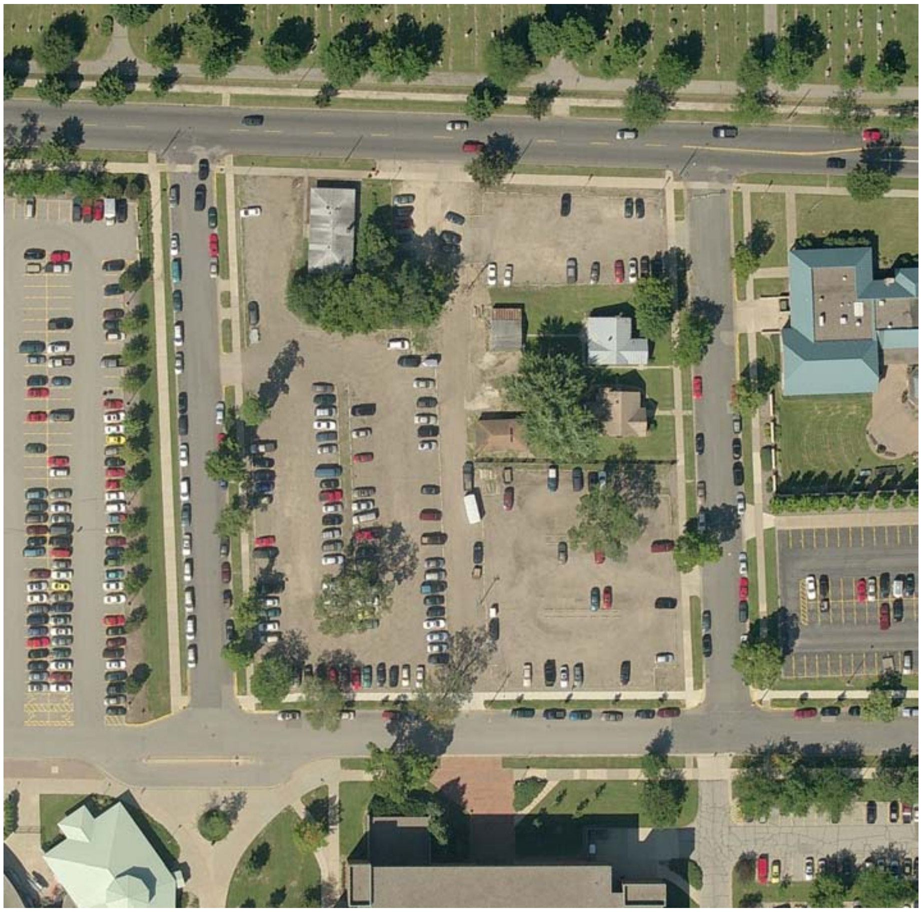
PARKING GARAGE STUDY



UNIVERSITY OF WISCONSIN - LA CROSSE

APRIL 2010

GRAEF

Parking Garage Study

Prepared for:

University of Wisconsin – La Crosse

April 22, 2010

Prepared By:

GRAEF

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Project Manager:

Dewey Hemba, P.E.

GRAEF Project Number 2010-0031

GRAEF

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INTRODUCTION

As the University of Wisconsin – La Crosse continues to grow, the demand for off-street parking spaces increases as well. The University has identified a site on the north side of the campus where it wishes to investigate the feasibility of building a parking garage. According to University staff, the garage should have at least 450 parking spaces and approximately 12,000 square feet of office space for the campus police and the parking administration.

The site identified is bounded by La Crosse Street to the north, 16th Street to the west, 17th Street to the east, and Farwell Street to the south. It presently consists of surface parking lots with approximately 225 parking spaces, two houses owned by the University on 17th Street, and a house on approximately 4,800 square feet of privately owned property on La Crosse Street. See Exhibit A for the Site Location Maps.

GRAEF was retained to investigate alternative parking garage layouts for the site, determine the advantages and disadvantages for the various alternatives, develop cost estimates for the alternatives, and provide recommendations for the alternative which best meets the University's needs.

PARKING GARAGE ALTERNATIVES

In investigating the various alternatives for the use of this site, certain considerations applied to all alternatives:

- The University prefers to maintain as much natural surface and vegetation as practical, especially on the La Crosse Street side of the lot.
- For traffic considerations, the entry and/or exit for the garage should not be located on La Crosse Street. On the other three streets, an entry/exit should best be located toward the middle portion of the block, away from the intersections, to allow for better traffic flow.
- The primary users of the garage will be students, both residential and commuters. However, the garage will occasionally be used for event parking. When in use for

events, campus personnel will direct traffic on the streets and the surge in traffic will be mainly at the end of the event. Most traffic will be directed east along Farwell Street to East Avenue and then to the controlled intersection of East Avenue and La Crosse Street.

- An area on the site should be provided for bicycle and moped parking.
- As is provided now on the University's surface parking lots, the garage will not have parking access control systems at the entry/exit. This will allow for faster and easier access and traffic flow into and out of the garage.
- The garage should allow for future vertical expansion.

Taking into account the above considerations, multiple garage layout alternatives were developed, which included combinations of the following variables:

- Perpendicular parking with two way traffic flow
- Angled parking with one way traffic flow
- Three drive aisles
- Four drive aisles
- Drive aisles oriented north-south
- Drive aisles oriented east-west
- Office space located on the ground floor of the garage with parking above
- Office space located outside the garage footprint

The variables listed above each have advantages and disadvantages associated with them. All of the existing campus surface parking lots use perpendicular parking with two way traffic flow. This layout is generally more efficient than angled parking, but it requires a larger module (the width of two rows of stalls plus the drive lane). Therefore, it is sometimes possible to fit in four aisles of angled parking where only three perpendicular aisles would fit. Parking users generally perceive angled parking to be more user friendly because it is easier to get into and out of the stalls. However, since all other University parking lots use perpendicular stalls, it might be confusing to the users of the garage if these stalls were angled with one way traffic flow.

It is generally preferred to have a garage entry/exit align with a drive aisle. Orienting the drive aisles in the east-west direction would allow for an entry and/or exit to be placed on 16th Street, 17th Street, or both. This would provide for good queuing and traffic flow if the entry/exit were to be placed toward the middle of the block. In order to maximize the parking footprint, the office spaces would have to be located within the garage, with parking levels directly overhead. If the office space were to be outside the garage footprint, the garage would need to be limited to only three aisles, which would mean that it would have to be taller in order to accommodate the required number of spaces.

Orienting the drive aisles in the north-south direction would mean that the entry/exit would have to be placed on Farwell Street. If two entry/exit points were placed on the Farwell Street side of the garage, it would mean that they would have to be immediately next to each other or would be close to the street intersections. Neither option would be good traffic flow design. Therefore, north-south oriented drive aisles means that the garage would have one entry/exit location on Farwell Street. Since the garage will not use access controls and gate arms, the open flow at entry/exit will make this acceptable.

The location of the Police and Parking Administration office space affects several design, construction and maintenance issues. The office space requires approximately twelve feet of clear space below the structure, which means the floor-to-floor height will be approximately fifteen feet. If the space is located within the footprint of the garage, the second parking level will need to be four feet higher than what would be required for just the parking function. This makes the ramp from the first parking level to the second parking level steeper. In some of the investigated alternatives, the ramp would be too steep to allow parking on it.

Placing the office space within the footprint of the garage allows the second parking level to act as the roof structure of the office space. While on the surface that appears to be a cost-effective solution, it has drawbacks. The parking level must be insulated and has the potential of leaking water into the office space. These concerns can be mitigated by providing a waterproof membrane on the parking level above the office space, which increases the cost. Also, parking structure framing is subject to dynamic loads and must be flexible, which in turn creates vibrations. These vibrations can be problematic for ceiling, mechanical, and electrical systems. All of these issues can create maintenance problems in the future. Solving these issues by creating a completely separate roof for the office space within the garage footprint adds significant cost and raises the second parking level even higher than discussed above.

SELECTED ALTERNATIVE

After considering the various advantages and disadvantages of the multiple alternatives investigated, the University chose one alternative to be developed further. This alternative included:

- Perpendicular parking with two way traffic flow
- Four aisles oriented north-south
- The Police and Parking Administration office space located outside the garage footprint, on the east side of the garage
- The primary entrance and exit located on Farwell Street
- A secondary exit located on 16th Street
- The elevator located in the southeast corner of the garage
- A biofiltration basin along La Crosse Street
- Bicycle and moped parking north of the office space

Option 1 assumes that the privately owned house on La Crosse Street will remain. Option 2 assumes that the property can be purchased and allows the garage to be built to within approximately 40 feet of the north property line. See Exhibit B for drawings of the two options.

Budgetary cost estimates for the two options were provided by a construction management firm experienced in building projects of this type. The estimates assumed:

- The structural system would be cast-in-place post-tensioned concrete.
- The elevator would be hydraulic and have a glass back for increased visibility and security.

- The exterior treatment would include precast concrete spandrels and walls with integrally cast brick.
- Glass enclosures at the stairwells for increased security.
- Full build-out of the Police and Parking Administration building with no basement.
- No costs are included for below-grade on-site storm water detention. If underground stormwater detention is required, add $260,000.
- Costs are based on 2010 pricing. It is recommended that an escalation factor of 5% per year be added until the start of construction.
- Costs include a 5% contingency.
- Costs do not include design, DSF management or other soft costs.

Table 1 summarizes the options with parking capacities and costs.

TABLE 1

	Option 1		**Option 2**	
Number of Levels	2.5	3	2.5	3
Number of Parking Spaces	500	610	590	720
Construction Cost	$10,700,000	$12,100,000	$11,800,000	$13,400,000

RECOMMENDATIONS

It is our opinion that the selected site is an excellent location for a garage of the size that the University is anticipating. In the event that the privately owned property on La Crosse Street can be purchased at a reasonable cost, we recommend implementing Option 2. However, if that is not the case, Option 1 will serve the University's need quite well.

