ADDENDUM NO. 4

4/28/2022

PROJECT:	Pavement Maintenance at Various Sites	**OWNER:**	Clovis Unified School District
ENGINEER:	Blair, Church & Flynn	**BID NO:**	2890
	Attention: Jenn Felix	**BCF PROJECT NO.**	221-0288
	Tanairy Barrera		

It will be the responsibility of the General Contractor to submit the information contained in this addendum to all its subcontractors and suppliers. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification. The following additions, deletions, and revisions to the Drawings and Project Manual are hereby made and do become a part of these Contract Documents.

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SUPPLEMENTAL INFORMATION

ATTACHMENTS

Exhibit A – Buchanan High School Geotechnical Report
Exhibit B – CART Geotechnical Report
Exhibit C – Clovis High School Geotechnical Report
Exhibit D – Clovis West High School Geotechnical Report
Exhibit E – Community Day School Geotechnical Report
Exhibit F – Jefferson Elementary School Geotechnical Report
Exhibit G – Mickey Cox Elementary School Geotechnical Report
Exhibit H – Pinedale Elementary School Geotechnical Report
Exhibit I – Professional Development Building Geotechnical Report

Blair, Church & Flynn Consulting Engineers
451 Clovis Avenue, Suite 200
Clovis, CA 93612
(559) 326-1400 FAX (559) 326-1500

SUPPLEMENTAL INFORMATION

AD4-1: Geotechnical Reports

Refer to the attached **Exhibits A through I** for the geotechnical reports for each site.

Blair, Church & Flynn Consulting Engineers
451 Clovis Avenue, Suite 200
Clovis, CA 93612
(559) 326-1400 FAX (559) 326-1500

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April 14, 2022 RMA Project No. 22G-0055-0/01

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Buchanan High School
1560 North Minnewawa Avenue
Clovis, California 93619

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Buchanan High School parking lot in Clovis, California. The project site consists of the existing Buchanan High School campus located west of North Minnewawa Avenue and south of West Teague Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8566° north latitude and 119.7117° west longitude. At the time of our field exploration on March 30, 2022, the existing parking lot was cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 373 feet at the project site. The layout of the parking lot is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at one location (C-1) and hand-augering to a depth of approximately 51.5 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the coring location between a depth of approximately 13 and 51.5 inches.
- The core hole was backfilled with soil and AB and then patched with asphalt cold mix.
- An R-Value test was performed on a sample of the near surface soils that was considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

FINDINGS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table.

Core Number	Encountered Pavement Section	
	AC (inches)	AB (inches)
C-1	3.0	10.0

The soils encountered at the coring location consisted primarily of fine to coarse grained clayey sand to sandy clay. The subgrade was moist. No unusually loose or wet subgrade was noted within the depths explored.

LABORATORY TESTING

A Resistance Value (R-Value) test was performed on a representative sample of the subgrade obtained from planned paved areas using test methods outlined in ASTM D2844.Details of the R-Value test that was performed are provided in the attached laboratory report, Figure 3.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 10 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 10.0” Class 2 AB
5.5	3.0” AC over 10.5” Class 2 AB
6.0	3.0” AC over 12.5” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 10 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 10 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas

where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either express or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3– R-Value Test Result

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com)*

Reference: Google Earth

Approximate Scale: 1" ≈ 174'

FIGURE 1

SITE VICINITY MAP

Buchanan High School
160 North Minnewawa Avenue
Clovis, CA 93619
Project# 22G-0055-0/01

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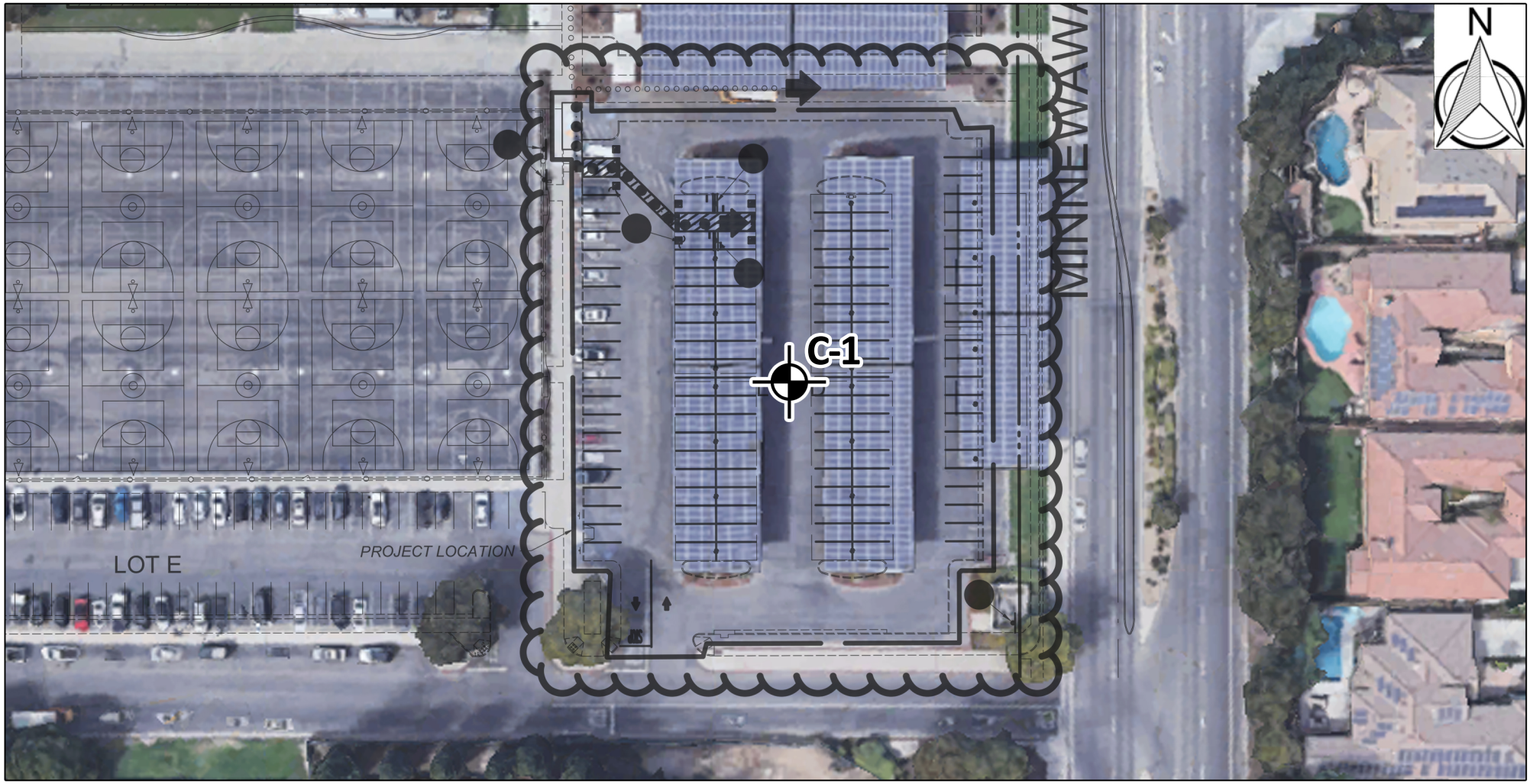

Reference: Google Earth
Tentative Tract Map dated Feb 2020
prepared by: Blair, Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 65'

C-1 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

Buchanan High School
160 North Minnewawa Avenue
Clovis, CA 93619
Project# 22G-0055-0/01

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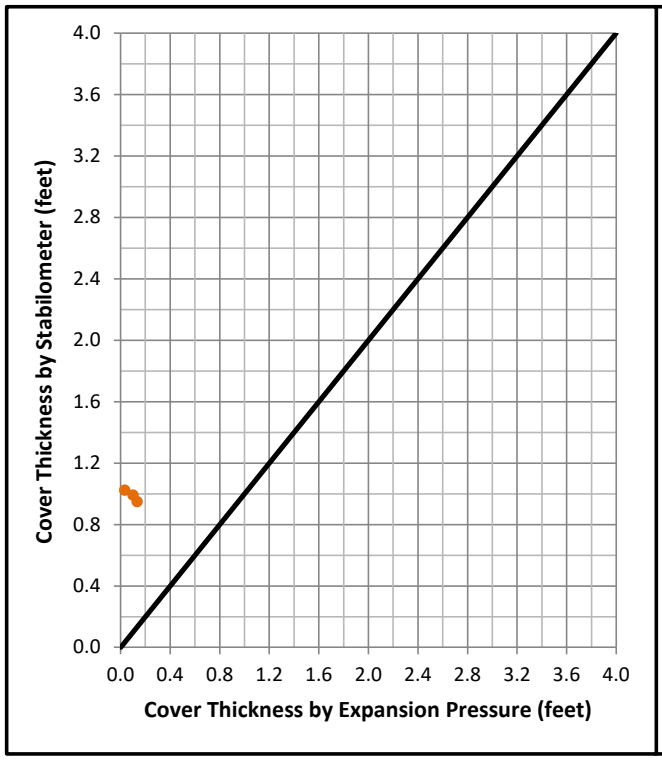
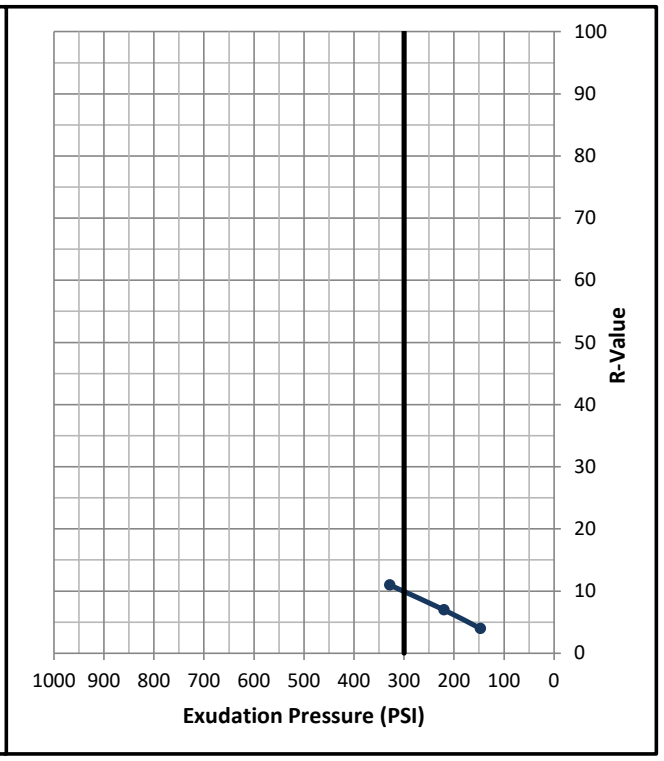
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/01		
Project Name:	Buchanan High School	Lab ID:	22-009418
Sampled By:	Phuoc T.	Date Sampled:	3/30/2022
Tested By:	Jason M.	Date Tested:	4/11/2022
Sample Location:	C-1 @ 13in - 51.5in		
Description:	Clayey SAND/Sandy CLAY, fine to coarse grained, dark brown		

"R" Value at 300psi Exudation Pressure:	10
"R" Value by Expansion Pressure:	N/A





Specimen:	1	2	3
Exudation Pressure Load (lbs):	1850	2765	4126
Exudation Pressure (psi):	147	220	329
Expansion * (0.0001 in):	1	3	4
Expansion Pressure (psf):	4	13	17
Stabilometer Value at 2000 lbs:	150	144	137
Displacement:	3.97	3.94	3.98
Resistance "R" Value:	4	7	10
"R" Value Corrected for Height:	4	7	11
Percent Moisture at Test:	13.0	12.6	12.1
Dry Density at Test (pcf):	124.9	126.7	127.4

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April 14, 2022 RMA Project No. 22G-0055-0/02

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
The Center for Advanced Research and Technology (CART)
2555 Clovis Avenue
Clovis, California 93612

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Center for Advanced Research and Technology (CART) parking lot in Clovis, California. The project site consists of the existing CART campus located east of Clovis Avenue and south of Santa Ana Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8032° north latitude and 119.6977° west longitude. At the time of our field exploration on March 24, 2022, the existing parking lot was cracked. Based on Google Earth data, the ground surface elevation varies between approximately 358 and 359 feet at the project site. The layout of the parking lot is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at three locations (C-1 through C-3) and hand-augering to depths of approximately 50 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the three coring locations between depths of approximately 46.5 and 50.25 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- Three R-value tests were performed on the soil samples that were considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

FINDINGS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table.

Core Number	Encountered Pavement Section	
	AC (inches)	AB (inches)
C-1	3.0	6.0
C-2	2.5	6.5
C-3	2.5	6.75

The soils encountered at the coring locations consisted primarily of fine to medium grained silty sand. The subgrade at all locations was moist. No unusually loose or wet subgrade was noted within the depths explored.

LABORATORY TESTING

Three Resistance Value (R-Value) tests were performed on representative samples of the subgrade obtained from planned paved areas using test methods outlined in ASTM D2844.Details of the R-Value tests that were performed are provided in the attached laboratory reports, Figures 3 through 5.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 50 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 3.0” Class 2 AB
5.5	3.0” AC over 3.0” Class 2 AB
6.0	3.0” AC over 4.0” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 6 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with

3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 6 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either express or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figures 3 through 5 – R-Value Test Results

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
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Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)

Reference: Google Earth

Approximate Scale: 1" ≈ 466'

FIGURE 1

SITE VICINITY MAP

The Center for Advanced Research and Technology
2555 Clovis Avenue
Clovis, CA 93612
Project# 22G-0055-0/02

