Facilities Services

1420 Austin Bluffs Parkway
Colorado Springs, Colorado 80918
(719) 255-3505 Fax: (719) 255-3222

Addendum No. 3

Arena Parking Lot
University of Colorado Colorado Springs (UCCS)
Facilities Services Department

Date: Wednesday, March 14, 2012

To: All Bidders

From: University of Colorado Colorado Springs
Facilities Planning and Construction

All Please make sure you read every question and answer.

We also have eased our stance on "Fresh Millings". Older or stockpiles milling will be acceptable but will need to be conditioned with oil and sealed.

Please provide an alternate price for paving the whole lot with 4" Asphalt over 6" Base

Questions and Clarifications:

1. Where will the power drop be located? See Lighting Plans Sheet L00 and L02

2. What is the UCCS subgrade section criteria for under pavement? See soils report

3. Where is the geotechnical soils information & borings for this site? See attached .pdf file

4. Soil report calls for class 6 base course or recycled concrete. Plans call for asphalt millings. Please explain, which do we use? See attached geotech report including addenda

5. If we use asphalt millings meeting the owner's specs, where do we get the millings? The General Contractor will find milling for the owner to inspect.

6. Class 6 base course or breeze for the trail system? Gravel Breeze

7. On plan sheets EC01 and EC02 is seeding and fertilizer required prior to placing the temporary erosion blankets……If so, can you provide a seed mix and a fertilizer type and rate for this project. See attached Table 14-9 seed mix.

8. Is there a type of erosion blanket to be used for this project. A Double/Natural-net erosion control blanket consisting of 70% straw/30% coconut as per Colorado Urban and Flood Control District Criteria.

9. Will UCCS supply a source of water (a hydrant) on this project, at no charge to the contractor? NO. Contractor is responsible for temporary water. There are hydrants at 4d and up Heller Road for the Contractor to contact CSFD for use.

10. Will you allow the contractor to install a temporary irrigation system, connected to the UCCS irrigation system, in lieu of sending a water truck to water the landscape areas? No. See Above. There are no "University Owned" irrigation systems in the area"

11. Can UCCS also supply an "Asphalt Paving Alternate" for paving in the light duty areas? One already exists for the heavy duty areas. Yes we are adding an alternate to pave the whole lot designed with 4"asphalt for entire lot.

12. Can UCCS allow the contractor to furnish milled and/ or crushed asphalt from existing or old stockpiles, in lieu of "fresh millings"? You can use old or stocked millings as long as they are conditioned prior to placement. Crushed asphalt will not be allowed. The design intent is to use materials that can be striped

13. Will the Contractor be required to remove all BMP's (silt fence, hay bales, etc.) from the job upon completion. Yes once vegetation levels are met to satisfy SWMP permit.

14. Drawing EC01 notes "Temporary Erosion Control Blanket…". Does this blanket need to be removed upon completion of the job? No.

15. CDOT projects that require Storm Water Prevention Plans, are "Permitted" in the name of CDOT and the contractor installs and maintains the BMP's during construction. CDOT will pull the permit and close out the permit for all work in their ROW. Will UCCS be the Storm Water permit holder on this project? No Contractor shall be permit holder.

16. Sheet 16, detail A., requires a "Design by a Registered P.E….." for the light poles. Can UCCS provide bidders with an assumed bid length, and if the design length is different than the assumed for bid length, then a Change Order can be done at that time? Provide pricing for minimum requirements on plan page LO4 Detail A,D,E and F.

17. Do any other items on this project require "Design by a Registered P.E."? NO

18. What testing types and frequincies, if any are required for the trenching, earthwork, subgrade, millings, and/or asphalt? See Addendum #2 and Project Specifications.

19. The MSE wall shows one culvert to be extended. There are two culverts in place. Are we to extend both culverts or abandon one and extend the other? Yes. Both culverts are to be extended.

20. How far past the MSE wall are we to extend the culvert? Extend pipe beyond wall 1.0'

21. Can a concrete retaining (head) wall be substituted for the MSE wall? Yes. A reinforced concrete wall is acceptable. Contractor shall submit design drawings to UCCS for approval prior to constructing.

22. One drawing shows bollard and cable across the MSE wall, but some drawings do not show this across the wall. Do we extend the cable and bollards across the wall or would this be safer adding guardrail to this location? Extend cable and bollards across the wall. Guardrail is an acceptable alternate at this location.

23. Should the other side of the road also have a safety guardrail installed at the inlet? A 2-foot tall berm is expected adjacent to the road on the north side. No guardrail necessary.

24. Miriafi normal requirements want 1' of cover over the fabric. the detail shows only 8 inches. Is there a concern of prematurely damaging the fabric? No concern.

25. Note 2 NPDES notes call out that a SWMP plan has been submitted to the City of Colorado Springs. Is this also required to be submitted to the state? Contractor is required to submit to the State.

26. Note on page LO3 show a 12' wide trail, but previous notes show an 8' wide trail. Please clarify. Trail is 8-feet wide.

27. Notes on Manhole at the current gate location say to adjust grade rings. This manhole lid is currently sitting on a cone section with no riser rings on it. Please clarify what will be required on this manhole. Contractor shall coordinate with CSU inspectors; Steve Vigil (668-4396) or Mike Webber (668-4658) for specific requirements regarding this manhole (field decision).

28. In light of the conversations about the availability of fresh asphalt millings would you consider using a recycled asphalt product sprayed with either a rejuvenation agent or CSS1H tack oil? See question 12 above.

29. Can excess dirt be left onsite increasing berm size or other areas as long as it is reseeded or can the parking lot elevation be changed to balance the entire site? Yes. The berm size may be increased within reason with the understanding visibility from Nevada is the main concern. Any proposed changes to the approved grading plan must be approved by UCCS prior to construction.

30. Where is the power coming from for the site? See Lighting Plans sheets L00 and L02.

31.Please verify the alternate for asphalt paving encompasses the entire parking lot and heavy duty sections. Alternate in plans is for Heavy Duty paving only. UCCS may elect to substitute same paving section for Light Duty areas.

32.Please confirm there is only one asphalt section for the asphalt alternate regardless of whether it is a parking are or a heavy duty area. No. see above.

33.Please verify, parking lot striping will only be required if the paving alternate is accepted? Striping required regardless of paving material.

34.Please verify striping work on north Nevada is Thermoplastic. Yes Thermoplastic striping required for all work within public R.O.W.

35.Please verify onsite striping is painted. Yes. Onsite striping is painted.

36.Does the owner have a soils report they can send out? Yes. See attached pdf

37.Please verify the owner is responsible for providing the cost of the transformer from CSU. YES it's the owners responsibility.

38.UCCS could secure an acceptable source of materials from the City, CDOT, etc., with an agreed upon cost, location and timing of an existing or anticipated source of millings, available to all bidders. This way all bidders can bid apples-to-apples. Although an acceptable alternate, probably not feasible.

39.Give an alternate asphalt paving section for the light duty areas as well as the heavy duty areas, in case acceptable millings aren't available. Then the contract could revert to the asphalt option to complete the work. Acceptable alternate. We do not recommend a "Light Duty" asphalt section in addition to the heavy duty section (i.e. if asphalt paved alternate is used, the entire lot shall be paved with 4" asphalt over 6" base.)

38. Electrical Questions and Answers. See next page.

UCCS Questions:

1. On page L01 number 1 through 8, each receptacle is calling for a ¾ inch conduit. Will it be allowed to use the conduit fill in the NEC instead of running one ¾ inch for each receptacle?

