CLASSROOM ADDITIONS

Laramie County Community College - Albany County Campus
August 8, 2016

LEVEL I & II REPORT

prepared by: Tobin & Associates, P.C, Architecutre / Planning

Potential Classroom Addition

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EXECUTIVE SUMMARY

Planning for additional classroom and laboratory instructional space has been identified by Dr. James Malm, Associate Vice President, as a priority for the Laramie County Community College - Albany County Campus(ACC), located in Laramie, Wyoming. Enrollment growth has strained the Campus facilities, which are currently operating at 90% of capacity. Strategically the Campus must begin planning for additional classroom, laboratory and office space to meet the needs of the students attending ACC.

The Laramie County Community College Albany County Campus' facilities were constructed in 2006, and since occupancy of the existing facilities, the Campus has seen continued growth in student enrollments through the 2012-2013 school year. The Campus has experienced a minor downturn in enrollments at the start of the 2014-2015 school year which mirror the LCCC Cheyenne Campus enrolment numbers. However, the ACC expect this downturn in enrollments to be temporary.

This Planning Report for the ACC Two Classroom Addition establishes the need for additional classroom and laboratory instructional space, in addition to facility office space. This Report was initiated in 2015 by LCCC – ACC, and was prepared by Tobin & Associates, P.C. It is a Level I and II Study, as required by the Wyoming Community College Commission for requesting approval for planning and construction, and is based upon the State Statutory guidelines for Level I and Level II reporting. This planning process involved meetings with the ACC administration and staff, to gather information on Campus enrollments, space utilization and project needs. A 3,160 square foot addition and the renovation of an existing Art Room to function as a Science Lab Room have been identified as required to meet the future educational facility needs, until such time as a second comprehensive classroom building can be planned for ACC.

Two classroom addition concepts were developed and Concept 2 was selected for further study and cost estimating. Additionally, the existing Art Room would be renovated to mirror the adjacent Science Lab.

The estimated construction cost for the addition is $798,334 and the estimated cost for the Art Room to Science classroom renovations is $72,976.79, for a total project cost of $973,687.57 which includes all Design Fees, Contingencies, and FF&E.

A construction start is anticipated in the Spring of 2017, with occupancy prior to the start of the 2018 Spring Semester.

PARTICIPANTS

Dr. James Malm	LCCC ACC Associate Vice President
Mr. Tim Macnamara	LCCC Director, Physical Plant
Mr. Shawn Holz	LCCC ACC Director of Academic Affairs
Mr. Bill Zink	LCCC Assistang Diretor, Physical Plant

PROGRAM SUMMARY

The proposed classroom additions are being designed with specific courses and degree programs in mind that will be implemented, but the classrooms will have a wide range of uses that could expand as LCCC continues to offer new courses and programs.

- **Lecture Classroom** - Space will be large enough to accommodate seating for 100 people and can be used for classes, staff meetings, public meetings, lectures, etc.
- **Multi-Purpose Wet Lab Classroom** - Space will be used as either a Wet Science Lab or as an art studio for 2D and 3D mediums such as painting or sculpture and have adequate ventilation for the mediums being used.
- **Storage** - Provide adjacent to the Lab Classroom for storage of various supplies.
- **Faculty Offices** - 2 faculty offices shall be provided adjacent ot the Lecture Classroom.
- **Science Lab** - Existing Art Room would be renovated as an additonal Science Lab.

IDENTIFY THE NEED FOR THE PROJECT

Laramie County Community College Albany County Campus has experienced consistent growth in courses and in degree programs offered. As a result of this growth, the classrooms at the ACC campus are currently being used at such a high capacity that it is no longer feasible to try and accommodate any new classes between the periods of classes currently scheduled. Pages 5-6 show how the Science Lab is currently being used throughout the week and the Classroom Utilization percentages.

The College has an agreement with the University of Wyoming (UW) which allows them to teach classes on the UW campus. They also utilize space at the Laramie Recreation Center for P.E. classes and are in discussions with Laramie High School to utilize space in their facility which is currently under construction. Although having the ability to teach classes at UW has proven beneficial to the College, allowing them to continue offering new courses, this arrangement has students inconveniently going back and forth between the ACC and UW during the day.

The additional Multi-Purpose Web Lab Classroom, together with the Art Lab conversion into a Science Lab, will allow the College to offer approximately 10 more art and science courses at the ACC and offer new courses such as Organic Chemistry and Sculpture. The proposed size of the classrooms will also allow courses that have previously been broken into multiple sections to remain as one section. The Lecture classroom will be capable of seating 100 people for larger lecture/seminar classes or for after hours lectures. Although specific courses have not been planned, this classroom will allow several classes to reduce sections, reduce instructor teaching hours, and reduce scheduled hours in other classrooms. Another need that this space will be addressing is the ability to provide the entire faculty and staff a large space for meetings or training.

Improved Art Studio and Multi-Purpose Wet Lab

The art courses in room 110 are limited due to the space location and ventilation. Art courses frequently utilize materials and media which require increased ventilation vented directly outside of the building. Even water based media can create fumes that can spread through the building. Sculpture classes are highly restricted because most adhesives or means of fabrication produce fumes and dust. Without direct outside access, larger sculptural projects cannot be offered to ACC students or the Laramie community through Life Enrichment programming. The proposed expansion would address these issues by having an independent ventilation system, overhead door access, increased access, better lighting control, and a more public presence on campus. This would allow for additional art courses and programming, increasing the utilization of the art studio classroom.

Highlights

- Room 105, the Science Lab, has been utilized at or near 100% capacity for the past 5 years resulting in no ability to offer additional lab sciences.
- Room 110, the Art Studio, has been utilized an average of 40.13% over the past 5 years because the space is not conducive for additional art programming.
- Over the past 5 years the majority of ACC instruciton space is utilized at 90% or greater. The majority of remaining spaces are utilized between 80% and 89%. Few classrooms are utilized below 75% capacity.
- Restricted classroom space limits the ACC's ability to add course sections when needed. Depending on the course, another course must be dropped before a new course can be added to the schedule.

CLASSROOM SCHEDULE

The current Science Lab in room 105 is consistently at full or nearly full capacity in the course schedule. Since 2011 room 105 has been at 100% usage for 7 of those semesters. The other 3 semesters room 105 was between 93% and 94% usage. The ACC does not have the ability to offer additional lab science sections in areas of higher demand, nor the ability to add new courses to support additional science degree offerings. Moving the art studio classroom from its current location in room 110 will allow the room to be renovated into a Science Lab.

Room 105 - Science Lab - Fall 2015

	MONDAY	TUESDAY	WEDNESDAY	THRUSDAY	FRIDAY
8:00	ZOO 2025-300 8:00 - 9:55	BIOL 1003-360 8:00 - 9:55	ZOO 2025-300 8:00 - 9:55	BIOL 1003-360 8:00 - 9:55	ZOO 2025-300 8:00 - 9:55
8:30					
9:00					
9:30					
10:00	CHEM 1020-300 10:00 - 10:55		CHEM 1020-300 10:00 - 10:55		CHEM 1020-300 10:00 - 10:55
10:30					
11:00		Z00 2015-300 11:00 - 2:00		Z00 2015-300 11:00 - 2:00	
11:30					
12:00	CHEM 1000-300 12:00 - 1:15		CHEM 1000-300 12:00 - 1:15		
12:30					
1:00					
1:30					
2:00	BIOL 1010-360 2:00 - 5:15		BIOL 1010-360 2:00 - 5:15		CHEM 1000-300 LAB 12:00 - 1:15
2:30		BIOL 1010-330 LAB 2:30 - 5:45		CHEM 1000-300 LAB 2:00 - 5:00	
3:00					
3:30					
4:00					
4:30					
5:00					
5:30					
6:00	ZOO 2015-320 6:00 - 9:00	Z00 2025-320 6:00 - 9:00	ZOO 2015-320 6:00 - 9:00	Z00 2025-320 6:00 - 9:00	
6:30					
7:00					
7:30					
8:00					
8:30					
9:00					
9:30					

CLASSROOM UTILIZATION

SPRING 2016

	8:00 AM -5:00 PM (45 hrs.)	5:00 PM - 10:00 PM (20 hrs.)	8:00 AM - 10:00 PM Average (65 hrs.)
Classroom 104 (Math Lab)	66.66%	100.00%	83.33%
Classroom 105 (Science Lab)	86.66%	100.00%	93.33%
Classroom 110 (Art Lab)	40.00%	75.00%	55.00%
Classroom 113	64.44%	100.00%	82.22%
Classroom 114	91.11%	75.00%	83.05%
Classroom 115	71.11%	70.00%	70.55%
Classroom 116	88.88%	25.00%	56.94%
Classroom 117	91.11%	100.00%	95.55%
Classroom 118 (Computer Lab)	53.33%	40.00%	46.66%
Classroom 204 (Adult Education	91.11%	75.00%	83.05%
Classroom 205	75.55%	70.00%	72.77%
Classroom 206	75.55%	100.00%	87.77%
Classroom 219	93.33%	100.00%	96.99%

FALL 2016

	8:00 AM -5:00 PM (45 hrs.)	5:00 PM - 10:00 PM (20 hrs.)	8:00 AM - 10:00 PM Average (65 hrs.)
Classroom 104 (Math Lab)	100.00%	100.00%	100.00%
Classroom 105 (Science Lab)	88.66%	100.00%	94.33%
Classroom 110 (Art Lab)	57.77%	50.00%	53.88%
Classroom 113	80.00%	100.00%	90.00%
Classroom 114	75.33%	100.00%	87.77%
Classroom 115	73.33%	100.00%	86.66%
Classroom 116	80.00%	100.00%	90.00%
Classroom 117	71.11%	100.00%	85.55%
Classroom 118 (Computer Lab)	46.66%	50.00%	48.33%
Classroom 204 (Adult Education	100.00%	100.00%	100.00%
Classroom 205	77.77%	100.00%	88.88%
Classroom 206	66.66%	100.00%	83.33%
Classroom 219	75.55%	85.00%	80.27%

A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 - Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. One hour is only enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 - No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 - Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 - Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2-3 hour blocks; TTh 2-3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2-3 hour blocks; F 3-4 hour blocks.

PROPOSED COURSE OFFERINGS

By adding the new Lab Classroom, art classes currently being offered in Classroom 110 can be moved into the new lab space. Classroom 110 can then be utilized as a science lab space for which it is better suited. The additional Lab Classroom and relocation of the art classes currently in Classroom 110 can allow for the following added courses and degrees.

COURSES:

CHEM 1030 General Chemestry II
CHEM 2320 Organic Chemistry I
CHEM 2325 Organic Chemistry Lab I
CHEM 2340 Organic Chemistry II
CHEM 2345 Organic Chemistry Lab II
MICR 2240 Medical Microbiology
PHYS 1110 General Physics I
PHYS 1120 General Physics II
ART 2310 Sculpture I
ART 2420 Sculpture II

DEGREES:

Associate of Science:
Natural Science – Biology Concentration
Natural Science – Chemistry (BA Track) Concentration
Natural Science – Chemistry (BS Track) Concentration
Natural Science – Human Biology Concentration
Natural Science – Molecular Biology Concentration
Natural Science – Physiology Concentration
Natural Science – Wildlife Biology Concentration
Natural Science – Zoology Concentration

BUILDING CONTEXT

The LCCC ACC building has a central Multipurpose Commons Area which has symmetrically designed wings on either side of this space. At the southeast corner of each of these wings is an intersection of corridors that meet at an inside corner where the proposed classrooms would be placed.

The LCCC ACC building currently has an exterior patio area with exposed steel structure framing at the space where the propsed additons are being considered for location. The proposed locations already have very little slope and the impact to the site will be minimal, matching any new landscaping to the existing.

The exposed framing, storefront entrance, fixtures, and some exterior finished will need to be demolished prior to any construction. Some plantings and landscaping will also need to be redone around the new entrances that will be created.

EXISTING BUILDING DESIGN ELEMENTS

The main entrance into the building is a unique element to the existing building with high curved roof and volume, exposed glue laminated structure, and large expanses of glazing.

Incorporating similar elements into the design of the classroom additions would not only match the existing materials, but create forms that are of a similar nature to the entrance, highlighting the new classrooms as unique spaces, and creating bookends on the main facade of the building.

Existing exterior walls have courses of materials that can be reproduced in the appropriate locations to match the existing and further connect the addition to the existing building. The addition would look like it was part of the original building and meld seamlessly into the existing architectural design.

MATERIALS

Concrete Masonry Unit Veneer

EcoStar Synthetic Shingles

Sandstone Veneer

Stucco

CONCEPTS

After gathering and compiling the data provided by LCCC, two concepts were developed in order to generate a conversation about the physical look and functionality of the proposed addition.

Both concepts created additions in the same location with the primary difference being the classrooms orientation.

The three primary points or questions that arose from conversations about any concept were:

1. How does the addition impact the main entry elevation as one approaches the building?

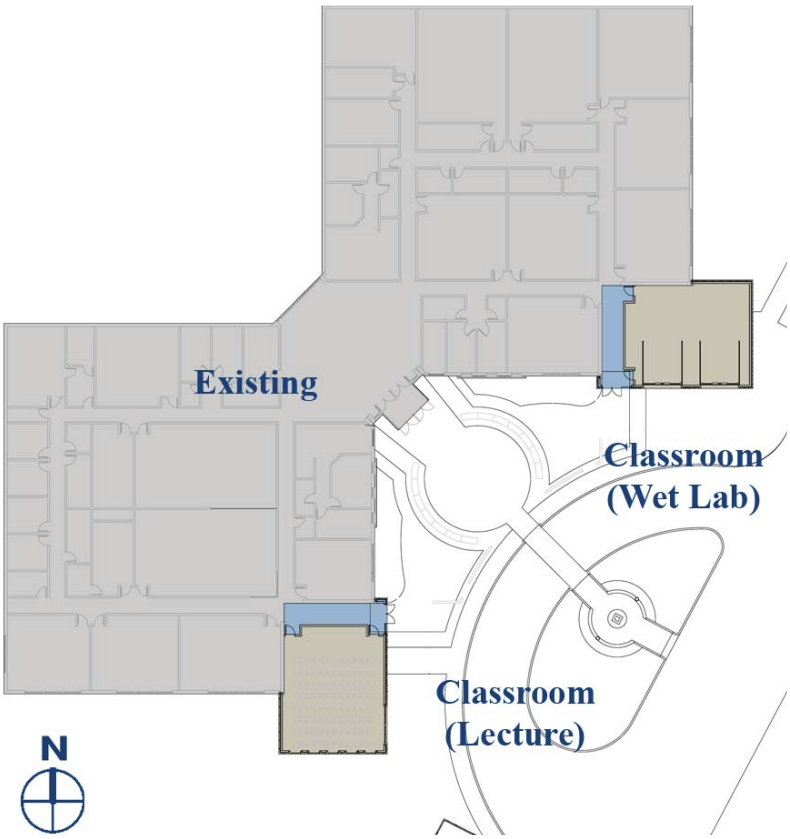
2. How does the addition impact the site circulation and function?

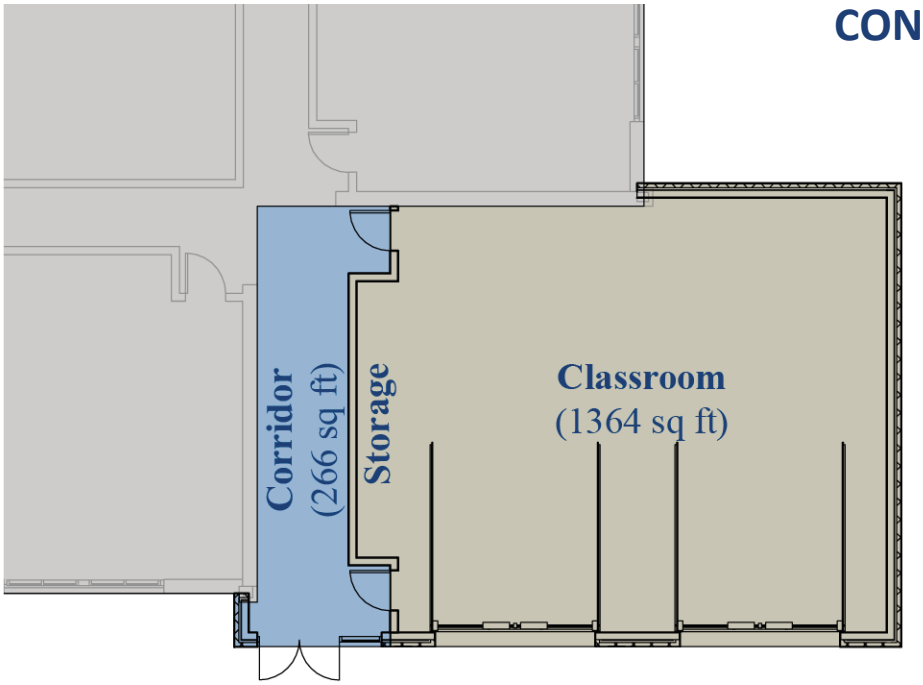
3. How does the addition interact with the canopies investegated in a previous study?

CONCEPT PLAN 1

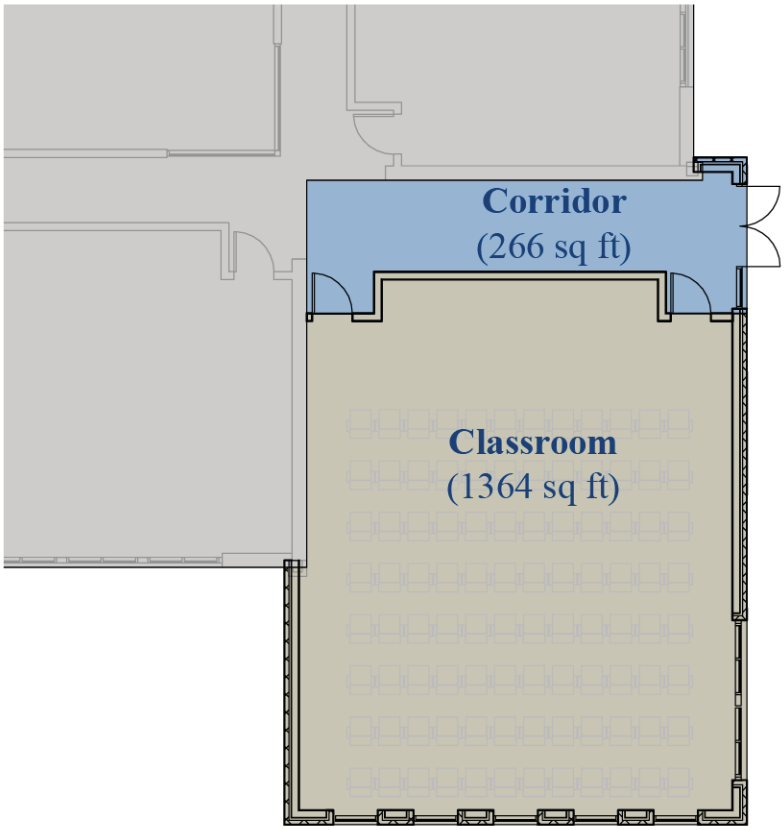
The intent of Concept 1 is to extend the proposed classrooms parallel to the existing walls on either side of the main entrance, leaving the patio area as open as possible. The Multi-Purpose Wet Lab space was chosen to be placed at the northern addition because of the adjacency to parking, making loading and unloading of projects and materials easier.

A previous study that Tobin & Associates completed with LCCC ACC involved canopies that were designed and placed near the location of the new exterior double doors that exit from each corridor. It was determined that developing drawings for this investigation with those canopies in mind would be the best course of action and would lead to a more unified product if/when both studies come to fruition. The canopies have not been incorporated into this study/plan but would provide a covered area outside of the walkway leading from the exit doors, and roof above the exit doors.



