ADDENDUM NO. 01

INDOOR AQUATICS & RECREATION CENTER – WATER MAIN RELOCATION
O.F. No. 1770.0

Addendum 01 Issue Date
July 27, 2021

Bid Time and Date:
3:00 PM, August 4, 2021

NOTICE TO ALL BIDDERS

The Contract Specifications and Construction Drawings are hereby modified as follows, and in submitting his/her bid, each bidder shall acknowledge receipt of all addenda, which will become part of the Contract Documents according to the requirements outlined in the INSTRUCTIONS TO BIDDERS.

This Addendum consists of **three (3)** pages and **eight (8)** attachments.

CLARIFICATIONS:

1. **Cover of Project Manual.** Bid day of the week was mislabeled as Tuesday, it should have been Wednesday. Modified cover provided eliminating day of the week. Actual Bid Date was not affected.
2. **General.** Questions will no longer be accepted or addressed following issuance of Addendum No.1.
3. **Engineer Estimate.** Engineering estimate for the project is $131,021.00, which includes all items listed in Bid Form.

ATTACHMENTS:

1. Bid Manual Cover
    a. Removed Wednesday from Cover
    b. Added Steve Herrig/David Gross to Cover
2. Section 00300 Bid Form
3. Construction Agreement
4. Section 00850 Special Provisions
5. Technical Specifications
6. Measurement & Payment
7. Appendix A: Geotechnical Report Appendix Information
8. Construction Drawings

CHANGES TO THE CONTRACT:

INSTRUCTIONS TO BIDDERS

N/A

BID FORM

Updated Bid Form Included in this addendum, see attached.

1. Updated Bid Address to Physical Address
2. Update Bid Schedule

CONSTRUCTION AGREEMENT

Updated Construction Agreement Included in this addendum, see attached.

1. Exhibit B: Added Bark Mulch for Tree Protection as City Supplied Material
2. Exhibit C: Added Notice to Proceed Date and Notice that Contractor must Commence Work by September 30, 2021
3. Exhibit F: Clarified wording regarding wage rates; Contractor shall use the higher of the two rates Federal or Montana.
4. Exhibit G: Waived Insurance Requirements 6/7

SPECIAL PROVISIONS

Updated Special Provisions provided in this addendum, see attached.

1. Various formatting changes throughout.
2. Changes to:
   SP-10
   SP-12
   SP-14
   SP-17
   SP-36
   SP-45
   SP-47

TECHNICAL SPECIFICATIONS

Updated Technical Specifications provided in this addendum, see attached.

1. Specification Table of Contents - Updated
2. 01010 – Updated
3. 01300 – Updated
4. 01041 – Updated
5. 02529 – Deleted from Specifications
6. 02911 – Added Tree Relocation and Demolition Information
7. 03310 – Added to Specifications for Thrust Blocks

MEASUREMENT & PAYMENT

Updated Measurement & Payment provided in this addendum, see attached.

1. Changes/Additions to Items 101-113 in the Measurement & Pay

CONSTRUCTION DRAWINGS

Updated Construction Drawings provided in this addendum, see attached.

1. Sheet C1.0 – Title block updates
2. Sheet C2.0 – Modifications to General Notes, Water Notes, Paving Notes and Legend
3. Sheet C3.0 – Modifications to Notes and Plan
4. Sheet C4.0 – Modifications to Plan and Profile
5. Sheet C5.0 – Modifications to All Details

ACKNOWLEDGEMENT OF ADDENDUM NO. 1

The bidder shall acknowledge receipt of Addendum No. 01 in the Bid Form, on the outside of the bid envelope, and include this Addendum with the Bid.

END OF ADDENDUM No. 01

J:\2020\20-091 Great Falls Rec Ctr_MAFB\DOCUMENTS\SPECS\WATER MAIN\ADD No. 01\1770.0 BID ADDENDUM No 01.docx

CONTRACT DOCUMENTS AND SPECIFICATIONS

For

INDOOR AQUATICS & RECREATION CENTER – WATER MAIN RELOCATION
O.F. 1770.0

Specifications Filed in the
Office of the City Engineer

On July 12, 2021

Bids to be received at the Office of the City Clerk until

3:00 p.m., August 4th, 2021

Paul Skubinna, Public Works Director
Jesse Patton, Interim City Engineer
Steve Herrig, Park & Recreation Director
David Grosse, Planning & Community Development

TD&H Job No. 20-091

1800 River Drive North
Great Falls, MT 59401

TD&H Engineering

406.761.3010
tdhengineering.com

MONTANA | WASHINGTON | IDAHO | NORTH DAKOTA | PENNSYLVANIA

SECTION 00300

BID FORM

PROJECT IDENTIFICATION:

INDOOR AQUATICS & RECREATION CENTER – WATER MAIN RELOCATION
O.F. 1770.0

THIS BID SUBMITTED TO:
City of Great Falls – City Clerk
2 Park Drive
Great Falls, MT 59403

1.01 The undersigned Bidder proposes and agrees if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents, to perform and furnish all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the terms and conditions of the Bidding Documents.

2.01 Bidder accepts all of the terms and condition of the Advertisement or Invitation to Bid, and Instruction to Bidders, including without limitations those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for sixty (60) days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged the following Addenda:

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Special Provisions, and (2) reports and drawings of a Hazard Environmental Condition, if any, which has been identified in the Special Provisions.

E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous

to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction, inclusive of dewatering and/or rock excavation, expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of the Work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Bidding Documents. Bidder has coordinated all Subcontractor work and costs to ensure conflicts, ambiguities or discrepancies between Specifications, Construction Drawings/Details, Reference Standards or Design Disciplines are addressed and if applicable, provided written notice as indicated in Article I. In the event of a conflict in the Contract Documents, Technical Specifications and/or Construction Drawings, Bidder accepts responsibility for providing labor, materials, and equipment required to complete the Work in accordance with City's interpretation. Furthermore, no conflict whether clarified prior to bidding or identified during construction shall be a basis for adjustment in Contract price.

I. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by ENGINEER is acceptable to Bidder.

J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

4.01 Bidder further represents that this Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

The BIDDER certifies that no official of the OWNER, ENGINEER, or any member of such officials' immediate family, has direct or indirect interest in the pecuniary profits or Contracts of the BIDDER.

5.01 The Bidder will complete the Work in accordance with the Contract Documents for the following prices(s):

BID SCHEDULE

ITEM NO.	DESCRIPTION	EST. QTY.	UNIT	UNIT PRICE	TOTAL PRICE
101	Mobilization, Permits (MAX 5%)	1	LS		
102	Demolition & Tree Protection	1	LS		
103	6" Depth 1.5" Minus Gravel Base Course	50	SY		
104	8" C900 DR14 Water Main	593	LF		
105	6" C900 DR14 Hydrant Lead	146	LF		
106	4" C900 DR14 Domestic / Fire Service Line	2	EA		
107	6" Gate Valve	2	EA		
108	8" Gate Valve	1	EA		
109	Fittings	370	LB		
110	Fire Hydrant Assembly	2	EA		
111	Connect to Existing 6" Water Main	2	EA		
112	2" Irrigation Service Line Tap	1	EA		
113	Miscellaneous Field Work or Materials	1	EA	$1.00	$12,000.00
	TOTAL				

TOTAL BID PRICE FOR ITEMS 101 TO 113 $_____DOLLARS

_____

(Words)

A. Unit Prices have been computed in accordance with the Instructions to Bidders.

B. Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents. No additional payment will be made for materials purchased and not installed as a result of adjustments in field quantities versus Bid Form quantities.

C. The undersigned agrees that the unit prices shall govern in checking the Bid, and should a discrepancy exist in the Total Estimated Price and Total Amount of Unit Prices Bid as listed above after extensions are checked and corrections made, if any, the Total Amount of Unit Prices Bid as corrected shall be used in awarding this Contract.

D. The OWNER reserves the right to reject any or all bids.

6.01 Bidder agrees that the Work will be completed and ready for final payment in accordance with the Construction Agreement or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of

failure to complete the Work within the times specified above, which shall be stated in the Agreement.

7.01 The following documents are attached to and made a condition of the Bid:

A. Required Bid security in the amount of 10% of the maximum Bid price including alternates, if any, and in the form of a Bid Bond identified in the Instructions To Bidders.

8.01 The terms used in this Bid with the initial capital letters have the meanings indicated in the Instructions To Bidders.

SUBMITTED on _____, _____ ____.
(Date)

Montana Contractor's Registration # (if any) _____.

Employer's Tax ID No. _____.

If BIDDER is:
An Individual: _____
(Name typed or printed)

By: _____
(Individual's Signature)

Doing business as: _____

Business Address: _____

Phone No.: _____ FAX No.: _____

A Partnership: _____
(Partnership Name)

By: _____
(Name, typed or printed)
(Signature)_____

Business Address: _____

Phone No.: _____ FAX No.: _____

A Corporation: _____
(Corporation Name)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature of person authorized to sign)

Title: _____

Attest: _____
(Signature)

Business Address: _____

Phone No.: _____ FAX No.: _____

Date of Qualification To Do Business Is: _____

_____
(Corporate Seal)

A Joint Venture: Each Joint Venture Must Sign

Joint Venture Name: _____
(Name)

By: _____
(Signature of Joint Venture Partner)

Name: _____
(Name, printed or typed)

Title: _____

Business Address: _____

_____

Phone No.: _____ FAX No.: _____

Joint Venture Name: _____
(Name)

By: _____
(Signature of Joint Venture Partner)

Name: _____
(Name, printed or typed)

Title: _____

Business Address: _____

_____

Phone No.: _____ FAX No.: _____

Address of Joint Venture for Receipt of Official Communication:

Address**:** _____

_____

Phone No.: _____ FAX No.: _____

(Each Joint Venture must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

END OF SECTION 00300

CONSTRUCTION AGREEMENT

This **Construction Agreement** is made and entered into by and between the **CITY OF GREAT FALLS, MONTANA**, a municipal corporation organized and existing under the laws of the State of Montana, P.O. Box 5021, Great Falls, Montana 59403 ("**City**"), and , a , , , , , ("**Contractor**").

Recitals

A. The City issued a Request For Bid for the construction project known as Indoor Aquatics & Recreation Center - Water Main Relocation O.F. 1770.0 ("Construction Project") pursuant to the requirements of all applicable statutes, rules, regulations, and ordinances.

B. The City analyzed all responses to the Request For Bid received pursuant to its standard practices and the requirements of all applicable statutes, rules, regulations, and ordinances.

C. At its meeting held on , 20 , the City Commission awarded the bid to Contractor, pursuant to the terms and conditions of this Agreement.

NOW THEREFORE, in consideration of the covenants, agreements, representations, and warranties contained herein, the parties agree as follows:

Agreement

1. Work to be Performed:

a. A description of the Construction Project and Contractor's duties is set forth in the Request For Bid and Bid Form as awarded and accepted by City, which are attached hereto and incorporated herein by this reference, and the drawings, plans, and specifications provided by the City and its architects and engineers. The Bid Form and City's Award are attached as **Exhibit A.**

b. Prior to the commencement of any work on the Construction Project, Contractor's representatives and City's representatives shall hold a meeting to establish a working understanding among the parties as to the scope of the Construction Project and duties of the Contractor. At this meeting, Contractor and City shall resolve any outstanding issues related to the plans, designs, drawings, and specifications. If the parties are unable to resolve these issues and the City fails, refuses, or is unable to approve the same, no work shall commence on the Construction Project until such issues are resolved and the City approves the related plans, designs, drawings, and specifications.

c. Except as provided elsewhere in this Agreement, Contractor shall furnish all the labor, materials, equipment, tools, and services necessary to perform and complete the Construction Project.

d. During work on the Construction Project, and as part of the final completion of the Construction Project, Contractor shall clean up the Project site, including the removal and satisfactory disposal of all waste, garbage, excess materials, equipment, temporary buildings, the removal or grading of all embankments made for construction purposes, the filling in of all excavations, and the performance of any other work necessary to restore the site to at least as good order and condition as at the commencement of the Construction Project.

2. City-Supplied Materials: City will supply the materials set forth on **Exhibit B** attached hereto. All other materials will be supplied by Contractor.

3. Time of Performance:

a. Contractor shall begin the Construction Project after receiving a Notice to Proceed from City and shall complete the Construction Project within sixty (60) days of the starting date stated in the Notice to Proceed. The various phases of the Construction Project shall be completed pursuant to the Construction Schedule attached hereto as **Exhibit C**. Time is of the essence of completion of all work and each phase of the Construction Project.

b. The Construction Schedule is subject to the City's approval. Contractor's construction plan, methods of operation, materials used, and individuals and subcontractors employed (collectively "Contractor's Resources") are subject to the City's approval at all times during the term of this Agreement, and must be such as to ensure the completion of the work in compliance with the deadlines set in the Construction Schedule during the term of this Agreement. In the event the City determines the Contractor's Resources are inadequate to meet the approved Construction Schedule, the City may order the Contractor to accelerate its performance to give reasonable assurances of timely completion and quality results. Acceleration under this section shall not be deemed a Change Order as defined in Section 5b below and the Contractor shall receive no equitable adjustment for such acceleration. Nothing in this section shall be interpreted to relieve the Contractor of its duties and responsibilities to plan for and complete the work in a timely manner according to the Construction Schedule.

4. Liquidated Damages: If the Construction Project is not completed within the time provided by this Agreement, the City may deduct for each day the Construction Project remains uncompleted the sum of Five Hundred dollars ($500.00) from the compensation hereinafter specified, and retain that sum as payment for liquidated damages sustained by reason of the Contractor's failure to complete the Construction Project on time.

5. Compensation:

a. City shall pay to Contractor, and Contractor shall accept as full payment for the performance of this Agreement and the Construction Project, the amount of DOLLARS ($), as paid in accordance with **Exhibit D**, Compensation Schedule, attached hereto.

b. If work not included within the original Scope of Work documents is requested by City, such additional work and the related compensation shall be agreed to in writing by both

parties prior to commencement of the additional work ("Change Order") pursuant to the Change of Work Specifications set forth on **Exhibit E** attached hereto.

c. Monthly progress payments and final payment will be made only in accordance with the terms of the Compensation Schedule. All invoices must be submitted to the City's Representative as set forth in ¶ 15.

d. City shall retain five percent (5%) of the total amount of compensation to be paid to the Contractor to ensure compliance with the terms and conditions of this Agreement and the timely completion of the Construction Project and any and all "punch list" items ("Retainage Amount"). The Retainage Amount shall be paid to Contractor thirty (30) days after the City's final acceptance of the portion of work for which a separate price is stated in the specifications for the Construction Project.

e. Upon acceptance of final payment and for other good and valuable consideration, Contractor shall release and forever discharge City, its officers, agents, and employees of and from any and all claims, demands, actions, causes of action, obligations, and liabilities of every kind and character whatsoever, in law and in equity, whether now known or in the future discovered, arising from or related to this Agreement or the Construction Project that Contractor may have or assert against City, its officers, agents, and employees.

6. Inspection and Testing:

a. City has the right to inspect and test any and all work performed by Contractor on the Construction Project. Contractor shall allow City and its agents access to the Construction Project at all times and shall provide every reasonable facility for the purpose of such inspection and testing, including temporarily discontinuing portions of the work or uncovering or taking down portions of the finished work.

b. Contractor is exclusively responsible for ensuring that the work contemplated under this Agreement strictly complies with the Agreement terms and conditions, acceptable engineering practices, State requirements, applicable laws and building and safety codes, and other applicable standards.

c. Any City inspections and testing are not an endorsement of the work contemplated under this Agreement. Any inspection and testing performed by the City and its agents is for the sole benefit of the City and shall not relieve the Contractor of its duties, responsibilities, and obligations set forth in this Agreement. City's inspection and testing shall not be deemed or considered acceptance by the City of any portion of the Construction Project. City's inspection and testing shall not serve to nullify, amend, or waive any warranties provided by the Contractor under this Agreement.

d. Contractor shall, without charge, replace any material or correct any work found by the City or its agents to be defective or otherwise not in compliance with the terms and conditions of this Agreement. The determination of defective and non-compliant Work and identification of replacement or repairs necessary to meet the Contract Document requirements shall be made in

the City's sole discretion. In the event Contractor fails to replace or correct any defective work or materials after reasonable written notice by the City to do so, the City may take such corrective action, either with its own materials and employees or by retaining any third party to do so, and deduct the cost and expense of such corrective action from the Contractor's compensation.

7. **Partial Utilization of Construction Project**: City shall have the right to use or occupy any portion of the Construction Project that City and Contractor mutually agree is substantially completed and constitutes a separately functioning and usable part of the Construction Project for its intended purpose without significant interference with Contractor's performance of the remaining portions of the Construction Project. In the event City takes possession of any portion of the Construction Project, such possession shall not be deemed an acceptance of the Construction Project, in whole or in part. Contractor shall still be required to conduct any final testing of the portions in the possession of the City. City's use of any portion of the Construction Project shall not be grounds for extensions of any construction deadlines or a change in the Contractor's compensation. Contractor's warranties shall run from the completion of the total Construction Project and not from the date the City may take possession of selected portions of the Construction Project.

8. **Related Work at the Site**: Nothing in this Agreement shall prevent or preclude City, through its own employees or by contract with any third party, from performing other work related to the Construction Project at the construction site; provided such related work is not otherwise addressed in this Agreement and provided such related work does not otherwise interfere with Contractor's performance of this Agreement or the completion of the Construction Project. Contractor shall afford any City employee, agent or representative, or any third party under contract with the City to perform the related work, proper and safe access to the construction site, a reasonable opportunity for the introduction and storage of materials and equipment, the opportunity to perform the related work, and shall properly coordinate the Contractor's work on the Construction Project with the related work.

9. **Contractor's Warranties**: Contractor represents and warrants as follows:

a. Unless otherwise specified by the terms of this Agreement, all materials and equipment installed by Contractor on the Construction Project must be new and, where not otherwise specified, of the most suitable grade for their intended uses.

b. All workmanship and materials shall be of a kind and nature acceptable to the City.

c. All equipment, materials, and labor provided to, on, or for the Construction Project must be free of defects and nonconformities in design, materials, and workmanship for a minimum period beginning with the commencement of the work on the Construction Project and ending two (2) years from the final completion and acceptance by the City of the Construction Project, regardless of whether such equipment, materials, or labor were supplied directly by Contractor or indirectly by Contractor's subcontractors or suppliers. Other express warranties on materials that provide for a warranty period longer than two years apply for the period of that express warranty and are not reduced by this provision. Upon receipt of City's written notice of a defective or nonconforming condition during the warranty period, Contractor shall take all actions, including

redesign and replacement, to correct the defective or nonconforming condition within a time frame acceptable to the City and at no additional cost to the City. Contractor shall also, at its sole cost, perform any tests required by City to verify that such defective or nonconforming condition has been corrected. Contractor warrants the corrective action taken against defective and nonconforming conditions for a period of an additional one (1) year from the date of City's acceptance of the corrective action.

d. Contractor and its sureties are liable for the satisfaction and full performance of all warranties.

e. Contractor shall prosecute the completion of the Construction Project under the terms of this Agreement and Contractor, or its duly authorized representative assigned to serve as the Construction Project Manager, shall be personally present at the site of the Construction Project during working hours for the term of this Agreement until the completion of the Construction Project.

f. Contractor shall maintain an office at the site of the Construction Project and shall have a complete, accurate, and up-to-date set of construction plans, drawings, and specifications at that office at all times. The office may be a mobile facility or vehicle.

g. Contractor has examined all available records and made field examinations of the site of the Construction Project. Contractor has knowledge of the field conditions to be encountered during the Construction Project. Contractor has knowledge of the types and character of equipment necessary for the work, the types of materials needed and the sources of such materials, and the condition of the local labor market.

h. Contractor is responsible for the safety of the work and shall maintain all lights, guards, signs, temporary passages, or other protections necessary for that purpose at all times.

i. All work must be performed at Contractor's risk, and Contractor shall promptly repair or replace all damage and loss at its sole cost and expense regardless of the reason or cause of the damage or loss.

j. Contractor is responsible for any loss or damage to materials, tools, or other articles used or held for use in the completion of performance of the Construction Project.

k. Contractor's performance must be without damage or disruption to any other work or property of the City or of others and without interference with the operation of existing machinery or equipment.

l. Title to all work, materials, and equipment covered by any payment of Contractor's compensation by City, whether directly incorporated into the Construction Project or not, passes to City at the time of payment, free and clear of all liens and encumbrances.

10. **Delays and Extensions of Time**: If Contractor's performance of this Agreement is prevented or delayed by any unforeseen cause beyond the control of the Contractor, including acts

or omissions of the City, Contractor shall, within ten (10) days of the commencement of any such delay, give the City written notice thereof. Further, Contractor shall, within ten (10) days of the termination of such delay, give the City written notice of the total actual duration of the delay. If the City is provided with these required notices and if the City determines that the cause of the delay was not foreseeable, was beyond the control of the Contractor, and was not a result of the fault or negligence of the Contractor, then the City will determine the total duration of the delay and extend the time for performance of the Agreement accordingly. Unless the delay is caused by the intentional interference of the City with the Contractor's performance, Contractor shall make no claim for damages or any other claim other than for an extension of time as herein provided by reason of any delays. Overtime Costs identified in the Special Provisions are still applicable.

11. <u>Suspension</u>:

a. The City may, by written notice to the Contractor and at its convenience for any reason, suspend the performance of all or any portion of the work to be performed on the Construction Project ("Notice of Suspension"). The Notice of Suspension shall set forth the time of suspension, if then known to the City. During the period of suspension, Contractor shall use its best efforts to minimize costs associated with the suspension.

b. Upon Contractor's receipt of any Notice of Suspension, unless the notice requires otherwise, Contractor shall: **(1)** immediately discontinue work on the date and to the extent specified in the Notice of Suspension; **(2)** place no further orders or subcontracts for materials, services, or equipment; **(3)** upon terms satisfactory to City promptly make every reasonable effort to obtain suspension of all orders, subcontracts, and rental agreements to the extent that they relate to the performance of the work suspended; and **(4)** continue to protect and maintain the Project, including those portions on which work has been suspended.

c. As compensation for the suspended work, Contractor will be reimbursed for the following costs, reasonably incurred, without duplication of any item, and to the extent that such costs directly resulted from the suspension: **(1)** a standby charge paid during the period of suspension which will be sufficient to reasonably compensate Contractor for keeping, to the extent required in the Notice of Suspension, Contractor's organization and equipment committed to the Project in standby status; **(2)** all reasonably incurred costs for the demobilization of Contractor's and subcontractor's crews and equipment; **(3)** an equitable amount to reimburse Contractor for the cost to protect and maintain the Project during the period of suspension; and **(4)** an equitable adjustment in the cost of performing the remaining portion of the work post-suspension if, as a direct result of the suspension, the cost to Contractor of subsequently performing the remaining work on the Construction Project has increased or decreased.

d. Upon receipt of written notice by the City to resume the suspended work ("Notice to Resume Work"), Contractor shall immediately resume performance of the suspended work as to the extent required in the Notice to Resume Work. Any claim by Contractor for time or compensation described in Section 11(c) shall be made within fifteen (15) days after receipt of the Notice to Resume Work and Contractor shall submit a revised Construction Schedule for the City's review and approval. Contractor's failure to timely make such a claim shall result in a waiver of the claim.

e. No compensation described in Section 11(c) shall be paid and no extension of time to complete the Construction Project shall be granted if the suspension results from Contractor's non-compliance with or breach of the terms or requirements of this Agreement.

12. Termination for Contractor's Fault:

a. If Contractor refuses or fails to timely do the work, or any part thereof, or fails to perform any of its obligations under this Agreement, or otherwise breaches any terms or conditions of this Agreement, the City may, by written notice, terminate this Agreement and the Contractor's right to proceed with all or any part of the Construction Project ("Termination Notice Due to Contractor's Fault"). The City may then take over the Construction Project and complete it, either with its own resources or by re-letting the contract to any other third party, and may immediately take possession of and use such materials, appliances, tools, and equipment as may be on the site and which may be necessary for the completion of the Construction Project.

b. In the event of a termination pursuant to this Section 12, Contractor shall be entitled to payment only for those services that Contractor has actually rendered. In the case of a lump sum or unit price contract, Contractor shall not be entitled to any further payment until the Construction Project has been completed. Upon completion of the Construction Project, if the unpaid balance of the Contractor's compensation exceeds the cost to the City of completing the work, including all costs paid to any subcontractors or third parties retained by the City to complete the Construction Project and all administrative costs resulting from the termination ("City's Cost for Completion"), such excess shall be paid to the Contractor. If the City's Cost for Completion exceeds the unpaid balance of the Contractor's compensation, then Contractor and its sureties shall be liable for and shall pay the difference, plus interest at the rate applicable to court judgments, to the City.

c. Any termination provided for by this Section 12 shall be in addition to any other remedies to which the City may be entitled under the law or at equity.

d. In the event of termination under this Section 12, Contractor shall, under no circumstances, be entitled to claim or recover consequential, special, punitive, lost business opportunity, lost productivity, field office overhead, general conditions costs, or lost profits damages of any nature arising, or claimed to have arisen, as a result of the termination.

13. Termination for City's Convenience:

a. Should conditions arise which, in the sole opinion and discretion of the City, make it advisable to the City to cease work on the Construction Project, City may terminate this Agreement by written notice to Contractor ("Notice of Termination for City's Convenience"). The termination shall be effective in the manner specified in the Notice of Termination for City's Convenience and shall be without prejudice to any claims that the City may otherwise have against Contractor.

b. Upon receipt of the Notice of Termination for City's Convenience, unless otherwise directed in the Notice, the Contractor shall immediately cease work on the Construction Project, discontinue placing orders for materials, supplies, and equipment for the Construction Project, and make every reasonable effort to cancel all existing orders or contracts upon terms satisfactory to the City. Contractor shall do only such work as may be necessary to preserve, protect, and maintain work already completed, in progress, or in transit to the construction site.

c. In the event of a termination pursuant to this Section 13, Contractor is entitled to payment only for those services that Contractor has actually rendered and materials actually purchased or which Contractor has made obligations to purchase on or before the receipt of the Notice of Termination for City's Convenience, and reasonably incurred costs for demobilization of Contractor's and any subcontractor's crews. It is agreed that any materials that City is obligated to purchase from Contractor will remain the City's sole property.

d. The compensation described in Section 13(c) is the sole compensation due to Contractor for its performance of this Agreement. Contractor shall, under no circumstances, be entitled to claim or recover consequential, special, punitive, lost business opportunity, lost productivity, field office overhead, general conditions costs, or lost profits damages of any nature arising, or claimed to have arisen, as a result of the termination.

14. Limitation on Contractor's Damages; Time for Asserting Claim:

a. In the event of a claim for damages by Contractor under this Agreement, Contractor's damages shall be limited to contract damages and Contractor hereby expressly waives any right to claim or recover consequential, special, punitive, lost business opportunity, lost productivity, field office overhead, general conditions costs, or lost profits damages of any nature or kind.

b. In the event Contractor asserts a claim for damages of any kind or nature, Contractor shall provide City with written notice of its claim, the facts and circumstances surrounding and giving rise to the claim, and the total amount of damages sought by the claim, within ten (10) days of the occurrence of the facts and circumstances giving rise to the claim. In the event Contractor fails to provide such notice, Contractor shall waive all rights to assert such claim.

15. Representatives:

a. City's Representative: The City's Representative for the purpose of this Agreement shall be **David Grosse** or such other individual as City shall designate in writing. Whenever approval or authorization from or communication or submission to City is required by this Agreement, such communication or submission shall be directed to City's Representative and approvals or authorizations shall be issued only by such Representative; provided, however, that in exigent circumstances when City's Representative is not available, Contractor may direct its communication or submission to other designated City personnel or agents and may receive approvals or authorization from such persons.

b. **Contractor's Representative**: The Contractor's Representative for the purpose of this Agreement shall be or such other individual as Contractor shall designate in writing. Whenever direction to or communication with Contractor is required by this Agreement, such direction or communication shall be directed to Contractor's Representative; provided, however, that in exigent circumstances when Contractor's Representative is not available, City may direct its direction or communication to other designated Contractor personnel or agents.

16. **Locating Underground Facilities**: If City personnel assume responsibility for locating any underground facilities, this fact shall be noted in writing prior to commencement of such location work. Otherwise, Contractor shall be solely responsible for obtaining and determining the location of any underground facilities, including but not limited to, the location of any pipelines or utility supply, delivery, or service lines in accordance with the provisions of §69-4-501, et seq., MCA. Contractor shall make every effort to avoid damage to underground facilities and shall be solely responsible for any damage that may occur.

17. **Permits**: Contractor shall provide all notices, comply with all applicable laws, ordinances, rules, and regulations, obtain all necessary permits, licenses, and inspections from applicable governmental authorities, pay all fees and charges in connection therewith, and perform all surveys and locations necessary for the timely completion of the Construction Project.

18. **Ownership of Documents; Indemnification**: All plans, designs, drawings, specifications, documents, sample results and data, in whatever medium or format, originated or prepared by or for Contractor in contemplation of, or in the course of, or as a result of this Agreement or work on the Construction Project, shall be promptly furnished to the City ("City Documents and Information"). All City Documents and Information shall be the exclusive property of the City and shall be deemed to be works-for-hire. Contractor hereby assigns all right, title, and interest in and to the City Documents and Information, including but not limited to, all copyright and patent rights in and to the City Documents and Information. Neither party grants to the other any express or implied licenses under any patents, copyrights, trademarks, or other intellectual property rights, except to the extent necessary to complete its obligations to the other under this Agreement.

19. **Laws and Regulations**: Contractor shall comply fully with all applicable federal, state, and local laws, regulations, and ordinances including, but not limited to, all workers' compensation laws, all environmental laws including, but not limited to, the generation and disposal of hazardous waste and storm water discharge, the Occupational Safety and Health Act (OSHA), the safety rules, codes, and provisions of the Montana Safety Act in Title 50, Chapter 71, MCA, all applicable City, County, and State building and electrical codes, the Americans with Disabilities Act, and all non-discrimination, and utilization of minority and small business statutes and regulations.

20. **Non-discrimination in Hiring**: All hiring by Contractor and subcontractors of persons performing work for Contractor will be on the basis of merit and qualification and will not discriminate on the basis of race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, national origin, or other class protected by state and/or federal law. The Contractor shall require these nondiscrimination terms of its subcontractors providing services under this Agreement.

21. **Intoxicants; DOT Drug and Alcohol Regulations**: Contractor shall not permit or allow the introduction or use of any intoxicants, including alcohol or illegal drugs, upon the site of the Construction Project. Contractor acknowledges it is aware of and shall comply with its responsibilities and obligations under the U.S. Department of Transportation (DOT) regulations governing anti-drug and alcohol misuse prevention plans and related testing. City shall have the right to request proof of such compliance and Contractor shall be obligated to furnish such proof.

22. **Labor Relations**:

a. Contractor shall post a legible statement of all wages and fringe benefits to be paid to the Contractor's employees and the frequency of such payments (i.e., hourly wage employees shall be paid weekly). Such posting shall be made in a prominent and accessible location at the site of the Construction Project and shall be made no later than the first day of work. Such posting shall be removed only upon the final completion of the Construction Project and the termination of this Agreement.

b. As required by §18-2-403, MCA, in performing the terms and conditions of this Agreement and the work on the Construction Project, Contractor shall give preference to the employment of bona fide residents of Montana, , as such term is defined by §18-2-401(1), MCA, and the Administrative Rules of Montana, including but not limited to A.R.M. 24.17.147, obliging Contractor to hire 50% bona fide Montana residents, excluding projects involving the expenditure of federal aid funds or where residency preference laws are specifically prohibited by federal law. When making assignments of work, Contractor shall use workers both skilled in their trade and specialized in their field of work for all work to which they are assigned.

c. Pursuant to §§18-2-403 and 18-2-422, MCA, Contractor shall pay wages, benefits, and expenses as set forth on **Exhibit F**, Contractor's Rates of Wages, Benefits, and Expenses, attached hereto. Contractor shall pay all hourly wage employees on a weekly basis. Violation of the requirements set forth on **Exhibit F** may subject the Contractor to the penalties set forth in §18-2-407, MCA. Contractor shall maintain payroll records and, upon City's request, provide certified copies to the City. Contractor shall maintain such payroll records during the term of this Agreement, the course of the work on the Construction Project, and for a period of three (3) years following the date of final completion of the Construction Project and termination of this Agreement.

d. In the event that, during the term of this Agreement and throughout the course of Contractor's performance of the Construction Project, any labor problems or disputes of any type arise or materialize which in turn cause any work on the Construction Project to cease for any period of time, Contractor specifically agrees to take immediate steps, at its own expense and without expectation of reimbursement from City, to alleviate or resolve all such labor problems or disputes. The specific steps Contractor shall take to resume work on the Construction Project shall be left to the discretion of Contractor; provided, however, that Contractor shall bear all costs of any related legal action. Contractor shall provide immediate relief to the City so as to permit the work on the Construction Project to resume and be completed within the time frames set forth in the Construction Schedule at no additional cost to City.

e. Contractor shall indemnify, defend, and hold the City harmless from any and all claims, demands, costs, expenses, damages, and liabilities arising out of, resulting from, or occurring in connection with any labor problems or disputes or any delays or stoppages of work associated with such problems or disputes.

23. Subcontractors:

a. Contractor may employ subcontractors for any work on the Construction Project. Contractor shall provide City with a list of all subcontractors employed and require that all subcontractors are appropriately licensed to work in the City of Great Falls.

b. Contractor remains fully responsible for the acts and omissions of any subcontractor, just as Contractor is for its own acts and omissions, and Contractor shall remain fully responsible and liable for the timely completion of the Construction Project.

c. Contractor is solely liable for any and all payments to subcontractors. Contractor shall hold all payments received from the City in trust for the benefit of subcontractors, and all such payments shall be used to satisfy obligations of the Construction Project before being used for any other purpose. Contractor shall make any payments due to any subcontractor within seven (7) days of Contractor's receipt of payment, including a proportional part of the retainage Contractor has received from the City. In the event of a dispute regarding any subcontractor's invoice, Contractor shall promptly pay the undisputed amount to the subcontractor and notify the subcontractor in writing of the amount in dispute and the reasons for the dispute. Any withholding of payment must comply with the requirements of §28-2-2103, MCA. In the event Contractor is unwilling or unable to make timely and proper payment to any subcontractor, City may elect to withhold any payment otherwise due to Contractor and upon seven (7) days' written notice to Contractor, may pay subcontractor by direct or joint payment.

24. Indebtedness and Liens: Before City may make any final payment to Contractor, Contractor shall furnish City with satisfactory proof that there are no outstanding debts or liens in connection with the Construction Project. If the Contractor allows any indebtedness to accrue to subcontractors or others during the progress of the work, and fails to pay or discharge the same within five (5) days after demand, then City may either withhold any money due to Contractor until such indebtedness is paid or apply the same toward the discharge of the indebtedness. If any lien or claim is filed or made by any subcontractor, material supplier, or any other person, the Contractor shall immediately notify the City and shall cause the same to be discharged of record within thirty (30) days after its filing.

25. Hazard Communication: Contractor shall comply with all hazard communication requirements dictated by the Environmental Protection Agency, the Montana Departments of Environmental Quality and Agriculture,OSHA, Hazard Communications Standard, 29 CFR 1910.1200, and applicable City ordinances. Contractor shall supply a chemical list, the associated safety data sheets (SDS), and other pertinent health exposure data for chemicals that the Contractor's, subcontractor's or the City's employees may be exposed to while working on City property during the course of the Construction Project. One copy of this documentation must be

delivered to City to the attention of the City's Representative. This documentation must be delivered before work involving these chemicals may commence.

26. **Accounts and Records**: Except as provided to the contrary herein, during the term of this Agreement and for two (2) years following the City's final acceptance of the Construction Project, Contractor shall maintain accounts and records related to the Construction Project. Upon reasonable notice, City shall have the right to inspect all such accounts and records, including but not limited to, Contractor's records, books, correspondence, instructions, drawings, specifications, field and site notes, receipts, invoices, bills, contracts, or other documents relating to the Construction Project.

27. **Indemnification; Insurance; Bonds**:

a. Contractor agrees to release, defend, indemnify, and hold harmless the City, its agents, representatives, employees, and officers (collectively referred to for purposes of this Section as the City) from and against any and all claims, demands, actions, fees and costs (including attorney's fees and the costs and fees of and expert witness and consultants), losses, expenses, liabilities (including liability where activity is inherently or intrinsically dangerous) or damages of whatever kind or nature connected therewith and without limit and without regard to the cause or causes thereof or the negligence of any party or parties that may be asserted against, recovered from or suffered by the City occasioned by, growing or arising out of or resulting from or in any way related to: (i) the negligent, reckless, or intentional misconduct of the Contractor; (ii) any negligent, reckless, or intentional misconduct of any of the Contractor's agents; or (iii) the negligent, reckless, or intentional misconduct of any other third party.

b. Such obligations shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist. The indemnification obligations of this Section must not be construed to negate, abridge, or reduce any common-law or statutory rights of the indemnitee(s) which would otherwise exist as to such indemnitee(s).

c. Contractor's indemnity under this Section shall be without regard to and without any right to contribution from any insurance maintained by City.

d. Should any indemnitee described herein be required to bring an action against the Contractor to assert its right to defense or indemnification under this Agreement or under the Contractor's applicable insurance policies required below the indemnitee shall be entitled to recover reasonable costs and attorney fees incurred in asserting its right to indemnification or defense but only if a court of competent jurisdiction determines the Contractor was obligated to defend the claim(s) or was obligated to indemnify the indemnitee for a claim(s) or any portion(s) thereof.

e. In the event of an action filed against City resulting from the City's performance under this Agreement, the City may elect to represent itself and incur all costs and expenses of suit.

f. Contractor also waives any and all claims and recourse against the City or its officers,

agents or employees, including the right of contribution for loss or damage to person or property arising from, growing out of, or in any way connected with or incident to the performance of this Agreement except responsibility for its own fraud, for willful injury to the person or property of another, or for violation of law, whether willful or negligent, according to 28-2-702, MCA.

g. These obligations shall survive termination of this Agreement and the services performed hereunder.

h. In addition to and independent from the above, Contractor shall at Contractor's expense secure insurance coverage through an insurance company or companies duly licensed and authorized to conduct insurance business in Montana which insures the liabilities and obligations specifically assumed by the Contractor in this Section. The insurance coverage shall not contain any exclusion for liabilities specifically assumed by the Contractor in subsection (a) of this Section. The insurance shall cover and apply to all claims, demands, suits, damages, losses, and expenses that may be asserted or claimed against, recovered from, or suffered by the City without limit and without regard to the cause therefore and which is acceptable to the City and Contractor shall furnish to the City an accompanying certificate of insurance and accompanying endorsements in amounts not less than as shown on Exhibit G.

i. Contractor shall maintain those insurances as may be required by City as set forth on The attached **Exhibit G**, Required Insurance Coverage, and Contractor shall provide City with proof of such insurance coverage within ten (10) days following execution of this Agreement and at least annually thereafter during the term of the Project. Contractor shall notify City thirty (30) days prior to the expiration of any such required insurance coverage and shall ensure such required insurance coverage is timely renewed during the term of this Agreement so that there is no lapse in coverage during Contractor's performance of this Agreement. Contractor shall further notify City within two (2) business days of Contractor's receipt of notice that any required insurance coverage will be terminated or Contractor's decision to terminate any required insurance coverage for any reason. Each required insurance coverage must name the City and its representatives, including but not limited to the architect and engineer, as additional insureds using a substantially similar or identical to the Additional Insured Endorsement example as set forth in **Exhibit G**.

j. Contractor shall maintain those security guarantees set forth on the attached **Exhibit H**, Required Bonds.

28. **Taxes**: Contractor is obligated to pay all taxes of any kind or nature and make all appropriate employee withholdings. Contractor understands that all contractors or subcontractors working on a publicly funded project are required to pay or have withheld from earnings a license fee of one percent (1%) of the gross contract price if the gross contract price is Five Thousand Dollars ($5,000) or more. This license fee is paid to the Montana Department of Revenue.

29. **Dispute Resolution**:

a. Any claim, controversy, or dispute between the parties, their agents, employees, or representatives shall be resolved first by negotiation between senior-level personnel from each

party duly authorized to execute settlement agreements. Upon mutual agreement of the parties, the parties may invite an independent, disinterested mediator to assist in the negotiated settlement discussions.

b. If the parties are unable to resolve the dispute within thirty (30) days from the date the dispute was first raised, then such dispute shall be resolved in a court of competent jurisdiction in compliance with the Applicable Law provisions of this Agreement.

30. **Survival**: Contractor's indemnification and warranty obligations shall survive the termination or expiration of this Agreement for the maximum period allowed under applicable law.

31. **Headings**: The headings used in this Agreement are for convenience only and are not to be construed as a part of the Agreement or as a limitation on the scope of the particular paragraphs to which they refer.

32. **Waiver**: A waiver by City of any default or breach by Contractor of any covenants, terms, or conditions of this Agreement does not limit City's right to enforce such covenants, terms, or conditions or to pursue City's rights in the event of any subsequent default or breach.

33. **Severability**: If any portion of this Agreement is held to be void or unenforceable, the balance thereof shall continue in effect.

34. **Applicable Law**: The parties agree that this Agreement is governed in all respects by the laws of the State of Montana and the parties expressly agree that venue will be in Cascade County, Montana, and no other venue.

35. **Binding Effect**: This Agreement is binding upon and inures to the benefit of the heirs, legal representatives, successors, and assigns of the parties.

36. **Amendments**: This Agreement may not be modified, amended, or changed in any respect except by a written document signed by all parties.

37. **No Third-Party Beneficiary**: This Agreement is for the exclusive benefit of the parties, does not constitute a third-party beneficiary agreement, and may not be relied upon or enforced by a third party.

38. **Counterparts**: This Agreement may be executed in counterparts, which together constitute one instrument.

39. **Assignment**: Contractor may not assign this Agreement in whole or in part without the prior written consent of the City. No assignment will relieve Contractor of its responsibility for the performance of the Agreement and the completion of the Construction Project. Contractor may not assign to any third party other than Contractor's subcontractors on the Construction Project, the right to receive monies due from City without the prior written consent of City.

40. **Authority**: Each party represents that it has full power and authority to enter into and perform this Agreement and the person signing this Agreement on behalf of each party has been properly authorized and empowered to sign this Agreement.

41. **Independent Contractor**: The parties agree and acknowledge that in the performance of this Agreement and the completion of the Construction Project, Contractor shall render services as an independent contractor and not as the agent, representative, subcontractor, or employee of the City. The parties further agree that all individuals and companies retained by Contractor at all times will be considered the agents, employees, or independent contractors of Contractor and at no time will they be the employees, agents, or representatives of the City. Contractor is not authorized to represent the City or otherwise bind the City in any dealings between Contractor and any third parties.

42. **Agreement Documents**: All work on the Construction Project shall be performed by Contractor in accordance with all of the terms and conditions of this Agreement, the Instructions to Bidders, Special Provisions, and all Exhibits attached hereto, which Exhibits consist of the following documents and are incorporated herein by this reference:

Exhibit A:	Bid Form and Project Manual
Exhibit B:	City Supplied Materials
Exhibit C:	Construction Schedule
Exhibit D:	Compensation Schedule
Exhibit E:	Change of Work Specifications
Exhibit F:	Contractor's Rates of Wages, Benefits, and Expenses
Exhibit G:	Required Insurance Coverage
Exhibit H:	Required Bonds

43. **Integration**: This Agreement and all Exhibits attached hereto constitute the entire agreement of the parties. Covenants or representations not contained therein or made a part thereof by reference, are not binding upon the parties. There are no understandings between the parties other than as set forth in this Agreement. All communications, either verbal or written, made prior to the date of this Agreement are hereby abrogated and withdrawn unless specifically made a part of this Agreement by reference.

IN WITNESS WHEREOF, Contractor and City have caused this Agreement to be executed and intend to be legally bound thereby as of the date set forth below.

CITY OF GREAT FALLS, MONTANA **CONTRACTOR:**

By: _____
Print Name: Gregory T. Doyon
Print Title: City Manager
Date:

By: _____
Print Name:
Print Title:
Date:

ATTEST:

_____ (SEAL OF THE CITY)

Lisa Kunz, City Clerk

*** APPROVED AS TO FORM:**

By: _____

Sara R. Sexe, City Attorney

* By law, the City Attorney may only advise or approve contract or legal document language on behalf of the City of Great Falls, and not on behalf of other parties. Review and approval of this document was conducted solely from the legal perspective, and for the benefit, of the City of Great Falls. Other parties should not rely on this approval and should seek review and approval by their own respective counsel.

Exhibit A

Project Manual and Bid Form

Attached.

This Agreement is included within the Project Manual and all other portions of the Project Manual are hereby incorporated within this Agreement by this reference. If there are inconsistencies or conflicts between any provision of this Agreement and other parts of the Project Manual, the Agreement prevails and is given greater weight in reconciling the conflicts.

Exhibit B

City Supplied Materials

Organic Mulch/Wood Chips for Tree Protection per Specification 02911.

Exhibit C

Construction Schedule

All time limits for milestones, if any, substantial completion, and readiness for final payment shall be completed within 60 days after the starting date stated in the Notice to Proceed as indicated in the Construction Agreement, Article 3 – Time of Performance.

The Notice to Proceed will be issued on or before September 15, 2021. Contractor is required to commense work prior to September 30, 2021.

Contractor shall schedule, coordinate and facilitate weekly construction progress meetings. Invitations shall be provided to the OWNER, ENGINEER, private utility companies, and property owners affected by the WORK.

Exhibit D

Compensation Schedule

Contractor shall not demand or be entitled to receive payment for any work on the Construction Project, in whole or in part, except in the manner set forth herein.

Monthly Progress Payments

A. After the commencement of work on the Construction Project, the Contractor may request monthly progress payments by submitting a written Application for Payment to the City during each successive calendar month, with a copy to the project architect or engineer. The Application for Payment must be based upon the actual or estimated percentage of work completed and materials supplied on the Construction Project prior to the date of the Application and shall be filled out and signed by the Contractor. Contractor shall attach all supporting documentation to the Application to verify that the work claimed in the Application has been completed. Only one Application for Payment may be submitted within a calendar month.

B. Beginning with the second Application for Payment, each Application shall also include an affidavit signed by the Contractor stating that all previous monthly progress payments received have been applied on account to discharge Contractor's obligations associated with the prior Applications for Payment.

C. City and its architect or engineer shall promptly review all Applications for Payment and, within twenty-one (21) days after receipt of each Application, determine whether a progress payment should be disapproved in whole or in part. An Application for Payment is considered to have been received when it is submitted to City's Representative and is considered approved unless prior to the expiration of the 21 day period the City or its architect or engineer provides the Contractor with a written statement containing specific items that are being disapproved. A progress payment or any portion may be disapproved upon a claim of: **(1)** unsatisfactory job progress; **(2)** failure to remedy defective construction work or materials; **(3)** disputed work or materials; **(4)** failure to comply with provisions of this Agreement, drawings, plans, specifications for the Construction Project, or other required documents, including but not limited to, payroll certifications, insurance coverage, bonding, lien releases, warranties, material certifications, and test data; **(5)** failure of Contractor to make timely payment for claims including, but not limited to claims for labor, equipment, materials, subcontracts, taxes, fees, professional services, rent, and royalties; **(6)** damages to the City; **(7)** the existence of reasonable evidence that the Agreement cannot be completed for the unpaid balance of the Agreement's Compensation; and **(8)** Contractor's non-compliance with applicable federal, state, and local laws, rules, regulations, and ordinances.

D. The City will furnish Contractor a written statement specifying a reason for disapproval that is listed in Section C above for which approval of the Application for Payment or a portion thereof is being withheld. If the City disapproves only a portion of an Application for Payment, the remainder of the Application for Payment is considered approved.

E. If the City approves a monthly progress payment, the City shall withhold the five percent (5%) Retainage Amount from the total payment requested in the Application for Payment and may withhold an amount that is sufficient to pay the direct expenses that the City may reasonably expect will be necessary to correct any claim based on the eight (8) items set out in Section C above. City shall tender the balance of the approved monthly progress payment to Contractor within fourteen (14) days following the approval.

F. Contractor understands that the Montana Public Contractors' Gross Receipts Tax requires all contractors or subcontractors working on a publicly funded project to pay or have withheld from earnings one percent (1%) of the gross contract price if the public contract price, including subcontracts attached thereto, is Five Thousand Dollars ($5,000) or more. If required, the City will withhold this tax from any payment made to Contractor and will remit the amount withheld to the Montana Department of Revenue. Contractor must withhold the tax from payments made to subcontractors by Contractor.

G. City's approval of any progress payment shall not operate as City's acceptance of any portion of the Construction Project as complete or free of defects or nonconformities, nor shall it operate as a waiver of Contractor's obligations under the Agreement including, but not limited to, Contractor's testing and warranty obligations.

Final Payment

A. Upon completion of the Construction Project, Contractor shall submit an Application for Final Payment to the City, with a copy to the project architect or engineer, seeking payment of the remaining balance of Contractor's compensation, including all retainage amounts. Contractor shall attach all supporting documentation and receipts to the Application for Final Payment to verify that the Construction Project has been fully and finally completed in compliance with all terms and conditions of the Agreement, including complete and legally effective releases or waivers of all liens or encumbrances that have been filed against the Construction Project, and a consent from all of Contractor's sureties to final payment. In addition, Contractor shall include an affidavit signed by the Contractor stating that all previous monthly progress payments received have been applied on account to discharge Contractor's obligations associated with the Construction Project and that the prior Applications for Payment and all claims asserted by any person arising from or related to the Construction Project have been settled or satisfied. In the event any claims have not been settled or satisfied, the Affidavit shall contain a complete listing of such claims, the name and address of each person making a claim, the facts and circumstances surrounding each claim, the amount of each claim, and the efforts made to date by Contractor to resolve, settle or satisfy each claim.

B. City and its architect or engineer shall promptly review the Application for Final Payment and, within twenty-one (21) days after receipt of the request, determine whether it should be disapproved in whole or in part. An Application for Final Payment is considered to have been received when it is submitted to City's Representative and is considered approved unless the City or its architect or engineer provides the Contractor with a written statement containing specific items that are being disapproved prior to the expiration of the 21-day period. A final payment or any portion may be disapproved upon a claim of: **(1)** unsatisfactory job progress; **(2)** after City's

final inspection of the Construction Project, Contractor has not completed all punch list items and failed to remedy defective construction work or materials; **(3)** disputed work or materials; **(4)** failure to comply with provisions of this Agreement, drawings, plans, specifications for the Construction Project, or other required documents including, but not limited to, payroll certifications, insurance coverage, bonding, lien releases, warranties, material certifications, and test data; **(5)** failure of Contractor to make timely payment for claims including, but not limited to, claims for labor, equipment, materials, subcontracts, taxes, fees, professional services, rent, and royalties; **(6)** liens or claims which have been filed or brought against Contractor or the City related to the Construction Project, or any such claims have not been properly documented in Contractor's Affidavit; **(7)** damage to the City; **(8)** Contractor has not delivered all maintenance and operating instructions, marked-up record documents, as-builts, and any other documents relating to the Construction Project as required by City; and **(9)** the Contractor is not in compliance with applicable federal, state, and local laws, rules, and ordinances and has not remedied the noncompliance.

C. The City will furnish Contractor a written statement specifying a reason for disapproval that is listed in Section B above for which approval of the Application for Final Payment or a portion thereof is being withheld. If the City disapproves only a portion of an Application for Payment, the remainder of the Application for Payment is considered approved.

D. Final payment is due and payable within fourteen (14) days of City's approval, but City may withhold an amount that is sufficient to pay the direct expenses that the City may reasonably expect will be necessary to correct any claim based on the nine (9) items set out in Section B above and any tax withholding required by law.

Exhibit E

Change of Work Specifications

A. City may, at any time or from time to time, order changes, additions, deletions, or revisions to the work on the Construction Project by submitting a written Change Order to Contractor. Upon receipt and City approval of any Change Order, Contractor shall comply with the terms of the changed work as reflected in the Change Order.

B. City and Contractor shall negotiate in good faith for an agreement as to any increase or decrease in the Contractor's compensation that results from any Change Order. The increased or decreased Contractor's compensation shall be set forth in the Change Order and both the City and the Contractor shall sign the Change Order as an indication of their respective acceptance of the changes and modifications to the Agreement. In the event the City and Contractor are unable to agree upon the increase or decrease in Contractor's compensation resulting from any Change Order, such increase or decrease shall be determined as follows:

1. increases to Contractor's compensation shall be calculated as follows and shall be evidenced by Contractor's submission to the City of its actual supporting documentation including time slips/cards, invoices, and receipts:

a. by unit prices otherwise set forth in the Agreement or subsequently agreed upon;

b. by an agreed upon lump sum; or

c. by the cost of the work and an agreed upon mark-up for Contractor's overhead and profit, with the costs of the work determined as follows:

(i) The Contractor shall be paid the actual gross wage rates, without any deductions, withholding, or overhead, paid for all labor and foremen assigned exclusively to performing the Change Order work, for the total recorded hours, in addition to a surcharge not to exceed 80% the total gross wage rates. The gross wage rates shall include travel pay, if applicable, however may not include fringe benefits, whether or not paid directly to the employees. Payment as described above will consist of full compensation for all labor related expenses incurred including but not limited to premiums for workers compensation insurance, Contractors liability and property damage insurance, social security taxes, unemployment compensation, health and welfare expenses, small tools and equipment not otherwise classified under heavy equipment and other expenses imposed by federal or state laws or both. Only labor included in certified payrolls will be eligible. The gross wage rates for Change Order work will be those which are listed on the certified payroll.

(ii) Contractor's actual cost of materials, including actual transportation costs, for all materials supplied by Contractor.

(iii) Costs for the use of heavy equipment and the transportation of the same. Such costs shall be the actual rental fees incurred for the use of the heavy equipment and the actual costs of transporting such heavy equipment to and from the site of the Construction Project. Contractor owned equipment rates shall be in accordance with the latest edition of RSMeans - Costs in compliance with the contract prevailing wage rates. Operator/labor costs shall be paid in accordance with (i) above.

(iv) Contractor's fee for overhead, profit, bonds, insurance, all related administrative fees, management costs, and taxes as described in section 28: (1) shall be no greater than 15% of the total labor, material and equipment costs incurred under paragraphs B.1.c.(i-iii); plus (2) may include up to a 5% markup of the total Subcontractor fees; Subcontractors and each lower tier contractor may apply a 15% markup to their individual costs as described in paragraph B.1. above.

(v) All cost of the work Change Order efforts will be accounted for daily. The City's field representative will prepare daily reports. Daily report sheets shall be the true record of additional work.

(vi) Contractor shall submit statements for the Change Order work including material invoices and freight bills, applicable certified payrolls, and equipment rental rates.

Or,

2. decreases to Contractor's compensation shall be determined by the City's good faith estimate. If Contractor disagrees with such good faith estimate, Contractor can avail itself of the Dispute Resolution provisions set forth in the Agreement. Engineer approved materials, testing and reports, inspections, certifications and all requirements of the Technical Specifications which are not provided or performed by the Contractor will be grounds for a decrease in Contractor compensation. If activity is specifically included in the approved Schedule of Values, Owner's credit shall be equal to the value established by the Contractor and approved by the Engineer in the Schedule of Values.

C. Except for minor modifications in the work not involving an increase of costs or Contractor's compensation and not inconsistent with the purposes of the work required by the Agreement, and except in an emergency situation which endangers life or property, no change to the work requirements shall be made unless pursuant to a written Change Order duly executed.

D. Contractor shall not be entitled to any increase in the Contractor's compensation or the extension of any deadlines set forth in Construction Schedule with respect to any work performed by Contractor that is not required by the terms and conditions of the Agreement and is not contained in a duly executed Change Order.

Exhibit F

Contractor's Rates of Wages, Benefits, and Expenses

For purposes of prevailing wage requirements, this Project is considered as Heavy Contruction. (Contractor shall use the higher of the two applicable Montana or Federal rate). The applicable Montana or Federal Prevailing Wage Rates for this type of project, as included in these Contract Documents, are incorporated herein by this reference.

Exhibit G

Required Insurance Coverage

Contractor shall purchase and maintain insurance coverage as set forth below. The amounts of insurance provided shall be exclusive of defense costs. The insurance policy, except Workers' Compensation, must name the City, (including its elected or appointed officers, officials, employees, or volunteers), as an additional insured and be written on a "primary—noncontributory basis, and on an occurrence, not a claims made basis." Contractor will provide the City with applicable additional insured endorsement documentation substantially similar or identical to the example set forth below. Each coverage shall be obtained from an insurance company that is duly licensed and authorized to transact insurance business and write insurance within the state of Montana, with a minimum of "A.M. Best Rating" of A-, VI, as will protect the Contractor, the various acts of subcontractors, the City and its officers, employees, agents, and representatives from claims for bodily injury and/or property damage which may arise from operations and completed operations under this Agreement. All insurance coverage shall remain in effect throughout the life of this Agreement and for the warranty period. All insurance policies, except Workers' Compensation, must contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least thirty (30) days prior written notice has been given to Contractor, City, and all other additional insureds to whom a certificate of insurance has been issued. Insurance coverages shall be in a form acceptable to the City. **The City must approve all insurance coverage and endorsements prior to the Contractor's commencing work.**

*** Insurance Coverage at least in the following amounts is required:**

1.	Commercial General Liability (bodily injury and property damage)	$1,500,000 per occurrence $3,000,000 aggregate
2.	Products and Completed Operations	$3,000,000
3.	Automobile Liability	$1,500,000 combined single limit
4.	Workers' Compensation	Not less than statutory limits
5.	Employers' Liability	$1,500,000
6.	Professional Liability (E&O) (only if applicable)	$1,500,000

7. Builder's Risk/Property Insurance (for buildings) Equal to greater of Contractor's compensation or full replacement (covering all work, buildings, materials and equipment, whether on site or in transit, loss due to fire, lightening, theft, vandalism, malicious

mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of laws, water damage, flood if site within a flood plain, repair or replacement costs, testing and start-up costs)

8.	Owner's and Contractor's Protective Liability (not required if General Aggregate has Project or location selection)	$1,000,000 per occurrence $3,000,000 aggregate
9.	Contractual Liability Insurance (covering indemnity obligations)	$1,000,000 per occurrence $3,000,000 aggregate

Additional coverage may be required in the event of the following:
crane operating services: add On-Hook Coverage
transportation services: add $1,000,000 Transit Coverage

Contractor may provide applicable excess or umbrella coverage to supplement Contractor's existing insurance coverage, if Contractor's existing policy limits do not satisfy the coverage requirements as set forth above.

*** If a request is made to waive certain insurance requirements, insert the insurance item # and corresponding description from the list above: 6. Professional Liability (E&O) & 7. Builder's Risk/Property Insurance.**

Legal reviewer initials: SS ☒ Approved ☐ Denied

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Example of Acceptable Additional Insured Endorsement:

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 26 07 04

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – DESIGNATED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s)
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your acts or omissions or the acts or omissions of those acting on your behalf:

A. In the performance of your ongoing operations; or

B. In connection with your premises owned by or rented to you.

Exhibit H

Required Bonds

Contractor shall make, execute, purchase, maintain and deliver to City performance and payment bonds in an amount at least equal to the Contractor's compensation under this Agreement, conditioned that the Contractor shall faithfully perform of all of Contractor's obligations under this Agreement and pay all laborers, mechanics, subcontractors, material suppliers and all persons who supply the Contractor or Contractor's subcontractors with provisions, provender, material, or supplies for performing work on the Construction Project. All bonds must be obtained with a surety company that is duly licensed and authorized to transact business within the state of Montana and to issue bonds for the limits so required. The surety company must have a Best's Financial Strength Rating of at least A, as rated by the A. M. Best Co., or an equivalent rating from a similar rating service. All bonds must remain in effect throughout the life of this Agreement and until the date of expiration of Contractor's warranties. A certified copy of the agent's authority to act must accompany all bonds signed by an agent. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business within the state of Montana is terminated, Contractor shall promptly notify City and shall within twenty (20) days after the event giving rise to such notification, provide another bond with another surety company, both of which shall comply with all requirements set forth herein.

Bond Types and Amounts:

1.	Performance Bond	Equal to Contractor's compensation amount
2.	Labor and Materials Payment Bond	Equal to Contractor's compensation amount

SECTION 00850

SPECIAL PROVISIONS INDEX

This section of the Contract Documents includes special provisions applicable to this project that are not described in the General Notes on the Construction Drawings. In case of conflict between the Special Provisions and the Construction Drawings, Special Provisions shall govern.

Work to be performed under the provisions of these specifications consists of furnishing all materials (except as noted in the Special Provisions), equipment, tools and labor; the performance of all necessary installation and the construction complete, including all work appurtenant thereto, as detailed and specified herein.

Any subsequent addenda issued after these documents have been prepared shall supplement and/or supersede any article of the specifications.

SP-1. REFERENCE STANDARDS:

Where reference is made to, U.L. Inc., NFPA, UFC, IFC, UBC, MPWSS, ASTM, ANSI, AWWA, ACI, or AASHTO designation, it shall be the latest revision at the time of the call for bids except as noted on the Construction Drawings or in the Special Provisions.

SP-2. DEFINITIONS OF CITY, ENGINEER, AND OWNER:

The use of the words "City," "Engineer," and "Owner" are synonymous, and are used interchangeably throughout the contract documents.

SP-3. PROJECT SAFETY:

CONTRACTOR IS SOLELY RESPONSIBLE FOR PROJECT SAFETY AND ADHERENCE TO O.S.H.A. AND OTHER APPLICABLE SAFETY, HEALTH, AND SANITATION STANDARDS.

This requirement will apply 24 hours per day until acceptance of the work by Owner and shall not be limited to normal working hours.

SP-4. ACCIDENTS:

Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work.

Contractor must promptly report in writing to Owner all accidents arising out of, or in connection with, the performance of the work, whether on or adjacent to the site which caused death, personal injury, or property damages, giving full details and statements of witnesses. In addition, if death or serious injury or serious damages are caused, the accident shall be reported immediately by telephone or messenger to Owner.

If any claim is made by anyone against Contractor or any Subcontractor on account of any accident, Contractor shall promptly report the facts in writing to Owner, giving full details of the claim.

SP-5. CONTRACT TIME:

Contract time specified in the Agreement references the number of calendar days allowed to complete the work. The number of calendar days permitted is based on a seven (7) day week. Trench excavated utility excavation may not occur on holidays, Saturdays, or Sundays, or between the hours of 8:00 p.m. and 7:00 a.m., without written approval of the Owner. Contract days shall commence upon the Notice to Proceed delivery date in accordance with the requirements of the Contract Documents.

Trench excavated utility installation may proceed for 10 hours per day, Monday through Friday.

In the event inclement weather or aftermath of inclement weather prevents Contractor from performing the sequence of operations that should be in progress at that time for a minimum of sixty (60) percent of the normal daily schedule being worked, he may make a written request for a credit for that day. No credit will be allowed for inclement weather on holidays, Saturdays, Sundays, or after the contract time has expired.

SP-6. CONTRACTOR SCHEDULE:

Contractor shall furnish the Engineer a construction schedule. The Engineer will review the schedule to determine whether or not it is appropriate for public convenience. Contractor shall make any necessary schedule adjustments and submit a final schedule to Owner.

SP-7. COORDINATION WITH OWNER:

Carefully coordinate all work activities and work schedule with the Owner's project representatives. Work beyond normal working hours or non-work days due to adverse weather or other conditions beyond the Contractor's control shall be approved and coordinated with the Owner's Representative.

All water main and service line locations, valve operation, tapping operations and inspection shall be performed by authorized personnel from the City. Coordinate this work with the City Public Works Department Utility Division and the Engineer.

Contractor shall properly prepare trench in accordance with all OSHA regulations and standards for trench shoring prior to City tapping activities.

Existing water services will be located based on all available information; however, unidentified services may be encountered. Verify with the City whether unidentified services must be reconnected.

SP-8. NOTIFICATIONS:

1. Maintain a 24-hour a day telephone number for Contractor's job superintendent.The telephone number must be on file at the City Engineers Office prior to the start of construction.
2. Notify affected residents, businesses, institutions, emergency services, and the City, including Great Falls Public Schools and the Great Falls Transit District, in writing a minimum of seventy-two (72) hours in advance of all roadway closures.
3. Notify the City Engineer's office at least forty-eight (48) hours in advance of plans to work longer shifts than identified in SP-5 Contract Time, or on weekends or holidays.
4. Notify affected residents, tenants, property owners, businesses, institutions, the City of Great Falls, and emergency services a minimum of forty-eight (48) hours in advance of work commencing or planned utility outages. This notification shall be made by delivering a written notice (door hanger) to the residents, tenants, and property owners on a form approved by the Engineer. The notice shall include the following: project name; contact number and address for the contractor; summary of work being performed; and the estimated duration of the work.
5. Notify the Great Falls Fire Department of hydrant outages and "sack" out of service hydrants.
6. Notify the City of Great Falls Public Works Department 48 hours in advance of need for tapping crews and water main valve operations.
7. Notify all affected utility companies a minimum of 14 days in advance of need to remove or relocate utilities.
8. Notify the Montana Department of Transportation (MDT) at least seventy-two (72) hours in advance of working within MDT Right-of-Way.

9. Notify the City of Great Falls and Cascade County Road Department at least seventy-two (72) hours in advance of beginning work.

SP-9. OVERTIME:

Contractor shall be responsible for payment of any overtime cost required by City Engineering, the City's consultant representative, or City personnel for work on weekends, extended days, or holidays. Hours beyond the limitations identified in SP-5 Contract Time will be considered overtime unless otherwise agreed upon. Contractor must request and receive approval from City Engineering prior to scheduling work for restricted hours or days.

The overtime rate for City Staff, Owner's Representative, or Crews shall be as follows:

Engineering Inspection:	$71.00/hr
Pipelayer	$60.46/hr
Laborer	$57.32/hr
Utility Truck	$30.59/hr

Overtime costs will be deducted from the Contractor's monthly pay request.

