engineering, Inc.

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

MOISTURE-DENSITY RELATIONSHIP

PROJECT NO. 2026035B

Source of Material **_TH-04 BULK**

Description of Material **Gravelly Sand with clay**

Test Method **ASTM D698 Method C**

Remarks

TEST RESULTS

Maximum Dry Density **139.8** **PCF**

Optimum Water Content **6.7** **%**

ATTERBERG LIMITS

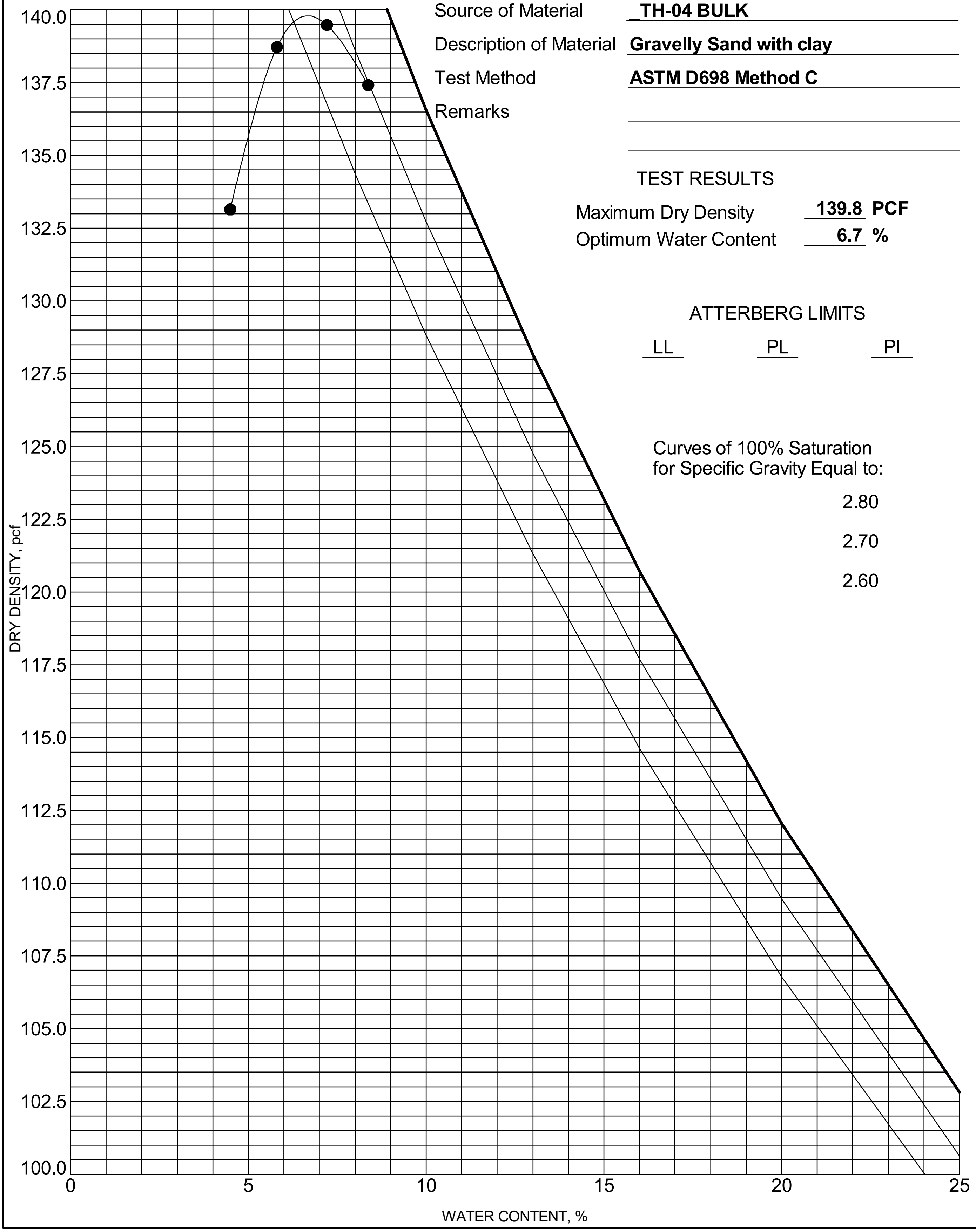
LL	PL	PI

Curves of 100% Saturation
for Specific Gravity Equal to:

2.80

2.70

2.60



COMPACTION 2026035B MASON JEWETT FIELD.GPJ SOMAT.GDT 4/28/26

4/28/26

Somat Engineering, Inc.

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

MOISTURE-DENSITY RELATIONSHIP

PROJECT NO. 2026035B

Source of Material **_TH-06 BULK**

Description of Material **Sandy Clay**

Test Method **ASTM D698 Method A**

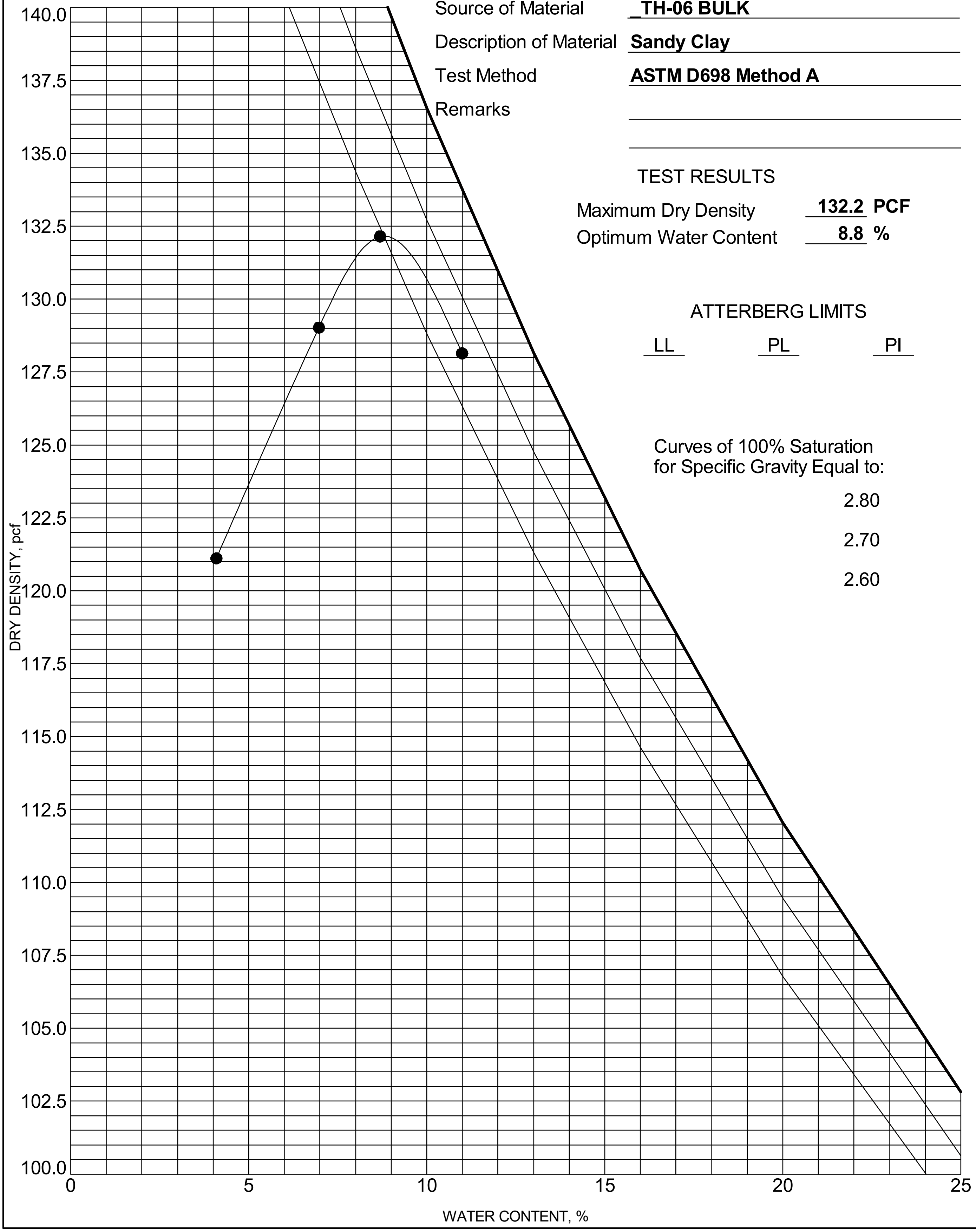
Remarks

TEST RESULTS

Maximum Dry Density	**132.2**	**PCF**
Optimum Water Content	**8.8**	**%**

ATTERBERG LIMITS

LL	PL	PI



Curves of 100% Saturation
for Specific Gravity Equal to:

2.80

2.70

2.60

Somat Engineering, Inc.