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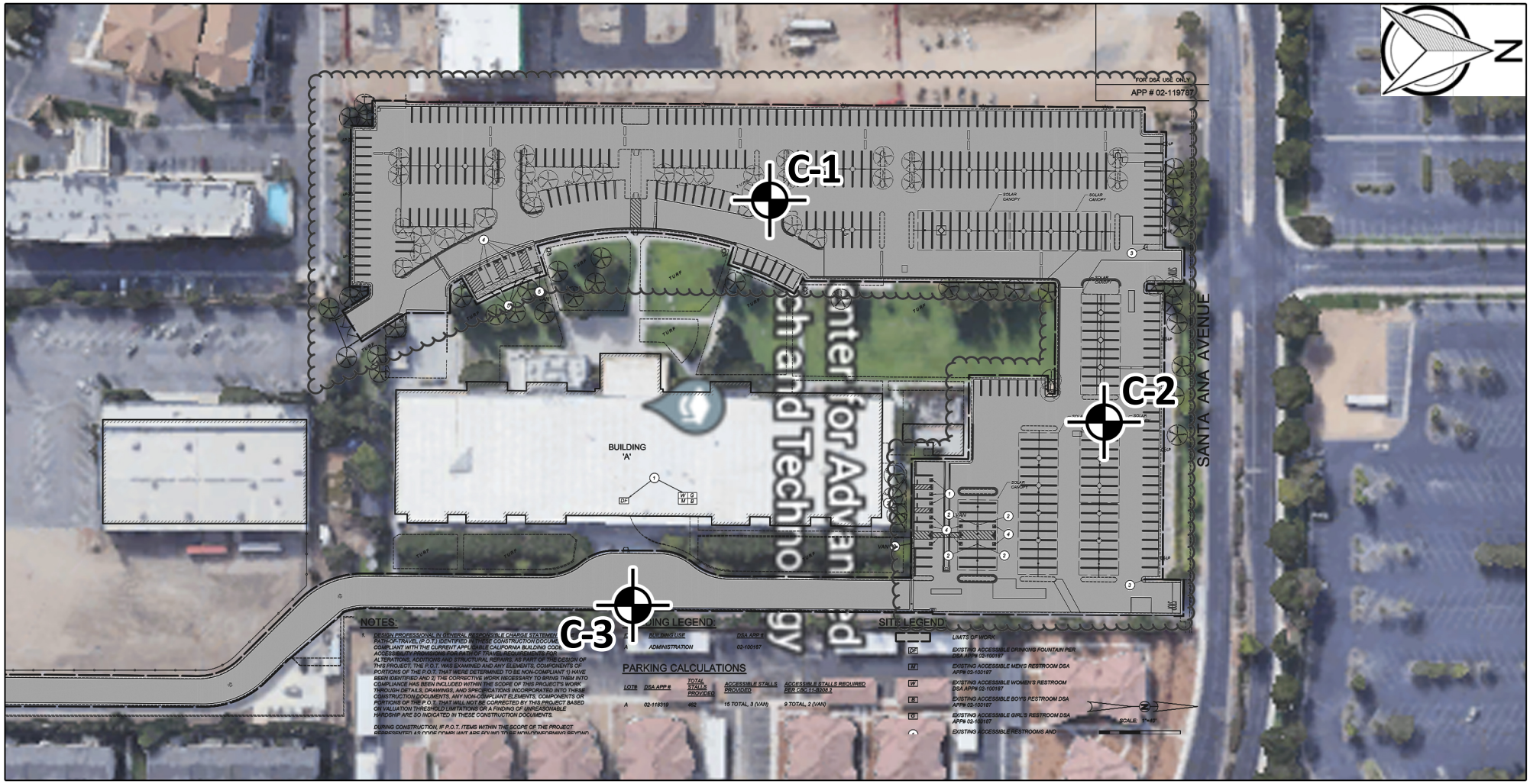

Reference: Google Earth
Tentative Tract Map dated January 2022
prepared by: Blair, Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 147'

C-3 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

The Center for Advanced Research and Technology
2555 Clovis Avenue
Clovis, CA 93612
Project# 22G-0055-0/02

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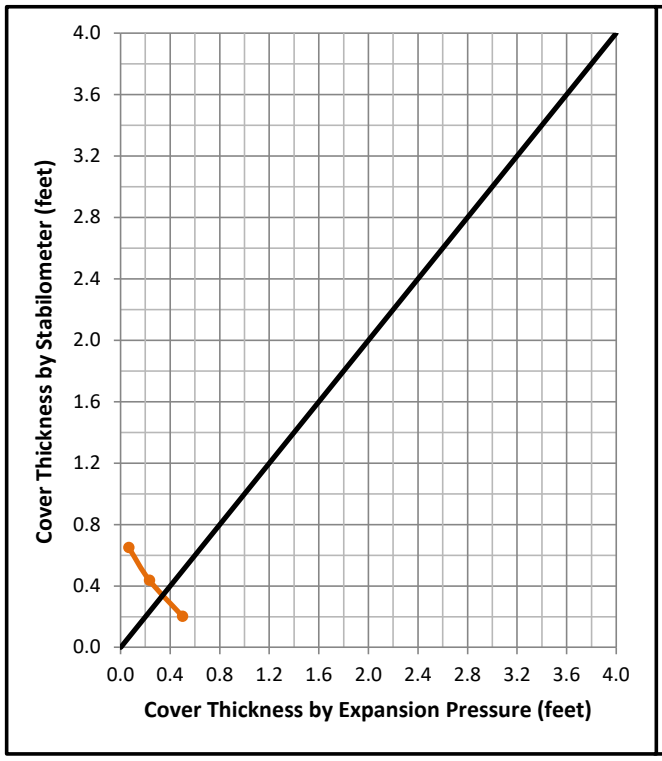
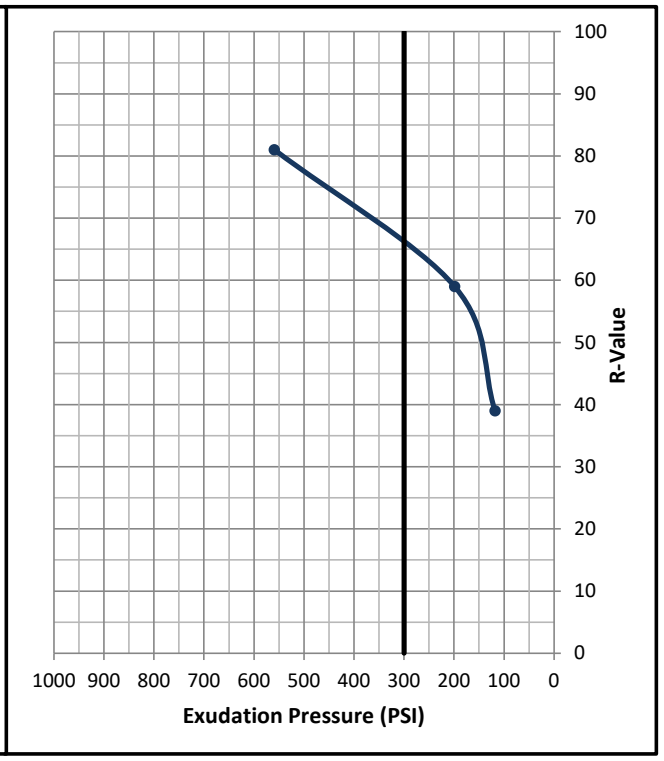
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/02		
Project Name:	CART	Lab ID:	22-009342
Sampled By:	Phuoc T.	Date Sampled:	3/24/2022
Tested By:	Jason M.	Date Tested:	4/6/2022
Sample Location:	C-1 @ 9in - 46.5in		
Description:	Silty SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	66
"R" Value by Expansion Pressure:	72





Specimen:	1	2	3
Exudation Pressure Load (lbs):	1481	2496	7026
Exudation Pressure (psi):	118	199	559
Expansion * (0.0001 in):	2	7	15
Expansion Pressure (psf):	9	30	65
Stabilometer Value at 2000 lbs:	70	45	23
Displacement:	4.98	4.23	3.50
Resistance "R" Value:	39	60	81
"R" Value Corrected for Height:	39	59	81
Percent Moisture at Test:	13.1	12.1	10.3
Dry Density at Test (pcf):	123.6	122.7	124.0

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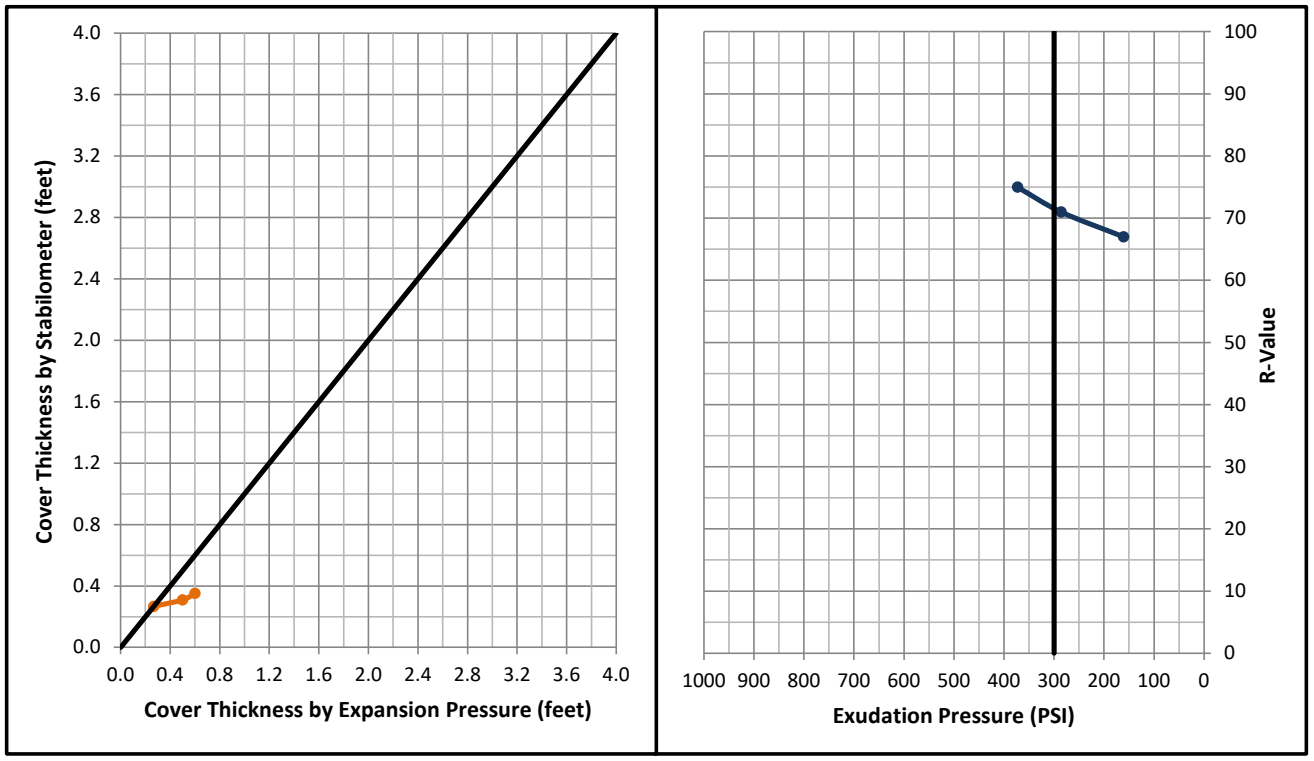
Figure 4
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/02		
Project Name:	CART	Lab ID:	22-009343
Sampled By:	Phuoc T.	Date Sampled:	3/24/2022
Tested By:	Jason M.	Date Tested:	4/6/2022
Sample Location:	C-2 @ 9in - 50.25in		
Description:	Silty SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	71
"R" Value by Expansion Pressure:	72



Specimen:	1	2	3
Exudation Pressure Load (lbs):	2021	3590	4683
Exudation Pressure (psi):	161	286	373
Expansion * (0.0001 in):	18	15	8
Expansion Pressure (psf):	78	65	35
Stabilometer Value at 2000 lbs:	36	31	27
Displacement:	4.01	3.98	4.11
Resistance "R" Value:	68	72	75
"R" Value Corrected for Height:	67	71	75
Percent Moisture at Test:	11.1	10.7	10.2
Dry Density at Test (pcf):	125.2	122.0	124.0

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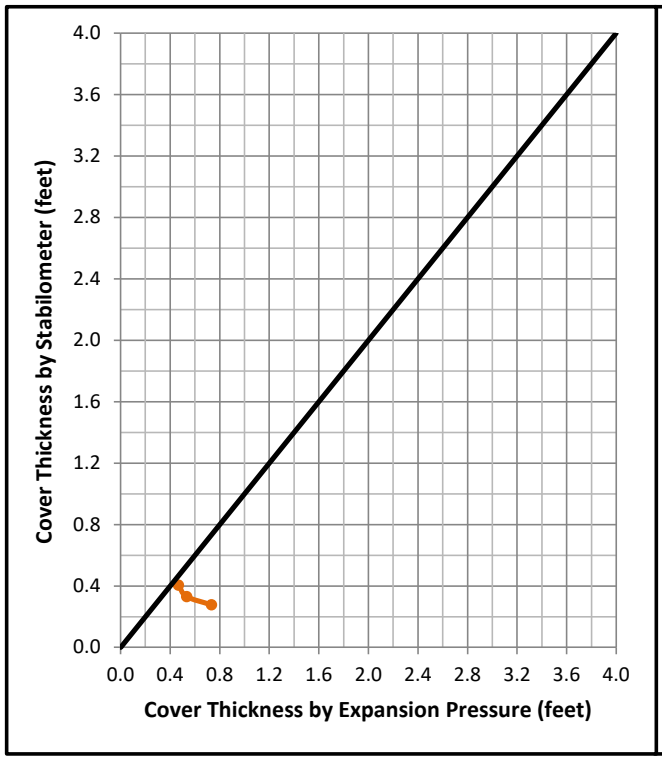
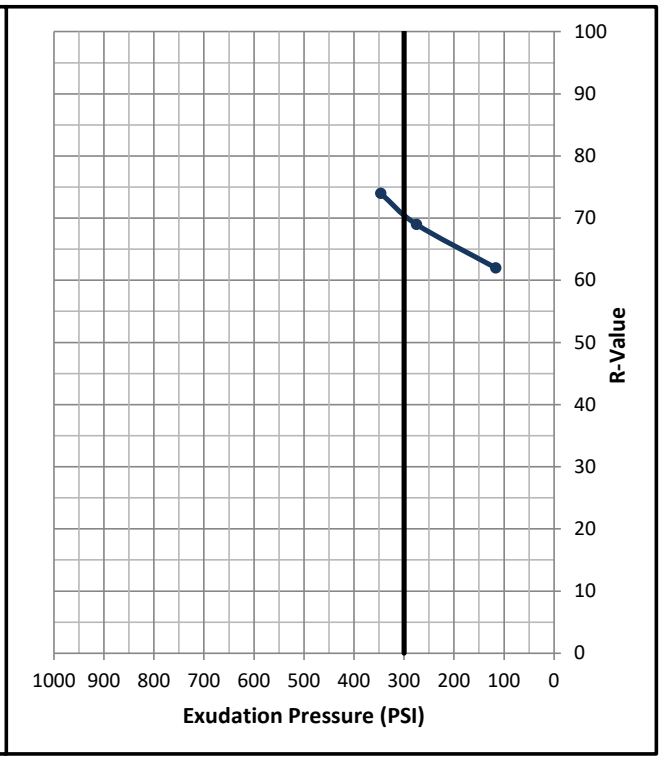
Figure 5
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/02		
Project Name:	CART	Lab ID:	22-009344
Sampled By:	Phuoc T.	Date Sampled:	3/24/2022
Tested By:	Jason M.	Date Tested:	4/6/2022
Sample Location:	C-3 @ 9.25in - 48in		
Description:	Silty SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	70
"R" Value by Expansion Pressure:	N/A





Specimen:	1	2	3
Exudation Pressure Load (lbs):	1464	3454	4352
Exudation Pressure (psi):	117	275	346
Expansion * (0.0001 in):	14	16	22
Expansion Pressure (psf):	61	69	95
Stabilometer Value at 2000 lbs:	42	33	29
Displacement:	4.37	4.11	4.02
Resistance "R" Value:	62	70	74
"R" Value Corrected for Height:	62	69	74
Percent Moisture at Test:	12.1	11.7	11.2
Dry Density at Test (pcf):	121.8	122.1	122.0

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April 5, 2022 RMA Project No. 22G-0055-0/03

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Clovis High School
1055 Fowler Avenue
Clovis, California 93611

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Clovis High School driveways and playcourt areas in Clovis, California. The project site consists of the existing Clovis High School campus located east of Fowler Avenue and north of Barstow Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8179° north latitude and 119.6786° west longitude. At the time of our field exploration on March 16, 2022, the existing driveways and playcourt were cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 369 and 372 feet at the project site. The layout of the campus is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at three locations (C-1 through C-3) and hand-augering to depths of approximately 52 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the three coring locations between depths of approximately 46 and 52 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- Three R-Value tests were performed on samples of the near surface soils that were considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

RESULTS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table. Details of the R-Value tests that were performed are provided in the attached laboratory report, Figures 3 through 5.