SP-10. PERMITS:

Contractor shall secure all necessary permits and pay the associated fees. Fees for street opening, sidewalk, and curb and gutter permits will be waived for this project, if applicable. A permit for a hydrant meter to supply construction water shall be secured and paid for by Contractor.

A Dust Control Plan must be submitted to the City and approved. A General Permit for Construction De-Watering, and a General Permit for Disinfected Water and Hydrostatic Testing from the Montana Department of Environmental Quality (DEQ) shall be secured by the Contractor. Permitting costs shall be merged with applicable bid items.

Contractor shall secure any additional permits deemed necessary above and beyond those already secured by the Owner.

SP-11. UTILITIES:

Existing utilities in the vicinity of the work are identified on the Construction Drawings to the extent such information has been made available to or discovered by the Engineer in preparing the Construction Drawings. The accuracy or completeness of such information is not guaranteed, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

The Contractor shall be solely responsible for locating all existing utility installations above and below ground, including service connections, in advance of the project by contacting their respective owners and by exploratory excavation as needed. Any delay, additional work, or extra cost to the Contractor caused by existing utility installation shall not constitute a claim for extra work, additional payment, additional time, standby time, or damages. This includes crossing over, under, or parallel to the utility. Contact the **One Call System** prior to beginning work at **1-800-424-5555**.

Assume responsibility for all City water mains and services, sanitary sewer mains and services, and storm drains located within and adjacent to the project area that is or has been under

construction. The Contractor is responsible for any damages during construction or during the warranty period that are determined to have been caused by the Contractor's activities during construction. The period during which the Contractor assumes responsibility for these utilities begins when excavation commences and ends when the two-year warranty expires.

The Owner shall provide, upon request and for informational purposes only, the existing sanitary sewer profile and water main valve locations in the project corridor. The accuracy or completeness of such information is not guaranteed; the Contractor shall assume all responsibility for exploratory excavation and utility locates as needed for the Project.

Coordination with Utility Companies. The Contractor shall provide adequate written notice to each utility requesting location of their lines and related service lines before beginning construction. Utilities shall be afforded reasonable and adequate time to re-locate the lines and provide the Contractor with any special requirements related to protecting the utilities. If the existing utilities require temporary support during construction, the Contractor shall arrange for the utility company to provide temporary support and pay all costs and fees charged by the utility company for that work. The Contractor is solely responsible for the safety and integrity of the existing power and natural gas distribution systems.

The Contractor shall notify power company of the anticipated work schedule and locations where work will be beneath or adjacent to overhead power lines. The Contractor shall comply with all safety requirements requested by the power company. A smaller excavator shall be utilized if required by the utility company when working near their power lines to prevent the excavator boom from coming to close to the power lines. Similar restriction may be placed on cranes and hoist equipment.

Excavated materials shall be stockpiled an adequate distance from power lines in to maintain a safe working distance from the power poles and lines. Pipe and materials stored near or beneath power lines shall only be handled manually or with equipment small enough to maintain the required safety zone. Exposed natural gas piping shall be inspected by the utility company prior to trench backfilling.

All costs related to use of specialized equipment and construction procedures required to comply with the utility company's safety, shoring or relocation requirements shall be merged and included in the related bid item. No separate measurement and payment shall be made for this work.

SP-12. INCIDENTAL WORK ITEMS:

The cost for the following incidental work items will not be paid separately and shall be merged with applicable bid items. Incidental work includes but is not limited to:

1.) Bonds and insurance
2.) Protection of existing utilities and coordination with utility owner including light poles, power poles, overhead electrical and communications cables
3.) Clean-up (including the removal of debris from storm drain inlets)
4.) Overhead and profit
5.) Contractor quality control testing
6.) Submittals including, but not limited to, shop drawings, O&M manuals, and construction submittals
7.) Layout/staking/surveying
8.) Repair of any damaged facilities (including marked underground utilities)
9.) Remove and reset items (including but not limited to signs, fencing, mailboxes,

parking blocks, landscape features, etc., as applicable)
10.) Soils/groundwater/underground utilities investigation, exploratory excavation, and associated utility locates
11.) Disposal of excess excavation and construction debris
12.) Fees associated with any required permits, licenses, and/or registrations (unless otherwise noted)
13.) Cost associated with implementing and conforming to any permit requirements
14.) Erosion and sedimentation controls
15.) Asphalt and concrete remove and replace identified as incidental on the Construction Drawings
16.) Abandoning existing pipe not identified in the measurement and payment
17.) Protect and preserve existing curb & gutter, concrete aprons, sidewalks etc.
18.) Repair damaged curb & gutter
19.) Protect and preserve existing water and sewer services and mains
20.) Protect and preserve existing storm drain piping, manholes, and vaults
21.) Compaction
22.) Salvage and return to Owner items not identified in the measurement and payment
23.) Administer weekly construction progress meetings
24.) Public notification
25.) Replace sidewalk to nearest control joint
26.) Procure and coordinate storage and spoil pile sites
27.) Dispose of excess excavated material including pipe, stumps, roots, and any other items
28.) Any items identified as incidental on the Construction Drawings and Specifications

SP-13. SANITARY FACILITIES:

Contractor shall provide and maintain on site sanitary facilities for use by construction personnel and subcontractors as may be necessary to comply with the requirements and regulations of the local and State Department of Health.

SP-14. SUBMITTALS:

Electronic submittals shall be formatted as searchable pdfs. Each data sheet or catalog in the submission shall be indexed according to specification section and paragraph for simple reference. If a submission is not indexed correctly it will be automatically rejected and returned to Contractor for resubmission.

The Contractor shall clearly circle, highlight, or otherwise indicate all unique features, model numbers, options, materials, etc. that apply to the material under consideration.

When submitted for the Engineer's review, shop drawings and equipment data shall bear the Contractor's certification that he/she has reviewed, checked, and approved the submitted data and that it is in accordance with the formatting requirements, technical specifications, and provisions of the Contract Documents. Contractor shall also certify that all field measurements, construction criteria, catalog numbers and similar data have been verified and the work represented by the shop drawings and equipment data is recommended by the Contractor and the Contractor's Guaranty will fully apply.

Contractor shall submit to the City four (4) hard copies or one electronic copy of submittals for the following:

1. Construction schedule
2. Schedule of values for lump sum activities
3. Submittal schedule
4. Permits
5. Wage rates per class
6. Water main pipe, service lines and fittings
7. Water service appurtenances
8. Water pipe gaskets
9. Valves, valve boxes & fire hydrant assembly
10. Tracer wire system & tracer wire testing reports
11. Polyethylene wrap
12. Utility warning tape
13. Wax-Tape System
14. Water main disinfecting plan and agent
15. Hydrostatic and leakage test plan and results
16. Bacteriological test results
17. Tree Protection Plan

If hard copies are submitted, the City will retain two (2) copies and two (2) copies will be returned to Contractor with review comments.

SP-15. CORRECTION OF WORK:

Contractor shall promptly remove from the premises all materials condemned by the City as failing to conform to the Contract, whether incorporated in the work or not. Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractor destroyed or damaged by such removal or replacement.

SP-16. NOISE IMPACT:

Contractor shall comply with Great Falls Municipal Code, Chapter 8.56 - NOISE. Contractor shall coordinate with Owner at least 1 week (seven days) prior to expected noise violations.

SP-17. TRACER WIRE SYSTEM:

A tracer wire system shall be installed as illustrated on the Construction Drawings and specified inthe Technical Specifications.

SP-18. PRE-BID SITE INSPECTION:

The Contractor shall visit the site before submitting a bid and become familiar with all project conditions including access limitations or restrictions. The Contractor shall merge and include all costs related to completing the work under existing conditions in the price for the related work items in the bid schedule. The Contractor shall make no claim for additional compensation for difficulty in access or construction under existing conditions.

SP-19. PRE-CONSTRUCTION CONFERENCE:

After the Contract has been awarded, yet prior to the start of construction, a preconstruction conference will be held at the site of the project for the purpose of discussing requirements on such matters as project supervision, on-site inspection, progress schedules and reports, weekly reports, payrolls, payment to contractors, contract change orders, insurance, safety, and any other items

pertinent to the project. The Contractor shall arrange to have all supervisory personnel, a representative from each of the affected utility companies connected with the project and the City of Great Falls and their representatives on hand to meet and discuss the project and any problems anticipated.

The Contractor shall provide a preliminary submittal schedule to the Engineer and Owner at the Pre-Construction Conference.

SP-20. FIELD ENGINEERING:

The Contractor shall carefully protect from disturbance all street monuments, property pins, block corners and other survey monuments or markers. If the markers are specifically called out for removal and replacement on the Construction Drawings, the Contractor shall notify the Owner in writing at least 10 days in advance of the marker or monument being removed. The Contractor shall arrange and pay for the proper referencing of the new or replacement monument by a licensed land surveyor prior to removal and for its proper installation after trenching and backfill are completed. The Contractor shall use extreme care to protect all reference points during construction. Any survey marker or monument that is disturbed or destroyed by the Contractor without specific written approval of the Owner shall be replaced at the Contractor's expense by a licensed land surveyor registered in the State of Montana.

The Owner shall provide a benchmark for the Contractor to utilize in construction staking. The Contractor is responsible for providing all other surveys necessary for construction. The Contractor is also responsible for preserving and protecting the installed stakes at all times during the construction period. Any stakes obliterated, removed, or otherwise lost during construction shall be replaced by the Contractor at the Contractor's expense.

Electronic files will be provided to the Contractor upon execution of ENGINEER'S "Electronic Media Waiver of Responsibility" for the purposes of site layout and construction staking.

SP-21. CONTRACTOR'S SUPERINTENDENT:

The Contractor must provide a permanent General Superintendent to remain at the project site while work is in progress. The superintendent shall be capable of directing work and decision making either directly or through immediate contact with a supervisor. Absence or incompetence of the superintendent may be grounds for the Owner to stop all work. This work stoppage shall not be cause for the Contractor to request a contract time extension.

SP-22. MATERIALS AND EQUIPMENT SOURCES AND DELIVERY:

It shall be the responsibility of the Contractor to fully investigate and confirm the availability of all materials and equipment within the Contract Schedule prior to submitting a bid. A time extension may be granted due to the Contractor's inability to obtain the materials within the specified contract time at the discretion of the Owner.

SP-23. MATERIAL STORAGE SITES:

The Contractor shall select and procure material storage sites. Permission to store materials on private property shall be secured in writing, with a copy provided to the Engineer. The Contractor shall reclaim private property to the owner's written satisfaction and submit documentation to the Engineer.

SP-24. INSPECTION BY PUBLIC OFFICIALS:

Authorized representatives of the Owner and Montana Department of Environmental Quality shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection such officials desire to make.

SP-25. COMPLIANCE WITH STATE AND FEDERAL STATUTES AND REGULATIONS:

The Contractor and each of his subcontractors shall comply with all State and Federal Statutes and Regulations governing the work.

SP-26. USE OF EASEMENTS AND ADJOINING PROPERTY:

The Contractor shall contain all of his construction operations within the Owner's property and easements unless written approval is secured from the Owner of the adjoining property. Such written permission shall be submitted to the Engineer in triplicate. The Contractor shall place lath or other suitable markers at the edge of easements to show workmen the limits they must stay within.

SP-27. PUBLIC CONVENIENCE.

The Contractor shall at all times so conduct their work as to insure the least possible obstruction to traffic and inconvenience to the Owner and the general public and to insure the protection of persons and property. No road or street shall be closed to the public except with the permission of the City Public Works Department.

The Contractor shall provide suitable safe access to all residences, institutions, and businesses in the construction corridor as well as for emergency vehicles. The Contractor shall immediately stop work and provide access to emergency vehicles at any time during the day or night.

The Contractor shall avoid nuisance lighting from directly impacting businesses and residences during early morning or late evening operations. City of Great Falls Municipal Code 17.40.050.A shall be the basis of establishing illumination limits at private property lines.

The Contractor shall establish and maintain an active public advisory program to provide for the safety and convenience of residences, institutions, and businesses adjacent to the work. Prior to construction, the Contractor shall develop and distribute to all adjacent residences, institutions, and businesses a written summary of the intended work operations. Include a brief description of the work, the intended time period for various work activities and potential impacts including temporary loss of access, detours, construction traffic, and service outages. Provide two copies of the written summary including sketches, maps diagrams etc. to the Owner for approval a minimum of 15 days prior to distribution. Provide a 24-hour contact and telephone number for emergency use.

During construction, the Contractor shall contact and inform businesses, institutions, and residents 72 hours prior to conducting operations at a particular location that may affect access or convenience.

Include a contact name and local telephone number in the written summary in the event of problems and/or complaints. The telephone must be in service before any work is commenced. An answering machine or voice messaging is not acceptable. Maintain a written log of call that

identifies the caller, the nature of the problem or complaint and the disposition. The log shall be made accessible to the Owner at all times. The Contractor shall act promptly to resolve complaints about safety and convenience. Refer any changes in project design, or extra work to the Owner for approval before commencing with changes. This provision does not alter or cancel any other contract provisions such as, but not limited to, control of the work, legal relations, responsibility to property owners and measurement and payment.

No additional measurement or payment shall be made. Merge all costs for this work into the related bid items.

SP-28. DISPOSAL OF WASTE MATERIALS:

The Contractor shall be responsible for disposal of all concrete, asphalt, rock, water main pipe, soil and other materials and debris removed during construction. All materials except for rock or soil shall be disposed of at a landfill approved by the County Sanitarian. All waste material shall be disposed of in accordance with all Federal, State, and Local laws and regulations.

The Contractor is responsible for locating a landfill site that will accept the material and for transporting the material to the site. If the site is on private property, the Contractor shall furnish the Owner a letter providing the Contractor permission to use the site and another letter approving final condition of the site after disposal operations are complete. Excess soil and rock material shall be removed from the site and disposed off site on private property at a location obtained by the Contractor. The disposal area shall be graded smooth and uniform, drain freely, and be covered with topsoil and seeded to native grass. The Contractor shall merge and include all costs and fees related to transport and disposal in his contract bid price for related work. No additional measurement or payment shall be made.

SP-29. ELECTRICAL AND TELEPHONE SERVICE FOR CONSTRUCTION:

The Contractor shall coordinate, arrange, and pay all required utility company fees for electrical power and telephone service for his own and his subcontractor's construction needs.

SP-30. PROTECTION OF EXISTING PAVEMENT:

All equipment shall be fitted with pads on the outriggers and other accessories as necessary to prevent damage to existing pavement during the course of the project. Any damages to pavement shall be corrected by the Contractor, at his expense, in a manner directed by the Engineer.

SP-31. PROTECTION OF PROPERTY DURING CONSTRUCTION:

The Contractor shall be fully responsible for all damages caused by construction activities, weather related hazards, and surface water on the project site or on adjacent properties. The Contractor shall retain and protect all adjacent improvements not called for removal on the Construction Drawings or specifications. The Contractor shall remove all excavated materials.

Stockpiles may not be located where existing roads, fences, retaining walls, trees, or landscaping may be damaged or where materials will obstruct access by homeowners, institutions and businesses or emergency vehicles. Excavated materials along watercourses shall be prohibited from entrance into those features. The Contractor shall restore all damaged items to pre-existing conditions at no cost to the Owner. At the completion of construction activities, the Contractor shall make sure the project site and adjacent areas are cleaned and returned to an orderly condition.

SP-32. AIR QUALITY:

The Contractor shall provide dust control as appropriate to meet all federal and state air quality requirements during construction that are applicable to this project. Special care shall be taken in areas directly adjacent to residential and commercial properties.

SP-33. WATER FOR CONSTRUCTION:

Contractor shall apply water at the locations and in the amounts required to properly compact the work. Equipment used for watering shall be of ample capacity and of such design as to assure uniform application of water in the amounts required.

Contractor shall also apply water during the course of the work to control dust and maintain all embankments and base courses in a damp condition.

Water for construction may be obtained from the City of Great Falls water system. A fire hydrant meter and permit are required and can be obtained from the Public Works Department. Cost of permits and purchase of water for construction purposes will not be paid separately and shall be merged with applicable bid items.

SP-34. WATER MAIN BREAKS AND EMERGENCY SHUT DOWNS:

The Contractor shall repair all water main breaks, which occur within the project area at no additional costs to the Owner. Breaks which occur outside the project area not caused by the Contractor's activities will be repaired by the Owner at no cost to the Contractor.

SP-35. CONTRACTOR QUALITY CONTROL AND OWNER QUALITY ASSURANCE:

The Contractor shall provide all laboratory and field tests listed below at Contractor's expense unless as otherwise stated herein. The frequency of testing listed below provides general indication of the level of anticipated testing. Owner provided testing is for Quality Assurance only. Contractor is responsible for all Quality Control testing.

1. Contractor shall provide Standard Proctor Moisture/Density curves or equivalent for all subgrade, native or imported backfill, base course, pipe bedding, and aggregate backfill materials encountered. Coarse materials require relative density test.
2. Contractor shall provide Laboratory Plasticity for each type of native or imported backfill, base course, pipe bedding, and aggregate backfill materials encountered.
3. Field Density Testing for utility bedding and select backfill materials will be provided by Contractor. Minimum of one passing test required for each 50 linear feet of main installed.
4. Field Density Testing for trench backfill materials will be provided by Contractor. Minimum ofone passing test per 300 linear feet of mainline trench per lift.
5. Contractor to provide all gradation, abrasion, and fracture tests for aggregate.
6. All laboratory and material test results shall be approved by the Owner before placement of associated materials.
7. Materials, compaction, densities, or other construction items which do not meet the

requirements of these specifications shall be replaced and/or retested at the Contractor's expense.

8. An independent testing laboratory shall be employed by the Contractor for all Contractor supplied tests. Contractor's independent lab shall be AASHTO accredited for soil testing.
9. If applicable, the Contractor shall supply material samples for Owners Quality Assurance tests as required for testing at no extracost to the Owner.
10. During water main shut-downs, fill, flush, and chlorination, valves are to be operated by City personnel only.
11. Owner will provide Quality Assurance testing to periodically check and review Contractor Quality Control. The Owner's testing is not a substitute for Contractor Quality Control testing.

Contractor shall be responsible for costs of failed tests:

1. Failed density tests will cost $35.00/test.
2. Failed bacteria tests will cost $100.00/test.

SP-36. CONTRACT HIERARCHY:

The various portions of the Contract Documents, of which these specifications are a part, are essential parts of the Agreement, and a requirement occurring in any portion or part is binding as though occurring in all. All portions are intended to be complementary and to describe and provide for a complete work. Unless specified otherwise, in the case of discrepancy the following hierarchy shall be observed:

Addenda, which will govern over;
Special Provisions, which will govern over;
City of Great Falls Design Criteria and Special Conditions, which will govern over;
Contract Documents, which will govern over;
Construction Drawings which will govern over;
MPWSS Technical Specifications and Standard Modifications

SP-37. SOIL INVESTIGATION:

A Report of Geotechnical Investigation was completed in March 2021. The Investigation included multiple borings and laboratory soils testing. It was prepared for the exclusive use of the Owner and their design team for reference during design of the proposed utility construction. The Report, including bore hole locations and laboratory results, is available upon request for consideration of factual data only. The Report does not provide a warranty of the subsurface conditions interpreted from the boring logs and discussed in the Investigation. In summary, copies of the Report of Geotechnical Investigation are available upon request for a non-refundable deposit of $50.00 per set and are provided as general information only.

Rock excavation may be required in order to complete the work. Rock excavation shall be considered unclassified, common excavation. The Contractor shall provide and utilize appropriate equipment for the work. All costs related to excavation and material disposal of any type shall be merged and included in the contract unit or lump sum price for related bid items for which excavation is required. The Contractor shall investigate site conditions thoroughly prior to submitting a bid and determine the amount, type and cost of the excavation required to accomplish

the work. Blasting is not allowed on this project.

The depth to the groundwater table will vary throughout project area and will fluctuate seasonally. Rapid fluctuations in groundwater are possible concurrent with rapid fluctuations in river level. The Contractor shall investigate groundwater conditions adequately to determine the extent of dewatering required. All costs related to dewatering shall be merged and included in the contract unit or lump sum price for related bid items for which dewatering is required.

SP-38. PROPRIETARY SPECIFICATIONS:

Wherever specific manufacturers are named in the specifications, the term "or equal" is implied whether or not specifically stated. Naming a specific manufacturer implies the minimum quality, material types, construction, and function desired. The Engineer has the exclusive right to decide whether or not an item is equal to that specified.

SP-39. CLEANUP:

Final payment will be not be made until cleanup on the entire project is complete and accepted. The Contractor shall clean up all areas after construction has been completed including sweeping of streets, removal of debris (including material collected in storm drain inlets), removal of temporary construction facilities, final grading, seeding, disposal of all waste materials, dumping fees and any other activities required to complete the work.

SP-40. RECORD DOCUMENTS:

Prior to monthly payments to the Contractor, redline drawings shall be submitted and approved by the Owner's Representative.

Submit record documents to the Engineer for approval. Final payment will not be processed until the documents are submitted to and approved by the Engineer.

SP-41. CONTAMINATED SOIL – UNKNOWN:

Petroleum hydrocarbon contaminated soils may be encountered on the project. No specific petroleum release sites have been identified but the possibility exists of encountering spill contamination from underground storage tanks.

State and Federal laws require that the discovery of previously unknown contamination be reported within 24 hours of discovery. If contaminated soils are discovered, suspend work and report contamination to DEQ's Hazardous Waste Bureau at 406-841-5045.

Dispose soil at a licensed soil disposal facility. Analytical testing of the soil at an accredited laboratory will be necessary prior to disposal. Obtain and pay for all analytical testing and provide the test reports to the Engineer. Excavating, testing and disposal of the contaminated soil will be measured by the cubic meter of contaminated soil removal.

If contaminated soils are encountered, this additional pay item may only be added if additional work items are added to the project by a work change directive (Change Order). Payment at the unit price bid includes all resources necessary to complete the work as described in this Provision.

SP-42. SALVAGE:

Contractor shall carefully remove salvageable materials. Salvaged materials are considered property of the City of Great Falls and shall be protected from vandalism and/or theft until delivered to the specified location. Clean (remove concrete, etc.) and deliver undamaged material to the Public Works Department pipe yard located at 1610 6th Street NE, Great Falls. Notify the City a minimum of 24 hours prior to delivery. Salvage materials include fire hydrants. Contractor shall be responsible for damage to any salvageable material caused by construction activities. Contractor will be charged for materials and labor to repair or replace damaged items. Damage charges will be deducted from the final payment to Contractor. All costs associated with salvage will be merged with the appropriate related bid items.

SP-43. DEWATERING

Depending on time of year and location of excavation, groundwater influence may be significant. The Contractor shall provide and maintain a dewatering system capable of removing and disposing of all surface and groundwater from the excavations. The dewatering system shall be capable of lowering and maintaining the groundwater to permit excavation and placement of building foundations, water main and service pipes, meter manholes, and all related appurtenances. Each excavation shall be kept dry during subgrade preparation and continually thereafter until backfilled to the extent that no damage will result from higher groundwater levels.

Dewatering methods may include the installation wells, well points, cutoff walls and other appropriate means as required to maintain excavations in a dewatered condition. Sufficient spare equipment shall be on-site to insure proper and continued dewatering. If well points or wells are the selected method, adequate spacing to achieve dry trench bottom conditions must be designed and implemented by the Contractor. Well installation shall include sand-packing and/or other means to prevent pumping of fine sands or silts from the subsurface. The Engineer may direct the Contractor to install additional or secondary trench dewatering methods. Contractor shall monitor to ensure that the subsurface soil is not removed by the dewatering operation.

Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement which may develop. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the Contractor. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the Contractor.

The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill, and prevent flotation or movement of structures and pipelines.

SP-44. OPEN TRENCH LIMITATIONS

Contractor shall not initiate trench excavation until approved compaction equipment is mobilized to the excavation site. All trench and structure backfill and compaction shall be completed within a maximum distance of 50 (fifty) feet of the pipe installation. Exposed excavation shall be no more than one pipe section at each day's end. Special conditions and specific project locations may necessitate the backfilling to the existing surface prior to daily, weekend, or holiday shutdowns.

SP-45. PROTECTION/DEMOLITION OF TREES

Contractor shall be responsible for the prevention of damage to trees located within or infringing on

the public right of way and City owned properties per Specification 02911 Tree Protection. Contractor is responsible for the demolition of vegetation as shown on the construction drawings. Contractor shall notify the Park and Recreation Department prior to any tree demolition on site to coordinate demolition activities. Contractor shall contact Lonnie Dalke or Todd Seymanski at 771-1265 for coordination and walk the site prior to any construction activities occur to establish a tree protection and demo plan.

SP-46. STORM WATER POLLUTION CONTROL

General Requirements: Contractor shall meet all requirements and applicable regulations of the Montana Department of Fish, Wildlife and Parks, Department of Environmental Quality, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers and other State or Federal regulations relating to the prevention or abatement of water pollution. Contractor shall conduct and schedule his operations to avoid muddying or silting river, streams, or impoundments. Contractor's specific attention is directed to the Montana Water Pollution Control Act and the Montana Stream Preservation Act for requirements of the State of Montana's MPDES Discharge Permit Program. Contractor shall be responsible for obtaining any required discharge permits associated with erosion control, groundwater dewatering, discharges from main flushing and disinfection operations, or other applicable permits. Contractor's responsibility shall include all cleanup and restoration of any detention or discharge areas. This requirement will apply 24 hours per day until acceptance of the work by Owner and shall not be limited to normal working hours.

Specific Requirements: Contractor's specific attention is directed to the Official Code of the City of Great Falls 13.2.160, 13.2.180, 13.12, 17.16.21 and 17.48.

Storm Water Controls: In accordance with Ordinance 17.48.050, Contractor shall achieve written approval of his Storm Water Pollution Prevention Plan (SWPPP) by City Public Works Environmental Division prior to beginning work or creating disturbance if the project will meet any one of the following criteria:

1.) Land disturbance of greater than or equal to 10,000 square feet.

2.) Construction activity disturbing any amount of soil if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

3.) When soils on slopes of 12 percent or more are disturbed, regardless of surface area.

4.) When 400 cubic yards or more of soil material are placed or moved on or within a site regardless of surface area.

5.) When there is a known issue identified by the City during plan review.

For all other projects, Contractor shall implement project phasing to minimize disturbance and install and maintain effective Best Management Practices (BMP's) throughout the life of the project to prevent site erosion and discharges of pollution or sediment to rivers, streams, impoundments, the MS-4 infrastructure and\or storm water conveyance(s). Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful wastes shall not be discharged into or alongside of rivers, streams, impoundments, or into natural or manmade channels leading thereto.

Excavation Dewatering: Discharges to the City storm drain system, any natural outlet, or any other storm drain conveyance from temporary site dewatering wells or direct excavation de-watering are prohibited without expressed written approval by the City Public Works Department

Environmental Division. Dewatering plans and trench dewatering activities shall be submitted to the City Environmental Division with Contractor's SWPPP, if any one of the SWPPP criteria 1-5 (above) are met by the project. **In all cases**, City authorization to discharge excavation and site dewatering will be contingent upon:

(a) the required Montana Pollutant Discharge Elimination System (MPDES) permit is obtained prior to discharge and

(b) the discharged water and activities conducted by the Contractor are compliant with the applicable MPDES permit(s).

Contaminated Groundwater: At some locations groundwater that is contaminated with petroleum products or other unknown pollutants may infiltrate excavations. Discharge of petroleum contaminated, or excavation dewatering water containing other known contaminants to the City sanitary sewer system or City storm sewer is also prohibited without prior written approval from the City Public Works Department Utility Systems Division and Environmental Division.

Line Flushing and Disinfection: Discharges to the City storm drain system, any natural outlet, or any other storm drain conveyance from main flushing and disinfection operations associated with the project are prohibited without expressed written approval by the City Public Works Department Environmental Division. Contractor shall secure General Permit for Disinfected Water and Hydrostatic Testing, as applicable, from the Montana Department of Environmental Quality. Main flushing and disinfection plans shall be submitted to the City Environmental Division with Contractor's SWPPP, if any one of SWPPP criteria 1-5 (above) are met by the project. **In all cases**, City authorization to discharge main flush or disinfectionwater will be contingent upon:

(a) the required Montana Pollutant Discharge Elimination System (MPDES) permit is obtained prior to discharge and

(b) the discharged water and activities conducted by the Contractor are compliant with the applicable MPDES permit(s).

In all cases Contractor shall be responsible for all expenses related to all remediation activities resulting from hydraulically overloading the storm or sanitary sewer system, enforcement penalties or fines for non-compliance including costs associated with claims related to flooding or backing up sewer service lines.

SP-47. BUY AMERICAN ACT:

Contractor is required to follow 41 USC Chapter 83, The Buy American Act, which requires that 55% of components of final products to be manufactured in the United States. 95% of products consisting wholly or predominantly of iron or steel (or a combination of both) are to be manufactured in the United States. Contractor is to provide documentation to Owner of materials that meet this as requirement as a part of their submittals.

TECHNICAL SPECIFICATIONS

GENERAL.

Contractor shall familiarize themself with the MPWSS and keep a reference copy at the work site at all times. Copies of the MPWSS will not be furnished to bidders and/or Contractors by the Owner or Engineer. Copies of the Montana Public Works Standard Specifications, 7th edition, can be obtained from:

Montana Contractors' Association, Inc. 1717 11th Avenue Helena, Montana 59601	Telephone FAX	(406) 442-4162 (406) 449-3199

Standard Construction Specifications referred to for this project shall be the "Montana Public Works Standard Specifications, Seventh Edition" (MPWSS), April 2021, including any Addenda thereto, are hereby incorporated into these contract documents by reference. The Measurement and Payment section of this document and Special Provisions SP-12, Incidental Work Items, supersede PART 4 MEASUREMENT AND PAYMENT contained in each MPWSS specification section.

SPECIFICATION INDEX. Both MPWSS and Supplemental specifications are listed in the index.

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 2 – SITE WORK

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01010
SUMMARY OF WORK
(Reference MPWSS Section 01010)

Modifications:

PART 1: GENERAL

1.1 DESCRIPTION

A. REPLACE WITH THE FOLLOWING*:* The Invitation to Bid contains a general description of the project work to be performed under this Contract. The Special Provisions and other documents contain additional information necessary to perform the work.

1.2 CONTRACT DOCUMENTS

A. REPLACE WITH THE FOLLOWING: For imperatives specifically addressing the Engineer/Owner, see Special Provision SP-2 Definitions of City, Engineer and Owner.

B. REPLACE WITH THE FOLLOWING: Contract Documents are defined in the Construction Agreement.

C. REPLACE WITH THE FOLLOWING*:* The Contract Documents are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Specifications and Drawings included in these contract documents establish the performance, quality requirements, location and general arrangement of materials and equipment, and establish the minimum standards for quality of workmanship and appearance. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the project shall be included.

D. REPLACE WITH THE FOLLOWING*:* The various portions of the Contract Documents, of which these specifications are a part, are essential parts of the Agreement, and a requirement occurring in any portion or part is binding as though occurring in all. All portions are intended to be complementary and to describe and provide for a complete work. Unless specifically noted otherwise, in the case of discrepancy the following hierarchy shall be observed:

Addenda, which will govern over;
Special Provisions, which will govern over;
City of Great Falls Design Criteria and Special Conditions, which will govern over;
Contract Documents, which will govern over;
Construction Drawings which will govern over;
MPWSS Technical Specifications and Standard Modifications

1.3 WORK SEQUENCE

A. REPLACE WITH THE FOLLOWING: Comply with the Contractor's approved construction schedule in accordance with Section 01410 and the Construction Agreement.

D. REPLACE WITH THE FOLLOWING: Notify Engineer/Owner of existing conditions differing from those indicated on the drawings. Verify the existence and location of underground utilities along the route of the proposed work. Omission of an existing or previous abandoned utility location on the Drawings is not to be considered as its nonexistence. Inclusion of existing utility locations on the Drawings is not to be considered as its definite location. Do not remove or alter existing utilities without prior written approval.

1.4 CONTRACTOR USE OF PREMISES

A. REPLACE WITH THE FOLLOWING: Comply with the Contract Documents. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers within the construction limits at the site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site or other storage and staging areas with construction equipment or materials. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

ADD: C. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless the City, Owner, and Engineer from and against all claims, costs, losses, and damages arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against the City, Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01041
PROJECT COORDINATION
(Reference MPWSS Section 01041)

Modifications:

PART 1: GENERAL

1.2 COORDINATION WITH PUBLIC AND PRIVATE AGENCIES

A. REPLACE WITH THE FOLLOWING: Carefully coordinate all work activities and work schedule with the Owner's project representatives. Work beyond normal working hours, weekends and holidays due to adverse weather, or other conditions beyond the Contractor's control, shall be approved and coordinated with the Owner's Project Manager.

Contractor shall furnish the Engineer a construction schedule. The Engineer will review the schedule to determine whether or not it is appropriate for public convenience. Contractor shall make any necessary schedule adjustments and submit a final schedule to Owner.

B. REPLACE WITH THE FOLLOWING: Existing utilities in the vicinity of the work are indicated on the plans to the extent such information has been made available to or discovered by the Engineer in preparing the plans. The accuracy or completeness of such information is not guaranteed, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

The Contractor shall be solely responsible for locating all existing utility installations above and below ground, including service connections, in advance of the project by contacting their respective owners and by exploratory excavation as needed. Any delay, additional work, or extra cost to the Contractor caused by existing utility installation shall not constitute a claim for extra work, additional payment, additional time, standby time, or damages. This includes crossing over, under, or parallel to the utility. Contact the **One Call System** prior to beginning work at **1-800-424-5555**. Permit utility companies to repair or replace their lines in the project limits.

C. REPLACE WITH THE FOLLOWING: NOTIFICATIONS:

1. Maintain a 24-hour per day telephone number for Contractor's job superintendent. The telephone number must be on file at the City Engineers Office prior to the start of construction.

2. Notify affected residents, emergency services, and the City in writing a minimum of seventy-two (72) hours in advance of all roadway closures.

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01300
SUBMITTALS
(Reference MPWSS Section 01300)

Modifications:

PART 1: GENERAL

1.1 CONSTRUCTION SCHEDULES

A. REPLACE WITH THE FOLLOWING: Within 10 days after the Effective Date of the Agreement, Contractor shall submit to Engineer for timely review:

1. A preliminary Progress Schedule indicating the times (number of calendar days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. A preliminary Schedule of Submittals;

3. The Contractor shall submit a Schedule of Values for lump sum items along with the initial progress schedule. This Schedule of Values will be utilized to assist the Engineer in preparing progress pay estimates. The Schedule of Values shall be a true and fair representation of the actual costs and shall not be biased or weighted. Material prices utilized in the breakdown shall be supported by quotations from suppliers. Separate material and labor costs shall be shown for each of the major materials or activities exceeding $3,000 in value. The Schedule of Values will be reviewed by the Engineer and adjustments may be requested. The Contractor shall make all required revisions and resubmit a final Schedule of Values for approval.

B. DELETE: Entire section.

C. DELETE: Entire section.

1.2 SHOP DRAWINGS

A. REPLACE WITH THE FOLLOWING: Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the Special Provisions or the Agreement), Contractor shall submit to Engineer for timely review, shop drawings for the Contractor, subcontractor(s), and supplier(s). Each submittal shall bear a stamp or specific written certification that Contractor has reviewed said submittal and that Contractor approves of said submittal. Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents.

Shop drawing submittals shall be organized as follows:

1. Electronic submittals shall be formatted as searchable pdfs. Each data sheet or catalog in the submission shall be indexed according to specification section and paragraph for simple reference. If a submission is not indexed correctly it will be automatically rejected and returned to Contractor for resubmission.

2. The Contractor shall clearly circle, highlight, or otherwise indicate all unique features, model numbers, options, materials, etc. that apply to the material under consideration.

3. When submitted for the Engineer's review, shop drawings and equipment data shall bear the Contractor's certification that he/she has reviewed, checked and approved them, that they are in harmony with the requirements of the project and with the provisions of the Contract Documents, and that he has verified all field measurements and construction criteria, materials, catalog numbers and similar data. Contractor shall also certify that the work represented by the shop drawings and equipment data is recommended by the Contractor and the Contractor's Guaranty will fully apply.

B. REPLACE WITH THE FOLLOWING: Before submitting each Shop Drawing or Sample, Contractor shall have:

1. Reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents

2. Determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

3. Determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

4. Determined and verified all information relative to Contractor’s responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

D. REPLACE WITH THE FOLLOWING: Within 10 days after the Effective Date of the Agreement, unless otherwise specified elsewhere, submit a complete list of anticipated shop drawings, test reports and documents identified in the Project Manual for submittal. At a minimum, Contractor shall submit one (1) electronic copy of the following submittals:

1. Construction schedule
2. Schedule of values for lump sum activities
3. Submittal schedule

4. Permits
5. Wage rates per class
6. Water main pipe, service lines and fittings
7. Water service appurtenances
8. Water pipe gaskets
9. Valves, valve boxes & fire hydrant assembly
10. Tracer wire system & tracer wire testing reports
11. Polyethylene wrap
12. Utility warning tape
13. Wax-Tape System
14. Water main disinfecting plan and agent
15. Hydrostatic and leakage test plan and results
16. Bacteriological test results
17. Tree Protection Plan

ADD: F. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of separate items as such will not indicate approval that the items are compatible with each other nor will it indicate approval that the items will function together.

ADD: G. Submittals for all products and materials must be within a year of bid date. The submittals shall include all product data, descriptive literature, manufacturer's drawings, and manufacturer's equipment and installation manuals. Any work affected by the submittal items shall not proceed without such review. Submittals and their contents shall be properly prepared, identified, and transmitted as provided herein or as the Engineer may otherwise direct.

ADD: H. Wherever specific manufacturers are named in the specifications, the term "or equal" is implied whether or not specifically stated. Naming a specific manufacturer implies the minimum quality, material types, construction, and function desired. The Engineer has the exclusive right to decide whether or not an item is equal to that specified.

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 2 – SITE WORK
SECTION 02911
TREE PROTECTION & DEMOLITION

PART 1: GENERAL

1.1 RELATED DOCUMENTS

Construction Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, apply to work of this section.

1.2 DESCRIPTION

The work in this section includes protection, trimming and maintenance of existing trees, shrubs and groundcover that are affected by execution of the Contract Documents, whether temporary or permanent construction. Work also includes demolition of any vegetation as noted on Contract Documents.

Trees to be protected include those noted on the plans and any tree where work is being completed in the dripline of a tree, this specification section applies only to trees to be protected.

A. The Contractor assumes responsibility for all coordination of work within the Critical Root Zone (CRZ) of protected trees.

B. Plant protection applies to all trees to remain within the Limit of Work as well as those, which are adjacent to the Limit of work and could be affected by new construction. Work to include:

1. Protection of existing trees and indicated vegetated areas.

2. Watering of existing trees and vegetated areas to be protected.

3. Removal of pruning debris and other excess material not used. On-site chipping and re-use of pruned material is encouraged.

C. Contractor shall perform all tree protection installation and removal, and any necessary pruning work required for construction under the supervision of the Owner.

1.3 DEFINITIONS

A. Tree Protection Zone (TPZ): Area surrounding individual trees or groups of trees to remain during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

B. Drip Line: The areas encompassing the base of the tree as delineated by an imagined vertical line drawn from the farthest extent of the branches to the ground.

C. Diameter at Breast Height (DBH): Diameter at breast height as measured at four and one-half feet (4'-6") above the existing grade at the base of the tree.

D. Critical Root Zone (CRZ): An area up to one and one-half the radius of the drip line of the tree.

E. Clearing: Clearing is the removal from the ground surface and disposal, within the designated areas, of trees, brush, shrubs, down timber, decayed wood, other vegetation, rubbish and debris as well as the removal of fences.

F. Grubbing: Grubbing is the removal and disposal of all stumps, buried logs, roots larger than 1-1/2 inches, matted roots and organic materials.

1.4 QUALITY ASSURANCE

A. Tree Service Firm Qualifications: An experienced tree service firm with a minimum of three years of experience that has successfully completed tree protection and trimming work similar to that required for this project.

B. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)."

C. Owner's representative shall be notified 24 hours in advance of all pruning, thinning and tree protection work.

D. Before tree protection and trimming operations begin, meet with Owner's representative, and other concerned entities to review tree protection and trimming procedures and responsibilities.

1.5 SUBMITTALS

A. Tree Protection Plan: Contractor shall mark layout of proposed water main then walk site with Owner's Representative prior to the start of construction to determine trees to be protected and demolished. Contractor shall submit a tree protection plan that confirms which trees are to be protected/demolished prior to start of construction. Contractor shall notify the Owner of all work activities within the dripline of trees to be protected, anticipated work methods, and proposed tree and root avoidance techniques for each tree.

1.6 JOB CONDITIONS

A. Site Work Restrictions: In order to prevent excessive soil compaction and destruction of soil structure, no site work will be performed in cases where equipment or traffic must pass over wet soils or if wet soils must be handled or manipulated within the Tree Protection Zone in order for the work to progress. Wet soil is defined as any soil within 85 percent of field capacity (saturation).

B. Utilities. Utility locates are required prior to digging and any construction activities.

C. Coordinate work with Owner, including irrigation manager, in order to prevent damage to underground sprinkler system.

1.7 MAINTENANCE

A. Water will be available on site. Provide necessary hoses and other watering equipment required to complete work.

B. Maintain existing plantings and trees within 20 feet of the limits of construction by watering, cultivating, weeding, and spraying as necessary to keep landscape in a vigorous, healthy condition.

C. Coordinate watering schedules with irrigation contractor during installation and until final acceptance. Provide deep root watering to newly installed trees.

1.8 APPLICABLE PUBLICATIONS

A. *ANSI Z60.1: American Standard for Nursery Stock*, latest edition, American National Standards Institute.

B. *Hortus Third: A Concise Dictionary of Plants Cultivated in the United States & Canada*, Staff of the L.H. Bailey Hortorium, Cornell University, 1999.

C. *ASTM C33: Specification for Concrete Aggregate*, American Society of Testing Materials.

D. Alex Shigo, *Tree Pruning*, Shigo & Tree Associates, LLC, 1989.

E. *Guide for Plant Appraisal*, latest edition, Council of Tree and Landscape Appraisers.

F. *Species Ratings and Appraisal Factors Guide*, latest edition, International Society of Arboriculture, Rocky Mountain Chapter.

G. *ANSI A300: Standards for Tree Care Operations*, American National Standards Institute.

H. International Society of Arboriculture Best Management Practices publications.

I. An Illustrated Guide to Pruning, 2nd Edition, Gilman, Delmar, 2002.

PART 2: PRODUCTS

2.1 MATERIALS

A. Cabling: Cabling materials shall meet the ANSI A300 standards for cabling of trees.

B. Tree Tags: Rack track shaped aluminum engraved numbered tags.

C. Organic Mulch/Wood Chips: Mulch can be provided by City Park & Recreation

Department. Contact Lonnie Dalke or Todd Seymanski at 771-1265 to coordinate. Contractor is responsible for mulch pick-up from City's Compost Site at 4001 18th Ave. N, Great Falls, MT. If mulch is contractor provided the wood chips shall be free from weed seed, sawdust and splinters and shall not contain resin, tannin, wood fiber or other compounds detrimental to plant life. Bagged mulch shall have moisture content not in excess of 22%. Bulk mulch shall have a size range of ½ inch to 1-1/4 inch with a maximum of 20% passing a ½ inch screen.

PART 3: EXECUTION

3.1 USE OF AREA WITHIN TREE PROTECTION ZONE (TPZ)

A. For trees being protected do not use area within TPZ for operation, storage, vehicles, or foot traffic.

B. Do not alter grades within the required TPZ except as directed during the fine grading operations at the conclusion of site development.

C. Control soil moisture within the protected area. Prevent flooding, ponding, erosion, or excessive wetting of the soil and root systems caused by dewatering operations. Protect root areas from leachate, concrete, oil, fuel, lubricating oil, and from other contaminants.

D. Nails, bolts, or other fastening materials shall not be imbedded into the trunk of any trees or limbs. Ropes, wires, or other hanging materials shall not be attached to a tree in such a manner that the bark may be damaged or cause undue stress to the plant structure.

E. Any overhanging branches or underlying roots which may be crushed, scarred, broken, or damaged in any way due to unavoidable construction activity shall be reported to the city Forester prior to construction activities to determine what preventive action may be taken to minimize tree damage. Any trees damaged shall be the responsibility of Contractor to repair/trim or replace as determined by the City Forester and the valuation shall be determined by "Landscape Trees, Shrubs and Other plants," published by the International society of Arboriculture.

F. Prior to backfilling any trench or ditch the City Forester shall be notified to inspect any repairs made to damaged roots. All exposed roots shall be pruned, or trimmed using a hand saw. Axe cuts will not be allowed.

3.2 TREE PROTECTION INSTALLATION

Mulch: Area within dripline of protected trees must be mulched with bark mulch to a depth of 12-inches.

3.3 USE OF AREA ADJACENT TO TPZ

A. Do not store materials potentially harmful to tree roots within 20 feet of protected areas. Potentially harmful materials include, but are not limited to petroleum

products, cement and concrete materials, cement additives, lime, paints coating, waterproofing agents, from coatings, detergents, acids, and cleaning agents.

B. Notify Owner's representative of all heavy equipment work to be performed within the CRZ.

C. Tie-back all flexible limbs and branches, which may be damaged during construction.

D. Use compaction mitigation strategies such as planking, mulch, or planting.

3.4 DAMAGES FOR LOSS OF INJURY TO TREES

Any trees to be removed during demolition or construction activities shall be done so with the approval of the Owner's representative. Any tree removed or damaged and deemed unviable, during demolition or construction, are to be replaced at the Owner's discretion.

Contractor is responsible for any damage to trees caused by construction activities. Repairs to trees required shall be completed by an approved ISA Certified Arborist.

Protected trees are considered 2-year warranty item.

If existing tree is to be removed, completely remove and dispose of any tree killed or irreparably damaged as a result of construction activities. Remove those trees damaged or killed as a result of vandalism, natural acts or other causes. Removal and disposal shall include stumps and roots to a depth of two feet below finished grade.

3.5 PRUNING OF EXISTING TREES.

Limbs and branches that have been broken shall be cut off cleanly above the nearest crotch in accordance with International Society of Arboriculture (ISA) standard. Cut limbs and branches greater than one-half inch in diameter. Sterilize equipment with alcohol prior and during trimming and pruning operation. All pruning of damaged trees shall be carried out to the complete satisfaction of the Owner's Representative.

3.6 TREE DEMOLITION

A. Remove trees and shrubs as indicated on Contract Documents.

B. Remove trees and shrubs to avoid damage to trees and shrubs designated to remain.

C. Clear, grub and remove tree, stumps and shrubs felled within the project site to an authorized disposal site. Fill depressions created by such removal with native back fill or topsoil

D. Dispose of all material and debris from the clearing and grubbing operation by hauling such material and debris away to an approved dump. The cost of disposal (including hauling) of cleared and grubbed material and debris shall be considered a

subsidiary obligation of the Contractor; the cost of which shall be included in the prices bid for the various classes of work.

3.7 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within Tree Protection Zones, unless otherwise indicated.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots. Work shall be performed under the supervision of the Owner's representative.

D. Redirect roots into backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately three inches back from new construction.

E. Do not allow exposed roots to dry out before placing permanent backfill. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with approved soil.

F. Straw Mulch: Thoroughly wet excavated sub-grade where roots of existing trees to remain have been exposed. Apply four inches of wet organic bark mulch on horizontal area and wet burlap mats along exposed trench sides.

G. Watering and Maintenance: Thoroughly and evenly water protected areas at a rate not to exceed two inches per hour during dry periods. Coordinate water procedures and schedules with the Owner's Representative. Maintain root protection procedures throughout the term of the Contract, as required.

H. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

I. Root Pruning: Do not cut roots larger than 1" without notifying Owner's representative. Cut roots smaller than 1" in accordance with ISA standards.

3.7 INSPECTION

Upon complete of construction, Contractor shall notify the city Forester for a final inspection of the trees whether or not any damage occurred. Any damage found to have been caused by the construction activity of Contractor shall be the remedial responsibility of Contractor.

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 3 - CONCRETE
SECTION 03310
STRUCTURAL CONCRETE
(Reference MPWSS 03310)

Modifications:

PART 3: EXECUTION

3.7 TESTING

A. REPLACE: “Unless otherwise specified, the engineer shall be responsible for all acceptance testing during the on-site placement of concrete” with “The Contractor shall be responsible for all acceptance testing during the on-site placement of the concrete.”

A.1 through A.5. REPLACE: All references to “Engineer’s” testing with “Contractor’s” testing.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Measurement and Payment

END OF SECTION

MEASUREMENT AND PAYMENT

SCOPE: The following description of work, measurement of pay quantity, and method of payment shall govern payment to Contractor under this Contract. Payment for these items shall be full compensation for the completed item of work furnished and installed, and the cost of any incidental work or materials required to complete the item. No additional payment will be made for materials purchased and not installed as a result of adjustments in field quantities versus Bid Form quantities.

BID ITEM

101. Mobilization, Permits. All costs related to general contract requirements, administration, and overhead shall be merged and included in the contract lump sum price for "Mobilization". The cost of all bonds, insurance, permits, licenses, safety, fees, royalties and taxes; purchasing permits and licenses, temporary electric and telephone service, utility location, shop drawings and samples, general administration and overhead, movement of equipment, tools, and workmen and other incidental work required for occupying the site and performing the work shall be merged and included in the contract lump sum price for "Mobilization, Permits". The contract price for "Mobilization, Permits" shall not exceed five (5) percent of the total bid and shall not include any anticipated profit. Anticipated profit shall be distributed proportionately among the various contract bid items. Any bids that contain a lump sum price for mobilization greater than five percent of the bid shall be reduced in price to the five percent limit without adding costs to other bid items or rejected at the option of the Owner.

102. Demolition & Tree Protection. Measurement and payment for Demolition & Tree Protection is per lump sum including furnishing of all labor, materials and equipment related to demolition work to sawcut and remove concrete sidewalk, asphalt pavement, cutting and capping existing irrigation system, landscape boulders, landscape islands, trees, shrubs, removal of existing water main and backfill with Type A Backfill, as well as removal, hauling, disposal, and all other incidental items required to complete required site demolition.

Tree Protection shall include all costs for labor, materials, and equipment associated with tree protection, per contract drawings and specifications, cleanup, and all other incidental items necessary to complete the work.

103. 6” Depth 1.5” Minus Gravel Base Course. Measurement and payment for this item shall be made at the contract unit price per square yard for “6” Depth 1.5” Minus Gravel Base Course”. Payment shall include all costs for labor, materials, and equipment for excavation, furnishing, placing, and compacting 6” thick layer of gravel base course in the areas indicated on the Construction Drawings, cleanup, and any incidental items necessary to complete the work.

104-105. C900 DR14 Water Main / Hydrant Lead. Measurement and payment of this item shall be made at the contract unit price per linear foot along the centerline of pipe through all valves, fittings, and appurtenances for “C900 DR14 Water Main / Hydrant Lead”. This item shall include furnishing and installing the transmission main of the type and size indicated in the Construction Drawings and Specifications; type #1 wax-tape system; polyethylene encasement, depending on water main pipe material; and hydrant leads. Payment shall include all costs for labor, materials, and equipment for the following: trench excavation including rock excavation, if any; trench plugs; dewatering; sheeting; shoring; backfill; compaction; remove and dispose of in-situ water main; furnishing and installing pipe; furnishing and placing pipe bedding; insulation; thrust blocks; detectable warning tape; tracer

wire; grounding rods; connect to new tees; deflect pipe through pipe joints; cost to purchase water for testing and cleaning mains; flushing; pressure and leak testing; disinfection; de-chlorination; repair and cleanup; and all other incidental items necessary to complete the work.

Payment for “C900 DR14 Water Main / Hydrant Lead” shall be made after installation, pressure and leakage testing, cleaning, disinfecting, and bacteriological testing of the water mains is complete and the water main is in service. Repair and disinfect at no cost to Owner any damaged existing water main while it is in use during Construction.

106. 4" C900 DR14 Domestic / Fire Service Line. Measurement and payment of this item shall be made at the contract unit price per each for “ 4" C900 DR14 Domestic / Fire Service Line”. Payment shall include all costs for labor, materials, and equipment for the following: furnishing and installing service line tee and gate valve of the type and location indicated in the Construction Drawings; type #1 wax-tape system; polythene encasement; providing a temporary cap and service line marker at ground level; flushing; disinfection; testing; excavation; bedding; backfill; compaction; cleanup; and all other incidental items necessary to complete the work.

107 – 108. Gate Valve. Measurement and payment of this item shall be made at the contract unit price per each for “Gate Valve” for the various sizes shown on the Bid Form and Construction Drawings including the auxiliary valves for fire hydrants. Payment for this item shall include all costs for labor, materials, and equipment for the following: furnish and install the valve and valve box with cover; anchor blocking; tie bars; concrete blocking; type #1 wax-tape system; polyethylene encasements or v-bio polyethylene (inner layer) and 4 mil cross laminated high density polyethylene (outer layer) encasements, depending on water main pipe material; furnishing, placing, and compacting bedding; cleanup; and all other incidental items necessary to complete the work.

109. Fittings. Measurement and payment of this item shall be made at the contract unit price per pound for “Fittings”. Payment shall include all costs for labor, materials, and equipment for the following: furnishing and installing the fittings of the type and size indicated in the Construction Drawings and Specifications; type #1 wax-tape system; polyethylene encasement or v-bio polyethylene (inner layer) and 4 mil cross laminated high density polyethylene (outer layer) encasements, depending on water main pipe material; thrust blocking; cleanup; and all other incidental items necessary to complete the work. Payment for “Fittings” shall be per each of the various types and sizes of fittings multiplied by the weight given in AWWA C-153 (compact fittings), as appropriate, for mechanical joint fittings (without follower glands or bolts). Mechanical joint weights shall be used for all mechanical joint and push-on fittings.

110. Fire Hydrant Assembly. Measurement and payment of this item shall be made at the contract unit price per each for “Fire Hydrant Assembly”. Payment shall include all costs for labor, materials, and equipment for the following: surface restoration including sod; furnish and install new hydrant; type #1 wax-tape system; polyethylene encasements; excavation, including rock excavation; backfill; compaction; special drain gravel; thrust blocks; concrete base; modification of the hydrant to achieve proper nozzle orientation; cleanup; and all other incidental items necessary to complete the work.

111. Connect to Existing 6” Water Main. Measurement and payment of this item shall be made at the contract unit price per each for “Connect to Existing 6” Water Main” at the location identified on the Construction Drawings. Payment shall include all costs for labor, materials, and equipment for the following: verifying existing pipe type and diameter; complete the connection; type #1 wax-tape system; water removal; isolation of connection locations; cut existing main and disposal of

existing pipe that is in conflict with the connection; preparing existing pipe ends; connection to mains with gate valves at locations shown on the Construction Drawings; polyethylene encasements; excavation; bedding; backfill; compaction; cleanup; surface restoration; and all other incidental items necessary to complete the work. Connections shall be made without transition or flexible couplings wherever possible. This bid item does not include connecting water services to mains.

112. 2" Irrigation Service Line Tap. Measurement and payment of this item shall be made at the contract unit price per each for " 2" Irrigation Service Line Tap". Payment shall include all costs for labor, materials, and equipment for the following: tapping the water main; furnishing and installing the service saddle, corporation stop, Type K copper pipe, curb stop, curb box, miscellaneous fittings; type #1 wax-tape system; polythene encasement; providing a temporary cap and service line marker at ground level for new service line; flushing; disinfection; testing; excavation; bedding; backfill; compaction; cleanup; and all other incidental items necessary to complete the work.

113. Miscellaneous Field Work or Materials. Measurement is made at $1.00/Unit of miscellaneous work. Payment will be made at the contract unit price of $1.00/Unit and includes furnishing of all labor, materials and equipment to complete miscellaneous work not provided by work items in the unit bid proposal. The number of units for a particular work item shall be by an agreed upon price or force account basis as deemed necessary and only as directed by the City.

END OF SECTION

APPENDIX A

Geotechnical Report Appendix Information

8TH AVE S

See Figure 77 for Subsurface Profile Along North-South Alignment

See Figure 78 for Subsurface Profile Along East-West Alignment

B-12
ELEV.= 3492

B-11
ELEV.= 3492.6

B-10
ELEV.= 3493

B-8
ELEV.= 3494.3

B-5
ELEV.= 3492.8

B-3
ELEV.= 3493.5

B-1
ELEV.= 3492.6

B-6
ELEV.= 3492.9

B-13
ELEV.= 3490.5

B-9
ELEV.= 3491.9

B-7
ELEV.= 3490.1

B-4
ELEV.= 3490.2

B-2
ELEV.= 3489.7

B-14
ELEV.= 3489.5

B-15
ELEV.= 3490.6

B-16
ELEV.= 3489.1

29TH ST S

9TH AVE S

30TH ST S

10TH AVE S

87

PROJECT LOCATION

N

0 20 40 80
Feet

BORING LOCATION

Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
U.S. Department of Agriculture Farm Services Agency Aerial Photography Field Office.

