



**WHEELING PLAN COMMISSION
THURSDAY, NOVEMBER 8, 2018 6:30 P.M.**

**AGENDA FOR A SPECIAL MEETING OF THE PLAN COMMISSION
Board Room - 2 Community Boulevard, Wheeling, Illinois**

- 1. CALL TO ORDER**
- 2. PLEDGE OF ALLEGIANCE**
- 3. ROLL CALL**
- 4. CHANGES TO THE AGENDA**
- 5. CITIZEN CONCERNS AND COMMENTS**

*Municipal Code 2.03.060 Subjects of Orders of Business:

Citizen Concerns and Comments. Members of the public may address the Plan Commission with comments regarding only those issues that are relevant to the Plan Commission's agenda or topics that the Plan Commission has the authority, pursuant to the Village Code, to address. The chairperson or his or her designee shall strictly restrain comments to matters that are relevant to the Plan Commission business and shall not permit repetitious comments or arguments. Members of the general public who wish to address the Plan Commission must sign the request to speak form prior to the commencement of the public meeting. The persons submitting a petition, concern or other comment shall be allocated five minutes to present their points.

6. CONSENT ITEMS

- A)** [Docket No. SCBA 18-48](#)
Korean Cultural Center of Chicago
9935 Capitol Drive
Appearance Approval of a Wall Sign
- B)** [Docket No. SCBA 18-49](#)
Hawthorne Aviation
1120 S. Milwaukee Avenue
Appearance Approval of Wall and Freestanding Signs

7. ITEMS FOR REVIEW

- A)** [Docket No. PC 18-17](#)
Housing Authority of Cook County
200 N. Milwaukee Avenue
Minor Site Plan and Appearance Approval of a Gazebo
- B)** [Docket No. 2018-23](#) (Continued from October 25, 2018)
H2O Express Car Wash
966 S. Milwaukee Avenue
Special Use-Site Plan Approval of a Car Wash

- C) [Docket No. 2018-27](#)
Pace Suburban Bus
1600 S. Wolf Road
Special Use-Site Plan Approval of a Ground Transportation Service, Large
8. **APPROVAL OF MINUTES** –[October 25, 2018](#) (including Findings for Docket Nos. 2018-24, 2018-25 and 2018-26)
9. **OTHER BUSINESS**
10. **ADJOURNMENT**

THIS MEETING WILL STREAM LIVE AND TELEVISED ON WHEELING'S CABLE CHANNELS 17 & 99.
IF YOU WOULD LIKE TO ATTEND A VILLAGE MEETING BUT REQUIRE AUXILIARY AID SUCH AS A SIGN
LANGUAGE INTERPRETER, PLEASE CALL (847) 499-9085 AT LEAST 72 HOURS PRIOR TO THE MEETING

Public Hearing Information
Wheeling Plan Commission Meeting
November 8, 2018
(Attachment to Agenda)

2018-23 H2O Express Car Wash, Inc., property owner, is seeking Special Use-Site Plan Approval as required under Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, in order to establish a car wash at 966 S. Milwaukee Avenue, which is zoned B-3 General Commercial and Office District.

2018-27 Pace Bus, applicant, on behalf of Allstate Insurance Company, property owner, is seeking Special Use-Site Plan Approval as required under Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19-07 Industrial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, in order to establish a ground transportation service, large, at 1600 S. Wolf Road, which is zoned I-1 Light Industrial and Office District and I-3 General Industrial District.

REQUEST FOR PLAN COMMISSION ACTION
STAFF PROJECT REVIEW

TO: Chairperson Ruffatto and Members of the
Wheeling Plan Commission

FROM: Andrew C. Jennings, Director of Community Development
Brooke A. Casolari, Senior Planner

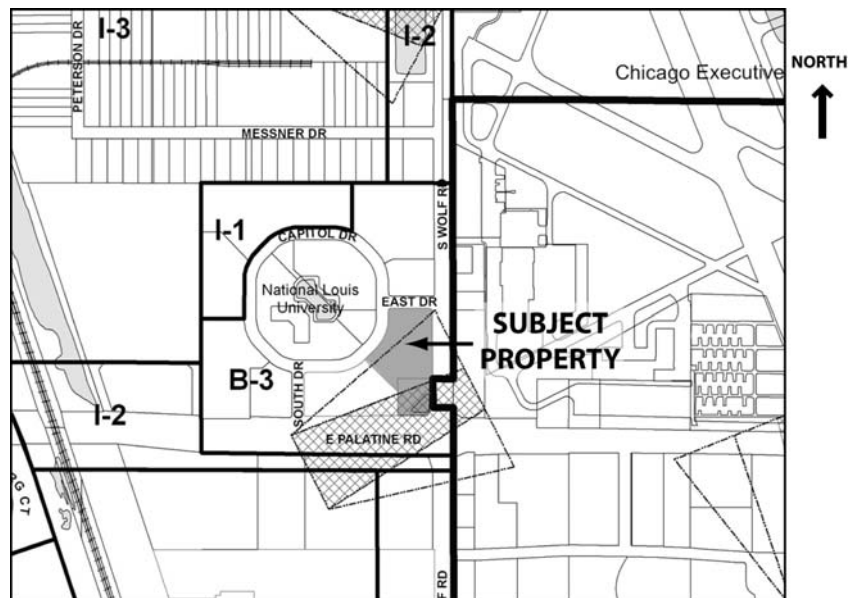
RE: **Docket No. SCBA 18-48**
Korean Cultural Center of Chicago
9935 Capitol Drive
Appearance Approval of a Wall Sign

DATE OF REPORT: October 30, 2018

DATE OF MEETING: November 8, 2018

PROJECT OVERVIEW: The petitioner is requesting appearance approval to install a new wall sign for an existing institution.

LOCATION MAP:



GENERAL PROPERTY INFORMATION

<u>Applicant Name:</u>	TFA Signs
<u>Property Owner Name:</u>	Korean Cultural Center of Chicago
<u>Common Location:</u>	Located in the Capitol Commerce Center
<u>Existing Use of Property:</u>	Institutional
<u>Existing Property Zoning:</u>	B-3 General Commercial and Office District
<u>Previous Relevant Zoning Action on Property:</u>	None.

PROJECT DESCRIPTION

The Korean Cultural Center of Chicago is requesting appearance approval to install a wall sign for its education center.

SITE PLAN REVIEW

Sign Location: The sign is located on the front façade of the education center, facing north into the parking lot.

Sign Type, Size and Material: A flush mounted, non-illuminated sign comprised of PVC lettering and logo is proposed. The sign has an overall size of 17.37 sq. ft. The sign includes white lettering in Korean and English and a blue and red logo.

The sign meets the requirements of the Sign Code.

STAFF REVIEW

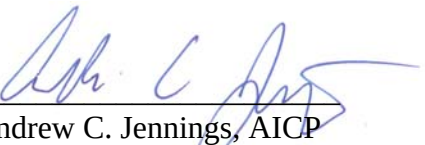
Impact on adjacent uses: No impact on adjacent uses is expected.

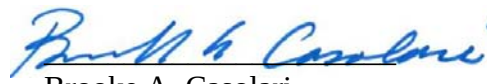
Staff Recommended Action: Staff recommends the Plan Commission approved the wall sign.

PROPOSED MOTION

If the Plan Commission finds that the petitioner has satisfied the requirements for appearance approval of the wall sign, an appropriate motion would be to:

Approve Docket No. SCBA 18-48 to permit installation of the wall sign in accordance with the sign plans (2 sheets) submitted October 29, 2018 by TFA Signs, on behalf of the Korean Cultural Center of Chicago, located at 9935 Capitol Drive, Wheeling, Illinois.


Andrew C. Jennings, AICP
Director of Community Development


Brooke A. Casolari
Senior Planner

Attachments: [Photo of existing conditions \(staff\)](#)

[Proposed sign plans](#)

Korean Cultural Center of Chicago – 9935 Capitol Drive
Docket No. SCBA 18-48 (Appearance Approval of a Wall Sign)



Existing conditions of north (front) building facade



시카고 한국교육원

CHICAGO KOREAN EDUCATION CENTER

Scope of Work:

- Manufacture and install 1 set of PVC dimensional letters
- Procure any associated permits

PLEASE REVIEW DRAWINGS FOR ACCURACY IN: COLOR, LAYOUT, SPELLING. APPROVAL STATES ALL CONTENT REPRESENTED IN THIS PROOF IS CORRECT.



5500 N. Kedzie Ave Chicago, IL 60625
773-267-6007 | sales@tfasigns.com

Client Name:
Cheon Seonhwa
Location:
9935 Capitol Drive
Wheeling, IL 60090

Start Date: 07/25/2018
Last Revision: 07/30/2018
Job#: 00000
Drawing#: 00000a.v1.s1 / e1
Page: 1 of 2

Exhibit received October 29, 2018

• Client Approval

• Landlord Approval

Sales Rep:
Andrew Oh
Designer:
Peter Boateng





PRODUCTION NOTES:

- 22"x112" overall dimensions
- Text has been stretched vertically to match requested 25.4"
- 19" logo
- 13.9" Korean Text
- 5.2" English



PMS 2955C
100:70:20:40



PMS 1935C
0:100:80:0



PMS 2C
18:14:16:0

PLEASE REVIEW DRAWINGS FOR ACCURACY IN: COLOR, LAYOUT, SPELLING. APPROVAL STATES ALL CONTENT REPRESENTED IN THIS PROOF IS CORRECT.



5500 N. Kedzie Ave Chicago, IL 60625
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Page: 2 of 2

Exhibit received October 29, 2018

Client Approval

Landlord Approval

Sales Rep:
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Designer:
Peter Boateng



REQUEST FOR PLAN COMMISSION ACTION
STAFF PROJECT REVIEW

TO: Chairperson Ruffatto and Members of the
Wheeling Plan Commission

FROM: Andrew C. Jennings, Director of Community Development
Brooke A. Casolari, Senior Planner

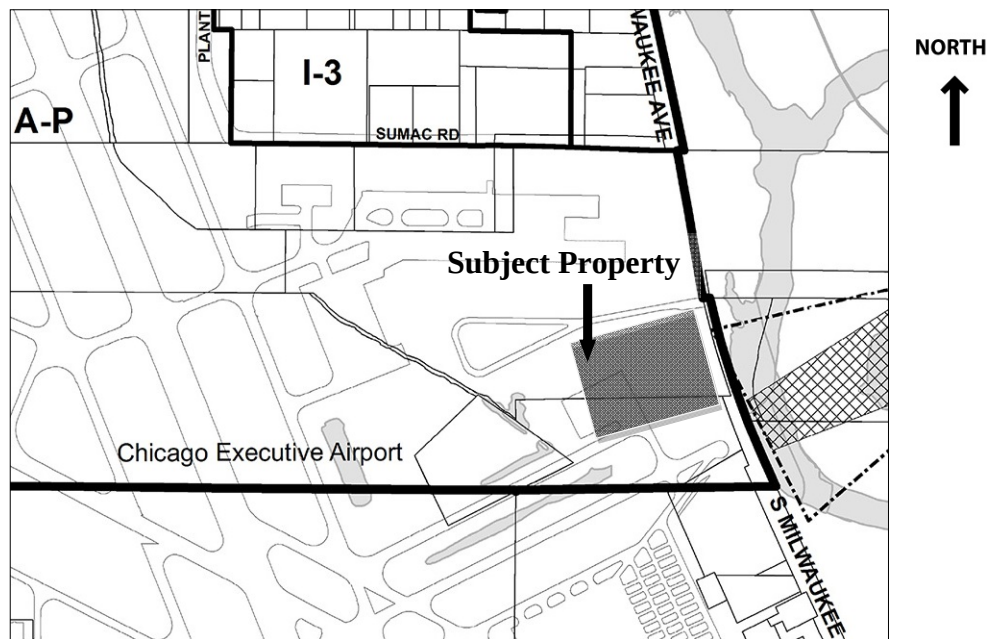
RE: **Docket No. SCBA 18-49**
Hawthorne Aviation
1120 S. Milwaukee Avenue
Appearance Approval of Wall and Freestanding Signs

DATE OF REPORT: November 1, 2018

DATE OF MEETING: November 8, 2018

PROJECT OVERVIEW: The petitioner is seeking appearance approval for new signage associated with the recent construction of a new airport hangar.

LOCATION MAP:



GENERAL PROPERTY INFORMATION

<u>Development Name:</u>	Hawthorne Global Aviation
<u>Applicant Name:</u>	North Shore Sign
<u>Property Owner Name:</u>	Chicago Executive Airport
<u>Common Location:</u>	Located at the Chicago Executive Airport west of Milwaukee Avenue and south of Tower Road.
<u>Neighboring Property Land Use(s):</u>	North: Airport West: Airport

South: Airport
East: Open Space (Forest Preserve)

Existing Use of Property:

Private aircraft hangar and office

Existing Property Zoning:

A-P, Airport District

Previous Relevant Zoning Action on Property:

PC 17-17 Ord. No. 5120, passed 10.17.2017, granted site plan and appearance approval for a new hangar.

DESCRIPTION OF PROPOSAL

Construction of the new airport hangar is nearing completion. The applicant is now proposing appearance approval of wall signs and a monument sign for the new development.

SIGNAGE PLAN REVIEW

Signage Locations: Two wall signs are proposed. One sign will be located on the west façade, which faces the airport runways, and the other will be located on the east façade facing Milwaukee Avenue. A monument sign, will be located near the access drive from Tower Road. It will have the required setback of 10 feet.

Proposed Signage Size, Style and Type: Two different types of wall signs are proposed. The primary sign, which is located on the west façade, will identify the business name and logo. The size of the sign is 78.58 sq. ft. This business identification sign is comprised of individual channel letters on a raceway. The letter have blue and grey faces and black trim and returns. The east facing sign will only include the building address. Due to the size of the building address, which is 56 sq. ft., it also requires Plan Commission review. The address sign includes grey lettering that has a depth of three-quarter inches, which is applied to a white panel.

A monument-style freestanding sign is also proposed. This internally illuminated, double-sided sign has a CMU base that matches the building's CMU for the lower wall and trims. The address is displayed prominently on the base of the sign. At the top of the structure is a 7 sq. ft. sign cabinet with a white background and its business name and logo applied. The sign has an overall height of 56.5 inches (4' 8.5").

The proposed signs meet the size requirements of the code.

Landscaping: A landscape plan is provided for new freestanding sign. The area of the landscaping is approximately 50 sq. ft., which exceeds the amount required by the Sign Code. The proposed landscape plans meet the species mix requirements of the Sign Code. It includes dwarf evergreens and winter interest (Green Mountain Boxwood), deciduous shrubs (Little Lime Hydrangea), decorative grass (Karl Foerster Reed Grass), and perennial flowers (Happy Return Daylily).

STAFF REVIEW

Impact on Adjacent Uses: No significant impact is anticipated on adjacent uses.

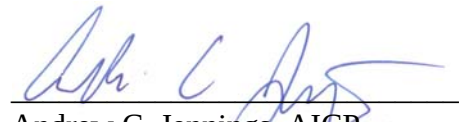
Staff Recommended Action: Staff recommends approval of the proposed wall and freestanding signs.

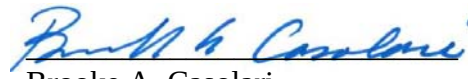
PROPOSED MOTION

If the Plan Commission approves of the requested signs, an appropriate motion would be to:

Approve Docket No. SCBA 18-49 to permit the installation of the wall and freestanding signs in accordance with the following exhibits submitted October 29, 2018, for Hawthorne Aviation, located at 1120 S. Milwaukee Avenue, Wheeling, Illinois:

- East elevation sign plan,
- West elevation sign plan,
- Monument sign plans (2 sheets),
- Site plan, and
- Landscape plan.


Andrew C. Jennings, AICP
Director of Community Development


Brooke A. Casolari
Senior Planner

Attachments: [Photos of existing conditions \(staff\)](#)

[East elevation sign plan](#)

[West elevation sign plan](#)

[Monument sign plans \(2 sheets\)](#)

[Site plan](#)

[Landscape plan](#)

Hawthorne Aviation – 1120 S. Milwaukee Avenue
Docket No. SCBA 18-49 (Appearance Approval of Wall & Freestanding Signs)

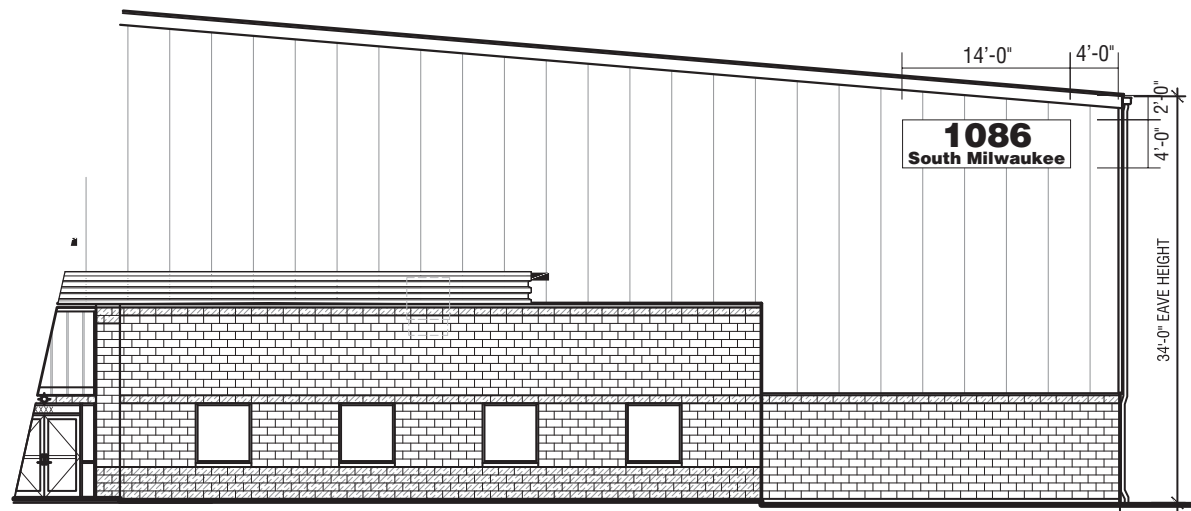


Existing conditions of east (front) building facade

Hawthorne Aviation – 1120 S. Milwaukee Avenue
Docket No. SCBA 18-49 (Appearance Approval of Wall & Freestanding Signs)



Existing conditions of west (airport side) building facade



EAST ELEVATION

Scale: 1/16" = 1'-0"



SINGLE FACE FLANGE PANEL

1/4" = 1'-0"

FLANGED METAL PANEL W/ 1" BEND BACK
WHITE POLYURETHANE FINISH
(mounted flush to wall)

3/4" THICK FCO "SINTRA" LETTERS GREY (220-101)
FINISH (mounted flush to panel)



NORTH SHORE SIGN

1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

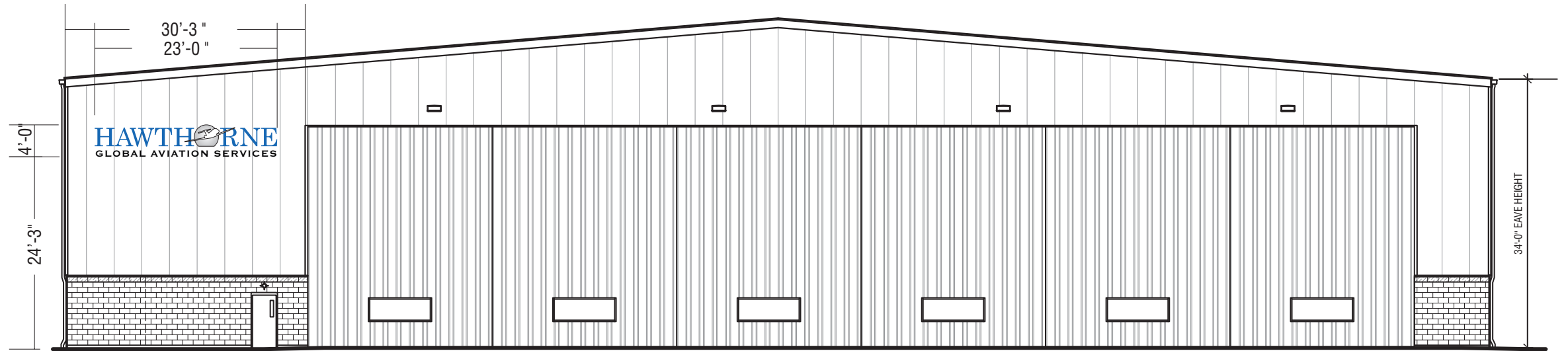
"Quality Signage Since 1930"



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REVISED		COMMENTS
C	10/4/18	OPTION "B"
HAWTHORNE GLOBAL AVIATION SERVICES 1086 S. MILWAUKEE AVE. WHEELING, IL.		
SCALE	NOTED	SALESPERSON SKIP
DATE	7/30/18	DRAWING # 11504 PG. 1
Exhibit received October 29, 2018		



WEST ELEVATION

Scale: 1/16" = 1'-0"



WEST ELEVATION

(1 SET REQ)

INDIVIDUAL ILLUMINATED CHANNEL LETTER DISPLAY

1/4" = 1'-0"

FABRICATED INDIVIDUAL CHANNEL LETTERS W/ BLACK POLYURETHANE FINISH

WHITE LED ILLUMINATION / PLEX FACES / BLACK TRIM CAPS

ALL MOUNTED TO RACEWAY PAINTED TO MATCH WALL COLOR

"HAWTHORNE" BLUE (PMS 7455 C) VINYL

"GLOBAL.." GREY (220-101) VINYL

"O" DIGITAL PRINTED VINYL BKG. / WHITE AIRPLANE

277v / 20amps TO SITE



1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

"Quality Signage Since 1930"

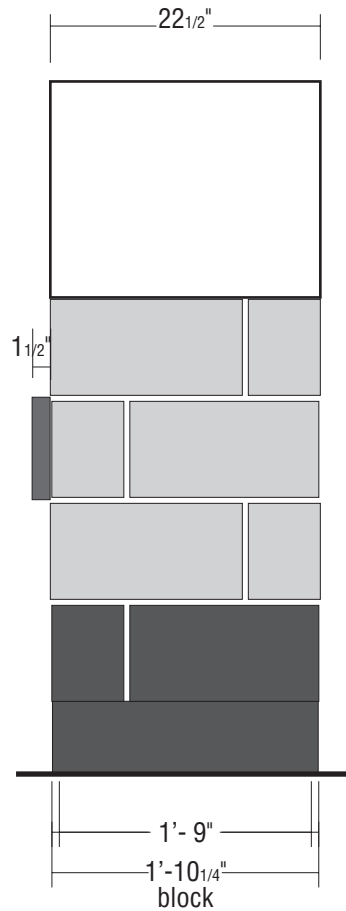


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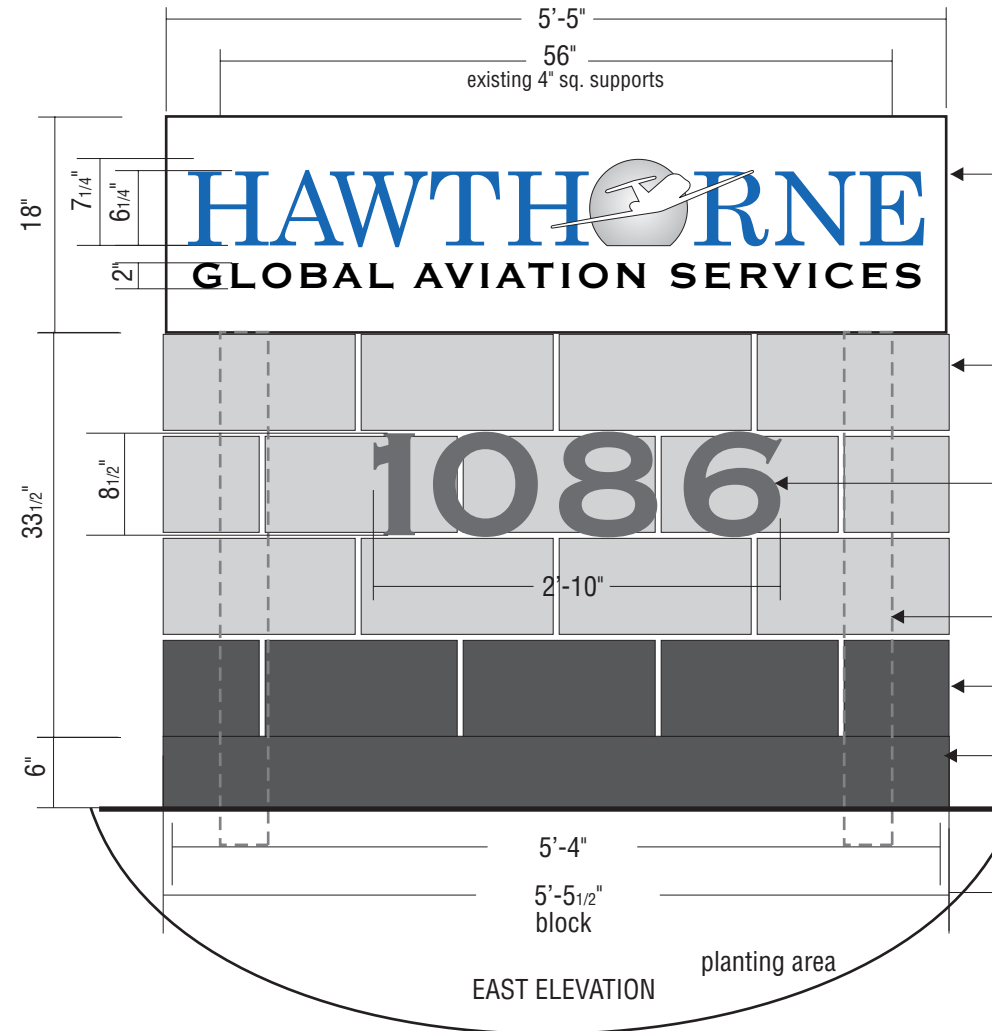
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REVISED		COMMENTS
A	9/4/18	SPEC CHANGES
HAWTHORNE GLOBAL AVIATION SERVICES 1086 S. MILWAUKEE AVE. WHEELING, IL.		
SCALE	NOTED	SALESPERSON SKIP
DATE	7/30/18	
Exhibit received October 29, 2018		DRAWING # 11504 PG. 2

8.125 square ft. of planting on each side
PLANTING BY OWNER IN SPRING



NORTH ELEVATION



EAST ELEVATION

DOUBLE FACE ILLUMINATED DISPLAY

3/4" = 1'-0"

FABRICATED METAL CABINET W/ WHITE POLYURETHANE FINISH
INTERIOR FLUORESCENT ILLUMINATION
ROUTED-OUT / BACKED-UP WHITE PLEXIGLAS COPY
AND LOGO SHAPE
"HAWTHORNE" OLYMPIC BLUE (230-57) VINYL
"O" DIGITAL PRINTED VINYL BKG. / WHITE AIRPLANE
277v / 20amps

(4) ROWS OF CINDER BLOCK " 8" X 16" X 4" (BY OWNER)

FABRICATED INDIVIDUAL REVERSE CHANNEL LETTERS
GREY POLYURETHANE FINISH
FLUSH ALL MOUNTED TO WALL

4" X 4" SQUARE STEEL SUPPORTS

(1) ROW OF CINDER BLOCK (BLACK FINISH) (BY OWNER)

6" ANGLE STEEL IRON BASE / BLACK FINISH
WELDED TO STEEL POLES

10' setback
35' FROM CURB

propertyline



NORTH SHORE SIGN

1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

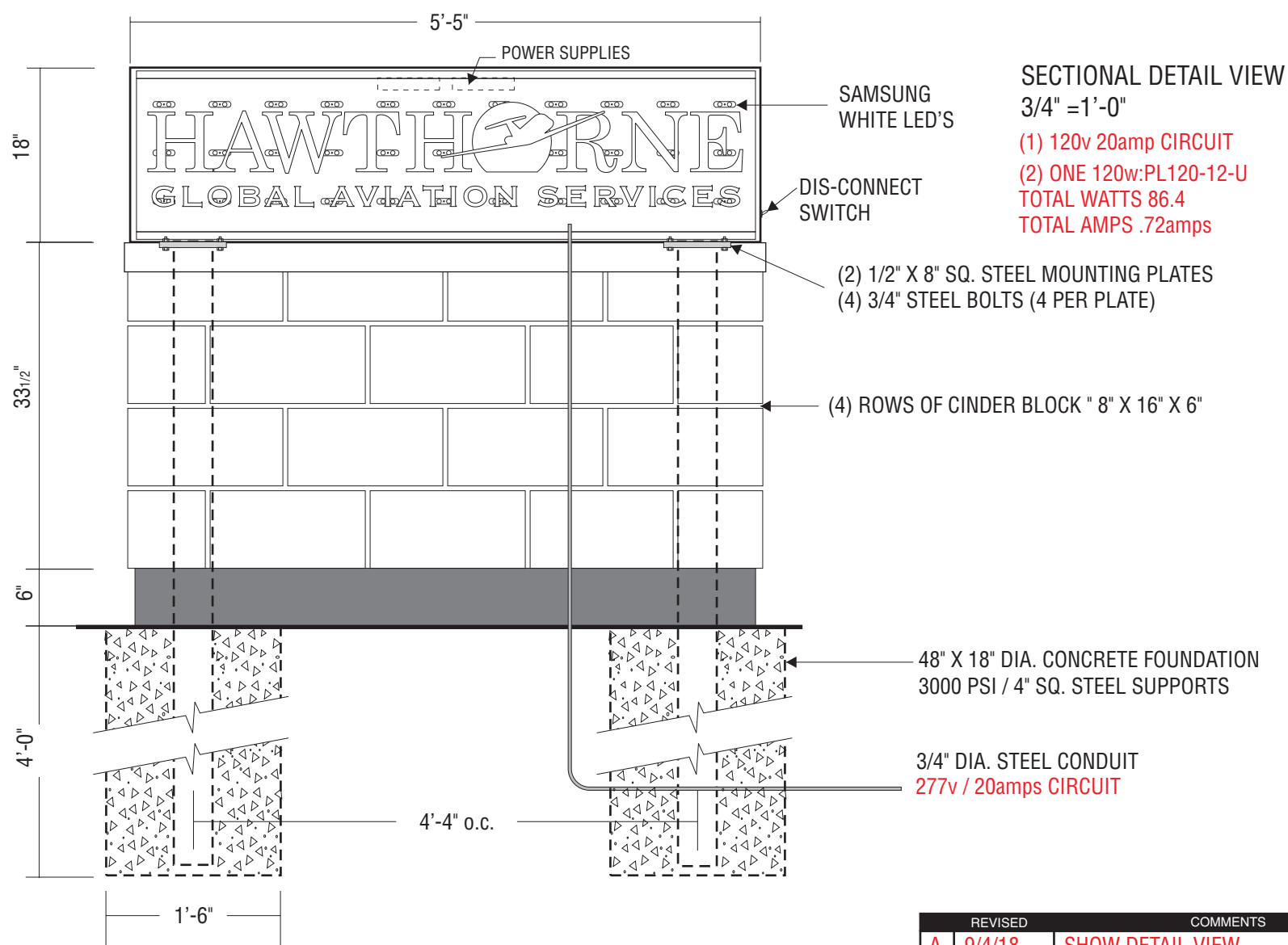
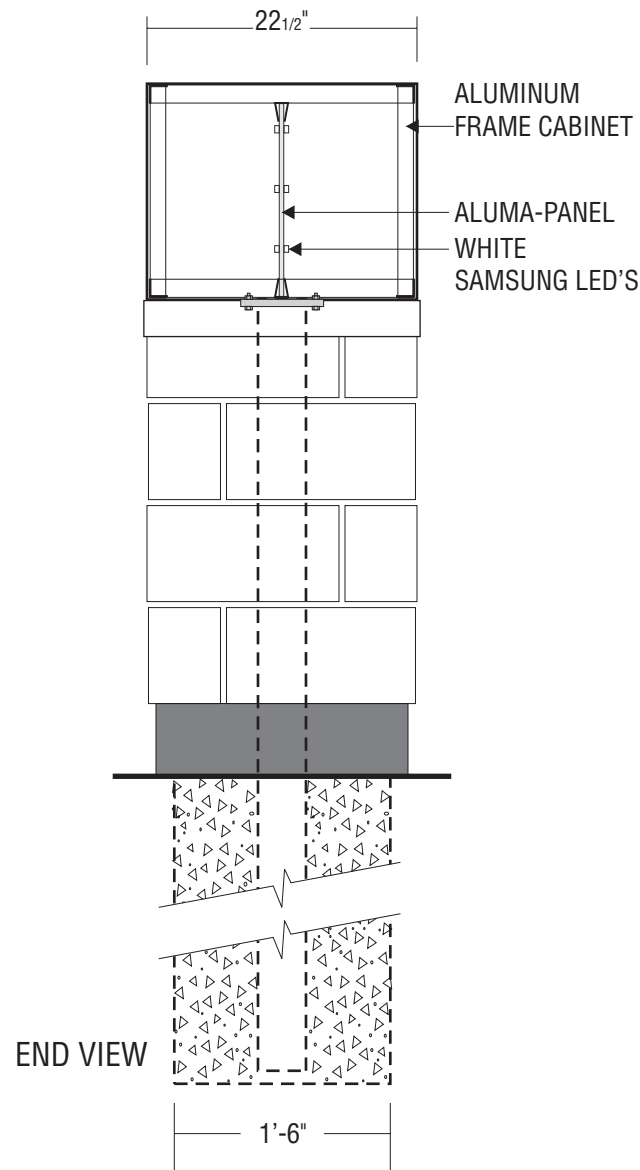
"Quality Signage Since 1930"



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REVISED		COMMENTS	
e	10/1/18	additional setback	
n. HAWTHORNE GLOBAL AVIATION SERVICES 1086 S. MILWAUKEE AVE. WHEELING, IL.			
SCALE	NOTED		SALESPERSON SKIP
DATE	7/30/18		DRAWING # 11504 PG. 3
Exhibit received October 29, 2018			



NORTH SHORE SIGN

1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

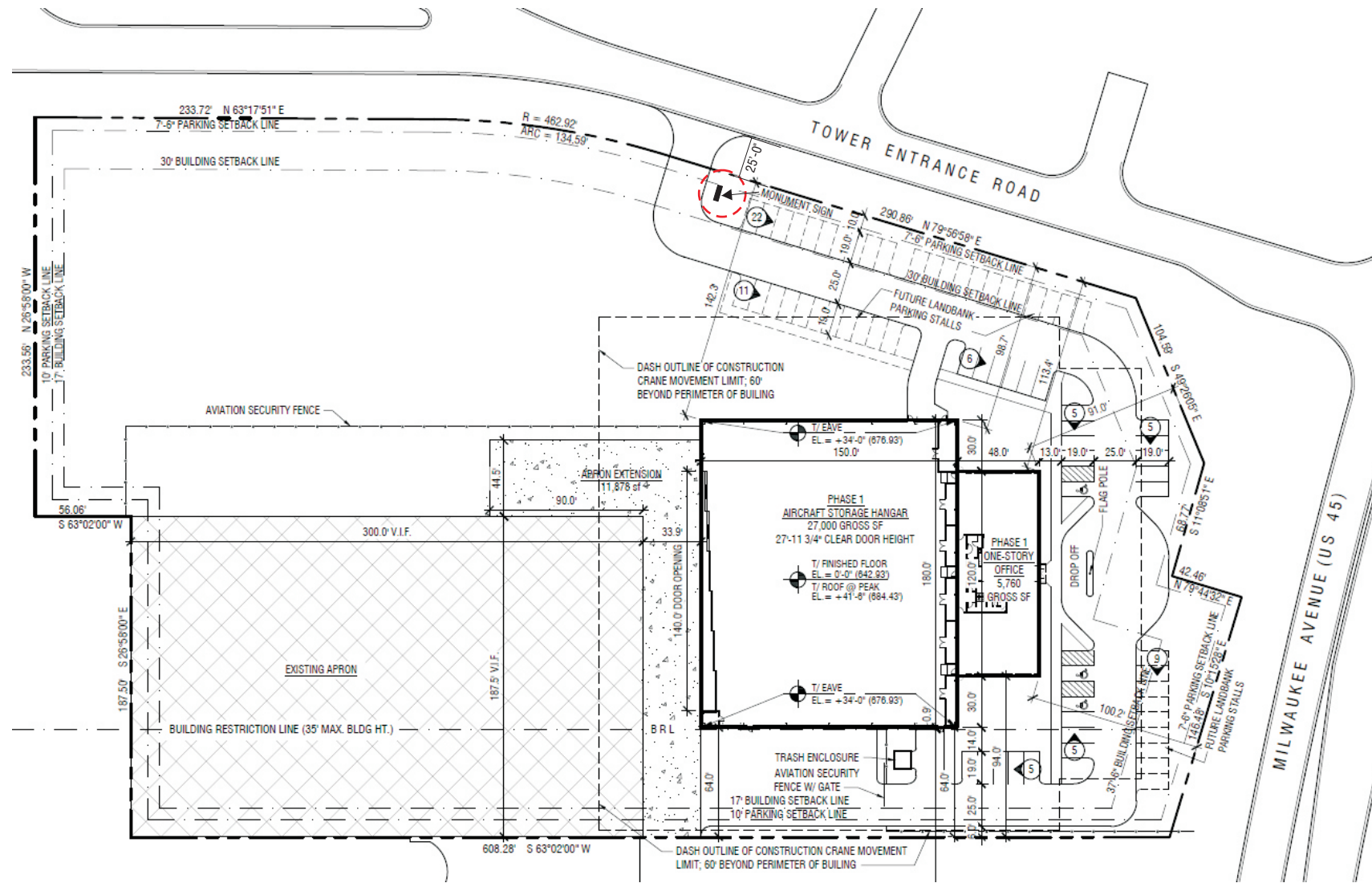
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REVISED		COMMENTS
A	9/4/18	SHOW DETAIL VIEW
HAWTHORNE GLOBAL AVIATION SERVICES 1086 S. MILWAUKEE AVE. WHEELING, IL.		
SCALE	NOTED	SALESPERSON SKIP
DATE	7/30/18	
Exhibit received October 29, 2018		DRAWING # 11504 PG. 5



NORTH SHORE SIGN

1925 Industrial Drive Libertyville, Illinois 60048 847-816-7020

"Quality Signage Since 1930"



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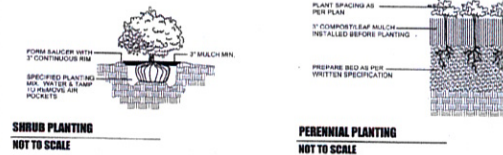
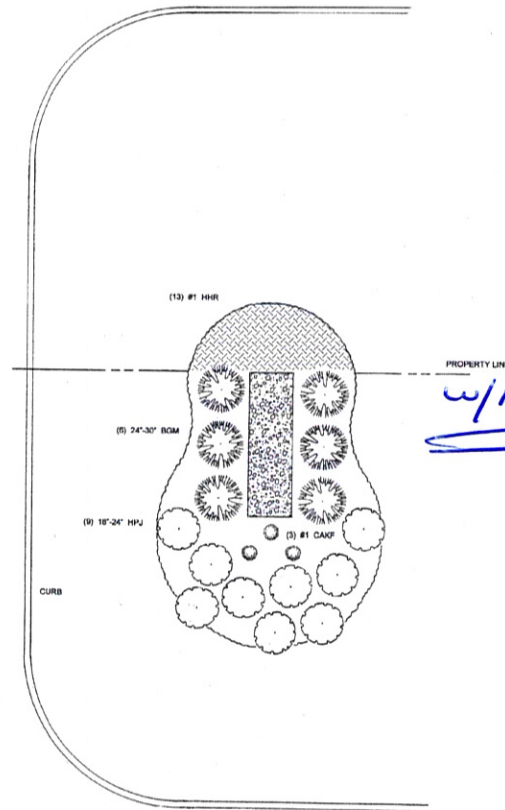
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REVISED		COMMENTS
B	10/1/18	change sign location
HAWTHORNE GLOBAL AVIATION SERVICES 1086 S. MILWAUKEE AVE. WHEELING, IL.		
SCALE	NOTED	SALESPERSON SKIP
DATE	7/30/18	
Exhibit received October 29, 2018		DRAWING # 11504 PG. 4

PLANT LIST

Qty.	Common Name	Botanical Name	Size	Remarks	Code
6	Green Mountain Boxwood	Buxus 'Green Mountain'	24"-30"	Cont.	BGM
9	Little Lime Hydrangea	Hydrangea paniculata 'Jane'	18"-24"	Cont.	HPJ
3	Karl Foerster Reed Grass	Calamagrostis acutiflora 'Karl Foerster'	#1	Pots	CAKF
13	Happy Returns Daylily	Hemerocallis 'Happy Returns'	#1	Pots	HRH

- [illegible]



1086 South Milwaukee
— Hawthorne —

Exhibit received October 29, 2018

Dowden Landscape Design

P.O.Box 415, Libertyville, IL 60048
Phone: (847) 362-1254
Email: dowdenassoc@stoglobal.net



**MOMUMENT SIGN
LANDSCAPE PLAN**

HAWTHORNE CHICAGO, LLC

S. MILWAUKEE AVENUE & TOWER ENTRANCE ROAD
CHICAGO EXECUTIVE AIRPORT, WHEELING, ILLINOIS

HAWTHORNE CHICAGO, LLC S. MILWAUKEE AVENUE & TOWER ENTRANCE ROAD CHICAGO EXECUTIVE AIRPORT, WHEELING, ILLINOIS		title 10-10-18 scale 1/8"=1' drawings CJD date L - 1.0
MONUMENT SIGN LANDSCAPE PLAN		
Dowden Landscape Design P.O. Box 415, Libertyville, IL 60048 Phone (847) 362-1254 Email: dowdenltdsco@aol.com		REVISIONS BY

REQUEST FOR PLAN COMMISSION ACTION
STAFF PROJECT REVIEW

TO: Chairperson Ruffatto and Members of the
Wheeling Plan Commission

FROM: Andrew C. Jennings, Director of Community Development
Brooke A. Casolari, Senior Planner

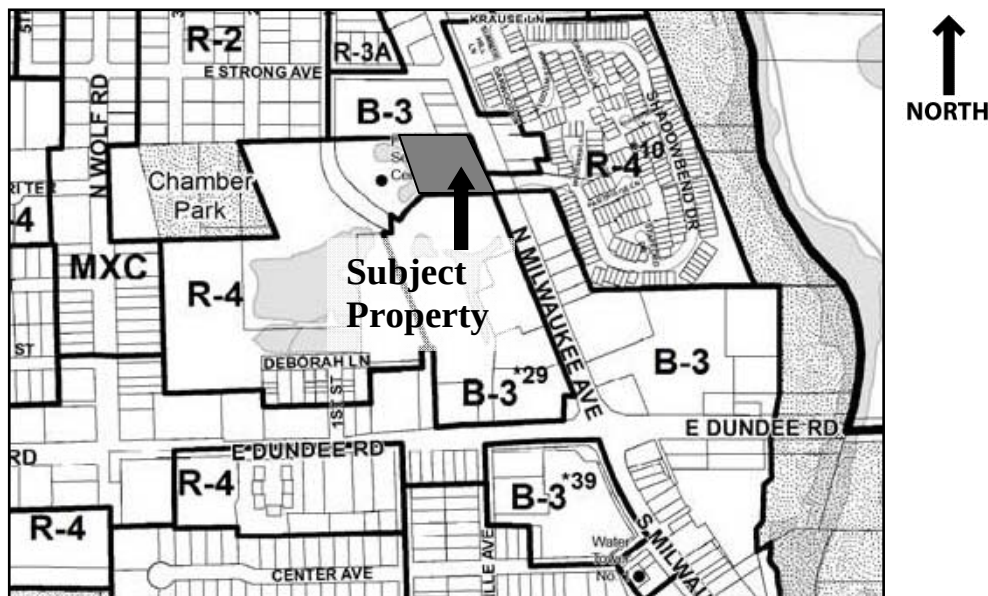
RE: **Docket No. PC 18-17**
Housing Authority of Cook County
200 N. Milwaukee Avenue
Minor Site Plan and Appearance Approval of a Gazebo

DATE OF REPORT: November 1, 2018

DATE OF MEETING: November 8, 2018

PROJECT OVERVIEW: The petitioner is requesting minor site plan and appearance approval for the construction of a gazebo-like accessory structure for use by the residents of the existing apartment building at 200 N. Milwaukee Avenue, which is zoned R-4 Multiple Family Residential.

LOCATION MAP:



GENERAL PROPERTY INFORMATION

<u>Applicant Name:</u>	Camille Yu, architect
<u>Property Owner Name:</u>	Housing Authority of Cook County
<u>Common Location:</u>	Located west of Milwaukee Avenue and south of Strong Avenue
<u>Neighboring Property Land Use(s):</u>	North: B-3 General Commercial and Office West: Multi-Family Residential South: B-3 General Commercial and Office East: B-3 General Commercial and Office

Comprehensive Plan Designation: Multi-Family Residential
Property size: 1.73 acres
Existing Use of Property: Multi-Family Residential
Existing Property Zoning: R-4 Multi-Family Residential District

Previous Relevant Zoning Action on Property:

1981-19 Ord. No. 1770, regarding residency requirements.
1981-19 Ord. No. 1771, regarding rezoning.
1981-19 Ord. No. 1772, regarding zoning variations.
1981-19 Ord. No. 1773, regarding special use for senior housing.
1982-14 Ord. No. 1890, amending Ord. No. 1773.

DESCRIPTION OF PROPOSAL

The property owner, the Housing Authority of Cook County, has requested minor site plan and appearance approval to construct a gazebo at 200 N. Milwaukee Avenue for the use of its residents.

SITE PLAN REVIEW

Scale of site plan: 1 = 20'

General site layout: The proposed open-air accessory structure will be located at the north end of the site in an existing open space area. The gazebo will be located a short walking distance from the apartment building, which will be accessible via the existing sidewalks.

Total number of parking spaces: The proposed structure will not impact the existing parking or require additional parking for the site.

Site lighting: A lighting plan is provided that indicates lights will be mounted under the roof of the gazebo.

Existing Landscaping to Remain: It appears that some existing trees have been recently removed for the installation of the pavilion. The site plan identifies one additional tree that may need to be removed.

APPEARANCE REVIEW

Structure size: The area of the roof is 25 feet by 25 feet (625 sq. ft.). The proposed brick paver floor under the gazebo is 29 feet by 29 feet (841 sq. ft.). The overall height of the structure is approximately 12'4" to the roof ridge. The maximum permitted height of an accessory structure in the R-4 district is 24 feet.

Elevation view: A low sloped, standing seam roof with exposed wood trusses, supported by four brick columns is proposed. The brick veneer columns will match the brick building. The metal roof finish will match dark bronze color of the residential building. All of the exposed wood at the roofline will be stained.

STAFF REVIEW

Fire Department Review: The Fire Department has received the plans and has provided a memo dated November 2, 2018. Of notable concern is that the structure is required to have fire sprinklers unless the structure (including the roof assembly) is constructed of non-combustible materials. The Plan Commission may wish to discuss this requirement with the petitioner to determine if any changes to the materials are proposed at this time.

Engineering Division Review: The Engineering Division has received the plans and has provided a memo dated November 1, 2018. These comments will be addressed at permit.

Impact on adjacent uses: It does not appear that the proposed site plan modifications will have a negative impact on the surrounding properties.

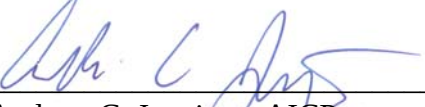
Staff Recommended Action: Prior to making a motion, staff recommends the Plan Commission discuss the Fire Department requirement of sprinklers with the applicant to determine if the materials, as proposed, are finalized.

PROPOSED MOTION

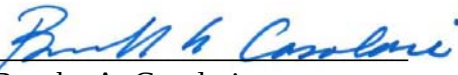
If the Plan Commission finds that the petitioner has satisfied the requirements for the granting of the minor site plan approval, an appropriate motion would be to:

Approve Docket No. PC 18-17 granting Minor Site Plan and Appearance Approval to construct one gazebo at the subject property in accordance with the following plans submitted October 12, 2018, on behalf of the Housing Authority of Cook County, located at 200 N. Milwaukee Avenue, Wheeling, Illinois:

- Cover letter (3 sheets) and
- Architectural and engineering plans (8 sheets).