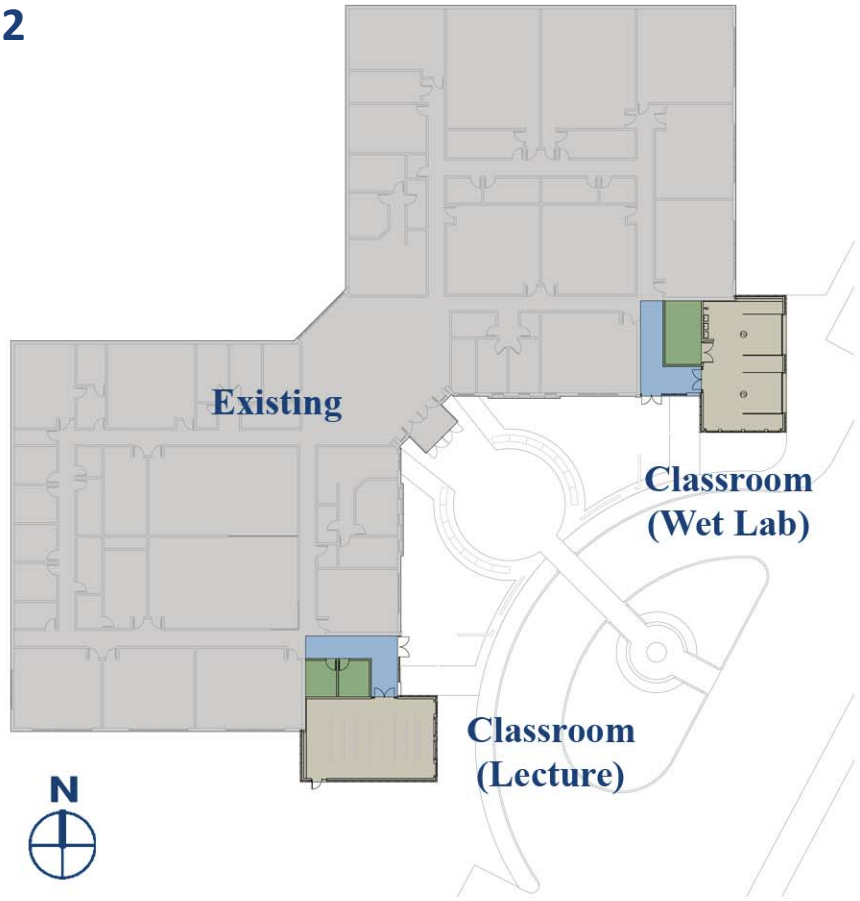


Classroom - Wet Lab (1630 sq ft)



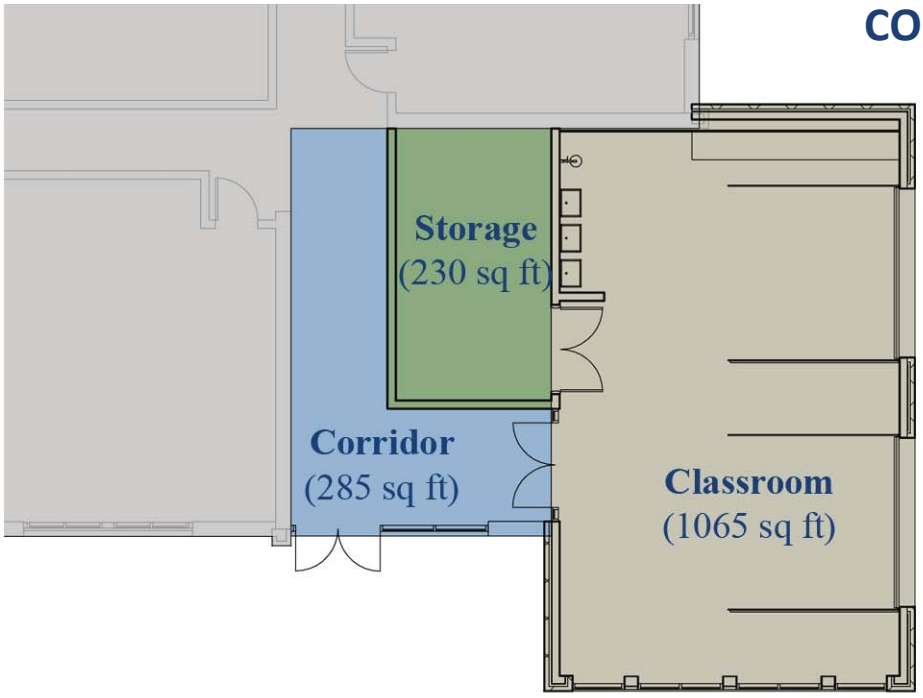
Classroom - Lecture (1630 sq ft)

CONCEPT PLAN 2

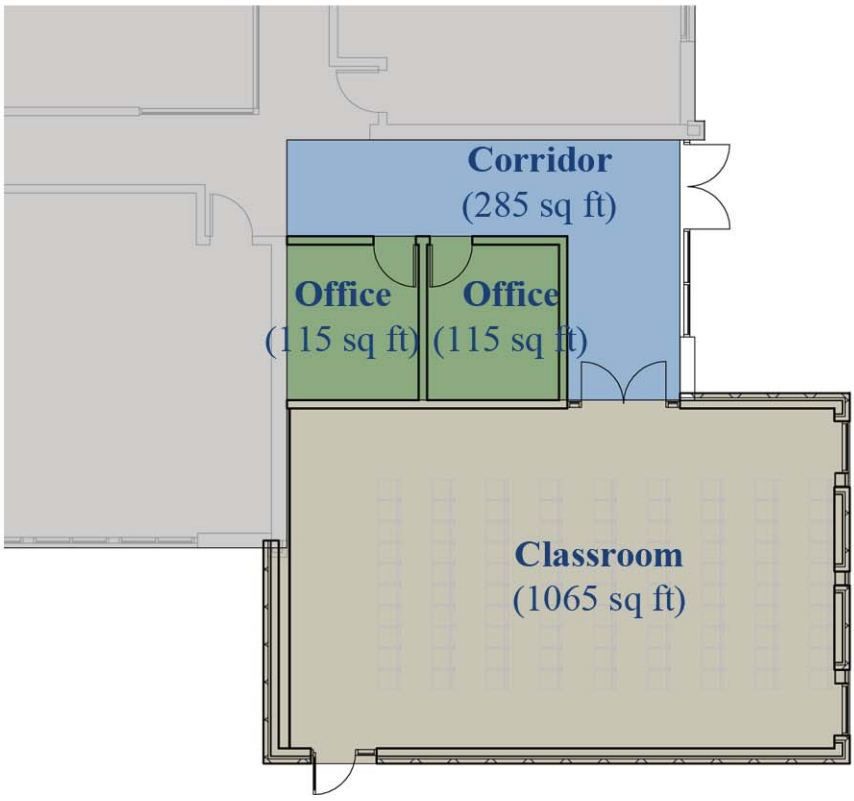


The intent of Plan 2 is to extend the proposed classrooms perpendicular to the existing walls on either side of the main entrance. This orientation cradles the patio area between the additions and creates an opportunity to incorporate future canopies into the interior corner this arrangement creates.

Outside of the Lecture Classroom, 2 small offices have been created as staffing requirements have increased along with the student population. Within the existing building, faculty have resorted to creating cubicles within break rooms and other spaces with room for a desk.

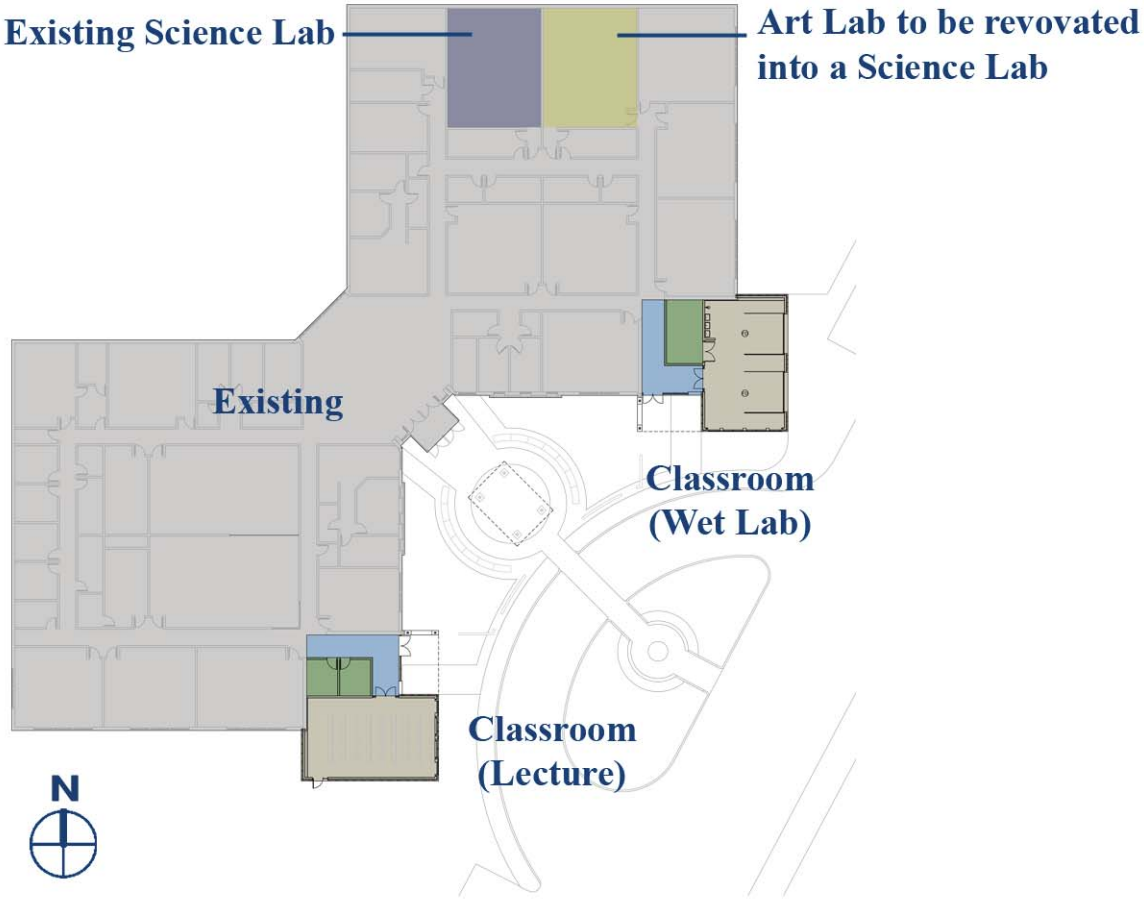


Classroom - Wet Lab (1580 sq ft)



Classroom - Lecture (1580 sq ft)

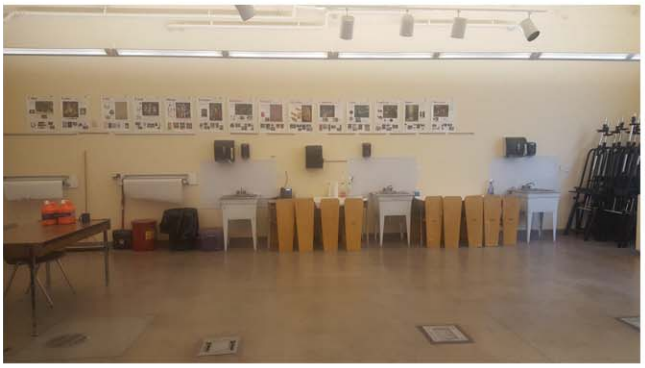
ART LAB RENOVATION



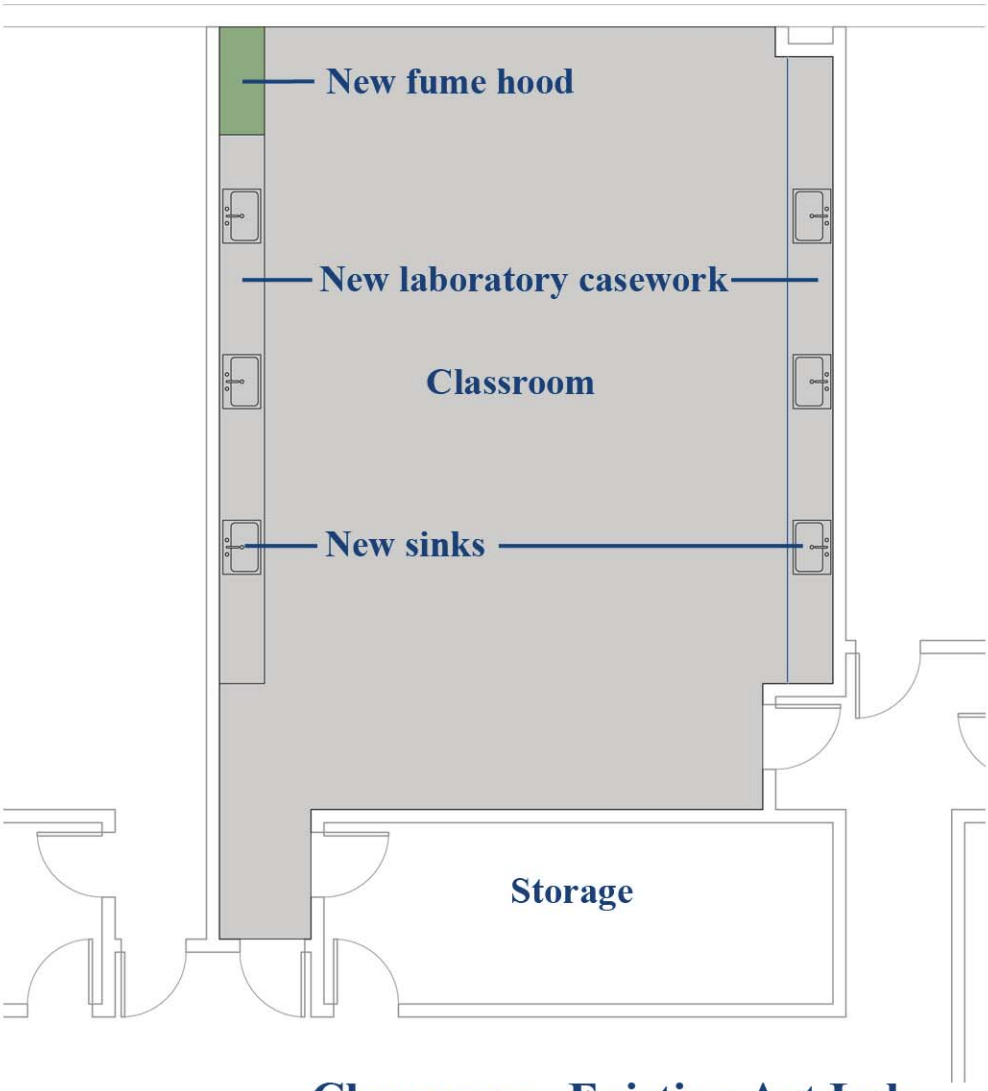
Renovation of the existing Art Lab to function as a Science Lab that can accommodate the additional proposed courses will be required to meete the needs of the College and to create a safe learning environment. In order to meet the needs of courses such as Biology or Chemistry, the following work will be done:

- Install a new fume hood
- Install new laboratory casework
- Install new sinks
- Install new safety shower and eyewash station

Existing West wall (Art)



Existing East wall (Art)



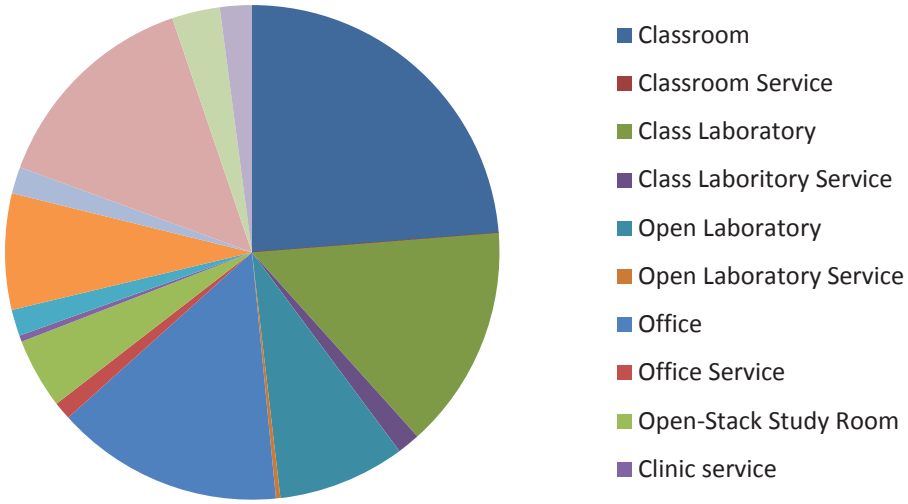
Classroom - Existing Art Lab renovated into Science Lab

Existing Science Room

Existing West wall (Science)

Space Use Code Dispersion in Existing Building

Room #	Room Name/Description	Sta.	Area by Category Code															
			110	115	210	215	220	225	310	315	430	545	660	650	710	WWW	XXX	YYY
			Classroom	Classroom Service	Class Laboratory	Class Laboritory Service	Open Laboratory	Open Laboratory Service	Office	Office Service	Open-Stack Study Room	Clinic service	Merchandising	Lounge	Central Computer	Circulation	Building Service	Mechanical
HW	Hallways/Circulation															3629		
000	Lounge													1694				
100A	Administrative Suite	1							378									
100B	Office	1							176									
100C	Office	1							201									
100D	Storage									100								
100E	Office								100									
101	Toilet																50	
102	Lounge													250				
102A	Office								58									
102B	Office								58									
103	Electrical Room																	164
104	Classroom	21	648															
105	Classroom	26			1063													
106	Science Storage/Prep					191												
107	Wiring Closet																	92
108	Women's Restroom																148	
109	Men's Restroom																149	
110	Classroom	26			1063													
111	Art Storage/Prep					191												
112	Mechanical Room																	93
113	Compressed Video/Computer Lab	25	857															
114	Classroom	21	668															
115	Classroom	21	678															
116	Classroom	21	670															
117	Computer Lab	25			807													
118	Computer Lab	25			807													
119	Custodial Closet																52	
120	Office	1							154									
121	Office	1							146									
122	Office	1							150									
123	Storage									125								
200A	Student Services	1							347									
200B	Office	1							198									
200C	Office	1							177									
200D	Storage									75								
200E	Office	1							78									
201	Toilet																50	
202A	Teaching and Learning Center	25									1177							
202B	Teaching and Learning Center	25					1177											
202C	Student Success Center	12					524											
202D	Storage							75										
203	Bookstore												436					
204	Compressed Video Classroom	26	740															
205	Classroom	21	546															
206	Classroom	21	645															
207	Server Room														450			
207A	Wiring Closet																	93
208	Office	1							113									
209	Office	1							157									
210	Men's Restroom																148	
211	Office	1							157									
212	Women's Restroom																148	
213	Office								157									
214	Mechanical Room																	95
215	Office								157									
216	Office								100									
217	Test Center						431											
218A	Test Center								114									
218B	Test Center											108						
219	Classroom		623															
220	Custodial Closet																54	
221	Office								156									
222	Office								148									
223	Office								145									
224	Office								187									
			110	115	210	215	220	225	310	315	430	545	660	650	710	WWW	XXX	YYY
			Classroom	Classroom Service	Class Laboratory	Class Laboritory Service	Open Laboratory	Open Laboratory Service	Office	Office Service	Open-Stack Study Room	Clinic service	Merchandising	Lounge	Central Computer	Circulation	Building Service	Mechanical
	Totals by Category Code		6075	0	3740	382	2132	75	3812	300	1177	108	436	1944	450	3629	799	537
	% of Total Building Area		23.73%	0.00%	14.61%	1.49%	8.33%	0.29%	14.89%	1.17%	4.60%	0.42%	1.70%	7.59%	1.76%	14.18%	3.12%	2.10%
	Total Building Area		**25596**															
	Total Sta.		**354**															



Space Use Code Dispersion with Proposed Addition

Room #	Room Name/Description	Sta.	Area by Category Code															
			110	115	210	215	220	225	310	315	430	545	660	650	710	WWW	XXX	YYY
			Classroom	Classroom Service	Class Laboratory	Class Laboritory Service	Open Laboratory	Open Laboratory Service	Office	Office Service	Open-Stack Study Room	Clinic service	Merchandising	Lounge	Central Computer	Circulation	Building Service	Mechanical
HW	Hallways/Circulation															4241		
000	Lounge													1694				
100A	Administrative Suite	1							378									
100B	Office	1							176									
100C	Office	1							201									
100D	Storage									100								
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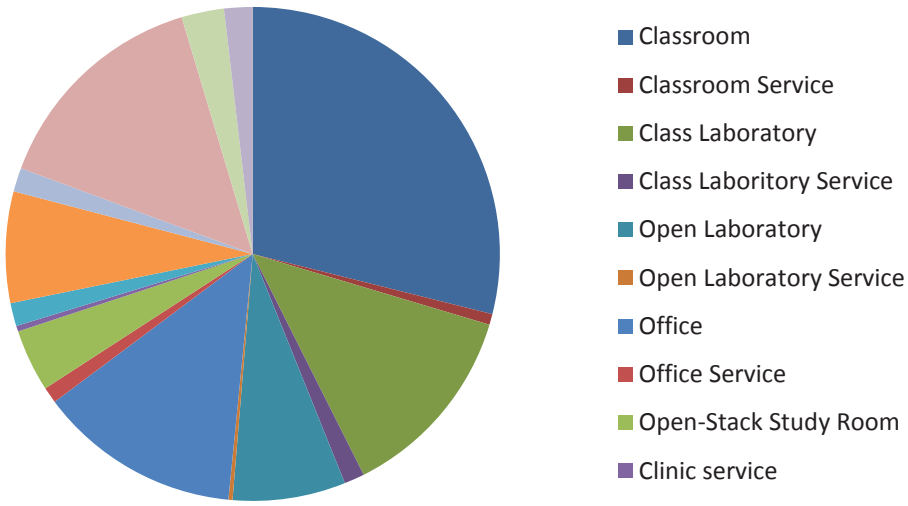
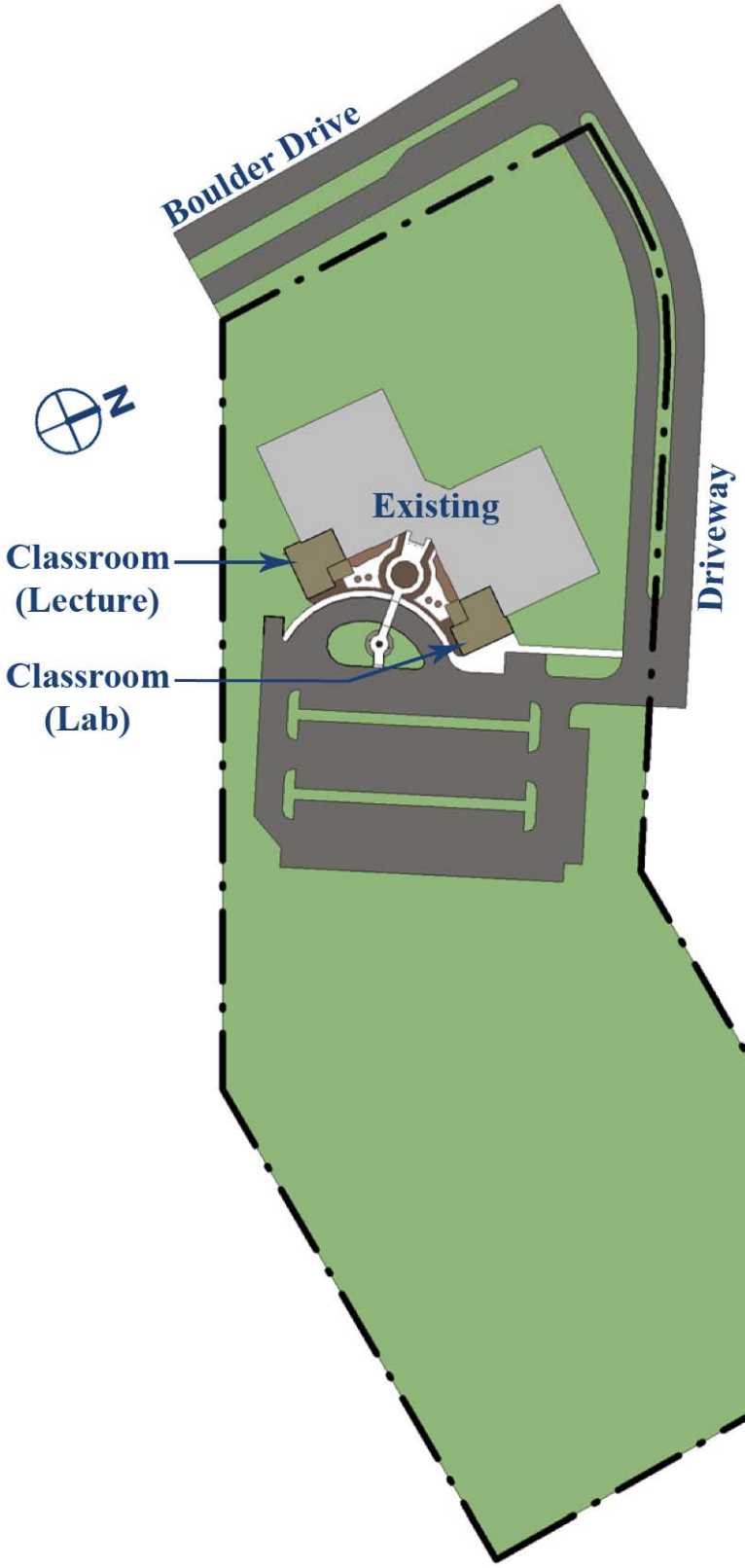
224	Office								187									
124	Classroom		973															
124A	Storage			198														
225	Classroom		973															
226	Office								200									
			110	115	210	215	220	225	310	315	430	545	660	650	710	WWW	XXX	YYY
			Classroom	Classroom Service	Class Laboratory	Class Laboritory Service	Open Laboratory	Open Laboratory Service	Office	Office Service	Open-Stack Study Room	Clinic service	Merchandising	Lounge	Central Computer	Circulation	Building Service	Mechanical
	Totals by Category Code		8021	198	3740	382	2132	75	4012	300	1177	108	436	1944	450	4241	799	537
	% of Total Building Area		28.09%	0.69%	13.10%	1.34%	7.47%	0.26%	14.05%	1.05%	4.12%	0.38%	1.53%	6.81%	1.58%	14.85%	2.80%	1.88%
	Total Building Area		28552															
	Total Sta.		354															

NOTE: Green highlights indicate added rooms or increases to existing space



ENVIRONMENTAL CONSIDERATIONS AND CONSTRAINTS



Site Plan

The classrooms being added will not cause any major disruption of site activities such as parking or students entering the building at the main entrance.