Core Number	Encountered Pavement Section		R-Value by Exudation	R-Value by Expansion
	AC (inches)	AB (inches)		
C-1	2.0	4.0	14	n/a
C-2	2.25	6.25	9	n/a
C-3	1.25	7.75	10	16

The soils encountered at the coring locations consisted primarily of fine to coarse grained clayey sand to sandy clay. The subgrade at all locations was moist. No unusually loose or wet subgrade was noted within the depths explored.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 10 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 10.0” Class 2 AB
5.5	3.0” AC over 10.5” Class 2 AB
6.0	3.0” AC over 12.5” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 4 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 4 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed

until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

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Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

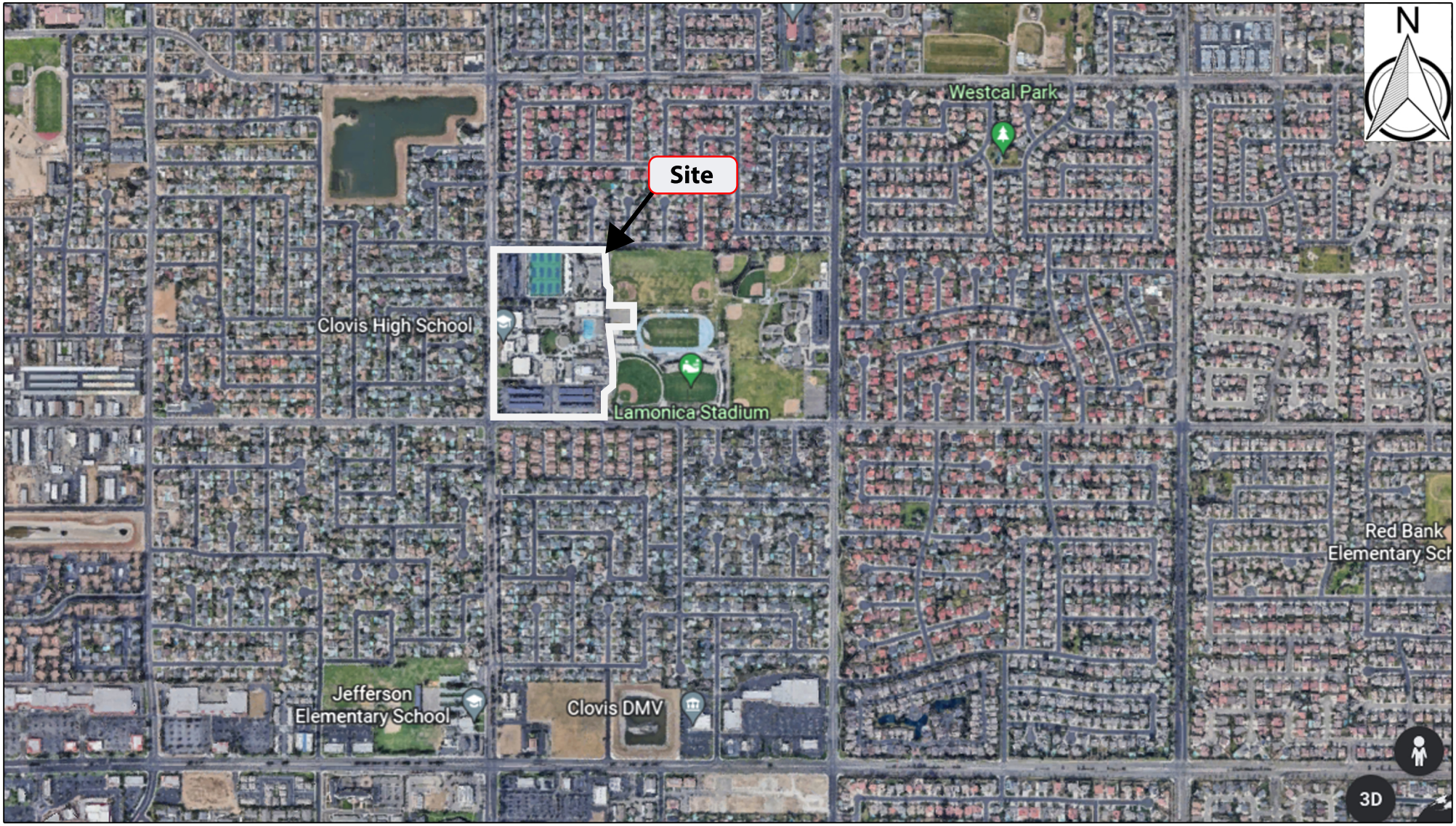
Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3 through 5– R-Value Test Results

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)



Reference: Google Earth

Approximate Scale: 1" ≈ 1052'

FIGURE 1

SITE VICINITY MAP

Clovis High School
1055 Fowler Avenue
Clovis, CA 93611
Project# 22G-0055-0/03

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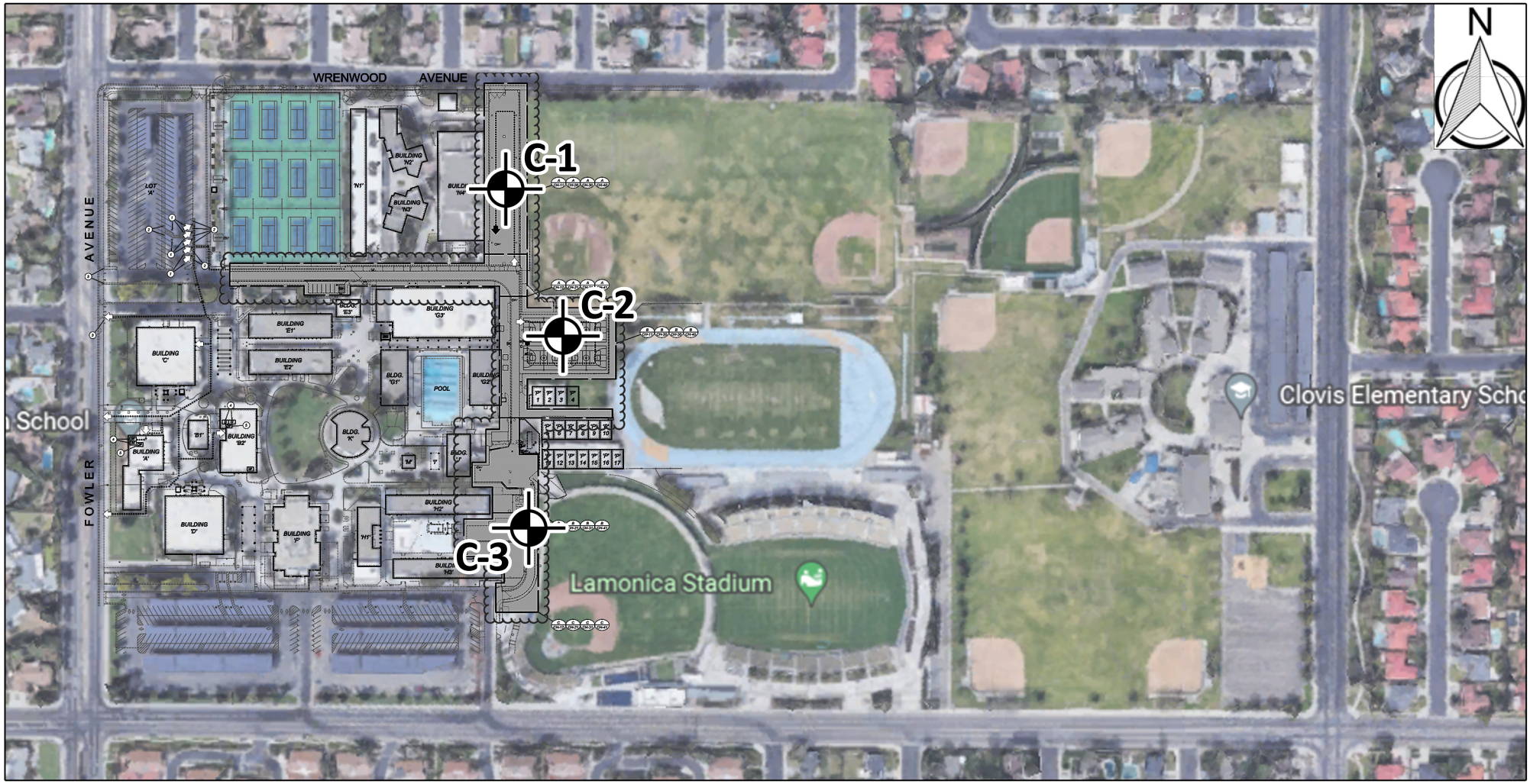

Reference: Google Earth
Tentative Tract Map dated November 2021
prepared by: Blair, Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 310'

FIGURE 2

CORING LOCATION MAP

Clovis High School
1055 Fowler Avenue
Clovis, CA 93611
Project# 22G-0055-0/03

C-3 Approximate Coring Location

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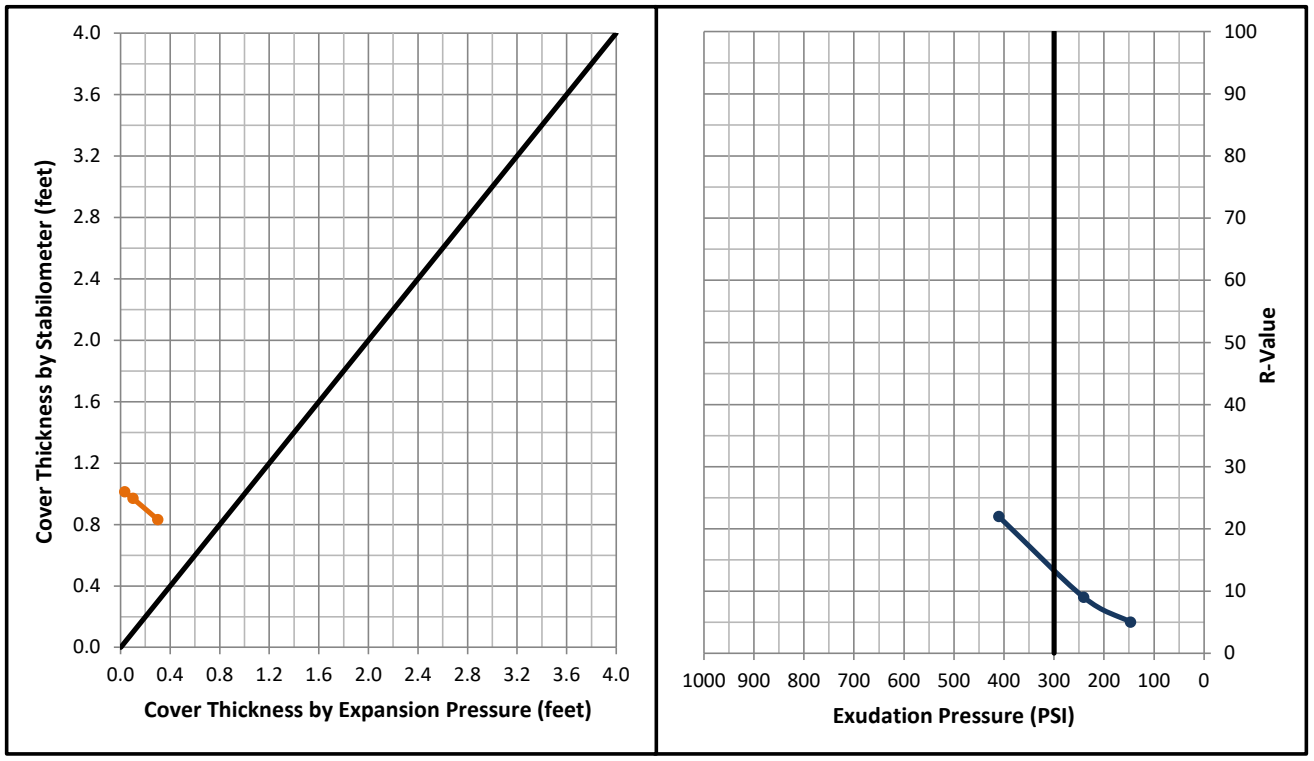
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/03		
Project Name:	Clovis High School	Lab ID:	22-009267
Sampled By:	Phuoc T.	Date Sampled:	3/16/2022
Tested By:	Jason M.	Date Tested:	3/30/2022
Sample Location:	C-1 @ 6in - 52in		
Description:	Clayey SAND, fine to coarse grained, dark brown		

"R" Value at 300psi Exudation Pressure:	14
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1846	3023	5154
Exudation Pressure (psi):	147	241	410
Expansion * (0.0001 in):	1	3	9
Expansion Pressure (psf):	4	13	39
Stabilometer Value at 2000 lbs:	149	139	112
Displacement:	4.11	3.96	3.81
Resistance "R" Value:	4	9	22
"R" Value Corrected for Height:	5	9	22
Percent Moisture at Test:	11.0	10.1	9.2
Dry Density at Test (pcf):	134.7	131.4	132.7

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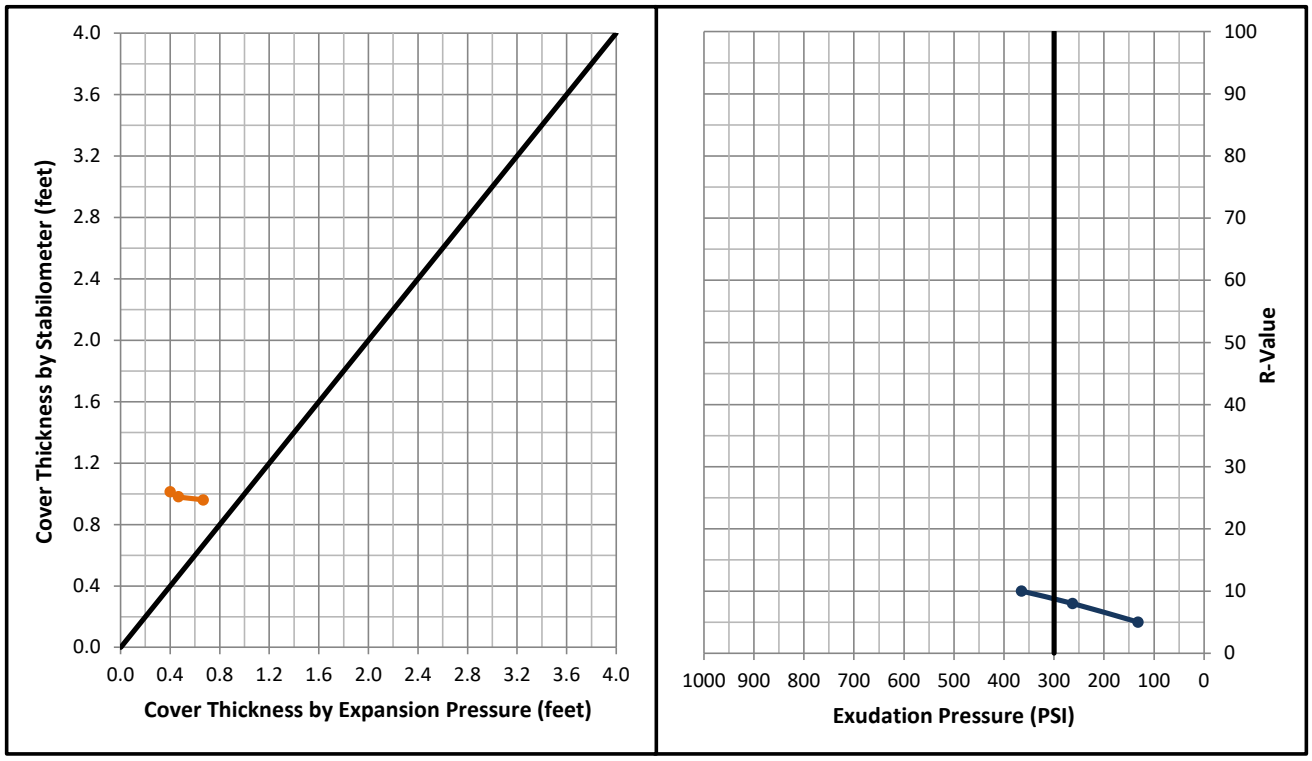
Figure 4
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/03		
Project Name:	Clovis High School	Lab ID:	22-009268
Sampled By:	Phuoc T.	Date Sampled:	3/16/2022
Tested By:	Jason M.	Date Tested:	3/30/2022
Sample Location:	C-2 @ 8.5in - 51.25in		
Description:	Clayey SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	9
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1659	3303	4585
Exudation Pressure (psi):	132	263	365
Expansion * (0.0001 in):	12	14	20
Expansion Pressure (psf):	52	61	87
Stabilometer Value at 2000 lbs:	148	139	135
Displacement:	4.28	4.32	3.79
Resistance "R" Value:	5	8	11
"R" Value Corrected for Height:	5	8	10
Percent Moisture at Test:	12.2	11.3	10.4
Dry Density at Test (pcf):	127.9	125.7	128.1