2. On page L01 number 9 calls for quantity 4, ¾ inch conduits. Are these to remain empty or is there any wire in them?

3. On the lighting circuit can the conduit fill in the NEC be used instead of individual conduits?

4. Are the wood poles regular round light poles or are there any specific specifications?

5. Is the lighting contactor relay mechanically or electrically held?

6. What is the AMP rating of the lighting contactor.

7. What is the control voltage for the lighting contactor, 120 V or 240V?

1) Per specification section 16120.2.1(D), all cable shall be THWN. Per Specification Section 16120.3.2(F), all conduit shall be a minimum of ¾" diameter. All conductors have been documented to correct for voltage drop, due to length of the cable runs and loads.

In accordance with NEC Annex Table C.9, (1) ¾" PVC conduit can support (7) conductors.
In accordance with NEC Annex Table C.9, (1) ½" PVC conduit can support (4) conductors.

Minimum raceway has been sized at ¾" to support the continuous pull of branch circuits for the distances needed on this project. The contractor is permitted by Code (NEC) to install additional conductors in accordance with NEC Annex Table C.9 and conductors shall be de-rated in compliance with NEC Table 310.15(B)(2)(a). The contractor assumes responsibility for the cable pull and any associated damage from increasing fill percentage or decreasing conduit size. Contractor must seek owner approval via shop drawings for changes to the raceway program.

2)The ¾" conduits are intended for future receptacles. The conduits are continuous from the parking lot location to the electrical panel. Per Specification 16110.3.2(o), pull wire is to be installed in all empty raceway. Use No. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200-lb tensile strength. Leave no less than 12 inches of slack at each end of the pull wire.

3)Refer to response to item #1 regarding conduit size and documented fill.

4)Contractor shall submit a wood pole suitable for utilizing the mounting bracket listed that meets meets AASHTO requirements (i.e. 100 mph with a 1.3 gust factor), including depth of installation.

5)It is presumed to be mechanically held, however electrically held will be considered.

6)The lighting contactor needs to be sized for the circuits being controlled.

7)The control voltage can be 120 or 240 depending on the lighting contactor submitted.

CTL|THOMPSON INCORPORATED

January 12, 2012

Matrix Design Group
2435 Research Parkway, Suite 300
Colorado Springs, Colorado 80920

Attention: Mr. Ray Perez, P.E.

Subject: Temporary Parking and Pedestrian Walkway
University of Colorado – Colorado Springs
East of Nevada Avenue
North and West of Four Diamonds Sports Complex
Colorado Springs, Colorado
CTL|T Project No. CS17888-125

As requested, we conducted a subgrade investigation for the construction of a temporary aggregate surface parking lot and pedestrian walkway on the campus of the University of Colorado at Colorado Springs in Colorado Springs, Colorado. This letter summarizes our aggregate base course sections and recommendations for construction of the parking lot and walkway.

INVESTIGATION

The near surface subgrade soils were evaluated by drilling two test holes to a depth of 10 feet below the existing grade on December 29, 2011. Figure 1 shows the approximate location of the test holes. Bulk samples of the subgrade soils were obtained from the surface to about 4 feet with penetration resistance testing performed at depths of 4 and 9 feet. The samples were returned to the laboratory where index property testing (gradation and Atterberg Limits) of the bulk samples were performed. The near surface soils encountered in both test holes consisted of sandy to very sandy clays over either clayey sandstone bedrock or clayey sands. Graphical log of the test holes are shown in Fig. 2. The near surface bulk samples which influence the aggregate base course section classify under the AASHTO system as A-6 and A-7-6. Our experience with these types of soils indicates Hveem stabilometer values ("R" values) rarely exceed 5, which was considered in our recommendations for aggregate design thickness. Laboratory data is presented in Fig. 3 and summarized on Table 1.

DESIGN

We understand the parking lot is to have an expected usage life span of approximately 5 years and will service passenger vehicle traffic only. The pedestrian walkway will be limited to maintenance vehicle traffic only (pick-up trucks). We understand an aggregate base course pavement section is desired for both the parking lot and the walkway. Aggregate base course sections should consist of 6 inches of

aggregate base course placed directly on a prepared subgrade for the parking lot and 4 inches of aggregate base course material place directly on a prepared subgrade for the pedestrian walkway. These aggregate base course sections will require periodic maintenance consisting of re-grading to original design slopes for the removal of water from the surface and may include placement of additional aggregate base course to level depressions and ruts. An alternative section for the parking lot would be an additional 2 inches of aggregate base course for a total section thickness of 8 inches. This thicker section may reduce the amount of maintenance required over the projected life span of the parking lot and the likelihood of additional materials being required for maintenance.

The aggregate base course should consist of material meeting Colorado Department of Transportation (CDOT) Class 5 or 6 specifications. Recycled concrete meeting these specifications would be an acceptable alternative. The existing subgrade should have organic matter and topsoil striped prior grading. Grading should be such that water is rapidly removed for the pavement surface. Fill materials should consist of on-site soils that are moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor (ASTM D 698 of AASHTO T 99). Natural soils in areas of cut should be scarified to a depth of at least 12 inches; moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor prior to the placement of the aggregate base course. The aggregate base course pavement should be placed in thin lifts, and moisture conditioned to within 2 percent of optimum moisture and compacted to at lest 95 percent of maximum modified proctor (ASTM D 1557 or AASHTO T 180).

ROADWAY CONSTRUCTION

Our recommendations consider construction of the aggregate base course surface is completed in accordance with the City of Colorado Springs standard specifications. The specifications contain requirements for the quality of materials and the construction practices used. Recommendations directed towards subgrade and aggregate base course compaction and proofrolling are of particular importance.

LIMITATIONS

The recommended sections presented were developed based upon the subgrade soils encountered and anticipated traffic loads. If traffic loads are not as discussed or traffic types and volume are not as indicated, we should be contacted to review the data presented in this letter.

Should you have any questions regarding the information contained in this letter, the design of the streets, or the project from a geotechnical point-of-view, please call.

Very truly yours,
CTL|THOMPSON, INC.

David Groenendale
BSCET

Reviewed by:

COLORADO REGISTERED MICHAEL NEAL LEMONS 33394 PROFESSIONAL ENGINEER

Michael Lemons, P.E. 1/12/12
Associate Engineer

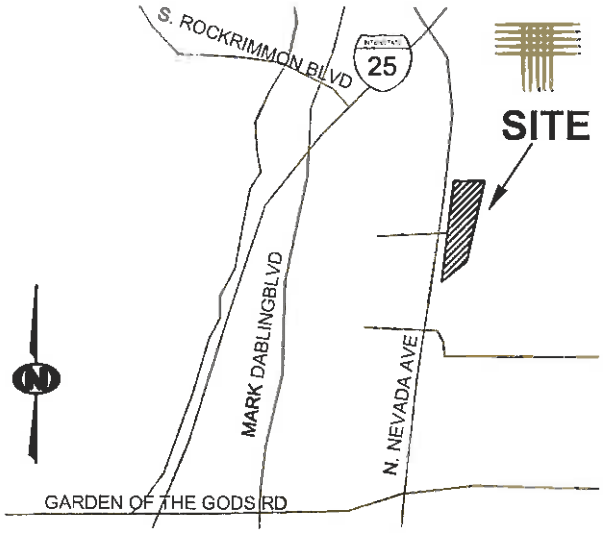
DG:MNL
(3 copies sent)

LEGEND:

TH-1 ● APPROXIMATE LOCATION OF EXPLORATORY BORING.

APPROXIMATE LOCATION OF EXISTING BUILDING.