Preliminary Pavement Evaluation
Runway 10/28 and Taxiway B
Mason Jewett Field
Mason, Michigan

MOISTURE-DENSITY RELATIONSHIP

PROJECT NO. 2026035B

Source of Material **_TH-10 BULK**

Description of Material **Clayey sand**

Test Method **ASTM D698 Method B**

Remarks

TEST RESULTS

Maximum Dry Density **131.0 PCF**

Optimum Water Content **9.0 %**

ATTERBERG LIMITS

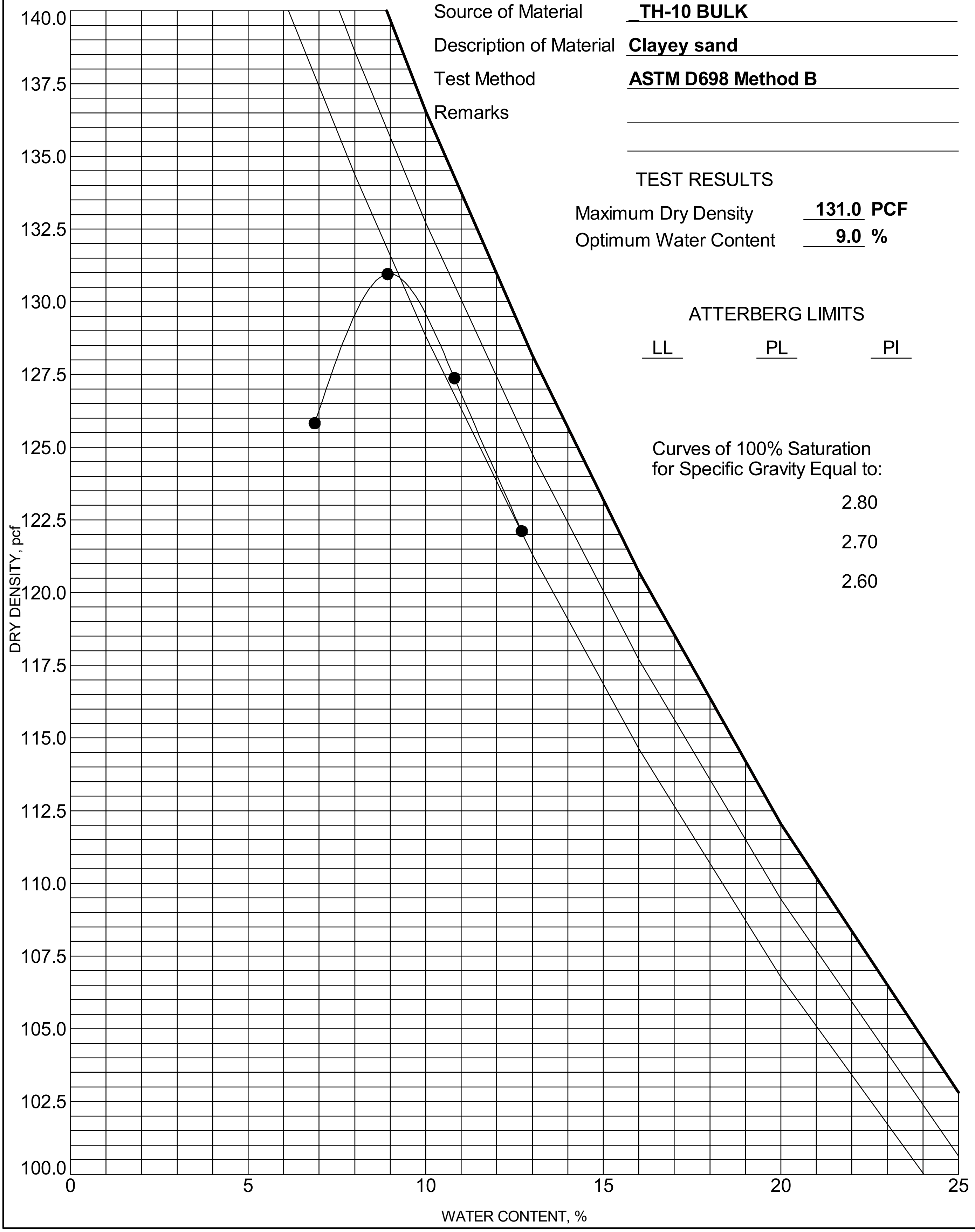
LL	PL	PI

Curves of 100% Saturation
for Specific Gravity Equal to:

2.80

2.70

2.60



Somat Engineering, INCORPORATED

CALIFORNIA BEARING RATIO
ASTM D1883

Project Name: **Runway 10/28 and Taxiway B Pavement**
Project Location: **Mason Jewett Airport, Mason, Michigan**
Project No.: **2026035B**

Sample ID: TH-02 Bulk
Description: Sandy Clay

Notes:

Test type: Soaked CBR
Test date: 5/2/2026
Tested by: LM/JDH

Test Readings

Surcharge Weight: 10 lbs

Penetration Zero Offset: -0.030

Penetration (in)	Corr. Penet. (in)	Load (lbs)	Pressure (psi)
0.000	0.030	0	0
0.025	0.055	71	24
0.050	0.080	108	36
0.075	0.105	133	44
0.100	0.130	155	52
0.125	0.155	168	56
0.150	0.180	181	60
0.175	0.205	198	66
0.200	0.230	209	70
0.250	0.280	229	76
0.300	0.330	247	82
0.350	0.380	262	87
0.400	0.430	277	92
0.450	0.480	290	97
0.500	0.530	304	101

Test Data

Retained on No. 4 sieve: *25%*

Maximum dry density of soil: 115.2 pcf
Optimum water content of soil: 15.3%
(as determined by ASTM D698)

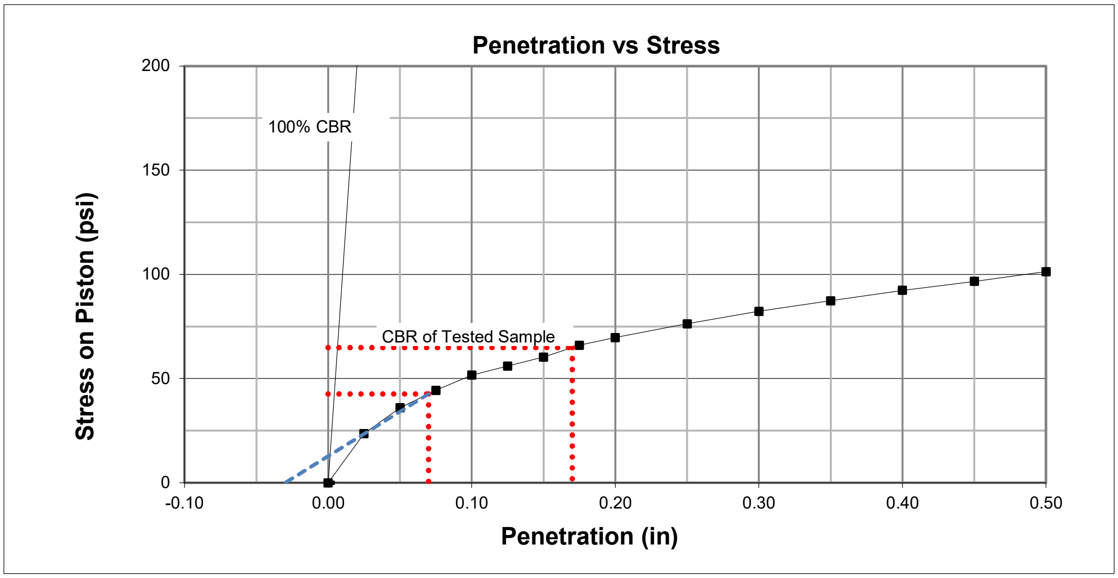
Unit weight of compacted sample: 115.4 pcf
Tested at 100.2% of maximum dry density
Water content before soaking: 15.0%
Water content after soaking: 16.4%
(top 1 inch)