Andrew C. Jennings, AICP
Director of Community Development



Brooke A. Casolari
Senior Planner

Attachments: [Photos of existing conditions \(staff\)](#)

[Fire Department memo](#)

[Engineering Division memo](#)

[Cover letter](#)

[Architectural and engineering plans](#)

Housing Authority of Cook County – 9935 Capitol Drive
Docket No. PC 18-17 (Minor Site Plan & Appearance Approval of a Gazebo)



Existing conditions of subject area (looking north)

Housing Authority of Cook County – 9935 Capitol Drive
Docket No. PC 18-17 (Minor Site Plan & Appearance Approval of a Gazebo)



Existing conditions of subject area (looking east)



MEMO – Fire Prevention Bureau

TO: Brooke Casolari, Village Planner
FROM: Ronald S. Antor, Fire Inspector
CC: Andrew Jennings, Director of Community Development
Keith MacIsaac, Fire Chief
FPB File
DATE: November 2, 2018
SUBJECT: Proposed Gazebo – 200 North Milwaukee Avenue – Housing Authority of Cook County/Wheeling Tower - Plans received for review by the Fire Department, October 22, 2018.

The Wheeling Fire Department has reviewed the submittals received related to the above referenced project and has the following comments:

Site Plan

1. The proposed plans show no changes to the existing Fire Department access to the site.

Housing Authority of Cook County Wheeling Tower – 200 North Milwaukee Avenue – Proposed Gazebo

1. Based on the documents submitted for review, the petitioner's proposal is for a new 625 square foot gazebo. Based on the use of the structure, it would be classified as an (A) Assembly Use Group occupancy as defined in the 2012 Editions of the International Building (IBC) and Fire Prevention Codes (IFC).
2. The proposed occupancy load for the structure will be verified during the construction/permitting process.
3. All construction shall comply with the Village's Building and Fire Prevention Codes (2012 Editions of the International Building Code & International Fire Code – with amendments).
4. The structure is required to be provided with an automatic fire sprinkler system in accordance with the 2012 Editions of the International Building and Fire Prevention Codes as amended by the Village of Wheeling.

The sprinkler system may be omitted if the structure, including roof assembly is constructed of non-combustible components.

5. This review is not a review for issuance of a building permit and additional comments will be forthcoming in the permitting process.

At this time there are no other Fire Department comments related to the project as presented in the documents reviewed.



MEMORANDUM

TO: Brooke Casolari, Senior Planner

FROM: Kyle Goetzelmann, Civil Engineer I

COPY: Jon Tack, Village Engineer
Steve Robles, Assistant Director of Community Development

DATE: November 1st, 2018

SUBJECT: Cook County Housing Authority – Gazebo Installation
200 N. Milwaukee Ave - Review Comments

The Engineering Division received a project description and site plan for the subject project on October 22nd, 2018. The Engineering Division has completed a review of the above referenced submittal and offers the following comments at this time:

1. Gazebo is located in the FEMA type A flood zone. No fill can be brought on site and gazebo must be constructed at or below existing grade.
2. Sidewalk and paver brick installation will require an engineering permit.

Stephanie Denny
Holabird & Root
140 S Dearborn St, 5th Floor
Chicago, IL 60603

October 10, 2018

Village of Wheeling
Plan Commission
2 Community Boulevard
Wheeling, IL 60090

To whom it may concern,

The Housing Authority of Cook County is currently doing interior renovations to an existing building at 200 N. Milwaukee Ave. in The Village of Wheeling. This new project is an additional structure of a gazebo on the same site. This gazebo will allow additional outdoor space for the tenants of the HACC Wheeling Tower.

The structure of the gazebo includes poured concrete foundations along with four steel columns, one in each corner of the gazebo. The roof structure consists of exposed wood trusses that will be designed by the manufacturer.

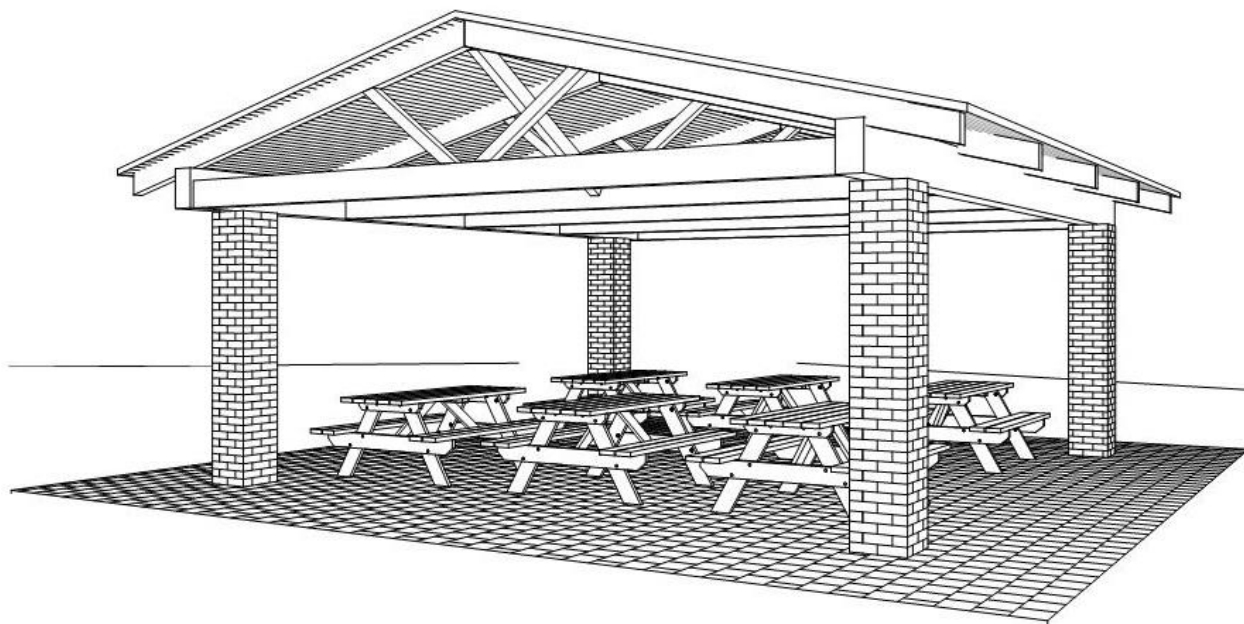
The design of the gazebo is going to consist of brick surrounds at all steel columns, exposed wood trusses, standing seam metal roofing, and permeable brick pavers. The brick columns are designed to match the existing brick of the tower. Contractor to submit samples to architect to find an adequate match. The exposed wood trusses will match the finished gazebo image below. The standing seam metal roof will match the finish on the windows of the Wheeling Tower. The current finish on the windows is a Pac-Clad dark bronze that looks almost black. This will also match the connection plates that will be used for the wood trusses. Lastly, the brick pavers will be Unilock Eco-Priora pavers in a pattern chosen by the architect.

An image is included below of an existing gazebo that this project was modeled after, with slight changes in materials specified above. Other finish images have also been provided.

The Gazebo at Wheeling Tower will be represent a great addition to the site and will complement the existing tower through materials and site design.

Exhibit received October 12, 2018

Gazebo Design:



Brick Columns:



Standing Seam:



Brick Pavers:



Finished Gazebo

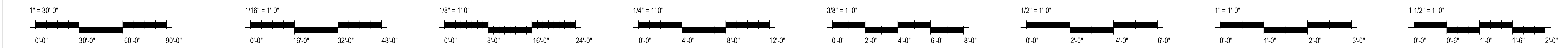


Any questions or concerns can be directed to the project architect, Camille Yu (Holabird & Root, cyu@holabird.com, 312.357.1408).

Sincerely,

Stephanie Denny

sdenny@holabird.com
312.357.1748



PROJECT

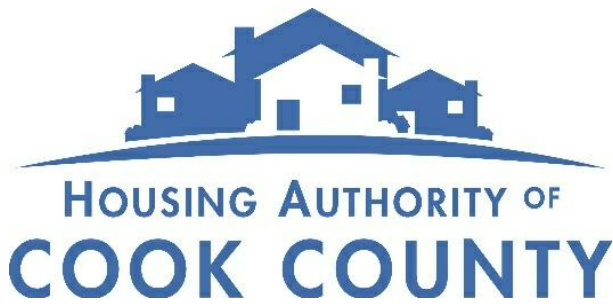
GAZEBO AT WHEELING APARTMENTS

PROPERTY ADDRESS

20 NORTH MILWAUKEE AVE.
WHEELING, IL 60090

PROJECT TEAM

OWNER



HOUSING AUTHORITY OF
COOK COUNTY
175 WEST JACKSON BLVD
SUITE 350
CHICAGO, IL 60604

www.holabird.com

ARCHITECT &
STRUCTURAL ENGINEER



HOLABIRD AND ROOT LLC
140 SOUTH DEARBORN STREET
SUITE 500
CHICAGO, IL 60603
312.357.1771 TEL
312.357.1909 FAX

www.holabird.com

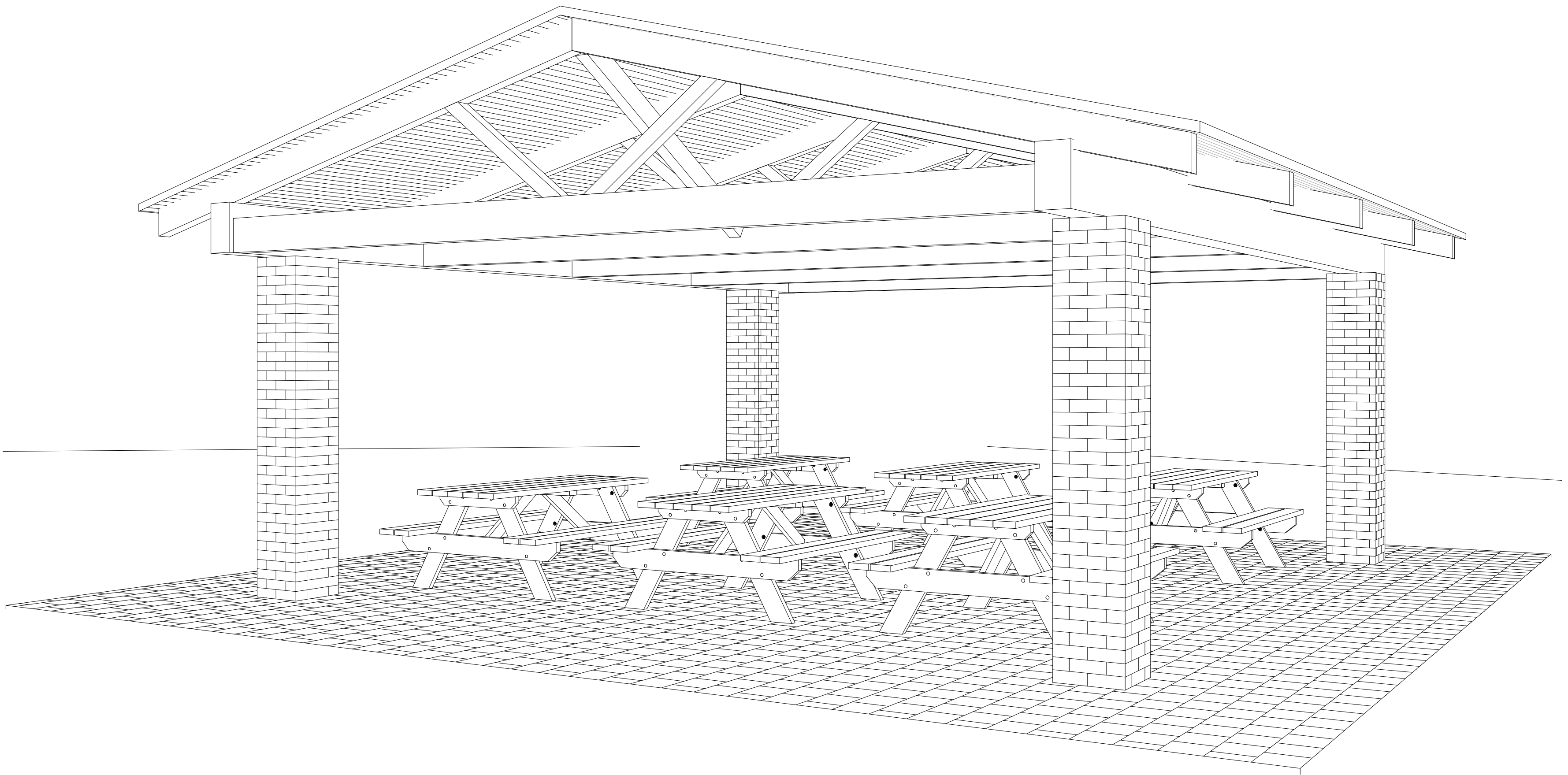
CIVIL & ELECTRICAL
ENGINEER



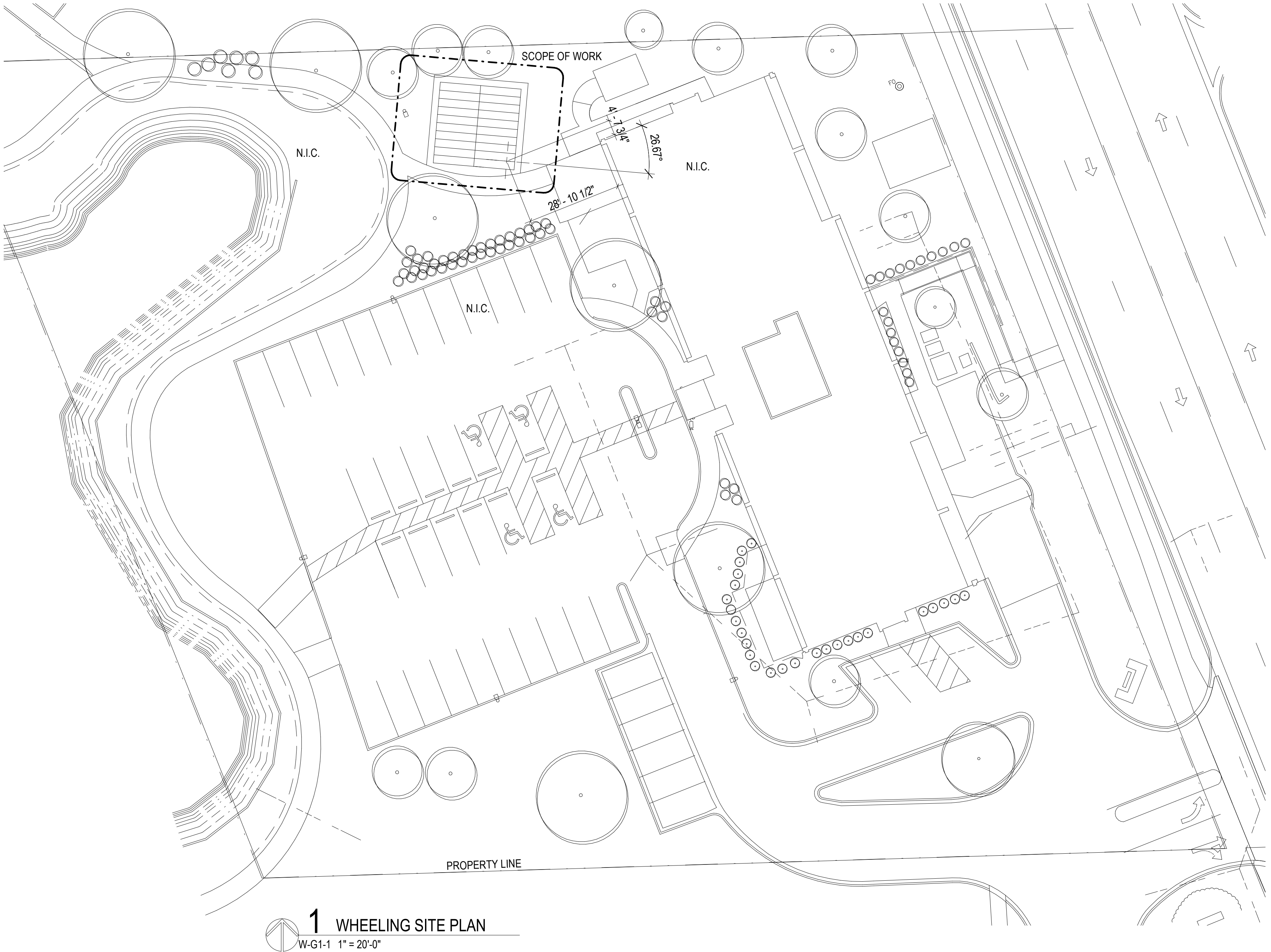
RTM ASSOCIATES
715 RIDGEVIEW DRIVE
McHENRY, IL 60050
815.578.0200 TEL

www.rtmassociates.com

GAZEBO SKETCH



SITE PLAN



1 WHEELING SITE PLAN
W-G1-1 1" = 20'-0"

ISSUE FOR PERMIT

HOLABIRD & ROOT

140 South Dearborn Chicago, IL 60603
Tel: 312 357 1771 Fax: 312 357 1909

www.holabird.com

Exhibit received October 12, 2018



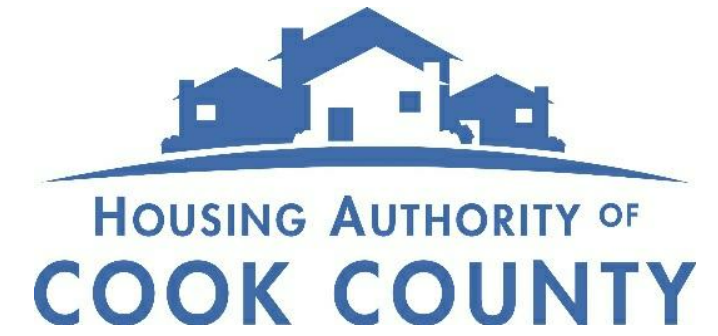
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1	10/09/18	ISSUE FOR PERMIT
No.	Date	Issue

Project Number	1566915670
Drawn	S. DENNY
Checked	J. BEHOUNEK
Proj. Arch./Eng.	C. YU



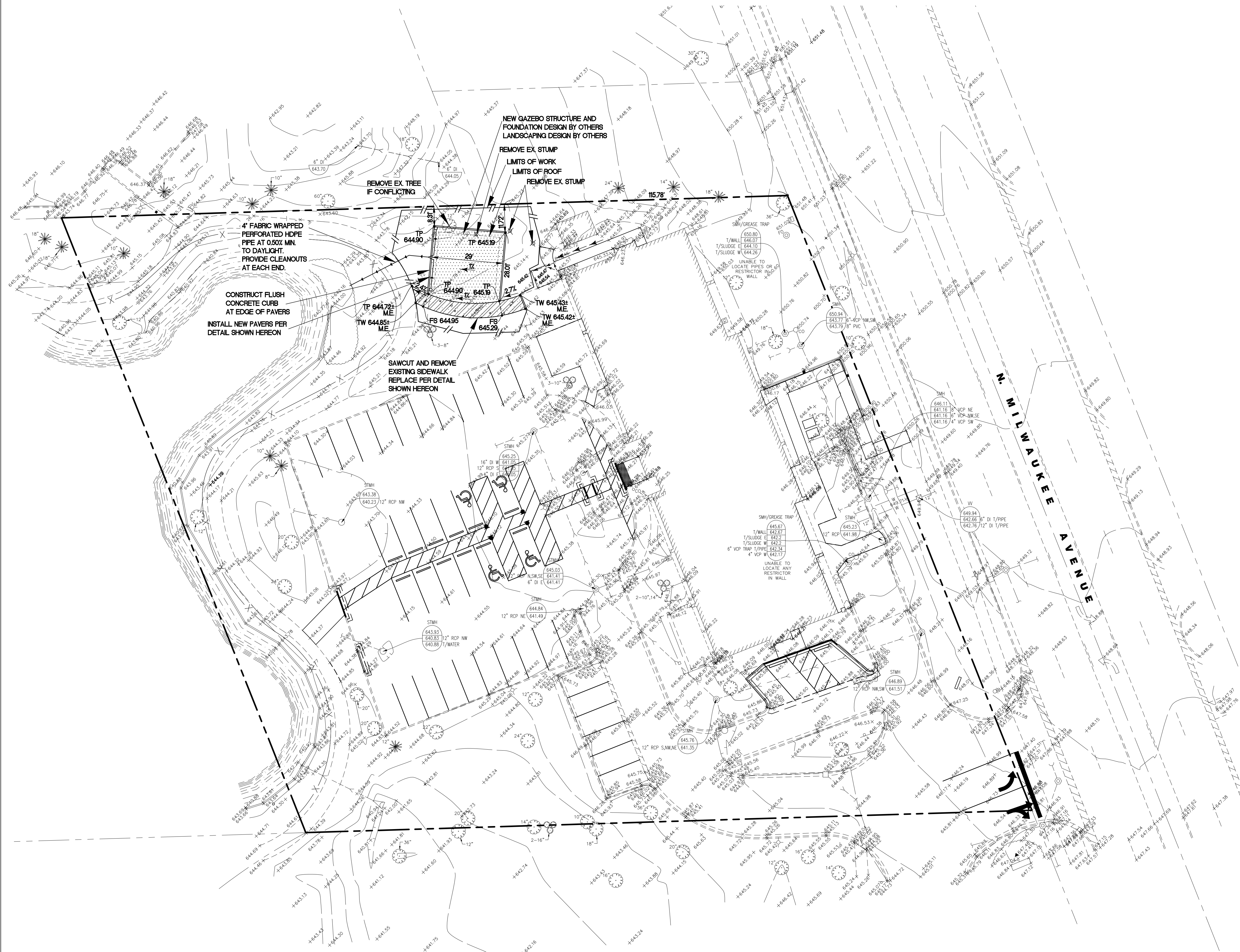
H.A.C.C.
WHEELING
TOWER
200 N. MILWAUKEE AVE.
WHEELING, IL 60090

Project

GENERAL INFORMATION &
DRAWING INDEX

Drawing Name

Drawing No. W-G1-1

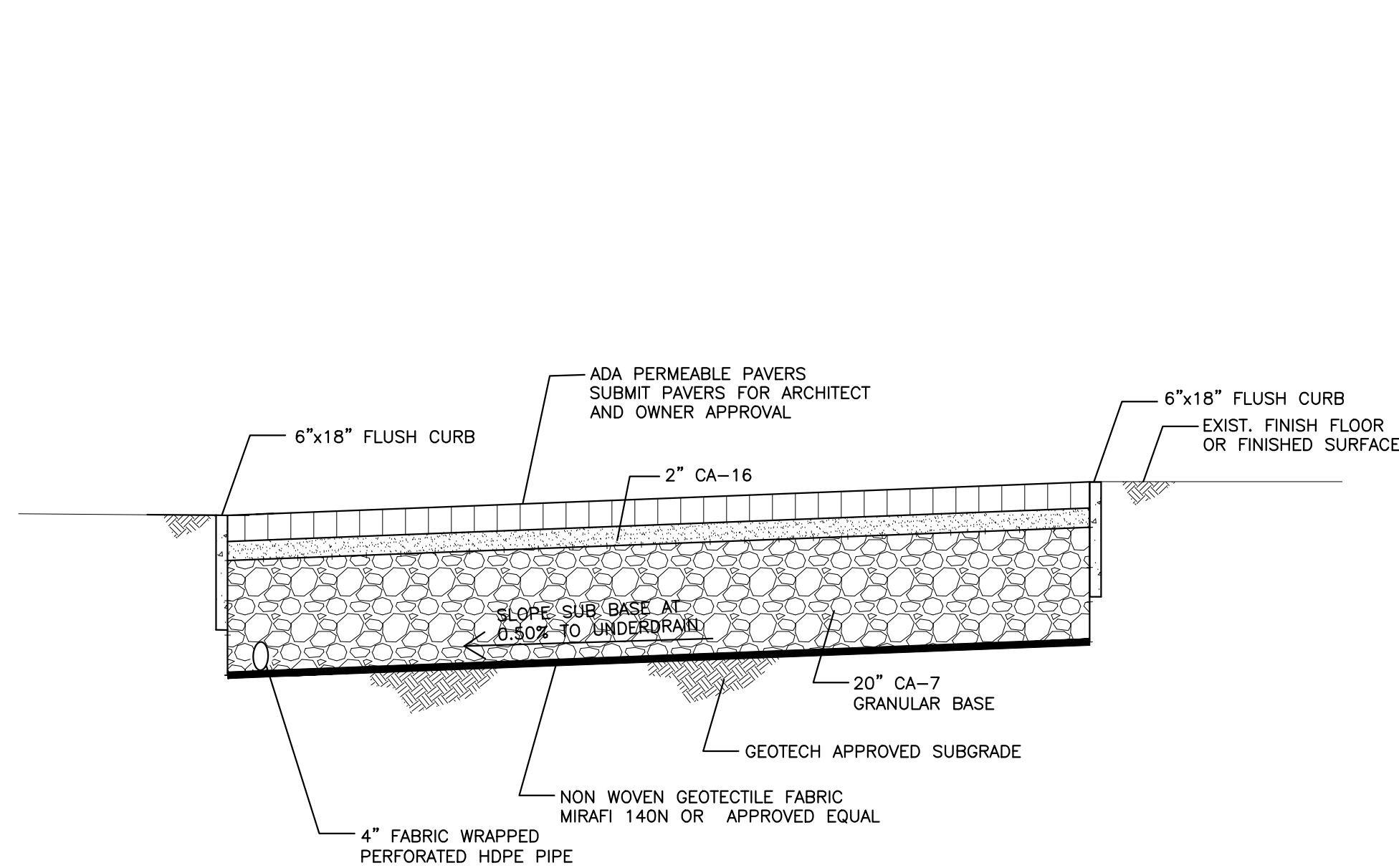


NOTES:

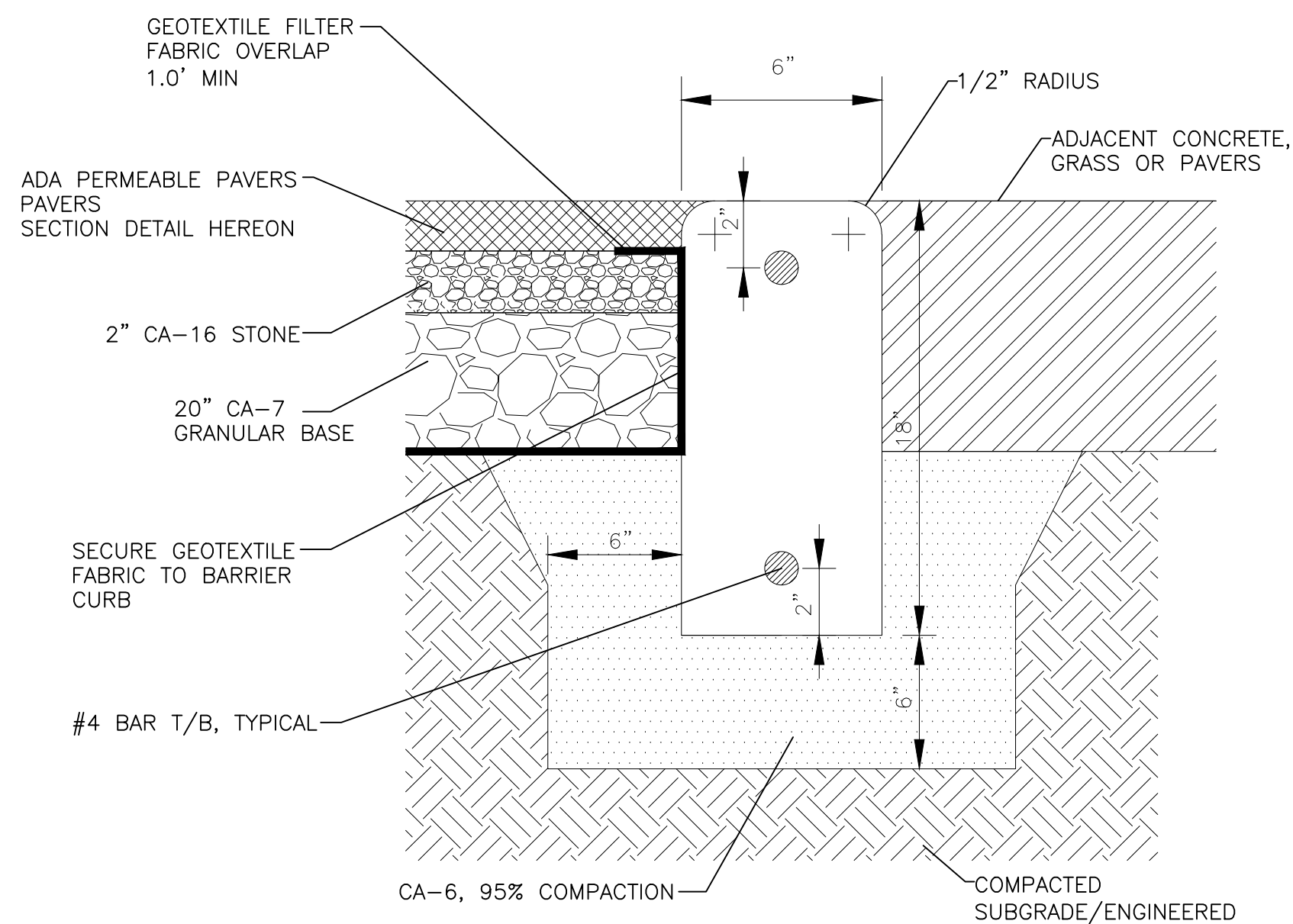
1. PROPOSED ELEVATIONS SHOWN ARE FINISHED SURFACE ELEVATIONS UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHOWN ARE TO FACE OF CURB.
3. A CONSTANT SLOPE SHALL BE MAINTAINED BETWEEN SPOT GRADES.
4. TOPOGRAPHIC SURVEY PREPARED BY SIGHT ON SOLUTIONS, LLC.
5. SOME EXISTING ELEVATIONS AND IMPROVEMENTS SHOWN PER PREVIOUS DEVELOPMENT PLANS.
6. CONTRACTOR TO PROVIDE SHORING/BRACING FOR CONSTRUCTION WORK IF REQUIRED.
7. CONTRACTOR TO PROVIDE UTILITY LOCATOR.
8. CONTRACTOR TO RESTORE DISTURBED GRASS AREAS WITH 6" OF TOPSOIL AND THEN SOD.

SOIL EROSION AND SEDIMENT CONTROL NOTES:

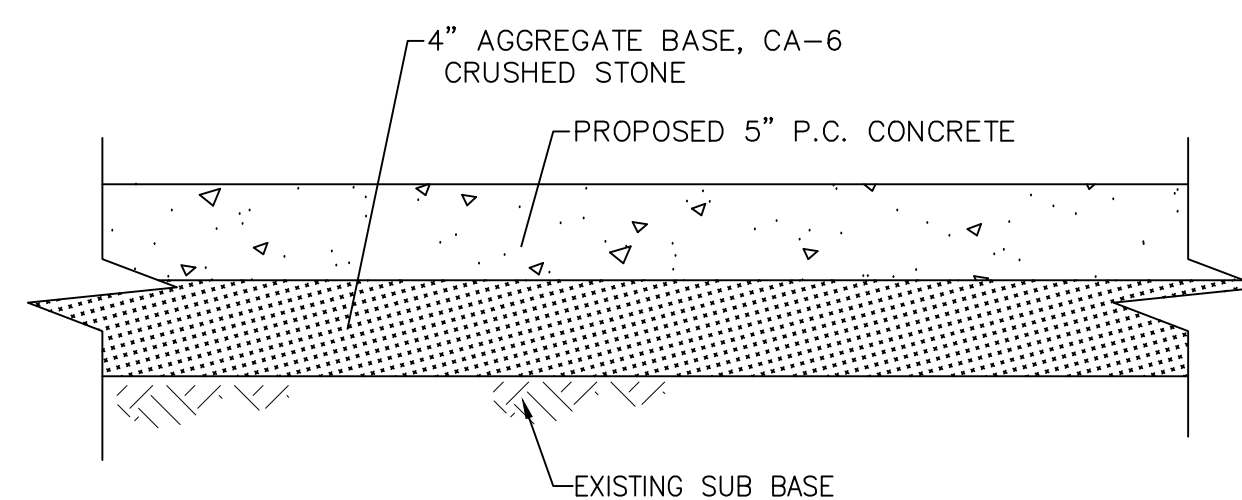
1. INLET PROTECTION SHALL BE INSTALLED AT EACH DRAINAGE STRUCTURE THAT ACCEPTS WATER.
2. ALL ROADS INCLUDING ADJACENT ROADWAYS, SWALES, DRAINAGE STRUCTURES, MANHOLES AND PIPES MUST BE KEPT CLEAN AND FREE OF DIRT, SILT AND DEBRIS AT ALL TIMES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD ADJUSTING THE LOCATION OF THE EROSION MEASURES TO ACCOMMODATE CONSTRUCTION ACTIVITIES. RELOCATED MEASURES SHALL BE PLACED TO PREVENT SILT FROM RUNNING OFF THE SITE OR INTO FINISHED GRADED AREAS. MEASURES SHALL BE RELOCATED BACK TO ORIGINAL LOCATION AS NECESSARY AFTER CONSTRUCTION ACTIVITY IN THE EFFECTED AREA IS COMPLETED.
4. AFTER PERMANENT GROUND COVER IS ESTABLISHED THROUGHOUT THE SITE, THE ACCUMULATED SEDIMENT SHALL BE REMOVED FROM COLLECTION AREAS, AND ALL STORM SEWER PIPES AND STRUCTURES.



PAVERS SECTION DETAIL
NO SCALE



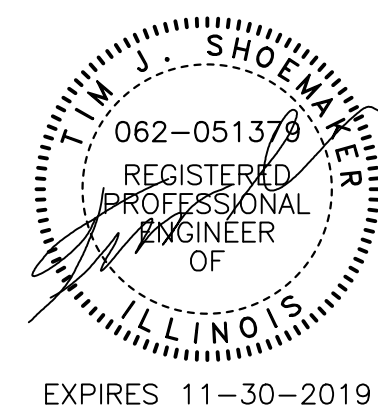
FLUSH CONCRETE CURB
NO SCALE



NOTES:

1. SAWCUT CONTRACTION JOINTS 3/16 INCH WIDE AT AN OPTIMUM TIME AFTER FINISHING, CUT 1/3 INTO DEPTH OF SLAB. CONTRACTION JOINTS TO BE PLACED AT INTERVALS EQUAL TO THE SIDEWALK WIDTH.
2. PLACE 3/8 INCH WIDE EXPANSION JOINTS AT INTERVALS EQUAL TO EVERY 4TH CONTRACTION JOINT AND TO SEPARATE PAVING FROM VERTICAL SURFACES AND OTHER COMPONENTS AND IN PATTERN INDICATED.
3. FORM JOINTS WITH JOINT FILLER EXTENDING FROM BOTTOM OF PAVEMENT TO WITHIN 1/2 INCH OF FINISHED SURFACE.
4. SECURE TO RESIST MOVEMENT BY WET CONCRETE.

PROPOSED CONCRETE SIDEWALK CROSS-SECTION
NO SCALE



EXPIRES 11-30-2019

HOLABIRD & ROOT

140 South Dearborn
Chicago, IL 60603
312.357.1771 tel
312.357.1909 fax
www.holabird.com



715 Ridgeway Drive, McHenry, 60050
T.815.576.0200 | www.rtmassociates.com

Exhibit received October 12, 2018

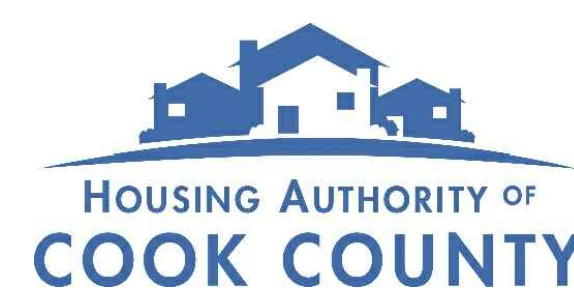
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1	10/10/18	PER HACC
No.	Date	Issue

Comm. No.	
Drawn	LK/MV
Checked	TM/SD
Proj. Arch./Eng.	TM



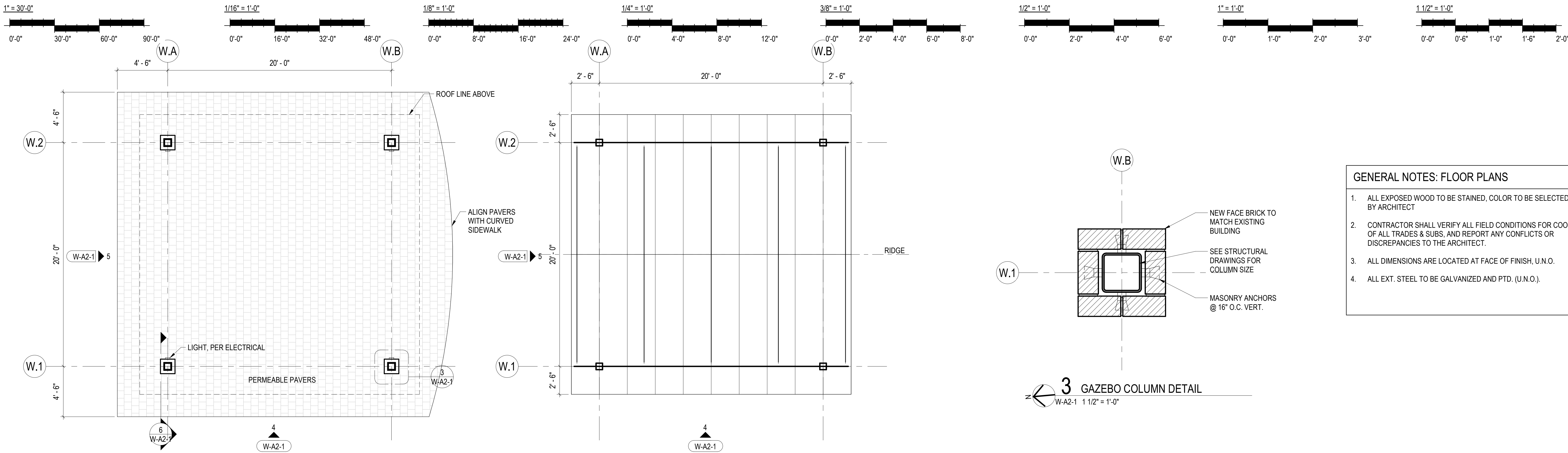
H.A.C.C.
WHEELING TOWER
200 N. MILWAUKEE
VILLAGE OF WHEELING, IL
60090

Project

ENGINEERING PLAN
☐ **DETAILS**

Drawing Name

Drawing No. **W-C1**



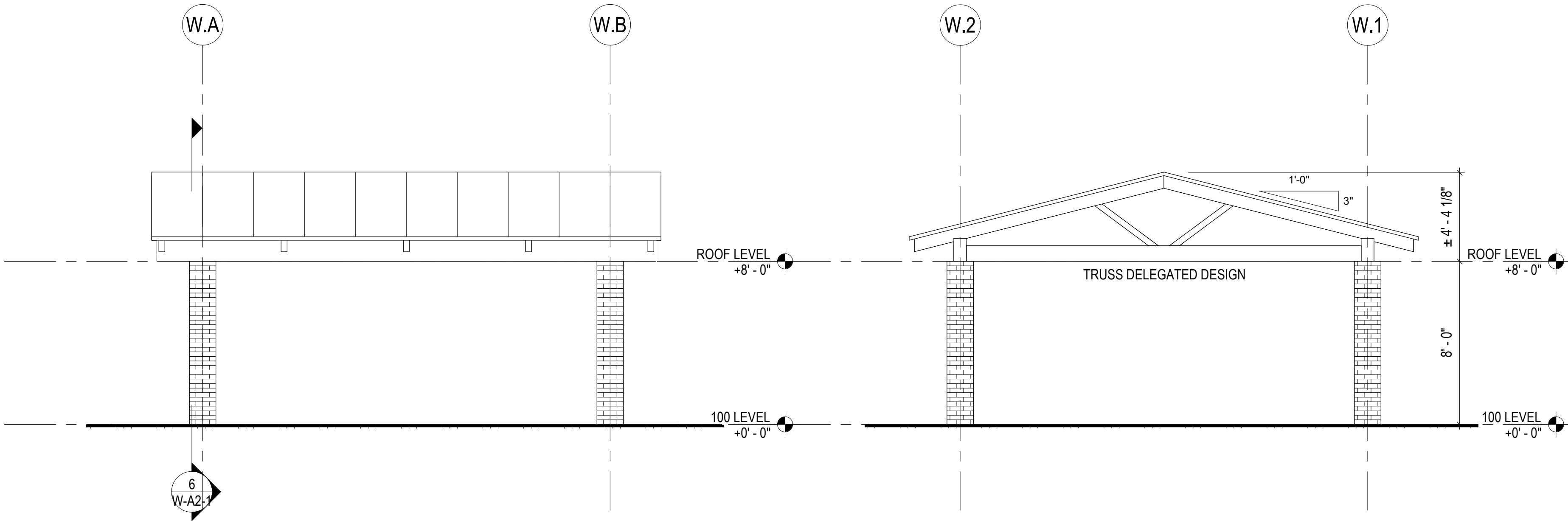
1 GAZEBO FLOOR PLAN
W-A2-1 1/4" = 1'-0"

2 GAZEBO ROOF PLAN
W-A2-1 1/4" = 1'-0"

3 GAZEBO COLUMN DETAIL
W-A2-1 1 1/2" = 1'-0"

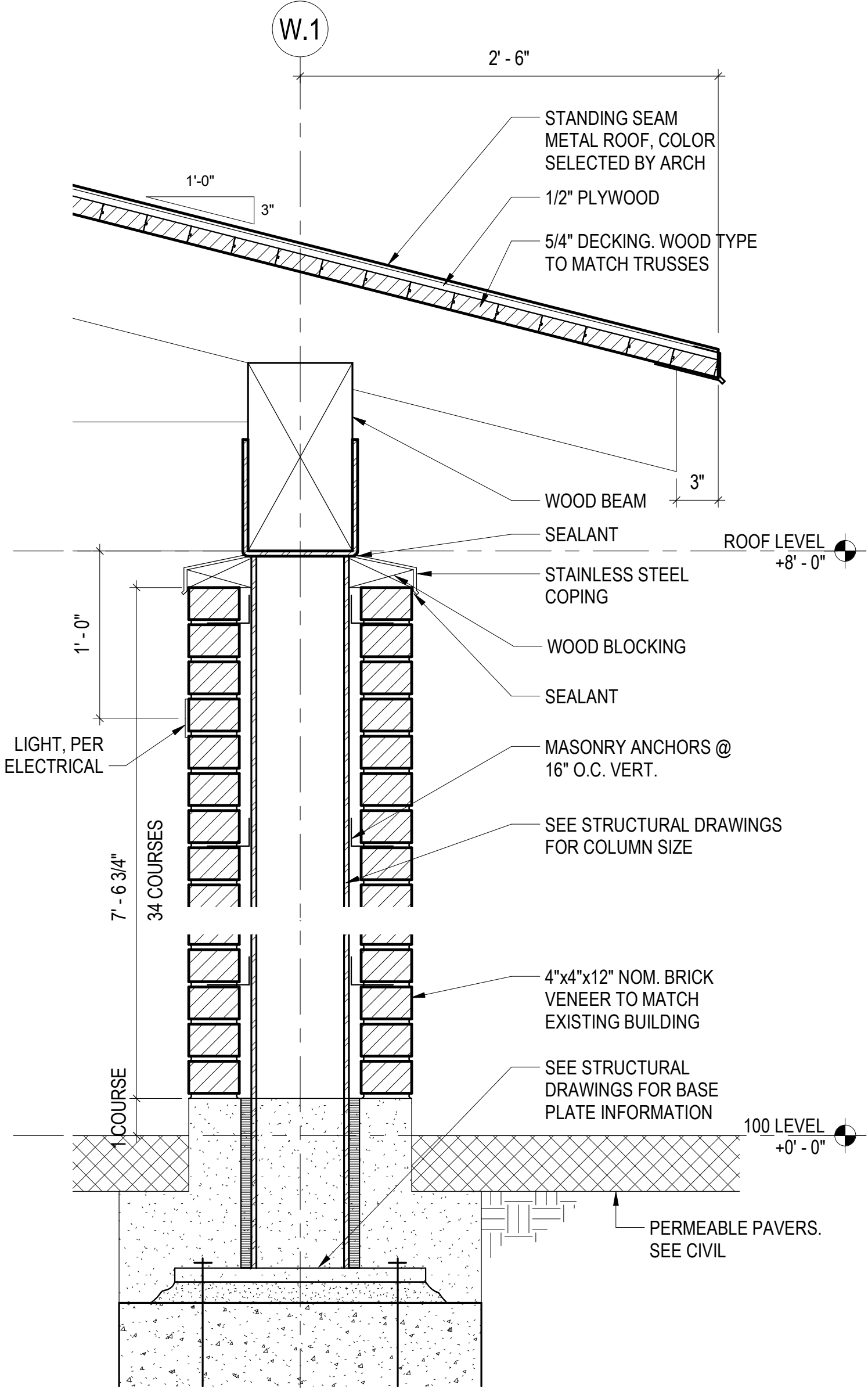
GENERAL NOTES: FLOOR PLANS

- ALL EXPOSED WOOD TO BE STAINED, COLOR TO BE SELECTED BY ARCHITECT
- CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS FOR COORD. OF ALL TRADES & SUBS, AND REPORT ANY CONFLICTS OR DISCREPANCIES TO THE ARCHITECT.
- ALL DIMENSIONS ARE LOCATED AT FACE OF FINISH, U.N.O.
- ALL EXT. STEEL TO BE GALVANIZED AND PTD. (U.N.O.).



