JOHN TURNER
CONSULTING

REPORT AND RECOMMENDATIONS BASED ON REVIEW OF:

Request for Select Board Review
Submitted by Attar Engineering on Feb 24th, 2023

CLIENT:
Jeff Brubaker, AICP
Town Planner
Town of Eliot, Maine
333 State Road
Eliot, Maine 03903
Ph: (207) 439-1813 x112
jbrubaker@eliotme.org

PROJECT:
The Village at Great Brook
Tax Map 17, Lot 29
Bolt Hill Road, Eliot, Maine

DATE: March 8th, 2023

Documents Reviewed (Attachment 3):

- Request for Select Board Review, The Village at Great Brook (Tax Map 17, Lot 29) Bolt Hill Road, Eliot, Maine submitted by Attar Engineering February 24th, 2023
- Approved bonding letter from Frankenmuth Insurance Company dated February 23rd, 2023

Documents Referenced (Attachment 4):

- Report of Pavement and Gravel Investigations generated by John Turner Consulting and dated September 14th, 2019
- Site Details for Villages at Great Brook generated by Attar Engineering and dated June 26th, 2006.
- Plan of Land for Villages at Great Brook generated by Millennium Engineering and dated April 5th, 2019.

JTC Contributing Representatives: J. Turner, A. Anderson

SUMMARY OF FINDINGS:

It is the opinion of John Turner Consulting, Inc. (JTC) that the scope proposed in the Request for Select Board Review does not fully encompass the recommendations of the field investigations completed by JTC in 2019. That investigation included gravel composition analysis, gravel compaction analysis, pavement thickness measurements, and pavement densities analysis for portions of the development roadways. Attachment 1 of this report includes a diagram showing the limits of the original investigation and a summary of the original investigation recommendations. Attachment 2 of this report shows the cost analysis of the pricing submitted by Attar Engineering for their proposed scope, as well as the estimated costs of the JTC recommended scope of repair. A summary of the relationship between the original investigation and submission to the Select Board is below:

Village Drive – Station 0+00 to 12+30

JTC did not conduct investigations for the first portion of Village Drive, beginning at Bolt Hill Road, assumed to be Station 0+00, and extending approximately 1,230 feet to Station 12+30. A brief visual inspection of this section of roadway in March of 2023 found significant deformation or grades, significant center line cracking for the entire length, trench settlement, and alligator cracking in localized areas. These conditions imply there may be gravel composition or gravel compaction issues in addition to the possibility of pavement composition, depth, and/or compaction issues. JTC recommends further pavement and gravel investigation on this portion of roadway. As this portion of roadway was not included in the original report, it is assumed it was not included in the scope and bonding estimate submitted by Attar Engineering and reviewed in this report.

Village Drive – Station 12+30 to 13+80

JTC investigation of this portion of roadway found significant gravel composition issues and pavement compaction and thickness issues. JTC recommended the removal of pavement and base gravels to full section and replacement in accordance with approved roadway section details. The scope and pricing submitted by Attar Engineering is in line with this recommendation. The cost estimate provided by Attar Engineering was itemized and analysis based on bid tab analysis data from MaineDOT bidding for similar scope and material. Based on that analysis JTC believes the submitted estimate of $15,000 is approximately $19,583 shy of the estimated total repair cost of $34,583.

Village Drive – Station 13+80 to 18+00

JTC investigation of this portion of roadway found significant and broad pavement compaction and thickness issues. The base gravels did not meet the reference specifications of submitted details, however they are believed to perform well if compacted to recommended densities and extended past the angle of repose beyond the edge of pavement. JTC had recommended removal of the existing base pavement; grading, extending, and compacting the existing gravel; and paving base and surface to detailed thicknesses and densities. The scope and pricing submitted by Attar Engineering is in not line with this recommendation. The cost analysis provided limited the scope to pavement repairs and resurfacing, leaving the existing base pavement and uncompacted gravels in place. The cost estimate provided by Attar Engineering was itemized and analysis based on bid tab analysis data from MaineDOT bidding for similar scope and material. Based on that analysis JTC believes the submitted estimate of $50,000 is approximately $18,190 in excess of the estimated total repair cost of $31,810 for the proposed scope. JTC recommends requiring the full recommended scope of pavement removal or reclamation; extending, grading, and compacting base gravels; paving base course; and paving surface course to detailed thicknesses and densities. The recommended scope would cost approximately $64,476, $14,476 more than the estimate provided.

Pheasant Lane – Station 0+00 to 12+40

JTC investigation of this portion of roadway found significant pavement compaction and thickness issues. The base gravels did not meet the reference specifications of submitted details, however they are believed to perform well if compacted to recommended densities and extended past the angle of repose beyond the edge of pavement. JTC had recommended removal of the existing base pavement; grading, extending, and compacting the existing gravel; and paving base and surface to detailed thickness and densities. The scope and pricing submitted by Attar Engineering is in not line with this recommendation. The cost analysis provided limited the scope to pavement repairs and resurfacing, leaving the existing base pavement and uncompacted gravels. The cost estimate provided by Attar Engineering was itemized and analysis based on bid tab analysis data from MaineDOT bidding for similar scope and material. Based on that analysis JTC believes the submitted estimate of $32,000 is approximately $40,486 shy of the estimated total repair cost of $72,486 for the proposed scope. JTC recommends requiring the full recommended scope of pavement removal or reclamation; extending, grading, and compacting base gravels; paving base course; and paving surface course to recommended thicknesses and densities. The recommended scope would cost approximately $168,931, $136,931 more than the estimate provided.

Drives - Sagamore Lane

JTC did not do any investigation for this shared drive. A visual inspection in March of 2023 indicated significant gravel and pavement issues. JTC recommends further investigation in the composition and compaction of gravels and pavements used to build the drive. A cost analysis of the submitted scope of remove all asphalt to correct grading Issues, fine-grade existing gravel base for proper drainage, compact existing gravel base, and pave 2" base course asphalt and 1” surface course found the estimate cost of $11,000 was $8,111 shy of the $19,111 JTC estimated cost.

Drives – Abenaki Trail

JTC did not do any investigation for this shared drive. A visual inspection in March of 2023 indicated significant gravel and pavement issues. JTC recommends further investigation in the composition and compaction of gravels and pavements used to build the drive. A cost analysis of the submitted scope of clean-up of existing paved surface (base course), trimming of back edges, leveling depressions and sinkholes, and pave surface course overlay of 1-1/2" found the estimate cost of $10,000 was $1,131 shy of the $11,131 JTC estimated cost.

All Drives on Village Drive and Pheasant Lane

JTC did not do any investigation for the driveways along Village Drive and Pheasant Lane. A visual inspection in March of 2023 indicated significant gravel and pavement issues. JTC recommends further investigation in the composition and compaction of gravels and pavements used to build the driveways. A cost analysis of the submitted scope of repair found the provided estimated costs were equivalent to the JTC estimated costs for repair.

Landscaping and Post-Construction Maintenance

JTC did not investigate the costs or scope of these items.

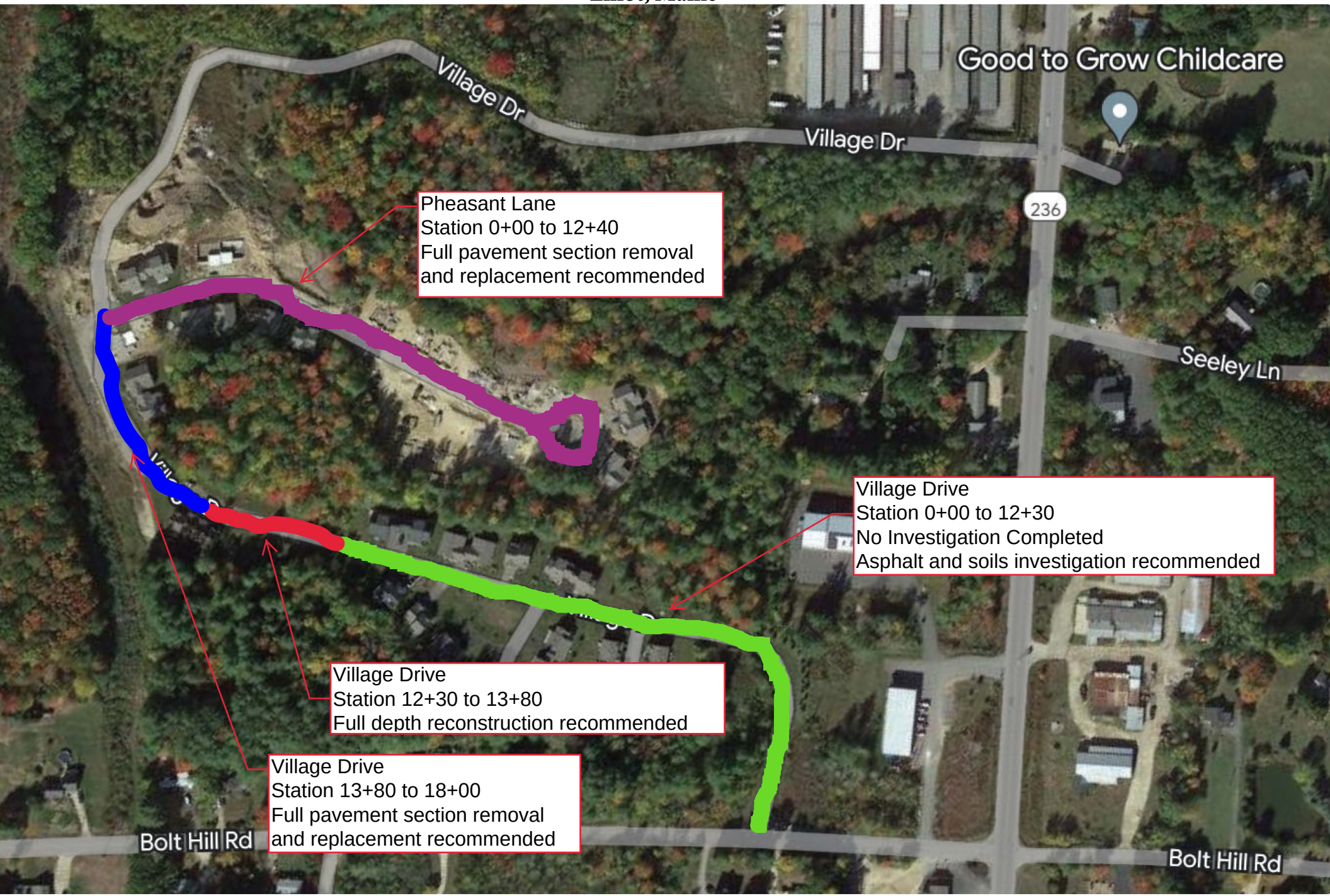
Conclusion

JTC recommends further investigation of Village Driver form Station 0+00 to Station 12+30. For the scope of work provided by Attar Engineering and cost analysis attached to it, JTC believed the actual construction costs to be approximately $199,335 more than what has been submitted.

JTC also recommended construction oversight during the repair work being recommended and any expansion of the roadways in the development.

ATTACHMENT 1

Village at Great Brook
Elliot, Maine



Pavement Repair Recommendations

ATTACHMENT 2

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Construction Items for Compliance					**Construction Items for Compliance Assumed scope is Station 12+30 to 13+80**					**Construction Items for Compliance Assumed scope is Station 12+30 to 13+80**				
Roadway Adjustment - Village Drive:	1.00	LS	$15,000	**$15,000**	**Roadway Adjustment - Village Drive:**					**Roadway Adjustment - Village Drive:**				
Lump Sum Includes: 150' Section of Village Drive, Stations 12+30 thru 13+80 Removal of Existing Asphalt within Section. Extend Gravel Base for Shifted Asphalt Surface Fine-Grade Existing Gravel Base for Proper Drainage Roll & Compact Existing & Extended Gravel Base Pave 1-3/4" Base Course Asphalt					*Remove pavement surface dimensions = 20 feet wide, 150 feet long*	*333.33*	*SY*	*$25.00*	*$8,333.33*	*Remove pavement surface dimensions = 20 feet wide, 150 feet long*	*333.33*	*SY*	*$25.00*	*$8,333.33*
					Type A Gravel dimensions per detail: 27 feet wide, 150 feet long, 6" depth	*75.00*	*CY*	*$60.00*	*$4,500.00*	*Type A Gravel dimensions per detail: 27 feet wide, 150 feet long, 6" depth*	*75.00*	*CY*	*$60.00*	*$4,500.00*
					Type D Gravel dimensions per detail: 27 feet wide, 150 feet long, 15" depth	*187.50*	*CY*	*$50.00*	*$9,375.00*	*Type D Gravel dimensions per detail: 27 feet wide, 150 feet long, 15" depth*	*187.50*	*CY*	*$50.00*	*$9,375.00*
					Asphalt Base dimensions = 20 feet wide, 150 feet long, 1.75" depth	*32.08*	*Tons*	*$225.00*	*$7,218.75*	*Asphalt Base dimensions = 20 feet wide, 150 feet long, 1.75" depth*	*32.08*	*Tons*	*$225.00*	*$7,218.75*
					Asphalt Surface dimensions = 20 feet wide, 150 feet long, 1.25" depth	*22.92*	*Tons*	*$225.00*	*$5,156.25*	*Asphalt Surface dimensions = 20 feet wide, 150 feet long, 1.25" depth*	*22.92*	*Tons*	*$225.00*	*$5,156.25*
								Total=	***$34,583.33***				***Total=***	***$34,583.33***
								Δ Developer Submission to JTC Review =	*-$19,583.33*				*Δ Developer Submission to JTC Review=*	*-$19,583.33*

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Paving: Travelways					**Paving: Travelways** **Assumed limits for Village Drive is Station 13+80 to 18+00** **Assumed limits for Pheasant Lane is Station 0+00 to 12+40**					**Remove/Replace Base Asphalt - Travelways** **Assumed limits for Village Drive is Station 13+80 to 18+00** **Assumed limits for Pheasant Lane is Station 0+00 to 12+40**				
Village Drive:	1.00	LS	$50,000	**$50,000**	**Village Drive:**					**Village Drive:**				
Lump Sum Includes: Clean-Up of Existing Paved Surface (Base Course). Trimming of Back Edges. Leveling of Depressions and Sinkholes Pave Surface Course Overlay of 1-1/2"					*Asphalt Surface dimensions = 20 feet wide, 420 feet long, 1.5" depth*	*77.00*	*Tons*	*$250.00*	*$19,250.00*	*Remove Pavement Surface or Reclaim and Grade existing surface = 20 feet wide, 420 feet long*	*933.33*	*SY*	*$35.00*	*$32,666.67*
					Tack Coat dimensions = 20 feet wide, 420 feet long, .03 Gal/SY	*28.00*	*Gal*	*$20.00*	*$560.00*	*Asphalt Surface dimensions = 20 feet wide, 420 feet long, 1.5" depth*	*77.00*	*Tons*	*$250.00*	*$19,250.00*
					Shim Allowance	*50.00*	*Tons*	*$200.00*	*$10,000.00*	*Tack Coat dimensions = 20 feet wide, 420 feet long, .03 Gal/SY*	*28.00*	*Gal*	*$20.00*	*$560.00*
					Trimming Allowance	*1.00*	*LS*	*$2,000.00*	*$2,000.00*	*Shim Allowance*	*50.00*	*Tons*	*$200.00*	*$10,000.00*
										Trimming Allowance	*1.00*	*LS*	*$2,000.00*	*$2,000.00*
								Total=	***$31,810.00***				***Total=***	***$64,476.67***
								Δ Developer Submission to JTC Review =	*$18,190.00*				*Δ Developer Submission to JTC Review=*	*-$14,476.67*

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Pheasant Lane:	1.00	LS	$32,000	**$32,000**	**Pheasant Lane:**					**Pheasant Lane:**				
Lump Sum Includes: Clean-Up of Existing Paved Surface (Base Course). Trimming of Back Edges. Leveling of Depressions and Sinkholes Pave Surface Course Overlay of 1-1/2"					*Asphalt Surface dimensions = 20 feet wide, 1240 feet long, 1.5" depth*	*227.33*	*Tons*	*$250.00*	*$56,833.33*	*Remove Pavement Surface or Reclaim and Grade existing surface = 20 feet wide, 1240 feet long*	*2755.56*	*SY*	*$35.00*	*$96,444.44*
					Tack Coat dimensions = 20 feet wide, 1240 feet long, .03 Gal/SY	*82.67*	*Gal*	*$20.00*	*$1,653.33*	*Asphalt Surface dimensions = 20 feet wide, 1240 feet long, 1.5" depth*	*227.33*	*Tons*	*$250.00*	*$56,833.33*
					Shim Allowance	*50.00*	*Tons*	*$200.00*	*$10,000.00*	*Tack Coat dimensions = 20 feet wide, 1240 feet long, .03 Gal/SY*	*82.67*	*Gal*	*$20.00*	*$1,653.33*
					Trimming Allowance	*1.00*	*LS*	*$4,000.00*	*$4,000.00*	*Shim Allowance*	*50.00*	*Tons*	*$200.00*	*$10,000.00*
									$0.00	*Trimming Allowance*	*1.00*	*LS*	*$4,000.00*	*$4,000.00*
								Total=	***$72,486.67***				***Total=***	***$168,931.11***
								Δ Developer Submission to JTC Review =	*-$40,486.67*				*Δ Developer Submission to JTC Review=*	*-$136,931.11*
Grading/Paving: Driveways					**Grading/Paving: Driveways**					**Grading/Paving: Driveways**				
Sagamore Lane (Driveways for All 4 Homes):	1.00	LS	$11,000	**$11,000**	**Sagamore Lane (Driveways for All 4 Homes):**					**Sagamore Lane (Driveways for All 4 Homes):**				
Lump Sum Includes: Remove all Asphalt to Correct Grading Issue. Fine-Grade Existing Gravel Base for Proper Drainage Roll & Compact Existing Gravel Base. Pave 2" Base Course Asphalt Pave Surface Course Overlay of 1"					*Remove pavement surface dimensions = 20 feet wide, 100 feet long*	*222.22*	*SY*	*$25.00*	*$5,555.56*	*Remove pavement surface dimensions = 20 feet wide, 100 feet long*	*222.22*	*SY*	*$25.00*	*$5,555.56*
					Grading Allowance	*1.00*	*LS*	*$5,000.00*	*$5,000.00*	*Grading Allowance*	*1.00*	*LS*	*$5,000.00*	*$5,000.00*
					Asphalt Base dimensions = 20 feet wide, 100 feet long, 2" depth	*24.44*	*Tons*	*$225.00*	*$5,500.00*	*Asphalt Base dimensions = 20 feet wide, 100 feet long, 2" depth*	*24.44*	*Tons*	*$225.00*	*$5,500.00*
					Asphalt Surface dimensions = 20 feet wide, 100 feet long, 1" depth	*12.22*	*Tons*	*$250.00*	*$3,055.56*	*Asphalt Surface dimensions = 20 feet wide, 100 feet long, 1" depth*	*12.22*	*Tons*	*$250.00*	*$3,055.56*
								Total=	***$19,111.11***				***Total=***	***$19,111.11***
								Δ Developer Submission to JTC Review =	*-$8,111.11*				*Δ Developer Submission to JTC Review=*	*-$8,111.11*