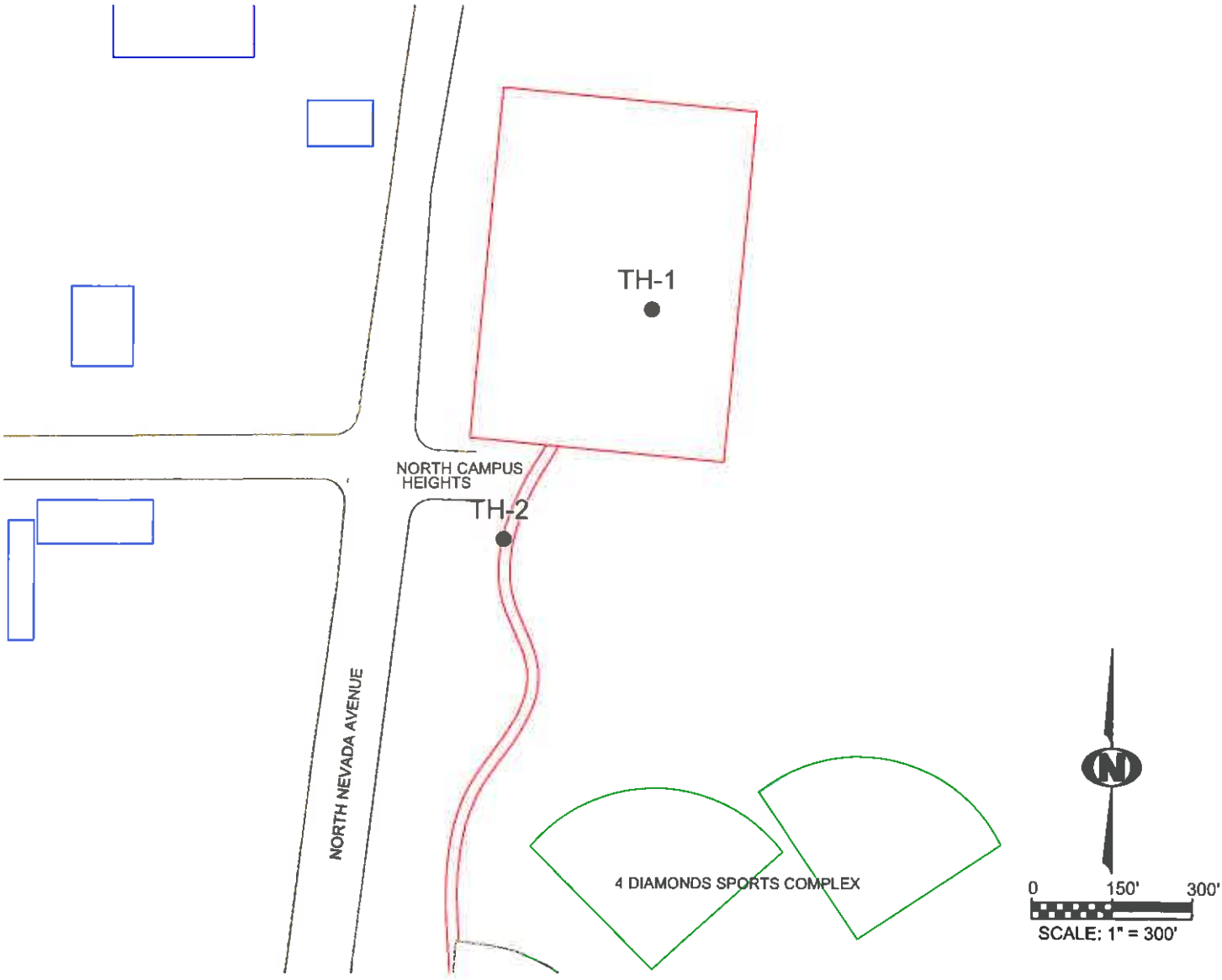
APPROXIMATE LOCATION OF PROPOSED PARKING LOT AND WALKWAY.



VICINITY MAP

(NO SCALE)

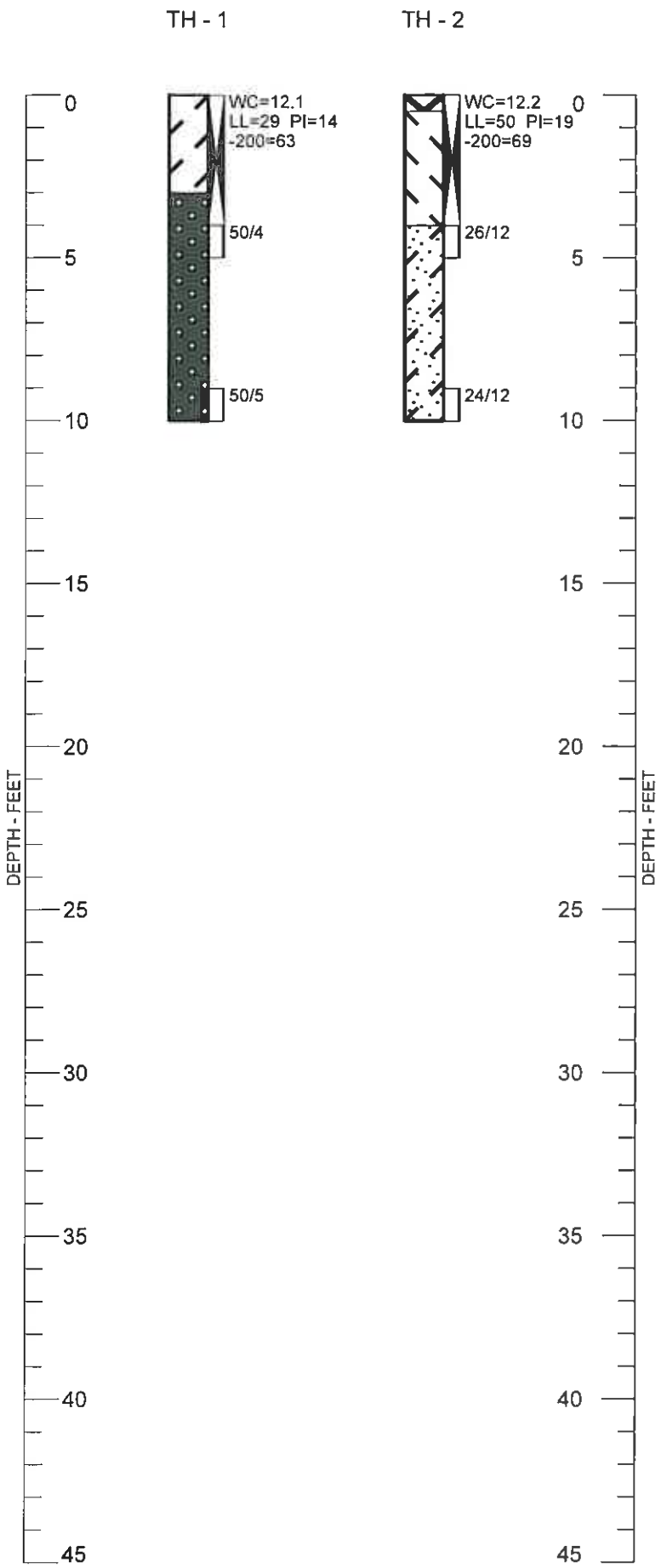
NOTE:
BASE DRAWING WAS PROVIDED BY GOOGLE EARTH (DATED 10/22/2011).



Location of Exploratory Borings

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRIAN WALKWAY
CTL|T PROJECT NO. CS17888-125
\\Csp-2k3r2-dc-01\engineering\CS17500-17999\CS17888.000\125\2. Reports\CS17888-125_CAD_FIG.dwg

FIG. 1



LEGEND:

FILL. SAND, CLAYEY, MOIST, BROWN.

CLAY, VERY SANDY, MOIST, LIGHT BROWN. (CL)

CLAY, SANDY, MOIST, DARK BROWN. (CH)

SAND, CLAYEY, MEDIUM DENSE, SLIGHTLY MOIST, DARK BROWN. (SC)

BEDROCK. SANDSTONE, CLAYEY, VERY HARD, SLIGHTLY MOIST, LIGHT BROWN.