4 GAZEBO EAST ELEVATION
W-A2-1 1/4" = 1'-0"

5 GAZEBO SOUTH ELEVATION
W-A2-1 1/4" = 1'-0"



6 PAVILION ROOF & COLUMN DETAIL
W-A2-1 1 1/2" = 1'-0"

HOLABIRD & ROOT

140 South Dearborn Chicago, IL 60603
Tel: 312 357 1771 Fax: 312 357 1909

www.holabird.com

Exhibit received October 12, 2018



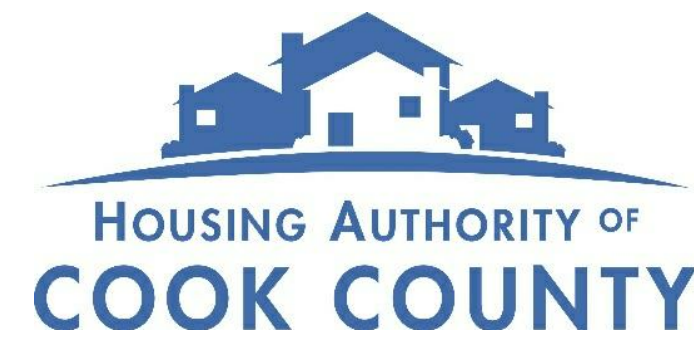
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No.	Date	Issue
1	10/09/18	ISSUE FOR PERMIT

Project Number	15669/15670
Drawn	S. DENNY
Checked	J. BEHOUNEK
Proj. Arch./Eng.	C. YU



H.A.C.C.
WHEELING
TOWER
200 N. MILWAUKEE AVE.
WHEELING, IL 60090

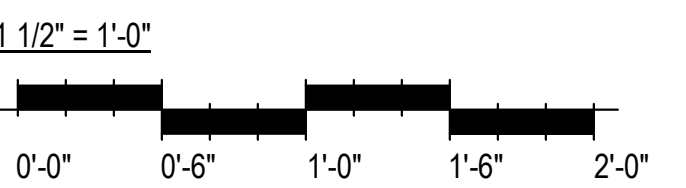
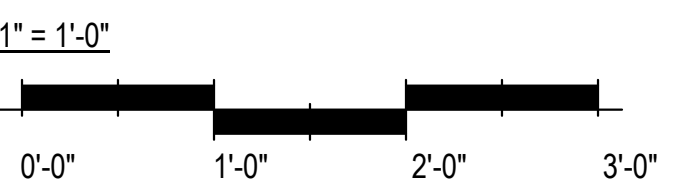
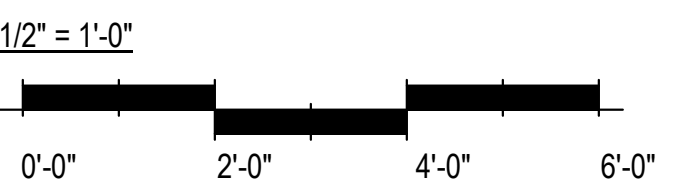
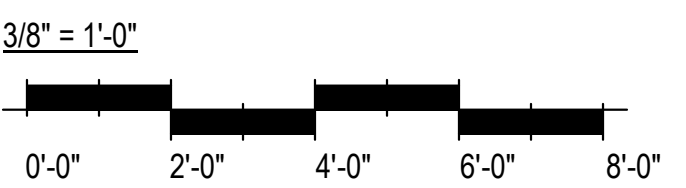
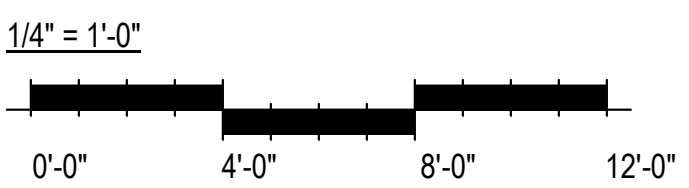
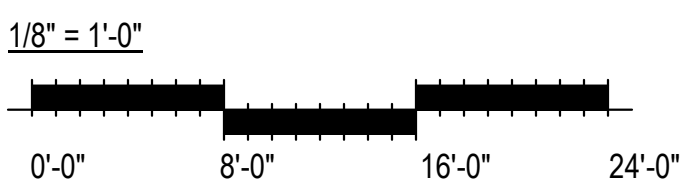
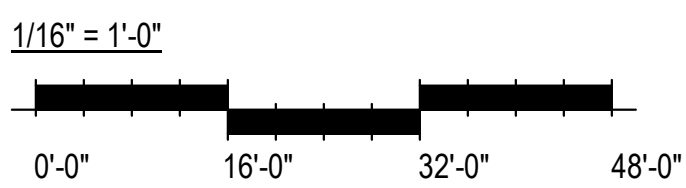
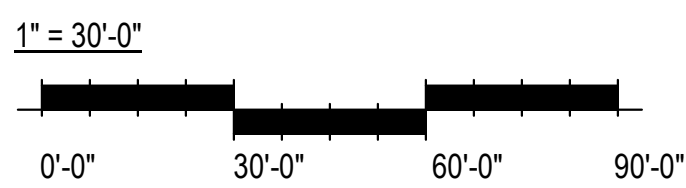
Project

PLANS, ELEVATIONS, & DETAILS

Drawing Name

Drawing No.

W-A2-1

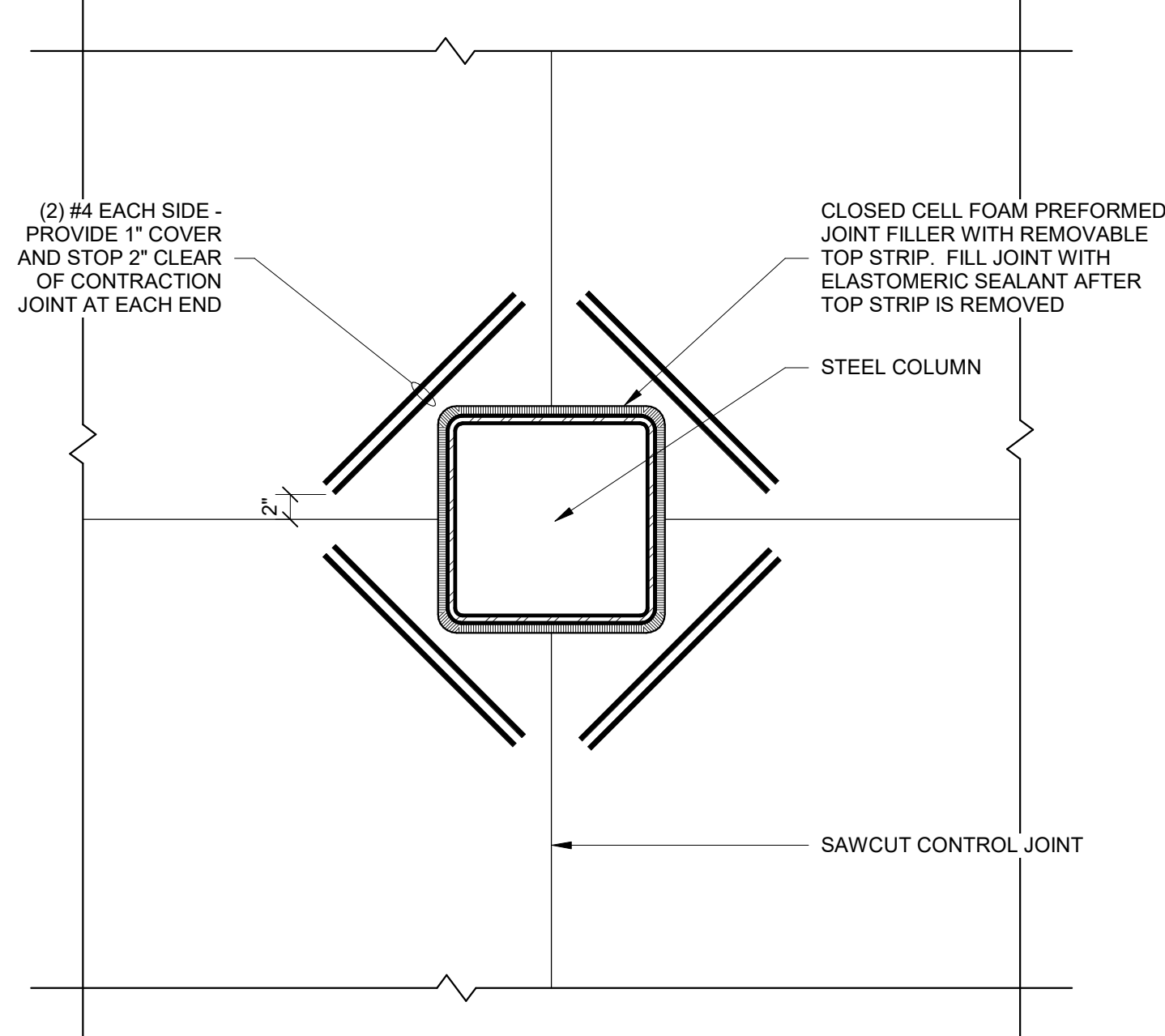
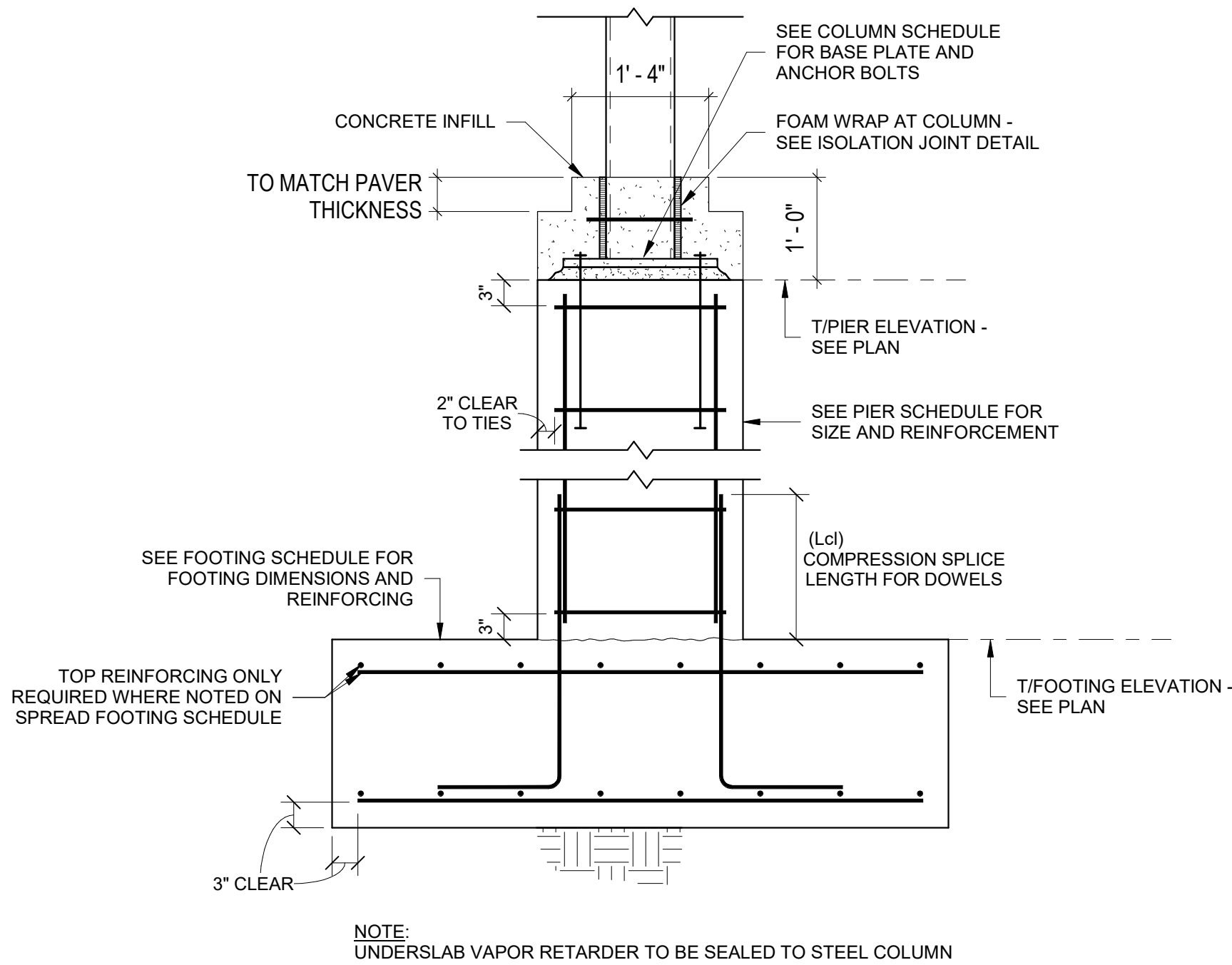


db = BAR DIAMETER
Ld = TENSION DEVELOPMENT LENGTH
Ldt = TENSION DEVELOPMENT LENGTH FOR TOP BAR
La = CLASS A LAP SPLICE LENGTH, 1.0 Ld
Lat = CLASS A LAP SPLICE LENGTH FOR A TOP BAR, 1.0 Ld
Lb = CLASS B LAP SPLICE LENGTH, 1.3 Ld
Lbt = CLASS B LAP SPLICE LENGTH FOR A TOP BAR, 1.3 Ldt
Ldh = TENSION DEVELOPMENT LENGTH FOR A STANDARD HOOK
Ldc = COMPRESSION DEVELOPMENT LENGTH
Lcl = COMPRESSION LAP SPLICE LENGTH

Fc = 4,000 psi
fy = 60,000 psi

SIZE	Ld	Ldt	La	Lat	Lb	Lbt	Ldh	Ldc	Lcl
#4	19 (28)	25 (37)	19 (28)	25 (37)	25 (37)	32 (48)	10	9	15
#5	24 (36)	31 (46)	24 (36)	31 (46)	31 (46)	40 (60)	12	12	19
#6	28 (43)	37 (55)	28 (43)	37 (55)	37 (55)	48 (72)	14	14	23
#7	41 (62)	54 (81)	41 (62)	54 (81)	54 (81)	70 (105)	17	17	26
#8	47 (71)	62 (92)	47 (71)	62 (92)	62 (92)	80 (120)	19	19	30
#9	53 (80)	70 (104)	53 (80)	70 (104)	70 (104)	90 (136)	21	21	34
#10	60 (90)	78 (117)	60 (90)	78 (117)	78 (117)	102 (153)	24	24	38
#11	67 (100)	87 (130)	67 (100)	87 (130)	87 (130)	113 (169)	27	27	42

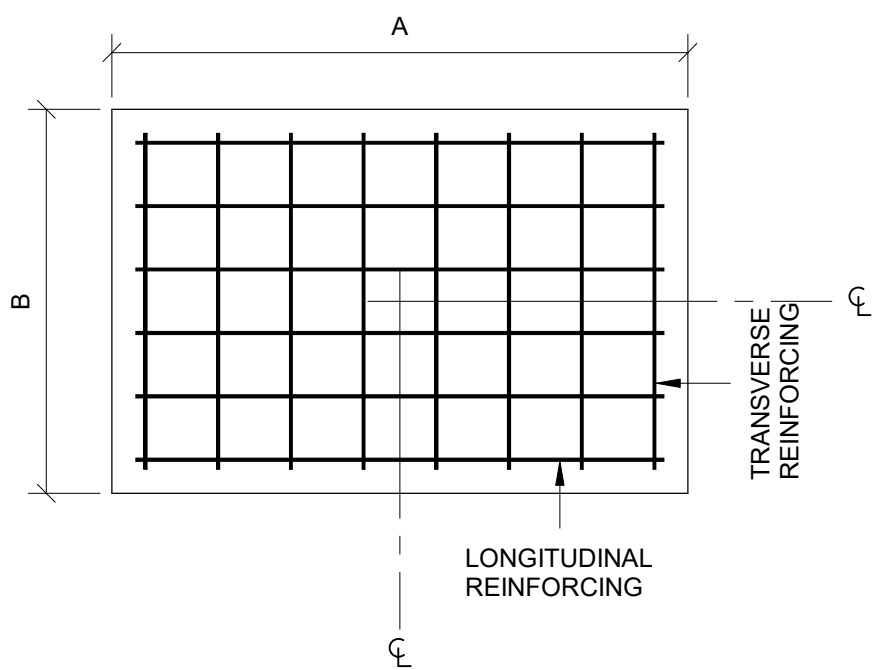
NOTES:
1. USE THE LENGTHS IN THIS SCHEDULE, UNLESS NOTED OTHERWISE.
2. USE LENGTH IN PARENTHESIS () WHEN BAR COVER IS db OR LESS OR WHEN BAR CLEAR SPACING IS 2db OR LESS.
3. A TOP BAR IS A HORIZONTAL BAR WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW IT.



1 DEVELOPMENT AND SPLICE LENGTH ABBREVIATIONS

W-S2-1 N.T.S.

MARK	DIMENSIONS			REINFORCING		REMARKS
	A	B	THICKNESS	LONGITUDINAL	TRANSVERSE	
F1	5'-0"	5'-0"	2'-0"	(8) #6	(8) #6	TOP REINF. REQ.



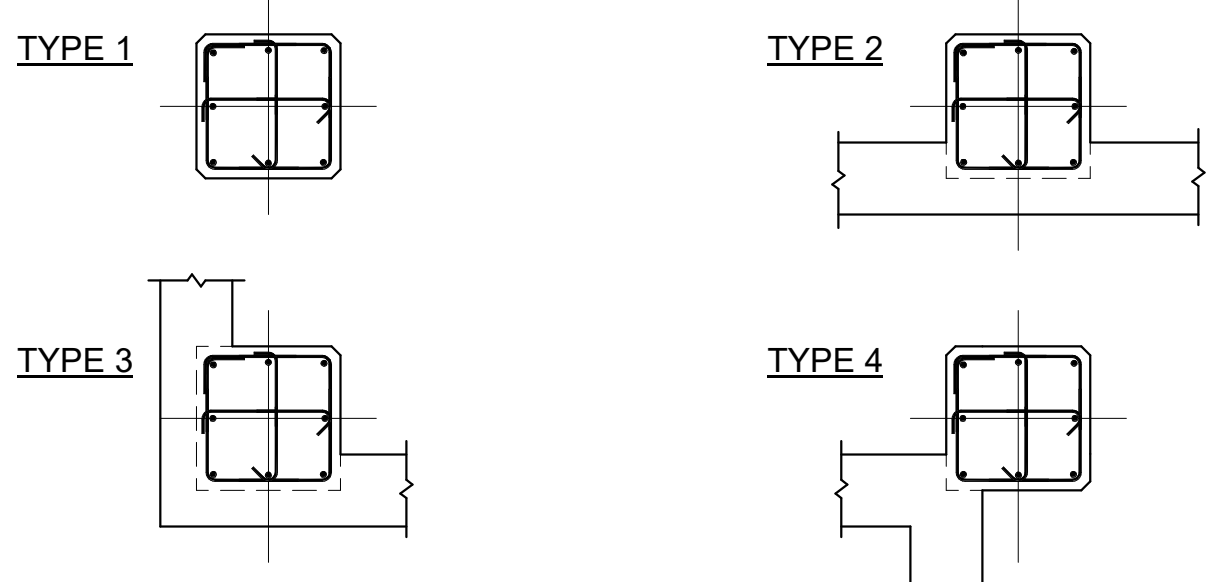
5 SPREAD FOOTING SCHEDULE

W-S2-1 N.T.S.

2 DEVELOPMENT AND SPLICE LENGTH SCHEDULE - f'c = 4,000 psi

W-S2-1 N.T.S.

MARK	TYPE	SIZE	REINFORCING				REMARKS
			VERT.	TIES	DOWELS	SPLICE	
P1	TYPE 1	26"x26"	(8)#8	#4@8"	(8)#6	24"	



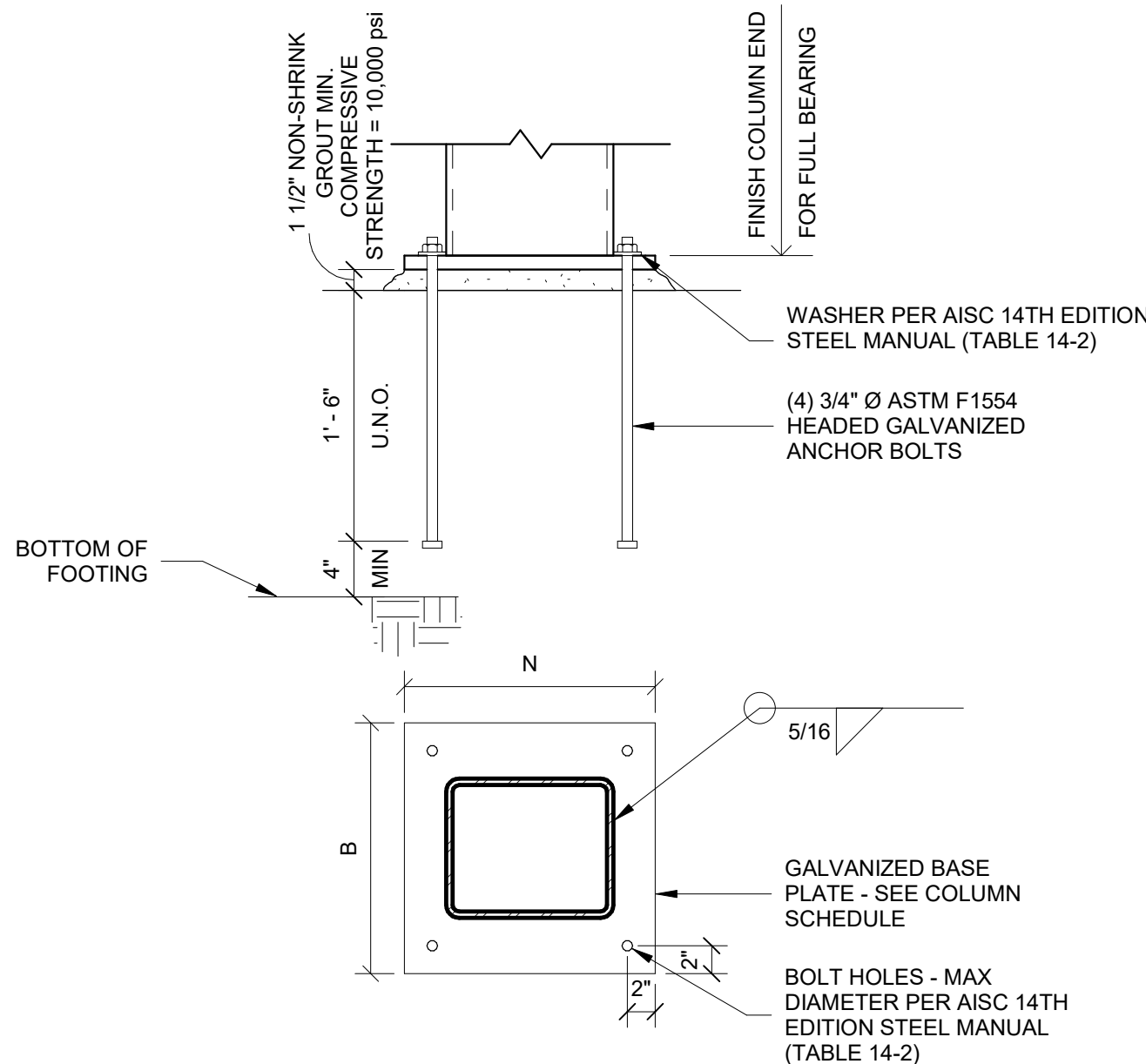
NOTES:
1. DASHED LINE INDICATES BLOCKOUT FOR COLUMN BASE PLATE. INFILL WITH CONCRETE AFTER STEEL ERECTION.
2. COORDINATE TIE LAYOUT TO AVOID CONFLICTS WITH ANCHOR BOLTS.
3. CONTINUE WALL REINFORCING THROUGH PIER

6 CONCRETE PIER SCHEDULE

W-S2-1 N.T.S.

3 INTERIOR STEEL COLUMN ON PIER AND SPREAD FOOTING

W-S2-1 N.T.S.

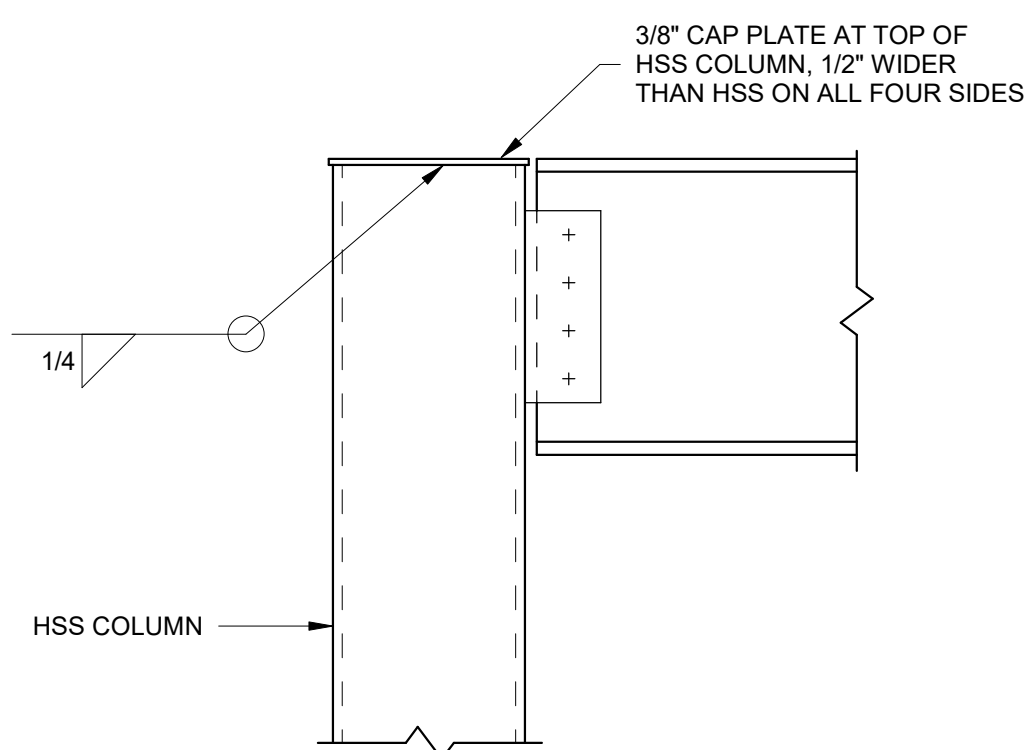


7 BASE PLATE TYPE BP-1

W-S2-1 N.T.S.

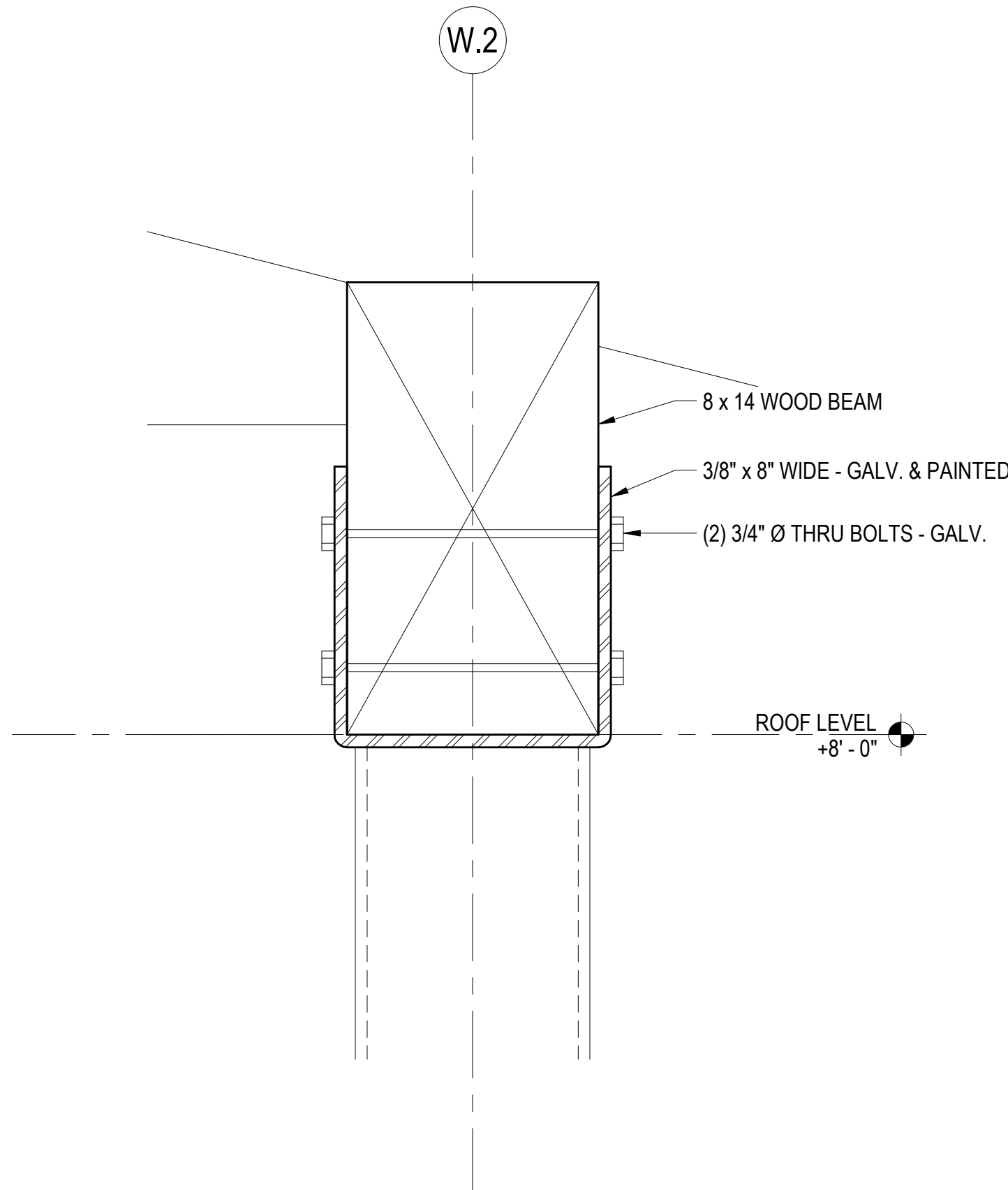
4 ISOLATION JOINT AT STEEL COLUMN

W-S2-1 N.T.S.



8 CAP PLATE AT HSS COLUMN

W-S2-1 N.T.S.



9 TOP OF COLUMN CONNECTION

W-S2-1 3" = 1'-0"

ROOF LEVEL 8' - 0"	HSS7X2X8 GALV.	ROOF LEVEL 8' - 0"
100 LEVEL 0' - 0"		100 LEVEL 0' - 0"
BASE PLATE 1' x N" x B" Type = BP-X	BASE PLATE 1 1/4" x 15" x 15" Type = BP-1	
Column Locations	W.1-W.A, W.1-W.B, W.2-W.A, W.2-W.B	

COLUMN SCHEDULE
N.T.S.

HOLABIRD & ROOT

140 South Dearborn Chicago, IL 60603
Tel: 312 357 1771 Fax: 312 357 1909

www.holabird.com

Exhibit received October 12, 2018



Tom Harrison

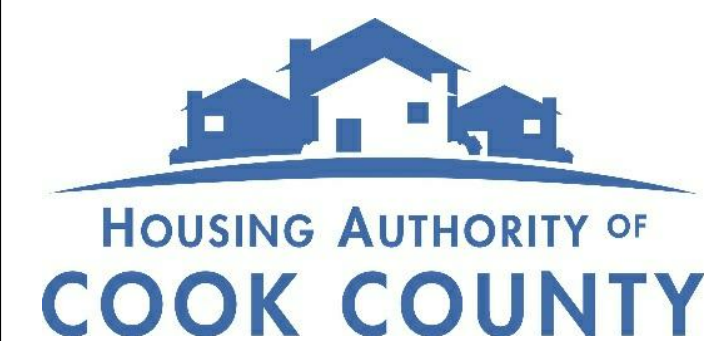
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1	10/09/18	ISSUE FOR PERMIT
No.	Date	Issue

Project Number	15669/15670
Drawn	S. DENNY
Checked	T. HARRISON
Proj. Arch./Eng.	T. HARRISON



H.A.C.C.
WHEELING
TOWER
200 N. MILWAUKEE AVE.
WHEELING, IL 60090

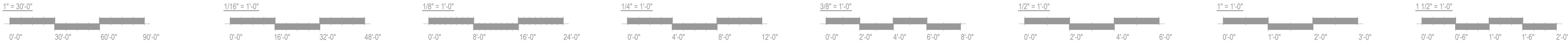
Project

COLUMN SCHEDULE & DETAILS

Drawing Name

Drawing No.

W-S2-1



LIGHTING FIXTURE SCHEDULE							
TYPE	MFGR. & CAT. NO.	LAMPS	MOUNTING	REMARKS	VOLT	BALLAST	INPUT WATTS
L1	BEDA LIGHTING PRODUCT #22263	LED	RECESSED WALL	EXTERIOR LED DIRECTED LIGHT	120v	ELECTRONIC	11.8W

KEY NOTES

- ① EC TO VERIFY EXACT MOUNTING HEIGHT OF THE NEW LIGHT FIXTURES WITH THE ARCHITECTURAL DRAWINGS AND IN FIELD.

PHASING

- X EXISTING TO REMAIN
XO EXISTING TO BE DEMOLISHED
XR EXISTING TO BE RELOCATED
XN EXISTING IN NEW LOCATION
XRC EXISTING TO BE RECIRCUITED
XNC EXISTING ON NEW CIRCUIT
N NEW

SYMBOLS

- L1 ■ NEW RECESSED DIRECTED LIGHT. REFER TO LIGHTING FIXTURE SCHEDULE FOR MORE INFORMATION.

GENERAL SCOPE OF WORK

- ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE 2014, LOCAL APPLICABLE CODES, NFPA AND LIFE SAFETY.
- INSTALL NEW EXTERIOR LIGHTING FIXTURES (L1) ON THE COLUMNS AS SHOWN ON THE PLAN. REFER TO CONTROL SPECIFICATIONS AND CONDUIT SIZING NOTES FOR MORE INFORMATION.

LIGHTING CONTROL DESIGN

- EC TO PROVIDE AND INSTALL A NEW ASTRONOMICAL TIME CLOCK PANEL TO CONTROL THE NEW EXTERIOR LIGHTS, TAGGED L1, SHOWN ON THE PLANS.
- PROVIDE NEW 120/208V TIME CLOCK PANEL WITH:
 - 7 DAY LOAD CONTROLS
 - SEPARATE CLOCK MOTOR
 - TWO 20 AMP LOAD CIRCUITS
- INSTALL THE NEW TIME CLOCK PANEL IN THE EXISTING ELECTRICAL ROOM INSIDE THE MAIN BUILDING. CIRCUIT CLOCK MOTOR AND LIGHTING LOAD TO SPARE BREAKERS ON EXISTING ELECTRICAL PANELS.

CONDUIT AND WIRING SPECIFICATION

- EC TO PROVIDE AND INSTALL NEW CONDUIT AND CONDUCTORS TO FEED THE NEW EXTERIOR LIGHTS (TAGGED L1) SHOWN ON THE PLAN.
- PROVIDE 2#12 AND 1#12G FOR EACH TIME CLOCK LOAD CIRCUIT. PROVIDE NEW 3/4" EMT CONDUIT TO ROUTE ALL CONDUCTORS FOR INDOOR RUNS. PROVIDE 3/4" NOMINAL PIPE SIZE SCHEDULE 40 PVC FOR OUTDOOR RUNS.
- CONDUIT DEPTH IN THE GROUND TO BE 24". COORDINATE CONDUIT TRENCH WITH CIVIL ENGINEER.

HOLABIRD & ROOT



Exhibit received October 12, 2018

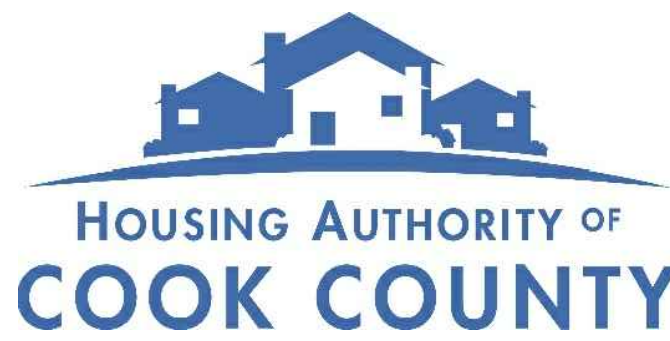
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1	10/09/18	ISSUE FOR PERMIT
No.	Date	Issue

Project Number	15669/15670
Drawn	Author
Checked	Checker
Proj. Arch./Eng.	Approver



H.A.C.C.
WHEELING
TOWER
200 N. MAILWAUKEE AVE.
WHEELING, IL 60090

Project

ELECTRICAL SITE PLAN

Drawing Name

Drawing No.

W-E0-1

REQUEST FOR PLAN COMMISSION ACTION
STAFF PROJECT REVIEW

TO: Chairperson Ruffatto and Members of the
Wheeling Plan Commission

FROM: Andrew C. Jennings, Director of Community Development
Brooke A. Casolari, Senior Planner

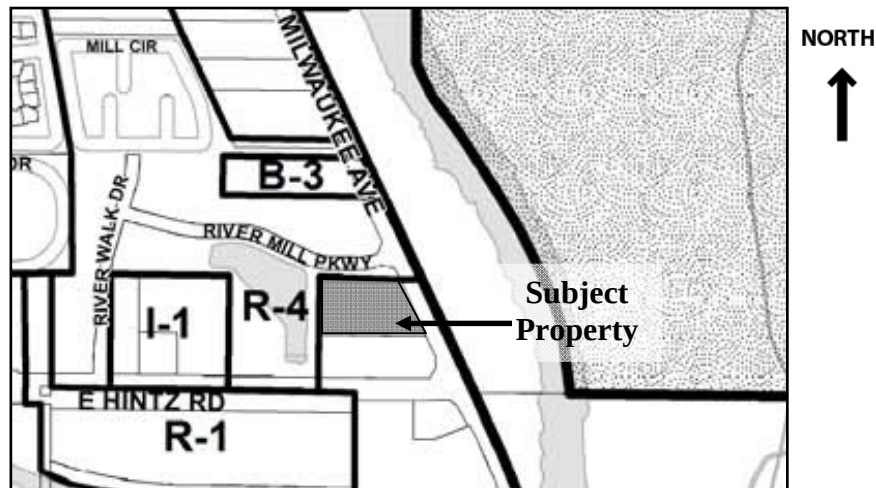
RE: **Docket No. 2018-23**
H2O Express Car Wash
966 S. Milwaukee Avenue
Special Use-Site Plan Approval of a Car Wash Facility

DATE OF REPORT: November 2, 2018

DATE OF MEETING: November 8, 2018

PROJECT OVERVIEW: The petitioner is requesting special use-site plan approval for the redevelopment of a commercial property into an automated car wash facility. The hearing was continued from September 13th to October 25th to allow the petitioner the opportunity to clarify the plans and operations. On October 25th, the petitioner requested the Plan Commission continue the hearing without discussion to November 8th.

LOCATION MAP:



GENERAL PROPERTY INFORMATION

Applicant Name: Nick Spallone, project manager

Property Owner Name: H2O Express Car Wash, Inc.

Common Location: On the west side of Milwaukee Avenue, north of Hintz Road and south of River Mill Parkway

Neighboring Property Land Use(s): North: Multi-Family Residential (River Mill)
West: Multi-Family Residential (retention pond)
South: Commercial
East: Open Space (Forest Preserve)

<u>Comprehensive Plan Designation:</u>	Commercial
<u>Property size:</u>	71,663 sq. ft. (1.65 acres) 4,983 sq. ft. (building area)
<u>Existing Use of Property:</u>	Vacant commercial
<u>Proposed Use of Property:</u>	Car wash facility
<u>Existing Property Zoning:</u>	B-3 General Commercial and Office District
<u>Previous Zoning Action on Property:</u>	None.

DESCRIPTION OF PROPOSAL

The petitioner, an experienced car wash developer, is proposing to redevelop the former Gator's property into a stand-alone automatic car wash facility. The use requires special use approval.

The car wash facility will include an approximately 5,000 sq. ft. building clad in multiple types of masonry building materials and will feature an attractive building design that will be complimentary to the Milwaukee Avenue corridor. There are also two rows of covered parking that will feature vacuums for customers.

The car wash facility will operate Monday through Saturday, 7am to 9pm, and Sunday, 8am to 6pm. It is anticipated that the facility will have five employees during peak times. The employees will assist at the pay stations, guide customers onto the belt in the tunnel, and provide ground maintenance. The cover letter indicates the facility will "provide for retail sale certain aftermarket vehicle products."

SUMMARY OF SEPTEMBER 13TH PLAN COMMISSION REVIEW

On September 13th the Plan Commission reviewed the proposal and continued the hearing so that the petitioner could revise and clarify plans. The following is a list of suggestions from the Plan Commission with staff updates provided in bold:

1. A rack for at least two bicycles shall be added to the site. **The site plan now indicates the location of a bike rack. A spec sheet for the rack is also provided.**
2. Prior to permit issuance, a draft public access easement for the sidewalk shall be reviewed and approved by staff. **Added as a condition of approval.**
3. If a looping water main is proposed, then a draft plat of easement shall be provided prior to permit issuance. **Added as a condition of approval.**
4. The areas of irritation shall be labeled on a plan. **An irrigation plan is provided.**
5. A traffic study shall be provided, which includes feedback from IDOT. **A traffic impact study is provided. An additional traffic memo was provided November 1st.**
6. Provide MSDS sheets regarding wash products. **Safety data sheets are provided for six products.**
7. Provide written responses to the environmental concerns and noise pollution. **A sound evaluation study is provided for the subject property.**

-
8. Correct the mislabel of “existing high dense wooded” area on landscape plan. Provide dense year-round screening along the north property line. **Incorrect label still shown north of property line. A revised landscape plan is provided.**
 9. Provide a solid fence along the west property line. **An eight-foot fence is shown on the landscape plan.**
 10. Provide separate sheets for the fire truck turning routes. **Two plans are provided.**
 11. Address snow removal. **A snow removal plan is provided.**

SITE PLAN REVIEW

Scale of site (landscape) plan: 1” = 20’

Scale of floor plan: 3/16” = 1’

General site layout: The car wash building is situated facing east to Milwaukee Avenue. The plan has been revised to remove the existing curb cuts onto Milwaukee Avenue. Now, one full-access drive is provided in the center of the property. The proposed modifications to these access points are subject to IDOT approval. Vehicles enter the car wash queue at the north end of the site. Three automatic pay stations are located at the west side of the site. A total of 49 cars can be stacked in these lanes. The Car Queue Line Exhibit, C-6, also notes queuing for four cars in “customer preparation area.” In between the car wash building at the south end of the property and the pay lanes that queue at the north end is a drive aisle with covered parking for 24. The parking stalls include vacuums for customer use. There are also five uncovered parking stalls situated parallel to Milwaukee Avenue. There is now a restricted bypass area for fire truck access between the vacuum parking lot and the vehicle entry to the building. This bypass area allow allows for looped emergency access through the site.

Impacts on traffic: No feedback from IDOT is provided with regard to the proposed new single access drive configuration. A letter is provided from IDOT dated July 19, 2018 and is in response to the original site configuration, which included two access drives from Milwaukee Avenue. The Village Engineering Division believes that the July 19th IDOT response letter indicates that a left-out of the site will be prohibited by IDOT. The petitioner has provided a Traffic Impact Study and a one-page traffic impact update memo. The memo indicates the Traffic Impact Study and current plans were submitted to IDOT on October 3rd. The Traffic Impact Study concludes that that the proposed single access drive configuration at Milwaukee is acceptable with the following caveat: future traffic conditions shall be monitored for potential traffic delays associated with the left-out turns from the site, especially during weekday evening peak hour. If such left-out traffic delays occur, then it is recommended that left-outs shall be prohibited from 4:00 to 6:00 pm through the use of signage.

Since there is no confirmation from IDOT that the proposed plan is acceptable to IDOT, Village approvals of the special use-site plan would need to be contingent upon IDOT approval. While the Village Engineering Division and the petitioner’s traffic engineer (KLOA) are at odds regarding assumptions that IDOT will allow the left-out of the site, staff believes the project will not be hindered by potential left-out restrictions. Moreover, if IDOT approves the site plan, as proposed, then it can be assumed that the special use will not have adverse impacts on traffic.

The Plan Commission may wish to have the petitioner summarize the findings of the Traffic Impact Study. Moreover, since IDOT may restrict left-turns out of the site, the petitioner should address if this would impact the viability of the project. Staff suggests a condition of approval that the final configuration of the access to and from Milwaukee Avenue shall be subject to approval by IDOT.

Floor Plan: The floor plan shows a wash tunnel that is the length of the building, 150 feet. The cover letter indicates the facility will “provide for retail sale of certain aftermarket vehicle products.” The floor plan indicates a vending room that appears to be open to the public. A set of detailed plans are also provided for a typical 130 foot car wash tunnel facility.

Total number of parking spaces: According to the zoning code, the total parking requirement for the proposed use (automated car wash) is stacking for six cars entering the wash and four cars leaving the wash. An additional stall is required for each employee. A total of 29 parking stalls are provided. The Car Queue Line Exhibit, C-6, shows that the parking requirements are met.

Bicycle parking: A bike rack is now labeled at the northeast corner of the building. A spec sheet for the rack indicates it accommodates 5 bicycles.

Site Lighting: The site lighting includes a mix of 25-foot high pole-mounted fixtures, canopy-mounted fixtures, and building-mounted fixtures. The light locations are illustrated on the revised photometric plan. Spec sheets are provided for the lights.

Sidewalks: There is no existing public walk on Milwaukee Avenue adjacent to the subject property. A five-foot sidewalk is planned for the property frontage along Milwaukee. The Engineering Division review indicates that the sidewalk will require a public access easement. A condition of approval has been added to the motion.

HVAC/Mechanical Components Screened: No details are provided. However, the flat portion of the building roof includes a 3’8” parapet. Between the tower elements at the ends of the building and the parapet between them, roof-top mounted mechanicals will be screened. This discussion took place at the September 13th hearing.

Exterior Downspouts: There appears to be an integrated gutter system with exterior downspouts.

APPEARANCE REVIEW

Elevation plans: Renderings and elevation plans are provided to describe the building exterior. The front and rear elevations include tower elements with a metal standing seam hipped roof and clerestory windows below the roof line. Each lower wall of the tower elements are clad in limestone veneer. Overhead garage doors with a divided lite design and a 12 inch arched stone header are located on the east and west tower elevations. Fixed glass windows that are similar in design to the overhead garage doors appear on the south elevations of the towers. Between the east and west towers is a long stretch of flat roof with a decorative Fypon (synthetic stone) cornice. The majority of the north and south walls of this wash tunnel portion of the building is covered in brick. There is also four foot high raised foundation of limestone veneer. The same limestone veneer is carried vertical on pilasters that provide relief on each the north and south

walls. A limestone trim separates the brick and limestone wall materials. Fixed windows are located throughout the north and south elevations. Limestone headers are shown above the windows.

Standing seam metal roof systems are located above the parking areas directly north of the building and above the pay stations. The structures are 11 feet in height. It appears they are supported by columns clad in brick and veneer to match the building.

Building height: The proposed single-story facility has a flat roof with hipped roofs at the east and west ends. The hipped tower roofs have a height of 30'0". The flat roof has a height of 19'0".

Material Samples: Material samples were provided at the September 13th hearing.

Trash Enclosure: A trash receptacle is situated at the northeast end of the parking aisle. Sheet A-3.2 provides elevation plans of the enclosure. It appears that the labels of these elevation plans are incorrect. The "west elevation" appears to actually be the south elevation, which includes the gates. The "south elevation" appears to actually be the east and west elevations with solid walls of brick veneer above a limestone veneer. The enclosure also has a limestone cap and limestone trim between the brick and limestone veneers. The appearance of the enclosure matches the building.

Signage: Multiple wall signs are shown on the elevation plans. Not enough detail is provided at this time to review or approve the signs. The sign plans shall be illustrative only.

LANDSCAPING PLAN REVIEW

Existing Landscaping to Remain: No existing landscaping will remain. A tree removal exhibit and tree inventory are now provided. These exhibits highlight the existing trees that will remain on the property directly west of the subject property. The landscape plan continues to have an incorrect label stating "existing highly dense wooded," which is located north of the property line. In actuality, there are no existing trees or shrubs in this area north of the property line, as shown on the existing tree inventory plan.

Proposed Landscaping: As noted on the landscape plan (Sheet L1.1) landscaped screening is provided on the perimeter of the site and surrounding the parking areas. See the note below for screening from residential. Additional building foundation plantings are provided. Detention basins are proposed for the northwest and south west corners of the site. Note: there is an existing six-foot fence just north of the property line that is owned by River Mills. The landscape plan incorrectly labels the fence at the north property line as eight feet.

Renderings are also provided that project a view of the subject property from the north looking south. The existing River Mills fence is shown in these renderings. It appears that the rendering depicts mature landscaping during non-winter months.

Irrigation: Irrigation is required by code. A plan is now provided that indicates nearly the entire site will be irrigated. Areas including and immediately adjacent to the stormwater basins will not be irrigated.

Screening from residential: The Zoning Code indicates that “*off-street parking* areas, including aisles and *driveways*, shall be effectively *screened* year round, on each side of any *off-street parking* lot for six (6) or more vehicles that adjoins any property used for residential purposes or situated in a residential district, by a wall, *fence* or densely planted compact hedge not less than five (5) feet nor more than six (6) feet in height.” The River Mills Subdivision is located directly north and west of the subject property. An eight-foot tall wood fence is proposed along the west property line. However, it does not appear that this requirement is met for the north property line. While vegetative screening is provided along the north property line, it will not provide year-round screening five to six feet in height. The Downy Serviceberry ornamental trees and Red Oak shade trees will not provide screening in the winter. At the September 13th hearing, the Plan Commission determined that the existing six-foot fence just north of the property line that is owned by River Mills does not meet this screening requirement. Furthermore, the Plan Commission asked for dense year-round screening along the north property line. The Plan Commission may wish to continue to ask the petitioner for additional year-round screening along the north property line.

STANDARDS FOR SPECIAL USE

Following are standards for special use with the petitioner's responses. **(Staff comments are in bold.)**

1. State why the Special Use is necessary for the public convenience at the proposed location. (Explain how the proposed use will benefit residents, the neighborhood or the community-at-large.)