J:\2020\20-091 Great Falls Rec Ctr_MAFB\CADD\CIVIL\20-091 BORINGS.mxd

REV	DATE	REVISION

TD&H Engineering
406.761.3010 • tdhengineering.com
1800 RIVER DR. NO. • GREAT FALLS, MONTANA 59401

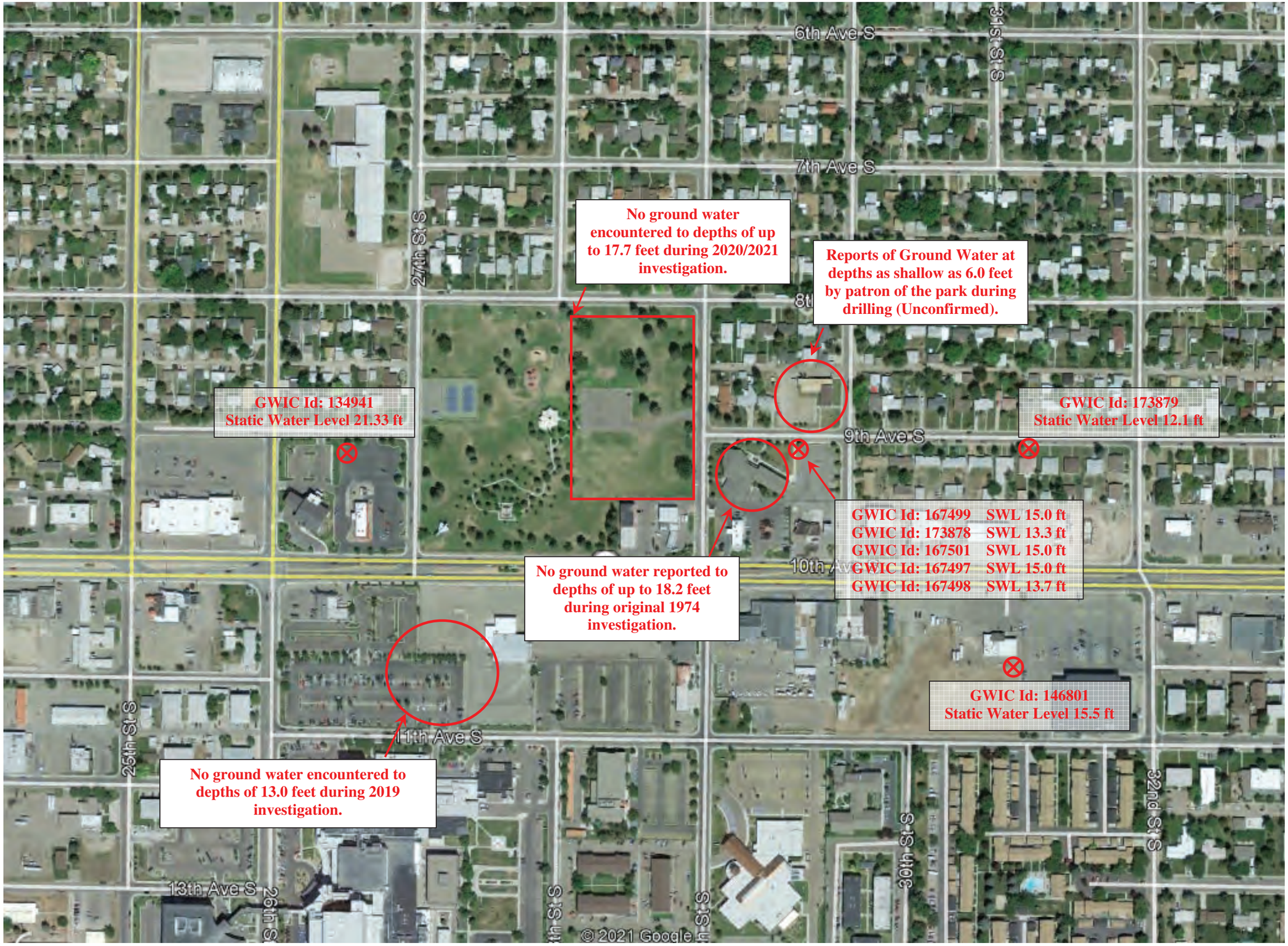
DRAWN BY:	CJS
DESIGNED BY:	
QUALITY CHECK:	
DATE DRAWN:	3/1/2021
JOB NO.:	20-091
FIELDBOOK:	

GREAT FALLS REC CENTER
GREAT FALLS, MONTANA

BORING LOCATION MAP

20-091 BORINGS.MXD

FIGURE 1



REV | DATE | REVISION

TD&H Engineering
406.761.3010 • tdhengineering.com
1800 RIVER DR. NO. • GREAT FALLS, MONTANA 59401

DRAWN BY:
DESIGNED BY:
QUALITY CHECK:
DATE:
JOB NO.
FIELDBOOK

GREAT FALLS RECREATION CENTER
GREAT FALLS, MONTANA

GROUND WATER RESEARCH SUMMARY

.DWG

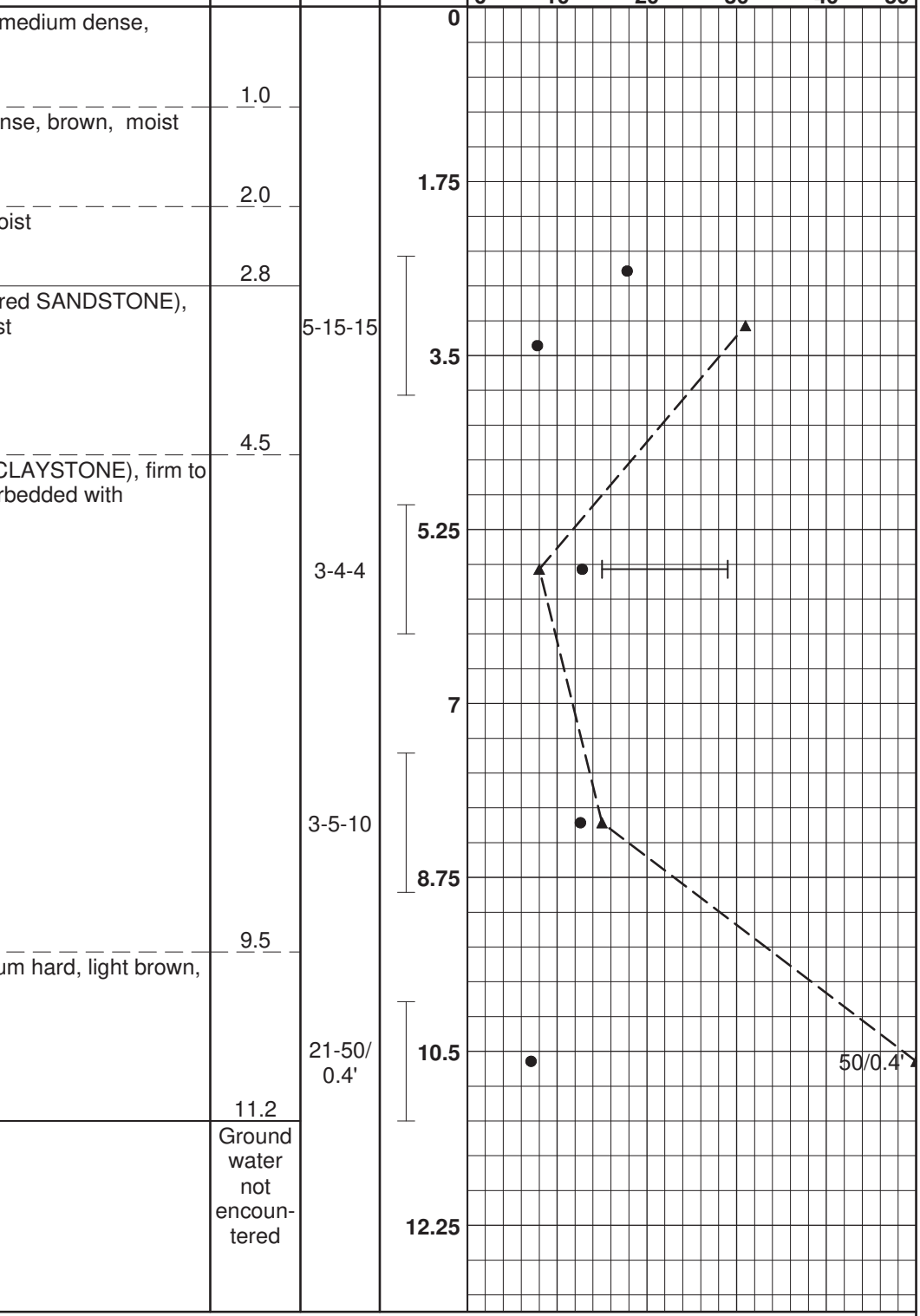
FIGURE 1B

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,492.6 feet

SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS
TOPSOIL: Silty SAND, appears medium dense, brown, moist, medium grained			
	1.0		
Silty SAND, appears medium dense, brown, moist			
	2.0		
Sandy Fat CLAY, stiff, brown, moist			
	2.8		
Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist			5-15-15
	4.5		
Sandy Lean CLAY (Weathered CLAYSTONE), firm to very stiff, light brown, moist, interbedded with sandstone			3-4-4
			3-5-10
	9.5		
Weathered SANDSTONE, medium hard, light brown, moist			21-50/ 0.4'
	11.2		
Bottom of Boring		Ground water not encoun-tered	

PENETRATION RESISTANCE/MOISTURE CONTENT

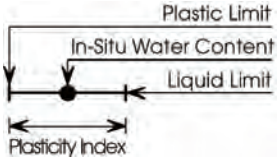
● = MOISTURE CONTENT
▲ = BLOWS PER FOOT



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-1

Recreation Center
Great Falls, Montana

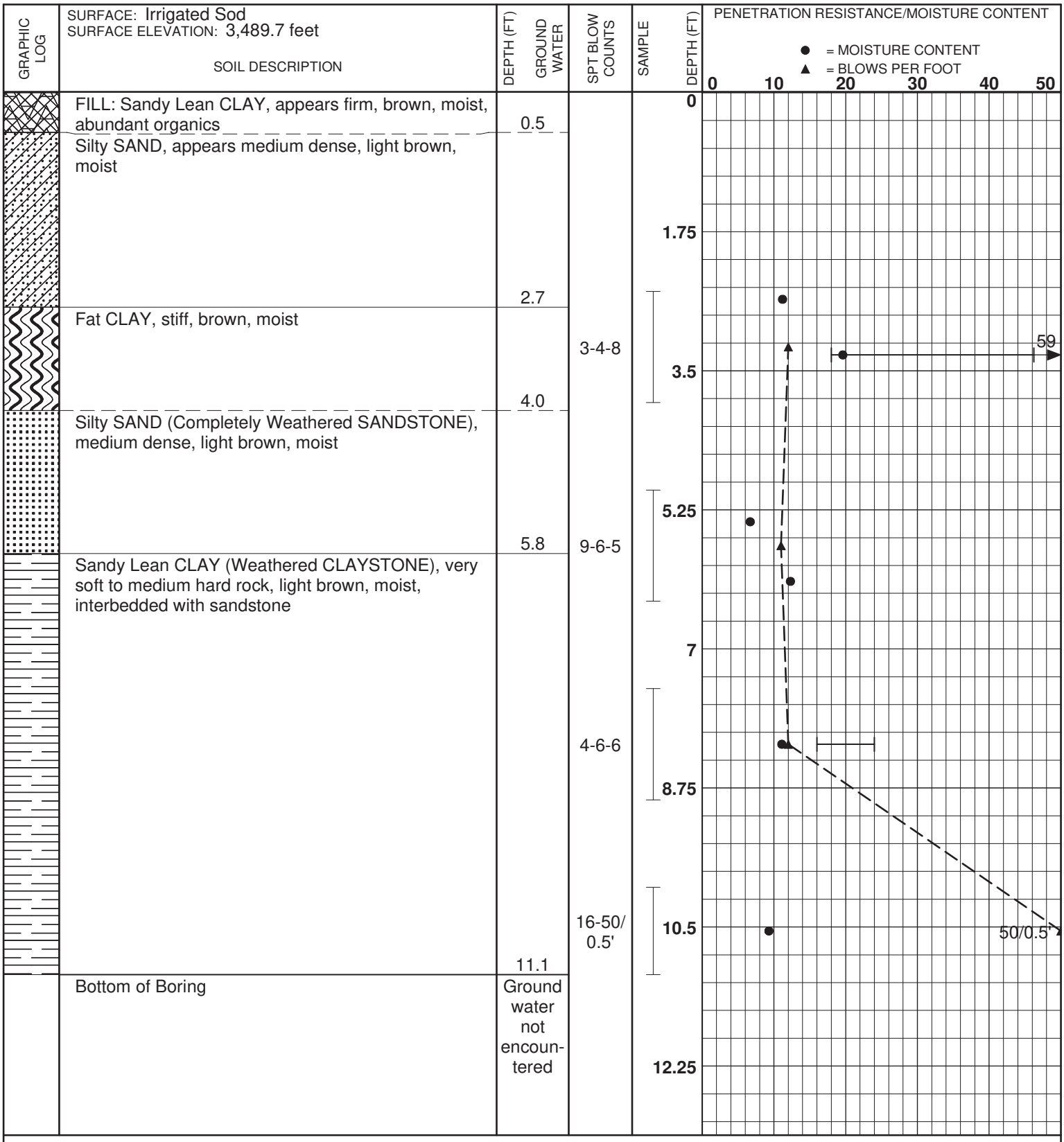
Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

December 23, 2020 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

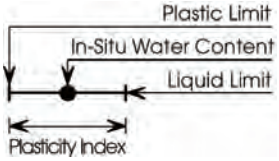
Figure No. 2
Sheet 1 of 1



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-2

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

December 23, 2020 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 3
Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,493.5 feet

SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, relatively loose, brown, moist	0	
Silty SAND, very loose, brown, moist	0.5	1-1-2
Sandy Fat CLAY, firm to stiff, brown, moist	5.5	2-4-4
qu = 2.5 - 3.0 tsf		
Clayey SAND, medium dense, light brown, moist, trace gravel	8.2	3-7-8
Fat CLAY, stiff, brown, moist, laminated	9.5	2-5-5
qu = 2.5 - 3.0 tsf		
qu = 2.0 - 3.0 tsf		

GROUND WATER

SAMPLE DEPTH (FT): 0, 1.75, 3.5, 5.25, 7, 8.75, 10.5, 12.25

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

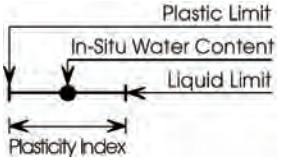
0 10 20 30 40 50

70

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-3

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

December 23, 2020 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 4
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,493.5 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)
			3-4-5		
		14.5			14
	Lean CLAY with Sand (Severely Weathered CLAYSTONE), stiff, light grayish brown and maroon, moist, trace carbon		5-7-7-9		15.75
		17.0			17.5
	Bottom of Boring	Ground water not encoun-tered			19.25
					21
					22.75
					24.5

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT

▲ = BLOWS PER FOOT

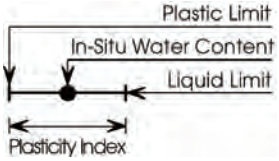
0 10 20 30 40 50

62

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-3

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

December 23, 2020 20-091-001

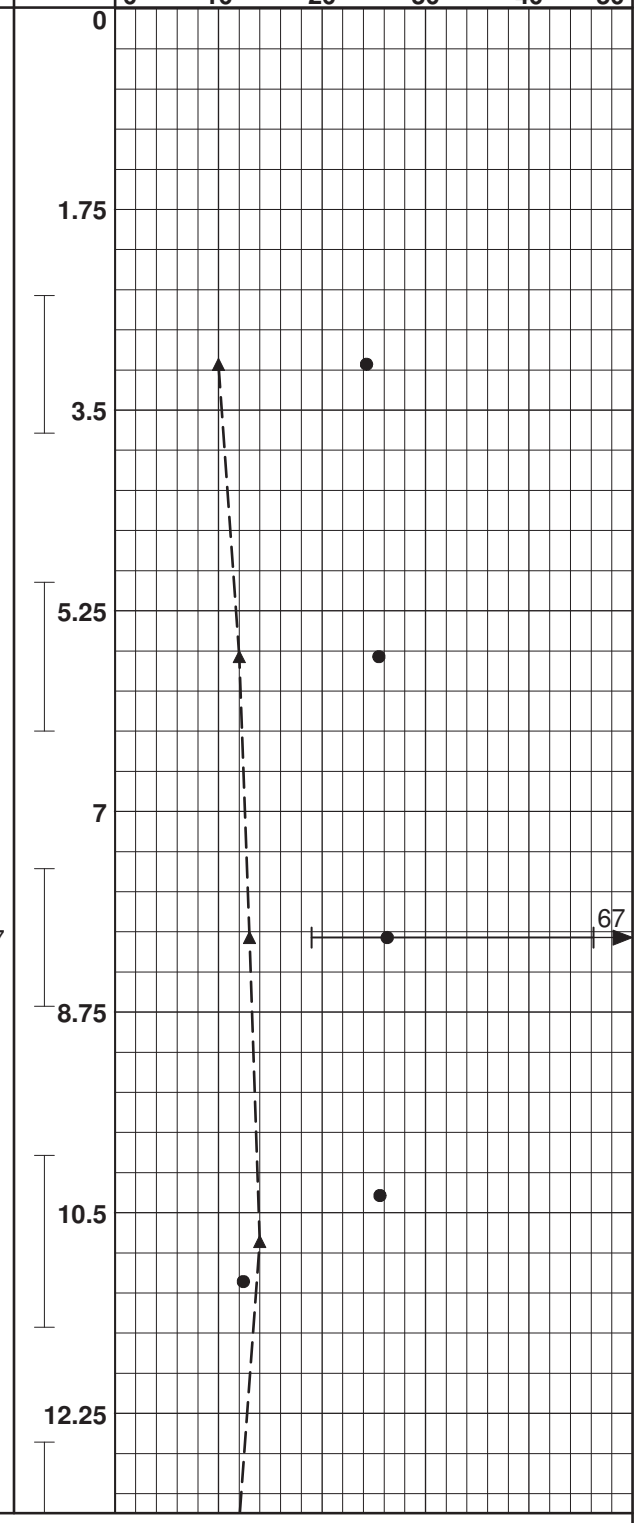
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 4

Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,490.2 feet

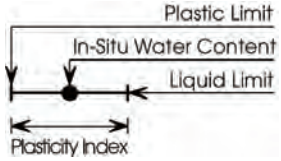
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Sandy Lean CLAY, appears firm, brown, moist	0.5	
Clayey SAND, appears medium dense, light brown, moist	2.0	
Fat CLAY with Sand, stiff, brown, moist qu > 4.5 tsf		3-4-6
Fat CLAY, stiff, brown, moist qu = 2.75 - 3.0 tsf	4.5	4-5-7
qu = 2.75 tsf		13-6-7
qu = 3.0 tsf	10.7	2-6-8
Sandy Fat CLAY, stiff, brown, moist	12.0	
Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist		



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-4

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

December 23, 2020 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

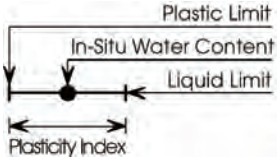
Figure No. 5
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,490.2 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)	PENETRATION RESISTANCE/MOISTURE CONTENT ● = MOISTURE CONTENT ▲ = BLOWS PER FOOT 0 10 20 30 40 50
			4-5-7			
		14.0			14	
	Bottom of Boring	Ground water not encoun-tered			15.75	
					17.5	
					19.25	
					21	
					22.75	
					24.5	

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-4

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

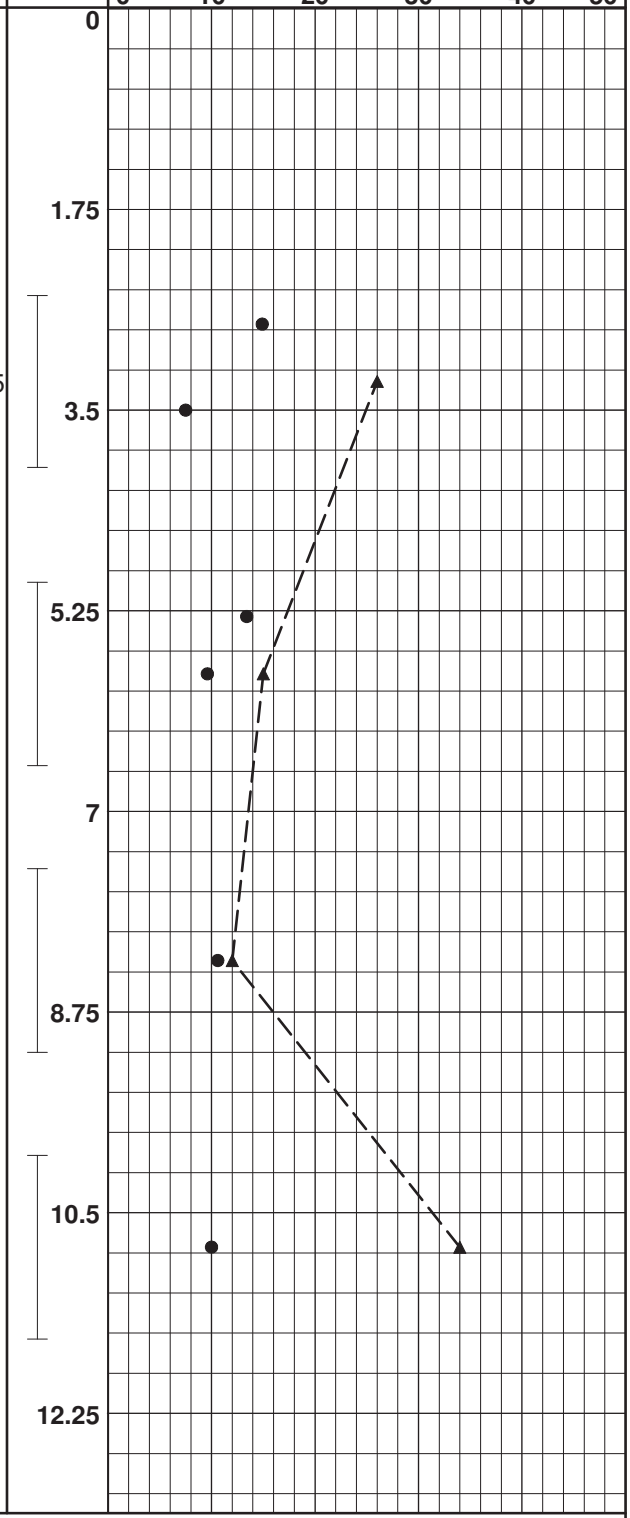
December 23, 2020 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO
SPOKANE LEWISTON

Figure No. 5
Sheet 2 of 2

SURFACE: Asphalt Parking Lot
SURFACE ELEVATION: 3,492.8 feet

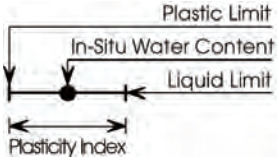
GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE
	ASPHALT Pavement, fair condition	0.3			
	Poorly-Graded GRAVEL with Clay and Sand (Base Course), appears medium dense, brown, moist	1.3			
	Silty SAND, relatively loose, light brown, moist	2.0			
	Clayey SAND, appears medium dense, brown, moist	3.0			
	Silty SAND (Completely Weathered SANDSTONE), medium dense to dense, light brown, moist			7-11-15	
	- Thin lens of claystone from 5.2 to 5.4 feet			5-7-8	
				4-5-7	
				13-18-16	
		11.5			
	Bottom of Boring	Ground water not encountered			



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-5

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

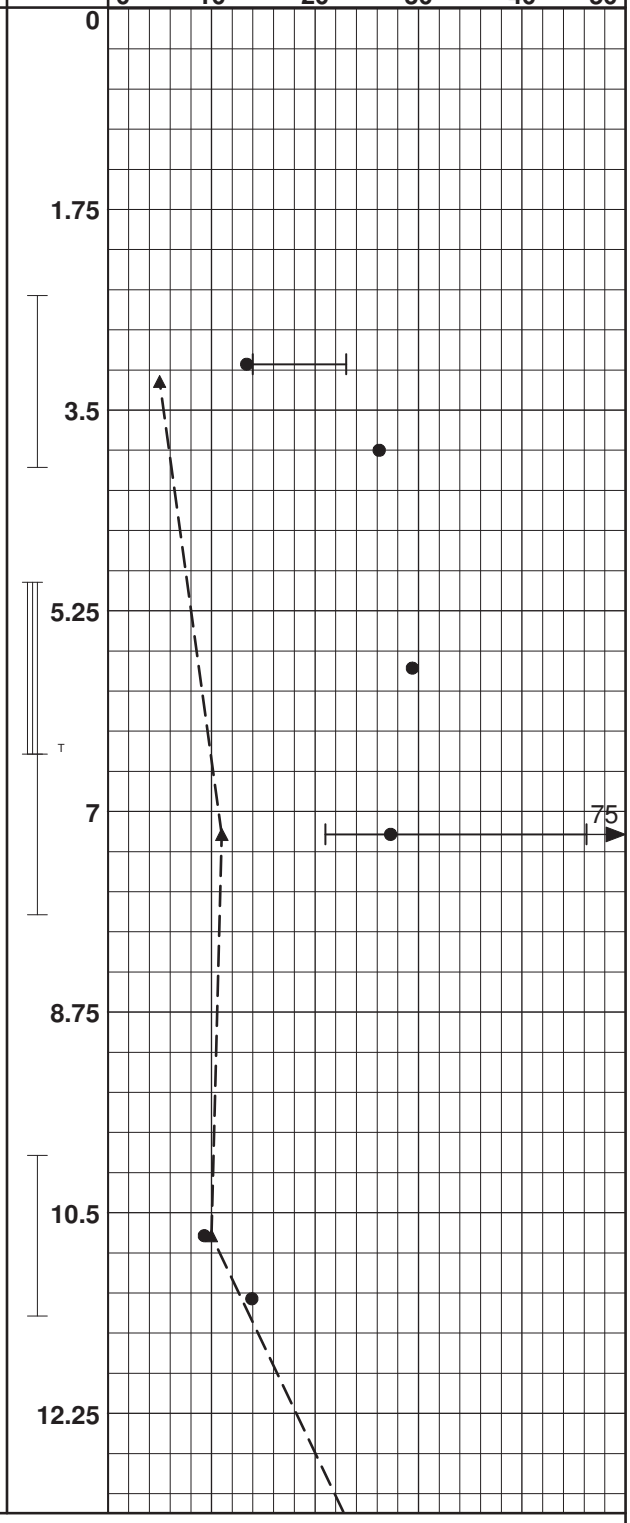
February 1, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE LEWISTON WASHINGTON IDAHO

Figure No. 6
Sheet 1 of 1

SURFACE: Asphalt Parking Lot
SURFACE ELEVATION: 3,492.9 feet

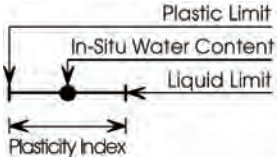
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
ASPHALT Pavement, fair condition	0.3	
Poorly-Graded GRAVEL with Clay and Sand (Base Course), appears medium dense, brown, moist	1.3	
Silty SAND, relatively loose, light brown, moist	2.0	
Clayey SAND, loose, brown, moist	3.7	1-2-3
Fat CLAY with Sand, appears firm, light brown, moist - See Figure 70 for result of constant volume swell test	5.5	
Fat CLAY, stiff, brown, moist, trace sand qu = 2.5 - 3.5 tsf	9.0	PUSH 3-4-7
Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist	11.0	6-6-4
Sandy Lean CLAY (Weathered CLAYSTONE), very dense to hard, light brown to light gray, moist, interbedded with sandstone		



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-6

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

February 1, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 7
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Asphalt Parking Lot SURFACE ELEVATION: 3,492.9 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE DEPTH (FT)
			7-17-20	14 15.75
		16.6		
	Bottom of Boring	Ground water not encoun-tered		17.5 19.25 21 22.75 24.5

PENETRATION RESISTANCE/MOISTURE CONTENT

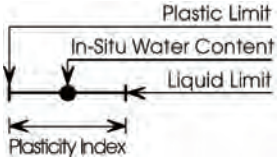
● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

0 10 20 30 40 50

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-6

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

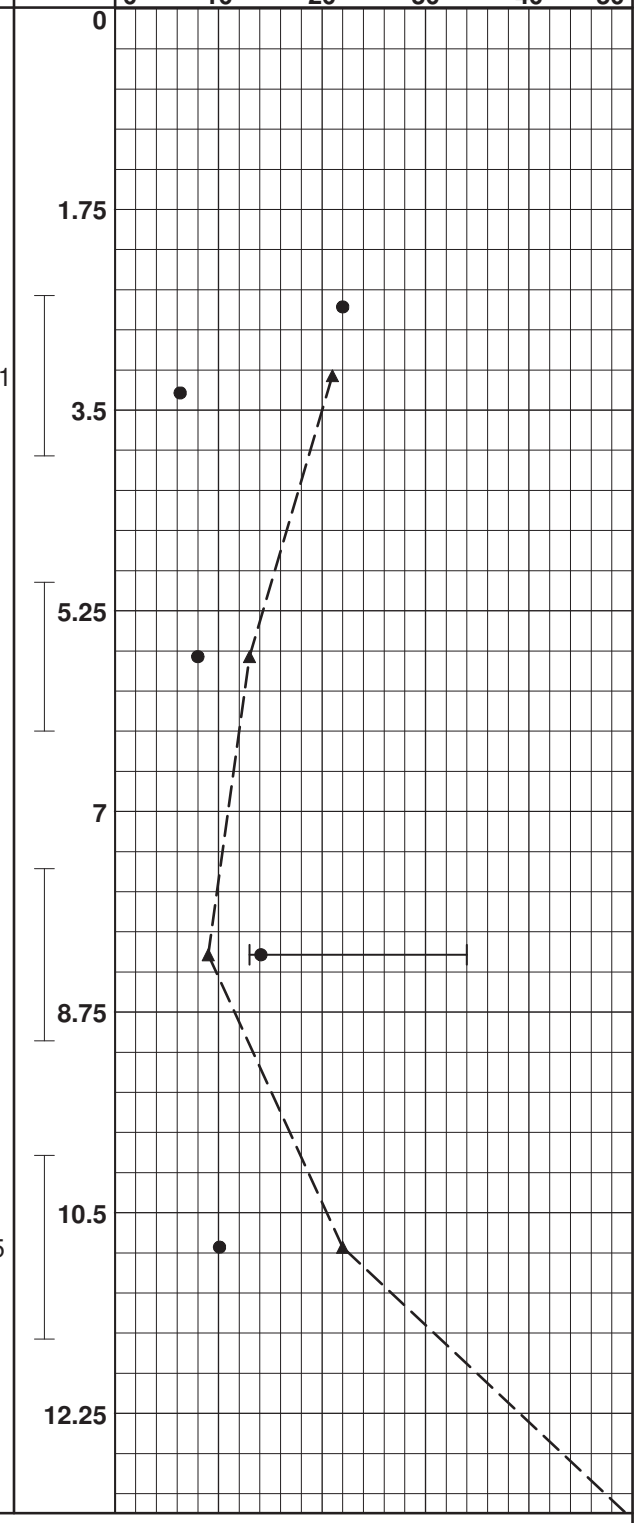
February 1, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO
SPOKANE LEWISTON

Figure No. 7
Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,490.1 feet

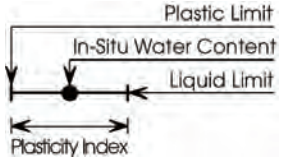
GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS
	TOPSOIL: Silty SAND, appears loose, brown, moist	0.5		
	Clayey SAND, relatively loose, brown, moist	1.5		
	Fat CLAY with Sand, appears firm, light brown, moist	2.7		
	Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist			5-10-11
				7-6-7
	Sandy Lean CLAY (Weathered CLAYSTONE), stiff, light grayish brown, moist, interbedded with sandstone	7.0		2-4-5
	Weathered SANDSTONE, very soft to medium hard rock, tannish brown to light gray, moist, claystone interbedding	9.5		7-7-15



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-7

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO
SPOKANE LEWISTON

Figure No. 8
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,490.1 feet SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)
				17-31-50		15.75
		16.6				
	Bottom of Boring		Ground water not encoun-tered			

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT

▲ = BLOWS PER FOOT

0 10 20 30 40 50

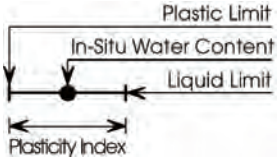
14 15.75 17.5 19.25 21 22.75 24.5

▲81 →

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-7

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

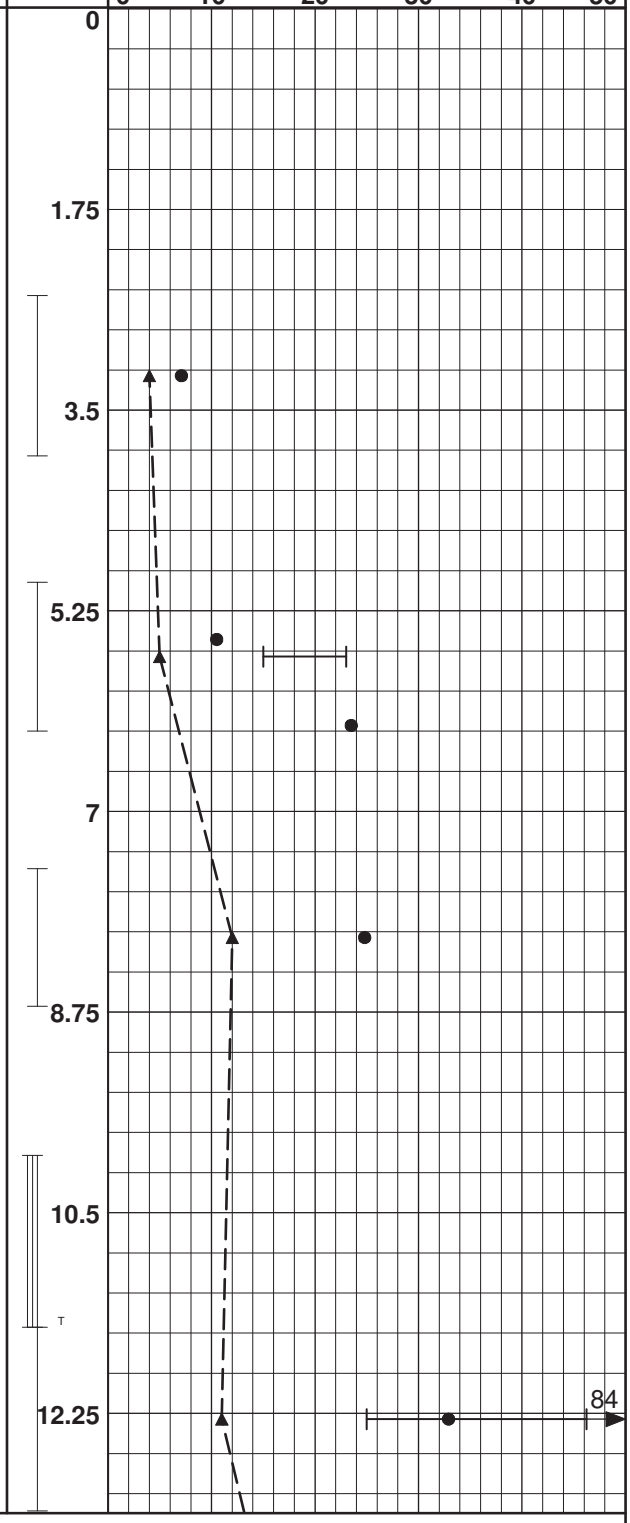
January 28, 2021 20-091-001

TD&H THOMAS, DEAN & HOSKINS, INC. ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 8
Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,494.3 feet

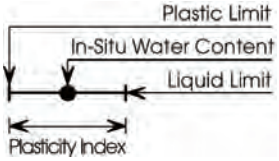
SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS
TOPSOIL: Silty SAND, relatively loose, brown, moist			
	0.5		
Silty SAND, loose, brown, moist			1-2-2
	4.0		
Clayey SAND, loose, brown, moist			1-2-3
	6.0		
Fat CLAY with Sand, soft to firm, light brown, moist			
	7.0		
Fat CLAY, stiff, brown, moist, laminated, some sand			3-5-7
	10.5		
Sandy Fat CLAY, appears firm to stiff, brown, moist			PUSH
	11.1		
Fat CLAY, stiff, brown, moist, laminated qu = 2.5 tsf			2-5-6



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-8

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO

Figure No. 9
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,494.3 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)
		15.2			14
	Weathered SANDSTONE with Interbedded CLAYSTONE, soft to medium hard rock, light gray to brown, moist		5-9-10		15.75
		17.7	50/0.2'		17.8
	Bottom of Boring	Ground water not encountered			19.25 21 22.75 24.5

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

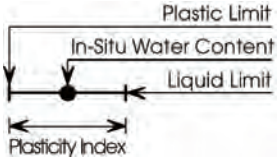
0 10 20 30 40 50

50/0.2'

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-8

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO
SPOKANE LEWISTON

Figure No. 9
Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,491.9 feet

SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, appears loose, brown, moist	0	
	0.5	
Silty SAND, loose to very loose, brown, moist		
- Granular, Non-Plastic		0-1-1
		1-1-1
	6.3	
Fat CLAY with Sand, soft, light brown, moist		
	7.0	
Fat CLAY, stiff, brown, moist, laminated		2-5-6
- See Figures 71 and 72 for results of swell testing		PUSH
	12.3	3-6-9
Silty SAND (Weathered SANDSTONE), medium dense, light brown, moist, interbedded claystone		

GROUND WATER

SAMPLE DEPTH (FT): 0, 1.75, 3.5, 5.25, 7, 8.75, 10.5, 12.25

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

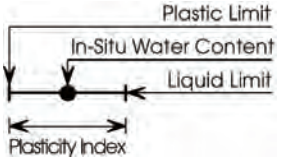
0 10 20 30 40 50

82

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-9

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO

Figure No. 10
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,491.9 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)
			5-7-11		14
		16.7			15.75
	Bottom of Boring	Ground water not encoun-tered			17.5
					19.25
					21
					22.75
					24.5

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT

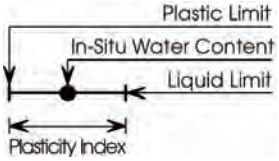
▲ = BLOWS PER FOOT

0 10 20 30 40 50

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-9

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

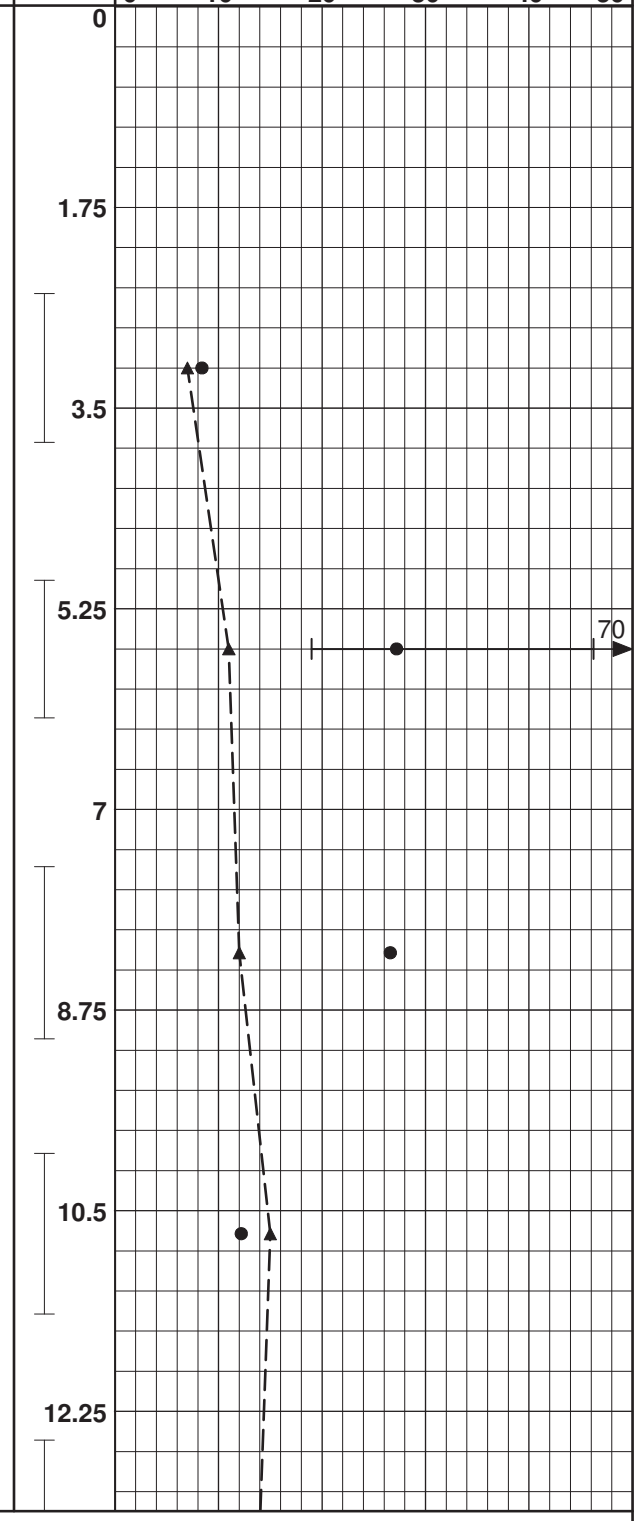
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 10

Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,493.0 feet

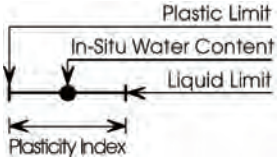
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Clayey SAND, appears loose, brown, moist	0.5	
Poorly-Graded GRAVEL with Clay and Sand (Base Course), relatively loose, brown, moist	1.0	
Silty SAND, loose, brown, moist		2-4-3
	4.5	
Fat CLAY, stiff, brown, moist, some sand		3-5-6
qu = 2.75 - 3.5 tsf		2-5-7
	9.5	
Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist		9-9-6
	12.0	
Lean CLAY with Sand (Weathered CLAYSTONE), stiff to very stiff, light gray, moist		



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-10

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

February 1, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO

Figure No. 11
Sheet 1 of 2

GRAPHIC LOG	SURFACE: Irrigated Sod SURFACE ELEVATION: 3,493.0 feet SOIL DESCRIPTION	DEPTH (FT) GROUND WATER	SPT BLOW COUNTS	SAMPLE	DEPTH (FT)
			3-6-8		14
			4-8-11		15.75
		16.5			
	Bottom of Boring	Ground water not encoun-tered			17.5
					19.25
					21
					22.75
					24.5

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT

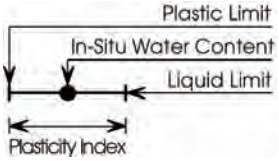
▲ = BLOWS PER FOOT

0 10 20 30 40 50

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

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LOG OF SOIL BORING B-10

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

February 1, 2021 20-091-001

TD&H THOMAS, DEAN & HOSKINS, INC. ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 11

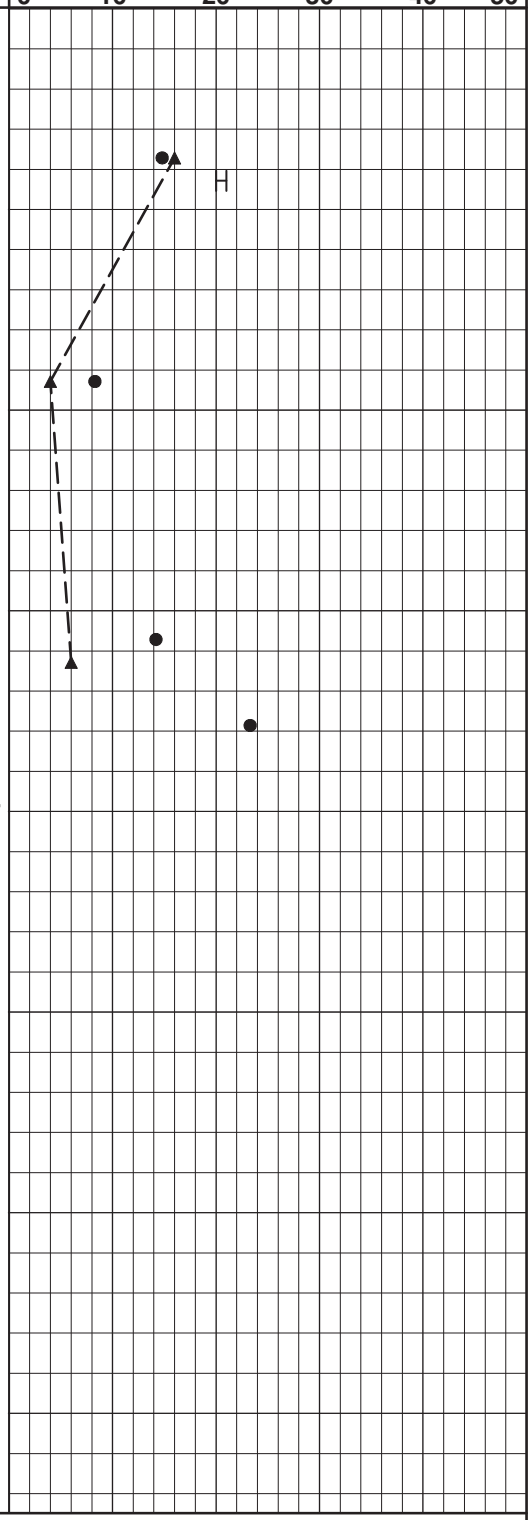
Sheet 2 of 2

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,492.6 feet

GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS	SAMPLE
	TOPSOIL: Silty SAND, appears medium dense, brown, moist	0.5			
	Silty SAND, medium dense to loose, brown, moist			8-8-8 BULK	
				2-2-2	G
				1-3-3	
	Fat CLAY with Sand, firm, light brown, moist	6.0			
	Bottom of Boring	6.5	Ground water not encountered		

PENETRATION RESISTANCE/MOISTURE CONTENT

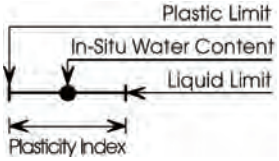
● = MOISTURE CONTENT
▲ = BLOWS PER FOOT



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-11

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

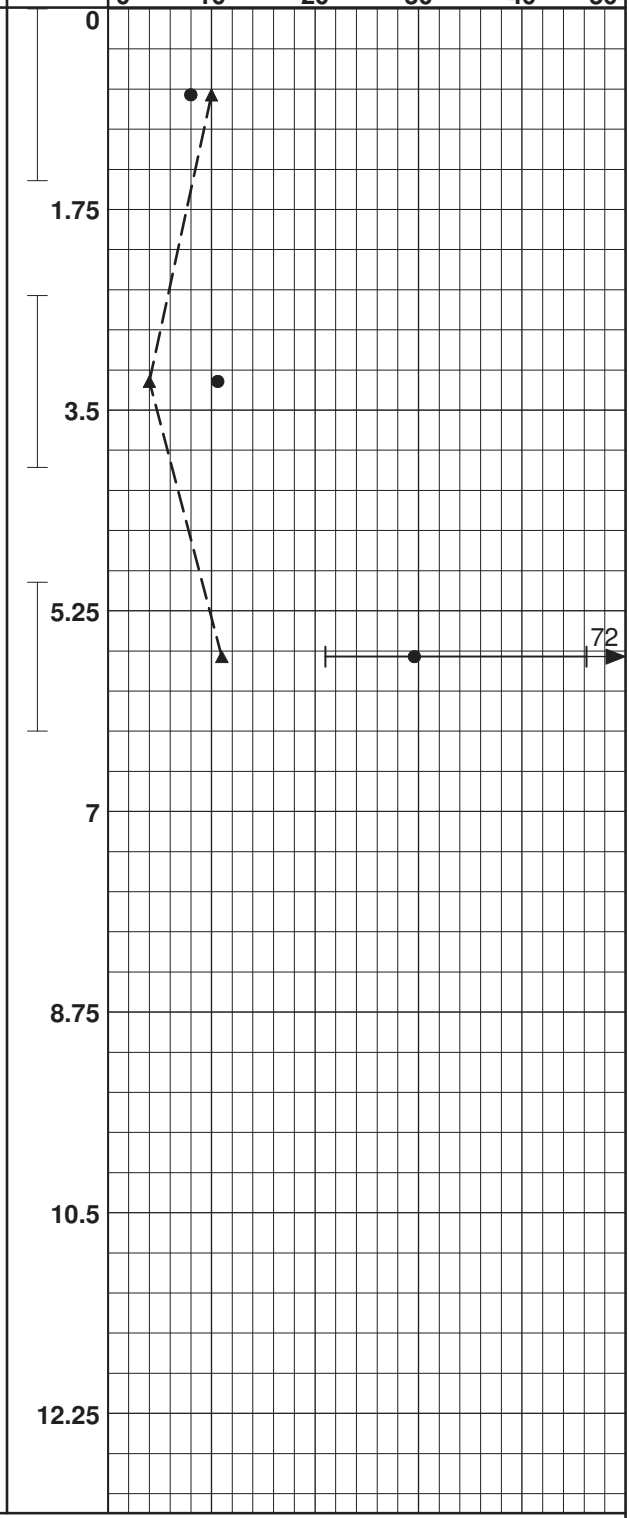
January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO
SPOKANE LEWISTON

Figure No. 12
Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,492.0 feet

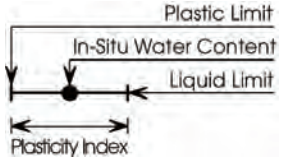
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, loose, brown, moist		
	0.5	
Silty SAND, loose, brown, moist - Granular, Non-Plastic		7-5-5
		1-2-2
	4.5	
Fat CLAY, stiff, light brown, moist		3-5-6
	6.5	
Bottom of Boring	Ground water not encountered	



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-12

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

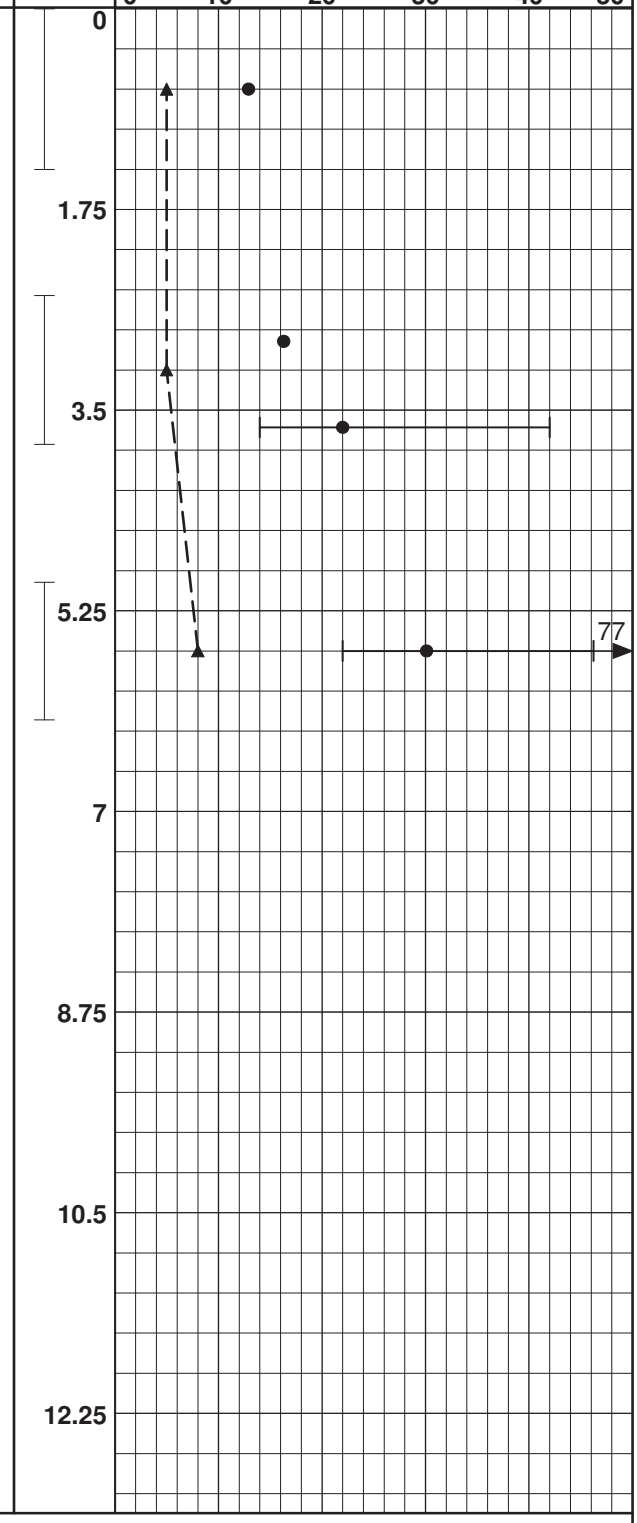
January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO

Figure No. 13
Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,490.5 feet

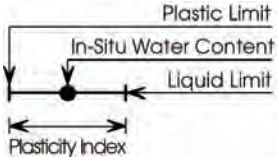
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, loose, brown, moist	0.5	
Silty SAND, loose, brown, moist	2.5	4-2-3
Clayey SAND, loose, brown, moist	3.3	1-2-3
Sandy Lean CLAY, firm, light brown, moist, high plasticity	4.5	
Fat CLAY, stiff, light brown, moist, trace sand	6.5	3-3-5
Bottom of Boring	Ground water not encountered	



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-13

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 14
Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,489.5 feet

SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, loose, brown, moist	0.5	
Silty Clayey SAND, loose, brown, moist		7-2-2
		BULK
	2.0	
Fat CLAY with Sand, stiff, brown to light brown, moist		2-4-6
	5.2	
Fat CLAY, stiff, brown, moist, laminated		3-5-9
	6.5	
Bottom of Boring	Ground water not encountered	

GROUND WATER

SAMPLE

PENETRATION RESISTANCE/MOISTURE CONTENT

● = MOISTURE CONTENT
▲ = BLOWS PER FOOT

DEPTH (FT): 0, 1.75, 3.5, 5.25, 7, 8.75, 10.5, 12.25

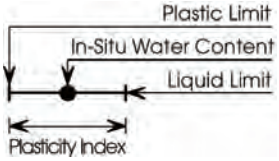
0 10 20 30 40 50

83

LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-14

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021

20-091-001

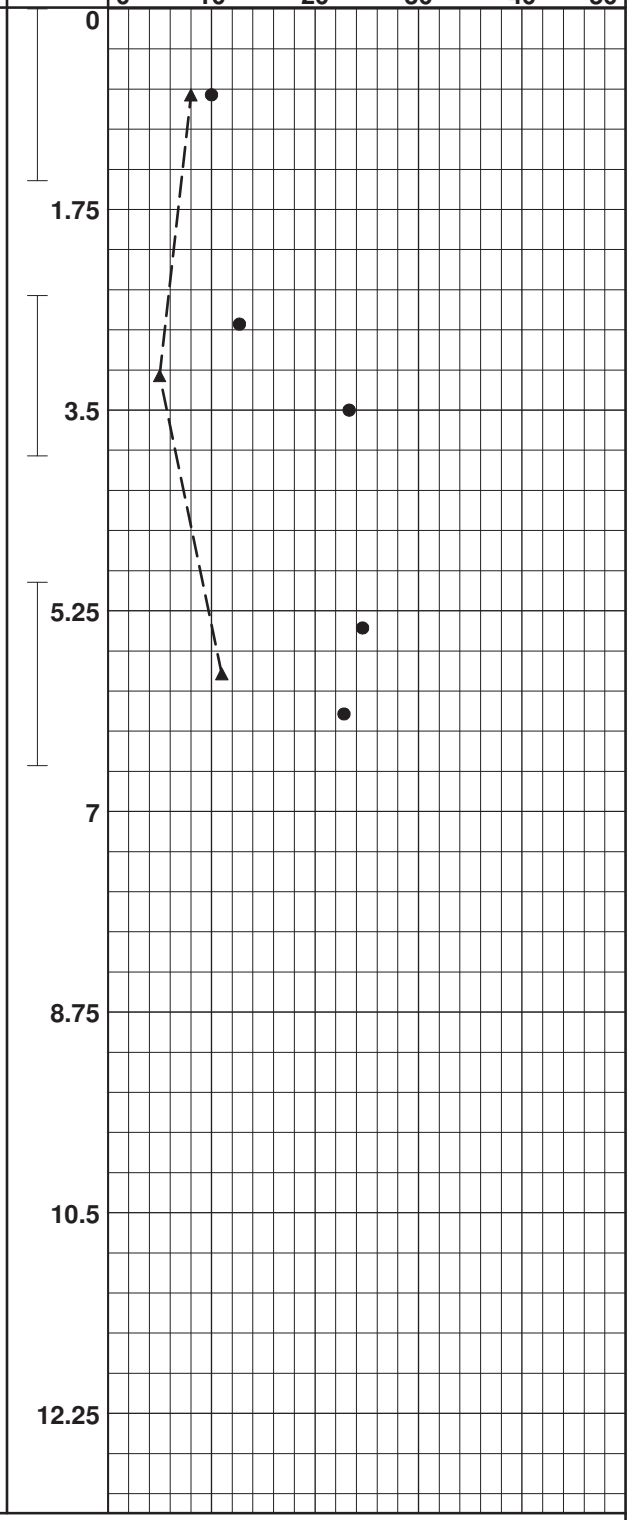
TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 15

Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,490.6 feet

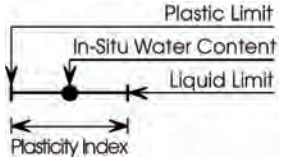
GRAPHIC LOG	SOIL DESCRIPTION	DEPTH (FT)	GROUND WATER	SPT BLOW COUNTS
	TOPSOIL: Silty SAND, appears medium dense, brown, moist	0.5		
	Silty SAND, loose, brown, moist			10-4-4
	Sandy Fat CLAY, firm, light brown, moist	3.0		1-2-3
	Fat CLAY with Sand, firm to stiff, brown, moist	4.5		
	Sandy Fat CLAY, stiff, brown, moist	5.8		3-5-6
	Bottom of Boring	6.6	Ground water not encountered	



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-15

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

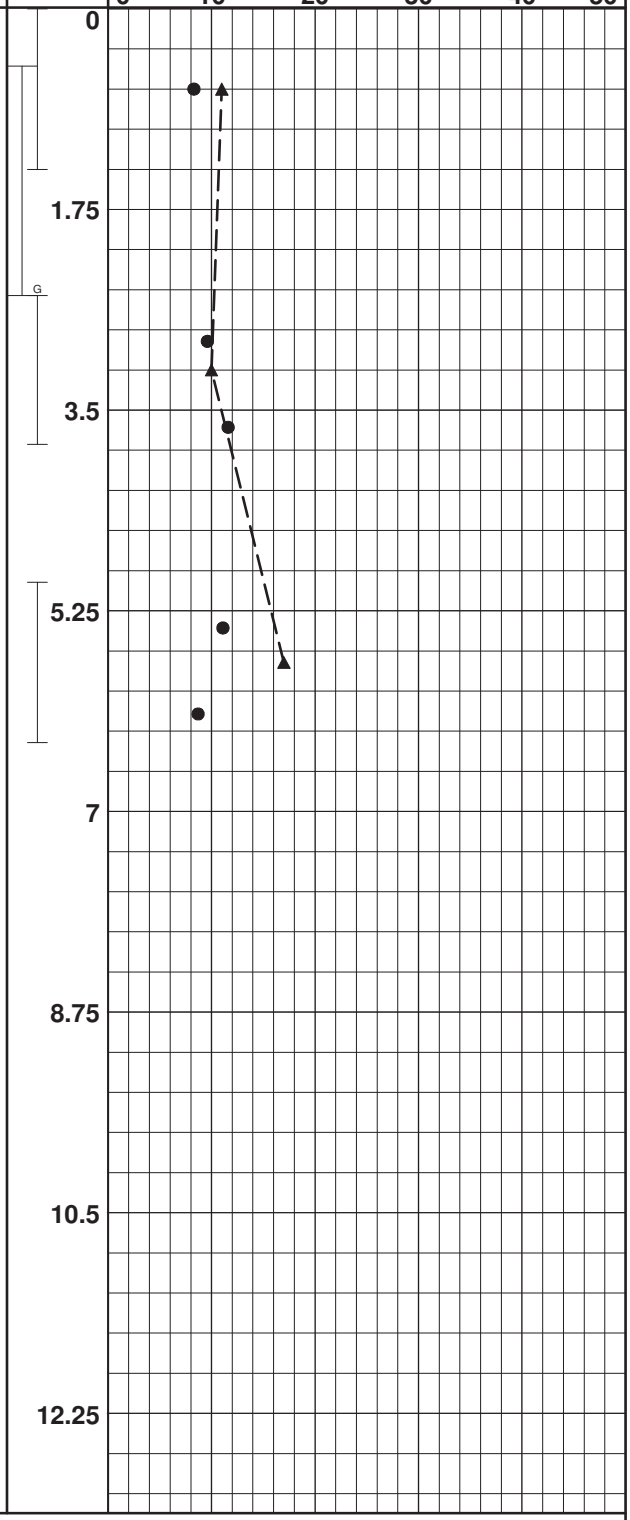
January 28, 2021 20-091-001

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA
MONTANA WASHINGTON IDAHO

Figure No. 16
Sheet 1 of 1

SURFACE: Irrigated Sod
SURFACE ELEVATION: 3,489.1 feet

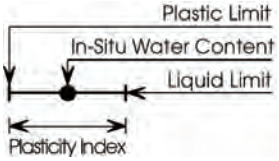
SOIL DESCRIPTION	DEPTH (FT)	SPT BLOW COUNTS
TOPSOIL: Silty SAND, loose, brown, moist	0	
	0.5	
Silty SAND, loose, brown, moist, granular non-plastic		6-6-5
		BULK
	3.3	6-5-5
Sandy Lean CLAY, stiff, brown, moist		
	4.5	
Silty SAND (Completely Weathered SANDSTONE), medium dense, light brown, moist		6-7-10
	6.5	
Bottom of Boring	Ground water not encountered	



LEGEND

- ▲ SPT blows per foot
- ● Field Moisture content
- ▼ Groundwater Level
- Grab/composite sample
- 1-3/8-inch I.D. split spoon
- 2-1/2-inch I.D. split spoon
- 2-1/2-inch I.D. ring sampler
- 3-inch I.D. thin-walled sampler
- * No sample recovery

Atterberg Limits



GNP = Granular and Nonplastic

Note: The stratification lines represent approximate boundaries between soil types. Actual boundaries may be gradual or transitional.

LOG OF SOIL BORING B-16

Recreation Center
Great Falls, Montana

Logged by: Bill Colenso, EI

Drilled by: TD&H Engineering
Track-mounted Geoprobe 6610X with 6-inch HSA

January 28, 2021

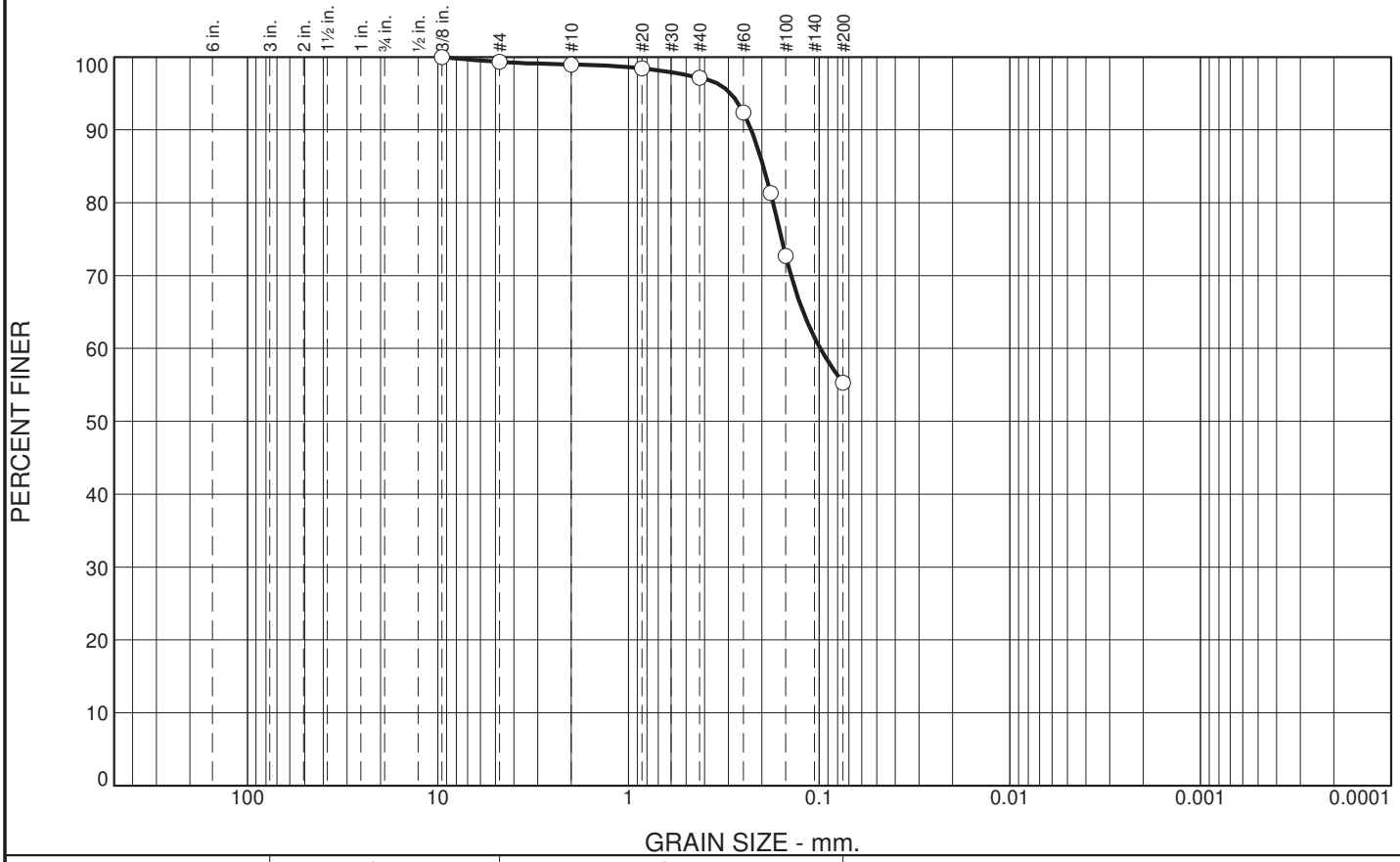
20-091-001

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS–BOZEMAN–KALISPELL–HELENA MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure No. 17

Sheet 1 of 1

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	0.3	1.8	41.9	55.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.3		
#10	99.0		
#20	98.4		
#40	97.2		
#60	92.4		
#80	81.3		
#100	72.7		
#200	55.3		

* (no specification provided)

Material Description

Sandy Lean CLAY (Weathered CLAYSTONE)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2275 D_{85}= 0.1962 D_{60}= 0.0989
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-22950-206

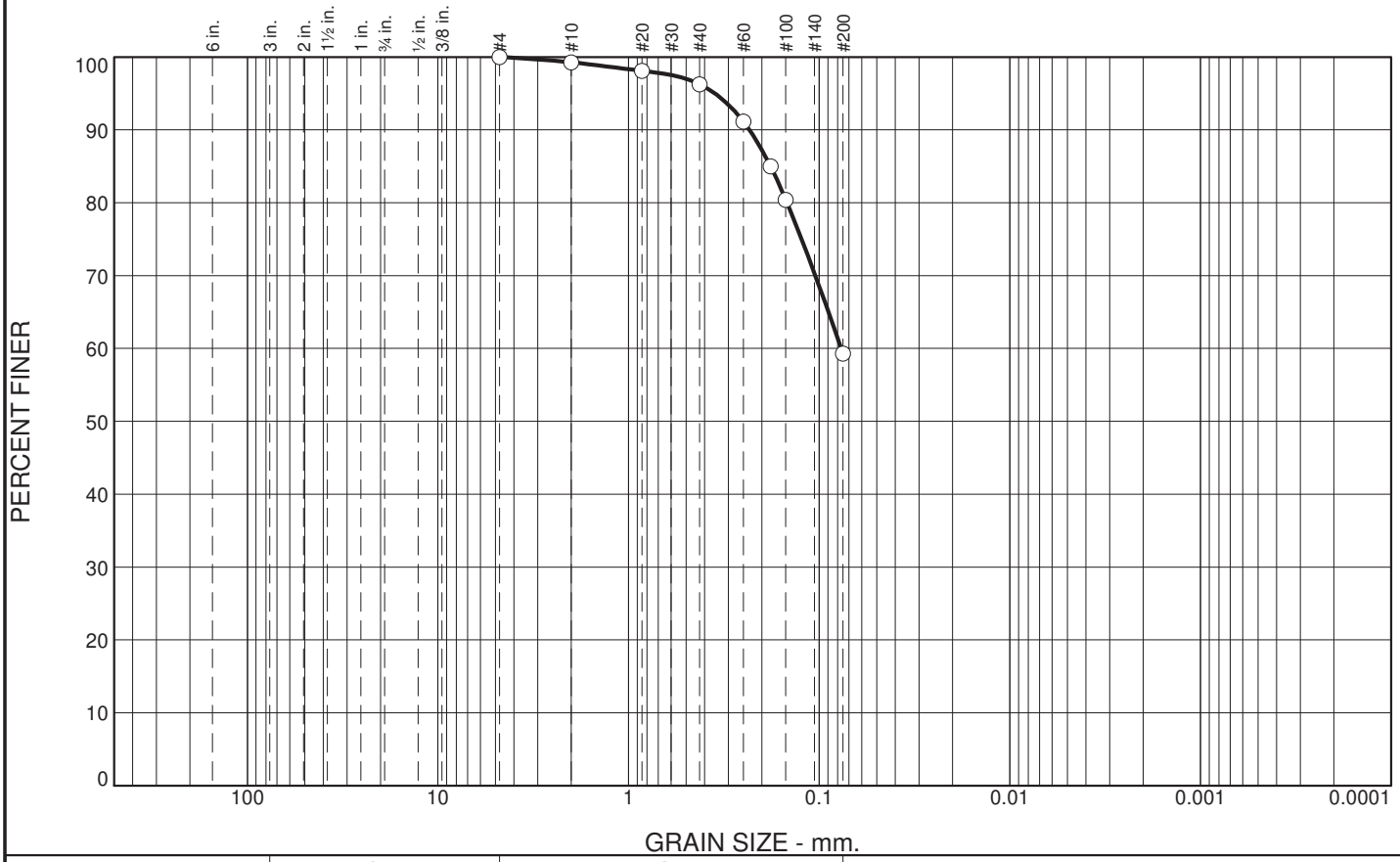
Location: B-1
Sample Number: A-22950 **Depth:** 7.5 - 9.0 ft **Date:** 2-5-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 18

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.7	3.0	37.0	59.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.3		
#20	98.1		
#40	96.3		
#60	91.1		
#80	85.0		
#100	80.4		
#200	59.3		

* (no specification provided)

Material Description

Sandy Lean CLAY (Weathered CLAYSTONE)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2326 D_{85}= 0.1800 D_{60}= 0.0766
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-22957-206

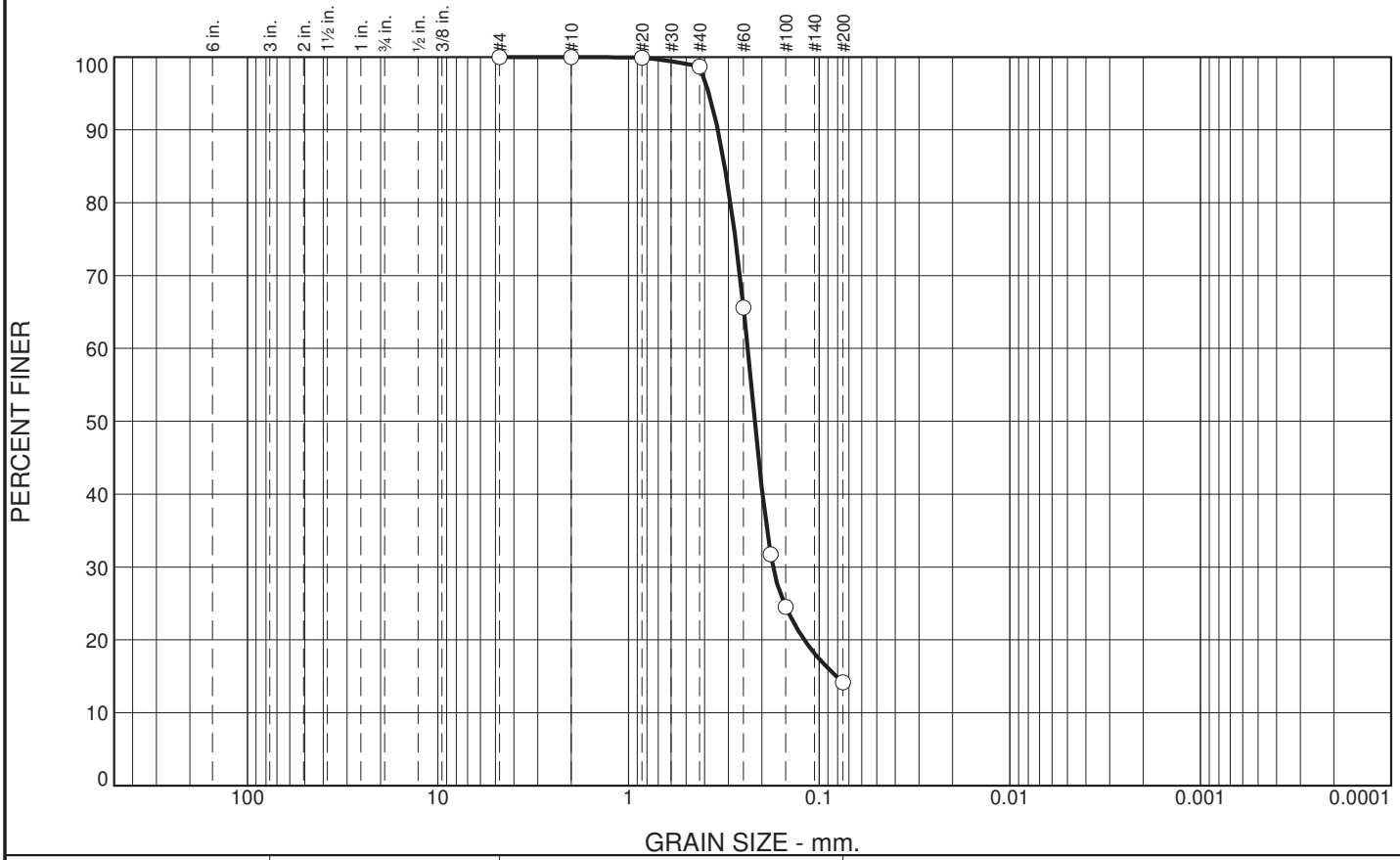
Location: B-2
Sample Number: A-22957 **Depth:** 10.0 - 11.0 ft **Date:** 2-4-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 19