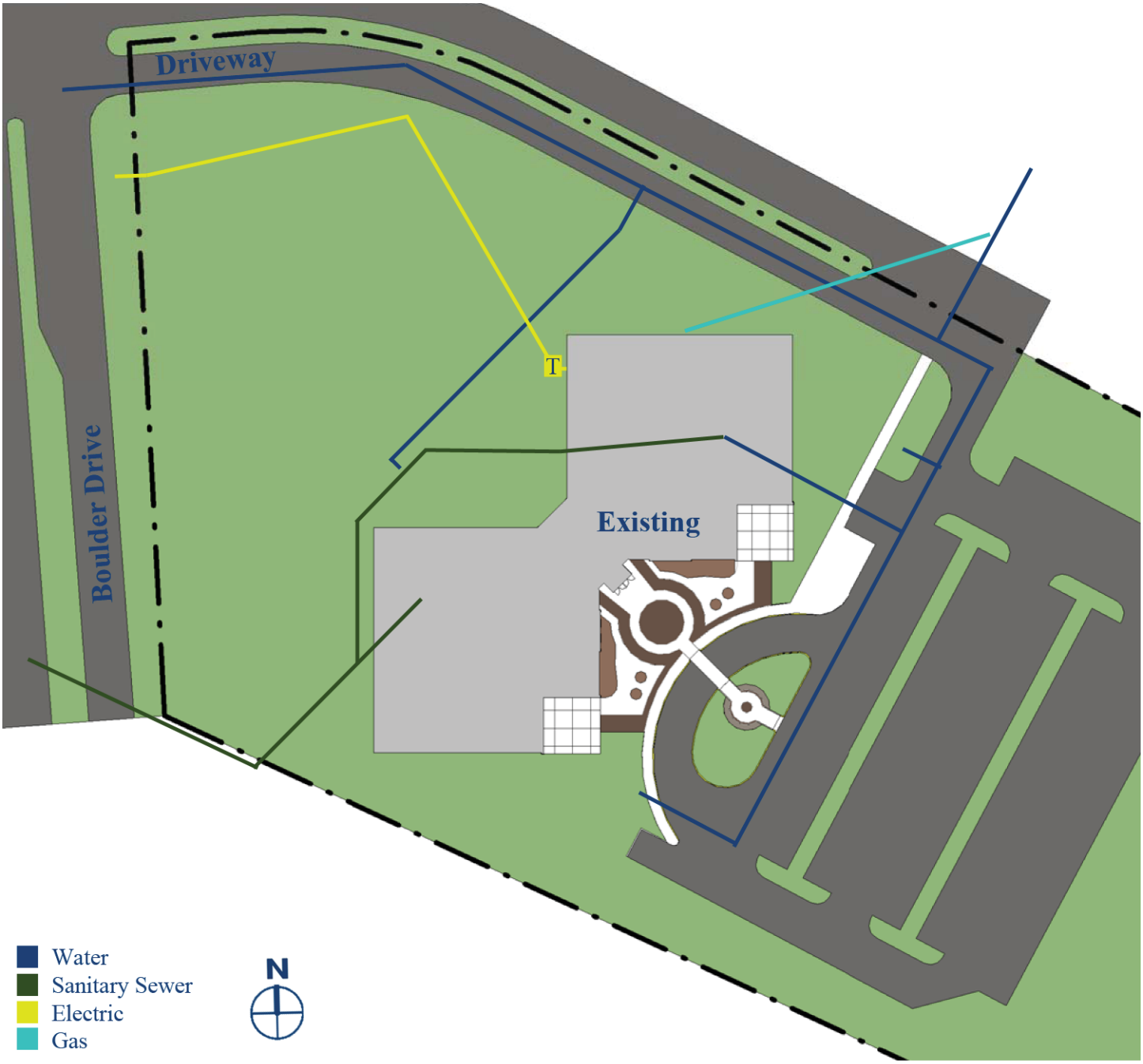
Considerations during construction for emergency exiting requirements would need to be addressed while the existing exits would be unusable.

Open space on site should provide adequate staging area for the contractor during construction.

GIS mapping shows that this site is not within a flood plane.

Subsurface Conditions: Pursuant to the Geotechnical Report dated 12/6/2001 by Terracon, no groundwater was present, and the structure may be supported upon conventional spread footings. Ref. pg 4 of report in appendix.

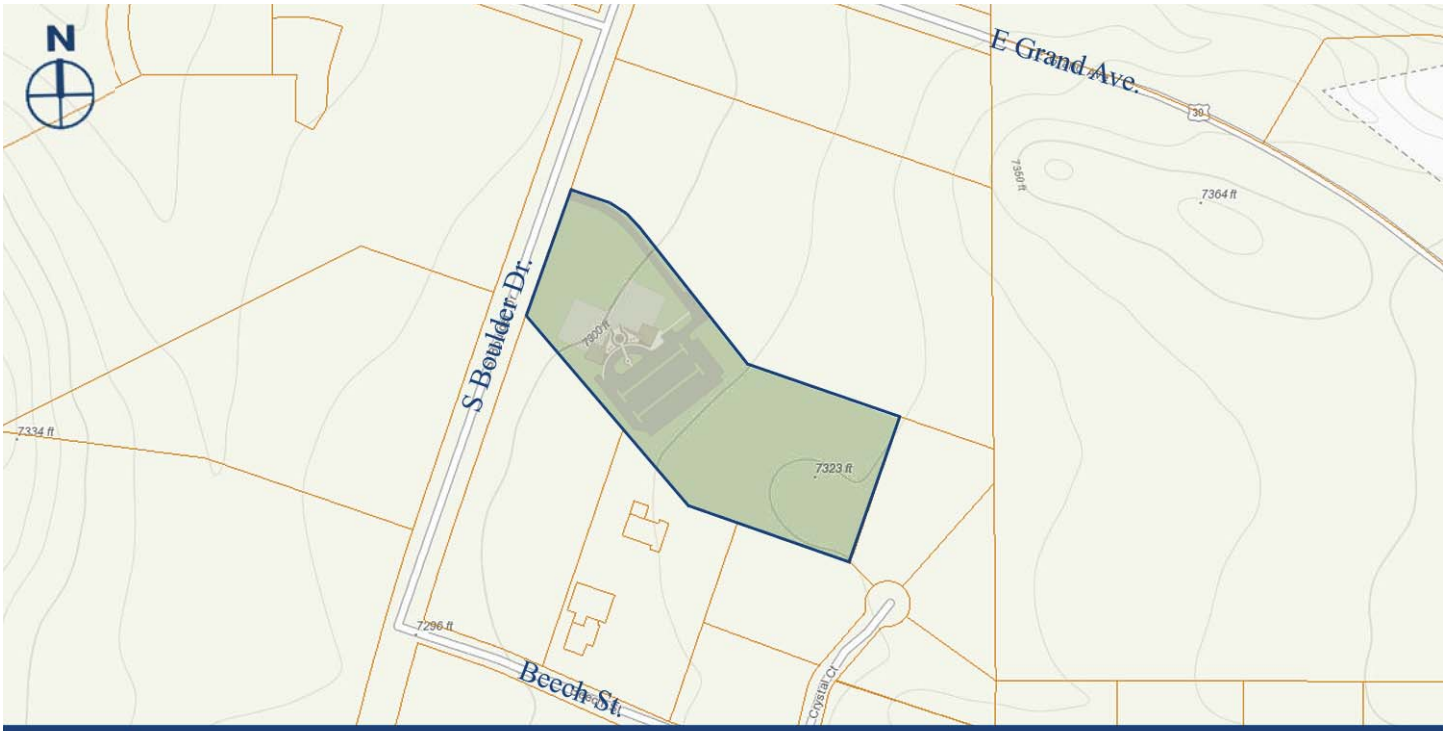
Utility Plan



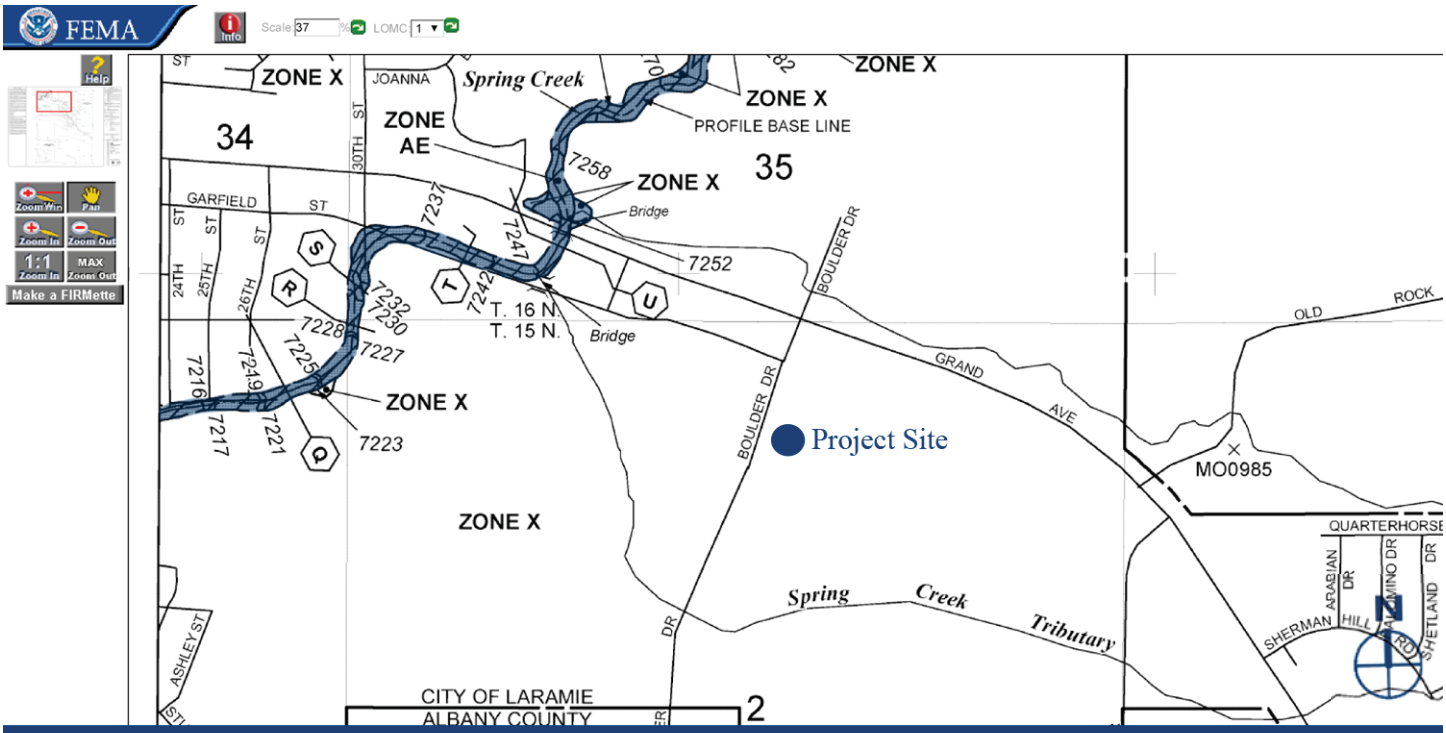
All necessary utilities are already on site and being utilized by the existing building. Due to the small extent of the additional classrooms, mechanical, electrical, and plumbing system investigations have determined that all utilities required by the addition can be achieved by connecting to the existing building systems. See the MEP Narrative for more information.

GIS MAPPING

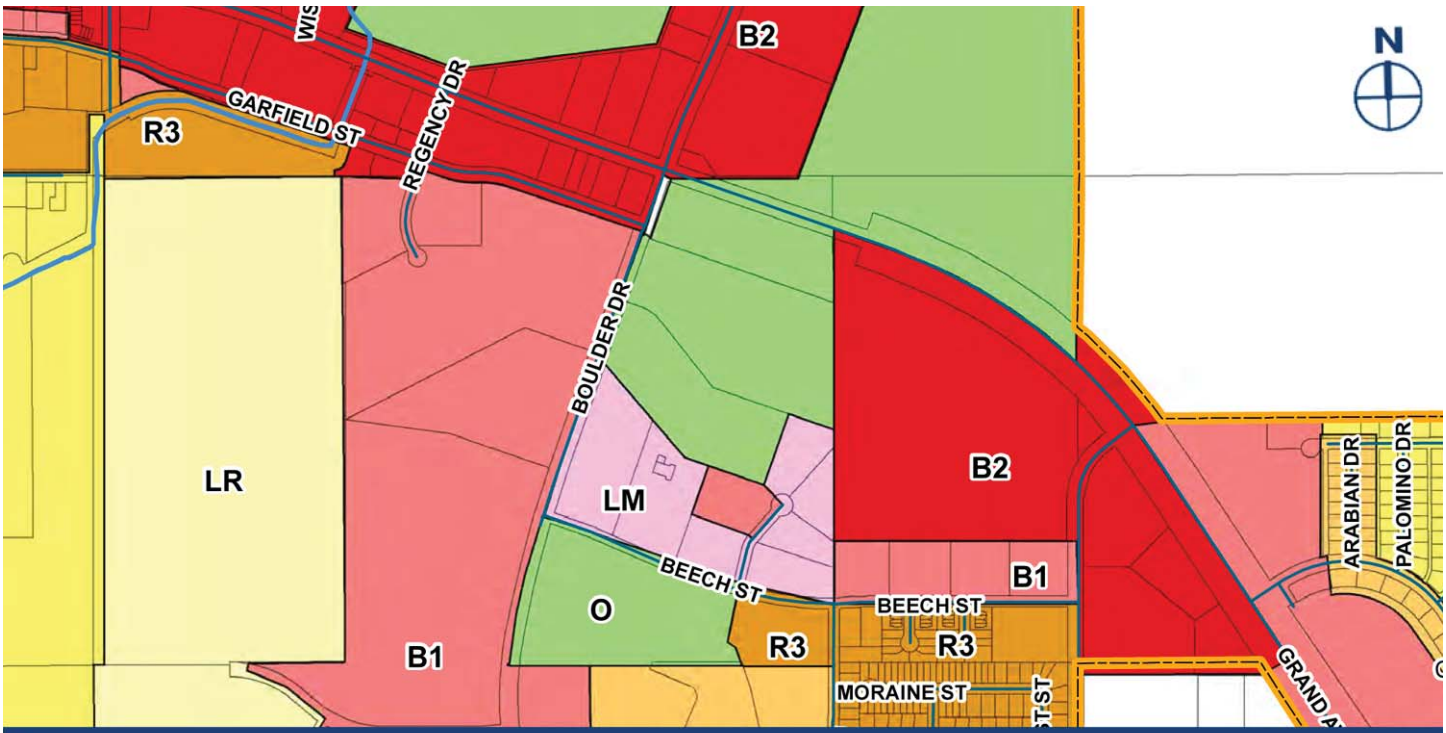
Aerial



Topography



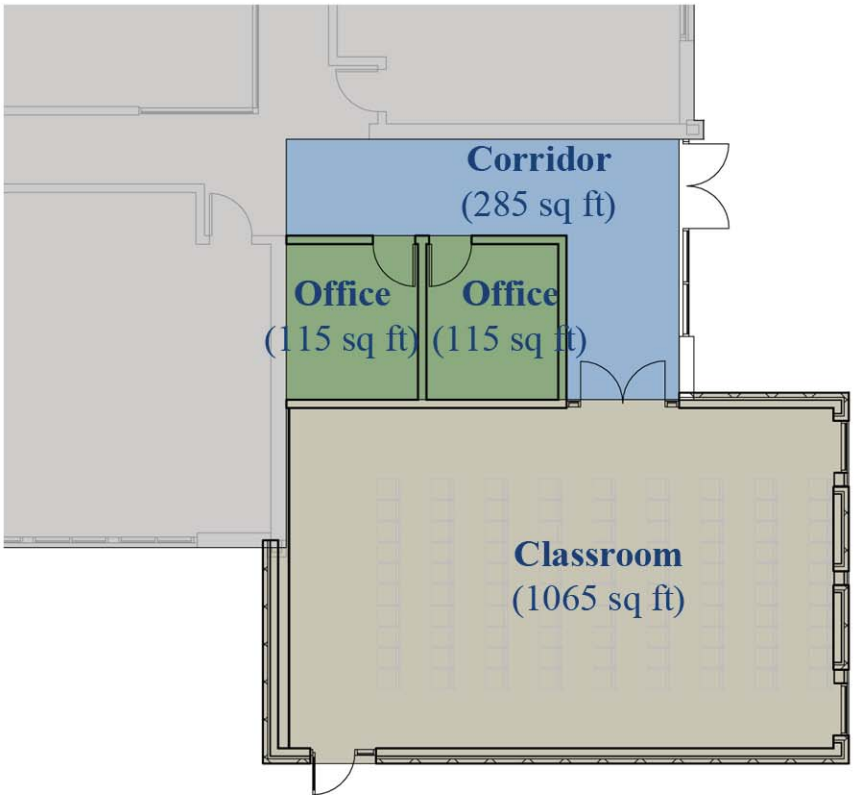
Flood Zone



Zoning

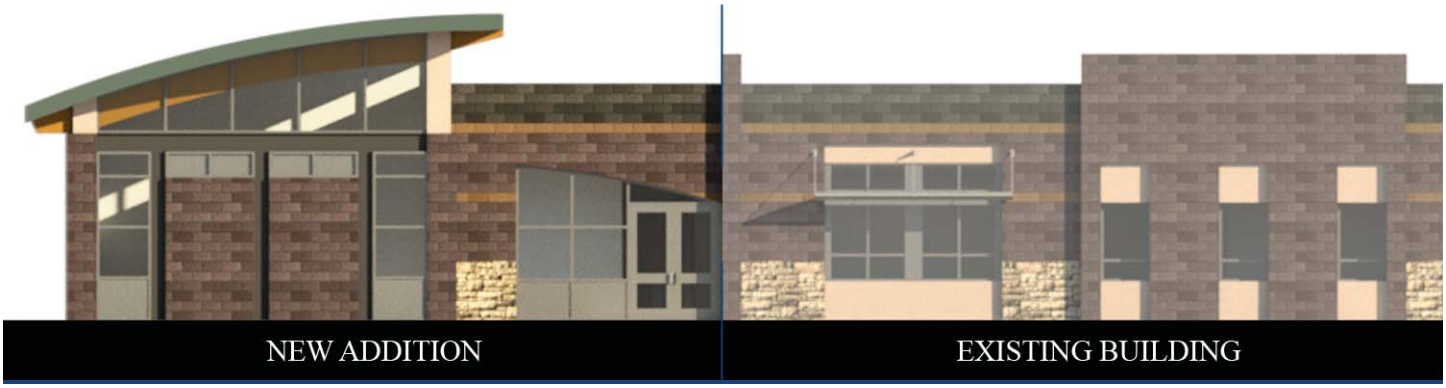
LEVEL TWO STUDIES

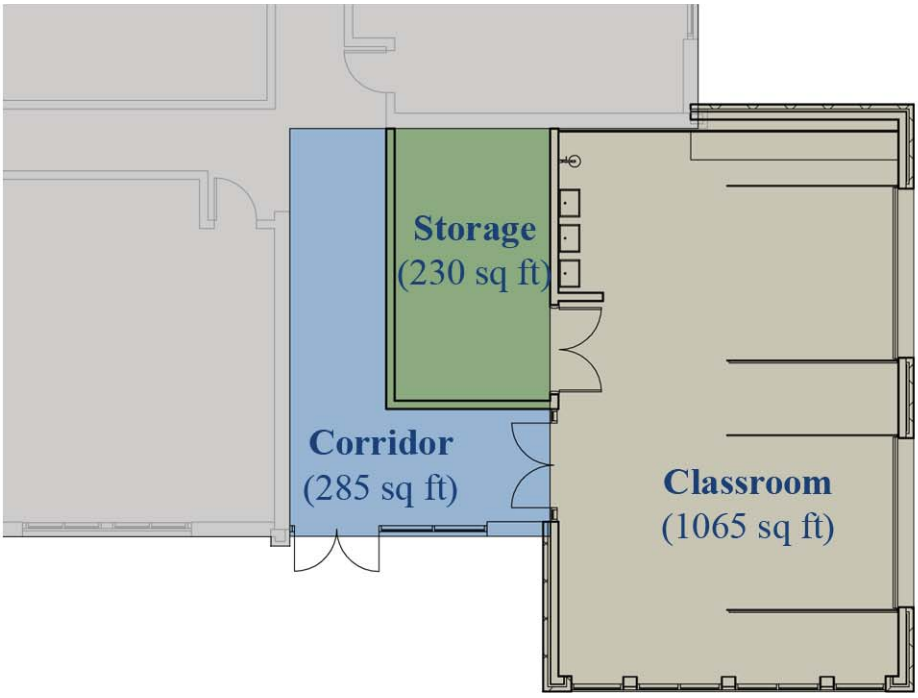
After reviewing Concept Plans 1 & 2, LCCC study participants directed the design team to continue developing and provide cost estimation for Concept Plan 2. This plan was chosen for the opportunities of added storage and additional office space, incorporation of the canopies that are being investegated as part of a separate study, classroom orientation and the effect on the plaza/patio space, and the aesthetic of the curved roof lines which bookend the elevations of the building and reflect similar structural and design elements that are seen in the existing main entry.