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Abenaki Trail (Driveways for All 5 Homes):	1.00	LS	$10,000	**$10,000**	**Abenaki Trail (Driveways for All 5 Homes):**					**Abenaki Trail (Driveways for All 5 Homes):**				
Lump Sum Includes: Clean-Up of Existing Paved Surface (Base Course). Trimming of Back Edges. Leveling Depressions and Sinkholes Pave Surface Course Overlay of 1-1/2"					*Asphalt Surface dimensions = 20 feet wide, 130 feet long, 1.5" depth*	*23.83*	*Tons*	*$250.00*	*$5,958.33*	*Asphalt Surface dimensions = 20 feet wide, 130 feet long, 1.5" depth*	*23.83*	*Tons*	*$250.00*	*$5,958.33*
					Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY	*8.67*	*Gal*	*$20.00*	*$173.33*	*Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY*	*8.67*	*Gal*	*$20.00*	*$173.33*
					Shim Allowance	*20.00*	*Tons*	*$200.00*	*$4,000.00*	*Shim Allowance*	*20.00*	*Tons*	*$200.00*	*$4,000.00*
					Trimming Allowance	*1.00*	*LS*	*$1,000.00*	*$1,000.00*	*Trimming Allowance*	*1.00*	*LS*	*$1,000.00*	*$1,000.00*
								Total=	***$11,131.67***				***Total=***	***$11,131.67***
								Δ Developer Submission to JTC Review =	*-$1,131.67*				*Δ Developer Submission to JTC Review=*	*-$1,131.67*
Village Drive (Driveways for All Homes):	1.00	LS	$20,000	**$20,000**	**Village Drive (Driveways for All Homes):**					**Village Drive (Driveways for All Homes):**				
Lump Sum Includes: Sawcut Elevated Asphalt Section near Garage of 28 & 30 Village Drive Clean-Up of Existing Paved Surface (Base Course). Trimming of Back Edges. Levelling of Depressions and Sinkholes Pave Surface Course Overlay of 1-1/2"					*Asphalt Surface dimensions = 8 drives, approx. 20'X40' each, 1.5" depth*	*58.67*	*Tons*	*$250.00*	*$14,666.67*	*Asphalt Surface dimensions = 8 drives, approx. 20'X40' each, 1.5" depth*	*58.67*	*Tons*	*$250.00*	*$14,666.67*
					Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY	*10.67*	*Gal*	*$20.00*	*$213.33*	*Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY*	*10.67*	*Gal*	*$20.00*	*$213.33*
					Shim Allowance	*20.00*	*Tons*	*$200.00*	*$4,000.00*	*Shim Allowance*	*20.00*	*Tons*	*$200.00*	*$4,000.00*
					Trimming/Sawcutting Allowance	*1.00*	*LS*	*$2,000.00*	*$2,000.00*	*Trimming/Sawcutting Allowance*	*1.00*	*LS*	*$2,000.00*	*$2,000.00*
								Total=	***$20,880.00***				***Total=***	***$20,880.00***
								Δ Developer Submission to JTC Review =	*-$880.00*				*Δ Developer Submission to JTC Review=*	*-$880.00*

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Pheasant Lane (Driveways for All Homes):	1.00	LS	$26,000	**$26,000**	**Pheasant Lane (Driveways for All Homes):**					**Pheasant Lane (Driveways for All Homes):**				
Lump Sum Includes: Sawcut Elevated Asphalt Section near Garage of 30 & 32 Pheasant Lane Sawcut Elevated Asphalt Section near Garage of 43 & 45 Pheasant Lane Clean-Up of Existing Paved Surface (Base Course). Trimming of Back Edges. Levelling of Depressions and Sinkholes Pave Surface Course Overlay of 1-1/2"					*Asphalt Surface dimensions = 10 drives, approx. 20'X40' each, 1.5" depth*	*73.33*	*Tons*	*$250.00*	*$18,333.33*	*Asphalt Surface dimensions = 10 drives, approx. 20'X40' each, 1.5" depth*	*73.33*	*Tons*	*$250.00*	*$18,333.33*
					Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY	*13.33*	*Gal*	*$20.00*	*$266.67*	*Tack Coat dimensions = 20 feet wide, 130 feet long, .03 Gal/SY*	*13.33*	*Gal*	*$20.00*	*$266.67*
					Shim Allowance	*20.00*	*Tons*	*$200.00*	*$4,000.00*	*Shim Allowance*	*20.00*	*Tons*	*$200.00*	*$4,000.00*
					Trimming/Sawcutting Allowance	*1.00*	*LS*	*$4,000.00*	*$4,000.00*	*Trimming/Sawcutting Allowance*	*1.00*	*LS*	*$4,000.00*	*$4,000.00*
								Total=	***$26,600.00***				***Total=***	***$26,600.00***
								Δ Developer Submission to JTC Review =	*-$600.00*				*Δ Developer Submission to JTC Review=*	*-$600.00*

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Landscaping & Transportation Safety					**Landscaping & Transportation Safety No investigation by JTC**					**Landscaping & Transportation Safety No investigation by JTC**				
Shade Tree Plantings - Pheasant Lane:	1.00	LS	$4,000	**$4,000**	**Shade Tree Plantings - Pheasant Lane:**					**Shade Tree Plantings - Pheasant Lane:**				
Lump Sum Includes: Excavation of Planting Trench behind 11 & 13 Pheasant Lane Placement of 3x Fireman's Maple. Stabilization and Mulching of Excavated Site					*3 Maple Trees*	*3.00*	*EA*	*$500.00*	*$1,500.00*	*3 Maple Trees*	*3.00*	*EA*	*$500.00*	*$1,500.00*
					Stabilization Allowance	*1.00*	*LS*	*$2,000.00*	*$2,000.00*	*Stabilization Allowance*	*1.00*	*LS*	*$2,000.00*	*$2,000.00*
								Total=	***$3,500.00***				***Total=***	***$3,500.00***
								Δ Developer Submission to JTC Review =	*$500.00*				*Δ Developer Submission to JTC Review=*	*$500.00*
Removal of Existing Fill Stockpile:	1.00	LS	$10,000	**$10,000**	**Removal of Existing Fill Stockpile:**					**Removal of Existing Fill Stockpile:**				
Lump Sum Includes: Excavation of Fill Stockpile and Trucking Off-Site. Smoothing and Blending of Ground Surface to Surrounding Grade Seeding/Mulching of Disturbed Area (As Needed)					*Excavation.Truckin/Site Stabilization allowance*	*1.00*	*LS*	*$10,000.00*	*$10,000.00*	*Excavation.Truckin/Site Stabilization allowance*	*1.00*	*LS*	*$10,000.00*	*$10,000.00*
								Total=	***$10,000.00***				***Total=***	***$10,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*				*Δ Developer Submission to JTC Review=*	*$0.00*
Ornamental Stone - Pheasant Lane Culverts:	1.00	LS	$2,000	**$2,000**	**Ornamental Stone - Pheasant Lane Culverts:**					**Ornamental Stone - Pheasant Lane Culverts:**				
Lump Sum Includes: Stabilization of Side Slopes at Driveway Culverts. Removal of Debris from Culvert Forebays (As Needed) Repair of Exposed Geotextile (As Needed). Placement of Landscape Paper Bedding. Placement of Ornamental Stone around Culvert Inlets					*Landscaping allowance, culvert inlet/outlet stabilozation allowance*	*1.00*	*LS*	*$2,000.00*	*$2,000.00*	*Landscaping allowance, culvert inlet/outlet stabilozation allowance*	*1.00*	*LS*	*$2,000.00*	*$2,000.00*
								Total=	***$2,000.00***				***Total=***	***$2,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*				*Δ Developer Submission to JTC Review=*	*$0.00*
Boulder Barriers - Pheasant Lane:	1.00	LS	$9,000	**$9,000**	**Boulder Barriers - Pheasant Lane:**					**Boulder Barriers - Pheasant Lane:**				
Lump Sum Includes: Stabilization of Side Slopes within cul-de-sac. Excavation for Boulder Placement (5' Separation Max.) Placement of 3' Boulder Barriers (4" Embedment Depth Min.) Seeding/Mulching of Disturbed Area (As Needed)					*Landscaping allowance, culvert inlet/outlet stabilozation allowance*	*1.00*	*LS*	*$9,000.00*	*$9,000.00*	*Landscaping allowance, culvert inlet/outlet stabilozation allowance*	*1.00*	*LS*	*$9,000.00*	*$9,000.00*
								Total=	***$9,000.00***				***Total=***	***$9,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*				*Δ Developer Submission to JTC Review=*	*$0.00*

Village at Great Brook

Eliot, Maine

Roadway Repair Cost Analysis

Developer Sumission					JTC Price Review FOR SCOPE PROPOSED BY DEVELOPER (NOT IN LINE WITH EVALUATION)					JTC Price Review FOR SCOPE RECOMMENDED (FROM PAVEMENT EVALUATION)				
Estimate Line Item	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**	**Estimate Line Item**	**Quantity**	**Unit**	**Unit Price**	**Price**
Emergency Access Gate (Quail Lane):	1.00	LS	$5,000	**$5,000**	**Emergency Access Gate (Quail Lane):**					**Emergency Access Gate (Quail Lane):**				
Lump Sum Includes: Excavation of Gate Post Foundations. Installation of Emergency Access Gate Installation of Knox Box Keyed Entry Device.					*Remove/Replace Gate*	*1.00*	*LS*	*$5,000.00*	*$5,000.00*	*Remove/Replace Gate*	*1.00*	*LS*	*$5,000.00*	*$5,000.00*
								Total=	***$5,000.00***				***Total=***	***$5,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*				*Δ Developer Submission to JTC Review=*	*$0.00*
Post-Construction Maintenance					**Post-Construction Maintenance No investigation by JTC**					**Post-Construction Maintenance No investigation by JTC**				
Maintenance of Emergency Access Drive:	1.00	LS	$25,000	**$25,000**	**Maintenance of Emergency Access Drive:**					**Maintenance of Emergency Access Drive:**				
Lump Sum Includes: Fine-Grade Existing Gravel Surface for Proper Drainage Monitoring and Repairs of Channelized Flow across Gravel Surface Annual Snow Removal Contract (Salt/Sand, Plowing)					*Maintenance*	*1.00*	*LS*	*$25,000.00*	*$25,000.00*	*Maintenance*	*1.00*	*LS*	*$25,000.00*	*$25,000.00*
								Total=	***$25,000.00***				***Total=***	***$25,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*				*Δ Developer Submission to JTC Review=*	*$0.00*
Inspection of Sewer Service Lines:	1.00	LS	$9,000	**$9,000**	**Inspection of Sewer Service Lines:**					**Inspection of Sewer Service Lines:**				
Lump Sum Includes: CCTV Inspection of All Unit Service Lines from Pump Station Jetting of Line to Clear Debris (As Needed). Removal of Septic via Trucking during Inspections. Pavement Markings of Service Line Locations for Future Reference					*Sewer maintenance/marking*	*1.00*	*LS*	*$9,000.00*	*$9,000.00*	*Sewer maintenance/marking*	*1.00*	*LS*	*$9,000.00*	*$9,000.00*
								Total=	***$9,000.00***				***Total=***	***$9,000.00***
								Δ Developer Submission to JTC Review =	*$0.00*					*$0.00*
Developer Submission					**JTC Cost Review**					**JTC Cost Review**				
			Subtotal	**$228,000.00**				**Subtotal**	**$280,102.78**				**Subtotal**	**$409,213.89**
			Contingency (10% of Subtotal 1)	$22,800.00				Contingency (10% of Subtotal 1)	$28,010.28				Contingency (10% of Subtotal 1)	$40,921.39
			Total	**$250,800.00**				**Total**	**$308,113.06**				**Total**	**$450,135.28**
								Δ Developer Submission to JTC Review =	***-$57,313.06***				***Δ Developer Submission to JTC Review=***	***-$199,335.28***

ATTACHMENT 3

FRANKENMUTH INSURANCE COMPANY

February 23, 2023

Town of Eliot
1333 State Road
Eliot, ME 03903

RE: Village on Great Brook, LLC
50 Nashua Road, Suite 203
Londonderry, NH 03053

Project: Site Improvements in connection with Village Drive

Dear Sir or Madam,

Please be advised that Frankenmuth Insurance Company is prepared to provide the requested Subdivision Bond in the amount equal to the estimated construction cost of $250,800. We hope you will give them favorable consideration for your project.

Although Village on Great Brook, LLC has our highest recommendation, execution of any final bonds would be subject to a review of the underwriting terms and conditions, including any requested bond forms, and also their current financial standing at the time of the request.

This letter is written for no consideration and is not a legally binding document or commitment to provide future bonds. If you need any additional assurance regarding the bonding capacity of Village on Great Brook, LLC, please do not hesitate to contact me.

Best Regards,

Joline L. Binette
Attorney-In-Fact

FRANKENMUTH INSURANCE COMPANY

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that Frankenmuth Insurance Company (the "Company"), a corporation duly organized and existing under the laws of the State of Michigan, having its principal office at 1 Mutual Avenue, Frankenmuth, Michigan 48787, does hereby nominate, constitute and appoint:

Robert E. Shaw, Jr., Benjamin S. Shaw, Heidi Rodzen, Melanie A. Bonnevie, Joline L. Binette, Nancy Castonguay, Samuel M. Goulet

Their true and lawful attorney(s)-in-fact, each in their separate capacity if more than one is named above, to make, execute, seal, acknowledge and deliver any and all bonds, contracts and undertakings of suretyship, with the exception of Financial Guaranty Insurance, provided, however, that the penal sum of any one such instrument shall not exceed the sum of:

Fifty Million and 00/100 Dollars ($50,000,000)

This Power of Attorney is granted pursuant to the following Resolution duly adopted at a meeting of the Board of Directors of Frankenmuth Insurance Company:

> "**RESOLVED**, that the President, Senior Vice President or Vice President and each of them under their respective designations, hereby is authorized to execute powers of attorney, and such authority can be executed by use of facsimile signature, which may be attested or acknowledged by any officer of the Company, qualifying the attorney(s) named in the given power of attorney, to execute on behalf of, and acknowledge as the act and deed of Frankenmuth Insurance Company on all bonds, contracts and undertakings of suretyship, and to affix the corporate seal thereto."

IN WITNESS WHEREOF, the Company has caused these presents to be signed and attested by its appropriate officers and its corporate seal hereunto affixed this 15th day of December, 2022.

FRANKENMUTH INSURANCE CORPORATE SEAL 1868 MICHIGAN

Frankenmuth Insurance Company

By _____
Frederick A. Edmond, Jr.,
President and Chief Executive Officer

STATE OF MICHIGAN)
COUNTY OF SAGINAW) ss:

Sworn to before me, a Notary Public in the State of Michigan, by Frederick A. Edmond, Jr., to me personally known to be the individual and officer described in, and who executed the preceding instrument, deposed and said the Corporate Seal and his signature as officer were affixed and subscribed to said instrument by the authority of the Company.

IN TESTIMONY WHEREOF, I have set my hand, and affixed my Official Seal this 15th day of December, 2022.

_____ (Seal)
Susan L. Fresorger, Notary Public
Saginaw County, State of Michigan
My Commission Expires: April 3, 2028

SUSAN L FRESORGER NOTARY PUBLIC STATE OF MICHIGAN MY COMMISSION EXPIRES APR 3, 2028

I, the undersigned, Executive Vice President of Frankenmuth Insurance Company, do hereby certify that the foregoing is a true, correct and complete copy of the original Power of Attorney; that said Power of Attorney has not been revoked or rescinded and is in full force and effect as of this date.

IN WITNESS WHEREOF, I have set my hand and affixed the Seal of the Company, this 23rd day of February, 2023.

_____
Andrew H. Knudsen, Executive Vice President,
Chief Operating Officer and Secretary

ALL CORRESPONDENCE RELATED TO BOND VALIDATION AND/OR A CLAIM SHOULD BE DIRECTED TO VP SURETY, 701 U.S. ROUTE ONE, SUITE 1, YARMOUTH, ME 04096

ATTAR
ENGINEERING, INC
CIVIL • STRUCTURAL • MARINE

Mr. Michael Sullivan, Town Manager
Town of Eliot, Maine
1333 State Road
Eliot, Maine 03903

February 14th, 2023
Project No. C173-21

RE: Request for Select Board Review
The Village at Great Brook (Tax Map 17, Lot 29)
Bolt Hill Road, Eliot, Maine

Dear Mr. Sullivan:

In accordance with Town of Eliot Code of Ordinances §33-132.(b), Village on Great Brook, LLC. respectfully requests to be heard before the next-available Select Board meeting to discuss the performance guarantee associated with the Amendment to Existing Subdivision application that is currently before the Planning Board for hybrid review.

The Applicant has furnished a performance guarantee consistent with Option 1 of the above-mentioned Ordinance section which covers a list of outstanding construction and maintenance items enumerated in the attached Estimate of Cost. The guarantee will be in the form of a bond, and additional information on said bond will be provided prior to the Select Board meeting.

We look forward to discussing the project with the Select Board at the February 23rd Select Board meeting. Please contact me for any additional information or clarifications required.

Sincerely;

Michael J. Sudak, E.I.
Staff Engineer

cc: Village on Great Brook, LLC.

Opinion of Cost - Villages at Great Brook (VGB)
Bolt Hill Road, Eliot, Maine
02/14/2023

Estimate Line Item	Quantity	Unit	Unit Price	Price
Construction Items for Compliance				
Roadway Adjustment - Village Drive:	1	LS	$15,000	**$15,000**
Lump Sum Includes: *150' Section of Village Drive, Stations 12+30 thru 13+80* *Removal of Existing Asphalt within Section* *Extend Gravel Base for Shifted Asphalt Surface* *Fine-Grade Existing Gravel Base for Proper Drainage* *Roll & Compact Existing & Extended Gravel Base* *Pave 1-3/4" Base Course Asphalt*				
Paving: Travelways				
Village Drive:	1	LS	$50,000	**$50,000**
Lump Sum Includes: *Clean-Up of Existing Paved Surface (Base Course)* *Trimming of Back Edges* *Leveling of Depressions and Sinkholes* *Pave Surface Course Overlay of 1-1/2"*				
Pheasant Lane:	1	LS	$32,000	**$32,000**
Lump Sum Includes: *Clean-Up of Existing Paved Surface (Base Course)* *Trimming of Back Edges* *Leveling of Depressions and Sinkholes* *Pave Surface Course Overlay of 1-1/2"*				
Grading/Paving: Driveways				
Sagamore Lane (Driveways for All 4 Homes):	1	LS	$11,000	**$11,000**
Lump Sum Includes: *Remove all Asphalt to Correct Grading Issue* *Fine-Grade Existing Gravel Base for Proper Drainage* *Roll & Compact Existing Gravel Base* *Pave 2" Base Course Asphalt* *Pave Surface Course Overlay of 1"*				
Abenaki Trail (Driveways for All 5 Homes):	1	LS	$10,000	**$10,000**
Lump Sum Includes: *Clean-Up of Existing Paved Surface (Base Course)* *Trimming of Back Edges* *Leveling Depressions and Sinkholes* *Pave Surface Course Overlay of 1-1/2"*				
Village Drive (Driveways for All Homes):	1	LS	$20,000	**$20,000**
Lump Sum Includes: *Sawcut Elevated Asphalt Section near Garage of 28 & 30 Village Drive* *Clean-Up of Existing Paved Surface (Base Course)* *Trimming of Back Edges* *Levelling of Depressions and Sinkholes* *Pave Surface Course Overlay of 1-1/2"*				