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.3	84.5	14.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	98.7		
#60	65.6		
#80	31.8		
#100	24.5		
#200	14.2		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3406 D_{85}= 0.3135 D_{60}= 0.2375
D_{50}= 0.2177 D_{30}= 0.1749 D_{15}= 0.0813
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-22958-206

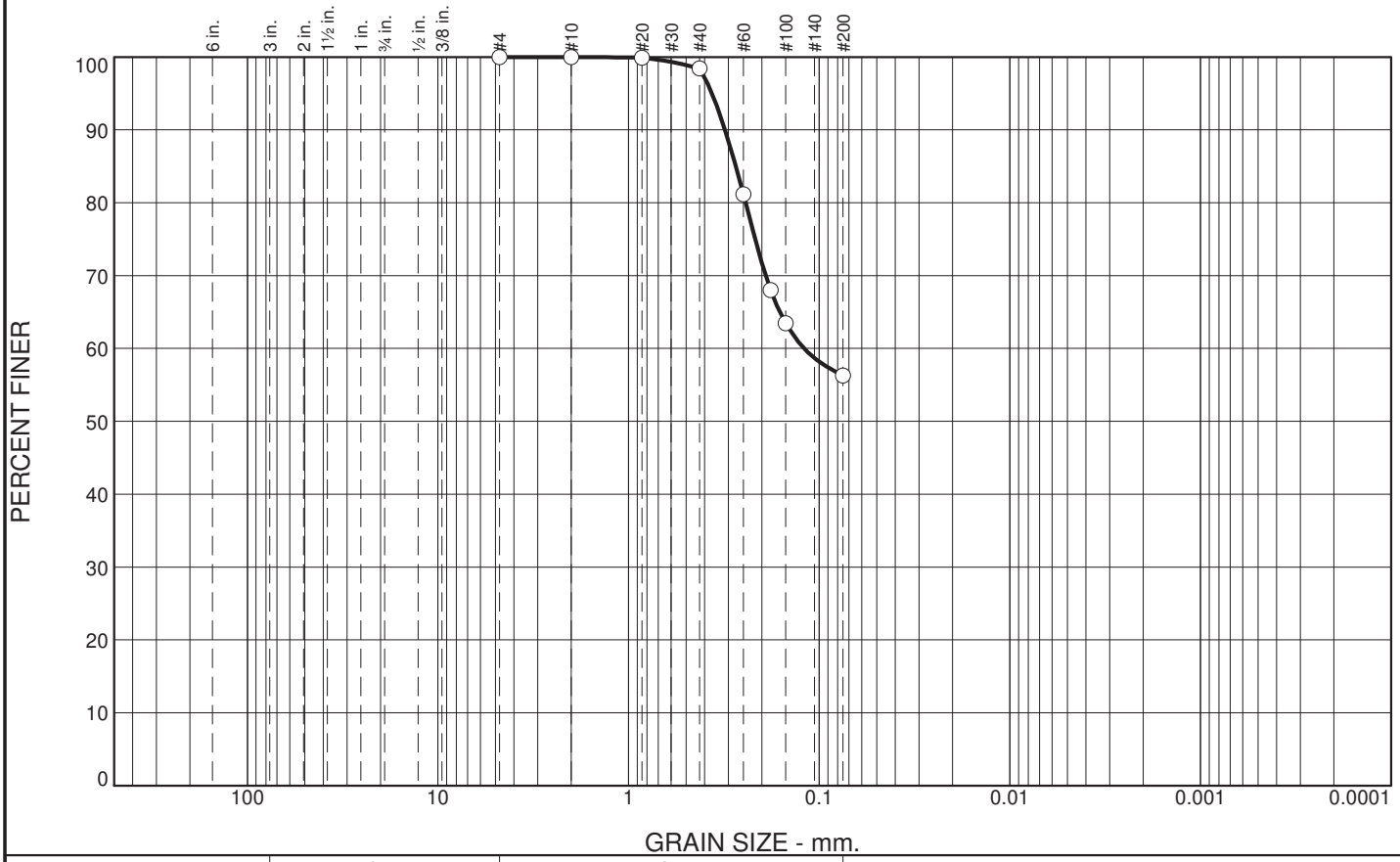
Location: B-3
Sample Number: A-22958 **Depth:** 2.5 - 4.0 ft **Date:** 2-9-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 20

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.6	42.1	56.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	98.4		
#60	81.1		
#80	68.0		
#100	63.5		
#200	56.3		

* (no specification provided)

Material Description

Sandy Fat CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3126 D_{85}= 0.2743 D_{60}= 0.1203
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-22960-206

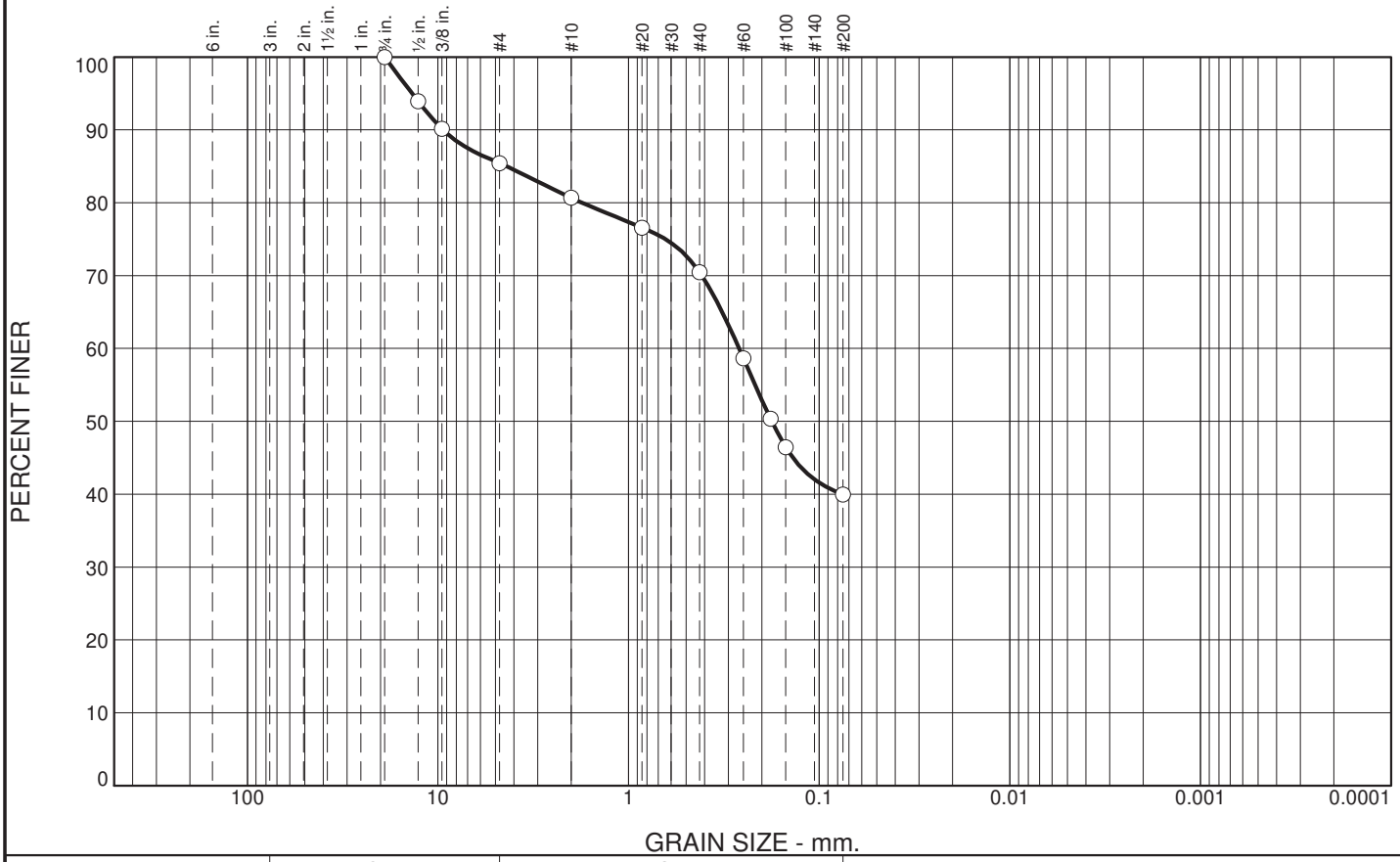
Location: B-3
Sample Number: A-22960 **Depth:** 5.5 - 6.5 ft **Date:** 2-9-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 21

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	14.6	4.7	10.2	30.6	39.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	93.9		
3/8"	90.1		
#4	85.4		
#10	80.7		
#20	76.6		
#40	70.5		
#60	58.6		
#80	50.4		
#100	46.5		
#200	39.9		

* (no specification provided)

Material Description

Clayey SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 9.4086 D_{85}= 4.3764 D_{60}= 0.2636
D_{50}= 0.1773 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Report No. A-22962-206

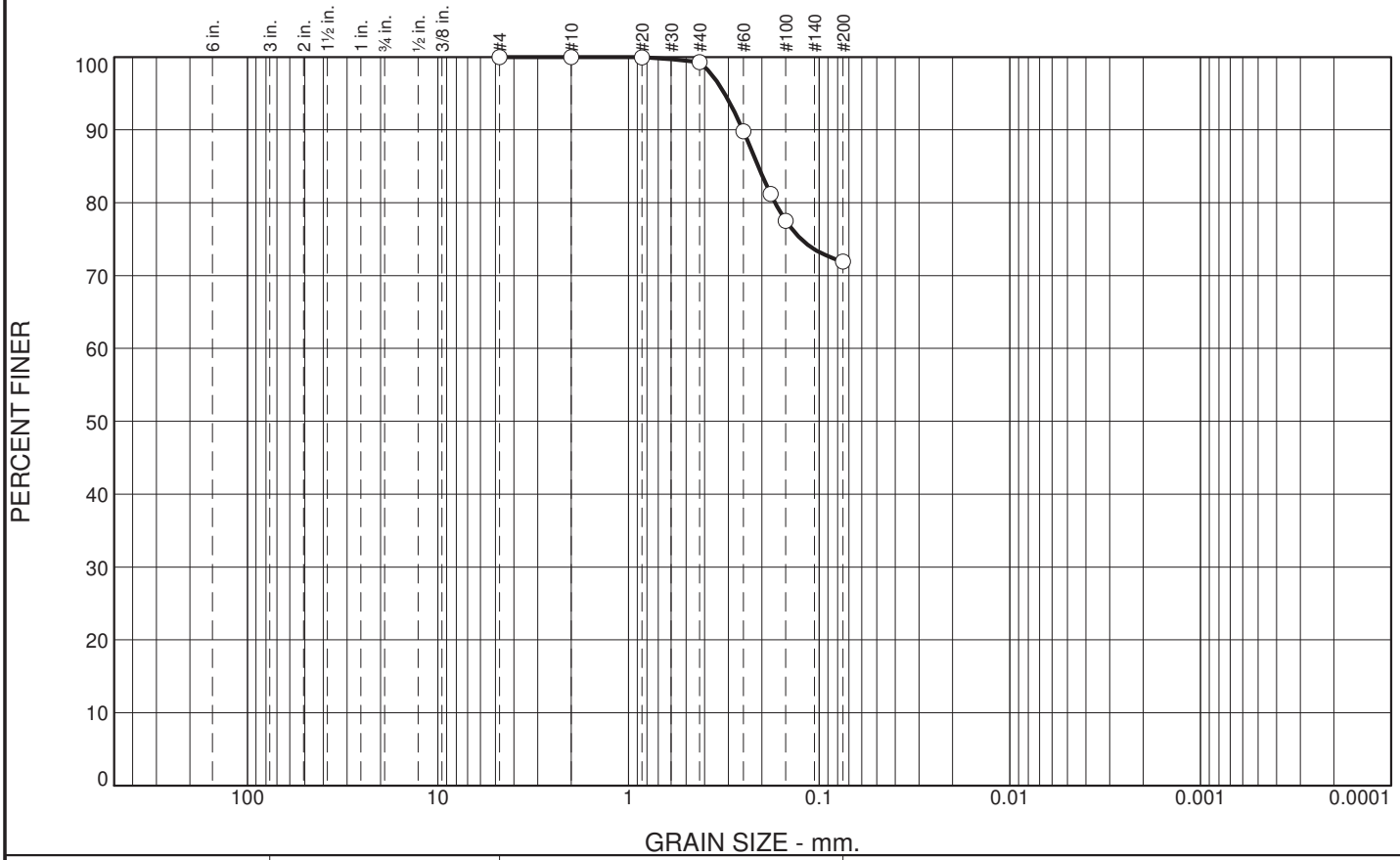
Location: B-3
Sample Number: A-22962 **Depth:** 8.2 - 9.0 ft **Date:** 2-10-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 22

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.7	27.4	71.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.3		
#60	89.8		
#80	81.2		
#100	77.5		
#200	71.9		

* (no specification provided)

Material Description

Fat CLAY with Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2518 D_{85}= 0.2089 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-22966-206

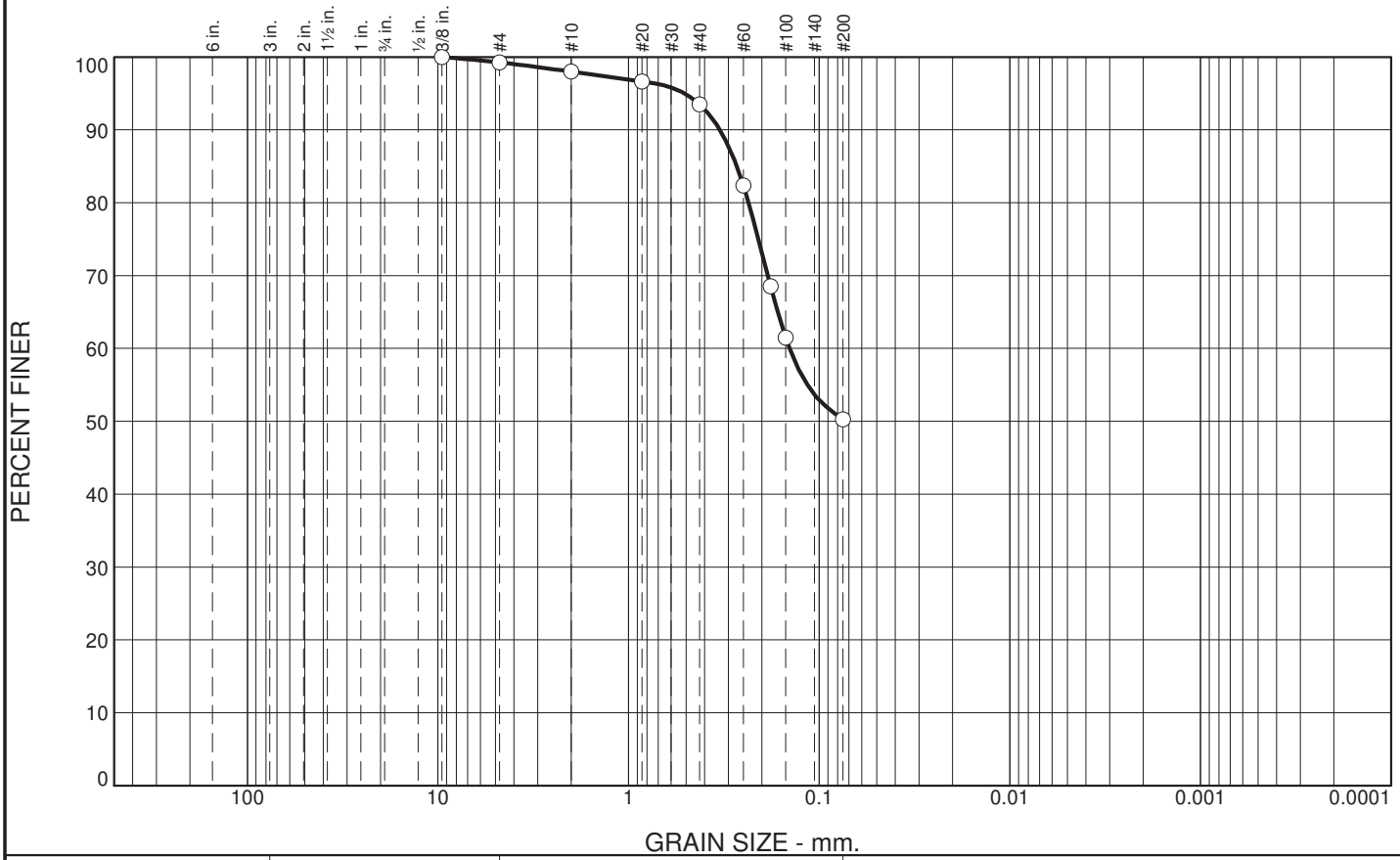
Location: B-4
Sample Number: A-22966 **Depth:** 2.5 - 4.0 ft **Date:** 2-10-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 23

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	1.3	4.5	43.2	50.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.3		
#10	98.0		
#20	96.6		
#40	93.5		
#60	82.3		
#80	68.5		
#100	61.5		
#200	50.3		

* (no specification provided)

Material Description

Sandy Fat CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3325 D_{85}= 0.2709 D_{60}= 0.1431
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-22970-206

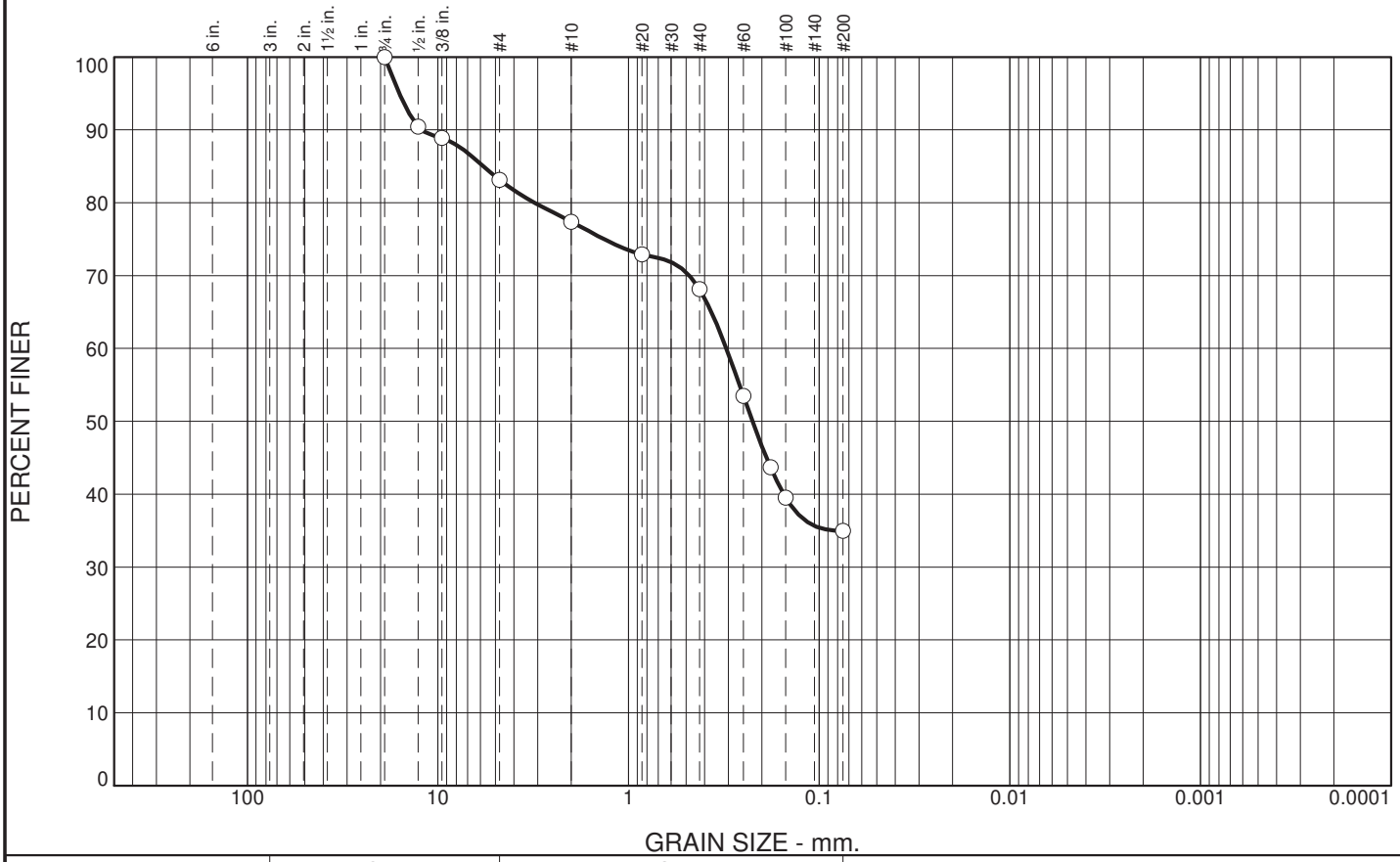
Location: B-4
Sample Number: A-22970 **Depth:** 10.7 - 11.5 ft **Date:** 2-10-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 24

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	16.9	5.7	9.2	33.2	35.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	90.5		
3/8"	88.9		
#4	83.1		
#10	77.4		
#20	72.9		
#40	68.2		
#60	53.5		
#80	43.7		
#100	39.5		
#200	35.0		

* (no specification provided)

Material Description

Clayey SAND with Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.1610 D_{85}= 5.7759 D_{60}= 0.3077
D_{50}= 0.2239 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Report No. A-22972-206

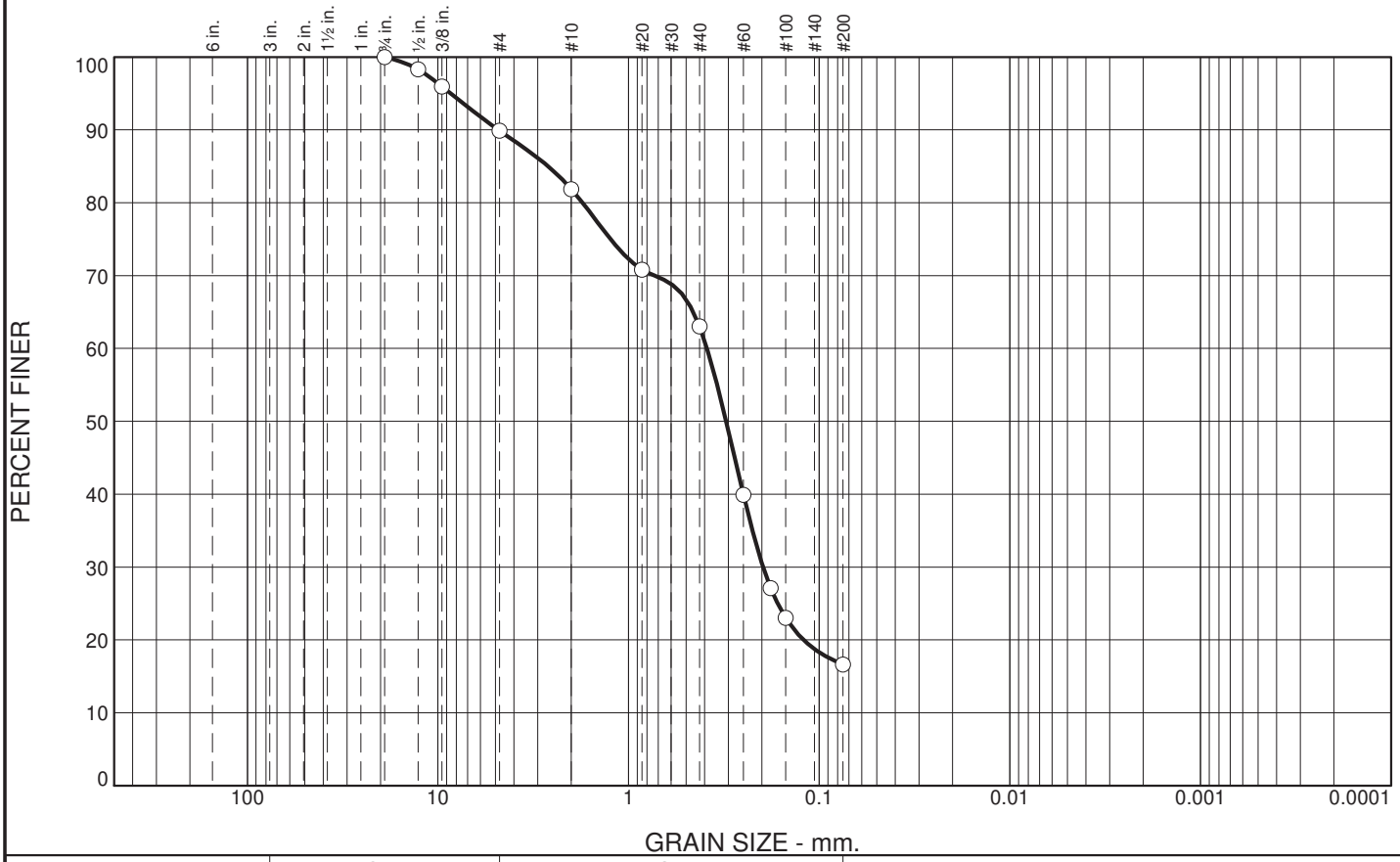
Location: B-5
Sample Number: A-22972 **Depth:** 2.5 - 3.0 ft **Date:** 2-11-2020

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 25

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.1	8.0	18.9	46.4	16.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	98.3		
3/8"	95.9		
#4	89.9		
#10	81.9		
#20	70.8		
#40	63.0		
#60	39.9		
#80	27.1		
#100	23.0		
#200	16.6		

* (no specification provided)

Material Description

Silty SAND (Weathered SANDSTONE)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 4.8225 D_{85}= 2.6474 D_{60}= 0.3881
D_{50}= 0.3084 D_{30}= 0.1971 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-22986-206

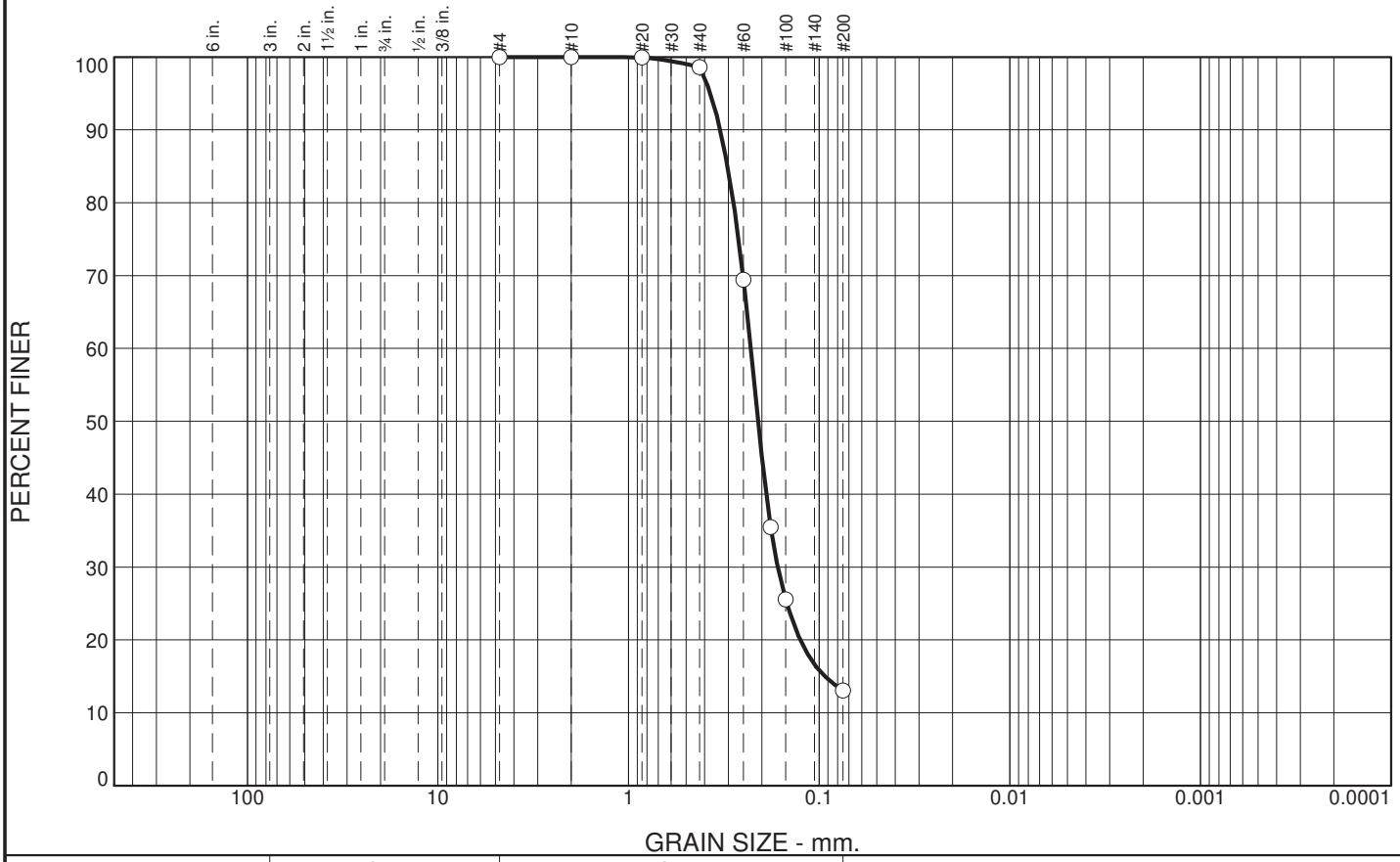
Location: B-7
Sample Number: A-22986 **Depth:** 5.0 - 6.5 ft **Date:** 2-11-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 26

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.4	85.5	13.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	98.6		
#60	69.5		
#80	35.5		
#100	25.6		
#200	13.1		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3309 D_{85}= 0.3030 D_{60}= 0.2287
D_{50}= 0.2091 D_{30}= 0.1654 D_{15}= 0.0936
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-22990-206

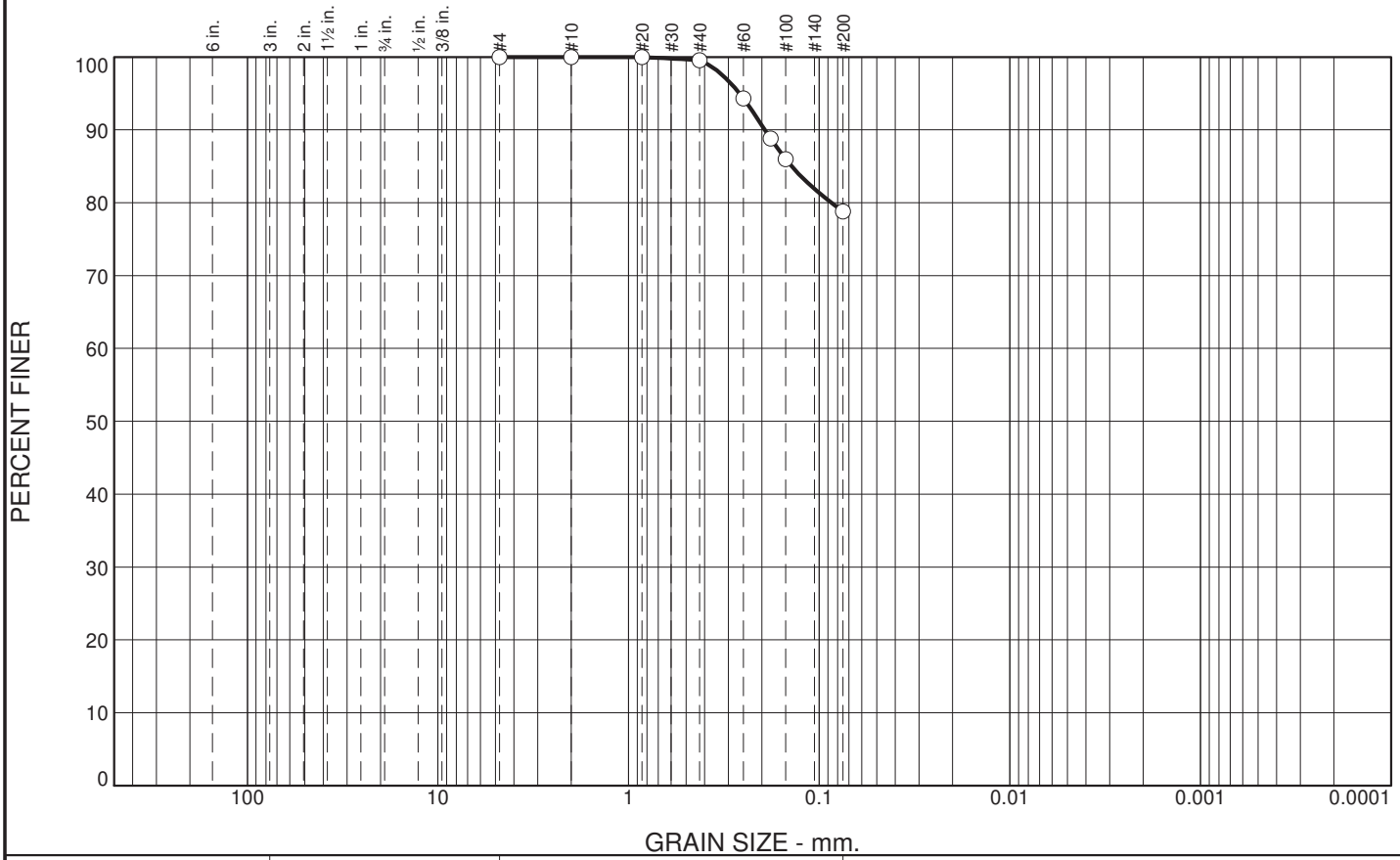
Location: B-8
Sample Number: A-22990 **Depth:** 2.5 - 4.0 ft **Date:** 2-16-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 27

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	20.7	78.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	100.0		
#40	99.5		
#60	94.3		
#80	88.8		
#100	86.0		
#200	78.8		

* (no specification provided)

Material Description

Fat CLAY with Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1931 D_{85}= 0.1395 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-22993-206

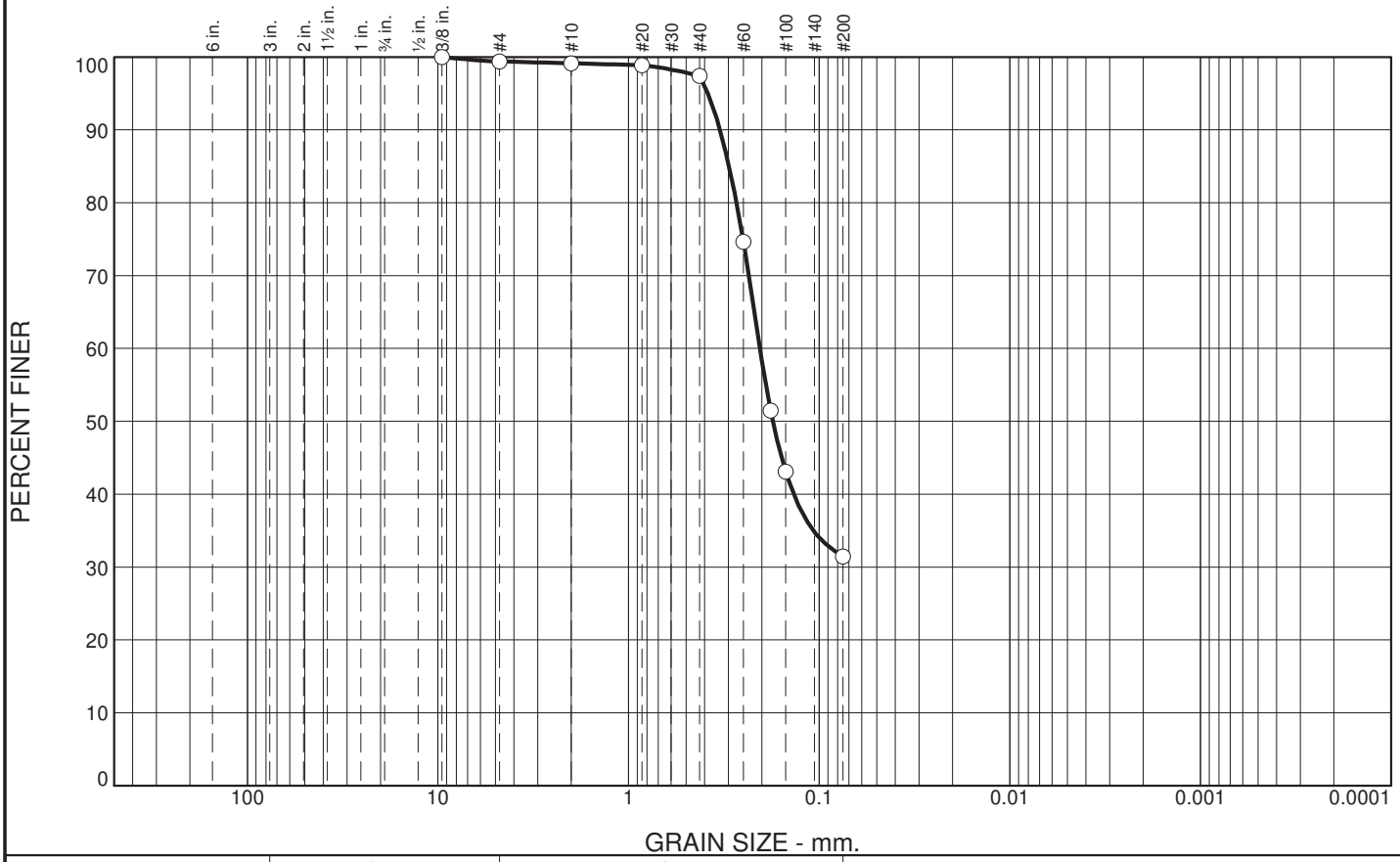
Location: B-8
Sample Number: A-22993 **Depth:** 7.5 - 9.0 ft **Date:** 2-12-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 28

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.3	1.7	66.0	31.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.4		
#10	99.1		
#20	98.9		
#40	97.4		
#60	74.6		
#80	51.5		
#100	43.1		
#200	31.4		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3317 D_{85}= 0.2975 D_{60}= 0.2047
D_{50}= 0.1754 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

Report No. A-22999-206

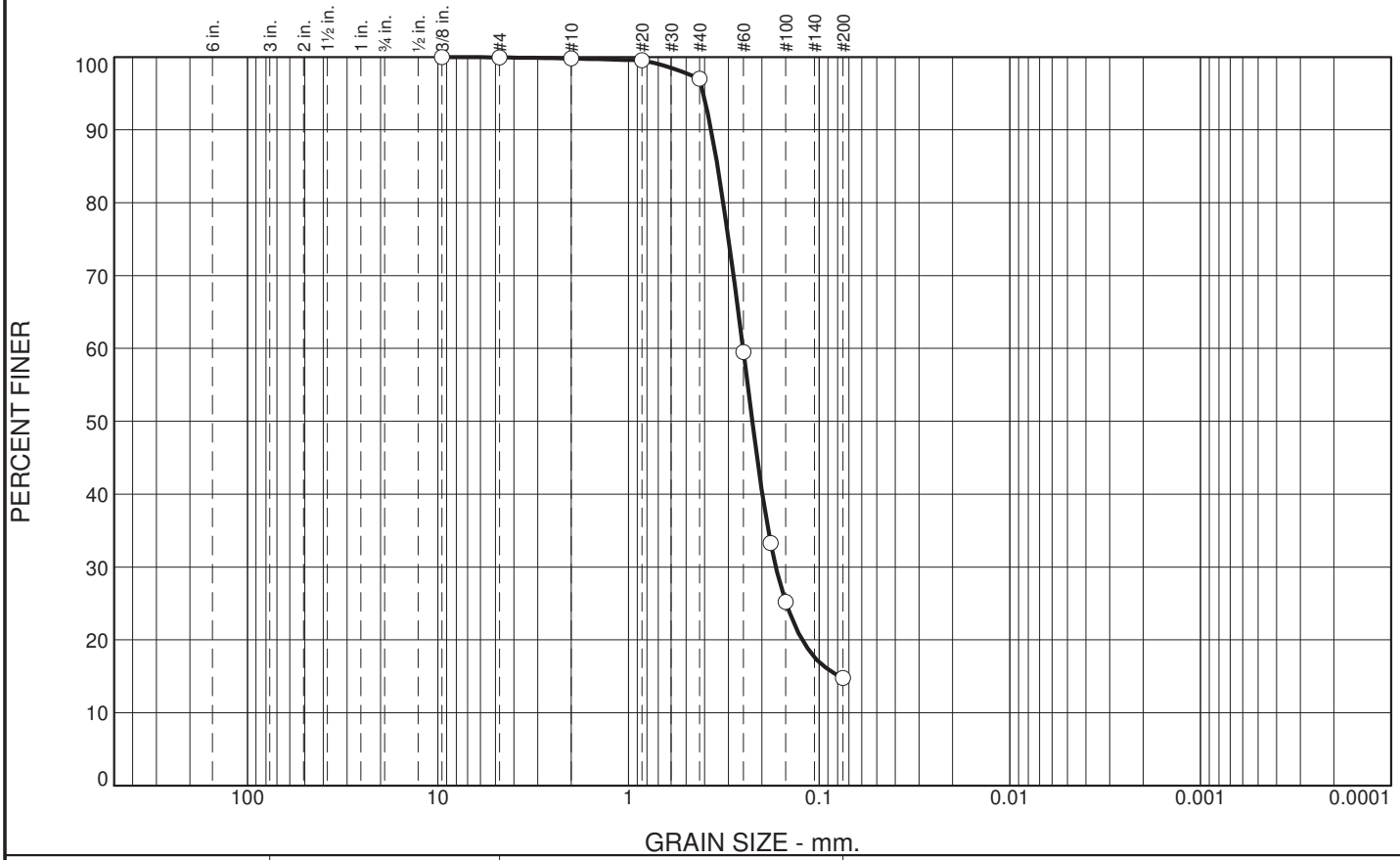
Location: B-9
Sample Number: A-22999 **Depth:** 5.0 - 6.3 ft **Date:** 2-10-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 29

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.1	2.8	82.2	14.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.9		
#10	99.8		
#20	99.5		
#40	97.0		
#60	59.5		
#80	33.3		
#100	25.2		
#200	14.8		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3694 D_{85}= 0.3419 D_{60}= 0.2514
D_{50}= 0.2245 D_{30}= 0.1692 D_{15}= 0.0781
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-23006-206

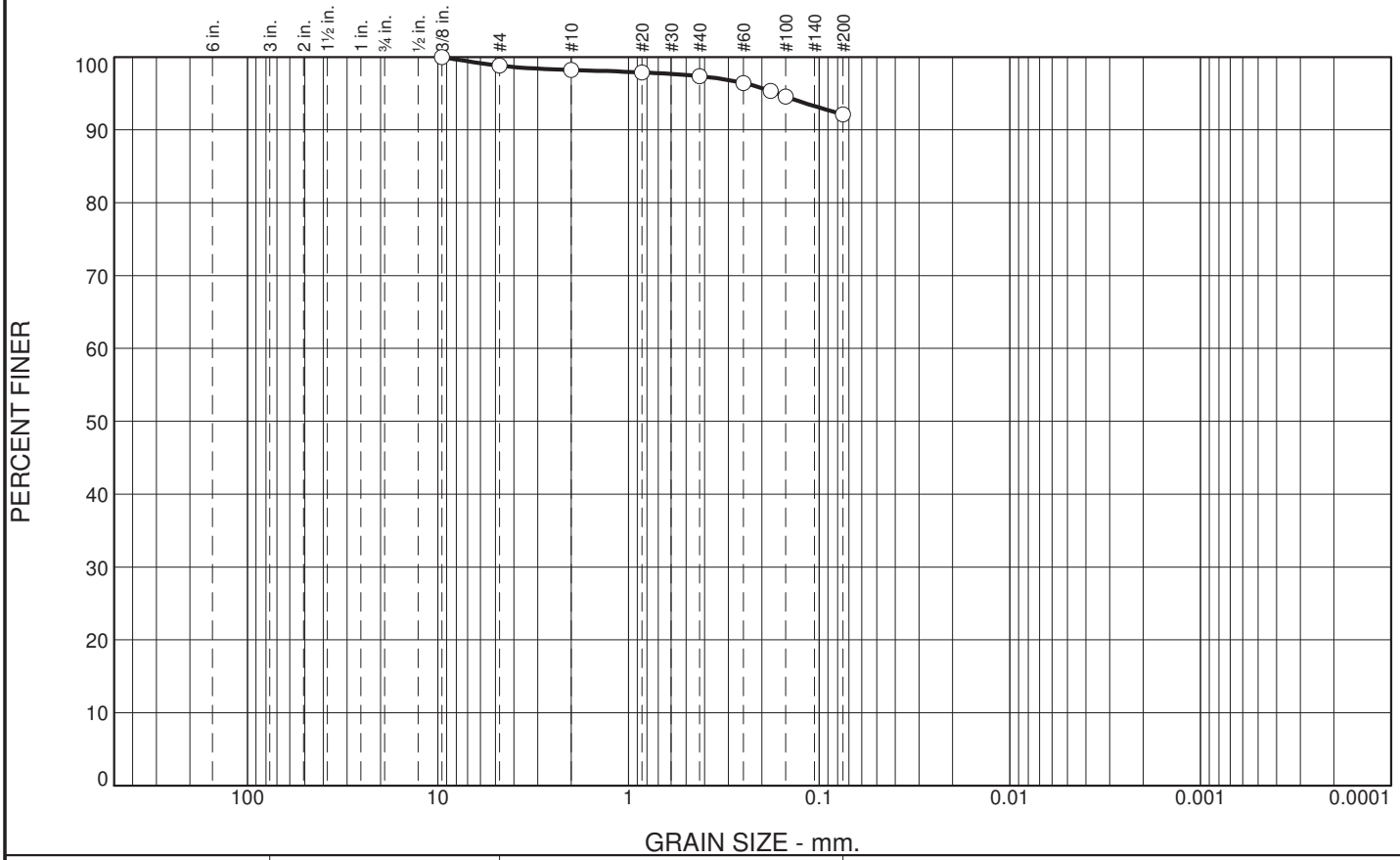
Location: B-10
Sample Number: A-23006 **Depth:** 2.5 - 4.0 ft **Date:** 2-12-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 30

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.2	0.6	0.8	5.3	92.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	98.8		
#10	98.2		
#20	97.9		
#40	97.4		
#60	96.4		
#80	95.3		
#100	94.6		
#200	92.1		

* (no specification provided)

Material Description

Fat CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-23008-206

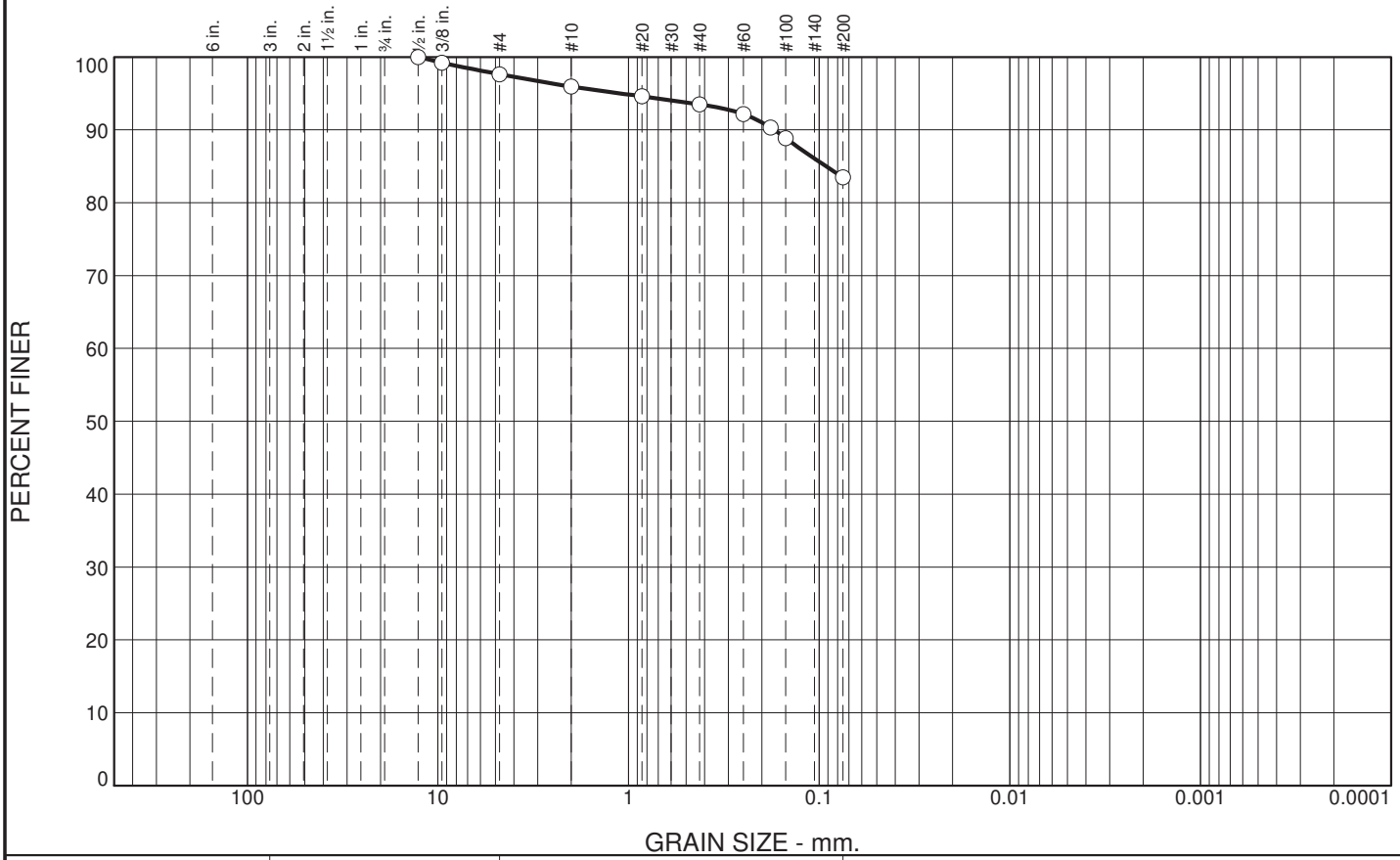
Location: B-10
Sample Number: A-23008 **Depth:** 7.5 - 9.0 ft **Date:** 2-12-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 31

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.4	1.7	2.4	10.0	83.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	99.2		
#4	97.6		
#10	95.9		
#20	94.6		
#40	93.5		
#60	92.2		
#80	90.3		
#100	88.8		
#200	83.5		

* (no specification provided)

Material Description

Lean CLAY with Sand (Weathered CLAYSTONE)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1724 D_{85}= 0.0921 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-23011-206

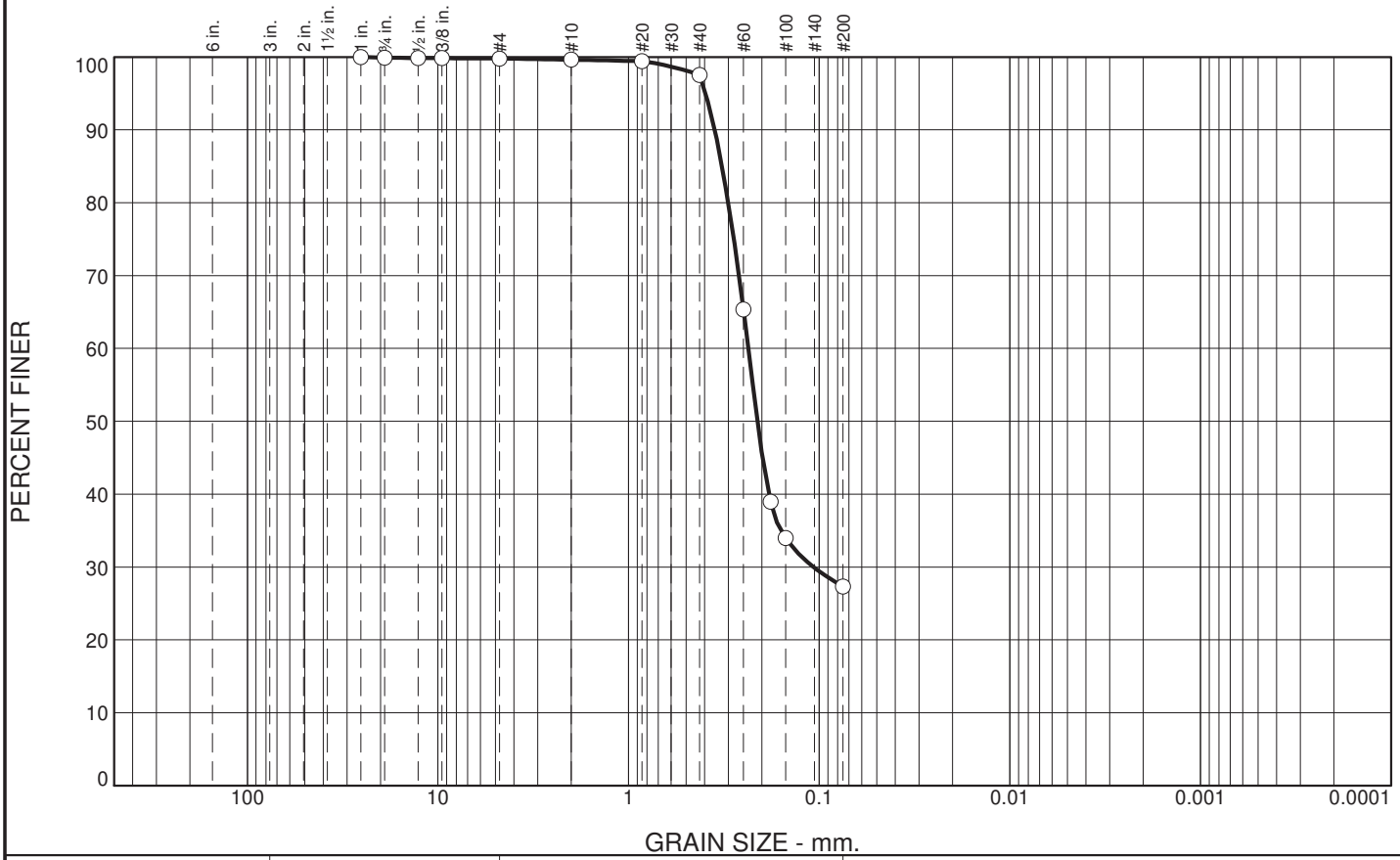
Location: B-10
Sample Number: A-23011 **Depth:** 15.0 - 16.5 ft **Date:** 2-16-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 32

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	0.1	0.2	2.1	70.2	27.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	99.9		
1/2"	99.9		
3/8"	99.8		
#4	99.8		
#10	99.6		
#20	99.4		
#40	97.5		
#60	65.3		
#80	38.9		
#100	34.0		
#200	27.3		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= 20 LL= 21 PI= 1

Coefficients

D_{90}= 0.3537 D_{85}= 0.3241 D_{60}= 0.2357
D_{50}= 0.2109 D_{30}= 0.1075 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Report No. A-23013-206

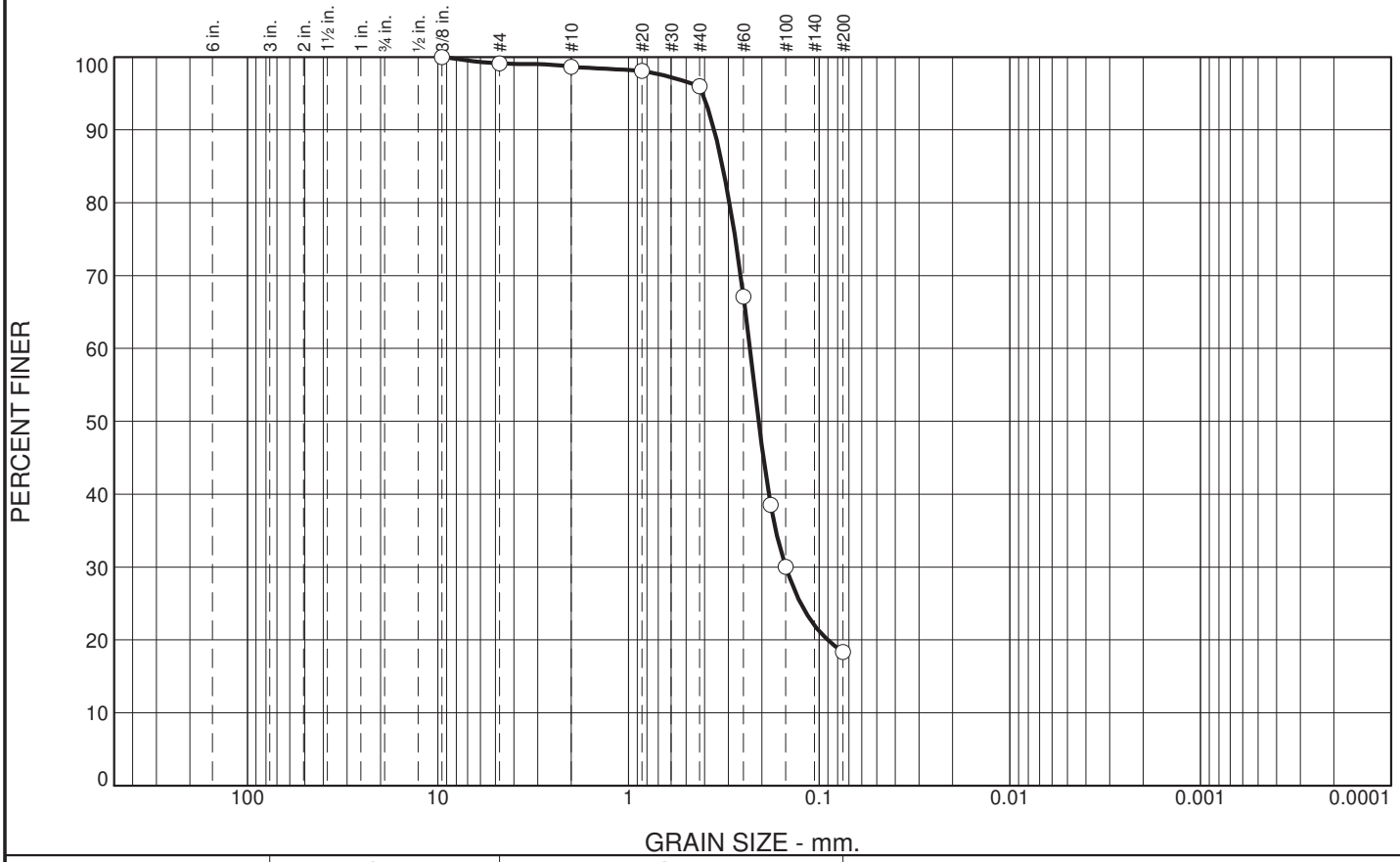
Location: B-11
Sample Number: A-23013 **Depth:** 0.0 - 2.5 ft **Date:** 2-9-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 33

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	0.5	2.6	77.7	18.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.1		
#10	98.6		
#20	98.1		
#40	96.0		
#60	67.1		
#80	38.5		
#100	30.0		
#200	18.3		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3560 D_{85}= 0.3217 D_{60}= 0.2312
D_{50}= 0.2078 D_{30}= 0.1498 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-23017-206

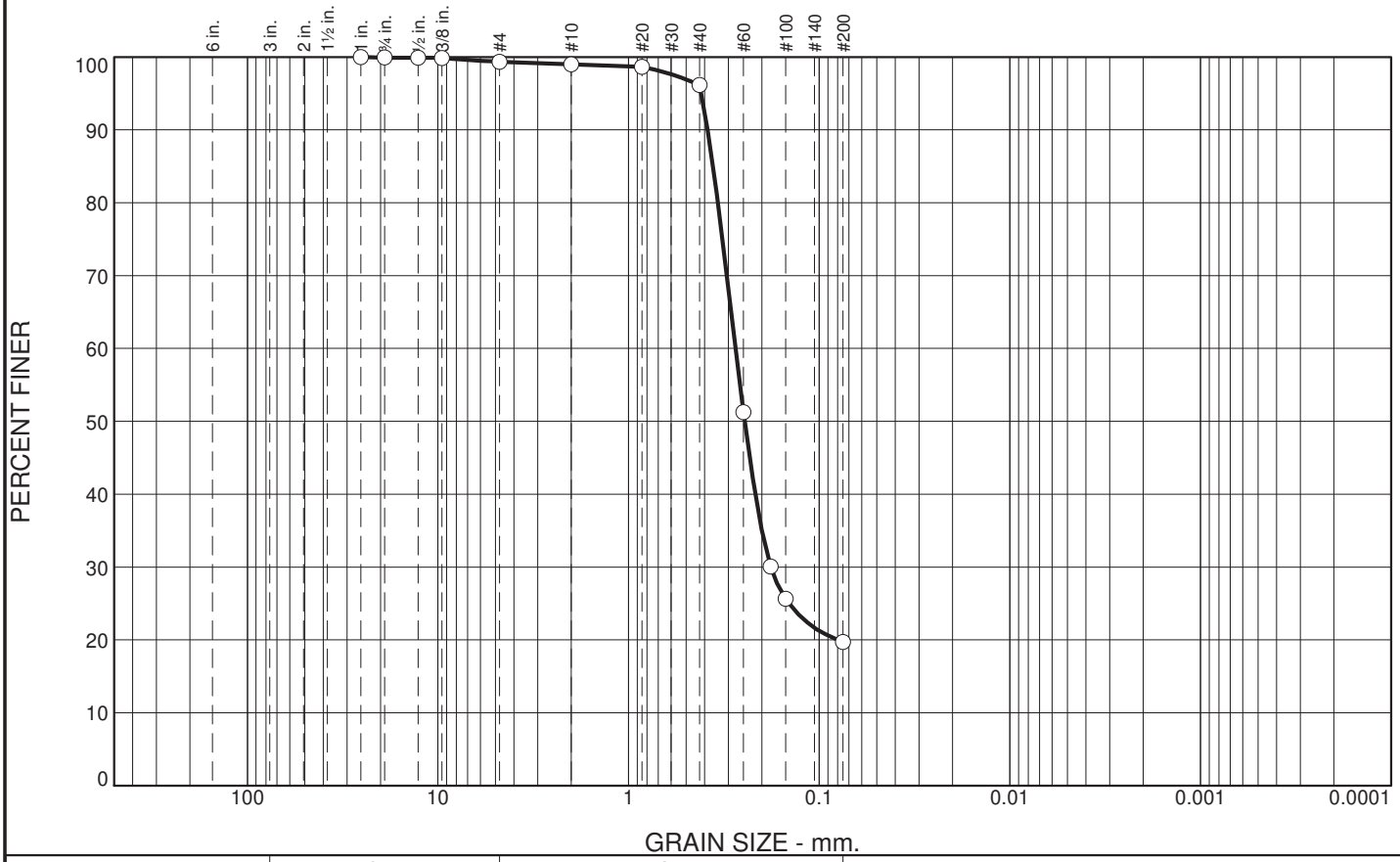
Location: B-12
Sample Number: A-23017 **Depth:** 0.0 - 1.5 ft **Date:** 2-16-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 34

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	0.6	0.3	2.8	76.5	19.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	99.9		
1/2"	99.9		
3/8"	99.8		
#4	99.3		
#10	99.0		
#20	98.6		
#40	96.2		
#60	51.3		
#80	30.1		
#100	25.6		
#200	19.7		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.3852 D_{85}= 0.3611 D_{60}= 0.2752
D_{50}= 0.2463 D_{30}= 0.1796 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Report No. A-23017B-206

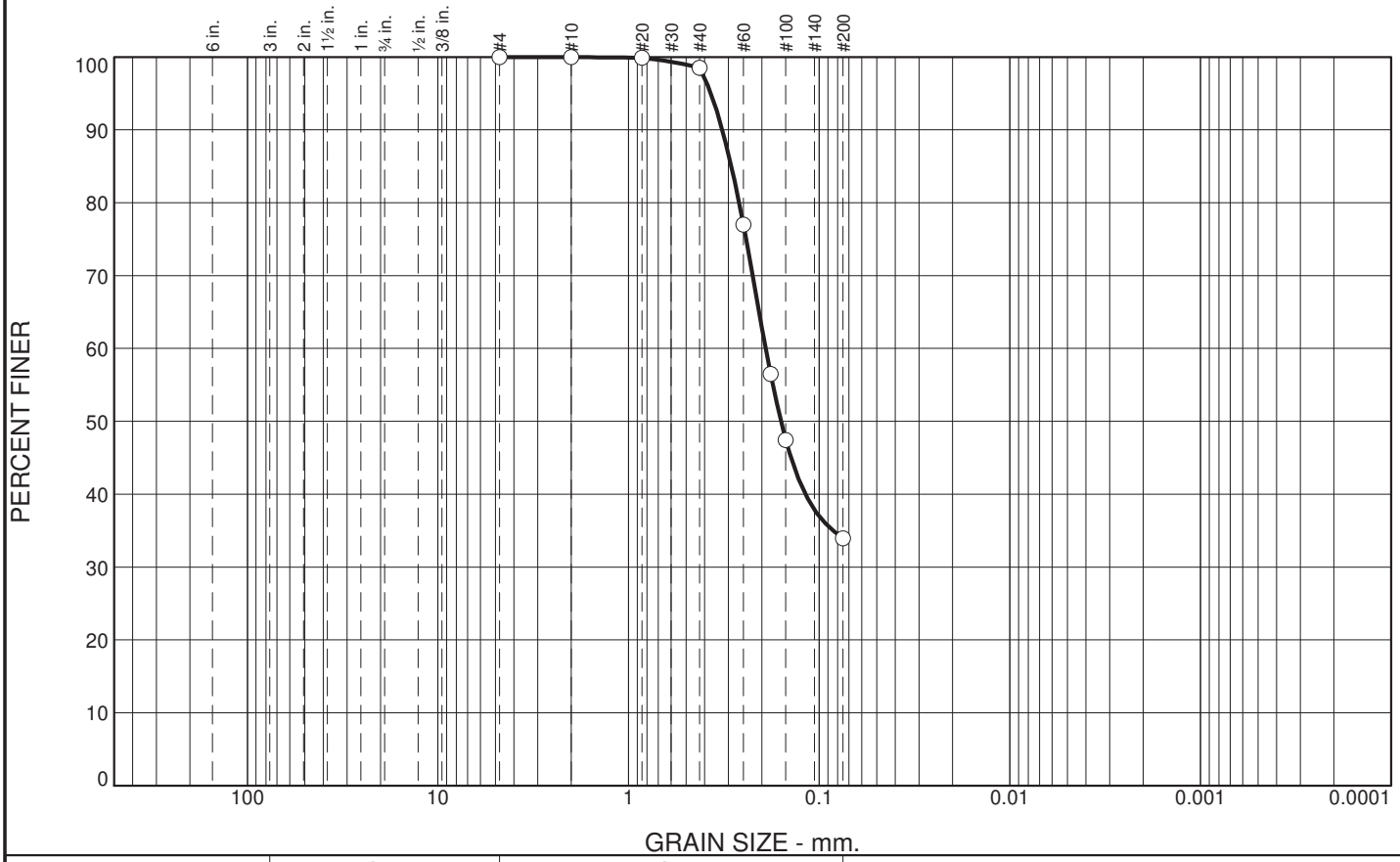
Location: B-12
Sample Number: A-23017B **Depth:** 0.0 - 2.5 ft **Date:** 2-9-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 35