Swell Monitoring

Initial height of sample: 4.584 in
Dial reading before soak: 0.400 in
Dial reading after soak: 0.418 in
Swell (%) 0.4%

CBR Results

Penetration:	**0.100 in**	**CBR Value**	***4.3***
	0.200 in	CBR Value	*4.3*



Somat Engineering, INCORPORATED

CALIFORNIA BEARING RATIO
ASTM D1883

Project Name: **Runway 10/28 and Taxiway B Pavement**
Project Location: **Mason Jewett Airport, Mason, Michigan**
Project No.: **2026035B**

Sample ID: TH-04 Bulk
Description: Gravelly Sand with clay

Notes:

Test type: Soaked CBR
Test date: 4/28/2026
Tested by: LM/JDH

Test Readings

Surcharge Weight: 10 lbs

Penetration Zero Offset: 0.000

Penetration (in)	Corr. Penet. (in)	Load (lbs)	Pressure (psi)
0.000	0.000	0	0
0.025	0.025	111	37
0.050	0.050	211	70
0.075	0.075	312	104
0.100	0.100	423	141
0.125	0.125	538	179
0.150	0.150	652	217
0.175	0.175	773	258
0.200	0.200	903	301
0.250	0.250	1140	380
0.300	0.300	1412	471
0.350	0.350	1656	552
0.400	0.400	1884	628
0.450	0.450	2133	711
0.500	0.500	2352	784

Test Data

Retained on No. 4 sieve: *40%*

Maximum dry density of soil: 139.8 pcf
Optimum water content of soil: 6.7%
(as determined by ASTM D698)

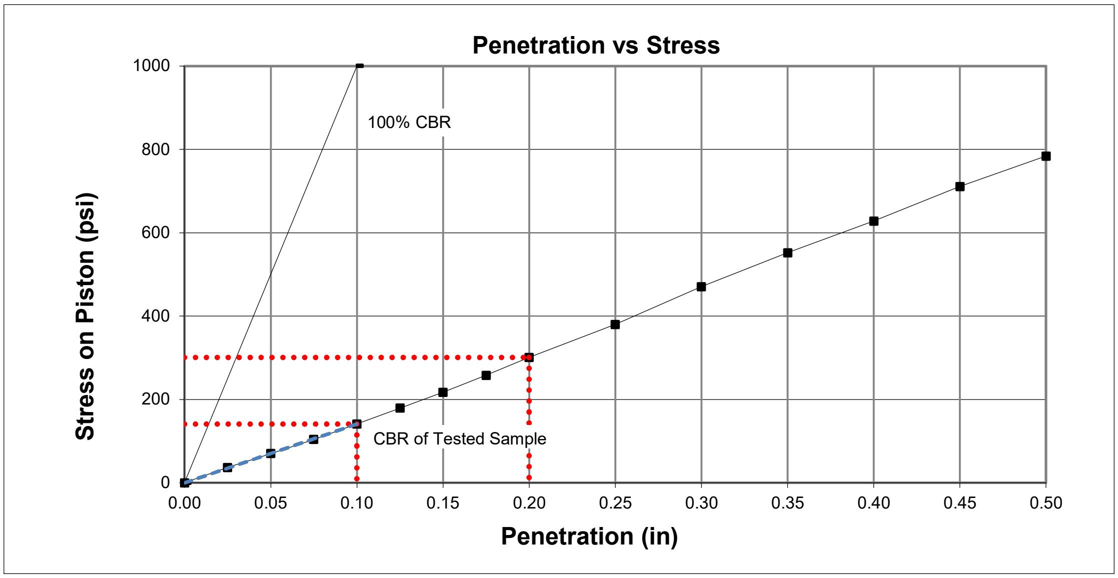
Unit weight of compacted sample: 138.2 pcf
Tested at 98.9% of maximum dry density
Water content before soaking: 6.9%
Water content after soaking: 7.5%
(top 1 inch)

Swell Monitoring

Initial height of sample: 4.586 in
Dial reading before soak: 0.300 in
Dial reading after soak: 0.297 in
Swell (%) -0.1%

CBR Results

Penetration: **0.100 in**	**CBR Value**	***14.1***
0.200 in	CBR Value	*20.1*



Somat Engineering, INCORPORATED

CALIFORNIA BEARING RATIO
ASTM D1883

Project Name: **Runway 10/28 and Taxiway B Pavement**
Project Location: **Mason Jewett Airport, Mason, Michigan**
Project No.: **2026035B**

Sample ID: TH-06 Bulk
Description: Sandy Clay

Test type: Soaked CBR
Test date: 5/2/2026
Tested by: LM/JDH

Notes:

Test Readings

Surcharge Weight: 10 lbs

Penetration Zero Offset: 0.000

Penetration (in)	Corr. Penet. (in)	Load (lbs)	Pressure (psi)
0.000	0.000	0	0
0.025	0.025	37	12
0.050	0.050	70	23
0.075	0.075	108	36
0.100	0.100	144	48
0.125	0.125	188	63
0.150	0.150	234	78
0.175	0.175	271	90
0.200	0.200	315	105
0.250	0.250	412	137
0.300	0.300	511	170
0.350	0.350	617	206
0.400	0.400	727	242
0.450	0.450	843	281
0.500	0.500	956	319

Test Data

Retained on No. 4 sieve: *<5%*

Maximum dry density of soil: 132.2 pcf
Optimum water content of soil: 8.8%
(as determined by ASTM D698)

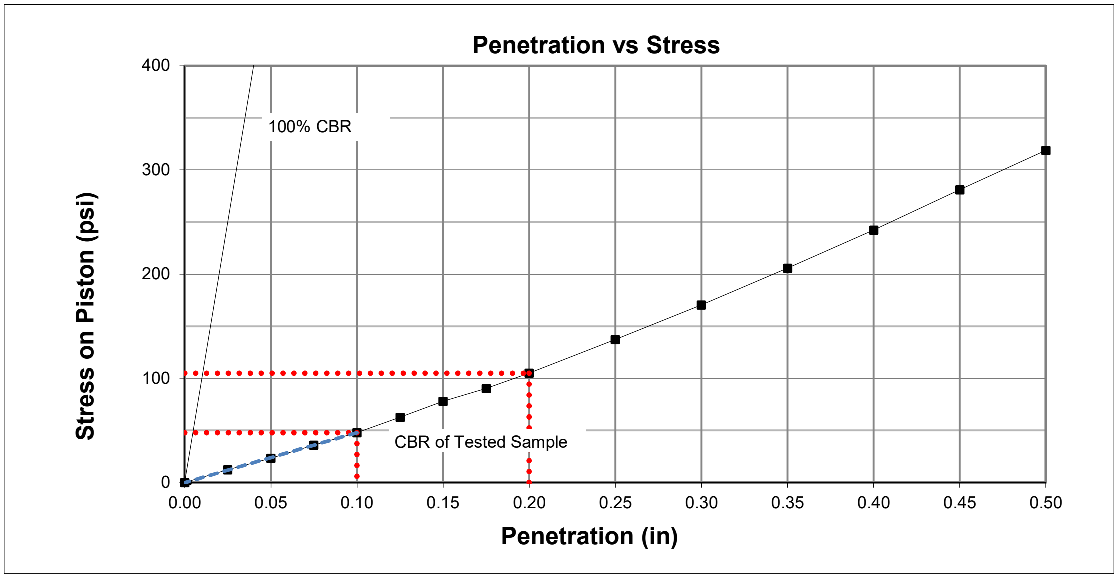
Unit weight of compacted sample: 132.1 pcf
Tested at 99.9% of maximum dry density
Water content before soaking: 8.5%
Water content after soaking: 8.6%
(top 1 inch)