Classroom - Lecture (1580 sq ft)

EAST ELEVATION

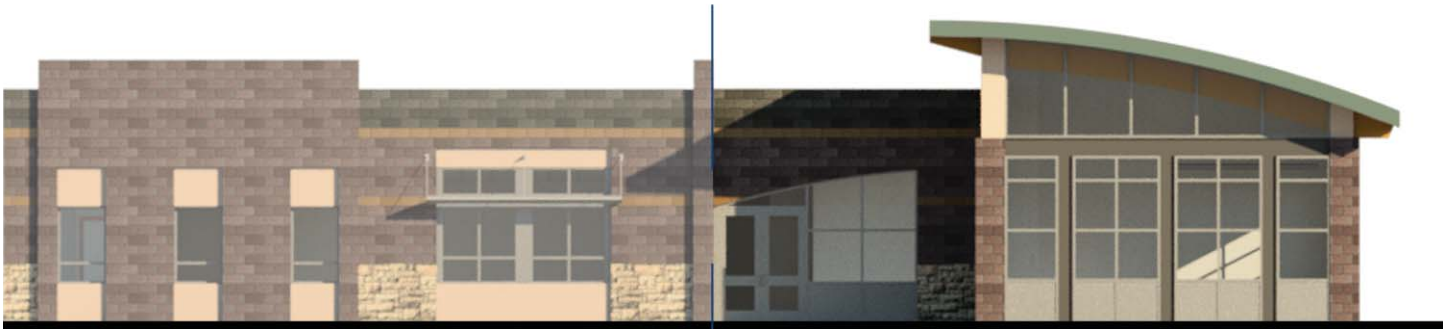




Classroom - Wet Lab (1580 sq ft)

N

SOUTH ELEVATION



PERMITTING

The following permits will be required (see appendix for copies of the forms):

City of Laramie
Building Permit and Plan Review

State of Wyoming Fire Marshal
Plan Review

Wyoming Department of Environmental Quality
Notification of Demolition and Renovation

Information regarding the results of asbestos and other hazardous materials testing will be required for these forms.

INTERNATIONAL BUILDING CODE (IBC) SQUARE FOOTAGE ALLOWANCE

Per the 2015 IBC, a Type 5B fully sprinklered construction with a B occupancy classification, the maximum square footage allowed is 36,000 square feet. The existing building is approximately 26,600 square feet and with the proposed classrooms the total would be 30,100 square feet, well below the maximum allowed.

ARCHITECTURAL SYSTEMS

EXTERIOR WALLS
The exterior wall construction will be comprised of wood stud framing with a combination of batt and rigid insulation to meet International Energy Conservation Code (IECC) guidelines as adopted by the City of Laramie. Exterior wall finishes will include concrete masonry units veneer, sandstone veneer, EcoStar synthetic shingles, stucco, glazing, and exposed painted steel to match the size, color, and texture of existing materials.

CURVED GLUE LAMINATED BEAMS
A design element seen in the existing main entry is the curved glulam beam roof structre is being used over the new classrooms as well. This element ties back to the existing design and provides a softer edge to the "bookend" that these classrooms create.

ROOF SYSTEM
An insulated roof system will be installed over the glulam beam system with metal roof panels, metal fascia, and metal soffit panels that will match existing materials.

STRUCTURAL SYSTEMS

PROJECT DESCRIPTION

The goal of the LCCC Albany County Campus Classroom Addition project is to provide additional classroom, laboratory instructional, and office spaces to accommodate growing enrollment and the future needs of the campus. The project will consist of two separate, one-story additions, each adjoining the existing building.

The structure for each of the additions is assumed to be nearly identical. Cast-in-place concrete foundations will support the light framed wood walls and the wood framed roofs above.

This structural narrative, and its associated sketches, describe the structural systems anticipated at this time. The narrative includes information relating to: design criteria, loading conditions, materials used during construction, and brief descriptions of each of the major structural systems. The sketches illustrate preliminary foundation and framing schemes, as well as identifying preliminary foundation and framing sizes.

DESIGN CRITERIA& LOADING

The design for this project will be based off of the following Codes and Standards:

- 2012 International Building Code (IBC)
- ASCE 7-10 – 'Minimum Design Loads for Buildings and Other Structures'
- ACI 318-11 – 'Building Code Requirements for Structural Concrete'
- AISC 360-10 – 'Specification for Structural Steel Buildings'
- NDS 2012 – 'National Design Specification for Wood Buildings'

The design loading for this project will be based on the following loading and design criteria:

1. Gravity Loads
   a. First floor & first floor corridors = 100psf
   b. Roof live load = 20psf
   c. Flat roof snow loads = 30psf + drift loading by location
2. Wind Design Criteria
   a. Risk Category = III
   b. Basic Ultimate Wind Speed = 115 mph
   c. Basic Nominal Wind Speed = 89 mph
   d. Exposure Category = C
   e. Internal Pressure Coefficient = ± 0.18
3. Seismic Design Criteria
   a. Risk Category = III
   b. Seismic Importance Factor = 1.25
   c. Site Class = TBD
   d. Seismic Design Category = TBD
   e. Seismic Force Resisting System = Light Framed Wood Walls w/ Wood Structural Panel Sheathing

GEOTECHNICAL

The foundation recommendations contained within this narrative are based on the geotechnical report prepared for the original construction of the LCCC ACC campus, as well as the existing building's structural drawings; the original geotechnical report was prepared by Terracon Consulting Engineers in 2004 (Terracon Report #24045077, see Appendix). ESD recommends that a supplement, specific to this project, be prepared prior to the commencement of design. These foundation recommendations are subject to change based on the findings of the supplement.

1. Preliminary Foundation Design Criteria
   a. Allowable Bearing Pressure = 3000psf
   b. Frost Depth = 42 in

MATERIALS

1. Concrete & Reinforcing Materials
    a. Footings & Foundations = 4500psi
    b. Slabs-on-Grade = 3500psi
    c. Typ Reinforcing = ASTM A615 Gr. 60, 60ksi
2. Structural Steel Materials
    a. Wide Flange = ASTM A992, 50ksi
    b. HSS = ASTM A500 Gr. B, 46ksi
3. Cold-Formed Metal Framing Materials
    a. Metal Roof Deck = ASTM A1008, 33ksi
4. Wood Materials
    a. Framing Lumber = Hem-Fir#2
    b. Glu-Laminated Beams = Douglas-Fir 24F-V4
    c. Wall Sheathing = APA Rated, Exposure 1
    d. Roof Decking = Douglas-Fir #1 T&G

FOUNDATIONS

1. At this time, it is anticipated that a conventional, cast-in-place concrete, shallow foundation system will be used to support the both of the additions and their exterior canopies.
    a. Typical reinforced strip footings are estimated at 2'-0"W x 1'-0"d.
    b. Foundation walls (or grade beams) adjacent to the existing structure are anticipated to be 8"W – 12"W.
    c. Foundation walls supporting masonry veneer are estimated to be 14"W.
    d. Footings and foundation walls will be isolated from the existing building's foundation to prevent unintended load transfer to, and/or unexpected settlements of, the existing foundation.
2. 4" thick reinforced slabs-on-grade will be placed for the floors of both additions.
    a. Reinforcing is anticipated to be #3 at 18"OC, each way.
    b. The slab will be placed over a subgrade surface prepared in accordance with the updated geotechnical report.

EXTERIOR WALL SYSTEM

1. The light framed wood wall system will act to carry both gravity loads (i.e. – dead, live & snow) as well as lateral loads (i.e. – wind & seismic) to the foundation. Wood framed walls will be sheathed with wood structural panels.
    a. 2x6 wood walls are anticipated for use adjacent to the existing building.
    b. 2x8 wood walls are anticipated for use for all walls supporting masonry veneer.

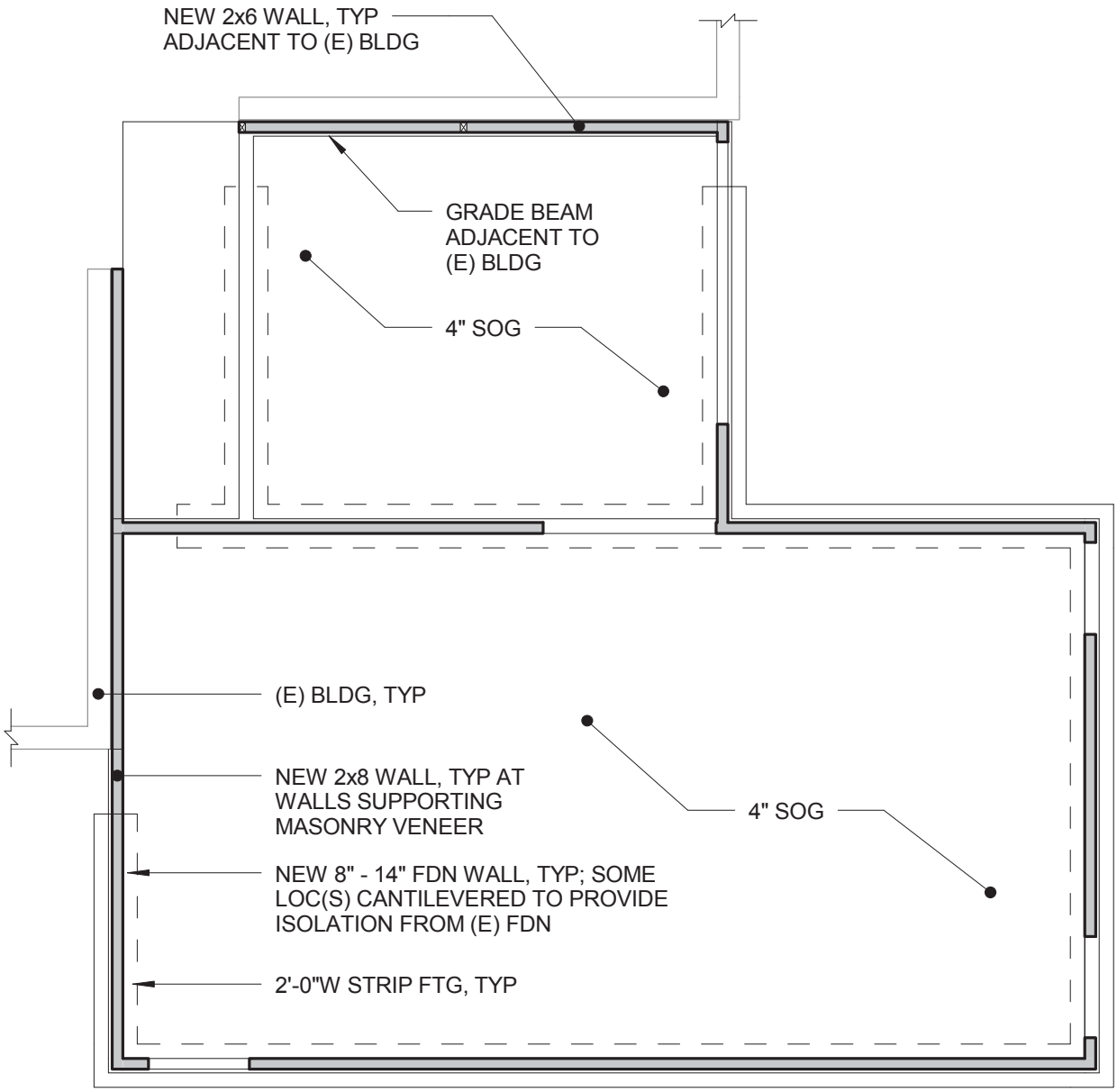
ROOF FRAMING SYSTEM

1. Heavy timber roof framing over the classrooms will be constructed using curved glulam beams supported on built-up wood columns located within the wood framed bearing walls below.
    a. 24"d curved GLB's
    b. 3" metal roof deck, 20ga.
2. A light framed wood roof will be constructed over the office spaces adjacent to the existing building using TJI roof joists. Plywood roof sheathing will span between the roof joists.
    a. 16"d TJI's at 24"OC
    b. 40/20 APA Rated Roof Sheathing

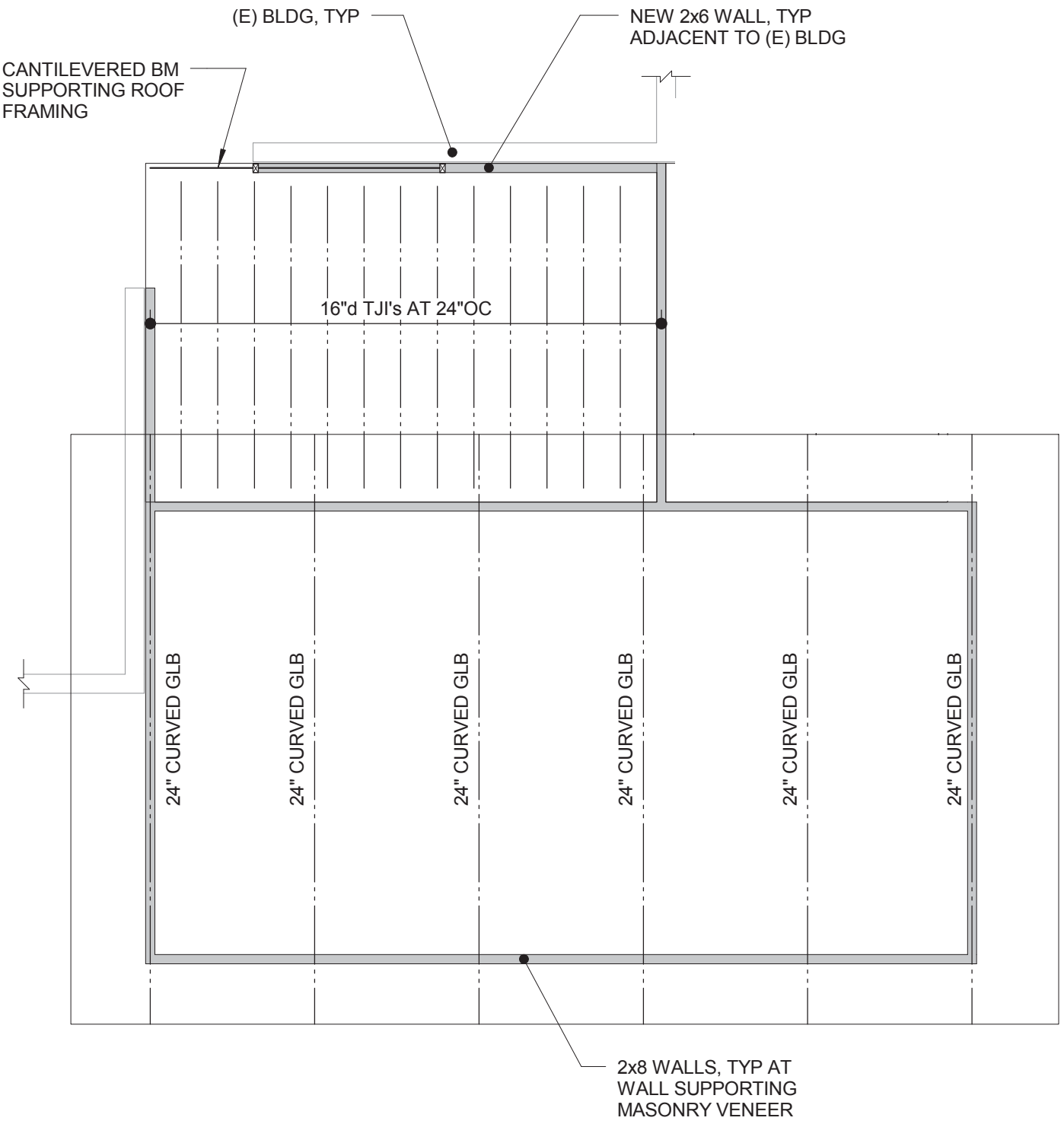
SPECIAL CONSIDERATIONS

1. Exterior Canopies
    a. Heavy timber canopy framing will be constructed using curved glulam beams supported on structural steel beams and columns. Isolated footings will be located at steel columns.
        i. HSS4x4 Steel Columns
        ii. W12 Steel Beams
        iii. 16”d curved GLB
        iv. 3” metal roof deck, 20ga.
2. Special Inspections
    a. Special inspections and testing, as required by the 2012 IBC, will be required unless exempted by the building official.

FOUNDATION PLAN



ROOF FRAMING PLAN



MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS

Fire Protection:
The new classrooms and canopies will be provided with an automatic fire suppression system that will connect to the existing system. The fire sprinkler system will be designed and installed per NFPA 13, applicable building and fire codes, local building and fire department requirements. Canopies will have a dry pendant head for freeze protection

Plumbing:
Plumbing systems will tie into the existing building domestic water and waste systems. A new 4" waste line from the 'Classroom Lab' will be connected to the existing waste piping in Janitor E122. Invert elevations will need to be confirmed. At this level of design we are assuming the waste lines will have sufficient fall to connect. A new 40 gallon water electric water heater will be installed in the storage room to serve the classroom sinks. Each sink will have a plaster trap. A 1" domestic water line will be extended to the new addition and connect into the water heater and sinks.

Heating, Ventilating and Air-Conditioning:
The new classrooms will each have new condenser water piping that will connect at the manifold in the existing mechanical room and route to each new heat pump. Each classroom will have 1 water/air heat pump for HVAC. New corridor entries will have a cabinet unit heater. Existing ductwork and air distribution modifications will be required in areas where remodeling will take place.

Ventilation/exhaust:
The 'Lecture Classroom' will be connected to the existing OA unit for ventilation air. The 'Classroom Lab' will have an exhaust fan with a dedicated gas fired Make up Air Unit (MAU) on the roof that will feed ventilation air to the heat pump for the space.

Controls Statement of Work:
New controls will connect to the existing central DDC system and be mapped into the graphics.

Electrical:
Fire Alarm:
New horn and strobes shall be added to the new rooms and connected to the existing system. Since the addition/remodel is to less than 50% of the overall existing area, the existing system will not need to be upgraded to a voice evacuation system.

New Lecture Classroom:

Power Distribution:

Power to the new west lecture classroom will be provided from a new 42 position100A panel that will be a second section to an existing 200A panel, “WC”. Power will be provided to new smartboards at the front of the classroom with short-throw projectors; in addition, the new panel will feed the classroom control console and a floor box for the professor’s lectern. Convenience receptacles will be provided evenly spaced around the classroom. New mechanical heat pumps serving the space will be powered from the new panel section. The new remodeled corridor and lounge space will have convenience receptacles installed at even intervals to serve space.

Data/Comm/AV:

The classroom space will utilize two-port RJ-45 Data Jack with Voice and Data connectivity. Data Cabling shall be installed such that sufficient whip length available to relocate the cabling between the ports as necessary. Voice and Data will utilize CAT6 cabling and TIA-568C Terminations. Faceplates will be labeled with IDF Room where terminated and ports identified to patch panels.Wall mounted faceplate and floor box at lectern for smart board interface will be provided.