EXHIBIT A
Site Maps

SITE LOCATION MAP : UW-LA CROSSE CAMPUS

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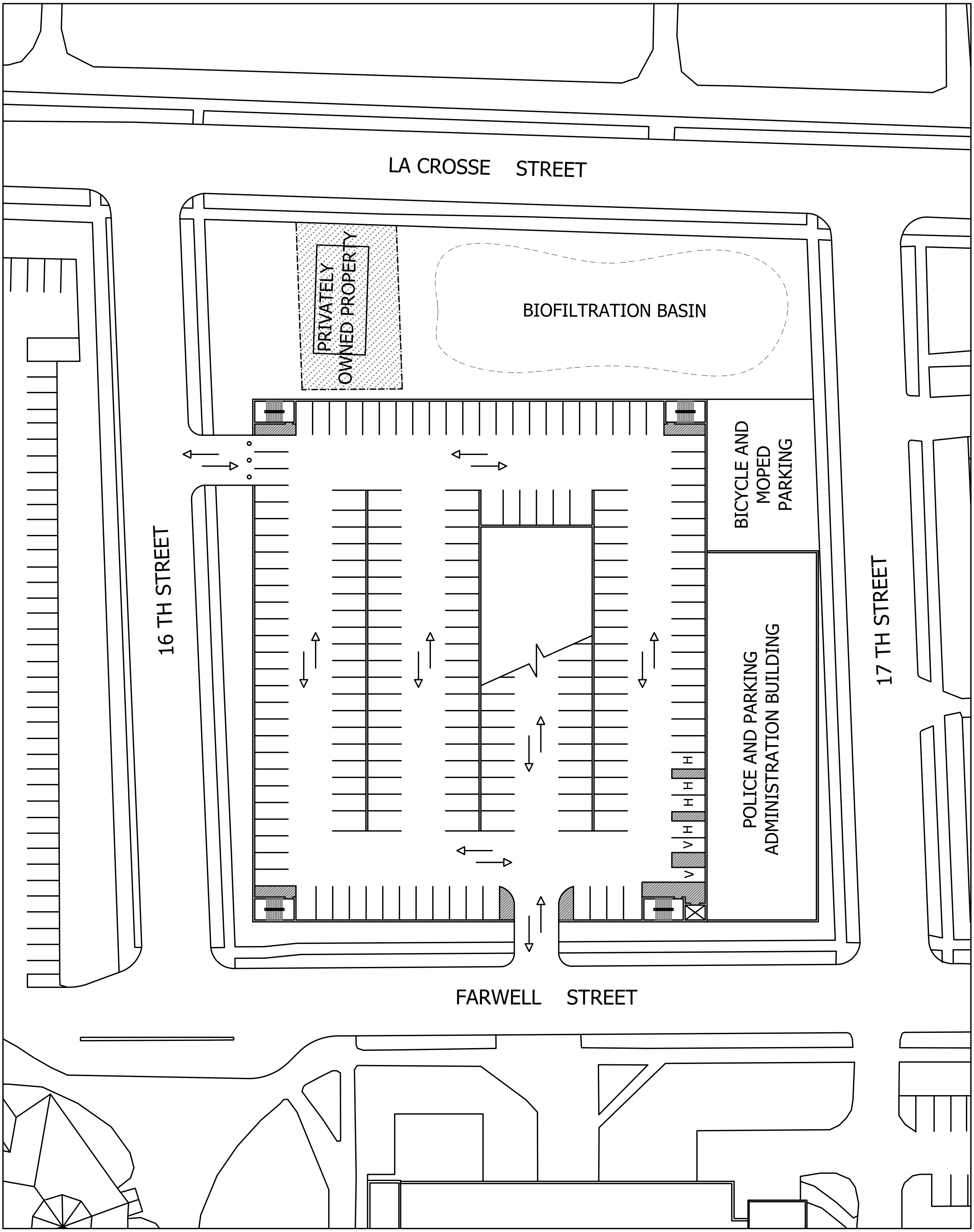
SITE MAP : UW-LA CROSSE CAMPUS

EXHIBIT B
Alternative Layouts



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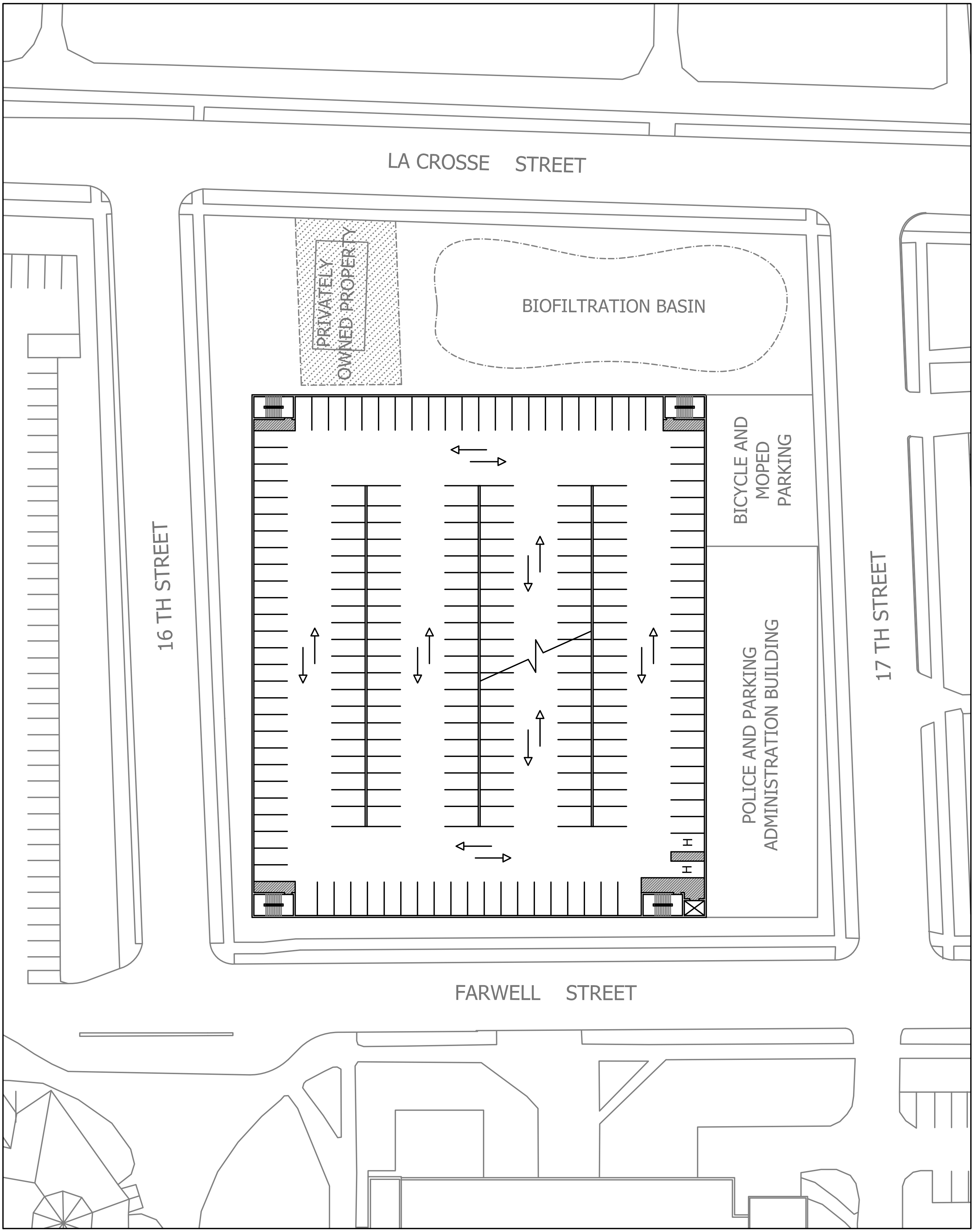
OPTION 1

• GROUND LEVEL •

NORTH 0ft. 70ft.

April 2010



OPTION 1

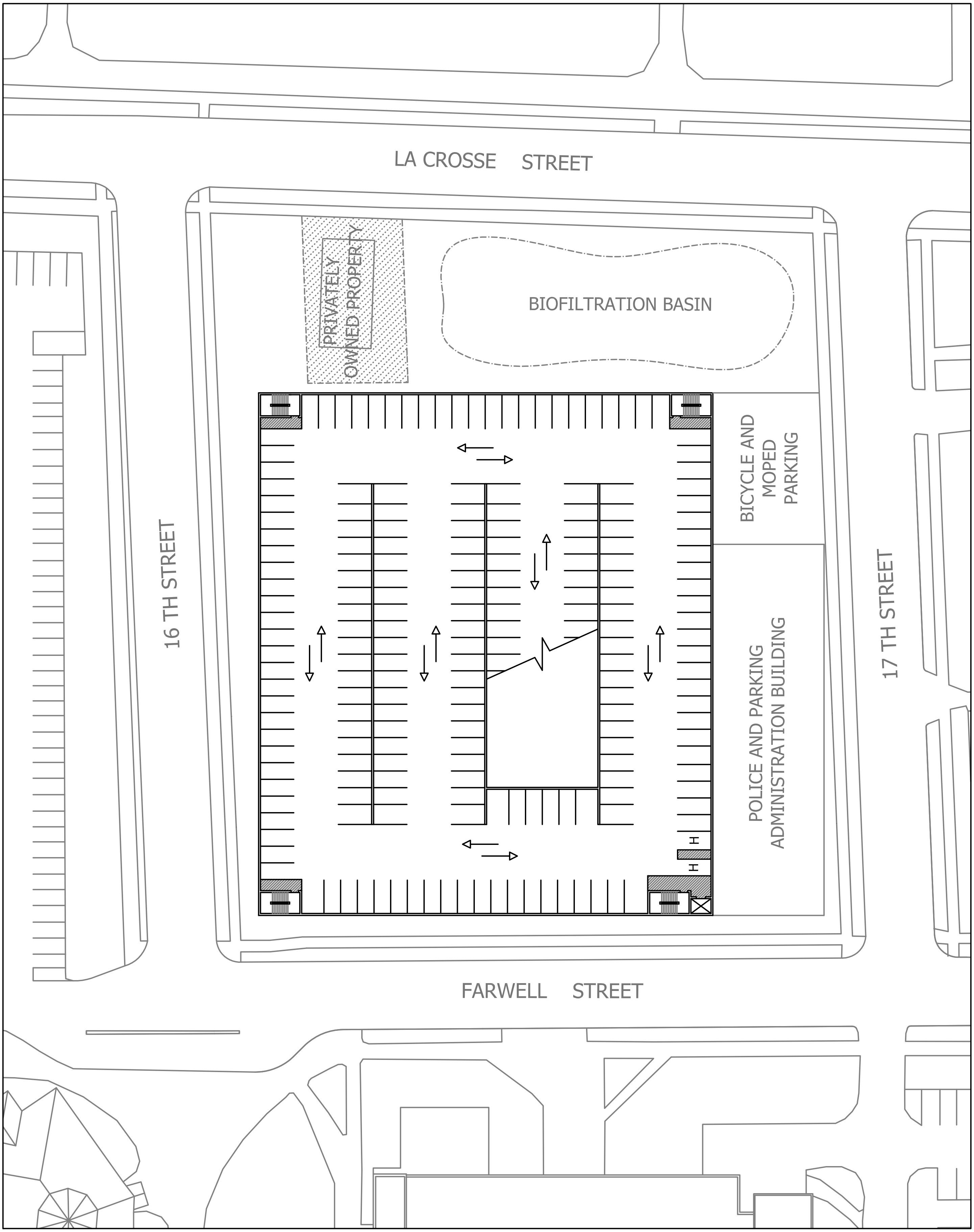
• LEVEL 2 •

GRAEF

NORTH

April 2010

0ft. 70ft.



