

REGULAR MEETING

July 21, 2025
6:30 p.m.

MEMORANDUM

G.3 Approve Change Order Summary Report – July 2025

Mr. Sederlund

RECOMMENDED MOTION: “That the Chippewa Valley Board of Education approve the 2018 Bond Issue Change Order Summary Report for the month of July 2025.”

RATIONALE: This work consists of changes to existing contracts for the purpose of owner requested work, deducts, code compliance, or hidden conditions on the construction and equipment projects. All amounts are within the contingency budget allocation.

This report was reviewed with the Building and Site Sub-Committee on Monday, July 21, 2025, and funding will come from the 2018 Building and Site Fund and the Food Service Fund.

CHIPPEWA VALLEY SCHOOLS
2018 Bond Issue Program

CHANGE ORDER SUMMARY #57

July 2025

B.P.	PROJECT	CONTRACTOR	DESCRIPTION	AMOUNT
Construction Contingency (design revision, owner request, hidden condition)				
A	7 Clinton Valley Elementary	T&M Asphalt Paving	furnish and install geogrid subgrade in lieu of undercutting per testing engineer inspection (815 SY) + additional stone as asphalt removed was thicker than expected	\$12,570
	7 Sequoyah Elementary	Versatile Commercial Flat Roofing	credit for balance of roofing allowance	(\$10,000)
	7 Shawnee Elementary	Versatile Commercial Flat Roofing	credit for balance of roofing allowance	(\$10,000)
	7 Dakota High School	Great Lakes Power & Lighting	credit for emergency lighting scope at the auditorium completed by others	(\$10,000)
	7 Chippewa Valley High School	Great Lakes Power & Lighting	backstage lights installation had additional work to move from one location to another	\$705
	7 Dakota High School	Great Lakes Power & Lighting	backstage lights installation had additional work to move from one location to another	\$705
B	7 Dakota High School	ASI Paving	fix failed subgrade per testing engineer inspection - furnish and install additional mill and paving and provide undercuts as needed.	\$159,000
	7D Dakota High School	Ainsworth Electric	provide new retrofit sockets to replace burnt out existing sockets for emergency lighting	\$3,926
	7D Dakota High School	Ainsworth Electric	credit for balance of electrical allowance	(\$1,561)
	7D Dakota High School	Preferred Glass	credit for balance of glazing allowance	(\$5,000)
Construction Contingency Subtotal:				\$140,345
Food Service				
	5E Administration Building	Innovated Energy Controls	credit for loss due to power shutdown in the technology department and the food service department	(\$3,923)
Food Service Subtotal:				(\$3,923)
TOTAL AMOUNT OF SUMMARY				\$136,422

Notes

Bond Program Construction Contingency Budget:	\$3,332,658
Previous Bond Program Construction Contingency Costs:	\$1,019,112
Current Bond Program Construction Contingency Costs:	\$140,345
Transfer to cover BP4 (2022) projects	\$1,400,000
Transfer for additional (2025) projects	\$700,000
Bond Program Construction Contingency Balance:	\$73,201
Bond Program Contingency Balance Remaining:	2.2%
Balance of Bond Projects Remaining to Complete:	2.5%

MEMORANDUM (A)

BARTON MALOW

DATE June 24, 2025

TO Scott Sederlund, Chippewa Valley Schools

FROM Cris Tollis, Barton Malow Builders

RE Chippewa Valley Schools
Bid Pack 7 – Clinton Valley Elementary Northwest Parking Lot –
Furnish and install geogrid subgrade.

Barton Malow has reviewed the proposal from the contractor listed below to furnish and install geogrid subgrade per requirements of the G2 inspector for the new Northwest parking lot. Everything was found to be in order. Therefore, it is the recommended motion that the Board of Education approves a change order to the existing contract as presented.

