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ANDREA ALLEN
UTAH COUNTY RECORDER
2025 May 22 02:01 PM FEE 0.00 BY KR
RECORDED FOR LEHI CITY

When recorded, mail to:

Moto United
405 Millpond Drive
Lehi, UT, 84043

Affects Parcel No(s): Parcel #s 47:368:0002 and 47:368:0003

STORMWATER SYSTEM OPERATIONS AND MAINTENANCE AGREEMENT

This Long-Term Stormwater Management Agreement ("Agreement") is made and entered into this 23RD day of APRIL, 20 25, by and between Lehi City, a Utah municipal corporation ("City"), and SMITH PAYNE INVESTMENTS, LLC, a UTAH LIMITED LIABILITY CORPORATION ("Owner").

RECITALS

WHEREAS, the City is authorized and required to regulate and control the disposition of storm and surface waters within the MS4, as set forth in the Lehi City Stormwater Ordinance, as amended ("Ordinance"), adopted pursuant to the Utah Water Quality Act, as set forth in *Utah Code Ann.* §§ 19-5-101, *et seq.*, as amended ("Act"); and

WHEREAS, the Owner hereby represents and acknowledges that it is the owner in fee simple of certain real property more particularly described in Exhibit "A," attached hereto and incorporated herein by this reference ("Property"); and

WHEREAS, the Owner desires to build or develop the Property and/or to conduct certain regulated construction activities on the Property which will alter existing storm and surface water conditions on the Property and/or adjacent lands; and

WHEREAS, in order to accommodate and regulate these anticipated changes in existing storm and surface water flow conditions, the Owner is required to build and maintain at Owner's expense a storm and surface water management facility or improvements ("Stormwater Facilities"); and

WHEREAS, the Stormwater Facilities are more particularly described and shown in the final site plan or subdivision approved for the Property and related engineering

drawings, and any amendments thereto, which plans and drawings are on file with the City and are hereby incorporated herein by this reference ("Development Plan"); and

WHEREAS, summary description of all Stormwater Facilities, details and all appurtenance draining to and affecting the Stormwater Facilities and establishing the standard operation and routine maintenance procedures for the Stormwater Facilities, and control measures installed on the Property, ("Stormwater System Operations and Maintenance Plan") more particularly shown in Exhibit "B" on file with the City Recorder and,

WHEREAS, a condition of Development Plan approval, and as required as part of the City's Small MS4 UPDES General Permit from the State of Utah, Owner is required to enter into this Agreement establishing a means of documenting the execution of the Stormwater System Operations and Maintenance Plan and,

NOW, THEREFORE, in consideration of the benefits received and to be received by the Owner, its successors and assigns, as a result of the City's approval of the Stormwater System Operations and Maintenance Plan, and the mutual covenants contained herein, the parties agree as follows:

AGREEMENT

Section 1

Construction of Stormwater Facilities. The Owner shall, at its sole cost and expense, construct the Stormwater Facilities in accordance with the Development Plans and specifications, and any amendments thereto which have been approved by the City.

Section 2

Maintenance of Stormwater Facilities. The Owner shall, at its sole cost and expense, adequately maintain the Stormwater Facilities. Owner's maintenance obligations shall include all system and appurtenance built to convey stormwater, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance, for purposes of this Agreement, is defined as good working condition so that the Stormwater Facilities are performing their design functions. The Owner shall, at its sole cost and expense, perform all work necessary to keep the Stormwater Facilities in good working condition.

Section 3

Annual Maintenance Report of Stormwater Facilities. The Owner shall, at its sole cost and expense, inspect the Stormwater Facilities and submit an inspection report and certification to the MS4 annually. The purpose of the inspection and certification is to assure safe and proper functioning of the Stormwater Facilities. The annual inspection shall cover all aspects of the Stormwater Facilities, including, but not limited to, the parking lots, structural improvements, berms, channels, outlet structure, pond areas,

access roads, vegetation, landscaping, etc. Deficiencies shall be noted in the inspection report. The report shall also contain a certification as to whether adequate maintenance has been performed and whether the structural controls are operating as designed to protect water quality. The annual inspection report and certification shall be due by June 30th of each year and shall be on forms acceptable to the City.

Section 4

Access and Inspections. The Owner hereby grants permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the Stormwater Facilities upon reasonable notice not less than three business days to the Owner. Such inspections shall be conducted in a reasonable manner and at reasonable times, as determined appropriate by the City. The purpose of the inspection shall be to determine and ensure that the Stormwater Facilities are being adequately maintained, are continuing to perform in an adequate manner, and are in compliance with the Act, the Ordinance, and the Stormwater Facilities Maintenance Plan.

Section 5

Notice of Deficiencies. If the City finds that the Stormwater Facilities contain any defects or are not being maintained adequately, the City shall send Owner written notice of the defects or deficiencies and provide Owner with a reasonable time. Such notice shall be confirmed delivery to the Owner or sent certified mail to the Owner at the address listed on the County Tax Assessor.

Section 6

Owner to Make Repairs. The Owner shall, at its sole cost and expense, make such repairs, changes or modifications to the Stormwater Facilities as may be determined as reasonably necessary by the City within a risk specific determined cure period to ensure that the Stormwater Facilities are adequately maintained and continue to operate as designed and approved. The Owner acknowledges any damage resulting from such defects and deficiencies is their cost liability.

Section 7

City's Corrective Action Authority. In the event the Owner fails to adequately maintain the Stormwater Facilities in good working condition acceptable to the City, after due notice of deficiencies as provided in Section 5 and failure to cure, then, upon Owner's failure to cure or correct within thirty days following a second notice delivered to Owner, the City may issue a Citation punishable as a Misdemeanor in addition to any State or EPA fine. The City may also give written notice that the facility storm drain connection will be disconnected. Any damage resulting from the disconnection is subject to the foregoing cure periods. It is expressly understood and agreed that the City is under no obligation to maintain or repair the Stormwater Facilities, and in no event shall this Agreement be construed to impose any such obligation on the City. The actions described in this Section are in addition to and not in lieu of any and all equitable remedies available to the City as provided by law for Owner's failure to remedy deficiencies or any other failure to perform under the terms and conditions of this Agreement.

Section 8

Reimbursement of Costs. In the event the City, pursuant to this Agreement, incurs any costs, or expends any funds resulting from enforcement or cost for labor, use of equipment, supplies, materials, and the like related to storm drain disconnection from the City system, the Owner shall reimburse the City upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the City. After said thirty (30) days, such amount shall be deemed delinquent and shall be subject to interest at the rate of ten percent (10%) per annum. Owner shall also be liable for any collection costs, including attorneys' fees and court costs, incurred by the City in collection of delinquent payments.

Section 9

Successor and Assigns. This Agreement shall be recorded in the County Recorder's Office and the covenants and agreements contained herein shall run with the land and whenever the Property shall be held, sold, conveyed or otherwise transferred, it shall be subject to the covenants, stipulations, agreements and provisions of this Agreement which shall apply to, bind and be obligatory upon the Owner hereto, its successors and assigns, and shall bind all present and subsequent owners of the Property described herein.

Section 10

Severability Clause. The provisions of this Agreement shall be severable and if any phrase, clause, sentence or provision is declared unconstitutional, or the applicability thereof to the Owner, its successors and assigns, is held invalid, the remainder of this Covenant shall not be affected thereby.

Section 11

Utah Law and Venue. This Agreement shall be interpreted under the laws of the State of Utah. Any and all suits for any claims or for any and every breach or dispute arising out of this Agreement shall be maintained in the appropriate court of competent jurisdiction in Salt Lake County, Utah.

Section 12

Indemnification. This Agreement imposes no liability of any kind whatsoever on the City, and the Owner agrees to hold the City harmless from any liability in the event the Stormwater Facilities fail to operate properly. The Owner shall indemnify and hold the City harmless for any and all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against the City from failure of Owner to comply with its obligations under this agreement relating to the Stormwater Facilities.

Section 13

Amendments. This Agreement shall not be modified except by written instrument executed by the City and the Owner of the Property at the time of modification, and no modification shall be effective until recorded in the Salt Lake County Recorder's Office.

Section 14

Subordination Requirement. If there is a lien, trust deed or other property interest recorded against the Property, the trustee, lien holder, etc., shall be required to execute a subordination agreement or other acceptable recorded document agreeing to subordinate their interest to the Agreement.

Section 15

Exhibit B. The Stormwater Operations and Maintenance Plan must adapt to change in good judgment when site conditions and operations change and when existing programs are ineffective. Exhibit B will not be filed with the agreement at County Recorder but is included by reference and kept on file with the City Recorder. Revision applications must be filed with the [INSERT MUNICIPALITY] and amended into the Stormwater System Operations and Maintenance Plan on file with the [INSERT MUNICIPALITY] City recorder.

STORMWATER SYSTEM OPERATIONS AND MAINTENANCE AGREEMENT

PROPERTY OWNER

By: _____ Title: 04/23/25
Aaron Smith

By: _____ Title: _____

STATE OF UTAH)
:ss.
COUNTY OF Washington)

The above instrument was acknowledged before me by Aaron Smith, this 23rd day of April, 2025.

Alyssa Crenshaw
Notary Public
Residing in: St. George
My commission expires: 6.10.2028

ALYSSA CRENSHAW
NOTARY PUBLIC • STATE OF UTAH
COMMISSION NO. 737615
COMM. EXP. 06/10/2028

Lehi **CITY**

By: _____ Date: 5/5/25
Mayor Johnson

Attest: Teresa Wilson
City Recorder

CORPORATE SEAL OF LEHI CITY
STATE OF UTAH

STATE OF UTAH)
:ss.
COUNTY OF Utah)

The above instrument was acknowledged before me by Mark Johnson, this 5 day of May, 2025.

Sherrie Benson
Notary Public
Residing in: Utah County
My commission expires: May 15, 2027
Attachments:

SHERRIE BENSON
NOTARY PUBLIC-STATE OF UTAH
My Commission Expires May 15, 2027
COMMISSION NUMBER 731175

Exhibit A: Legal Description
Exhibit B: Stormwater System Operations and Maintenance Plan; Filed with Lehi City Recorder

EXHIBIT A

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Parcel #s 47:368:0002 and 47:368:0003
LOTS 2 AND 3
New Star Commercial Development Subdivision
Located in the Northeast Quarter and Southeast Quarter of Section 16 and the Southwest Quarter of section 15, Township 5 South, Range 1 East, Salt Lake Base & Meridian

EXHIBIT B

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Stormwater System Operation and Maintenance Plan
for:

Moto United
405 Millpond Drive
Lehi, UT, 84043

Owner:

Moto United
4646 South Desert Color Parkway Building #2
St. George, UT, 84790
907-398-3852

Maintenance Contact:

Shawn Hutchings
4646 South Desert Color Parkway Building #2
St. George, UT, 84790
907-398-3852
shawn@motounited.com

PURPOSE AND RESPONPONSIBILITY

The Clean Water Act regulates development to protect water resources. The resulting Lehi City Municipal Separate Storm Sewer Systems (MS4) Permit regulates development to design with water quality approaches and to show that maintenance adequately contains and controls pollution generated on the property.

The Utah Stormwater Advisory Committee, formed to support the Utah Department of Environmental Quality, Division of Water Quality CWA obligations, recommends the Stormwater System Operations and Maintenance Plan program to achieve the MS4 obligations and to foster uniformity across municipalities.

The Stormwater System Operations and Maintenance Plan, prepared by the designers of this property, is intended to help site staff and service contractors understand the property's flood and water quality control system and why adequate maintenance is necessary for sufficient flood control protection and to prevent pollutants in the runoff from affecting the environment. Ultimately, good maintenance helps improve the quality of life in the communities where we live and visit.

This Stormwater System Operation and Maintenance Plan describes the systems, operations, and minimum operating procedures necessary to manage pollutants on this property. Any activities or site operations on this property that contaminate water entering the City's stormwater system or groundwater and results in loose litter must be prohibited.

This Stormwater System Operation and Maintenance Plan is aimed at preventing the Spring Creek, Jordan River, and Utah Lake impairments.

Spring Creek Impairments:

- E. coli
- Temperature
- Dissolved Oxygen

Jordan River Impairments:

- Total Dissolved Solids (TDS)
- Arsenic

Utah Lake Impairments

- Eutrophication
- PCBs in Fish Tissue

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- E. coli
- Harmful Algal Blooms
- Phosphorus
- Total Dissolved Solids (TDS)

Contents

SECTION 1: SITE DESCRIPTION, USE, AND IMPACT

By living in urban communities, every property has runoff that can potentially affect the quality of water that drains to waterways and the ground. To manage flooding, control water pollution, and manage cost, it is vital we understand how our flood and water quality system works.