“In addition to the proposed auto spa, operating as an express car wash, would add a unique service to the residents of the Village of Wheeling, commuters traversing through the Village, and the community at large. Wheeling is unique in its own right with Restaurant Row and the Airport. Future development encourages adding unique services within the Village limits, including this auto spa. Specifically, this business model provides fair competition and alternative options to the residents and commuters who move across Milwaukee Avenue. Most car owners take great pride in the cleanliness of their vehicles and prefer a stand alone auto spa/express car wash as opposed to the standard gas station car wash or a do-it-yourself operation. This is clear public convenience as the accessibility and the unique operation of this express car wash provides an efficient and thorough manner in providing a wash.”

A similar stand-alone car wash is located at 400 N. Milwaukee Avenue. The Plan Commission may wish to ask the petitioner what differentiates this car wash from others and inquire about the market demand for the proposed use.

2. State how the special use will not alter the essential character of the area in which it is to be located. (Explain how the proposed special use is appropriate for the neighborhood or shopping center and how the overall character will not be affected by the special use.)

“The area subject to this Special Use is strictly a commercial/retail zone. There are no immediate adjacent residential neighborhoods or homes located in close proximity to the property. A car wash/auto spa is highly appropriate and would neatly fit into the design

set aside by the Village of Wheeling for this particular neighborhood. Millions of cars pass along Milwaukee Avenue as Milwaukee runs north to Wisconsin and south into the City of Chicago. It is a major surface route primarily designed to accommodate commercial and retail businesses. Neighboring municipalities and those immediately adjacent to the Village of Wheeling utilize Milwaukee Avenue as a major commercial and retail corridor. In this specific neighborhood, commercial is encouraged moreso than retail. Shops such as clothing boutiques or restaurant establishments. Furthermore, this particular neighborhood is outside the famous Restaurant Row and does not alter that particular design nor the design within its immediate vicinity.”

The applicant incorrectly noted that the subject property is located in a strictly commercial area. The subject property is directly adjacent to R-4 Multiple Family Residential zoning to the north and west. The subject property is adjacent to the River Mill Crossing Subdivision. Provided the proposed use is properly screened from the adjacent residential property, then the location of the special use would be appropriate along Milwaukee Avenue and in the B-3 General Commercial and Office District.

3. State how the location and size of the Special Use, the nature and intensity of the operation involved in or conducted in connection with it, the size of the site in relation to it, and the location of the site with respect to streets giving access to it, will be in harmony with and will not impede the normal, appropriate, and orderly development of the district in which it is to be located and the development of surrounding properties. (Explain how the proposed use will allow the surrounding area to develop appropriately. Is the use too large for the site? Will it be in a location on the lot that will cause conflicts with adjacent properties? Does the use create noise, odor, smoke, or light that will affect other properties?)

“The location of the proposed business model is in line with the harmony of the adjacent land along Milwaukee Avenue and the structure and design will not impede the normal flow of traffic or interrupt the development of the district. The use is fit within the site to allow ease of access and ingress and egress to the site. The proposal will enhance and draw attention to surrounding business units and improve the general economic development of the area and the community. Milwaukee Avenue is a four lane (two in each direction) with no physical barrier between the opposing lanes of traffic with a forest preserve to the east. No conflicts will be created to any adjacent properties to this site nor will there be any excessive odor, smoke, light, or noise so much so that it would affect the enjoyment and use of the adjacent properties.”

The site is adequately parked for the proposed use and includes efficient site planning that will prevent traffic backups onto Milwaukee Avenue. Final configuration of the site access shall be contingent on IDOT approval.

4. State how the location, nature and height of buildings, walls and fences, and the nature and extent of the landscaping on the site shall be such that the use will not hinder or discourage the appropriate development and use of adjacent land and buildings, or will not impair the value thereof. (Explain how the proposed use will not prevent development on adjacent properties. Will the proposed use have a negative impact on existing adjacent land uses?)

“The width, depth, breadth of the proposed structures will not impede the visibility of any surrounding structures. The design of the buildings are state-of-the-art and will enhance the corridor along Milwaukee Avenue. The site design will not prevent development anywhere along the Milwaukee Avenue corridor nor will it impact negatively on adjacent property uses. The car wash/auto spa is designed to be quiet, efficient, and aesthetically pleasing to the area. Sound is minimal.”

As described previously, this site is not adequately screened from the adjacent residential property. The code requires the parking areas and access drives have year-round screening five to six feet in height because it is adjacent to residential property. This requirement is not met for the north property line.

5. State how the parking areas will be of adequate size for the particular use, properly located, and suitably screened from adjoining residential uses, entrance and exit drives shall be laid out so as to prevent traffic hazards and nuisances, and the development will not cause traffic congestion. (Is adequate parking provided? Is parking area visible from adjacent homes? Are the entrance and exit drives designed for safe access to the site? Will the special use generate so much traffic as to cause congestion? Will visitors to the special use access the site through residential streets?)

“There shall be adequate parking areas above and beyond what is required by the Village for the same square footage of the site and for the use proposed. Entrance and exists will allow easy access and the stacking design of the vehicles will not impede the entry point or exit point onto the site. Furthermore, a special lane is included in the design to allow any vehicle or emergency vehicle to move around stacked vehicles waiting for the service to be provided. There is no access to the site through residential neighborhoods nor can there be any ancillary traffic through a residential neighborhood to access or exit the site. Traffic flow will not be impeded by the site plan as the ease of entry and design of stacking with multiple lanes will allow for efficient manner of movement along the site. Parking spaces are not visible to the adjacent homes because there are no adjacent home to the site. The design includes safe movement into and out of the site.

Sufficient parking and stacking is provided. But it is not adequately screened. See staff comments to Standard #4. Final configuration of the site access shall be contingent on IDOT approval.

6. State how the property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulation in that zone. (Other than the special use listed in this application, the proposal must meet all other requirements of the Zoning Code. Note any other exceptions.)

“Currently, the site is vacant. There is no use made of it nor does it currently generate any income or develop the economic health of the Village. Granting this special use will result in an increase to a tax base to the Village, employment opportunities for the community members at large, and a necessity of service for the general public.”

If the special use is not granted, then the property will likely remain vacant.

STAFF REVIEW

Fire Department Review: The Fire Department has provided a comment memo dated November 2, 2018. Based upon these comments, staff expects minor site changes to the access drives, curbing, and landscaping. It is anticipated that all comments can be addressed prior to permit issuance.

Engineering Division Review: The Engineering Division has submitted comments dated November 1, 2018. Most comments will be addressed at building permit. Comment # 8 (need for a sidewalk easement) has been addressed during the site plan review above. Comment #4 states that if a looping water main is proposed, then a plat of easement shall be provided prior to permit issuance. A condition of approval has been added to the motion to address this engineering requirement. Comment #13, addresses the July 19th IDOT response letter. A condition of approval has been added to the motion that the final configuration of the access to and from Milwaukee Avenue is subject to approval by IDOT.

Impact on adjacent uses: The proposed use is not adequately screened from the adjacent residential property to the north. The code requires the parking areas and access drives have year-round screening five to six feet in height because it is adjacent to residential property.

Staff Recommended Action: Staff recommends that the Plan Commission review the following issues prior to making a motion:

1. Consider modifications to the landscape plan that satisfies the screening requirement from residential properties along the north property line;
2. Request a summary of the Traffic Impact Study and discussions with IDOT; and
3. Ask if the petitioner believes the project is viable if left-outs are restricted by IDOT.

PROPOSED MOTION

If the Plan Commission finds that the petitioner has satisfied the requirements for the granting of the Special Use, Site Plan, and Building Appearance Approval for the car wash facility, an appropriate motion would be to:

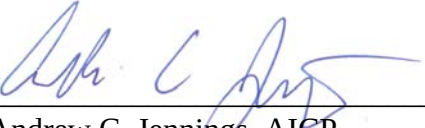
Recommend approval of Docket No. 2018-23, granting Special Use, Site Plan, and Building Appearance Approval, as required under Chapter 19-06, Commercial Districts, Chapter 19-10 Use Regulations, and Chapter 19-12 Site Plan Approval Requirements, and associated sections, to permit a Car Wash Facility in accordance with the following exhibits submitted October 25, 2018 (except as noted), to be located at 966 S. Milwaukee Avenue, Wheeling, Illinois:

- Cover letter,
- Site plan, A-0,
- Landscape plan, L1.1,
- Floor plan, A-2.1,
- Roof & tower plans, A-2.3,
- Main elevation & window schedules, A-3.1,
- Elevations, A-3.2,
- Wall details & building signs, A-5,
- Landscape plan, L1.1,

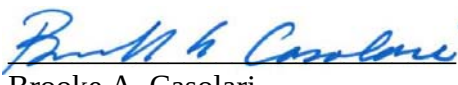
- Irrigation plan, L1.2,
- Building renderings (5 sheets),
- Landscape site plan with aerial insert,
- Renderings of north property line (3 sheets),
- Civil engineering plans (8 sheets),
- Existing tree exhibit,
- Existing tree inventory (3 sheets),
- Photometric plan
- Lighting fixture specs (5 sheets),
- Snow removal plan,
- Bicycle rack specs,
- Sound evaluation and associated report (16 sheets),
- Safety data sheets for car wash products (40 sheets),
- IDOT response letter, July 19, 2018,
- Traffic update memo, November 1, 2018, and
- Traffic Impact Study (64 sheets).

And with the following conditions of approval:

1. Prior to permit issuance, a draft public access easement for the sidewalk shall be reviewed and approved by staff.
2. If a looping water main is proposed, then a draft plat of easement shall be provided prior to permit issuance.
3. The final configuration of the access to and from Milwaukee Avenue shall be subject to approval by IDOT.



Andrew C. Jennings, AICP
Director of Community Development



Brooke A. Casolari
Senior Planner

Attachments: [Fire Department comment memo](#)

[Engineering Division comment memo](#)

[Photo of existing conditions \(staff\)](#)

[Cover letter](#)

[Site plan, A-0](#)

[Landscape plan, L1.1](#)

[Floor plan, A-2.1](#)

[Roof & tower plans, A-2.3](#)

[Main elevation & window schedules, A-3.1](#)

[Elevations, A-3.2](#)

[Wall details & building signs, A-5](#)

[Landscape plan, L1.1](#)

[Irrigation plan, L1.2](#)

[Building renderings](#)

[Landscape site plan with aerial insert](#)

[Renderings of north property line \(3 sheets\)](#)

[Civil engineering plans \(8 sheets\)](#)

[Existing tree exhibit](#)

[Existing tree inventory](#)

[Photometric plan](#)

[Lighting fixture specs](#)

[Snow removal plan](#)

[Bike rack spec](#)

[Sound reports](#)

[Safety data sheets for car wash products](#)

[IDOT response letter, 7.19.2018](#)

[Traffic update memo, 11.01.2018](#)

[Traffic Impact Study](#)

Additional Materials:

[Plat of survey](#)

[Pay terminal specs](#)

[Typical plans for a 130 ft. car wash tunnel](#)



MEMO – Fire Prevention Bureau

TO: Brooke Casolari, Village Planner
FROM: Ronald S. Antor, Fire Inspector
CC: Andrew Jennings, Director of Community Development
Keith MacIsaac, Fire Chief
FPB File
DATE: November 2, 2018
SUBJECT: Proposed Car Wash Facility (Revised submittal) – 966 South Milwaukee Avenue - Plans received for review by the Wheeling Fire Department, October 26, 2018.

The Wheeling Fire Department has reviewed the submittals received related to the above referenced project and has the following comments:

Site Plan

1. The site plan reviewed includes a new 4,983 square foot automotive car wash facility with ancillary retail sales uses.
2. The current submittal has addressed the Fire Department's previous concerns related to Fire Department access for the site.

The fire apparatus routes around the structure needs to comply with the following code requirements:

- a. It shall be capable of supporting fire apparatus with a gross vehicle weight of 85,000 pounds. (To be reviewed in final engineering)
 - b. The drive shall be a minimum of 20 feet wide.
 - c. Fire lanes shall be posted as required by the Fire Department.
3. The current submittal has addressed the Fire Department's previous concerns related to water main improvements related to fire hydrant locations and a looped water supply.

The site water main improvements shall comply with all Village of Wheeling Municipal Code which includes, but is not limited to the "Manual of Practice for the Design of Public & Private Improvements" and the 2012 Edition of the International Fire Code. Water main improvements required would include:

4. A clear space of at least 4-feet shall be maintained around the circumference of any fire hydrants. This includes light fixtures, transformers, and landscaping.
5. Trees and light fixtures along the drives that are fire access routes shall not hang over the drives/parking stalls in a manner that hinders Fire Department access. A minimum of 13'6" overhead clearance shall be provided over the fire apparatus access routes.

Ms. Brooke Casolari

SUBJECT: Proposed Car Wash Facility (Revised submittal) – 966 South Milwaukee Avenue - Plans received for review by the Wheeling Fire Department, October 26, 2018.

November 2, 2018

Page 2

6. The building's Fire Department connection shall be located at the front of the building or at another location as approved by the Fire Department. The location shown meets that requirement.

Proposed Car Wash Facility – 966 South Milwaukee Avenue – A New Car Wash Building

1. Based on the information provided for review, the proposed building would be a B (Business) Use Group Occupancy as defined in the 2012 Edition of the International Building Code (IBC) and Fire Prevention Codes (IFC).
2. All construction for the new building would need to comply with the Village's Building and Fire Prevention Codes (2012 Editions of the International Building Code & International Fire Code – with amendments). Some of the code requirements that this would include are:
 - a. Height/area requirements based on construction type and use.
 - b. The building is required to be fully sprinklered with a system designed and installed in accordance with NFPA 13 (Including any carport canopies within 20 feet of the building).
 - c. All other canopies shall be provided with fire sprinkler protection unless all components of the canopy is completely non-combustible (i.e. – steel and brick or stone).
 - d. The building is required to be provided with a monitored fire alarm system designed and installed in accordance with NFPA 72.

At this time there are no other Fire Department comments related to the project as presented in the documents reviewed.



MEMORANDUM

TO: Brooke Casolari, Senior Planner

FROM: Kyle Goetzelmann, Civil Engineer I

COPY: Jon Tack, Village Engineer
Steve Robles, Assistant Director of Community Development

DATE: November 1st, 2018

SUBJECT: Car Wash – Special Use
966 S. Milwaukee Ave. - Review Comments

The Engineering Division received a revised submittal for the subject project on October 12th, 2018. The Engineering Division has completed a review of the above referenced submittal and offers the following comments at this time:

1. Permits from all necessary agencies will be required prior to Village of Wheeling Engineering permit issuance. These agencies include, but aren't limited to: IDOT, IEPA, IDNR, and MWRD.
2. A letter of credit or performance bond in the amount of 110% of the public and private improvement cost must be provided before permit issuance.
3. Engineer's opinion of probable cost must be provided to support the LOC/Performance bond amount.
4. If looping water main is proposed, a plat of easement must be provided prior to permit issuance. The Village can provide the easement language.
5. SWPPP to be included in Engineering Submittal and IEPA NOI will be required prior to any excavation work.
6. LOMA/LOMR-F will be required prior to occupancy.
7. Storm water report will be required prior to permit issuance from the Village. This will need to include compensatory storage and detention.
8. Petitioner will be responsible for installation of sidewalk and must draft a public access easement for our review and approval.
9. Minimum slope of sanitary sewer service line is 2%. Engineer must show that this slope can be achieved at the current connection point.

10. All pertinent Village of Wheeling standard details and notes should be added to the plan set.
11. Minimum storm sewer diameter is 12" unless otherwise approved by the Village Engineer.
12. Ponding on pavement from HWL should not exceed 9 inches.
13. IDOT response letter dated July 19th, 2018 indicates that the only acceptable form of ingress and egress from Milwaukee Ave will be in the form of an ingress only entrance to the north and right out to the south. The current configuration doesn't meet these requirements.

H2O Express Car Wash – 966 S. Milwaukee Avenue
Docket No. 2018-23 (Special Use-Site Plan Approval of a Car Wash)



Existing conditions of subject property (looking southwest)

N E R I ARCHITECTS, pc

444 N. NORTHWEST HWY. STE 355
PARK RIDGE IL 60068
TEL 847.825.9400

October 25, 2018

Plan Commission / Zoning Board
Village of Wheeling
2 Community Blvd.
Wheeling, IL 60090

Attn: Zoning & Landscape Review

Re: CWPD Wheeling
966 S. Milwaukee Ave
Wheeling, IL 60090

In response to the Village of Wheeling Plan Commission review & comments with this project, we have addressed them and resubmitted the following all updated plans.

1. Bike Rack specs, min. 5 bikes. Located close to the Vending Area as showing on L1.1
2. A draft of the public access easement for the sidewalk will be provided for review & approval prior to permit issuance.
3. A draft of the plat of easement for the water main will be provided for review & approval prior to permit issuance. The preliminary locations of the water main, connections and fire hydrants have been coordinated with Ronald Antor with the Fire District.
4. An Irrigation Plan has been provided L1.2
5. A traffic study was completed by KLOA, Inc. that analyzed the proposed site plan and found the consolidated access drive to be adequate in accommodating site traffic subject to potential restriction of left turns out via signage during the Weekday PM Peak Hour. The revised site plan and traffic study has been submitted to IDOT for further review and approval.
6. Chemical Data of Products being used on site.
7. Noise Pollution Study completed and report provided.
8. New Site Plan & Landscape plan w/ the Following:
 - o Enhancing the landscape screening of the North & West property lines.
 - o Dense year round screening along north property line with Evergreens and other trees.
 - o Showing Single access in and out of the site
9. Privacy Fence Added on West side
10. Final Engineering plan now have sheets C-8 & C-9 addressing the Fire Truck turning routes.
11. A snow Removal Exhibit has been enclosed on civil drawings.
12. Renderings From Street View – showing how the existing fence and proposed planting provides a strong sightline buffer.
13. New Signage Logo applied, Elevations w/ signage,
14. Updated 3D Elevations, showing revised landscape and single entry.
15. Photometric Plan updated per new site layout.
16. Pictures of the existing property line views and conditions.

Should you have any questions pertaining to the above please do not hesitate to contact me at the number above or the e-mail below

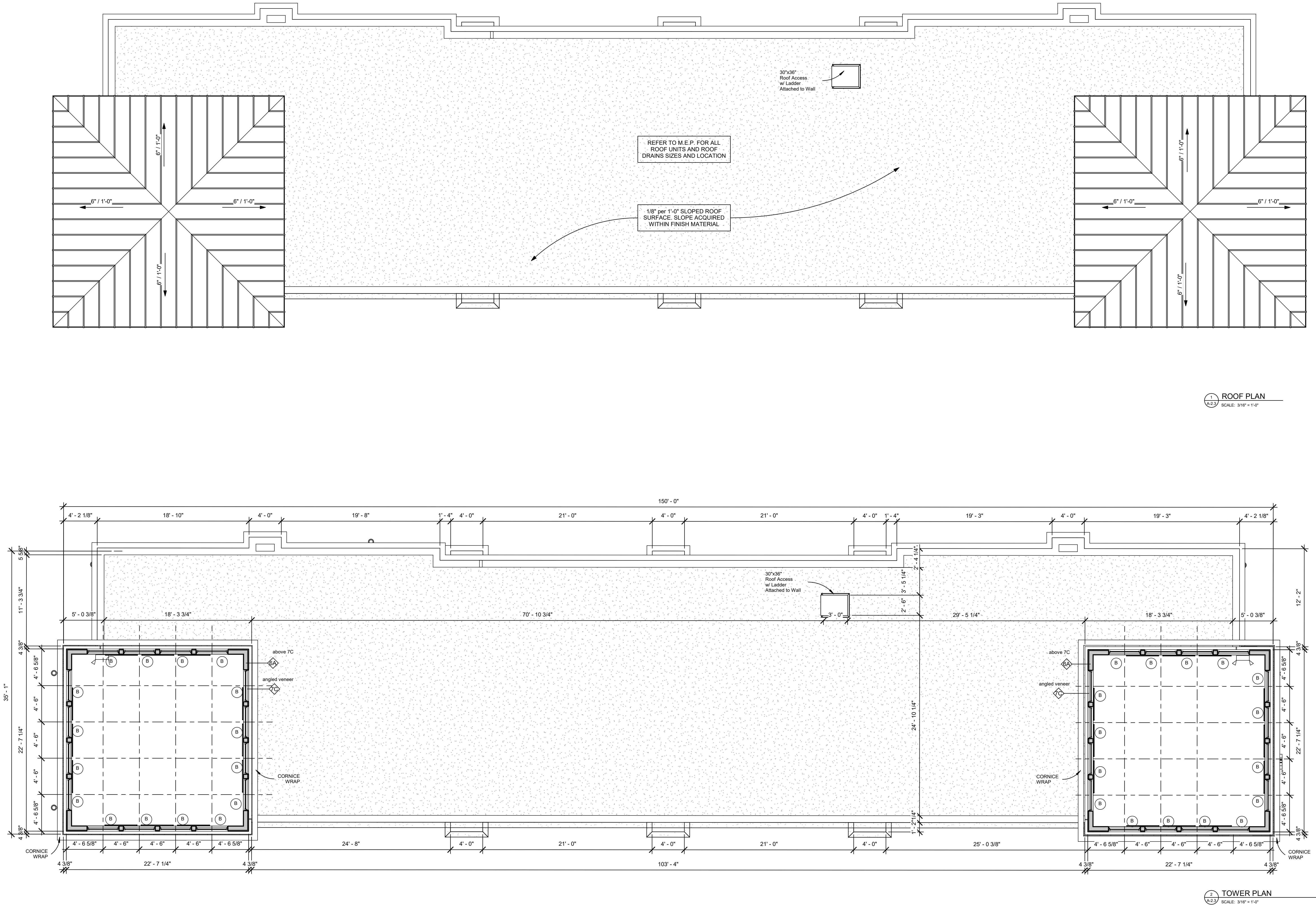
Sincerely,

Raymond Morgan

Neri Architects

rmorganl@neriarchitects.com

A-0



NEW AUTOMATED CARWASH FACILITY
"SPOTLESS"

966 S. MILWAUKEE AVENUE
WHEELING, IL 60090

PROJECT #	1825
DATE:	07.19.18

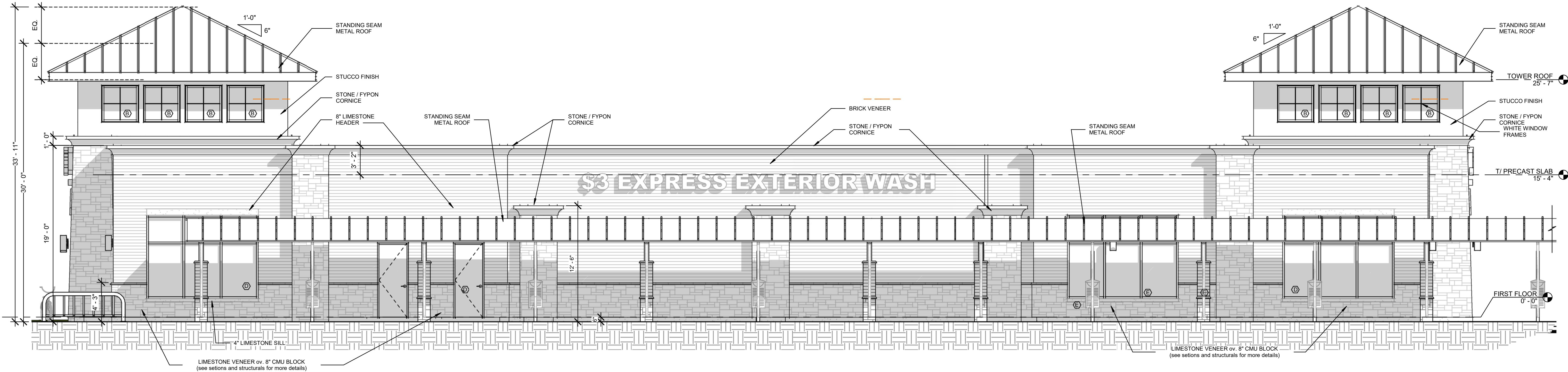
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APPROVED BY:	Checker
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DESCRIPTION:	ROOF & TOWER PLANS

SHEET NO.
A-2.3

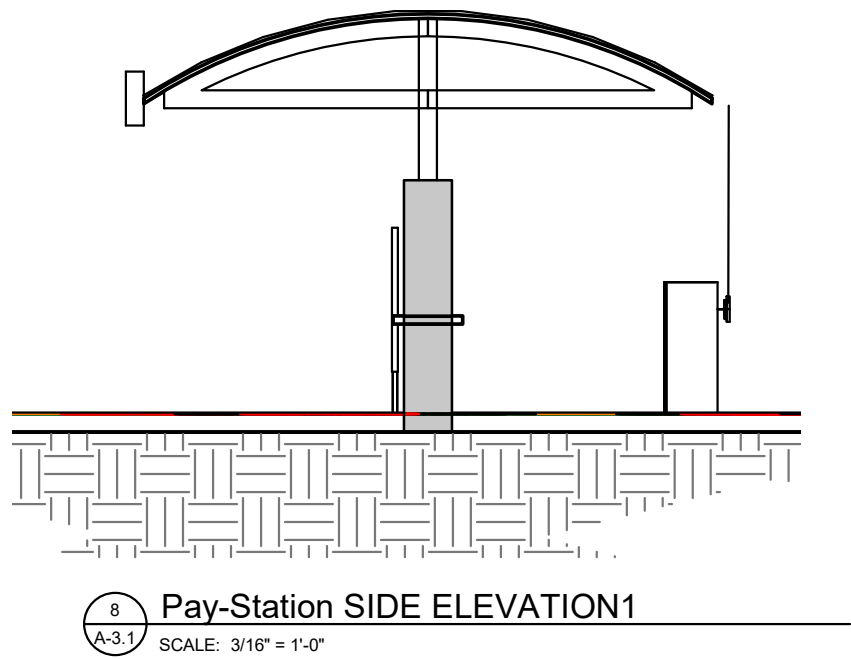
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ARCHITECTS, pc

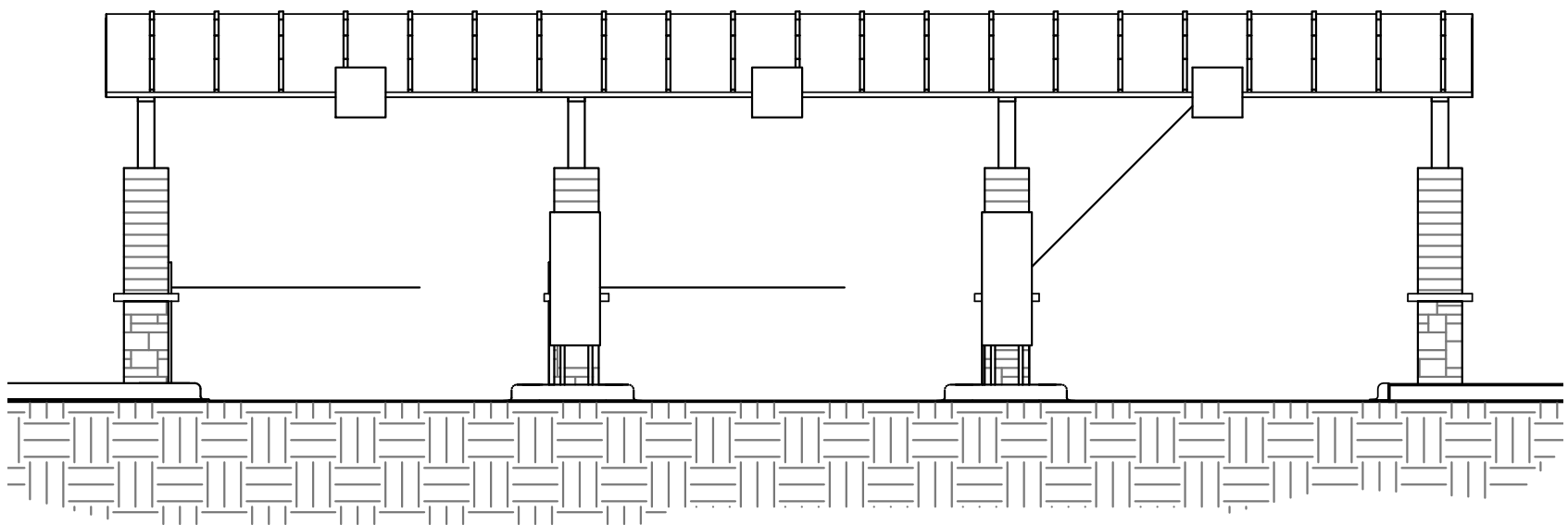
444 N. NORTHWEST HWY. STE 355
PARK RIDGE IL 60068
TEL 847.825.9400



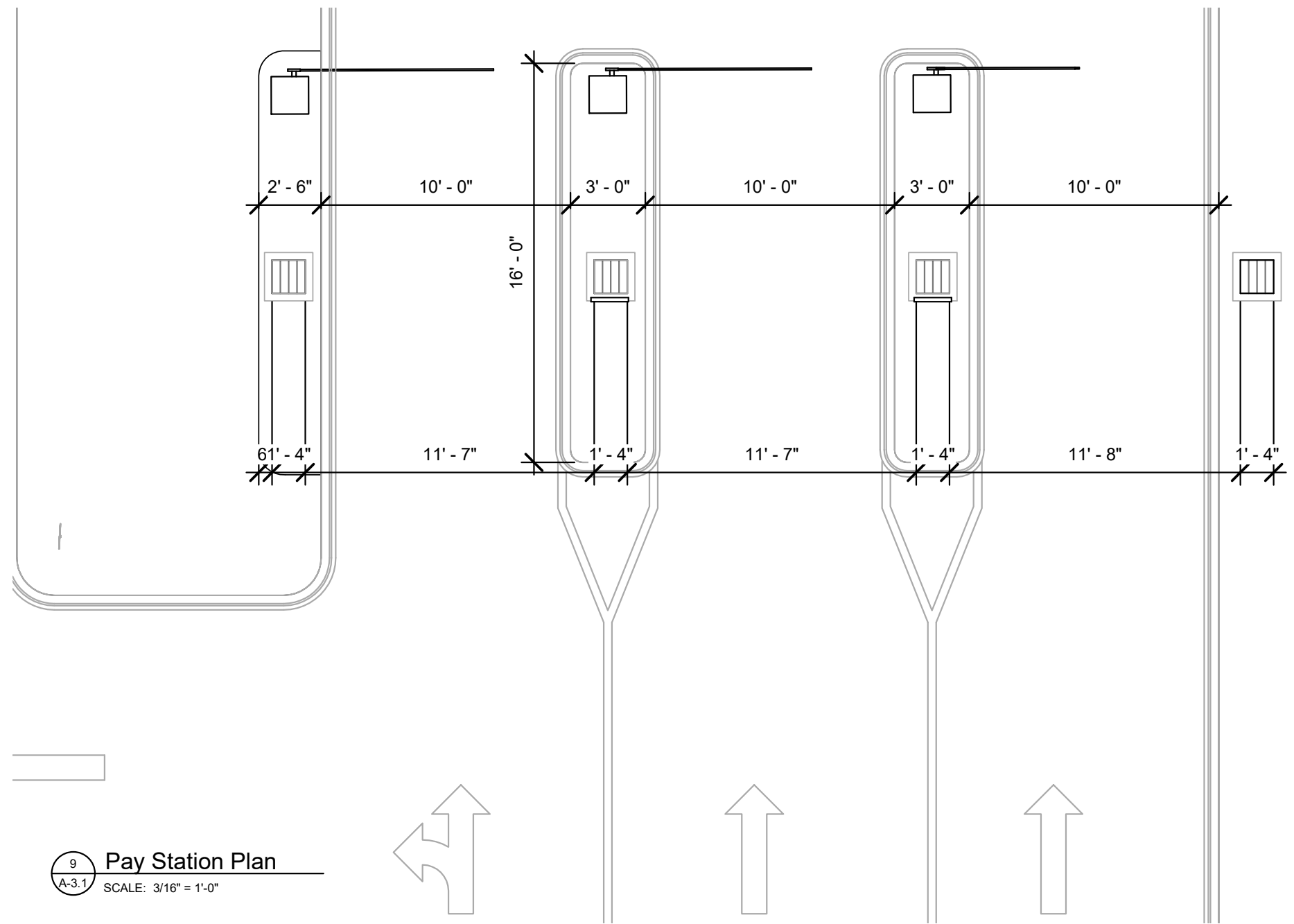
1 North - Main Elevation
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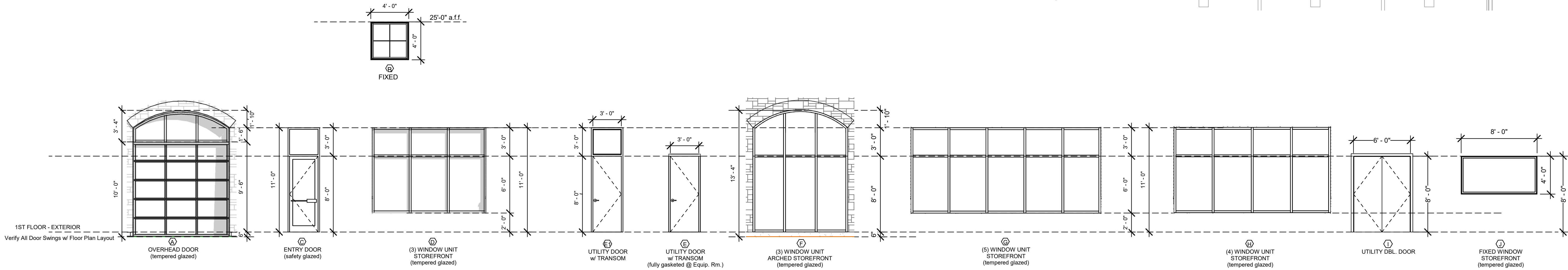
2 Pay-Station SIDE ELEVATION1
SCALE: 3/16" = 1'-0"



3 Pay-Station ELEVATION1
SCALE: 3/16" = 1'-0"



4 Pay Station Plan
SCALE: 3/16" = 1'-0"



DOOR & WINDOW SCHEDULE
SCALE: 3/16" = 1'-0"

NEW AUTOMATED CARWASH FACILITY
"SPOTLESS"

966 S. MILWAUKEE AVENUE
WHEELING, IL 60090

PROJECT # 1825
DATE: 07.19.18

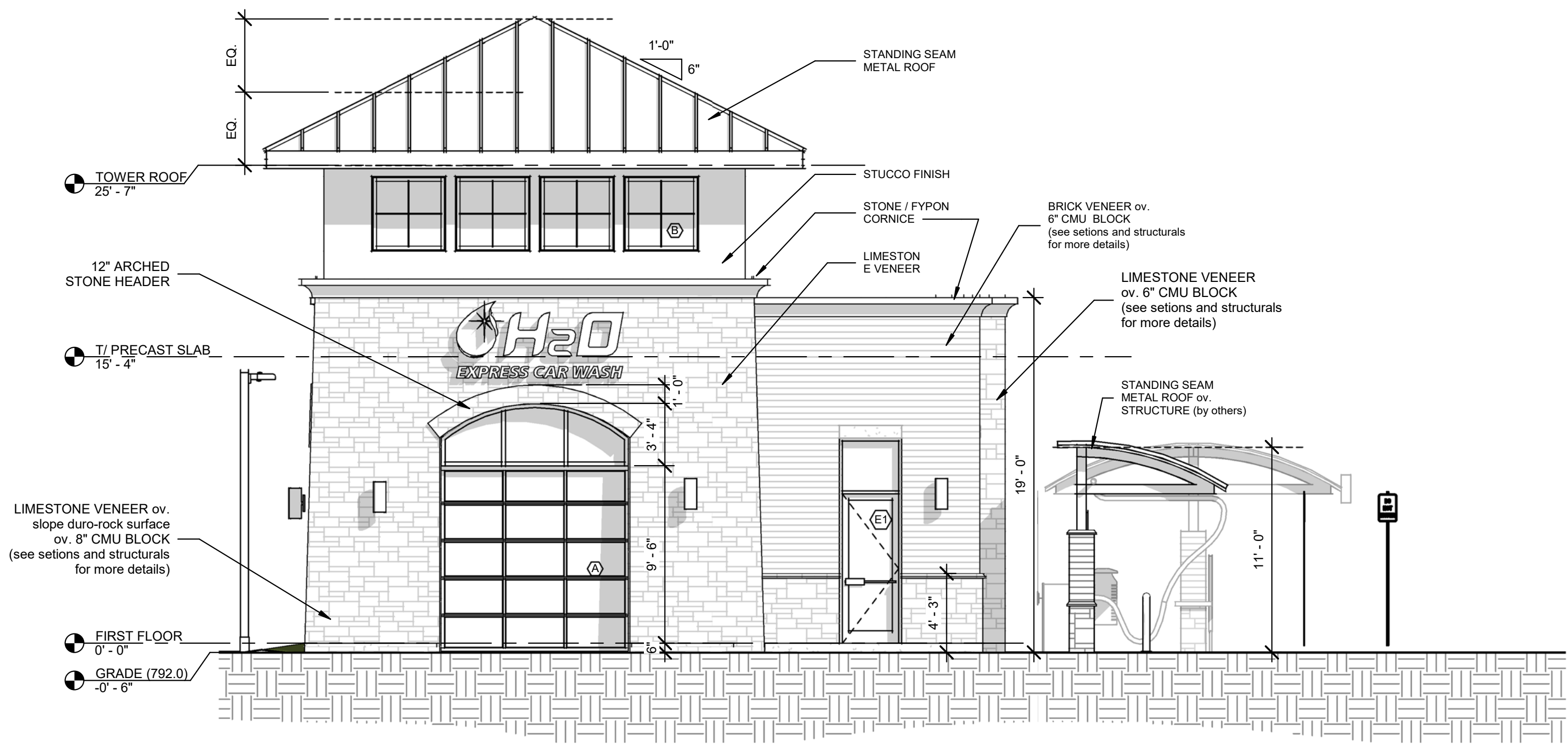
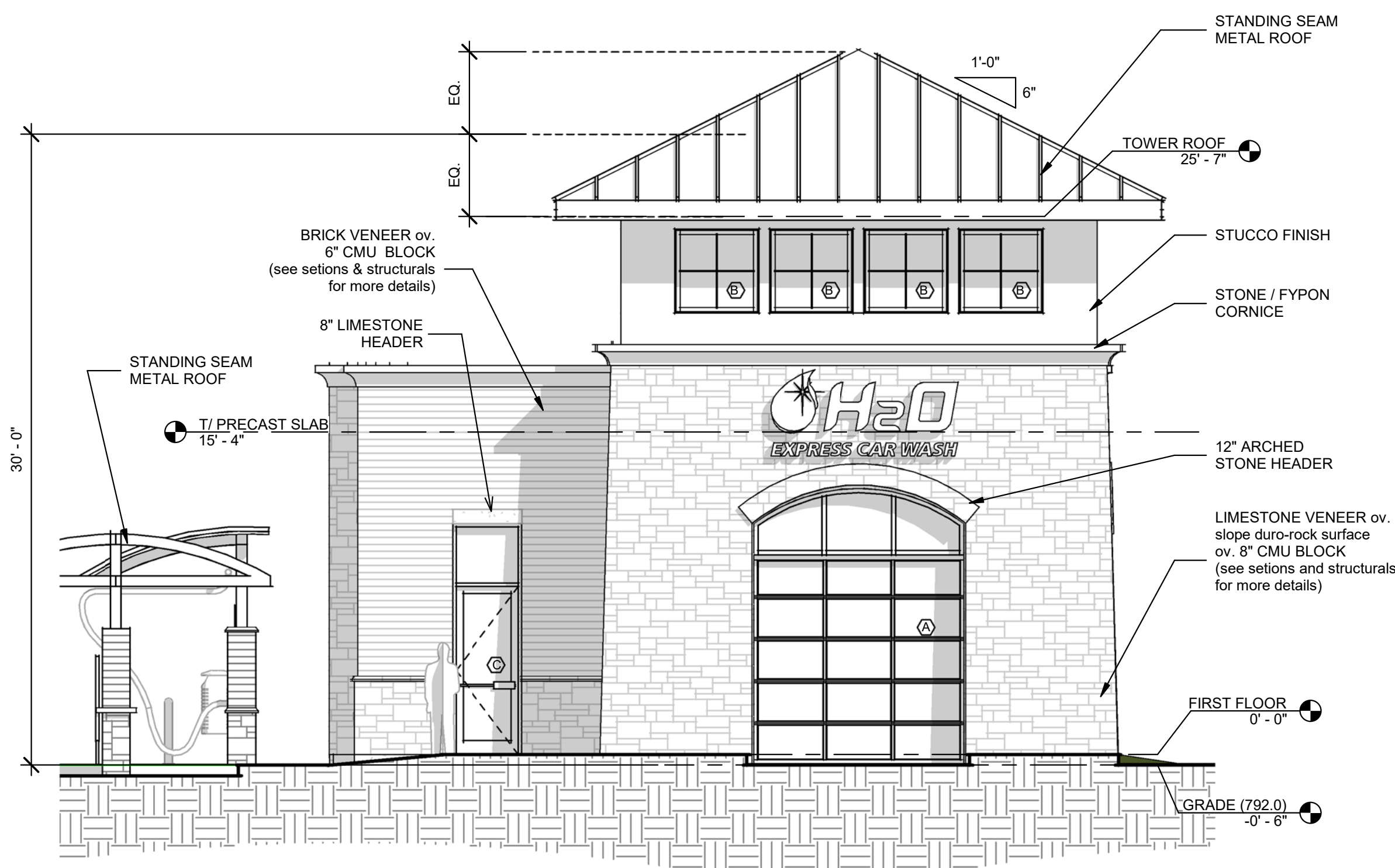
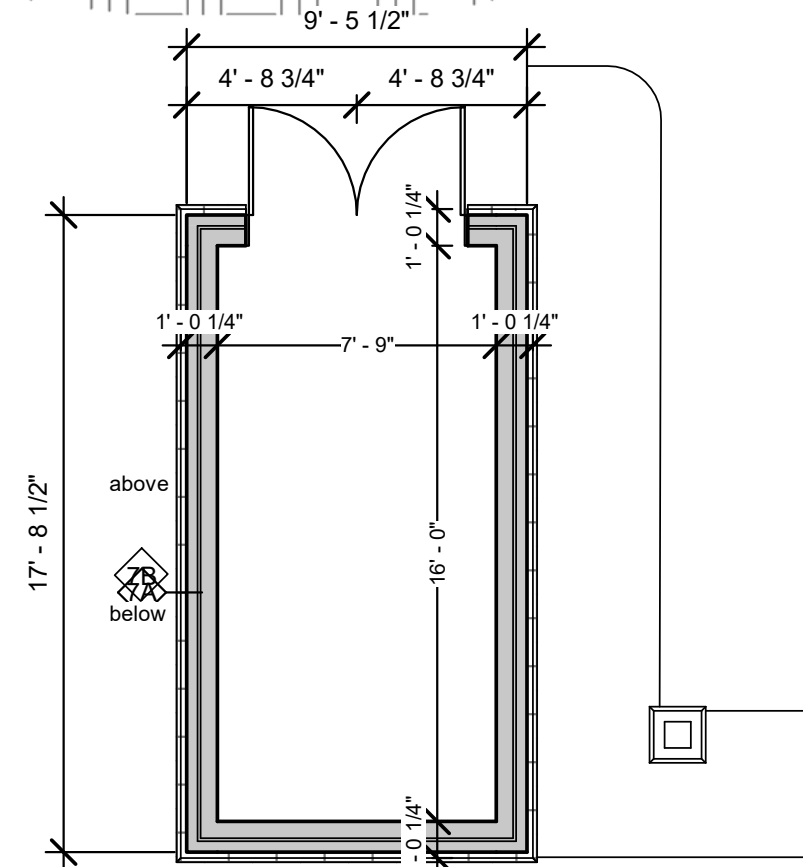
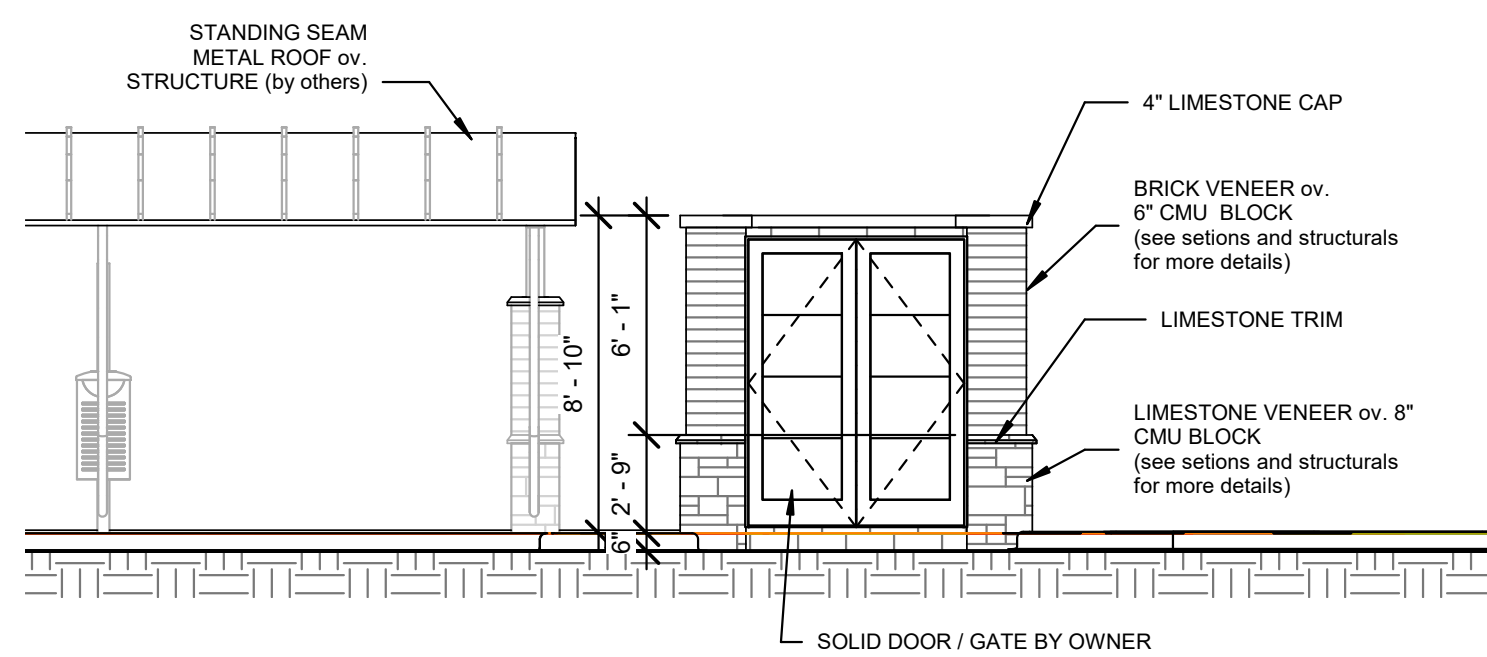
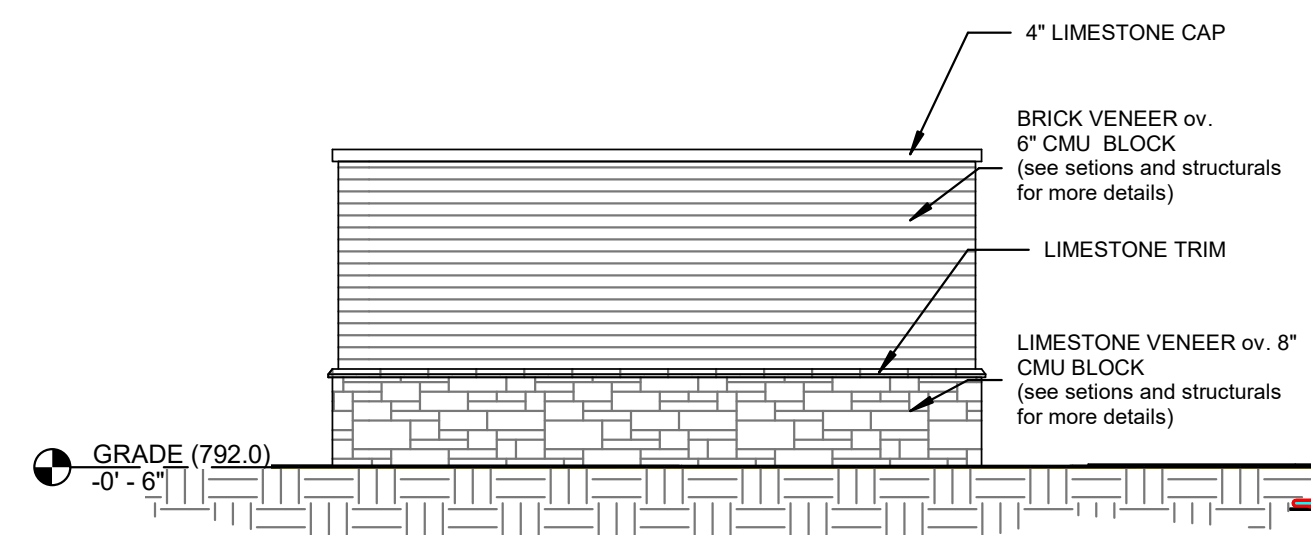
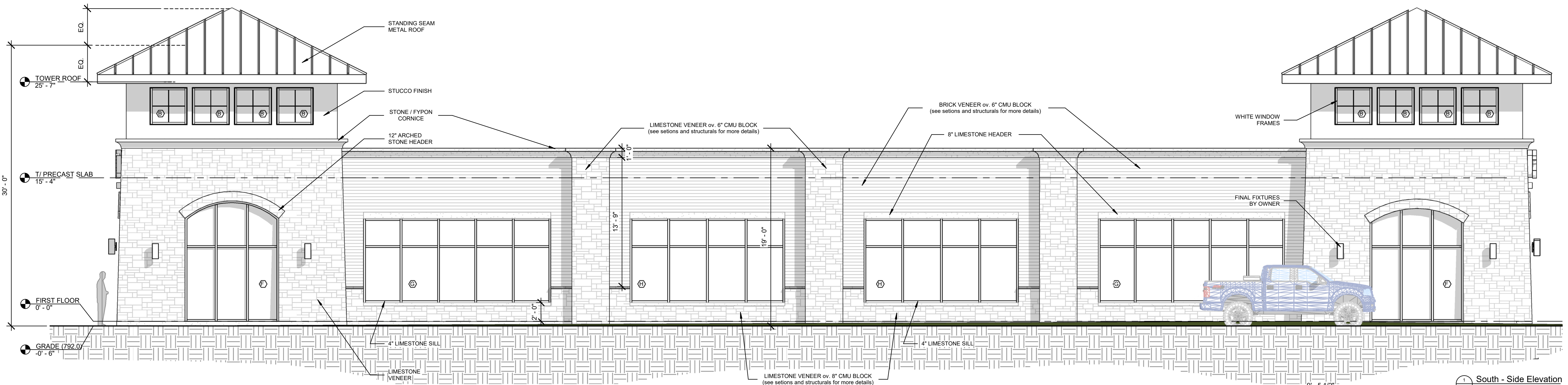
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APPROVED BY: Checker
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DESCRIPTION: MAIN ELEVATION & WIN./DR. SCHEDULES
SHEET NO.