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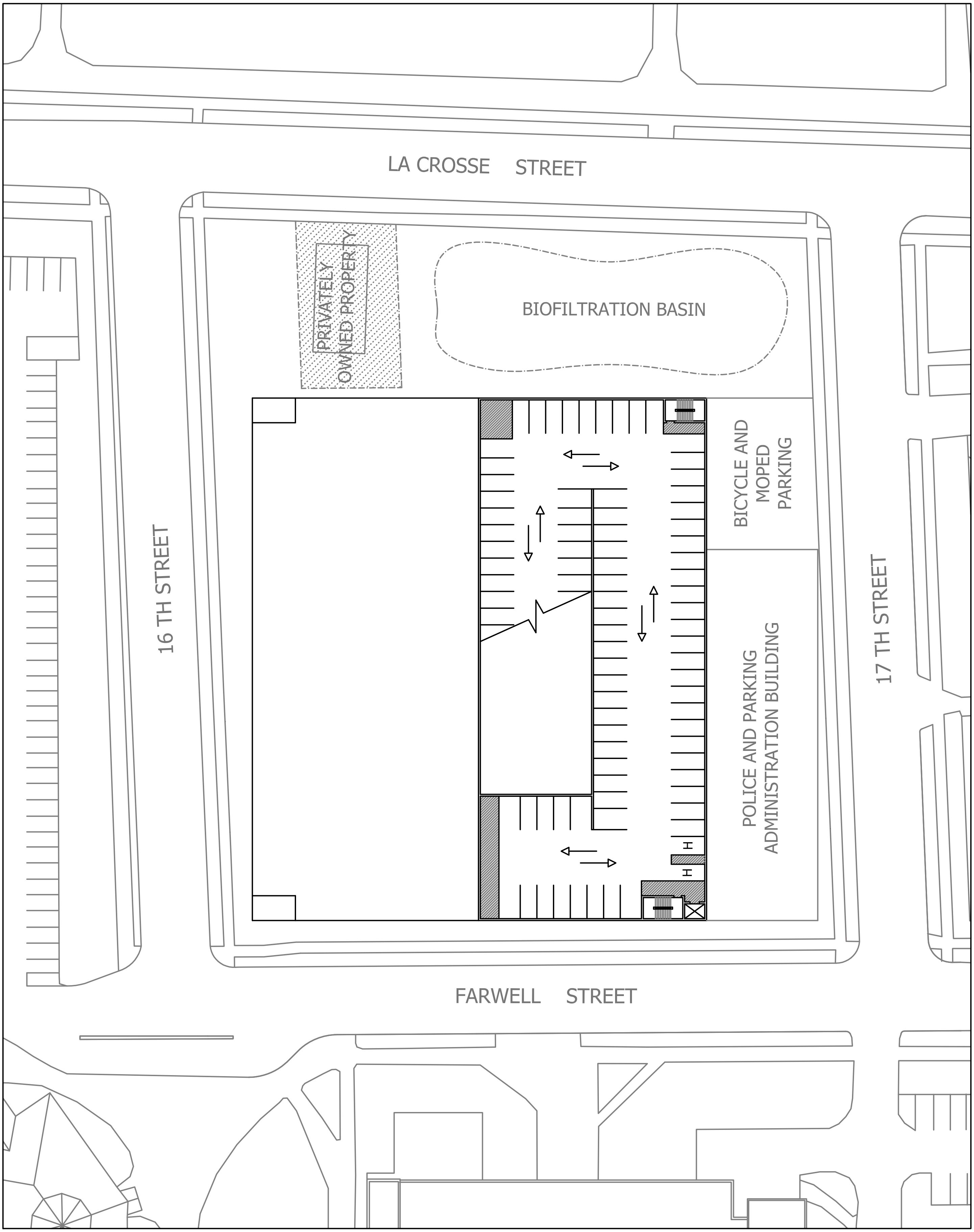
OPTION 1

• LEVEL 3 •

NORTH 0ft. 70ft.

April 2010



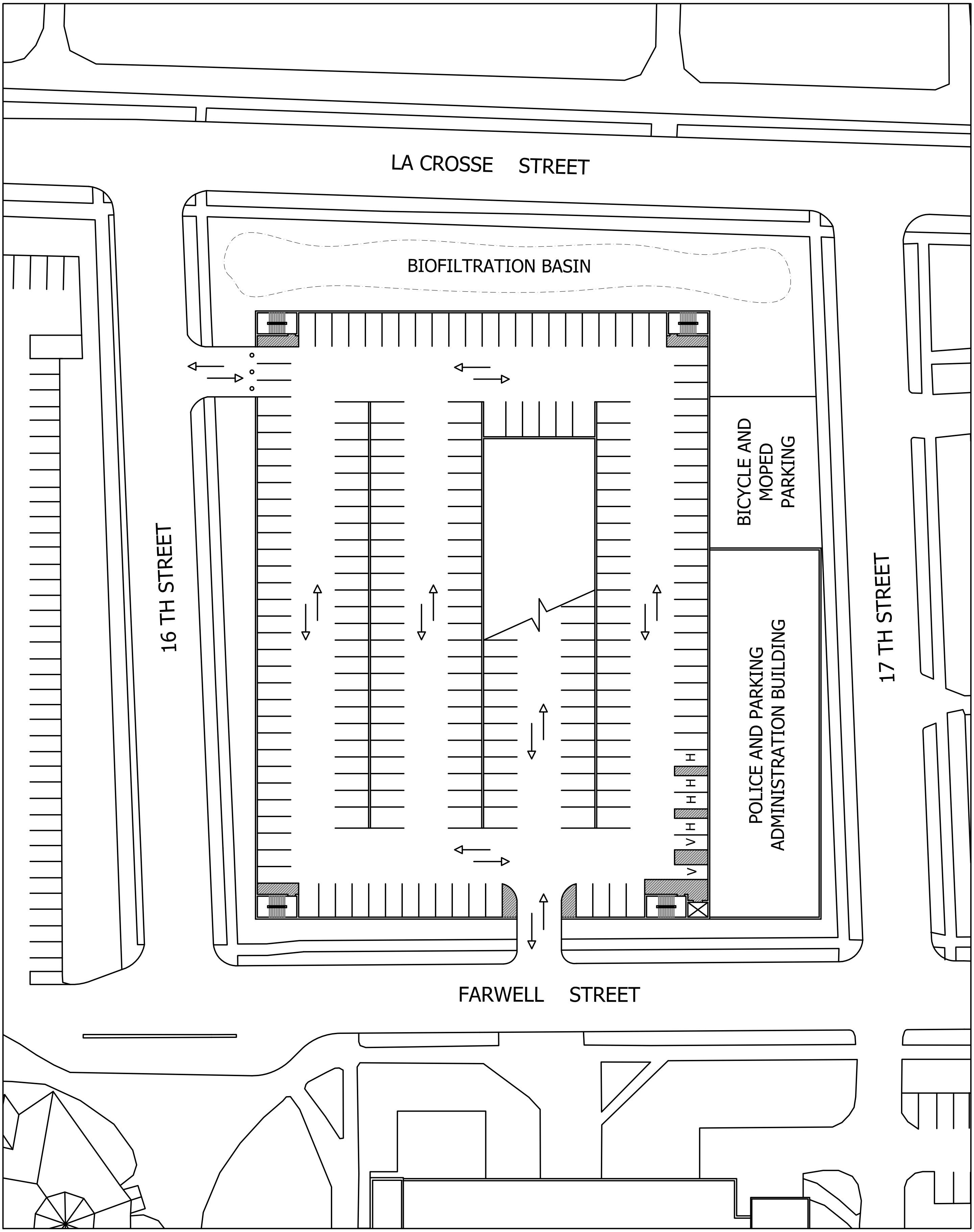
GRAEF

OPTION 1

• LEVEL 3 - ALTERNATIVE •

NORTH 0ft. 70ft.

April 2010



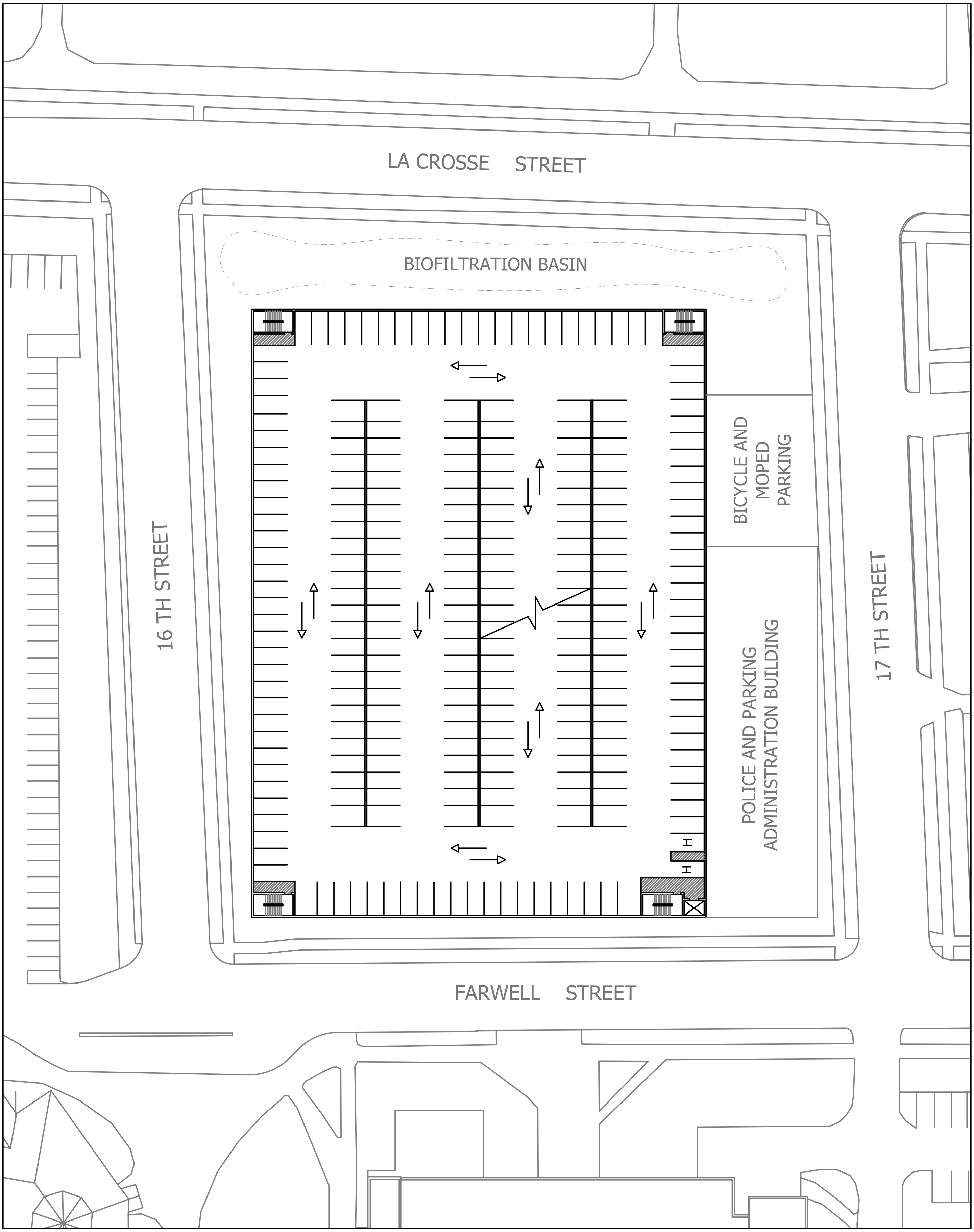
GRAEF

OPTION 2

• GROUND LEVEL •

NORTH 0ft. 70ft.