Our site infrastructure is limited at controlling and containing pollutants. If our property and operations are managed improperly, we will contaminate local water resources. This Stormwater System Operation and Maintenance Plan includes standard operating procedures intended to help us responsibly manage our grounds. Standard Operating Procedures are filed in Appendix B.

Parking, Sidewalk, and Flatwork

Any sediment, leaves, debris, spilt fluids, or other waste that collects on our parking areas, sidewalks, and other pavements will be carried by runoff to our flood and water quality control system. Any solids will fill in our system, requiring removal and cleaning. Any solid material, dissolved solids, and liquids mixed with runoff can contaminate surface water and potentially groundwater, for which we are responsible. Maintenance involves regular sweeping, but it can also involve pavement washing to remove stains, slick spots, and improve appearance when necessary. The Pavement Maintenance and the Pavement Washing SOPs are used to manage the pollutants associated with our pavements.

Landscaping

Our landscape operations can result in grass clippings, sticks, branches, dirt, mulch, fertilizers, herbicides, and pesticides collecting on our paved areas. When left on pavements, these solids will fill in our flood and water quality system, requiring removal and cleaning. Any dissolved solids and liquids mixed with runoff can contaminate surface water and potentially groundwater, for which we are responsible. The primary pollutant impairing the Jordan River is organic material so it is vital that the paved areas with direct connection to the City storm drain systems remain clean of landscape debris. The Landscape Maintenance SOP is written to control and manage this potential pollution source affecting the Jordan River.

Flood and Water Quality Control System

Our flood and water quality control system collects runoff directly from pavements with inlets and pipes. The pipes carry runoff and anything washed off our pavement directly to our manufactured treatment device and to our underground chamber retention/detention system designed to retain and infiltrate the first 0.5 inches of runoff. Our manufactured treatment device is a ADS Stormtech Chamber System (or approved equal) and only captures sediments and floating material. Pollution that dissolves in water is not treated and anything else that can bypass runoff events will drain into the ground. The runoff in excess of the retention volume is released to the Lehi City System at 1.14 cfs. The entire system is designed to manage the peak volume runoff for the 100-year storm event.

Treating and infiltrating runoff from our property is required by the Clean Water Act and is intended to protect streams, rivers, and groundwater. It is important that we regularly maintain our system and diligently follow our standard operating procedures to manage and prevent pollution with potential to dissolve and mix with runoff, damaging surface and subsurface water resources, for which we are responsible.

Also, anything we allow to reach our surface low impact system, manufactured treatment device, and underground chamber system will fill it with sediment and debris, increasing maintenance costs. It is important to follow our standard operating procedures to help manage site maintenance costs and ensure our system is working properly.

Waste Management

Good waste management systems, if managed improperly, can become the source of the very pollution it was intended to manage. Closing the lids of our dumpsters and trash receptacles is necessary to prevent lightweight trash from being carried off by wind, and precipitation exposure causing liquids to leak to our pavement and from haul trucks. In addition, our dumpster pad slopes toward our pavement and any leaks can leach into runoff, staining our pavement, increasing odors, and increasing the risk to water resources. The Waste Management SOP is written to control and manage the waste we generate.

Utility System

Our roof top utility system is exposed to our roof drains which drain to our pavements. This heating and air conditioner unit contains oils and other chemicals that can harm surface water and groundwater if allowed to reach our flood and water quality system. Liquids and other waste generated by maintenance of this system can be appropriately managed by the Spill Containment and Cleanup SOP.

Snow and Ice Removal Management

Salt is a necessary pollutant and is vital to ensuring safe parking lots and pedestrian walkways. However, salt and other ice management chemicals, when improperly managed, will unnecessarily increase our salt impact on our own vegetation and local water resources. In addition, we need to minimize salt to maintain healthy root systems needed for optimum infiltration rates.

Equipment / Outside Storage

Not applicable for this property and business.

SECTION 2: TRAINING

Ensure that all employees and maintenance contractors know and understand the standard operating procedures specifically written to manage and maintain the property. Maintenance contractors must use the stronger of their company and the Stormwater System Operations and Maintenance Plan standard operating procedures. File all training records in Appendix C.

SECTION 3: RECORDKEEPING

Maintain records of operation and maintenance activities in accordance with standard operating procedures. Mail a copy of the record to Lehi City annually.

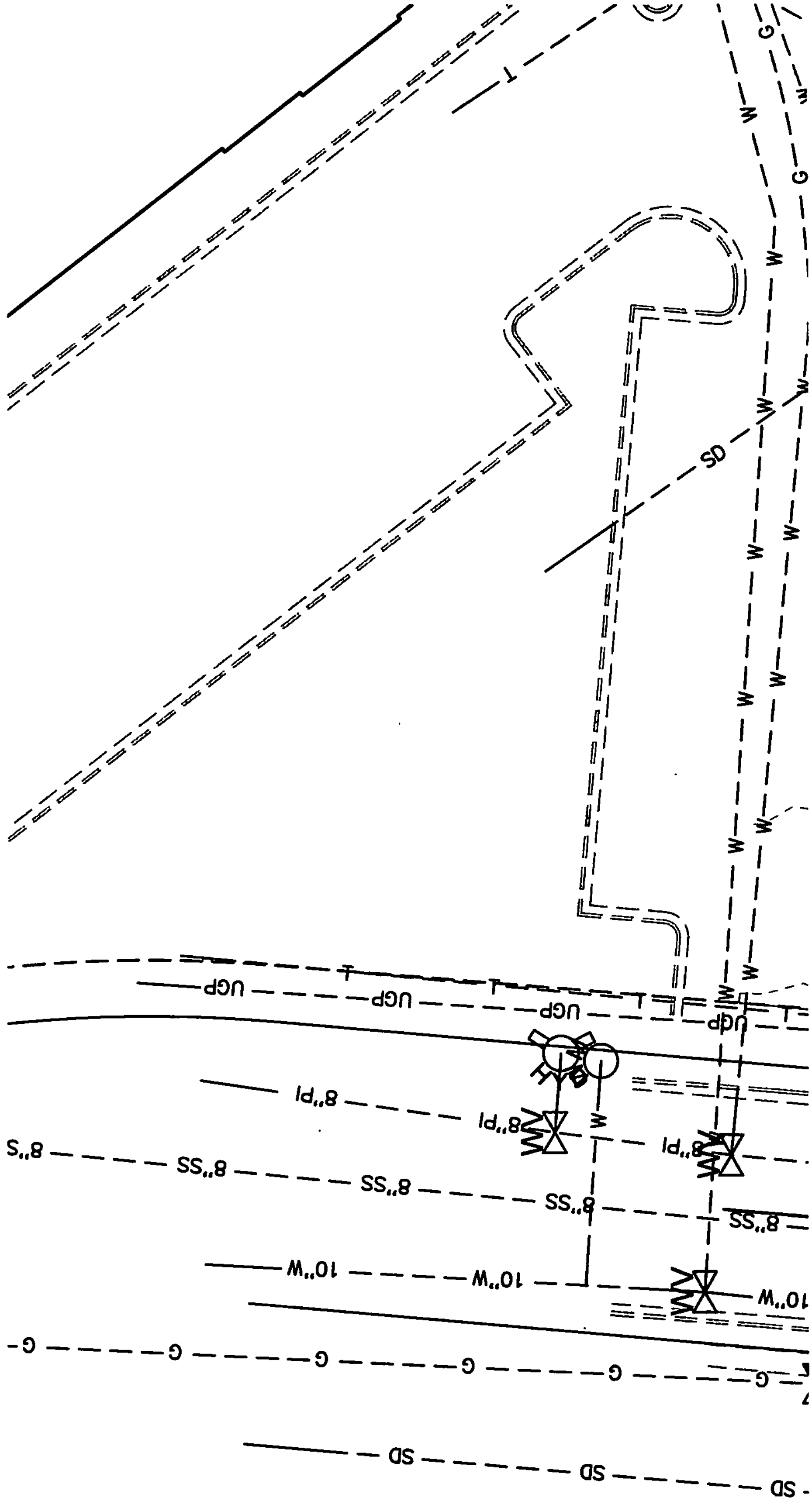
Mailing Address:
Lehi City Stormwater Division
2538 North 300 West
Lehi, Utah 84043

Email Address:
lehicitystormwater@gmail.com

SECTION 4: APPENDICES

Appendix A-Site Drawings and Details
Appendix B-SOPs
Appendix C-Recordkeeping Documents
Appendix D-Drainage and Geotechnical Reports, UIC Registration

APPENDIX A – SITE DRAWINGS AND DETAILS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PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

FOR
INSTALLATI
VIS

MOTO UNITED

LEHI, UT, USA

MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12 12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3"
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/% THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
10. MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE. DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
11. ADS DOES NOT DESIGN OR PROVIDE MEMBRANE LINER SYSTEMS. TO MINIMIZE THE LEAKAGE POTENTIAL OF LINER SYSTEMS, THE MEMBRANE LINER SYSTEM SHOULD BE DESIGNED BY A KNOWLEDGEABLE GEOTEXTILE PROFESSIONAL AND INSTALLED BY A QUALIFIED CONTRACTOR.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF M

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S PRE-CONSTRUCTION MEETING WITH THE INSTALLERS
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORI
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVE STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVAT
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMI
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAM
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR S 467, 5, 56, OR 57.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMB
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MAT ENGINEER
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORI
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED.
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PF WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTEC
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED F

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUS BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE WARRANTY.

CONTACT STORMTECH AT 1-800-821-6710 WITH ANY QUESTIONS ON INSTALLATION REQUIREMEN

APPENDIX B -SOPS

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PAVEMENT SWEEPING

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General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) One of the primary contaminants in Spring Creek, Utah Lake, and the Jordan River is organic material.
   b) Any sediment, leaves, debris, spilt fluids, or other waste that collects on our parking areas and sidewalks will fill in our underground retention/detention infiltration system, increasing our maintenance costs. Removing these debris after they have washed to our flood and water quality system is very expensive.
2. Regular Procedure:
   a) Remain aware of minor sediment/debris and sweep or remove this material by other means as needed. Significant deposits will likely collect in autumn with leaf fall and early spring after winter thaw. Sweeping machinery is usually the best tool for this application.
   b) Regularly manage outside activities that spread fugitive debris on our pavements. This involves outside functions including but not limited to yard sales, yard storage, fund raisers, etc.
   c) Do not allow car wash fund raisers or other related activities. Detergents will damage water resources and washed pollutants will fill our storm drain system and drain into the ground, which we are responsible for.
3. Disposal Procedure:
   a) Dispose of hand collected material in dumpster.
   b) Use licensed facilities when haul off is necessary.
4. Training:
   a) Annually and at hire
   b) Inform staff and service contractors when incorrect SOP implementation is observed.

LANDSCAPE MAINTENANCE

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) One of the primary contaminants in Spring Creek, Utah Lake, and the Jordan River is organic material.
   b) Grass clippings, sticks, branches, dirt, mulch, fertilizers, pesticides, and other pollutants will fill our underground retention/detention infiltration system, increasing our maintenance costs. Removing these debris after they have washed to our flood and water quality system is very expensive.
2. Maintenance Procedure:
   a) Maintain healthy vegetation root systems. Healthy root systems will help improve permeable soils, maintaining more desirable infiltration rates in the landscape areas receiving runoff from our pavements.
   b) Grooming
      - Lawn Mowing – Immediately following operations, sweep or blow clippings onto vegetated ground.
      - Fertilizer Operations – Prevent overspray. Sweep or blow granular fertilizer onto vegetated ground immediately following operations.
      - Herbicide Operations – Prevent overspray. Sweep or blow granular herbicide onto vegetated ground immediately following operations.
      - Trash and Debris – Remove trash and debris that have collected within landscaping.
   c) Remove or contain all erodible or loose material prior to forecasted wind and precipitation events, before any non-stormwater will pass through the property, and at the end of the work period. Lightweight debris and landscape materials can require immediate attention when wind or rain is expected.
   d) Landscaping materials and waste can usually be contained or controlled by operational best management practices.
      - Operational; including but not limited to:
        - Strategic staging of materials to eliminate exposure, such as not staging on pavement.
        - Avoiding multiple day staging of landscaping backfill and spoil on pavements.