Swell Monitoring

Initial height of sample: 4.582 in
Dial reading before soak: 0.300 in
Dial reading after soak: 0.293 in
Swell (%) -0.2%

CBR Results

Penetration:	**0.100 in**	**CBR Value**	***4.8***
	0.200 in	CBR Value	*7.0*



Somat Engineering, INCORPORATED

CALIFORNIA BEARING RATIO

ASTM D1883

Project Name: **Runway 10/28 and Taxiway B Pavement**
Project Location: **Mason Jewett Airport, Mason, Michigan**
Project No.: **2026035B**

Sample ID: TH-10 Bulk
Description: Clayey Sand

Notes:

Test type: Soaked CBR
Test date: 5/2/2026
Tested by: LM/JDH

Test Readings

Surcharge Weight: 10 lbs

Penetration Zero Offset:		0.030	
Penetration (in)	Corr. Penet. (in)	Load (lbs)	Pressure (psi)
0.000	-0.030	0	0
0.025	-0.005	22	7
0.050	0.020	43	14
0.075	0.045	70	23
0.100	0.070	100	33
0.125	0.095	129	43
0.150	0.120	161	54
0.175	0.145	193	64
0.200	0.170	224	75
0.250	0.220	288	96
0.300	0.270	349	116
0.350	0.320	407	136
0.400	0.370	465	155
0.450	0.420	518	173
0.500	0.470	574	191

Test Data

Retained on No. 4 sieve: *25%*

Maximum dry density of soil: 131.0 pcf
Optimum water content of soil: 9.0%
(as determined by ASTM D698)

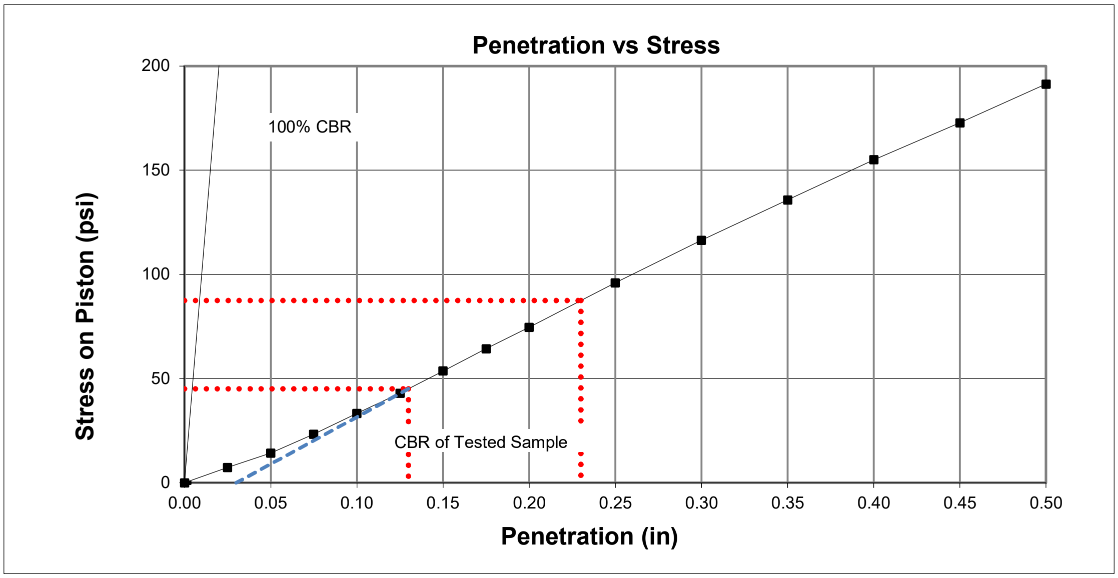
Unit weight of compacted sample: 130.8 pcf
Tested at 99.9% of maximum dry density
Water content before soaking: 8.8%
Water content after soaking: 9.0%
(top 1 inch)

Swell Monitoring

Initial height of sample: 4.587 in
Dial reading before soak: 0.300 in
Dial reading after soak: 0.292 in
Swell (%) -0.2%

CBR Results

Penetration:	**0.100 in**	**CBR Value**	***4.5***
	0.200 in	CBR Value	*5.8*



Description of Frequently Used Laboratory Testing Procedures

Visual Engineering Classification

Visual classification was performed on all samples (though other means of refining the classification may also be used). The General Notes provided immediately following the Logs of Test Borings include a brief discussion of the general method used to visually classify the soil, which is based on the visual-manual procedure (ASTM D2488). The visual classification is used to assign an appropriate Unified Soil Classification System (USCS) group symbol. The USCS symbol is shown in parentheses following the textural description of the various strata on the boring logs.

Where more laboratory testing is performed (requiring both grain size and Atterberg Limits tests), the classification may also be refined further based on USCS ASTM D2487.

Moisture Content (ASTM D2216)

Moisture content determination tests were performed in accordance with ASTM D2216. Samples were sealed in the field to retain the natural moisture content of the soil specimen. Samples were then dried at a constant temperature (approximately 110º C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample (and the loss in weight representing the water contained in the original sample). The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

Hand Penetrometer

A hand/pocket penetrometer was used to estimate the unconfined compressive strength of cohesive (clay) samples. In the hand penetrometer test, the shear strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small, calibrated spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square foot. The value is reported on the soil boring logs as an estimate of the unconfined compressive strength.

Grain Size Analyses (ASTM D6913, D7928, and/or D422-2017)

Grain size analyses were performed in accordance with ASTM D6913, D7928, and/or D422-2017 on selected soil samples to evaluate the gradation of the soil represented by the sample. The distribution of particle sizes larger than 75 micrometers (retained on the No. 200 sieve) is determined by sieving, while the distribution of particle sizes smaller than 75 micrometers is determined by a sedimentation process using a hydrometer.

Organic Content (Loss-On-Ignition) Tests (ASTM D2974)

The organic content of a soil is determined through a Loss-On-Ignition test performed in accordance with ASTM D2974 on soil samples suspected to contain significant organics. After the sample has been oven-dried, the soil sample is super-heated in a 440ºC muffle furnace as a means to burn off all present organic matter. The weight of the remaining ash is used to calculate the percentage of organic matter as compared to the dry weight of the sample.

Standard or Modified Proctor Test (ASTM D698 and D1557)

Moisture-density relationship tests are performed on bulk soil samples. This test defines the practical maximum density of a soil sample along with the optimum moisture content needed to achieve that density. The test procedures are similar for both the Standard and Modified Proctors, but the laboratory compactive effort of the Modified method is higher.

California Bearing Ratio Test (ASTM D1883)

The CBR test is a penetration test performed to evaluate the mechanical strength of subgrade, subbase, or base course material at the material's optimum water content or a range of water contents from a specified compaction test and a specified dry unit weight. The test is performed by measuring the pressure required to penetrate a soil sample with a plunger of standard area. The measured pressure is then divided by the pressure required to achieve an equal penetration on a standard well-graded crushed rock material having a CBR of 100%.