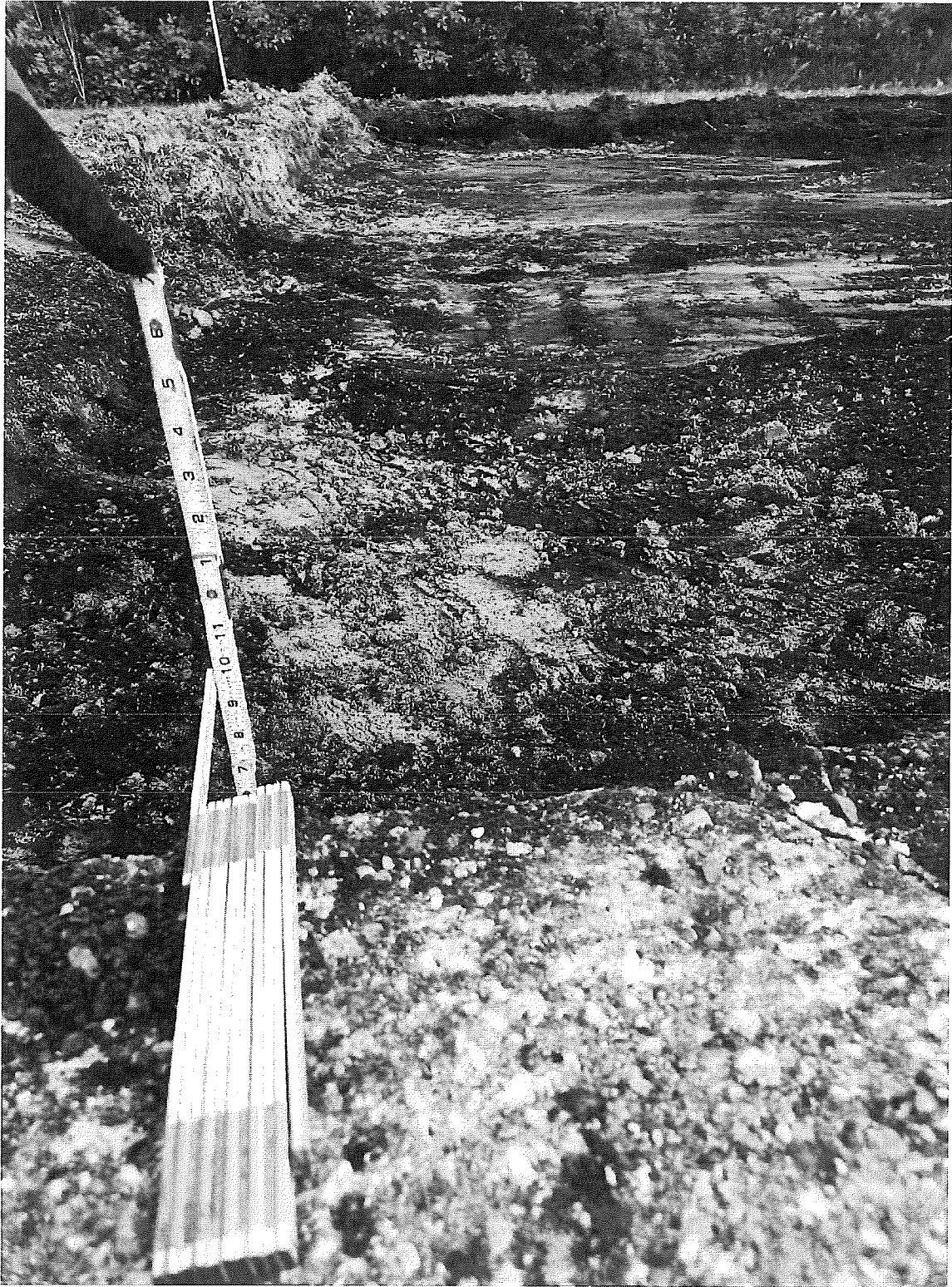
Bid Category	Contractor	Amount
320000-Sitework	T&M Asphalt Paving	\$12,570.00

A G2 Inspector was on site during testing and noticed unsuitable soils. In lieu of undercutting, which would be more costly based solely on the volume of stone removed and stone replaced, T&M provided a geogrid subgrade. Additional stone was also required to bring the base of the new lot to the existing heights. The asphalt removed was thicker than expected (see attached photo), thus the need for additional stone backfill. This additional work will be funded from the bond program contingency budget.

Please feel free to contact me at cris.tollis@bartonmalow.com or 947-234-2859 if you should have any questions or comments regarding this recommendation.

COPY: Daryl Dombrow, Barton Malow Builders
Dan Tollis, Barton Malow Builders
Jeff Atkins, Chippewa Valley Schools
Brian Smilnak, Wakely Associates Inc.
File

Clinton Valley Elementary
Northwest parking lot - existing paving cross section



MEMORANDUM (B)

BARTON MALOW

DATE July 9, 2025
TO Scott Sederlund, Chippewa Valley Schools
FROM Cris Tollis, Barton Malow Builders
RE Chippewa Valley Schools
Bid Pack 7 - Dakota High School North Parking Lot

The original scope of work involved milling and resurfacing the majority of the existing pavement. A marked-up drawing from the bid documents is included following this memo. However, during the milling operation, it was determined that the underlying base course was in poor condition. See attached photos and field report from the independent testing agency (G2). In response, several corrective options were evaluated—please refer to the attached analysis and summary, which outlines both cost implications and anticipated service life extensions.

Based on this evaluation, the project team selected the full replacement option with targeted subgrade undercuts. This approach was determined to provide the most durable long-term solution while balancing cost and performance expectations.

Barton Malow has reviewed the contractor's proposal to remediate the failed subgrade in accordance with specifications provided by G2 and the project architect. All aspects of the proposal were found to align with current unit pricing and expected value benchmarks.

Barton Malow will track quantities and time daily, and the District will be invoiced only for actual costs incurred. This work is being completed as part of the Summer 2025 scope, which includes a \$200,000 contingency allowance to support unforeseen site conditions and associated remediation/corrections. Remaining scope will take approximately 2-4 weeks to complete weather dependent.

As such, it is recommended that the Board of Education approve a change order to the existing contract as presented.

Bid Category	Contractor	Base Bid	Additional	Projected Total
320000-Sitework	ASI Paving Inc.	\$251,000	\$159,000	\$410,000

Please feel free to contact me at cris.tollis@bartonmalow.com or (947) 234-2859 if you should have any questions or comments regarding this recommendation.

CC: Daryl Dombrow, Barton Malow Builders
Dan Tollis, Barton Malow Builders
Jeff Atkins, Chippewa Valley Schools
Brian Smilnak, Wakely Associates Inc.