Pheasant Lane (Driveways for All Homes):	1	LS	$26,000	**$26,000**
Lump Sum Includes: *Sawcut Elevated Asphalt Section near Garage of 30 & 32 Pheasant Lane* *Sawcut Elevated Asphalt Section near Garage of 43 & 45 Pheasant Lane* *Clean-Up of Existing Paved Surface (Base Course)* *Trimming of Back Edges* *Levelling of Depressions and Sinkholes* *Pave Surface Course Overlay of 1-1/2"*				
Landscaping & Transportation Safety				
Shade Tree Plantings - Pheasant Lane:	1	LS	$4,000	**$4,000**
Lump Sum Includes: *Excavation of Planting Trench behind 11 & 13 Pheasant Lane* *Placement of 3x Fireman's Maple* *Stabilization and Mulching of Excavated Site*				
Removal of Existing Fill Stockpile:	1	LS	$10,000	**$10,000**
Lump Sum Includes: *Excavation of Fill Stockpile and Trucking Off-Site* *Smoothing and Blending of Ground Surface to Surrounding Grade* *Seeding/Mulching of Disturbed Area (As Needed)*				
Ornamental Stone - Pheasant Lane Culverts:	1	LS	$2,000	**$2,000**
Lump Sum Includes: *Stabilization of Side Slopes at Driveway Culverts* *Removal of Debris from Culvert Forebays (As Needed)* *Repair of Exposed Geotextile (As Needed)* *Placement of Landscape Paper Bedding* *Placement of Ornamental Stone around Culvert Inlets*				
Boulder Barriers - Pheasant Lane:	1	LS	$9,000	**$9,000**
Lump Sum Includes: *Stabilization of Side Slopes within cul-de-sac* *Excavation for Boulder Placement (5' Separation Max.)* *Placement of 3' Boulder Barriers (4" Embedment Depth Min.)* *Seeding/Mulching of Disturbed Area (As Needed)*				
Emergency Access Gate (Quail Lane):	1	LS	$5,000	**$5,000**
Lump Sum Includes: *Excavation of Gate Post Foundations* *Installation of Emergency Access Gate* *Installation of Knox Box Keyed Entry Device*				
Post-Construction Maintenance				
Maintenance of Emergency Access Drive:	1	LS	$25,000	**$25,000**
Lump Sum Includes: *Fine-Grade Existing Gravel Surface for Proper Drainage* *Monitoring and Repairs of Channelized Flow across Gravel Surface* *Annual Snow Removal Contract (Salt/Sand, Plowing)*				

Inspection of Sewer Service Lines:	1	LS	$9,000	**$9,000**
Lump Sum Includes: CCTV Inspection of All Unit Service Lines from Pump Station *Jetting of Line to Clear Debris (As Needed)* *Removal of Septic via Trucking during Inspections* *Pavement Markings of Service Line Locations for Future Reference*				
Subtotal				**$228,000**
Contingency (10% of Subtotal 1)				$22,800
Total				**$250,800**

ATTACHMENT 4

JOHN TURNER
CONSULTING

REPORT OF PAVEMENT AND GRAVEL OBSERVATIONS

CLIENT: Mr. Joel Kahn
Equity Alliance LLC
7 Rolling Woods Drive
Bedford, NH 03110
Ph: 603-472-3808
jkahn@equity-alliance.com

PROJECT: Village at Great Brook
Eliot, ME

DATE: September 14, 2019

REPORT #: 19-10-066-002

General Location: Roadways - Phase I (Sta. 10+75 & Sta. 15+50 to 18+00) and Phase 2 (Sta. 0+00 to 12+36)
Field Representatives: J. Turner, J. McCarthy, D. Grodan, & M. Bronstein
Air Temperature: 55°
Weather: Overcast

SUMMARY OF PAVEMENT AND BASE GRAVEL INVESTIGATION:

On Saturday, September 14th, 2019, representatives of John Turner Consulting performed an investigation of the existing pavement and base gravels for roadway sections of the Village at Great Brook development in Eliot, Maine. This investigation consisted of cutting cored specimens of the asphalt material and collecting and measuring the underlying base gravel materials. Separate asphalt core samples were also taken to determine compaction percentages and the exposed, in-place base gravel was tested for compaction, as well.

COMPACTION CORE SAMPLES

Six (6)-inch diameter core samples were taken at six (6) locations over the roadway area. These samples were tested/measured to determine their thickness and bulk specific gravity. Two (2) of these samples were then tested to obtain a Maximum Theoretical Value for the binder material. The results were then averaged and compared against the bulk specific gravity of the 6 cores to determine a compaction percentage.

Thicknesses of the six (6) cores ranged from 1.46” to 2.29”, with an average of 1.94”. Compaction percentages ranged from 85.6% to 91.7%, with an average of 89.0%. Typical roadway compaction specification is 92 to 97% of Maximum Theoretical Value. Refer to the 6” Core Compaction Table for testing details.

Core Samples – (6" Diameter Cores)

CORE ID	LOCATION	THICKNESS (inches)	BULK SPECIFIC GRAVITY	THEORETICAL MAX (Avg of C-2 & C-4)	PERCENT COMPACTION
C-1	Sta. 17+10, R 4'	1.46	2.273	2.480	91.7%
C-2	Sta. 2+11, L 3'	1.67	2.157	2.480	87.0%
C-3	Sta. 5+33, R 6.5'	2.12	2.188	2.480	88.2%
C-4	Sta. 7+44, L 5'	2.29	2.275	2.480	91.7%
C-5	Sta. 8+88, R 1'	1.94	2.123	2.480	85.6%
C-6	Sta. 11+13, R 7'	2.17	2.229	2.480	89.9%

Thickness = Average of 3 Measurements

ROADWAY SOIL SAMPLES & COMPACTION TESTS

Nine (9) Locations were selected along the roadway sections for Phase 1 and Phase 2. Approximately 2'x2' sections of the asphalt binder were sawcut and removed from these areas. Once removed, in-place compaction tests were taken on the underlying base gravel. The areas were then hand-excavated to determine gravel thicknesses and obtain samples of the base material. The Driveway Cross Section and Cul-de-sac Cross Section details on Sheet 9 of the plans specify a 6" minimum layer of Crushed Gravel (MDOT Type A or B) for the paving base and a 15" minimum layer of Gravel Subbase (MDOT Type D or E). Moisture-Density relationships (Proctor values) were determined on 3 of the mainline roadway samples and 1 at the patch area at Sta. 10+75, which appeared to be a completely different sample than the others. The highest Proctor value was applied against the in-place density tests to obtain a compaction percentage. These are listed in the table below.

Two (2) separate samples (19-460, 19-461) were also collected of the gravel material along the roadway shoulders. These were compared against the MEDOT Type A & Type B specification, as well. The table below provides details on the samples collected.

Sample Number	Location	Base Layer Thickness	Moisture Content / Dry Density	Max. Dry Density	Percent Compaction	Notes
1) 19-460	Shoulder – Sta. 5+09, L	N/A	N/A	N/A	N/A	Does NOT meet MEDOT Type A or B
2) 19-461	Shoulder – Sta. 6+34, L	N/A	N/A	N/A	N/A	Does NOT meet MEDOT Type A or B
3) 19-484	Phase 1 – Sta. 17+02, L	22+"	2.0% / 129.7 pcf	133.9 pcf	96.9%	Does NOT meet MEDOT Type A or B
4) 19-485	Phase 1 – Sta. 17+86, R	21+"	2.5% / 133.3 pcf	133.9 pcf	99.6%	Does NOT meet MEDOT Type A or B
5) 19-486	Phase 2 – Sta. 2+50, R	21+"	2.4% / 133.4 pcf	133.9 pcf	99.6%	Does NOT meet MEDOT Type A or B
6) 19-487	Phase 2 – Sta. 4+25, R	21+"	2.9% / 136.1 pcf	133.9 pcf	+100%	Does NOT meet MEDOT Type A or B
7) 19-488	Phase 2 – Sta. 6+95, L	21+"	2.8% / 135.0 pcf	133.9 pcf	+100%	Does NOT meet MEDOT Type A or B

8) 19-489	Phase 2 – Sta. 7+25, R	21+"	2.6% / 132.7 pcf	133.9 pcf	99.1%	MEETS MEDOT Type B (Type A: 1.5% out on #40)
9) 19-490	Phase 2 – Sta. 10+60, R	21+"	2.1% / 132.8 pcf	133.9 pcf	99.2%	Does NOT meet MEDOT Type A or B
10) 19-491	Phase 2 – Sta. 11+50, L	22+"	2.6% / 131.6 pcf	133.9 pcf	98.3%	Does NOT meet MEDOT Type A or B
11) 19-492	Phase 1 – Sta. 10+75 (Patch Area)	22+"	5.6% / 132.6 pcf	142.4 pcf	93.1%	Does NOT meet MEDOT Type A or B

THICKNESS CORES

In order to determine asphalt binder thicknesses for the roadway, cores were cut every 100' from Sta. 16+00 to 18+00 (Phase 1) and from 1+00 to 12+00 (Phase 2). 3 cores were taken at every location (1 at 24" off Right EOP, 1 at Centerline and 1 at 24" off Left EOP). The Driveway Cross Section and Cul-de-sac Cross Section details on Sheet 9 of the plans specify a thickness of 1 ¾" for the asphalt Base Course. Thickness core samples ranged from 1.52" to 4.44", with an average thickness of 2.19". Refer to the Core Thickness Table for individual measurements.

Thickness Core Samples (3" & 4" Diameter Cores)

CORE ID	LOCATION	THICKNESS (inches)
1A	16+00, R	4.44
1B	16+00, CTR	2.56
1C	16+00, L	2.68
2A	17+00, R	2.03
2B	17+00, CTR	2.02
2C	17+00, L	2.00
3A	18+00, R	1.57
3B	18+00, CTR	1.92
3C	18+00, L	1.79
4A	1+00, R	1.82
4B	1+00, CTR	1.91
4C	1+00, L	1.97
5A	2+00, R	1.85
5B	2+00, CTR	2.04
5C	2+00, L	2.02
6A	3+00, R	1.62
6B	3+00, CTR	2.48
6C	3+00, L	2.29
7A	4+00, R	2.05

7B	4+00, CTR	2.26
7C	4+00, L	2.06
8A	5+00, R	2.16
8B	5+00, CTR	1.8
8C	5+00, L	1.72
9A	6+00, R	2.35
9B	6+00, CTR	1.93
9C	6+00, L	2.73
10A	7+00, R	2.15
10B	7+00, CTR	2.43
10C	7+00, L	1.91
11A	8+00, R	2.21
11B	8+00, CTR	2.48
11C	8+00, L	2.27
12A	9+00, R	2.58
12B	9+00, CTR	2.38
12C	9+00, L	1.60
13A	10+00, R	2.47
13B	10+00, CTR	4.02
13C	10+00, L	1.70
14A	11+00, R	2.78
14B	11+00, CTR	2.97
14C	11+00, L	1.60
15A	12+00, R	1.78
15B	12+00, CTR	1.52
15C	12+00, L	1.53

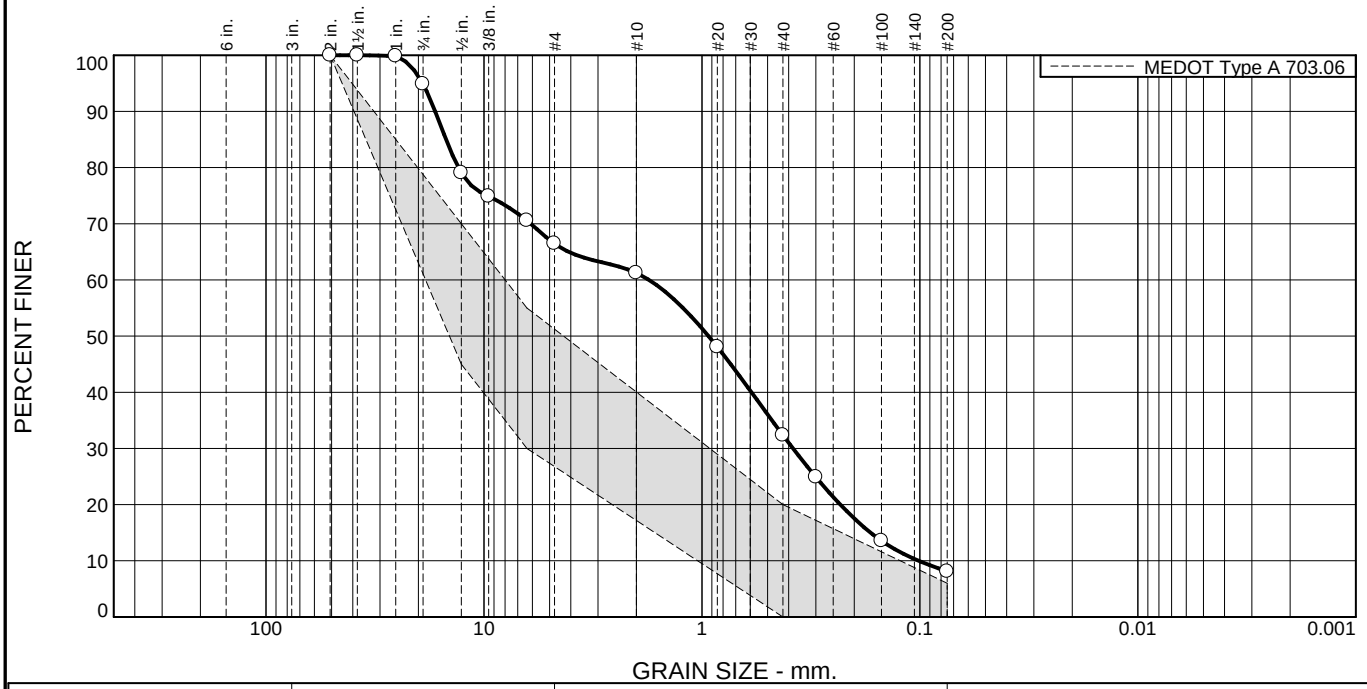
Right / Left (R / L) = 24” off the of Edge of Pavement (EOP)
Thickness = Average of 3 Measurements

Observations/Conclusions

- *Pavement thickness:* Eight (8) of the 45 thickness core samples were less than the specified 1.75". Two (2) of the 6 bulk specific gravity cores were less than the specified 1.75".
- *Gravel thickness*: All of the excavated holes, except Phase I – Station 10 + 75, had greater than the specified 21 inches of gravel. The gravel at Station 10+75 was contaminated with clay/silt, debris and organics and thus does not meet the project specifications.
- *Gravel compaction:* All of the areas tested for gravel compaction exceeded the specification for a minimum of 95%.
- *Pavement compaction:* None of the six (6) samples tested for compaction achieved the minimum requirement of 92%. However, two cores were at 91.7 percent were close. The other four (4) cores were significantly below 92%.
- *Gravel gradation:* Ten (10) of the eleven (11) gravels samples failed to meet the project gradation requirement in the specification. However, with the exception of Phase I – Station 10+75, the gravels are generally close to the project specifications and did meet the Town of Eliot specifications. I would recommend approving the in-place gravels with the exception of Phase I – Station 10+75 area.
- Station 10+75 area – JTC recommends fully boxing this area out and removing the in-place pavement and gravels, installing a filter fabric and reconstructing gravels and pavements in accordance with the project specifications.
- *Driveways* – JTC did not perform any sampling or testing for any driveways as part of this evaluation. However, our visual observations were that the driveways have many structural defects, and surfaces are very rough which may be indicative to poor compaction which would be consistent with what was found for the road.
- *Roadway* – Due to poor asphalt compaction, deficient asphalt depth and general poor workmanship, JTC recommends either removing the entire pavement cross-section or reclaiming the in-place pavement for the length of the project. Then the road should be re-paved in accordance with the project specifications.

We trust this letter meets your needs at this time. Please feel free to contact us with any questions or comments.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.1	28.4	5.3	28.8	24.3	8.1	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.9		
3/4	94.9		
1/2	79.1	45.0 - 70.0	X
3/8	74.9		
1/4	70.6	30.0 - 55.0	X
#4	66.5		
#10	61.2		
#20	48.1		
#40	32.4	0.0 - 20.0	X
#50	24.9		
#100	13.6		
#200	8.1	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel
(Brown Gravel)

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 16.7584 D_{85}= 14.9303 D_{60}= 1.7504
D_{50}= 0.9333 D_{30}= 0.3822 D_{15}= 0.1683
D_{10}= 0.1013 C_u= 17.28 C_c= 0.82

Remarks

Date Received: 9/12/19 **Date Tested:** 9/13/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Station 5+09
Sample Number: 19-460

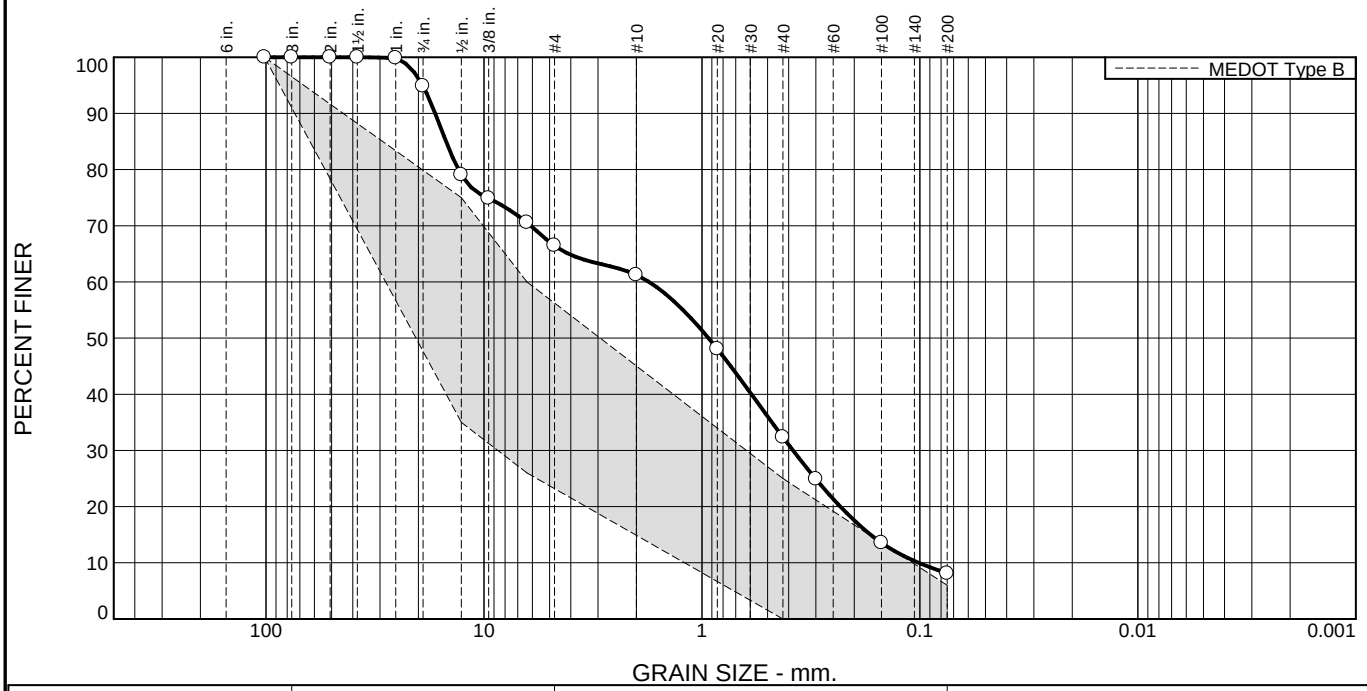
Date Sampled: 9/12/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 460A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.1	28.4	5.3	28.8	24.3	8.1	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.9		
3/4	94.9		
1/2	79.1	35.0 - 75.0	X
3/8	74.9		
1/4	70.6	26.0 - 60.0	X
#4	66.5		
#10	61.2		
#20	48.1		
#40	32.4	0.0 - 25.0	X
#50	24.9		
#100	13.6		
#200	8.1	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel
(Brown Gravel)

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 16.7586 D_{85}= 14.9304 D_{60}= 1.7504
D_{50}= 0.9333 D_{30}= 0.3822 D_{15}= 0.1683
D_{10}= 0.1013 C_u= 17.28 C_c= 0.82

Remarks

Date Received: 9/12/19 **Date Tested:** 9/13/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Station 5+09
Sample Number: 19-460