April 2010

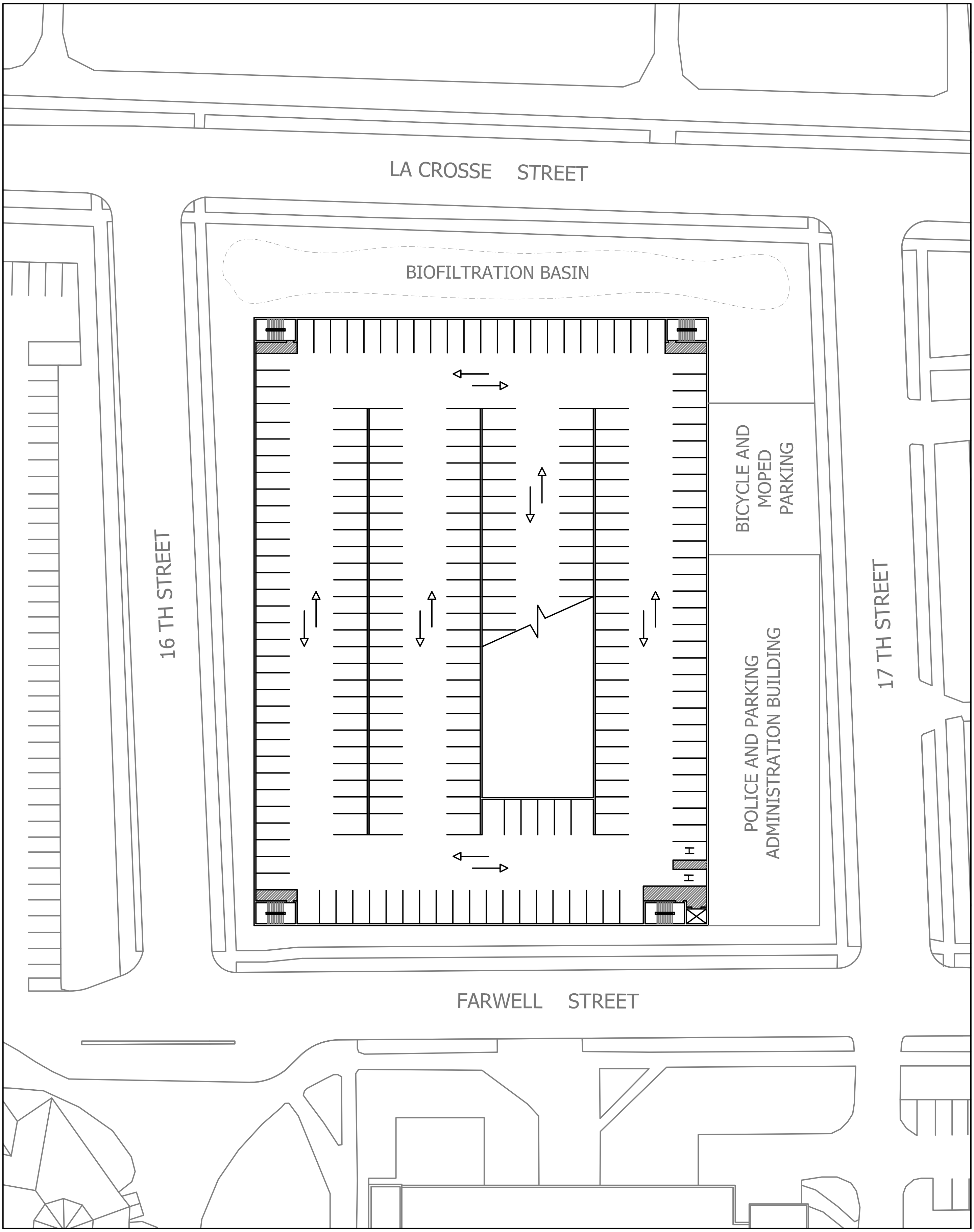


GRAEF

OPTION 2

• *LEVEL 2* •

April 2010



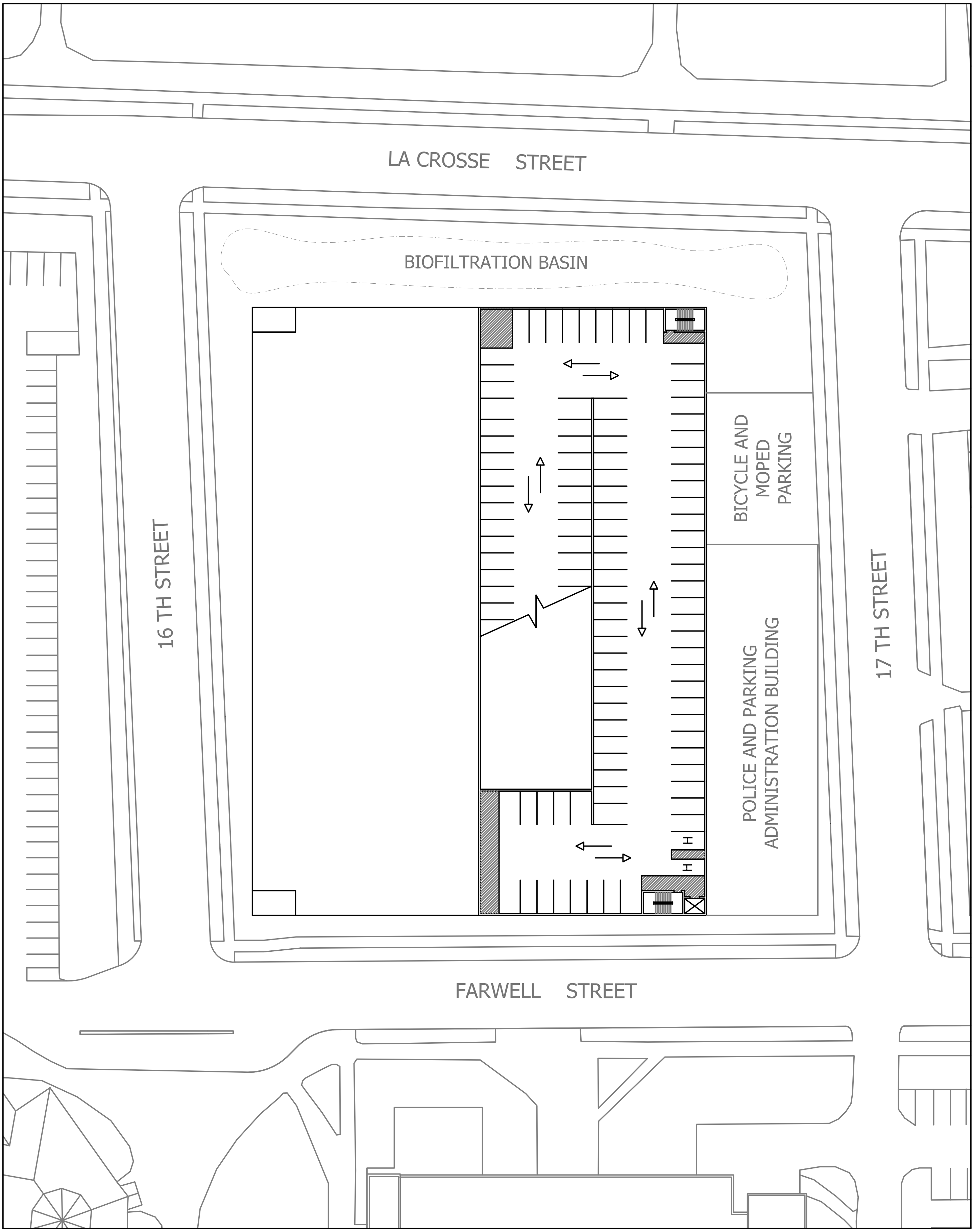
GRAEF

OPTION 2

• LEVEL 3 •

NORTH 0ft. 70ft.

April 2010



GRAEF

OPTION 2

• LEVEL 3 - ALTERNATIVE •

NORTH

0ft. 70ft.

April 2010

EXHIBIT C
Renderings

Farwell Street Elevation

Southeast Corner Looking Northwest

EXHIBIT D
Geotechnical Report

Geotechnical Evaluation Report

Proposed Parking Ramp
University of Wisconsin – La Crosse
La Crosse, Wisconsin

Prepared for

GRāEF

Brandon K. Wright, PE
Project Engineer
License Number: 40141-006
February 9, 2010

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Project LC-09-05465

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February 9, 2010 Project LC-09-05465

Mr. Dewey Hemba, PE
GRāEF
One Honey Creek, Corporate Center
125 South 84th Street, Suite 401
Milwaukee, WI 53214

Re: Geotechnical Evaluation
Proposed Parking Ramp
University of Wisconsin – La Crosse
La Crosse, Wisconsin

Dear Mr. Hemba:

We are pleased to present this Geotechnical Evaluation Report for a proposed multi-level parking structure at the University of Wisconsin – La Crosse Campus in La Crosse Wisconsin. The proposed structure will be located between La Crosse Street to the north, Farwell Street to the south, and between 16th Street North to the West and 17th Street North to the east.

A summary of our results and a summary of our recommendations in light of the geotechnical issues influencing design and construction are presented below. More detailed information and recommendations follow in the attached report.

Summary of Results

Our borings indicate that the general material profile is composed of fill over alluvial sands. The borings initially encountered silty gravel fill or silty sand with gravel fill that extended to a depth of 1 foot in three of the so borings, but was found to extend to a depth of 7 feet in Boring ST-1.

Below the fill, the borings encountered alluvial sand soils that extended to the borings' termination depths. The alluvial sands were composed of poorly graded sand, poorly graded sand with silt, and silty sand. Groundwater was consistently observed at 38 feet below the ground surface. Based on penetration resistance testing, the alluvial soil was very loose to medium dense.

Summary of Design Recommendations

From a design perspective, it is our opinion that the proposed structures can be supported on conventional perimeter wall footings and isolated column pads. This is based on the following considerations:

- The existing fill is unsuitable for building support and should therefore, be removed from below the proposed structure. Foundations need to be supported on either native alluvial sand soils or compacted sand or gravel backfill that extends to native alluvial sand soils.

AA/EOE

- Remnants of old foundations, slabs and utilities may be encountered during the site grading. These materials will need to be completely removed and the excavation backfilled with compacted sand or gravel.
- Because the alluvial soils were noted as being locally very loose to loose, provisions should be made to surface-compact foundation and slab subgrades to densify the bearing soils, enhancing subgrade uniformity and strength, and limiting the potential for the structure to settle.

Following the above design recommendations, footings can be sized to exert a net allowable bearing capacity of up to 6,000 pounds per square foot.

Summary of Construction Considerations

From a construction perspective, the project team should also be aware that:

- The on-site existing fill should not be considered for re-use as backfill and additional required fill below the footings. Fill below footings should be composed of sand having less than 12 percent particles passing a number 200 sieve. The on-site alluvial soils appear to meet this requirement and can be considered for re-use as fill below the structure and footings.
- Our review of historic site use indicates the previously had multiple residential structures. Knowing this, consideration of encountering remnants of old structures and abandoned utilities is highly likely. In the event these situations arise, additional (deeper) excavations in these locations will be required to expose suitable bearing soils for the proposed structure.
- Excavation bottoms should be surface-compacted with a large steel drum roller in order to facilitate the net allowable bearing capacity. Subgrade densities should be checked by means of in-place compaction testing prior to placing additional required fill to achieve footing elevation or placement of concrete for footings.

Remarks

Thank you for making Braun Intertec your geotechnical consultant for this project. If you have questions about this report, or if there are other services that we can provide in support of our work to date, please call Brandon Wright at 608.781.7277.

Sincerely,

BRAUN INTERTEC CORPORATION

Brandon K. Wright, PE
Project Engineer

Loren W. Braun, PE
Senior Engineer

BRAUN
INTERTEC

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Description **Page**

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Description **Page**

A. Introduction

A.1. Project Description

This Geotechnical Evaluation Report addresses a proposed parking to be constructed for the University of Wisconsin – La Crosse Campus. The project will include design and construction of a multi-level parking ramp constructed with reinforced concrete. Plans are preliminary at this time, but may include one below grade parking level. The general location of the site with adjacent streets is shown on the Soil Boring Location Sketch in the Appendix.