Chippewa Valley Schools

Bid Package No. 7 - 2025 Projects

Change Order Analysis (summary)

Option	Description	Base Bid	Additional Cost	Project Total	Expected Service Life	Total SF*	\$/SF	\$/year	Notes
1	Replace existing 2" asphalt base course and cement stabilization	\$ 251,000	\$ 202,750	\$ 453,750	20-25	65,100	\$ 6.97	\$ 20,167	Cement stabilization involves mixing soil with cement and water to form a stronger, more durable base for construction—projected to save approximately \$200,000 compared to full replacement while achieving a comparable service life.
2	Replace existing 2" asphalt base course and select undercuts	\$ 251,000	\$ 159,000	\$ 410,000	15-20	65,100	\$ 6.30	\$ 23,429	Includes a \$40,000 undercut allowance; final scope to be confirmed by a third-party testing agency and may result in additional costs.
3	Repair existing 2" asphalt base course and select undercuts	\$ 251,000	\$ 91,000	\$ 342,000	10-15	65,100	\$ 5.25	\$ 27,360	Includes a \$40,000 undercut allowance and 150 tons of asphalt for repairs and wedging. Final value will be determined by a third-party testing agency and tracked by BMB prior to issuance of the final change order. Actual costs may exceed this estimate based on testing results and field conditions. The district should anticipate some cracking within the first year and plan to implement a preventive maintenance program to achieve a 7-year service life.

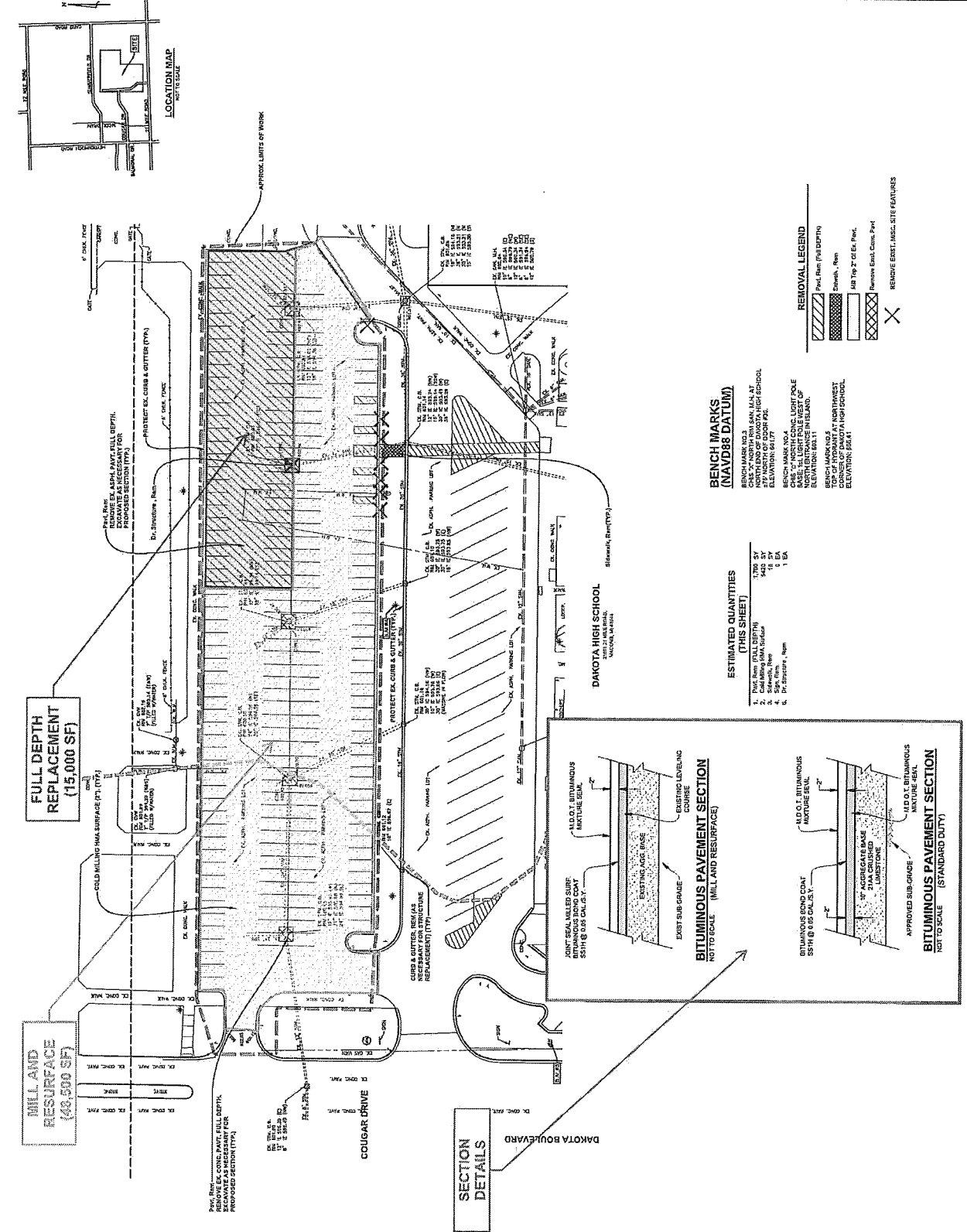
* includes 48,500 sf of mill and cap and 15,000 sf of full replacement