APPENDIX E

GBA MESSAGE:
"IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT"

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept* *responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

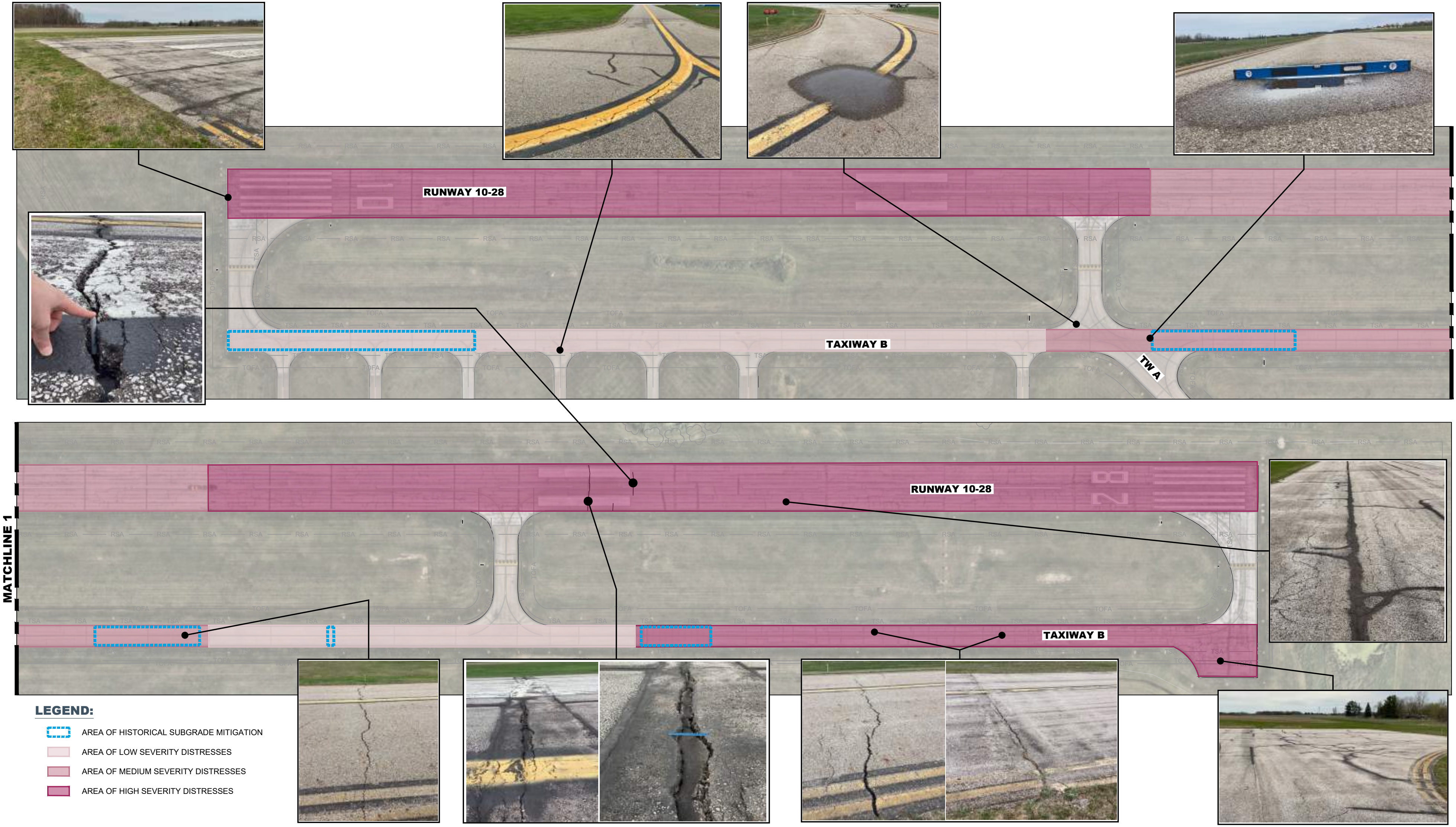
While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL
BUSINESS
ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Appendix B

Pavement Distress Severity Generalization Map and Site Photos



LEGEND:

- ⬚ AREA OF HISTORICAL SUBGRADE MITIGATION
- ▨ AREA OF LOW SEVERITY DISTRESSES
- ▨ AREA OF MEDIUM SEVERITY DISTRESSES
- ▨ AREA OF HIGH SEVERITY DISTRESSES

MISS DIG System, Inc.
1-800-482-7171
811

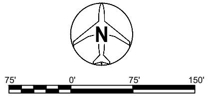
MASON JEWETT FIELD

2026 VISUAL SITE INSPECTION

PAVEMENT DISTRESS SEVERITY GENERALIZATION MAP AND SITE PHOTOS

PROJECT No: 1010.5186.002
DATE: 6/12/2026
DRAWN BY/REVIEWED BY: MJD/APD

APPENDIX B



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Appendix C

Transverse and Longitudinal Grade Analysis

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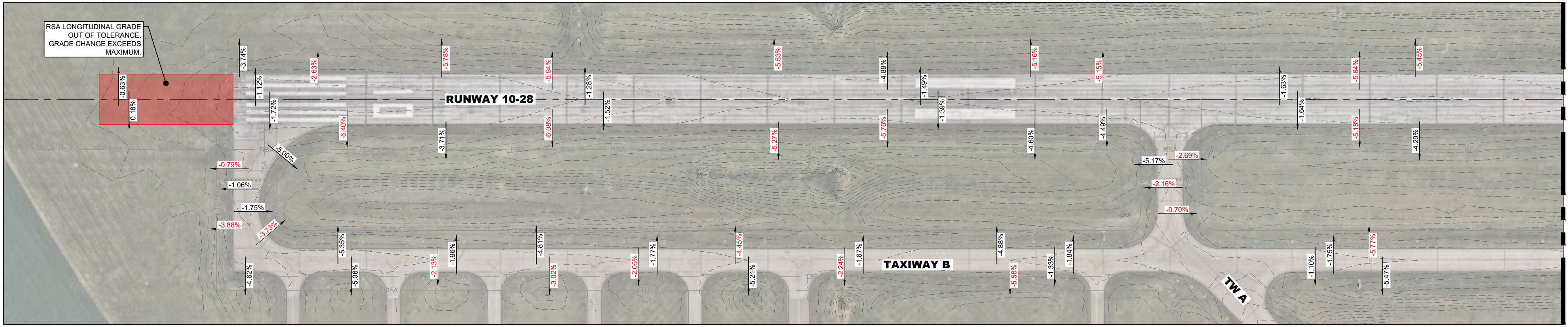
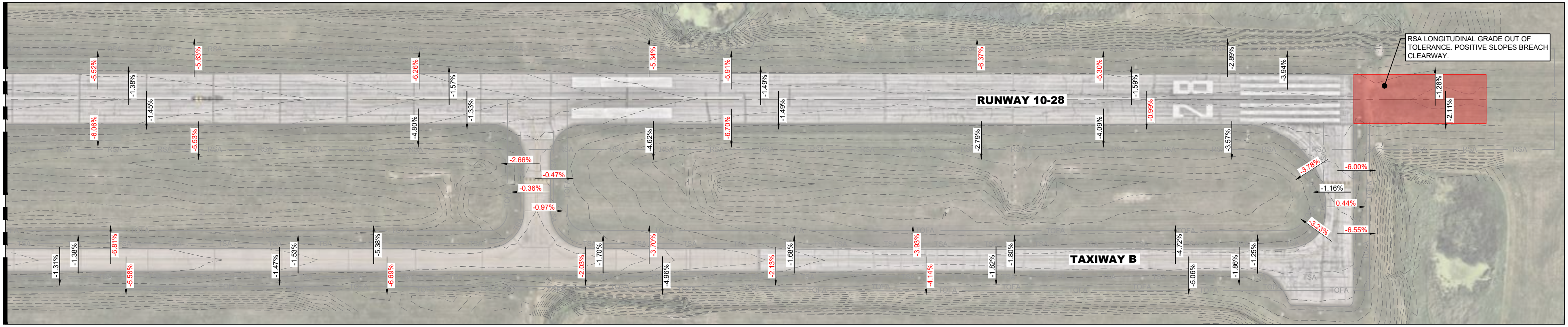
Plotted by: Diliberto, Matthew
Plotted on: 6/12/2026 9:36 AM


RSA LONGITUDINAL GRADE OUT OF TOLERANCE. GRADE CHANGE EXCEEDS MAXIMUM.