A.2. Purpose

The purpose of this geotechnical evaluation was to characterize the subsurface conditions in the proposed project area, and assist the project team by providing geotechnical recommendations regarding design of foundations and slabs.

A.3. Site Conditions

The site is a currently being used for parking but also has some residential structures. Review of historic records and aerial photographs of the site indicate multiple residential homes were once present, but have since been demolished and backfilled.

A.4. Scope of Services

Our scope of services for this project was originally submitted as a Cost Estimate to Mr. Dewey Hemba, with GRāEF, who provided authorization to proceed. Our scope of services was performed under the terms of our June 15, 2006, General Conditions.

A.4.a. Staking and Surveying

We staked boring locations by measuring dimensions from nearby buildings or other site features with a tape or surveyor's wheel at approximate right angles from those references. Surface elevations were measured by the project surveyor, Paragon Associates, Inc.

A.4.b. Subsurface Exploration

We performed four penetration test borings at the locations shown on the Soil Boring Location Sketch in the Appendix. The borings were extended to a depth of 51 feet. Prior to commencing with our subsurface exploration activities, we cleared the boring locations of underground utilities through Wisconsin's Diggers Hotline.

A.4.c. Geotechnical Evaluation, Analysis and Reporting

Information obtained from the borings was used to identify the geotechnical issues influencing design and construction, qualify the nature of their impact, and outline alternatives for their mitigation. Upon reviewing our results we developed recommendations for:

- Structure subgrade preparation, including excavations and ground improvement.
- Selecting, placing and compacting on-site or imported earth materials.
- Designing foundations and slabs.
- Providing quality control during construction.

B. Results

B.1. Exploration Logs

B.1.a. Log of Boring Sheets

Log of Boring sheets for our penetration test borings are included in the Appendix. The logs identify and describe the soils that were penetrated, and present the results of penetration resistance tests performed within them, laboratory tests performed on penetration test samples retrieved from them, and groundwater measurements.

Strata boundaries were inferred from changes in the penetration test samples and the auger cuttings. Because sampling was not performed continuously, the strata boundary depths are only approximate. The boundary depths likely vary away from the boring locations, and the boundaries themselves may also occur as gradual rather than abrupt transitions.

B.1.b. Geologic Origins

Geologic origins assigned to the materials shown on the logs and referenced within this report were based on: (1) a review of the background information and reference documents cited above, (2) visual classification of the various geologic material samples retrieved during the course of our subsurface exploration, (3) penetration resistance testing performed for the project, (4) laboratory test results, and (5) available common knowledge of the geologic processes and environments that have impacted the site and surrounding area in the past.

B.2. Soils and Groundwater

B.2.a. Soil Profile

As revealed by the borings, the general material profile is composed of fill over alluvial sands. The borings initially encountered silty gravel (GM) or silty sand with gravel (SM) fill that was black to dark brown and moist. The fill generally extended to 1 foot, but was found to extend to a depth of 7 feet in Boring ST-1.

Below the fill, the borings encountered alluvial sand soils that extended to the borings' termination depths. The alluvial sands were composed of poorly graded sand (SP), poorly graded sand with silt (SP-SM), and silty sand that was brown to light brown, moist to 38 feet and then waterbearing.

B.2.b. Penetration Resistance Testing

Penetration resistance values recorded in the fill and near surface alluvial soils ranged from 17 to 44 blows per foot (BPF), indicating they were likely frozen. Penetration resistance values recorded in the alluvial soils ranged from 4 to 19 BPF, indicating they were locally very loose to medium dense.

B.2.c. Groundwater

Groundwater was observed at a depth of 38 feet below the ground surface, corresponding to elevation 631 to 632 1/2. Considering the free draining characteristics of the alluvial sand soils, we believe this represents the static groundwater elevation for the site. However, seasonal and annual fluctuations of groundwater should also be anticipated.

B.3. Pressuremeter Test Results

A summary of the limit pressures and modulus values derived from the raw pressuremeter data is presented below in Table 1. The test was conducted in Boring ST-4.

Table 1. Pressuremeter Test Results

Test Depth (ft)	Geologic Material	Classification	Limit Pressure (tsf)	Modulus (tsf)
12 1/2	Alluvium	Poorly Graded Sand (SP)	6.1	51.9
20	Alluvium	Poorly Graded Sand (SP)	6.0	41.0
45	Alluvium	Poorly Graded Sand (SP)	12.7	63.3

B.4. Laboratory Test Results

Results of our laboratory tests are presented below in Table 2.

Table 2. Laboratory Classification Test Results

Location	Sample Depth (ft)	Classification	Moisture Content (%)	Percent Passing a #200 Sieve
ST-1	20	Poorly Graded Sand (SP)	5	1
ST-2	10	Silty Sand (SM)	13	15
ST-2	35	Poorly Graded Sand with Silt (SP-SM)	22	8
ST-3	20	Poorly Graded Sand (SP)	6	1
ST-4	20	Poorly Graded Sand (SP)	5	2

C. Basis for Recommendations

C.1. Design Details

C.1.a. Building Structure Loads

Specific structure location was not available at the time of this report. However, according to Mr. Dewey Hemba of GRāEF, maximum column loads are expected to be as much as 820 kips per column. The structure will be constructed out of (reinforced concrete and post-tension concrete).

C.1.b. Anticipated Grade Changes

According to Mr. Hemba, the structure will be designed to have the footings constructed to accommodate either ground level parking or one below-grade level of parking. Therefore, the footings will either be constructed at a depth of 4 feet or 10 feet below existing site elevations.

C.1.c. Precautions Regarding Changed Information

We have attempted to describe our understanding of the proposed construction to the extent it was reported to us by others. Depending on the extent of available information, assumptions may have been made based on our experience with similar projects. If we have not correctly recorded or interpreted the project details, we should be notified. New or changed information could require additional evaluation, analyses and/or recommendations.

C.2. Design Considerations

From a design perspective, it is our opinion that the proposed structures can be supported on conventional perimeter wall footings and column pads. This is based on the following considerations:

- The existing fill is unsuitable for building support and should therefore, be removed from below the proposed structure. Foundations need to be supported on either native alluvial sand soils or compacted sand or gravel backfill that extends to native alluvial sand soils.
- Remnants of old foundations, slabs and utilities may be encountered during the site grading. These materials will need to be completely removed and the excavation backfilled with compacted sand or gravel.
- Because the alluvial soils were noted as being locally very loose to loose, provisions should be made to surface compact foundation and slab subgrades to densify the bearing soils, enhancing subgrade uniformity and strength, and limiting the potential for the structure to settle.

C.3. Construction Considerations

From a construction perspective, the project team should also be aware that:

- The on-site existing fill should <u>not</u> be considered for re-use as backfill and additional required fill below the footings. Fill below footings should be composed of clean sand having less than 12 percent particles passing a number 200 sieve. The on-site alluvial soils appear to meet this requirement and can be considered for re-use as fill below the structure and footings.
- Our review of historic site use indicates the previously had multiple residential structures. Knowing this, consideration of encountering remnants of old structures and abandoned utilities is highly likely. In the event these situations arise, additional (deeper) excavations in these locations will be required to expose suitable bearing soils for the proposed structure.

- Excavation bottoms must be surface compacted with a large steel drum roller in order to facilitate the net allowable bearing capacity. Subgrade densities should be checked by means of in-place compaction testing prior to placing additional required fill to achieve footing elevation or placement of concrete for footings.

D. Recommendations

D.1. Building Subgrade Preparation

D.1.a. Excavations

We recommend removing the fill from below the structure. In addition, footings, slabs, and underground utilities associated with the existing building should also be removed from beneath the proposed building. Anticipated excavation depths and bottom elevations for each of the borings are shown below in Table 3.

Table 3. Excavation Depths and Bottom Elevations

Location	Surface Elevation	Anticipated Excavation Depth (ft)	Corresponding Bottom Elevation
ST-1	669.4	7	662 1/2
ST-2	668.8	1	667
ST-3	670.4	1	669 1/2
ST-4	669.2	1	668

To provide lateral support to replacement backfill, additional required fill and the structural loads they will support, we recommend oversizing (widening) the excavations 1 foot horizontally beyond the outer edges of the building perimeter footings for each foot the excavations extend below bottom-of-footing elevations.

D.1.b. Excavation Support

The alluvial soils are Type C Soil under OSHA guidelines. Unsupported excavations in these soils should therefore be maintained at a gradient no steeper than 1:1 1/2 (horizontal: vertical), or be shored.

D.1.c. Selecting Excavation Backfill and Additional Required Fill

The on-site existing fill can be considered for re-use as backfill and additional required fill provided debris (if encountered)and organic material are first removed. The alluvial soils can also be considered for reuse as backfill and additional required fill.

We recommend that imported material needed to replace excavation spoils or balance cut and fill quantities, consist of sand having less than 12 percent of the particles by weight passing a #200 sieve.

D.1.d. Placement and Compaction of Backfill and Fill

We recommend spreading backfill and fill in loose lifts of approximately 12 inches. We recommend compacting backfill and fill in accordance with the criteria presented below in Table 4. The relative compaction of utility backfill should be evaluated based on the structure below which it is installed, and vertical proximity to that structure.

Table 4. Compaction Recommendations Summary

Fill Placement Reference	Relative Compaction, percent (ASTM International D 698)	Moisture Content Variance from Optimum, percentage points
Footing elevation to 3 feet below footing elevation	100	±3
3 feet or greater below the footing elevation	98	±3
Below slabs/pavements	95	±3
Below landscaped surfaces	90	NA

D.2. Spread Footings

D.2.a. Embedment Depth

For frost protection, we recommend embedding perimeter footings 60 inches below the lowest adjacent grade.

D.2.b. Subgrade Improvement

Prior to placing forms or reinforcement, we recommend that exposed soils in the foundation excavations be surface-compacted with a large steel drum vibratory roller with a minimum dynamic force of 45,000 pounds. A minimum of four passes should be completed with two of the passes perpendicular to the other two passes. An additional pass may be required in the static mode to consolidate the surface sands that may have been loosened by the vibratory process.

D.2.c. Net Allowable Bearing Pressure

We recommend sizing spread footings to exert a net allowable bearing pressure of 6,000 pounds per square foot (psf). This value includes a safety factor of at least 3 with regard to bearing capacity failure.

D.2.d. Settlement

We estimate that post-construction total and differential settlements among the footings will amount to less than 1 and 1/2 inch, respectively, under the assumed loads.

D.3. Ground Supported Concrete Slabs

D.3.a. Subgrade Modulus

Assuming that slab subgrades are surface compacted, we recommend using a modulus of subgrade reaction, k, of 250 pounds per square inch per inch of deflection (pci).

D.4. Construction Quality Control

D.4.a. Excavation Observations

We recommend having a geotechnical engineer observe all excavations related to subgrade preparation and spread footing and slab-on-grade construction. The purpose of the observations is to evaluate the competence of the geologic materials exposed in the excavations, and the adequacy of required excavation oversizing.

D.4.b. Materials Testing

We recommend density tests be taken in excavation backfill and additional required fill placed below spread footings, slab-on-grade construction, and beside foundation walls.