Tested By: MS/TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.5	64.6	33.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	98.5		
#60	77.0		
#80	56.5		
#100	47.4		
#200	33.9		

* (no specification provided)

Material Description

Clayey SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3229 D_{85}= 0.2895 D_{60}= 0.1910
D_{50}= 0.1589 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-23021-206

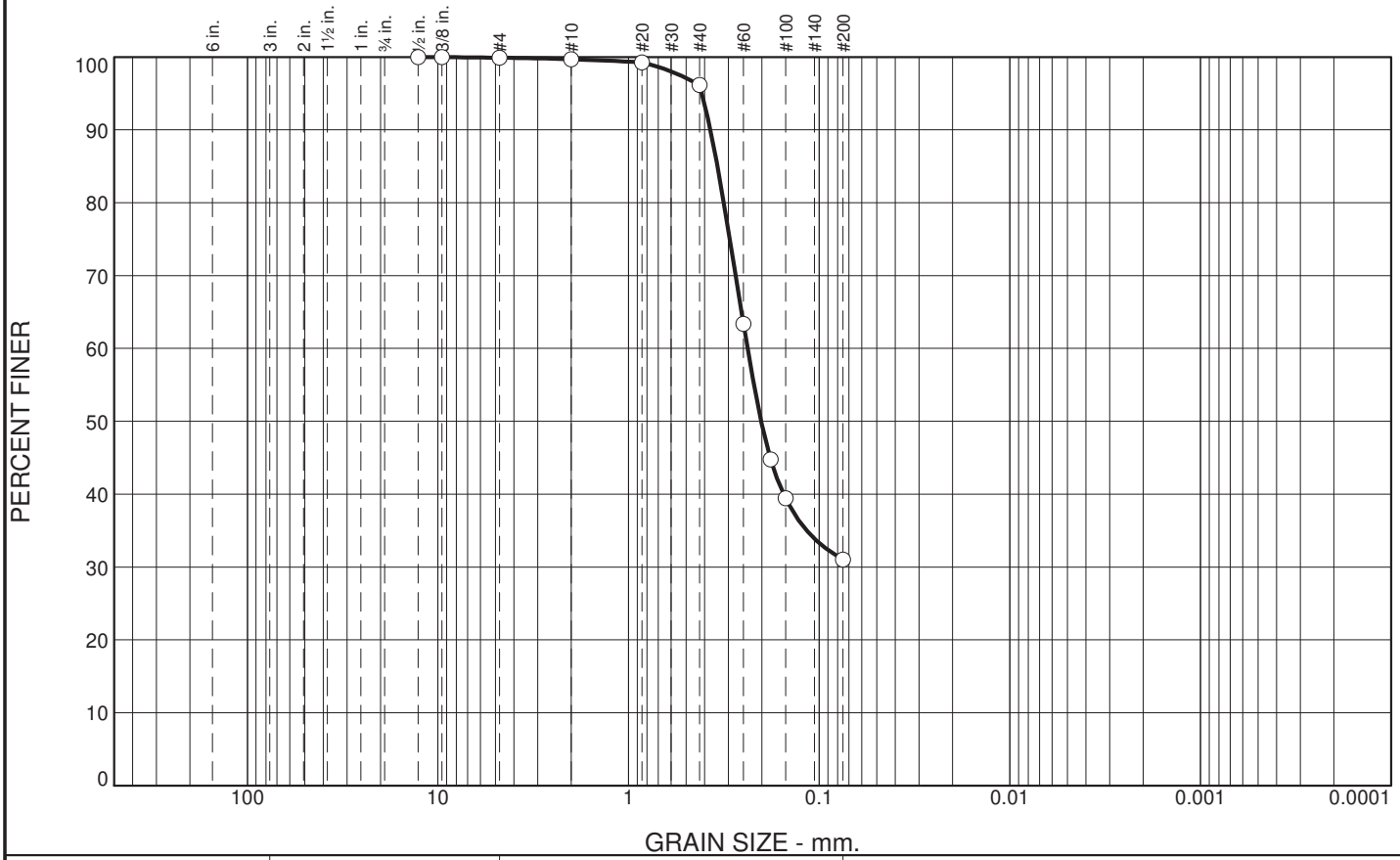
Location: B-13
Sample Number: A-23021 **Depth:** 2.5 - 3.3 ft **Date:** 2-11-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 36

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	3.5	65.2	31.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	100.0		
#4	99.9		
#10	99.7		
#20	99.3		
#40	96.2		
#60	63.4		
#80	44.8		
#100	39.4		
#200	31.0		

* (no specification provided)

Material Description

Silty Clayey SAND

Atterberg Limits

PL= 19 LL= 26 PI= 7

Coefficients

D_{90}= 0.3726 D_{85}= 0.3424 D_{60}= 0.2379
D_{50}= 0.2015 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC-SM AASHTO= A-2-4(0)

Remarks

Report No. A-23025-206

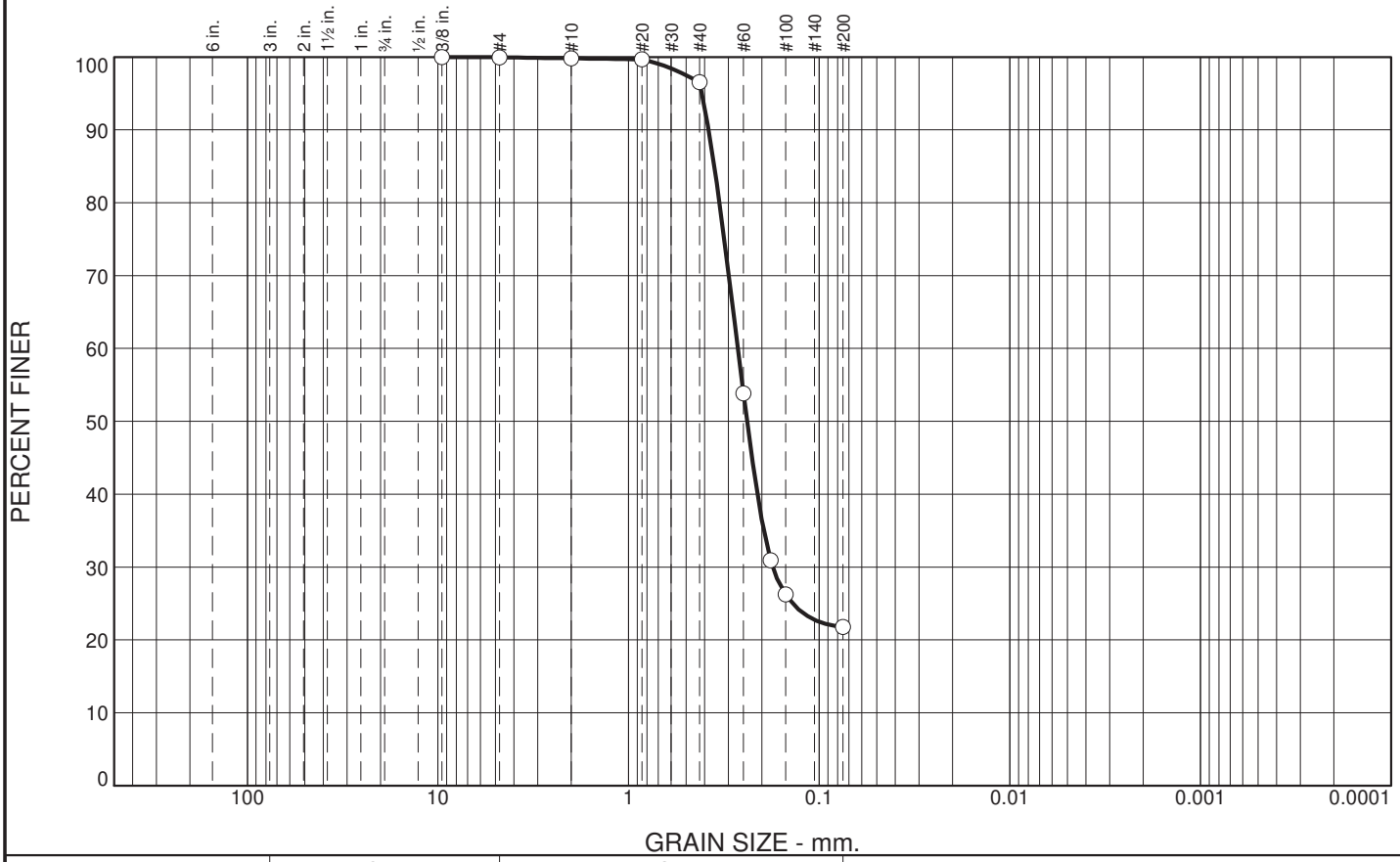
Location: B-14
Sample Number: A-23025 **Depth:** 0.0 - 2.5 ft **Date:** 2-5-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 37

Tested By: MS **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	3.3	74.7	21.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	100.0		
#10	99.8		
#20	99.7		
#40	96.5		
#60	53.8		
#80	30.9		
#100	26.2		
#200	21.8		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3804 D_{85}= 0.3554 D_{60}= 0.2677
D_{50}= 0.2393 D_{30}= 0.1757 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Report No. A-23029-206

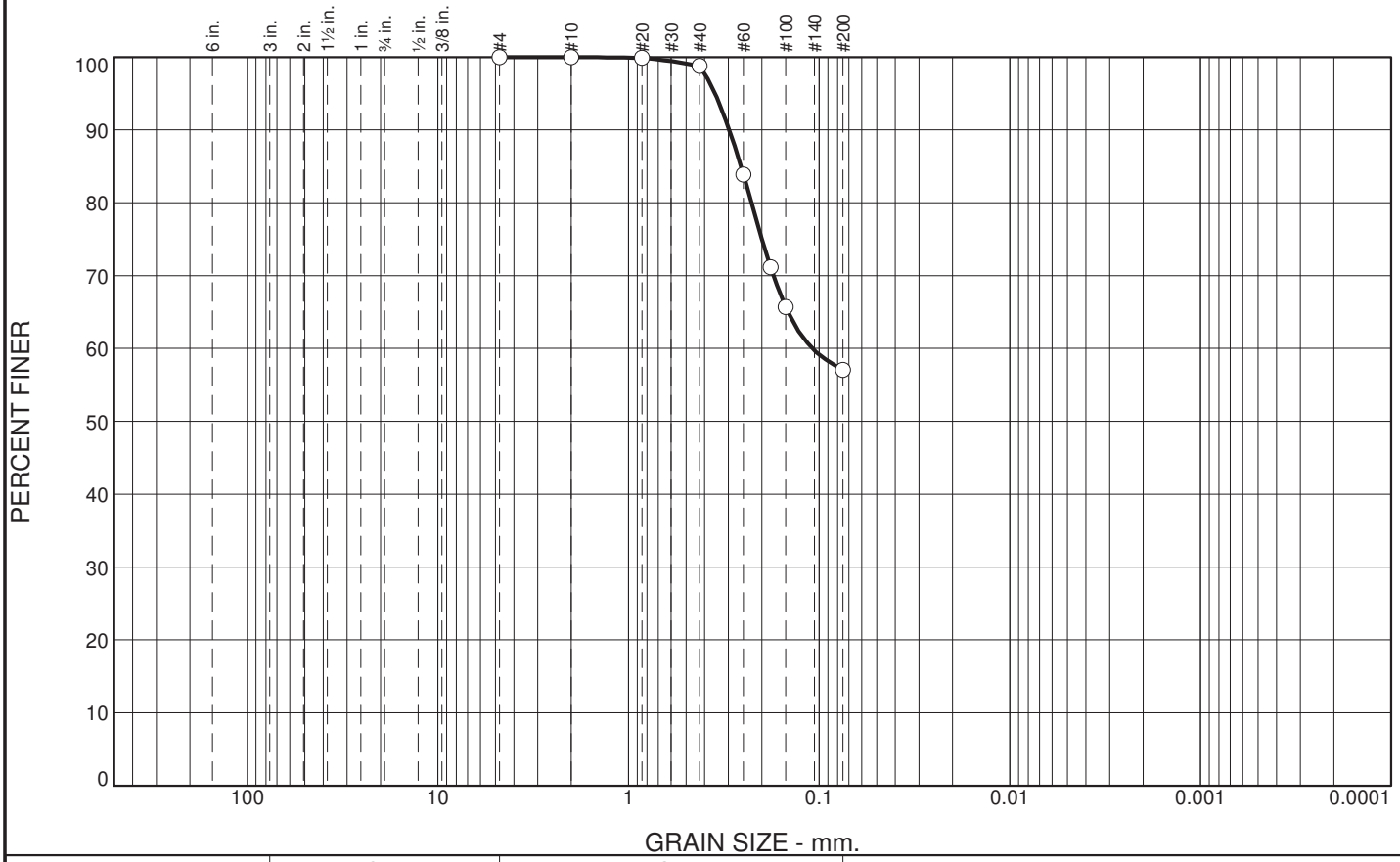
Location: B-15
Sample Number: A-23029 **Depth:** 0.0 - 1.5 ft **Date:** 2-11-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 38

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	1.2	41.7	57.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	98.8		
#60	83.9		
#80	71.2		
#100	65.7		
#200	57.1		

* (no specification provided)

Material Description

Sandy Fat CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2967 D_{85}= 0.2575 D_{60}= 0.1088
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-23031-206

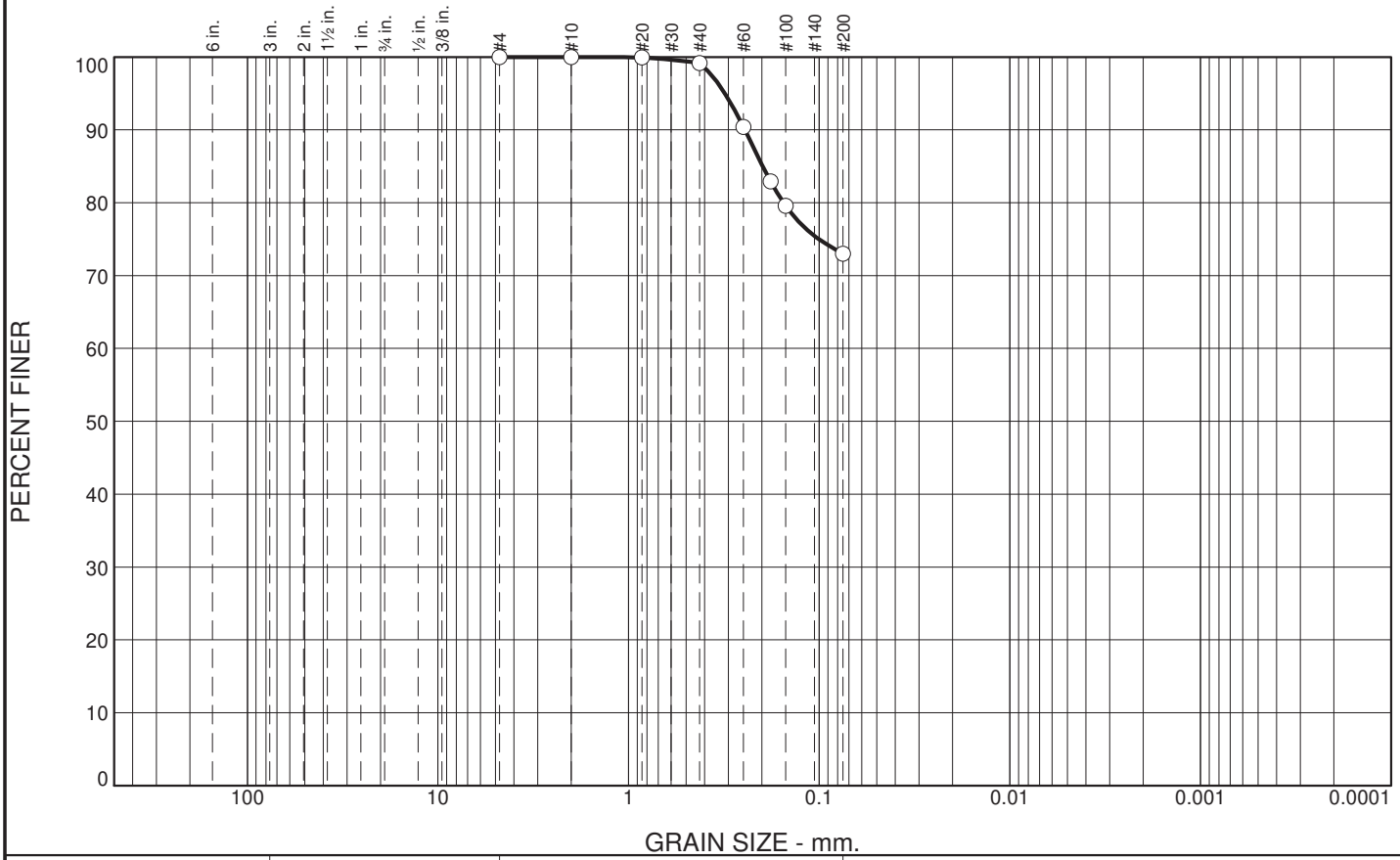
Location: B-15
Sample Number: A-23031 **Depth:** 3.0 - 4.0 ft **Date:** 2-10-2021

TD&H THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 39

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.8	26.2	73.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.2		
#60	90.4		
#80	82.9		
#100	79.6		
#200	73.0		

* (no specification provided)

Material Description

Fat CLAY with Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2457 D_{85}= 0.1981 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-23032-206

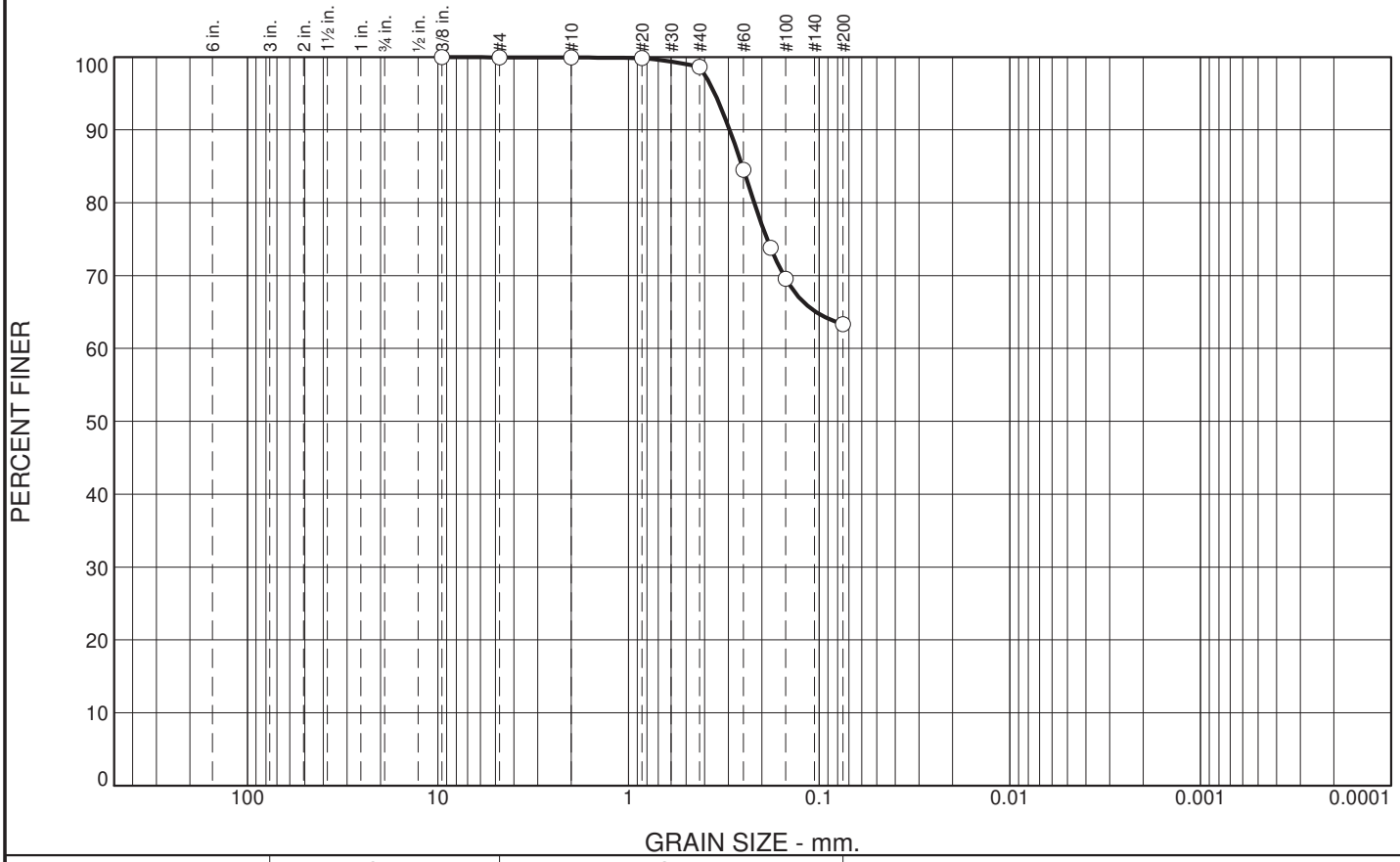
Location: B-15
Sample Number: A-23032 **Depth:** 5.0 - 5.8 ft **Date:** 2-9-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 40

Tested By: TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.0	1.3	35.3	63.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	99.9		
#10	99.9		
#20	99.9		
#40	98.6		
#60	84.5		
#80	73.8		
#100	69.5		
#200	63.3		

* (no specification provided)

Material Description

Sandy Fat CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2955 D_{85}= 0.2535 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Report No. A-23033-206

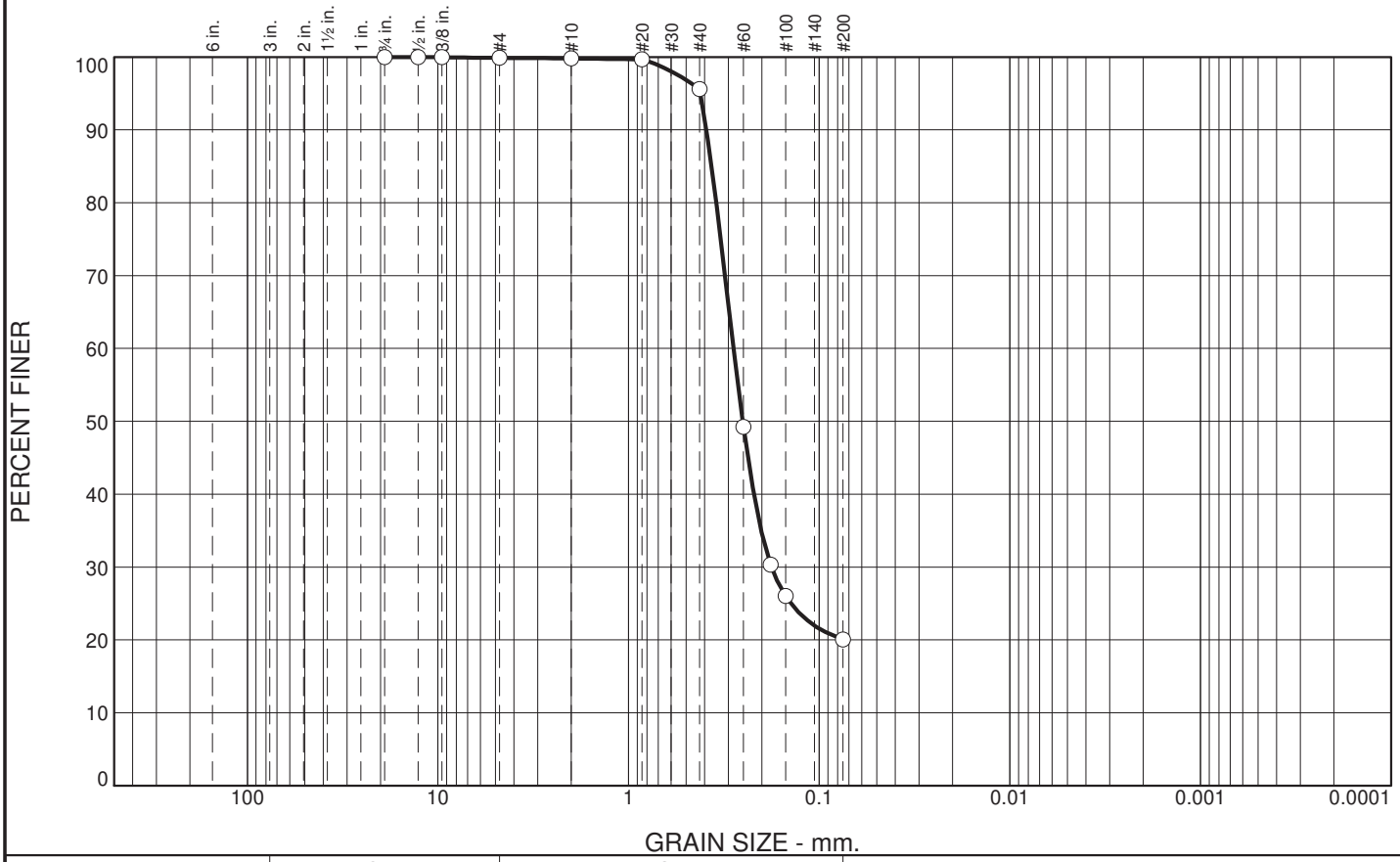
Location: B-15
Sample Number: A-23033 **Depth:** 5.8 - 6.5 ft **Date:** 2-11-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 41

Tested By: WJC **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.1	4.2	75.5	20.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	99.9		
#10	99.8		
#20	99.7		
#40	95.6		
#60	49.3		
#80	30.3		
#100	26.0		
#200	20.1		

* (no specification provided)

Material Description

Silty SAND

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.3908 D_{85}= 0.3673 D_{60}= 0.2819
D_{50}= 0.2523 D_{30}= 0.1783 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Report No. A-23035-206

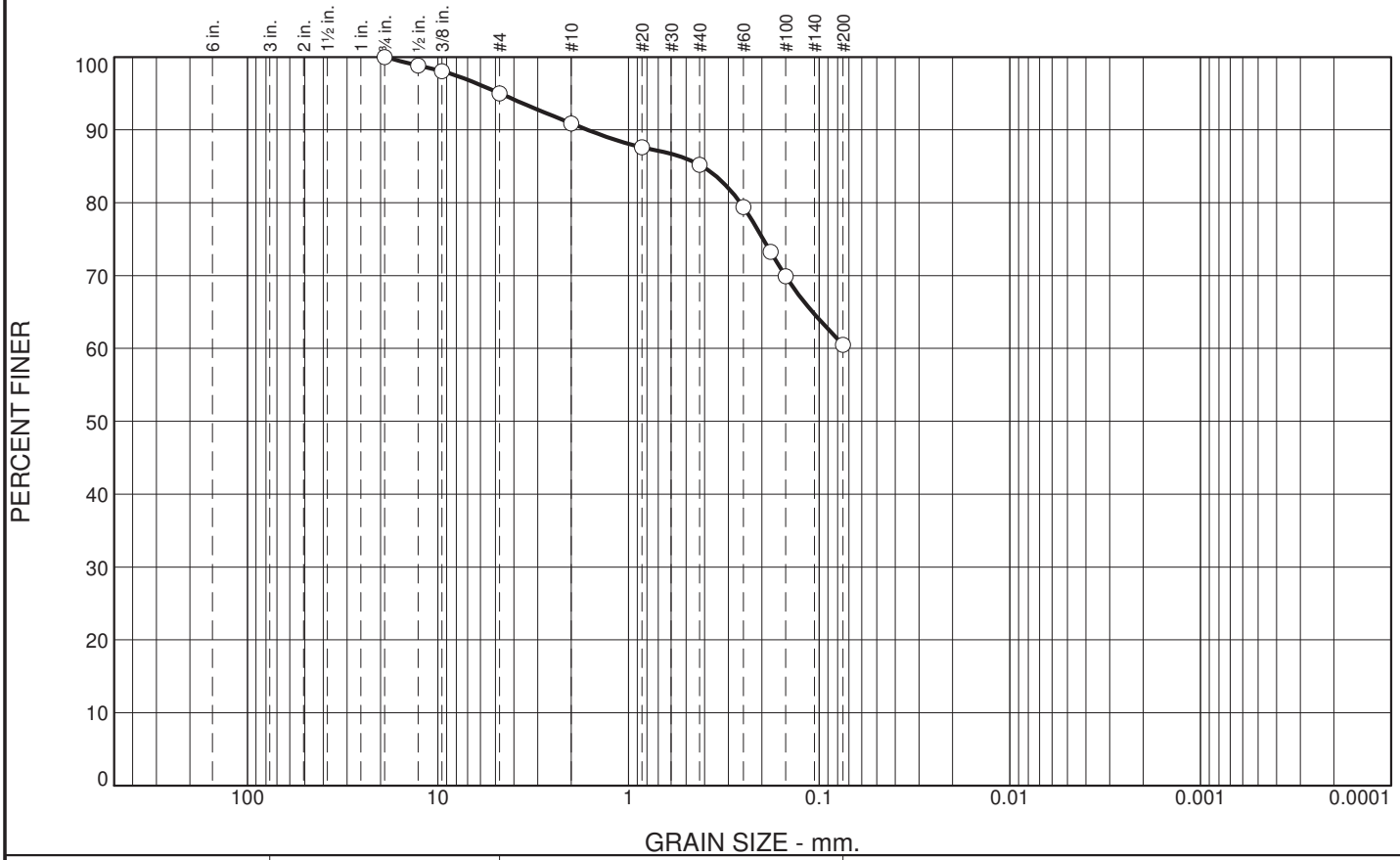
Location: B-16
Sample Number: A-23035 **Depth:** 0.0 - 2.5 ft **Date:** 2-9-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 42

Tested By: MS/TF **Checked By:** Craig R Madsen

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.0	4.1	5.7	24.7	60.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	98.8		
3/8"	98.1		
#4	95.0		
#10	90.9		
#20	87.6		
#40	85.2		
#60	79.4		
#80	73.3		
#100	69.9		
#200	60.5		

* (no specification provided)

Material Description

Sandy Lean CLAY

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.6407 D_{85}= 0.4112 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Report No. A-23037-206

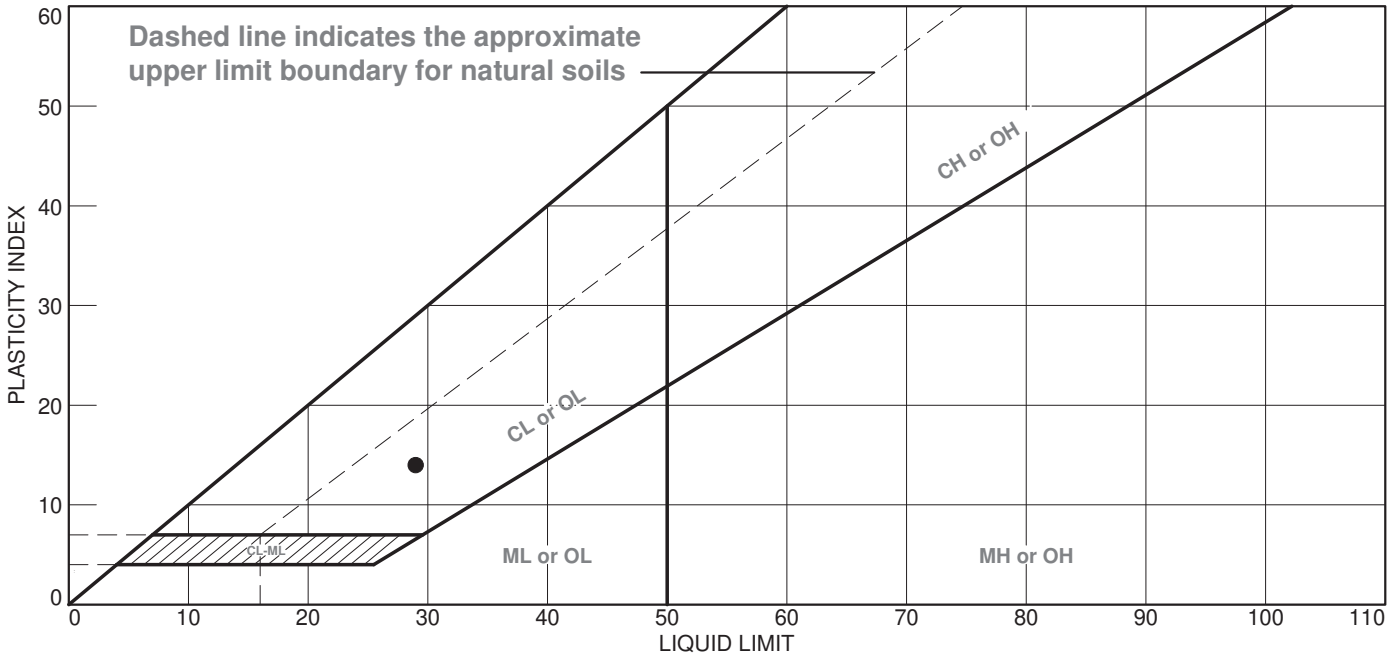
Location: B-16
Sample Number: A-23037 **Depth:** 3.3 - 4.0 ft **Date:** 2-11-2021

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Client: LPW Architects
Project: Recreation Center
Great Falls, Montana
Project No: 20-091-001 **Figure** 43

Tested By: WJC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY (Weathered CLAYSTONE)	29	15	14			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-1

Sample Number: A-22949 **Depth:** 5.0 - 6.5 ft

Remarks:

● Report No. A-22949-207
Date: 2-9-2021

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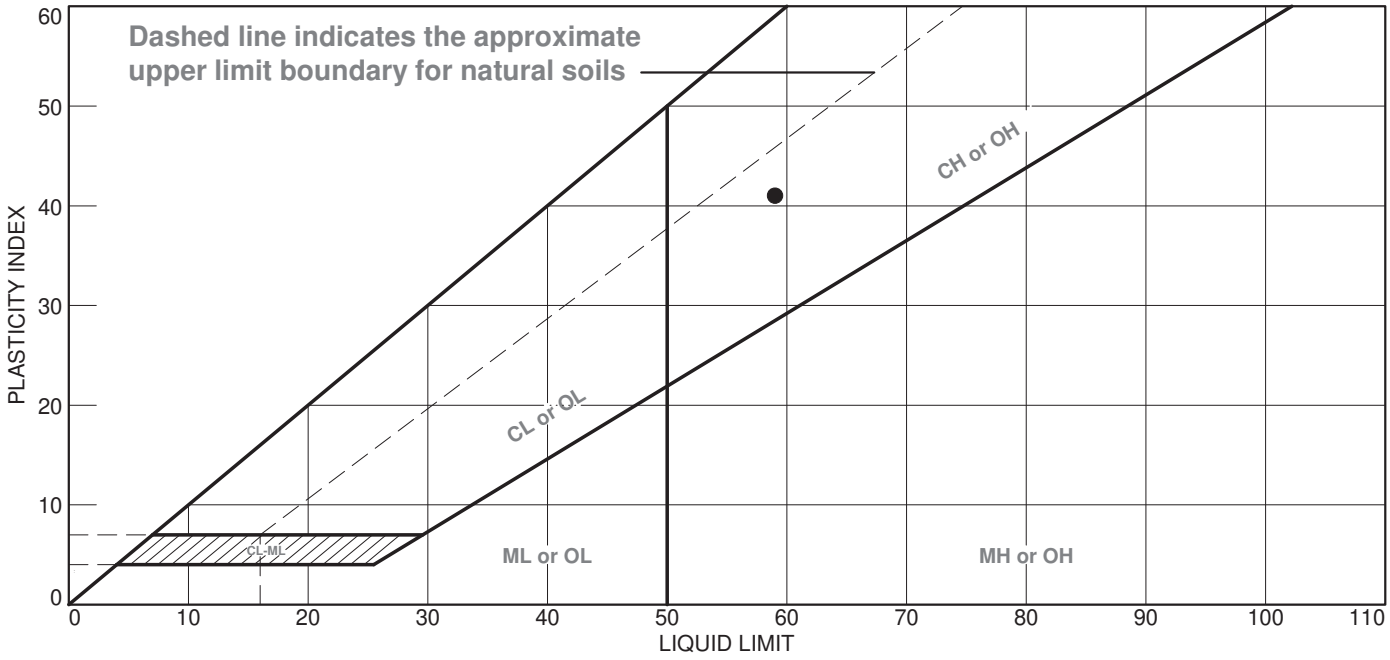
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 44

Tested By: JS **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	59	18	41			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-2

Sample Number: A-22953 **Depth:** 2.7 - 4.0 ft

Remarks:

● Report No. A-22953-207
Date: 2-5-2021

TD&H

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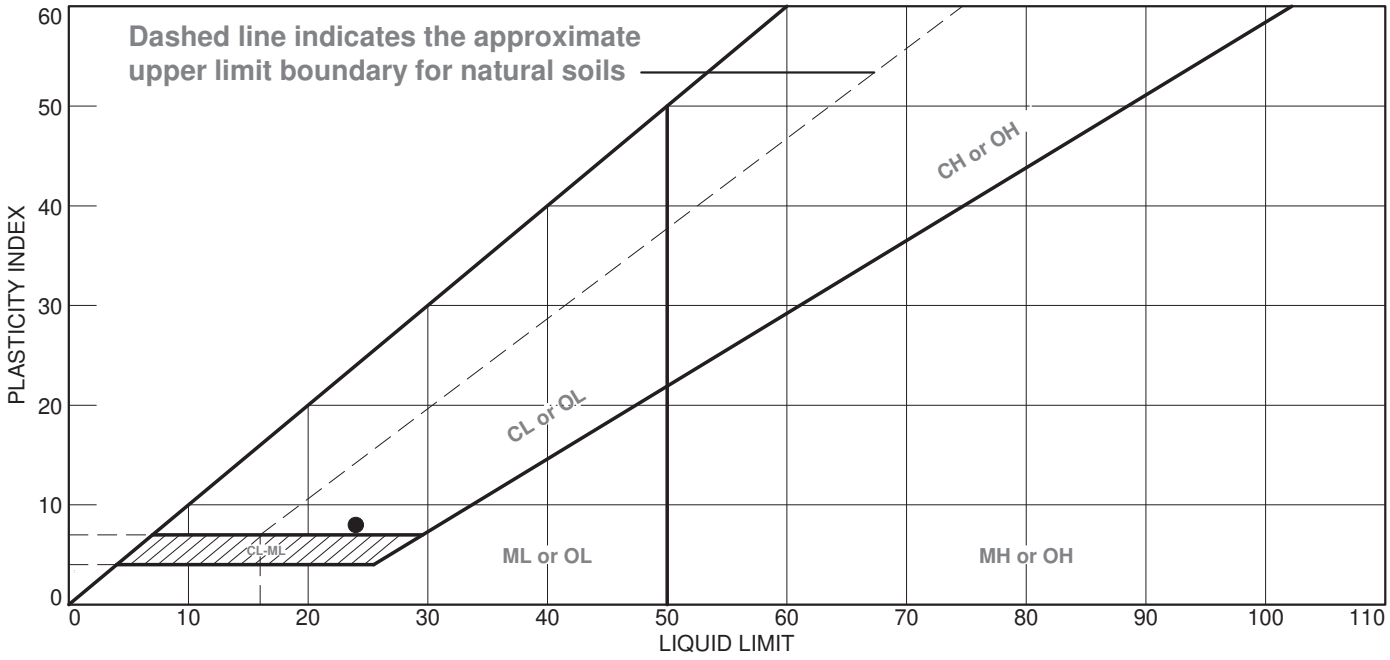
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 45

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY (Weathered CLAYSTONE)	24	16	8			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-2

Sample Number: A-22956 **Depth:** 7.5 - 9.0 ft

Remarks:

● Report No. A-22956-207
Date: 2-5-2021

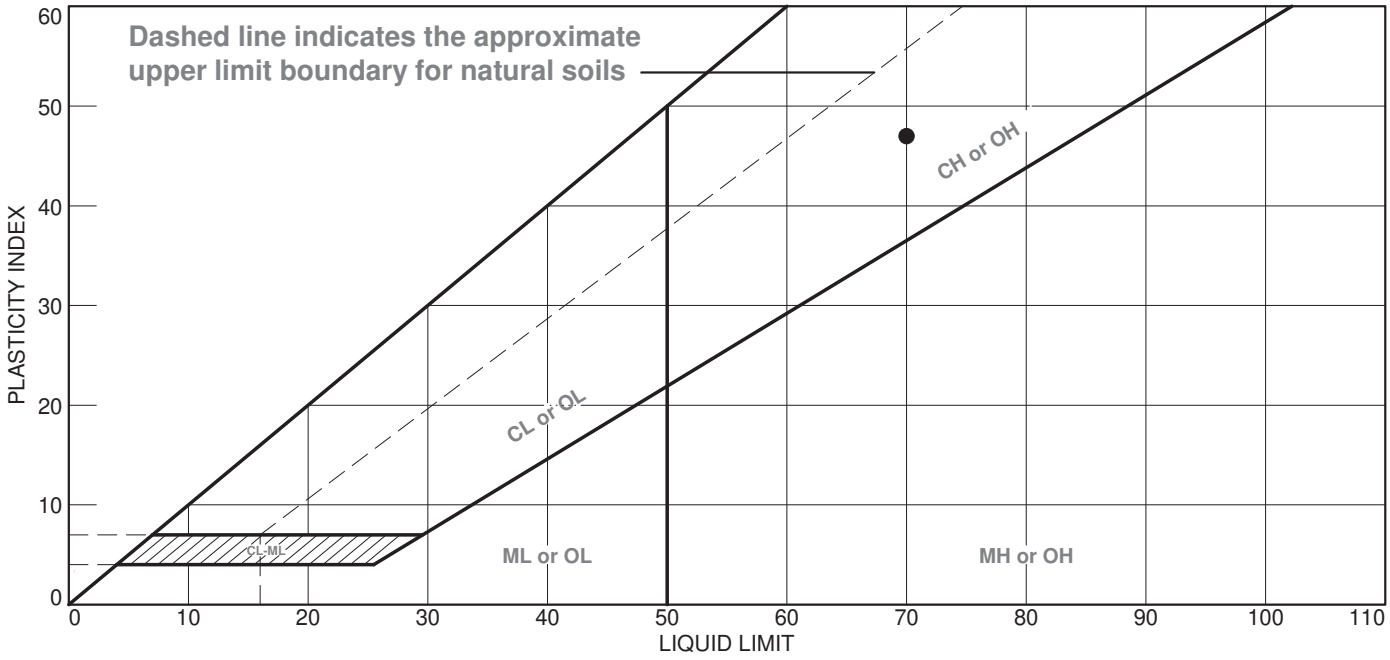
TD&H

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 46

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Fat CLAY	70	23	47			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-3

Sample Number: A-22961 **Depth:** 7.5 - 8.2 ft

Remarks:

● Report No. A-22961-207
Date: 2-12-2021

TD&H

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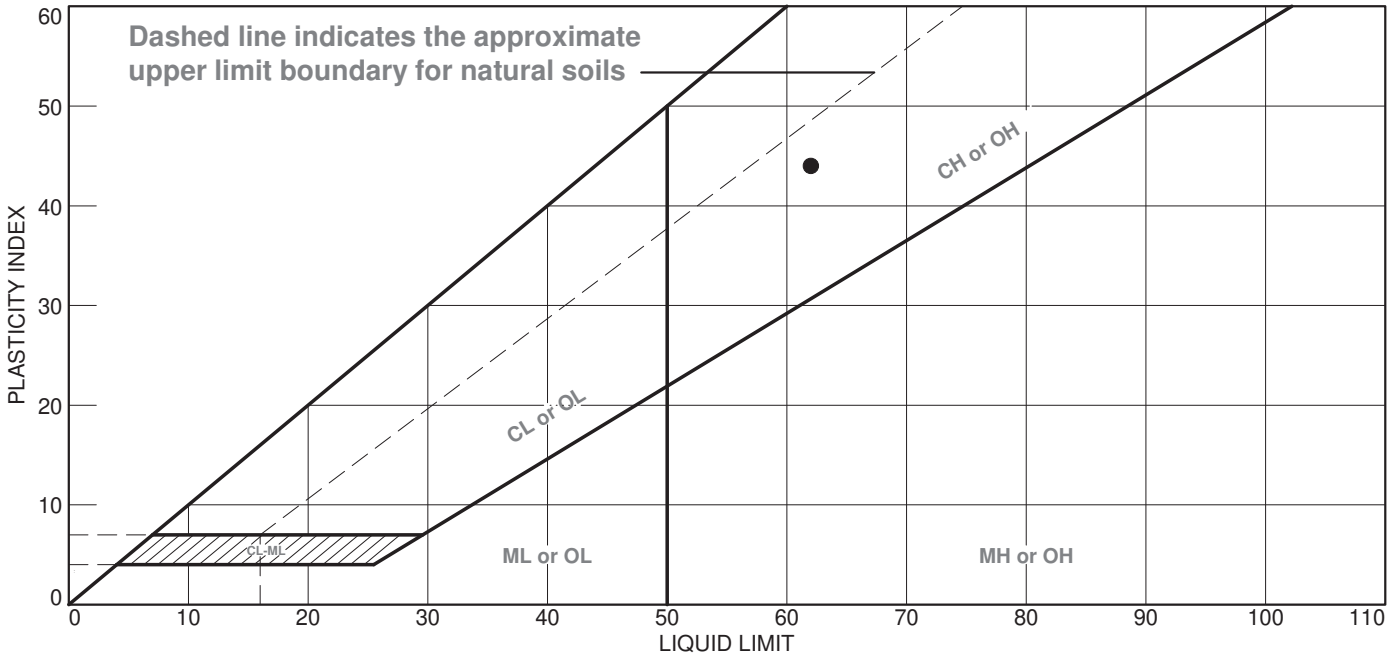
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 47

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	62	18	44			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-3

Sample Number: A-22964 **Depth:** 12.5 - 14.0 ft

Remarks:

● Report No. A-22964-207
Date: 2-10-2021

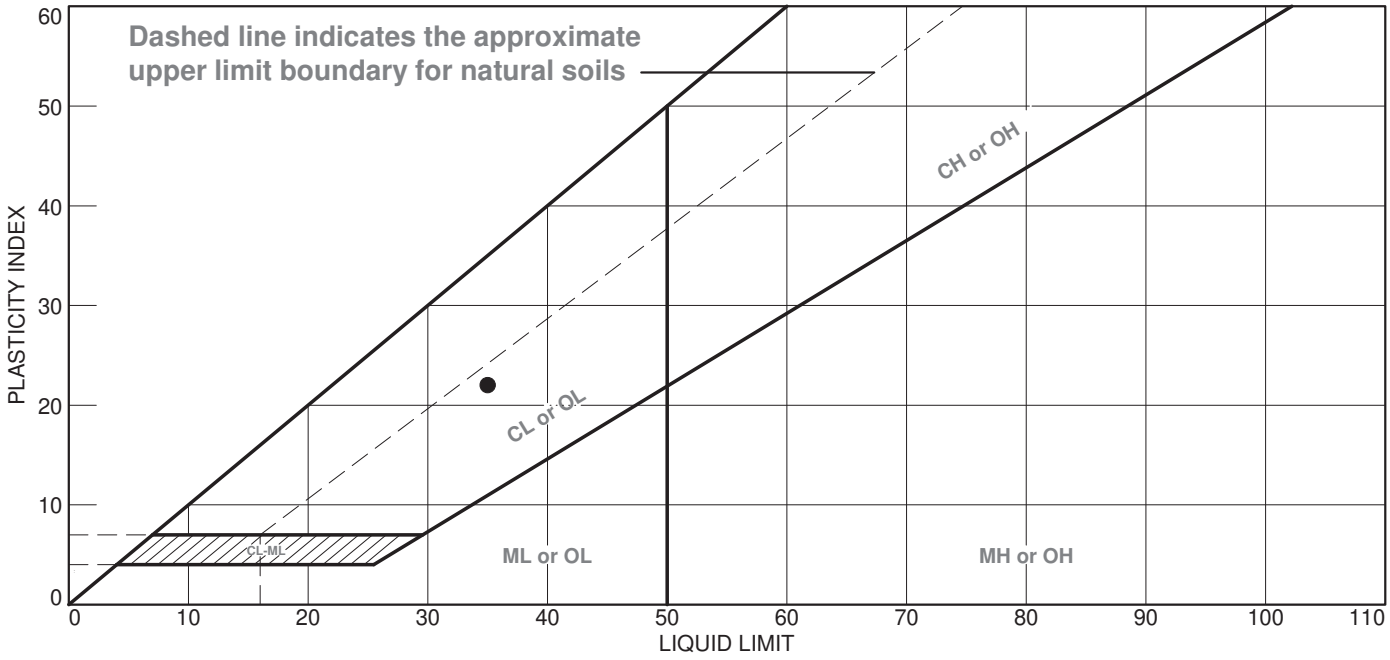
TD&H

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 48

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean CLAY with Sand (Weathered CLAYSTONE)	35	13	22			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-3

Sample Number: A-22965 **Depth:** 15.0 - 17.0 ft

Remarks:

● Report No. A-22965-207
Date: 2-10-2021

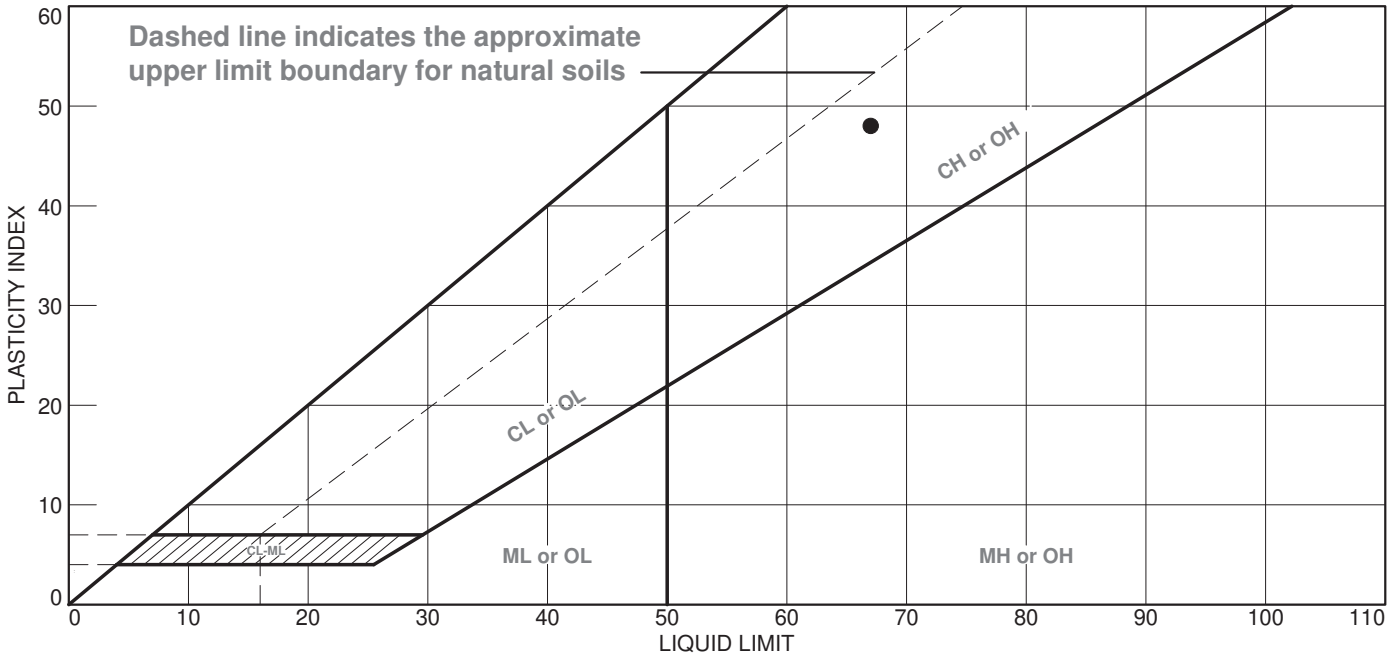
TD&H

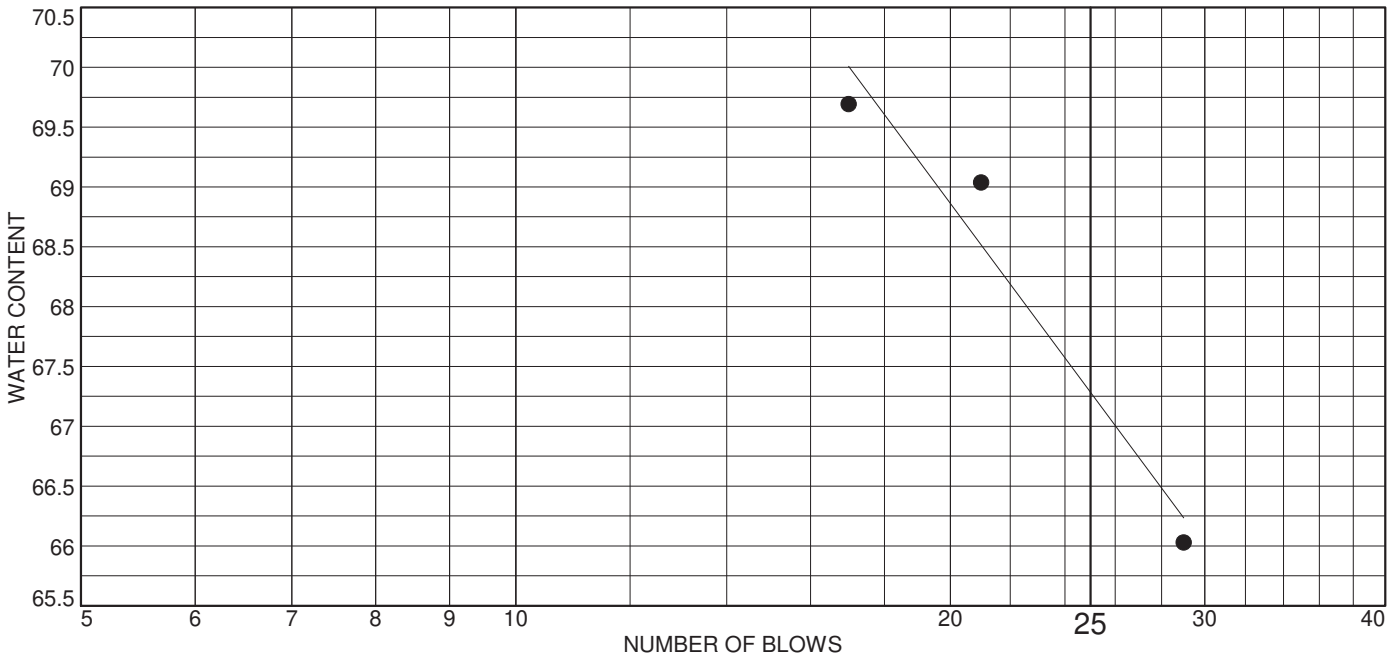
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 49

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	67	19	48			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-4

Sample Number: A-22968 **Depth:** 7.5 - 9.0 ft

Remarks:

● Report No. A-22968-207
Date: 2-16-2021

TD&H

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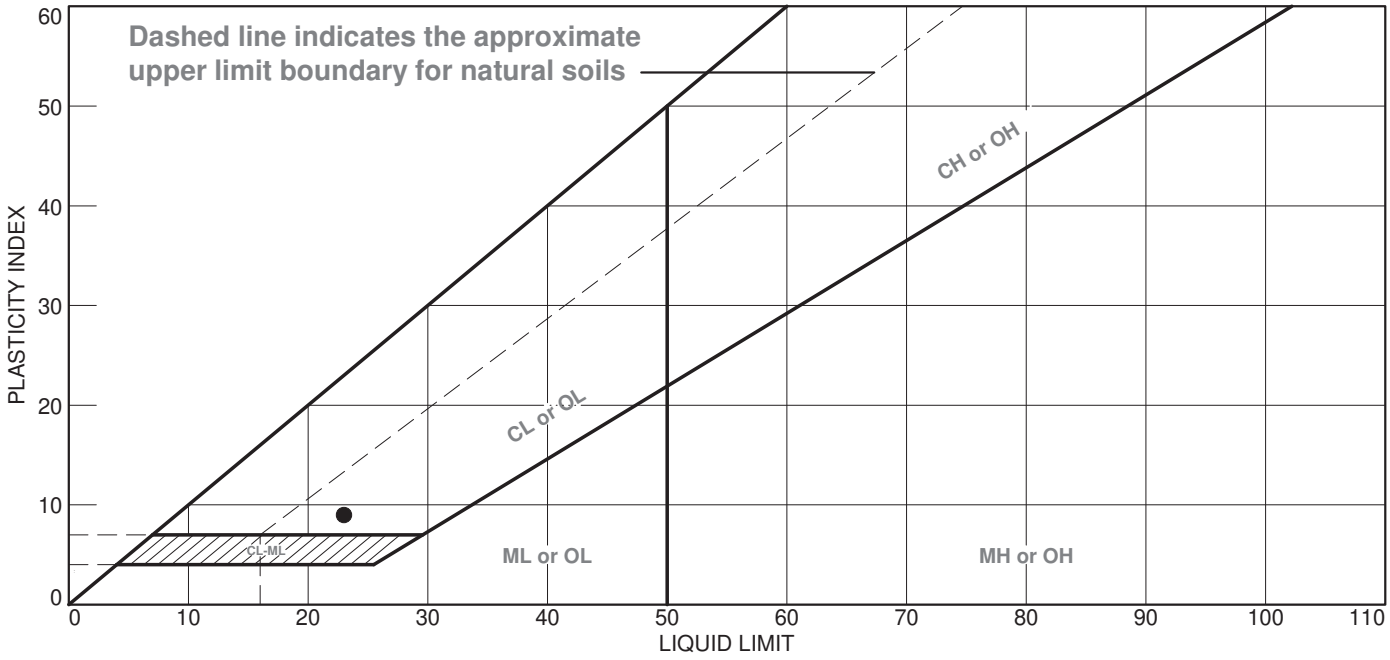
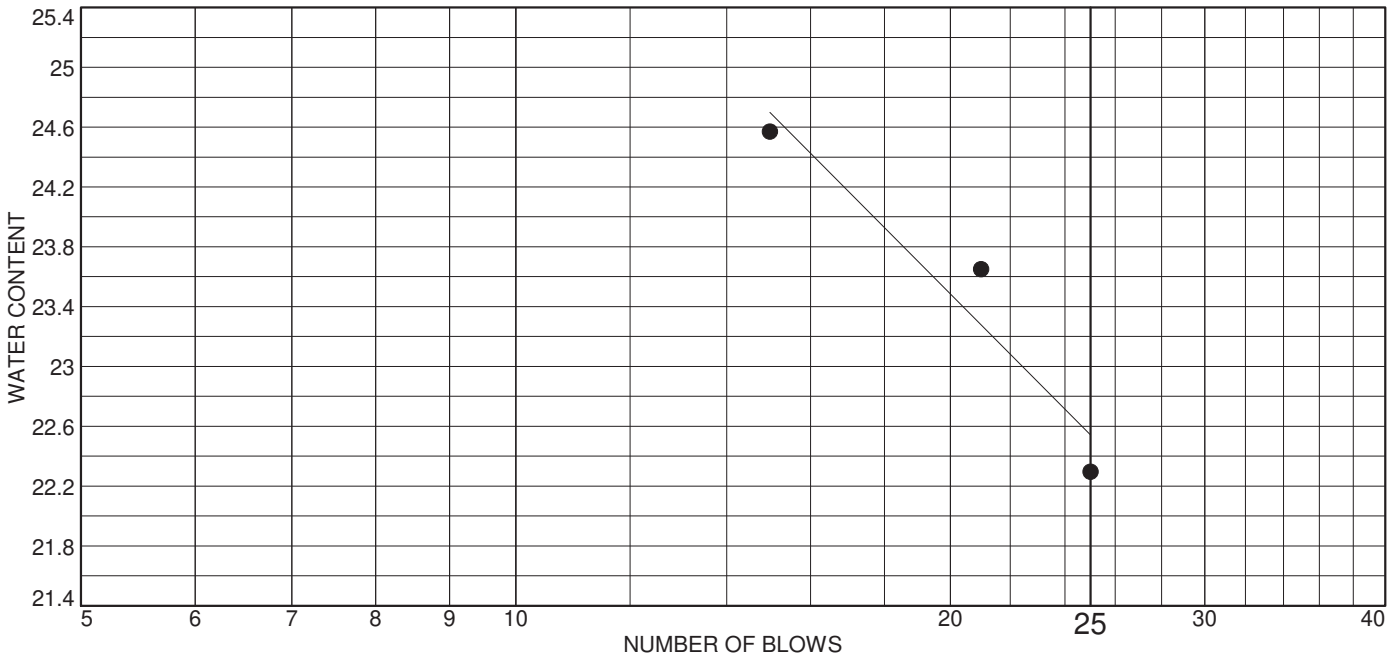
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 50

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Clayey SAND	23	14	9			SC

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-6

Sample Number: A-22977 **Depth:** 2.5 - 3.7 ft

Remarks:

● Report No. A-22977-207
Date: 2-16-2021

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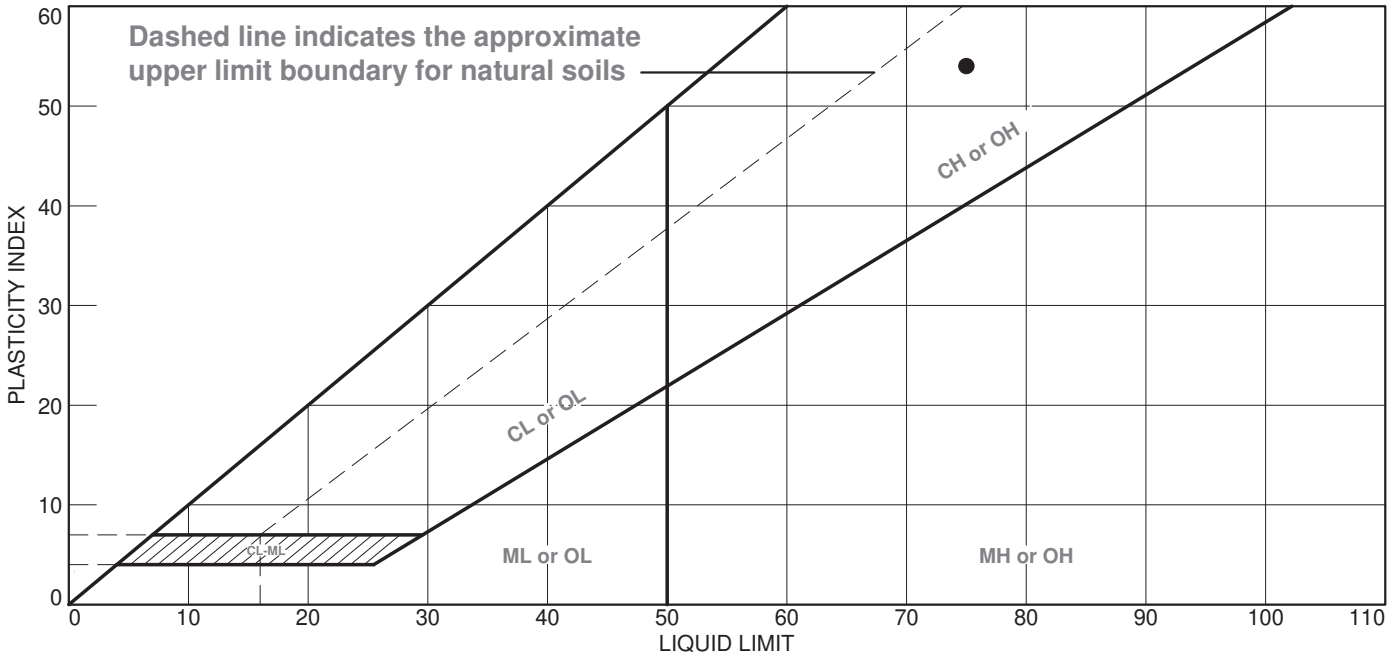
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 51

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	75	21	54			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-6

Sample Number: A-22980 **Depth:** 6.5 - 8.0 ft

Remarks:

● Report No. A-22980-207
Date: 2-23-2021

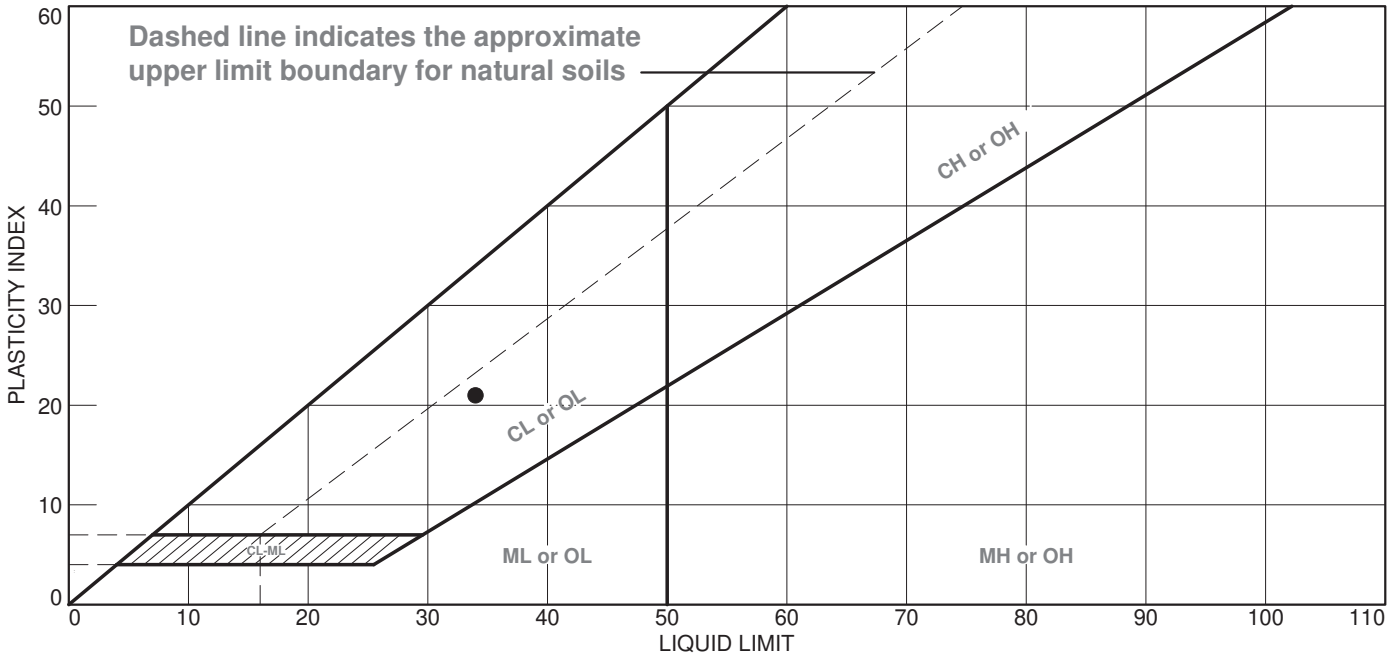
TD&H

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 52

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY (Weathered CLAYSTONE)	34	13	21			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-6

Sample Number: A-22983 **Depth:** 15.0 - 16.5 ft

Remarks:

● Report No. A-22983-207
Date: 2-11-2021

TD&H

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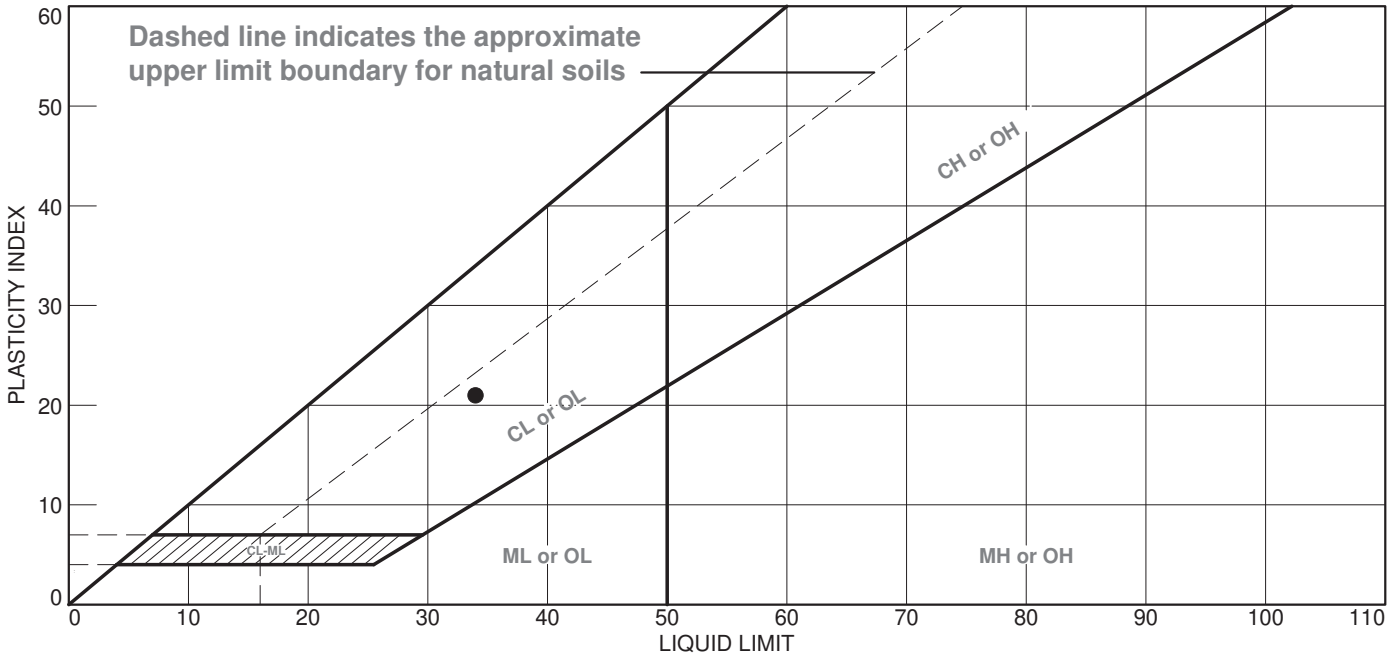
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 53

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY (Weathered CLAYSTONE)	34	13	21			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-7

Sample Number: A-22987 **Depth:** 7.5 - 9.0 ft

Remarks:

● Report No. A-22987-207
Date: 2-11-2021

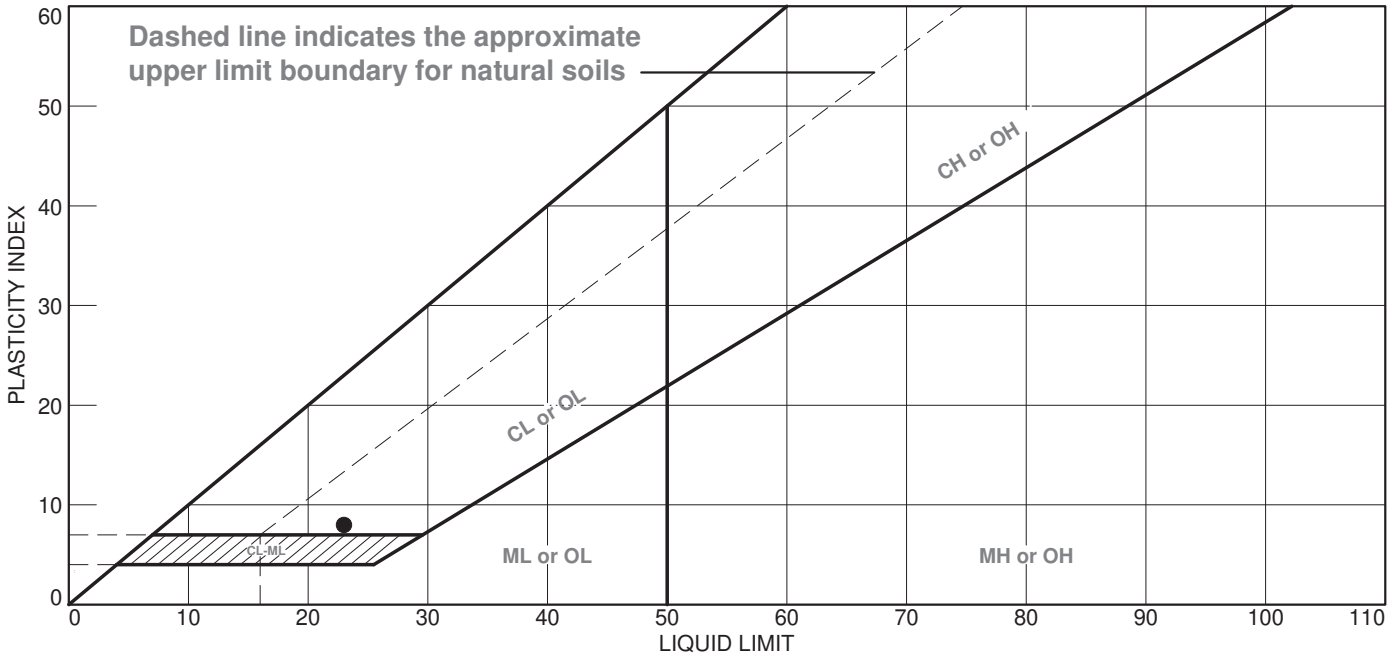
TD&H

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 54

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Clayey SAND	23	15	8			SC

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-8

Sample Number: A-22991 **Depth:** 5.0 - 6.0 ft

Remarks:

● Report No. A-22991-207
Date: 2-16-2021

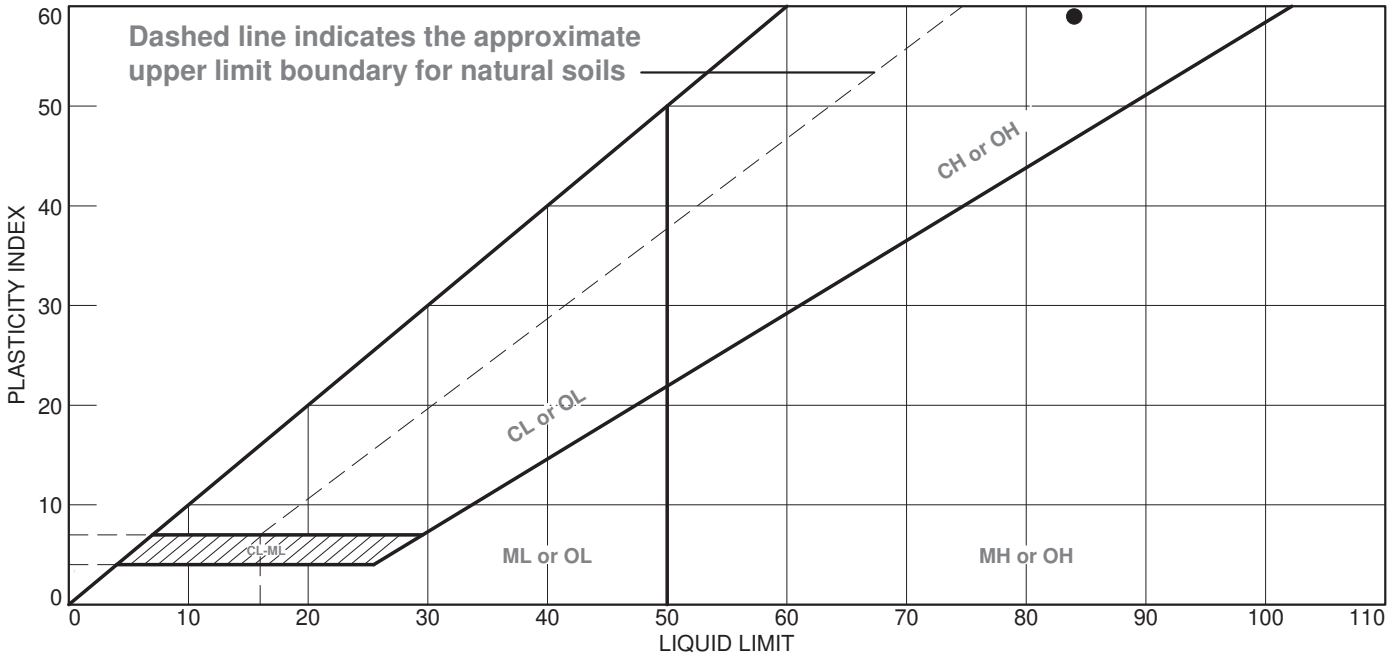
TD&H

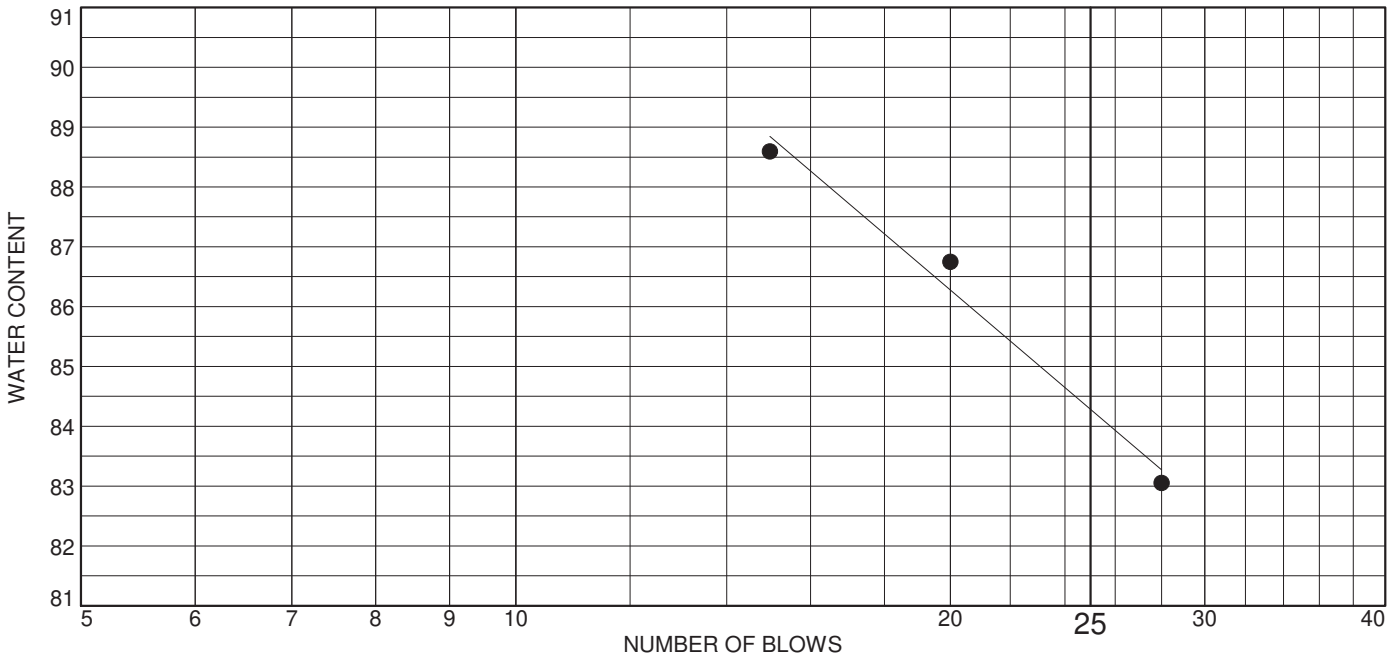
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 55

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	84	25	59			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-8

Sample Number: A-22995 **Depth:** 11.5 - 13.0 ft

Remarks:

● Report No. A-22995-207
Date: 2-22-2021

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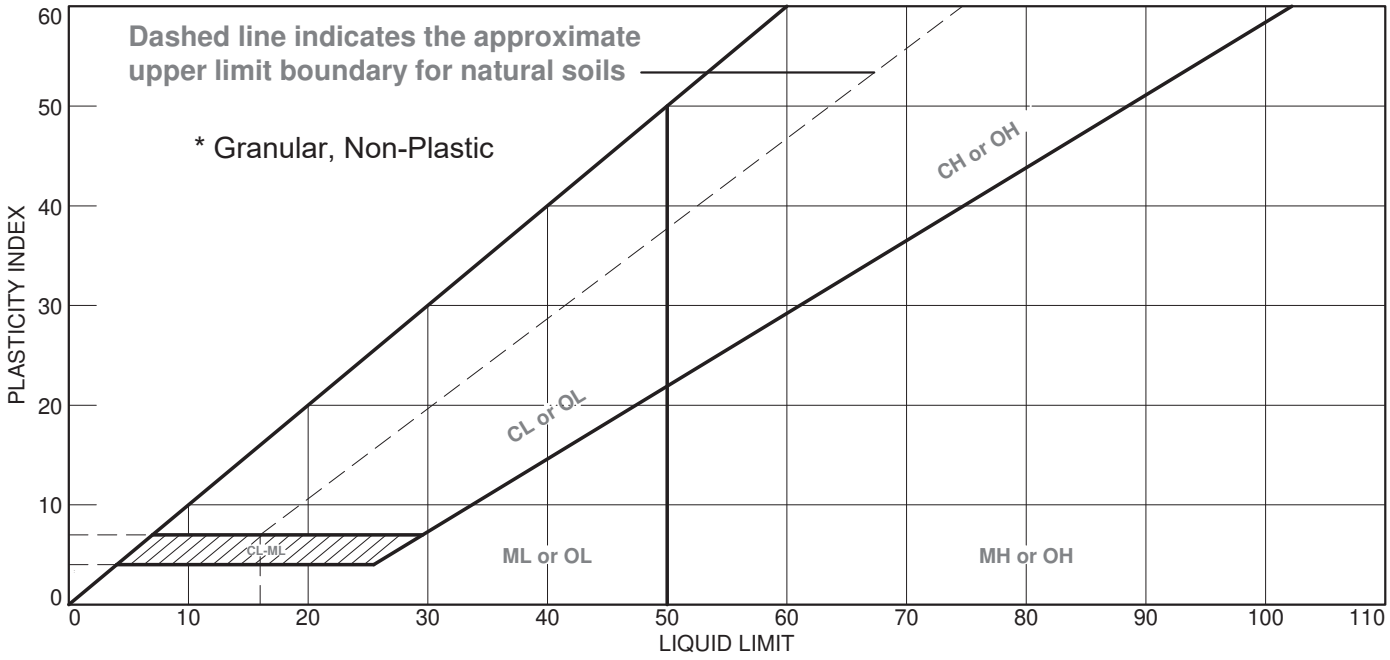
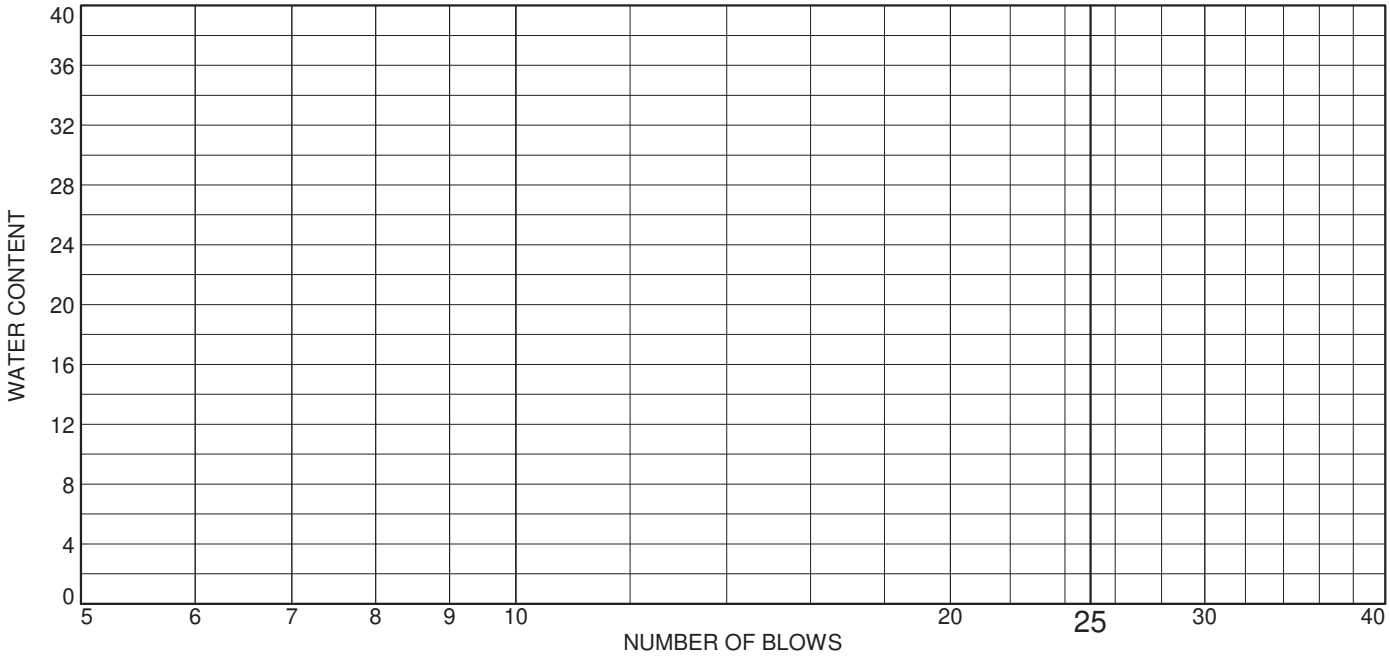
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 56

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty SAND *	NV	NP	NP			SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-9

Sample Number: A-22998 **Depth:** 2.5 - 4.0 ft

Remarks:

● Report No. A-22998-207
Date: 2-12-2021

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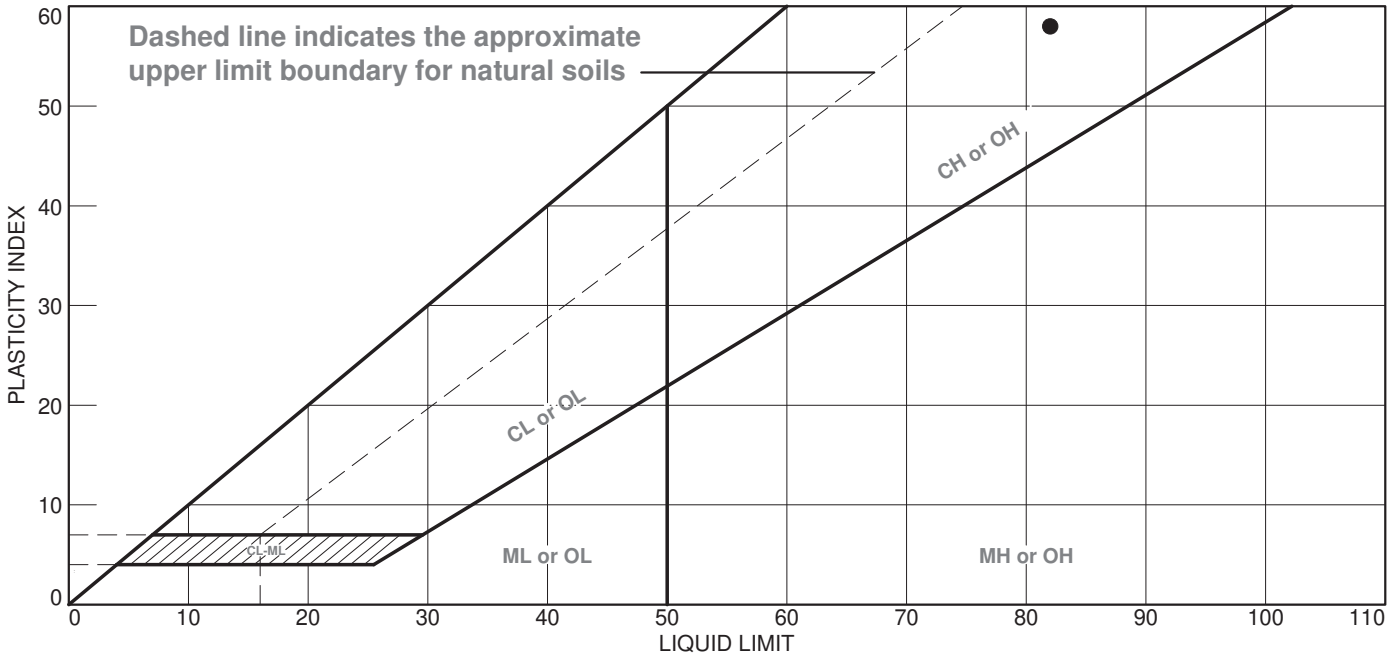
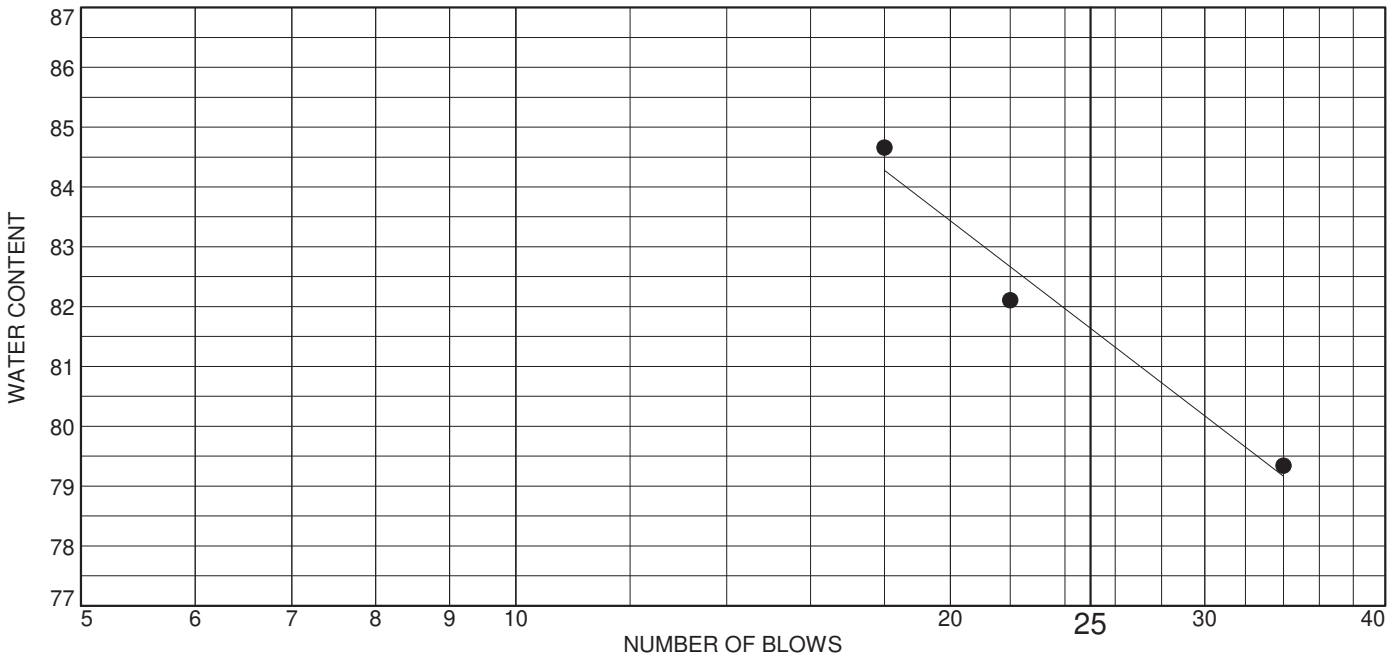
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 57

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	82	24	58			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-9

Sample Number: A-23001 **Depth:** 7.5 - 9.0 ft

Remarks:

● Report No. A-23001-207
Date: 2-17-2021

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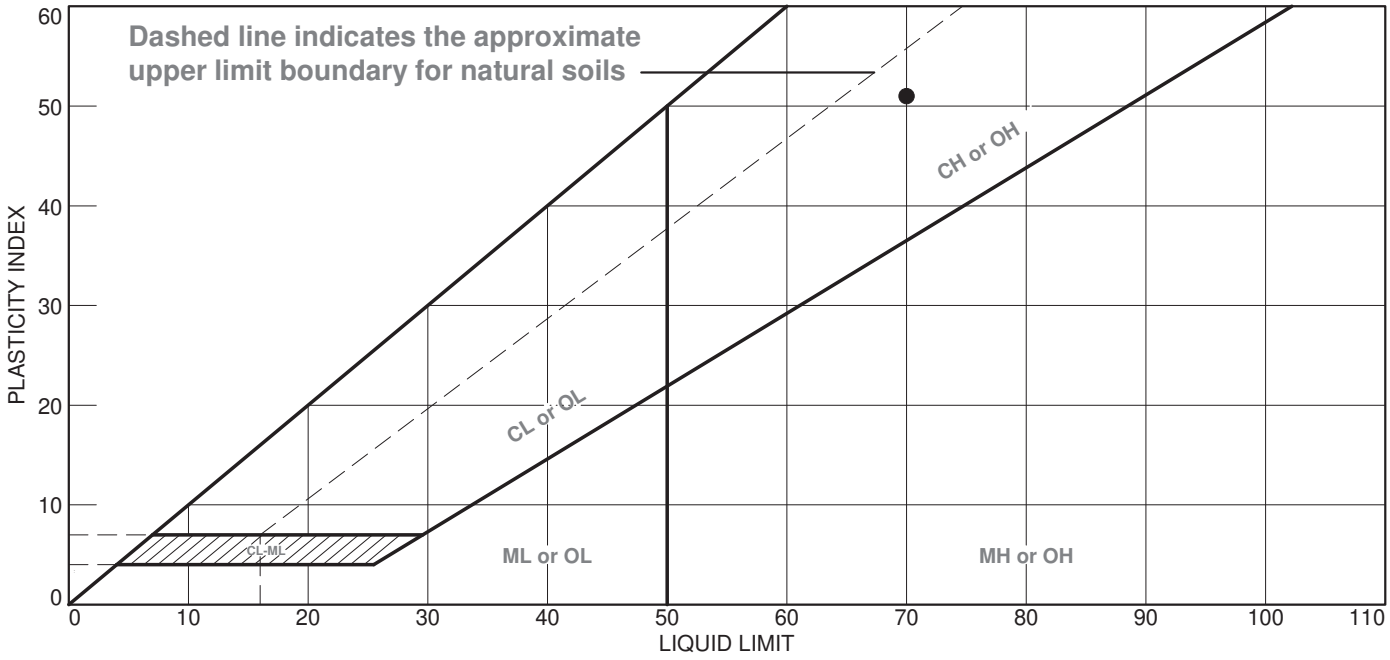
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 58

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	70	19	51			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-10

Sample Number: A-23007 **Depth:** 5.0 - 6.5 ft

Remarks:

● Report No. A-23007-207
Date: 2-22-2021

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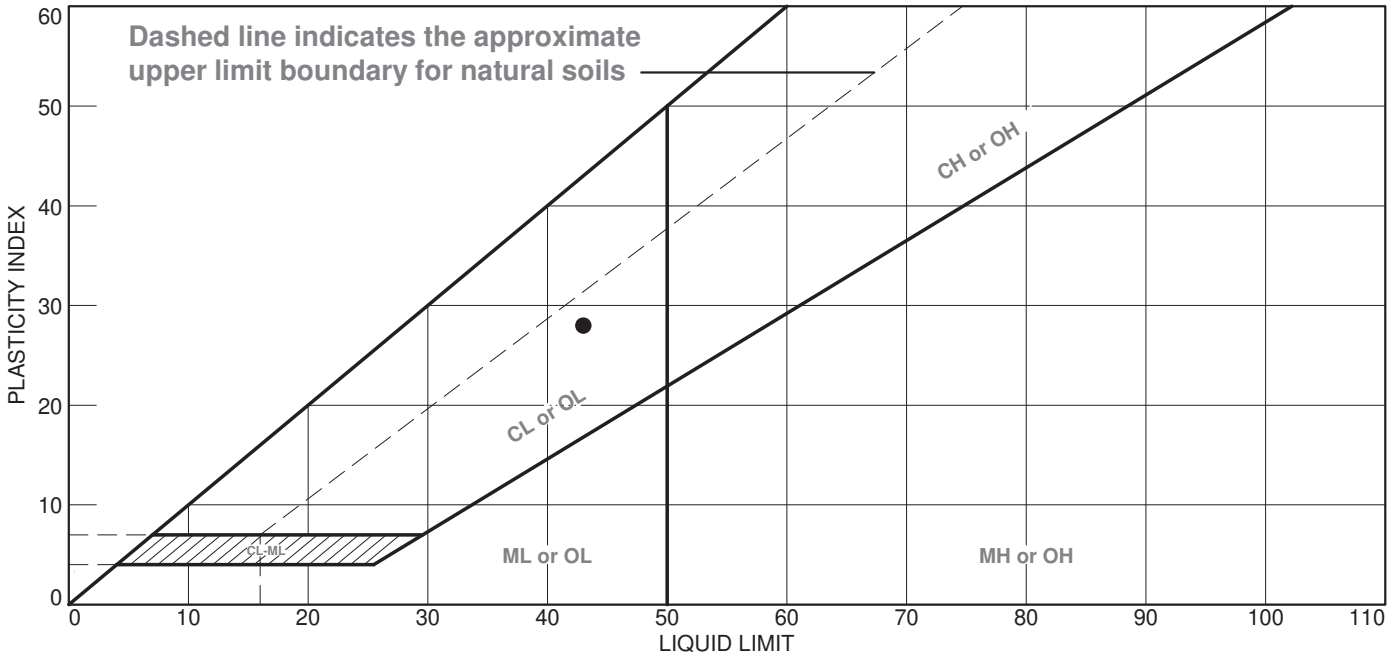
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 59

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean CLAY with Sand (Weathered CLAYSTONE)	43	15	28			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-10

Sample Number: A-23010 **Depth:** 12.5 - 14.0 ft

Remarks:

● Report No. A-23010-207
Date: 2-22-2021

TD&H

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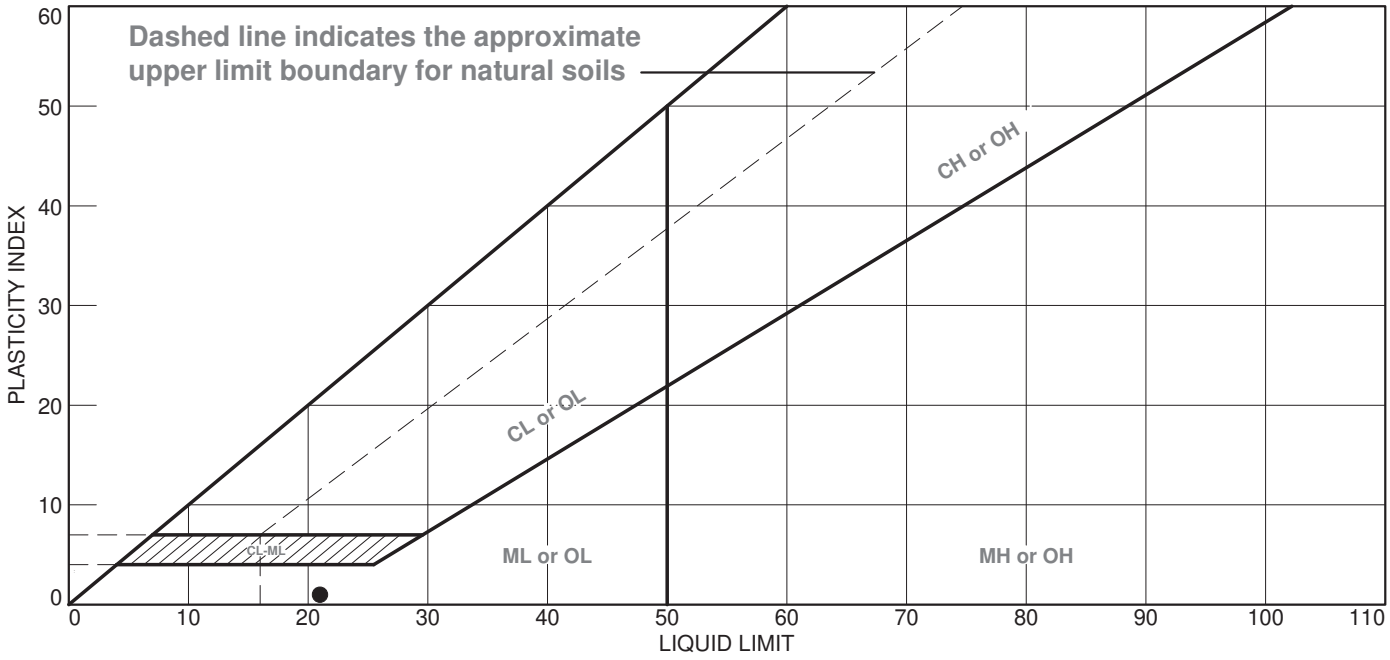
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 60

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty SAND	21	20	1	97.5	27.3	SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-11

Sample Number: A-23013 **Depth:** 0.0 - 2.5 ft

Remarks:

● Report No. A-23013-207
Date: 2-9-2021

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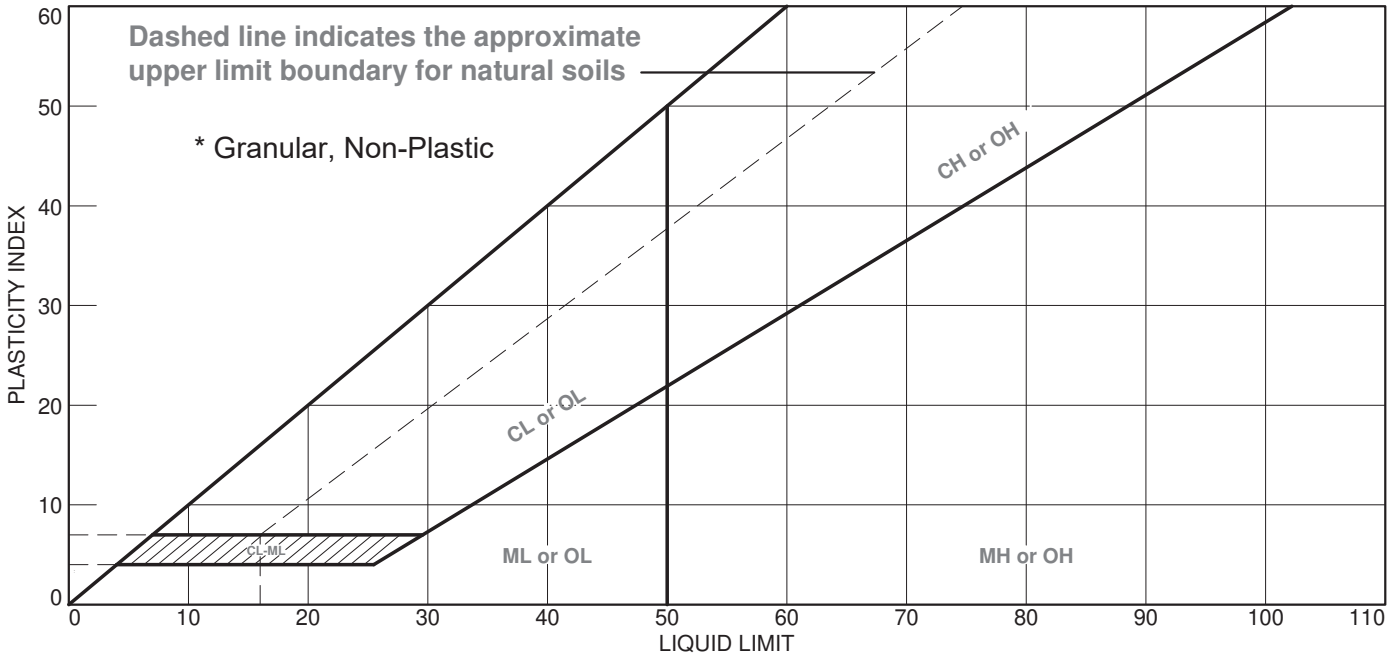
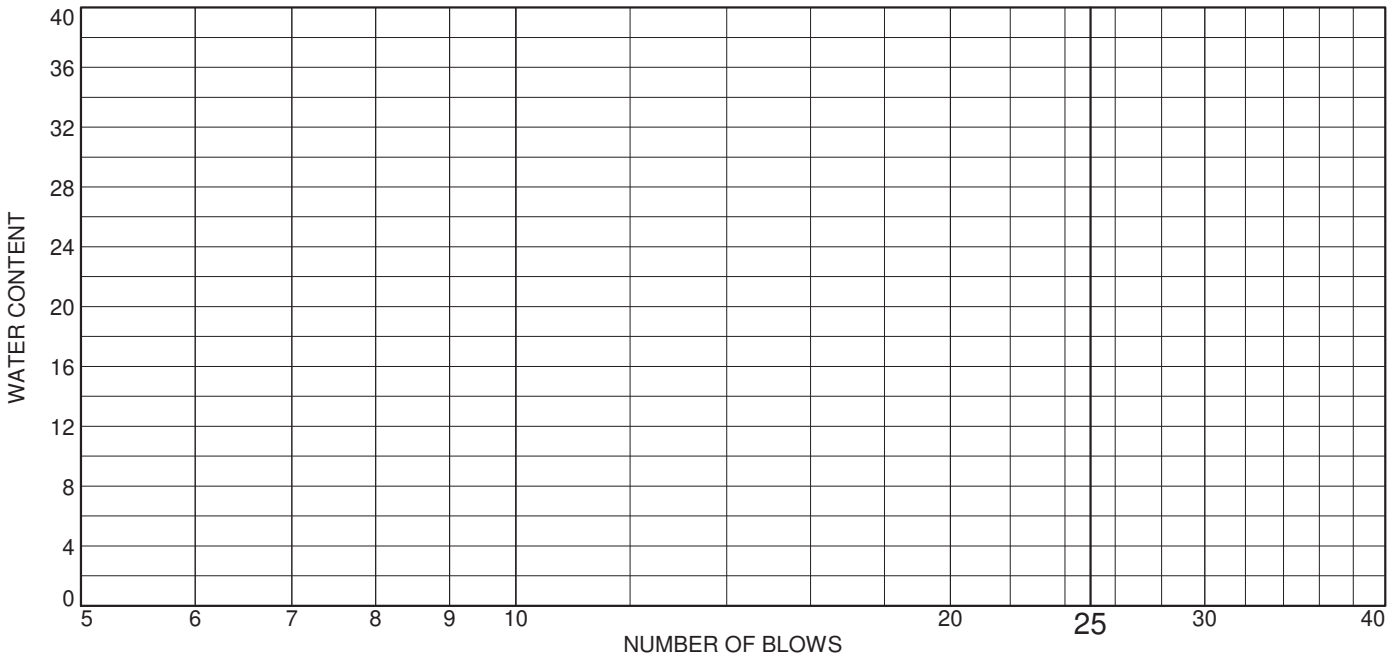
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 61

Tested By: JS **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty SAND *	NV	NP	NP	96.2	19.7	SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-12

Sample Number: A-23017B **Depth:** 0.0 - 2.5 ft

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SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

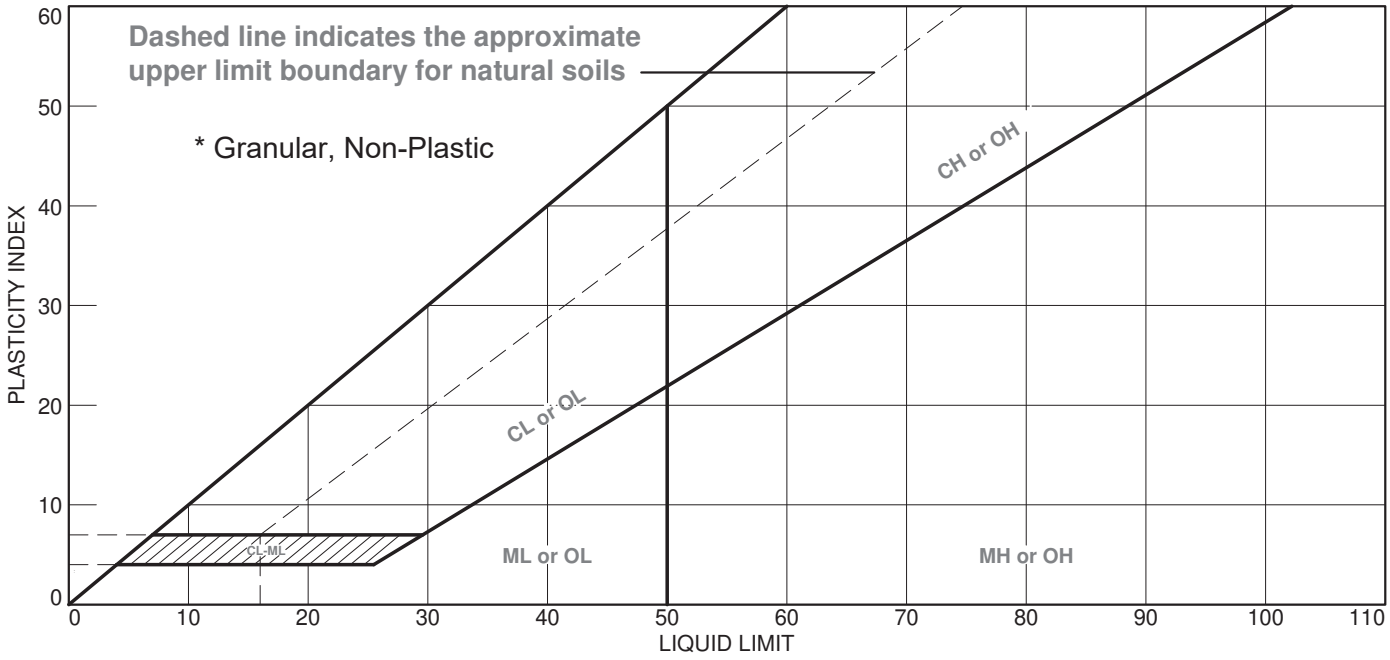
Remarks:

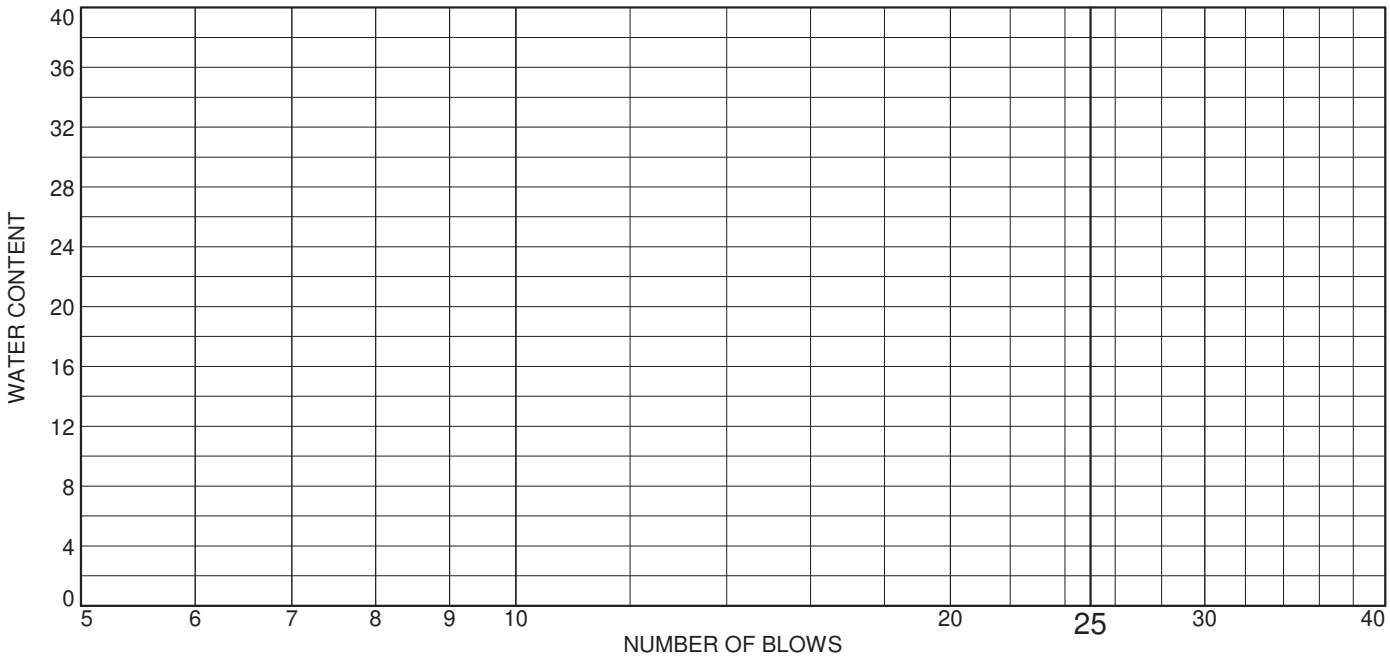
● Report No. A-23017-207
Date: 2-9-2021

Figure 62

Tested By: JS **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty SAND *	NV	NP	NP			SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-12

Sample Number: A-23018 **Depth:** 2.5 - 4.0 ft

Remarks:

● Report No. A-23018-207
Date: 2-22-2021

TD&H

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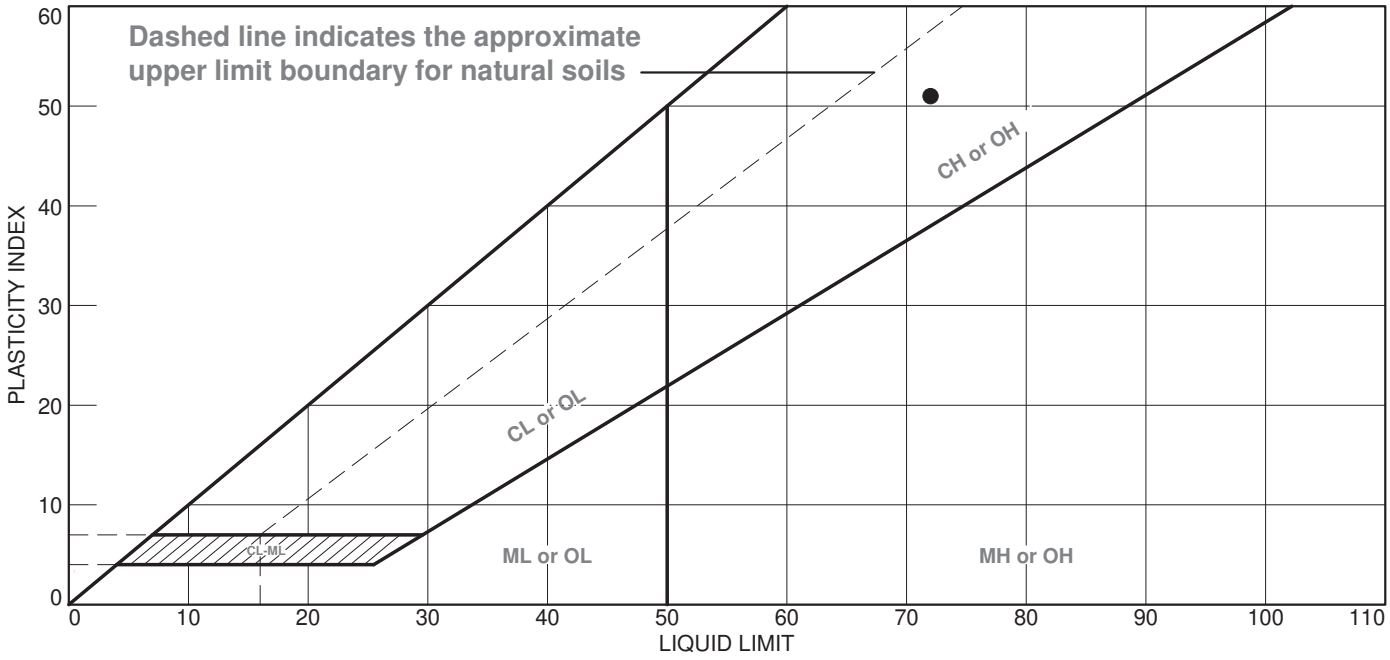
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 63

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	72	21	51			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-12

Sample Number: A-23019 **Depth:** 5.0 - 6.5 ft

Remarks:

● Report No. A-23019-207
Date: 2-22-2021

TD&H

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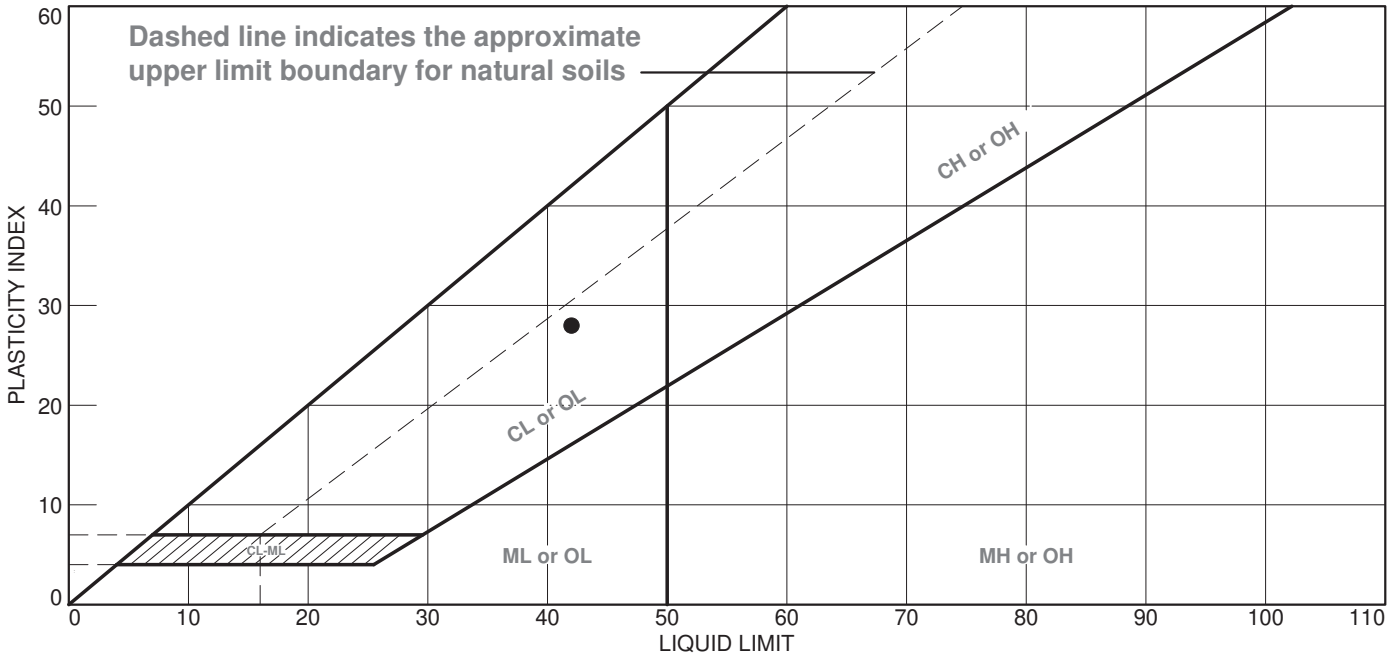
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 64

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Sandy Lean CLAY	42	14	28			CL

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-13

Sample Number: A-23022 **Depth:** 3.3 - 4.0 ft

Remarks:

● Report No. A-23022-207
Date: 2-9-2021

TD&H

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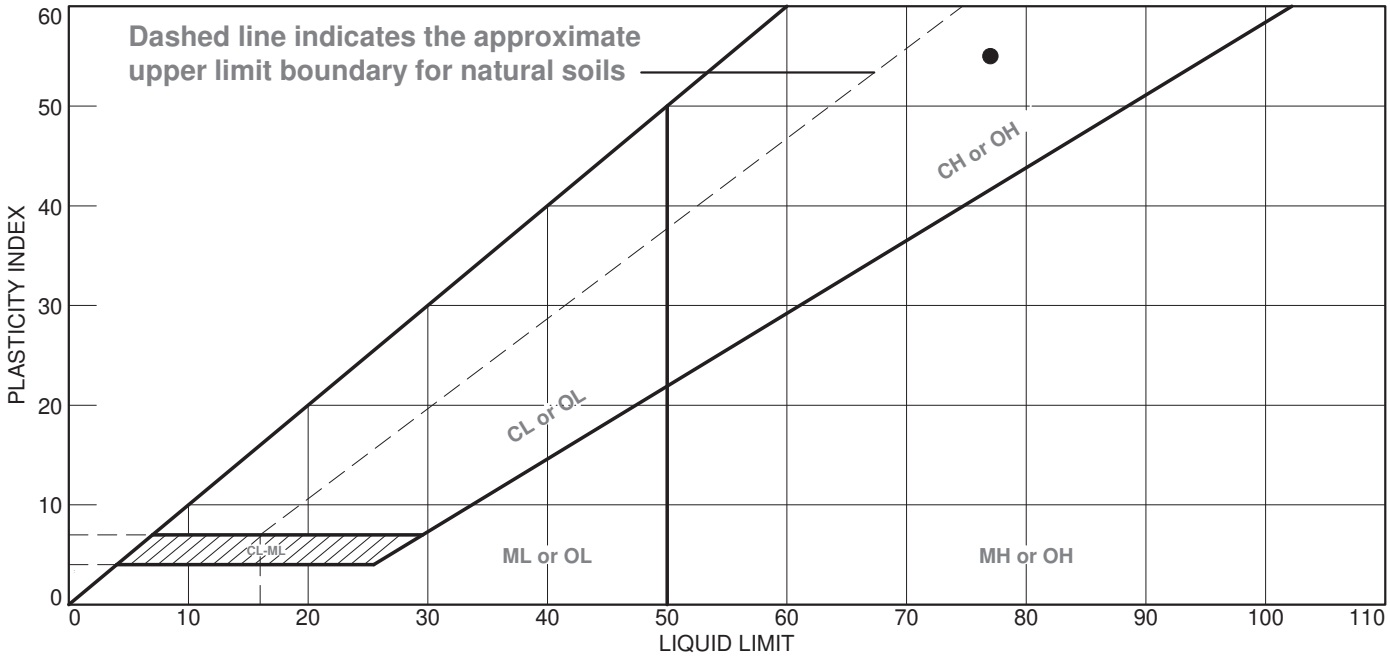
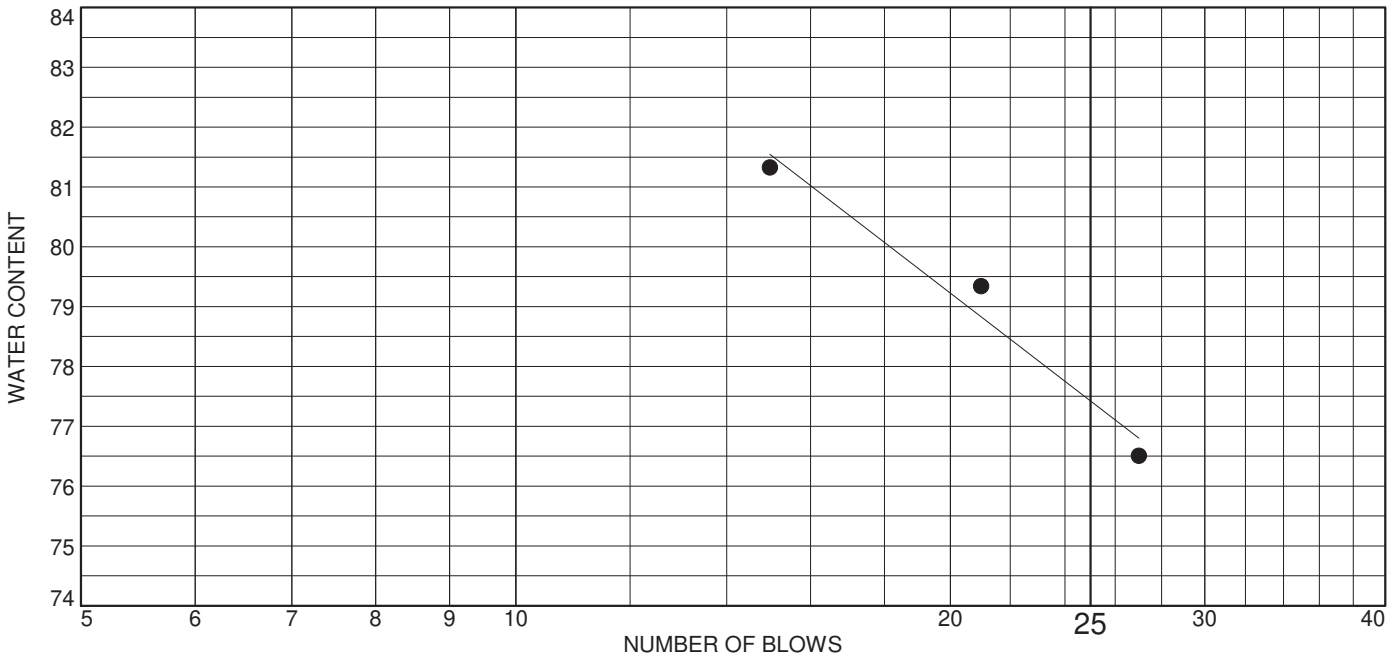
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 65

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	77	22	55			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-13

Sample Number: A-23023 **Depth:** 5.0 - 6.5 ft

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ENGINEERING CONSULTANTS
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SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

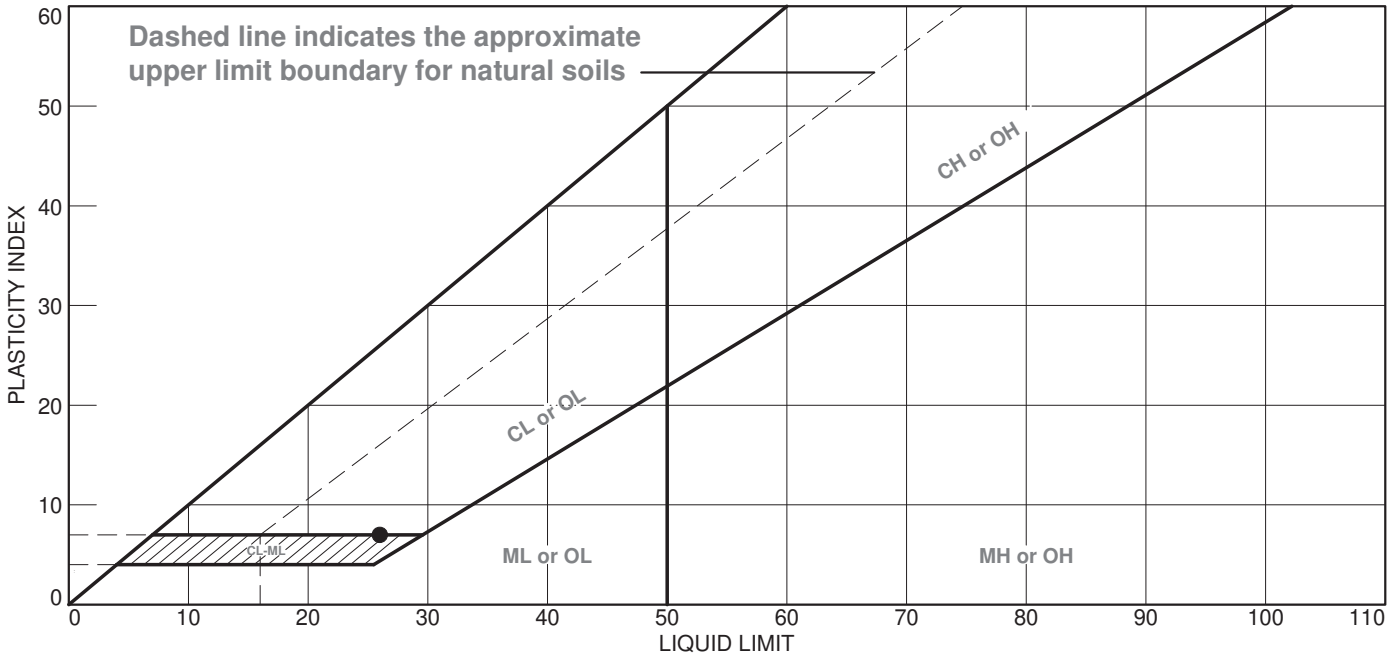
Remarks:

● Report No. A-23023-207
Date: 2-9-2021

Figure 66

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty Clayey SAND	26	19	7	96.2	31.0	SC-SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-14

Sample Number: A-23025 **Depth:** 0.0 - 2.5 ft

Remarks:

● Report No. A-23025-207
Date: 2-9-2021

TD&H

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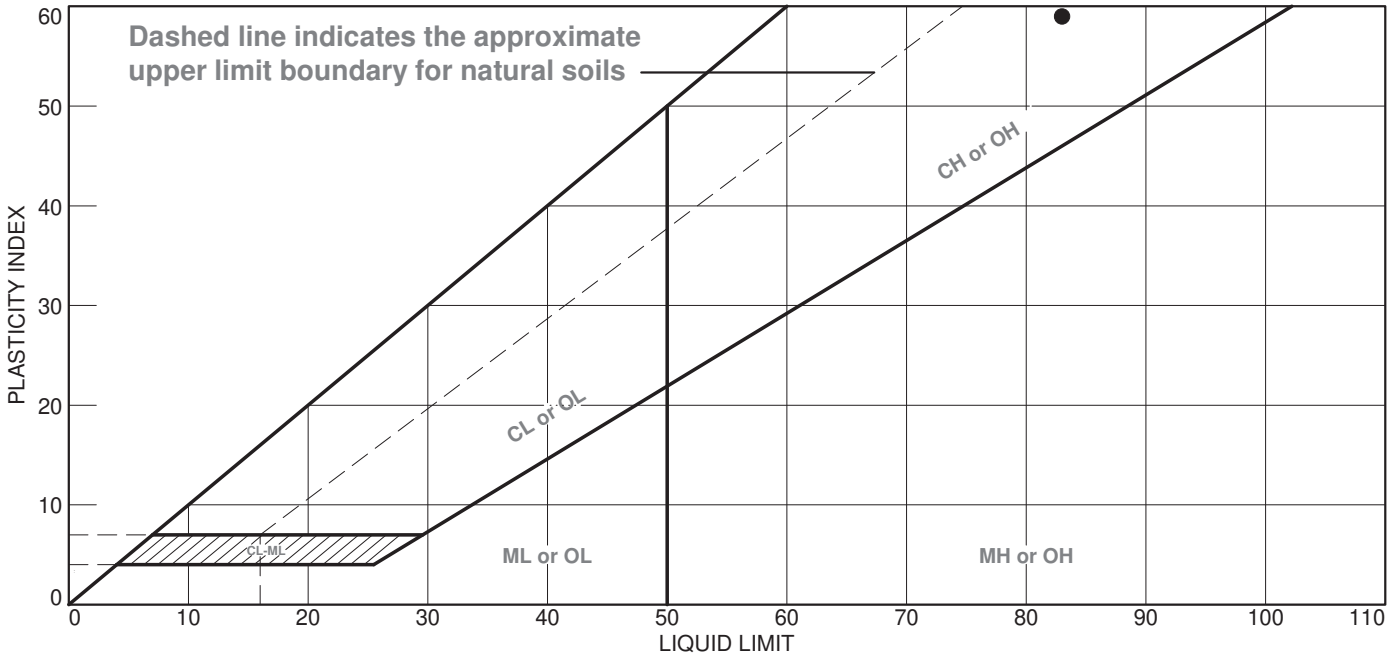
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 67