Lighting:

The room will be lit from new indirect, LED, pendant mounted fixtures to meet IECC standard lighting levels. Lighting control will be handled by low-voltage switches and occupancy sensors, with daylighting zones. Lighting will be divided into two zones, one for the teaching wall and one for the rest of the classroom that can be independently controlled. The remodeled corridor space will have new 2’x4’ LED troffers installed that tie into the existing corridor controls and selected to best match existing lighting. The new exterior canopy will have new LED recessed down lights to provide required egress lighting. Exit signs and emergency lighting will be provided as required.

New Art Classroom:

Power Distribution:

Power to the new east art classroom will be provided from a new 100A 42 position panel that will be subfed from panel “EE” and located in the main electric room. Power will be provided to new smartboards at the front of the classroom with short-throw projectors; in addition, the new panel will feed the classroom control console. Convenience receptacles will be provided evenly spaced around the classroom. Specialty power will be provided to any owner provided equipment as required.

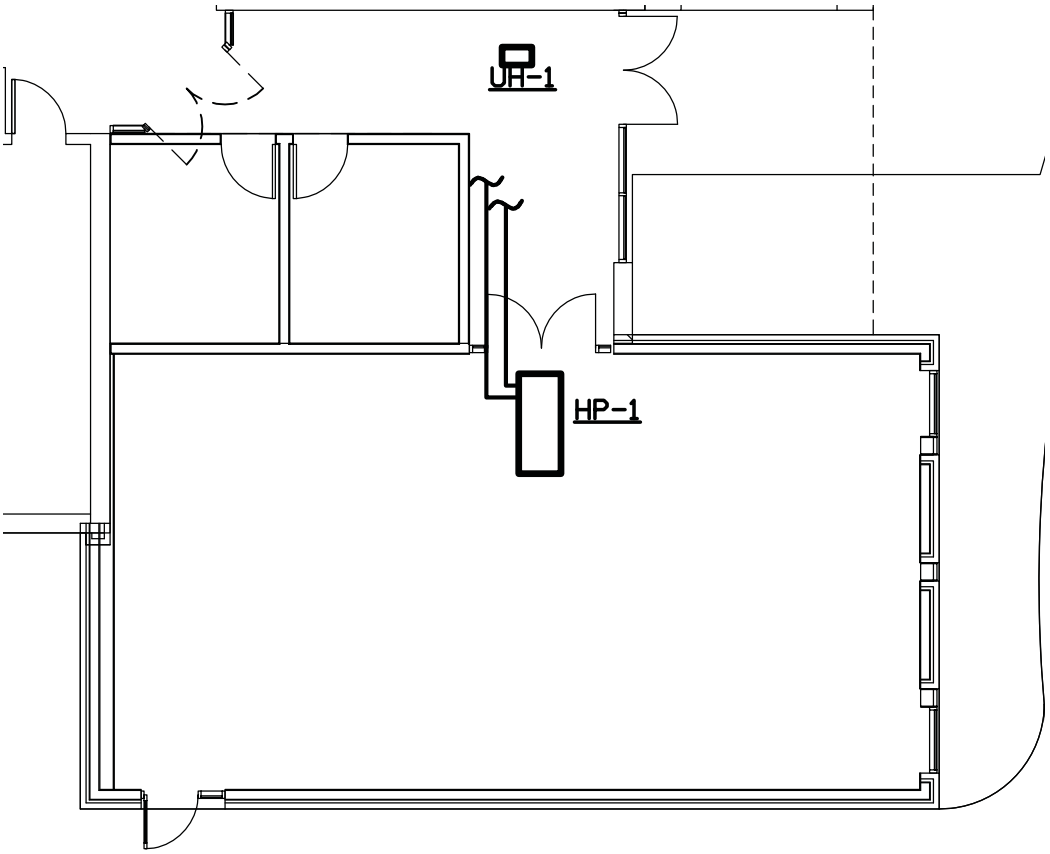
Data/Comm./AV:

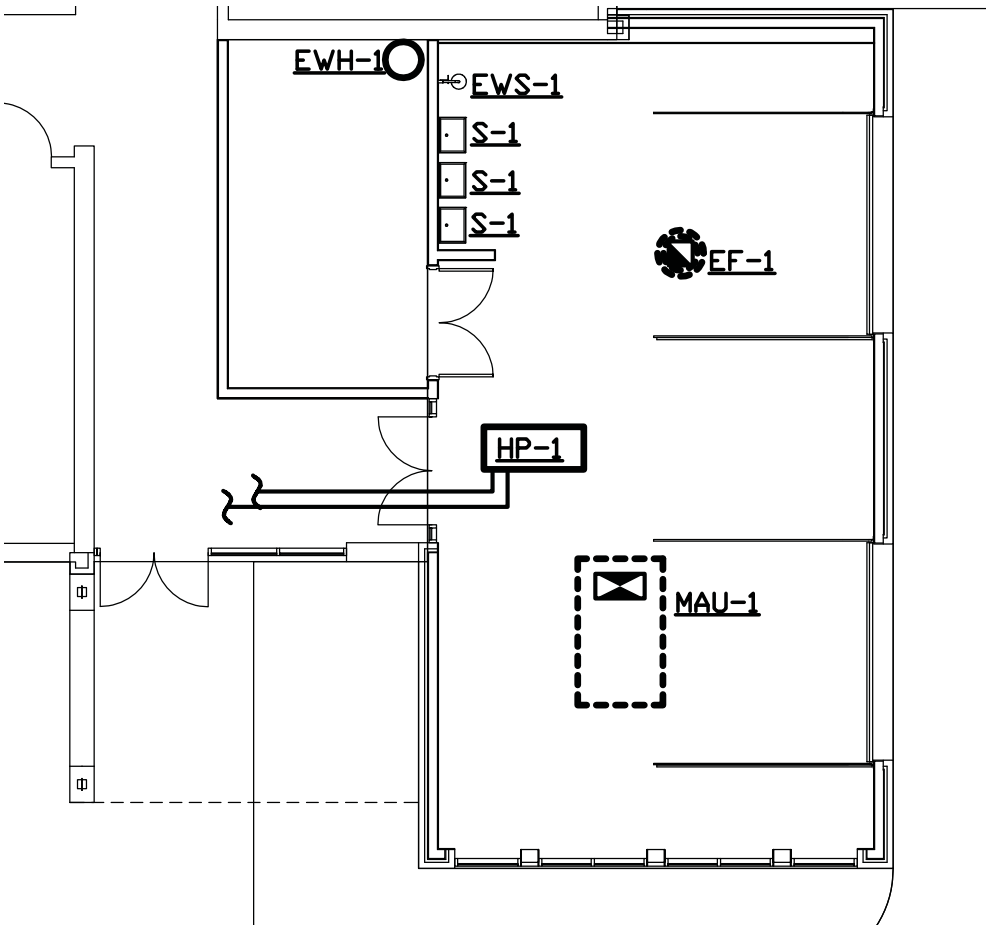
The classroom space will utilize two-port RJ-45 Data Jack with Voice and Data connectivity. Data Cabling shall be installed such that sufficient whip length available to relocate the cabling between the ports as necessary. Voice and Data will utilize CAT6 cabling and TIA-568C Terminations. Faceplates will be labeled with IDF Room where terminated and ports identified to patch panels. Wall mounted faceplate and floor box at lectern for smart board interface will be provided. Voice Evacuation and notification system speakers and strobes will be added to the space as required.

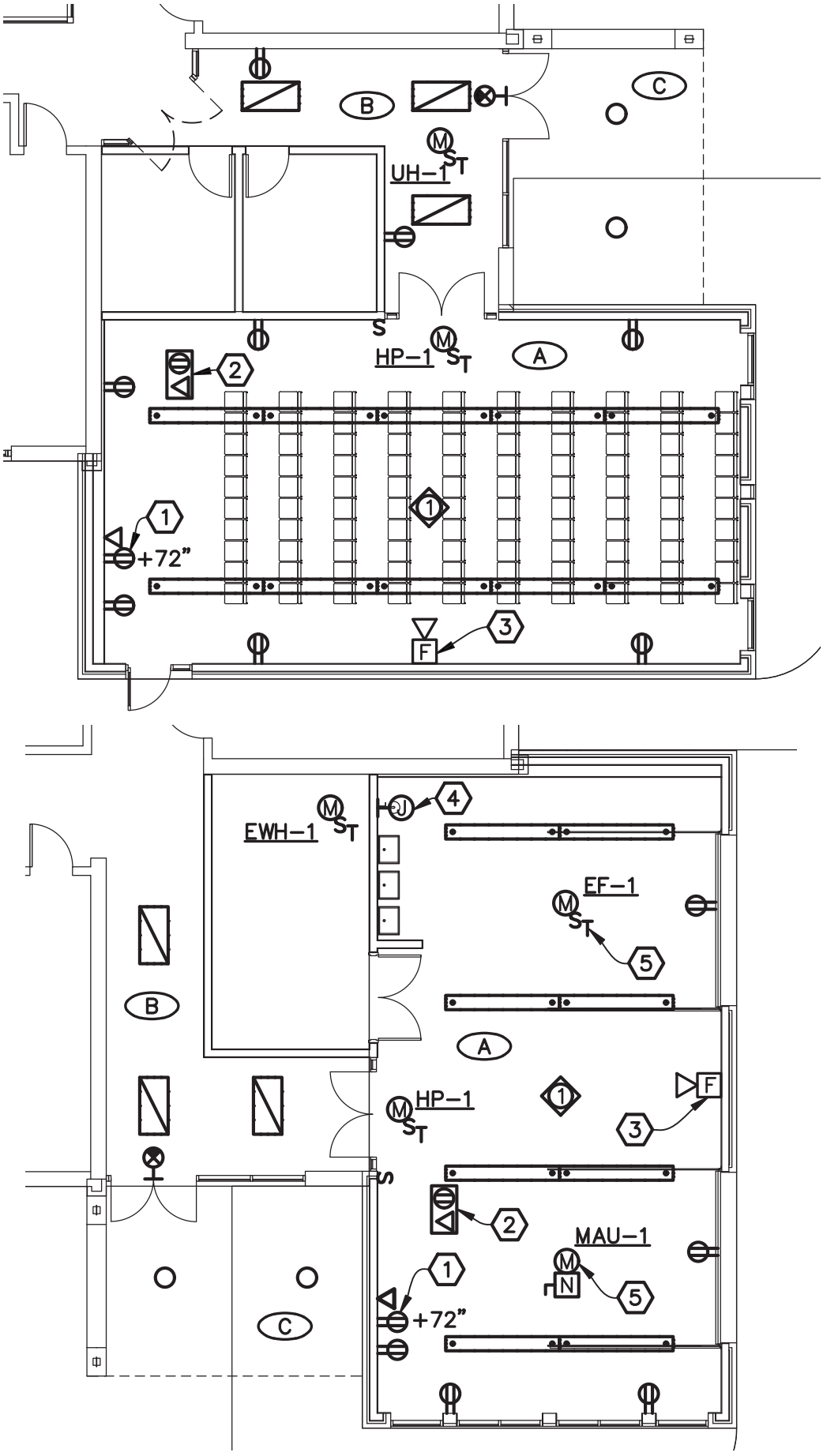
Lighting:

The room will be lit from new indirect, LED, pendant mounted fixtures to meet IECC standard lighting levels. Lighting control will be handled by low-voltage switches and occupancy sensors. Lighting will be divided into two zones, one for the teaching wall and one for the rest of the classroom that can be independently controlled. The remodeled corridor space will have new 2’x4’ LED troffers installed that tie into the existing corridor controls. The new exterior canopy will have new down can-lights to provide required egress lighting. Exit signs and emergency lighting will be provided as required.In addition, track lighting will be provided at the center of the room for art display as requested by the owner.

MECHANICAL AND ELECTRICAL DIAGRAMS






B
C
UH–1
HP–1
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2
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EWH–1
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EF–1
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+72"
C

PROJECT COST

Laramie County Community College - L1L2 Classroom Additions Cost Estimate		
Tobin & Associates August 8, 2016		

Laramie County Community College - L1L2 Classroom Additions Cost Estimate

Project No. 10-04-25

Costs are based on Means National Construction Costing Information and from experience of past projects of a similar nature.

Lecture Classroom Building Addition	$	274,382.29
Multi-Purpose Wet Lab Classroom Building Addition	$	326,399.87
Art to Science Classroom Renovation	$	72,976.79
Classroom FF&E	$	42,860.50
Permit, Bonding & Insurance, Site Safety Costs	$	39,773.68
Project Location Factor	$	35,830.97
Owner's Construction Contingency for Change Orders	$	72,463.47
Design Fee	$	109,000.00
Total Classroom Project Cost	**$**	**973,687.57**

APPENDIX

TABLE OF CONTENTS

CITY OF LARAMIE - INFORMATIONAL BULLETINS

City of Laramie
Community Development Department – Code Administration Division
INFORMATIONAL BULLETIN #1

Getting a Building Permit

June 18, 2014

PLEASE NOTE: Informational Bulletins should not be used as substitutes for actual codes and regulations. Detailed information regarding codes and regulations can be obtained by calling the Code Administration Division at (307) 721-5271.

This bulletin is designed to help you through the permit process. It provides general information on how to apply for your building permit, what fees are required, how long the process is likely to take, and when inspections must be obtained.

A building permit is required to perform work on most buildings or structures within the city. Some examples include new construction, roof repair, additions, renovations or repairs, interior remodeling, finishing a basement, siding, building a garage or deck, or changing the use of a building,

Step 1. Submit at least two complete sets of plans and specifications. Four sets are required for large residential or commercial projects, and where public food preparation or handling is involved. Additional plans may be required when outside agency review is required. Contact the code administration division for detailed plan submittal information.
Plans must be drawn to scale and must meet the general standards for plans and drawings set by the City. The plans must at least show the following information.

- Site plan of the entire lot, including dimensions, building footprint, decks, overhangs and projections, off-street parking, utilities, drainage, topography, and landscaping.
- Footing and foundation plan with soils report, where required.
- Geotechnical and drainage report where required.
- Framing plan with information on all manufactured components.
- Floor plan of each floor.
- Exterior building elevations.
- Wall sections and details.
- Plumbing, mechanical and electrical layouts (optional for one and two family dwellings).
- Other information as needed to show compliance with codes.
- Energy Code Worksheets

Plans for commercial buildings over 4,000 square feet, buildings over three stories in height, residential buildings with five or more dwelling units, and foundations in areas with poor soils must be professionally prepared. The building official may require other engineered plans as deemed necessary.

It is recommended that you call the code administration division for detailed information before submitting plans. A plan review fee may be required at time of application.

Step 2. Complete a building permit application. Applications ask for information about the owner and contractor, the property, the prospective building to be constructed and the estimated valuation of the work. Applications are available at 405 Grand Avenue, or by mail by calling (307) 721-5271.

Step 3. Your plans are reviewed. Plans are checked for compliance with all city codes and regulations including building, fire, and zoning codes. The time required for plan review will depend on the complexity of the work, the completeness of the plans, and the backlog of plans at the time of submittal. You can expect your plan to be reviewed within 1-4 weeks. Complex projects could take longer. You may be asked to resubmit corrected plans or additional information. If no corrections are required your plan will be approved. Please note that a plan review fee will be charged for all plans where the valuation of the work exceeds $5,000.00.

Step 4. Pay the permit fees. You will be notified when your application is approved. Construction cannot begin until the permit is paid. Fees are based on the estimated valuation of the work, so the more extensive the work, the more the permit will cost. Contact the Code Administration Division for a complete

schedule of fees. You will receive an inspection record card to be posted in a readily visible location at the jobsite.
Separate permits are required for work such as plumbing, mechanical, electrical, signs, and fire sprinklers.

Step 5. Call for all required inspections. All work that requires a permit must be inspected. You must call at least *one working day* before you need the inspection, and the area to be inspected must be accessible and visible. Mandatory inspections include foundation, concrete or under-floor, structural framing, plumbing, mechanical and electrical, wall coverings, insulation, and final inspection.

Step 6. Obtain a Certificate of Occupancy. You must have a Certificate of Occupancy before occupying the building. Certificates are available at no additional cost after successfully completing the final inspection.

City of Laramie
Community Development Department – Code Administration Division
INFORMATIONAL BULLETIN #2

Codes and Design Information

January 2015

PLEASE NOTE: Informational Bulletins should not be used as substitutes for actual codes and regulations. Detailed information regarding codes and regulations can be obtained by calling the Code Administration Division at (307) 721-5271.

Building Codes

International Building Code (2012)
International Residential Code (2012)
International Mechanical Code (2012)
International Plumbing Code (2012)
International Fuel Gas Code (2012)
International Fire Code (2012)
International Energy Conservation Code (2012)
National Electrical Code (2014)
Laramie Municipal Code
City of Laramie Standard Details

See the Laramie Municipal Code for any code amendments.

Design Information

Roof live load (snow)	30 psf
Ground snow load	30 psf
Wind speed (IBC)	115 mph (Cat. II)
	Exposure Category C
Seismic	Site Class B
Weathering	Severe
Termite	Slight to none
Decay	None to slight
Location	41^0 19'N / 105^0 41'W
Heating degree days	8839
Winter design temperature	-10 degrees F
Air freezing index	3000
Mean annual temperature	40 degrees F
Frost depth	42 inches
Rainfall intensity (100 year)	1.8 inches/hour
Ice Shield Underlayment	Yes

Flood hazard:
FIRM Community-Panel Number 560002
Map revised June 16, 2011

General Standards for Plans and Drawings

June 20, 2014

PLEASE NOTE: Informational Bulletins should not be used as substitutes for actual codes and regulations. Detailed information regarding codes and regulations can be obtained by calling the Code Administration Division at (307) 721-5271.

Drawing Quality

- Drawings must be easy to read, photocopy and microfilm.
- Lines and lettering must be dark enough to provide good contrast with the paper. Lettering must be at least 1/8" high.
- Paper must be of blueprint quality or standard drafting paper. Tissue paper, graph paper, poster board and cardboard are ***not*** acceptable.
- All plans must be drawn to scale.
- Plans must be drawn to scale with straight lines. Free-hand drawings may not be accepted.

Paper Size

- Minimum 8 ½" x 11". Maximum 41" x 54".
- All drawings or sheets must be one size. Do not attach information with clips, staples, tape or glue.

Minimum Scales

Site plan	1"=20' or 1/16"=1'-0" (1:250 or 1:200)
Floor plan	1/8" = 1'-0" (1:100)
Elevations	1/8" = 1'-0" (1:50)
Details	1/4" = 1'-0" (1:50)
Sections	1/4" = 1'-0" (1:50)

Exceptions are made for unusually large buildings or sites. Contact the Code Administration Division for details.

Identification required

All drawings must have an address and project name on it. Drawings must have the name, address and telephone number of the person who prepared it.
Plans that do not meet the minimum standards may not be reviewed. Inadequate plans could delay your project.

Professionally Prepared Plans

Plans for commercial buildings over 4,000 square feet, buildings over three stories in height, residential buildings with five or more dwelling units, foundations in areas with poor soils, and manufactured components must be professionally prepared. The building official may require other engineered plans as deemed necessary. Land surveys and drainage plans must be professionally prepared.

Please contact the Code Administration Division if you have any questions about plans or drawings.

City of Laramie
Community Development Department – Code Administration Division
INFORMATIONAL BULLETIN #4

Site Plan Requirements

March 2002

PLEASE NOTE: Informational Bulletins should not be used as substitutes for actual codes and regulations. Detailed information regarding codes and regulations can be obtained by calling the Code Administration Division at (307) 721-5271.

What is a site plan?

A site plan is an accurate, scaled drawing or map of a property showing its size and shape and the size and location of all man-made and natural features. A site plan should show what currently exists on the site and what changes are proposed.

Information required

All applications that involve new construction, a change of use, an increase in floor area, or modification of any site amenity must be accompanied by a site plan. The following list is provided to help you prepare a complete plan. Incomplete plans may delay your project.

- Plans must be drawn to scale, easy to read, and must meet the required general standards for plans and drawings.
- At least one 8 ½" x 11" or 11" x 17" drawing must be provided in addition to all other required copies.
- All aspects of the plan must be *fully dimensioned*, and must show the scale used.
- Plans must be identified by location, project name, the owner's name, and the name and address of the person who prepared the plan.
- Show the entire lot.
- Show which direction is north.
- Show the location and name of all adjacent streets, sidewalks and alleys.
- Provide dimensions for all lot lines.
- Show the location of any easements or restrictions like flood hazard areas.
- Show all building footprints along with any architectural projections like roof overhangs, decks, or porches.
- Dimension the setbacks on all sides of the buildings and show the building heights. A setback is the distance from the property lines to the nearest wall of the building, measured perpendicular to the property line.
- Show the size and location of all underground utilities such as water, sanitary sewer, natural gas and electrical power.
- Show the final grading of the site using contours or spot elevations.
- Provide a drainage study, storm water calculations and retention/detention locations, where required.
- Provide finished floor elevations or top of foundation elevations for each building.
- Show the location and design of trash collection and storage facilities.
- Show the location, surfacing and design of all off-street parking areas, including accessible parking, and accessible routes. Show the pavement markings with dimensions.
- Location and design of vehicle access routes, service areas and drive-up windows.
- Include a complete landscaping plan with planting schedules and material lists. Landscaping plans are not required for one and two family dwellings.
- Show the driveway design, size and location.
- Locate all restricted fire zones such as exits and fire department hose connections.
- Show the size and location of fences, signs, towers or antennas.
- Show any proposed right-of-way encroachments.

A survey prepared by a licensed surveyor may be required under certain circumstances. Contact the Code Administration Division for additional information.