We also recommend slump, air content and strength tests of Portland cement concrete.

D.4.c. Cold Weather Precautions

If site grading and construction is anticipated during cold weather, all snow and ice should be removed from cut and fill areas prior to additional grading. No fill should be placed on frozen subgrades. No frozen soils should be used as fill.

Concrete delivered to the site should meet the temperature requirements of ASTM International C 94. Concrete should not be placed on frozen subgrades. Concrete should be protected from freezing until the necessary strength is attained. Frost should not be permitted to penetrate below footings.

E. Procedures

E.1. Penetration Test Borings

The penetration test borings were drilled with a truck-mounted core and auger drill equipped with hollow-stem auger. The borings were performed in accordance with ASTM International D 1586. Penetration test samples were taken at 2 1/2- or 5-foot intervals. Actual sample intervals and corresponding depths are shown on the boring logs.

E.2. Material Classification and Testing

E.2.a. Visual and Manual Classification

The geologic materials encountered were visually and manually classified in accordance with ASTM International D 2488. A chart explaining the classification system is attached. Samples were sealed in jars and returned to our facility for review and storage.

E.2.b. Laboratory Testing

The results of the laboratory tests performed on geologic material samples are noted on or follow the appropriate attached exploration logs. The tests were performed in accordance with ASTM International procedures.

E.3. Groundwater Measurements

The drillers checked for groundwater as the penetration test borings were advanced, and again after auger withdrawal. The boreholes were then backfilled or allowed to remain open for an extended period of observation as noted on the boring logs.

F. Qualifications

F.1. Variations in Subsurface Conditions

F.1.a. Material Strata

Our evaluation, analyses and recommendations were developed from a limited amount of site and subsurface information. It is not standard engineering practice to retrieve material samples from exploration locations continuously with depth, and therefore strata boundaries and thicknesses must be inferred to some extent. Strata boundaries may also be gradual transitions, and can be expected to vary in depth, elevation and thickness away from the exploration locations.

Variations in subsurface conditions present between exploration locations may not be revealed until additional exploration work is completed, or construction commences. If any such variations are revealed, our recommendations should be re-evaluated. Such variations could increase construction costs, and a contingency should be provided to accommodate them.

F.1.b. Groundwater Levels

Groundwater measurements were made under the conditions reported herein and shown on the exploration logs, and interpreted in the text of this report. It should be noted that the observation period was relatively short, and groundwater can be expected to fluctuate in response to rainfall, flooding, irrigation, seasonal freezing and thawing, surface drainage modifications and other seasonal and annual factors.

F.2. Continuity of Professional Responsibility

F.2.a. Plan Review

This report is based on a limited amount of information, and a number of assumptions were necessary to help us develop our recommendations. It is recommended that our firm review the geotechnical aspects of the designs and specifications, and evaluate whether the design is as expected, if any design changes have affected the validity of our recommendations, and if our recommendations have been correctly interpreted and implemented in the designs and specifications.

F.2.b. Construction Observations and Testing

It is recommended that we be retained to perform observations and tests during construction. This will allow correlation of the subsurface conditions encountered during construction with those encountered by the borings, and provide continuity of professional responsibility.

F.3. Use of Report

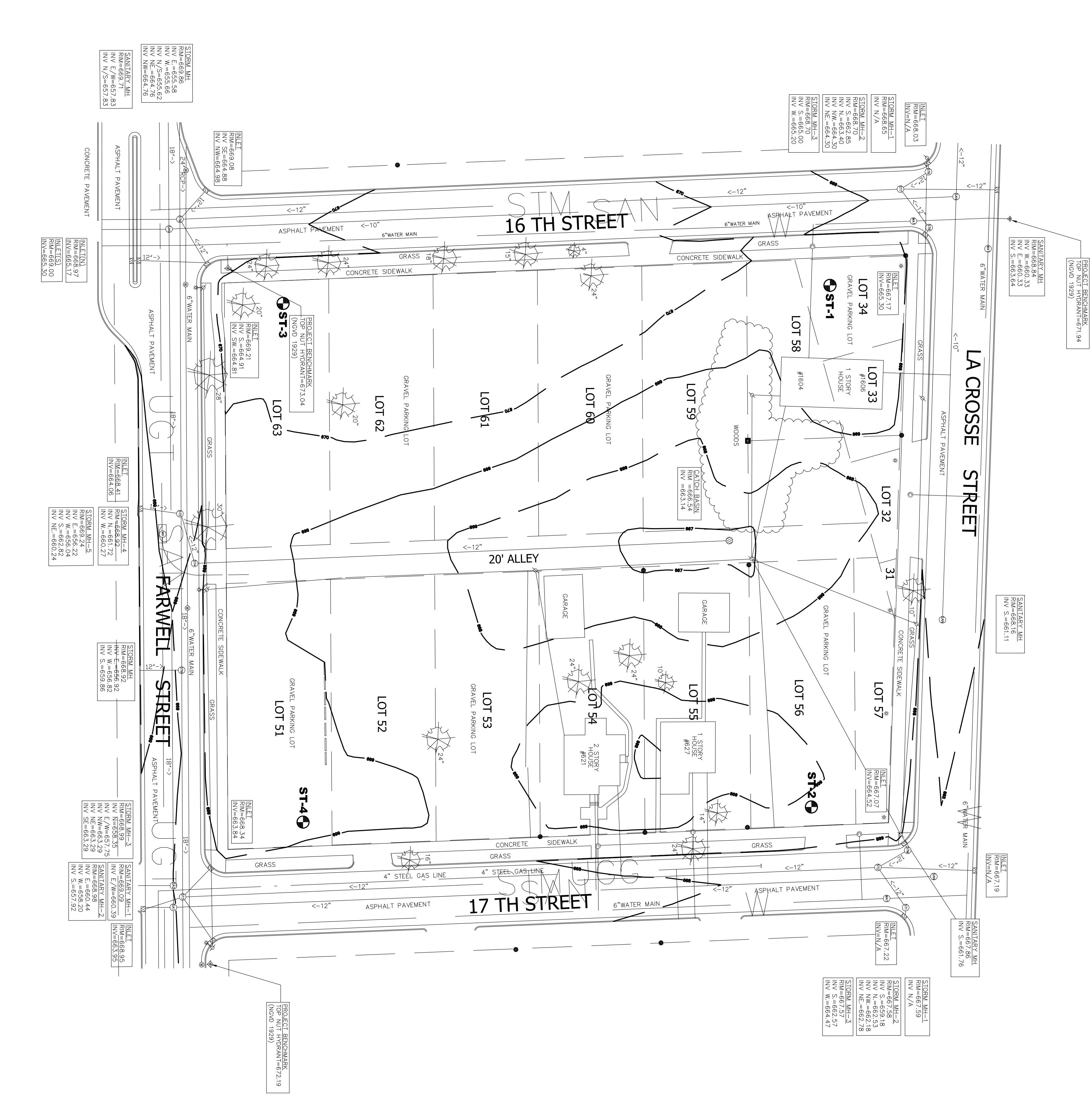
This report is for the exclusive use of the parties to which it has been addressed. Without written approval, we assume no responsibility to other parties regarding this report. Our evaluation, analyses and recommendations may not be appropriate for other parties or projects.

F.4. Standard of Care

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

Appendix

F:\LC\2009\LC0905465.dwg,BLAND,2/5/2010 3:07:12 PM



DENOTES APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING

SCALE: 1" = 60'

Project No:	LC0905465
Drawing No:	LC0905465
Scale:	1" = 60'
Drawn By:	BJB
Date Drawn:	2/5/10
Checked By:	BW
Last Modified:	2/5/10
Sheet: of	Fig:

SOIL BORING LOCATION SKETCH
GEOTECHNICAL EVALUATION
PROPOSED PARKING RAMP
UNIVERSITY OF WISCONSIN - LA CROSSE
LA CROSSE, WISCONSIN

Base Dwg Provided By:
PARAGON ASSOCIATES, INC.

BRAUN INTERTEC
11001 Hampshire Avenue So.
Minneapolis, MN 55438
PH. (952) 995-2000
FAX (952) 995-2020

LOG OF BORING

Braun Project LC-09-05465 Geotechnical Evaluation Proposed Parking Ramp University of Wisconsin - La Crosse La Crosse, Wisconsin	BORING: ST-1 LOCATION: See attached sketch.

DRILLER: K. Keck	METHOD: 3 1/4" HSA, Autohammer	DATE: 1/21/10	SCALE: 1" = 4'

Elev. feet 669.4	Depth feet 0.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
668.4	1.0	FILL	FILL: Silty Gravel, dark brown, frozen.					Surface elevations at the boring locations were surveyed by Paragon Associates, Inc.
662.4	7.0	FILL	FILL: Silty Sand, with Gravel, medium grained, brown, frozen to moist.	44				
				17				
		SP	POORLY GRADED SAND, fine grained, light brown, moist, very loose to loose. (Alluvium)	8				
				7				
				5				
				5				
				4		5	1.0	
				7				
				7				

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:23

BRAUN INTERTEC

LOG OF BORING

Braun Project LC-09-05465
Geotechnical Evaluation
Proposed Parking Ramp
University of Wisconsin - La Crosse
La Crosse, Wisconsin

BORING: **ST-1 (cont.)**

LOCATION: See attached sketch.

DRILLER: K. Keck	METHOD: 3 1/4" HSA, Autohammer	DATE: **1/21/10**	SCALE: **1" = 4'**

Elev. feet 637.4	Depth feet 32.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
			POORLY GRADED SAND, fine grained, light brown, moist, very loose to loose. (Alluvium) *(continued)*	19	▬			The solid bar symbol in the WL column indicates the observed dry cave-in depth after withdrawal of auger.
631.4	38.0	SP	POORLY GRADED SAND, medium grained, brown, waterbearing, loose. (Alluvium)	8	▽			An open triangle in the water level (WL) column indicates the depth at which groundwater was observed while drilling.
				7				
621.4	48.0	SP	POORLY GRADED SAND, fine to medium grained, brown, waterbearing, medium dense. (Alluvium)	12				
618.4	51.0		END OF BORING. Water observed at 38 feet while drilling. Water not observed to cave-in depth of 35 1/2 feet immediately after withdrawal of auger. Boring then grouted.					

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:23

BRAUN INTERTEC

LOG OF BORING

Braun Project LC-09-05465 Geotechnical Evaluation Proposed Parking Ramp University of Wisconsin - La Crosse La Crosse, Wisconsin	BORING: ST-2 LOCATION: See attached sketch.