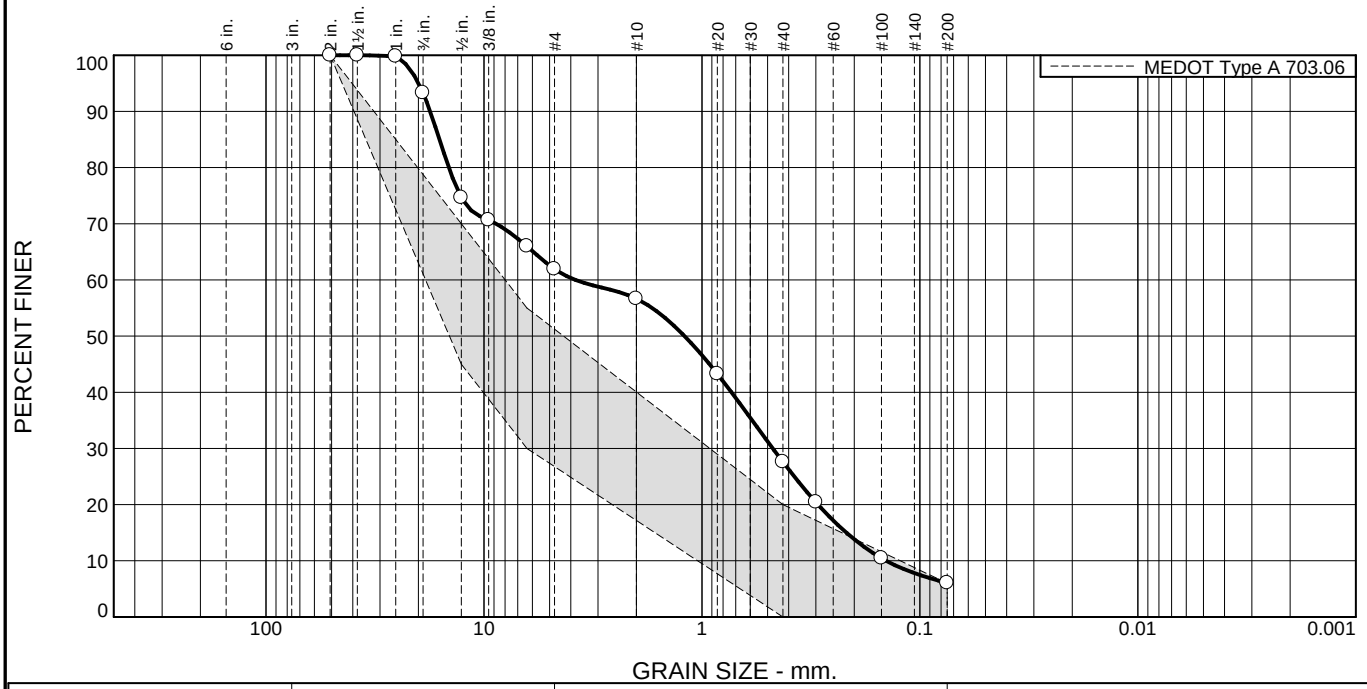
Date Sampled: 9/12/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 460A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.7	31.4	5.3	29.0	21.6	6.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.8		
3/4	93.3		
1/2	74.7	45.0 - 70.0	X
3/8	70.7		
1/4	66.0	30.0 - 55.0	X
#4	61.9		
#10	56.6		
#20	43.3		
#40	27.6	0.0 - 20.0	X
#50	20.4		
#100	10.5		
#200	6.0	0.0 - 6.0	

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel
(Brown Gravel)

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6687 D_{85}= 16.0032 D_{60}= 3.8059
D_{50}= 1.2011 D_{30}= 0.4733 D_{15}= 0.2173
D_{10}= 0.1429 C_u= 26.63 C_c= 0.41

Remarks

Date Received: 9/12/19 **Date Tested:** 9/13/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Station 6+34
Sample Number: 19-461

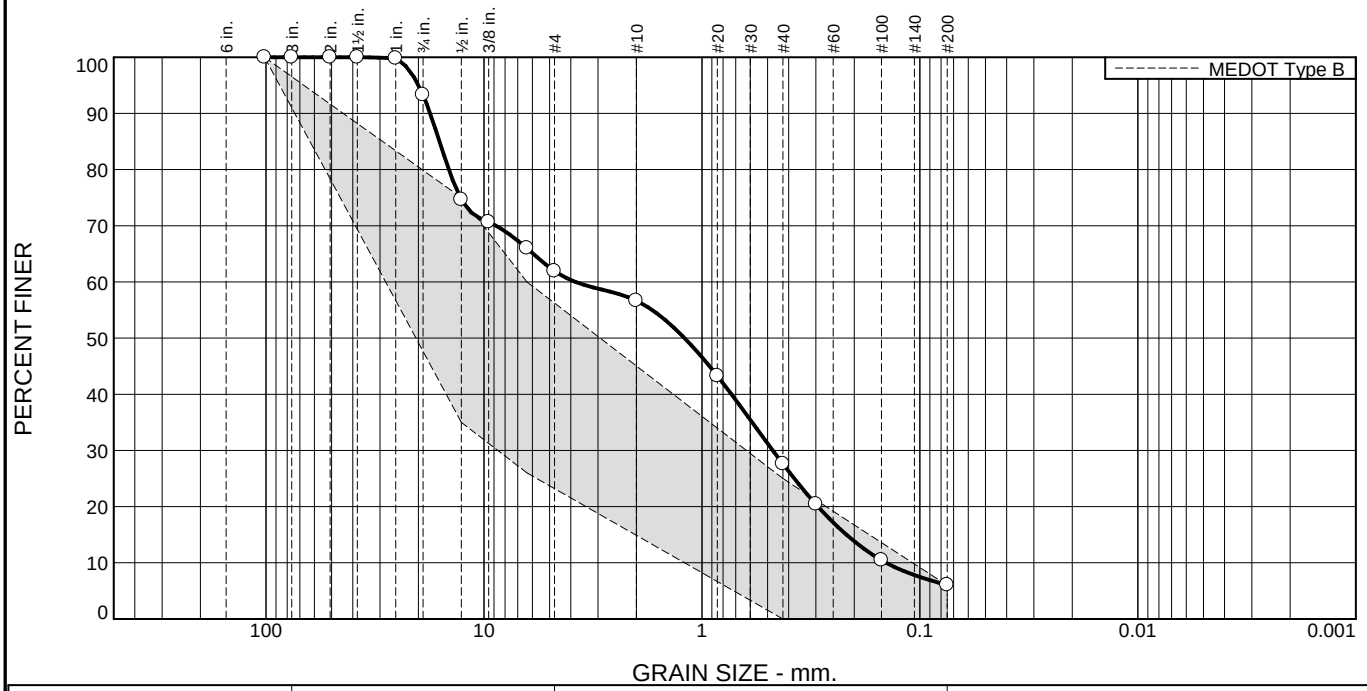
Date Sampled: 9/12/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 461A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.7	31.4	5.3	29.0	21.6	6.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.8		
3/4	93.3		
1/2	74.7	35.0 - 75.0	
3/8	70.7		
1/4	66.0	26.0 - 60.0	X
#4	61.9		
#10	56.6		
#20	43.3		
#40	27.6	0.0 - 25.0	X
#50	20.4		
#100	10.5		
#200	6.0	0.0 - 6.0	

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel
(Brown Gravel)

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6688 D_{85}= 16.0034 D_{60}= 3.8059
D_{50}= 1.2011 D_{30}= 0.4733 D_{15}= 0.2173
D_{10}= 0.1429 C_u= 26.63 C_c= 0.41

Remarks

Date Received: 9/12/19 **Date Tested:** 9/13/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Station 6+34
Sample Number: 19-461

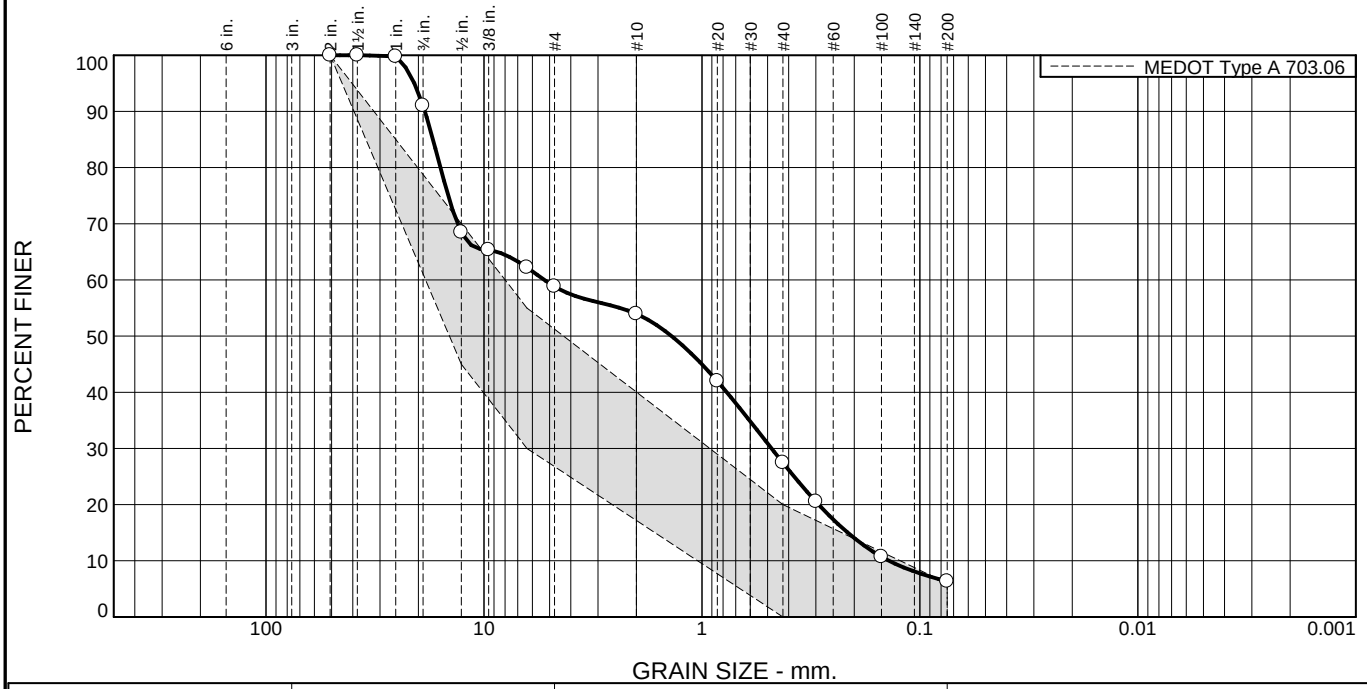
Date Sampled: 9/12/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 461A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.0	32.2	4.8	26.6	21.1	6.3	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.8		
3/4	91.0		
1/2	68.5	45.0 - 70.0	
3/8	65.3		
1/4	62.2	30.0 - 55.0	X
#4	58.8		
#10	54.0		
#20	42.0		
#40	27.4	0.0 - 20.0	X
#50	20.5		
#100	10.7		
#200	6.3	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.6830 D_{85}= 17.1510 D_{60}= 5.2856
D_{50}= 1.3775 D_{30}= 0.4794 D_{15}= 0.2142
D_{10}= 0.1387 C_u= 38.10 C_c= 0.31

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 1 Station 17+02 L
Sample Number: 19-484

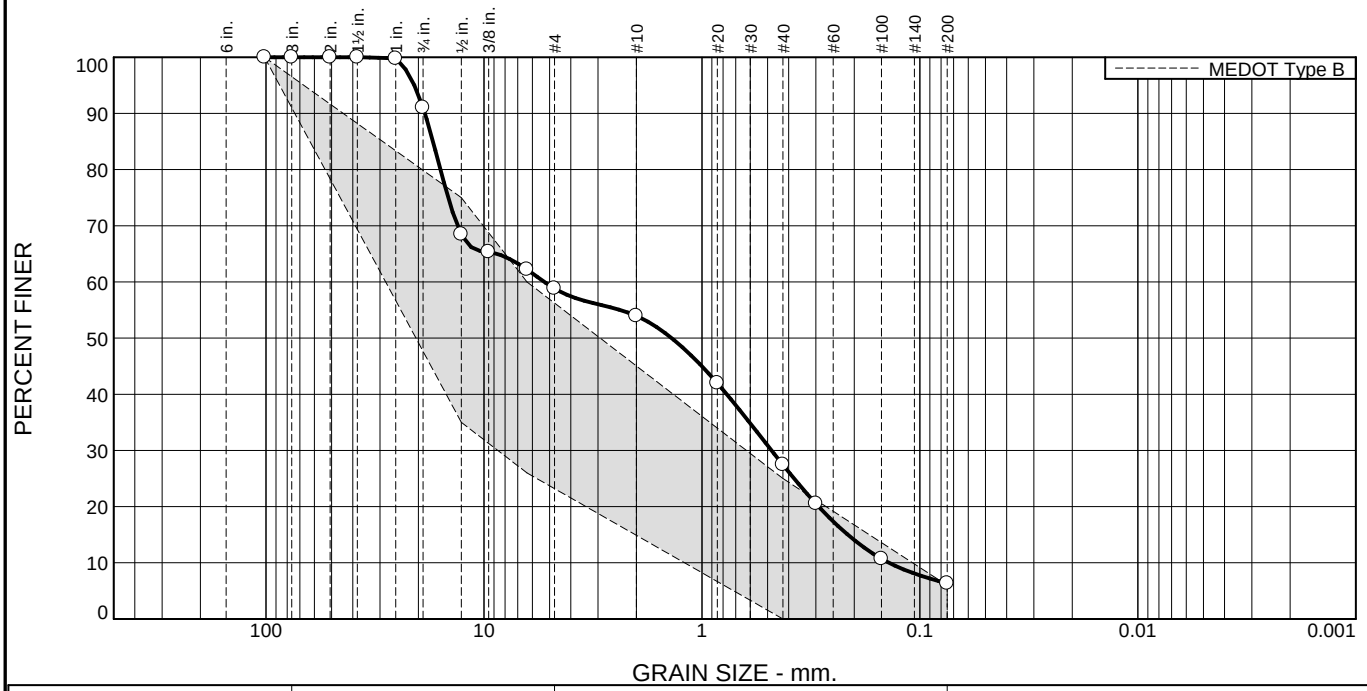
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 484A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.0	32.2	4.8	26.6	21.1	6.3	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.8		
3/4	91.0		
1/2	68.5	35.0 - 75.0	
3/8	65.3		
1/4	62.2	26.0 - 60.0	X
#4	58.8		
#10	54.0		
#20	42.0		
#40	27.4	0.0 - 25.0	X
#50	20.5		
#100	10.7		
#200	6.3	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.6831 D_{85}= 17.1512 D_{60}= 5.2856
D_{50}= 1.3775 D_{30}= 0.4794 D_{15}= 0.2142
D_{10}= 0.1387 C_u= 38.10 C_c= 0.31

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 1 Station 17+02 L
Sample Number: 19-484

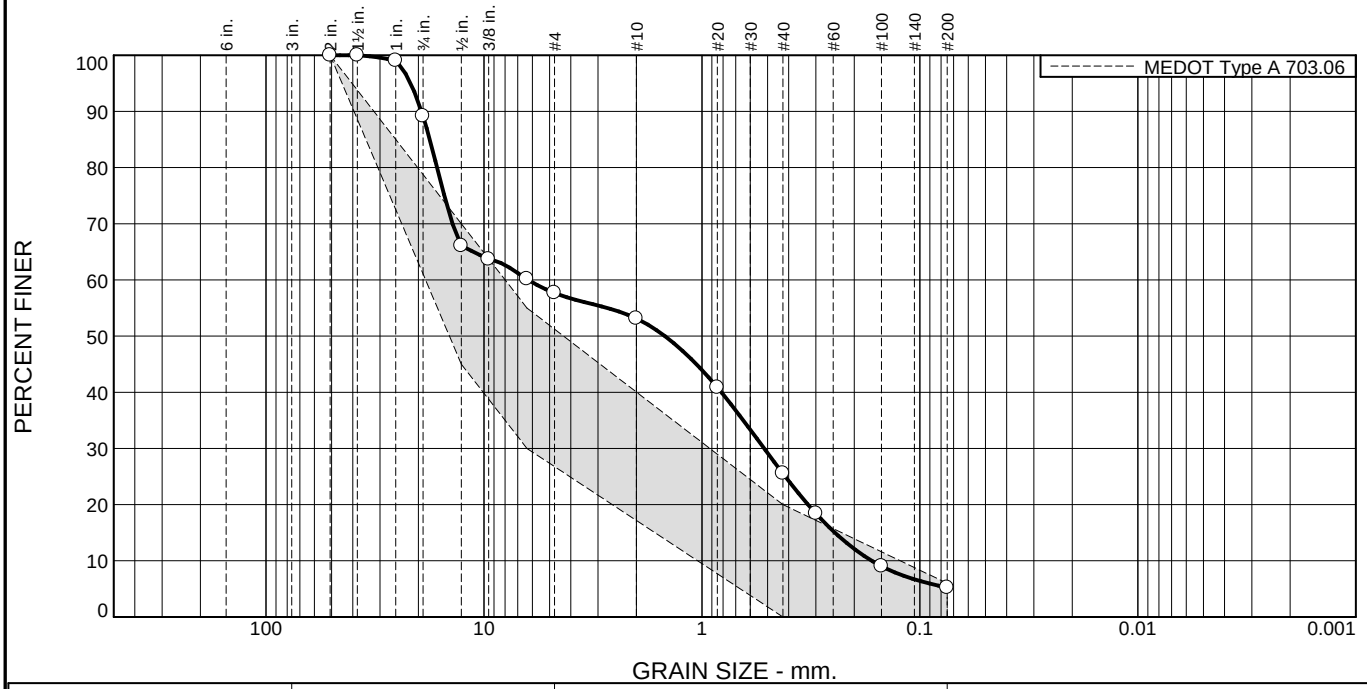
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 484A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.8	31.5	4.6	27.6	20.3	5.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.0		
3/4	89.2		
1/2	66.1	45.0 - 70.0	
3/8	63.7		
1/4	60.1	30.0 - 55.0	X
#4	57.7		
#10	53.1		
#20	40.9		
#40	25.5	0.0 - 20.0	X
#50	18.4		
#100	9.0		
#200	5.2	0.0 - 6.0	

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 19.3438 D_{85}= 17.7444 D_{60}= 6.2622
D_{50}= 1.4803 D_{30}= 0.5183 D_{15}= 0.2454
D_{10}= 0.1664 C_u= 37.64 C_c= 0.26

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 1 Station 17+86 R
Sample Number: 19-485

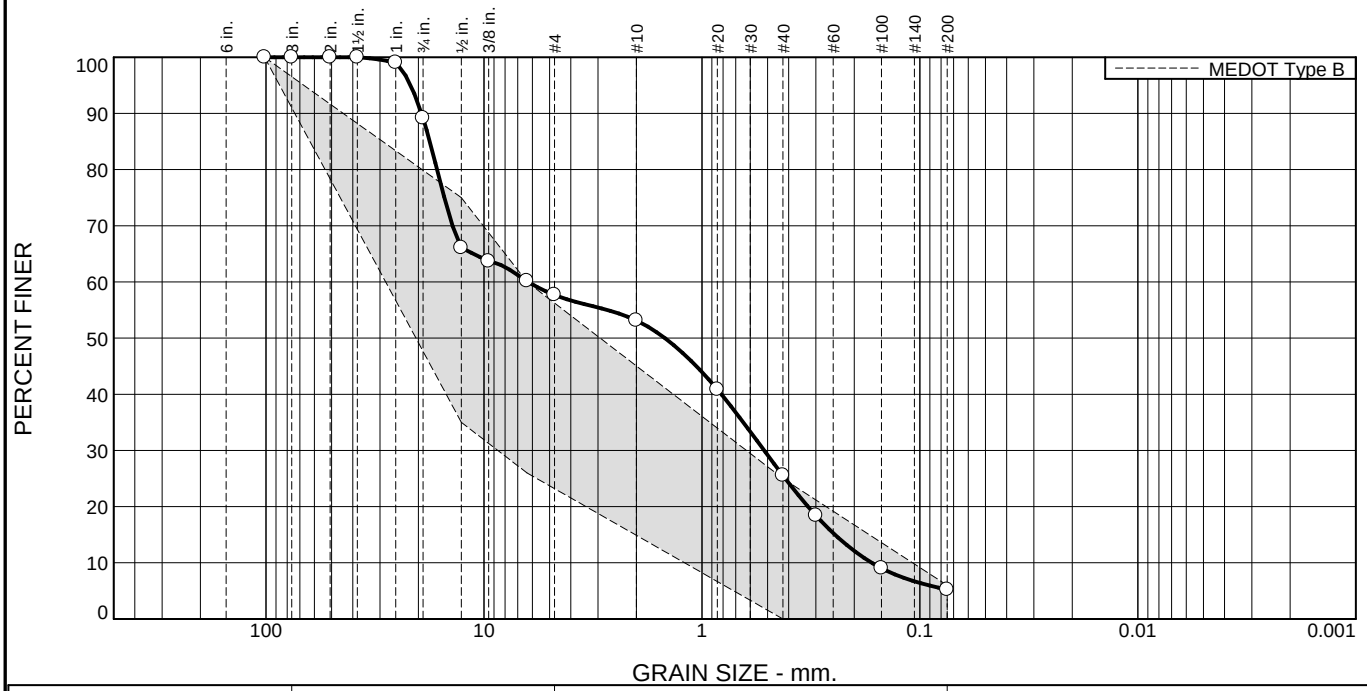
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 485A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.8	31.5	4.6	27.6	20.3	5.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.0		
3/4	89.2		
1/2	66.1	35.0 - 75.0	
3/8	63.7		
1/4	60.1	26.0 - 60.0	X
#4	57.7		
#10	53.1		
#20	40.9		
#40	25.5	0.0 - 25.0	X
#50	18.4		
#100	9.0		
#200	5.2	0.0 - 6.0	