- ➢ Haul off spoil as generated daily.
- ➢ Scheduling work when weather forecasts are clear.

e) Cleanup:

- Use dry cleanup methods, e.g., square nosed shovel and broom. Conditions are usually sufficient when no more material can be swept onto the square nosed shovel.
- Power blowing tools.

3. Waste Disposal:
   a) Dispose of waste according to General Waste Management SOP, unless superseded by specific SOPs for the operation.
4. Equipment:
   a) Tools sufficient for proper containment and removal of pollutants.
5. Training:
   a) Annually and at hire.
   b) Inform staff and service contractors when incorrect SOP implementation is observed.
   c) Landscape Service Contractors must use equal or better SOPs.

WASTE MANAGEMENT

General:
This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Trash can easily blow out of dumpsters and trash receptacles.
   b) Liquids in our dumpsters can leak from our dumpsters as well as haul trucks, polluting waterways and subsurface soils, staining pavements, and increasing odors.
2. Procedure:
   a) Remain aware of the lids and keep them closed.
   b) Remain aware of and repair leaks. Minimize allowing disposal of liquids in our receptacles and dumpsters.
   c) Be aware of dumpster capacity and solve capacity issues. Leaving bags outside of dumpsters is not acceptable.
3. Waste Disposal Restrictions for all Waste Scheduled for the North Pointe Solid Waste landfill:
   a) Generally, most waste generated at this property, and waste from all spill cleanup operations can be disposed of in our dumpsters under the conditions listed in this SOP, unless specific disposal requirements are identified by the product SDS or otherwise specified in other SOPs.
   b) Know the facility disposal requirements and restrictions. It should not be assumed that all waste disposed of in collection devices will be disposed of at the North Pointe Solid Waste landfill.
   c) Review the North Pointe Solid Waste landfill regulations for additional restrictions and understand what waste is prohibited in the North Pointe Solid Waste landfill. Ensure the SDS and North Pointe Solid Waste landfill regulations are not contradictory. Generally, the North Pointe Solid Waste landfill regulations are:
      - Electronic waste, mattresses, dead animals, batteries, and refrigerators or appliances containing refrigerant should not be placed in trash receptacles or dumpsters but will be accepted at the transfer station. See the North Point Solid Waste Special Service District website for more information.
      - Household hazardous waste (HHW) is accepted on a limited basis. See the North Pointe Solid Waste Special Service District website for more information.

d) North Pointe Solid Waste Special Service District
   - Address: 2000 W 200 S, Lindon UT 84042
   - Phone Number: 801-225-8538
   - Website: https://www.utahcountygarbage.org/

4. Training:
   a) Annually and at hire.
   b) Inform staff and service contractors when incorrect SOP implementation is observed.

FLOOD AND WATER QUALITY SYSTEM

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Our flood and water quality system will collect anything we leave in the way of runoff, which will fill in our underground retention/detention infiltration system, increasing maintenance costs. Removing these debris after they have washed to our flood and water quality system is very expensive.
   b) Any liquids or dissolved pollutants can increase the risk of contaminating groundwater, for which we are responsible.
   c) During very intense storm events, pollutants in excess runoff can bypass our system, increasing the risk of contaminating groundwater and surface waters.
2. Inspections:
   a) Inspect underground retention/detention infiltration system for liquid or solid pollutants that can pollute subsurface soils. There is no vegetation and less soil biology in these systems to break down harmful chemicals, so extra measures need to be taken to prevent them from entering the system. Find the sources of these pollutants and prevent them from entering the system.
   b) Inspect underground retention/detention infiltration system for sediment and debris accumulations. Remove sediment and debris accumulation when volume capacities drop below 90%. Removal will require hydro-vacuum machinery.
   c) Inspect flood design and retention system high water levels following significant storm events. The retention and detention depths should not exceed the depths shown on the plans for the respective storm event volumes. Contact an engineer when high water depths shown within plans are not consistent with the storm event.
   d) Inspect surface water ponding. Water should not remain for more than 48 hours. Contact an engineer when the system is not draining. We should reduce site irrigation overspray as this could keep our pond wet all the time.
3. Disposal Procedure:
   a) Remove and dispose of sediment and debris at licensed facilities. Also, dry waste can be disposed of in your dumpster as permitted by the North Pointe Solid Waste landfill.
   b) Disposal of hazardous waste:

- Dispose of hazardous waste at regulated disposal facilities. Follow SDS Sheets. Also see Waste Management and Spill Control SOPs.

4. Training:
   a) Annually and at hire.
   b) Inform staff and service contractors when incorrect SOP implementation is observed.

PAVEMENT WASHING

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Pavement washing involving detergents can potentially contaminate groundwater with phosphates and with whatever we are washing from pavements.
   b) Pavement washing can fill our underground retention/detention infiltration system, increasing our maintenance costs. Removing these debris after they have washed to our flood and water quality system is very expensive.
2. Procedure:
   a) Prevent waste fluids and any detergents, if used, from entering storm drain system. The following methods are acceptable for these operations:
      - Dam the inlet using a boom material that seals itself to the pavement and pick up the wastewater with shop-vacuum or absorbent materials.
      - Collect wastewater with shop-vacuum simultaneous with the washing operations.
      - Collect wastewater with vacuum truck or trailer simultaneous with the washing operation.
   b) This procedure must not be used to clean the initial spills. First apply the Spill Containment and Cleanup SOP, followed by pavement washing when desired or necessary.
3. Disposal Procedure:
   a) Small volumes of diluted washing waste can usually be drained to the local sanitary sewer. Contact the Timpanogos Special Service District prior to disposing of wash water this way.
   b) Large volumes must be disposed of at regulated facilities.
4. Pavement Cleaning Frequency:
   a) There is no regular pavement washing regimen. Pavement washing is determined by conditions that warrant it, including but not limited to prevention of slick or other hazardous conditions, or to restore acceptable appearance of pavements.
5. Training:
   a) Annually and at hire.
   b) Inform staff and service contractors when incorrect SOP implementation is observed.

SNOW AND ICE REMOVAL MANAGEMENT

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Salt and other ice management chemicals, if improperly managed, will unnecessarily increase our salt impact on our own vegetation and local water resources.
   b) We need to maintain healthy root systems to help maintain optimum infiltration rates.
2. De-Icing Procedure:
   a) Do not store or allow salt or equivalent to be stored on outside paved surfaces.
   b) Minimize salt use by varying salt amounts relative to hazard potential.
   c) Sweep excessive piles left by the spreader.
   d) Watch the weather forecast. When temperatures are expected to increase and the risk is low, adjust salt amounts the same day.
3. Training:
   a) Annually and at hire.
   b) Require snow and ice service contractors to follow the stronger of this SOP and their company SOPs.

GENERAL CONSTRUCTION MAINTENANCE

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Any sediment, debris, or construction waste will fill our underground retention/detention infiltration system, increasing our maintenance costs. Removing these debris after they have washed to our flood and water quality system is very expensive.
2. Construction Procedure:
   a) Remove or contain all erodible or loose material prior to forecasted wind and precipitation events or before non-stormwater will pass through the project site. For lightweight debris, maintenance can require immediate attention for wind and runoff events. Often daily or as needed maintenance is necessary per random precipitation or non-stormwater events.
   b) Project materials and waste can be contained or controlled by operation or structural best management practices.
      - Operational; including but not limited to:
        - Strategic staging of materials eliminating exposure, such as not staging on pavement.
        - Avoiding multiple day staging of backfill and spoil.
        - Haul off spoil as generated or daily.
        - Schedule work during clear forecast
      - Structural; including but not limited to:
        - Inlet protection, e.g., wattles, filter fabric, drop inlet bags, temporary covers.
        - Gutter dams, e.g., wattles, sandbags, dirt dams.
        - Boundary containment, e.g., wattles, silt fence.
        - Dust control, e.g., water hose.
        - Waste control, e.g., construction solid or liquid waste containers, dumpsters, receptacles.
   c) Inspect often and at least prior to the workday end to ensure the structural best management practices are in good operating condition. Promptly repair damaged best management practices to achieving effective containment.
   d) Cleanup:

- Use dry cleanup methods, e.g., square nosed shovel and broom.
- Wet methods are allowed if wastewater is prevented from entering the stormwater system, e.g., wet/dry vacuum, or disposal to landscaped areas.

e) Cleanup Standard:

- When a broom and a square nosed shovel cannot pick up any appreciable amount of material.

3. Waste Disposal:
   a) Dispose of waste according to General Waste Management SOP, unless superseded by specific SOPs for the operation.
   b) Never discharge waste material to storm drains.
4. Equipment:
   a) Tools sufficient for proper cleanup and containment of pollutants.
   b) Push broom and square blade shovel should be a minimum.
5. Training:
   a) Annually and at hire.
   b) Require contractors to follow the stronger of this SOP and their company SOPs.

SPILL CONTROL

General:

This SOP is not expected to cover all necessary procedure actions. Operators are allowed to adapt SOPs to unique site conditions in good judgment when it is necessary for safety, and the proper and effective containment of pollutants; however, any changes of routine operations must be amended in this SOP.

1. Purpose:
   a) Spilt liquids and solids can reach our underground retention/detention infiltration system, potentially contaminating groundwater for which we are responsible.
   b) It is vital that we contain all spills on the surface. Spills reaching waterways and permeable surfaces can result in expensive spill mitigation, including waterway restoration and the potential need to tear out and replace permeable drainage systems.
2. Containment Procedure:
   a) Priority is to dam and contain flowing spills.
   b) Use spill kits, booms if available, or any materials available to stop flowing liquids; including but not limited to nearby sand, landscaping materials, etc.
   c) Hazardous or unknown waste material spills:
      1. Critical Emergency constitutes large quantities of flowing, uncontained liquid that imposes a risk to people or has the potential to reach storm drain systems. Generally, burst or tipped tanks would be considered critical. Call Hazmat, DWQ, Utah County Health Department, and Lehi City.
      2. Minor Emergency constitutes a spill that is no longer flowing, but has reached a storm drain, and adequate cleanup is still critical. Call Utah County Health Department and Lehi City.
      3. Spills that are contained on the surface typically do not meet the criteria for Critical or Minor Emergencies and may be managed by the responsible implementation of this SOP.
      4. Contact Numbers:
         - Hazmat – 911
         - DWQ Hotline – 801-536-4123, 801-231-1769, 801-536-4300
         - Utah County Health Department – 801-851-7331
         - Lehi City – 385-201-1700
3. Cleanup Procedure:
   a) NEVER WASH SPILLS TO THE STORM DRAIN SYSTEM.

b) Clean per SDS requirements, but generally most spills can be cleaned up according to the following:

- Absorb liquid spills with spill kit absorbent material, sand, or dirt until liquid is sufficiently converted into solid material.
- Remove immediately using dry cleanup methods, e.g., broom and shovel or vacuum operations.
- Cleanup with water and detergents may also be necessary depending on the spilled material; however, the waste from this operation must be effectively picked up by dry methods or vacuum machinery. See Pavement Washing SOP.
- Repeat process when residue material remains.

4. Disposal:
   a) Follow SDS requirements, but usually most spills can be disposed of per the following (b. & c.).
   b) Generally, most spills absorbed into solid forms can be disposed of in the dumpster and receptacles. Follow Waste Management SOP.
   c) Generally, liquid waste from surface cleansing processes may be disposed to the sanitary sewer system after the following conditions have been met:
      - Dry cleanup methods have been used to remove the bulk of the spill and disposed of per the Waste Management SOP.
      - The liquid waste amounts are small and diluted with water. This is intended for spill cleanup waste only and never for the disposal of unused or spent liquids.
5. Documentation:
   a) Document all spills in Appendix C.
6. SDS Sheets:
   a) SDS Manuals are filed in break room.
7. Material:
   a) Generally, sand or dirt will work for most cleanup operations and containment; however, it is the responsibility of the owner to select the absorbent materials and cleanup methods required by the SDS Manuals for chemicals used by the company.
8. Training:
   a) Annually and at hire.

APPENDIX C – PLAN RECORDKEEPING DOCUMENTS

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MAINTENANCE/INSPECTION SCHEDULE

Frequency	Site Infrastructure
Monthly	Storm Drain Pipes, Boxes and Chamber System

Inspection Frequency Key: A=annual, Q=quarterly, M=monthly, W=weekly, S=following appreciable storm event, U=unique infrastructure specific (specify)

Record Inspections in the Maintenance Log

Inspection means traditional walkthrough or noting efficiencies/inefficiencies/concerns during regular maintenance operations.