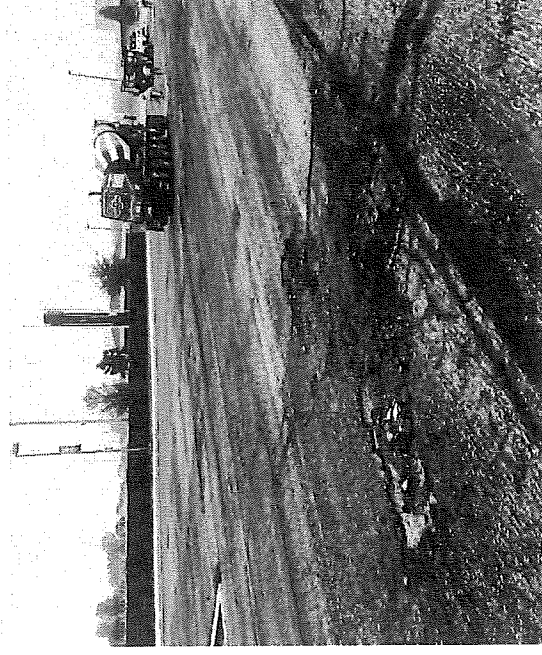
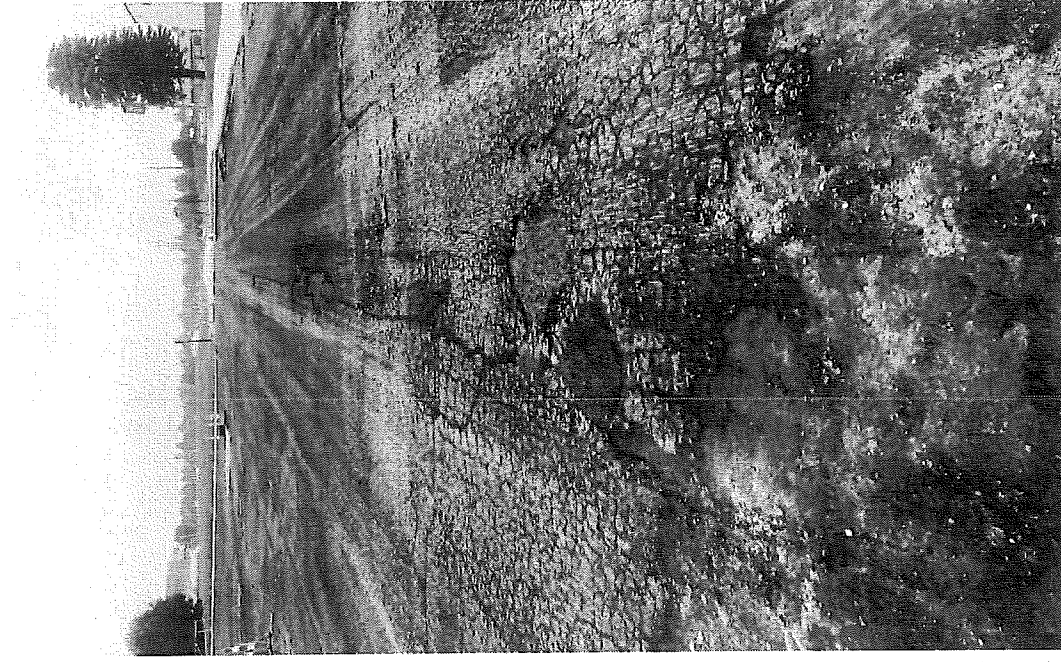
Chippewa Valley Schools

Bid Package No. 7 - 2025 Projects

Change Order Analysis (unit cost review)

Method	Description	Estimated Cost Range (per sq ft) Low	Estimated Cost Range (per sq ft) High	Square Footage	Estimated Cost (Low)	Estimated Cost (High)	Project Total (w/ addl. cost)	Project Total Variance (Low)	Project Total Variance (High)	Project Total \$/SF
Mill and Resurface	Milling off top layer (2") and installing new asphalt surface	\$ 3.50	\$ 5.50	65,100	\$ 227,850	\$ 358,050	\$ 251,000	\$ 23,150	\$ (107,050)	\$ 3.86
Mill and Resurface w/ repairs	Milling off top layer (2"), undercut unsuitable soils, wedge, and install new asphalt surface	\$ 4.00	\$ 5.50	65,100	\$ 260,400	\$ 358,050	\$ 342,000	\$ 81,600	\$ (16,050)	\$ 5.25
Full Asphalt Replacement	Remove and replace entire 4" asphalt layer	\$ 5.00	\$ 7.50	65,100	\$ 325,500	\$ 488,250	\$ 370,000	\$ 44,500	\$ (118,250)	\$ 5.68
Full Asphalt Replacement w/ Select Undercuts	Remove and replace entire 4" asphalt layer w/ select undercuts	\$ 5.50	\$ 8.00	65,100	\$ 358,050	\$ 520,800	\$ 410,000	\$ 51,950	\$ (110,800)	\$ 6.30
Asphalt Replacement with Cement Stabilization	Remove asphalt, stabilize existing base with cement, then repave	\$ 6.50	\$ 8.50	65,100	\$ 423,150	\$ 553,350	\$ 453,750	\$ 30,600	\$ (99,600)	\$ 6.97
Asphalt + Full Base Replacement	Remove asphalt and 8" base, install new 4" base and asphalt	\$ 8.00	\$ 12.00	65,100	\$ 520,800	\$ 781,200	\$ 651,000	\$ 130,200	\$ (130,200)	\$ 10.00

[illegible]



The images show areas where the milling operation has exposed a severely compromised base course, marked by cracking, voids, and material loss. These conditions confirm that the underlying structure lacks adequate support and will require significant repair or replacement to meet performance standards.