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 19.3437 D_{85}= 17.7445 D_{60}= 6.2622
D_{50}= 1.4803 D_{30}= 0.5183 D_{15}= 0.2454
D_{10}= 0.1664 C_u= 37.64 C_c= 0.26

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 1 Station 17+86 R
Sample Number: 19-485

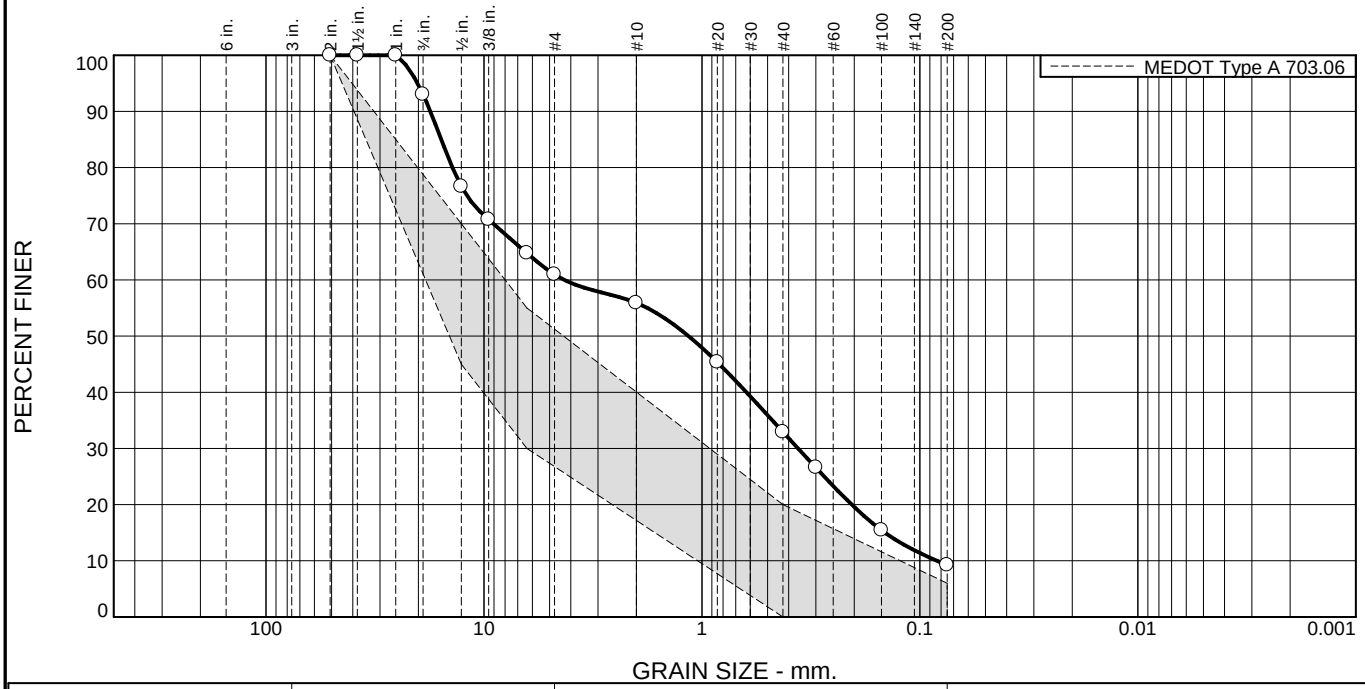
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 485A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.0	32.0	5.1	23.0	23.7	9.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	100.0		
3/4	93.0		
1/2	76.7	45.0 - 70.0	X
3/8	70.8		
1/4	64.8	30.0 - 55.0	X
#4	61.0		
#10	55.9		
#20	45.3		
#40	32.9	0.0 - 20.0	X
#50	26.6		
#100	15.4		
#200	9.2	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6359 D_{85}= 15.7107 D_{60}= 4.2774
D_{50}= 1.1516 D_{30}= 0.3623 D_{15}= 0.1447
D_{10}= 0.0836 C_u= 51.18 C_c= 0.37

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 2+50 R
Sample Number: 19-486

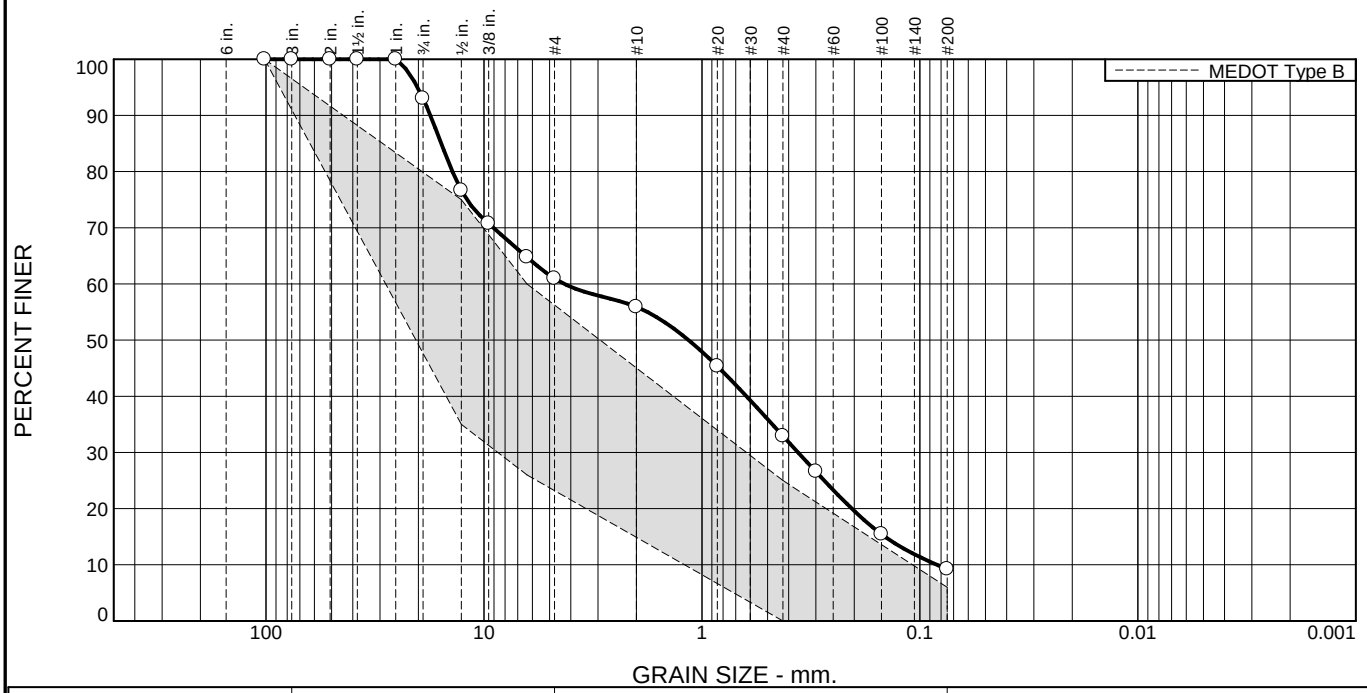
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 486A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.0	32.0	5.1	23.0	23.7	9.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	100.0		
3/4	93.0		
1/2	76.7	35.0 - 75.0	X
3/8	70.8		
1/4	64.8	26.0 - 60.0	X
#4	61.0		
#10	55.9		
#20	45.3		
#40	32.9	0.0 - 25.0	X
#50	26.6		
#100	15.4		
#200	9.2	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6362 D_{85}= 15.7110 D_{60}= 4.2774
D_{50}= 1.1516 D_{30}= 0.3623 D_{15}= 0.1447
D_{10}= 0.0836 C_u= 51.18 C_c= 0.37

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 2+50 R
Sample Number: 19-486

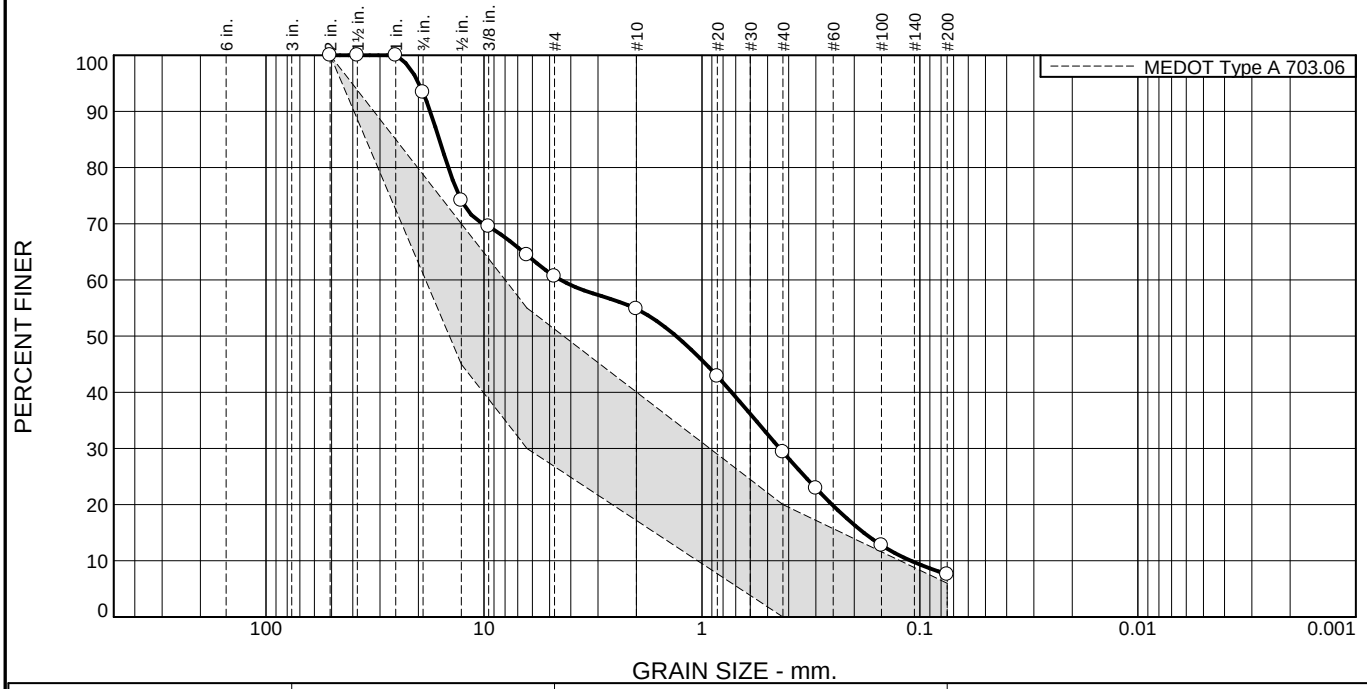
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 486A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.6	32.7	5.9	25.4	21.8	7.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	100.0		
3/4	93.4		
1/2	74.1	45.0 - 70.0	X
3/8	69.5		
1/4	64.4	30.0 - 55.0	X
#4	60.7		
#10	54.8		
#20	42.8		
#40	29.4	0.0 - 20.0	X
#50	22.9		
#100	12.8		
#200	7.6	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6693 D_{85}= 16.0391 D_{60}= 4.4518
D_{50}= 1.3123 D_{30}= 0.4395 D_{15}= 0.1808
D_{10}= 0.1100 C_u= 40.48 C_c= 0.39

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 4+25 R
Sample Number: 19-487

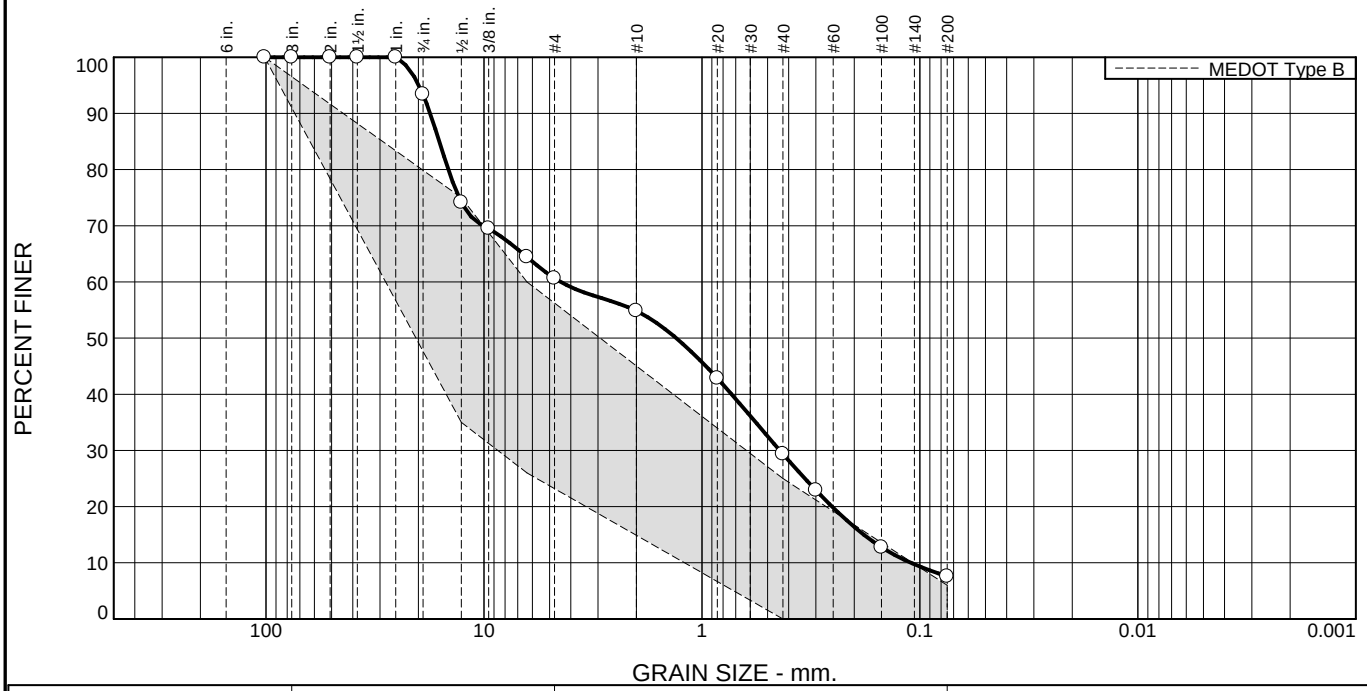
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 487A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.6	32.7	5.9	25.4	21.8	7.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	100.0		
3/4	93.4		
1/2	74.1	35.0 - 75.0	
3/8	69.5		
1/4	64.4	26.0 - 60.0	X
#4	60.7		
#10	54.8		
#20	42.8		
#40	29.4	0.0 - 25.0	X
#50	22.9		
#100	12.8		
#200	7.6	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6695 D_{85}= 16.0393 D_{60}= 4.4518
D_{50}= 1.3123 D_{30}= 0.4395 D_{15}= 0.1808
D_{10}= 0.1100 C_u= 40.48 C_c= 0.39

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 4+25 R
Sample Number: 19-487

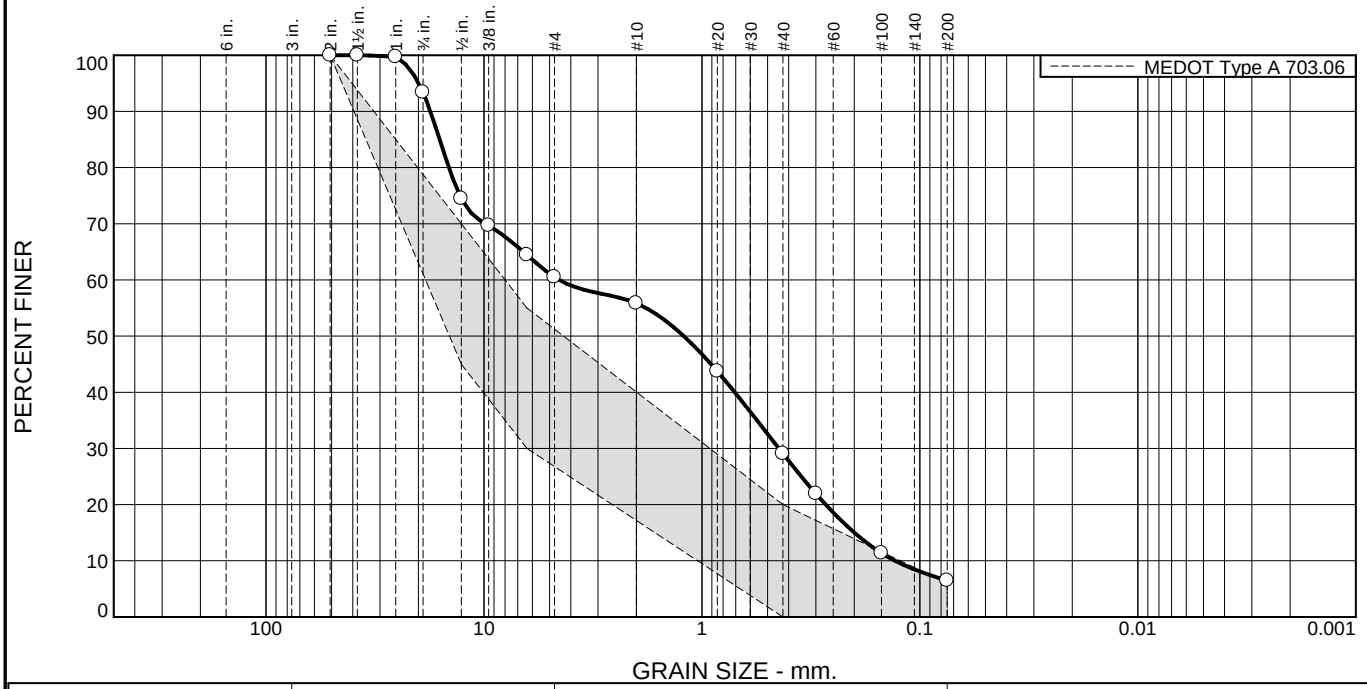
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 487A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.6	32.9	4.7	26.7	22.6	6.5	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.7		
3/4	93.4		
1/2	74.5	45.0 - 70.0	X
3/8	69.7		
1/4	64.5	30.0 - 55.0	X
#4	60.5		
#10	55.8		
#20	43.7		
#40	29.1	0.0 - 20.0	X
#50	21.9		
#100	11.4		
#200	6.5	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6318 D_{85}= 15.9740 D_{60}= 4.5165
D_{50}= 1.2115 D_{30}= 0.4439 D_{15}= 0.1998
D_{10}= 0.1301 C_u= 34.71 C_c= 0.34