MAINTENANCE LOG

Date	Maintenance Performed/Spill Events. Perform Maintenance per SOPs	Observation Notes including but not limited to inspection results, observations, system performance, SOP usefulness, concerns, necessary changes, etc.	Initials

Annual Summary of SSOMP effectiveness, inefficiencies, problems, necessary changes, etc.

*You may create your own form that provides the same information

ANNUAL SOP TRAINING LOG PER SECTION 2

SOP	Trainer	Employee Names / Maintenance Contractor Company	Date

*You may create your own form that provides this same information

APPENDIX D – SUPPORT DESIGN REPORTS AND DOCUMENTS

CIR
Engineering, L.L.C.

LEHI MOTO UNITED

DRAINAGE REPORT

Submitted to:

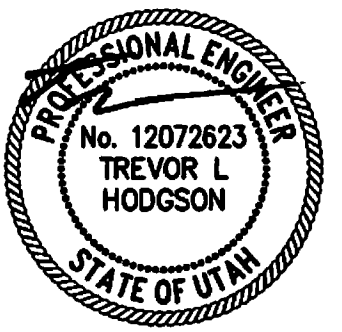
LEHI CITY

Prepared for:

MOTO UNITED

By:

CIR ENGINEERING
10718 SOUTH BECKSTEAD LANE, STE. 102
SOUTH JORDAN, UT 84095
801-949-6296



OCTOBER 23, 2024

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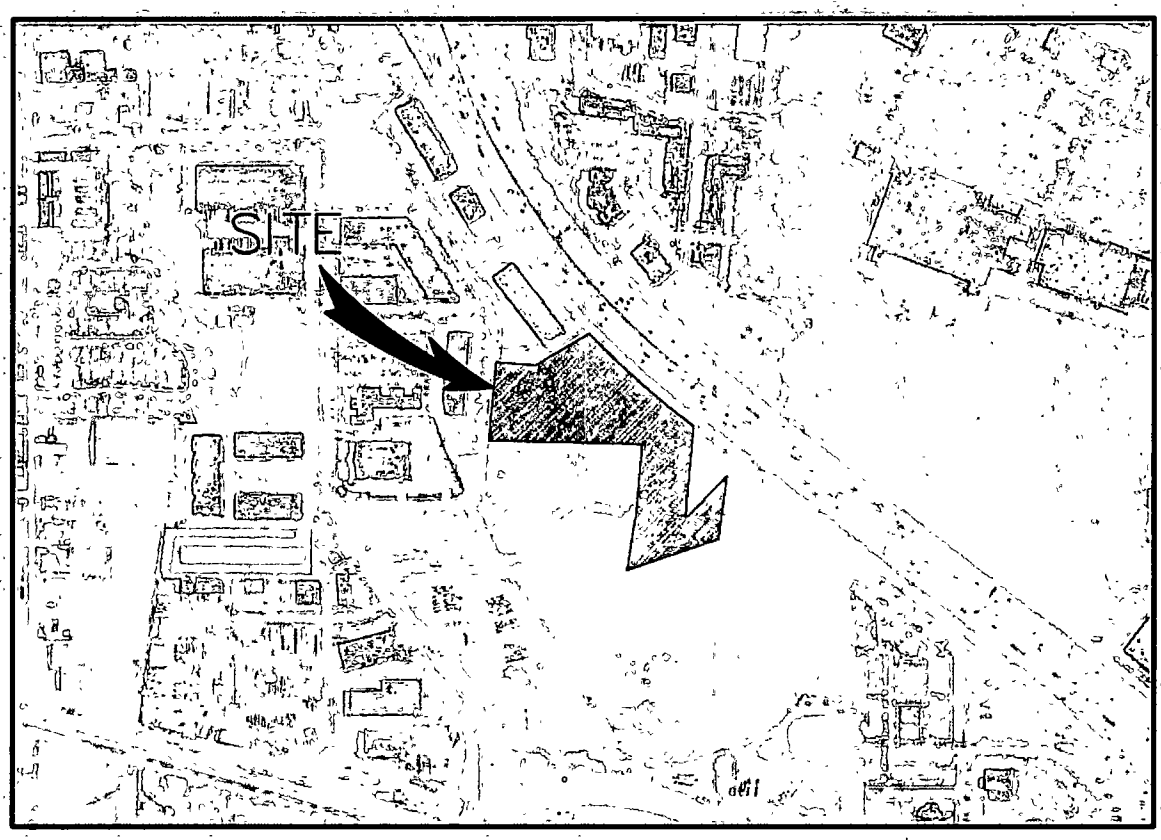

VICINITY MAP
NOT TO SCALE

INTRODUCTION:

The runoff and drainage calculations in this report pertain to the storm drainage design for the Lehi Moto United project located at 405 Millpond Drive, Lehi, UT 84043.

The site being evaluated in this report is 8.403 acres in size. The site is bordered to the north by an existing developed site, to the east by Interstate 15, to the south by an existing wetland area, and to the west by Mill Pond Drive. The site is undeveloped land with topography that grades down towards the southeast corner of the site with a total relief of approximately 6 feet.

Storm water runoff will be collected through inlet boxes on the site and directed towards a proposed stormtech chamber system located at the southeast corner of the site. From there it will be released through a 4.7" outlet structure to an existing storm drain manhole east of the site.

CALCULATIONS:

The rational method was used based on a 100 year 24 hour storm event. The detention volume for the project was calculated using a 0.2 cfs/acre release rate. An orifice plate will be provided to reduce the release rate from the site to 1.14 cfs. For this project, retention will be provided for the first 0.45" of storm water and allowed to percolate into the ground.

Total Site: Basin Size = 8.403 acres
Detention Volume Required = 21,656 cubic feet

Detention Volume Required Calculation:

DRAINAGE CALCS FOR LEHI MONO UNITED

Restriction Rate:	0.2000	cfs/acre		100 Year flood design	
		Runoff Coefficient			
Roof Area	67372	ft^2	C_roof	0.90	
Paved Area	132612	ft^2	C_paved	0.90	
Landscaped	52035	ft^2	C_landscaped	0.15	
Total Area	252019	ft^2	Weighted C	0.75	
	5.786	acres	CA :	187791	ft^2

Lapsed Time (min)	Accum Rainfall (in)	"CA" (ft^2)	Accum Flow (ft^3)	Allow Discharge (ft^3)	Required Storage (ft^3)
15	0.99	187791	15493	1041	14451
30	1.33	187791	20813	2083	18731
60	1.65	187791	25821	4166	**21656**
120	1.79	187791	28012	8331	19681
180	1.82	187791	28482	12497	15985
360	1.94	187791	30360	24994	5366
720	2.22	187791	34741	49987	0
1440	2.23	187791	34898	99974	0

Summary

Required detention storage =	21656	ft^3
Unit storage per acre =	3743.07	ft^3/acre
Allowable release rate =	1.16	ft^3/sec

The total detention volume required for the Lehi DR Horton project is 21,656 cubic feet.

Detention/Retention Provided:

Detention and retention are provided by a stormtech chamber system, see drainage plan in appendix B for details.

LOW IMPACT DEVELOPMENT BEST MANAGEMENT PRACTICES:

As part of this project, retention for the 80th percentile storm (0.45") is being retained in the proposed chambers. Per the Utah Department of Environmental Quality Guide to Low Impact Development within Utah, the proposed chamber system being designed to detain storm water is considered a Low Impact Design with a high effectiveness of pollutant removal including sediments, nutrients, metals, bacteria, and oil/grease ("Infiltration Basin", page C-41).

The 80th percentile volume was calculated using the water quality volume equation outlined on page 21 of the Utah Department of Environmental Quality, A Guide to Low Impact Development within Utah report. The volumetric runoff coefficient (Rv) was calculated using the Reese method. The summary table below shows the required retention for this project is 2,654 cf.

WQRv=	2653.67	cf
P80%=	0.04	ft
Rnew=	0.53	
A=	132612.00	sf
Imp=	0.79	

SUMMARY:

Retention volume is provided for 0.45" storm events and provides a total volume of 23,586 cubic feet at a highwater elevation of 4530.52. A 4.7" orifice plate is provided at elevation 4526.34 for detention volume. Emergency overflow is provided at elevation 4530.52 by a weir wall in the outlet structure.

APPENDIX A – Precipitation Frequency Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Lehi, Utah, USA*
Latitude: 40.3827°, Longitude: -111.8312°
Elevation: 4531 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.123 (0.107-0.143)	0.156 (0.137-0.182)	0.215 (0.187-0.251)	0.269 (0.232-0.315)	0.354 (0.298-0.417)	0.433 (0.355-0.514)	0.525 (0.417-0.628)	0.632 (0.484-0.769)	0.804 (0.584-0.999)	0.958 (0.668-1.22)
10-min	0.186 (0.163-0.218)	0.237 (0.208-0.277)	0.327 (0.285-0.382)	0.409 (0.353-0.479)	0.539 (0.453-0.634)	0.659 (0.539-0.782)	0.799 (0.634-0.956)	0.962 (0.737-1.17)	1.22 (0.890-1.52)	1.46 (1.02-1.85)
15-min	0.231 (0.202-0.270)	0.294 (0.258-0.343)	0.406 (0.353-0.473)	0.507 (0.437-0.594)	0.668 (0.561-0.786)	0.817 (0.668-0.969)	0.990 (0.786-1.18)	1.19 (0.913-1.45)	1.52 (1.10-1.88)	1.81 (1.26-2.29)
30-min	0.311 (0.272-0.363)	0.396 (0.347-0.462)	0.547 (0.476-0.637)	0.683 (0.589-0.799)	0.899 (0.756-1.06)	1.10 (0.900-1.30)	1.33 (1.06-1.60)	1.60 (1.23-1.95)	2.04 (1.48-2.54)	2.43 (1.70-3.09)
60-min	0.385 (0.336-0.449)	0.490 (0.429-0.571)	0.676 (0.589-0.789)	0.845 (0.729-0.989)	1.11 (0.935-1.31)	1.36 (1.11-1.62)	1.65 (1.31-1.98)	1.99 (1.52-2.42)	2.53 (1.84-3.14)	3.01 (2.10-3.82)
2-hr	0.478 (0.430-0.546)	0.598 (0.534-0.681)	0.784 (0.696-0.894)	0.957 (0.841-1.09)	1.24 (1.06-1.42)	1.49 (1.24-1.72)	1.79 (1.45-2.10)	2.14 (1.67-2.55)	2.70 (2.00-3.30)	3.20 (2.28-4.01)
3-hr	0.549 (0.499-0.618)	0.680 (0.618-0.762)	0.865 (0.782-0.969)	1.03 (0.925-1.16)	1.30 (1.14-1.46)	1.53 (1.32-1.74)	1.82 (1.52-2.12)	2.15 (1.74-2.58)	2.70 (2.10-3.33)	3.24 (2.39-4.05)
6-hr	0.702 (0.649-0.769)	0.865 (0.797-0.946)	1.06 (0.972-1.16)	1.23 (1.13-1.35)	1.48 (1.33-1.63)	1.69 (1.50-1.88)	1.94 (1.68-2.17)	2.23 (1.90-2.60)	2.76 (2.28-3.36)	3.27 (2.59-4.09)
12-hr	0.879 (0.811-0.957)	1.08 (0.993-1.18)	1.30 (1.20-1.42)	1.49 (1.37-1.63)	1.77 (1.60-1.94)	1.99 (1.78-2.20)	2.22 (1.96-2.49)	2.50 (2.16-2.84)	2.93 (2.46-3.40)	3.29 (2.70-4.13)
24-hr	0.969 (0.904-1.04)	1.18 (1.10-1.28)	1.41 (1.32-1.52)	1.60 (1.49-1.71)	1.85 (1.72-1.98)	2.04 (1.90-2.22)	2.23 (2.07-2.52)	2.52 (2.23-2.86)	2.96 (2.49-3.43)	3.32 (2.73-4.17)
2-day	1.12 (1.05-1.20)	1.37 (1.28-1.46)	1.62 (1.52-1.74)	1.83 (1.72-1.95)	2.11 (1.98-2.24)	2.32 (2.17-2.47)	2.54 (2.36-2.70)	2.75 (2.54-2.92)	3.02 (2.77-3.47)	3.35 (2.95-4.21)
3-day	1.21 (1.13-1.30)	1.48 (1.38-1.59)	1.75 (1.64-1.88)	1.98 (1.85-2.12)	2.29 (2.14-2.45)	2.53 (2.35-2.70)	2.77 (2.56-2.96)	3.01 (2.77-3.22)	3.32 (3.04-3.70)	3.63 (3.24-4.22)
4-day	1.30 (1.20-1.40)	1.58 (1.47-1.71)	1.88 (1.75-2.02)	2.13 (1.98-2.28)	2.47 (2.30-2.65)	2.73 (2.53-2.93)	3.00 (2.77-3.23)	3.27 (3.00-3.52)	3.63 (3.31-3.92)	3.91 (3.54-4.24)
7-day	1.51 (1.40-1.64)	1.84 (1.70-1.99)	2.18 (2.02-2.34)	2.45 (2.28-2.63)	2.81 (2.61-3.01)	3.08 (2.86-3.30)	3.35 (3.10-3.59)	3.61 (3.34-3.88)	3.95 (3.63-4.25)	4.19 (3.84-4.52)
10-day	1.68 (1.55-1.81)	2.04 (1.90-2.20)	2.41 (2.24-2.58)	2.70 (2.51-2.89)	3.07 (2.85-3.28)	3.34 (3.10-3.57)	3.60 (3.34-3.84)	3.85 (3.57-4.12)	4.15 (3.84-4.45)	4.36 (4.02-4.68)
20-day	2.18 (2.01-2.34)	2.66 (2.46-2.87)	3.13 (2.90-3.36)	3.48 (3.24-3.74)	3.93 (3.66-4.21)	4.25 (3.95-4.55)	4.54 (4.22-4.86)	4.82 (4.48-5.15)	5.13 (4.77-5.49)	5.34 (4.96-5.72)
30-day	2.60 (2.42-2.80)	3.18 (2.95-3.41)	3.72 (3.47-3.99)	4.14 (3.86-4.43)	4.68 (4.36-5.00)	5.07 (4.72-5.41)	5.43 (5.05-5.80)	5.77 (5.36-6.18)	6.18 (5.72-6.63)	6.46 (5.97-6.94)
45-day	3.20 (2.98-3.43)	3.90 (3.64-4.18)	4.54 (4.25-4.85)	5.03 (4.72-5.36)	5.64 (5.29-5.99)	6.06 (5.69-6.43)	6.44 (6.05-6.82)	6.77 (6.37-7.17)	7.13 (6.72-7.54)	7.33 (6.93-7.74)
60-day	3.77 (3.52-4.04)	4.59 (4.28-4.91)	5.34 (5.00-5.69)	5.92 (5.54-6.29)	6.63 (6.20-7.03)	7.12 (6.66-7.54)	7.56 (7.08-8.01)	7.95 (7.44-8.43)	8.38 (7.86-8.87)	8.63 (8.11-9.14)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