DRILLER: K. Keck	METHOD: 3 1/4" HSA, Autohammer	DATE: 1/21/10	SCALE: 1" = 4'

Elev. feet 668.8	Depth feet 0.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
667.8	1.0	FILL	FILL: Silty Sand, fine grained, black, frozen.					
664.8	4.0	SP	POORLY GRADED SAND, fine grained, light brown, frozen. (Alluvium)	40				
655.8	13.0	SM	SILTY SAND, fine grained, light brown, moist, loose. (Alluvium)	6				
				5				
				6		13	15	
				5				
		SP	POORLY GRADED SAND, fine grained, light brown, moist, loose to medium dense. (Alluvium)	6				
				7				
				10				
				19				

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:23

BRAUN INTERTEC

LOG OF BORING

Braun Project LC-09-05465 **Geotechnical Evaluation** **Proposed Parking Ramp** **University of Wisconsin - La Crosse** **La Crosse, Wisconsin**	BORING: **ST-2 (cont.)** LOCATION: See attached sketch.
DRILLER: K. Keck — METHOD: 3 1/4" HSA, Autohammer	DATE: **1/21/10** — SCALE: **1" = 4'**

Elev. feet 636.8	Depth feet 32.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
635.8	33.0							
		SP-SM	POORLY GRADED SAND, fine grained, with SILT, brown, wet, medium dense. (Alluvium)	17		22	7.9	
630.8	38.0				▽			
		SP	POORLY GRADED SAND, medium grained, brown, waterbearing, medium dense. (Alluvium)	12				
				14				
				14				
617.8	51.0		END OF BORING. Water observed at 38 feet while drilling. Water not observed to cave-in depth of 36 feet immediately after withdrawal of auger. Boring then grouted.					

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:23

BRAUN INTERTEC

LOG OF BORING

Braun Project LC-09-05465
Geotechnical Evaluation
Proposed Parking Ramp
University of Wisconsin - La Crosse
La Crosse, Wisconsin

BORING: **ST-3**

LOCATION: See attached sketch.

DRILLER: K. Keck | METHOD: 3 1/4" HSA, Autohammer | DATE: **1/21/10** | SCALE: **1" = 4'**

Elev. feet 670.4	Depth feet 0.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
669.4	1.0	FILL	FILL: Silty Gravel, black, frozen.					
668.4	2.0	SM	SILTY SAND, fine grained, brown, frozen.					
666.4	4.0	SP-SM	POORLY GRADED SAND, fine grained, with SILT, brown, moist, medium dense. (Alluvium)	14				
		SP	POORLY GRADED SAND, fine grained, light brown, moist, loose to medium dense. (Alluvium)	5				
				9				
				8				
				9				
				5				
				6		6	1.2	
				5				
				11				

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:24

BRAUN℠ INTERTEC

LOG OF BORING

Braun Project LC-09-05465 Geotechnical Evaluation Proposed Parking Ramp University of Wisconsin - La Crosse La Crosse, Wisconsin	BORING: **ST-3 (cont.)** LOCATION: See attached sketch.

DRILLER: K. Keck	METHOD: 3 1/4" HSA, Autohammer	DATE: **1/21/10**	SCALE: **1" = 4'**

Elev. feet 638.4	Depth feet 32.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
			POORLY GRADED SAND, fine grained, light brown, moist, loose to medium dense. (Alluvium) *(continued)*	5				
632.4	38.0	SP	POORLY GRADED SAND, fine to medium grained, brown, waterbearing, loose. (Alluvium)	9	▽			
627.4	43.0	SP	POORLY GRADED SAND, fine grained, brown, waterbearing, medium dense. (Alluvium)	13 14				
619.4	51.0		END OF BORING. Water observed at 38 feet while drilling. Boring then grouted.					

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:24

BRAUN[SM]
INTERTEC

LOG OF BORING

Braun Project LC-09-05465 Geotechnical Evaluation Proposed Parking Ramp University of Wisconsin - La Crosse La Crosse, Wisconsin	BORING: **ST-4** LOCATION: See attached sketch.

DRILLER: K. Keck	METHOD: 3 1/4" HSA, Autohammer	DATE: **1/21/10**	SCALE: **1" = 4'**

Elev. feet 669.2	Depth feet 0.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
668.2	1.0	FILL	FILL: Silty Sand, fine grained, black, frozen.					
666.2	3.0	SP-SM	POORLY GRADED SAND, fine grained, with SILT, brown, frozen. (Alluvium)	40				
		SP	POORLY GRADED SAND, fine grained, light brown, moist, very loose to loose. (Alluvium)	5				
				6				
				6				
				5				
				4				
				4		5	1.8	
				7				
				10				

(See Descriptive Terminology sheet for explanation of abbreviations)

LOG OF BORING LC-09-05465.GPJ BRAUN.GDT 2/9/10 10:24

LOG OF BORING

BRAUN INTERTEC

Braun Project LC-09-05465
Geotechnical Evaluation
Proposed Parking Ramp
University of Wisconsin - La Crosse
La Crosse, Wisconsin

BORING: **ST-4 (cont.)**

LOCATION: See attached sketch.

DRILLER: K. Keck | METHOD: 3 1/4" HSA, Autohammer | DATE: **1/21/10** | SCALE: **1" = 4'**

Elev. feet 637.2	Depth feet 32.0	Symbol	Description of Materials (Soil- ASTM D2488 or D2487, Rock-USACE EM1110-1-2908)	BPF	WL	MC %	P200	Tests or Notes
			POORLY GRADED SAND, fine grained, light brown, moist, very loose to loose. (Alluvium) *(continued)*	7				
631.2	38.0	SP	POORLY GRADED SAND, medium grained, brown, waterbearing, loose. (Alluvium)	6 8 11	▽			
618.2	51.0		END OF BORING. Water observed at 38 feet while drilling. Water not observed to cave-in depth of 35 1/2 feet immediately after withdrawal of auger. Boring then grouted.					

(See Descriptive Terminology sheet for explanation of abbreviations)

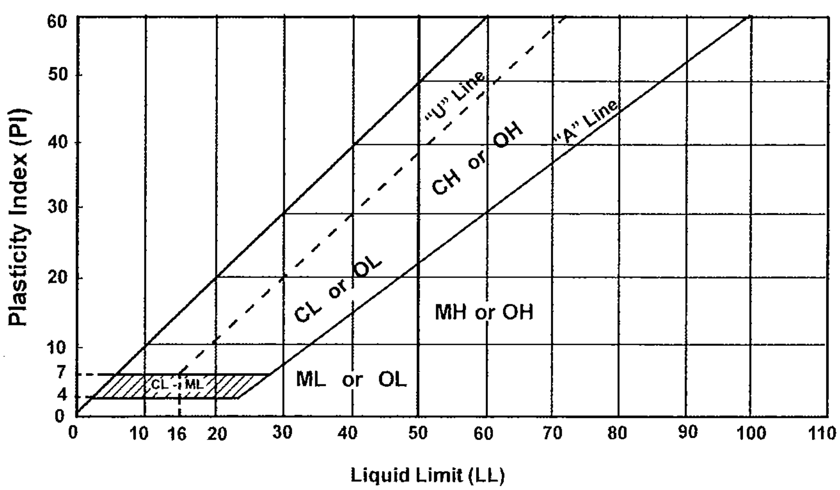
BRAUN INTERTEC

Descriptive Terminology of Soil

Standard D 2487 - 00
Classification of Soils for Engineering Purposes
(Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [a]				Soils Classification: Group Symbol	Soils Classification: 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 5% or less fines [e]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [c]	GW	Well-graded gravel [d]
			$C_u < 4$ and/or $1 > C_c > 3$ [c]	GP	Poorly graded gravel [d]
		Gravels with Fines More than 12% fines [e]	Fines classify as ML or MH	GM	Silty gravel [d f g]
			Fines classify as CL or CH	GC	Clayey gravel [d f g]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands 5% or less fines [i]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [c]	SW	Well-graded sand [h]
			$C_u < 6$ and/or $1 > C_c > 3$ [c]	SP	Poorly graded sand [h]
		Sands with Fines More than 12% [i]	Fines classify as ML or MH	SM	Silty sand [f g h]
			Fines classify as CL or CH	SC	Clayey sand [f g h]
Fine-grained Soils 50% or more passed 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]
				OL	Organic silt [k l m c]
	Silts and clays Liquid limit 50 or more	Inorganic	PI plots on or above "A" line	CH	Fat clay [k l m]
			PI plots 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]
				OH	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 (75mm) sieve.
b. If field sample contained cobbles or boulders, or both, add "with cobbles or boulders or both" to group name.
c. $C_u = D_{60} / D_{10}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
d. If soil contains ≥15% sand, add "with sand" to group name.
e. 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
f. If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
g. If fines are organic, add "with organic fines" to group name.
h. If soil contains ≥ 15% gravel, add "with gravel" to group name.
i. 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
j. If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
k. If soil contains 10 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.



Laboratory Tests

DD	Dry density, pcf	OC	Organic content, %
WD	Wet density, pcf	S	Percent of saturation, %
MC	Natural moisture content, %	SG	Specific gravity
LL	Liquid limit, %	C	Cohesion, psf
PL	Plastic limit, %	∅	Angle of internal friction
PI	Plasticity index, %	qu	Unconfined compressive strength, psf
P200	% passing 200 sieve	qp	Pocket penetrometer strength, tsf

Particle Size Identification

Boulders	over 12"
Cobbles	3" to 12"
Gravel	
Coarse	3/4" to 3"
Fine	No. 4 to 3/4"
Sand	
Coarse	No. 4 to No. 10
Medium	No. 10 to No. 40
Fine	No. 40 to No. 200
Silt	< No. 200, PI < 4 or below "A" line
Clay	< No. 200, PI ≥ 4 and on or above "A" line

Relative Density of Cohesionless Soils

Very loose	0 to 4 BPF
Loose	5 to 10 BPF
Medium dense	11 to 30 BPF
Dense	31 to 50 BPF
Very dense	over 50 BPF

Consistency of Cohesive Soils

Very soft	0 to 1 BPF
Soft	2 to 3 BPF
Rather soft	4 to 5 BPF
Medium	6 to 8 BPF
Rather stiff	9 to 12 BPF
Stiff	13 to 16 BPF
Very stiff	17 to 30 BPF
Hard	over 30 BPF

Drilling Notes

Standard penetration test borings were advanced by 3 1/4" or 6 1/4" ID hollow-stem augers unless noted otherwise, Jetting water was used to clean out auger prior to sampling only where indicated on logs. Standard penetration test borings are designated by the prefix "ST" (Split Tube). All samples were taken with the standard 2" OD split-tube sampler, except where noted.

Power auger borings were advanced by 4" or 6" diameter continuous-flight, solid-stem augers. Soil classifications and strata depths were inferred from disturbed samples augered to the surface and are, therefore, somewhat approximate. Power auger borings are designated by the prefix "B."

Hand auger borings were advanced manually with a 1 1/2" or 3 1/4" diameter auger and were limited to the depth from which the auger could be manually withdrawn. Hand auger borings are indicated by the prefix "H."

BPF: Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler was set 6" into undisturbed soil below the hollow-stem auger. Driving resistances were then counted for second and third 6" increments and added to get BPF. Where they differed significantly, they are reported in the following form: 2/12 for the second and third 6" increments, respectively.