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 6+95 L
Sample Number: 19-488

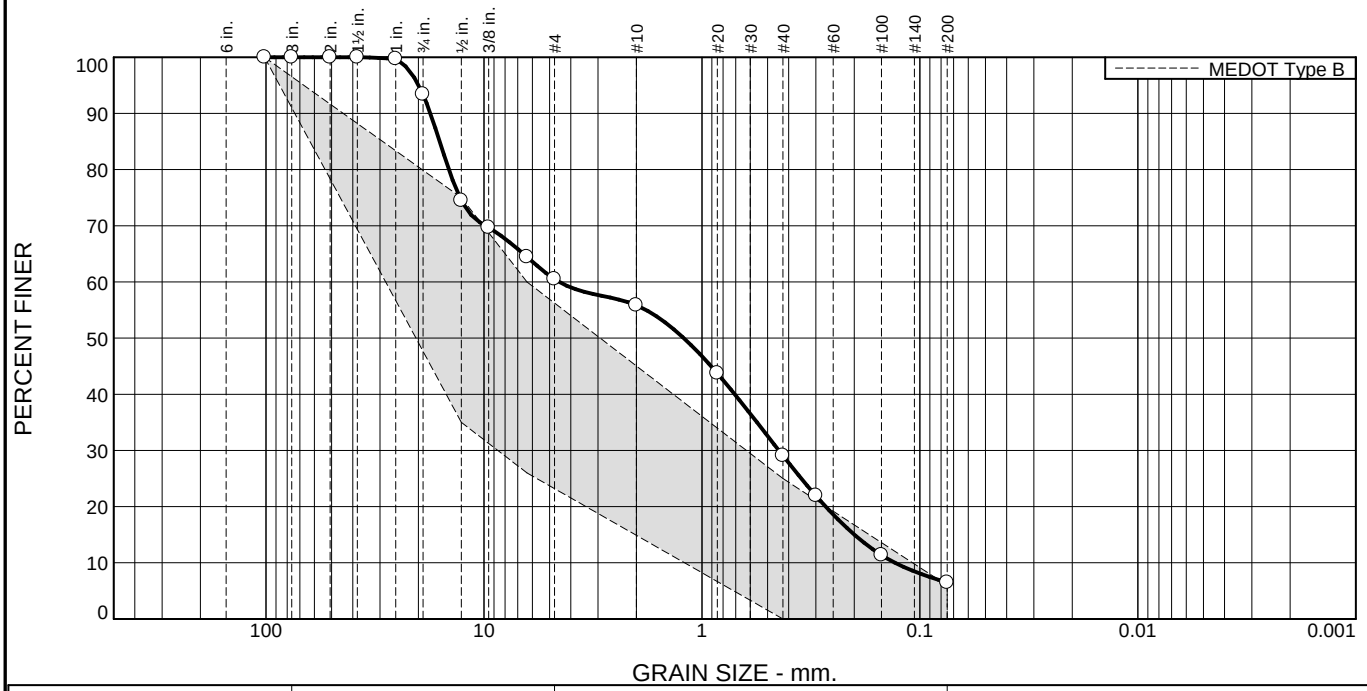
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 488A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.6	32.9	4.7	26.7	22.6	6.5	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.7		
3/4	93.4		
1/2	74.5	35.0 - 75.0	
3/8	69.7		
1/4	64.5	26.0 - 60.0	X
#4	60.5		
#10	55.8		
#20	43.7		
#40	29.1	0.0 - 25.0	X
#50	21.9		
#100	11.4		
#200	6.5	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 17.6320 D_{85}= 15.9741 D_{60}= 4.5165
D_{50}= 1.2115 D_{30}= 0.4439 D_{15}= 0.1998
D_{10}= 0.1301 C_u= 34.71 C_c= 0.34

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 6+95 L
Sample Number: 19-488

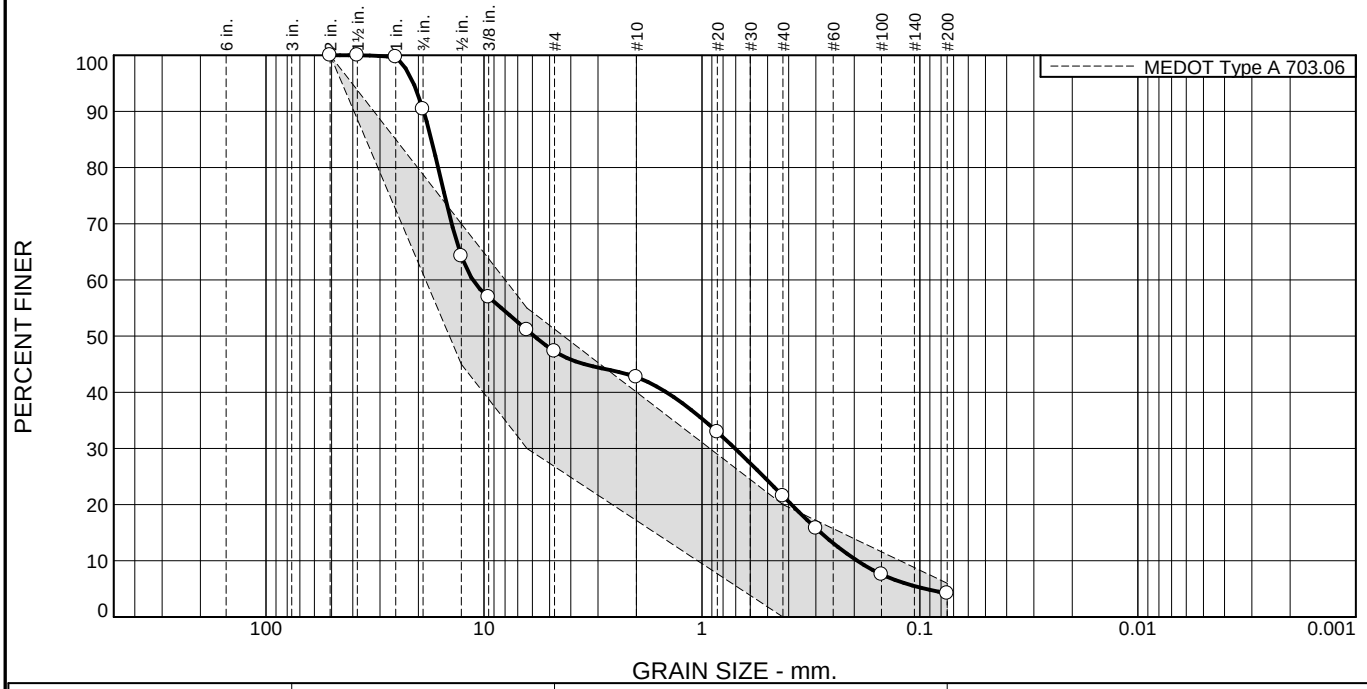
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 488A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.6	43.1	4.6	21.2	17.3	4.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.7		
3/4	90.4		
1/2	64.3	45.0 - 70.0	
3/8	56.9		
1/4	51.1	30.0 - 55.0	
#4	47.3		
#10	42.7		
#20	32.9		
#40	21.5	0.0 - 20.0	X
#50	15.8		
#100	7.6		
#200	4.2	0.0 - 6.0	

* MEDOT Type A 703.06

Material Description

Poorly Graded Gravel with Sand

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= GP **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.9095 D_{85}= 17.4481 D_{60}= 11.2556
D_{50}= 5.8825 D_{30}= 0.7055 D_{15}= 0.2847
D_{10}= 0.1938 C_u= 58.07 C_c= 0.23

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 7+25 R
Sample Number: 19-489

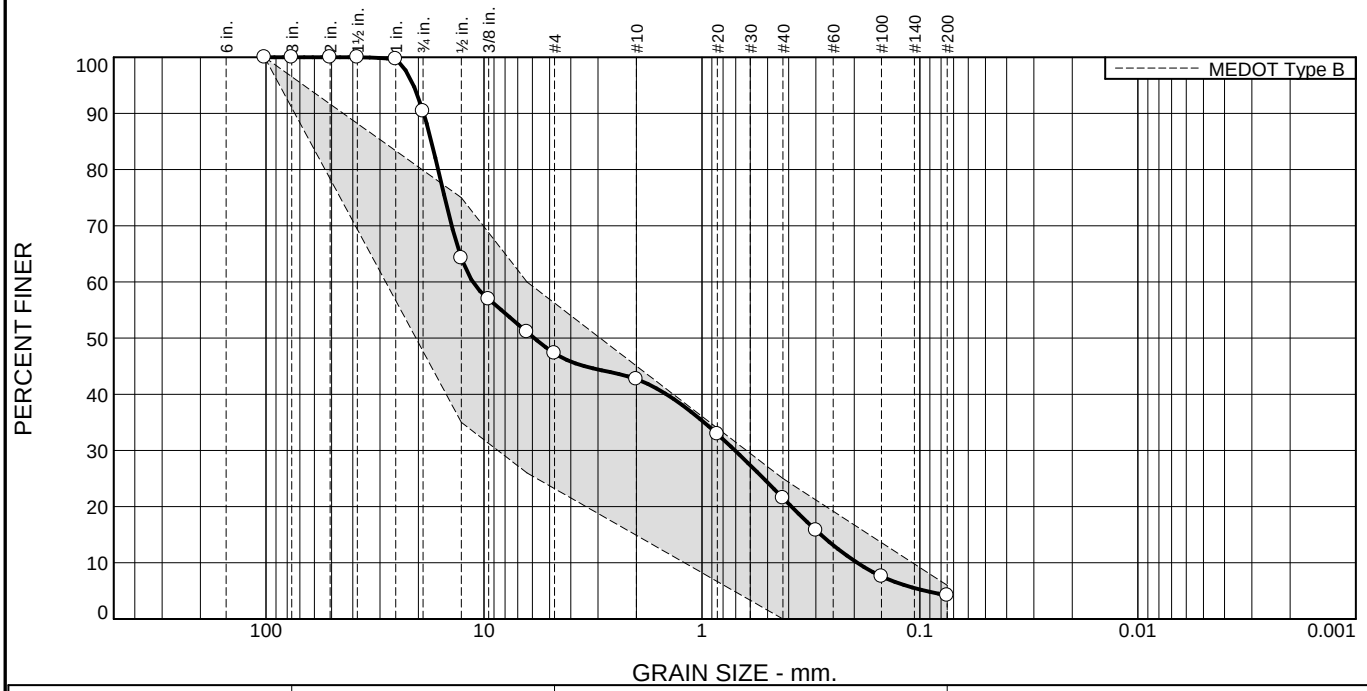
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 489A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.6	43.1	4.6	21.2	17.3	4.2	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.7		
3/4	90.4		
1/2	64.3	35.0 - 75.0	
3/8	56.9		
1/4	51.1	26.0 - 60.0	
#4	47.3		
#10	42.7		
#20	32.9		
#40	21.5	0.0 - 25.0	
#50	15.8		
#100	7.6		
#200	4.2	0.0 - 6.0	

* MEDOT Type B

Material Description

Poorly Graded Gravel with Sand

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= GP **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.9096 D_{85}= 17.4482 D_{60}= 11.2556
D_{50}= 5.8825 D_{30}= 0.7055 D_{15}= 0.2847
D_{10}= 0.1938 C_u= 58.07 C_c= 0.23

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

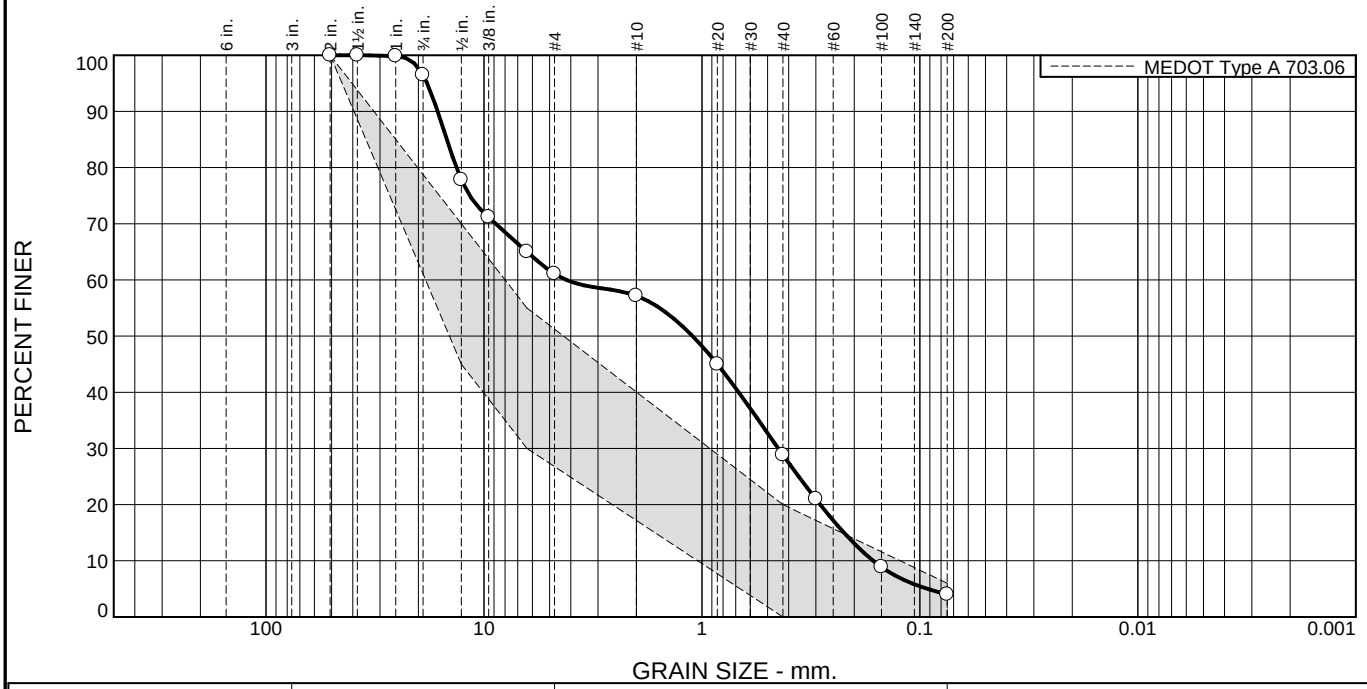
Location: Phase 2 Station 7+25 R **Date Sampled:** 9/16/19
Sample Number: 19-489

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 489A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.5	35.4	3.9	28.4	24.8	4.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	100.0		
1	99.8		
3/4	96.5		
1/2	77.8	45.0 - 70.0	X
3/8	71.2		
1/4	65.0	30.0 - 55.0	X
#4	61.1		
#10	57.2		
#20	45.0		
#40	28.8	0.0 - 20.0	X
#50	21.0		
#100	8.9		
#200	4.0	0.0 - 6.0	

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= SP **AASHTO (M 145)=** -

Coefficients

D_{90}= 16.3178 D_{85}= 14.8094 D_{60}= 4.1856
D_{50}= 1.1036 D_{30}= 0.4462 D_{15}= 0.2230
D_{10}= 0.1639 C_u= 25.54 C_c= 0.29

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 10+60 R
Sample Number: 19-490

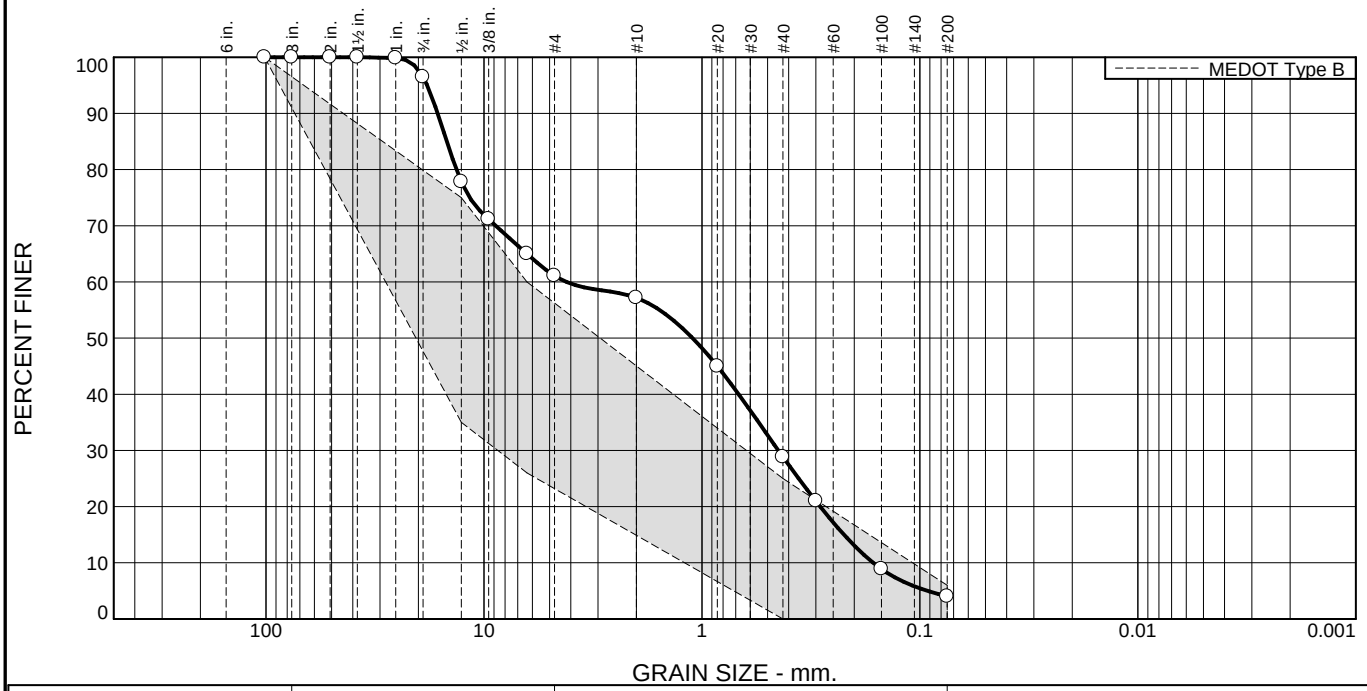
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 490A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.5	35.4	3.9	28.4	24.8	4.0	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	100.0		
1	99.8		
3/4	96.5		
1/2	77.8	35.0 - 75.0	X
3/8	71.2		
1/4	65.0	26.0 - 60.0	X
#4	61.1		
#10	57.2		
#20	45.0		
#40	28.8	0.0 - 25.0	X
#50	21.0		
#100	8.9		
#200	4.0	0.0 - 6.0	

* MEDOT Type B

Material Description

Poorly Graded Sand with Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= SP **AASHTO (M 145)=** -

Coefficients

D_{90}= 16.3178 D_{85}= 14.8094 D_{60}= 4.1856
D_{50}= 1.1036 D_{30}= 0.4462 D_{15}= 0.2230
D_{10}= 0.1639 C_u= 25.54 C_c= 0.29

Remarks

Date Received: 9/16/19 **Date Tested:** 9/18/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 10+60 R
Sample Number: 19-490