REPORT
GEOTECHNICAL STUDY
PROPOSED MOTO UNITED MILLPOND DEVELOPMENT
405 MILLPOND DRIVE
LEHI, UTAH

Submitted To:

Moto United
11553 South State Street
Draper, Utah 84020

Submitted By:

GSH Geotechnical, Inc.
473 West 4800 South
Salt Lake City, Utah 84123

October 30, 2024

Job No. 4003-001-24

October 30, 2024
Job No. 4003-001-24

Mr. Aaron Smith
Moto United
11553 South State Street
Draper, Utah 84020

Mr. Smith:

Re: Report
Geotechnical Study
Proposed Moto United Millpond Development
405 Millpond Drive
Lehi, Utah

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed at the site of the proposed Moto United Millpond Development to be located at 405 Millpond Drive in Lehi, Utah. The general location of the site with respect to existing roadways, as of 2024, is presented on Figure 1, Vicinity Map. A more detailed layout of the site showing proposed facilities, existing roadways, and the borings drilled in conjunction with this study is presented on Figure 2, Site Plan.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of the study were planned in discussions between Mr. Aaron Smith of Moto United and Mr. Robert Gifford of GSH Geotechnical, Inc. (GSH).

In general, the objectives of this study were to:

1. Define and evaluate the subsurface soil and groundwater conditions across the site.

2. Provide appropriate foundation, earthwork, pavement, and geoseismic recommendations to be utilized in the design and construction of the proposed facilities.

In accomplishing these objectives, our scope has included the following:

1. A field program consisting of the exploration, logging, and sampling of 9 borings.

2. A laboratory testing program.

3. An office program consisting of the correlation of available data, engineering analysis, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of the Professional Services Agreement No. 24-0861 dated August 30, 2024.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration borings, projected groundwater conditions, and the layout and design data discussed in Section 2, Proposed Construction. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, GSH must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

The project is to consist of the construction of a shop/retail structure, demo track, and associated pavements. The structure is anticipated to be 1- to 2-stories of wood- or light steel-framing, concrete tilt-up, or CMU construction and be supported upon conventional spread and continuous wall footings.

Maximum real column and wall loads are anticipated to be on the order of up to 180 kips and 5 to 6 kips per lineal foot, respectively. Real loads are defined as the total of all dead plus frequently applied (reduced) live loads.

Paved parking areas, light- and heavy-duty drive lanes, a demo track, and loading/unloading areas are planned around the structure. Projected traffic in the parking areas is anticipated to consist of a light volume of automobiles and light trucks, occasional medium-weight trucks, and no heavyweight trucks. Projected traffic in the light-duty drive lanes is anticipated to consist of a moderate volume of automobiles and light trucks, a light volume of medium-weight trucks, and occasional heavyweight trucks. Projected traffic in the heavy-duty drive lanes, loading/unloading

areas, and demo track is anticipated to consist of a moderate volume of automobiles, light trucks, and medium-weight trucks with a light volume of heavyweight trucks.

Site development will require some earthwork in the form of minor cutting and filling. At this time, we anticipate that maximum site grading cuts and fills, excluding utilities, will be on the order of 1 to 3 feet.

3. SITE INVESTIGATIONS

3.1 GENERAL

Subsurface conditions in unexplored locations or at other times may vary from those encountered at specific boring locations. If such variations are noted during construction or if project development plans are changed, GSH must review the changes and amend our recommendations, if necessary.

Boring locations were established by estimating distances and angles from site landmarks. If increased accuracy is desired by the client, we recommend that the boring locations and elevations be surveyed.

3.2 FIELD PROGRAM

To define and evaluate the subsurface soil and groundwater conditions across the site, 9 borings were completed within the accessible areas. These borings were completed to depths ranging from 5.5 to 46.5 feet with a truck-mounted drill rig equipped with hollow-stem augers. The approximate locations of the borings are presented on Figure 2.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the drilling operations, a continuous log of the subsurface conditions encountered was maintained. In addition, samples of the typical soils encountered were obtained for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications were supplemented by subsequent inspection and testing in our laboratory. Graphical representation of the subsurface conditions encountered is presented on Figures 3A through 3I, Boring Logs. Soils were classified in accordance with the nomenclature described on Figure 4, Key to Boring Log (USCS).

A 3.25-inch outside diameter, 2.42-inch inside diameter (Dames & Moore) and a 2.0-inch outside diameter, 1.38-inch inside diameter drive sampler (SPT) were utilized at select locations and depths. The blow counts recorded on the boring logs were those required to drive the sampler 12 inches with a 140-pound hammer dropping 30 inches.

Following completion of exploration operations, 1.25-inch diameter slotted PVC pipe was installed in Borings B-1, B-4, B-5, B-8, and B-9 to provide a means of monitoring the groundwater fluctuations. The borings were backfilled with auger cuttings.

3.3 LABORATORY TESTING

To provide data necessary for our engineering analysis, a laboratory testing program is currently being performed. This program includes moisture, density, partial gradation, Atterberg limits, consolidation, and chemical tests. The results of the testing program are pending and may be transmitted when completed, upon your request.

4. SITE CONDITIONS

4.1 SURFACE

The site is located at 405 Millpond Drive in Lehi, Utah. The site is currently vacant/undeveloped brush/grass land with an unpaved dirt road along the southern border. The topography of the site is relatively flat, grading down to the southwest with a total relief of approximately 3 to 5 feet. Site vegetation consists of various weeds and brush/grass as well as mature trees.

The site is bounded to the north by a commercial structure along with Interstate Highway 15; to the east by Interstate Highway 15; to the south by similar vacant/undeveloped land along with Millpond; and to the west by Millpond Drive followed by commercial structures.

4.2 SUBSURFACE SOIL

The following paragraphs provide generalized descriptions of the subsurface profiles and soil conditions encountered within the borings conducted during this study. As previously noted, soil conditions may vary in unexplored locations.

The borings were completed to depths ranging from 5.5 to 46.5 feet. The soil conditions encountered in each of the borings, to the depths completed, were generally similar across the boring locations.

- Approximately 6 inches of topsoil was encountered in each boring. Topsoil thickness is frequently erratic and thicker zones of topsoil should be anticipated.

- Non-engineered fill soils were encountered in each boring, to depths ranging from 1.0 to 5.0 feet beneath the existing ground surface. The non-engineered fill soils primarily consisted of clay with varying silt and sand content.

- Natural soils were encountered below the non-engineered fill in each boring. The natural soils consisted primarily of clay with varying silt and sand content as well as sand with varying clay, silt, and gravel content.

The natural clay soils were medium stiff to very stiff, slightly moist to saturated, gray, yellow, and brown in color, and moderately over-consolidated. The natural clay soils are anticipated to exhibit moderate strength and compressibility characteristics under the anticipated loading.

The natural sand soils were medium dense to dense, slightly moist to saturated, and gray and brown in color. The natural sand soils are anticipated to exhibit moderately high strength and moderately low compressibility characteristics under the anticipated load range.

For a more descriptive interpretation of subsurface conditions, please refer to Figures 3A through 3I, Boring Logs. The lines designating the interface between soil types on the boring logs generally represent approximate boundaries. In situ, the transition between soil types may be gradual.

4.3 GROUNDWATER

On October 29, 2024 (11 days following drilling), groundwater was measured within the PVC pipes installed as tabulated below:

Boring No.	Groundwater Depth (feet)
	October 29, 2024
B-1	5.0
B-4	4.7
B-5	5.5
B-8	3.3
B-9	2.8

Groundwater levels vary with changes in season and rainfall, construction activity, irrigation, snow melt, surface water run-off, and other site-specific factors.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The proposed structures may be supported upon conventional spread and continuous wall foundations supported upon suitable natural soils and/or structural fill extending to suitable natural soils.

The most significant geotechnical aspects at the site are:

1. The existing non-engineered fills across much of the site.

2. The very shallow depth to groundwater.

Prior to proceeding with construction, removal of any existing debris, surface vegetation, root systems, topsoil, non-engineered fill, and any deleterious materials from beneath an area extending out at least 5 feet from the perimeter of the proposed structure footprints and 3 feet beyond rigid pavements and exterior flatwork areas will be required. All existing utility locations should be reviewed to assess their impact on the proposed construction and abandoned and/or relocated as appropriate.

Due to the developed nature of this site and the surrounding area, additional non-engineered fills may exist in unexplored areas of the site. Based on our experience, non-engineered fills are frequently erratic in composition and consistency. All surficial loose/disturbed soils and non-engineered fills must be removed below all footings, floor slabs, and rigid pavements. The in situ, non-engineered fills may remain below flexible pavements if free of any deleterious materials, of limited thickness, and if properly prepared, as discussed later in this report.

On-site granular soils may be re-utilized as structural site grading fill if they meet the criteria for such, as stated later in this report.

Groundwater was measured as shallow as 2.8 feet below the ground surface. GSH recommends placing floor slabs no closer than 4 feet from the highest groundwater elevation or 1.5 feet if a foundation subdrain system is utilized. Foundation subdrain recommendations are discussed in Section 5.3.1, Subdrains. As an alternative, site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

Proof rolling of the natural clay subgrade must not be completed if cuts extend to within 1 foot of the groundwater surface. In areas where cuts are to extend to within 1 foot of the groundwater surface, stabilization must be anticipated.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

Detailed discussions pertaining to earthwork, foundations, pavements, and the geoseismic setting of the site are presented in the following sections.

5.2 EARTHWORK

5.2.1 Site Preparation

Initial site preparation will consist of the removal of any existing debris, non-engineered fills, surface vegetation, root systems, topsoil, and any deleterious materials from beneath an area extending out at least 5 feet from the perimeter of the proposed structure footprint and 3 feet beyond rigid pavements and exterior flatwork areas. All existing utility locations should be reviewed to assess their impact on the proposed construction and abandoned and/or relocated as appropriate.