Daily Field Report

Project Name: Dakota High School Parking Lot
Location: 21051 21 Mile Road, Macomb, MI 40844
Client: Barton Malow Company
Client Rep: Dan Tollis (Barton Malow)
Contractor: Asphalt Specialists, Inc.
Contractor Rep: Rueben (ASI)

G2 Project No.: 250592
Date: June 25, 2025
Weather: M. Cloudy 78°F
Page: 1 of 1

Progress of Work:

G2 made a visit to the above-referenced job site at 1:30 pm to observe the contractors asphalt milling operations for the north parking lot improvements at Dakota High School. Refer to the attached annotated site plan for the approximate locations of today's construction operations observed by G2. Upon arrival to the job site, G2 observed the remaining milled asphalt surface after approximately 2 inches of the wearing course was removed. G2 observed that approximately 65 to 75 percent of the remaining surface was missing, deteriorating, cracking or peeling up. Approximately 1/2-inch to 1-inch of the remaining asphalt was visible and varied throughout the entire parking lot.

G2 recommended one of the following options in regards to the milled surface:

Option 1: Milling and removing the remaining asphalt surface to the existing aggregate base. The aggregate base material should then be proof-rolled to evaluate stability. If areas of instability are observed, undercuts could be recommended and then backfilled with imported dense-graded aggregate.

Option 2: Marking out the areas on the milled surface that are deemed unsuitable for paving, including areas of instability which could be determined during proof-rolling operations.

G2 representative informed the client representative, engineering representative, and contractor representatives of G2's recommendations. Please see attached site photos. G2 completed field reports and departed the site at 2:00 pm.

G2 Field Representative: Jeff Merlotti

Reviewer: GNTA, P.E.

Testing Engineers & Consultants, Inc.

**Barton Malow Builders
26500 American Drive
Southfield, Michigan 48034**

GEOTECHNICAL INVESTIGATION

FOR

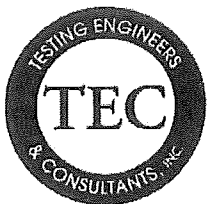
**Chippewa Valley Schools
2022 Site Improvements
Macomb Township, Michigan**

TEC Report: 61628

By:

**Testing Engineers & Consultants, Inc.
1343 Rochester Road
P.O. Box 249
Troy, Michigan 48099-0249
(248) 588-6200**

May 24, 2021



Testing Engineers & Consultants, Inc.

1343 Rochester Road • PO Box 249 • Troy, Michigan 48099-0249
(248) 588-6200 or (313) T-E-S-T-I-N-G • Fax (248) 588-6232
www.testingengineers.com

Engineering Client Success

TEC Report: 61628
Date Issued: May 24, 2021

Mr. Jeff Atkins, Project Manager
Barton Malow Builders
26500 American Drive
Southfield, Michigan 48034

Re: Geotechnical Investigation For
Chippewa Valley Schools
2022 Site Improvements
Macomb Township, Michigan

Dear Mr. Atkins:

Please find enclosed the results of a geotechnical investigation performed at the above referenced site. This geotechnical report presents our field and laboratory results; engineering analysis; and our recommendations for design of pavements, as well as important construction considerations.

As you may know, Testing Engineers & Consultants, Inc. (TEC) has fifty-five years of experience in Quality Control Testing and Construction Inspection. We would be pleased to provide any of these services on this project.

Should you have any questions regarding this report, please let us know. It has been a pleasure to be of service to you.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Carey J. Suhan, P.E.,
Vice President, Geotechnical
& Environmental Services

CJS/ln
Enclosure

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All services undertaken are subject to the following policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and the comprehensiveness of the tests, examinations and surveys made. No quotation from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, AND TROY
FOUNDED IN 1966



Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

4.1 Subsoil Conditions (Cont'd)

Dakota High School

The eight borings were drilled in HMA pavement. The thickness of the pavement varied from 3 ½ to 8 ½ inches. The pavement was underlain by aggregate base fill that consisted of sandy crushed gravel with some clay. The fill ranged in thickness from 1 ½ to 9 ¼ inches. At Boring Nos. DH-7 and DH-8, additional fill consisting of firm clay with some silt extended to depths of 3 and 4 feet, respectively, below existing pavement surface.

The underlying native soil was generally plastic to stiff clay and loose to medium compact sand and clayey sand that extended to the terminal depth of the borings.

Standard penetration values range from 7 to 27 blows per foot with an unconfined compressive strength of 1,650 psf. Bulk densities range from 116 to 142 pounds per cubic foot with moisture contents of 9 to 25 percent.

Fox Elementary School

The seven borings were drilled in HMA pavement. The thickness of the pavement varied from 3 to 5 inches. The pavement was underlain by sandy crushed gravel fill at Boring Nos. F-1 through F-4 that ranged in thickness from 7 to 9 ½ inches. At Boring Nos. F-5 through F-7, the pavement was underlain by crushed asphalt fill that ranged in thickness from 7 to 8 ½ inches.