Tested By: JS **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Fat CLAY	83	24	59			CH

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-14

Sample Number: A-23028 **Depth:** 5.2 - 6.5 ft

Remarks:

● Report No. A-23028-207
Date: 2-12-2021

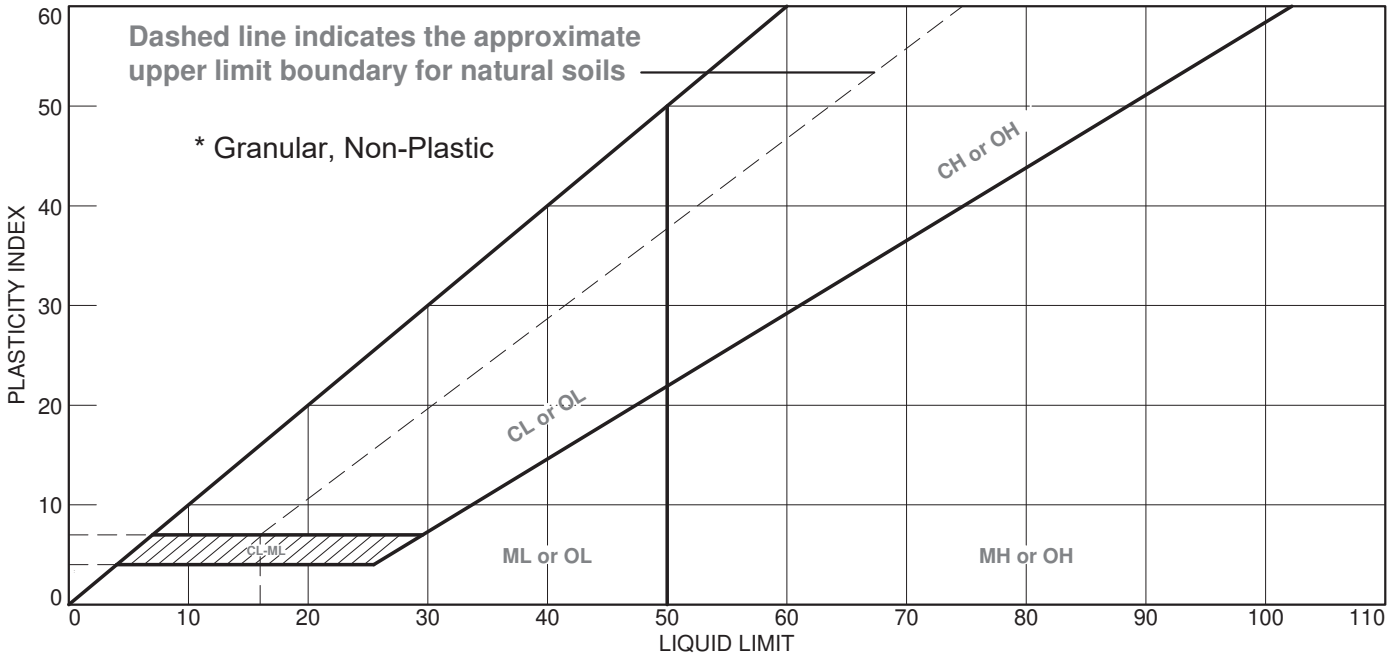
TD&H

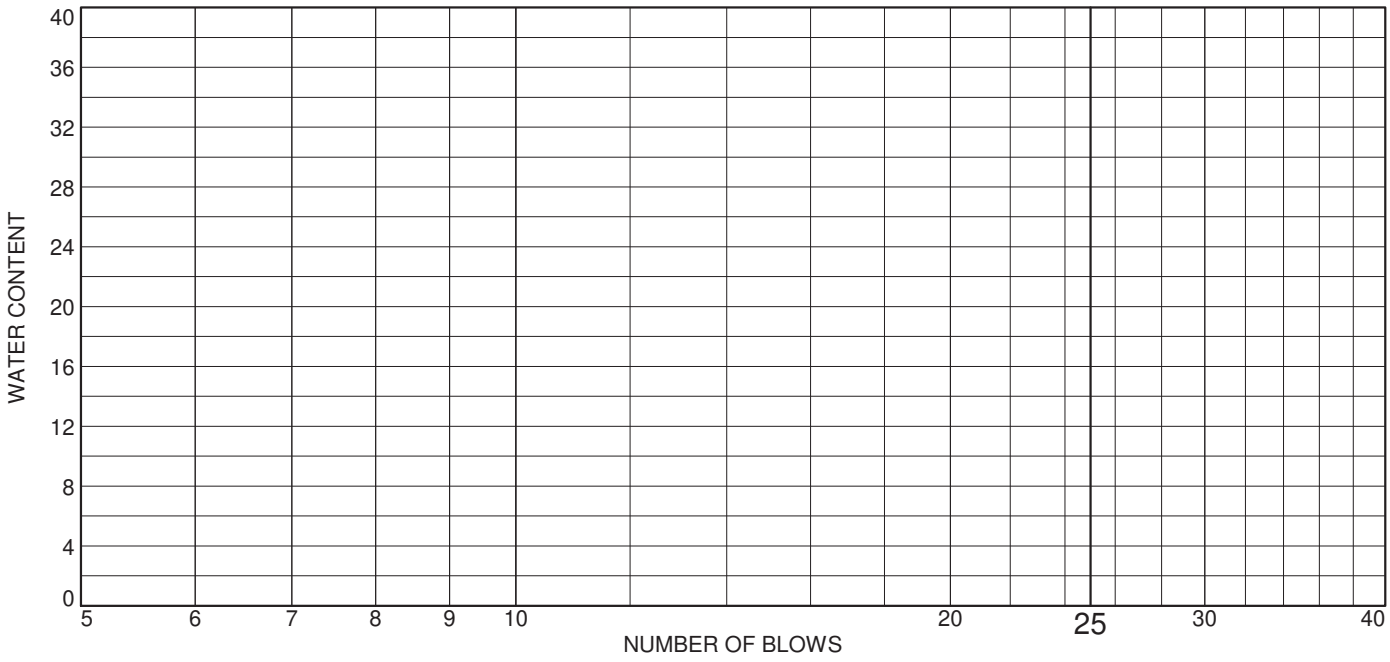
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 68

Tested By: BC **Checked By:** Craig R Madsen

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty SAND *	NV	NP	NP	95.6	20.1	SM

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center

Great Falls, Montana

Location: B-16

Sample Number: A-23035 **Depth:** 0.0 - 2.5 ft

Remarks:

● Report No. A-23035-207
Date: 2-9-2021

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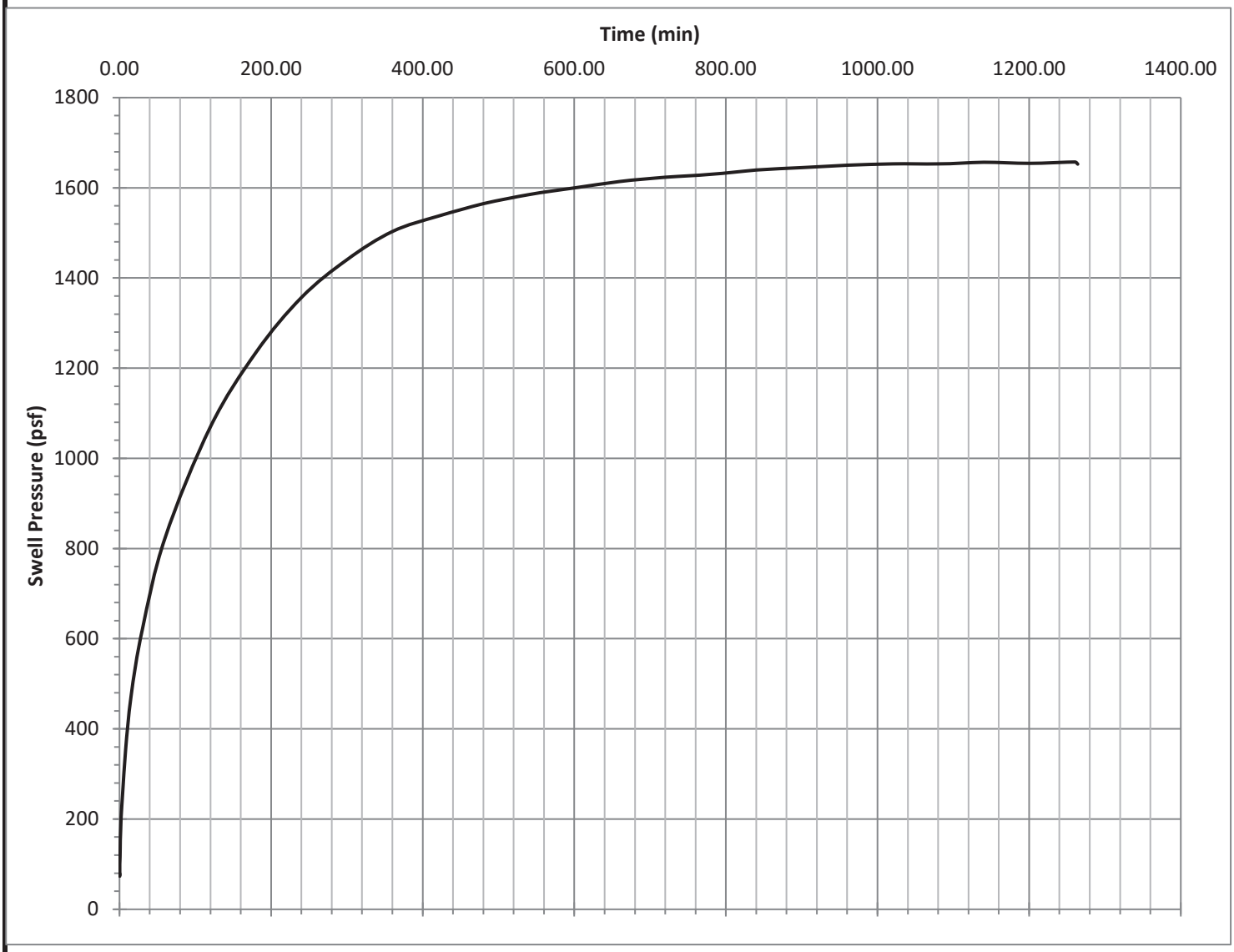
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL
SPOKANE
LEWISTON
MONTANA
WASHINGTON
IDAHO

Figure 69

Tested By: JS **Checked By:** Craig R Madsen

CONSTANT VOLUME SWELL TEST REPORT



Natural Sat.	Natural Moist	Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	Pc (psf)	C_c	C_s	Swell Pressure (psf)	Swell (%)	e_o
97.8	29.4	91.9	75	54	2.65	710	N/A	N/A	N/A	~ 1,650	N/A	0.796

MATERIAL DESCRIPTION	USCS	AASHTO
Fat CLAY	CH	A-7-6

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center
Great Falls, Montana

Location: B-6 **Sample Depth (ft):** 5.0 - 6.5

Remarks:
Report No. A-22979-216

TD&H Engineering

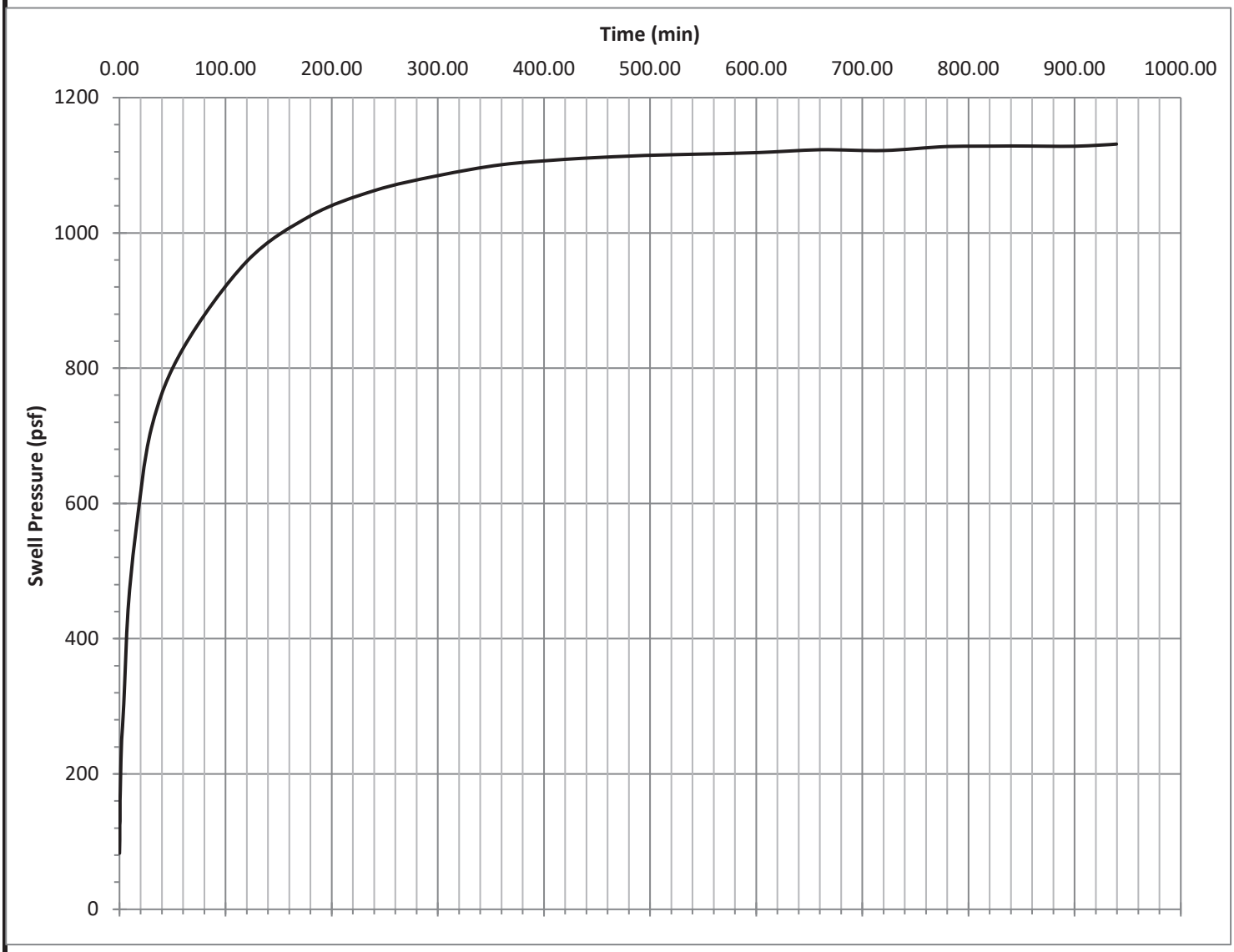
Thomas, Dean & Hoskins, Inc.
Engineering Consultants

Figure 70

Technician: CRN

Reviewed By: Craig R Nadeau

CONSTANT VOLUME SWELL TEST REPORT



Natural Sat.	Natural Moist	Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	Pc (psf)	C_c	C_s	Swell Pressure (psf)	Swell (%)	e_o
98.9	28.4	93.7	82	58	2.65	1320	N/A	N/A	N/A	~ 1,150	N/A	0.761

MATERIAL DESCRIPTION	USCS	AASHTO
Fat CLAY	CH	A-7-6

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center
Great Falls, Montana

Location: B-9 **Sample Depth (ft):** 10.0 - 11.5

Remarks:
Report No. A-23002-216

TD&H Engineering

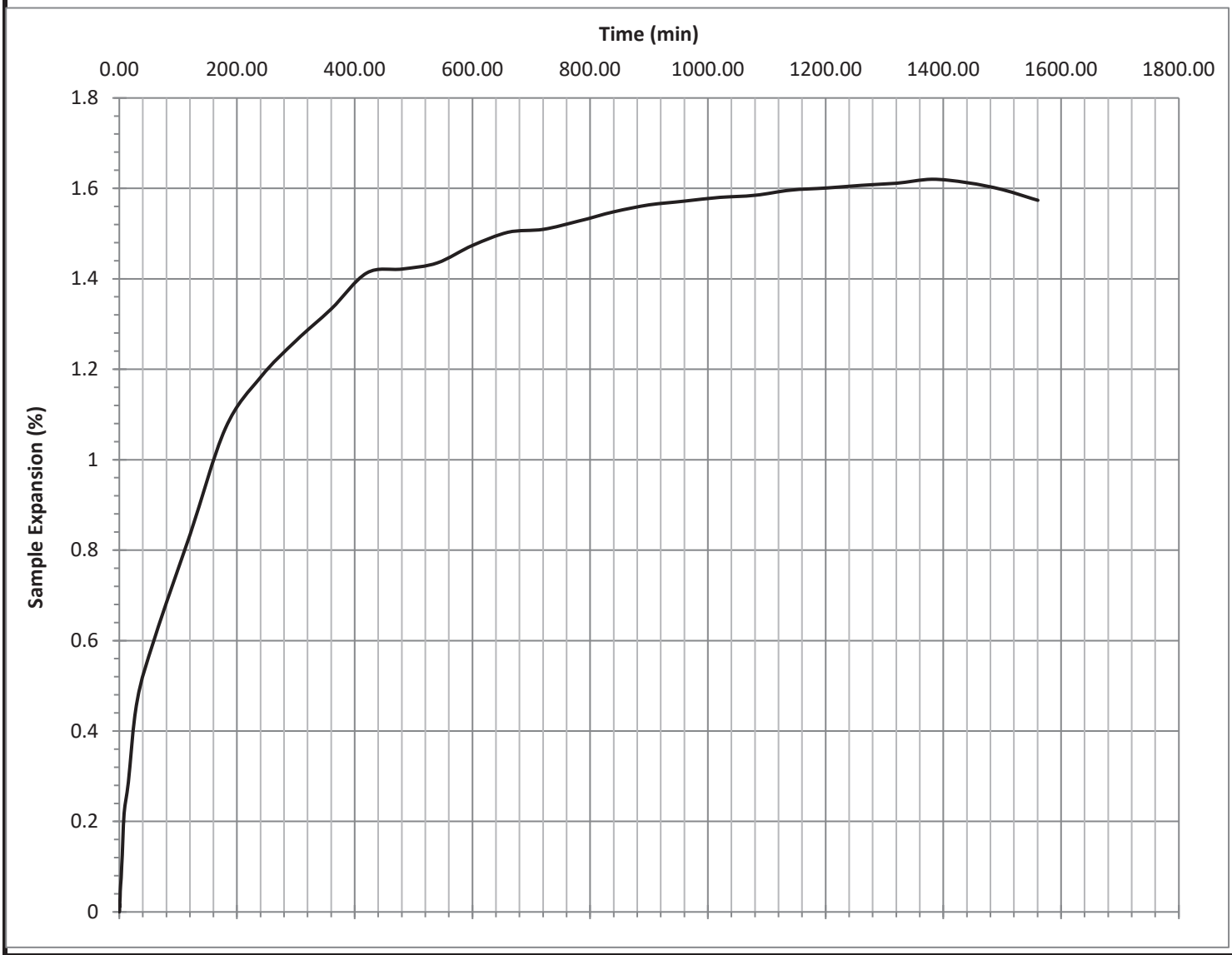
Thomas, Dean & Hoskins, Inc.
Engineering Consultants

Figure 71

Technician: CRN

Reviewed By: Craig R Nadeau

CONSTANT PRESSURE SWELL TEST REPORT



Natural Sat.	Natural Moist	Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	Pc (psf)	C_c	C_s	Test Pressure (psf)	Swell (%)	e_o
99.4	25.5	98.2	82	58	2.65	1350	N/A	N/A	N/A	500	~ 1.6	0.680

MATERIAL DESCRIPTION	USCS	AASHTO
Fat CLAY	CH	A-7-6

Project No. 20-091-001 **Client:** LPW Architects

Project: Recreation Center
Great Falls, Montana

Location: B-9 **Sample Depth (ft):** 10.0 - 11.5 ft

Remarks:
Report No. A-23002-216

TD&H Engineering

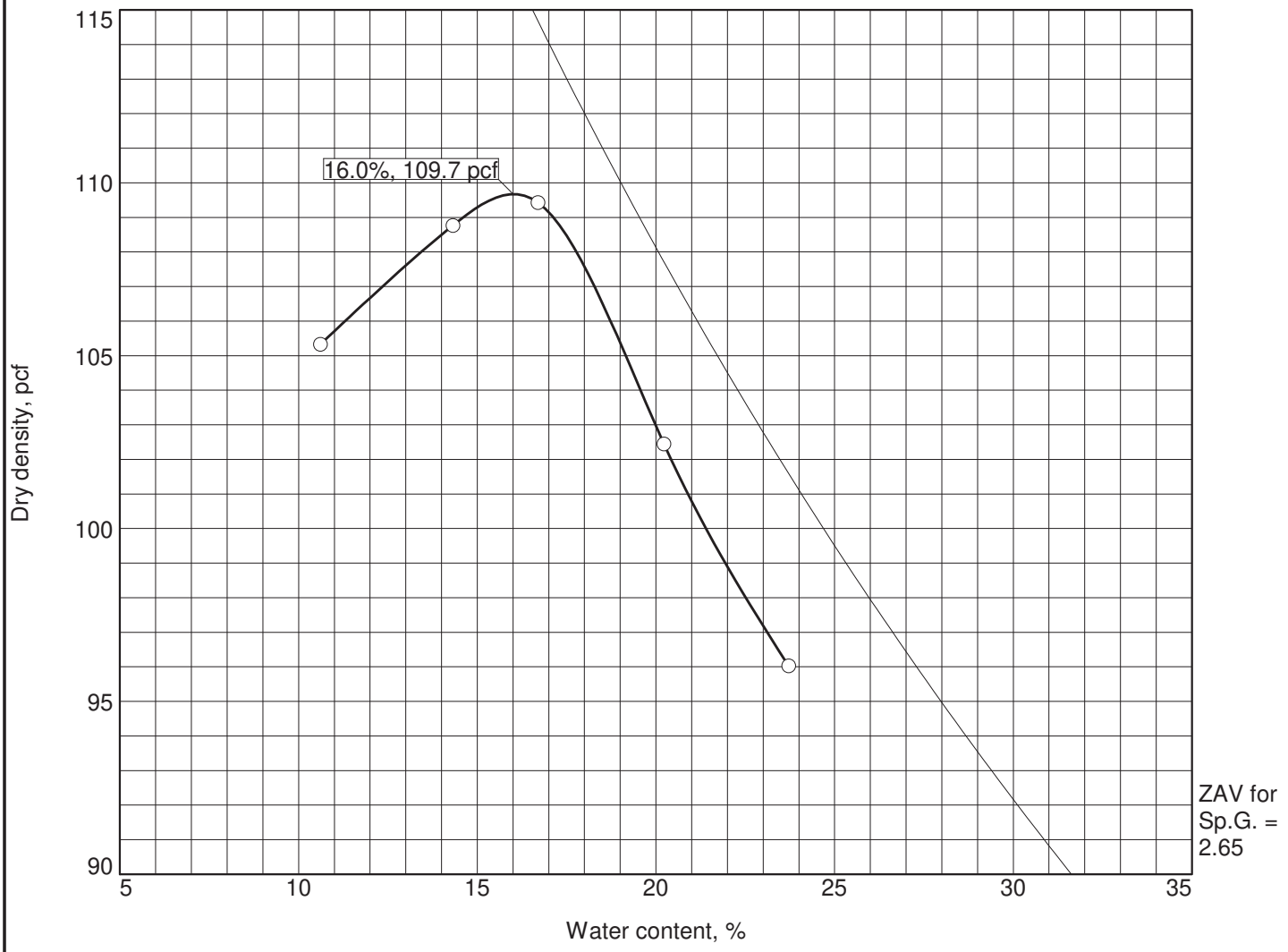
Thomas, Dean & Hoskins, Inc.
Engineering Consultants

Figure 72

Technician: CRN

Reviewed By: Craig R Nadeau

Moisture-Density Test Report



Test specification: ASTM D 698-12 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 2.5 ft	SM			2.65				

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 109.7 pcf Optimum moisture = 16.0 %	Silty SAND

Project No. 20-091-001 **Client:** LPW Architects
Project: Recreation Center
Great Falls, Montana
○ **Location:** B-11/B-14 Comp **Sample Number:** A-23013/23025

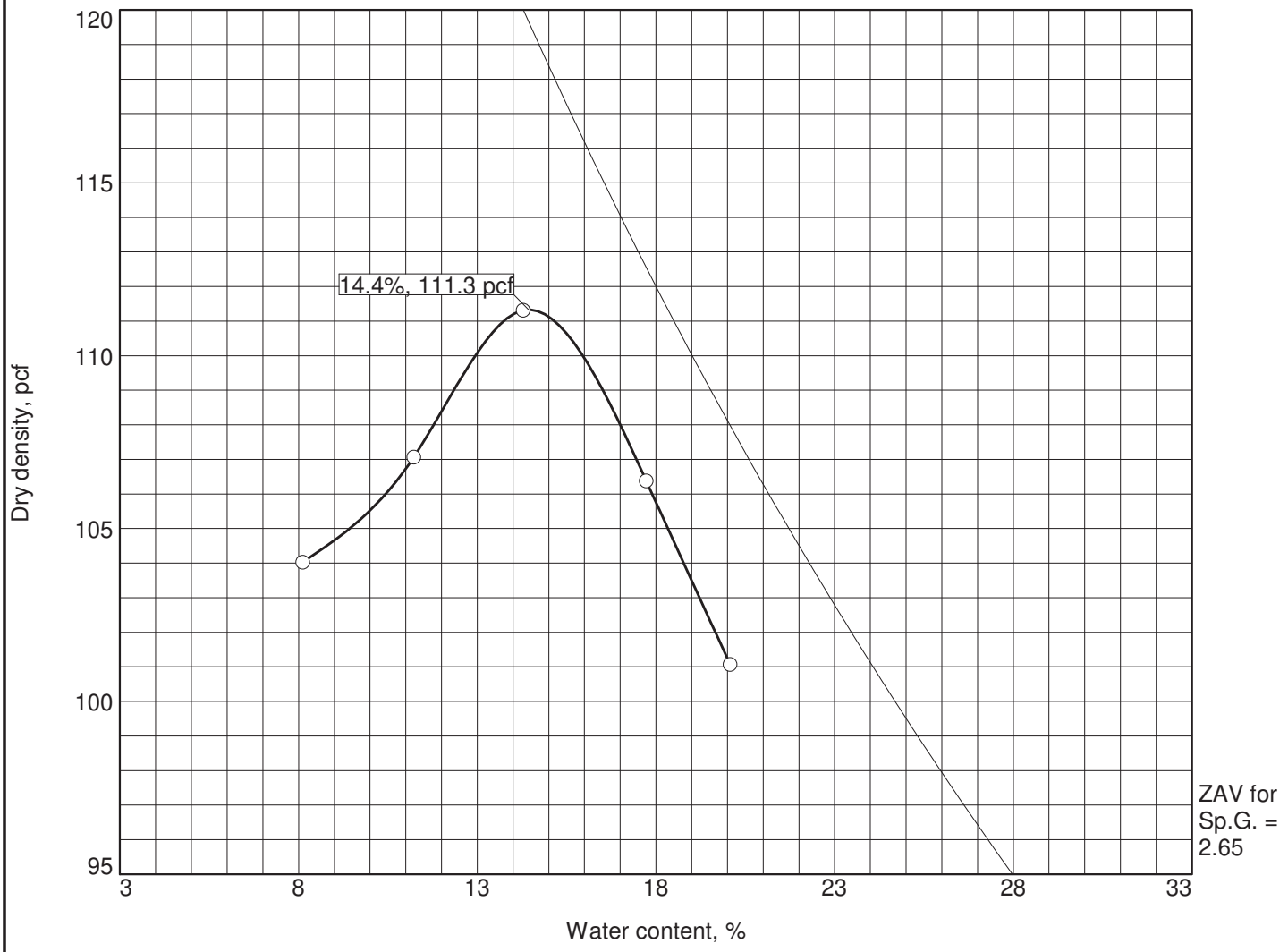
Remarks:
Report No. A-23013/23025-204
Date: 2-11-2021

TD&H
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Figure 73

Tested By: TF **Checked By:** Craig R Madsen

Moisture-Density Test Report



Test specification: ASTM D 698-12 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
0.0 - 2.5 ft	SM			2.65				

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 111.3 pcf Optimum moisture = 14.4 %	Silty SAND

Project No. 20-091-001 **Client:** LPW Architects
Project: Recreation Center
Great Falls, Montana
○ **Location:** B-12/B-16 Comp **Sample Number:** A-23017B/23035

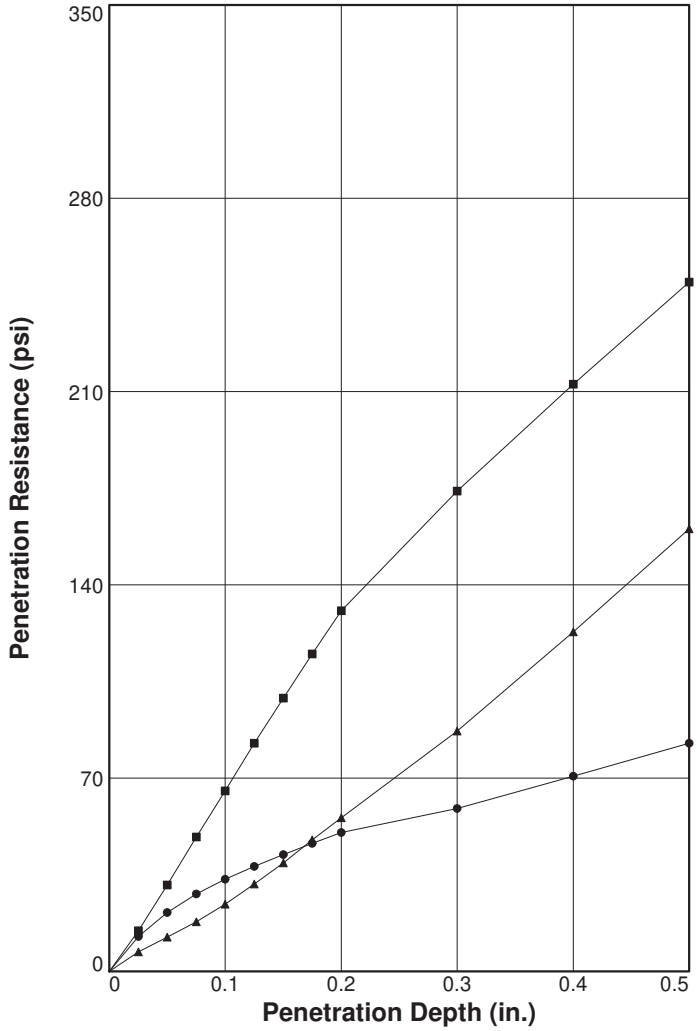
Remarks:
Report No. A-23017B/23035-206
Date: 2-11-2021

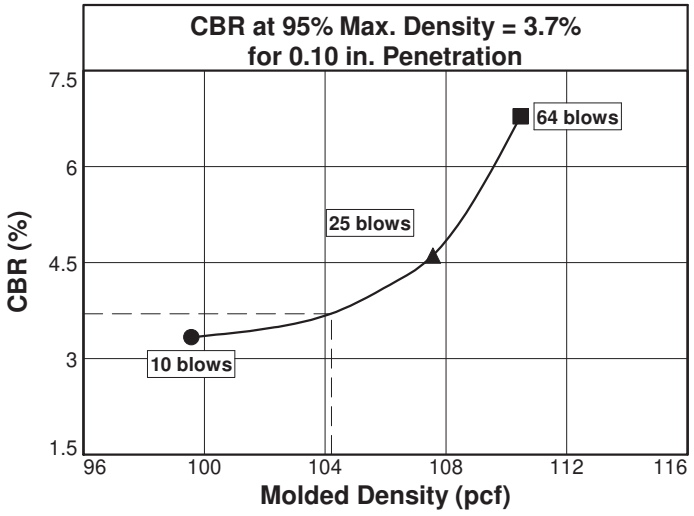
TD&H
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

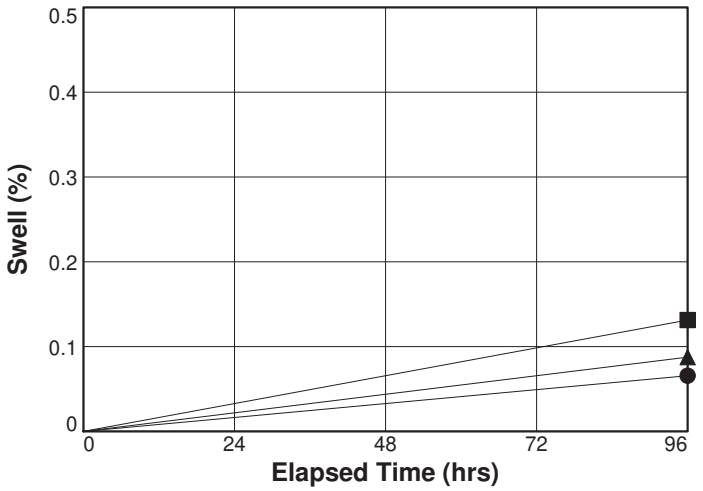
Figure 74

Tested By: TF **Checked By:** Craig R Madsen

BEARING RATIO TEST REPORT
ASTM D1883-16







	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	99.6	90.8	15.8	99.5	90.7	18.9	3.3	3.4	0.000	10	0.1
2 △	107.6	98.1	15.6	107.5	98	16.3	4.6	5.2	0.070	10	0.1
3 □	110.5	100.7	15.5	110.3	100.6	15.7	6.8	8.8	0.004	10	0.1

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Silty SAND	SM	109.7	16.0		

Project No: 20-091-001

Project: Recreation Center Great Falls, Montana

Location: B-11/B-14 Comp

Sample Number: A-23013/23025 **Depth:** 0.0 - 2.5 ft

Date: 1-28-2021

Craig R Nadeau

TD&H

THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

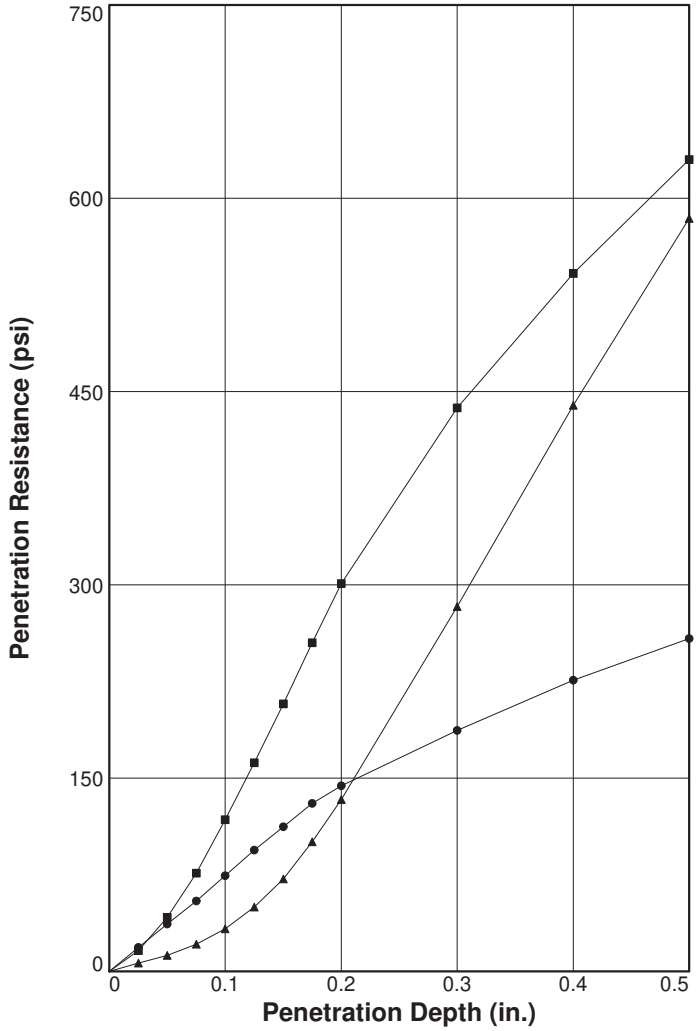
Test Description/Remarks:

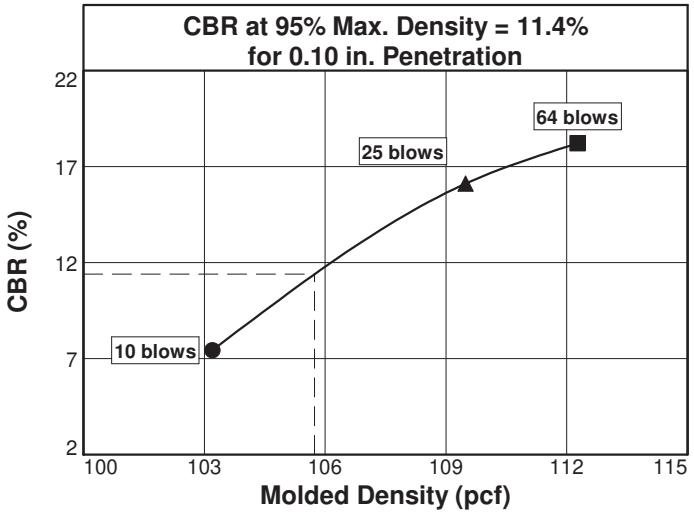
ASTM D698 with 6-inch mold
96-hour soak prior to testing

Report No. A-23013/23025-210
Date: 2-24-2021

Figure 75

BEARING RATIO TEST REPORT
AASHTO T 193-13





	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	103.2	92.7	13.6	103.2	92.7	16.7	7.4	9.6	0.000	10	0
2 △	109.5	98.4	13.6	109.5	98.4	14.4	16.1	20.8	0.119	10	0
3 □	112.3	100.9	13.9	112.3	100.9	13.6	18.2	23.3	0.036	10	0

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Silty SAND	SM	111.3	14.4		

Project No: 20-091-001

Project: Recreation Center Great Falls, Montana

Location: B-12/B-16 Comp

Sample Number: A-23017B/23035 **Depth:** 0.0 - 2.5 ft

Date: 1-28-2021

Craig R Nadeau

TD&H

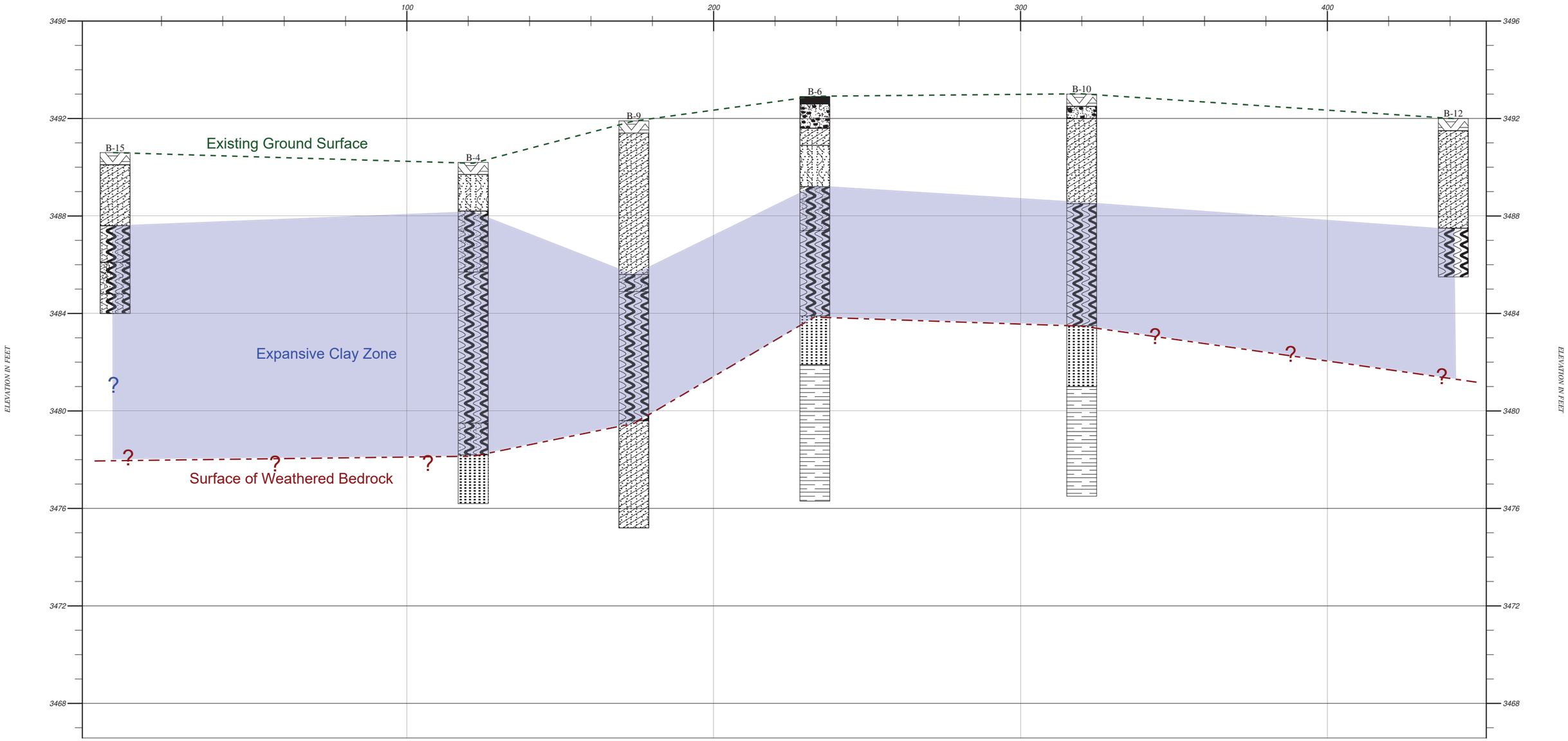
THOMAS, DEAN & HOSKINS, INC.
ENGINEERING CONSULTANTS
GREAT FALLS - BOZEMAN - KALISPELL MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO

Test Description/Remarks:

ASTM D698 with 6-inch mold
96-hour soak prior to testing

Report No. A-23017B/23035-210
Date: 2-24-2021

Figure 76



TOPSOIL

Silty SAND

Sandy Fat CLAY

Fat CLAY with Sand

Clayey SAND

Fat CLAY

SANDSTONE

Asphalt PAVEMENT

Poorly-Graded GRAVEL with Clay and Sand

SHALE
CLAYSTONE
MUDSTONE

Thomas, Dean & Hoskins, Inc.
TD&H
Engineering Consultants

Thomas, Dean & Hoskins

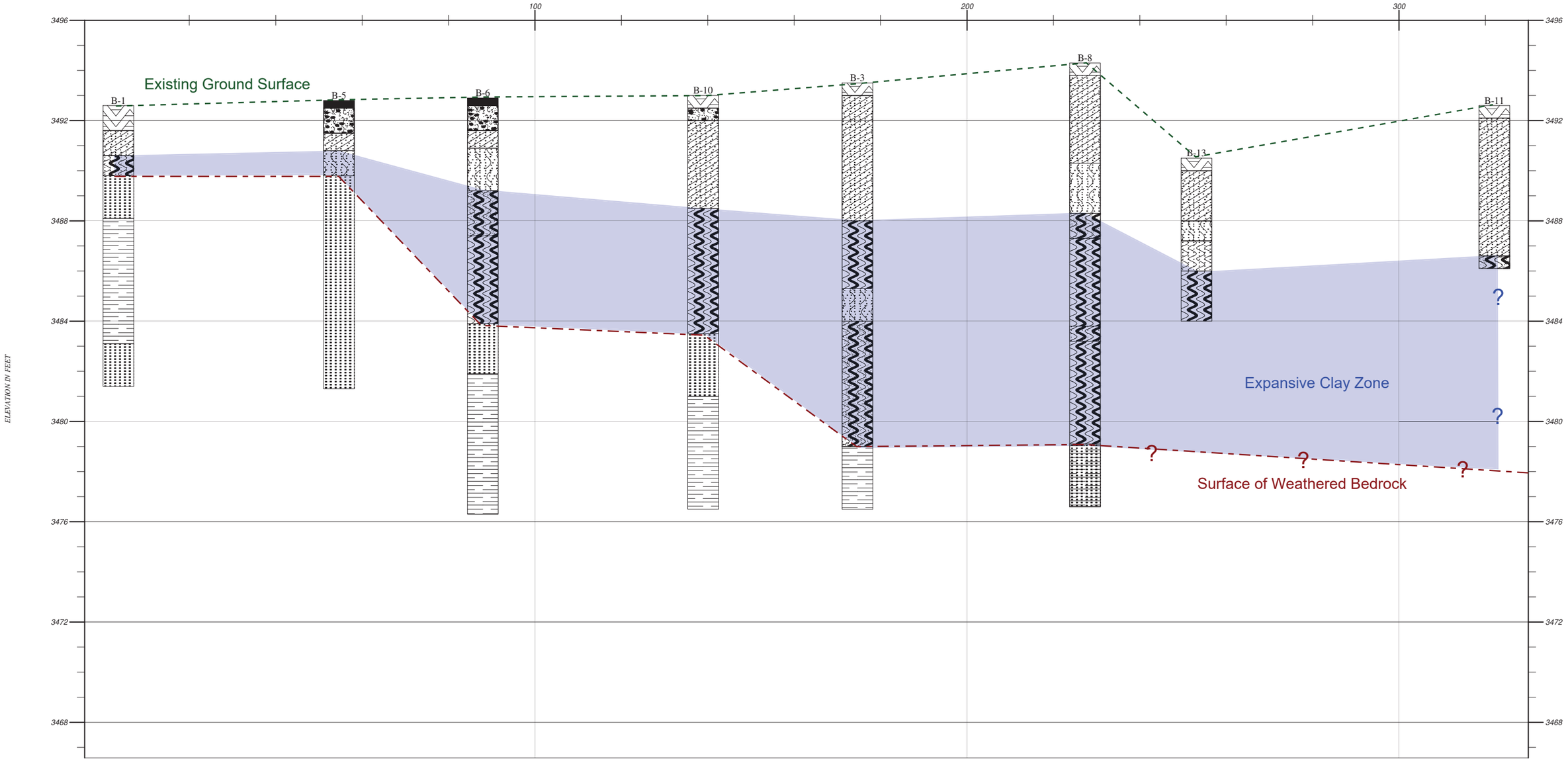
SUBSURFACE SOIL PROFILE

HORIZONTAL SCALE: 1"=(proportional)'	DRAWN BY: Craig Nadeau, PE	DATE DRAWN: 3/8/2021
VERTICAL SCALE: 1"=4'		

Recreation Center
Great Falls, Montana

PROJECT NO. 20-091-001

FIGURE 77



TOPSOIL

Silty SAND

Sandy Fat CLAY

SANDSTONE

SHALE
CLAYSTONE
MUDSTONE

Asphalt PAVEMENT

Poorly-Graded GRAVEL with Clay and Sand

Clayey SAND

Fat CLAY with Sand

Fat CLAY

Thomas, Dean & Hoskins, Inc.
TD&H
Engineering Consultants

Thomas, Dean & Hoskins
SUBSURFACE SOIL PROFILE

HORIZONTAL SCALE: 1"=(proportional)'	DRAWN BY: Craig Nadeau, PE	DATE DRAWN: 3/8/2021
VERTICAL SCALE: 1"=4'		

Recreation Center
Great Falls, Montana

PROJECT NO. 20-091-001

FIGURE 78

General Project Information

Project Number: 20-091
Project Title: Great Falls Recreation Center
Project Description:

Climatic Data Source (MERRA)

Latitude, Degree: 47.4954
Longitude, Degree: -111.25849

Climatic Data

Lowest Yearly Air Temperature, ºC: -38.90
Low Air Temp Standard Deviation, ºC: 4.76
Yearly Degree-Days > 10 Deg. ºC: 2120.81
High Air Temperature of high 7 days: 33.16
Standard Dev. of the high 7 days: 2.08
Low Pavement Temperature 50%: -29.80
Low Pavement Temperature 98%: -38.10
High Avg Pavement Temperature of 7 Days 50%: 53.91
High Avg Pavement Temperature of 7 Days 98%: 58.13

Target Rut Depth

Target Rut Depth (mm): 16.5

Temperature Adjustments

Depth of Layer, mm: 0
Base HT PG: 52

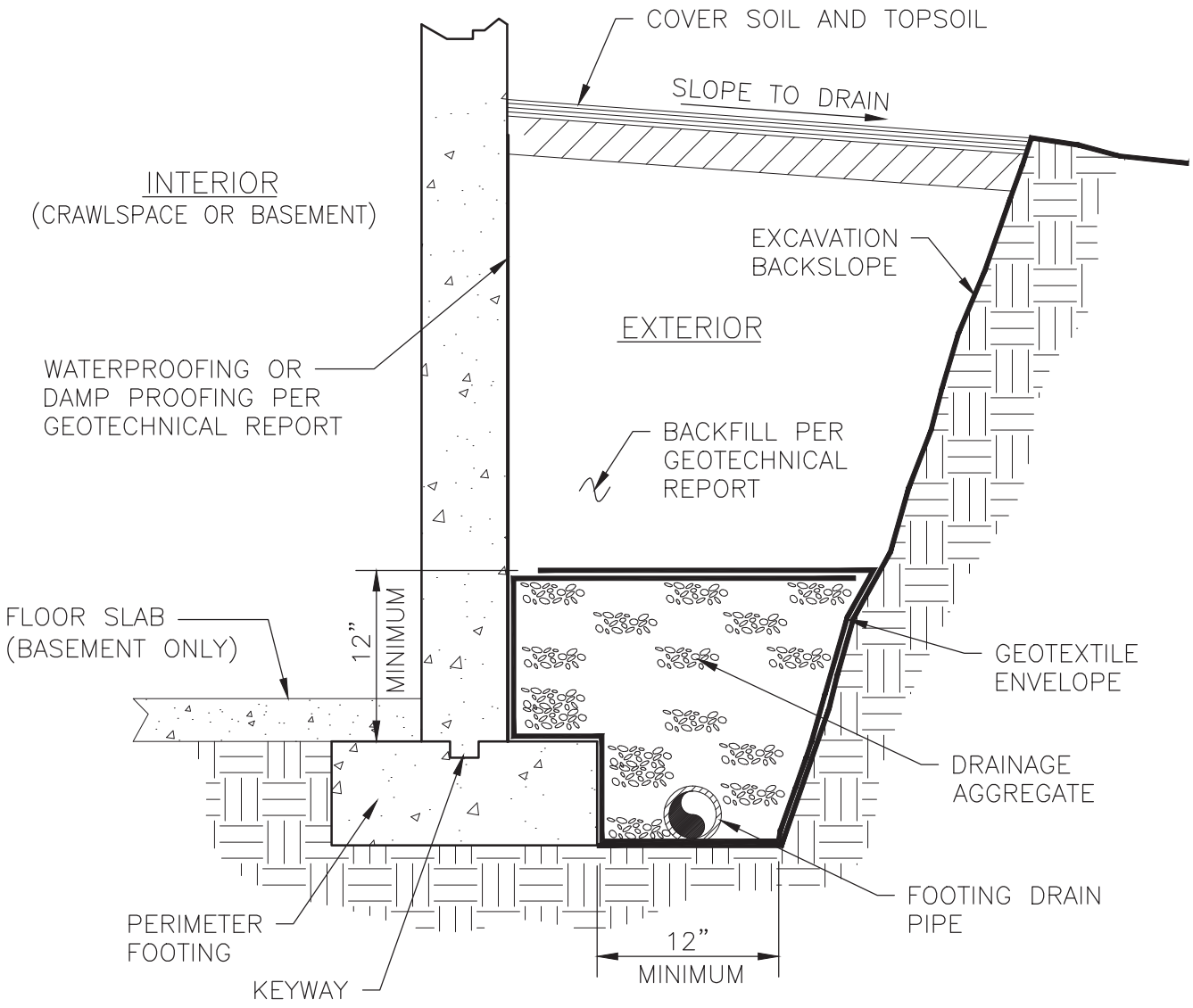
Traffic Adjustments

Traffic loading Cumulative ESAL for the Design Period, Millions: 0.2
Traffic Speed (Fast: >70 km/h, Slow: 20-70 km/h, Standing: < 20 km/h): Standing

Performance Grade

AASHTO M323-13 Performance-Graded Asphalt Binder		
PG Temperature	**High**	**Low**
Performance Grade Temperature at 50% Reliability	40.6	-29.8
Performance Grade Temperature at 98% Reliability	45.7	-38.1
Adjustment for Traffic (AASHTO M323-13)	2.8	
Adjustment for Depth	0.0	-0.0
Adjusted Performance Grade Temperature	48.5	-38.1
Selected PG Grade	**52**	**-40**
PG Grade	**M323, PG 52-40**	

AASHTO M 332-14 Performance-Grade Asphalt Binder using Multiple Stress Creep Recovery (MSCR) Test		
PG Temperature	**High**	**Low**
Performance Grade Temperature at 50% Reliability	40.6	-29.8
Performance Grade Temperature at 98% Reliability	45.7	-38.1
Designation for traffic loading	V	
Selected PG Grade	**46**	**-40**
PG Grade	**M332, PG 46V-40**	
Temperature Report		
Lowest Yearly Air Temperature, ºC:	-38.90	
Low Air Temp Standard Deviation, ºC:	4.76	
Yearly Degree-Days > 10 Deg. ºC:	2120.81	
High Air Temperature of high 7 days:	33.16	
Standard Dev. of the high 7 days:	2.08	
Low Pavement Temperature 50%:	-29.80	
Low Pavement Temperature 98%:	-38.10	
High Avg Pavement Temperature of 7 Days 50%:	53.91	
High Avg Pavement Temperature of 7 Days 98%:	58.13	



PERIMETER FOUNDATION DRAIN
NO SCALE

NOTES

1. FOOTING DRAIN PIPE SHALL CONSIST OF A MINIMUM 3–INCH DIAMETER, GEOTEXTILE–WRAPPED, FLEXIBLE, SLOTTED PIPE, ADVANCED DRAINAGE SYSTEM (ADS) WITH DRAIN GUARD OR APPROVED EQUIVALENT.
2. GEOTEXTILE ENVELOPE SHALL INCLUDE A FULL WIDTH OVERLAY AT THE TOP. GEOTEXTILE SHALL BE SOILTEX ST120N, MIRAFI 140NC OR APPROVED EQUIVALENT.
3. DRAINAGE AGGREGATE SHALL BE WASHED OR SCREENED GRAVEL CONFORMING TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT PASSING
1 1/2–INCH	100
3/4–INCH	75–95
3/8–INCH	10–20
NO. 4	0–5

4. FOOTING DRAINS SHALL HAVE A MINIMUM SLOPE OF 0.2 PERCENT TOWARDS A SUMP PUMP OR DAY–LIGHTED A MINIMUM OF 15 FEET AWAY FROM THE FOUNDATION.

CONSTRUCTION STANDARD NO. 02801-06C

PERIMETER FOUNDATION DRAIN
RESIDENTIAL CONSTRUCTION

TD&H Engineering
tdhengineering.com
GREAT FALLS-BOZEMAN-KALISPELL-SHELBY MONTANA
SPOKANE WASHINGTON
LEWISTON IDAHO
WATFORD CITY NORTH DAKOTA

DRAWN BY:	RLT
DESIGNED BY:	CRN
QUALITY CHECK:	MMJ
DATE:	5/21/15
JOB NO.	
CAD NO.	02801-06C

FIGURE

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 10:58:36 AM)

Site Name: CENEX R.I. *CDH-15
GWIC Id: 134941

Section 1: Well Owner(s)

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SW¼ SW¼

County
CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.49506	-111.261634	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water
MONITORING (1)

Section 4: Type of Work
Drilling Method: AIR ROTARY
Status: NEW WELL

Section 5: Well Completion Date
Date well completed: Tuesday, February 23, 1993

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	25	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	25	2				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
10	25	2		0.020	FACTORY SLOTTED

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0.6	CEMENT	
2.5	9	10-20 SAND	
9	3	BENTONITE	

Section 7: Well Test Data

Total Depth: 25
Static Water Level: 21.33
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log
Geologic Source
Unassigned

From	To	Description
0	0.3	ASPHALT PAVEMENT
0.3	5	SANDY GRAVEL DARK BROWN WITH WOOD CHIPS
5	25	SANDSTONE

Driller Certification
All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BOLAND DRILLING
License No: MWC-42
Date Completed: 2/23/1993

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/31/2006 8:56:49 AM)

Site Name: GILLIGANS ISLAND *DH-101
GWIC Id: 146801

Section 1: Well Owner(s)

1) GILLIGAN,S ISLAND (MAIL)
N/A
GREAT FALLS MT 59401 [05/05/1994]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	17	NE¼ NE¼ NW¼

County

CASCADE

Geocode

Latitude	Longitude	Geomethod	Datum
47.493309	-111.253591	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method: HOLLOWSTEM AUGER
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, May 5, 1994

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	22	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	19.3	2				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
3.4	19	2		.01	FACTORY SLOTTED

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
1.5	3.4	BENTONITE	
3.4	19	10/20 SILICA SAND	

Section 7: Well Test Data

Total Depth: 22
Static Water Level: 15.5
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.5	ASPHALTIC CONCRETE SURFACING
0.5	1	BASE COURSE
1	2	FILL; POORLY-GRADED SAND; LOOSE MOIST; PETROLEUM HYDROCARBON ODOR; SOME BRICK FRAGMENTS; DARK GRAY
2	2.8	FILL FAT CLAY VERY STIFF VERY MOIST PETROLEUM HYDROCARBON ODOR LIGHT GRAY
2.8	4.5	FILL POORLY-GRADED GRAVEL MEDIUM DENSE CLAY FINES SOME BRICKS SLIGHT PETROLEUM HYDROCARBON ODOR; RED BROWN
4.5	6.8	FILL POORLY GRADED SAND LOOSE MOIST INTERBEDDED CLAY LENSES DARK GRAY
6.8	7.7	POORLY GRADED SAND LOOSE VERY STRONG HYDROCARBON ODOR DARK GRAY
7.7	11.4	SANDY FAT CLAY STIFF VERY MOIST ROOTLETS MINOR PETROLEUM HYDROCARBON ODOR; GRAY SAND LENS 10.9 TO 11.4'; TRACE ROOTS; STRONG PETROLEUM HYDROCARBON ODOR; GRAY
11.4	12.6	FAT CLAY STRONG PETROLEUM HYDROCARBON ODOR; VARVED BROWN WITH GRAY LAYERS
12.6	13.7	POORLY-GRADED TO SILTY SAND; MEDIUM DENSE MOIST VERY STRONG PETROLEUM HYDRCARBON ODOR; BROWN TO REDDISH BROWN BELOW 13.0'
13.7	15	SANDY LEAN CLAY STIFF MOIST PETROLEUM HYDROCARBON ODOR; GRAY-BROWN
15	16.8	CLAYEY SAND STRONG PETROLUEM HYDROCARBON ODOR BECOMES DENSER @ 16.5'
16.8	17.3	WEATHERED SANDSTONE WET TO SATURATED ZONE @ 16.8' TO 17.3'; TRACE PETROLEUM SHEEN ON WET ROCK
17.3	19.3	SANDSTONE MODERATELY HARD THINLY LAYERED FRIABLE NO NOTICABLE PETROLEUM HYDROCARBON ODOR; LIGHT GRAY-TAN
19.3	22	COMPLETELY WEATHERED SANDY SHALE; TRACE LAYERING PETROLEUM HYDROCARBON ODOR; BROWN

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:03:37 AM)

Site Name: CHUCKS EXXON * CE-MW5
GWIC Id: 167497

Section 1: Well Owner(s)

1) ZADICK, BOB (MAIL)
3051 10TH AVE S
GREAT FALLS MT 59405 [01/30/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SE¼ SW¼

County: CASCADE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.49506	-111.256215	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
3481.9			

Addition: **Block:** **Lot:**

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method:
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, January 30, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	2	12
2	19	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	19	2				PVC-SCHED40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
9	19	2		.020	SCREEN-CONTINUOUS-PVC

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	8	CONCRETE BENTONITE	
8	19	10/20 GRAVEL	

Section 7: Well Test Data

Total Depth: 19
Static Water Level: 15
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.3	ASPHALT
0.3	1	GRAVEL SANDY BROWN
1	6	SANDY CLAY LIGHT BROWN SLIGHTLY MOIST FILL
6	7	SAND FINE TO MED GRAINED SLIGHTLY MOIST DARK BROWN
7	13	CLAY FAT FIRM BROWN & GRAY
13	15	SILT CLAY LIGHT BROWN SLIGHTLY MOIST
15	17	VERY FINE SAND MINOR SILT INCREASINGLY MOIST PETRO ODOR LT BROWN TO GRAY
17	18	VERY SOFT SILT SANDY LT BROWN SATURATED PETRO ODOR
18	19	SAND MINOR CLAY AND SILT BROWN MOIST CLAY SHALE BEDROCK LT BROWN DRY

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: LEWISTOWN FOUR STAR
License No: WWC-240
Date Completed: 1/30/1998

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:03:46 AM)

Site Name: CHUCKS EXXON * CE-MW4
GWIC Id: 167498

Section 1: Well Owner(s)

1) ZADICK, BOB (MAIL)
3051 10TH AVE S
GREAT FALLS MT 59405 [01/30/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SE¼ SW¼

County: CASCADE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.49506	-111.256215	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
3481.1			

Addition: **Block:** **Lot:**

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method:
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, January 30, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	2	12
2	20	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	20	2				PVC-SCHED40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
0	0	2		.020	SCREEN-CONTINUOUS-PVC

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	CONCRETE BENTONITE	

Section 7: Well Test Data

Total Depth: 20
Static Water Level: 13.7
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.5	CONCRETE
0.5	1.2	GRAVEL SANDY BROWN SLIGHTLY MOIST
1.2	5.5	SANDY CLAY LIGHT BROWN SLIGHTLY MOIST
5.5	7	SAND FINE TO MED GRAINED DARK BROWN TO GRAY
7	10.5	CLAY FAT FIRM BROWN
10.5	12	VERY FINE SAND SILTY LT BROWN MINOR CLAY MOIST
12	15.5	SILT MINOR CLAY & VERY FINE SAND IRON MOTTLING BROWN & SLIGHTLY MOIST
15.5	17.5	VERY FINE SAND MINOR SILT NON PLASTIC VERY MOIST
17.5	20	CLAY SHALE BEDROCK

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: LEWISTOWN FOUR STAR
License No: WWC-240
Date Completed: 1/30/1998

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:04:16 AM)

Site Name: CHUCKS EXXON * CE-AIW NO.1
GWIC Id: 167499

Section 1: Well Owner(s)

1) ZADICK, BOB (MAIL)
3051 10TH AVE S
GREAT FALLS MT 59405 [01/30/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SE¼ SW¼

County: CASCADE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.49506	-111.256215	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
3481.8			

Addition: **Block**: **Lot**:

Section 3: Proposed Use of Water

INJECTION (1)

Section 4: Type of Work

Drilling Method:
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, January 30, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	2	12
2	20	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	18	2				PVC-SCHED40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
0	0	2		.020	SCREEN

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	0	CONCRETE BENTONITE	

Section 7: Well Test Data

Total Depth: 18
Static Water Level: 15
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

110ALVM - ALLUVIUM (QUATERNARY)

From	To	Description
0	0.5	CONCRETE
0.5	1	SAND GRAVELLY BROWN
1	5	SANDY CLAY LIGHT BROWN SLIGHTLY MOIST PETRO ODOR
5	7	SAND FINE TO MED GRAINED SLIGHTLY MOIST ROOTS DARK BROWN POSSIBLE PETRO ODOR
7	12	CLAY FAT FIRM BROWN & GRAY TRACE OF GRAVEL
12	12.5	SILT LIGHT BROWN POSSIBLY PRODUCT SATURATED
12.5	15	SILT CLAY LT BRN SLIGHTLY MOIST STRONG PETRO ODOR
15	17	VERY FINE SAND SILTY LOW PLASTICITY MOIST LT BROWN TO GRAY PETRO ODOR
17	18	SAND SILTY CLAY BROWN SATURATED

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: LEWISTOWN FOUR STAR
License No: WWC-240
Date Completed: 1/30/1998

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:03:26 AM)

Site Name: CHUCKS EXXON * CE-MW6
GWIC Id: 167501

Section 1: Well Owner(s)

1) ZADICK, BOB (MAIL)
3051 10TH AVE S
GREAT FALLS MT 59405 [01/30/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SE¼ SW¼

County: CASCADE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.49506	-111.256215	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
3481.6			

Addition: **Block**: **Lot**:

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method:
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, January 30, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	2	12
2	20	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	20	2				PVC-SCHED40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
0	0	2		.020	SCREEN-CONTINUOUS-PVC

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	CONCRETE BENTONITE	
0	0	10/20 GRAVEL	