RSA LONGITUDINAL GRADE OUT OF TOLERANCE. POSITIVE SLOPES BREACH CLEARWAY.

LEGEND:

▨	LONGITUDINAL GRADE OUTSIDE ADVISORY CIRCULAR TOLERANCE
0.27% →	GRADE WITHIN ADVISORY CIRCULAR TOLERANCE
0.31% →	GRADE OUTSIDE ADVISORY CIRCULAR TOLERANCE

NOTES:

1. EXISTING SURFACE CONTOURS FROM SURVEY PERFORMED BY ALPINE ENGINEERING IN APRIL 2026.
2. TRANSVERSE GRADES SHOWN ADJACENT TO THE SHOULDER REPRESENT GRADES FROM THE EDGE OF SHOULDER PAVEMENT TO A DISTANCE 10 FT BEYOND. GRADES MUST MEET THE RESPECTIVE CRITERIA SHOWN IN SECTIONS TO THE RIGHT.
3. TRANSVERSE GRADES SHOWN WITHIN THE RSA REPRESENT GRADES FROM A DISTANCE 10 FT BEYOND THE EDGE OF SHOULDER PAVEMENT TO THE RSA LIMIT. GRADES MUST MEET THE RESPECTIVE CRITERIA SHOWN IN SECTIONS TO THE RIGHT.
4. TRANSVERSE GRADES SHOWN IN RED DENOTE AREAS WITH NONSTANDARD GRADES.
5. LONGITUDINAL GRADES FOR CONNECTOR TAXIWAYS WERE NOT THOROUGHLY INVESTIGATED AS A PART OF THIS GRADE ANALYSIS.

TAXIWAY TRANSVERSE GRADE REQUIREMENTS:

- 1.0% - 2.0% FOR FULL-STRENGTH PAVEMENT
- 4.5% - 5.5% FOR 10 FT BEYOND EDGE OF SHOULDER PAVEMENT
- 1.5% - 5.0% FOR TRANSVERSE GRADE WITHIN TSA

RUNWAY TRANSVERSE GRADE REQUIREMENTS:

- 1.0% - 2.0% FOR RUNWAY FULL-STRENGTH PAVEMENT
- 3.0% - 5.0% FOR 10 FT BEYOND EDGE OF FULL-STRENGTH PAVEMENT
- 1.5% - 5.0% FOR TRANSVERSE GRADE WITHIN RSA (SIDE SLOPE)

RUNWAY LONGITUDINAL RSA GRADE REQUIREMENTS:

- 0% - 3.0% MAXIMUM LONGITUDINAL GRADE FOR 200 FEET BEYOND RUNWAY END
- BEYOND FIRST 200 FEET, THE MAXIMUM ALLOWABLE POSITIVE LONGITUDINAL GRADE CHANGE IS SUCH THAT NO PART OF RSA PENETRATES APPROACH SURFACE OR CLEARWAY PLANE
- 5.0% MAXIMUM ALLOWABLE NEGATIVE GRADE
- ± 2.0% GRADE CHANGE LIMITATION PER 100 FEET

Fly Lansing

MISS DIG System, Inc.
1-800-482-7171
811

MASON JEWETT FIELD

RS&H

EXISTING GRADE ANALYSIS

TRANSVERSE AND LONGITUDINAL GRADE ANALYSIS

PROJECT No: 1010.5186.002
DATE: 6/12/2026
DRAWN BY/REVIEWED BY: MJD/APD

APPENDIX C

N
75' 0' 75' 150'

Appendix D

Updated ACIP Estimates of Probable Construction Cost

Airport: Mason Jewett Field

Project Description
Reconstruct Runway 10-28 Pavement (4,002 x 60')

Date: 6/10/2026
Prepared by: MJD/APD

Preliminary Opinion of Probable Construction Cost

ITEM NO.	WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Reconstruct Runway 10-28 (3,900 x 60') - Federal Portion					
C-100	Contractor Quality Control Program (CQCP)	LSUM	1	$ 116,000.00	$ 116,000.00
C-102-1	Inlet Protection	EACH	8	$ 200.00	$ 1,600.00
C-102-2	Installation and Removal of Silt fence	LFT	4,200	$ 2.00	$ 8,400.00
C-102-3	Soil Erosion and Sedimentation Control Permitting	LSUM	1	$ 9,700.00	$ 9,700.00
C-105	Mobilization and General Conditions	LSUM	1	$ 465,600.00	$ 465,600.00
G-102-1	Safety Plan Compliance Document (SPCD)	LSUM	1	$ 15,500.00	$ 15,500.00
G-102-2	Safety and Security	LSUM	1	$ 232,800.00	$ 232,800.00
P-101	Pavement Removal	SYD	34,600	$ 6.00	$ 207,600.00
P-152-1	Unclassified Excavation	CYD	15,000	$ 12.00	$ 180,000.00
P-152-2	Removal of Unsuitable/Organic Soils	CYD	1,000	$ 85.00	$ 85,000.00
P-154-1	Drainable Base Course	CYD	13,700	$ 16.00	$ 219,200.00
P-156	Cement-Treated Subgrade, Incl Cement	SYD	27,400	$ 19.00	$ 520,600.00
P-209-1	Crushed Aggregate Base Course	CYD	4,600	$ 90.00	$ 414,000.00
P-209-2	Separation Geotextile Fabric	SYD	2,800	$ 2.00	$ 5,600.00
D-705	Underdrain, perforrated	LFT	9,000	$ 22.00	$ 198,000.00
P-401	Asphalt Surface Course	TON	6,560	$ 115.00	$ 754,400.00
P-603	Emulsified Tack Coat	GAL	2,000	$ 3.00	$ 6,000.00
P-620-1	Pavement Markings with Reflective Media, White	SFT	16,700	$ 1.00	$ 16,700.00
P-620-2	Pavement Markings with Reflective Media, Yellow	SFT	700	$ 1.00	$ 700.00
P-620-3	Pavement Markings without Reflective Media, Black	SFT	5,300	$ 1.00	$ 5,300.00
P-620-4	Temporary Pavement Marking, Yellow	SFT	700	$ 1.00	$ 700.00
T-901	Seeding, Hydroseed with Fertilizer and Mulch	ACRE	5.0	$ 4,000.00	$ 20,000.00
T-905	Topsoil (Obtained off the site)	CYD	2,500	$ 28.00	$ 70,000.00
				Construction Subtotal	**$ 3,553,400.00**
				20% Contingency	$ 710,680.00
				Total Construction Cost	**$ 4,264,080.00**
Professional Services					
	Estimated Construction Administration Services	LSUM	1		$ 263,000.00
				PROJECT TOTAL (FEDERAL PORTION)	**$ 4,527,080.00**
Reconstruct Runway 10-28 (102 x 60') - Local Portion					
C-100	Contractor Quality Control Program (CQCP)	LSUM	1	$ 4,000.00	$ 4,000.00
C-102-1	Installation and Removal of Silt fence	LFT	225	$ 2.00	$ 450.00
C-102-2	Soil Erosion and Sedimentation Control Permitting	LSUM	1	$ 300.00	$ 300.00
C-105	Mobilization and General Conditions	LSUM	1	$ 14,400.00	$ 14,400.00
G-102-1	Safety Plan Compliance Document (SPCD)	LSUM	1	$ 500.00	$ 500.00
G-102-2	Safety and Security	LSUM	1	$ 7,200.00	$ 7,200.00
P-101	Pavement Removal	SYD	700	$ 6.00	$ 4,200.00
P-152-1	Unclassified Excavation	CYD	500	$ 12.00	$ 6,000.00
P-152-2	Removal of Unsuitable/Organic Soils	CYD	30	$ 85.00	$ 2,550.00
P-154	Drainable Base Course	CYD	400	$ 16.00	$ 6,400.00
P-155	Cement-Treated Subgrade, Incl Cement	SYD	690	$ 19.00	$ 13,110.00
P-209-1	Crushed Aggregate Base Course	CYD	120	$ 90.00	$ 10,800.00
P-209-2	Separation Geotextile Fabric	SYD	70	$ 2.00	$ 140.00
P-401	Asphalt Surface Course	TON	170	$ 115.00	$ 19,550.00
P-603	Emulsified Tack Coat	GAL	50	$ 3.00	$ 150.00
P-620-1	Pavement Markings with Reflective Media, White	SFT	800	$ 1.00	$ 800.00
P-620-2	Pavement Markings with Reflective Media, Yellow	SFT	30	$ 1.00	$ 30.00
P-620-3	Pavement Markings without Reflective Media, Black	SFT	200	$ 1.00	$ 200.00
T-901	Seeding, Hydroseed with Fertilizer and Mulch	ACRE	0.5	$ 4,000.00	$ 2,000.00
				Construction Subtotal	**$ 92,780.00**
				20% Contingency	$ 18,556.00
				Total Construction Cost	**$ 111,336.00**
Professional Services					
	Estimated Construction Administration Services	LSUM	1		$ 9,000.00
				PROJECT TOTAL (LOCAL PORTION)	**$ 120,336.00**