Additional fill consisting of firm clay with some silt was encountered at Boring No. F-2 that extended to a depth of 3 feet below existing pavement surface. At Boring No. F-6, the additional fill consisted of 6 inches of compacted crushed concrete followed by medium compact clay with some sand and wood that extended to a depth of 3 feet.

The underlying native soil was soft to stiff clay with some silt that extended to the terminal depth of the borings. A trace of organic material was encountered in the clay at Boring F-5. At Boring No. F-7, a 12 inch thick layer of medium compact sand overlaid the clay.

Standard penetration values range from 4 to 12 blows per foot with unconfined compressive strength of 3,300 to 6,590 psf. Bulk densities range from 108 to 134 pounds per cubic foot with moisture contents of 12 to 36 percent of the dry weight of the soil.

Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

4.1 Subsoil Conditions (Cont'd)

Mohawk Elementary School

The seven borings were drilled in HMA pavement. The thickness of the pavement varied from 2 ½ to 4 inches. The underlying aggregate base fill varied from silty well graded sand with some gravel at Boring Nos. M-1 and M-6, sandy gravel at Boring Nos. M-2 and M-5, coarse to medium sand at Boring Nos. M-3 and M-4 and sand and crushed gravel at Boring No. M-7. The fill ranged in thickness from 4 to 9 ¼ inches. Additional fill that consisted of loose to medium compact clayey sand was encountered at Boring Nos. M-2, M-3 and M-6. The fill ranged in thickness from 8 to 10 inches.

The underlying native soils were generally plastic to stiff clays with some silt that extended to the terminal depth of the borings. At Boring Nos. M-1, M-2 and M-4, the clay was overlain with loose to medium compact sand or clayey sand.

Standard penetration values range from 6 to 15 blows per foot with unconfined compressive strength of 2,310 to 7,000 psf. Bulk densities range from 116 to 135 pounds per cubic foot with moisture contents of 13 to 33 percent of the dry weight of the soil.

Seneca Middle School

The two borings were drilled in HMA pavement. The thickness of the pavement was 3 ¼ and 5 inches at Boring Nos. S-1 and S-2, respectively. The underlying aggregate fill was medium to fine sand with some crushed gravel, silt and clay. The fill was 14 ¾ and 9 inches thick at Boring Nos. S-1 and S-2, respectively.

The underlying native soil was loose to compact sand and clayey sand that extended to the terminal depth of the borings. Some clayey seams were encountered in the loose sand at Boring No. S-2.

Standard penetration values range from 10 to 48 blows per foot. Bulk densities range from 123 to 136 pounds per cubic foot with moisture contents of 12 to 16 percent of the dry weight of the soil.

4.2 Ground Water Observations

Water level readings were taken in the bore holes during and after the completion of drilling. These observations are noted on the respective Test Boring Logs. Ground water was first observed during drilling at Boring Nos. C-1, C-2, C-4, DG-1 through DG-3, DH-1, DH-4

Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

4.2 Ground Water Observations (Cont'd)

through DH-7, F-3 and M-5 at depths ranging from 3 inches to 4 feet below existing pavement surface. After completion of drilling and removal of the augers, water was measured at Boring Nos. C-1, C-2, C-4, DG-1 through DG-3, DH-1, DH-6 and F-3 at depths ranging from 1.1 to 4 feet. No water was noted at Boring Nos. DH-4, DH-5, DH-7 and M-5 after completion of drilling. No water was noted in the other 24 borings either during drilling or after completion of drilling.

5.0 ANALYSIS AND RECOMMENDATIONS

5.1 Proposed Project

The proposed project is to consist of the repaving of several parking lots and drive lanes at six school sites for Chippewa Valley Schools.

5.2 Ground Water Conditions

The position of water levels found in test borings may vary somewhat depending on seasonal precipitation. At the level water was encountered in the borings, it should present no significant problems for design or construction of pavements. At Boring Nos. C-1, C-2, DG-2, DH-4 through DH-7, F-3 and M-5, the water appears to be trapped in wet sand layers directly or slightly below existing pavement. The wet sand layers are underlain by less permeable clay layers. The trapped water and any water in excavations to remove unstable soils should be controllable by direct pumping from low points in the excavation.

5.3 Recommended Earthwork Operations

The asphalt pavement thickness at the west parking lot at Mohawk Elementary School (Boring Nos. M-1) is generally thin. In addition, the pavement in this area shows signs of fatigue (alligator/stress cracking).

The HMA pavement at all six school sites where parking lots and drives are to be rehabilitated, are in poor to fair condition showing signs of fatigue (alligator/stress cracking). The north drive at Mohawk Elementary School appears to be in good to fair condition.

The underlying aggregate base at Cheyenne Middle School, part of Dakota 9th Grade Center and at the west parking lot and southeast entrance drive at Mohawk Elementary School consists of well graded sand and silty sand often with some gravel and silt. The material does

Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

5.3 Recommended Earthwork Operations (Cont'd)

not comply with MDOT 21AA grading requirements. The aggregate was thin at Boring No. DG-6 (south parking lot at Dakota High School) and at Boring M-6 (southeast entrance drive at Mohawk Elementary School).

The underlying aggregate base at part of Dakota 9th Grade Center (Boring Nos. DG-3 and D-5) is sand and crushed gravel. The material nearly complies with MDOT 21AA grading requirements.