DRIVE SAMPLE. THE SYMBOL INDICATES BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.

INDICATES BULK SAMPLE OBTAINED FROM AUGER CUTTINGS.

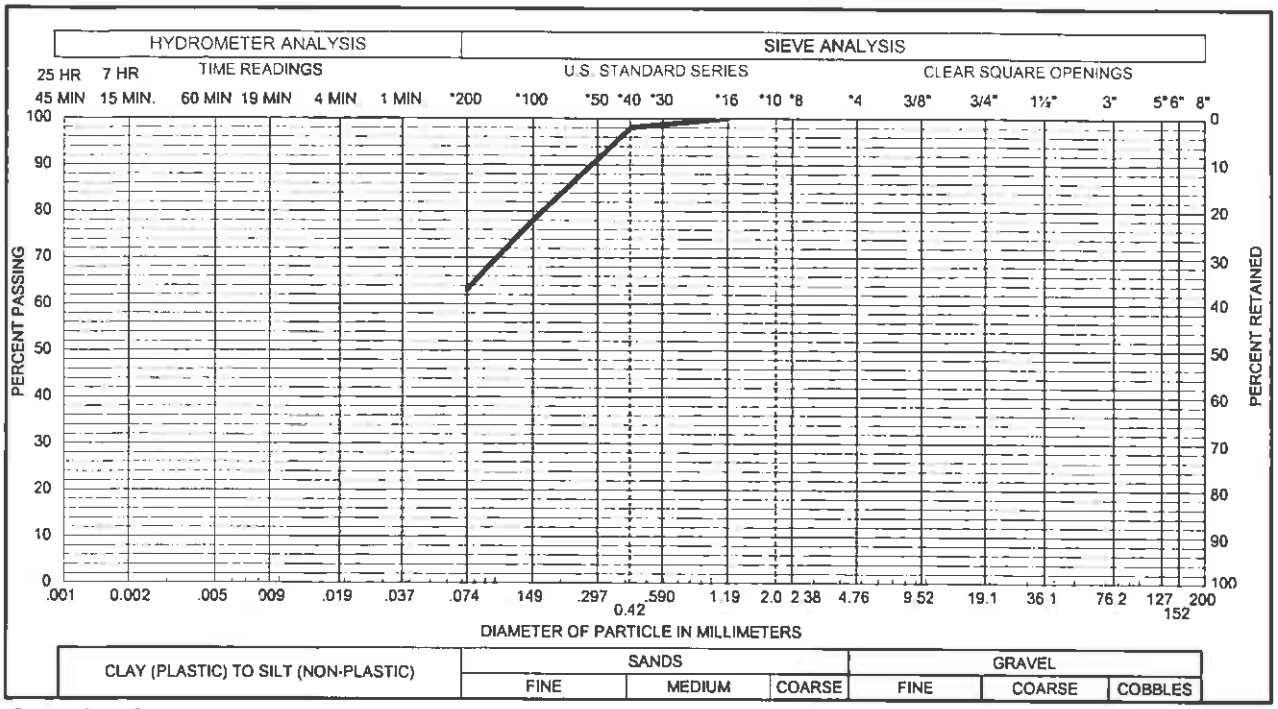
NOTES:

1. THE BORINGS WERE DRILLED DECEMBER 29, 2011 USING A 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A CME-55, TRUCK-MOUNTED DRILL RIG.
2. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS, AND CONCLUSIONS AS CONTAINED IN THIS REPORT.
3. GROUND WATER WAS NOT ENCOUNTERED IN THE EXPLORATORY BORINGS DURING THIS INVESTIGATION.
4. WC - INDICATES MOISTURE CONTENT. (%)
   LL - INDICATES LIQUID LIMIT. (%)
   (NV : NO VALUE)
   PI - INDICATES PLASTICITY INDEX. (%)
   (NP : NON-PLASTIC)
   -200 - INDICATES PASSING NO. 200 SIEVE. (%)

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRIAN WALKWAY
CTL|T PROJECT NO. CS17888-125
\\CSP-2K3R2-DC-01\ENGINEERING\CS17500-17999\CS17888.000\125\2. REPORTS\CS17888-125_GINT_FIG.GPJ

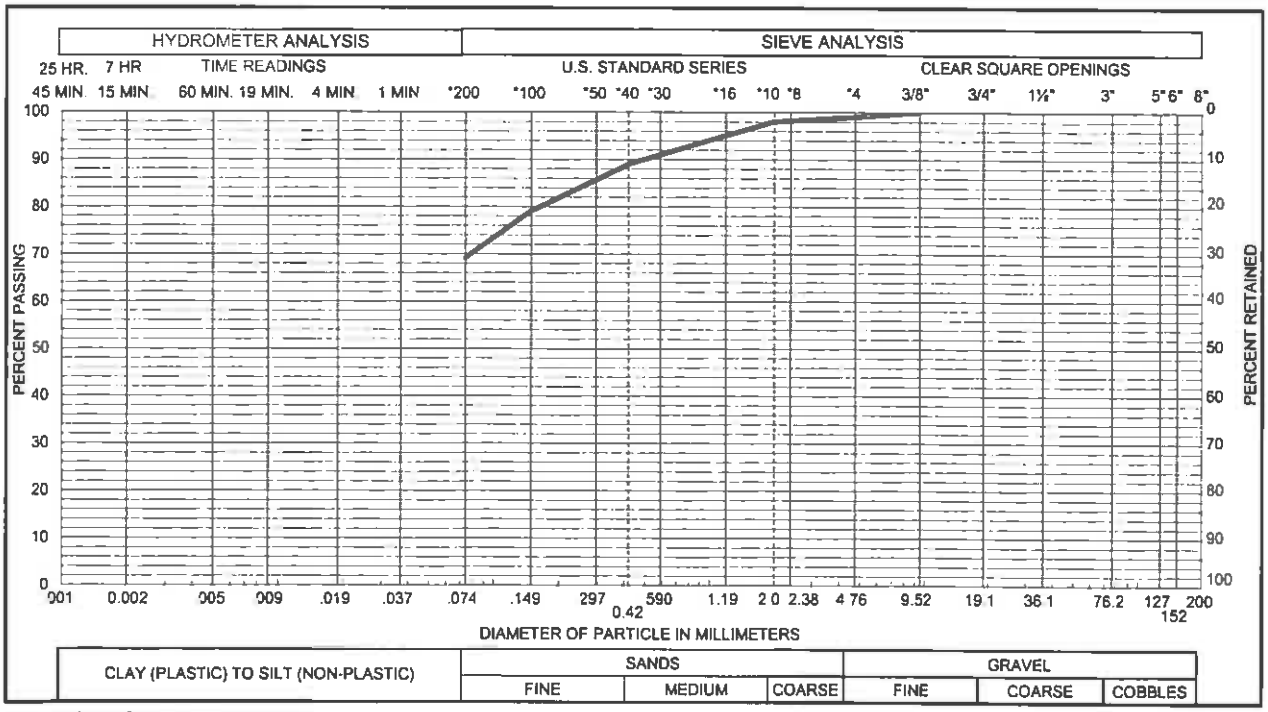
Summary Logs of Exploratory Borings

FIG. 2



Sample of CLAY, VERY SANDY (CL)
From TH - 1 AT 0-4 FEET

GRAVEL	0 %	SAND	37 %
SILT & CLAY	63 %	LIQUID LIMIT	29 %
PLASTICITY INDEX			15 %



Sample of CLAY, SANDY (CH)
From TH - 2 AT 0-4 FEET

GRAVEL	1 %	SAND	30 %
SILT & CLAY	69 %	LIQUID LIMIT	50 %
PLASTICITY INDEX			31 %

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRAIN WALKWAY
CTL|T PROJECT NO. CS17888-125
S:\CS17500-17999\CS17888.000\125\2. REPORTS\CS17888-125_GRADATION.XLS

Gradation Test Results

FIG. 3

TABLE 1

SUMMARY OF LABORATORY TESTING
CTL|T PROJECT NO. CS17888-125

SUBGRADE SAMPLE	DEPTH (FEET)	GROUP NAME	MOISTURE CONTENT (%)	ATTERBERG LIMITS		PASSING NO. 200 SIEVE (%)	GROUP INDEX	CLASSIFICATION		DESCRIPTION
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)			AASHTO	UNIFIED	
S-1	0-4	B	12.1	29	14	63	6	A-6	CL	CLAY, VERY SANDY
S-2	0-4	A	12.2	50	19	69	20	A-7-6	CH	CLAY, SANDY

CTL | THOMPSON INCORPORATED

January 12, 2012
Revised January 19, 2012

Matrix Design Group
2435 Research Parkway, Suite 300
Colorado Springs, Colorado 80920

Attention: Mr. Ray Perez, P.E.