CITY OF LARAMIE - BUILDING PERMIT APPLICATION

BUILDING PERMIT APPLICATION

City of Laramie Community Development Department
Code Administration Division
405 Grand Avenue, Laramie WY 82070 PO Box C, Laramie WY 82073
Phone: (307) 721-5271 Fax: (307) 721-5248 TDD: (307) 721-5295
www.cityoflaramie.org

CODE ADMINISTRATION USE ONLY

Application Date _____ Approval Date _____ By _____

BUILDING ADDRESS: _____

Owner

Name | Phone

Address | City | State | Zip Code

email | Fax

Contractor

Individual/Business Name | Phone

Address | City | State | Zip Code

email | Fax

Legal

Lot | Block | Subdivision

Lot Size/Area | PIN#

Description

Description of Work

Building Information

Type of Construction | Occupancy Group | Fire Sprinklers? Yes No

Proposed Use of Building | Number of Stories above Grade | Height | Number of Dwelling Units

Total Floor Area | Building Area/Excl. Basement | Basement? Yes No | Basement Area

Will Basement be fully finished? Yes No | Will Basement be partially finished? Yes No

Utilities

Water Service Size | Sewer Service Size | Water Meter Size

Valuation

		CODE ADMINISTRATION USE ONLY
BUILDING		
PLUMBING		
MECHANICAL		
ELECTRICAL		
SUB-TOTAL		
EXTERIOR SIGNS		
Landscaping, parking, and similar surface improvements		
TOTAL VALUATION	$	

Applicant

Separate permits are required for any plumbing, mechanical or electrical work and exterior signs.

Printed Name _____

Signature _____ Date _____

CODE ADMINISTRATION USE ONLY							
						Type of Construction	
						Occupancy Group	
						Flood Zone	
						Application #	
						Application Fee	
PRF Amount		PRF Date Paid		Recieved By:		Date Issued	

DRAW OR ATTACH SITE PLAN HERE

Address _____ **SCALE:** _____

Site Plan

Show the entire lot drawn to scale.
Complete legal description of the property.
Address (if one has been assigned).
Lot dimensions.
North arrow or directions.
Location of adjacent streets and alleys.
Building setback dimensions.
Location and dimensions of all driveways and approaches.
Location of all steps, terraces, porches, fences and retaining walls.
Location and dimensions of easements.
Size, location and material of all water and sewer service lines.
Location and size of water meters.
Landscaping, off-street parking and other surface improvements.
Unique topographical features, if any.

LCCC ACC - STUDENT ENROLLMENT

STUDENT ENROLLMENT

Laramie County Community College

Annualized[1] Headcount Enrollment by Location, 2004-2005 to 2014-2015

location	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Albany County Campus											
ACC Facility	578.50	688.50	862.50	883.50	958.50	1,029.00	1,035.50	1,076.50	1,044.50	992.00	820.00
UW Campus	415.50	399.00	402.50	360.50	383.00	314.00	335.50	348.50	368.50	341.00	338.00
Cheyenne Campus	3,132.50	3,341.00	3,146.50	3,206.00	3,240.00	3,454.50	3,546.00	3,410.50	3,322.00	3,041.00	2,773.00
Concurrent Enrollment	334.50										
Laramie County Schools		378.00	482.00	473.00	492.00	495.00	415.00	511.00	542.00	396.50	340.50
Albany County Schools		38.50	37.00	54.00	82.00	61.50	80.00	79.50	73.50	56.50	37.50
Other Schools			5.50	14.00	6.50	19.00	34.00	38.50	39.50	46.50	40.50
Distance Learning Courses											
Compressed Video	45.50	45.50	54.50	73.50	76.00	78.50	29.00	36.00	39.50	35.00	15.00
Online Courses	1,046.50	1,369.00	1,516.00	1,617.50	1,776.00	1,839.50	2,171.50	2,287.00	2,107.00	2,008.00	2,159.50
Telecourse	81.00	56.50	24.00	26.50	32.50	28.50	5.50				
Other Sites											
Eastern Laramie County	54.50	46.00	42.50	39.00	35.50	26.50	16.50	7.50	9.50	11.50	13.00
F.E. Warren AFB	296.50	293.50	232.00	221.50	232.00	236.50	277.50	274.50	243.50	213.50	145.50
Other Cheyenne Sites	62.50	28.00	23.50	11.00	26.00	29.50	9.50	4.00	0.00	0.00	0.00
Total[2]	**6,047.50**	**6,683.50**	**6,828.50**	**6,980.00**	**7,340.00**	**7,612.00**	**7,955.50**	**8,073.50**	**7,789.50**	**7,141.50**	**6,682.50**
Unduplicated Total	*5,016.50*	*5,486.50*	*5,572.50*	*5,701.00*	*5,970.00*	*6,134.00*	*6,283.50*	*6,367.00*	*6,190.00*	*5,668.00*	*5,261.00*

Annualized[1] FTE[3] Enrollment by Location, 2004-2005 to 2014-2015

location	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Albany County Campus											
ACC Facility	380.89	422.71	493.87	539.96	594.79	651.21	663.71	668.04	655.34	580.59	469.34
UW Campus	108.13	100.13	100.75	90.25	96.17	79.00	83.69	87.38	92.07	85.75	84.50
Cheyenne Campus	2,196.78	2,226.74	2,206.52	2,212.37	2,268.17	2,493.96	2,596.23	2,491.46	2,399.39	2,222.38	2,053.84
Concurrent Enrollment	63.54										
Laramie County Schools		103.33	137.63	124.83	132.58	142.83	113.29	138.04	150.92	104.21	96.67
Albany County Schools		17.25	12.46	21.88	32.08	31.63	34.00	30.09	27.71	18.17	14.21
Other Schools			2.63	4.13	2.25	7.63	9.63	10.63	11.25	11.63	10.13
Distance Learning Courses											
Compressed Video	16.50	14.63	18.38	22.63	23.00	23.50	9.38	12.75	14.13	11.88	4.88
Online Courses	446.53	510.75	588.41	623.58	692.83	700.34	790.29	805.84	723.75	733.17	789.46
Telecourse	27.21	14.25	6.00	6.75	8.25	7.25	1.38				
Other Sites											
Eastern Laramie County	13.82	10.33	11.58	8.34	11.17	7.38	4.54	2.46	2.54	3.04	3.54
F.E. Warren AFB	97.38	89.92	71.71	69.50	76.21	79.92	91.63	85.46	75.71	65.50	45.13
Other Cheyenne Sites	14.88	4.73	3.71	2.04	3.96	5.38	0.80	0.33	0.00	0.00	0.00
Total	**3,365.65**	**3,514.77**	**3,653.64**	**3,726.25**	**3,941.45**	**4,230.00**	**4,398.55**	**4,332.47**	**4,152.79**	**3,836.29**	**3,571.67**

Notes:

[1] Annualized enrollment = (summer + fall + spring)/2.

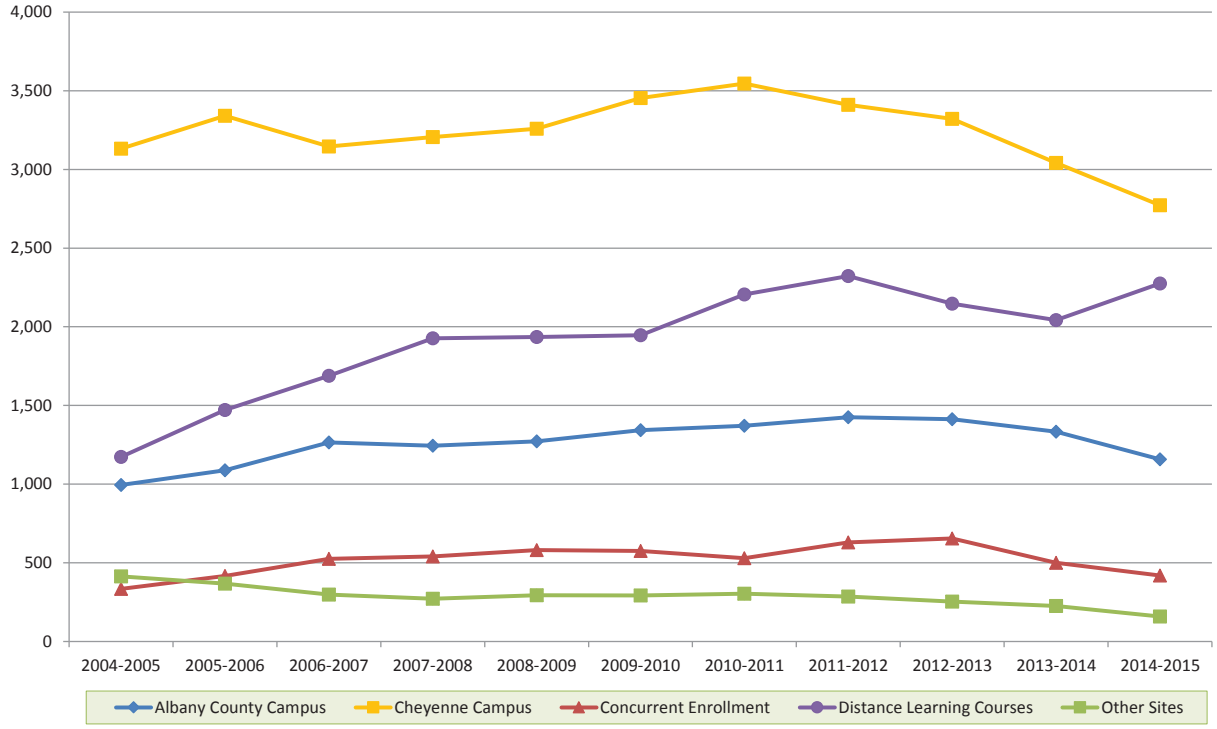
[2] Headcounts are unduplicated by location. However, since some students take classes at more than one location, total headcounts are duplicated counts.

[3] Full-time Equivalent (FTE) enrollment for each semester = (total student credits)/12.

[4] As of Fall 2013, the total FTE may differ slightly from LCCC's official enrollment report due to a different methodology required by recently implemented reporting software.

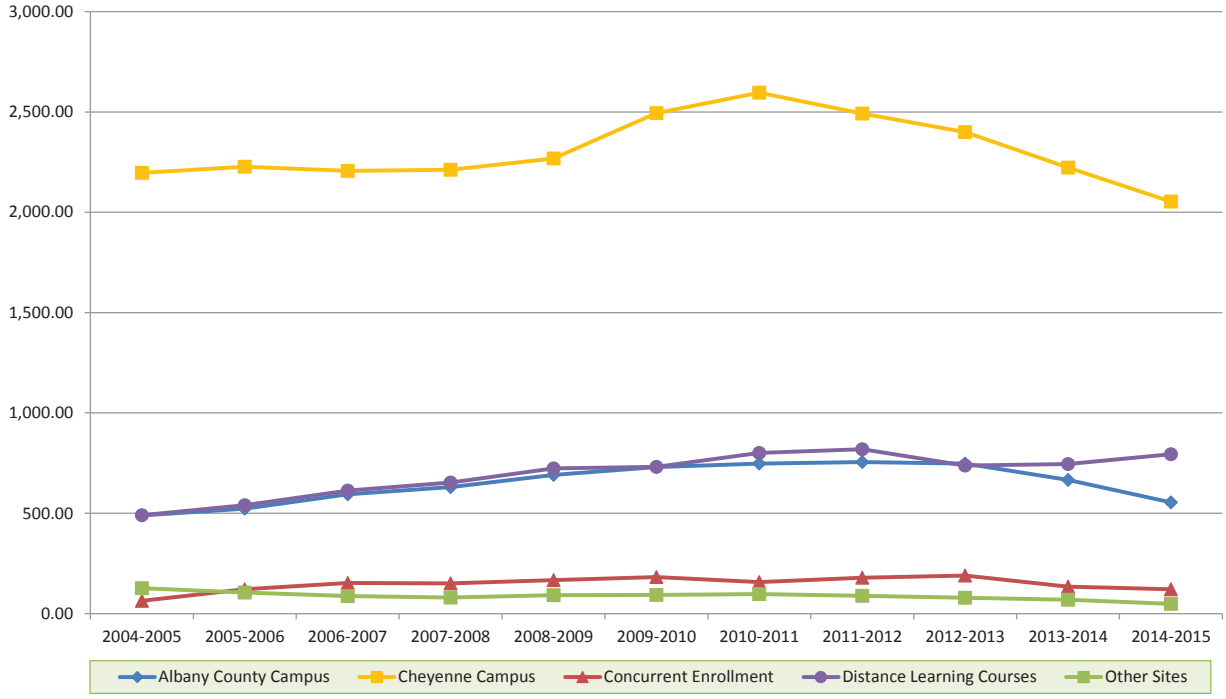
Source: Colleague Records
LCCC IR Office, SES, 7/2/2015

Laramie County Community College
Annualized Headcount Enrollment by Location, 2004-2005 to 2014-2015



Source: Colleague Records
LCCC IR Office, 07/02/2015

Laramie County Community College
Annualized FTE Enrollment by Location, 2004-2005 to 2014-2015



Source: Colleague Records
LCCC IR Office, 07/02/2015

LCCC ACC - SPACE UTILIZATION REPORT

Laramie County Community College
Albany County Campus
Academic Affairs Instructional Space Utilization Report: Fall 2011 - Fall 2016
March 9, 2016

FALL 2011

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total
Classroom 104	51.10%	85.00%	68.05%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	40%	0%	20.00%
Classroom 113	82.22%	100%	91.11%
Classroom 114	80.00%	100%	90.00%
Classroom 115	71.11%	100%	85.5%
Classroom 116	68.88%	100%	84.44%
Classroom 117	99.33%	100%	99.66%
Classroom 118 (Computer Lab)	99.33%	100%	99.66%
Classroom 204	80.00%	75.00%	77.50%
Classroom 205	66.66%	100%	83.33%
Classroom 206	80.00%	100%	90.00%
Classroom 219	86.66%	100%	93.33%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

SPRING 2012

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104	86.66%	100%	93.33%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	80%	0%	40%
Classroom 113	80%	100%	90%
Classroom 114	80%	100%	90%
Classroom 115	93.33%	100%	96.66%
Classroom 116	73.33%	100%	86.66%
Classroom 117	93.33%	100%	96.66%
Classroom 118 (Computer Lab)	53.33%	75%	64.16%
Classroom 204	73.33%	100%	86.66%
Classroom 205	86.66%	80%	83.33%
Classroom 206	80%	100%	90%
Classroom 219	100%	100%	100%

FALL 2012

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104 (Math Lab)	86.66%	100%	93.33%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	71.11%	10%	40.55%
Classroom 113	80%	75%	75.5%
Classroom 114	86.66%	100%	93.33%
Classroom 115	100%	100%	100%
Classroom 116	86.66%	100%	93.33%
Classroom 117	93.33%	100%	96.66%
Classroom 118 (Computer Lab)	66.66%	85%	75.83%
Classroom 204 (Adult Education)	93.33%	75%	84.16%
Classroom 205	66.66%	85%	75.83%
Classroom 206	86.66%	70%	78.38%
Classroom 219	93.33%	100%	96.66%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

SPRING 2013

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104	80%	100%	90%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	48.88%	0%	24.44%
Classroom 113	86.66%	100%	93.33%
Classroom 114	100%	100%	100%
Classroom 115	77.77%	90%	83.88%
Classroom 116	86.66%	60%	76.66%
Classroom 117	93.33%	100%	96.66%
Classroom 118 (Computer Lab)	80%	100%	90%
Classroom 204 (Adult Education)	80%	75%%	77.5%
Classroom 205	86.66%	100%	93.33%
Classroom 206	86.66%	100%	93.33%
Classroom 219	93.33%	100%	96.66%

FALL 2013

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104	84.44%	100%	92.22%
Classroom 105 (Science Lab)	86.66%	100%	93.33%
Classroom 110 (Art Lab)	60%	0%	30%
Classroom 113	0%	0%	0%
Classroom 114	73.33%	100%	86.66%
Classroom 115	75.55%	100%	87.77%
Classroom 116	60%	100%	80%
Classroom 117	86.66%	80.00%	83.33%
Classroom 118 (Computer Lab)	60%	100%	80%
Classroom 204 (Adult Education)	80.00%	75%	77.50%
Classroom 205	77.77%	100%	8.88%
Classroom 206	86.66%	100%	93.33%
Classroom 219	93.33%	75%	84.16%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

SPRING 2014

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104	13.33%	85%	49.16
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	66.66%	0%	33.33%
Classroom 113	100%	50%	75%
Classroom 114	66.66%	75%	70.83%
Classroom 115	71.11%	100%	85.55%
Classroom 116	46.66%	100%	73.33%
Classroom 117	73.33%	75%	74.16%
Classroom 118 (Computer Lab)	93.33%	60%	76.66%
Classroom 204 (Adult Education)	68.88%	75%	71.94%
Classroom 205	93.33%	100%	96.66%
Classroom 206	86.66%	100%	93.33%
Classroom 219	86.66%	55%	70.83%

FALL 2014

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104	22.22%	70%	46.11%
Classroom 105 (Science Lab)	86%	100%	93%
Classroom 110 (Art Lab)	60%	0%	30%
Classroom 113	100%	50%	75%
Classroom 114	73.33%	100%	86.66%
Classroom 115	88.66%	90%	89.33%
Classroom 116	91.11%	100%	95.55%
Classroom 117	60%	70%	65%
Classroom 118 (Computer Lab)	86.66%	50%	69.33%
Classroom 204 (Adult Education)	80%	100%	90%
Classroom 205	66.66%	100%	83.33%
Classroom 206	84.44%	75%	9.72%
Classroom 219	73.33%	100%	86.66%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

SPRING 2015

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104 (Math Lab)	100%	100%	100%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	44.44%	100%	72.20%
Classroom 113	77.77%	90%	83.88%
Classroom 114	73.33%	100%	86.66%
Classroom 115	66.66%	80%	73.33%
Classroom 116	68.88%	75%	71.94
Classroom 117	71.11%	50%	60.55
Classroom 118 (Computer Lab)	55.55%	0%	27.77%
Classroom 204 (Adult Education)	80%	50%	65%
Classroom 205	64.44%	100%	82.22%
Classroom 206	60%	80%	70%
Classroom 219	60%	60%	60%

FALL 2015

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104 (Math Lab)	82.22%	100%	91.11%
Classroom 105 (Science Lab)	100%	100%	100%
Classroom 110 (Art Lab)	86.66%	25%	55.83%
Classroom 113	88.88%	100%	94.44%
Classroom 114	75.55%	100%	87.77%
Classroom 115	86.66%	50%	68.33%
Classroom 116	73.33%	100%	86.66%
Classroom 117	100%	100%	100%
Classroom 118 (Computer Lab)	93.33%	0%	46.66%
Classroom 204 (Adult Education)	82.22%	50%	66.11%
Classroom 205	100%	100%	100%
Classroom 206	91.11%	100%	95.55%
Classroom 219	84.44%	100%	92.22%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

SPRING 2016

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104 (Math Lab)	66.66%	100%	83.33%
Classroom 105 (Science Lab)	86.66%	100%	93.33%
Classroom 110 (Art Lab)	40%	75%	55%
Classroom 113	64.44%	100%	82.22%
Classroom 114	91.11%	75%	83.05%
Classroom 115	71.11%	70%	70.55%
Classroom 116	88.88%	25%	56.94%
Classroom 117	91.11%	100%	95.55%
Classroom 118 (Computer Lab)	53.33%	40%	46.66%
Classroom 204 (Adult Education)	91.11%	75%	83.05%
Classroom 205	75.55%	70%	72.77%
Classroom 206	75.55%	100%	87.77%
Classroom 219	93.33%	100%	96.99%

FALL 2016

***Percent of time classrooms are utilized or not available for scheduling.**

	8:00 AM – 5:00 PM (45 hrs.)	5:00 PM – 10:00 PM (20 hrs.)	8:00 AM – 10:00 PM Total (65 hrs.)
Classroom 104 (Math Lab)	100%	100%	100%
Classroom 105 (Science Lab)	88.66%	100%	94.33%
Classroom 110 (Art Lab)	57.77%	50%	53.88%
Classroom 113	80%	100%	90%
Classroom 114	75.55%	100%	87.77%
Classroom 115	73.33%	100%	86.66%
Classroom 116	80.00%	100%	90%
Classroom 117	71.11%	100%	85.55%
Classroom 118 (Computer Lab)	46.66%	50%	48.33%
Classroom 204 (Adult Education)	100%	100%	100%
Classroom 205	77.77%	100%	88.88%
Classroom 206	66.66%	100%	83.33%
Classroom 219	75.55%	85%	80.27%

*A classroom may not be available for scheduling because usable hours are too short and do not allow for courses to be scheduled in that timeframe. Example 1 – Lab classrooms typically need a minimum of 2-3 hour time blocks open to schedule the lab courses and a one hour block does not allow enough time for a lab class to be scheduled. It is enough time to transition and complete lab preparations. That one hour block is available or usable so it is counted as utilized. Example 2 – No courses are scheduled to start later than 7:00 PM. Hours after 7:00 PM that do not have a course scheduled are not usable and counted as utilized. Example 3 – Friday courses require a minimum of 3-4 hour time blocks. Hours that do not fit within those blocks, or a MWF 1 hour block, are not usable and counted as utilized. Example 4 – Courses are typically scheduled in the following blocks: MWF 1 hour blocks; MW 2 – 3 hour blocks; TTh 2 – 3 hour blocks; MTWTh 1 hour blocks; MW or TTh Nights 2 – 3 hour blocks; F 3-4 hour blocks.