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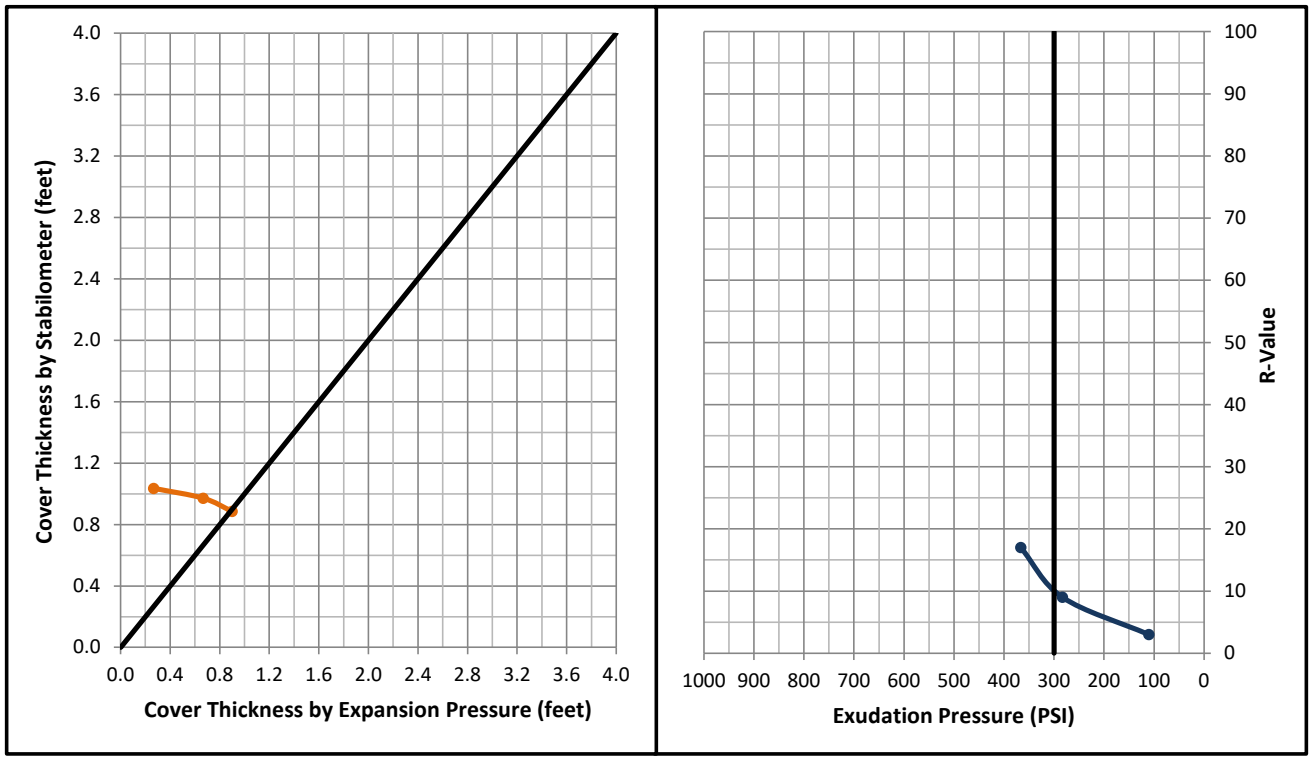
Figure 5
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/03		
Project Name:	Clovid High School	Lab ID:	22-009269
Sampled By:	Phuoc T.	Date Sampled:	3/16/2022
Tested By:	Jason M.	Date Tested:	3/30/2022
Sample Location:	C-3 @ 9in - 46in		
Description:	Clayey SAND, fine to coarse grained, brown		

"R" Value at 300psi Exudation Pressure:	10
"R" Value by Expansion Pressure:	16



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1386	3556	4602
Exudation Pressure (psi):	110	283	366
Expansion * (0.0001 in):	8	20	27
Expansion Pressure (psf):	35	87	117
Stabilometer Value at 2000 lbs:	153	134	114
Displacement:	4.53	4.96	4.99
Resistance "R" Value:	2	9	17
"R" Value Corrected for Height:	3	9	17
Percent Moisture at Test:	13.0	11.6	10.7
Dry Density at Test (pcf):	129.3	123.5	126.0

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April 14, 2022 RMA Project No.22G-0055-0/04

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Clovis West High School
1070 East Teague Avenue
Fresno, California 93720

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Clovis West High School playcourt area in Fresno, California. The project site consists of the existing Clovis West High School campus located north of East Teague Avenue and east of North Millbrook Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8597° north latitude and 119.7615° west longitude. At the time of our field exploration on March 30, 2022, the existing playcourt was cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 369 and 371 feet at the project site. The layout of the playcourt area is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at one location (C-1) and hand-augering to a depth of approximately 48 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the coring location between a depth of approximately 8.5 and 48 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- An R-value test was performed on a sample of the near surface soils that was considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844/California Test Method 301.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

FINDINGS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table.

Core Number	Encountered Pavement Section	
	AC (inches)	AB (inches)
C-1	4.0	4.5

The soils encountered at the coring location consisted primarily of fine grained sandy silt trace clay. The subgrade was moist. No unusually loose or wet subgrade was noted within the depths explored.

LABORATORY TESTING

A Resistance Value (R-Value) test was performed on a representative sample of the subgrade obtained from planned paved areas using test methods outlined in ASTM D2844. Details of the R-Value test that was performed are provided in the attached laboratory report, Figure 3.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 15 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 9.0” Class 2 AB
5.5	3.0” AC over 10.0” Class 2 AB
6.0	3.0” AC over 11.5” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 4 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 4 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas

where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either express or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3– R-Value Test Result

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Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)

Reference: Google Earth

Approximate Scale: 1" ≈ 488'

FIGURE 1

SITE VICINITY MAP

Clovis West High School
1070 East Teague Avenue
Fresno, CA 93720
Project# 22G-0055-0/04

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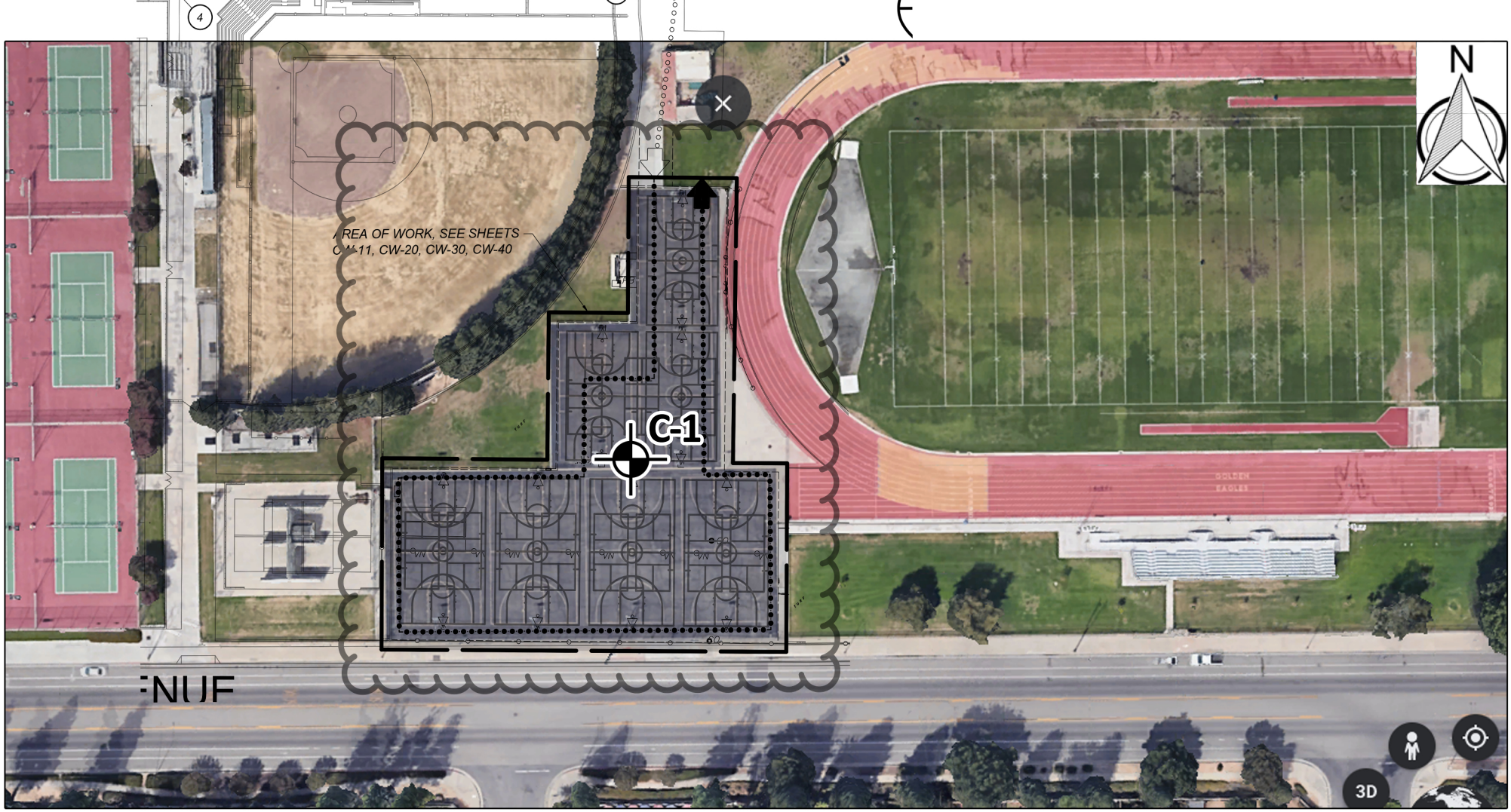

Reference: Google Earth
Tentative Tract Map dated November 2021
prepared by: Blair, Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 84'

C-1 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

Clovis West High School
1070 East Teague Avenue
Fresno, CA 93720
Project# 22G-0055-0/04

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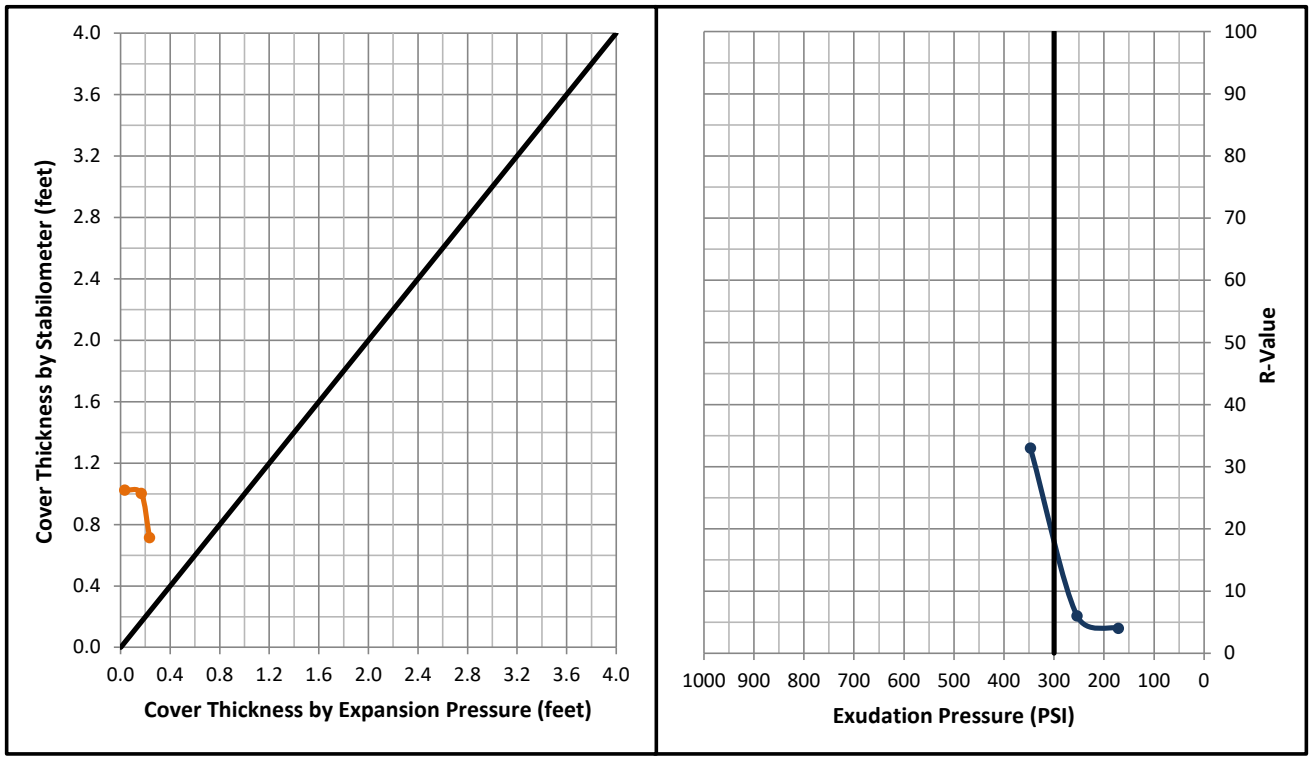
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/04		
Project Name:	Clovis West High School	Lab ID:	22G-009417
Sampled By:	Phuoc T.	Date Sampled:	3/30/2022
Tested By:	Jason M.	Date Tested:	4/8/2022
Sample Location:	C-1 @ 8.5in - 48in		
Description:	Sandy SILT trace Clay, fine grained, brown		

"R" Value at 300psi Exudation Pressure:	17
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	2152	3190	4359
Exudation Pressure (psi):	171	254	347
Expansion * (0.0001 in):	1	5	7
Expansion Pressure (psf):	4	22	30
Stabilometer Value at 2000 lbs:	150	141	84
Displacement:	4.79	4.89	4.81
Resistance "R" Value:	3	6	32
"R" Value Corrected for Height:	4	6	33
Percent Moisture at Test:	23.5	22.5	21.6
Dry Density at Test (pcf):	117.2	116.7	118.5

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April 14, 2022 RMA Project No. 22G-0055-0/05

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Community Day School
1715 David E Cook Way
Clovis, California 93611

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Community Day School parking lot and playcourt areas in Clovis, California. The project site consists of the existing Community Day School campus located north and east of David E. Cook Way and west of North Fowler Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8346° north latitude and 119.6837° west longitude. At the time of our field exploration on March 31, 2022, the existing parking lot and playcourt area was cracked. Based on Google Earth data, the ground surface elevation varies between approximately 375 and 379 feet at the project site. The layout of the parking lot and playcourt areas are illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at two locations (C-1 through C-2) and hand-augering to depths of approximately 46 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the three coring locations between depths of approximately 45 and 46.25 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- Two R-value tests were performed on the soil samples that were considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and playcourt areas and preparing this engineering report.