In situ, non-engineered fills may remain below flexible pavements if free of debris and deleterious materials, less than 3 feet in thickness, and if properly prepared. Proper preparation below pavements will consist of the scarification of the upper 12 inches below asphalt concrete (flexible pavement), followed by moisture preparation and re-compaction to the requirements of structural fill. Even with proper preparation, pavements established overlying non-engineered fills may encounter some long-term movements unless the non-engineered fills are completely removed.

It must be noted that from a handling and compaction standpoint, soils containing high amounts of fines (silts and clays) are inherently more difficult to rework and are very sensitive to changes in moisture content, requiring very close moisture control during placement and compaction. This will be very difficult, if not impossible, during wet and cold periods of the year. Additionally, the on-site soils are likely above optimum moisture content for compacting at present and would require some drying prior to re-compacting.

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

Subgrade preparation as described must be completed prior to placing overlying structural site grading fills.

Due to the relatively high groundwater, site grading cuts should be kept to a minimum. Cuts extending to within 1 foot of the groundwater elevation will likely disturb the natural clay soils and proof rolling must not be completed. Stabilization must be anticipated in areas where cuts are to extend to within 1 foot of the groundwater surface.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

GSH must be notified prior to the placement of structural site grading fills, floor slabs, footings, and pavements to verify that all loose/disturbed soils and non-engineered fills have been completely removed and/or properly prepared.

5.2.2 Temporary Excavations

Temporary excavations up to 8 feet deep in fine-grained cohesive soils, above or below the water table, may be constructed with sideslopes no steeper than one-half horizontal to one vertical (0.5H:1.0V). Excavations deeper than 8 feet are not anticipated at the site.

For granular (cohesionless) soils, construction excavations above the water table, not exceeding 4 feet, shall be no steeper than one-half horizontal to one vertical (0.5H:1.0V). For excavations up to 8 feet, in granular soils and above the water table, the slopes shall be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated cohesionless soils will be very difficult and will require very flat sideslopes and/or shoring, bracing, and dewatering.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

The static groundwater table was encountered as shallow as 2.8 feet below the existing surface and may be shallower with seasonal fluctuations. Consideration for dewatering of utility trenches, excavations for the removal of non-engineered fill, and other excavations below this level should be incorporated into the design and bidding process.

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

5.2.3 Structural Fill

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by footings, floor slabs, pavements, etc. Structural fill will be required as backfill over foundations and utilities, as site grading fill, and as replacement fill below footings. All structural fill must be free of surface vegetation, root systems, rubbish, topsoil, frozen soil, and other deleterious materials.

Structural site grading fill is defined as structural fill placed over relatively large open areas to raise the overall grade. For structural site grading fill, the maximum particle size shall not exceed 4 inches; although, occasional larger particles, not exceeding 8 inches in diameter, may be incorporated if placed randomly in a manner such that "honeycombing" does not occur, and the desired degree of compaction can be achieved. The maximum particle size within structural fill placed within confined areas shall be restricted to 2 inches.

On-site soils, including existing non-engineered fills, may be re-utilized as structural site grading fill if they do not contain construction debris or deleterious material and meet the requirements of structural fill. Fine-grained soils will require very close moisture control and may be very difficult, if not impossible, to properly place and compact during wet and cold periods of the year.

Imported structural fill below foundations and floor slabs shall consist of a well graded sand and gravel mixture with less than 30 percent retained on the three-quarter-inch sieve and less than 20 percent passing the No. 200 Sieve (clays and silts).

To stabilize soft subgrade conditions (if encountered) or where structural fill is required to be placed closer than 2.0 feet above the water table at the time of construction, a mixture of coarse angular gravels and cobbles and/or 1.5- to 2.0-inch gravel (stabilizing fill) shall be utilized. It may

also help to utilize a stabilization fabric, such as Mirafi 600X or equivalent, placed on the natural ground if 1.5- to 2.0-inch gravel is used as stabilizing fill.

5.2.4 Fill Placement and Compaction

All structural fill shall be placed in lifts not exceeding 8 inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the AASHTO[1] T180 (ASTM[2] D1557) compaction criteria in accordance with the following table:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 5 feet beyond the perimeter of the structure	0 to 5	95
Site grading fills outside area defined above	0 to 5	90
Utility trenches within structural areas	--	96
Road base	--	96

Structural fills greater than 5 feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade shall be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation shall consist of the removal of all loose or disturbed soils.

Coarse angular gravel and cobble mixtures (stabilizing fill), if utilized, shall be end dumped, spread to a maximum loose lift thickness of 15 inches, and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the stabilizing fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment over the surface at least twice. Subsequent fill material placed over the coarse gravels and cobbles shall be adequately compacted so that the "fines" are "worked into" the voids in the underlying coarser gravels and cobbles. Where soil fill materials are to be placed directly over more than about 18 inches of clean gravel, a separation geofabric, such as Mirafi 140N or equivalent, is recommended to be placed between the gravel and subsequent soil fills.

Non-structural fill may be placed in lifts not exceeding 12 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

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1 American Association of State Highway and Transportation Officials
2 American Society for Testing and Materials

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (footings, floor slabs, flatwork, pavements, etc.) shall be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill shall be proof rolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proof rolling shall be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proof rolling, they shall be removed to a maximum depth of 2 feet below design finish grade and replaced with structural fill.

Many utility companies and City-County governments are now requiring that Type A-1a or A-1b (AASHTO Designation – granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways, the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T180 (ASTM D1557) method of compaction. GSH recommends that as the major utilities continue onto the site that these compaction specifications are followed.

Fine-grained soils, such as silts and clays, are not recommended for utility trench backfill in structural areas.

The static groundwater table was encountered as shallow as 2.8 feet below the existing surface and may be shallower with seasonal fluctuations. Dewatering of utility trenches and other excavations below this level should be anticipated.

To reduce disturbance of the natural soils during excavation, it is recommended that low-impact, track-mounted equipment with smooth edge buckets/blades be utilized.

5.3 GROUNDWATER

On October 29, 2024 (11 days following drilling), groundwater was measured within the PVC pipes installed as tabulated below:

Boring No.	Groundwater Depth (feet)
	October 29, 2024
B-1	5.0
B-4	4.7
B-5	5.5
B-8	3.3
B-9	2.8

Based on the anticipated cuts necessary to reach design subgrades, we anticipate temporary and permanent dewatering will be necessary. Floor slabs must be placed a minimum of 4 feet from the stabilized groundwater elevation or 1.5 feet if a perimeter subdrain system is utilized. Foundation subdrain recommendations are discussed in Section 5.3.1, Subdrains. As an alternative, site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

The groundwater measurements presented are conditions at the time of the field exploration and may not be representative of other times or locations. Groundwater levels may vary seasonally and with precipitation, as well as other factors including irrigation. Evaluation of these factors is beyond the scope of this study. Groundwater levels may, therefore, be at shallower or deeper depths than those measured during this study, including during construction and over the life of the structure.

The extent and nature of any dewatering required during construction will be dependent on the actual groundwater conditions prevalent at the time of construction and the effectiveness of construction drainage to prevent run-off into open excavations.

5.3.1 Subdrains

A subdrain system, if utilized, shall consist of a perimeter foundation/chimney subdrain and an under-slab subdrain. The perimeter subdrain would consist of a 4-inch diameter slotted or perforated PVC or other durable material pipe installed with an invert at least 18 inches below the top of the lowest adjacent slab. The drain pipe shall slope at least 0.25 percent to a suitable point of gravity discharge, such as an inside or outside sump. The 4-inch diameter slotted PVC pipe shall be encased in a one-half to three-quarter-inch clean gap-graded gravel extending 2 inches below laterally and continuously up at least 12 inches above the top of the lowest adjacent slab. The gravels must be separated from the adjacent soils with a geotextile fabric, such as Mirafi 140N or equivalent. Extending up from the top of the foundation subdrain to within 1 foot of final grade shall be a synthetic drain board or a zone of "free-draining" permeable fill, also separated from all adjacent soils with a geotextile fabric. Prior to the placement of the perimeter foundation subdrain, the outside subgrade walls shall be appropriately waterproofed.

In addition to the perimeter foundation/chimney subdrain, an under-slab drain is recommended. This shall consist of a minimum of 8 inches of "free-draining" one-half to three-quarter-inch minus clean gap-graded gravel placed over properly prepared suitable natural subgrade soils and/or structural fill extending to suitable natural soil. The "free-draining" gravel shall be hydraulically connected to the perimeter drain. In addition, we recommend 4-inch diameter slotted PVC pipes be installed laterally and spaced approximately 50 feet apart beneath the below-grade level slab of the structure with an invert elevation of at least 12 inches below the top of the lowest adjacent slab. This subdrain would be similarly encased in the one-half- to three-quarter-inch clean gap-graded gravel, separated from the natural soils with a geotextile fabric, extending up to the 6-inch layer of gravel underneath the at-grade slab. This subdrain line would discharge to the perimeter subdrain.

GSH also recommends that a minimum of 10.0 inches of free-draining gravel material be placed below the floor slab and that this gravel be hydraulically tied to the perimeter foundation drain. This may be accomplished by placing footings on a minimum of 6.0 inches of similar free-draining gravel material. Lateral drains must also be placed approximately every 50 feet and tied to the subdrain system.

Water collected by the subdrain system would be gravity discharged or pumped to a suitable discharge point such as area subdrains, storm drains, or other suitable down-gradient location (see attached Figure 5, Typical Foundation/Chimney Subdrain Detail 18"). A back-up power and back-up pump would need to be incorporated against failure if a suitable gravity discharge system is unavailable.

5.4 SPREAD AND CONTINUOUS WALL FOUNDATIONS

5.4.1 Design Data

The results of our analysis indicate that the proposed structures may be supported upon conventional spread and continuous wall foundations established upon suitable natural soils and/or structural fill extending to suitable natural soils. Under no circumstances shall foundations be established over non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. More heavily loaded footings will require a certain amount of granular structural replacement fill as specified in Section 5.4.3, Settlements, of this report. For design, the following parameters are provided:

Minimum Recommended Depth of Embedment for Frost Protection	- 30 inches
Minimum Recommended Depth of Embedment for Non-frost Conditions	- 15 inches
Recommended Minimum Width for Continuous Wall Footings	- 18 inches
Minimum Recommended Width for Isolated Spread Footings	- 24 inches
Recommended Net Bearing Capacity for Real Load Conditions	- 2,000 pounds per square foot
Bearing Capacity Increase for Seismic Loading	- 50 percent

The term "net bearing capacity" refers to the allowable pressure imposed by the portion of the structure located above lowest adjacent final grade. Therefore, the weight of the footing and backfill to lowest adjacent final grade need not be considered. Real loads are defined as the total of all dead plus frequently applied live loads. Total load includes all dead and live loads, including seismic and wind.

5.4.2 Installation

Under no circumstances shall the footings be installed upon non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, or other deleterious materials. If unsuitable soils are encountered, they must be removed and replaced with compacted granular fill. If granular soils become loose or disturbed, they must be recompacted prior to pouring the concrete.

The width of structural replacement fill below footings shall be equal to the width of the footing plus one foot for each foot of fill thickness.

5.4.3 Settlements

Granular structural replacement fill will be required under more heavily loaded footings. For the required amount, refer to the table below:

Foundations	Loading	Minimum Thickness of Replacement Structural Granular Fill (feet)
Wall	Up to 6 kips per lineal foot	0
Spread	Up to 125 kips	0
	125 kips to 180 kips	1.0

Based on column loadings, soil bearing capacities, and the foundation recommendations as discussed above, we expect primary total settlement beneath individual foundations to be less than one inch.

The amount of differential settlement is difficult to predict because the subsurface and foundation loading conditions can vary considerably across the site. However, we anticipate differential settlement between adjacent foundations could vary from 0.5 to 0.75 inch. The final deflected shape of the structure will be dependent on actual foundation locations and loading.

5.5 LATERAL RESISTANCE

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the

supporting soils. In determining frictional resistance, a coefficient of friction of 0.35 may be utilized for the footing interface with in situ natural clay soils and 0.40 for footing interface with natural granular soils or granular structural fill. Passive resistance provided by properly placed and compacted granular structural fill above the water table may be considered equivalent to a fluid with a density of 300 pounds per cubic foot. Below the water table, this granular soil shall be considered equivalent to a fluid with a density of 150 pounds per cubic foot.

A combination of passive earth resistance and friction may be utilized provided that the friction component of the total is divided by 1.5.