A-3.1

N E R I

ARCHITECTS, pc

444 N. NORTHWEST HWY. STE 355
PARK RIDGE IL 60068
TEL 847.825.9400



PROJECT # 1825
DATE: 07.19.18

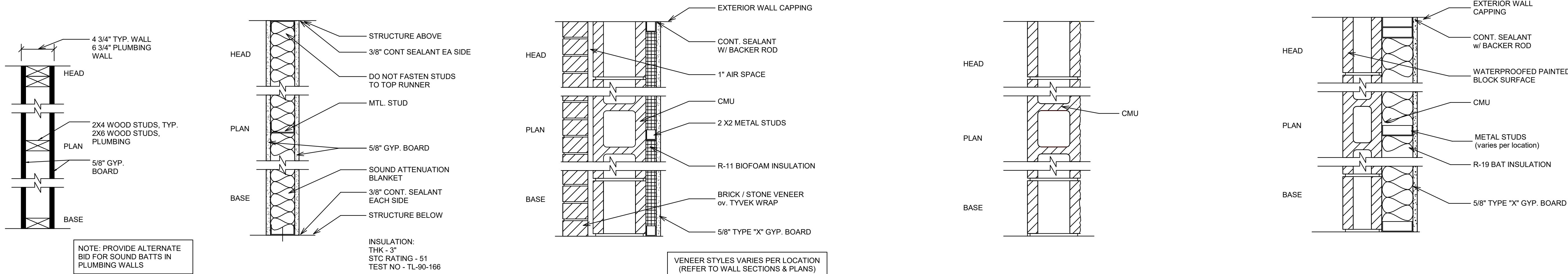
NEW AUTOMATED CARWASH FACILITY
"SPOTLESS"

966 S. MILWAUKEE AVENUE
WHEELING, IL 60090

00.00.00 ISSUED FOR PERMIT
REVISIONS
DRAWN BY: Author
APPROVED BY: Checker
SCALE: AS NOTED
DESCRIPTION: ELEVATIONS

SHEET NO.

A-3.2



1 TYPICAL PARTITION DETAIL
SCALE: 1 1/2" = 1'-0"

DTD. NO.	STUD SIZE	STUD SPACING	MAX HT. 5 PSF	FIRE RATING / TEST NO.	WALL THK
A	3 5/8" 25 GA	24" OC	14'-8"	1 HR / UL U404	4 7/8"
B	3 5/8" 25 GA	24" OC	14'-8"	1 HR / UL U404	4 7/8"
C	3 5/8" 25 GA	24" OC	14'-8"	1 HR / UL U404	4 7/8"
D	5 5/8" 25 GA	24" OC	14'-8"	1 HR / UL U404	6 7/8"

2 1HR & NON-RATED ACOUSTICAL WALL
SCALE: 1 1/2" = 1'-0"

DTD. NO.	CMU THK	CMU CLASSIFICATION	STUD SIZE	STUD SPACING	FIRE RATING / TEST NO.	WALL THK	LOAD BEARING
A	6" CMU	C-3		24" OC	2 HR / U906	10 1/8"	Y
B	8" CMU	C-3	2x2	24" OC	2 HR / U906	14 1/8"	Y
C	8" CMU	C-3	VARIES	24" OC	2 HR / U906	14 1/8"	Y

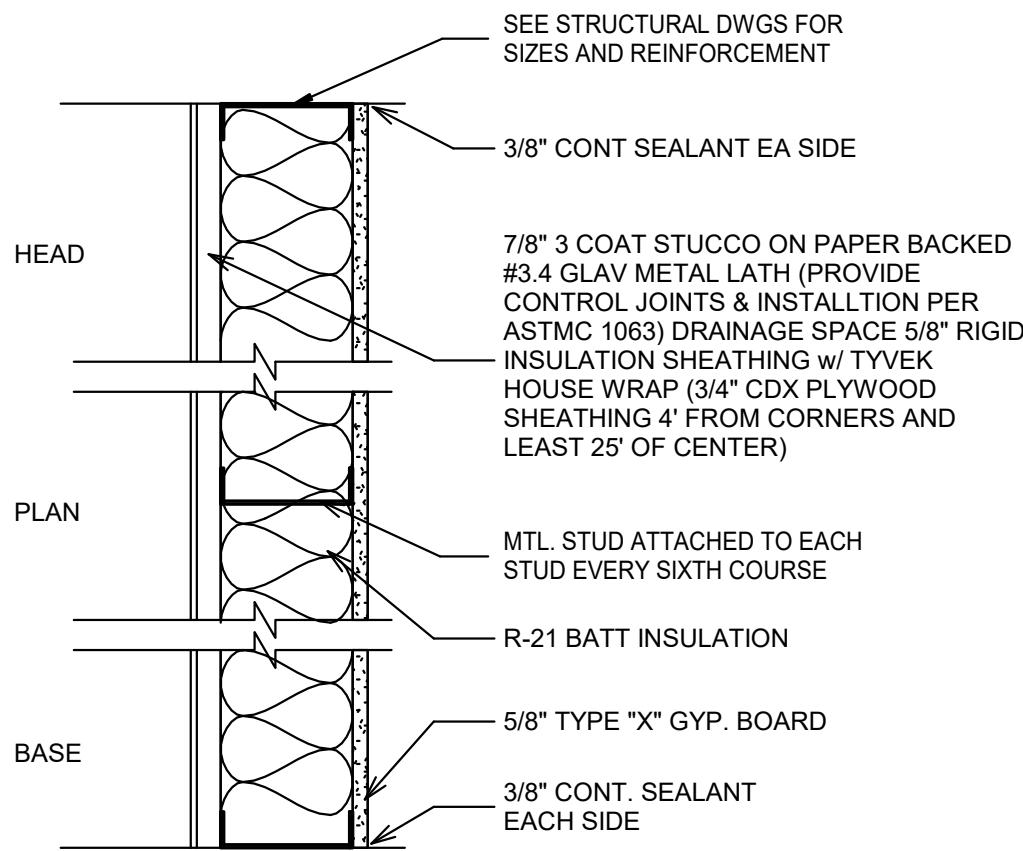
3 MASONRY WALL w/ VENEER
SCALE: 1 1/2" = 1'-0"

DTD. NO.	CMU SIZE	CMU CLASSIFICATION	FIRE RATING / TEST NO.	WALL THK	LOAD BEARING
A	8" CMU	D-2	2 HR / U906	7 5/8"	Y
B	6" CMU	D-2	2 HR / U906	5 5/8"	Y

4 MASONRY WALL
SCALE: 1 1/2" = 1'-0"

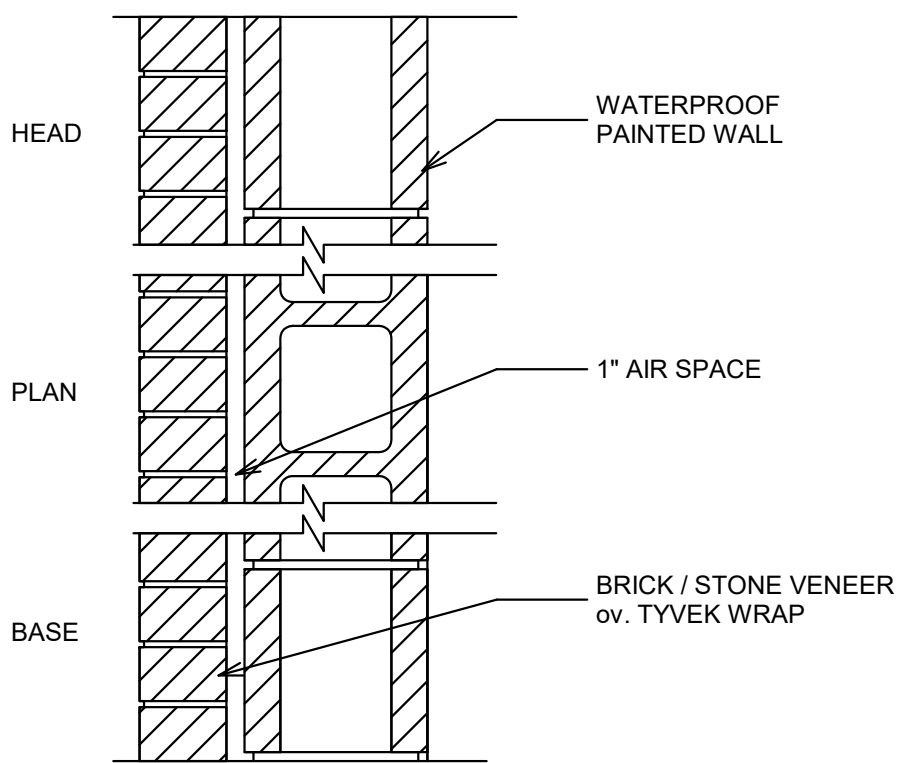
DTD. NO.	CMU THK	CMU CLASSIFICATION	STUD SIZE	STUD SPACING	FIRE RATING / TEST NO.	WALL THK	LOAD BEARING
A	8" CMU	D-2	2x2	24" OC	2 HR / U906	9 3/4"	N
B	6" CMU	D-2	2x2	24" OC	2 HR / U906	7 3/4"	N
C	6" CMU	D-2	2x6	24" OC	2 HR / U906	11 3/4"	N

5 MASONRY WALL (wash tunnel)
SCALE: 1 1/2" = 1'-0"



DTD. NO.	STUD SIZE	STUD SPACING	MAX HT. 5 PSF	FIRE RATING / TEST NO.	WALL THK
A	5 1/2" 25 GA	24" OC	13'-6"		7 1/8"

6 TYPICAL STUCCO WALL
SCALE: 1 1/2" = 1'-0"



DTD. NO.	CMU THK	CMU CLASSIFICATION	STUD SIZE	TYPE OF VENEER	FIRE RATING / TEST NO.	WALL THK	LOAD BEARING
A	6" CMU	C-3		brick	2 HR / U906	10 1/8"	Y
B	8" CMU	C-3		stone	2 HR / U906	14 1/8"	Y
C	8" CMU	C-3	varies	angled stone	2 HR / U906	varies	Y

7 EXTERIOR MASONRY WALL (typical)
SCALE: 1 1/2" = 1'-0"

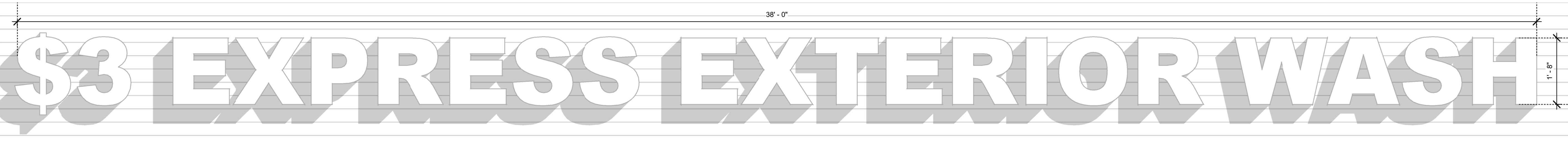
PARTITION NOTES

- PARTITIONS ARE INDICATED ON FLOOR PLANS BY GRAPHIC DESIGNATION AND/OR BY PARTITION TYPE SYMBOL - REFER TO PARTITION LEGEND.
- LINE OF STRUCTURE INDICATED FOR EACH PARTITION IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS OR GEOMETRY - REFER TO STRUCTURAL DRAWINGS FOR FURTHER INFORMATION.
- PROVIDE BRACING WHERE PARTITION HEIGHT EXCEEDS MANUFACTURER'S ALLOWABLE HEIGHT. DO NOT BRACE TO DUCTWORK OR OTHER SUCH COMPONENTS VERIFY ALLOWABLE HEIGHT PSF REQUIREMENTS WITH LOCAL CODE AUTHORITIES.
- THE FIRE RATINGS AND STC RATINGS NOTED FOR THE GYPSUM BOARD PARTITION ASSEMBLIES SHOWN ARE COPIED AND TRANSCRIBED HERE FOR CONVENIENCE ONLY FROM THE UNDERWRITERS LABORATORY DIRECTORY AND THE UNITED STATES GYPSUM CATALOG.
- WALL ASSEMBLIES AND PARTITIONS THAT RECEIVE FIRE RESISTIVE RATINGS SHALL BE CONSTRUCTED PER TESTED ASSEMBLIES. MANUFACTURER'S RECOMMENDATIONS AND THE REQUIREMENTS OF ALL APPLICABLE CODES AND LOCAL GOVERNING AUTHORITIES.
- PENETRATIONS OR PRODUCTS FOR USE IN SPECIFIC FIRE RATED PARTITION ASSEMBLIES SHALL BE BASED ON SUCCESSFUL PERFORMANCE IN FIRE TESTS. THESE PENETRATIONS MAY INCLUDE BUT ARE NOT LIMITED TO ITEMS SUCH AS PIPING, CONDUIT, OR HVAC DUCTWORK.
- EACH PARTITION SHOWN ON THE DRAWINGS TO BE A FIRE AND/OR SMOKE RESISTANT PARTITION SHALL BE IDENTIFIED AS SUCH WITH A LABEL ABOVE THE CEILING ON EACH SEGMENT OF THE WALL, 8'-0" O.C.
- FIRE AND/OR SMOKE RESISTANT RATINGS ARE TO CONTINUE ABOVE ALL OPENINGS IN RATED PARTITIONS.
- ELECTRICAL RECEPTACLES SHALL NOT BE LOCATED IN FIRE RATED PARTITIONS IN EXCESS OF 2HRS.
- THE SURFACE AREA OF INDIVIDUAL METALLIC OUTLET OR SWITCH BOXES SHALL NOT EXCEED 16 SQ. IN. THE AGGREGATE SURFACE AREA OF BOXES SHALL NOT EXCEED 100 SQ. IN. PER 100 SQ. FT. OF WALL AREA. A HORIZONTAL DISTANCE OF 24 IN. SHALL SEPARATE BOXES LOCATED ON OPPOSITE SIDES OF PARTITIONS.
- BOXES LOCATED IN CORRIDOR AND UNIT DEMISING PARTITIONS SHALL BE TREATED WITH ACOUSTICAL SEALANT AROUND PERIMETER AND BEHIND EACH BOX (FULL CLOSURE BED). IN ADDITION, OUTLET AND JUNCTION BOXES SHALL BE SEPARATED BY INSTALLING A STUD BETWEEN THEM IN THE PARTITION.
- COMPLETELY SEAL WITH CONTINUOUS ACOUSTICAL SEALANT ALL PARTITION HEADS, BASES, AND ENDS, PLUS SEAL ALL PENETRATIONS, INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL AND PLUMBING WORK.
- SOUND ATTENUATION BLANKETS ARE TO BE INSTALLED IN ALL PARTITIONS SEPARATING PUBLIC FROM PRIVATE AREAS AND WHERE NOISE CAN BE TRANSMITTED (ELEVATOR SHAFTS, TRASH CHUTES, KITCHENS, ETC.) EXTEND BLANKETS FULL HEIGHT OF PARTITION UP TO BOTTOM OF STRUCTURE, INSTALLED IN TIGHT, COMPRESSION FIT TO STUDS, STRUCTURE AND ADJACENT SURFACES.
- FINAL LOCATION AND PLACEMENT OF MEPPF ITEMS (BOTH HORIZONTAL AND VERTICAL) SHALL BE COORDINATED SUCH THAT THEY DO NOT TOUCH STUD PARTITION ASSEMBLIES AND CREATE AN ACOUSTICAL PROBLEM SUCH AS VIBRATION, IMPACT NOISE, ETC.

- PROVIDE FIRE RETARDANT WOOD BLOCKING IN METAL STUD PARTITIONS AS REQUIRED FOR SUPPORT AND/OR INSTALLATION OF DOOR FRAMES, MOLDINGS, MILLWORK, WALL PANELS, HANDRAILS, GRAB BARS, AND/OR PARTITIONS WHICH CONTAIN PLUMBING FIXTURES (SUCH AS WET WALLS AND WALLS ADJACENT TO AND BEHIND PLUMBING FIXTURES) U.N.O.
- CEMENTITIOUS BACKER BOARD SHALL BE USED AT PARTITIONS WHICH CONTAIN TUB AND SHOWER PLUMBING FIXTURES U.N.O.
- USE GALVANIZED METAL CORNER BEADS AND EDGE TRIMS (OR SCREEDS AS REQUIRED) IN ALL EXPOSED WORK, POSITIVELY ATTACHED WITH FASTENERS.
- TAPE AND APPLY JOINT COMPOUND TO ALL INTERIOR CORNERS AND MOVEMENT CONTROL JOINTS IN GYPSUM BOARD PARTITIONS U.N.O.
- PROVIDE VERTICAL CONTROL JOINTS FOR ANY UNINTERRUPTED PARTITION LENGTH AT 30' - 0" O.C. IN THE HORIZONTAL DIRECTION WHERE INDICATED OR AS REQUIRED. VERIFY LOCATIONS WITH ARCHITECT BEFORE INSTALLATION.
- ALL PLUMBING, MECHANICAL AND ELECTRICAL WORK WITHIN PUBLIC SPACES IS TO BE CONCEALED BY PAINTED SUSPENDED GYPSUM BOARD SOFFITS AND CEILINGS. COORDINATE LOCATIONS WITH MEPPF DRAWINGS.
- ALL MASONRY PARTITIONS THAT EXTEND BETWEEN STRUCTURAL CONCRETE COLUMNS AND/OR HEARWALLS SHALL HAVE VERTICAL SEALANT JOINTS BETWEEN CONCRETE AND MASONRY.
- ALL FIRESAFED MASONRY PARTITIONS SHALL HAVE CONTINUOUS FIRESAFING OF DENSITY AS SPECIFIED. PROVIDE CONTINUOUS JOINT FILLER AND ELASTOMERIC SEALANT AT THE TOP OF THE WALL AND UNDERSIDE OF STRUCTURE.
- INTERSECTIONS OF MASONRY PARTITIONS SHALL BE CONSTRUCTED BY INTERLOCKING ALTERNATE COURSES OF MASONRY AND INSTALLING METAL TIES, RIGID ANCHORS, OR PREFABRICATED JOINT REINFORCEMENT.
- COORDINATE LOCATIONS OF ALL OPENINGS REQUIRED IN MASONRY PARTITIONS WITH ARCHITECTURAL, STRUCTURAL AND MEP DRAWINGS. REFER TO STRUCTURAL DRAWINGS



8 Bldg. Name (above Garage Doors)
SCALE: 3/4" = 1'-0"



9 Main Sign (west side)
SCALE: 3/4" = 1'-0"

PROJECT #1825
DATE:07.19.18

NEW AUTOMATED CARWASH FACILITY
"SPOTLESS"

966 S. MILWAUKEE AVENUE
WHEELING, IL 60090

00.00.00ISSUED FOR PERMIT

REVISIONS

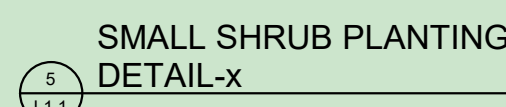
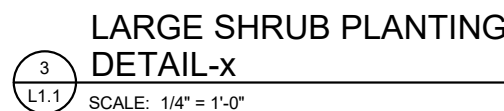
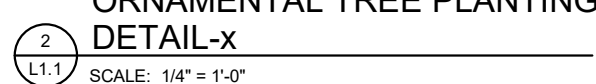
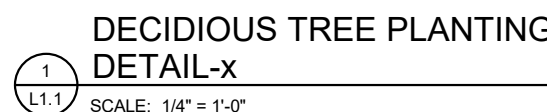
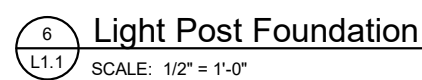
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APPROVED BY:Checker

SCALE:AS NOTED

DESCRIPTION:WALL DETAILS & BUILDING SIGNS

SHEET NO. A-5



LEGEND	QUANT.	BOTANICAL NAME	COMMON NAME	SIZE (at time of planting)	NOTES / SPECIAL CONDITIONS
DECIDUOUS SHADE TREES					
QR	6	Quercus Rubra	Red Oak	8' ht / 3" min. caliper	
ZS	2	Zelkova Serrata	Japanese Zelkova	8' ht / 3" min. caliper	
DECIDUOUS ORNAMENTAL TREES					
MG	7	Magnolia Stellata	Star Magnolia	8' ht / 3" min. caliper	B&B, Clump
AL	6	Amelanchier Laevis	Serviceberry	8' ht / 3" min. caliper	B&B, Clump
MA	12	Magnolia x 'Ann'	Ann Magnolia	8' ht / 3" min. caliper	B&B, Clump
AA	24	Amelanchier Arborea	Downy Serviceberry	8' ht / 3" min. caliper	Used around the retention ponds
EVERGREEN TREES					
PG	6	Picea Glauca	White Spruce	10' - 25' ht.	
TO	52	Thuja Occidentalis 'Emerald Green'	Emerald Green Arborvitae	6' ht	mature height 8'-12'
SHRUBS (TALL) - w/ LANDSCAPE MULCHED BED					
HA	112	Hydrangea arborescens 'Annabelle'	Annabelle Hydrangea	4' ht	Used around the retention ponds
SHRUBS (LOW) - w/ LANDSCAPE MULCHED BED					
SB	10	Spiraea Bumalda	Bumald Spiraea	30" spr. / 24" ht	mature height 30"
SP	6	Spiraea Japonica	Little Princess Spiraea	30" spr. / 24" ht	mature height 30"
TM	32	Taxus x media 'Everlow'	Dark Yew - tall	30" spr. / 24" ht	
PERENNIALS & GROUND COVER PLANTS - w/ LANDSCAPE MULCHED BED					
SG	517	Panicum virgatum 'Heavy Metal'	Switch Grass	36" spr.	mature height 2'
VN	240	Vergosa Nemorosa	Salvia (Blue)	2" pot	mature height 18"
VM	299	Vinca minor	Periwinkle	2" pot	mature height 18"
SL	200	Sagittaria Lancifolia	Lancelped Arrowhead	2" pot	Use in Wetland Basin
RL	200	Rudbeckia Laciniata	Green-headed Coneflower	2" pot	Use in Wetland Basin / Embankment
TL	24	Thypha Latifolia	Common Cattail	36" ht	Use in Wetland Basin / Embankment





1825
07.19.18
PRES-2

View Looking SE
SCALE: 1/2" = 1'-0"

N E R I
ARCHITECTS, pc
444 N. NORTHWEST HWY. STE 300
PARK RIDGE, IL 60068
TEL 847.622.8400
FAX 847.622.8401

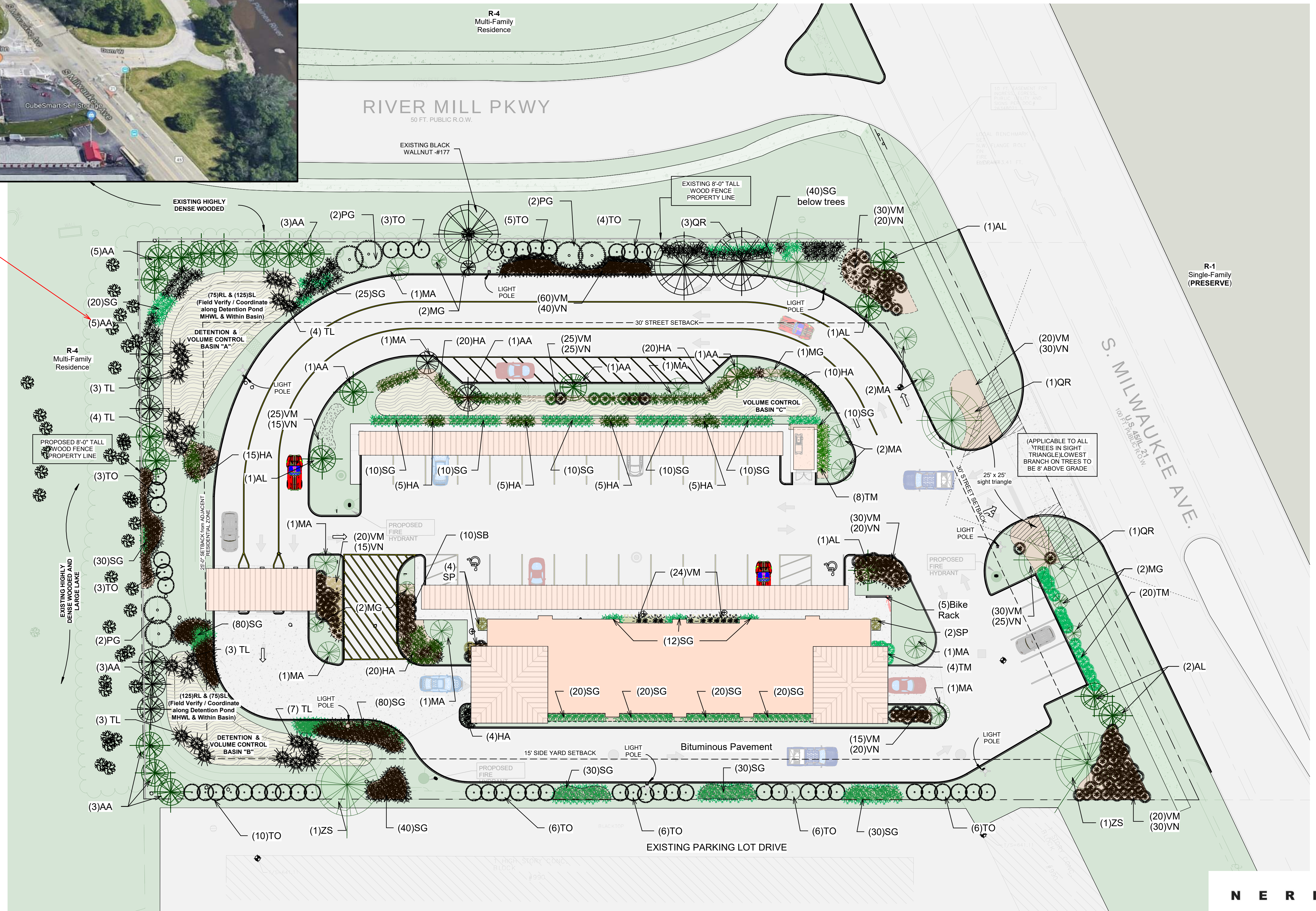








EXISTING WOODED AREA
ALONG PROPERTY LINE





Car Wash Facility

View from North looking South

BEFORE



Car Wash Facility

View from North looking South
(Without Landscape)

AFTER



Car Wash Facility

View from North looking South
(With Landscape)

AFTER

PRELIMINARY ENGINEERING

FOR

CAR WASH FACILITY

AT

966 S. MILWAUKEE AVE.
WHEELING, IL

PREPARED FOR:

Design, Development, Consulting

PREPARED BY:

600 Busse Highway
Park Ridge, IL 60068
Ph: 847/698-6400
Fax: 847/698-6401

LEGEND		
DESCRIPTION	EXISTING	PROPOSED
SANITARY SEWER		
STORM SEWER		
COMBINED SEWER		
WATERMAIN		
GAS		
TELEPHONE		
ELECTRIC		
OVER HEAD WIRE		
CURB		
FENCE		
STORM CATCHBASIN OR MANHOLE, OPEN GRATE		
SANITARY MANHOLE OR STORM MANHOLE, CLOSED LID		
INLET & FLARED END SECTION		
SEWER CLEANOUT		
FIRE HYDRANT & VALVE VAULT		
SIAMESE CONNECTION & B-BOX		
WATER METER VAULT		
GAS VALVE		
LIGHTS		
UTILITY POLE & GUY ANCHOR		
DRAINAGE ARROWS		
ELEVATIONS		
TOP OF CURB		
EDGE OF PAVEMENT		
TOP OF CURB		
TOP OF DEPRESSIONED CURB		
EDGE OF PAVEMENT		
OVERLAND OVERFLOW		
SOIL BORINGS		
TRAFFIC SIGN		
TRAFFIC ARROW		
PARKING STALL COUNT		
CONCRETE		
MAIL BOX		
TRAFFIC SIGNAL BOX		
TELEPHONE BOX		
FOUND IRON PIPE		
SET IRON PIPE		
FOUND IRON ROD		
SET IRON ROD		
FOUND CUT CROSS		
SET CUT CROSS		
FOUND P.K. NAIL		
SET P.K. NAIL		
FOUND CONCRETE MONUMENT		
SET CONCRETE MONUMENT		
ALL DIMENSIONS, COORDINATES, AND PROPOSED GRADES ARE REFERENCED TO THE EDGE OF PAVEMENT UNLESS OTHERWISE INDICATED. OPEN SYMBOLS AND DASHED LINES INDICATE EXISTING CONDITIONS.		

BENCHMARK & DATUM:

LOCAL BENCHMARK SET N.W. FLANGE BOLT ON FIRE HYDRANT SEE DRAWING.
DATUM: NAVD83
ELEVATION: 643.41 FT.

ALL OBSERVATION REFER TO GLOBAL POSITIONING SYSTEM IN REFERENCE TO TRIMBLE RTK CORS NETWORK (CONTINUOUSLY OPERATING REFERENCE STATION) BY TRIMBLE.
MODEL: OF GEOID: GEOID12A
DATUM: NAVD83

SURVEYED BY:

Andrew Spiewak Land Surveyor, Inc.
1030 W. Higgins Road
Suite 218
Park Ridge, IL 60068

773-853-2672 x 102
www.landsurveyors.pro

OPERATES 24 HOURS
A DAY 365 DAYS A YEAR



CALL JULIE TOLL FREE
1(800) 892-0123
48 HOURS BEFORE
YOU DIG

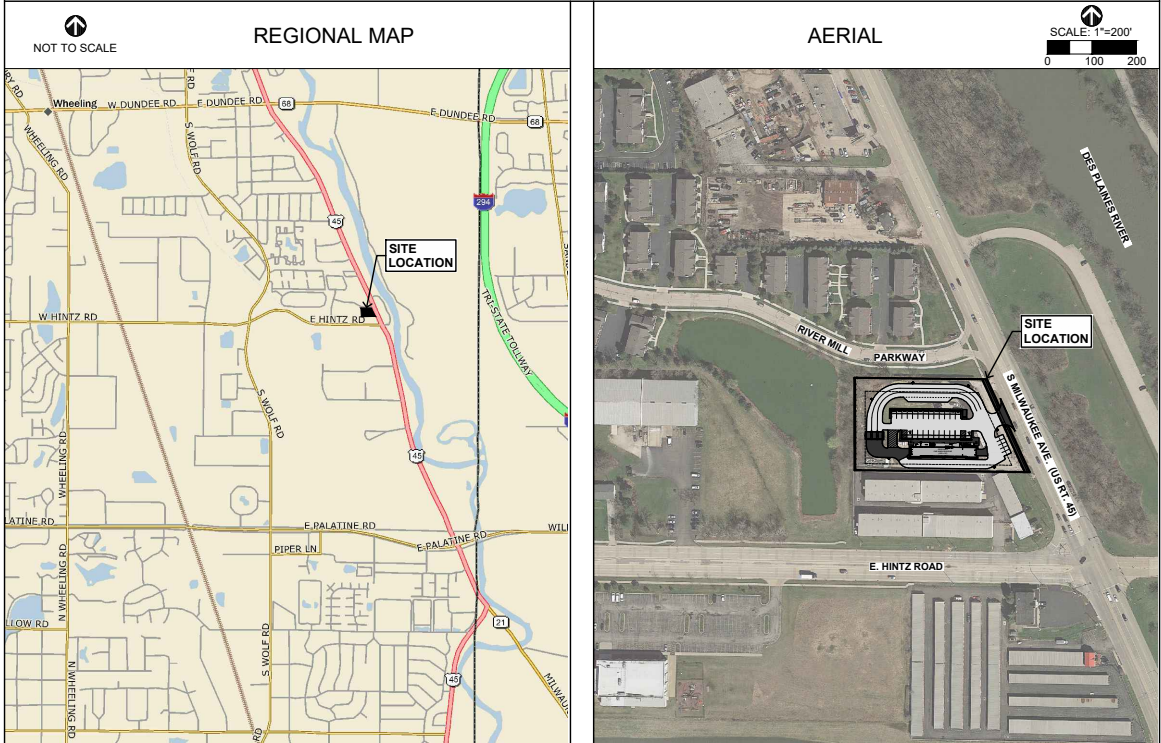
UTILITIES CONTACTS

THE CONTRACTOR FOR ALL CONTRACTS SHALL NOTIFY:

NAME (description)	PHONE NUMBER	CONTACT PERSON
ComEd (electricity)		
Peoples Energy (natural gas)		
AT&T (telephone)		

PRIOR TO BEGINNING ANY CONSTRUCTION, SAID COMPANIES SHALL ESTABLISH ON THE GROUND, THE LOCATION OF UNDERGROUND PIPES, CONDUITS, OR CABLES ADJOINING OR CROSSING PROPOSED CONSTRUCTION.

LOCATION MAPS



PERMIT AGENCIES

AGENCY	APPLICATION #	PERMIT #	DATE ISSUED
VILLAGE OF WHEELING			
ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT)	016-83288		
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY - WATER POLLUTION CONTROL			
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY - NOTICE OF INTENT			

INDEX OF SHEETS

No.	SHEET TITLE
C-1	TITLE SHEET
C-2	GEOMETRIC PLAN
C-3	GRADING PLAN
C-4	UTILITY PLAN
C-5	EXISTING COMPENSATORY STORAGE EXHIBIT
C-6	CAR QUEUE LINE EXHIBIT
C-7	CAR TURNING EXHIBIT
C-8	FIRE TRUCK TURNING EXHIBIT
C-9	FIRE TRUCK TURNING EXHIBIT

PRELIMINARY ENGINEERING

FOR

SITE IMPROVEMENTS

CAR WASH FACILITY

966 S. MILWAUKEE AVE.
WHEELING, IL 60090

DESIGNED BY: J.T.M.

DRAWN BY: K.S.B.

DATE: 07/13/2018

PROJECT #: 1517

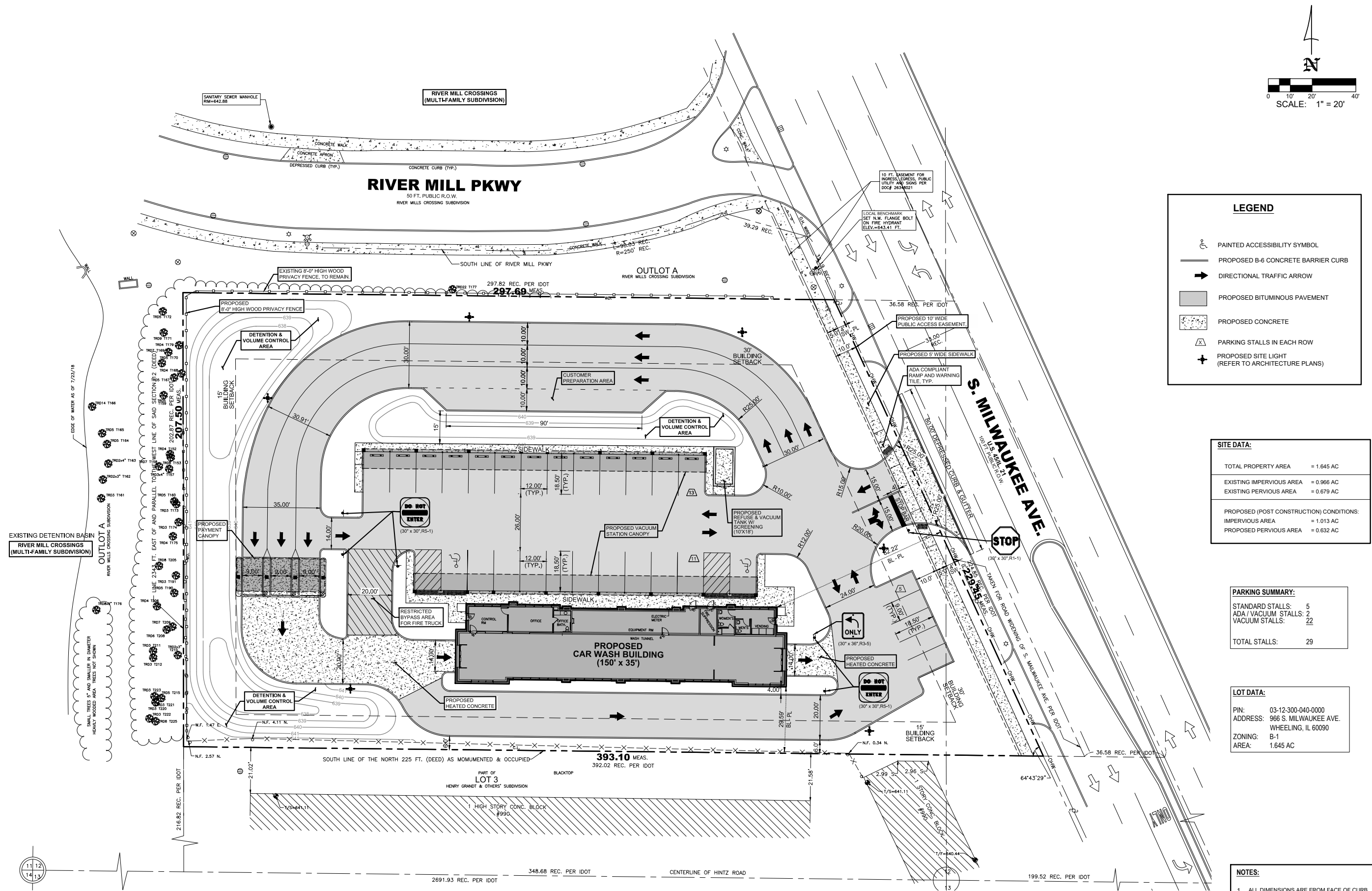
SHEET TITLE

TITLE SHEET

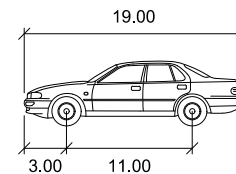
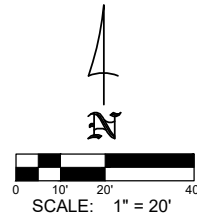
SHEET NUMBER

C-1

NOT FOR CONSTRUCTION
PENDING PERMIT REVIEW



- NOTES:**
1. ALL DIMENSIONS ARE FROM FACE OF CURB, EDGE OF PAVEMENT, FACE OF BUILDING OR PERPENDICULAR TO PROPERTY LINE UNLESS OTHERWISE NOTED.
 2. STRIPING DIMENSIONS FROM CENTER OF STRIPE.
 3. ABBREVIATIONS:
TYP. = TYPICAL
BC = BACK OF CURB
PL = PROPERTY LINE
BL = BUILDING FACE/FOUNDATION LINE



PASSENGER CAR (TYPICAL)	
ILDOT 2014 (US)	
	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.5

NOTE:
DIMENSION DATA IS FROM ILLINOIS DEPT. OF TRANSPORTATION (ILDOT)
AND THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS (AASHTO).

LEGEND

· · · · · CENTER PATH

— — — — — FRONT WHEEL PATH

— — — — — REAR WHEEL PATH

PREPARED FOR:



CAR WASH
Pro Designers
Design. Development. Consulting

PREPARED BY:

TERRA
CONSULTING GROUP, LTD.

600 Busse Highway
Park Ridge, IL 60068
Ph: 847/698-6400
Fax: 847/698-6401

[illegible]

**PRELIMINARY
ENGINEERING**

FOR

**SITE
IMPROVEMENTS**

**CAR WASH
FACILITY**

966 S. MILWAUKEE AVE.
WHEELING, IL 60090

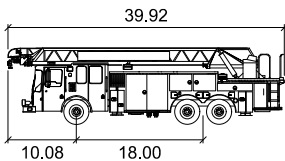
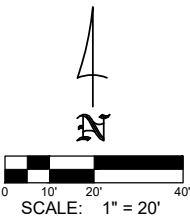
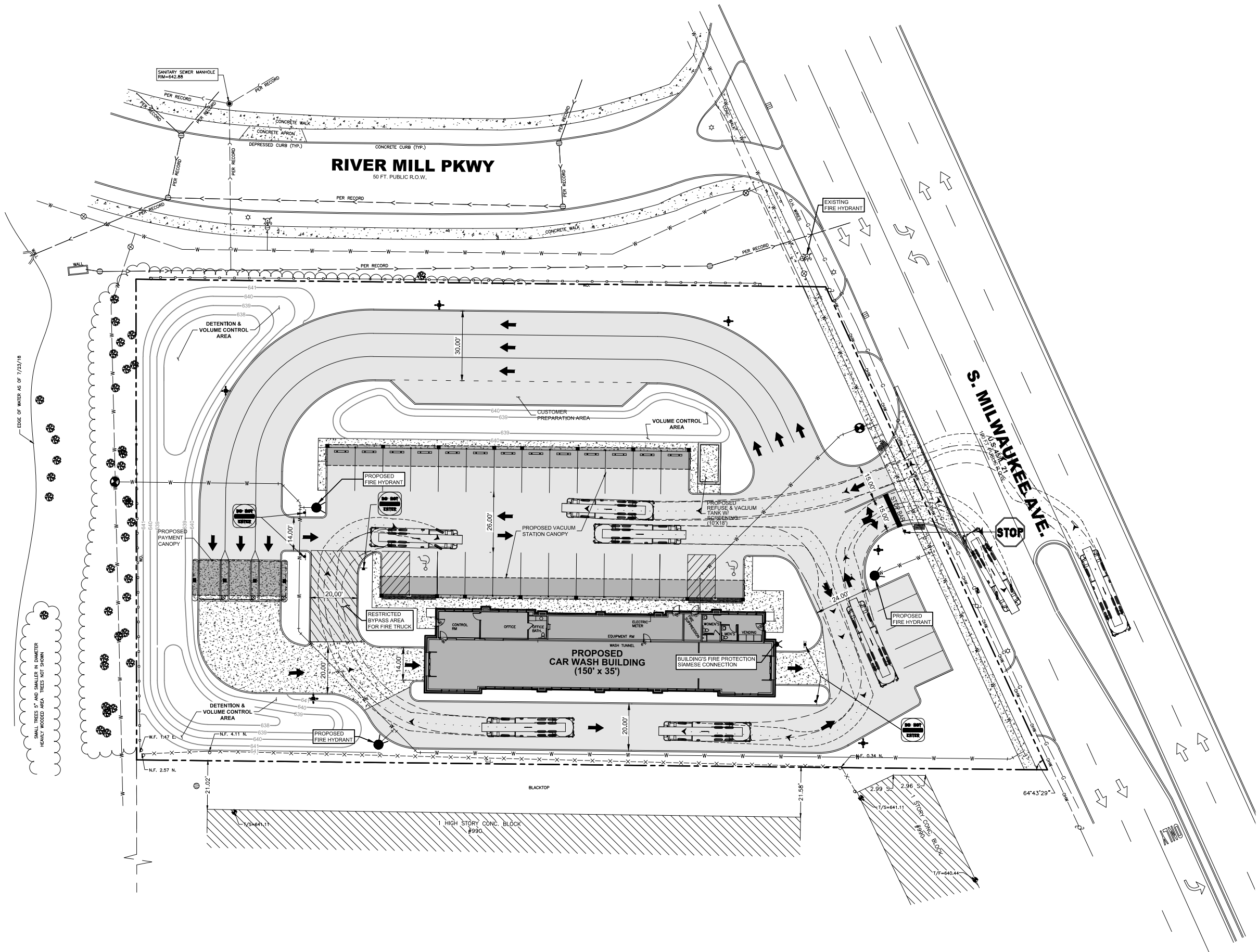
DESIGNED BY:	J.T.M.
DRAWN BY:	K.S.B.
DATE:	07/13/2018
PROJECT #:	1517

SHEET TITLE

**CAR
TURNING
EXHIBIT**

SHEET NUMBER

C-7



SMEAL AERIAL RM 100FT

	feet
Width	: 8.33
Track	: 7.92
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

NOTE: DIMENSION DATA IS FROM THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND TRUCK MANUFACTURER'S SPECIFICATIONS.