FINDINGS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table.

Core Number	Encountered Pavement Section	
	AC (inches)	AB (inches)
C-1 (Parking Lot)	2.5	5.0
C-2 (Playcourts)	2.0	7.0

The soils encountered at the coring locations consisted primarily of fine to medium grained silty sand with varying amounts of clay. The subgrade at all locations was moist. No unusually loose or wet subgrade was noted within the depths explored.

LABORATORY TESTING

Two Resistance Value (R-Value) tests were performed on representative samples of the subgrade obtained from planned paved areas using test methods outlined in ASTM D2844.Details of the R-Value tests that were performed are provided in the attached laboratory reports, Figures 3 and 4.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, the subgrade R-Values recommended for design purposes are given below.

Location	Recommended R-Value
Parking Lot	45
Playcourts	25

The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Parking Lot

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 4.0” Class 2 AB
5.5	3.0” AC over 4.0” Class 2 AB
6.0	3.0” AC over 5.0” Class 2 AB

Playcourts

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5" AC over 7.5" Class 2 AB
5.5	3.0" AC over 8.0" Class 2 AB
6.0	3.0" AC over 9.5" Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 5 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 5 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

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Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

RMA GeoScience
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Respectfully submitted,
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Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
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Figures 3 & 4 – R-Value Test Results

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Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)

Reference: Google Earth

Approximate Scale: 1" ≈ 800'

FIGURE 1

SITE VICINITY MAP

Community Day School
1715 David E Cook Way
Clovis, CA 93611
Project# 22G-0055-0/05

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Reference: Google Earth
Tentative Tract Map dated November 2021
prepared by: Blaire. Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 104'

FIGURE 2

CORING LOCATION MAP

Community Day School
1715 David E Cook Way
Clovis, CA 93611
Project# 22G-0055-0/05

C-2 Approximate Coring Location

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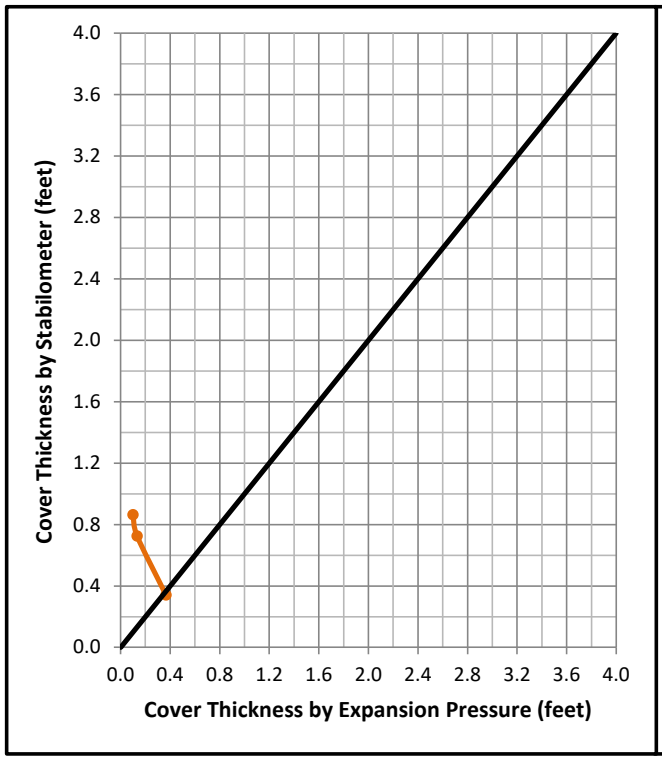
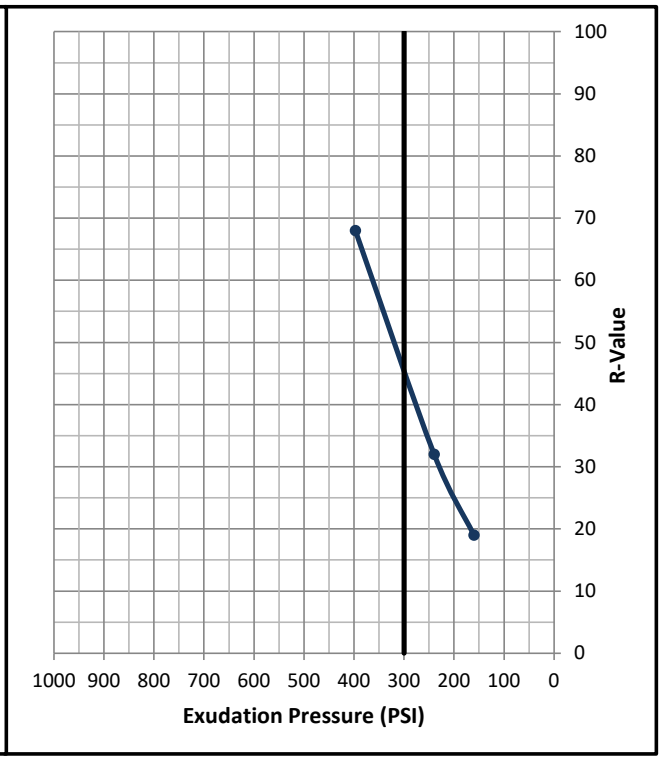
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/05		
Project Name:	Community Day School	Lab ID:	22-009421
Sampled By:	Phuoc T.	Date Sampled:	3/31/2022
Tested By:	Jason M.	Date Tested:	4/11/2022
Sample Location:	C-1 @ 7.5in - 46.25in		
Description:	Silty SAND trace Clay, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	45
"R" Value by Expansion Pressure:	63





Specimen:	1	2	3
Exudation Pressure Load (lbs):	2010	3009	4988
Exudation Pressure (psi):	160	240	397
Expansion * (0.0001 in):	3	4	11
Expansion Pressure (psf):	13	17	48
Stabilometer Value at 2000 lbs:	110	81	39
Displacement:	5.11	5.41	3.46
Resistance "R" Value:	18	31	69
"R" Value Corrected for Height:	19	32	68
Percent Moisture at Test:	10.8	9.9	9.0
Dry Density at Test (pcf):	129.0	130.3	125.9

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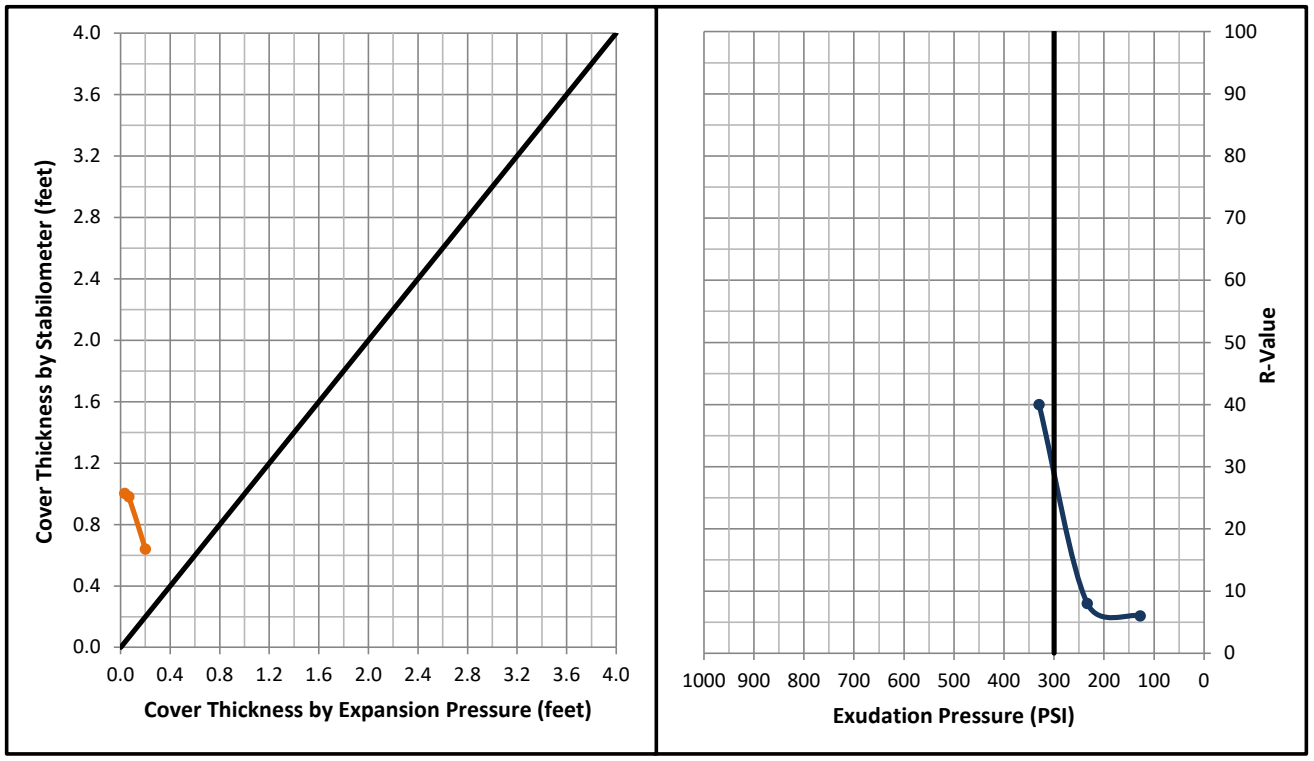
Figure 4
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/05		
Project Name:	Community Day School	Lab ID:	22-009422
Sampled By:	Phuoc T.	Date Sampled:	3/31/2022
Tested By:	Jason M.	Date Tested:	4/8/2022
Sample Location:	C-2 @ 9in - 45in		
Description:	Silty SAND with Clay, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	27
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1603	2933	4143
Exudation Pressure (psi):	128	234	330
Expansion * (0.0001 in):	1	2	6
Expansion Pressure (psf):	4	9	26
Stabilometer Value at 2000 lbs:	146	137	78
Displacement:	4.08	4.06	3.74
Resistance "R" Value:	6	9	41
"R" Value Corrected for Height:	6	8	40
Percent Moisture at Test:	12.0	11.0	10.1
Dry Density at Test (pcf):	126.5	125.7	124.8

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April 5, 2022 RMA Project No. 22G-0055-0/06

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Jefferson Elementary School
1880 Fowler Avenue
Clovis, California 93611

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Jefferson Elementary School playcourt area in Clovis, California. The project site consists of the existing Jefferson Elementary School campus located west of Fowler Avenue and north of Shaw Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8099° north latitude and 119.6863° west longitude. At the time of our field exploration on March 16, 2022, the existing playcourt was cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 369 feet at the project site. The layout of the campus is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at one location (C-1) and hand-augering to a depth of approximately 44 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the coring location between a depth of approximately 7.5 and 44.25 inches.
- The core hole was backfilled with soil and AB and then patched with asphalt cold mix.
- An R-Value tests was performed on a sample of the near surface soils that was considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

RESULTS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table. Details of the R-Value test that was performed are provided in the attached laboratory report, Figure 3.

Core Number	Encountered Pavement Section		R-Value by Exudation	R-Value by Expansion
	AC (inches)	AB (inches)		
C-1	1.25	6.25	21	n/a

The soils encountered at the coring location consisted primarily of fine to medium grained silty sand with clay. The subgrade was moist. No unusually loose or wet subgrade was noted within the depths explored.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 20 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 8.0” Class 2 AB
5.5	3.0” AC over 9.0” Class 2 AB
6.0	3.0” AC over 10.5” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 6 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 6 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3– R-Value Test Result

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com)*

Reference: Google Earth

Approximate Scale: 1" ≈ 383'

FIGURE 1

SITE VICINITY MAP

Jefferson Elementary School
1880 Fowler Avenue
Clovis, CA 93611
Project# 22G-0055-0/06

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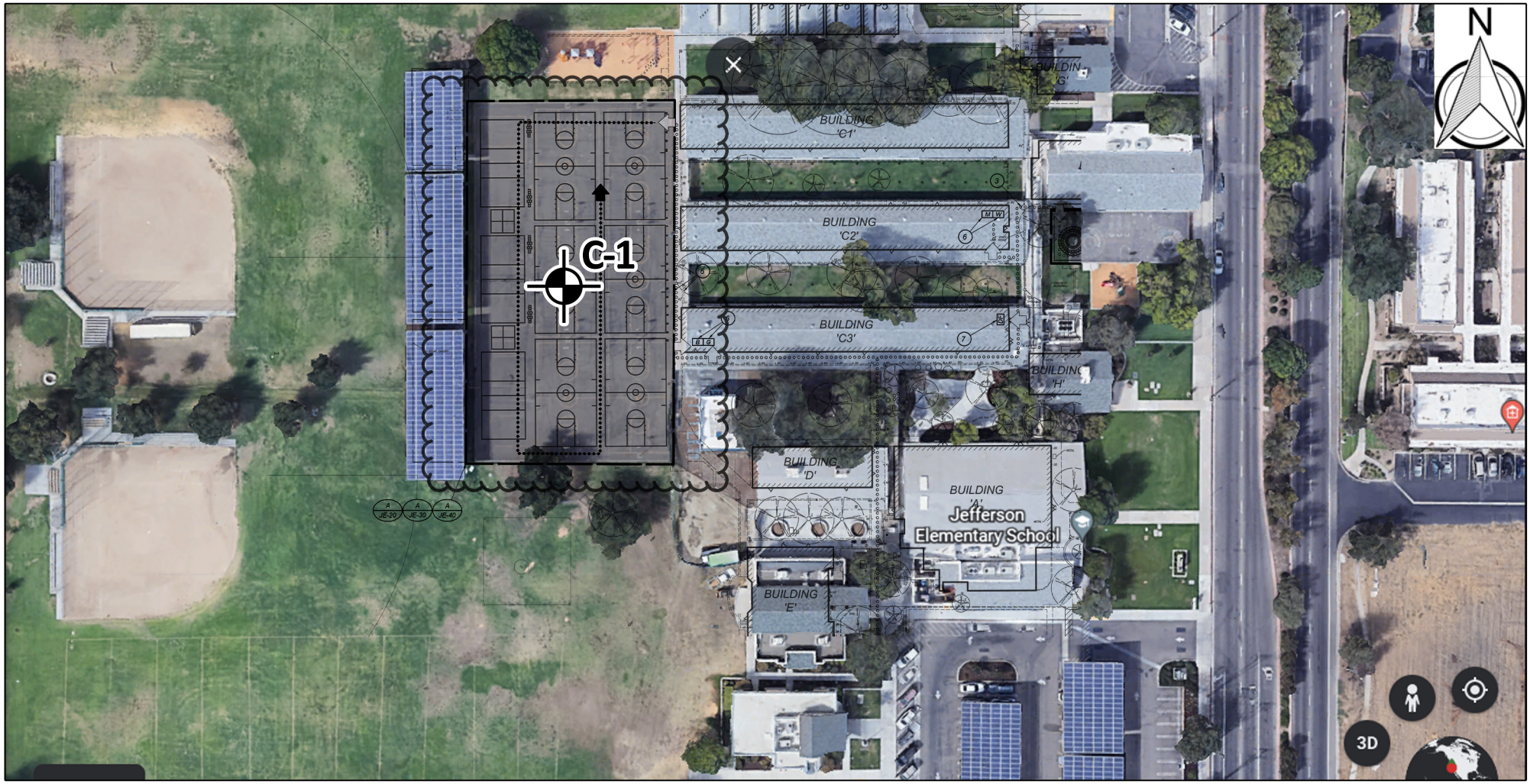