5.6 FLOOR SLABS

Floor slabs may be established upon suitable natural subgrade soils or structural fill extending to suitable natural soils. Under no circumstances shall floor slabs be established directly over non-engineered fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

Additionally, GSH recommends that floor slabs be constructed a minimum of 4.0 feet from the stabilized groundwater elevation or 1.5 feet if a foundation subdrain system is utilized. A design for a foundation subdrain system will be provided, upon request. Foundation subdrain recommendations are discussed in Section 5.3.1, Subdrains. As an alternative, site grading fill may be utilized to raise the overall grade to achieve the required separation between the floor slab and the highest groundwater elevation.

To facilitate curing of the concrete and to provide a capillary moisture break, it is recommended that floor slabs be directly underlain by at least 4 inches of "free-draining" fill, such as "pea" gravel or three-quarters to one inch minus clean gap-graded gravel.

Settlement of lightly loaded floor slabs designed according to previous recommendations (average uniform pressure of 200 pounds per square foot or less) is anticipated to be less than one-quarter of an inch.

If a vapor barrier is proposed to be utilized, GSH must be contacted for additional recommendations.

5.7 PAVEMENTS

The natural clay soils and non-engineered fills will exhibit poor pavement support characteristics when saturated. All pavement areas must be prepared as previously discussed (see Section 5.2.1, Site Preparation). Under no circumstances shall pavements be established over unprepared non-engineered fills, loose or disturbed soils, topsoil, surface vegetation, root systems, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. With the subgrade soils and the estimated projected traffic as discussed in Section 2, Proposed Construction, the pavement sections on the following pages are recommended.

Parking Areas

(Light Volume of Automobiles and Light Trucks,
Occasional Medium-Weight Trucks,
and No Heavyweight Trucks)
[5 equivalent 18-kip axle loads per day]

Flexible Pavements:
(Asphalt Concrete)

3.0 inches	Asphalt concrete
8.0 inches	Aggregate base
Over	Properly prepared and stabilized fills, stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized fills and/or stabilized natural subgrade soils

Rigid Pavements:
(Non-reinforced Concrete)

5.0 inches	Portland cement concrete (non-reinforced)
5.0 inches	Aggregate base
Over	Properly prepared and stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized natural subgrade soils

Light-Duty Drive Lanes

(Moderate Volume of Automobiles and Light Trucks,
Light Volume of Medium-Weight Trucks,
and Occasional Heavyweight Trucks)
[8 equivalent 18-kip axle loads per day]

Flexible Pavements:
(Asphalt Concrete)

3.0 inches	Asphalt concrete
9.0 inches	Aggregate base
Over	Properly prepared and stabilized fills, stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized fills and/or stabilized natural subgrade soils

Rigid Pavements:
(Non-reinforced Concrete)

6.0 inches	Portland cement concrete (non-reinforced)
5.0 inches	Aggregate base
Over	Properly prepared and stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized natural subgrade soils

Heavy-Duty Drive Lanes, Loading/Unloading Areas, and Demo Track

(Moderate Volume of Automobiles, Light Trucks,
and Medium-Weight Trucks,
with a Light Volume of Heavyweight Trucks)
[40 equivalent 18-kip axle loads per day]

Flexible Pavements:
(Asphalt Concrete)

4.0 inches	Asphalt concrete
8.0 inches	Aggregate base
8.0 inches*	Aggregate subbase
Over	Properly prepared and stabilized fills, stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized fills and/or stabilized natural subgrade soils

* Subbase may consist of granular site grading fills with a minimum California Bearing Ratio (CBR) of 30 percent.

Rigid Pavements:
(Non-reinforced Concrete)

7.0 inches	Portland cement concrete (non-reinforced)
6.0 inches	Aggregate base
Over	Properly prepared and stabilized natural subgrade soils, and/or structural site grading fill extending to properly prepared and stabilized natural subgrade soils

For dumpster pads, we recommend a pavement section consisting of 8.0 inches of Portland cement concrete, 12.0 inches of aggregate base, over properly prepared natural subgrade or site grading structural fills. Dumpster pads shall not be constructed overlying non-engineered fills under any circumstances.

These above rigid pavement sections are for non-reinforced Portland cement concrete. Concrete shall be designed in accordance with the American Concrete Institute (ACI) and joint details shall

conform to the Portland Cement Association (PCA) guidelines. The concrete shall have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent ±1 percent air-entrainment.

The crushed stone shall conform to applicable sections of the current Utah Department of Transportation (UDOT) Standard Specifications. All asphalt material and paving operations shall meet applicable specifications of the Asphalt Institute and UDOT. A GSH technician shall observe placement and perform density testing of the base course material and asphalt.

Please note that the recommended pavement section is based on estimated post-construction traffic loading. If the pavement is to be constructed and utilized by construction traffic, the above pavement section may prove insufficient for heavy truck traffic, such as concrete trucks or tractor-trailers used for construction delivery. Unexpected distress, reduced pavement life, and/or premature failure of the pavement section could result if subjected to heavy construction traffic and the owner should be made aware of this risk. If the estimated traffic loading stated herein is not correct, GSH must review actual pavement loading conditions to determine if revisions to these recommendations are warranted.

5.8 CEMENT TYPES

A representative soil sample was collected and sent for laboratory analysis for pH and sulfate content. As of the date of this report, results are still pending and will be transmitted when available and with corresponding cement recommendations, if applicable.

5.9 GEOSEISMIC SETTING

5.9.1 General

Utah municipalities have adopted the International Building Code (IBC) 2021. The IBC 2021 code refers to ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16) determines the seismic hazard for a site based upon mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points).

5.9.2 Faulting

Based on our review of available literature, no active faults pass through or immediately adjacent to the site. The nearest active mapped fault consists of the Utah Lake Faults, located about 2.8 miles to the south-southwest of the site.

5.9.3 Site Class

For dynamic structural analysis, the Site Class D – Default Soil Profile as defined in Chapter 20 of ASCE 7-16 (per Section 1613.3.2, Site Class Definitions, of IBC 2021) can be utilized. If a measured site class is desired based on the project structural engineer's evaluation and recommendations, additional testing and analysis can be completed by GSH to determine the measured site class. Please contact GSH for additional information.

5.9.4 Ground Motions

The IBC 2021 code is based on USGS mapping, which provides values of short and long period accelerations for average bedrock values for the Western United States and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for the MCE event and incorporates the appropriate soil amplification factor for a Site Class D – Default* Soil Profile. Based on the site latitude and longitude (40.3830 degrees north and 111.8311 degrees west, respectively) and Risk Category II, the values for this site are tabulated below:

Spectral Acceleration Value, T	Bedrock Boundary [mapped values] (% g)	Site Coefficient	Site Class D - Default* [adjusted for site class effects] (% g)	Design Values** (% g)
0.2 Seconds (Short Period Acceleration)	S_S = 123.8	F_a = 1.200	S_{MS} = 148.6	S_{DS} = 99.1
1.0 Second (Long Period Acceleration)	S_1 = 44.9	F_v = 1.851	S_{M1} = 83.1	S_{D1} = 55.4

* If a measured site class in accordance with IBC 2021/ASCE 7-16 is beneficial based on the project structural engineer's review, please contact GSH for additional options for obtaining this measured site class.

**IBC 2021/ASCE 7-16 may require a site-specific study based on the project structural engineer's evaluation and recommendations. If needed, GSH can provide additional information and analysis including a complete site-specific study in accordance with chapter 21 of ASCE 7-16.

5.9.5 Liquefaction

The site is located in an area that has been identified by the Utah Geological Survey (UGS) as being a "high" liquefaction potential zone. Liquefaction is defined as the condition when saturated, loose, granular soils lose their support capabilities because of excessive pore water pressure, which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event.

Due to the clayey nature of the soils and density of the granular soils, liquefaction is not anticipated to occur within the soils encountered at this site.

5.10 SITE VISITS

GSH must verify that all topsoil/disturbed soils and any other unsuitable soils have been removed, that non-engineered fills have been removed and/or properly prepared, and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements. Additionally, GSH must observe fill placement and verify in-place moisture content and density of fill materials placed at the site.

6. CLOSURE

If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 685-9190.

Respectfully submitted,

GSH Geotechnical, Inc.

REGISTERED PROFESSIONAL ENGINEER
No. 334228
ALAN D. SPILKER
STATE OF UTAH

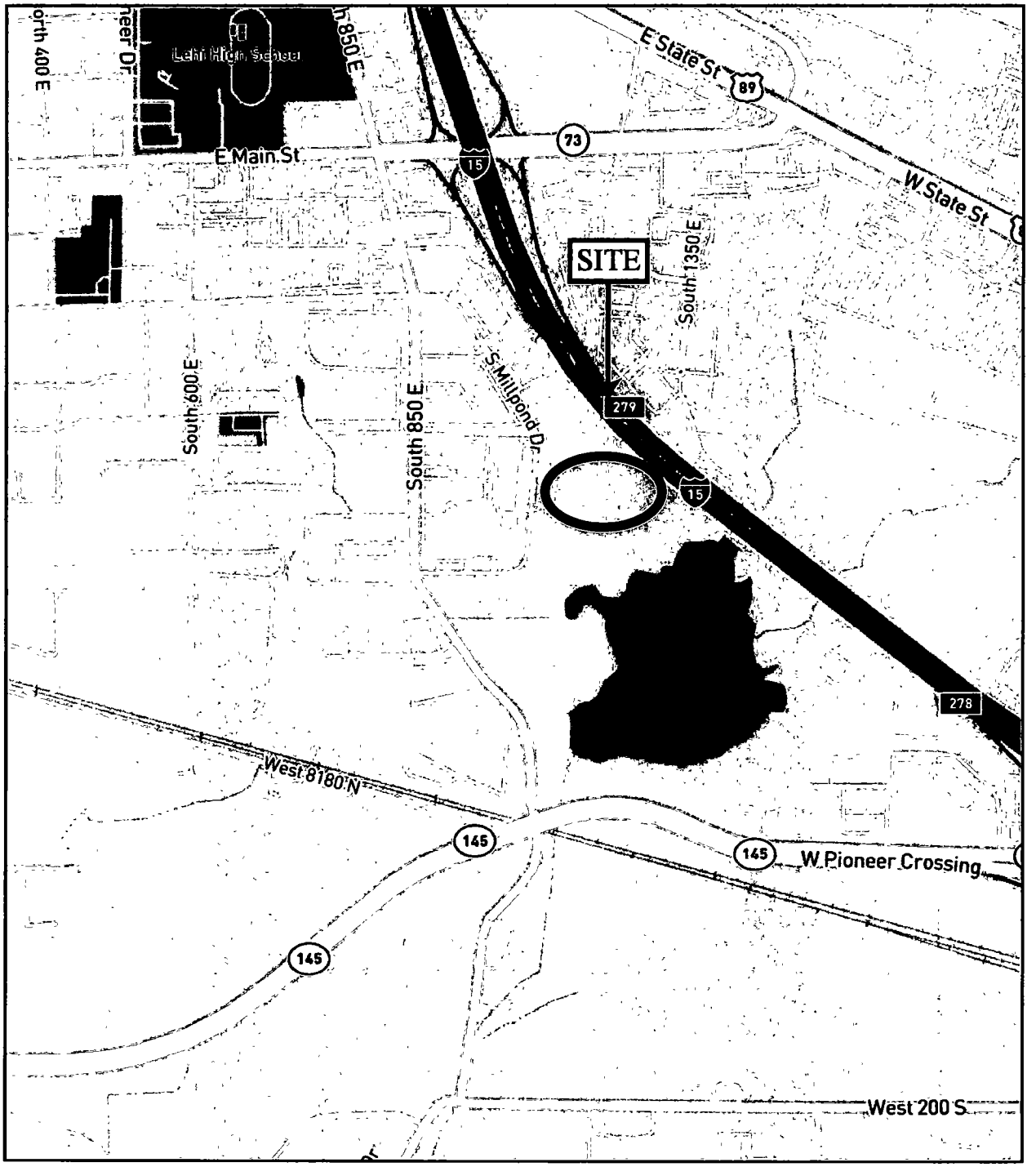
Alan D. Spilker, P.E.
State of Utah No. 334228
President/Senior Geotechnical Engineer

ADS:jmt

Encl. Figure 1, Vicinity Map
Figure 2, Site Plan
Figures 3A through 3I, Log of Borings
Figure 4, Key to Boring Log (USCS)
Figure 5, Typical Foundation Chimney Subdrain Detail 18"

Addressee (email)