LEGEND

- CENTER PATH
- FRONT WHEEL PATH
- REAR WHEEL PATH

SUBMITTALS AND REVISIONS		
No.	DESCRIPTION	DATE
-	WHEELING P.C.	09-13-18
1	IDOT Rev. #1	10-04-18
2	WHEELING P.C. #1	10-09-18
3	WHEELING P.C. #2	10-25-18

PRELIMINARY
ENGINEERING

FOR
SITE
IMPROVEMENTS

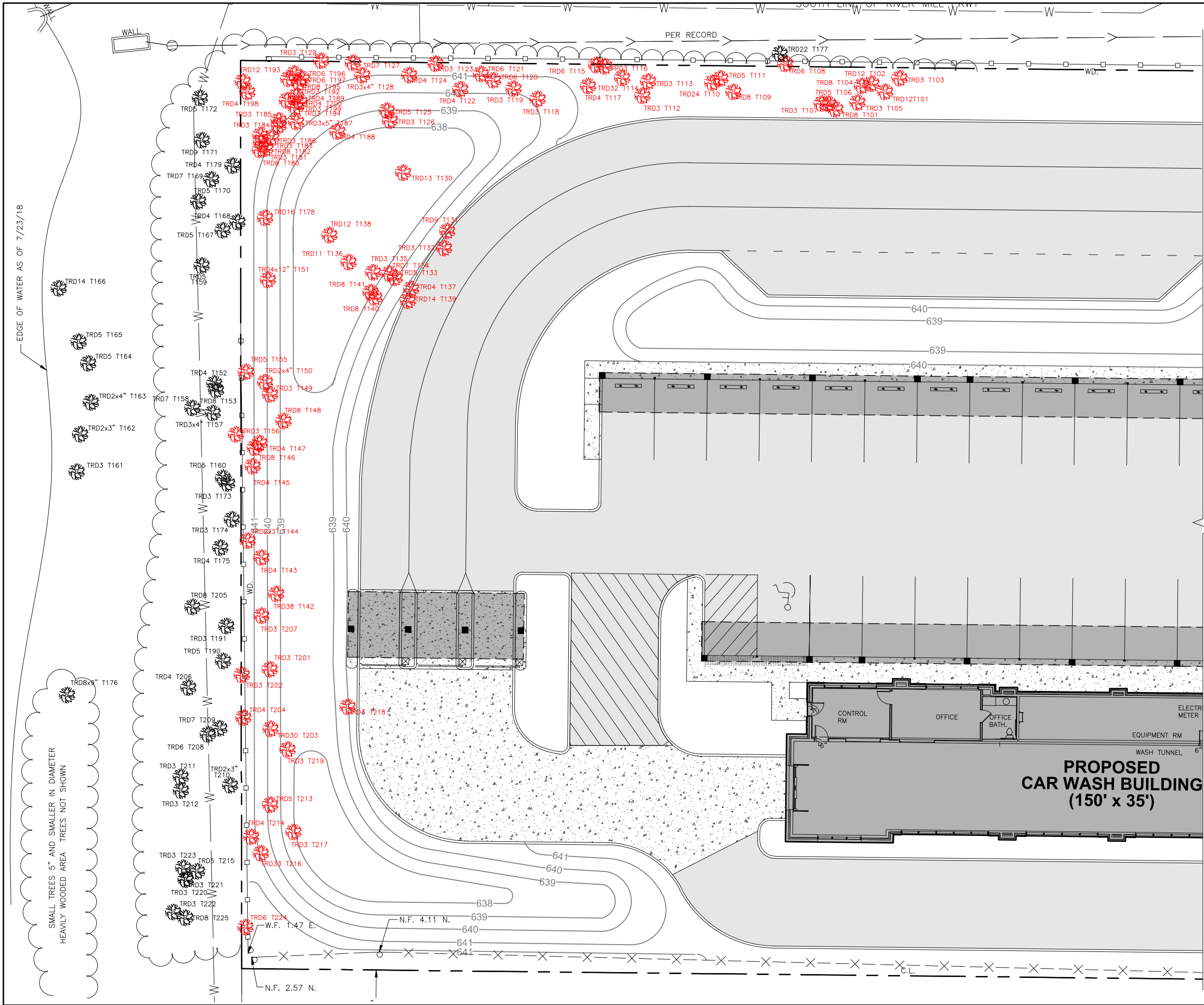
CAR WASH
FACILITY

966 S. MILWAUKEE AVE.
WHEELING, IL 60090

DESIGNED BY:	J.T.M.
DRAWN BY:	K.S.B.
DATE:	07/13/2018
PROJECT #:	1517

SHEET TITLE
**FIRE TRUCK
TURNING
EXHIBIT**

SHEET NUMBER
C-9



LEGEND

EXISTING TREE TO REMAIN
(TREE DIAMETER INCH TREE NUMBER)

EXISTING TREE TO BE REMOVED
(TREE DIAMETER INCH TREE NUMBER)

NOTE:
SEE EXISTING TREE INVENTORY

PREPARED FOR:

CAR WASH
Pro Designers
Design, Development, Consulting

PREPARED BY:

TERRA
CONSULTING ENGINEERS, LTD.
600 Busse Highway
Park Ridge, IL 60068
Ph: 847/698-6400
Fax: 847/698-6401

SUBMITTALS AND REVISIONS		
No.	DESCRIPTION	DATE
-	WHEELING P.C.	09-13-18
1	IDOT Rev. #1	10-04-18
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3	WHEELING P.C. #2	10-25-18

PRELIMINARY ENGINEERING

FOR

CAR WASH FACILITY

966 S. MILWAUKEE AVE.
WHEELING, IL 60090

DESIGNED BY: J.T.M.
DRAWN BY: K.S.B.
DATE: 07/13/2018
PROJECT #: 1517

EXISTING TREE EXHIBIT

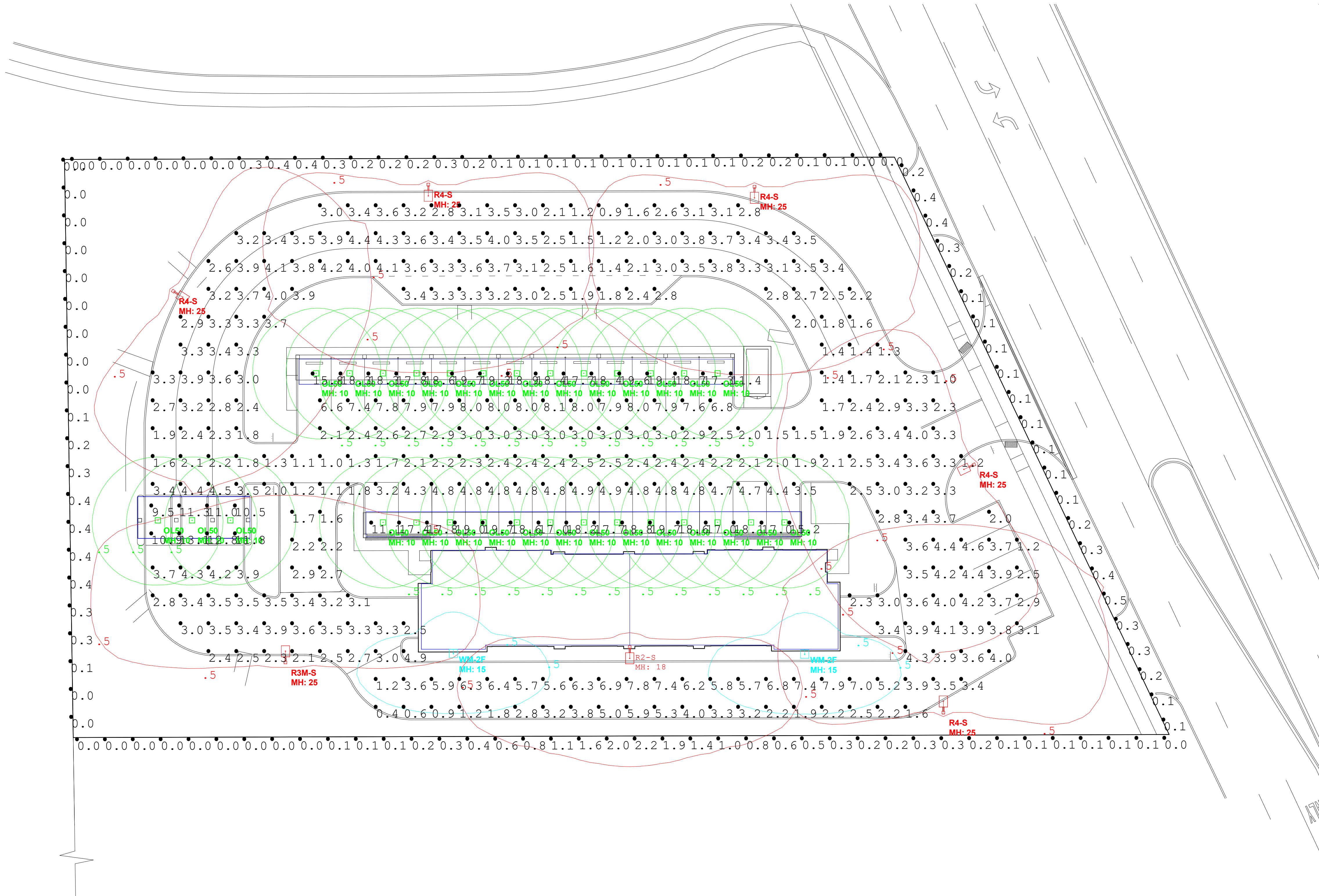
SHEET NUMBER
1

Tree #	DBH (diameter at breat heigh/ inches)	Genus species	Common Name	Condtion
T224	6	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T225	8	<i>Ulmus pumila</i>	Siberian Elm	Fair
T222	3	<i>Ulmus pumila</i>	Siberian Elm	Fair
T221	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T220	3	<i>Acer nugundo</i>	Boxelder	Fair
T215	5	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T216	33	<i>Acer saccharinum</i>	Silver Maple	Fair
T223	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T214	4	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T217	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T213	5	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T212	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T210	2 X 3"	<i>Morus alba</i>	White Mullberry	Poor
T210	2 X 3"	<i>Morus alba</i>	White Mullberry	Poor
T211	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T208	6	<i>Acer saccharinum</i>	Silver Maple	Fair
T209	7	<i>Acer nugundo</i>	Boxelder	Fair
T219	3	<i>Acer nugundo</i>	Boxelder	Fair
T203	30	<i>Acer saccharinum</i>	Silver Maple	Fair
T218	3	<i>Morus alba</i>	White Mullberry	Poor
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T176	8 X 9"	<i>Salix babylonica</i>	Weeping Willow	Fair
T206	4	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T191	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T190	5	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T202	3	<i>Acer nugundo</i>	Boxelder	Fair
T204	4	<i>Morus alba</i>	White Mullberry	Poor
T201	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T207	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T142	38	<i>Acer saccharinum</i>	Silver Maple	Poor
T205	8	<i>Acer nugundo</i>	Boxelder	Fair
T143	4	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T175	4	<i>Acer nugundo</i>	Boxelder	Fair
T144	2 X 3"	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T144	2 X 3"	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T174	3	<i>Acer nugundo</i>	Boxelder	Fair
T173	3	<i>Acer nugundo</i>	Boxelder	Fair
T160	5	<i>Acer nugundo</i>	Boxelder	Fair
T161	3	<i>Ulmus pumila</i>	Siberian Elm	Fair
T162	2 X 3"	<i>Acer saccharinum</i>	Silver Maple	Fair
T162	2 X 3"	<i>Acer saccharinum</i>	Silver Maple	Fair
T163	2 X 4"	<i>Acer saccharinum</i>	Silver Maple	Poor
T163	2 X 4"	<i>Acer saccharinum</i>	Silver Maple	Poor
T164	5	<i>Acer saccharinum</i>	Silver Maple	Poor
T165	5	<i>Acer saccharinum</i>	Silver Maple	Poor

T166	14	<i>Salix babylonica</i>	Weeping Willow	Fair
T156	3	<i>Acer nugundo</i>	Boxelder	Fair
T157	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T157	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T157	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T158	7	<i>Acer nugundo</i>	Boxelder	Fair
T153	8	<i>Juglans nigra</i>	Black Walnut	Fair
T152	4	<i>Juglans nigra</i>	Black Walnut	Fair
T145	4	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T146	8	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T147	4	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T148	8	<i>Acer nugundo</i>	Boxelder	Fair
T149	3	<i>Acer nugundo</i>	Boxelder	Fair
T150	2 X 4"	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T150	2 X 4"	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T155	5	<i>Acer nugundo</i>	Boxelder	Poor
T140	8	<i>Acer saccharinum</i>	Silver Maple	Fair
T141	8	<i>Acer saccharinum</i>	Silver Maple	Fair
T139	4	<i>Acer saccharinum</i>	Silver Maple	Fair
T137	4	<i>Acer saccharinum</i>	Silver Maple	Poor
T133	5	<i>Acer nugundo</i>	Boxelder	Poor
T134	7	<i>Acer nugundo</i>	Boxelder	Poor
T135	3	<i>Acer nugundo</i>	Boxelder	Fair
T136	11	<i>Populus deltoides</i>	Eastern Cottonwood	Fair
T138	12	<i>Populus deltoides</i>	Eastern Cottonwood	Fair
T131	9	<i>Acer saccharinum</i>	Silver Maple	Fair
T132	3	<i>Acer saccharinum</i>	Silver Maple	Fair
T130	13	<i>Populus deltoides</i>	Eastern Cottonwood	Fair
T178	16	<i>Populus deltoides</i>	Eastern Cottonwood	Good
T151	4 X 12"	<i>Acer nugundo</i>	Boxelder	Poor
T151	4 X 12"	<i>Acer nugundo</i>	Boxelder	Poor
T151	4 X 12"	<i>Acer nugundo</i>	Boxelder	Poor
T159	5	<i>Juglans nigra</i>	Black Walnut	Fair
T167	5	<i>Prunus spp.</i>	Ornamental Cherry	Fair
T170	5	<i>Juglans nigra</i>	Black Walnut	Fair
T168	4	<i>Morus alba</i>	White Mullberry	Poor
T169	7	<i>Juglans nigra</i>	Black Walnut	Fair
T171	9	<i>Ulmus pumila</i>	Siberian Elm	Fair
T172	5	<i>Fraxinus pennsylvanica</i>	Green Ash	Poor
T179	4	<i>Morus alba</i>	White Mullberry	Poor
T180	8	<i>Acer nugundo</i>	Boxelder	Poor
T181	3	<i>Acer nugundo</i>	Boxelder	Poor
T182	8	<i>Acer nugundo</i>	Boxelder	Poor
T183	3	<i>Acer nugundo</i>	Boxelder	Poor
T186	3	<i>Acer nugundo</i>	Boxelder	Poor
T184	3	<i>Acer nugundo</i>	Boxelder	Poor
T185	3	<i>Acer nugundo</i>	Boxelder	Poor
T187	3 X 5"	<i>Acer nugundo</i>	Boxelder	Poor
T187	3 X 5"	<i>Acer nugundo</i>	Boxelder	Poor
T187	3 X 5"	<i>Acer nugundo</i>	Boxelder	Poor
T188	4	<i>Acer nugundo</i>	Boxelder	Poor
T198	4	<i>Acer nugundo</i>	Boxelder	Poor
T193	12	<i>Acer nugundo</i>	Boxelder	Dead

T195	8	<i>Acer nugundo</i>	Boxelder	Poor
T196	6	<i>Acer nugundo</i>	Boxelder	Poor
T197	6	<i>Acer nugundo</i>	Boxelder	Poor
T192	3	<i>Acer nugundo</i>	Boxelder	Poor
T189	4	<i>Acer nugundo</i>	Boxelder	Fair
T200	4	<i>Acer nugundo</i>	Boxelder	Fair
T199	3	<i>Acer nugundo</i>	Boxelder	Fair
T194	3	<i>Acer nugundo</i>	Boxelder	Fair
T129	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T127	7	<i>Morus alba</i>	White Mullberry	Poor
T128	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T128	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T128	3 X 4"	<i>Acer nugundo</i>	Boxelder	Poor
T123	3	<i>Acer nugundo</i>	Boxelder	Poor
T124	4	<i>Acer nugundo</i>	Boxelder	Poor
T125	5	<i>Acer nugundo</i>	Boxelder	Poor
T126	3	<i>Acer nugundo</i>	Boxelder	Poor
T122	4	<i>Juglans nigra</i>	Black Walnut	Fair
T121	6	<i>Morus alba</i>	White Mullberry	Poor
T120	6	<i>Acer nugundo</i>	Boxelder	Fair
T119	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T118	3	<i>Acer nugundo</i>	Boxelder	Poor
T117	4	<i>Pyrus calleryana</i>	Callery Pear	Poor
T116	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T115	6	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T114	32	<i>Quercus bicolor</i>	Swamp White Oak	Fair
T113	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T112	3	<i>Prunus spp.</i>	Ornamental Cherry	Fair
T111	5	<i>Acer nugundo</i>	Boxelder	Poor
T110	24	<i>Acer nugundo</i>	Boxelder	Poor
T109	8	<i>Celtis occidentalis</i>	Hackberry	Poor
T108	6	<i>Fraxinus pennsylvanica</i>	Green Ash	Poor
T107	3	<i>Acer nugundo</i>	Boxelder	Poor
T106	5	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T177	22	<i>Juglans nigra</i>	Black Walnut	Fair
T101	8	<i>Acer nugundo</i>	Boxelder	Poor
T102	12	<i>Acer nugundo</i>	Boxelder	Fair
T104	8	<i>Acer nugundo</i>	Boxelder	Poor
T105	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T103	3	<i>Rhamnus cathartica</i>	European Buckthorn	Poor
T101	12	<i>Acer nugundo</i>	Boxelder	Poor
***No additonal trees tagged or observed, T154 not observed or found in sequence				
***ALL IN RED ARE TO BE REMOVED (DUE TO CONFLICT w/ PROPOSED PROJECT LOCATION OR HEALTH)				

146 Trees Total



TYPE R: 25'0" MOUNTING HEIGHT
TYPE WM: 15'0" MOUNTING HEIGHT
TYPE OL50: 10'0" MOUNTING HEIGHT

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Description	Luminaire Watts	Arr. Lum. Lumens
	1	R2-S	SINGLE	RZR-PLED-II-80LED-700mA-NW-HS	173.6	15715
	1	R3M-S	SINGLE	RZR-PLED-III-80LED-700mA-NW-HS	173.6	15899
	5	R4-S	SINGLE	RZR-PLED-IV-80LED-700mA-NW-HS	173.6	16422
	2	WM-2F	SINGLE	RZR-WM2-PLED-II-FR-40LED-350mA-NW	42.7	6112
	29	OL50	SINGLE	OLCS-050-UNV-40-SYM	52	5500

Calculation Summary						
Label	CalcType	Units	Avg	Max	Min	Avg/Min
CANOPIES 1-2	Illuminance	Fc	17.76	19.7	11.1	1.80
CANOPY 3	Illuminance	Fc	11.36	13.1	9.5	1.20
PARKING LOT	Illuminance	Fc	3.39	8.1	0.4	8.48
PROPERTY LINE	Illuminance	Fc	0.26	2.2	0.0	N.A.

Luminaire Location Summary					
LumNo	Label	X	Y	Z	Orient
1	OL50	290.75	221.5	10	90
2	OL50	302.75	221.5	10	90
3	OL50	314.75	221.5	10	90
4	OL50	326.75	221.5	10	90
5	OL50	338.75	221.5	10	90
6	OL50	350.75	221.5	10	90
7	OL50	362.75	221.5	10	90
8	OL50	374.75	221.5	10	90
9	OL50	386.75	221.5	10	90
10	OL50	398.75	221.5	10	90
11	OL50	410.75	221.5	10	90
12	OL50	422.75	221.5	10	90
13	OL50	434.75	221.5	10	90
14	OL50	266.75	275	10	90
15	OL50	278.75	275	10	90
16	OL50	290.75	275	10	90
17	OL50	302.75	275	10	90
18	OL50	314.75	275	10	90
19	OL50	326.75	275	10	90
20	OL50	338.75	275	10	90
21	OL50	350.75	275	10	90
22	OL50	362.75	275	10	90
23	OL50	374.75	275	10	90
24	OL50	386.75	275	10	90
25	OL50	398.75	275	10	90
26	OL50	410.75	275	10	90
27	OL50	222.25	222.25	10	0
28	OL50	210	222.25	10	0
29	OL50	236	222.25	10	0
30	R2-S	379.25	176.75	18	270
31	R3M-S	255.75	171.25	25	90
32	R4-S	502.75	242.25	25	205.292
33	R4-S	491.75	153.25	25	90
34	R4-S	307	342.75	25	270
35	R4-S	424	342	25	270
36	R4-S	215.5	304.5	25	327.482
37	WM-2F	316	176	15	270
38	WM-2F	442	175.75	15	270



U.S. ARCHITECTURAL & SUN VALLEY LIGHTING
660 W AVE O PALMDALE CA 93551
(661) 233-2000

NOTES:
See schedule for luminaire specifications.
Luminaire Symbols are not to scale.
Varying the position, mounting height, or orientation from what is specified in this drawing will invalidate the calculation performed.

DRAWN BY: L.C.P.
AGENCY: PG enlighten
Date: 10/25/2018
SCALE: 1" = 20'

Point-By-Point Illuminance Calculation
(At Grade)
CAR WASH
966 MILWAUKEE AVE - WHEELING, IL

Canopy / Soffit Series

The OLCS series combines the rugged look of yesterday's HID fixtures with smoother style features like radius corners and a contoured low profile lens, which minimizes up light. Optical performance is achieved with LG or Seoul brand surface mount LED's and an efficient refractive lens. These luminaires can be surface or pendant mounted and are ideal for canopy and soffit applications. LED life is assured through efficient thermal coupling and dissipation via a durable, pressure die cast, low-copper alloy, aluminum housing. Engineered to last, all gaskets are anti-UV, anti-aging with no harmful out-gassing. Luminaires are available in 4000K or 5000K, a number of color finishes, optional occupancy sensors and surge protectors.



FEATURES

- LG ® or Seoul ® Brand LED's
- Color Temperature: 4000K & 5000K (other CCT's are available upon request)
- CRI: 80
- Lumen Maintenance: L70 = 50,000 hours (at 25° C)
- Full Cutoff (meets IDA criteria)
- Operating Temperature: -40C (-40F) to 40C (104F)
- Durable All Aluminum Pressure Die Cast Housing
- Long Life Durable Powder Coat Finish
- (custom/other RAL colors are available upon request)
- IP65 Rated (wet listed)
- Mounting: Surface or Pendant (hook & plug also available upon request)

ELECTRICAL SPECIFICATIONS

- Power Input: 120-277V (347V & 480V optional for 40W, 60W, & 75W)
- Drive Currents: 40W = 1050 mA; 50W = 1200 mA; 60W = 1500mA; 75W = 1875 mA
- Efficacy: 40W, 50W, 60W, 75W = 110 lm/W
- Power Factor: > 90%
- THD: < 15%
- Surge Protection: 10 kV (optional)
- Control Options: 0-10V Dimming; Occupancy Sensor; (2 or 3 step dimming & on/off); Photocell (button type)



TEST & CERTIFICATIONS

- ETL (UL 1598)
- CSA (C22.2 No.250.0)
- RoHS Compliant
- Design Lights Consortium (Standard)

WARRANTY

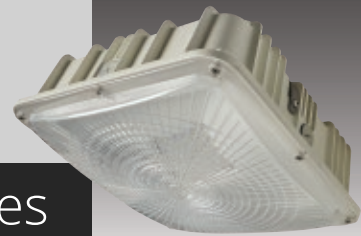
- 5-Year Warranty (parts or replacement)

PERFORMANCE SPECIFICATIONS

Lens Type	Model / Wattage	Lumens	
		4000K	5000K
Type SYM	OLCS - 040	4,400	4,400
	OLCS - 050	5,500	5,500
	OLCS - 060	6,600	6,600
	OLCS - 075	8,250	8,250

Drive Current	Wattage	Drive Current	Wattage
1050 mA	40	1200 mA	50
Current (A) @ 120V	.33	Current (A) @ 120V	0.42
Current (A) @ 208V	0.19	Current (A) @ 208V	0.24
Current (A) @ 240V	0.17	Current (A) @ 240V	0.21
Current (A) @ 277V	0.14	Current (A) @ 277V	0.18
Current (A) @ 347V	0.12	Current (A) @ 347V	N/A
Current (A) @ 480V	0.08	Current (A) @ 480V	N/A

Drive Current	Wattage	Drive Current	Wattage
1500 mA	60	1875 mA	75
Current (A) @ 120V	0.50	Current (A) @ 120V	0.63
Current (A) @ 208V	0.29	Current (A) @ 208V	0.36
Current (A) @ 240V	0.25	Current (A) @ 240V	0.31
Current (A) @ 277V	0.22	Current (A) @ 277V	0.27
Current (A) @ 347V	0.17	Current (A) @ 347V	0.22
Current (A) @ 480V	0.13	Current (A) @ 480V	0.16



Canopy / Soffit Series

ORDERING INFORMATION

EXAMPLE: OLCS-060-UNV-50-SYM-PM-WH-DM-OS-ST18

SERIES	WATTAGE	VOLTAGE	COLOR TEMP	DISTRIBUTION	MOUNT	FINISH	CONTROL / OPTIONS
OLCS = Optec LED Canopy/ Soffit	040 = 40W (1050 mA) 050 = 50W (1200 mA) 060 = 60W (1500 mA) 075 = 75W (1875 mA)	UNV = 120-277V 347 = 347V * 480 = 480V *	40 = 4000K 50 = 5000K	SYM = Symmetrical	SM = Surface Mount PM = Pendant Mount **	WH = White BZ = Dark Bronze BL = Black SL = Silver CC = Custom Color	DM = 0-10V Dimming OS = Occupancy Sensor *** PC = Photocell On/Off Only SP = 10 kV Surge Protector ST = Stem **** (xx = Specify Length in Inches)

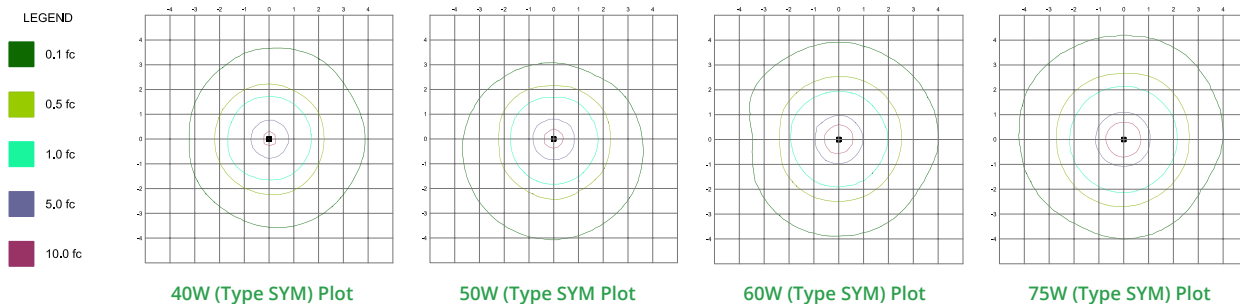
* Available for 40W, 60W & 75W

** Accepts Schedule 40
3/4" NPT Stem (See Options for Stem Ordering)

*** 2 or 3 Step Dimming & On/Off
**** Schedule 40, 3/4" NPT Stem 1" Thread Length Both Ends Finish = Plated/Galvanized

PHOTOMETRIC PERFORMANCE

Isofootcandle plots = OLCS Models in 5000K CCT @ 10' (3.048 m) mounting height. Distances are in units of mounting height.

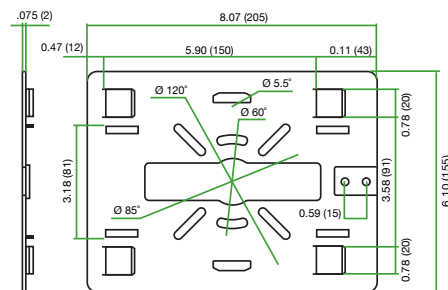


Published luminaire photometric testing performed to IESNA-79-08 standards

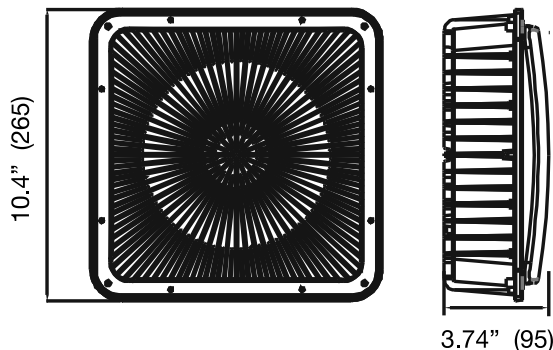
DIMENSIONS, WEIGHTS & MOUNTINGS

Wattage	40W	50W	60W	75W
Length (in" / mm)	10.4" / 265	10.4" / 265	10.4" / 265	10.4" / 265
Width (in" / mm)	10.4" / 265	10.4" / 265	10.4" / 265	10.4" / 265
Height (in" / mm)	3.74" / 95	3.74" / 95	3.74" / 95	3.74" / 95
Weight (lbs / kg)	5.62 / 2.55	5.73 / 2.60	5.84 / 2.65	6.17 / 2.8

Mounting Details



Bracket Dimensions



Mounting Plate



Installed

SOLID STATE AREA LIGHTING

RAZAR SERIES-LED

S P E C I F I C A T I O N S

PROJECT NAME: _____

PROJECT TYPE: _____

OPTICAL HOUSING

Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling fins. The Optical Panel mounting surface is milled flat (surface variance $\pm .002"$) to facilitate thermal transfer of heat to housing and cooling fins. Solid barrier wall separates optical and electrical compartments. The optical and electrical compartments are integrated to create one assembly. Minimum wall thickness is .188".

ELECTRICAL HOUSING w/ INTEGRATED ARM

Heavy cast low copper aluminum (A356 alloy; <0.2% copper) assembly with integral cooling ribs surrounding the electrical compartment and a flat surface on the top of the arm to accommodate a photocell receptacle. Solid barrier wall separates optical and electrical compartments. The optical compartment and electrical compartment with the integrated support arm combine to create one assembly. Minimum wall thickness is .188". Cast and hinged driver assembly cover is integrated with wiring compartment cover.

PLED™ OPTICS

Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. In asymmetric distributions, a micro-reflector inside the refractor re-directs the house side emitter output towards the street side and functions as a house side shielding element. Refractors are injection molded H12 acrylic. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments.

LED DRIVER(S)

Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F. Driver(s) is/are UL and cUL recognized and mounted directly against the Electrical Housing to facilitate thermal transfer, held down by universal clamps to facilitate easy removal. In-line terminal blocks facilitate wiring between the driver and optical arrays. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3KV internal surge protection. Luminaire supplied with 20KV surge protector for field accessible installation.)

LED EMITTERS

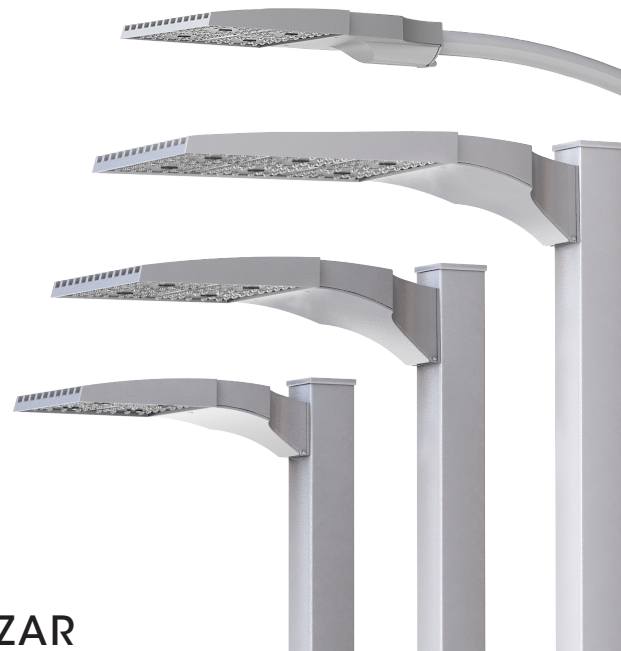
High output LED's are utilized with drive currents ranging from 350mA to 1050mA. 70CRI Minimum. LED's are available in standard Neutral White (4000K), or optional Cool White (5000K) or Warm White (3000K). Consult Factory for other LED options.

FINISH

Electrostatically applied TGIC Polyester Powder Coat on substrate prepared with 20 PSI power wash at 140°F. Four step media blast and iron phosphate pretreatment for protection and paint adhesion. 400°F bake for maximum hardness and durability.

MAST ARM FITTER/ELECTRICAL HOUSING

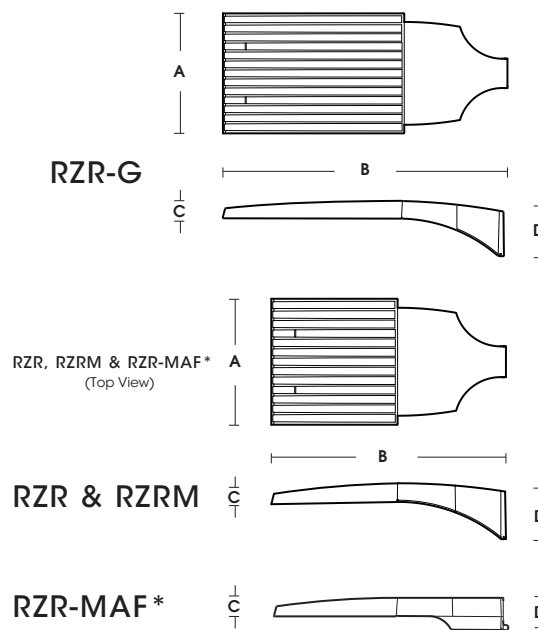
Replaces standard Electrical Housing. Fits standard 2 3/8" O.D. horizontal tenon. Two (2) straps with two (2) bolts each encircle the lower half of the tenon. Upper half of the tenon rests on self-centering steps that position the angle of the luminaire at 0°, +1.5°, +1.5° or +3° up from the horizontal. All hardware is stainless steel.



RAZAR

(MODELS: RZRM, RZR, RZR-G & RZR-MAF*)

PATENT PENDING



FIXTURE	A	B	C	D
RZR-G	15" 381mm	36.5" 927mm	3" 76mm	7" 187mm
RZR	14.75" 375mm	28.25" 718mm	2.75" 70mm	6.5" 165mm
RZRM	11.5" 292mm	22" 559mm	2.5" 64mm	5.25" 133mm
RZR-MAF	15" 381mm	28.25" 724mm	2.5" 64mm	4" 102mm

* DLC PENDING AS OF 7/17



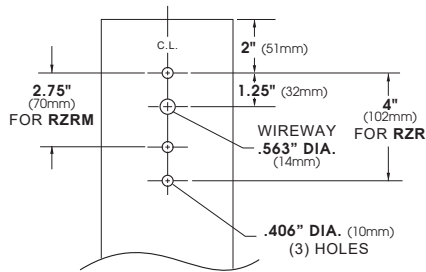
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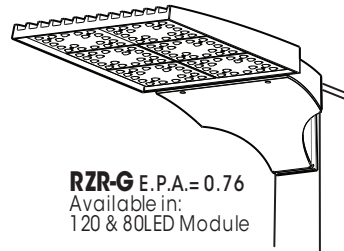
RAZAR SERIES-LED

S P E C I F I C A T I O N S

POLE DRILLING TEMPLATE

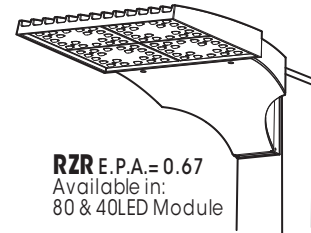


PLED® MODULES



RZR-G E.P.A.= 0.76
Available in:
120 & 80LED Module

120 LED Module

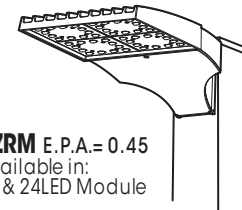


RZR E.P.A.= 0.67
Available in:
80 & 40LED Module

80 LED Module

Approximate Average Lumens – 4000K (Lumens median of all distributions)

	350mA			525mA			700mA			1050mA		
	Watts	Lumens	HID Eq.	Watts	Lumens	HID Eq.	Watts	Lumens	HID Eq.	Watts	Lumens	HID Eq.
24	28	3541	50	41	5058	70-100	53	6567	100	81	8773	150-175
40	45	5997	70-100	66	8653	100-150	87	10995	175	134	14647	200-250
48	55	7046	100	81	10018	150-175	105	12600	200	160	17566	250
80	87	11622	175-200	131	16736	200-250	174	21235	400	266	28190	450-575
120	127	17405	250	195	24860	450	260	31592	575-750	396	43323	750-1000



RZRM E.P.A.= 0.45
Available in:
48 & 24LED Module

48 LED Module

Spec/Order Example: RZR/PLED-IV/80LED-700mA/CW/277/RAL-8019-S/10SP

S P E C / O R D E R I N G I N F O R M A T I O N

MODEL	OPTICS	LED MODE			VOLTAGE	FINISH	OPTIONS
MODEL	OPTICS	LED MODE			VOLTAGE	FINISH	OPTIONS
☐ RZR-G	☐ TYPE II PLED-II	NO. LEDs RZR-G ☐ 120LED ☐ 80LED	DRIVE CURRENT ☐ 350mA ☐ 525mA ☐ 700mA ☐ 1050mA	COLOR TEMP - CCT ☐ NW (4000K)* *STANDARD ☐ CW (5000K) ☐ WW (3000K) CONSULT FACTORY FOR OTHER LED COLORS	☐ 120 ☐ 208 ☐ 240 ☐ 277 ☐ 347 ☐ 480	STANDARD TEXTURED FINISH ☐ BLACK RAL-9005-T ☐ WHITE RAL-9003-T ☐ GREY RAL-7004-T ☐ DARK BRONZE RAL-8019-T ☐ GREEN RAL-6005-T FOR SMOOTH FINISH REPLACE SUFFIX "T" WITH SUFFIX "S" (EXAMPLE: RAL-9005-S) CONSULT FACTORY FOR CUSTOM COLORS	☐ HIGH-LOW DIMMING FOR HARDWIRED SWITCHING OR NONINTEGRATED MOTION SENSOR HLSW ☐ INTERNAL HOUSE SIDE SHIELD ... HS-PLED ☐ PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) ... PC+V ☐ TWIST LOCK PHOTO CELL + VOLTAGE (EXAMPLE: PC120V) ... TPC+V ☐ TWIST LOCK RECEPTACLE ONLY ... TPR ☐ 7-PIN TWIST LOCK RECEPTACLE ONLY ... TPR7 ☐ SINGLE FUSE (120V, 277V, 347V) ... SF ☐ DOUBLE FUSE (208V, 240V, 480V) ... DF ☐ STEP DIM MOTION SENSOR (PROGRAMMED 50/100) MS-F211 ☐ REMOTE MOTION SENSOR CONFIGURATOR MS-FC10
☐ RZR	☐ TYPE II MEDIAN ILLUMINATOR PLED-II-ML	RZR ☐ 80LED ☐ 40LED					
☐ RZR-MAF*	☐ TYPE III MED. PLED-III-M						
☐ RZRM	☐ TYPE III WIDE PLED-III-W	RZRM ☐ 48LED ☐ 24LED					
	☐ TYPE IV PLED-IV						
	☐ TYPE IV PLED-IV-FT						
	☐ TYPE V NARROW PLED-V-SQ-N						
	☐ TYPE V MED. PLED-V-SQ-M						
	☐ TYPE V WIDE PLED-V-SQ-W						

*DLC PENDING AS OF 7/17



RAZAR SERIES-LED

LED/ELECTRICAL GUIDE

LED COUNT	SOURCE TYPE	SOURCE	INITIAL LUMENS - 4000K CCT	INITIAL LUMENS - 3000K CCT	INITIAL LUMENS - 5000K CCT	L70 GREATER THAN (HR)	STARTING TEMP.	SYSTEM WATTS	VOLTS	MAX INPUT AMPS
24	LED	24 PLED® Optical Module - 350mA	3,298 - 3,784	3,133 - 3,595	3,463 - 3,973	60,000+	-20°F	29	120 277	0.24 0.10
24	LED	24 PLED® Optical Module - 525mA	4,711 - 5,405	4,475 - 5,135	4,947 - 5,675	60,000+	-20°F	42	120 277	0.34 0.15
24	LED	24 PLED® Optical Module - 700mA	6,023 - 6,911	5,722 - 6,565	6,324 - 7,256	60,000+	-20°F	56	120 277	0.45 0.20
24	LED	24 PLED® Optical Module - 1050mA	8,171 - 9,375	7,762 - 8,906	8,580 - 9,844	60,000+	-20°F	82	120 277	0.68 0.30
40	LED	40 PLED® Optical Module - 350mA	5,585 - 6,408	5,306 - 6,088	5,864 - 6,729	60,000+	-20°F	43	120 277	0.38 0.17
40	LED	40 PLED® Optical Module - 525mA	8,059 - 9,246	7,656 - 8,784	8,462 - 9,709	60,000+	-20°F	65	120 277	0.55 0.24
40	LED	40 PLED® Optical Module - 700mA	10,240 - 11,749	9,728 - 11,162	10,752 - 12,337	60,000+	-20°F	87	120 277	0.73 0.32
40	LED	40 PLED® Optical Module - 1050mA	13,642 - 15,652	12,960 - 14,870	14,324 - 16,435	60,000+	-20°F	128	120 277	1.12 0.49
48	LED	48 PLED® Optical Module - 350mA	6,562 - 7,529	6,234 - 7,153	6,890 - 7,909	60,000+	-20°F	53	120 277	0.46 0.20
48	LED	48 PLED® Optical Module - 525mA	9,330 - 10,705	8,864 - 10,170	9,797 - 11,240	60,000+	-20°F	79	120 277	0.68 0.29
48	LED	48 PLED® Optical Module - 700mA	11,735 - 13,464	11,148 - 12,791	12,322 - 14,137	60,000+	-20°F	106	120 277	0.88 0.38
48	LED	48 PLED® Optical Module - 1050mA	16,360 - 18,771	15,542 - 17,832	17,178 - 19,709	60,000+	-20°F	160	120 277	1.33 0.58
RZR										
80	LED	80 PLED® Optical Module - 350mA	10,824 - 12,419	10,283 - 11,798	11,365 - 13,040	60,000+	-20°F	86	120 277	0.75 0.33
80	LED	80 PLED® Optical Module - 525mA	15,587 - 17,884	14,808 - 16,990	16,366 - 18,778	60,000+	-20°F	130	120 277	1.10 0.48
80	LED	80 PLED® Optical Module - 700mA	19,767 - 22,680	18,779 - 21,546	20,755 - 23,814	60,000+	-20°F	174	120 277	1.45 0.63
80	LED	80 PLED® Optical Module - 1050mA	26,255 - 30,124	24,942 - 28,618	27,568 - 31,630	60,000+	-20°F	257	120 277	2.22 0.96
RZR-G										
80	LED	80 PLED® Optical Module - 350mA	10,950 - 12,564	10,403 - 11,936	11,498 - 13,192	60,000+	-20°F	87	120 277	0.75 0.33
80	LED	80 PLED® Optical Module - 525mA	15,735 - 18,054	14,948 - 17,151	16,522 - 18,957	60,000+	-20°F	129	120 277	1.10 0.48
80	LED	80 PLED® Optical Module - 700mA	20,074 - 23,032	19,071 - 21,881	21,078 - 24,184	60,000+	-20°F	174	120 277	1.45 0.63
80	LED	80 PLED® Optical Module - 1050mA	27,651 - 31,725	26,268 - 30,139	29,033 - 33,311	60,000+	-20°F	266	120 277	2.22 0.96
120	LED	120 PLED® Optical Module - 350mA	16,211 - 18,599	15,400 - 17,669	17,021 - 19,529	60,000+	-20°F	130	120 277	1.06 0.46
120	LED	120 PLED® Optical Module - 525mA	23,154 - 26,566	21,996 - 25,238	24,312 - 27,894	60,000+	-20°F	192	120 277	1.63 0.70
120	LED	120 PLED® Optical Module - 700mA	29,424 - 33,760	27,953 - 32,072	30,895 - 35,448	60,000+	-20°F	260	120 277	2.17 0.94
120	LED	120 PLED® Optical Module - 1050mA	40,350 - 46,296	38,333 - 43,981	42,368 - 48,611	60,000+	-20°F	398	120 277	3.33 1.43

- NOTES:**
1. Max Input Amps is the highest of starting, operating, or open circuit currents.
 2. Lumen values for LED Modules vary according to the distribution type. 80LED array appears in both the RZR and RZR-G models.
 3. System Watts includes the source watts and all driver components.
 4. Fuse value should be sufficient to protect all wiring components. For electronic driver and LED component protection, use surge suppressor supplied with luminaire.
Note: Surge suppressors are considered a perishable device.
 5. L70(10K) - TM-21 6x rule applied.

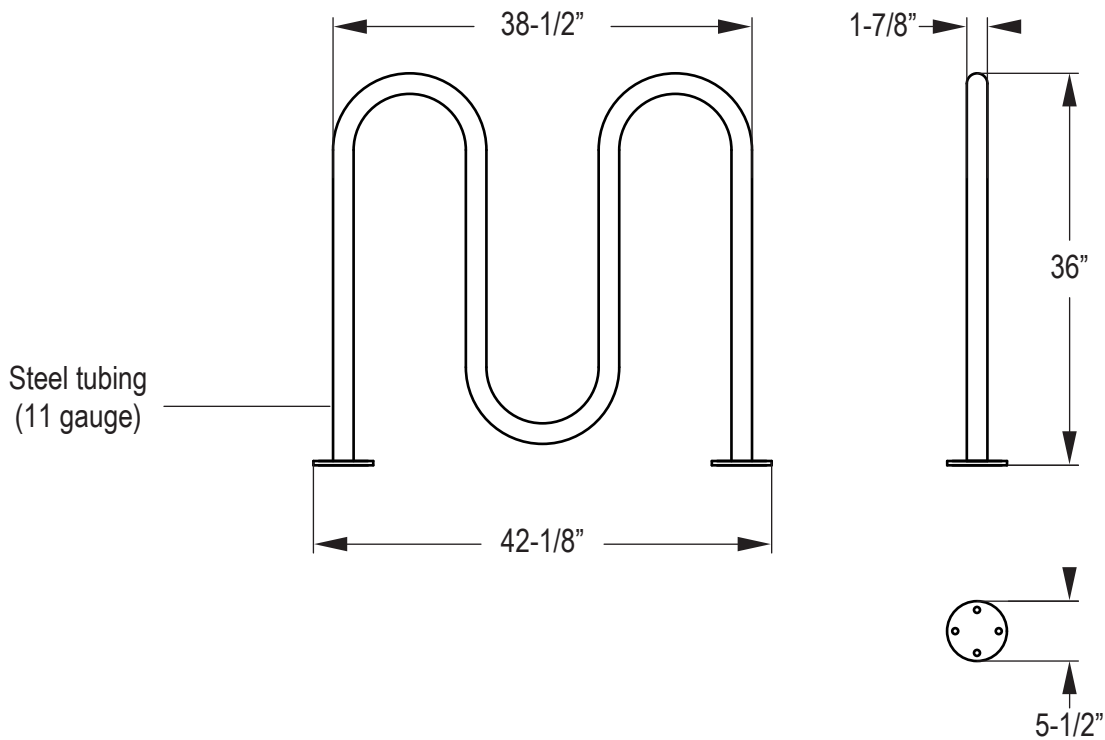
WARNING: All fixtures must be installed in accordance with local codes or the National Electrical Code. Failure to do so may result in serious personal injury.



Model # CBBR-5UR-BK

Dimension Sheet

5 Bike Wave Bike Rack, Powder-Coated Black, Surface Mount



Sound Evaluation for the Proposed Car Wash in Wheeling on Milwaukee Road

October 9, 2018

Acoustic Associates conducted an analysis to examine the impact of noise from the proposed car wash in Wheeling to be located on the southwest side of Milwaukee Road and Mill River Parkway. To accomplish this, we used noise emissions data from a similar car wash operating in Columbia, Missouri. This was the Mobil Brite Worx facility located at 123 Admiral Troste Drive. The measurements were conducted in August of 2017 by a board certified acoustical engineer using professional grade instruments. In addition, our own data from a car wash in Vernon Hills shows that the sound level drops off for receivers off to the side of the car wash.

In addition, we inspected the Wheeling site to examine the effect of its topography on sound propagation. We also conducted ambient noise monitoring to document the background noise levels that exist near the residents adjacent to the site. All of this data is important in predicting accurate car wash sound levels at any specific location near the new facility.

Based on the Columbia car wash noise data (which is primarily blower noise) and allowing for the reduction in noise due to distance, directivity, and topography, we conclude that the noise from the car wash will meet the Illinois State noise code. Moreover, because the projected sound levels are well below the ambient noise levels recorded at the site, there would be no noise impact from the car wash.

Ambient Noise Levels

To assess the **ambient noise** at this site, we set up professional grade audio equipment to record the noise near the closest residence on the north side of River Mall Pkwy. This location can be seen in **Figure 1** and specifically was in



Figure 1 - Aerial view showing the location of the audio equipment used to record the ambient noise data.

the parkway between the sidewalk and the street. To assess the ambient noise over the course of a full day, the recording was made from 12:00 PM on Wednesday, September 26 until 12:00 PM on the next day.