The underlying aggregate fill at Dakota High School, Fox Elementary School and Boring Nos. M-2 and M-5 at Mohawk Elementary School is sandy crushed gravel. The material complies with MDOT 21AA grading requirements at Fox Elementary School and nearly complies with MDOT 21AA grading requirements at the other two school sites. The aggregate was thin at Boring Nos. DH-2, DH-6 and DH-7 (northwest parking lot at Dakota High School), F-4 (west circular drive at Fox Elementary School) and at M-2 (north drive at Mohawk Elementary School).

The underlying aggregate fill at Seneca Middle School and at Boring Nos. M-3 and M-4 at Mohawk Middle School is either medium to fine sand or coarse to medium sand. The material does not comply with MDOT 21AA grading requirements.

The overall pavement cross section was also thin at most locations. Typically, asphalt pavements for drives and parking lots have a minimum thickness of 4 inches. The underlying aggregate base is typically 10 inches thick for drives and 8 inches thick for parking lots.

Because of the lack of a good aggregate base and/or adequate thickness, it is recommended that total reconstruction be performed at the six school sites.

In areas where total reconstruction is to occur, which is at most areas, the exposed subgrade should be proofrolled to identify soft or yielding areas. Generally, the subgrade is sand or clayey sand at Cheyenne Elementary School, Dakota 9th Grade Center, Mohawk Elementary School and Seneca Middle School and clay with some silt at Dakota High School and Fox Elementary School. The moisture contents at the time of drilling are generally several percentage points above the anticipated optimum moisture contents at Cheyenne Elementary School, Dakota 9th Grade Center, Fox Elementary School, Mohawk Elementary School and Seneca Middle School. Any of these areas that are found to experience more than normal yielding should be undercut and the yielding materials should be scarified, dried and recompacted or removed and replaced with engineered fill. This can be more of a problem in the case of proofrolling close to or on clay subgrade. If the site moisture content is elevated, the grade can experience severe pumping in which case the grade would need to be undercut

Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

5.3 Recommended Earthwork Operations (Cont'd)

and replaced with crushed stone. A trace of organic material was encountered in the clayey fill at Boring No. C-3 (Cheyenne Elementary School) and in the soft clay at Boring No. F-5 (Fox Elementary School). The organic fill at Boring No. C-3 is about 4 feet below existing grade and should be assessed for stability during proofroll operations. We do not expect it to have an adverse effect during proofrolling, however, if the subgrade is unstable and yielding the organic material should be removed. Since the soft clay with trace of organics subgrade at Boring No. F-5 is shallow, we recommend that the soft clay be removed. This soil extends to a depth of 3 feet below pavement.

The buried topsoil mixed with the clayey sand fill at Boring No. DG-5 (Dakota 9th Grade Center) should be removed. This will require removal of about 4 feet of material.

Engineered backfill required for construction excavations or fill required to achieve desired grades should preferably consist of clean and well graded granular soils. The on-site sands encountered generally contain an appreciable amount of clay and silt and should not be considered as engineered fill. Fill should be placed in uniform layers not more than 9 inches in thickness with the soils in each layer compacted to a minimum of 95% of the maximum density as determined by ASTM D1557. Fill should be at approximately the optimum moisture content during placement and compaction. Furthermore, frozen material must not be used as fill and fill should not be placed on frozen ground.

5.4 Pavement Recommendations

The subgrade resulting from the site preparation, as outlined in the recommended earthwork operations section, will provide a fair subgrade for support of pavements.

For the reconstructed automobile drives and minimal truck traffic the following section is recommended:

- 1 ½ inch bituminous concrete wearing course (MDOT 5E1 or 4E1)
- 2 ½ inch bituminous concrete leveling course (MDOT 4E1)
- 10 inches untreated aggregate base (MDOT 21AA)

The aggregate base may be reduced to 8 inches in automobile parking areas.

In the bus loop areas, the pavement cross section should be increased as follows:

- 1 ½ inch bituminous concrete wearing course (MDOT 5E1 or 4E1)
- 4 ½ inch bituminous concrete leveling course (MDOT 4E1) (2 lifts)
- 10 inches untreated aggregate base (MDOT 21AA)

Testing Engineers & Consultants, Inc.

Mr. Jeff Atkins
Barton Malow Builders
May 24, 2021

TEC Report: 61628

5.4 Pavement Recommendations (Cont'd)

The pavement should be properly crowned and shaped in order to provide effective surface drainage and prevent water ponding. A 1.5 percent slope is recommended. Edge drains along the perimeter of the pavement and finger drains around catch basins are recommended to prevent water from infiltrating the subgrade. All drains should be connected to storm sewer or other outlets.

The pavement recommendations presented above are intended to provide a serviceable pavement for an extended period of time. However, all pavements show deterioration with time and require regular maintenance such as occasional repairs of cracks and pot holes. The need for such maintenance efforts is not necessarily indicative of premature pavement failure. The serviceable life of the pavement can be substantially reduced if maintenance and minor repair is not performed in a timely manner.

6.0 DESIGN REVIEW AND FIELD MONITORING

The evaluations and recommendations presented in this report relative to site preparation and pavements have been formulated on the basis of assumed and provided data relating to the location, type and finished grades for the proposed pavement and adjacent areas. Any significant change in this data should be brought to our attention for review and evaluation with respect to the prevailing subsoil conditions.

When the plans are finalized, a consultation should be arranged with us for a review to verify that the evaluations and recommendations have been properly interpreted.