Reference: Google Earth
Tentative Tract Map dated November 2021
prepared by: Blaire. Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 100'

C-1 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

Jefferson Elementary School
1880 Fowler Avenue
Clovis, CA 93611
Project# 22G-0055-0/06

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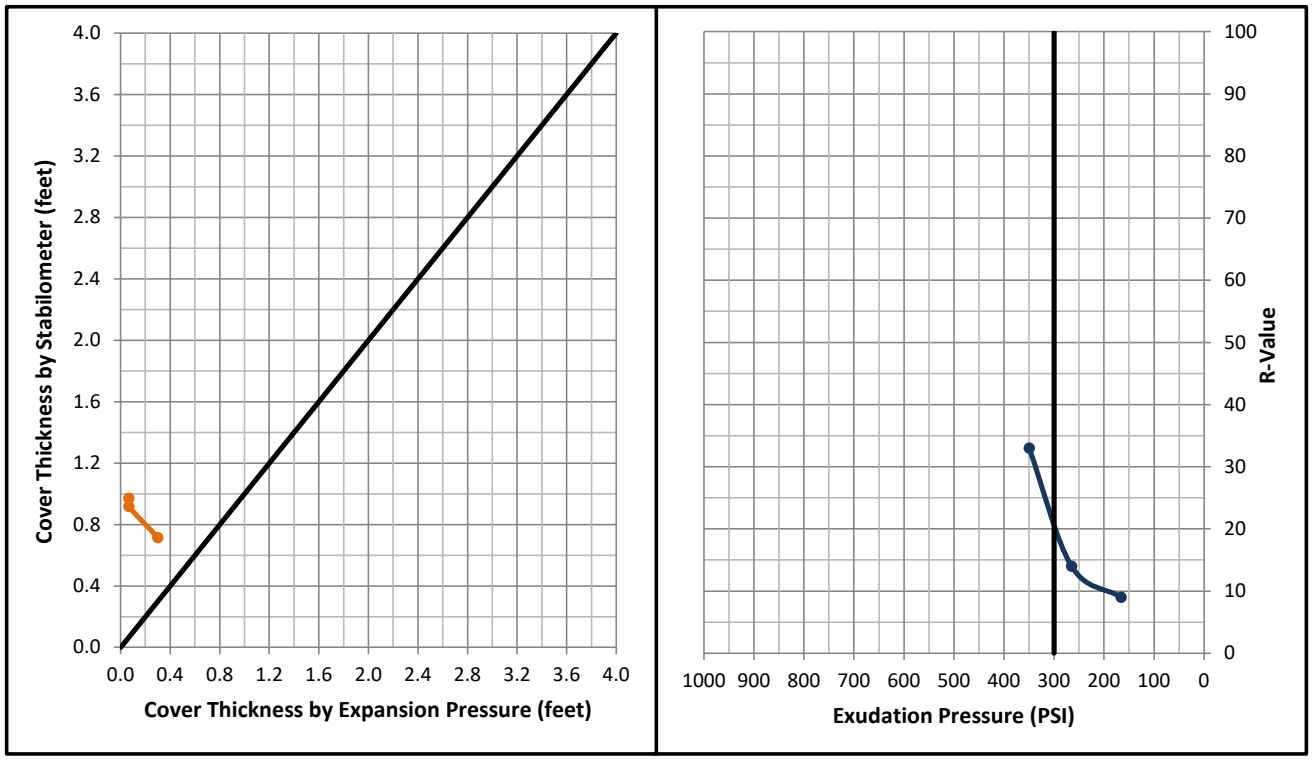
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/06		
Project Name:	Jefferson Elementary School	Lab ID:	22-009265
Sampled By:	Phuoc T.	Date Sampled:	3/16/2022
Tested By:	Jason M.	Date Tested:	3/28/2022
Sample Location:	C-1 @ 7.5in - 44.5in		
Description:	Silty SAND with Clay, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	21
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	2082	3326	4389
Exudation Pressure (psi):	166	265	349
Expansion * (0.0001 in):	2	2	9
Expansion Pressure (psf):	9	9	39
Stabilometer Value at 2000 lbs:	132	120	78
Displacement:	5.3	5.21	5.03
Resistance "R" Value:	9	14	34
"R" Value Corrected for Height:	9	14	33
Percent Moisture at Test:	13.1	12.2	11.3
Dry Density at Test (pcf):	123.8	125.7	124.8

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April 5, 2022 RMA Project No. 22G-0055-0/07

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Mickey Cox Elementary School
2191 Sierra Avenue
Clovis, California 93611

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Mickey Cox Elementary School playcourt area in Clovis, California. The project site consists of the existing Mickey Cox Elementary School campus located north of Sierra Avenue and west of North Armstrong Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8307° north latitude and 119.6748° west longitude. At the time of our field exploration on March 16, 2022, the existing playcourt was cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 377 to 379 feet at the project site. The layout of the campus is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at one location (C-1) and hand-augering to a depth of approximately 48 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the coring location between a depth of approximately 5.5 and 48 inches.
- The core hole was backfilled with soil and AB and then patched with asphalt cold mix.
- An R-Value tests was performed on a sample of the near surface soils that was considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

RESULTS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table. Details of the R-Value test that was performed are provided in the attached laboratory report, Figure 3.

Core Number	Encountered Pavement Section		R-Value by Exudation	R-Value by Expansion
	AC (inches)	AB (inches)		
C-1	2.25	3.25	38	30

The soils encountered at the coring location consisted primarily of fine to medium grained silty sand with clay. The subgrade was moist. No unusually loose or wet subgrade was noted within the depths explored.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 30 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 6.5” Class 2 AB
5.5	3.0” AC over 7.0” Class 2 AB
6.0	3.0” AC over 8.5” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 3 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 3 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3– R-Value Test Result

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)

Reference: Google Earth

Approximate Scale: 1" ≈ 370'

FIGURE 1

SITE VICINITY MAP

Mickey Cox Elementary School
2191 Sierra Avenue
Clovis, CA 93611
Project# 22G-0055-0/07

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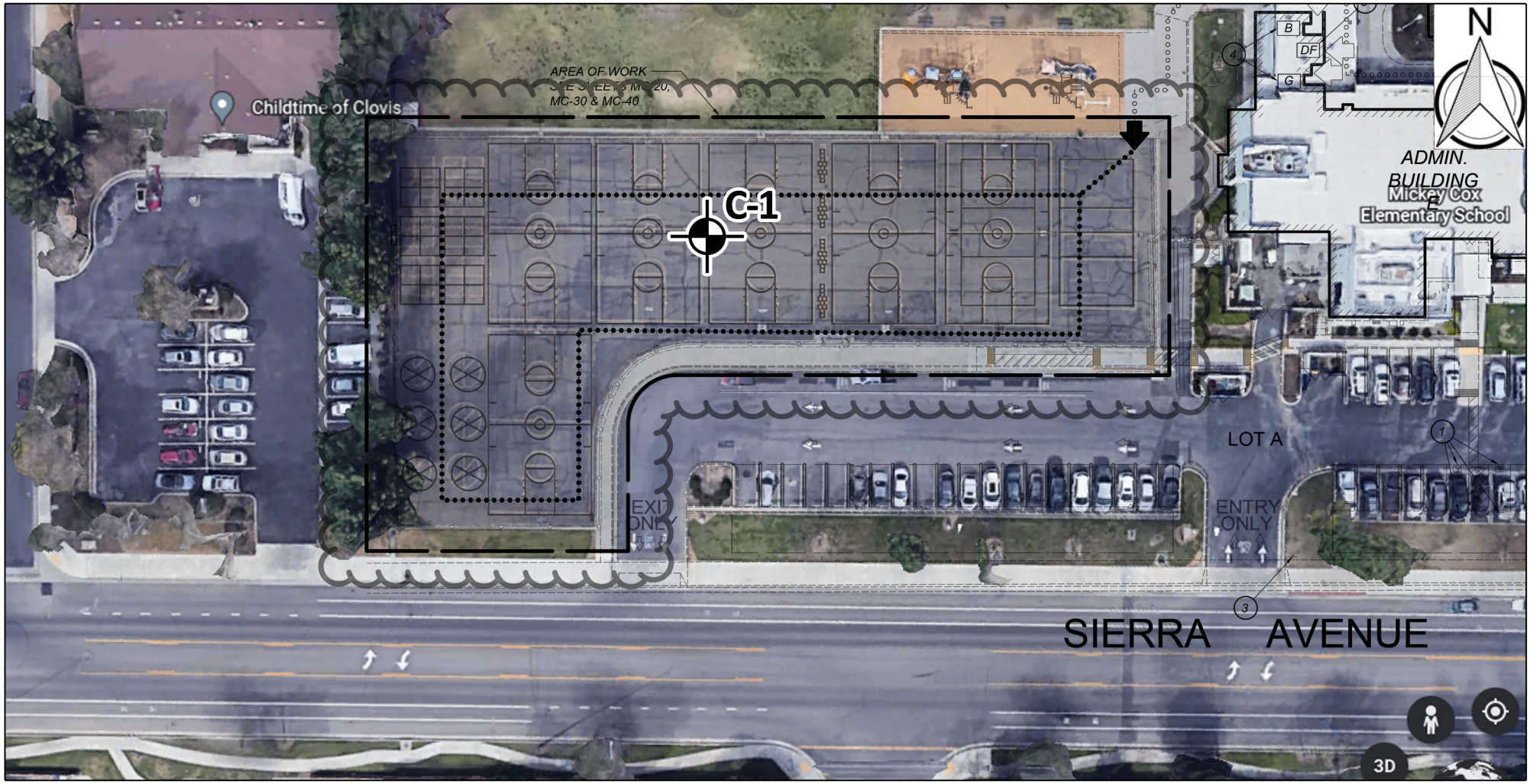

Reference: Google Earth
Tentative Tract Map dated November 2021
prepared by: Blaire. Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 57'

C-1 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

Mickey Cox Elementary School
2191 Sierra Avenue
Clovis, CA 93611
Project# 22G-0055-0/07

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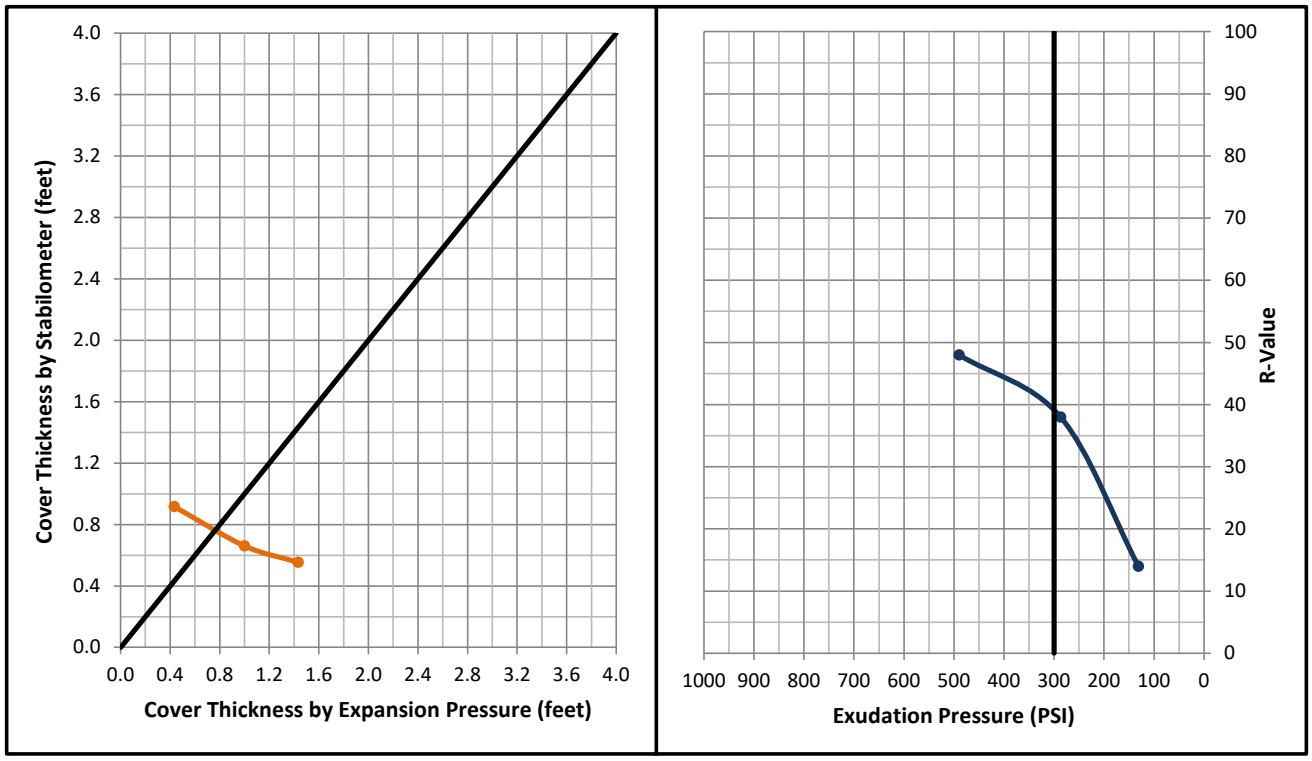
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/07		
Project Name:	Mickey Cox Elementary School	Lab ID:	22-009266
Sampled By:	Phuoc T.	Date Sampled:	3/16/2022
Tested By:	Jason M.	Date Tested:	3/28/2022
Sample Location:	C-1 @ 5.5in - 48in		
Description:	Silty SAND with Clay, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	38
"R" Value by Expansion Pressure:	30



Specimen:	1	2	3
Exudation Pressure Load (lbs):	6151	3602	1648
Exudation Pressure (psi):	490	287	131
Expansion * (0.0001 in):	43	30	13
Expansion Pressure (psf):	186	130	56
Stabilometer Value at 2000 lbs:	64	79	124
Displacement:	3.81	4.09	4.32
Resistance "R" Value:	50	39	14
"R" Value Corrected for Height:	48	38	14
Percent Moisture at Test:	8.3	8.7	9.2
Dry Density at Test (pcf):	129.5	126.4	129.0

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January 7, 2020 RMA Project No. 19G-0642-0/05

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Pinedale Elementary School
7171 North Sugar Pine Avenue
Fresno, California 93650

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Pinedale Elementary School Parking Lot in Fresno, California. The project site consists of the existing Pinedale Elementary School located on the west side of North Sugar Pine Avenue north of West Fir Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8399° north latitude and 119.7915° west longitude. At the time of our field exploration on December 18, 2019, the existing parking lot was cracked and uneven. Based on Google Earth data, the ground surface elevation varies between approximately 347 and 348 feet at the project site. The layout of the parking lot is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at two locations (C-1 through C-2) and hand-augering to depths of approximately 82 inches as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the two coring locations between depths of approximately 9 and 82 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- A Minus #200 Wash (ASTM D1140) was completed on a sample from each core location. An R-value test was performed on a composite soil sample that was considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844/California Test Method 301. In addition, a Maximum Density/Optimum Moisture test was performed on a composite sample in accordance with ASTM D1557.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and preparing this engineering report.