Section 7: Well Test Data

Total Depth: 20
Static Water Level: 15
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.3	ASPHALT
0.3	1	SANDY BROWN GRAVEL
1	5	SANDY CLAY LT BROWN SLIGHTLY MOIST
5	7	SAND MINOR SILT FINE TO MED GRAINED DK BROWN
7	11	CLAY FAT FIRM BROWN & GRAY
11	14	SILT CLAY LT BROWN NEARLY DRY
14	16.5	VERY FINE SAND MINOR SILT CLAY & SMALL GRAVEL MOIST TO SATURATED
16.5	20	CLAY SHALE BEDROCK LT BROWN

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: LEWISTOWN FOUR STAR
License No: WWC-240
Date Completed: 1/30/1998

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:03:57 AM)

Site Name: ZEDICK BOB * MW-8
GWIC Id: 173878

Section 1: Well Owner(s)

1) ZEDICK, BOB (MAIL)
1053 10TH AVE S
GREAT FALLS MT 59405 [11/10/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SW¼ SE¼ SW¼

County CASCADE **Geocode**

Latitude	Longitude	Geomethod	Datum
47.49506	-111.256215	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method:
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Tuesday, November 10, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	20	7

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	20	2				PVC-SCHED40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
9.5	19.5	2		.020	SCREEN-CONTINUOUS-PVC

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
1	9	BENTONITE	
9	20	GRAVEL	

Section 7: Well Test Data

Total Depth: 20
Static Water Level: 13.28
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.3	ASPHALT
0.3	1	GRAVEL
1	5	CLAY SANDY LIGHT BROWN
5	7	CLAY SANDY MORE SILT SLIGHTLY MOIST
7	8	GRAVEL SILTY SAND
8	10	SILT CLAYEY MINOR SAND
10	16.5	SILT SANDY VERY FINE GRAINED MILOR SILT & CLAY MOIST
16.5	20	CLAY SHALE BEDROCK LIGHT BROWN

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BOLAND DRILLING
License No: WWC-272
Date Completed: 11/10/1998

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/28/2006 11:01:47 AM)
View scanned well log (8/11/2009 2:55:49 PM)

Site Name: CHUCKS EXXON * MW-2
GWIC Id: 173879

Section 1: Well Owner(s)

1) CHUCKS EXXON * MW-2 (MAIL)
32ND & 10TH AVE S
GREAT FALLS MT 59401 [06/13/1997]

Section 2: Location

Township	Range	Section	Quarter Sections
20N	04E	8	SE¼ SE¼ SW¼

County CASCADE **Geocode**

Latitude	Longitude	Geomethod	Datum
47.49506	-111.253506	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

MONITORING (1)

Section 4: Type of Work

Drilling Method: AUGER/ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, June 13, 1997

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	30	8

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
0	30	2				PVC-SCHED 40

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
15	30	2		.020	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	12	BENTONITE	
12	30	SILICA SAND	

Section 7: Well Test Data

Total Depth: 30
Static Water Level: 12.08
Water Temperature:

Unknown Test Method *

Yield _ gpm.
Pumping water level _ feet.
Time of recovery _ hours.
Recovery water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	0.3	CEMENT
0.3	1	SAND
1	18	CLAY W/SAND LAYERS
18	26	SANDSTONE
26	30	SANDSTONE W/CLAY LAYERS

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name:
Company: BOLAND DRILLING
License No: -
Date Completed: 6/13/1997

TD&H Engineering Consultants
Great Falls, Kalispell, Bozeman, MT
Spokane, WA; Lewiston, ID, Watford City, ND

SOIL CLASSIFICATION AND SAMPLING TERMINOLOGY FOR ENGINEERING PURPOSES

STANDARD PENETRATION TEST (ASTM D1586)

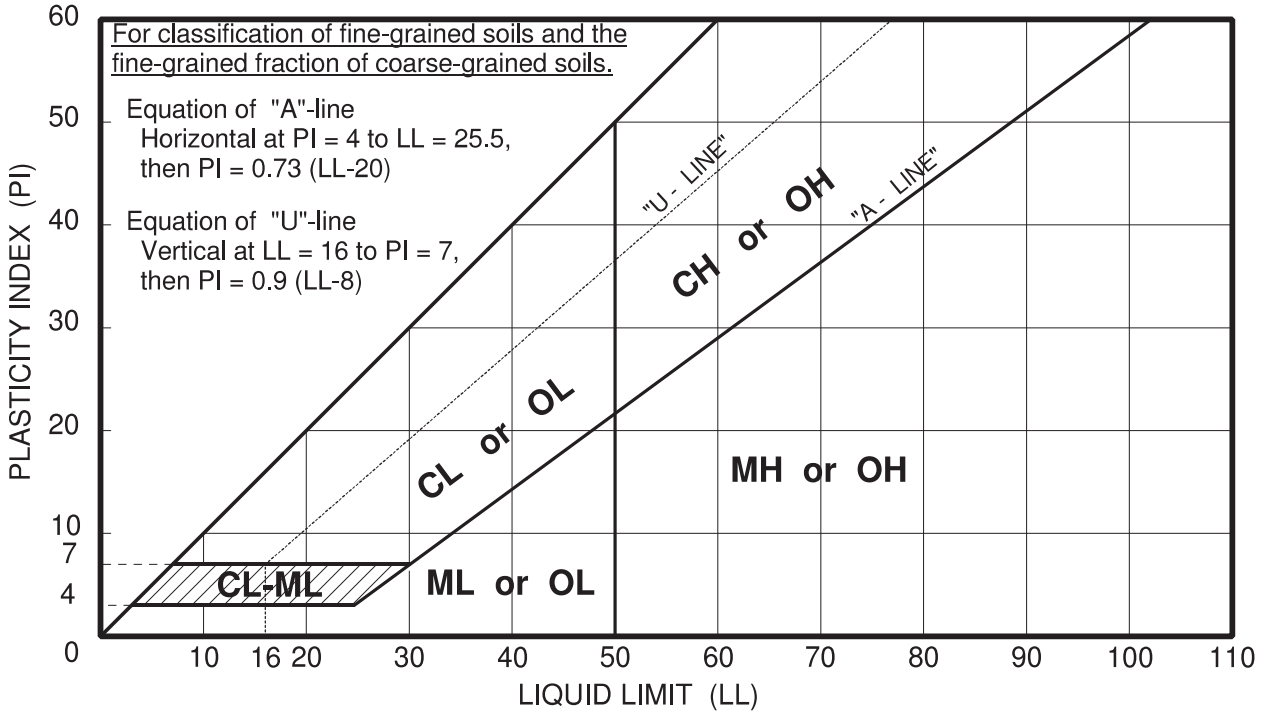
RELATIVE DENSITY*		RELATIVE CONSISTENCY*	
Granular, Noncohesive (Gravels, Sands, & Silts)	Standard Penetration Test (blows/foot)	Fine-Grained, Cohesive (Clays)	Standard Penetration Test (blows/foot)
Very Loose	0-4	Very Soft	0-2
Loose	5-10	Soft	3-4
Medium Dense	11-30	Firm	5-8
Dense	31-50	Stiff	9-15
Very Dense	+50	Very Stiff	15-30
		Hard	+30

* Based on Sampler-Hammer Ratio of 8.929 E-06 ft/lbf and 4.185 E-05 ft^2/lbf for granular and cohesive soils, respectively (Terzaghi)

PARTICLE SIZE RANGE

Sieve Openings (Inches)				Standard Sieve Sizes				
12"		3"	3/4"	No.4	No.10	No.40	No.200	<No.200
BOULDERS	COBBLES	GRAVELS		SANDS				SILTS & CLAYS
		Coarse	Fine	Coarse	Medium	Fine		(Distinguished By Atterberg Limits)

PLASTICITY CHART



GW - Well-graded GRAVEL
GP - Poorly-graded GRAVEL
GM - Silty GRAVEL
GC - Clayey GRAVEL

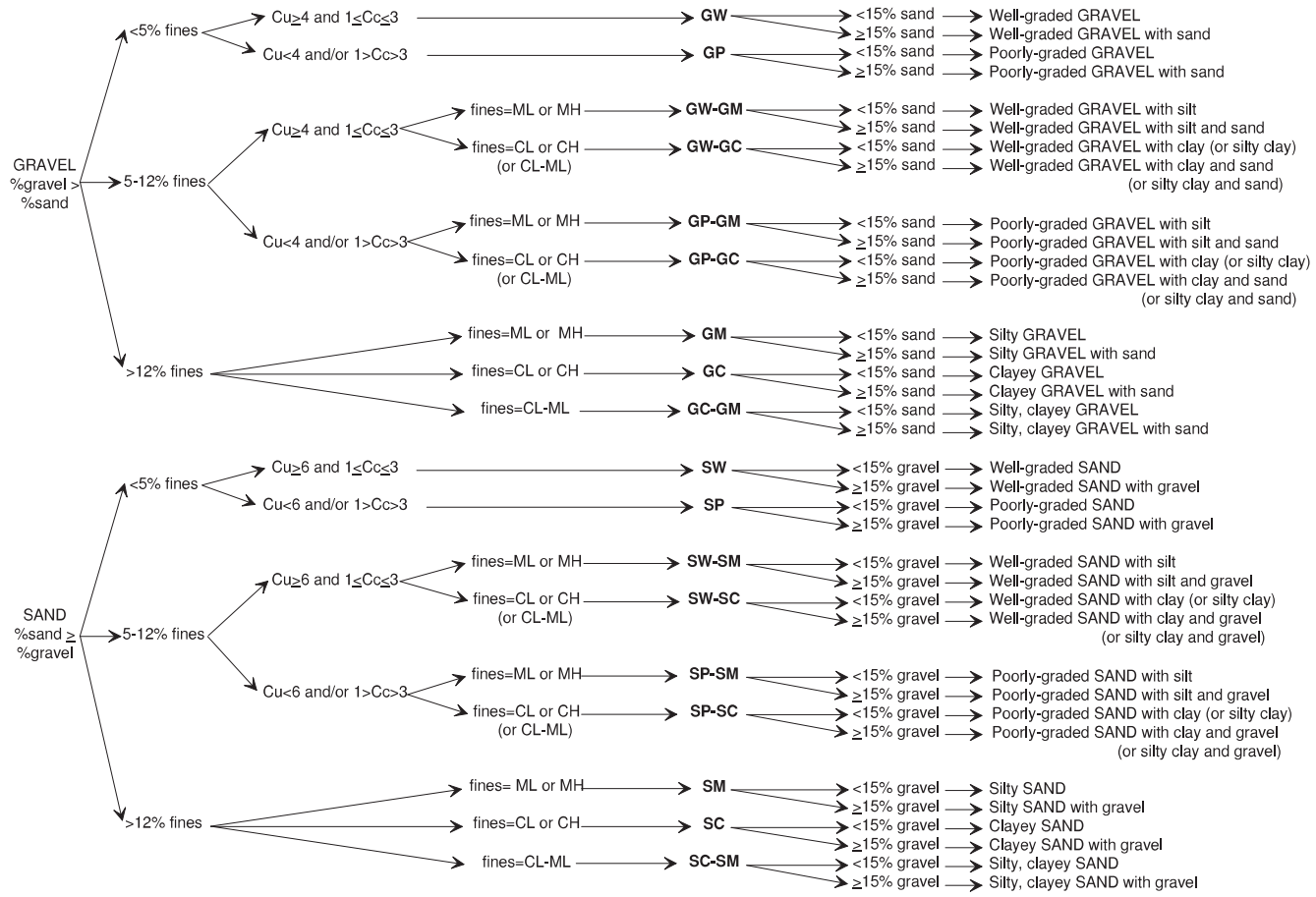
SW - Well-graded SAND
SP - Poorly-graded SAND
SM - Silty SAND
SC - Clayey SAND

CL - Lean CLAY
ML - SILT
OL - Organic SILT/CLAY
CH - Fat CLAY
MH - Elastic SILT
OH - Organic SILT/CLAY

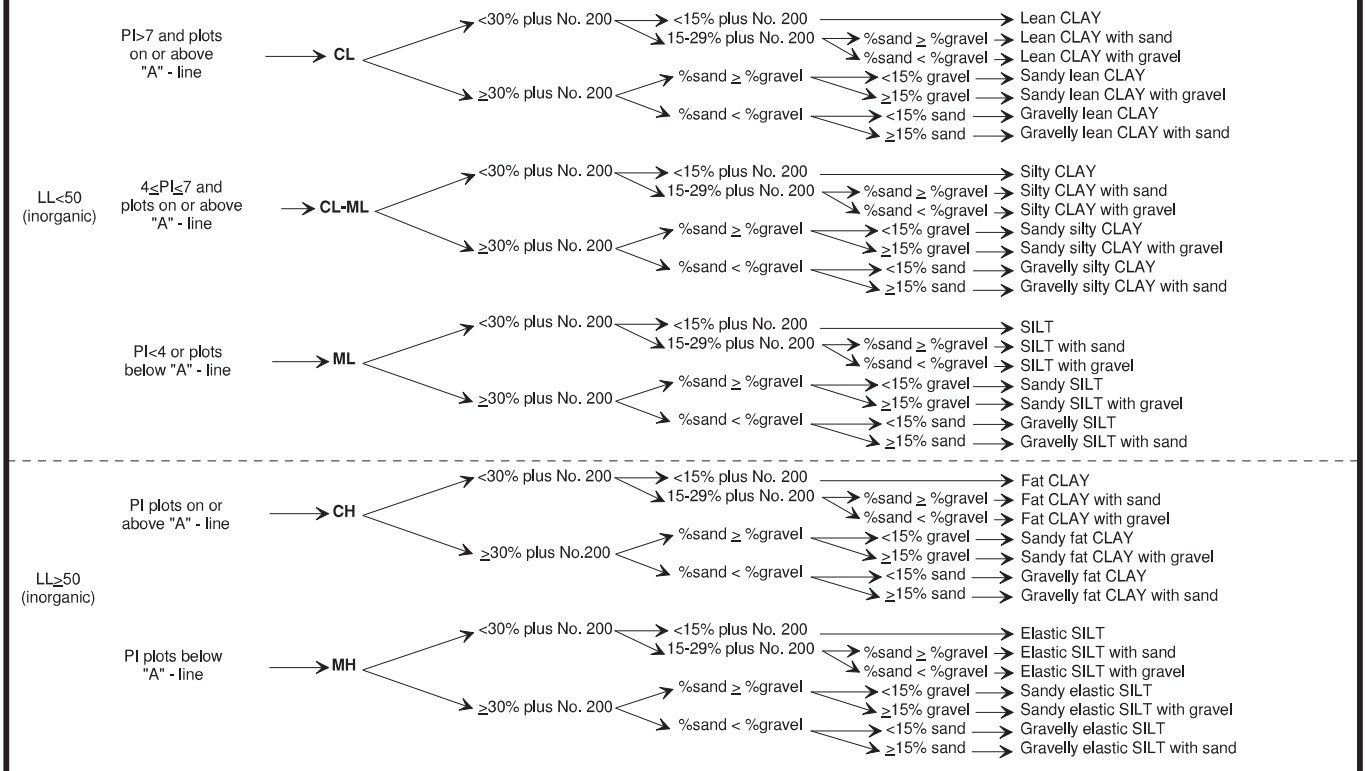
03/01

TD&H Engineering Consultants
Great Falls, Kalispell, Bozeman, MT
Spokane, WA; Lewiston, ID, Watford City, ND

ASTM D2487
CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES



Flow Chart For Classifying Coarse-Grained Soils (More Than 50 % Retained On The No. 200 Sieve)



Flow Chart For Classifying Fine-Grained Soils (50 % Or More Passes The No. 200 Sieve)

03/98

CONSTRUCTION DRAWINGS FOR

INDOOR AQUATICS & RECREATION CENTER
WATER MAIN RELOCATION

O.F. 1770.0

GREAT FALLS, MONTANA

JULY 2021

SITE LOCATION MAP

SHEET INDEX

SHEET NUMBER	DESCRIPTION
C1.0	COVER SHEET
C2.0	NOTES, ABBREVIATIONS, AND LEGEND
C3.0	EXISTING CONDITIONS, SURVEY DATA, AND DEMOLITION PLAN
C4.0	WATER MAIN PLAN & PROFILE
C5.0	DETAILS
TOTAL 5 SHEETS	

LPW ARCHITECTURE
www.lpwarchitecture.com
PHONE | 406.771.0770
15 FIFTH ST. SOUTH
GREAT FALLS | MT 59401

TD&H Engineering
406.761.3010 • tdhengineering.com
1800 RIVER DR. NO. • GREAT FALLS, MONTANA 59401

Indoor Aquatics and Recreation Center - Water Main Relocation
O.F. 1770.0
Great Falls, Montana
COVER SHEET

Revision Schedule

No.	Revision	Date
1	ADDENDUM #1	7/26/21

Submittals

No.		Date

DRAWN BY: CJS
CHECKED BY: RCB
DATE: 07/02/21
PROJECT NUMBER: 20-019A
SHEET NUMBER: **C1.0**

J:\2020\20-091 Great Falls Rec Ctr_MAF\BIC\ACAD\CIVIL\WATER MAIN\20-091 C1.0.dwg, 7/27/2021 8:48:30 AM, RGB1

4/29/2021 1:51:03 PM

GENERAL NOTES

1. NOTIFY ALL UTILITY COMPANIES IN WRITING AND SECURE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE BEGINNING EXCAVATION. TELEPHONE CABLES IN THE PROJECT AREA ARE NOT SHOWN.
2. EXCAVATE ALL UTILITY CROSSINGS PRIOR TO BEGINNING TRENCH EXCAVATION TO ENSURE CROSSING CLEARANCE. THE CONTRACTOR SHALL NOTIFY THE GREAT FALLS PUBLIC WORKS DEPARTMENT PRIOR TO EXCAVATION.
3. ALL CONSTRUCTION WILL CONFORM TO MPWSS, LATEST EDITION, AND CITY OF GREAT FALLS STANDARDS FOR DESIGN & CONSTRUCTION – ADOPTED 05–19–2020.
4. PERMITTING AND FEES SHALL BE PAID BY CONTRACTOR AND COORDINATED WITH CITY OF GREAT FALLS PUBLIC WORKS DEPARTMENT AND PLANNING DEPARTMENT.
5. PREPARE A DUST CONTROL PLAN FOR CITY APPROVAL AND PROVIDE AND MAINTAIN DUST CONTROL THROUGHOUT CONSTRUCTION.
6. ELECTRONIC DESIGN FILES IN CIVIL 3D VERSION 2018 AVAILABLE FOR CONSTRUCTION STAKING UPON REQUEST AND EXECUTION OF TDH "ELECTRONIC MEDIA WAIVER OF RESPONSIBILITY" FORM. ANY OTHER FORMAT OR SOFTWARE WILL REQUIRE PAYMENT FOR CONVERSION.
7. ALL SOIL STOCKPILES MUST BE CONTAINED WITH SILT FENCE.
8. EXISTING UTILITIES SHOWN ARE BASED ON AVAILABLE AS–BUILT DRAWING INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING EXISTING UTILITIES AND CONFIRMING CONNECTION REQUIREMENTS PRIOR TO ORDERING NEW FITTINGS.
9. ALL EXCAVATION SHALL BE TYPE 2 EXCAVATION PER OSHA AND ALL TRENCHES SHALL HAVE TYPE 'A' BACKFILL UNLESS OTHERWISE NOTED.
10. PROTECT ALL EXISTING SURVEY MONUMENTATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPLACE ANY DISTURBED MONUMENTATION. REPLACEMENT SHALL BE BY PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF MONTANA.
11. COORDINATE ALL TRAFFIC CONTROL, SITE ACCESS ISSUES, AND PERMITTING WITH CITY OF GREAT FALLS PUBLIC WORKS.
12. ALL STREET & TRAFFIC SIGNS THAT INTERFERE WITH CONSTRUCTION SHALL BE REMOVED & RESET BY CITY OF GREAT FALLS.
13. CONSTRUCTION MATERIALS TESTING MUST BE PERFORMED BY AN AASHTO ACCREDITED TESTING LABORATORY.
14. ANY EXISTING UTILITIES, FENCES, CONCRETE SLABS, OR OTHER SITE FEATURES THAT ARE NOT SPECIFICALLY CALLED FOR DEMOLITION, BUT THAT ARE REQUIRED TO BE REMOVED OR RELOCATED TO FACILITATE NEW CONSTRUCTION, ARE THE RESPONSIBILITY OF THE CONTRACTOR.
15. QUANTITIES PROVIDED IN THE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL VERIFY ALL QUANTITIES PRIOR TO BIDDING.

1

WATER NOTES

1. ALL WATER MAINS AND SERVICES TO MAINTAIN A MINIMUM OF 6.5' OF COVER TO TOP OF PIPE, UNLESS OTHERWISE NOTED ON PLANS. WATER MAINS SHALL BE INSTALLED AT DEEPER DEPTHS, ON UNIFORM GRADES AS NECESSARY TO PREVENT LOCAL OR INTERMEDIATE HIGH SPOTS WHERE AIR CAN COLLECT.
2. EXISTING FITTING LOCATIONS ARE BASED ON DATA FURNISHED BY THE OWNER. EXCAVATE FITTINGS AND CONFIRM REQUIREMENTS PRIOR TO ORDERING NEW FITTINGS.
2. ALL PIPING GREATER THAN 2" TO MEET AWWA C–900 OR C–905 PRESSURE CLASS 305 (DR14) REQUIREMENTS. ALL PIPING 2" AND SMALLER SHALL BE TYPE "K" COPPER.
3. NOTIFY THE CITY OF GREAT FALLS WATER DEPARTMENT A MINIMUM OF 48–HOURS PRIOR TO BEGINNING ANY WORK.
4. REPLACE WATER SERVICE CURB STOPS COMPLETELY IF DAMAGED BY CONSTRUCTION PER CITY OF GREAT FALLS DESIGN CRITERIA & SPECIAL CONDITIONS.
5. WRAP ALL BOLTS ON MECHANICAL AND FLANGED JOINTS, RESTRAINTS, COUPLINGS, HYDRANTS AND VALVES WITH A WAX–TAPE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.
6. ALL EXISTING CITY WATER MAIN VALVES SHALL BE OPERATED BY CITY OF GREAT FALLS UTILITIES DEPARTMENT PERSONNEL. PROVIDE 48 HOURS NOTICE PRIOR TO SCHEDULED VALVE OPERATION.
7. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL SEPARATION BETWEEN OUTSIDE OF SANITARY SEWER/STORM DRAIN AND WATER LINES, UNLESS OTHERWISE IDENTIFIED ON THE PLANS.
8. MAINTAIN A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN OUTSIDE OF SANITARY SEWER/STORM DRAIN AND WATER LINE CROSSINGS, UNLESS OTHERWISE IDENTIFIED ON PLANS.
9. THE CONTRACTOR SHALL INSTALL CONCRETE THRUST BLOCKS AT ALL WATER LINE FITTINGS, VALVES, & FIRE HYDRANTS AS DESCRIBED IN THE DETAILS AND SPECIFICATIONS.
10. ALL DUCTILE OR CAST IRON WATER MAIN PIPE, FITTINGS VALVES, ETC. SHALL BE WRAPPED IN CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
11. WATER MAIN VALVES SHALL BE A PUSH–ON x PUSH–ON (POxPO) FITTING UNLESS OTHERWISE NOTED. HYDRANT AUXILIARY VALVES SHALL BE PUSH–ON x FLANGE (POxF) FITTING UNLESS OTHERWISE NOTED ON THE PLANS.
7. ALL JOINTS SHALL BE PUSH–ON UNLESS SPECIAL RESTRAINT IS REQUIRED AND IN THAT CASE A BOLTED RESTRAINT FITTING SHALL BE USED. MECHANICAL JOINT FITTINGS SHALL NOT BE USED IN LIEU OF PUSH ON JOINTS.
8. IF AREAS OF SOIL CONTAMINATED WITH PETROLEUM PRODUCTS ARE FOUND DURING EXCAVATION FOR THE WATER MAINS, INSTALL DUCTILE IRON PIPE, CLASS 51 IN ACCORDANCE WITH AWWA C151 WITH ACYLONITRILE BUTADIENE (NBR) PIPE JOINT GASKETS. CONTAMINATED TRENCH MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH DEQ REQUIREMENTS AND REPLACED WITH CLEAN BACKFILL.
9. CONSTRUCTION DEWATERING WILL BE NECESSARY DEPENDING ON PROJECT LOCATION AND TIME OF YEAR. REFERENCE SPECIFICATION SECTION 00850 (SPECIAL PROVISIONS) FOR CONSTRUCTION DEWATERING AND ASSOCIATED PERMIT REQUIREMENTS.
10. CONSTRUCTION WATER DISPOSAL INCLUDING BURIED PIPE TESTING, DISINFECTION, AND RESIDUAL WATER, SHALL BE COORDINATED WITH AND APPROVED BY THE CITY OF GREAT FALLS ENGINEERING, UTILITIES, AND ENVIRONMENTAL DEPARTMENTS.
11. TRACER WIRE AND TEST STATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS.

UTILITY LOCATION

THE LOCATIONS OF UNDERGROUND UTILITIES REPRESENTED ON THIS DRAWING HAVE BEEN DETERMINED FROM A FIELD SURVEY AND FROM RECORDS OBTAINED FROM THE VARIOUS UTILITY COMPANIES. THE NUMBER AND LOCATIONS OF ALL UNDERGROUND UTILITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATION TO OBTAIN THE EXACT INFORMATION NECESSARY TO PROTECT OR ACCESS ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CALL THE FOLLOWING NUMBER FOR ASSISTANCE : 406–755–8344 OR 800–551–8344.

"CALL BEFORE YOU DIG"

SCALING NOTE

DRAWING SHEETS PRINTED FROM ADOBE PDF ELECTRONIC FILES ARE USUALLY NOT TO SCALE. VERIFY PRINTED SHEET SCALES FROM THE BAR SCALES LOCATED ON THE PLAN SHEETS.

LEGEND

NEW	EXISTING	DESCRIPTION
		ASPHALT SURFACING
		BARRIER POST
	BH	BORING
		BUILDING
		CLEANOUT
		CONCRETE
	3415	CONTOUR
	CP	CONTROL POINT
		CURB & GUTTER
		DRAINAGE DITCH
		EASEMENT
		EDGE OF ASPHALT
		EDGE OF GRAVEL
		ELECTRIC BOX
	E	ELECTRIC – OVERHEAD
	E	ELECTRIC – UNDERGROUND
		FENCE – CHAIN LINK
		FIRE HYDRANT
	G	GAS LINE
		GATE
	1	GRAVEL
		IRRIGATION VALVE BOX
		IRRIGATION SERVICE VAULT
		PAINT STRIPE
		POWER POLE
	P/L	PROPERTY LINE
		PROPERTY PIN
	SS SS	SANITARY SEWER
		SANITARY SEWER MANHOLE
		TELEPHONE RISER
	TBM	TEMPORARY BENCHMARK
	TP	TEST PIT
		TRAFFIC SIGN
		TREE – DECIDUOUS
W	W	WATERLINE
		WATER VALVE – BUTTERFLY
	W	WATER VALVE – GATE
		LANDSCAPE TURF

ABBREVIATIONS

AND	&	MANHOLE	MH
APPROXIMATE	APPROX	MAXIMUM	MAX.
AT	@	MECHANICAL JOINT	MJ
AMERICAN WATER WORKS ASSOCIATION	AWWA	MINIMUM	MIN.
CENTER LINE	℄	MISCELLANEOUS	MISC
CORRUGATED METAL PIPE	CMP	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS	MPWSS
CLEANOUT	CO	NORTH/NORTHING	N
CONCRETE	CONC	NUMBER	NO. OR #
CONSTRUCTION	CONST	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	O.S.H.A.
CONTROL POINT	CP	ON CENTER	O.C.
CUBIC YARDS	CY	POLYVINYL CHLORIDE	PVC
DIAMETER	DIA OR ø	RADIUS	R
DUCTILE IRON	DI	REQUIRED	REQ'D
EACH	EA	RIGHT	RT
EAST/EASTING	E	SCHEDULE	SCH
EDGE OF ASPHALT	EOA	SHEET	SHT
ELEVATION	EL. OR ELEV.	SIDEWALK	SW
ETCETERA	ETC.	SIMILAR	SIM
EXISTING	EXIST	SPECIFICATIONS	SPECS
FINISH FLOOR	F.F.	SQUARE FEET	SF
FLARED END TERMINUS SECTION	FETS	SQUARE YARDS	SY
FLOW LINE	F.L.	STATION	STA.
INVERT	INV	TOP OF CURB	TC
INVERT ELEVATION	I.E.	TOP OF WALL	TW
LEFT	LT	TYPICAL	TYP
LINEAR FEET	L.F.	WITH	W/

LPW ARCHITECTURE
www.lpwarchitecture.com
PHONE | 406.771.0770
15 FIFTH ST. SOUTH
GREAT FALLS | MT 59401

TD&H Engineering
406.761.3010 • tdhengineering.com
1800 RIVER DR. NO. • GREAT FALLS, MONTANA 59401

Indoor Aquatics and Recreation Center - Water Main Relocation
O.F. 1770.0
Great Falls, Montana

NOTES, ABBREVIATIONS, AND LEGEND

Revision Schedule

No.	Revision	Date
1	ADDENDUM #1	7/26/21

Submittals

No.		Date

DRAWN BY: CJS
CHECKED BY: RCB
DATE: 07/02/21
PROJECT NUMBER: 20-019A
SHEET NUMBER: C2.0

4/29/2021 1:51:43 PM

J:\2020\20-091 Great Falls Rec Ctr_MAFB\CADD\CIVIL\WATER MAIN\20-091 C2.0.dwg, 7/27/2021 8:48:33 AM, RCB1

HORIZONTAL COORDINATES ARE GROUND, UNITS ARE INTERNATIONAL FEET. TO CONVERT TO MONTANA STATE PLANE COORDINATES, ZONE 2500, NAD 83 DATUM, MULTIPLY BY A COMBINED SCALE FACTOR OF 0.9992616956 ABOUT AN ORIGIN OF (0,0). THEY WERE PROJECTED WITH SURVEY QUALITY GPS FROM TD&H GPS CONTROL POINT #500.

VERTICAL DATUM IS "CITY OF GREAT FALLS DATUM", UNITS ARE U.S. SURVEY FEET. TO RETURN TO NAVD 88 ADD 19.15'. THEY WERE PROJECTED WITH SURVEY QUALITY GPS FROM TD&H GPS CONTROL POINT #500.

BENCHMARKS

TOP OPERATING NUT FH NE COR. 27TH ST S. AND 9TH AVE S. = 3462.47
TOP OPERATING NUT FH NE COR. 27TH ST S. AND 8TH AVE S. = 3464.42
TOP OPERATING NUT FH NE COR. 28TH ST S. AND 8TH AVE S. = 3473.13
TOP OPERATING NUT FH NE COR. 29TH ST S. AND 8TH AVE S. = 3471.26
TOP OPERATING NUT FH NE COR. 29TH ST S. AND 9TH AVE S. = 3472.11

SURVEY CONTROL DATA

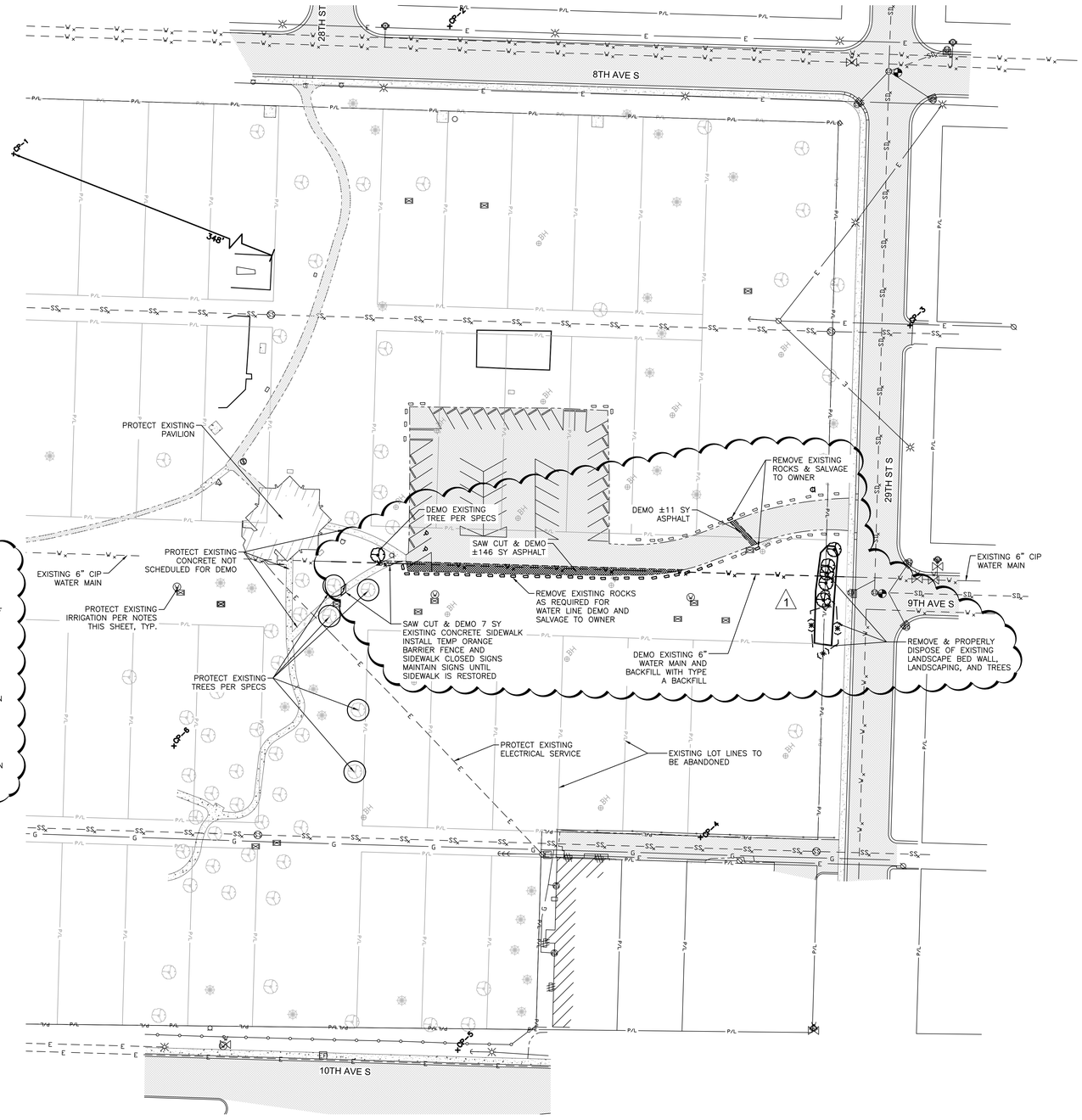
Point	Northing	Easting	Description
1	1189192.324	1534689.593	CP, 5/8" RBR W/RPC
2	1189241.261	1535149.946	CP, LARGE NAIL IN HUB
3	1189011.255	1535503.580	CP, NAIL IN ASPHALT
4	1188617.874	1535342.600	CP, NAIL IN ASPHALT
5	1188454.303	1535156.020	CP, LARGE NAIL IN HUB
6	1188688.113	1534937.989	CP, LARGE NAIL IN HUB

1 IRRIGATION NOTES

1. CONTRACTOR SHALL MEET WITH OWNER'S REPRESENTATIVE ON SITE TO DETERMINE ACTUAL EXTENTS OF IRRIGATION/LANDSCAPE DISTURBANCE PRIOR TO ANY CONSTRUCTION WORK.
2. CONTRACTOR SHALL CAREFULLY REMOVE ALL IRRIGATION HEADS, VALVES AND PIPING WITHIN 10' OF LIMITS OF WATER MAIN CONSTRUCTION AREA OF DISTURBANCE.
3. SALVAGE ALL IRRIGATION CONTROL WIRE, LOOP AND STORE IN VALVE BOX OUTSIDE LIMITS OF DISTURBANCE FOR FUTURE REUSE.
4. POINT OF CONNECTION FOR IRRIGATION SYSTEM SHALL NOT BE DISTURBED BY CONSTRUCTION ACTIVITIES, CONTRACTOR IS RESPONSIBLE FOR PROTECTING POINT OF CONNECTION AND ASSOCIATED EQUIPMENT, SUCH AS BACKFLOW PREVENTER, METER, ETC.
5. CAP SERVICE LINES PER PLUMBING CODE.
6. CAP ALL IRRIGATION LINES (LATERALS & MAINLINES) WITH SOLVENT WELDED PVC CAP, SOLVENT WELD FOR DURATION OF WATER MAIN PROJECT.
7. IRRIGATION RESTORATION IS NOT REQUIRED FOR WATER MAIN PROJECT. SYSTEM UPGRADES AND RESTORATION WILL BE PART OF INDOOR AQUATICS AND RECREATION CENTER BUILDING PROJECT.
8. CONTRACTOR TO COORDINATE WATER MAIN TAPPING WITH CITY OF GREAT FALLS PUBLIC WORKS.

TREE PROTECTION NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PROTECTING TREES AS NOTED ON THIS SHEET PER SPECIFICATION SECTION 02911 TREE PROTECTION.



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Indoor Aquatics and Recreation Center - Water Main Relocation

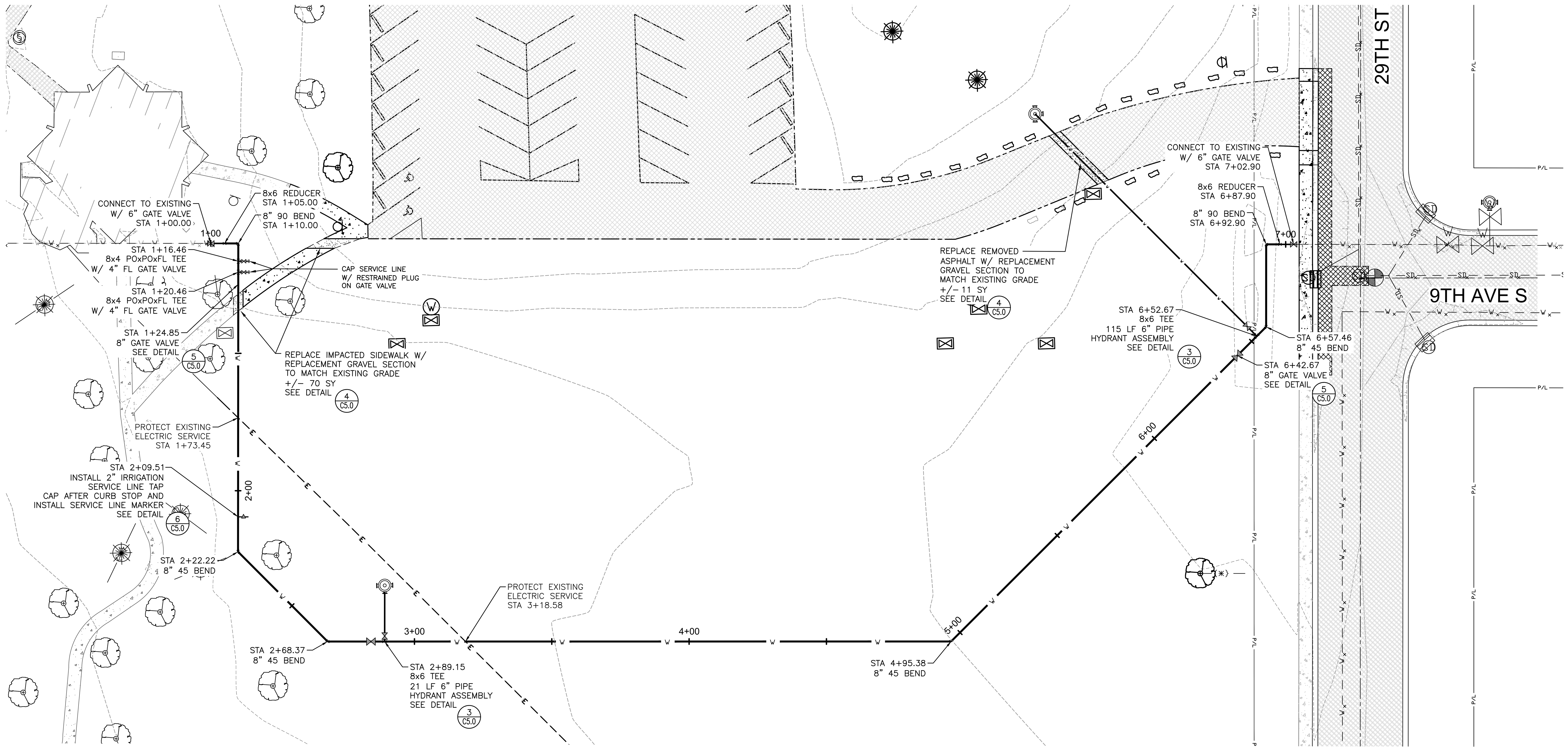
O.F. 1770.0
Great Falls, Montana

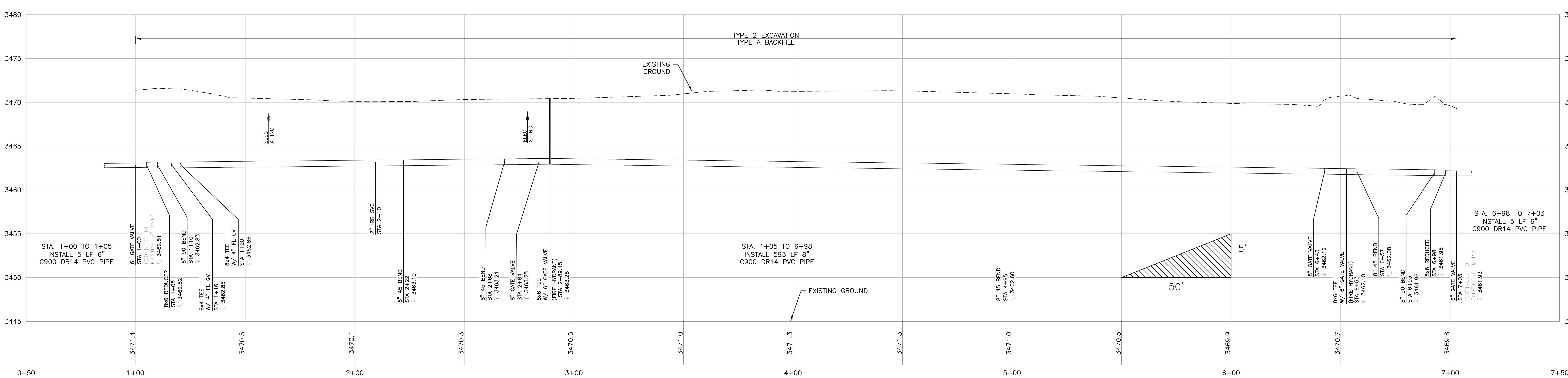
EXISTING CONDITIONS, SURVEY DATA AND DEMOLITION PLAN

Revision Schedule		
No.	Revision	Date
1	ADDENDUM #1	7/26/21

Submittals		
No.		Date

DRAWN BY:	CJS
CHECKED BY:	RCB
DATE:	07/02/21
PROJECT NUMBER:	20-019A
SHEET NUMBER:	**C3.0**





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WATER MAIN PLAN & PROFILE

Revision Schedule

No.	Revision	Date
1	ADDENDUM #1	7/26/21

Submittals

No.		Date

DRAWN BY: CJS

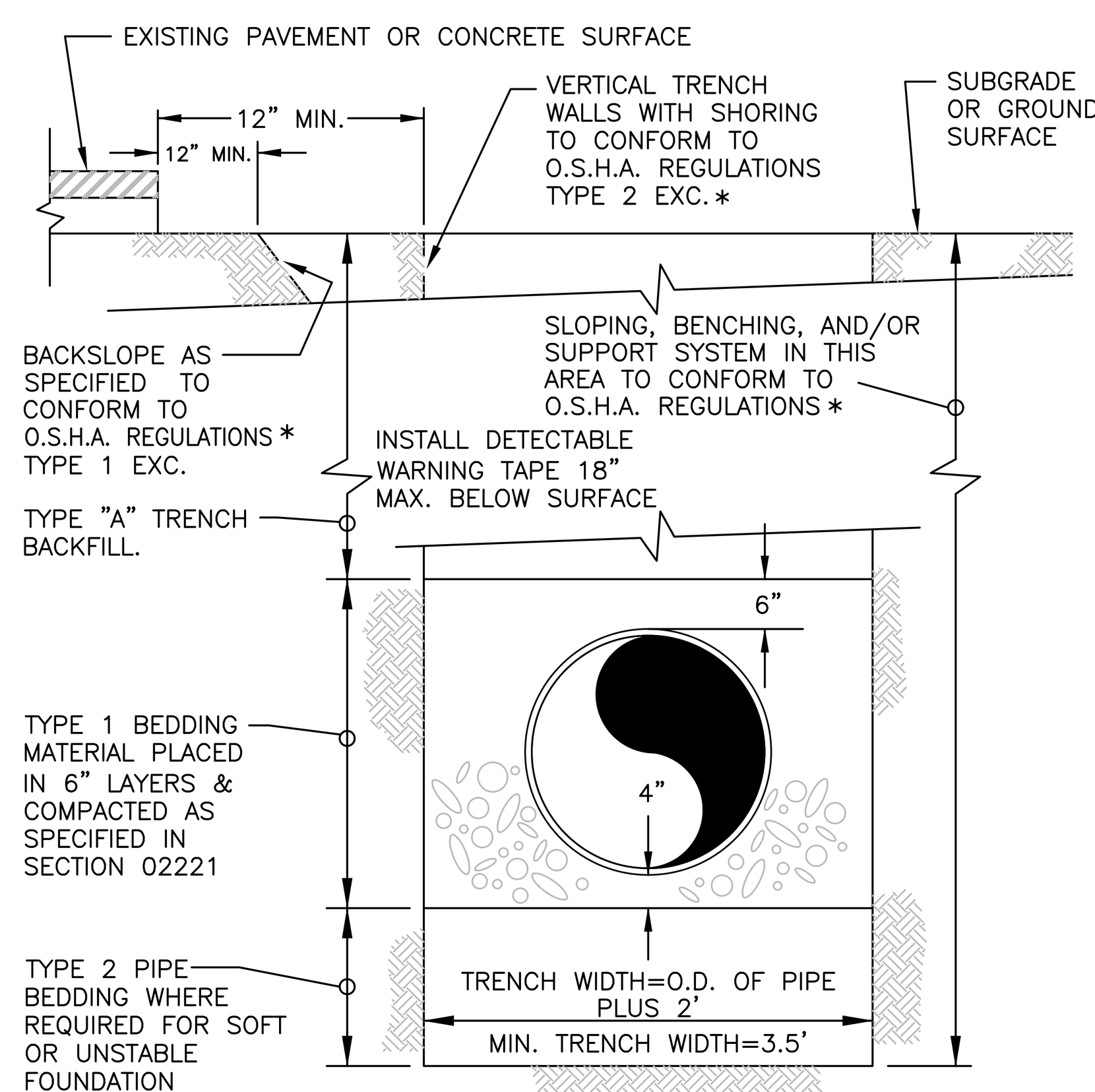
CHECKED BY: RCB

DATE: 07/02/21

PROJECT NUMBER: 20-019A

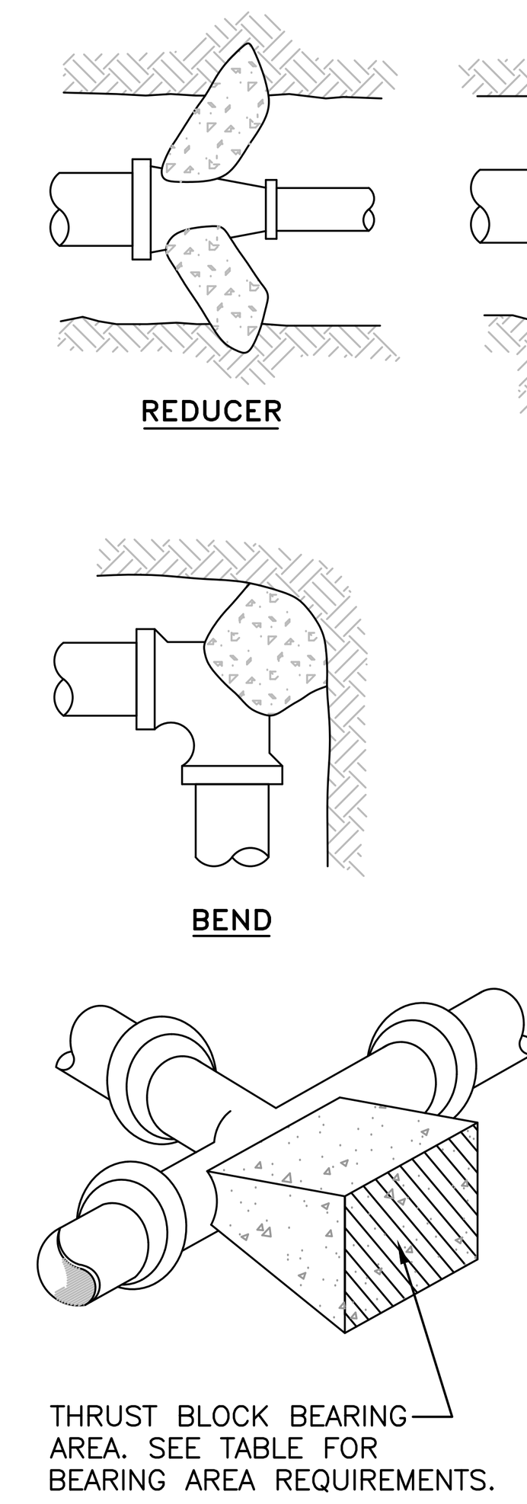
SHEET NUMBER: C4.0

NOTE:
1. WHERE TRENCH PASSES THROUGH EXISTING CONCRETE OR ASPHALT PAVEMENT, THE PAVEMENT SHALL BE CUT ALONG A NEAT VERTICAL LINE A MINIMUM OF 12" FROM THE EDGE OF THE TRENCH OPENING.



* SEE O.S.H.A. CONSTRUCTION STANDARDS FOR EXCAVATIONS, SEC. 1926, SUBPART P

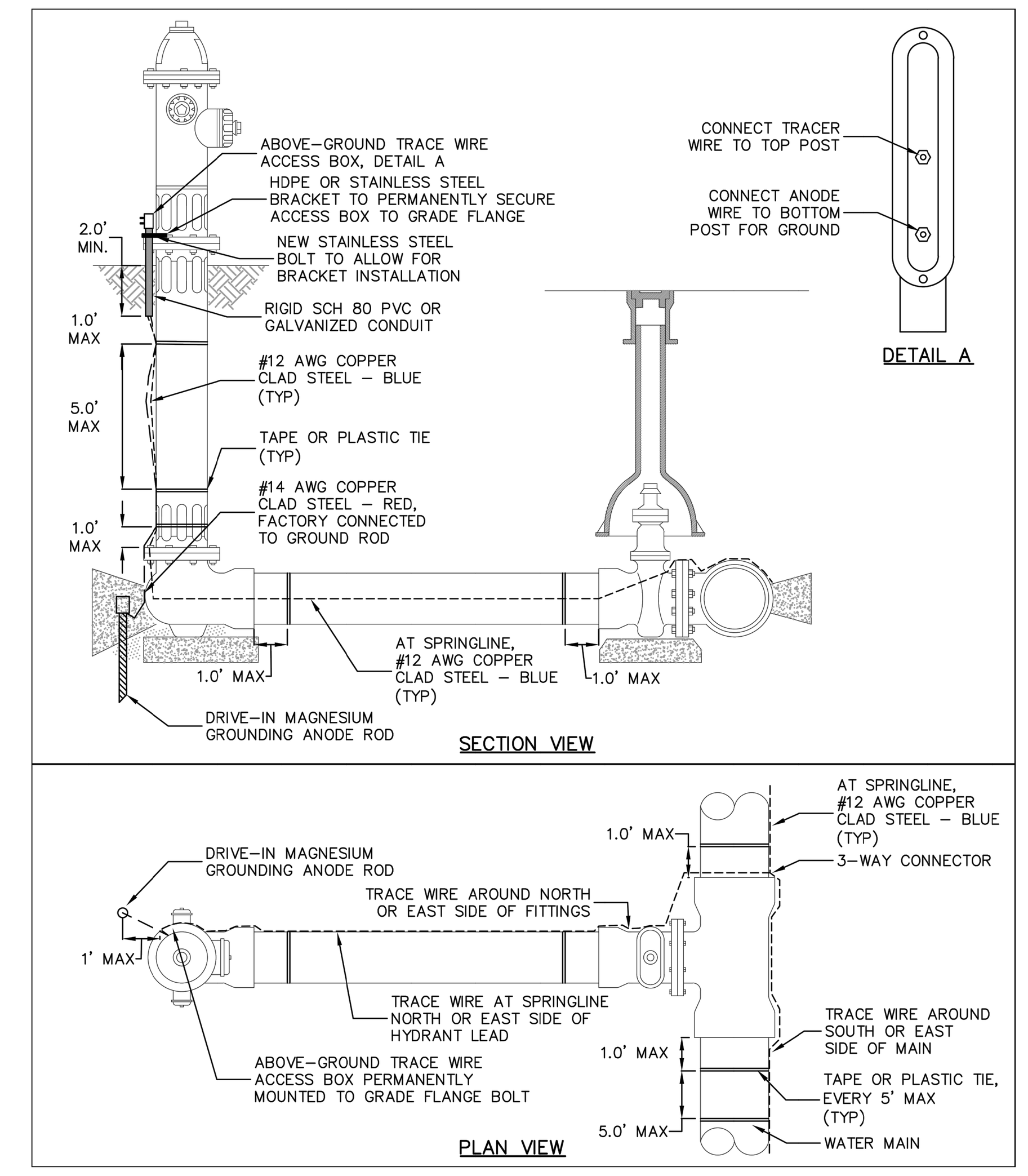
TYPICAL TRENCH DETAIL 1/C5.0
NO SCALE



THRUST BLOCK BEARING AREAS (SQ. FT.)				
PIPE SIZES	TEES & PLUGS	90° BEND	45° BEND & WYES	REDUCERS & 22 1/2° BEND
4"	1.8	2.6	1.4	0.8
6"	3.8	5.2	2.9	1.5
8"	6.7	9.5	5.0	2.6
10"	10.8	15.3	8.3	4.2
12"	15.3	21.8	11.9	5.8
14"	20.8	28.8	16.2	8.3
16"	27.4	37.7	20.9	10.8
18"	34.7	47.7	26.5	13.6
20"	42.8	58.9	32.7	16.8

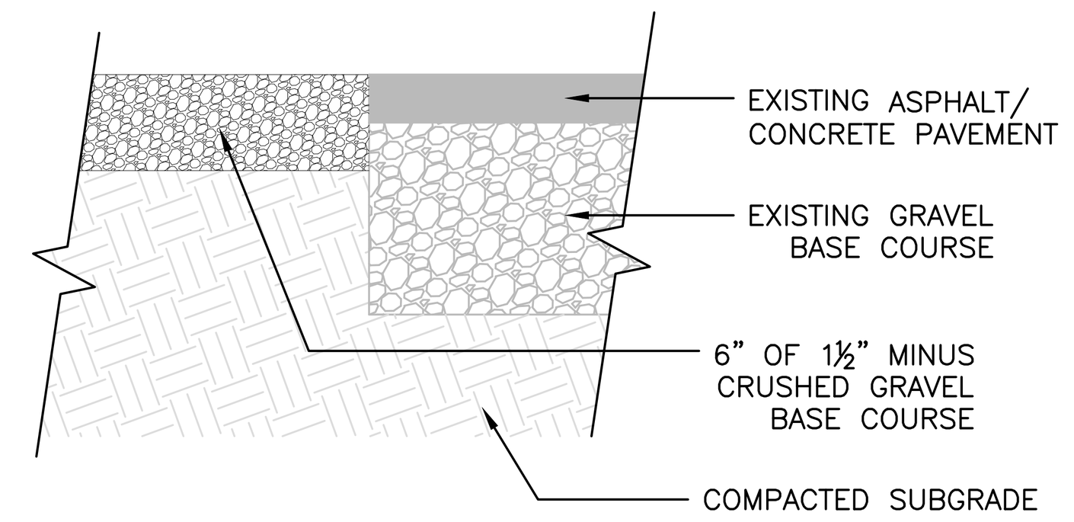
NOTE:
1. THIS TABLE IS BASED ON 150 P.S.I. MAIN PRESSURE; 2000 P.S.F. SOIL PRESSURE.
2. SEE SPECIFICATIONS FOR CORROSION PROTECTION WRAP SYSTEM.
3. 4000 P.S.I. CONCRETE.
4. INSTALL THRUST BLOCKING ON ALL WATER MAIN FITTINGS

THRUST BLOCK DETAIL 2/C5.0
NO SCALE

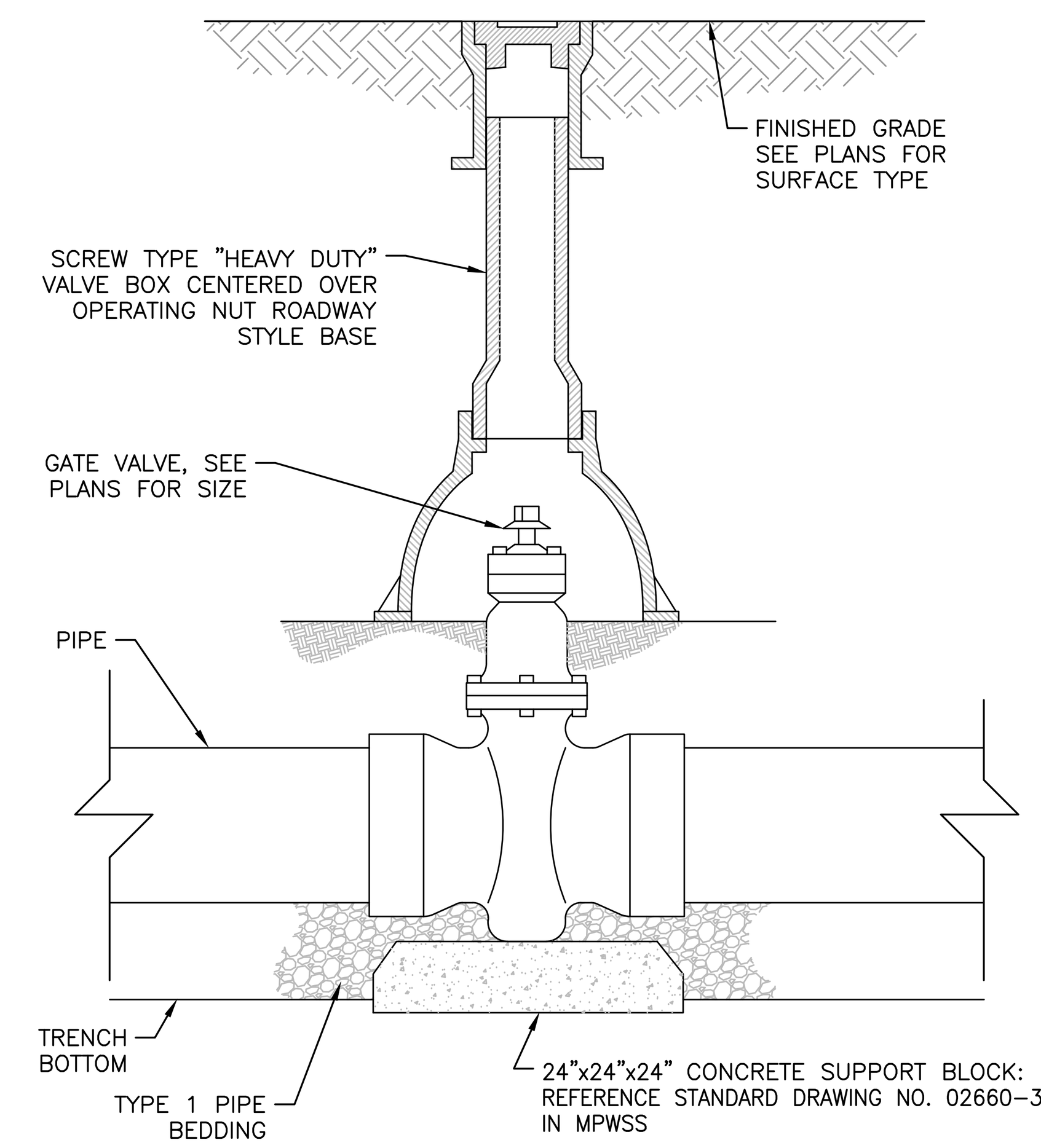


NOTES:
1. TEE ON MAIN SHALL BE INLINE PUSH-ON X FLANGE WITH FLANGE TO HYDRANT LEAD.
2. HYDRANT THRUST BLOCKING SHALL BE IN ACCORDANCE WITH DETAIL 2/C5.0.
3. SEE SPECIFICATIONS FOR CORROSION PROTECTION WRAP SYSTEM.

FIRE HYDRANT ASSEMBLY DETAIL 3/C5.0
NO SCALE

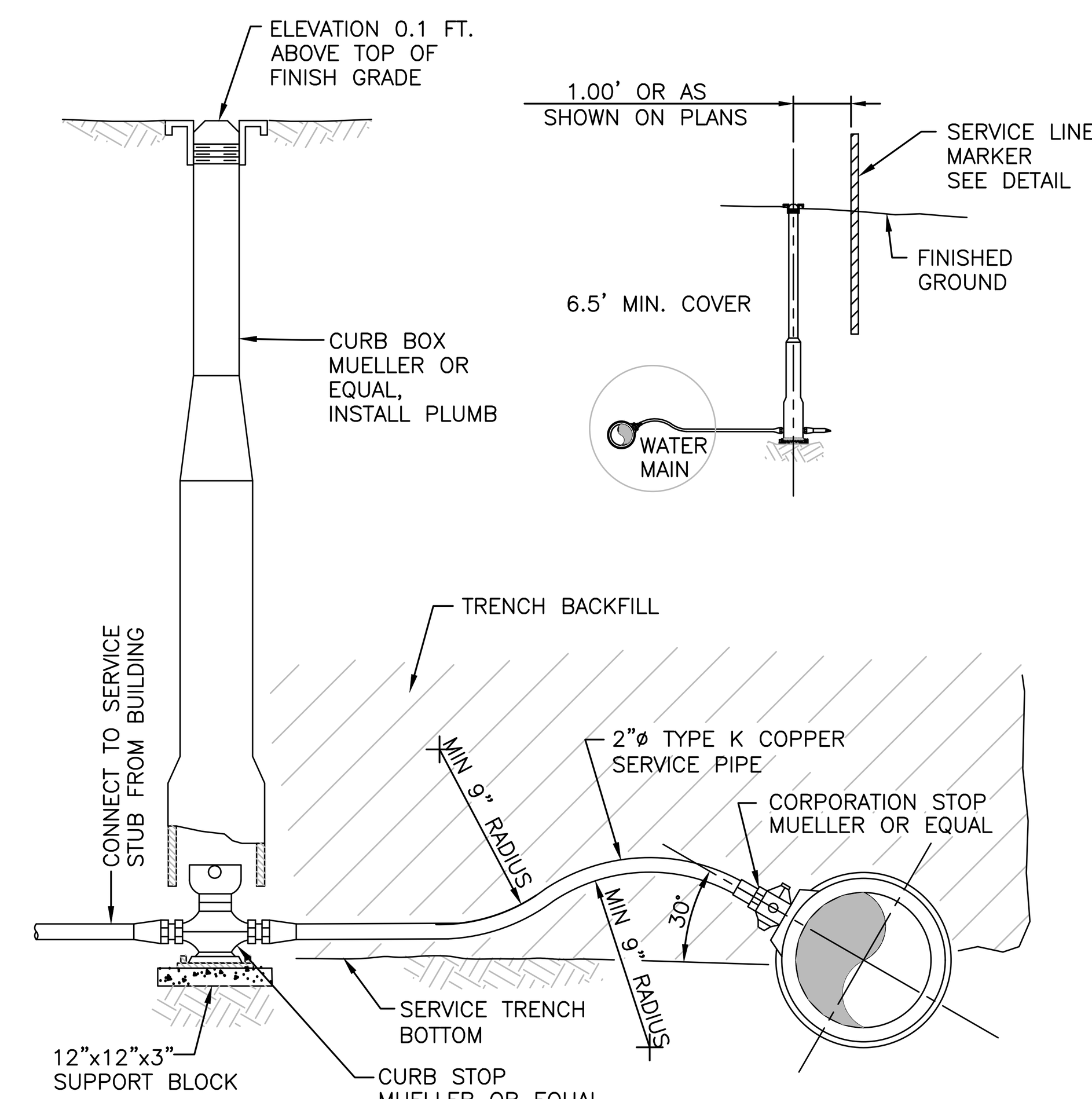


GRAVEL REPLACEMENT SECTION 4/C5.0
NO SCALE



NOTES:
1. THE USE OF "DROP IN" RISERS TO ACHIEVE FINAL GRADE IS NOT ALLOWED.
2. THREE PIECE RISER SHALL BE USED. A FOUR PIECE RISER WITH UPWARD ADJUSTMENT SHALL BE ALLOWED FOR DEEPER VALVES.
3. SEE SPECIFICATIONS FOR CORROSION PROTECTION WRAP SYSTEM.

GATE VALVE DETAIL 5/C5.0
NO SCALE



NOTES:
1. WATER SERVICE LINES SHALL HAVE A MIN. COVER OF 6.5 FEET MEASURED FROM THE EXIST. GROUND SURFACE.
2. WATER SERVICE LINES SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS OR AS SPECIFIED.
3. BEDDING SHALL BE 3/4"ø MAX. WITHIN 6" OF SERVICE PIPE.
4. SEE SPECIFICATIONS FOR CORROSION PROTECTION WRAP SYSTEM.
5. CONTRACTOR TO COORDINATE WATER MAIN TAP WITH CITY OF GREAT FALLS PUBLIC WORKS.

IRRIGATION SERVICE DETAIL 6/C5.0
NO SCALE

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DETAILS

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Submittals	
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DRAWN BY: CJS
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