Subject: Temporary Parking and Pedestrian Walkway
University of Colorado – Colorado Springs
East of Nevada Avenue
North and West of Four Diamonds Sports Complex
Colorado Springs, Colorado
CTL|T Project No. CS17888-125

As requested, we conducted a subgrade investigation for the construction of a temporary aggregate surface parking lot and pedestrian walkway on the campus of the University of Colorado at Colorado Springs in Colorado Springs, Colorado. This letter summarizes our aggregate base course sections and recommendations for construction of the parking lot and walkway.

INVESTIGATION

The near surface subgrade soils were evaluated by drilling two test holes to a depth of 10 feet below the existing grade on December 29, 2011. Figure 1 shows the approximate location of the test holes. Bulk samples of the subgrade soils were obtained from the surface to about 4 feet with penetration resistance testing performed at depths of 4 and 9 feet. The samples were returned to the laboratory where index property testing (gradation and Atterberg Limits) of the bulk samples were performed. The near surface soils encountered in both test holes consisted of sandy to very sandy clays over either clayey sandstone bedrock or clayey sands. Graphical logs of the test holes are shown in Fig. 2. The near surface bulk samples which influence the aggregate section thickness classify under the AASHTO system as A-6 and A-7-6. Our experience with these types of soils indicates Hveem stabilometer values ("R" values) rarely exceed 5, which was considered in our recommendations for aggregate design thickness. Laboratory data is presented in Fig. 3 and summarized on Table 1.

DESIGN

We understand the parking lot is to have an expected usage life span of approximately 5 years and will service passenger vehicle traffic and up to eight buses on a daily biases. The pedestrian walkway will be limited to maintenance vehicle traffic only (pick-up trucks). We understand an aggregate pavement section is desired for both the parking lot and the walkway. Aggregate sections should consist of 6 inches of

aggregate placed directly on a prepared subgrade for the parking lot. Bus traffic routes and parking areas should have a section of at least 8 inches of aggregate place of a geotextile similar to Mirafi 600X. If bus traffic can not be limited to certain routes through the parking lot, the entire lot should be surfaced with the 8 inches of aggregate and the underlying geotextile. The pedestrian walkway should consist of 4 inches of aggregate material place directly on a prepared subgrade. These aggregate sections will require periodic maintenance consisting of re-grading to original design slopes for the removal of water from the surface and may include placement of additional aggregate material to level depressions and ruts.

The aggregate course should consist of material meeting Colorado Department of Transportation (CDOT) Class 5 or 6 specifications. Recycled materials (concrete or asphalt millings) meeting these specifications would be an acceptable alternative. The existing subgrade should have organic matter and topsoil striped prior grading. Grading should be such that water is rapidly removed form the pavement surface. Fill materials should consist of on-site soils that are moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor (ASTM D 698 of AASHTO T 99). Natural soils in areas of cut should be scarified to a depth of at least 12 inches; moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor prior to the placement of the aggregate section and geotextile. The aggregate should be placed in thin lifts, and moisture conditioned to within 2 percent of optimum moisture and compacted to at lest 95 percent of maximum modified proctor (ASTM D 1557 or AASHTO T 180).

ROADWAY CONSTRUCTION

Our recommendations consider construction of the aggregate base course surface is completed in accordance with the City of Colorado Springs standard specifications. The specifications contain requirements for the quality of materials and the construction practices used. Recommendations directed towards subgrade and aggregate base course compaction and proofrolling are of particular importance.

LIMITATIONS

The recommended sections presented were developed based upon the subgrade soils encountered and anticipated traffic loads. If traffic loads are not as discussed or traffic types and volume are not as indicated, we should be contacted to review the data presented in this letter.

Should you have any questions regarding the information contained in this letter, the design of the streets, or the project from a geotechnical point-of-view, please call.

Very truly yours,
CTL|THOMPSON, INC.

David Groenendale
BSCET

Reviewed by:

Michael Lemons., P.E.
Associate Engineer

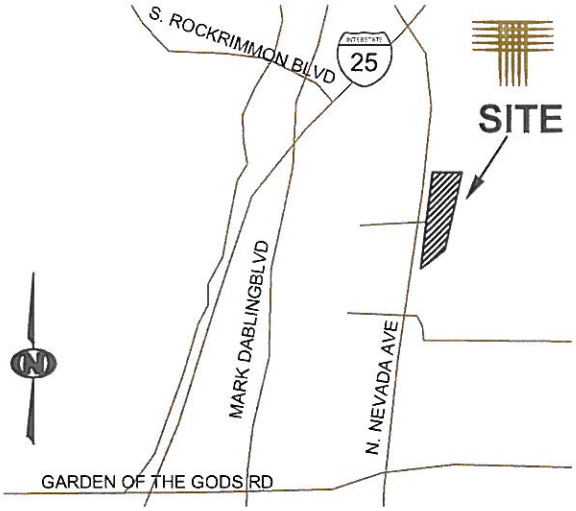
DG:MNL
(3 copies sent)

LEGEND:

TH-1 ● APPROXIMATE LOCATION OF EXPLORATORY BORING.

——— APPROXIMATE LOCATION OF EXISTING BUILDING.