Airport: Mason Jewett Field

Project Description
Reconstruct Runway 10-28 Lighting

Date: 7/13/2026
Prepared by: MJD/APD

Preliminary Opinion of Probable Construction Cost

ITEM NO.	WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Reconstruct Runway 10-28 Lighting - Federal Portion					
C-105-5.1	Mobilization and General Conditions	LSUM	1	$ 65,000.00	$ 65,000.00
L-108-5.1	Remove Existing Cable and Conduit	LSUM	1	$ 19,800.00	$ 19,800.00
L-108-5.3	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Trench, Duct Bank or Conduit	LFT	15,700	$ 3.00	$ 47,100.00
L-108-5.4	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed above the Duct Bank or Conduit, Including Connections/Terminations	LFT	14,400	$ 2.50	$ 36,000.00
L-109-7.1	Install New Regulator in Existing Airfield Lighting Vault	LSUM	1	$ 28,000.00	$ 28,000.00
L-110-5.1	Non-Encased Electrical Conduit, 1-Way 2-Inch, PVC	LFT	14,400	$ 6.00	$ 86,400.00
L-110-5.2	Concrete Encased Electrical Duct Bank, 1-Way 2-Inch	LFT	350	$ 15.00	$ 5,250.00
L-110-5.4	Concrete Encased Electrical Duct Bank, 2-Way 4-Inch	LFT	260	$ 80.00	$ 20,800.00
L-115-5.1	Remove Existing Electrical Junction Structure	EACH	13	$ 400.00	$ 5,200.00
L-115-5.2	Aircraft Rated Concrete Handhole	EACH	4	$ 2,200.00	$ 8,800.00
L-115-5.4	L-867 Junction Can	EACH	12	$ 1,200.00	$ 14,400.00
L-125-5.1	Remove Existing Elevated Airfield Light and Foundation	EACH	82	$ 150.00	$ 12,300.00
L-125-5.2	L-861T(L) Taxiway Edge Light, Including Base, In Turf	EACH	28	$ 2,000.00	$ 56,000.00
L-125-5.3	L-860(L) Runway Edge Light, Including Base, In Turf	EACH	38	$ 2,500.00	$ 95,000.00
L-125-5.4	L-860E(L) Runway Threshold/End Light, Including Base, In Turf	EACH	12	$ 3,000.00	$ 36,000.00
L-125-5.6	L-858 Guidance Sign, Size 2, Class 2, 2 Module	EACH	6	$ 12,000.00	$ 72,000.00
L-125-5.7	L-858 Guidance Sign, Size 2, Class 2, 3 Module	EACH	4	$ 14,000.00	$ 56,000.00
L-125-5.8	Remove Airfield Guidance Sign, including Foundation	EACH	8	$ 800.00	$ 6,400.00
L-105-7.1	Maintenance of Airport Lighting Systems	LSUM	1	$ 8,000.00	$ 8,000.00
				Construction Subtotal	**$ 678,450.00**
				20% Contingency	$ 135,690.00
				Total Construction Cost	**$ 814,140.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 58,000.00	$ 58,000.00
				PROJECT TOTAL (FEDERAL PORTION)	**$ 872,140.00**
Reconstruct Runway 10-28 Lighting - Local Portion					
C-105-5.1	Mobilization and General Conditions	LSUM	1	$ 3,500.00	$ 3,500.00
L-108-5.1	Remove Existing Cable and Conduit	LSUM	1	$ 1,200.00	$ 1,200.00
L-108-5.3	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Trench, Duct Bank or Conduit	LFT	800	$ 3.00	$ 2,400.00
L-108-5.4	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed above the Duct Bank or Conduit, Including Connections/Terminations	LFT	500	$ 2.50	$ 1,250.00
L-110-5.1	Non-Encased Electrical Conduit, 1-Way 2-Inch, PVC	LFT	500	$ 6.00	$ 3,000.00
L-115-5.1	Remove Existing Electrical Junction Structure	EACH	2	$ 400.00	$ 800.00
L-115-5.2	Aircraft Rated Concrete Handhole	EACH	2	$ 2,200.00	$ 4,400.00
L-115-5.4	L-867 Junction Can	EACH	2	$ 1,200.00	$ 2,400.00
L-125-5.1	Remove Existing Elevated Airfield Light and Foundation	EACH	4	$ 150.00	$ 600.00
L-125-5.3	L-860(L) Runway Edge Light, Including Base, In Turf	EACH	4	$ 2,500.00	$ 10,000.00
				Construction Subtotal	**$ 29,550.00**
				20% Contingency	$ 5,910.00
				Total Construction Cost	**$ 35,460.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 4,000.00	$ 4,000.00
				PROJECT TOTAL (LOCAL PORTION)	**$ 39,460.00**

Airport: Mason Jewett Field

RS&H

Project Description
Reconstruct Taxiway B Pavement (4,002 x 60)