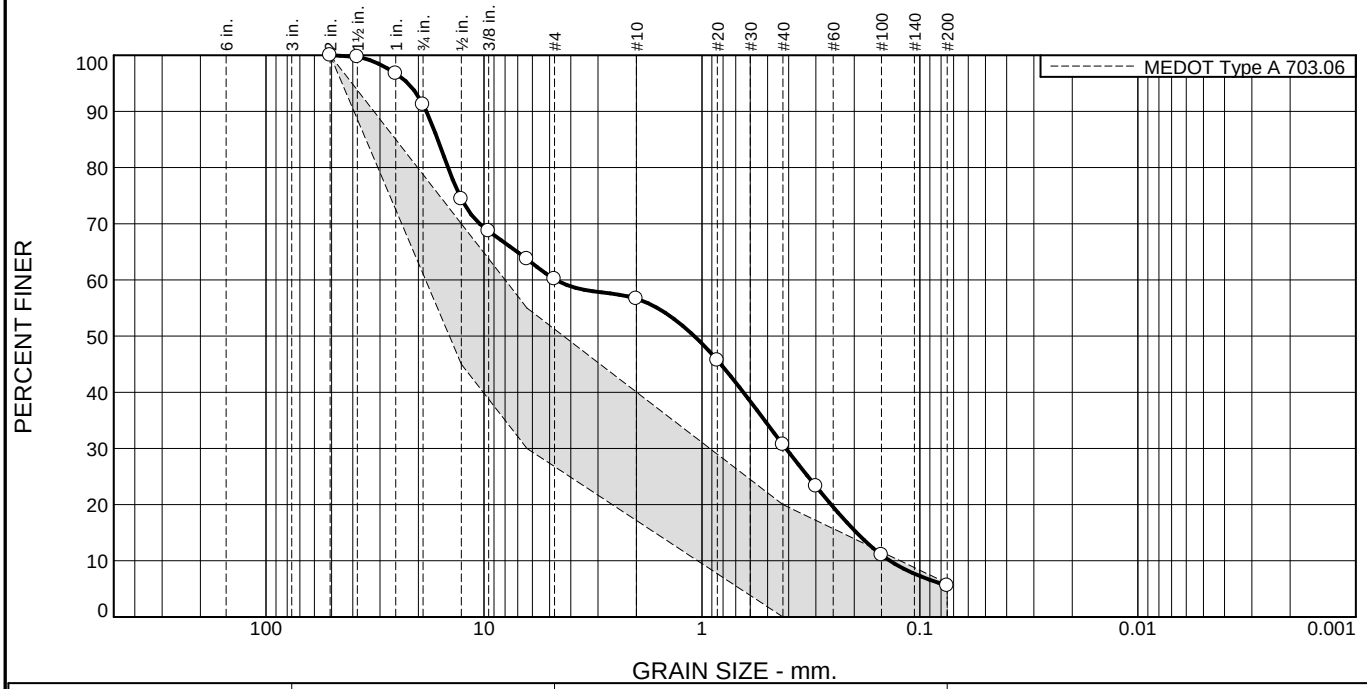
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 490A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.8	31.1	3.4	26.0	25.1	5.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2	100.0	100.0	
1 1/2	99.7		
1	96.7		
3/4	91.2		
1/2	74.4	45.0 - 70.0	X
3/8	68.7		
1/4	63.7	30.0 - 55.0	X
#4	60.1		
#10	56.7		
#20	45.7		
#40	30.7	0.0 - 20.0	X
#50	23.3		
#100	11.0		
#200	5.6	0.0 - 6.0	

* MEDOT Type A 703.06

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.3845 D_{85}= 16.3106 D_{60}= 4.6782
D_{50}= 1.0844 D_{30}= 0.4122 D_{15}= 0.1952
D_{10}= 0.1373 C_u= 34.08 C_c= 0.26

Remarks

Date Received: 9/16/19 **Date Tested:** 9/19/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 11+50 L
Sample Number: 19-491

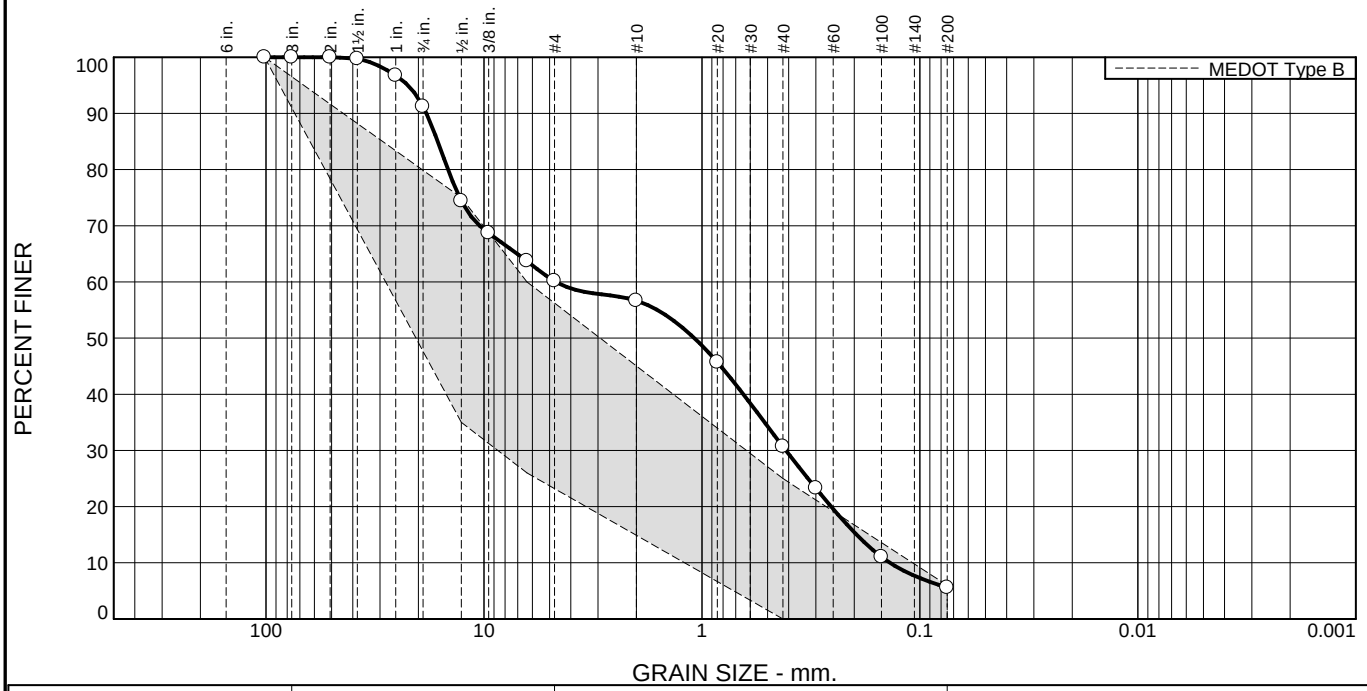
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 491A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.8	31.1	3.4	26.0	25.1	5.6	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
4	100.0	100.0	
3	100.0		
2	100.0		
1 1/2	99.7		
1	96.7		
3/4	91.2		
1/2	74.4	35.0 - 75.0	
3/8	68.7		
1/4	63.7	26.0 - 60.0	X
#4	60.1		
#10	56.7		
#20	45.7		
#40	30.7	0.0 - 25.0	X
#50	23.3		
#100	11.0		
#200	5.6	0.0 - 6.0	

* MEDOT Type B

Material Description

Poorly Graded Sand with Silt and Gravel

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 18.3845 D_{85}= 16.3106 D_{60}= 4.6782
D_{50}= 1.0844 D_{30}= 0.4122 D_{15}= 0.1952
D_{10}= 0.1373 C_u= 34.08 C_c= 0.26

Remarks

Date Received: 9/16/19 **Date Tested:** 9/19/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 11+50 L
Sample Number: 19-491

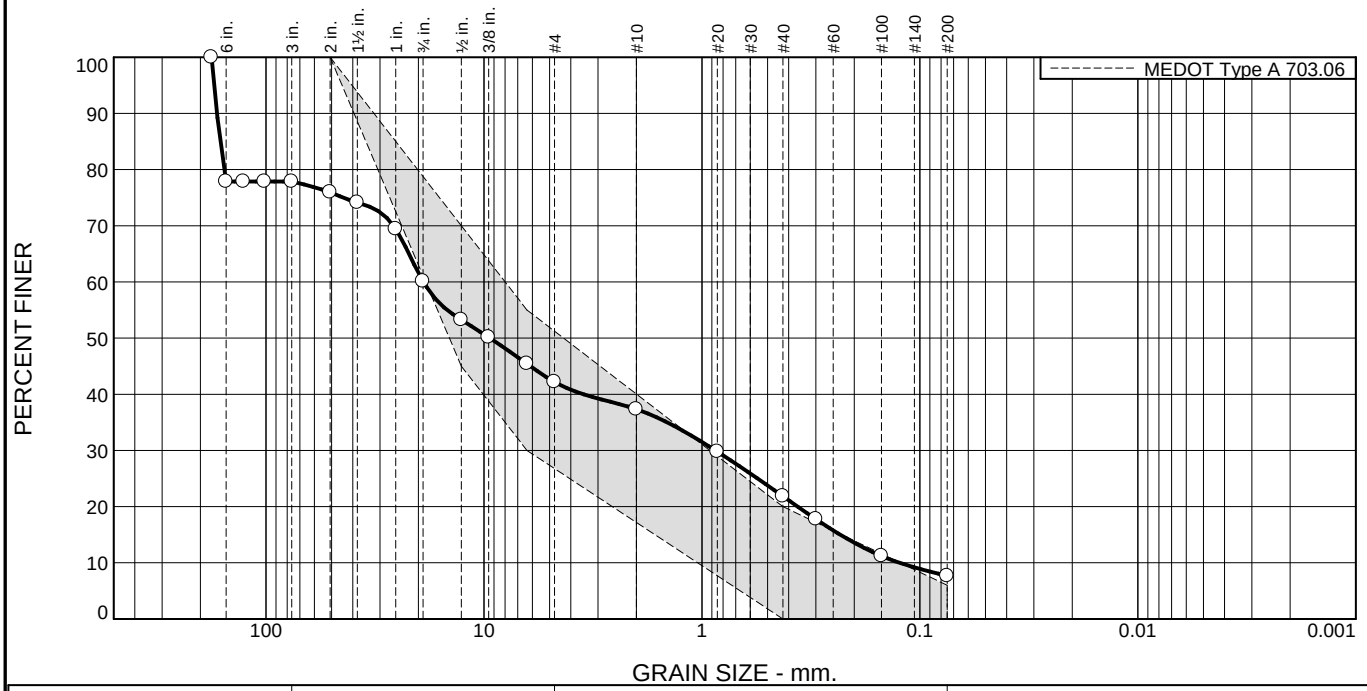
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 491A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
22.1	17.8	17.9	4.9	15.5	14.1	7.7	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
7	100.0		
6	77.9		
5	77.9		
4	77.9		
3	77.9		
2	76.0	100.0	X
1 1/2	74.1		
1	69.4		
3/4	60.1		
1/2	53.3	45.0 - 70.0	
3/8	50.1		
1/4	45.4	30.0 - 55.0	
#4	42.2		
#10	37.3		
#20	29.8		
#40	21.8	0.0 - 20.0	X
#50	17.8		
#100	11.2		
#200	7.7	0.0 - 6.0	X

* MEDOT Type A 703.06

Material Description

Poorly Graded Gravel with Silt and Sand

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 167.8634 D_{85}= 162.5093 D_{60}= 18.9779
D_{50}= 9.4085 D_{30}= 0.8673 D_{15}= 0.2320
D_{10}= 0.1240 C_u= 153.10 C_c= 0.32

Remarks

Date Received: 9/16/19 **Date Tested:** 9/19/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

Location: Phase 2 Station 10+75 Patch Area
Sample Number: 19-492

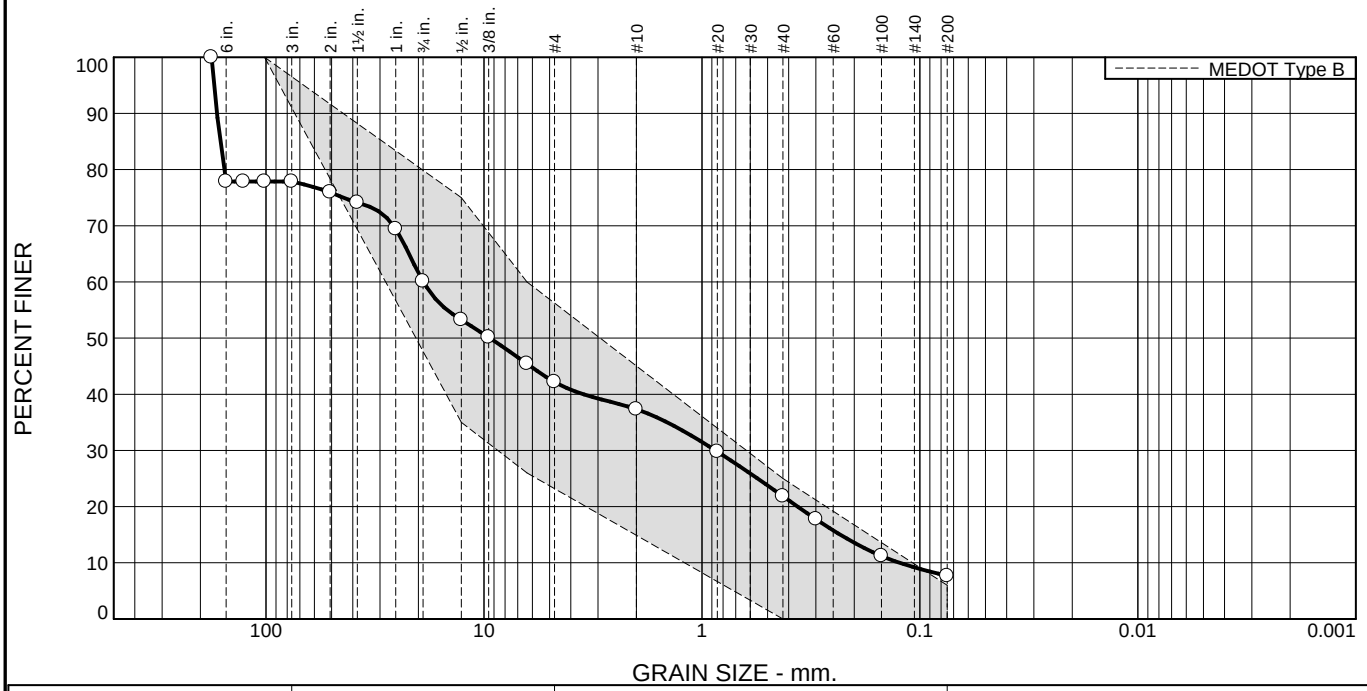
Date Sampled: 9/16/19

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 492A

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
22.1	17.8	17.9	4.9	15.5	14.1	7.7	

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
7	100.0		
6	77.9		
5	77.9		
4	77.9	100.0	X
3	77.9		
2	76.0		
1 1/2	74.1		
1	69.4		
3/4	60.1		
1/2	53.3	35.0 - 75.0	
3/8	50.1		
1/4	45.4	26.0 - 60.0	
#4	42.2		
#10	37.3		
#20	29.8		
#40	21.8	0.0 - 25.0	
#50	17.8		
#100	11.2		
#200	7.7	0.0 - 6.0	X

* MEDOT Type B

Material Description

Poorly Graded Gravel with Silt and Sand

Atterberg Limits (ASTM D 4318)

PL= - **LL=** - **PI=** -

Classification

USCS (D 2487)= **AASHTO (M 145)=** -

Coefficients

D_{90}= 167.8634 D_{85}= 162.5093 D_{60}= 18.9779
D_{50}= 9.4085 D_{30}= 0.8673 D_{15}= 0.2320
D_{10}= 0.1240 C_u= 153.10 C_c= 0.32

Remarks

Date Received: 9/16/19 **Date Tested:** 9/19/19

Tested By: Ted M.

Checked By: Jeff Y.

Title: Lab Manager

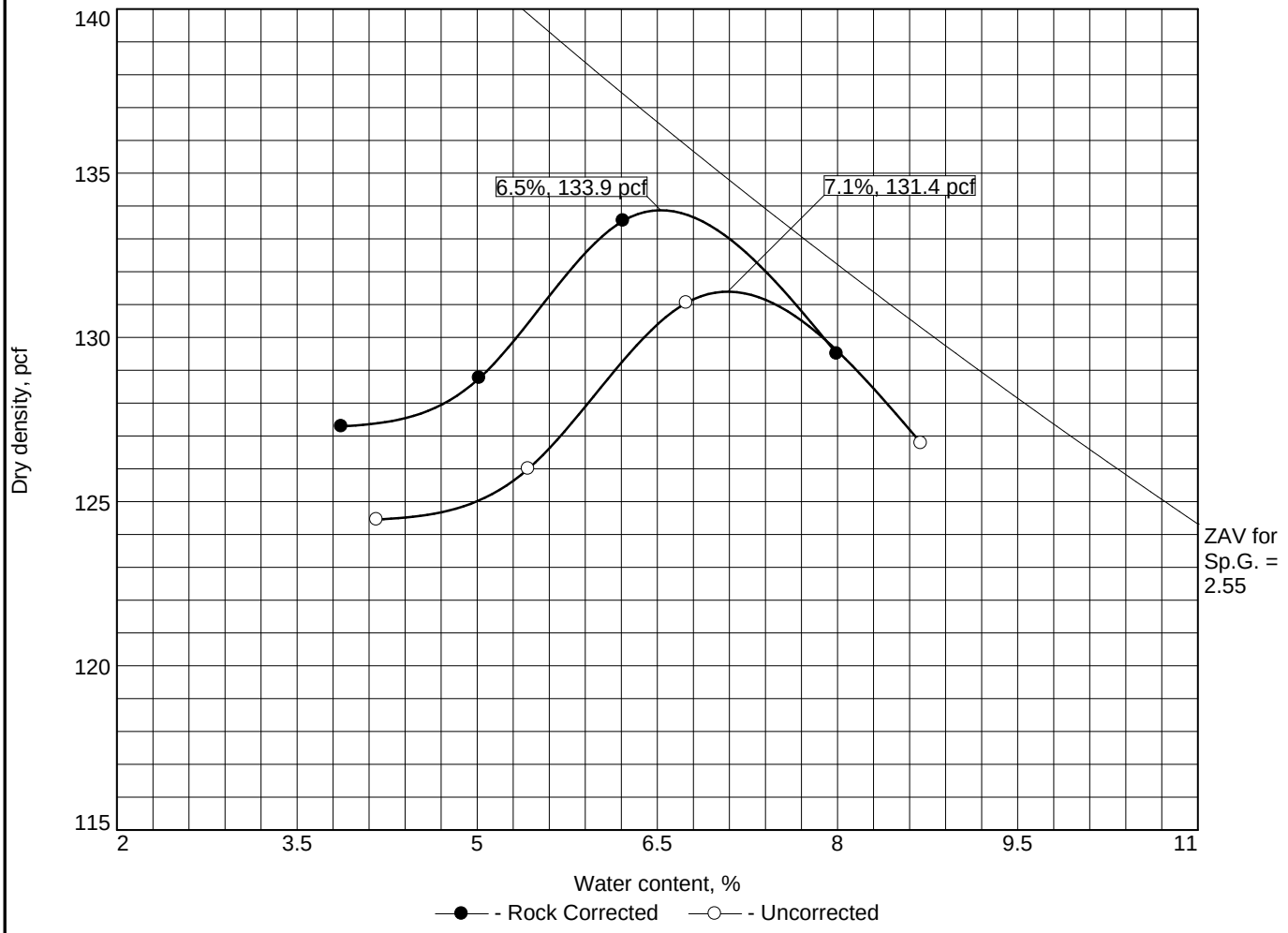
Location: Phase 2 Station 10+75 Patch Area **Date Sampled:** 9/16/19
Sample Number: 19-492

JOHN TURNER CONSULTING

Client: Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH

Project No: 19-10-066 **Figure** 492A

Moisture Density Report For Curve No. 19-484



Test specification: ASTM D 1557-00 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
		-	-	2.65	-	-	9.0	6.3

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 133.9 pcf	131.4 pcf	Poorly Graded Sand with Silt and Gravel
Optimum moisture = 6.5 %	7.1 %	

Project No. 19-10-066 **Client:** Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH
Date: 9/20/19
○ **Location:** Phase 1 Station 17+02 L **Sample Number:** 19-484