GEOTECHNICAL ENGINEERING REPORT

GEOTECHNICAL ENGINEERING REPORT

LARAMIE COUNTY COMMUNITY COLLEGE
LARAMIE CAMPUS
BOULDER DRIVE
LARAMIE, WYOMING

TERRACON PROJECT NO. 24045077
DECEMBER 8, 2004

Prepared for:

Midyette Architects
1936 14th Street
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Prepared by:

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December 8, 2004

Midyette Architects
1936 14th Street
Boulder, Colorado 80302

Attn: Tim Laughlin
Project Lead

Re: Geotechnical Engineering Report
Laramie County Community College - Laramie Campus
Boulder Drive, Laramie, Wyoming
Terracon Project No. 24045077

Terracon has completed our geotechnical engineering study for the proposed buildings to be located east of Boulder Drive in Laramie, Wyoming. Authorization to proceed with this soil study was given by Midyette Architects in a signed Agreement for Services dated November 4, 2004. This study was performed in general accordance with our proposal and agreement, Proposal No. 2404G096 dated October 26, 2004.

The results of our engineering study, including the boring location diagram, laboratory test results, test boring records, and the geotechnical recommendations needed to aid in the design and construction of foundations and other earth connected phases of this project are attached.

We appreciate being of service to you in the geotechnical engineering phase of this project, and are prepared to assist you during the construction phases as well. If you have any questions concerning this report or any of our testing, inspection, design and consulting services, please do not hesitate to contact us.

Sincerely,
TERRACON

Professional Engineer (Civil) BRENT F. WILKINS 9459 Date 12/8/04 WYOMING

Brent F. Wilkins, P.E.
Geotechnical Department Manager

Douglas J. Jobe, P.E.
Principal/Regional Manager

bfw

Copies to: Addressee (3)

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GEOTECHNICAL ENGINEERING REPORT

LARAMIE COUNTY COMMUNITY COLLEGE - LARAMIE CAMPUS
BOULDER DRIVE
LARAMIE, WYOMING

TERRACON PROJECT NO. 24045077
DECEMBER 8, 2004

INTRODUCTION

This report contains the results of our geotechnical engineering study for the proposed buildings to be located at Boulder Drive, in Laramie, Wyoming. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil and bedrock conditions
- groundwater conditions
- foundation design and construction
- floor slab design and construction
- pavement design and construction
- earthwork
- drainage

The recommendations contained in this report are based on the results of field and laboratory testing, engineering analyses, experience with similar soil conditions and structures, and our understanding of the proposed project.

PROPOSED CONSTRUCTION

Based on information provided by the client, the proposed campus will consist of two buildings separated by a student commons area. The buildings will be single-story, slab on-grade structures, constructed of steel post and beam with structurally insulated panel walls. The maximum wall and column loads are reported to be 1 kip per linear foot (klf) and 42 kips, respectively. We assume that the design subgrade elevation will be within one foot of the average existing site grade.

Other site development will include the construction of a parking lot to the southeast of the proposed building locations.

SITE EXPLORATION

The scope of the services performed for this project included site reconnaissance by a geotechnical engineer, subsurface exploration program, laboratory testing, and engineering analyses.

Field Exploration

A total of eight test borings were performed on November 19, 2004. The borings were advanced to approximate depths of 5½ to 14½ feet at the locations shown on the Boring Location Diagram, Figure 1. Six borings were drilled within the approximate footprint of the proposed buildings and two borings were drilled in the area of proposed pavements. The borings were advanced with a truck-mounted drilling rig, utilizing 4-inch-diameter, solid-stem augers.

The proposed building corners were located and staked in the field by Washington Group International, the project surveyor, prior to our field exploration. Approximate ground surface elevations at the building boring locations were obtained from Washington Group International. The approximate ground surface elevations at the pavement boring locations were obtained by interpolation from contours indicated on the site plan. The accuracy of boring locations and elevations should only be assumed to the level implied by the methods used to determine each.

Lithologic logs of each boring were recorded by the geotechnical engineer during the drilling operations. The logs of borings are presented in Appendix A. At selected intervals, samples of the subsurface materials were taken by means of driving split-spoon and/or California barrel samplers.

Penetration resistance measurements were obtained by driving the split-spoon or California barrel into the subsurface materials with a 140-pound hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency, relative density, or hardness of the materials encountered.

Groundwater conditions were observed in each boring at the time of site exploration and three days after the completion of drilling.

Laboratory Testing

The soil samples retrieved during the field exploration were returned to the laboratory for observation by the project geotechnical engineer. At that time, the field descriptions were reviewed and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples. The results of these tests are presented in Appendix B. The test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. The laboratory tests were performed in general accordance with applicable locally accepted standards. Soil samples were classified in general accordance with the Unified Soil Classification System described in Appendix C. Rock samples were visually classified in general accordance with the General Notes in Appendix C.

Selected soil and bedrock samples were tested for the following engineering properties:

- Water Content
- Grain Size
- Consolidation/Expansion
- Plasticity Index
- Dry Density

SITE CONDITIONS

The site is located in the NW ¼ of the NE ¼ of Section 2,Township15 North, Range 73 West of the 6th Principal Meridian. Further, the site is situated on the east side of Boulder Drive, south of the Farm Bureau building and east of the Laramie Recreation Center. The site was bordered to the east and south by undeveloped prairie land.

At the time of the field exploration, the site was undeveloped and the ground surface was covered with a moderate growth of prairie grass and low weeds. The site grade slopes gently to the west with an approximate grade change of six feet from the east side of the proposed parking area to Boulder Avenue. Site drainage was to the west although shallow depressions existed.

SUBSURFACE CONDITIONS

As presented on the Logs of Boring a vegetative layer extends to a depth of about four to six inches below the ground surface. Below the vegetative layer, one to 12 feet of loose to dense, sand with various amounts of silt, clay, and gravel were encountered. Within the sand layers, occasional layers of stiff to hard, lean clay were encountered. Underlying the sand and lean

clay soils and extending to the maximum depth of exploration was firm to hard siltstone bedrock with an occasional thin sandstone stringer.

Laboratory Test Results

Laboratory test results indicate that the silty clayey overburden soils can have a low expansive potential when subjected to water. Based on the test results the expansive potential is not sufficiently high to warrant soil mitigation measures.

Groundwater Conditions

Groundwater was not observed in the test borings at the time of field exploration, nor when checked three days after the completion of drilling. These observations represent groundwater conditions at the time of the observations only, and may not be indicative of other times, or at other locations. Groundwater conditions can change with varying seasonal and weather conditions, and other factors. The possibility of groundwater fluctuations should be considered when developing design and construction plans for the project.

ENGINEERING ANALYSES AND RECOMMENDATIONS

Geotechnical Considerations

Based on information from the geotechnical engineering analyses, subsurface exploration, and laboratory testing results, it is our opinion the proposed structure can be supported on a spread footing foundation system bearing on native soils or engineered fill. The bedrock materials exhibited a low potential for swelling, therefore minimum dead load pressures are recommended for all spread footings. Design and construction recommendations for foundation systems and other earth related phases of the project are outlined below.

Foundation Systems

Based on our analysis, spread footings supported on native sand and lean clay soils or engineered fill can be designed using a maximum allowable soil bearing pressure of 3,000 pounds per square foot (psf). Due to the proximity of the bedrock, a minimum dead load of 500 psf should be maintained on all foundation elements. The design bearing pressures apply to dead loads plus design live load conditions. The design bearing pressures may be increased by one-third when considering total loads that include wind or seismic conditions.

To resist lateral loads, a passive earth pressure coefficient of 3.0 can be used in the design of spread footings. A sliding coefficient of 0.4 can be used for footings cast directly against the

soil subgrade. The passive earth pressure and sliding coefficients given are ultimate values. The footing designer should apply a prudent factor of safety to each coefficient.

Exterior footings should be placed a minimum of 42 inches below finished grade for frost protection. Interior footings within heated areas of the building can be supported a minimum of 12 inches below finished grade. Finished grade is the lowest adjacent grade for perimeter footings and floor subgrade level for interior footings.

Construction joints in the building and foundation are recommended to reduce the effects of the differential movement. In areas where bedrock is encountered at footing elevation, the bedrock material should be overexcavated two feet below the footing level and replaced with engineered fill to reduce the potential of differential movements.

Total movement resulting from the allowable bearing capacities given are estimated to be on the order of one inch. Additional foundation movements could occur if water from any source infiltrates the foundation soils; therefore, proper drainage should be provided in the final design and during construction. Footings should be proportioned to reduce differential foundation movement. Proportioning on the basis of equal total movement is recommended; however, proportioning to relative constant dead-load pressure will also reduce differential movement between adjacent footings.

Footings, foundations, and masonry walls should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

Foundation excavations should be observed by the geotechnical engineer. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

If soft, loose, or other unsuitable bearing soils are encountered in footing excavations, the excavations should be extended to suitable soils in accordance with the Earthworks recommendations given herein.

Floor Slab Design and Construction

The native sandy soils can be used to support the floor slabs, provided the upper eight inches of the subgrade surface is recompacted in accordance with the Earthwork recommendations given herein. Compacted, engineered fill can also be used to support the floor slabs. Some differential movement of a slab-on-grade floor system is possible if the moisture content of the

subgrade soils is increased. To reduce potential slab movements, the subgrade soils should be prepared as outlined in the Earthwork section of this report.

For structural design of concrete slabs-on-grade, a modulus of subgrade reaction of 150 pounds per cubic inch (pci) may be used for floors supported on native sand soils or engineered fill.

Additional floor slab design and construction recommendations are as follows:

- Positive separations and/or isolation joints should be provided between slabs and all foundations, columns, or utility lines to allow independent movement.
- Control joints should be provided in slabs to control the location and extent of cracking.
- Interior utility trench backfill placed beneath slabs should be compacted in accordance with the recommended specifications outlined below.
- Floor slabs should not be constructed on frozen subgrade.
- If moisture sensitive floor coverings are used on interior slabs, consideration should be given to the use of barriers to minimize potential vapor rise through the slab.
- Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

Earthwork

The following presents recommendations for site preparation, subgrade preparation, excavation, and placement of engineered fills on the project.

All earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

Site Preparation

Strip and remove existing vegetation, and any other deleterious materials from the proposed building and pavement areas. Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas after completion of grading operations. All exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Prior to the placement of overlot fills or pavements, the site should be graded to create a relatively level surface to receive fill or pavement base material, and to provide for a relatively uniform thickness of fill beneath proposed building structures. The exposed ground surface should be recompacted and proof-rolled in the presence of a Terracon engineer using a fully-loaded dump truck, water truck, or other engineer approved equipment.

Subgrade Preparation

If pockets of soft, loose, or otherwise unsuitable materials are encountered at the bottom of the footing excavations and it is inconvenient to lower the footings, the proposed footing elevations may be reestablished by overexcavating the unsuitable soils and backfilling with compacted engineered fill or lean concrete. Any overexcavation should be performed in accordance with the excavation recommendations given below.

After the bottom of the excavation has been compacted and proof-rolled, engineered fill can be placed to bring the building pad to the desired grade. Engineered fill should be placed in accordance with the recommendations given below. The soil removed from this site that is free of organic or objectionable materials, as defined by a field technician who is qualified in soil material identification and compaction procedures, can be reused as fill for the building pad or pavement areas. If the bedrock materials will be used as fill, the material should be broken down such that the largest particle size is a nominal one inch. It should be noted that the native soil and bedrock will require reworking to adjust the moisture content to meet the compaction criteria.

Based on the subsurface conditions determined from the geotechnical exploration, the native soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade, particularly the soils with a higher clay or silt content, may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Alternatively, overexcavation of wet zones and replacement with granular materials may be used, or crushed gravel and/or rock can be tracked into the unstable surface soil until a stable working surface is attained.

Excavation and Trench Construction

The native soils are anticipated to be stable at the maximum slope inclinations as defined by the OSHA excavation and trench regulations. However, the subgrade soil conditions should be evaluated during the excavation process and the stability of the soils determined at that time. Slope inclinations flatter than the OSHA maximum values may have to be used.

Excavation penetrating the bedrock may require the use of specialized heavy-duty equipment, to facilitate rock break-up and removal. Consideration should be given to obtaining a unit price for difficult excavation in the contract documents for the project.

The soils and bedrock materials to be penetrated by the proposed excavations may vary significantly across the site. The preliminary soil and rock classifications are based solely on the materials encountered in widely spaced exploratory test borings. The contractor should verify that similar conditions exist throughout the proposed area of excavation. If different subsurface conditions are encountered at the time of construction, the actual conditions should be evaluated to determine any excavation modifications necessary to maintain safe conditions.

Although evidence of fills or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If unexpected fills or underground facilities are encountered, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

Any overexcavation that extends below the bottom of foundation elevation should extend laterally beyond all edges of the footings at least eight inches per foot of overexcavation depth below the footing base elevation. The overexcavation should be backfilled to the footing base elevation with select material placed in lifts of no more than 8-inch loose thickness and compacted to at least 95 percent of the material's maximum dry density, as defined by the standard Proctor test (ASTM D-698).

Depending upon depth of excavation and seasonal conditions, seasonal surface water infiltration or perched groundwater in may be encountered in excavations on the site. It is anticipated that pumping from sumps may be utilized to control water within excavations.

As a safety measure, it is recommended that all vehicles and soil piles be kept to a minimum lateral distance from the crest of the slope equal to no less than the slope height. The exposed slope face should be protected against the elements.

The individual contractor(s) should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards. If any excavation, including a utility trench, is extended to a depth of more than 20 feet, it will be necessary to have the side slopes and/or shoring system designed by a professional engineer.

Fill Materials and Placement

The native, on-site soils or approved granular and low plasticity, low swell potential, cohesive imported materials may be used as fill material.

Engineered fill should be placed and compacted in horizontal lifts, not exceeding eight inches in loose thickness, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Recommended compaction criteria for engineered fill materials are as follows:

	Minimum Percent Material (ASTM D698)
Scarified subgrade soils	95
On-site and imported fill soils:	
Beneath foundations and slabs	95
Beneath pavements	95
In utility trenches	95
General backfill, non-structural areas	95

It is noted that if crushed gravel or certain other granular materials are used it may be appropriate to specify compaction criteria based on a relative density test. Compaction criteria based on relative density should be evaluated based on a project specific basis.

On-site and imported soils should be compacted within a moisture range of three percent below to three percent above optimum unless modified by the project geotechnical engineer.

Additional Design and Construction Considerations

Exterior Slabs Design and Construction

Exterior slabs on-grade, exterior architectural features, and utilities founded on, or in backfill or the site soils will likely experience some movement due to the volume change of the material. Potential movement could be reduced by:

- Minimizing moisture increases in the backfill
- Controlling moisture-density during placement of the backfill
- Using designs which allow vertical movement between the exterior features and adjoining structural elements
- Placing control joints on relatively close centers

Underground Utility Systems

All piping should be adequately bedded for proper load distribution, using a clean, granular material with no more than 5% passing the no. 200 sieve. Bedding material should be compacted to at least 75 percent of relative density, as defined by ASTM D4253 and D4254. Utility trenches should be excavated using stable slopes in accordance with OSHA regulations as discussed above.

All underground piping within or near the proposed structure should be designed with flexible couplings, so minor deviations in alignment do not result in breakage or distress. Utility knockouts in grade beams should be oversized to accommodate differential movements.

Corrosion Protection

Terracon recommends the use of fly ash or lithium admixture if ASR reactive aggregate is used in concrete for proposed foundations, slabs, or pavements. Mortar bar tests should be performed on the concrete to evaluate the effectiveness of the mitigation process. In most cases, expansions less than 0.1% are considered innocuous. Foundation concrete should be designed in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

Surface Drainage

Positive drainage should be provided during construction and maintained throughout the life of the proposed project. Infiltration of water into utility or foundation excavations must be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 10 percent for at least 10 feet from perimeter walls. Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Downspouts, roof drains or scuppers should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems should not be installed within 10 feet of foundation walls. Landscaped irrigation adjacent to the foundation system should be minimized or eliminated.

Pavement Design and Construction

Design of pavements for the project have been based on the procedures outlined in the 1993 Guideline for Design of Pavement Structures by the American Association of State Highway and Transportation Officials (AASHTO). Traffic design data was not provided for this report. Therefore we have assumed a maximum average daily traffic volume of 350 passenger cars and 2 delivery trucks per day. Based on these assumed values a design 18-kip equivalent single-axle load (ESAL) of 25,000 was estimated over a design life of 20 years.

Recommended Alternative Pavement Section Thickness

Areas	Alternative	Asphalt Concrete	Aggregate Base	Portland Cement Concrete	Total
Car Parking Area	A	3"	4"	--	7"
Drive Lanes Access Drives	B	3.5"	4"	--	7.5"
	C	--	--	6"	6"

For areas subject to concentrated and repetitive loading conditions such as dumpster pads and ingress/egress aprons, we recommend using a reinforced concrete pad at least 6 inches thick underlain by at least 6 inches of granular base. It is also recommended that signage and/or curbing be used to restrict truck traffic in car parking and drive lane areas.

Where rigid pavements are used, the concrete should be obtained from an approved mix design conforming to the specifications of the Wyoming Department of Transportation (WYDOT), including the following minimum properties:

- Modulus of Rupture @ 28 days: 650 psi minimum
- Entrained Air Content: 5% to 7%

All of the paving materials and pavement construction should meet WYDOT specifications. In addition, mix designs should be submitted prior to construction to verify their adequacy.

Concrete should be deposited by truck mixers or agitators and placed a maximum of 90 minutes from the time the water is added to the mix. Longitudinal and transverse joints should be provided and designed in accordance with ACI procedures.

Terracon recommends the use of fly ash, or lithium admixture if ASR reactive aggregate is used in concrete for proposed pavements. An alternative would be to use non-reactive aggregate in the concrete. Mortar bar tests should be performed on the concrete to evaluate

the effectiveness of the mitigation process. In most cases, expansions less than 0.1% are considered innocuous.

In areas where landscape irrigation will be performed adjacent to pavement, it is recommended that pavement edge drains be installed to prevent the accumulation of water beneath or next to the pavement. All water collected in edge drains should be collected and discharged in a positive manner.

Each pavement alternative should be evaluated with respect to current material availability and economic conditions. The pavement sections presented herein are based on design parameters selected by Terracon based on experience with similar projects and soil conditions. Design parameters may vary with specific project. Variation of these parameters may change the thickness of the pavement sections presented. Terracon is prepared to discuss the details of these parameters and their effects on pavement design and reevaluate pavement design as appropriate.

Pavement Preventative Maintenance

Future performance of pavements constructed on the native soils at this site will be dependent on several factors, including:

- maintaining stable moisture content of the subgrade soils; and,
- providing for a planned program of preventative maintenance.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

The performance of all pavements can be enhanced by minimizing excess moisture which can reach the subgrade soils. The following recommendations should be considered at a minimum:

- Site grading at a minimum 2% grade away from the pavements;

- Compaction of any utility trenches for landscaped areas to the same criteria as the pavement subgrade;
- Sealing all landscaped areas in, or adjacent to pavements to minimize or prevent moisture migration to subgrade soils;
- Placing compacted backfill against the exterior side of curb and gutter; and,
- Placing curb, gutter and/or sidewalk directly on subgrade soils without the use of base course materials.

Since the clayey soils and bedrock on the site have shrink/swell characteristics, pavements could crack in the future due to the expansion of the subgrade soils when subjected to an increase in moisture content. The cracking, while not desirable, does not necessarily constitute structural failure of the pavement.

GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide testing and observation during excavation, grading, foundation and construction phases of the project.

The analysis and recommendations presented in this report are based on the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

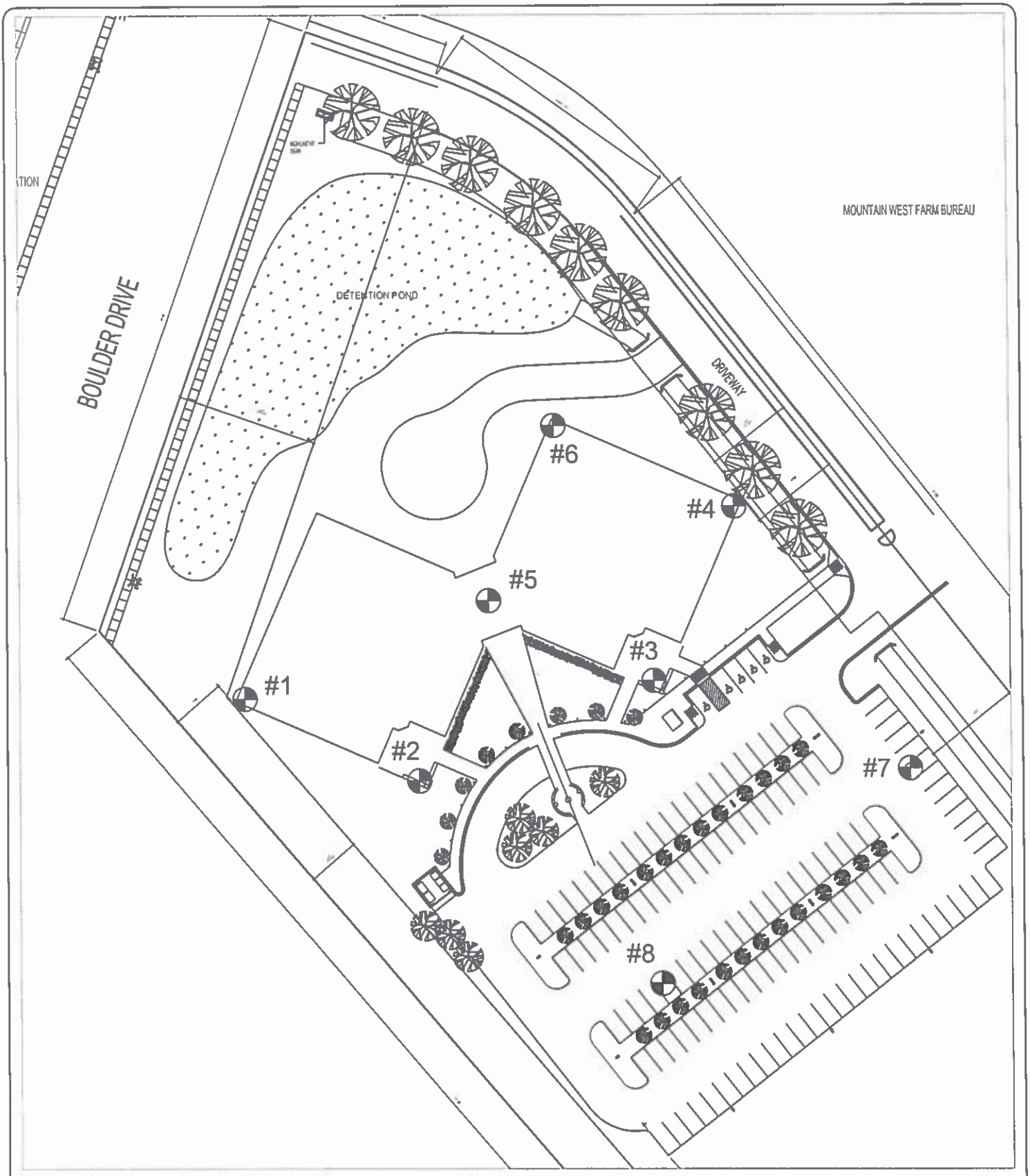
The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In

the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A

FIELD EXPLORATION



APPROXIMATE LOCATION OF BORING.