RESULTS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table. Details of the R-value test that was performed are provided in the attached laboratory report, Figure 3.

Core Number	Encountered Pavement Section		% Passing the #200	R-Value
	AC (inches)	AB (inches)		
C-1	2.25	6.5	49	58
C-2	2	8.25	34	

The soils encountered at the coring locations consisted primarily of silty sand with varying amounts of clay and silty sand with gravel. The subgrade at C-1 and C-2 was damp in the upper 3 feet and moist below that. No unusually loose or wet subgrade was noted within the depths explored.

Core Number	% Moisture	Optimum Moisture %	% from Optimum
C-1	10.0	7.5	+2.5
C-2	8.5		+1.0

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-value of 50 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 3.0” Class 2 AB
5.5	3.0” AC over 3.0” Class 2 AB
6.0	3.0” AC over 4.0” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 8 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 5 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and

reconstructing the existing pavement section, the existing AC layer could be removed and replaced with 3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 5 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either expressed or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figure 3– R-Value Test Results
Figure 4– ASTM D1557 Test Result

Distribution: Addressee (1 Originals and a pdf to adambelmont@clovisusd.k12.ca.us)
Mr. Zachary Hockett, Blair, Church & Flynn (3 Originals and a pdf to zhockett@bcf-engr.com)

Scale: 1" ≈ 1,205'

FIGURE 1

SITE VICINITY MAP

Pinedale Elementary School Southeast Parking Lot
7171 North Sugarpine
Fresno, California 93650
Project #19G-0642-0/05

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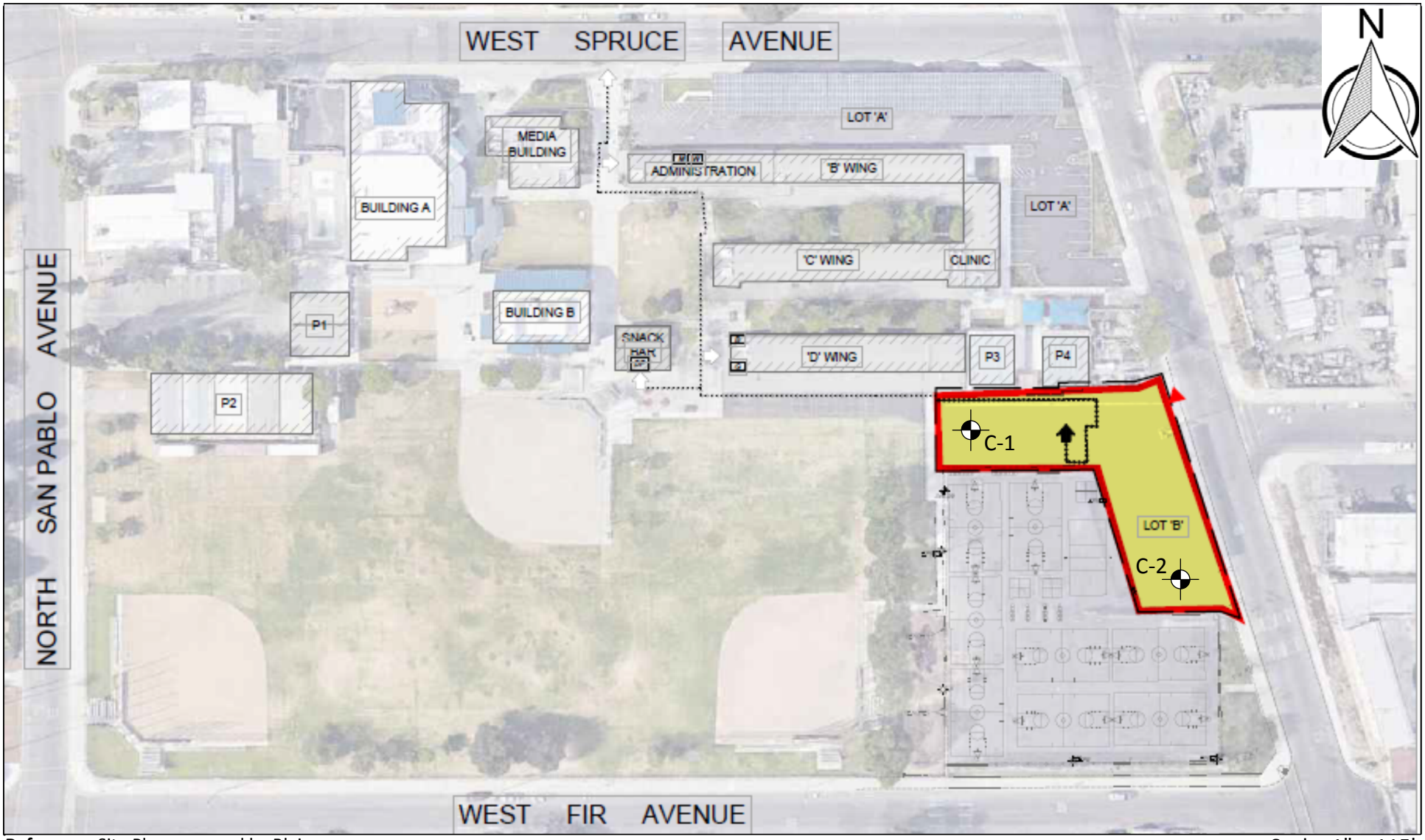

Reference: Site Plan prepared by Blair, Church & Flynn Consulting Engineers, 10/7/2019

Scale: 1" ≈ 115'

FIGURE 2

CORING LOCATION MAP

Pinedale Elementary School Southeast Parking Lot
7171 North Sugarpine
Fresno, California 93650
Project #19G-0642-0/05

C-2 Approximate Coring Location

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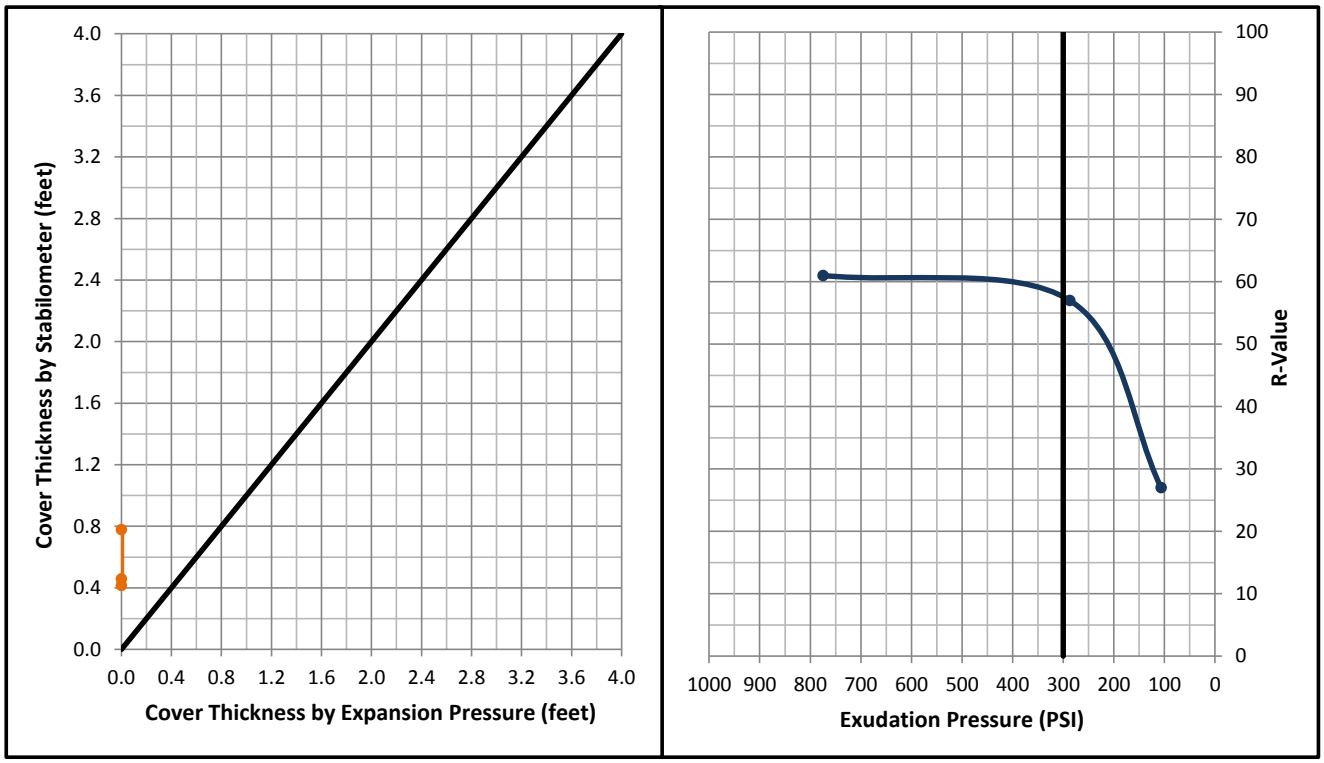
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	19G-0642-0/05		
Project Name:	Pinedale ES Southeast Parking Lot	Lab ID:	19-003562
Sampled By:	Bryce M.	Date Sampled:	12/18/2019
Tested By:	Ryan R.	Date Tested:	12/23/2019
Sample Location:	Composite: C-1 & C-2		
Description:	Silty SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	58
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1336	3605	9731
Exudation Pressure (psi):	106	287	775
Expansion * (0.0001 in):	0	0	0
Expansion Pressure (psf):	0	0	0
Stabilometer Value at 2000 lbs:	102	48	38
Displacement:	4.04	4.2	4.47
Resistance "R" Value:	26	58	64
"R" Value Corrected for Height:	27	57	61
Percent Moisture at Test:	12.7	9.0	8.1
Dry Density at Test (pcf):	124.4	126.9	128.6

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Figure 4
Laboratory Test Form | ASTM D 1557
Test Method A

Project Number:	19G-0642-0/05	Curve Number:	1
Project Name:	Pinedale ES Southeast Parking Lot	Lab ID:	19-003562
Sampled By:	Bryce M.	Date Sampled:	12/18/2019
Tested By:	Phuoc T. / Ryan R.	Date Tested:	12/23/2019
Sample Location:	Composite: C-1, C-2		
Description:	Silty SAND, fine to medium grained, brown		

	1	2	3	4
Weight of Moist Specimen and Mold (grams)	3972.4	4105.7	4066.5	4025.5
Weight of Compaction Mold (grams)	1957.8	1957.8	1957.8	1957.8
Weight of Moist Specimen (grams)	2014.6	2147.9	2108.7	2067.7
Volume of mold (ft^3)	0.0334	0.0334	0.0334	0.0334
Wet Density (lbs/ft^3)	133.0	141.8	139.2	136.5
Weight of Wet (Moisture) Sample (grams)	300.0	300.0	300.0	300.0
Weight of Dry (Moisture) Sample (grams)	283.7	279.1	273.9	269.3
Moisture Content (%)	5.7%	7.5%	9.5%	11.4%
Dry Density (lbs/ft^3)	125.7	131.9	127.1	122.5

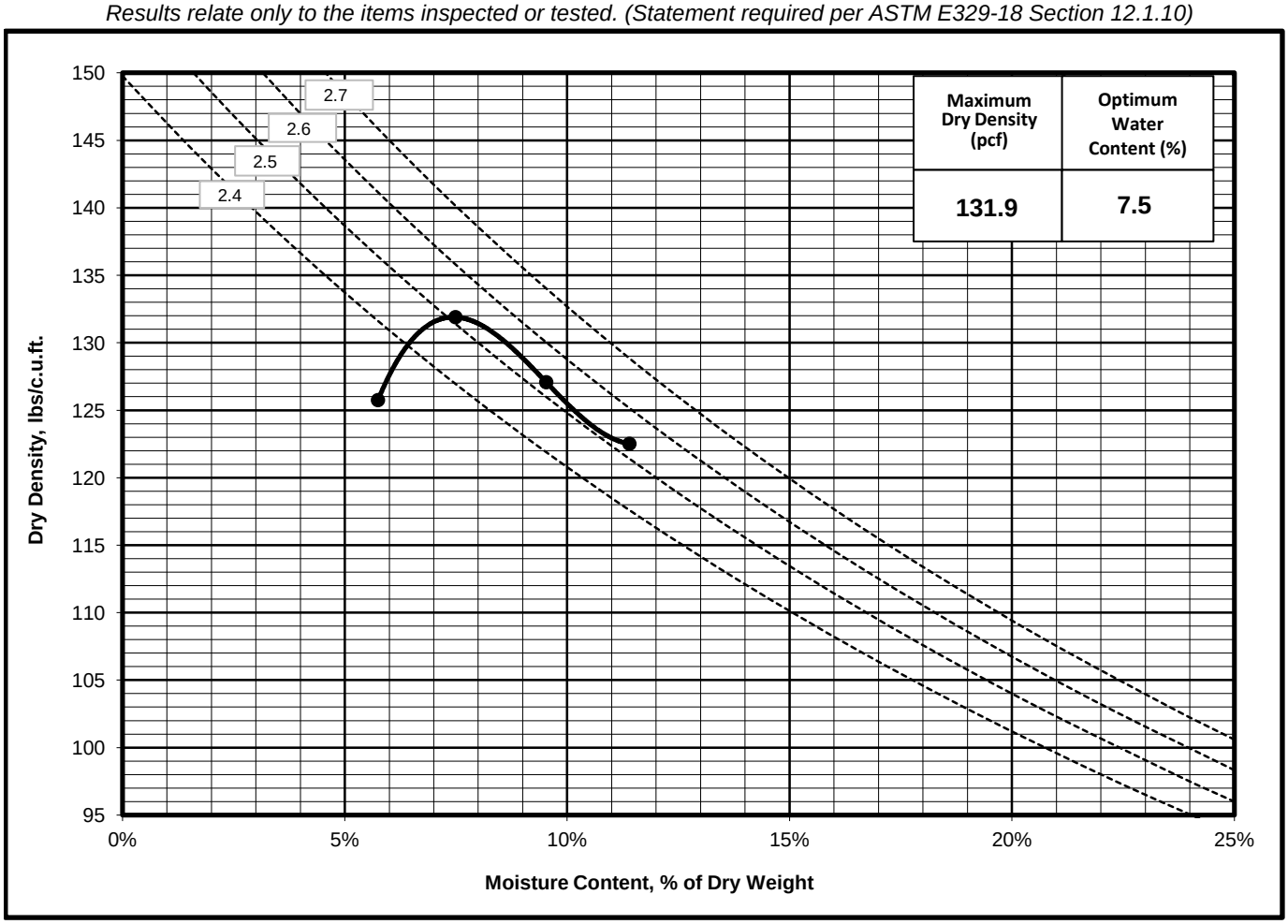
Sieve Size	No.4	3/8"	3/4"
Oversize Fraction, %	<1%	0.0%	0.0%

Method
A: No.4 Sieve, < 25% Oversize, 4" Mold
B: 3/8" Sieve, < 25% Oversize, 4" Mold
C: 3/4" Sieve, < 30% Oversize, 6" Mold

Rammer: Mechanical / ~~Manual~~ **Preparation:** ~~Dry~~ / Moist

Specimen Prep. Mass: 2500 gm

Results relate only to the items inspected or tested. (Statement required per ASTM E329-18 Section 12.1.10)



3897 N Ann Ave Fresno, CA 93727 559.708.8865 | 559.228.9488 fax

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April 14, 2022 RMA Project No. 22G-0055-0/08

Mr. Adam Belmont
Clovis Unified School District
1470 Herndon Avenue
Clovis, CA 93611

Subject: Materials Report for Pavement Section Recommendations
Professional Development Center
1680 David E Cook Way
Clovis, California 93611

Dear Mr. Belmont:

As requested, we have performed sampling, laboratory testing, and engineering for the planned improvements to the Professional Development Center parking lot in Clovis, California. The project site consists of the existing Professional Development Center campus located south of David E Cook Way and west of North Fowler Avenue (see Figure 1, Site Vicinity Map). The geographic position of the project site is 36.8343° north latitude and 119.6849° west longitude. At the time of our field exploration on March 31, 2022, the existing parking lot was cracked. Based on Google Earth data, the ground surface elevation varies between approximately 375 and 379 feet at the project site. The layout of the parking lot is illustrated on Figure 2.