Ambient noise refers to the existing, all-encompassing sound at a given place in a community. It is a composite of sounds from many sources near and far.

The primary ambient noise at this recording location was vehicle traffic on Milwaukee Road, a primary, 4-lane highway. Secondary noise originated from general noise at more distant locations including aircraft in the area.

The recording in the field was analyzed in our lab to determine the sound levels at 1-second intervals. These levels are shown in **Figure 2**. The thin, blue line shows the variation in the **A-weighted sound level** at 1-second intervals. The high peaks in the graph were typically from motorcycles, trucks, and airplane flyovers.

The thick, red line in **Figure 1** is the hourly, time-averaged level of the ambient noise. This level is often called the equivalent level (Leq) because its value is “equivalent” to the average sound energy – not the average decibel level. The Leq is the metric adopted by the U.S. EPA and the State of Illinois. It correlates well with the effect of community noise on people.

The **A-weighted sound level** is the standard metric to measure sound and is expressed in decibels (dB). It is a filter that mimics how we hear noise because it diminishes low frequencies.

The Leq line in **Figure 2** shows the trend in the ambient noise over a weekday 24-hour period. Specifically, it reveals that the ambient noise begins to drop around 9:00 PM and then returns to near daytime levels by around 6:00 AM.

Projected Noise Levels

The data obtained at the Brite Worx car wash in Columbia indicates a sound level of 82 dB at 50 feet from the exit. Because the entrance is much farther from the blowers than the exit, the sound level is substantially lower at the entrance. Specifically, the level at 50 feet from the entrance was 70 dB - a level 12 dB lower than the exit. Since a 10-dB drop in sound level is half as loud, the noise emission from the entrance is less than half as loud as that from the exit.

As mentioned above, the sound level of a tunnel car wash drops off as a listener moves to the side of either the exit or the entrance. This is a phenomenon known as directivity. Based on our data, the sound level drops off by as much as 12 dB at an angle of 90° from the opening. The drop is further for angles greater than 90°.

The sound level due to a car wash is generally the highest at the closest residential location. In this case, the closest residential lot is directly to the north of the proposed car wash. Using the Columbia sound data, we projected the noise level to this property based on the attenuation of sound over distance (i.e., 6 dB per doubling of distance) and the effect of directivity (i.e., 12+ dB for a location to the side of the building). The result is a projected level of 53 dB. This is below the State of Illinois daytime monitoring limit of 55 dBA for noise radiated from commercial property (Class B) to residential property (Class A).

The Village of Wheeling has a noise code at Section 8.25.040. This code limits the sound level at adjacent residential property in eight frequency bands. However the frequency bands listed in the code are obsolete as there have not been any instruments to measure with these bands in over 40 years. Based on our analysis, however, the combined noise level of all eight bands is equivalent to a total sound level of 55 dB, the same limit specified by the State of Illinois.

Even if a noise meets a local or state standard, an impact could still occur if the time-averaged noise level of the carwash significantly exceeds the time-averaged level of the ambient noise. In fact, the Village of Wheeling noise code limits the car wash noise to 3 dB above the ambient noise. To visualize the relationship between the projected sound level and the ambient noise levels we measured, we plotted the projected car wash blower noise level on the ambient noise graph in **Figure 2**. As seen in this chart, the car wash noise level is well below the hourly Leq of the ambient noise level from about 5:00 AM until 11:00 PM.

In summary, our analysis indicates that the operation of this facility would pose no impact during its proposed operation hours of 6:00 AM to 10:00 PM.

Submitted by,



Thomas Thunder, AuD, FAAA, INCE Bd. Cert.

Principal Audiologist and Acoustical Specialist

Adjunct Faculty – Northern Illinois University, Rush University, Salus University

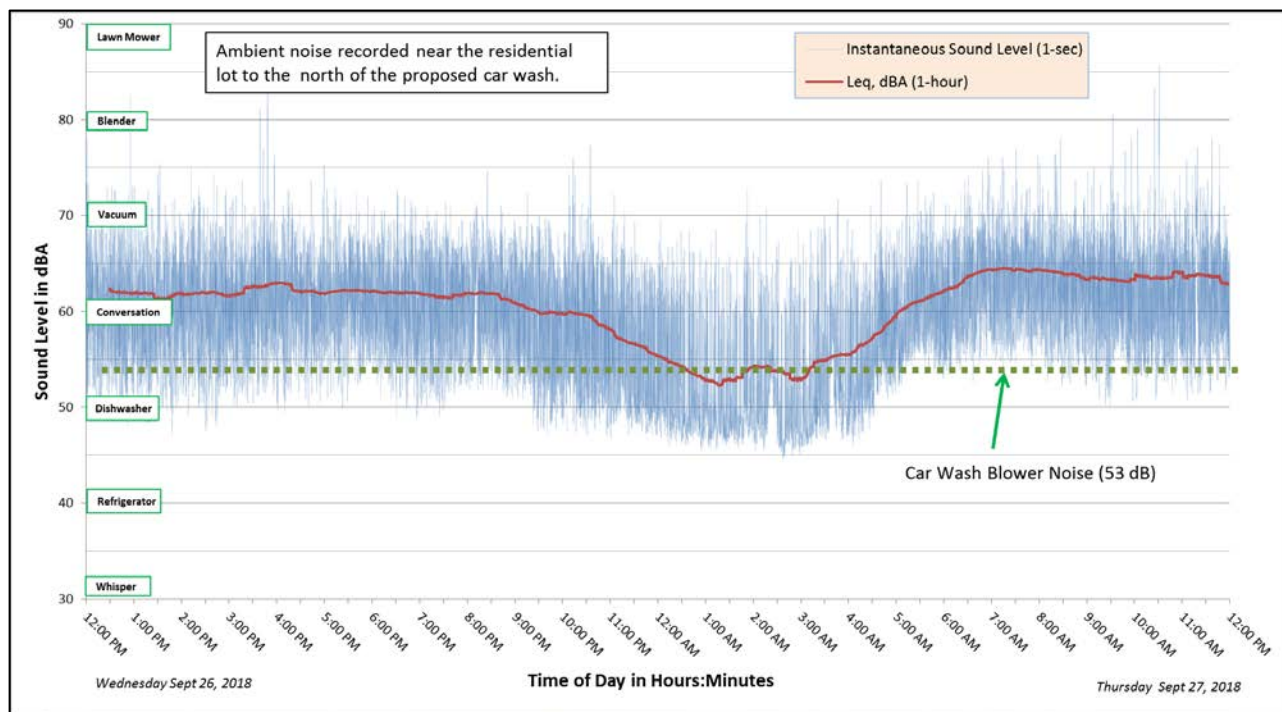


Figure 2 – Plot showing the expected car wash sound levels at the residential location to the north of the car wash compared to the ambient noise levels measured at this location.

AcoustiControl is a Certified 100% Woman Owned Business

AcoustiControl Report H1293 Revised

Environmental Noise Study / Mobil Car Wash

14905 Clayton Road / Chesterfield, Missouri 63017

Client: Civil and Environmental Consultants, Inc. (CEC)

Report Date: August 29, 2017

Definition of Terms

Decibel: (also referred to as dB, dBA, dBC)

A decibel is a measurement of sound. The higher the decibel number, the louder the sound.

Outdoor Background Noise Level (sometimes referred to as Ambient Noise)

The amount of sound generated by lawnmowers, road traffic, construction, industrial noise, human and animals sources, outdoor mechanical equipment, train whistles, airplane noise etc.

Sound Pressure Level (LAeq)

A-Weighted equivalent sound pressure level in dB (decibels measured over a period of time).

Sound Level A - Weighted (dBA)

The A – Weighted is the most common single number measure of loudness. This standard scale in decibels is a measure of the human response to noise which correlate to judgments of loudness from a broad band noise that are characteristic in the environment. A-weighting takes into account the frequency of the sound so that correlates with how people notice noise. The A-weighting was used in the noise assessment for its prevalent use for environmental noise assessments and large body of correlations of A-weighted sound levels and people's sensitivity to noise. In Table 1 is a list of some common noises and their levels recorded in dBA .

Nearest Residential Property Line

The adjacent residential property line that separates 14905 Clayton Road and the Woodfield Condominiums.

Examples of Human Responses to Changes in Noise Levels

There is variation in individual perception of the power of a sound; studies have shown that the changes in noise levels of less than 3 dBA are barely perceptible to most people.

However; a 10 dBA change are reported by people as either a doubling (halving) of noise by a normal human ear. This means that a 10 dBA reduction of noise is actually perceived by the listener as a reduction of ½ the noise. The average ability of a listener to detect changes in noise levels are outlined in Table 2. (All tables and figures may be found in the Appendix.)

Environmental Noise Study and Acoustical Model and Analysis

This parcel of land will fall within the noise ordinance of St Louis County, Chapter **625-Noise Control Code**.

Appendix: All tables and figures may be found in the Appendix.

A: Environmental Noise Study performed at 14905 Clayton Road Chesterfield, Missouri 63017.

Conditions: This is a Mobil single bay car wash.

AcoustiControl conducted continuous 24 hour environmental noise monitoring from 10AM on Wednesday July 26th 2017 through 11PM on Saturday July 29th 2017.

The purpose of this noise study was to determine what the existing average ambient background noise levels are at the site. This noise study captured all existing nearby environmental noise which includes the noise generated by traffic from Clayton Road and Baxter Road.

Environmental noise was monitored at 3 different locations on the property. (Please see Figure 1 for locations of noise monitoring equipment.)

Results of the Environmental Noise Study:

The average measured sound pressure levels (LAeq) at the residential property lines of Woodfield Condominiums, which are adjacent to 14905 Clayton Road, varied from 56 dBA to 65 dBA. (Please see Table 3 for the daily average measurements).

Based on traffic counts provided by St. Louis County, and the results of the Environmental Noise Study, it is clear that the background noise levels at 14905 Clayton Road **is controlled by vehicles noise from Clayton Road and Baxter Road.**

B: Acoustical Spot Measurements

Acoustical Spot Measurements were taken at the existing Mobil Brite Worx facilities located of 123 Admiral Troste Drive in Columbia, Illinois and 4132 North Highway 67 in Florissant Missouri (see Table 4).

The purpose of the acoustical spot measurements was to capture all existing noises generated by the operation of the car washes. This data was used in the building of the SoundPlan Computer Model.

Conditions at:

123 Admiral Troste Drive : This is a tunnel car wash with 14 Tommy's Carwash Systems canister vacuums located alongside the tunnel building in the vacuum area. The car drying system located within the tunnel is an AVW Equipment Company 9 Blower Car Wash Drying System.

4132 North Highway 67 : This is a tunnel car wash with 12 Tommy's Carwash Systems canister vacuums located alongside the tunnel building at the vacuum area. The car drying system located the tunnel is an AVW Equipment Company 9 Blower Car Wash Drying System.

Bruel & Kjaer (B&K) Equipment and Methodology

The measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R2010).

All measurements were made on the A-scale (dBA).

A windscreen was used during all measurements.

Two Softdb Piccolo Type II Sound Level Meters.

The two Piccolo Sound Level Meters were mounted on a tripod at the standard testing height of 5 feet above the ground surface (this is considered ear level) and at least 10 feet away from any sound-reflecting surface, such as the fence at the property line.

One B&K Model 2250 Sound Level Meter

While standard testing methodology would be to locate the microphone 5 feet from the ground surface (which is considered ear at level) for purposes of these measurements, the sound level

meter was mounted on the tripod at a height of 10 feet above the ground surface and located at least 10 feet away from the fence at the property line. To gather accurate acoustical data, this microphone positioning was selected so that it would be above any sound-reflecting surface, such as the fence at the property line.

A B&K Type 4231 sound-level calibrator was used to calibrate all three instruments prior to and after noise measurements were taken.

C: SoundPlan Acoustic Model One Results / Versions A B & C

Based on data collected during the environmental noise study, the acoustical spot measurements, acoustical data provided by Aerodry Drying Systems and Vacutech Vacuum Systems, (see Table 4) and drawings provided by CEC, Inc, a series of predictive SoundPlan scenarios were performed. Because we understand that this car wash will only operate between the hours of 7AM and 8PM and because this time frame falls under the St. Louis County Daytime Noise Ordinance, nighttime noise measurements are not considered relevant and are not included in this report.

Version A = Figure 2

This model shows the current building and car wash located at 14905 Clayton Road and the acoustical data shows traffic noise only. This model does not include any environmental noise other than traffic noise.

The scenario illustrated in the Version A would allow the reader to understand what acoustic impact noise generated from traffic on Clayton and Baxter Roads would be realized at the nearest residential property line.

Version B = Figure 3

This model shows the proposed building and barrier wall to be located at 14905 Clayton Road. The acoustical data shows traffic noise only. This model does not include any environmental noise other than traffic noise.

The scenario illustrated in Version B would allow the reader to understand what acoustic impact the proposed building and barrier wall would have on the traffic noise realized at the nearest residential property line.

Version C = Figure 4

This model shows the proposed car wash to be located at 14905 Clayton Road. The acoustical data in this model shows only noise generated by the Aerodry Drying Systems and the Vacutech Vacuum Systems central vacuum when they are in operation. This model does not include traffic noise or any other environmental noise.

The results of the acoustical scenarios A, B and C are as follows:

1. Version A:

The predicted environmental background noise levels due to vehicle traffic only, varies between 56 dBA to 65 dBA. The noise levels predicted in the SoundPlan Acoustic Model match the actual sound pressure levels that were measured during the Environmental Noise Study conducted in July 2017. (Please see Figure 2, Table 3).

2. Version B:

Figure 3 predicts that the acoustical effect of adding the currently designed 8 foot high concrete barrier only reduces the noise level generated from road traffic by 0 to 2 dBA at the west property line of 14905 Clayton Road. It would not reduce the noise level generated by road traffic at the north property line of 14905 Clayton Road.

3. Version C:

Figure 4 predicts the acoustical impact of the operation of the proposed car wash that would be realized at the nearest residential property line. This acoustical prediction includes an 8 foot high concrete barrier wall and addresses only noise generated by the operation of the car wash and does not include any environmental noise or noise generated by road traffic.

Based on the SoundPlan Acoustic Model, the predicted sound pressure level at the nearest residential property line is 50 dBA. 50 dBA is 5 dBA below the St. Louis County Daytime Noise Ordinance of 55 dBA or less. This is also 13 to 15 dBA below the measured daytime sound pressure level. This sound pressure level is generated by vehicle traffic noise on Clayton and Baxter Roads. (See Table 3 Location A).

As the predicted noise levels that would be generated from the operation of the car wash is at least 10 dBA below the existing daytime sound pressure level, there would be no additional acoustical impact predicted at the nearest residential property line.

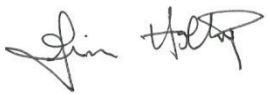
Conclusion

Based on the SoundPlan Acoustic Model, the predicted sound pressure levels that would be generated by the operation of the proposed car wash at 14905 Clayton Road would be 50 dBA at the nearest residential property line. It is clear that the noise at 14905 Clayton Road is controlled by traffic noise generated on Clayton Road and Baxter Road.

Because traffic noise is the loudest noise source at 14905 Clayton Road, any noise generated from the operation of the proposed car wash will not increase the levels of noise already being experienced at the nearest residential property line.

Based on the predictions of the SoundPlan Acoustic Model, the operation of the proposed Mobil Car Wash will be compliant with the St. Louis County Daytime Noise Ordinance of 55 dBA or less.

Sincerely yours,



Jim Holtrop, INCE ASA ASHRAE

AcoustiControl LLC

Appendix Figures and Tables

Table 1: Common Noise Levels

Sound Source	(dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concert (Rear Seats) On	110
Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60-70
Typical Suburban Area	50-60
Quiet Suburban Area at Night Typical	40-50
Rural Area at Night	30-40
Note: A change in 3 dB(A) is just noticeable change in SPL. A change in 10 dB(A) is perceived as a doubling or halving in SPL. Source: Cowan, James P. Handbook of Environmental, Acoustics. Van Nostrand Reinhold, New York, 1994. Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988.	

Table 2: Average Ability of a Person to Perceive Changes in Noise Levels

Change (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A dramatic change
40	Difference between a faintly audible sound and a very loud sound
Source: Bolt Beranek and Neuman, Inc., <i>Fundamentals and Abatement of Highway Traffic Noise</i> , Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973.	

Table 3: Environmental Noise Measured during Noise Study

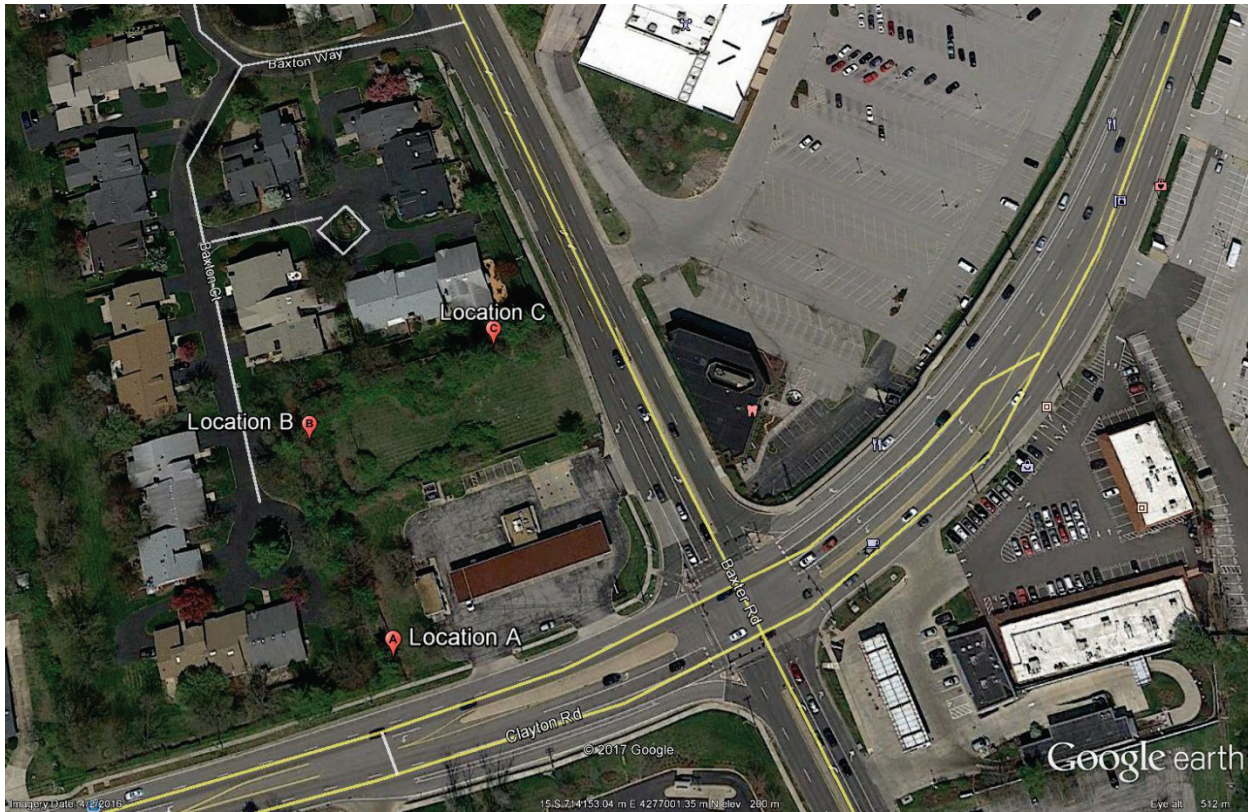
	July 26, 2017 LA _{eq} (dBA)*	July 27, 2017 LA _{eq} (dBA)*	July 28, 2017 LA _{eq} (dBA)*	July 29, 2017 LA _{eq} (dBA)*	Soundplan Predicted LA _{eq} (dBA)
Location A	64	63	65	63	65
Location B	57	56	57	58	57
Location C	60	59	61	61	61

*Average Daytime LA_{eq}

Table 4: Car Wash Sound Pressure Level Measurements

Description of Measurement	LAeq
Columbia Brite Worx 1 meter from Exit	96
Columbia Brite Worx 20 feet from Exit	90
Columbia Brite Worx 50 feet from Exit	82
Columbia Brite Worx 1 meter from Entrance	85
Columbia Brite Worx 20 feet from Entrance	77
Columbia Brite Worx 50 feet from Entrance	70
Brite Work Florissant 1 meter from Entrance	82
Brite Worx Florissant 20 feet from Entrance	78
Brite Worx Florissant 50 feet from Entrance	72
Brite Worx Florissant 1 meter from Exit	97
Brite Worx Florissant 20 feet from Exit	90
Brite Worx Florissant 50 feet from Exit	81
Aerodry Model A120 1 Meter	85
Aerodry Model A120 20 Feet	76
Aerodry Model A120 50 Feet	69
Vacutech Vacuum 1 Meter From Exit of Hose	70

Figure1: Locations of Noise Monitoring Equipment



SoundPlan Graphics

Figure 2:

Version A = Current Building and Carwash @ 14905 Clayton Road / **Traffic Noise Levels Only** (in dBA)
Thickest solid black lines represent approximate residential property lines.

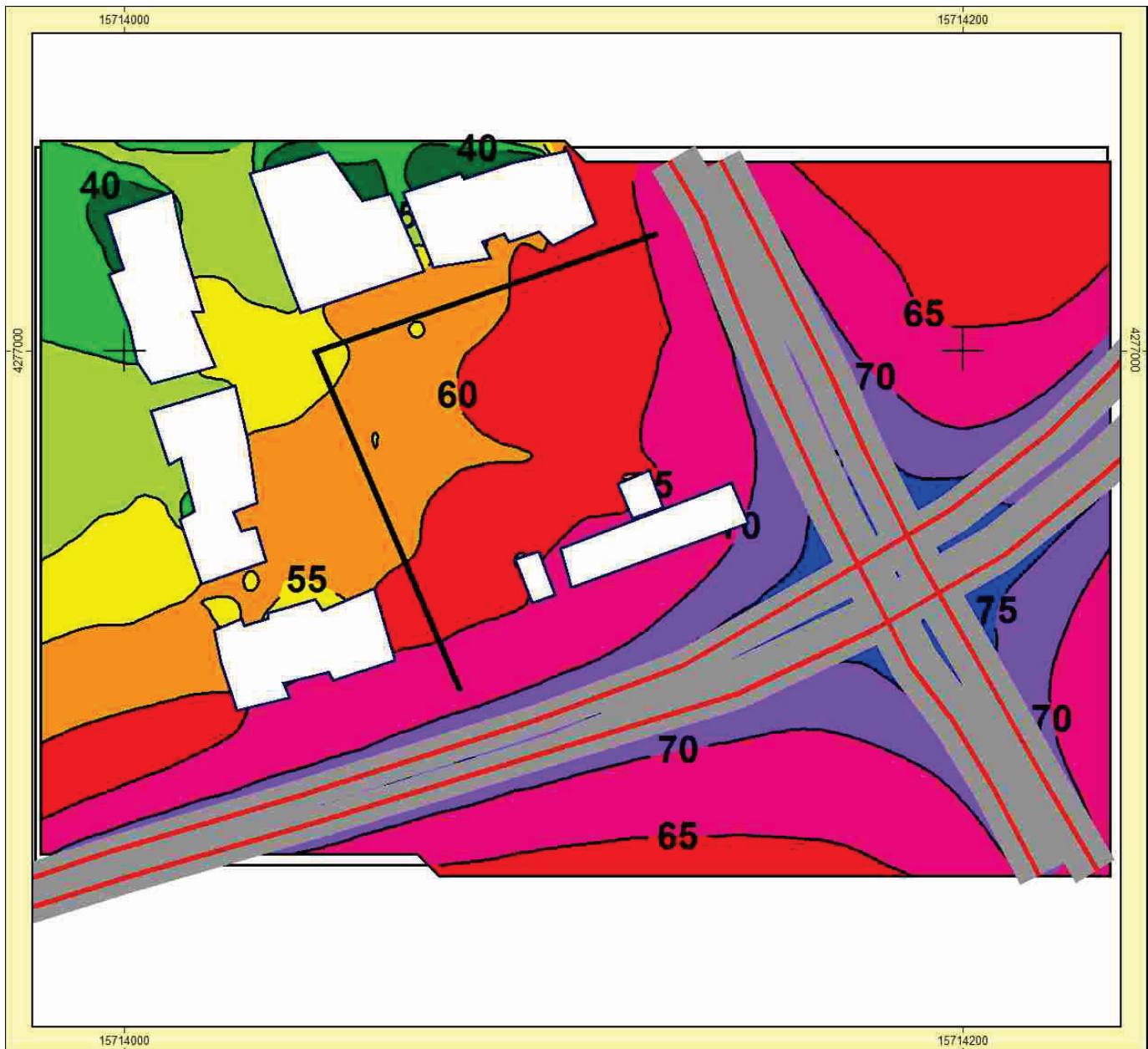


Figure 3:

Version B = Proposed Car Wash Building & Barrier Wall @14905 Clayton Rd / **Traffic Noise Levels Only**
(in dBA)

Thickest solid black lines represent approximate residential property lines.

Thick green line represents the barrier wall.

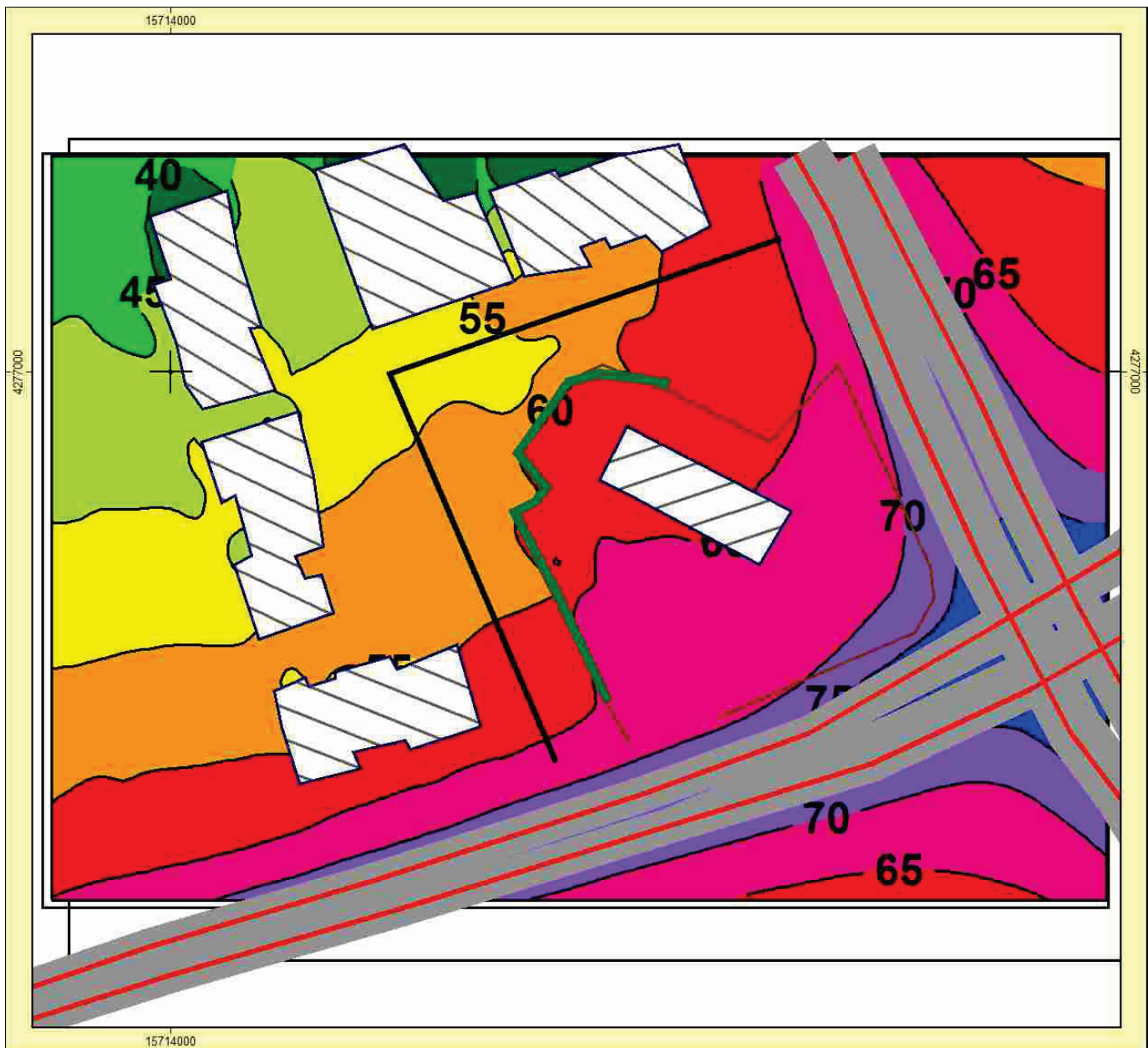
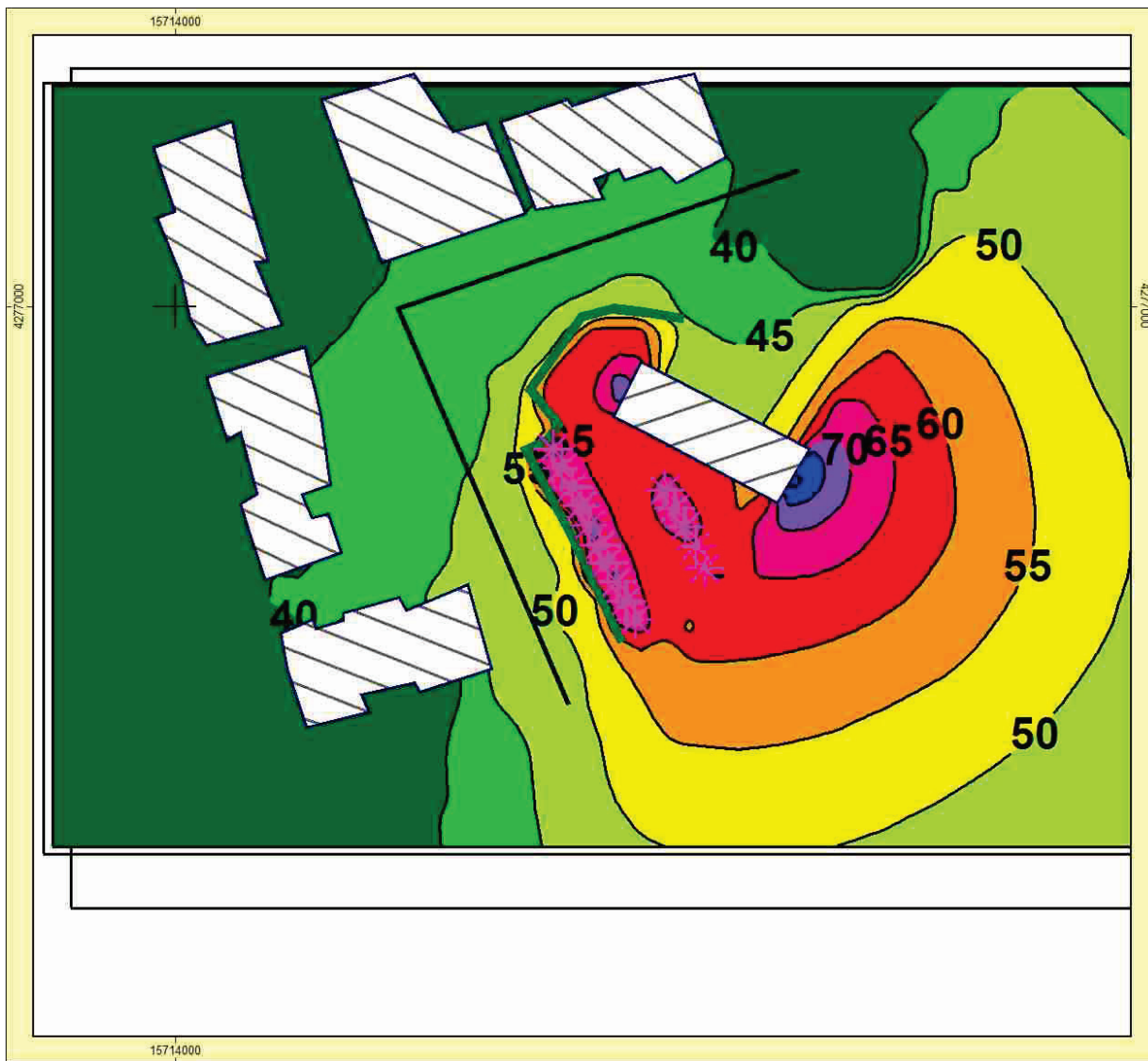


Figure 4:

Version C = Proposed Car Wash with Barrier Wall located @ 14905 Clayton Rd / Car Wash Noise Only (in dBA). This does not include traffic noise.

Thickest solid black lines represent approximate residential property lines.

Thick green line represents the barrier wall.





Safety Data Sheet (SDS)

Pro Finish
649 Chase Ave. Elk Grove Village, IL 60007
847-981-9400

SECTION 1: PRODUCT AND COMPANY INFORMATION

SUPPLIER / DISTRIBUTOR

Pro Finish
649 Chase Ave.
Elk Grove Village, IL 60007

Telephone: 847-981-9400

Emergency Telephone: 800-535-5053

PRODUCT IDENTIFIER

672 - Golden Kote

OTHER COMMON NAMES OR SYNONYMS

Section 2: Hazard(s) Identification

GHS CLASSIFICATION

HAZARD CLASSIFICATION

Acute Toxicity – Category 4

Skin Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 1

Specific Target Organ Toxicity – Single Exposure – Category 3

GHS LABEL ELEMENTS



Signal Word: Danger

HAZARD STATEMENT

Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause drowsiness or dizziness.

PRECAUTIONARY STATEMENTS (PREVENTION)

Wash skin thoroughly after handling wear protective gloves/protective clothing/eye protection/face protection.

PRECAUTIONARY STATEMENTS (RESPONSE)

IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Absorb spillage to prevent material damage.

PRECAUTIONARY STATEMENTS (STORAGE):

Store in a well-ventilated place. Keep container tightly closed.

PRECAUTIONARY STATEMENTS (DISPOSAL):

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

OTHER HAZARDS

Keep out of the reach of children. For industrial and professional use only.

Section 3: Composition/Information on Ingredients

The identity of individual components of this mixture is proprietary information and is regarded to be a trade secret and is withheld in accordance with paragraph (i) of §1910.1200.

Ingredient	% by Wt.
Water	50-85%
Petroleum Distillates	1-30%
Quaternary ammonium compounds	1-20%
Ethylene Glycol Ethers	1-10%
Dye	<1%

Section 4: First-Aid Measures

EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Get medical attention immediately. If physician is not immediately available, continue flushing with water. Do not use chemical antidote.

INHALATION: Remove individual from site of exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

SKIN CONTACT: Immediately wash exposed area with soap and water for at least 15 minutes, then flush with water for at least five minutes. If reddening persists, or if open sores or blisters develop, see physician. Remove contaminated clothing and launder before reuse.

INGESTION: Immediately drink two large glasses of water. Call a physician.

Most important symptoms/effects, acute and delayed: None known. See section 11.

SPECIFIC TREATMENTS: No data available.

PROTECTION OF FIRST-AIDERS: No special precautions are necessary for first aid responders.

Section 5: Fire-Fighting Measures

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: None inherent in this product.

SUITABLE EXTINGUISHING MEDIA: Dry chemical, water fog, alcohol foam

UNSUITABLE EXTINGUISHING MEDIA: No data available.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, organic amines, hydrogen chloride, methyl chloride, and various unknown organic compounds.

SPECIAL FIRE FIGHTING PROCEDURES: As any fire, where self-contained breathing apparatus pressure demand, and full protective gear. Water or foam may cause frothing which can be violent, especially if sprayed into containers of hot burning liquid.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: No data available

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Use personal protective equipment. Ensure adequate ventilation.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Take up with absorbent material (e.g. sand, kieselguhr, universal binder). Dispose of absorbent material in accordance with the regulations.

ENVIRONMENTAL PRECAUTIONS:

Do not allow to enter drains or waterways. Do not discharge into the subsoil/soil.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING

Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in a well-ventilated place. Keep container tightly closed.

Section 8: Exposure Controls/Personal Protection

CONTROL PARAMETERS

Ingredients	CAS	Value type (Form of exposure)	Control parameters Permissible concentration	Basis
Propan-2-ol	67-63-0	TWA	200 ppm	ACGIH
Propan-2-ol	67-63-0	STEL	400 ppm	ACGIH
Propan-2-ol	67-63-0	TWA	400 ppm 980 mg/m ³	NIOSH REL
Propan-2-ol	67-63-0	ST	500 ppm 1,225 mg/m ³	NIOSH REL
Propan-2-ol	67-63-0	TWA	400 ppm 980 mg/m ³	OSHA Z-1
Petroleum Distillates	64742-88-7	TWA (as total hydrocarbon vapor, non-aerosol)	200 mg/m ³	ACGIH
Petroleum Distillates	64742-47-8	TWA	100 ppm	CMRG
White Mineral Oil	8042-47-5	TWA	5 mg/m ³	CMRG
Mineral Oils, Highly-Refined Oils	8042-47-5	TWA (inhalable fraction)	5 mg/m ³	ACGIH

ENGINEERING MEASURES

Provide sufficient ventilation to maintain exposure below established limits and avoid overexposure.

INDIVIDUAL PROTECTION MEASURES

EYE/FACE PROTECTION

Chemical splashproof goggles.

SKIN/HAND PROTECTION

Gloves made from the following material(s) are recommended: Neoprene or Buna-N

RESPIRATORY PROTECTION

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as

part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure: NIOSH/MSHA approved respirator with organic vapor canister or self-contained breathing apparatus.

HYGIENE MEASURES

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact.

Section 9: Physical and Chemical Properties

PHYSICAL STATE Viscous Liquid	FLASH POINT No data available.	VAPOR DENSITY No data available.
FORM Liquid	EVAPORATION RATE No data available.	RELATIVE DENSITY No data available
COLOR Clear to Amber	FLAMMABILITY (SOLID, GAS) No data available.	SOLUBILITY IN WATER No data available
ODOR Solvent	FLAMMABILITY LIMIT - UPPER (%) No data available.	SOLUBILITY (OTHER) No data available.
ODOR THRESHOLD No data available.	FLAMMABILITY LIMIT - LOWER (%) No data available.	PARTITION COEFFICIENT (N- OCTANOL/WATER) No data available.
PH No data available.	EXPLOSIVE LIMIT - UPPER (%) No data available.	AUTO-IGNITION TEMPERATURE No data available.
FREEZING POINT No data available	EXPLOSIVE LIMIT - LOWER (%) No data available.	DECOMPOSITION TEMPERATURE No data available.
BOILING POINT No data available.	VAPOR PRESSURE No data available.	VISCOSITY No data available.

Section 10: Stability and Reactivity

REACTIVITY

Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).

CHEMICAL STABILITY

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reaction known under conditions of normal use.

CONDITIONS TO AVOID

Heat, flames and contact with strong oxidizing agents.

INCOMPATIBLE MATERIALS

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

No data available.

Section 11: Toxicological Information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:

Based on test data and/or information on the components, this material may produce the following health effects:

INHALATION: No data available.

SKIN CONTACT: No data available.

EYE CONTACT: No data available.

INGESTION: No data available.

Target Organ Effects:

SINGLE EXPOSURE MAY CAUSE: No data available.

TOXICOLOGICAL DATA

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Rabbit	LD50 > 3,160 mg/kg
Petroleum Distillates	Inhalation, Dust/Mist 4 hrs.	Rat	LC50 > 3.0 mg/l
Petroleum Distillates	Ingestion	Rat	LD50 > 5,000 mg/kg
White Mineral Oil	Dermal	Rabbit	LD50 > 2,000 mg/kg
White Mineral Oil	Ingestion	Rat	LD50 > 5,000 mg/kg
Propan-2-ol	Inhalation, Vapor 4hr	Rat	LC50 (Rat): 72.6 mg/l
Propan-2-ol	Oral	Rat	LD50 > 5,000 mg/kg
Propan-2-ol	Dermal	Rat	LD50 (Rat): > 5,000 mg/kg

Skin Corrosion / Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant
White Mineral Oil	Rabbit	Mild Irritant

Skin Sensitization

Name	Species	Value
Petroleum Distillates	Rabbit	Not sensitizing

White Mineral Oil	Rabbit	Not sensitizing
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Respiratory Sensitization

No data available.

Germ Cell Mutagenicity

Name	Route	Value
Petroleum Distillates	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed source of reproductive toxicity.

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Petroleum Distillates	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 4.6 mg/l	6 months
Petroleum Distillates	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 1.9 mg/l	13 weeks
Petroleum Distillates	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Multiple	NOAEL 0.6 mg/l	90 days
Petroleum Distillates	Inhalation	bone, teeth, nails, and/or hair blood liver muscles	All data are negative	Rat	NOAEL 5.6 mg/l	12 weeks
Petroleum Distillates	Inhalation	heart	All data are negative	Multiple	NOAEL 1.3 mg/l	90 days

Aspiration Hazard

Name	Value
Petroleum Distillates	Aspiration hazard

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information

PREPARATION / REVISION DATE

05/27/2015

OTHER INFORMATION

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.



Safety Data Sheet (SDS)

Pro Finish
649 Chase Ave. Elk Grove Village, IL 60007
847-981-9400

SECTION 1: PRODUCT AND COMPANY INFORMATION

SUPPLIER / DISTRIBUTOR

Pro Finish
649 Chase Ave.
Elk Grove Village, IL 60007

Telephone: 847-981-9400

Emergency Telephone: 800-535-5053

PRODUCT IDENTIFIER

699 – GR8 Shine

OTHER COMMON NAMES OR SYNONYMS

Section 2: Hazard(s) Identification

GHS CLASSIFICATION

Serious Eye Damage/Irritation: Category 2B.

GHS LABEL ELEMENTS

Signal Word: **Warning**

HAZARD STATEMENT(S)

Causes eye irritation.

PRECAUTIONARY STATEMENTS

PREVENTION

Wash thoroughly after handling.

RESPONSE

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

OTHER HAZARDS

Keep out of reach of children. For commercial and industrial use only.

Section 3: Composition/Information on Ingredients

The identity of individual components of this mixture is proprietary information and is regarded to be a trade secret and is withheld in accordance with paragraph (i) of §1910.1200.

Ingredient	% by Wt.
Water	50-75%
Silicates	1-30%
Thickening Agent	1-10%
Fragrance	<1%

Section 4: First-Aid Measures

In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.

EYE CONTACT: Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

INHALATION: Remove person to fresh air. If you feel unwell, get medical attention.

SKIN CONTACT: Wash with soap and water. If signs/symptoms develop, get medical attention.

INGESTION: Rinse mouth. If you feel unwell, get medical attention.

Most important symptoms/effects, acute and delayed:

POTENTIAL ACUTE HEALTH EFFECTS

See Section 11.1. Information on toxicological effects.

OVER-EXPOSURE SIGNS/SYMPTOMS

No information available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

No information available.

Section 5: Fire-Fighting Measures

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: No data available.

SUITABLE EXTINGUISHING MEDIA: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

UNSUITABLE EXTINGUISHING MEDIA: No data available.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS: Carbon oxides, Formaldehyde

SPECIAL FIRE FIGHTING PROCEDURES: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: No special protective actions for fire-fighters are anticipated.

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with water. Seal the container. Dispose of collected material as soon as possible.

ENVIRONMENTAL PRECAUTIONS:

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING

Avoid eye contact. Keep out of reach of children. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

No special storage requirements..

Section 8: Exposure Controls/Personal Protection

CONTROL PARAMETERS

Ingredients	Exposure Limits
Petroleum Distillates	ACGIH TLV (United States, 3/2012). Absorbed through skin. TWA: 200 mg/m ³ , (as total hydrocarbon vapor) 8 hours.

ENGINEERING CONTROLS

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

INDIVIDUAL PROTECTION MEASURES

EYE/FACE PROTECTION

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended: Indirect Vented Goggles

SKIN / BODY PROTECTION

Appropriate protective clothing should be worn to prevent skin contact.

HAND PROTECTION

Chemical-resistant protective gloves (rubber or neoprene).

RESPIRATORY PROTECTION

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn.

HYGIENE MEASURES

Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

Section 9: Physical and Chemical Properties

PHYSICAL STATE	FREEZING POINT	FLAMMABILITY LIMIT - LOWER (%)
Liquid	No data available.	No data available.
FORM	BOILING POINT	EXPLOSIVE LIMIT - UPPER (%)
Thick Liquid	No data available.	No data available.
COLOR	FLASH POINT	EXPLOSIVE LIMIT - LOWER (%)
Clear to Amber	No data available.	No data available.
ODOR	EVAPORATION RATE	VAPOR PRESSURE
"Leather"	No data available.	No data available.
ODOR THRESHOLD	FLAMMABILITY (SOLID, GAS)	VAPOR DENSITY
No data available.	No data available.	No data available.
PH	FLAMMABILITY LIMIT - UPPER (%)	RELATIVE DENSITY
No data available.	No data available.	No data available.

SOLUBILITY IN WATER

Insoluble in water

PARTITION COEFFICIENT

No data available.

DECOMPOSITION TEMPERATURE

No data available.

SOLUBILITY (OTHER)

No data available.

AUTO-IGNITION TEMPERATURE

No data available.

VISCOSITY

No data available.

Section 10: Stability and Reactivity**REACTIVITY**

Not classified as a reactivity hazard.

CHEMICAL STABILITY

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS

Under normal conditions of storage and use, hazardous reactions will not occur.

CONDITIONS TO AVOID

None known.

INCOMPATIBLE MATERIALS

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

None known..

Section 11: Toxicological Information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:

INHALATION: Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

SKIN CONTACT: Contact with the skin during product use is not expected to result in significant irritation.

EYE CONTACT: Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

INGESTION: Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

TOXICOLOGICAL DATA

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Rabbit	LD50 > 3,160 mg/kg
Petroleum Distillates	Inhalation, Dust/Mist 4 hrs.	Rat	LC50 > 3.0 mg/l

Petroleum Distillates	Ingestion	Rat	LD50 > 5,000 mg/kg
Poly(Dimethylsiloxane)	Dermal	Rabbit	LD50 > 19,400 mg/kg
Poly(Dimethylsiloxane)	Ingestion	Rat	LD50 > 17,000 mg/kg

Skin Corrosion / Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant

Skin Sensitization

Name	Species	Value
Petroleum Distillates	Guinea Pig	Not sensitizing

Respiratory Sensitization

No data available.

Germ Cell Mutagenicity

Name	Route	Value
Petroleum Distillates	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Petroleum Distillates	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

No data available.

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information

PREPARATION / REVISION DATE

05/28/2015

OTHER INFORMATION

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.



Safety Data Sheet (SDS)

Pro Finish
649 Chase Ave. Elk Grove Village, IL 60007
847-981-9400

SECTION 1: PRODUCT AND COMPANY INFORMATION

SUPPLIER / DISTRIBUTOR

Pro Finish
649 Chase Ave.
Elk Grove Village, IL 60007

Telephone: 847-981-9400

Emergency Telephone: 800-535-5053

PRODUCT IDENTIFIER

637 – Mega Foam

OTHER COMMON NAMES OR SYNONYMS

Section 2: Hazard(s) Identification

GHS CLASSIFICATION

HEALTH HAZARDS

Serious Eye Damage/Eye Irritation - Category 2A

UNKNOWN TOXICITY

Acute toxicity, oral - 0.0 %

Acute toxicity, dermal - 0.0 %

Acute toxicity, inhalation, vapor - 6.6 %

Acute toxicity, inhalation, dust or mist - 6.6

GHS LABEL ELEMENTS



Signal word: **DANGER!**

HAZARD STATEMENT(S)

Causes serious eye irritation.

PRECAUTIONARY STATEMENTS

PREVENTION

Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

RESPONSE

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If exposed or concerned: Get medical advice/attention.

STORAGE

Store locked up

DISPOSAL

Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

OTHER HAZARDS

None identified.

Section 3: Composition/Information on Ingredients

The identity of individual components of this mixture is proprietary information and is regarded to be a trade secret and is withheld in accordance with paragraph (i) of §1910.1200.