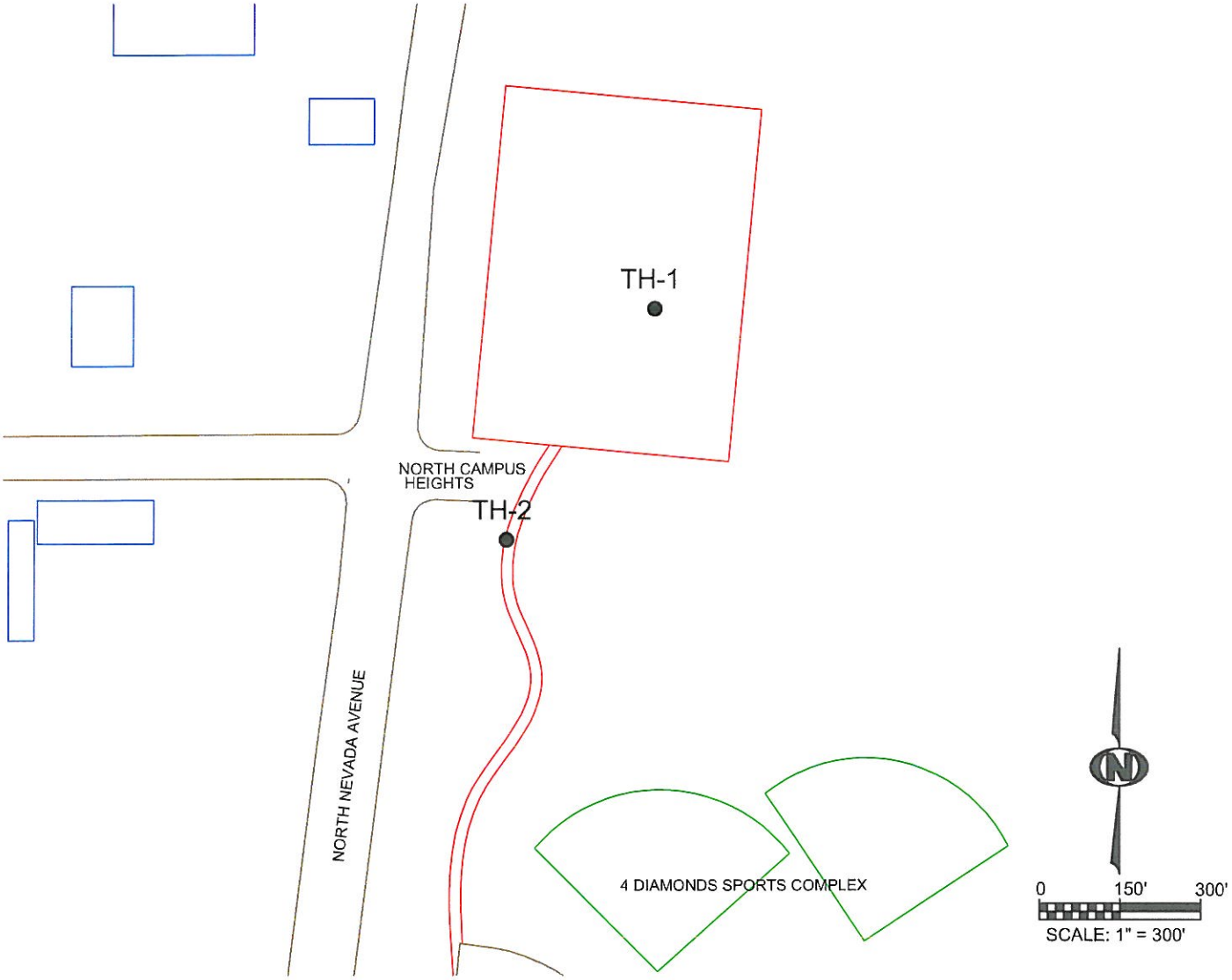
——— APPROXIMATE LOCATION OF PROPOSED PARKING LOT AND WALKWAY.



VICINITY MAP

(NO SCALE)

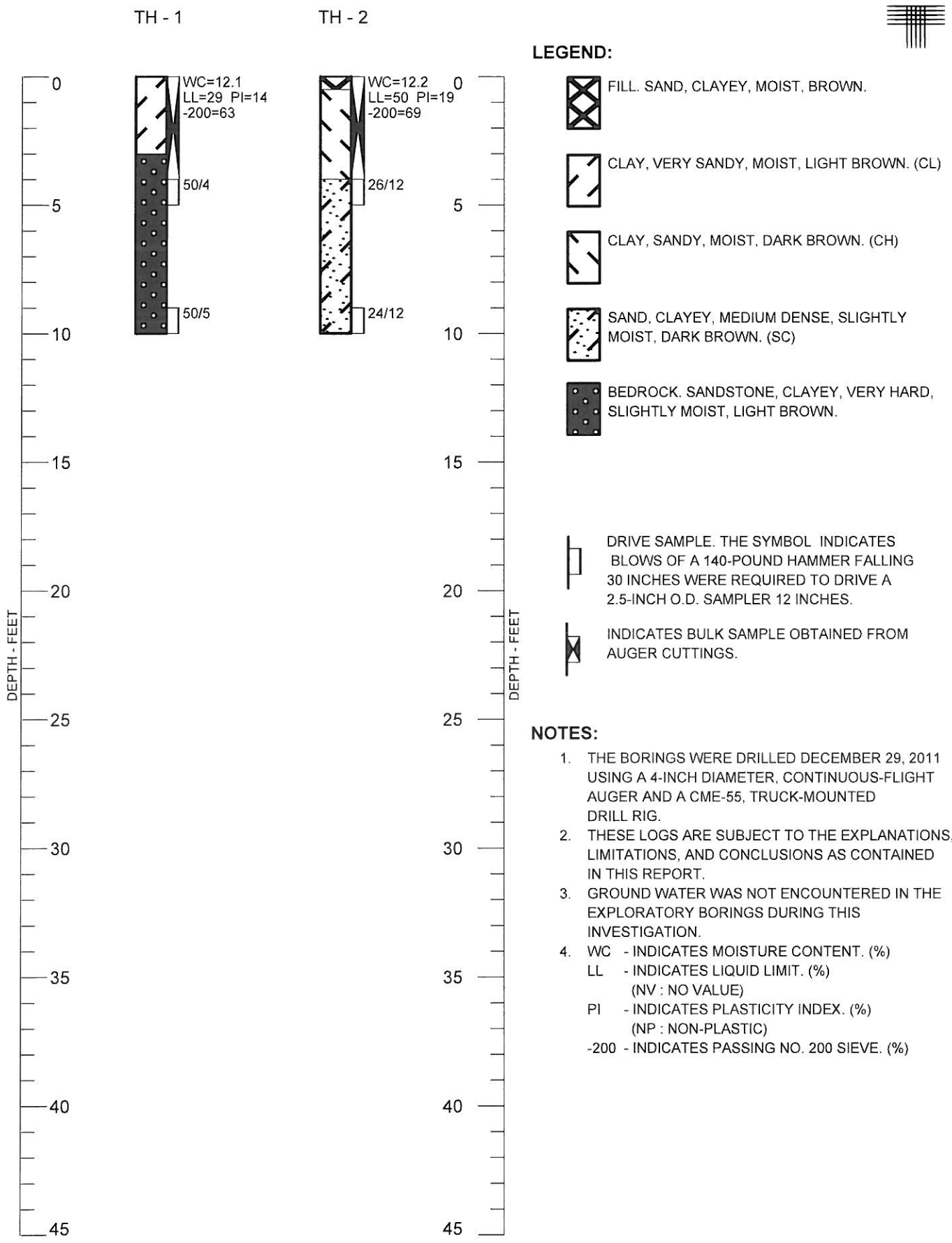
NOTE:
BASE DRAWING WAS PROVIDED BY GOOGLE EARTH (DATED 10/22/2011).



Location of Exploratory Borings

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRIAN WALKWAY
CTL|T PROJECT NO. CS17888-125
\\Csp-2k3r2-dc-01\engineering\CS17500-17999\CS17888.000\125\2. Reports\CS17888-125_CAD_FIG.dwg