SCOPE OF SERVICES

The scope of work performed for this project included the following tasks:

- Coring the existing pavement at two locations (C-1 through C-2) and hand-augering to depths of approximately 48 inches, with approximate locations as indicated on the attached Figure 2, Coring Location Map. The coring was performed using a 4-inch core barrel, which extended through the asphalt concrete (AC) into the underlying aggregate base (AB) layer. Hand tools were used to dig through the AB layer and into the subgrade. Subgrade samples were obtained from the three coring locations between depths of approximately 46.5 and 48 inches.
- The core holes were backfilled with soil and AB and then patched with asphalt cold mix.
- Two R-value tests were performed on the soil samples that were considered representative of the subgrade to evaluate the stability characteristics of the soil in accordance with ASTM D2844.
- Performing geotechnical engineering and providing recommendations for earthwork and pavement sections for the new parking lot and playcourt areas and preparing this engineering report.

FINDINGS

A summary of the data that was obtained from the field exploration that were done for this project is provided in the following table.

Core Number	Encountered Pavement Section	
	AC (inches)	AB (inches)
C-1	2.75	7.75
C-2	2.75	4.25

The soils encountered at the coring locations consisted primarily of fine to medium to fine to coarse grained silty sand. The subgrade at all locations was moist. No unusually loose or wet subgrade was noted within the depths explored.

LABORATORY TESTING

Two Resistance Value (R-Value) tests were performed on representative samples of the subgrade obtained from planned paved areas using test methods outlined in ASTM D2844.Details of the R-Value tests that were performed are provided in the attached laboratory reports, Figures 3 and 4.

RECOMMENDATIONS FOR NEW PAVEMENT SECTIONS

Based on the laboratory testing that has been performed for this project, a subgrade R-Value of 50 is recommended for design purposes and has been used to develop the pavement sections given below. The asphalt concrete (AC) structural section recommendations given herein were developed using the procedures outlined in Chapter 630 of the California Highway Design Manual. The design procedure is based on the principle that the pavement structural section must be of adequate thickness to distribute the load from the design TI to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R-value). Recommended minimum structural sections are given below:

Design TI	Recommended Minimum Pavement Section
≤5.0	2.5” AC over 3.0” Class 2 AB
5.5	3.0” AC over 3.0” Class 2 AB
6.0	3.0” AC over 4.0” Class 2 AB

Prior to paving, the subgrade should be prepared with at least the upper 12 inches of subgrade soils compacted to a minimum of 95% relative compaction. All aggregate base (AB) courses should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% relative compaction. The AC mix design(s) and installation requirements should be specified by the Project Civil Engineer.

Our field exploration encountered a base layer (AB) that is at least 4 inches thick and the underlying subgrade appeared to be firm and stable. Therefore, as an alternative to completely removing and reconstructing the existing pavement section, the existing AC layer could be removed and replaced with

3-inch thick layer of AC. This alternative would require verifying that the base layer is at least 4 inches thick across the entire site, especially within driveway areas or wherever truck traffic is expected. In areas where the existing base layer does not meet the minimum thickness required, Class 2 AB should be placed until this requirement is met. In any case, the aggregate base layer must be compacted to at least 95 percent relative compaction prior to placing the new AC layer.

A representative from RMA GeoScience should perform observations and testing during construction in order to verify that the site preparation, compaction of subgrade, thickness of the base layer, and placement of Class 2 Aggregate Base is done in accordance with recommendations provided in this report and the project specifications.

The AC mix should comply with the Caltrans Standard Specifications. Details of the AC mix design and installation requirements should be specified by the Project Civil Engineer.

CLOSING REMARKS

The information contained in this report was provided in accordance with generally accepted engineering principles and practices. No other warranty, either express or implied, is made. This report has been prepared for Clovis Unified School District and the Project Design Team to be used for the design and construction of the subject parking lot. Anyone using this report for any other purpose must draw their own conclusions regarding required construction procedures and subsurface conditions.

Thank you for the opportunity to be of service to you on this project. If you should have any questions regarding the information provided in this report, please contact the undersigned at (559) 708-8865.

RMA GeoScience
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Respectfully submitted,
RMA GeoScience

Megan J. Stewart, GIT
Staff Geologist

Josue Montes, P.E., G.E.
Principal Geotechnical Engineer

Attachments: Figure 1 – Site Vicinity Map
Figure 2 – Coring Location Map
Figures 3 & 4 – R-Value Test Results

Distribution: Addressee (1 Originals and a pdf to *adambelmont@clovisusd.k12.ca.us*)
Ms. Jennifer Felix, Blair, Church & Flynn (3 Originals and a pdf to *jfelix@bcf-engr.com*)
Mr. Zachary Hockett, Blair, Church & Flynn (pdf to *zhockett@bcf-engr.com*)
Mr. Albert Rodriguez, Blair, Church & Flynn (pdf to *arodriguez@bcf-engr.com*)

Reference: Google Earth

Approximate Scale: 1" ≈ 800'

FIGURE 1

SITE VICINITY MAP

Professional Development Center
1680 David E Cook Way
Clovis, CA 93611
Project# 22G-0055-0/08

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Reference: Google Earth
Tentative Tract Map dated January 2021
prepared by: Blaire. Church & Flynn Consulting Engineers

Approximate Scale: 1" ≈ 47'

C-2 Approximate Coring Location

FIGURE 2

CORING LOCATION MAP

Professional Development Center
1680 David E Cook Way
Clovis, CA 93611
Project# 22G-0055-0/08

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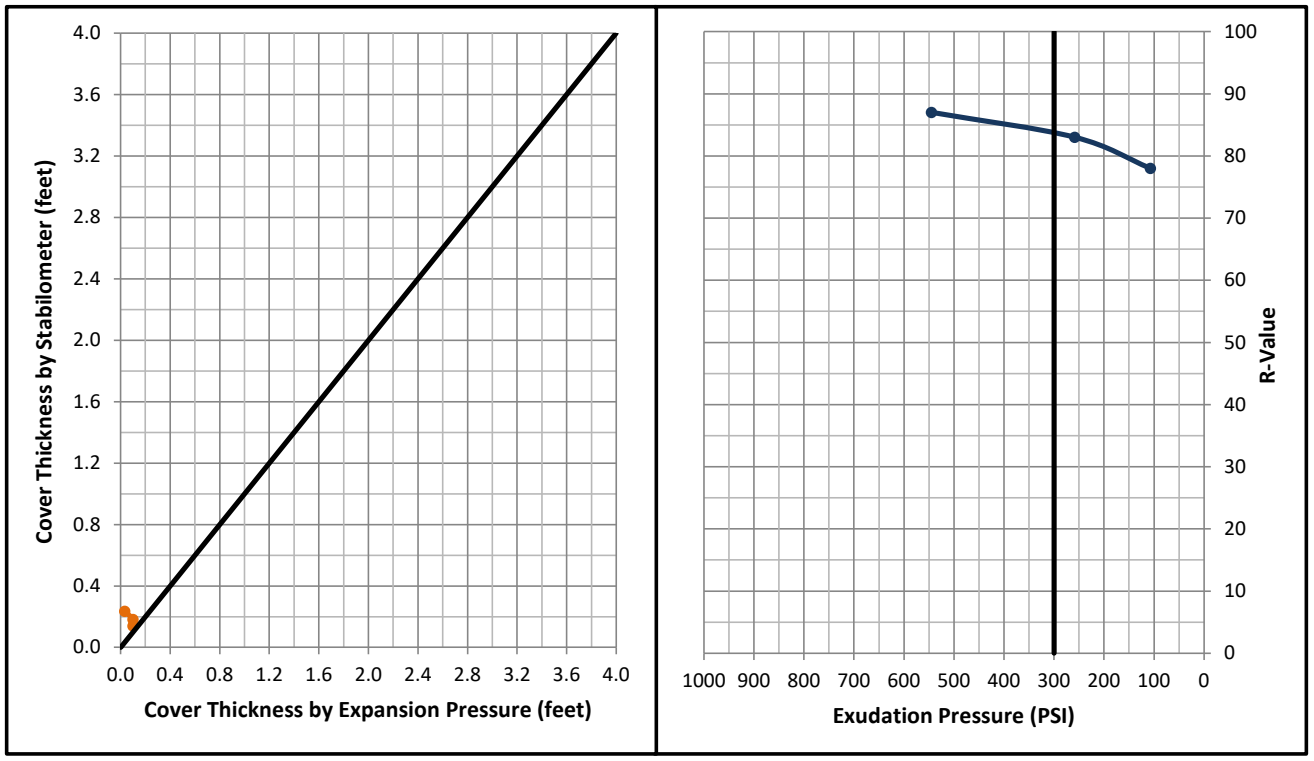
Figure 3
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/08		
Project Name:	Professional Development Center	Lab ID:	22-009419
Sampled By:	Phuoc T.	Date Sampled:	3/31/2022
Tested By:	Jason M.	Date Tested:	4/11/2022
Sample Location:	C-1 @ 10.5in - 48in		
Description:	Silty SAND, fine to coarse grained, brown		

"R" Value at 300psi Exudation Pressure:	84
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	1347	3248	6846
Exudation Pressure (psi):	107	259	545
Expansion * (0.0001 in):	1	3	3
Expansion Pressure (psf):	4	13	13
Stabilometer Value at 2000 lbs:	24	18	14
Displacement:	4.02	3.98	3.47
Resistance "R" Value:	78	83	88
"R" Value Corrected for Height:	78	83	87
Percent Moisture at Test:	12.2	10.4	8.6
Dry Density at Test (pcf):	119.4	120.0	118.5

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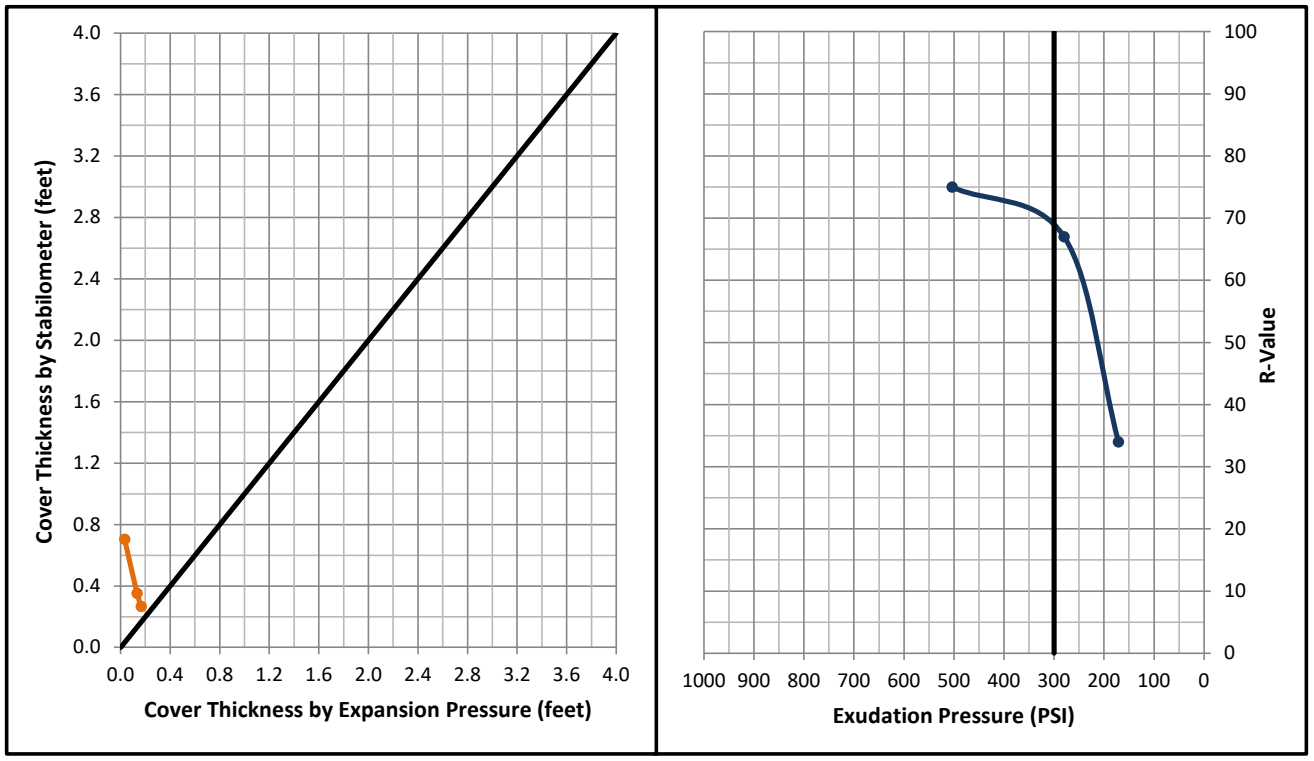
Figure 4
Laboratory Test Form | ASTM D2844
Resistance "R-Value" and Expansion Pressure of Compacted Soil

Project Number:	22G-0055-0/08		
Project Name:	Professional Development Center	Lab ID:	22-009420
Sampled By:	Phuoc T.	Date Sampled:	3/31/2022
Tested By:	Jason M.	Date Tested:	4/12/2022
Sample Location:	C-2 @ 7in - 46.5in		
Description:	Silty SAND, fine to medium grained, brown		

"R" Value at 300psi Exudation Pressure:	69
"R" Value by Expansion Pressure:	N/A



Specimen:	1	2	3
Exudation Pressure Load (lbs):	2150	3514	6326
Exudation Pressure (psi):	171	280	504
Expansion * (0.0001 in):	1	4	5
Expansion Pressure (psf):	4	17	22
Stabilometer Value at 2000 lbs:	79	39	30
Displacement:	4.89	3.78	3.58
Resistance "R" Value:	34	67	75
"R" Value Corrected for Height:	34	67	75
Percent Moisture at Test:	11.2	10.3	9.4
Dry Density at Test (pcf):	123.1	123.8	125.3