NOTE: Site plan based on information provided by the client.
Diagram is for general location only, and is not for construction purposes.

N

NTS

BORING LOCATION DIAGRAM
LCCC LARAMIE CAMPUS
BOULDER DRIVE
LARAMIE, WYOMING

Drawn By:	MHF	Project No.:	24045077
Checked By:	BFW	Date:	12/04
File Name:	BL Diagram	Figure No.:	1

Terracon
2701 Westland Court, Suite A
Cheyenne, Wyoming

LOG OF BORING NO. 1

CLIENT
Midyette Architects

SITE
Boulder Drive
Laramie, Wyoming

PROJECT
LCCC - Laramie Campus

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 7299 ft									
	0.3 VEGETATIVE LAYER, 4" 7298.5 SILTY CLAYEY SAND, loose, damp, reddish brown		SC SM	1	SS		9	11.9		
	4 7295									
	4.7 LEAN CLAY, hard, damp, red to brown 7294.5 BEDROCK, siltstone, medium hard to hard, damp, reddish brown	5		2	CB		42	7.5		
		10		3	SS		73/10"	4.9		
	13.8 Color changes to grayish white at 13.6' 7285 End of Boring			4	SS		42/4"	4.7		

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	No Water WD	No Water AD
WL		
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON GDT 12/7/04

LOG OF BORING NO. 2

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 7301 ft									
	0.5 VEGETATIVE LAYER, 6" 7300.5 LEAN CLAY, trace sand, loose, damp, reddish brown		CL	1	SS		7	8.3		
	3 7298 SILTY CLAYEY SAND with GRAVEL, dense, damp, reddish brown		SC SM	2	SS		40	5.7	127	
	6 7295 BEDROCK, siltstone, medium hard to hard, damp, reddish brown	5								
				3	SS		54	4.5		
		10								
	14.1 7287 End of Boring			4	SS		40/.5"			

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽ No Water WD	▼ No Water AD
WL	▽	▼
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077.GPJ TERRACON.GDT 12/7/04

LOG OF BORING NO. 3

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

Approx. Surface Elev.: 7303 ft

DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: SULFATE, %	SAMPLES: PENETRATION BLOWS / ft.	TESTS: WATER CONTENT, %	TESTS: DRY UNIT WT pcf	TESTS: UNCONFINED STRENGTH, psf
0.3 VEGETATIVE LAYER, 4" 7302.5 SILTY CLAYEY SAND, trace gravel, loose, damp, reddish brown		SC SM	1	SS		3	5.4		
4 7299 SILTY SAND with GRAVEL, medium dense, damp, reddish brown	5	SM	2	CB		17	1.5		
9.5 7293.5 SILTY SAND, loose, damp, light tan	10	SM	3	SS		5	4.7 4.3		
12 7291 BEDROCK, siltstone, hard, damp, reddish brown			4	SS		30/4"	3.8		
14.3 7288.5 End of Boring									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	No Water WD	No Water AD
WL		
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON GDT 12/7/04

LOG OF BORING NO. 4

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 7302 ft									
	0.3 VEGETATIVE LAYER, 4" 7301.5 CLAYEY SAND, trace gravel, loose, damp, reddish brown		SC SM	1	SS		5	9.5		
	3 7299 POORLY-GRADED SAND with GRAVEL, trace to little silt, medium dense, damp, brown 7297.5									
	4.7	5		2	SS		12	2.7 11.1		
	SILTY SAND with GRAVEL, trace to little silt, medium dense, moist, reddish brown									
	9 7293 BEDROCK, siltstone/sandstone, medium hard to hard, damp, mottled with gray			3	CB		41	4.9		
		10						11.3		
	14.1 7288 End of Boring			4	SS		38/2"	5.5		

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽ No Water WD	▽ No Water AD
WL	▽	▽
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04
BORING COMPLETED	11-19-04
RIG CME - 55	FOREMAN mhf
	JOB # 24045077

BOREHOLE 99 24045077 GPJ TERRACON GDT 12/7/04

LOG OF BORING NO. 5

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 7301 ft									
	0.5 VEGETATIVE LAYER, 6" 7300.5 SILTY CLAYEY SAND, trace gravel, loose, damp, reddish brown		SC SM	1	SS		5	5.7		
	4 7297 SILTY SAND, trace to little gravel, medium dense, damp, light red to brown	5	SM	2	SS		14	1.7		
	8.3 7292.5 BEDROCK, siltstone, medium hard to hard, damp, reddish brown			3	SS		48	5.4		
	14.4 7286.5 Creamy tan colored layer at 14.1' End of Boring	10		4	SS		50/5"	8.7		

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	▽ No Water WD	▼ No Water AD
WL	▽	▼
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON.GDT 12/7/04

LOG OF BORING NO. 6

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

Approx. Surface Elev.: 7300 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	0.3 VEGETATIVE LAYER, 4" 7299.5									
	SILTY CLAYEY SAND, loose, damp, reddish brown		SC SM	1	SS		5	6.0		
	4 7296									
	SILTY GRAVEL with SAND, medium dense, damp, brown to reddish brown	5	GM	2	SS		11	1.6		
	9 7291									
	BEDROCK, siltstone, firm to hard, damp, reddish brown	10		3	SS		33	8.1		
	14.3 7285.5									
	End of Boring			4	SS		35/3"	2.6		

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ No Water WD	▽ No Water AD	
WL	▽	▽	
WL	AD measured on 11/22/04		

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON GDT 12/7/04

LOG OF BORING NO. 7

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

Approx. Surface Elev.: 7303 ft

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	0.3 VEGETATIVE LAYER, 4" 7302.5									
	SILTY CLAYEY SAND, medium dense damp, brown to reddish brown		SC SM	1	SS		25	8.2		
	4 7299									
	BEDROCK, siltstone, hard, damp, reddish brown to light tan	5		2	SS		63	5.9		
	5.5 7297.5 End of Boring									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	No Water WD	No Water AD
WL		
WL	AD measured on 11/22/04	

Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON.GDT 12/7/04

LOG OF BORING NO. 8

CLIENT: Midyette Architects

SITE: Boulder Drive, Laramie, Wyoming

PROJECT: LCCC - Laramie Campus

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES SULFATE, %	SAMPLES PENETRATION BLOWS / ft.	TESTS WATER CONTENT, %	TESTS DRY UNIT WT pcf	TESTS UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 7303 ft									
	0.5 VEGETATIVE LAYER, 6" 7302.5			1	SS		21	11.3		
	1 SANDY SILTY CLAY, very stiff, damp, reddish brown 7302							4.4		
	BEDROCK, siltstone, firm to hard, damp, reddish brown									
	4.5 7298.5			2	SS		39/6"	5.0		
	End of Boring									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft		
WL	No Water WD	No Water AD
WL		
WL	AD measured on 11/22/04	

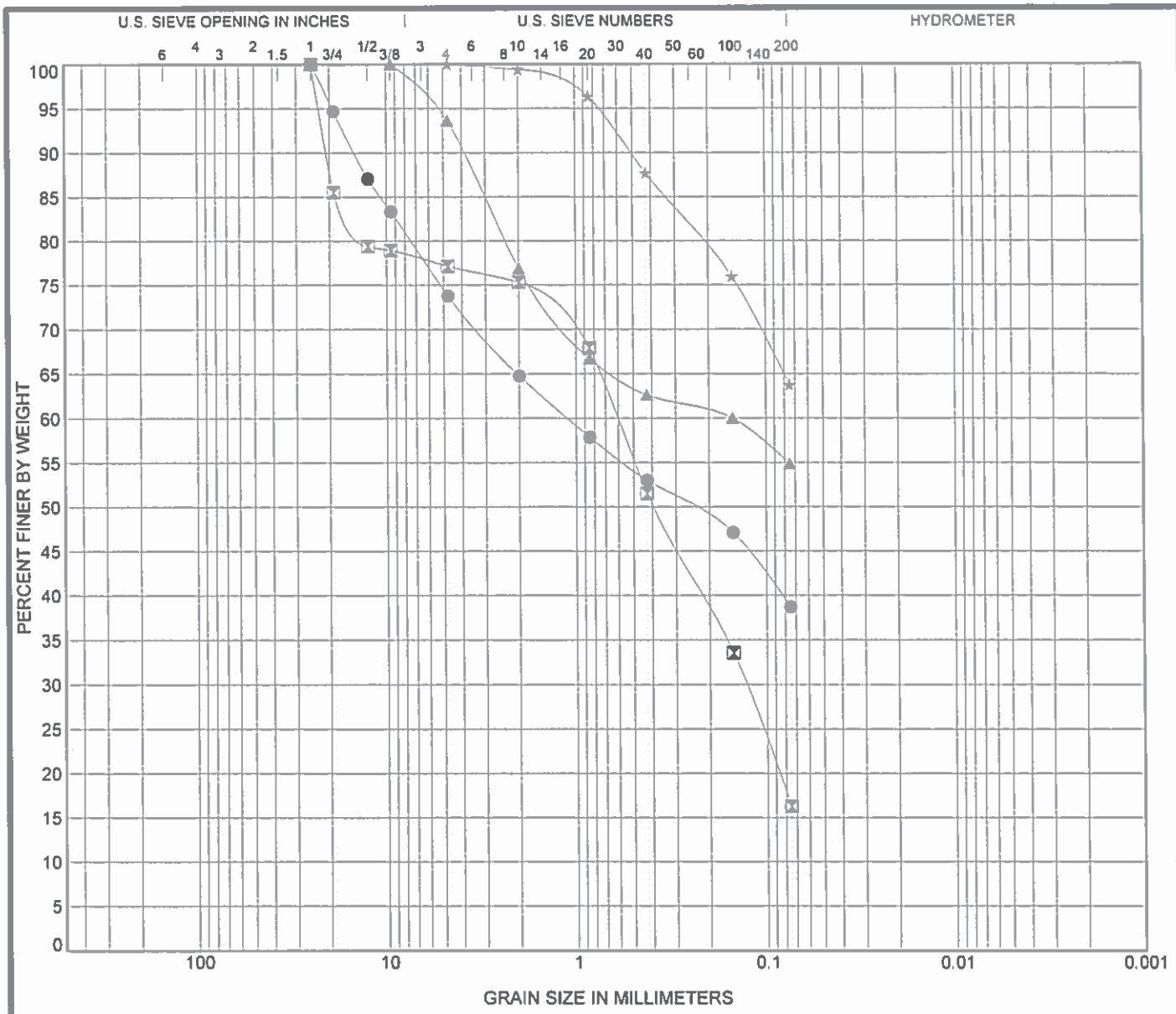
Terracon

BORING STARTED	11-19-04		
BORING COMPLETED	11-19-04		
RIG	CME - 55	FOREMAN	mhf
		JOB #	24045077

BOREHOLE 99 24045077 GPJ TERRACON GDT 12/7/04

APPENDIX B

LABORATORY DATA



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	2	3.0ft	SILTY, CLAYEY SAND with GRAVEL(SC-SM)	22	17	5		
⊠	3	4.0ft	SILTY SAND with GRAVEL(SM)	NP	NP	NP		
▲	6	9.0ft	BEDROCK	24	17	7		
★	8	0.0ft	SANDY SILTY CLAY(CL-ML)	27	20	7		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	2	3.0ft	25	1.106			26.2	35.0	38.7	
⊠	3	4.0ft	25	0.609	0.13		22.9	60.9	16.3	
▲	6	9.0ft	9.5	0.15			6.4	38.8	54.9	
★	8	0.0ft	4.75				0.0	36.2	63.8	

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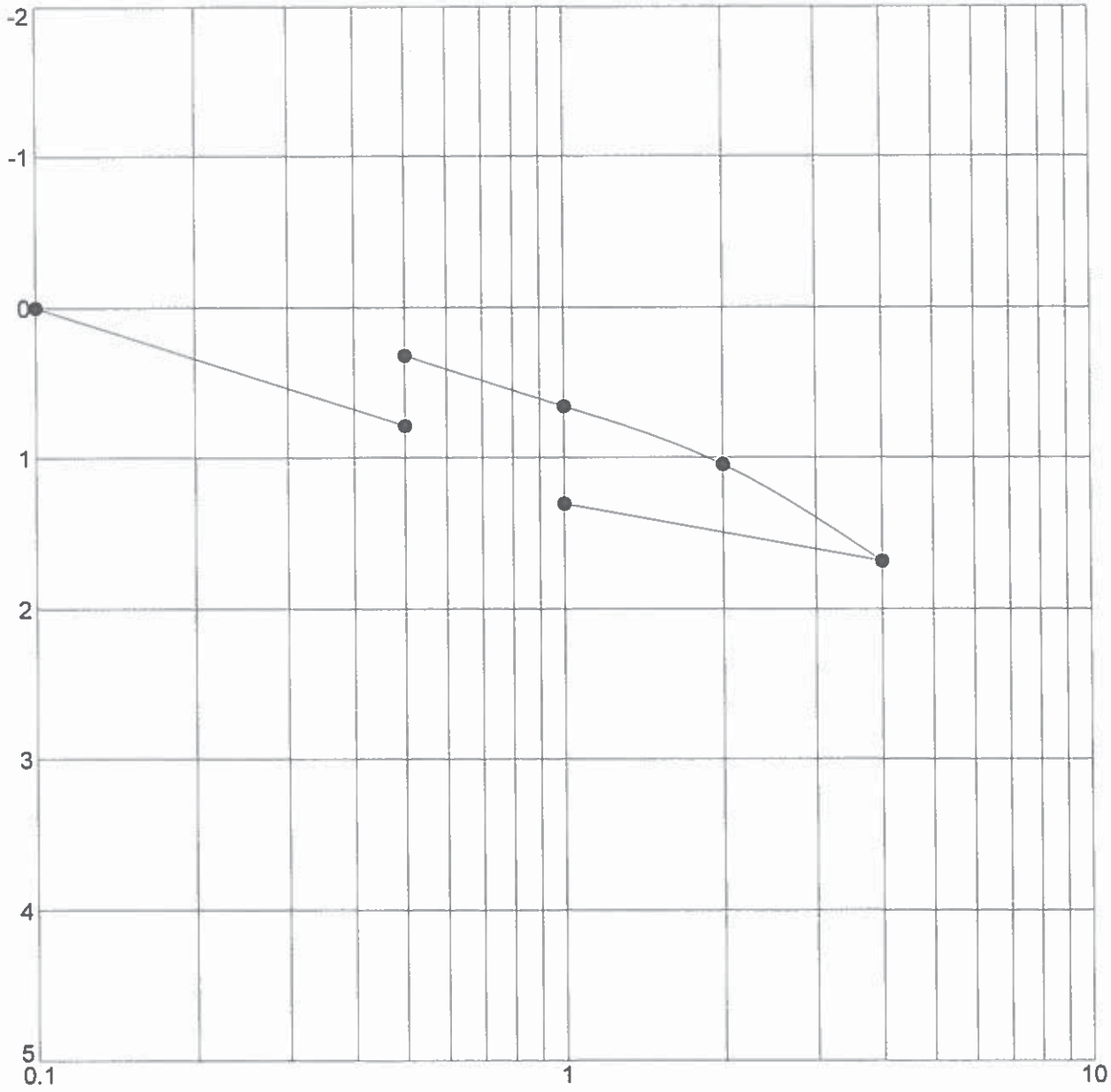
GRAIN SIZE DISTRIBUTION

Project: LCCC - Laramie Campus
Site: Boulder Drive Laramie, Wyoming
Job #: 24045077
Date: 12-3-04

TC_GRAIN_SIZE 24045077.GPJ TERRACON.GDT 12/3/04



Specimen Identification		Classification	γ_d, pcf	WC,%
● 2	3.0ft	SILTY, CLAYEY SAND with GRAVEL(SC-SM)	127	6

Notes:

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CONSOLIDATION TEST

Project: LCCC - Laramie Campus
Site: Boulder Drive Laramie, Wyoming
Job #: 24045077
Date: 12-3-04

TC CONSOL STRAIN 24045077.GPJ TERRACON.GDT 12/3/04

APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS:	Split Spoon - 1-3/8" I.D., 2" O.D., unless otherwise noted	HS:	Hollow Stem Auger
ST:	Thin-Walled Tube - 2" O.D., unless otherwise noted	PA:	Power Auger
CB:	California Barrel Sampler – 1.92" I.D., unless otherwise noted	HA:	Hand Auger
DB:	Diamond Bit Coring - 4", N, B	RB:	Rock Bit
BS:	Bulk Sample or Auger Sample	WB:	Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL:	Water Level	WS:	While Sampling	N/E:	Not Encountered
WCI:	Wet Cave in	WD:	While Drilling		
DCI:	Dry Cave in	BCR:	Before Casing Removal		
AB:	After Boring	ACR:	After Casing Removal		

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-value (SS) Blows/Ft.	Consistency
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Standard Penetration or N-value (SS) Blows/Ft.	Relative Density
0 – 3	Very Loose
4 – 9	Loose
10 – 29	Medium Dense
30 – 49	Dense
50+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 – 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 – 12
Modifiers	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

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GENERAL NOTES

Description of Rock Properties

WEATHERING

Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" not discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)

Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding and Foliation Spacing in Rock[a]

Spacing	Joints	Bedding/Foliation
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

Rock Quality Designator (RQD)[b]		Joint Openness Descriptors	
RQD, as a percentage	Diagnostic description	Openness	Descriptor
Exceeding 90	Excellent	No Visible Separation	Tight
90 – 75	Good	Less than 1/32 in.	Slightly Open
75 – 50	Fair	1/32 to 1/8 in.	Moderately Open
50 – 25	Poor	1/8 to 3/8 in.	Open
Less than 25	Very poor	3/8 in. to 0.1 ft.	Moderately Wide
		Greater than 0.1 ft.	Wide

a. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.
b. RQD (given as a percentage) = length of core in pieces 4 in. and longer/length of run.

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976.
U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

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UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]					Soil Classification	
					Group Symbol	Group Name[B]
Coarse Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$[E]		GW	Well-graded gravel[F]
			$Cu < 4$ and/or $1 > Cc > 3$[E]		GP	Poorly graded gravel[F]
		Gravels with Fines More than 12% fines[C]	Fines classify as ML or MH		GM	Silty gravel[F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$[E]		SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3$[E]		SP	Poorly graded sand[I]
		Sands with Fines More than 12% fines[D]	Fines classify as ML or MH		SM	Silty sand[G,H,I]
			Fines Classify as CL or CH		SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	Inorganic	PI > 7 and plots on or above "A" line[J]		CL	Lean clay[K,L,M]
			PI < 4 or plots below "A" line[J]		ML	Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay[K,L,M,N] / Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line		CH	Fat clay[K,L,M]
			PI lots below "A" line		MH	Elastic Silt[K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay[K,L,M,P] / Organic silt[K,L,M,Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

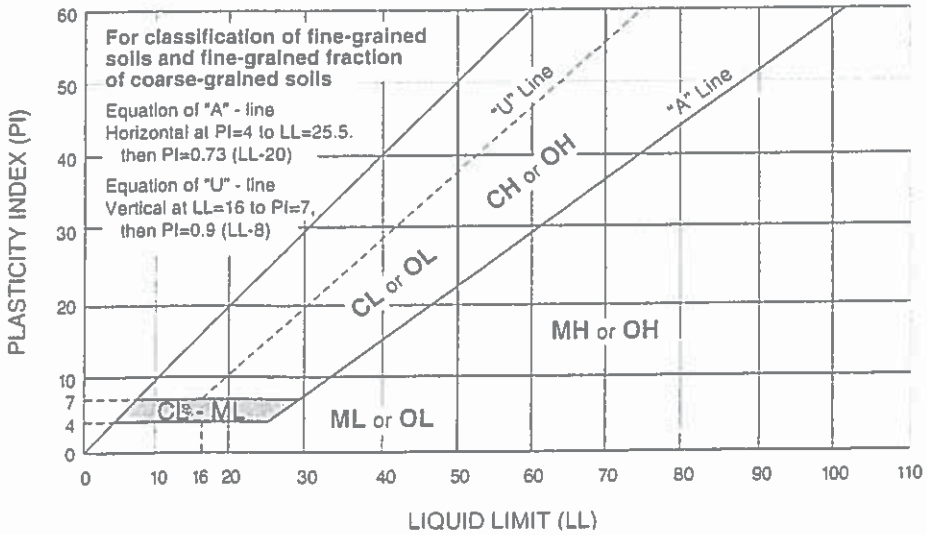
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



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prepared by: Tobin & Associates, P.C, Architecutre / Planning