Soil conditions at the site could vary from those generalized on the basis of test borings made at specific locations. It is therefore recommended that Testing Engineers & Consultants, Inc. be retained to provide soil engineering services during the site preparation and pavement phases of the proposed project. This is to observe compliance with the design concepts, specifications and recommendations. Also, this provides opportunity for design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.



Gary E. Putt, P.E.
Senior Project Engineer



Carey J. Suhan, P.E.
Vice President, Geotechnical
& Environmental Services

GEP/CJS/In

I:\gs\Job Files\61200-61299\61628 Barton Malow\61628.doc

Dakota 9th Grade Center and Dakota High School
Test Boring Location Plan

Legend

Dakota 9th Grade Center

Dakota High School

Dakota Boulevard

East Drive

DH1, DH2, DH3, DH4, DH6, DH7, DH8, DG1, DG2, DG3, DG4, DG5

300 ft

Legend

Dakota 9th Grade Center and Dakota High School

Test Boring Location Plan

COUGARS

DH1

DH2

34

Gravel Dr

Dakota North Grade Center

P

SAFARI

1

20

9HC

1

10

1000

10

Palola Boulevard

2HCl

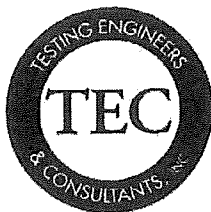
East Drive

300 ft

Good Earth

0210000

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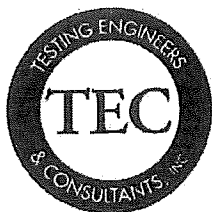
Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: DH-1		Job No.: 61628		Project: Chippewa Valley Schools, 2022 Site Improvements			
Client: Barton Malow Builders				Location: Macomb Township, Michigan			
Type of Rig: Truck				Drilled By: I. Mickle			
Drilling Method: Solid Stem Augers				Started: 4/7/2021			
Location: Dakota High School				Completed: 4/7/2021			

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	7 7 9	.38	ASPHALT (4 1/2")	17.8	130	
			1.1				
5.0	LS	5 3 4	3	Moist Sandy Crushed Gravel With Some Clay-FILL (8 1/2")	15.9	123	
			5	Medium Compact Moist Brown Clayey Fine SAND			
				Loose Wet Brown Fine SAND With Clayey Seams			
				Bottom of Boring at 5'			
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance SS - 2" D. Split Spoon Sample LS - Sectional Liner Sample ST - Shelby Tube Sample AS - Auger Sample	w - H₂O, % of dry weight d - Bulk Density, pcf qu - Unconfined Compression, tsf DP - Direct Push RC - Rock Core	Water Encountered: 3'0" At Completion: 2'10" Boring No. DH-1
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Testing Engineers & Consultants, Inc.

1343 Rochester Road - PO Box 249 - Troy, Michigan - 48099-0249
 (248) 588-6200 or (313) T-E-S-T-I-N-G
 Fax (248) 588-6232

Boring No.: DH-2

Job No.: 61628

Project: Chippewa Valley Schools, 2022 Site Improvements

Client: Barton Malow Builders

Location: Macomb Township, Michigan

Type of Rig: Truck

Drilled By: I. Mickle

Drilling Method: Solid Stem Augers

Started: 4/7/2021

Location: Dakota High School

Completed: 4/7/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
2.5	LS	3 5 7	.46 1.1	ASPHALT (5 1/2")	14.7	135	7420
			3	Moist Sandy Crushed Gravel With Some Clay-FILL (7 1/2")			
5.0	LS	8 8 7	5	Stiff Moist Brown CLAY With Some Silt	13.2	136	
				Medium Compact Moist Brown Fine SAND With Clay Layers			
7.5				Bottom of Boring at 5'			
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

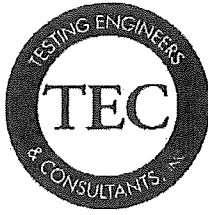
"N" - Standard Penetration Resistance
 SS - 2" J.D. Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. DH-2



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Boring No.: DH-3	Job No.: 61628	Project: Chippewa Valley Schools, 2022 Site Improvements
Client: Barton Malow Builders		Location: Macomb Township, Michigan
Type of Rig: Truck		Drilled By: I. Mickle
Drilling Method: Solid Stem Augers		Started: 4/7/2021
Location: Dakota High School		Completed: 4/7/2021

Depth (ft)	Sample Type	N	Strata Change	Soil Classification	w	d	qu
			.33				
			1	ASPHALT (4")			
2.5	LS	3			15.2	134	11120
		5					
		5	3	Moist Sandy Crushed Gravel With Some Clay-FILL (8")			
	LS	3		Firm Moist Gray CLAY With Some Silt	19.7	129	
5.0		7					
		10	5	Stiff Moist Gray CLAY With Some Silt & Sand Seams			
7.5				Bottom of Boring at 5'			
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							

"N" - Standard Penetration Resistance
 SS - 2" D Split Spoon Sample
 LS - Sectional Liner Sample
 ST - Shelby Tube Sample
 AS - Auger Sample

w - H₂O, % of dry weight
 d - Bulk Density, pcf
 qu - Unconfined Compression, tsf
 DP - Direct Push
 RC - Rock Core

Water Encountered: None

At Completion: None

Boring No. DH-3