FIG. 1



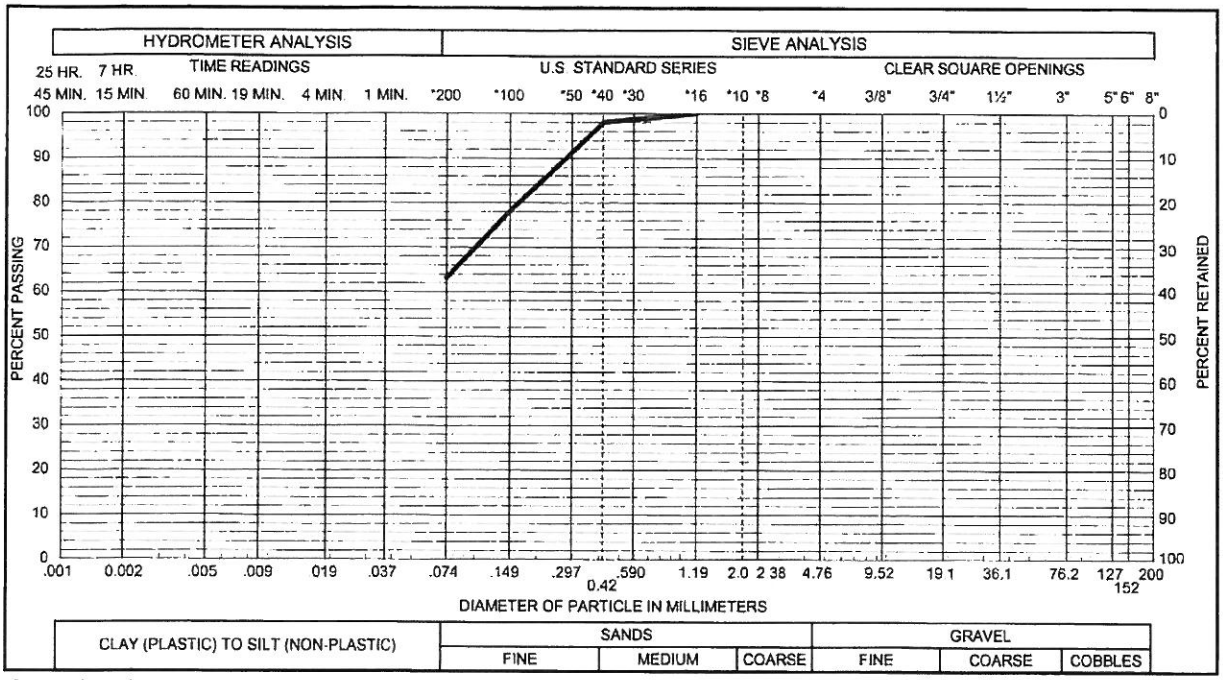
NOTES:

1. THE BORINGS WERE DRILLED DECEMBER 29, 2011 USING A 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A CME-55, TRUCK-MOUNTED DRILL RIG.
2. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS, AND CONCLUSIONS AS CONTAINED IN THIS REPORT.
3. GROUND WATER WAS NOT ENCOUNTERED IN THE EXPLORATORY BORINGS DURING THIS INVESTIGATION.
4. WC - INDICATES MOISTURE CONTENT. (%)
   LL - INDICATES LIQUID LIMIT. (%)
   (NV : NO VALUE)
   PI - INDICATES PLASTICITY INDEX. (%)
   (NP : NON-PLASTIC)
   -200 - INDICATES PASSING NO. 200 SIEVE. (%)

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRIAN WALKWAY
CTL|T PROJECT NO. CS17888-125
\\CSP-2K3R2-DC-01\ENGINEERING\CS17500-17999\CS17888.000\125\2. REPORTS\CS17888-125_GINT_FIG.GPJ

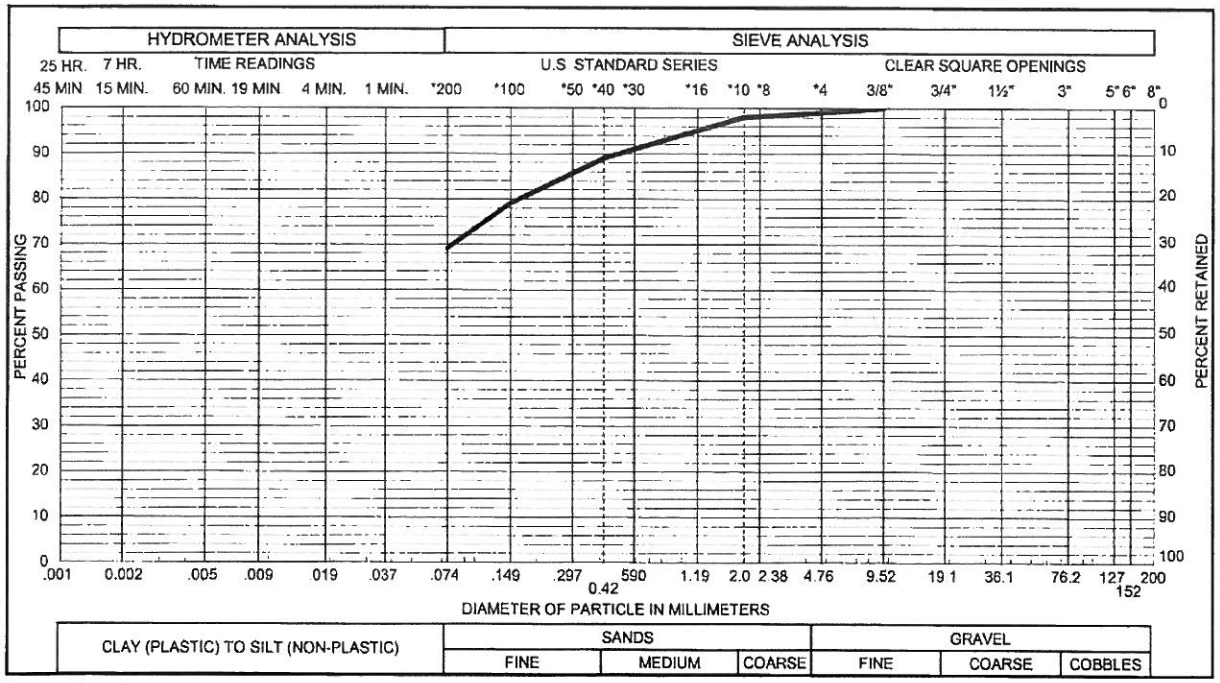
Summary Logs of Exploratory Borings

FIG. 2



Sample of CLAY, VERY SANDY (CL)
From TH - 1 AT 0-4 FEET

GRAVEL	0 %	SAND	37 %
SILT & CLAY	63 %	LIQUID LIMIT	29 %
PLASTICITY INDEX			15 %



Sample of CLAY, SANDY (CH)
From TH - 2 AT 0-4 FEET

GRAVEL	1 %	SAND	30 %
SILT & CLAY	69 %	LIQUID LIMIT	50 %
PLASTICITY INDEX			31 %

MATRIX DESIGN GROUP, INC.
TEMPORARY PARKING AND PEDESTRAIN WALKWAY
CTL|T PROJECT NO. CS17888-125
S:\CS17500-17999\CS17888.000\125\2. REPORTS\CS17888-125_GRADATION.XLS

Gradation Test Results

FIG. 3

TABLE 1

SUMMARY OF LABORATORY TESTING
CTL|T PROJECT NO. CS17888-125

SUBGRADE SAMPLE	DEPTH (FEET)	GROUP NAME	MOISTURE CONTENT (%)	ATTERBERG LIMITS		PASSING NO. 200 SIEVE (%)	GROUP INDEX	CLASSIFICATION		DESCRIPTION
				LIQUID LIMIT (%)	PLASTICITY INDEX (%)			AASHTO	UNIFIED	
S-1	0-4	B	12.1	29	14	63	6	A-6	CL	CLAY, VERY SANDY
S-2	0-4	A	12.2	50	19	69	20	A-7-6	CH	CLAY, SANDY

CTL|THOMPSON INCORPORATED

March 2, 2012

Matrix Design Group
2435 Research Parkway, Suite 300
Colorado Springs, Colorado 80920

Attention: Mr. Ray Perez, P.E.

Subject: Temporary Parking and Pedestrian Walkway
University of Colorado – Colorado Springs
East of Nevada Avenue
North and West of Four Diamonds Sports Complex
Colorado Springs, Colorado
CTL|T Project No. CS17888-125

As requested, we conducted a subgrade investigation for the construction of a temporary aggregate surface parking lot and pedestrian walkway on the campus of the University of Colorado at Colorado Springs in Colorado Springs, Colorado. We understand you would like to consider an asphalt pavement section for the bus route within the parking lot. This letter summarizes our recommendations.