MOTO UNITED
JOB NO. 4003-001-24



0.1 0 0 0 0 0 0.1 0.2 0.3 MI 0.4

200 0 0 200 400 M 600

REFERENCE:
ALL TRAILS - NATIONAL GEOGRAPHIC TERRAIN
DATED 2024

FIGURE 1
VICINITY MAP

GSH

MOTO UNITED
JOB NO. 4003-001-24

GSH	BORING LOG Page: 1 of 2	BORING: B-1

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/18/24 | DATE FINISHED: 10/18/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.0' (10/29/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
				6							
▼	CL	SILTY CLAY with trace fine sand and trace organics; brown	5	5							saturated medium stiff
			10	14							stiff
		grades brown/gray	15	8							
			20	12							
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A

GSH

BORING LOG

Page: 2 of 2

BORING: B-1

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/18/24 | DATE FINISHED: 10/18/24

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
			25								
				16							very stiff
		grades high plasticity clay; gray	30	5					52	28	medium stiff
		grades with layers of fine to medium sand up to 1/2" thick	35	12							stiff
		grades with layers of fine to medium sand up to 1" thick	40	18							very stiff
	SP	FINE TO COARSE SAND with fine and coarse gravel; gray	45	43							saturated dense; 4' heave
		End of Exploration at 46.5'. Installed 1.25" diameter slotted PVC pipe to 46.5'.	50								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A
(continued)

GSH

BORING LOG

Page: 1 of 1

BORING: B-2

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/18/24 | DATE FINISHED: 10/18/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (10/18/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									dry medium stiff
	CL	SILTY CLAY with trace fine to medium sand and trace organics; brown									slightly moist medium stiff
			5								
		End of Exploration at 5.5'. No groundwater encountered at time of drilling.									
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3B

GSH	BORING LOG Page: 1 of 1	BORING: B-3

CLIENT: Moto United — PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development — DATE STARTED: 10/18/24 — DATE FINISHED: 10/18/24

LOCATION: 405 Millpond Drive, Lehi, Utah — GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger — HAMMER: Automatic — WEIGHT: 140 lbs — DROP: 30"

GROUNDWATER DEPTH: Not Encountered (10/18/24) — ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
	CL	SILTY CLAY with trace fine sand and trace organics; brown/gray/yellow									slightly moist medium stiff
		grades brown/gray	5								
		End of Exploration at 5.5'. No groundwater encountered at time of drilling.									
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3C

GSH

BORING LOG

Page: 1 of 1

BORING: B-4

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/17/24 | DATE FINISHED: 10/17/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 4.7' (10/29/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
	SM/ SC	SILTY/CLAYEY FINE TO COARSE SAND with trace fine gravel; organics; brown									slightly moist medium dense
				26		15.0	106				
▼											saturated
			5	17		19.9	103				
	SP/ SM	FINE TO COARSE SAND with some silt and trace clay; brown									saturated medium dense
			10	24		18.1		7.0			
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.									
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3D

GSH BORING LOG

Page: 1 of 1

BORING: B-5

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/18/24 | DATE FINISHED: 10/18/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 5.5' (10/29/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
	CL	SILTY CLAY with trace fine sand; organics; layers of fine to medium sand up to 1/2" thick; brown		17							slightly moist stiff
▼		grades with layers of fine to medium sand up to 1" thick	5	18							saturated
	SM	SILTY FINE TO COARSE SAND with trace fine gravel; brown	10	29		20.4		28 4			saturated medium dense
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.	15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3E

GSH BORING LOG

Page: 1 of 1

BORING: B-6

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/17/24 | DATE FINISHED: 10/17/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (10/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
	CL	FINE TO MEDIUM SANDY CLAY brown									slightly moist medium stiff
	SM	SILTY FINE TO MEDIUM SAND gray	5			8.5		32.6			slightly moist medium dense
		End of Exploration at 5.5'. No groundwater encountered at time of drilling.	10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3F

GSH

BORING LOG

Page: 1 of 1

BORING: B-7

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/17/24 | DATE FINISHED: 10/17/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (10/17/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist medium stiff
	CL	SILTY CLAY with some fine to medium sand; trace organics; brown									slightly moist medium stiff
		grades gray	5								
		End of Exploration at 5.5'. No groundwater encountered at time of drilling.									
			10								
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3G

GSH

BORING LOG

Page: 1 of 1

BORING: B-8

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/18/24 | DATE FINISHED: 10/18/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 3.3' (10/29/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with fine to coarse sand; major roots (topsoil) to 6"; brown									slightly moist medium stiff
▼	CL	SILTY CLAY with some fine sand; brown/gray		7							slightly moist medium stiff saturated
			5	5							
			10	15							stiff
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.	15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3H

GSH

BORING LOG

Page: 1 of 1

BORING: B-9

CLIENT: Moto United | PROJECT NUMBER: 4003-001-24

PROJECT: Proposed Moto United Millpond Development | DATE STARTED: 10/17/24 | DATE FINISHED: 10/17/24

LOCATION: 405 Millpond Drive, Lehi, Utah | GSH FIELD REP.: RS

DRILLING METHOD/EQUIPMENT: 3-1/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: 2.8' (10/29/24) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0								
	CL FILL	SILTY CLAY, FILL with major roots (topsoil) to 6"; dark brown									slightly moist stiff
▼		grades fine to medium sandy clay with trace organics									saturated
	CL	SILTY CLAY with trace fine to medium sand; gray		12							saturated medium stiff
			5	9		25.2	98				
			10	23		22.8	105				very stiff
		End of Exploration at 11.5'. Installed 1.25" diameter slotted PVC pipe to 11.5'.									
			15								
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3I

CLIENT: Moto United
PROJECT: Proposed Moto United Millpond Development
PROJECT NUMBER: 4003-001-24

KEY TO BORING LOG

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

COLUMN DESCRIPTIONS

① **Water Level:** Depth to measured groundwater table. See symbol below.

② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below.

③ **Description:** Description of material encountered; may include color, moisture, grain size, density/consistency,

④ **Depth (ft.):** Depth in feet below the ground surface.

⑤ **Blow Count:** Number of blows to advance sampler 12" beyond first 6", using a 140-lb hammer with 30" drop.

⑥ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

⑦ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of

⑧ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.

⑨ **% Passing 200:** Fines content of soils sample passing a No. 200 sieve; expressed as a percentage.

⑩ **Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior.

⑪ **Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties.

⑫ **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. May include other field and laboratory test results using the following abbreviations:

CEMENTATION	MODIFIERS	MOISTURE CONTENT (FIELD TEST)
Weakly: Crumbles or breaks with handling or slight finger pressure	**Trace** <5%	**Dry:** Absence of moisture, dusty, dry to the touch.
Moderately: Crumbles or breaks with considerable finger pressure.	**Some** 5-12%	**Moist:** Damp but no visible water.
Strongly: Will not crumble or break with finger pressure.	**With** > 12%	**Saturated:** Visible water, usually soil below water table.

Descriptions and stratum lines are interpretive, field descriptions may have been modified to reflect lab test results Descriptions on the logs apply only at the specific boring locations and at the time the borings were advanced, they are not warranted to be representative of subsurface conditions at other locations or times

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

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

Note: Dual Symbols are used to indicate borderline soil classifications.

STRATIFICATION:

DESCRIPTION	THICKNESS
Seam	up to 1/8"
Layer	1/8" to 12"
Occasional: One or less per 6" of thickness	
Numerous; More than one per 6" of thickness	

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Bulk/Bag Sample
- Standard Penetration Split Spoon Sampler
- Rock Core
- No Recovery
- 3.25" OD, 2.42" ID D&M Sampler
- 3.0" OD, 2.42" ID D&M Sampler
- California Sampler
- Thin Wall

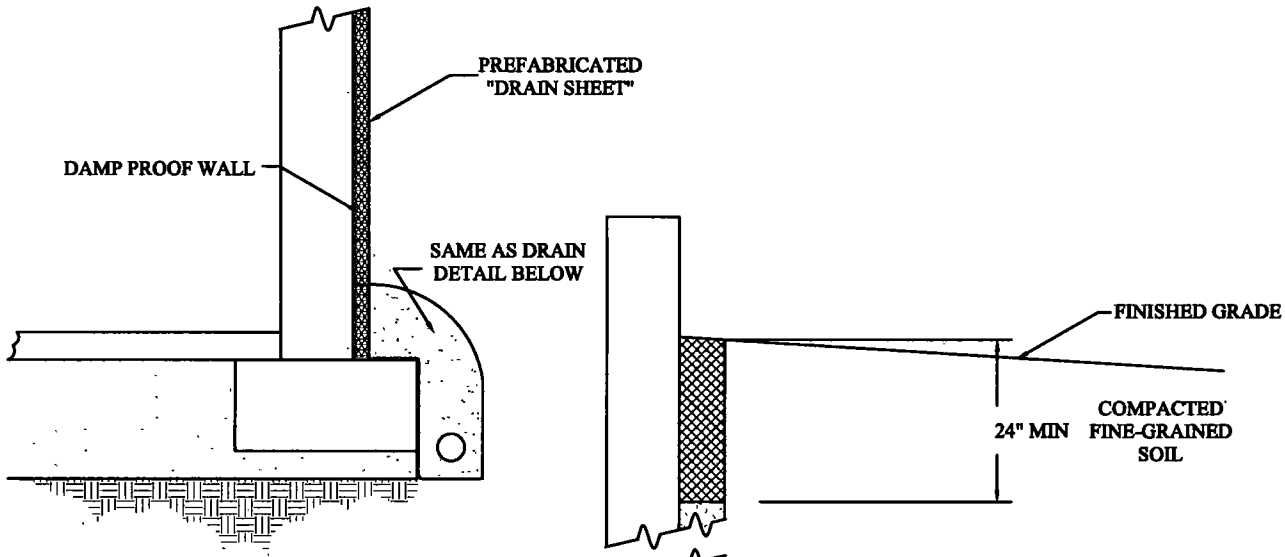
WATER SYMBOL

- Water Level

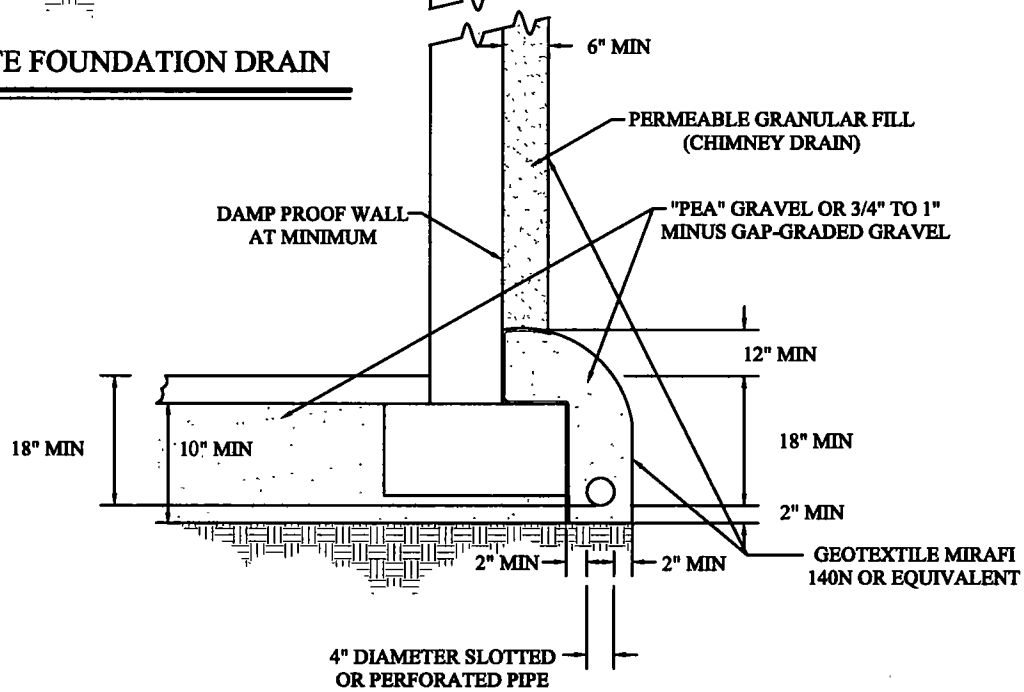
FIGURE 4

GSH

TYPICAL FOUNDATION/CHIMNEY SUBDRAIN DETAIL



ALTERNATE FOUNDATION DRAIN



TYPICAL FOUNDATION DRAIN

(NOT TO SCALE)

GSH

FIGURE 5