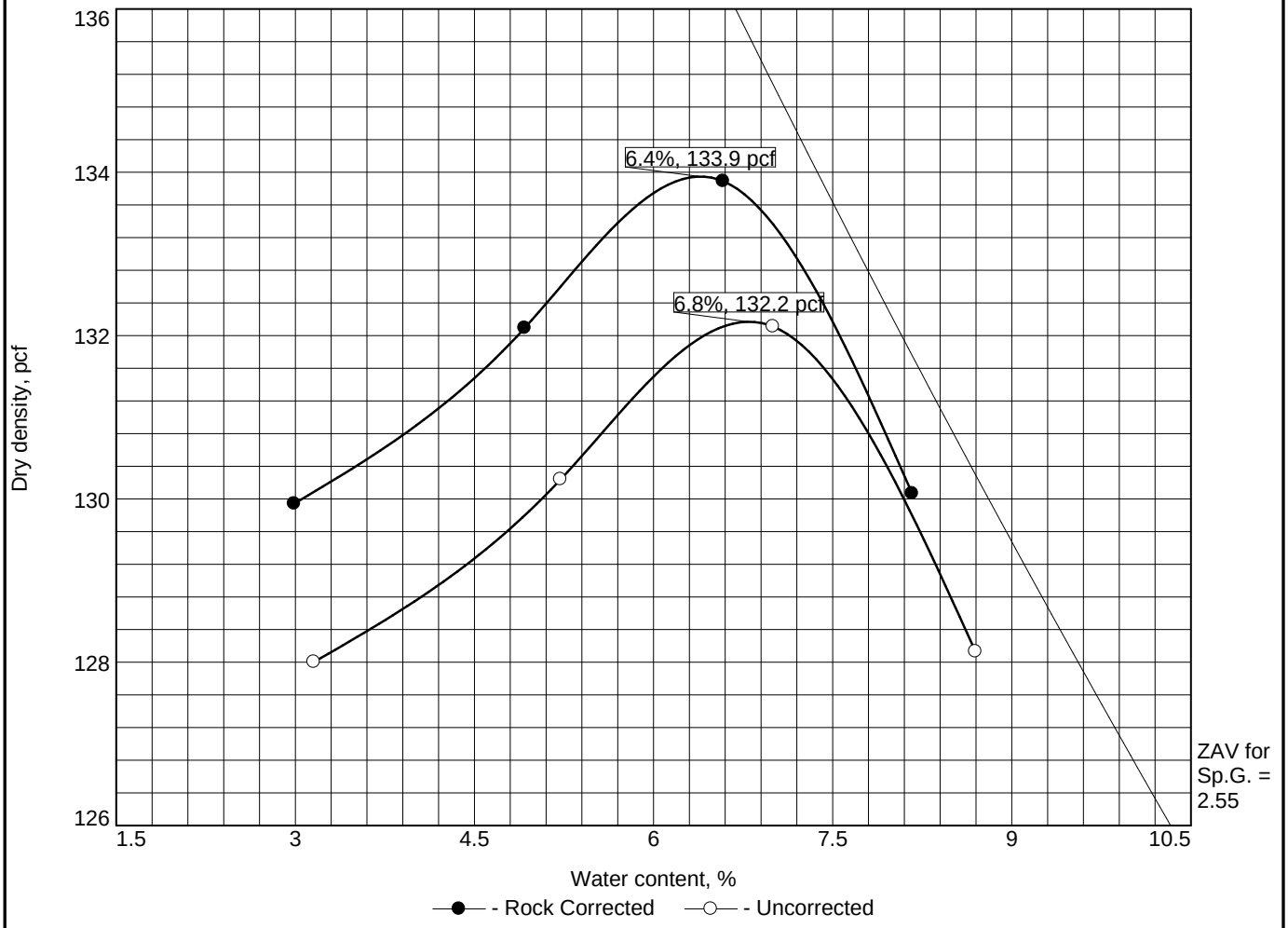
JOHN TURNER CONSULTING

Remarks:

Figure 484B

Tested By: Ted M. **Checked By:** Jeff Y.

Moisture Density Report For Curve No. 19-487



Test specification: ASTM D 1557-00 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
		-	-	2.65	-	-	6.6	7.6

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 133.9 pcf	132.2 pcf	Poorly Graded Sand with Silt and Gravel
Optimum moisture = 6.4 %	6.8 %	

Project No. 19-10-066 **Client:** Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH
Date: 9/20/19
○ **Location:** Phase 2 Station 4+25 R **Sample Number:** 19-487

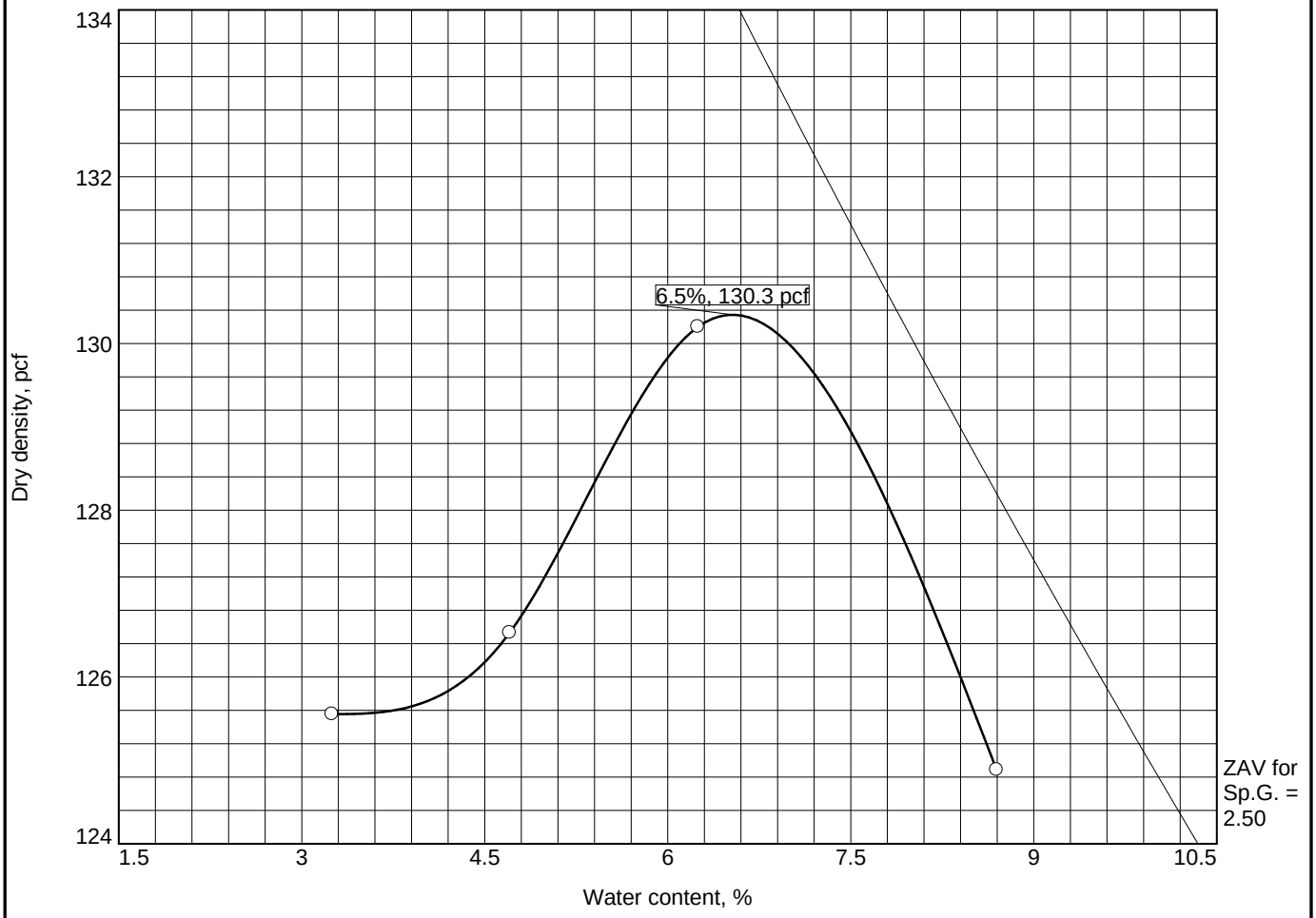
JOHN TURNER CONSULTING

Remarks:

Figure 487B

Tested By: Ted M. **Checked By:** Jeff Y.

Moisture Density Report For Curve No. 19-490



Test specification: ASTM D 1557-00 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	SP	-		2.65	-	-	3.5	4.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 130.3 pcf Optimum moisture = 6.5 %	Poorly Graded Sand with Gravel

Project No. 19-10-066 **Client:** Equity Alliance LLC

Project: Village at Greatbrook LLC-Bedford, NH

Date: 9/20/19

○ **Location:** Phase 2 Station 10+60 R **Sample Number:** 19-490

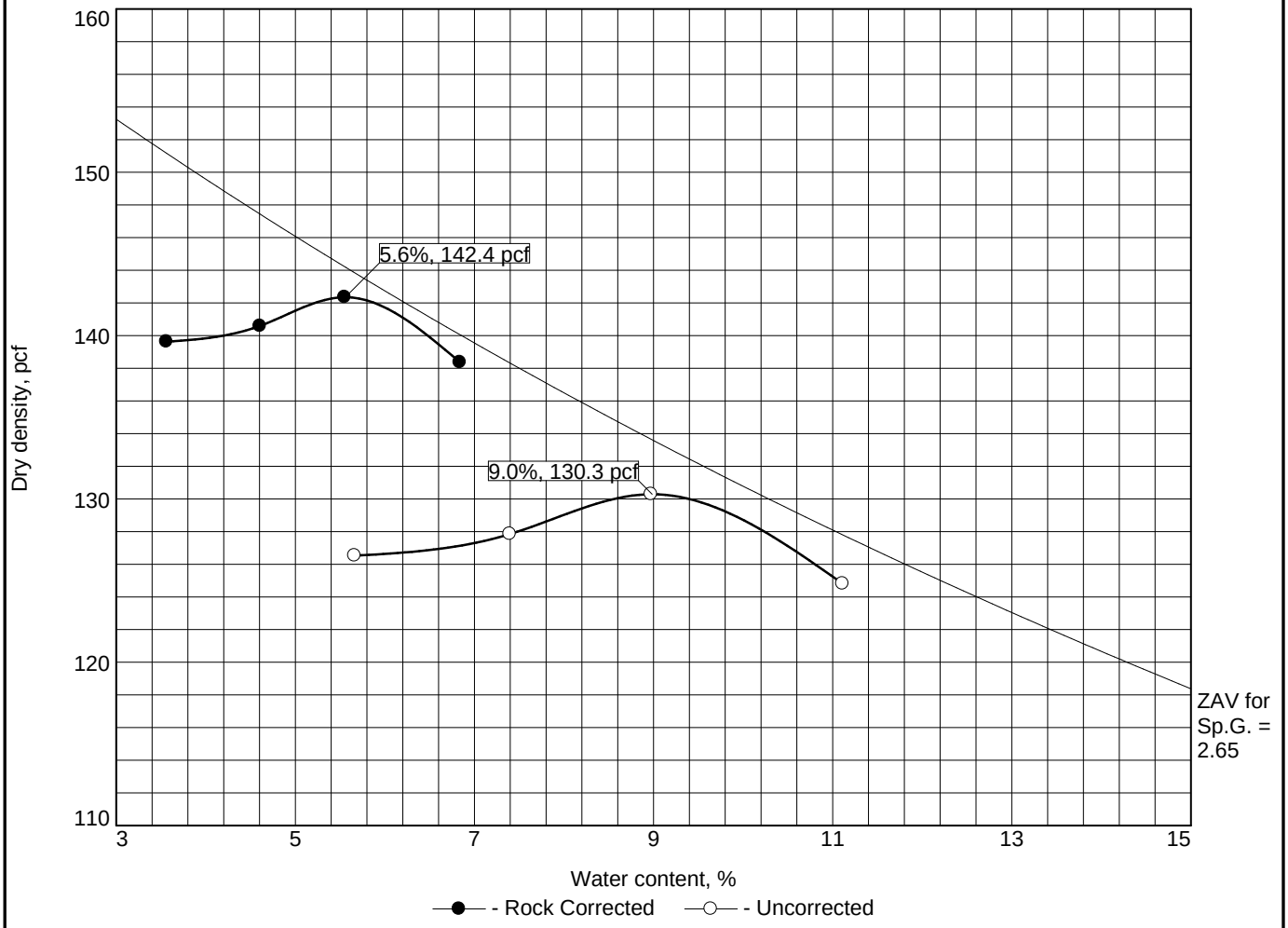
JOHN TURNER CONSULTING

Remarks:

Figure 490A

Tested By: Ted M. **Checked By:** Jeff Y.

Moisture Density Report For Curve No. 19-492



Test specification: ASTM D 1557-00 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
		-		2.65	-	-	39.9	7.7

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 142.4 pcf	130.3 pcf	Poorly Graded Gravel with Silt and Sand
Optimum moisture = 5.6 %	9.0 %	

Project No. 19-10-066 **Client:** Equity Alliance LLC
Project: Village at Greatbrook LLC-Bedford, NH
Date: 9/20/19
○ **Location:** Phase 1 Station 10+75 Patch Area **Sample Number:** 19-492

JOHN TURNER CONSULTING

Remarks:

Figure 492B

Tested By: Ted M. **Checked By:** Jeff Y.

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GEOTECHNICAL ▼ ENVIRONMENTAL ▼ RESIDENT ENGINEERING ▼ TESTING

HMA Theoretical Maximum Specific Gravity Test Report (T 209)

Date/Time:	9/14/2019	**Lab/Location:**	John Turner Consulting - Dover, NH		
Weather:	Overcast, 65	**Date Rec'd #:**	9/14/2019	**Random Sample:**	No
Project:	Village at Great Brook	**Lab Login #:**		**Lot #:**	
Contract #:		**Material ID:**	Binder Course	**Sublot #:**	
Contractor:		**Material #:**		**Sample Location:**	
Pay Item #:		**Sample #:**		**Station:**	
Source:		**Sample Type:**	Other	**Offset:**	
Plant Type:		**Sampled By/Cert. #:**	Dave Grodan #4352 & J. McCarthy #2988		

Maximum Specific Gravity of HMA (T 209)				
Specimen #:	**C-2**	**C-4**		
Mass of Dry Sample in Air (A):	**1114.3**	**1901.9**		
Mass of Pycnometer filled with Water (D): er at 25 +/- 1 ºC)	**1616.4**	**1616.4**		
Mass of Pycnometer filled with Sample and Water (E): er at 25 +/- 1 ºC)	**2281.8**	**2750.4**		
Theoretical Maximum Specific Gravity (Gmm): (A/(A+D-E))	**2.482**	**2.477**		
Unit Weight, Kg/m^3: Gmm * 1000)	**2482**	**2477**		
Average Theoretical Maximum Specific Gravity (Gmm):	**2.480**			
Average Unit Weight, Kg/m^3:	**2480**			

Comments:

Tested by:	John McCarthy	**Reviewed by:**	
Certification #:	919m	**Certification #:**	
Date:	9/19/2019	**Date:**	
Results Within Specification Limits:	☐	**Results Outside Specification Limits:**	☐

New England Transportation Technician Certification Program

HMA Pavement Thickness and Compaction Test Report (D 3549, T 166, T 230, T 269)

Date/Time:	09/14/19	Lab/Location:	John Turner Consulting - Dover, NH
Weather:	Overcast, 65	Date Rec'd #:	9/14/2019
Project:	Village at Great Brook	Lab Login #:	
Contract #:		Material ID:	Binder Course
Contractor:		Material #:	
Pay Item #:		Sample #:	
Source:		Sample Type:	
Plant Type:		Sampled By/Cert. #:	D. Grodan #4352 / J. McCarthy #2988

Core Identification Information					
Sample #:		C-1	C-2	C-3	
Lot #:					
Sublot #:					
Station:		17+10	2+11	5+33	
Offset:		R 4'	L 3'	R 6.5'	
Thickness Determination (D 3549)					
Measured Core Thickness, in:		1.46	1.67	2.12	
Target Thickness, in:		1.75	1.75	1.75	
Bulk Specific Gravity of Compacted HMA (T 166)					
Test Specimen Thickness, in:		1.00	1.25	1.75	
Mass of Dry Specimen in Air (A):		938.5	1120.8	1686.0	
Mass of Specimen at SSD (B):		943.5	1136.0	1696.2	
Mass of Specimen in Water (C):	(@ 25 +/- 1 ºC)	530.7	616.4	925.8	
Specimen Volume (V):	(B-C)	412.8	519.6	770.4	
Core Bulk Specific Gravity (Gmbc):	(A / (B - C))	**2.273**	**2.157**	**2.188**	
Unit Weight, Kg/m^3:	(Gmbc * 1000)	**2273**	**2157**	**2188**	
Percent Compaction and Percent Air Voids in HMA (T 230, T 269)					
heoretical Maximum Specific Gravity (Gmm):	(From T 209)	2.480	2.480	2.480	
% Compaction of Gmm:	(Gmbc / Gmm) * 100	**91.65322581**	**86.9758065**	**88.2258065**	
Percent Voids in Place (Pa):	(100 * ((Gmm - Gmbc) / Gmm))	**8.346774194**	**13.0241935**	**11.7741935**	

Comments:

Tested by:	John McCarthy	Reviewed by:	
Certification #:	919m	Certification #:	
Date:	9/19/2019	Date:	
Results Within Specification Limits:	☐	Results Outside Specification Limits:	☐

New England Transportation Technician Certification Program

HMA Pavement Thickness and Compaction Test Report (D 3549, T 166, T 230, T 269)

Date/Time:	09/14/19	Lab/Location:	John Turner Consulting - Dover, NH
Weather:	Overcast, 65	Date Rec'd #:	9/14/2019
Project:	Village at Great Brook	Lab Login #:	
Contract #:		Material ID:	Binder Course
Contractor:		Material #:	
Pay Item #:		Sample #:	
Source:		Sample Type:	
Plant Type:		Sampled By/Cert. #:	D. Grodan #4352 / J. McCarthy #2988

Random Sample:					
Lot #:					
Sublot #:					
Sample Location:					
Station:					
Offset:					

Core Identification Information					
Sample #:		C-4	C-5	C-6	
Lot #:					
Sublot #:					
Station:		7+44	8+88	11+13	
Offset:		L 5'	R 1'	R 7'	

Thickness Determination (D 3549)					
Measured Core Thickness, in:		2.29	1.94	2.17	
Target Thickness, in:		1.75	1.75	1.75	

Bulk Specific Gravity of Compacted HMA (T 166)					
Test Specimen Thickness, in:		1.95	1.94	1.75	
Mass of Dry Specimen in Air (A):		1911.9	1512.3	1675.6	
Mass of Specimen at SSD (B):		1919.6	1547.4	1682.6	
Mass of Specimen in Water (C):	(@ 25 +/- 1 ºC)	1079.1	835.1	931.0	
Specimen Volume (V):	(B-C)	840.5	712.3	751.6	
Core Bulk Specific Gravity (Gmbc):	(A / (B - C))	**2.275**	**2.123**	**2.229**	
Unit Weight, Kg/m^3:	(Gmbc * 1000)	**2275**	**2123**	**2229**	

Percent Compaction and Percent Air Voids in HMA (T 230, T 269)					
heoretical Maximum Specific Gravity (Gmm):	(From T 209)	2.480	2.480	2.480	
% Compaction of Gmm:	(Gmbc / Gmm) * 100	**91.73387097**	**85.6048387**	**89.8790323**	
Percent Voids in Place (Pa):	(100 * ((Gmm - Gmbc) / Gmm))	**8.266129032**	**14.3951613**	**10.1209677**	

Comments:

Tested by:	John McCarthy	Reviewed by:	
Certification #:	919m	Certification #:	
Date:	9/19/2019	Date:	
Results Within Specification Limits:	☐	Results Outside Specification Limits:	☐