Date: 6/10/2026
Prepared by: MJD/APD

Preliminary Opinion of Probable Construction Cost

ITEM NO.	WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Reconstruct Taxiway B (3,900 x 25') - Federal Portion					
C-100	Contractor Quality Control Program (CQCP)	LSUM	1	$ 45,000.00	$ 45,000.00
C-102-1	Inlet Protection	EACH	5	$ 200.00	$ 1,000.00
C-102-2	Installation and Removal of Silt fence	LFT	2,000	$ 2.00	$ 4,000.00
C-102-3	Soil Erosion and Sedimentation Control Permitting	LSUM	1	$ 5,000.00	$ 5,000.00
C-105	Mobilization and General Conditions	LSUM	1	$ 160,000.00	$ 160,000.00
G-102-1	Safety Plan Compliance Document (SPCD)	LSUM	1	$ 8,000.00	$ 8,000.00
G-102-2	Safety and Security	LSUM	1	$ 80,000.00	$ 80,000.00
P-101	Pavement Removal	SYD	19,550	$ 7.00	$ 136,850.00
P-152-1	Unclassified Excavation	CYD	6,300	$ 12.00	$ 75,600.00
P-152-2	Removal of Unsuitable/Organic Soils	CYD	5,000	$ 80.00	$ 400,000.00
P-155	Cement-Treated Subgrade, Incl Cement	SYD	15,700	$ 19.00	$ 298,300.00
P-209-1	Crushed Aggregate Base Course	CYD	2,700	$ 90.00	$ 243,000.00
P-209-2	Separation Geotextile Fabric	SYD	1,600	$ 2.00	$ 3,200.00
D-705	Underdrain, perforated	LFT	8,000	$ 22.00	$ 176,000.00
P-401	Asphalt Surface Course	TON	3,800	$ 120.00	$ 456,000.00
P-603	Emulsified Tack Coat	GAL	1,100	$ 3.00	$ 3,300.00
P-620-1	Pavement Markings with Reflective Media, Yellow	SFT	5,800	$ 1.00	$ 5,800.00
P-620-2	Pavement Markings without Reflective Media, Black	SFT	750	$ 1.00	$ 750.00
P-620-3	Temporary Pavement Markings	SFT	6,500	$ 1.00	$ 6,500.00
T-901	Seeding, Hydroseed with Fertilizer and Mulch	ACRE	6.5	$ 4,000.00	$ 26,000.00
T-905	Topsoil (Obtained off the site)	CYD	1,000	$ 28.00	$ 28,000.00
				Construction Subtotal	**$ 2,162,300.00**
				20% Contingency	$ 432,460.00
				Total Construction Cost	**$ 2,594,760.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 180,000.00	$ 180,000.00
				PROJECT TOTAL (FEDERAL PORTION)	**$ 2,774,760.00**
Reconstruct Taxiway B (102 x 25') - Local Portion					
C-100	Contractor Quality Control Program (CQCP)	LSUM	1	$ 45,000.00	$ 45,000.00
C-102-1	Installation and Removal of Silt fence	LFT	500	$ 2.00	$ 1,000.00
C-102-2	Soil Erosion and Sedimentation Control Permitting	LSUM	1	$ 5,000.00	$ 5,000.00
C-105	Mobilization and General Conditions	LSUM	1	$ 160,000.00	$ 160,000.00
G-102-1	Safety Plan Compliance Document (SPCD)	LSUM	1	$ 8,000.00	$ 8,000.00
G-102-2	Safety and Security	LSUM	1	$ 80,000.00	$ 80,000.00
P-101	Pavement Removal	SYD	820	$ 7.00	$ 5,740.00
P-152-1	Unclassified Excavation	CYD	230	$ 12.00	$ 2,760.00
P-152-2	Removal of Unsuitable/Organic Soils	CYD	280	$ 80.00	$ 22,400.00
P-155	Cement-Treated Subgrade, Incl Cement	SYD	810	$ 19.00	$ 15,397.00
P-209-1	Crushed Aggregate Base Course	CYD	135	$ 90.00	$ 12,155.00
P-209-2	Separation Geotextile Fabric	SYD	90	$ 2.00	$ 180.00
P-401	Asphalt Surface Course	TON	200	$ 120.00	$ 24,000.00
P-603	Emulsified Tack Coat	GAL	60	$ 3.00	$ 180.00
P-620-1	Pavement Markings with Reflective Media, Yellow	SFT	300	$ 1.00	$ 300.00
P-620-2	Pavement Markings without Reflective Media, Black	SFT	50	$ 1.00	$ 50.00
P-620-3	Temporary Pavement Markings	SFT	500	$ 1.00	$ 500.00
T-901	Seeding, Hydroseed with Fertilizer and Mulch	ACRE	1.0	$ 4,000.00	$ 4,000.00
T-905	Topsoil (Obtained off the site)	CYD	100	$ 28.00	$ 2,800.00
				Construction Subtotal	**$ 389,462.00**
				20% Contingency	$ 77,892.00
				Total Construction Cost	**$ 467,354.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 32,000.00	$ 32,000.00
				PROJECT TOTAL (LOCAL PORTION)	**$ 499,354.00**

Airport: Mason Jewett Field

Project Description
Reconstruct Taxiway B Lighting

Date: 6/10/2026
Prepared by: MJD/APD

Preliminary Opinion of Probable Construction Cost

ITEM NO.	WORK ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Reconstruct Taxiway B Lighting - Federal Portion					
C-105-5.1	Mobilization and General Conditions	LSUM	1	$ 74,000.00	$ 74,000.00
L-108-5.1	Remove Existing Cable and Conduit	LSUM	1	$ 16,500.00	$ 16,500.00
L-108-5.3	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Trench, Duct Bank or Conduit	LFT	8,500	$ 3.00	$ 25,500.00
L-108-5.4	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed above the Duct Bank or Conduit, Including Connections/Terminations	LFT	8,300	$ 2.50	$ 20,750.00
L-109-7.1	Install New Regulator in Existing Airfield Lighting Vault	LSUM	1	$ 26,000.00	$ 26,000.00
L-110-5.1	Non-Encased Electrical Conduit, 1-Way 2-Inch, PVC	LFT	8,300	$ 6.00	$ 49,800.00
L-110-5.2	Concrete Encased Electrical Duct Bank, 1-Way 2-Inch	LFT	600	$ 60.00	$ 36,000.00
L-110-5.4	Concrete Encased Electrical Duct Bank, 2-Way 4-Inch	LFT	300	$ 80.00	$ 24,000.00
L-115-5.1	Remove Existing Electrical Junction Structure	EACH	16	$ 400.00	$ 6,400.00
L-115-5.2	Aircraft Rated Concrete Handhole	EACH	8	$ 2,200.00	$ 17,600.00
L-115-5.4	L-867 Junction Can	EACH	20	$ 1,200.00	$ 24,000.00
L-125-5.3	Remove Existing Elevated Edge Light and Foundation	EACH	132	$ 150.00	$ 19,800.00
L-125-5.4	L-861T(L) Taxiway Edge Light, Including Base, In Turf	EACH	130	$ 2,000.00	$ 260,000.00
L-125-5.6	L-853 Taxiway Retro-Reflective Marker	EACH	48	$ 300.00	$ 14,400.00
L-125-5.7	L-858 Guidance Sign, Size 2, Class 2, 2 Module	EACH	7	$ 12,000.00	$ 84,000.00
L-125-5.8	L-858 Guidance Sign, Size 2, Class 2, 3 Module	EACH	2	$ 14,000.00	$ 28,000.00
L-125-5.10	L-858 Guidance Sign, Unlighted	EACH	6	$ 1,500.00	$ 9,000.00
L-125-5.9	Remove Airfield Guidance Sign, including Foundation	EACH	8	$ 800.00	$ 6,400.00
L-105-7.1	Maintenance of Airport Lighting Systems	LSUM	1	$ 14,000.00	$ 14,000.00
				Construction Subtotal	**$ 756,150.00**
				20% Contingency	$ 151,230.00
				Total Construction Cost	**$ 907,380.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 65,000.00	$ 65,000.00
				PROJECT TOTAL (FEDERAL PORTION)	**$ 972,380.00**
Reconstruct Taxiway B Lighting - Local Portion					
C-105-5.1	Mobilization and General Conditions	LSUM	1	$ 4,000.00	$ 4,000.00
L-108-5.1	Remove Existing Cable and Conduit	LSUM	1	$ 1,000.00	$ 1,000.00
L-108-5.3	No. 8 AWG, 5 kV, L-824, Type C Cable, Installed in Trench, Duct Bank or Conduit	LFT	800	$ 3.00	$ 2,400.00
L-108-5.4	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed above the Duct Bank or Conduit, Including Connections/Terminations	LFT	500	$ 2.50	$ 1,250.00
L-110-5.1	Non-Encased Electrical Conduit, 1-Way 2-Inch, PVC	LFT	500	$ 6.00	$ 3,000.00
L-115-5.1	Remove Existing Electrical Junction Structure	EACH	4	$ 400.00	$ 1,600.00
L-115-5.4	L-867 Junction Can	EACH	2	$ 1,200.00	$ 2,400.00
L-125-5.3	Remove Existing Elevated Edge Light and Foundation	EACH	4	$ 150.00	$ 600.00
L-125-5.4	L-861T(L) Taxiway Edge Light, Including Base, In Turf	EACH	4	$ 2,000.00	$ 8,000.00
L-125-5.7	L-858 Guidance Sign, Size 2, Class 2, 2 Module	EACH	2	$ 12,000.00	$ 24,000.00
				Construction Subtotal	**$ 48,250.00**
				20% Contingency	$ 9,650.00
				Total Construction Cost	**$ 57,900.00**
Professional Services					
Estimated Construction Administration Services		LSUM	1	$ 5,000.00	$ 5,000.00
				PROJECT TOTAL (LOCAL PORTION)	**$ 62,900.00**