INVESTIGATION

As presented in our earlier letter, the near surface soils encountered in both test holes consisted of sandy to very sandy clays over either clayey sandstone bedrock or clayey sands. The near surface bulk samples which influence the pavement section thickness classify under the AASHTO system as A-6 and A-7-6. Our experience with these types of soils indicates Hveem stabilometer values ("R" values) rarely exceed 5, which was considered in our recommendations for asphalt pavement design thickness.

DESIGN

We understand the parking lot is still to have an expected usage life span of approximately 5 years and will service passenger vehicle traffic and up to eight buses on a daily biases. We understand the buses will be restricted to the asphalt pavement portion of the parking lot. The pedestrian walkway will be limited to maintenance vehicle traffic only (pick-up trucks). We understand an aggregate pavement section is still desired for the walkway and the college is proposing the use of "breeze material". Aggregate sections of the parking lot should consist of 6 inches of aggregate placed directly on a prepared subgrade for the parking lot. The bus routes and bus parking should consist of at least 4 inches of asphalt placed directly on a prepared subgrade. Periodic maintenance of the asphalt section will be required during the proposed five year life of the parking lot. Subgrade failures could occur if the soils below the asphalt become wet. This condition may result in cracking and failures of the asphalt pavement. The pedestrian walkway should consist of 4 inches of aggregate material place directly on a prepared subgrade. The proposed "breeze material" for the walkway is an acceptable alternative to base course. However, some of the breeze material in the area

the area contain plastic silt and can become either sticky of slippery when wetted. The aggregate sections will require periodic maintenance consisting of re-grading to original design slopes for the removal of water from the surface and may include placement of additional aggregate material to level depressions and ruts.

The aggregate course for the parking lot should consist of material meeting Colorado Department of Transportation (CDOT) Class 5 or 6 specifications. Recycled materials (concrete or asphalt millings) meeting these specifications would be an acceptable alternative. If breeze material is used for the walkway, construction should follow the same specifications as the parking lot. The existing subgrade should have organic matter and topsoil striped prior grading. Grading should be such that water is rapidly removed form the pavement surface. Fill materials should consist of on-site soils that are moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor (ASTM D 698 of AASHTO T 99). Natural soils in areas of cut should be scarified to a depth of at least 12 inches; moisture conditioned to within 2 percent of optimum moisture and compacted to at least 95 percent of maximum standard proctor prior. The aggregate should be placed in thin lifts, and moisture conditioned to within 2 percent of optimum moisture and compacted to at lest 95 percent of maximum modified proctor (ASTM D 1557 or AASHTO T 180).

Asphalt construction should be in accordance with the Pikes Peak Regional Pavement specification for paving mixes and strength of materials criteria.

ROADWAY CONSTRUCTION

Our recommendations consider construction of the aggregate base course surface and asphalt surfaces is completed in accordance with the City of Colorado Springs standard specifications. The specifications contain requirements for the quality of materials and the construction practices used. Recommendations directed towards subgrade and aggregate base course compaction and proofrolling are of particular importance.

LIMITATIONS

The recommended sections presented were developed based upon the subgrade soils encountered and anticipated traffic loads. If traffic loads are not as discussed or traffic types and volume are not as indicated, we should be contacted to review the data presented in this letter.

Should you have any questions regarding the information contained in this letter, the design of the streets, or the project from a geotechnical point-of-view, please call.

Very truly yours,
CTL|THOMPSON, INC.

David Groenendale
BSCET

Reviewed by:

Michael Lemons., P.E.
Associate Engineer

COLORADO REGISTERED MICHAEL NEAL LEMONS 33394 PROFESSIONAL ENGINEER 3/2/12

DG:MNL
(3 copies sent)

wheatgrass (Arriba)	*smithii*					
Indian saltgrass	*Distichlis spicata*	Warm	Sod	520,000	1.0	2.0
Wooly sedge	*Carex lanuginose*	Cool	Sod	400,000	0.1	0.2
Baltic rush	*Juncus balticus*	Cool	Sod	109,300,000	0.1	0.2
Prairie cordgrass	*Spartina pectinata*	Cool	Sod	110,000	1.0	2.0
Annual rye	*Lolium multiflorum*	Cool	Cover crop	227,000	10.0	20.0
				TOTAL	**22.4**	**44.8**
Wildflowers						
Nuttall's sunflower	*Helianthus nuttallii*	---	---	250,000	0.10	0.20
Wild bergamot	*Monarda fistulosa*	---	---	1,450,000	0.12	0.24
Yarrow	*Achillea millefolium*	---	---	2,770,000	0.06	0.12
Blue vervain	*Verbena hastata*	---	---		0.12	0.24
				TOTAL	**0.40**	**0.80**

[1]For areas of facilities located near or on the bottom or where wet soil conditions occur. Planting of potted nursery stock wetland plants 2-foot on-center is recommended for sites with wetland hydrology.
*Nonnative

Table 14-9.
Recommended Seed Mix for Transition Areas

Common Name (Variety)	Scientific Name	Growth Season	Growth Form	Seeds/Lb	Lbs PLS/Acre Drilled	Lbs PLS/Acre Broadcast or Hydroseeded
Sheep fescue (Durar)	*Festuca ovina*	Cool	Bunch	680,000	1.3	2.6
Western wheatgrass	*Pascopyrum*	Cool	Sod	110,000	7.9	15.8

(Arriba)	*smithii*					
Alkali sacaton	*Spolobolus airoides*	Warm	Bunch	1,758,000	0.5	1.0
Slender wheatgrass	*Elymus trachycaulus*	Cool	Bunch	159,000	5.5	11.0
Canadian bluegrass (Ruebens)*[2]	*Poa compressa*	Cool	Sod	2,500,000	0.3	0.6
Switch grass (Pathfinder)	*Panicum virgatum*	Warm	Sod/ Bunch	389,000	1.3	2.6
Annual rye	*Lolium multiflorum*	Cool	Cover crop	227,000	10.0	20.0
				TOTAL	**26.8**	**53.6**
Wildflowers						
Blanket flower	*Faillardia aristata*	---	---	132,000	0.25	0.50
Prairie coneflower	*Ratibida columnaris*	---	---	1,230,000	0.20	0.40
Purple prairie clover	*Petalostemum purpurea*	---	---	210,000	0.20	0.40
Gayfeather	*Liatris punctata*	---	---	138,000	0.06	0.12
Flax	*Linum lewisii*	---	---	293,000	0.20	0.40
Penstemon	*Penstemon strictus*	---	---	592,000	0.20	0.40
Yarrow	*Achillea millefolium*	---	---	2,770,000	0.03	0.06
				TOTAL	**1.14**	**2.28**

[1]For side slopes or between wet and dry areas.
[2]Substitute 1.7 lbs. PLS/acres of inland salt grass (*Distichlis spicata)* in salty soils.

Table 14-10.
Recommended Seed Mix for Alkali Soils

SHEET NO. 13

REVISIONS					
NO.	DATE	BY	DESCRIPTION	APPROVED BY:	DATE
ADD2	03/06/12	APS	ADDENDUM #2 UPDATES		
ADD3	**03/14/12**	**APS**	**ADDENDUM #3 UPDATES**		

me engineers

FOR AND ON BEHALF OF MATRIX DESIGN GROUP, INC.

Matrix DESIGN GROUP

UCCS ARENA PARKING LOT

LIGHTING LAYOUT – PARKING LOT

DESIGNED BY: APS
DRAWN BY: APS
CHECKED BY:

SCALE
HORIZ: 1" = 30'
VERT: N/A

DATE ISSUED: **FEBRUARY 17, 2012**

SHEET NO. 13 OF 16

L01