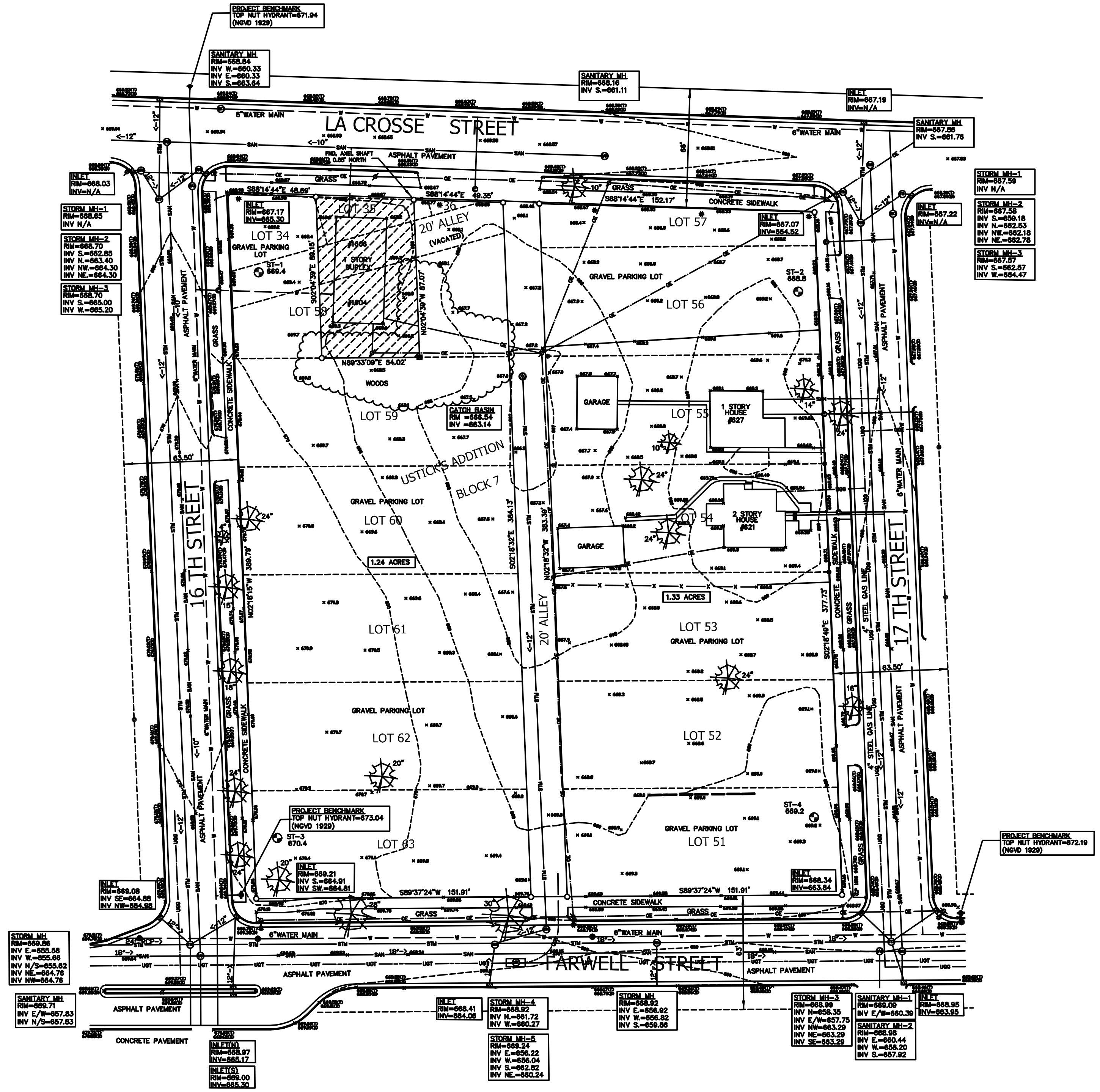
WH: WH indicates the sampler penetrated soil under weight of hammer and rods alone; driving not required.

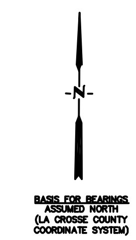
WR: WR indicates the sampler penetrated soil under weight of rods alone; hammer weight and driving not required.

TW indicates thin-walled (undisturbed) tube sample.

Note: All tests were run in general accordance with applicable ASTM standards.

EXHIBIT E
Site Survey





NOTES

-THIS DOCUMENT HAS BEEN PREPARED FOR A SPECIFIC APPLICATION AND SOLELY FOR THE USE OF EPPSTEIN-UHEN ARCHITECTS, INC. AND UNIVERSITY OF WISCONSIN - LA CROSSE AND NOT FOR GENERAL USE. IT MAY NOT BE USED WITHOUT THE EXPRESSED WRITTEN CONSENT OF PARAGON ASSOCIATES, INC. UNAPPROVED USE IS THE SOLE RESPONSIBILITY OF THE UNAUTHORIZED USER.

-THIS DOCUMENT IS BEING FURNISHED TO EPPSTEIN-UHEN ARCHITECTS, INC. IN THE FORM OF AN AUTOCAD DRAWING. THE PURPOSE OF THE AUTOCAD DRAWING IS FOR USE WITHIN THE AUTOCAD SOFTWARE PROGRAM WITH THE UNDERSTANDING THAT THE CAPABILITY OF AUTOCAD TO DIMENSION AN ELEMENT OF A DRAWING EXCEEDS THE DEGREE OF PRECISION TO WHICH THAT ELEMENT MAY HAVE BEEN LOCATED. FIELD VERIFICATION MAY BE NECESSARY BEFORE DESIGN IS FINALIZED.

-THE UNDERGROUND LOCATION OF THE PUBLIC UTILITIES WERE MARKED BY REPRESENTATIVES OF THOSE COMPANIES. THE LOCATION OF THE CUSTOMER OWNED UNDERGROUND UTILITIES WERE NOT MARKED. THE LOCATION OF EXISTING UTILITIES, BOTH UNDERGROUND AND OVERHEAD, ARE APPROXIMATE ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR THE REPRESENTATIVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THESE PLANS OR NOT, BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGE WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ALL UTILITIES. THERE MAY BE MORE UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
CALL DIGGERS HOT LINE: 800 242 8511

DESCRIPTION

PART OF LOT 34, LOT 35 AND LOT 36 LYING SOUTH OF THE SOUTH RIGHT OF WAY OF LA CROSSE STREET, THE VACATED ALEEY LYONG NOTH OF LOT 57 AND 58, LOT 51, LOT 52, LOT 53, LOT 54, LOT 55, LOT 56, LOT 57, LOT 58, LOT 59, LOT 60, LOT 61, LOT 62, LOT AND LOT 63, ALL LOCATED IN BLOCK 7 OF USTICK'S ADDITION, CITY OF LA CROSSE, LA CROSSE COUNTY, WISCONSIN.

UTILITIES

CENTURY TELEPHONE
208 5TH AVENUE SOUTH
PO BOX 820
LA CROSSE WI 54601
608 796 5900

CHARTER COMMUNICATIONS
1228 12TH AVENUE SOUTH
ONALASKA WI 54650
800 581 0081

CITY OF LA CROSSE
ENGINEERING DEPARTMENT
400 LA CROSSE STREET
LA CROSSE WI 54601
608 789 7505

PUBLIC WORKS OFFICE
608 789 7599

WATER UTILITY
608 789 7536

XCEL ENERGY
3215 COMMERCE STREET
LA CROSSE WI 54603
608 789 3634

VERTICAL DATUM NOTE

NVGD 1929

FLOOD ZONE INFORMATION

FLOOD INSURANCE RATE MAP. FLOOD ZONE X.
COMMUNITY PANEL NUMBER: 55063C0253C. EFFECTIVE DATE: APRIL 2, 2008..

LEGEND

- BORING LOCATIONS WITH ELEVATIONS
- SET 3/4" x 18" IRON BAR (1.5 LBS/LIN FT)
- SET 3/8" DRILL HOLE MONUMENT
- FOUND 1" IRON PIPE (UNLESS NOTED)
- FOUND 6"X6" CONCCRETE MONUMENT
- ×100.00 SPOT ELEVATION
- × 100.00 (CP/L) SPOT ELEVATION (CONTROL POINT NUMBER)
- CONC CONCRETE
- INV INVERT
- RCP ROUND CONCRETE PIPE
- TNH TOP NUT HYDRANT
- SANITARY SEWER MANHOLE
- SAN SANITARY SEWER LINE
- STORM SEWER MANHOLE
- STM STORM SEWER LINE
- CATCH BASIN
- CURB INLET
- W WATER LINE
- HYDRANT
- WATER MANHOLE
- WATER VALVE
- CURB STOP
- FO UNDERGROUND FIBER OPTIC (LOCATED BY CENTURY TELEPHONE)
- UGG UNDERGROUND GAS (LOCATED BY XCEL)
- GAS METER
- UGT UNDERGROUND TELEPHONE
- OVERHEAD UTILITY LINES
- LIGHT POLE
- UTILITY POLE W/GUY WIRE
- SIGNS
- —x—x— WOOD FENCE (UNLESS NOTED)
- CONIFEROUS TREE
- DECIDUOUS TREE
- - - - - RIGHT OF WAY LINE

LEGEND FOR UW-LA CROSSE PRIVATE UTILITIES

MAPS AND INFORMATION FOR UW-LA CROSSE PRIVATE UTILITIES WERE PROVIDED BY UW-LA CROSSE PHYSICAL PLANT/PLANT ENGINEERING. ALL UW LA CROSSE PRIVATE UNDERGROUND UTILITIES SHOWN HEREON WERE NOT MARKED AND ARE APPROXIMATE IN LOCATION. THERE ARE MORE EXISTING UW-LA CROSSE PRIVATE UNDERGROUND UTILITIES NOT SHOWN HEREON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
PHYSICAL PLANT/PLANT ENGINEERING CONTACT NUMBER: 608 785 8592.

- PRIMARY MANHOLES FOR UNDERGROUND ELECTRICAL LINES
- ELEC UW-LA CROSSE UNDERGROUND ELECTRIC 4" INSIDE DIAMETER - 4160 VOLTS
- UGE UW-LA CROSSE UNDERGROUND ELECTRIC - 208 VOLTS
- ELECTRICAL MANHOLE
- UNDERGROUND ELECTRICAL BOX OR LIGHTING BOX
- OUTLET BOX
- SIGNAL MANHOLES FOR UNDERGROUND COMMUNICATION LINES
- COM UW-LA CROSSE UNDERGROUND COMMUNICATION
- MANHOLES FOR UNDERGROUND EMERGENCY GENERATOR LINES
- S/C 100 UW-LA CROSSE UNDERGROUND STEAM AND CONDENSATION LINES 100 PSI STEAM LINES (STEAM AND CONDENSATIONS LINE SIZES AS NOTED)
- S/C 15 UW-LA CROSSE UNDERGROUND STEAM AND CONDENSATION LINES 15 PSI STEAM LINES (STEAM AND CONDENSATION LINE SIZES AS NOTED)
- UL UNDERGROUND ELECTRIC FOR LIGHT POLES
- CWL UNDERGROUND CHILLED WATER LINES
- CHILLED WATER LINE MANHOLE
- GAS UNDERGROUND GAS LINES SHOWN ON MAP PROVIDED BY UW-LA CROSSE

CERTIFICATE

I, PAUL E. FAIRCHILD, REGISTERED LAND SURVEYOR #20258, HEREBY CERTIFY THAT I HAVE SURVEYED AND MAPPED THE ABOVE PARCEL AT THE DIRECTION OF JONATHAN PARKER, AND THE ATTACHED MAP IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

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State of Wisconsin
Department of Administration
Division of State Facilities

Agency / Institution: UW LA CROSSE

Project Title: UW LA CROSSE

Project Location: UW LA CROSSE CAMPUS LA CROSSE, WISCONSIN

Sheet Title: BOUNDARY AND TOPOGRAPHIC SITE MAP

Revisions:			
No.	Date:	By:	Description:

Scale	1"=30'
Graphic Scale	0' 15' 30' 45'
DSF Number	
Set Type	
Date Issued	2/17/10
Sheet Number	C100