Ingredient	% by Wt.
Water	2-10%
Surfactant Blend	90-95%
Conditioners	1-10%
Dye	<1%
Fragrance	<1%

Section 4: First-Aid Measures

GENERAL: If exposed or concerned: Get medical advice/attention.

INGESTION: Rinse mouth. Get medical attention if symptoms occur.

INHALATION: Remove exposed person to fresh air if adverse effects are observed.

SKIN CONTACT: Take off contaminated clothing and wash before re-use. Wash with soap and water. If skin irritation occurs, get medical attention.

EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed:**SYMPTOMS**

Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed

TREATMENT

Treat symptomatically.

Section 5: Fire-Fighting Measures

GENERAL FIRE HAZARDS: No unusual fire or explosion hazards noted.

SUITABLE EXTINGUISHING MEDIA: Use extinguishing agents appropriate for surrounding fire.

UNSUITABLE EXTINGUISHING MEDIA: Not determined.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: See section 10 for additional information. Material will not burn until water has been evaporated. Container may rupture on heating. Water or foam may cause frothing. Avoid solid streams of water. Use water spray.

SPECIAL FIRE FIGHTING PROCEDURES: No data available.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: Recommend wearing self-contained breathing apparatus.

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Ventilate area if spilled in confined space or other poorly ventilated areas. Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material. Wash area with soap and water. Spilled liquid and dried film are slippery. Use care to avoid falls. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.

ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Avoid contact with eyes. Observe good industrial hygiene practices. Provide adequate ventilation. Use personal protective equipment as required. Wash hands thoroughly after handling. Launder contaminated clothing before reuse. Avoid environmental contamination.

Avoid contact with eyes and prolonged or repeated contact with skin. Avoid breathing mists or vapors. When using do not eat, drink or smoke. Stir well before use. Keep containers closed when not in use. Minimize contact with air to reduce contamination with mold, fungus, or other organisms which could cause decomposition or spoilage. Wash thoroughly after handling.

MAXIMUM HANDLING TEMPERATURE

Not determined.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store away from incompatible materials. See section 10 for incompatible materials. Keep from freezing. Do not store in open, unlabeled or mislabeled containers.

MAXIMUM STORAGE TEMPERATURE

Not determined.

Section 8: Exposure Controls/Personal Protection

CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS

None of the components have assigned exposure limits.

APPROPRIATE ENGINEERING CONTROLS

Use material in well ventilated area only. Adequate ventilation should be provided so that exposure limits are not exceeded. Mechanical ventilation or local exhaust ventilation may be required.

INDIVIDUAL PROTECTION MEASURES

GENERAL INFORMATION

Provide easy access to water supply and eye wash facilities. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

EYE/FACE PROTECTION

If contact is likely, safety glasses with side shields are recommended.

SKIN PROTECTION / HAND PROTECTION

Suitable gloves can be recommended by the glove supplier. Use good industrial hygiene practices to avoid skin contact. If contact with the material may occur wear chemically protective gloves.

OTHER

Gloves, coveralls, apron, boots as necessary to minimize contact. Do not wear rings, watches or similar apparel that could entrap the material.

RESPIRATORY PROTECTION

A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Under normal use conditions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist or vapors is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.

HYGIENE MEASURES

Observe good industrial hygiene practices. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product.

Section 9: Physical and Chemical Properties

PHYSICAL STATE	FLASH POINT	VAPOR DENSITY
Liquid	Material will not burn.	No data available.
FORM	EVAPORATION RATE	RELATIVE DENSITY
Liquid	No data available.	1 - 1.01 68 °F (20 °C)
COLOR	FLAMMABILITY (SOLID, GAS)	SOLUBILITY IN WATER
Blue, Red or Yellow	No data available.	Insoluble in water
ODOR	FLAMMABILITY LIMIT - UPPER (%)	SOLUBILITY (OTHER)
Cherry	No data available.	No data available.
ODOR THRESHOLD	FLAMMABILITY LIMIT - LOWER (%)	PARTITION COEFFICIENT (N- OCTANOL/WATER)
No data available.	No data available.	No data available.
PH	EXPLOSIVE LIMIT - UPPER (%)	AUTO-IGNITION TEMPERATURE
No data available.	No data available.	No data available.
FREEZING POINT	EXPLOSIVE LIMIT - LOWER (%)	DECOMPOSITION TEMPERATURE
No data available.	No data available.	No data available.
BOILING POINT	VAPOR PRESSURE	VISCOSITY
Approximate 212 °F (100 °C)	No data available.	No data available.

Section 10: Stability and Reactivity

REACTIVITY

No data available.

CHEMICAL STABILITY

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS

Will not occur.

CONDITIONS TO AVOID

Do not freeze.

INCOMPATIBLE MATERIALS

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. Irritating and toxic substances may be emitted upon combustion, burning, or decomposition of dry solids.

Section 11: Toxicological Information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

ROUTES OF EXPOSURE

INHALATION: No data available.

INGESTION: No data available.

SKIN CONTACT: Causes mild skin irritation.

EYE CONTACT: Causes serious eye irritation.

TOXICOLOGICAL EFFECTS

ACUTE TOXICITY

ORAL: ATEmix > 10.000 mg/kg.

DERMAL: Not classified for acute toxicity based on available data.

INHALATION: Not classified for acute toxicity based on available data.

SKIN CORROSION/IRRITATION: Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin. Remarks: Causes mild skin irritation.

SERIOUS EYE DAMAGE/EYE IRRITATION: Causes serious eye irritation.

RESPIRATORY SENSITIZATION

Formaldehyde - (Literature) May cause skin sensitization in sensitive individuals.

SKIN SENSITIZATION:

Coconut diethanolamide - Not a skin sensitizer.

Formaldehyde - May cause sensitization by skin contact. (Literature)

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE:

Alkanolamide - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Ammonium laureth sulfate - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Sodium lauryl ether sulfate - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Coconut diethanolamide - May cause irritation to the mucous membranes and upper respiratory tract.

Formaldehyde - May cause respiratory irritation.

ASPIRATION HAZARD: No data available

CHRONIC EFFECTS

This product contains 0.09% or less of Formaldehyde, which is below the cut off for categorization as a carcinogen.

CARCINOGENICITY:

Butyl cellosolve - A National Toxicology Program (NTP) chronic inhalation study revealed some evidence of carcinogenic activity in male and female mice, equivocal evidence in female rats. and no evidence in male rats.

IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMANS:

Formaldehyde - Overall evaluation: 1. Carcinogenic to humans.

US. NATIONAL TOXICOLOGY PROGRAM (NTP) REPORT ON CARCINOGENS:

Formaldehyde - Known To Be Human Carcinogen.

US. OSHA SPECIFICALLY REGULATED SUBSTANCES (29 CFR 1910.1001-1050):

Formaldehyde - Cancer

GERM CELL MUTAGENICITY:

Alkanolamide - The Ames Salmonella test for mutagenicity was negative for this product.

REPRODUCTIVE TOXICITY: No data available

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE:

Formaldehyde - Unknown: Target Organ(s): Central nervous system.

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information

PREPARATION / REVISION DATE

05/14/2015

OTHER INFORMATION

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.

Safety Data Sheet

according to OSHA Hazard Communication
29 CFR Part 1910.1200



SECTION 1. Identification

Product Code 49339

Product Name: Pro Magic, Professional Finish
Pro Magic

Supplied by: Professional Finish Inc.
649 Chase Ave.
Elk Grove, IL 60007
847-981-9400

24 Hour Emergency:
INFOTRAC: 1-800-535-5053

Outside U.S. and Canada
Infotrac: 352-323-3500

NOTE: INFOTRAC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

SECTION 2. Hazard(s) Identification

*** EMERGENCY OVERVIEW ***: Causes serious eye irritation.

GHS Classification
Eye Irrit. 2

Symbol(s) of Product



Signal Word
Warning

GHS HAZARD STATEMENTS

Eye Irritation, category 2 H319 Causes serious eye irritation.

GHS PRECAUTIONARY STATEMENTS

P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: Get medical advice/attention.

SECTION 3. Composition/Information on Ingredients

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
2-butoxyethanol	111-76-2	2.5-10	GHS07	H227-302-315-319-336
Alkylphenol ethoxylate	127087-87-0	2.5-10	GHS07	H319
Sodium metasilicate anhydrous	6834-92-0	1.0-2.5	GHS05-GHS07	H302-314-335

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

SECTION 4. First-Aid Measures



FIRST AID - EYE CONTACT: Remove contact lenses if worn. Immediately flush eyes with water. Flush eyes with water for a minimum of 15 minutes, occasionally lifting and lowering upper lids. Get medical attention promptly.

FIRST AID - SKIN CONTACT: Immediately flush skin with plenty of water. Remove clothing. Get medical attention immediately. Wash clothing separately and clean shoes before reuse.

FIRST AID - INHALATION: Rescuers should put on appropriate protective gear. Remove from area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep victim warm. Get immediate medical attention. To prevent aspiration, keep head below knees.

FIRST AID - INGESTION: Do not induce vomiting. Do not give liquids. Obtain emergency medical attention. Small amounts which accidentally enter mouth should be rinsed out until taste of it is gone.

SECTION 5. Fire-Fighting Measures

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors can travel to a source of ignition and flash back. Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. Also, do not reuse container without commercial cleaning or reconditioning.

SPECIAL FIREFIGHTING PROCEDURES: As in any fire, wear self-contained breathing apparatus pressure-demand (MSHA/NIOSH approved or equivalent) and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Water spray to cool containers or protect personnel. Use with caution. Small fires: Dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Large fires: Water spray, water fog, and alcohol-resistant foam.

EXTINGUISHING MEDIA: Carbon Dioxide, Dry Chemical, Foam, Water Fog

SECTION 6. Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Use only non-combustible material for clean-up. Use clean, non-sparking tools to collect absorbed materials. Eliminate all ignition sources. Prevent additional discharge of material if able to do so safely. Flush spill area with water spray after clean up. Do not touch or walk through spilled material. Take up spill with clean, dry shovel and place in chemical waste container. Stay upwind of spill. Ventilate spill area. Collect spilled materials for disposal. Flush spill area with water spray. Neutralize spill with any dilute inorganic acid. Wear appropriate personal protective equipment. (See Exposure Controls / Personal Protection Section.)

SECTION 7. Handling and Storage



HANDLING: Use only in a well ventilated area. Follow all MSDS/label precautions even after containers are emptied because they may retain product residues. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor, fumes or mist. Potential peroxide former. If peroxide formation is suspected, do not open or move container. After opening, purge container with nitrogen before reclosing. Addition of water or appropriate reducing materials will lessen peroxide formation. Material can generate explosive hydrogen gas when comes in contact with metals. Take precautionary measures against static discharge.

STORAGE: Containers can build up pressure if exposed to heat (fire). Keep away from heat, sparks, and flame. Keep container closed when not in use. Protect from direct sunlight. Store containers in a cool, well ventilated place. Do not allow to evaporate to near dryness.

SECTION 8. Exposure Controls/Personal Protection

Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA PEL-CEILING</u>
2-butoxyethanol	20 ppm	N.D.	50 ppm	N.D.
Alkylphenol ethoxylate	N.D.	N.D.	N.D.	N.D.
Sodium metasilicate anhydrous	N.D.	N.D.	N.D.	2 mg/m3

Personal Protection

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator. NIOSH/MSHA approved respirators may be necessary if airborne concentrations are expected to exceed exposure limits.



SKIN PROTECTION: Wear impervious gloves to prevent contact with the skin. Wear protective gear as needed - apron, suit, boots.



EYE PROTECTION: Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent).



OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.



HYGIENIC PRACTICES: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Avoid breathing vapors. Do not eat, drink, or smoke in areas where this material is used.

SECTION 9. Physical and Chemical Properties

Appearance:	Clear, blue liquid	Physical State:	Liquid
Odor:	Citrus	Odor Threshold:	N.D.
Density, g/cm3:	1.022	pH:	N.D.
Freeze Point, °F:	N.D.	Viscosity:	N.D.
Solubility in Water:	Soluble	Explosive Limits, vol%:	N.D.
Boiling Range, °F:	201 - 473	Flash Point, °F:	>200
Evaporation Rate:	Not determined	Auto-ignition Temp., °F:	N.D.
Vapor Density:	N.D.	Vapor Pressure:	N.D.

(See "Other information" Section for abbreviation legend)

SECTION 10. Stability and Reactivity

STABILITY: No Information

CONDITIONS TO AVOID: Avoid impact, friction, heat, sparks, flame and source of ignition. Minimize exposure to air.

INCOMPATIBILITY: Keep away from acids. Prevent contact with strong oxidizing agents. Avoid contact with amines. Avoid contact with metals. Avoid contact with ammonia. Avoid contact with moisture and/or water. Avoid contact with bases. None Known

HAZARDOUS DECOMPOSITION PRODUCTS: During combustion carbon monoxide may be formed. During combustion carbon dioxide may be formed. May form peroxides of unknown stability.

HAZARDOUS POLYMERIZATION: No Information

SECTION 11. Toxicological Information



Information on Toxicological Effects

EFFECTS OF OVEREXPOSURE - INHALATION: Vapors can cause irritation of the respiratory tract. High concentrations can cause headache, nausea, weakness, lightheadedness, and stupor (CNS depression). May cause central nervous system depression.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

EFFECTS OF OVEREXPOSURE - EYE CONTACT: May cause tearing, redness and discomfort. Causes serious irritation to eyes.

EFFECTS OF OVEREXPOSURE - INGESTION: Ingestion may cause weakness, confusion, anxiety, decreased blood pressure and

CNS depression with collapse and coma.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: No Information

Carcinogenic Statement: No Information

Primary Route(s) of Entry: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name</u>	<u>Oral LD50, mg/kg</u>	<u>Dermal LD50, mg/kg</u>	<u>Vapor LC50, mg/L</u>
111-76-2	2-butoxyethanol	1300	>2,000	>20
127087-87-0	Alkylphenol ethoxylate	3314	>3000	>20
6834-92-0	Sodium metasilicate anhydrous	1280.0	>2000	>20

SECTION 12. Ecological Information

ECOLOGICAL INFORMATION: No Information

SECTION 13. Disposal Considerations



For more guidance and information contact our Waste Services Division at (262) 658-4000.

Always dispose of any waste in accordance with all local, state, and federal regulations.

DISPOSAL METHOD: Dispose of waste in accordance with all local, state and federal regulations.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASE OR SPILLED: Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Avoid runoff into storm sewers and ditches which lead to waterways. Use only non-combustible material for clean-up. Use clean, non-sparking tools to collect absorbed materials. Eliminate all ignition sources. Prevent additional discharge of material if able to do so safely. Flush spill area with water spray after clean up. Do not touch or walk through spilled material. Take up spill with clean, dry shovel and place in chemical waste container. Stay upwind of spill. Ventilate spill area. Collect spilled materials for disposal. Flush spill area with water spray. Neutralize spill with any dilute inorganic acid. Wear appropriate personal protective equipment. (See Exposure Controls / Personal Protection Section.)

SECTION 14. Transport Information

DOT Proper Shipping Name: Not Regulated **Packing Group:** No Information

DOT Hazard Class: No Information **Hazard SubClass:** No Information

DOT UN/NA Number: No Information **Resp. Guide Page:** No Information

SECTION 15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Acute Health Hazard, Chronic Health Hazard

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
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2-butoxyethanol	111-76-2
1,2-ethanediol	107-21-1
glycol ethers	111-76-2
1-butanol	71-36-3
dioxane	123-91-1

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

U.S. State Regulations:**NEW JERSEY RIGHT-TO-KNOW:**

The following materials are non-hazardous, but are among the top five components in this product.

<u>Chemical Name</u>	<u>CAS-No.</u>
Water	7732-18-5

PENNSYLVANIA RIGHT-TO-KNOW

The following non-hazardous ingredients are present in the product at greater than 3%.

<u>Chemical Name</u>	<u>CAS-No.</u>
Water	7732-18-5

CALIFORNIA PROPOSITION 65 CARCINOGENS

Warning: The following ingredients present in the product are known to the state of California to cause Cancer.

<u>Chemical Name</u>	<u>CAS-No.</u>
dioxane	123-91-1
ethylene oxide	75-21-8

CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

<u>Chemical Name</u>	<u>CAS-No.</u>
ethylene oxide	75-21-8

International Regulations: As follows -**CANADIAN WHMIS:**

This SDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

WHMIS Class: No Information

SECTION 16. Other Information

Revision Date: 12/28/2016 **Supersedes Date:** 5/6/2015

Datasheet produced by: EH&S - Regulatory Department

HMIS Ratings:

Health:	2	Flammability:	1	Reactivity:	0	Personal Protection:	X
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Volatile Organic Compounds, gr/ltr: 60

DISCLAIMER: THE VOLATILE ORGANIC COMPOUND (VOC) CONTENT REPORTED HEREIN, IF ANY, IS BASED ON A MATERIAL VOC CALCULATION. NOTE THAT SEVERAL METHODS ARE USED FOR CALCULATING VOC CONTENT AND THAT STANDARDS/ REQUIREMENTS REGARDING VOC CONTENT VARY BY LOCATION/JURISDICTION. ACCORDINGLY, EMCO MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, REGARDING THIS MATERIAL'S COMPLIANCE WITH VOC STANDARDS/ REQUIREMENTS APPLICABLE IN LOCATIONS/JURISDICTIONS WHERE THIS MATERIAL MAY BE SOLD OR USED.

Text for GHS Hazard Statements shown in Section 3 describing each ingredient:

H227	Combustible liquid
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Icons for GHS Pictograms shown in Section 3 describing each ingredient:

GHS05



GHS07



Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information on this SDS was obtained from sources which we believe to be reliable. However, the information provided is without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information and recommendations are offered for the user's consideration and examination and should be used to make an independent determination of the methods to safeguard workers and the environment. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For these reasons we do not assume responsibility and expressly disclaim any liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS may not be applicable. It is the responsibility of the user to comply with all Federal, State, and Local laws and regulations.



Safety Data Sheet (SDS)

Pro Finish
649 Chase Ave. Elk Grove Village, IL 60007
847-981-9400

SECTION 1: PRODUCT AND COMPANY INFORMATION

SUPPLIER / DISTRIBUTOR

Pro Finish
649 Chase Ave.
Elk Grove Village, IL 60007

Telephone: 847-981-9400

Emergency Telephone: 800-535-5053

PRODUCT IDENTIFIER

680 – Super Glo

OTHER COMMON NAMES OR SYNONYMS

Section 2: Hazard(s) Identification

GHS CLASSIFICATION

HAZARD CLASSIFICATION

Acute Toxicity – Category 4

Skin Irritation – Category 2

Serious Eye Damage/Eye Irritation – Category 1

Specific Target Organ Toxicity – Single Exposure – Category 3

GHS LABEL ELEMENTS



Signal Word: Danger

HAZARD STATEMENT

Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause drowsiness or dizziness.

PRECAUTIONARY STATEMENTS (PREVENTION)

Wash skin thoroughly after handling wear protective gloves/protective clothing/eye protection/face protection.

PRECAUTIONARY STATEMENTS (RESPONSE)

IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Absorb spillage to prevent material damage.

PRECAUTIONARY STATEMENTS (STORAGE):

Store in a well-ventilated place. Keep container tightly closed.

PRECAUTIONARY STATEMENTS (DISPOSAL):

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

OTHER HAZARDS

Keep out of the reach of children. For industrial and professional use only.

Section 3: Composition/Information on Ingredients

The identity of individual components of this mixture is proprietary information and is regarded to be a trade secret and is withheld in accordance with paragraph (i) of §1910.1200.

Ingredient	% by Wt.
Water	50-85%
Petroleum Distillates	1-30%
Quaternary ammonium compounds	1-20%
Ethylene Glycol Ethers	1-10%
Dye	<1%

Section 4: First-Aid Measures

EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Get medical attention immediately. If physician is not immediately available, continue flushing with water. Do not use chemical antidote.

INHALATION: Remove individual from site of exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

SKIN CONTACT: Immediately wash exposed area with soap and water for at least 15 minutes, then flush with water for at least five minutes. If reddening persists, or if open sores or blisters develop, see physician. Remove contaminated clothing and laundry before reuse.

INGESTION: Immediately drink two large glasses of water. Call a physician.

Most important symptoms/effects, acute and delayed: None known. See section 11.

SPECIFIC TREATMENTS: No data available.

PROTECTION OF FIRST-AIDERS: No special precautions are necessary for first aid responders.

Section 5: Fire-Fighting Measures

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: None inherent in this product.

SUITABLE EXTINGUISHING MEDIA: Dry chemical, water fog, alcohol foam

UNSUITABLE EXTINGUISHING MEDIA: No data available.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS: Carbon monoxide, nitrogen oxides, organic amines, hydrogen chloride, methyl chloride, and various unknown organic compounds.

SPECIAL FIRE FIGHTING PROCEDURES: As any fire, where self-contained breathing apparatus pressure demand, and full protective gear. Water or foam may cause frothing which can be violent, especially if sprayed into containers of hot burning liquid.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: No data available

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Use personal protective equipment. Ensure adequate ventilation.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Take up with absorbent material (e.g. sand, kieselguhr, universal binder). Dispose of absorbent material in accordance with the regulations.

ENVIRONMENTAL PRECAUTIONS:

Do not allow to enter drains or waterways. Do not discharge into the subsoil/soil.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING

Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in a well-ventilated place. Keep container tightly closed.

Section 8: Exposure Controls/Personal Protection

CONTROL PARAMETERS

Ingredients	CAS	Value type (Form of exposure)	Control parameters Permissible concentration	Basis
Propan-2-ol	67-63-0	TWA	200 ppm	ACGIH
Propan-2-ol	67-63-0	STEL	400 ppm	ACGIH
Propan-2-ol	67-63-0	TWA	400 ppm 980 mg/m ³	NIOSH REL
Propan-2-ol	67-63-0	ST	500 ppm 1,225 mg/m ³	NIOSH REL
Propan-2-ol	67-63-0	TWA	400 ppm 980 mg/m ³	OSHA Z-1
Petroleum Distillates	64742-88-7	TWA (as total hydrocarbon vapor, non-aerosol)	200 mg/m ³	ACGIH
Petroleum Distillates	64742-47-8	TWA	100 ppm	CMRG
White Mineral Oil	8042-47-5	TWA	5 mg/m ³	CMRG
Mineral Oils, Highly-Refined Oils	8042-47-5	TWA (inhalable fraction)	5 mg/m ³	ACGIH

ENGINEERING MEASURES

Provide sufficient ventilation to maintain exposure below established limits and avoid overexposure.

INDIVIDUAL PROTECTION MEASURES

EYE/FACE PROTECTION

Chemical splashproof goggles.

SKIN/HAND PROTECTION

Gloves made from the following material(s) are recommended: Neoprene or Buna-N

RESPIRATORY PROTECTION

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as

part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure: NIOSH/MSHA approved respirator with organic vapor canister or self-contained breathing apparatus.

HYGIENE MEASURES

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact.

Section 9: Physical and Chemical Properties

PHYSICAL STATE Viscous Liquid	FLASH POINT No data available.	VAPOR DENSITY No data available.
FORM Liquid	EVAPORATION RATE No data available.	RELATIVE DENSITY No data available
COLOR Clear to Amber	FLAMMABILITY (SOLID, GAS) No data available.	SOLUBILITY IN WATER No data available
ODOR Solvent	FLAMMABILITY LIMIT - UPPER (%) No data available.	SOLUBILITY (OTHER) No data available.
ODOR THRESHOLD No data available.	FLAMMABILITY LIMIT - LOWER (%) No data available.	PARTITION COEFFICIENT (N-OCTANOL/WATER) No data available.
PH No data available.	EXPLOSIVE LIMIT - UPPER (%) No data available.	AUTO-IGNITION TEMPERATURE No data available.
FREEZING POINT No data available	EXPLOSIVE LIMIT - LOWER (%) No data available.	DECOMPOSITION TEMPERATURE No data available.
BOILING POINT No data available.	VAPOR PRESSURE No data available.	VISCOSITY No data available.

Section 10: Stability and Reactivity

REACTIVITY

Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).

CHEMICAL STABILITY

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reaction known under conditions of normal use.

CONDITIONS TO AVOID

Heat, flames and contact with strong oxidizing agents.

INCOMPATIBLE MATERIALS

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

No data available.

Section 11: Toxicological Information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:

Based on test data and/or information on the components, this material may produce the following health effects:

INHALATION: No data available.

SKIN CONTACT: No data available.

EYE CONTACT: No data available.

INGESTION: No data available.

Target Organ Effects:

SINGLE EXPOSURE MAY CAUSE: No data available.

TOXICOLOGICAL DATA

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Rabbit	LD50 > 3,160 mg/kg
Petroleum Distillates	Inhalation, Dust/Mist 4 hrs.	Rat	LC50 > 3.0 mg/l
Petroleum Distillates	Ingestion	Rat	LD50 > 5,000 mg/kg
White Mineral Oil	Dermal	Rabbit	LD50 > 2,000 mg/kg
White Mineral Oil	Ingestion	Rat	LD50 > 5,000 mg/kg
Propan-2-ol	Inhalation, Vapor 4hr	Rat	LC50 (Rat): 72.6 mg/l
Propan-2-ol	Oral	Rat	LD50 > 5,000 mg/kg
Propan-2-ol	Dermal	Rat	LD50 (Rat): > 5,000 mg/kg

Skin Corrosion / Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Petroleum Distillates	Rabbit	Mild Irritant
White Mineral Oil	Rabbit	Mild Irritant

Skin Sensitization

Name	Species	Value
Petroleum Distillates	Rabbit	Not sensitizing

White Mineral Oil	Rabbit	Not sensitizing
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Respiratory Sensitization

No data available.

Germ Cell Mutagenicity

Name	Route	Value
Petroleum Distillates	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Petroleum Distillates	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed source of reproductive toxicity.

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	
Petroleum Distillates	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ	Value	Species	Test Result	Exposure Duration
Petroleum Distillates	Inhalation	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 4.6 mg/l	6 months
Petroleum Distillates	Inhalation	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 1.9 mg/l	13 weeks
Petroleum Distillates	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Multiple	NOAEL 0.6 mg/l	90 days
Petroleum Distillates	Inhalation	bone, teeth, nails, and/or hair blood liver muscles	All data are negative	Rat	NOAEL 5.6 mg/l	12 weeks
Petroleum Distillates	Inhalation	heart	All data are negative	Multiple	NOAEL 1.3 mg/l	90 days

Aspiration Hazard

Name	Value
Petroleum Distillates	Aspiration hazard

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information

PREPARATION / REVISION DATE

05/27/2015

OTHER INFORMATION

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.



Safety Data Sheet (SDS)

Pro Finish
649 Chase Ave. Elk Grove Village, IL 60007
847-981-9400

SECTION 1: PRODUCT AND COMPANY INFORMATION

SUPPLIER / DISTRIBUTOR

Pro Finish
649 Chase Ave.
Elk Grove Village, IL 60007

Telephone: 847-981-9400

Emergency Telephone: 800-535-5053

PRODUCT IDENTIFIER

660 – Super Suds Car Wash

OTHER COMMON NAMES OR SYNONYMS

Section 2: Hazard(s) Identification

GHS CLASSIFICATION

HEALTH HAZARDS

Serious Eye Damage/Eye Irritation - Category 2A

UNKNOWN TOXICITY

Acute toxicity, oral - 0.0 %

Acute toxicity, dermal - 0.0 %

Acute toxicity, inhalation, vapor - 6.6 %

Acute toxicity, inhalation, dust or mist - 6.6

GHS LABEL ELEMENTS



Signal word: **DANGER!**

HAZARD STATEMENT(S)

Causes serious eye irritation.

PRECAUTIONARY STATEMENTS

PREVENTION

Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required.

RESPONSE

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If exposed or concerned: Get medical advice/attention.

STORAGE

Store locked up

DISPOSAL

Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

OTHER HAZARDS

None identified.

Section 3: Composition/Information on Ingredients

The identity of individual components of this mixture is proprietary information and is regarded to be a trade secret and is withheld in accordance with paragraph (i) of §1910.1200.

Ingredient	% by Wt.
Water	2-10%
Surfactant Blend	90-98%

Section 4: First-Aid Measures

GENERAL: If exposed or concerned: Get medical advice/attention.

INGESTION: Rinse mouth. Get medical attention if symptoms occur.

INHALATION: Remove exposed person to fresh air if adverse effects are observed.

SKIN CONTACT: Take off contaminated clothing and wash before re-use. Wash with soap and water. If skin irritation occurs, get medical attention.

EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Most important symptoms/effects, acute and delayed:

SYMPTOMS

Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed

TREATMENT

Treat symptomatically.

Section 5: Fire-Fighting Measures

GENERAL FIRE HAZARDS: No unusual fire or explosion hazards noted.

SUITABLE EXTINGUISHING MEDIA: Use extinguishing agents appropriate for surrounding fire.

UNSUITABLE EXTINGUISHING MEDIA: Not determined.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: See section 10 for additional information. Material will not burn until water has been evaporated. Container may rupture on heating. Water or foam may cause frothing. Avoid solid streams of water. Use water spray.

SPECIAL FIRE FIGHTING PROCEDURES: No data available.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS: Recommend wearing self-contained breathing apparatus.

Section 6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Ventilate area if spilled in confined space or other poorly ventilated areas. Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material. Wash area with soap and water. Spilled liquid and dried film are slippery. Use care to avoid falls. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.

ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

Section 7: Handling and Storage

PRECAUTIONS FOR SAFE HANDLING

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Avoid contact with eyes. Observe good industrial hygiene practices. Provide adequate ventilation. Use personal protective equipment as required. Wash hands thoroughly after handling. Launder contaminated clothing before reuse. Avoid environmental contamination.

Avoid contact with eyes and prolonged or repeated contact with skin. Avoid breathing mists or vapors. When using do not eat, drink or smoke. Stir well before use. Keep containers closed when not in use. Minimize contact with air to reduce contamination with mold, fungus, or other organisms which could cause decomposition or spoilage. Wash thoroughly after handling.

MAXIMUM HANDLING TEMPERATURE

Not determined.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store away from incompatible materials. See section 10 for incompatible materials. Keep from freezing. Do not store in open, unlabeled or mislabeled containers.

MAXIMUM STORAGE TEMPERATURE

Not determined.

Section 8: Exposure Controls/Personal Protection

CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS

None of the components have assigned exposure limits.

APPROPRIATE ENGINEERING CONTROLS

Use material in well ventilated area only. Adequate ventilation should be provided so that exposure limits are not exceeded. Mechanical ventilation or local exhaust ventilation may be required.

INDIVIDUAL PROTECTION MEASURES

GENERAL INFORMATION

Provide easy access to water supply and eye wash facilities. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust

ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

EYE/FACE PROTECTION

If contact is likely, safety glasses with side shields are recommended.

SKIN PROTECTION / HAND PROTECTION

Suitable gloves can be recommended by the glove supplier. Use good industrial hygiene practices to avoid skin contact. If contact with the material may occur wear chemically protective gloves.

OTHER

Gloves, coveralls, apron, boots as necessary to minimize contact. Do not wear rings, watches or similar apparel that could entrap the material.

RESPIRATORY PROTECTION

A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Under normal use conditions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist or vapors is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.

HYGIENE MEASURES

Observe good industrial hygiene practices. Avoid contact with eyes. Wash hands before breaks and immediately after handling the product.

Section 9: Physical and Chemical Properties

PHYSICAL STATE	FLASH POINT	VAPOR DENSITY
Liquid	Material will not burn.	No data available.
FORM	EVAPORATION RATE	RELATIVE DENSITY
Liquid	No data available.	1 - 1.01 68 °F (20 °C)
COLOR	FLAMMABILITY (SOLID, GAS)	SOLUBILITY IN WATER
Colorless to white	No data available.	Insoluble in water
ODOR	FLAMMABILITY LIMIT - UPPER (%)	SOLUBILITY (OTHER)
Slight	No data available.	No data available.
ODOR THRESHOLD	FLAMMABILITY LIMIT - LOWER (%)	PARTITION COEFFICIENT (N-OCTANOL/WATER)
No data available.	No data available.	No data available.
PH	EXPLOSIVE LIMIT - UPPER (%)	AUTO-IGNITION TEMPERATURE
No data available.	No data available.	No data available.
FREEZING POINT	EXPLOSIVE LIMIT - LOWER (%)	DECOMPOSITION TEMPERATURE
No data available.	No data available.	No data available.
BOILING POINT	VAPOR PRESSURE	VISCOSITY
Approximate 212 °F (100 °C)	No data available.	No data available.

Section 10: Stability and Reactivity

REACTIVITY

No data available.

CHEMICAL STABILITY

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS

Will not occur.

CONDITIONS TO AVOID

Do not freeze.

INCOMPATIBLE MATERIALS

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. Irritating and toxic substances may be emitted upon combustion, burning, or decomposition of dry solids.

Section 11: Toxicological Information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

ROUTES OF EXPOSURE

INHALATION: No data available.

INGESTION: No data available.

SKIN CONTACT: Causes mild skin irritation.

EYE CONTACT: Causes serious eye irritation.

TOXICOLOGICAL EFFECTS

ACUTE TOXICITY

ORAL: ATE_{mix} > 10.000 mg/kg.

DERMAL: Not classified for acute toxicity based on available data.

INHALATION: Not classified for acute toxicity based on available data.

SKIN CORROSION/IRRITATION: Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin. Remarks: Causes mild skin irritation.

SERIOUS EYE DAMAGE/EYE IRRITATION: Causes serious eye irritation.

RESPIRATORY SENSITIZATION

Formaldehyde - (Literature) May cause skin sensitization in sensitive individuals.

SKIN SENSITIZATION:

Coconut diethanolamide - Not a skin sensitizer.

Formaldehyde - May cause sensitization by skin contact. (Literature)

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE:

Alkanolamide - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Ammonium laureth sulfate - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Sodium lauryl ether sulfate - If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Coconut diethanolamide - May cause irritation to the mucous membranes and upper respiratory tract.

Formaldehyde - May cause respiratory irritation.

ASPIRATION HAZARD: No data available

CHRONIC EFFECTS

This product contains 0.09% or less of Formaldehyde, which is below the cut off for categorization as a carcinogen.

CARCINOGENICITY:

Butyl cellosolve - A National Toxicology Program (NTP) chronic inhalation study revealed some evidence of carcinogenic activity in male and female mice, equivocal evidence in female rats. and no evidence in male rats.

IARC MONOGRAPHS ON THE EVALUATION OF CARCINOGENIC RISKS TO HUMANS:

Formaldehyde - Overall evaluation: 1. Carcinogenic to humans.

US. NATIONAL TOXICOLOGY PROGRAM (NTP) REPORT ON CARCINOGENS:

Formaldehyde - Known To Be Human Carcinogen.

US. OSHA SPECIFICALLY REGULATED SUBSTANCES (29 CFR 1910.1001-1050):

Formaldehyde - Cancer

GERM CELL MUTAGENICITY:

Alkanolamide - The Ames Salmonella test for mutagenicity was negative for this product.

REPRODUCTIVE TOXICITY: No data available

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE:

Formaldehyde - Unknown: Target Organ(s): Central nervous system.

Section 12: Ecological Information (non-mandatory)

Section 13: Disposal Considerations (non-mandatory)

Section 14: Transport Information (non-mandatory)

Section 15: Regulatory Information (non-mandatory)

Section 16: Other Information

PREPARATION / REVISION DATE

05/14/2015

OTHER INFORMATION

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

DISCLAIMER

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Illinois Department of Transportation

Office of Highways Project Implementation / Region 1 / District 1
201 West Center Court / Schaumburg, Illinois 60196-1096

PERMITS

Location: US 45 / IL 21 (Milwaukee Avenue) N/O Hintz Road
Municipality: Village of Wheeling, Cook County
Re: Proposed Car Wash
Reference No.: 016-83288

July 19, 2018

Mr. Michael Elliott, P.E.
Terra Consulting Group, Ltd.
600 Busse Highway
2nd Floor
Park Ridge, IL 60068

Dear Mr. Elliott, P.E.:

We have completed our review of your preliminary concept plan for the subject location. In addition to reviewing the aforementioned concept plan, we have also field reviewed the site.

Two of the Department's main goals in granting access to a property include the safety of all pedestrian and vehicular traffic as well as the efficient and effective flow of traffic to serve such property and the surrounding area. US 45/ IL 21 (Milwaukee Avenue) in this area has been designated by the Department as a Strategic Regional Arterial (SRA) route. The SRA system is a network of arterial highways intended to supplement the existing and proposed expressway facilities by accommodating a significant portion of long-distance, high-volume automobile and commercial vehicle traffic. Access management is a key component of promoting a high level of service for traffic traveling along an SRA route.

Limiting the vehicular maneuvers at driveways also reduces the number of potential conflict points for accidents to occur. The southbound US 45 / IL 21 traffic queues into the existing driveways, which will make the left-out movement difficult to make during the peak hours and causes concern for adequate sight distance.

The Department has determined that the proposed car wash home at the above-referenced location would have both reasonable and safe access to the State highway through one (1) ingress-only access drive (north) and one (1) right-out only egress access drive (south). Vehicles wishing to continue northbound can use Hintz Road to Wolf Road.

Please revise your plans in accordance with the above comments and resubmit two (2) revised copies, along with the enclosed red markups, to continue the review process.

If you have any questions regarding this matter, please contact Abigail Robinson at (847) 705-4541.

Very truly yours,

Anthony J. Quigley, P.E.
Region One Engineer

By:

Thomas G. Gallenbach, P.E.
Traffic Permit Engineer

cc: Jon Tack - Village of Wheeling

November 1, 2018

Mr. Mike Elliott
Terra Consulting Group, Ltd.
600 Busse Highway
Park Ridge, Illinois 60068

Re: Proposed Car Wash
Wheeling, Illinois

Dear Mike:

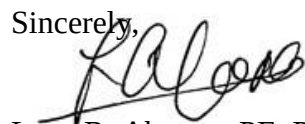
As requested, Kenig, Lindgren, O'Hara, Aboona, Inc. has prepared a Traffic Impact Study (TIS) for the proposed car wash to be located on Milwaukee Avenue north of Hintz Road in Wheeling, Illinois. The traffic study was completed on October 2, 2018 and addressed issues and comments raised by IDOT in their initial review letter dated July 19, 2018. The TIS, which was resubmitted to IDOT by your office on October 3, 2018, included the following:

- Evaluated the traffic conditions on Milwaukee Avenue and its intersection with Hintz Road during the weekday morning, weekday evening, and Saturday midday peak hours
- Estimated the traffic that will be generated by the proposed car wash during the same time periods
- Analyzed the projected operations with the addition of the car wash traffic including the adequacy of the proposed access in accommodating site-generated traffic
- Reviewed on-site circulation and stacking requirements

The TIS concluded that the studied intersections will continue to operate at acceptable levels of service and that the proposed single access drive will be adequate in accommodating site traffic. While the study determined that an adequate number of gaps exists in the Milwaukee Avenue traffic stream to accommodate the projected left- and right-turning movements out of the site, it is recommended that traffic conditions be monitored in the future to determine that should the outbound left-turning movements experience greater than anticipated delays during the critical weekday evening peak hour, then consideration should be given to restrict them via signage during the 4:00 to 6:00 P.M. peak period.

Should you have any questions or require additional information, please let me know.

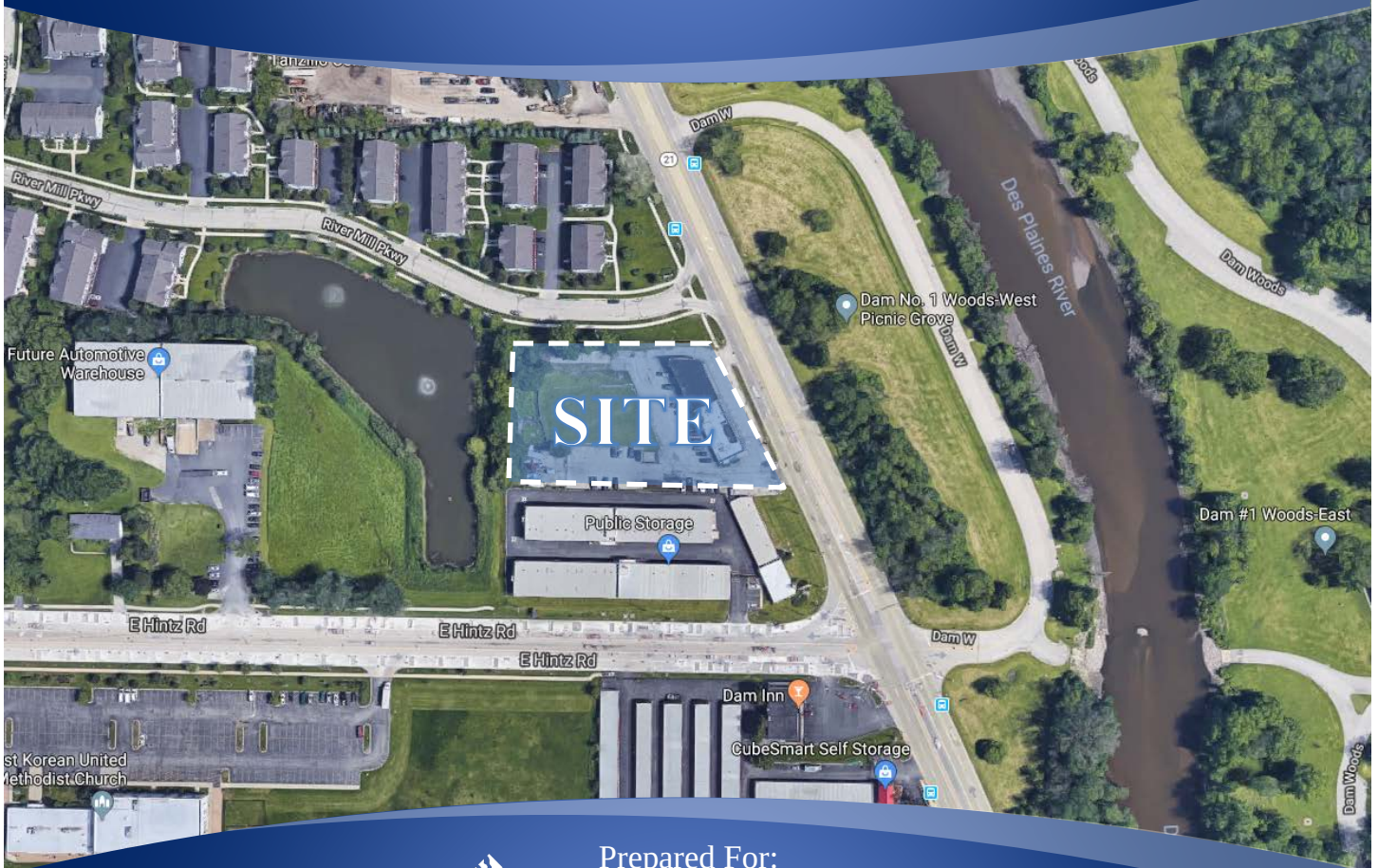
Sincerely,



Luay R. Aboona, PE, PTOE
Principal

Traffic Impact Study Proposed Car Wash

Wheeling, Illinois



Prepared For:



TERRA
CONSULTING GROUP, LTD.

Prepared By:

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.

October 2, 2018

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for the proposed car wash to be located in Wheeling, Illinois. The site, which is currently occupied by a vacant multi-tenant commercial building and has two full-movement access drives, is located on the west side of US 45/IL 21 (Milwaukee Avenue) north of its intersection with Hintz Road. As proposed, the site will be developed to contain an approximately 5,250 square-foot automatic car wash tunnel and 31 parking spaces, of which 26 will be for the use of vacuums. Access to the proposed facility will be provided on US 45/IL 21 via a single full access drive.

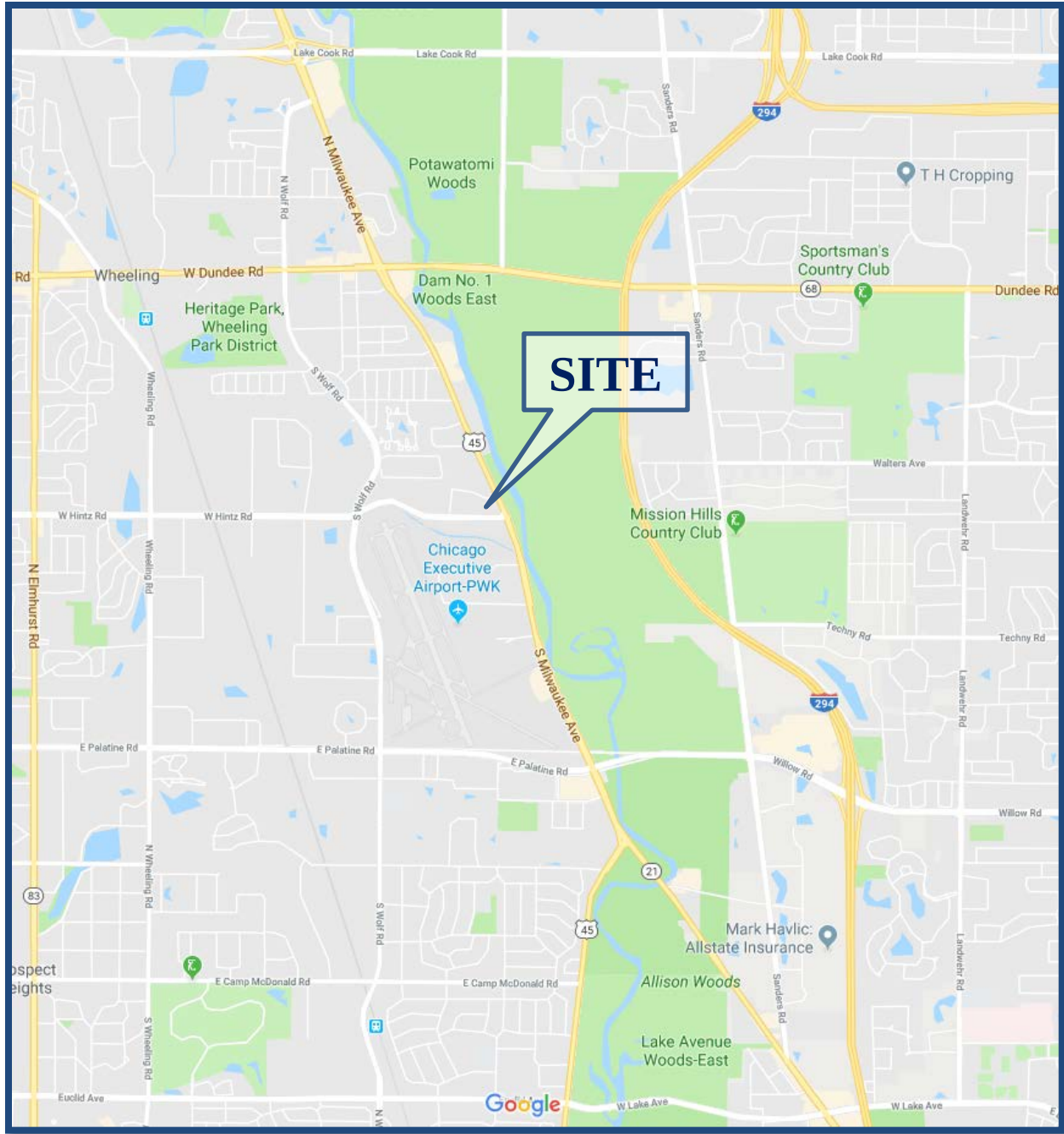
The purpose of this study was to examine background traffic conditions, assess the impact that the proposed facility will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate traffic generated by the proposed facility. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site.

The sections of this report present the following:

- Existing roadway conditions
- A description of the proposed facility
- Directional distribution of the facility traffic
- Vehicle trip generation for the facility
- Future traffic conditions including access to the facility
- Traffic analyses for the weekday morning, evening, and Saturday midday peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system

Traffic capacity analyses were conducted for the weekday morning, weekday evening and Saturday midday peak hours for the following conditions:

1. Existing Conditions - Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.
2. Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the existing traffic volumes, ambient area growth not attributable to any particular development, and the traffic estimated to be generated by the full buildout of the proposed facility.



Site Location

Figure 1



Aerial View of Site

Figure 2

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices, and existing peak hour traffic volumes.

Site Location

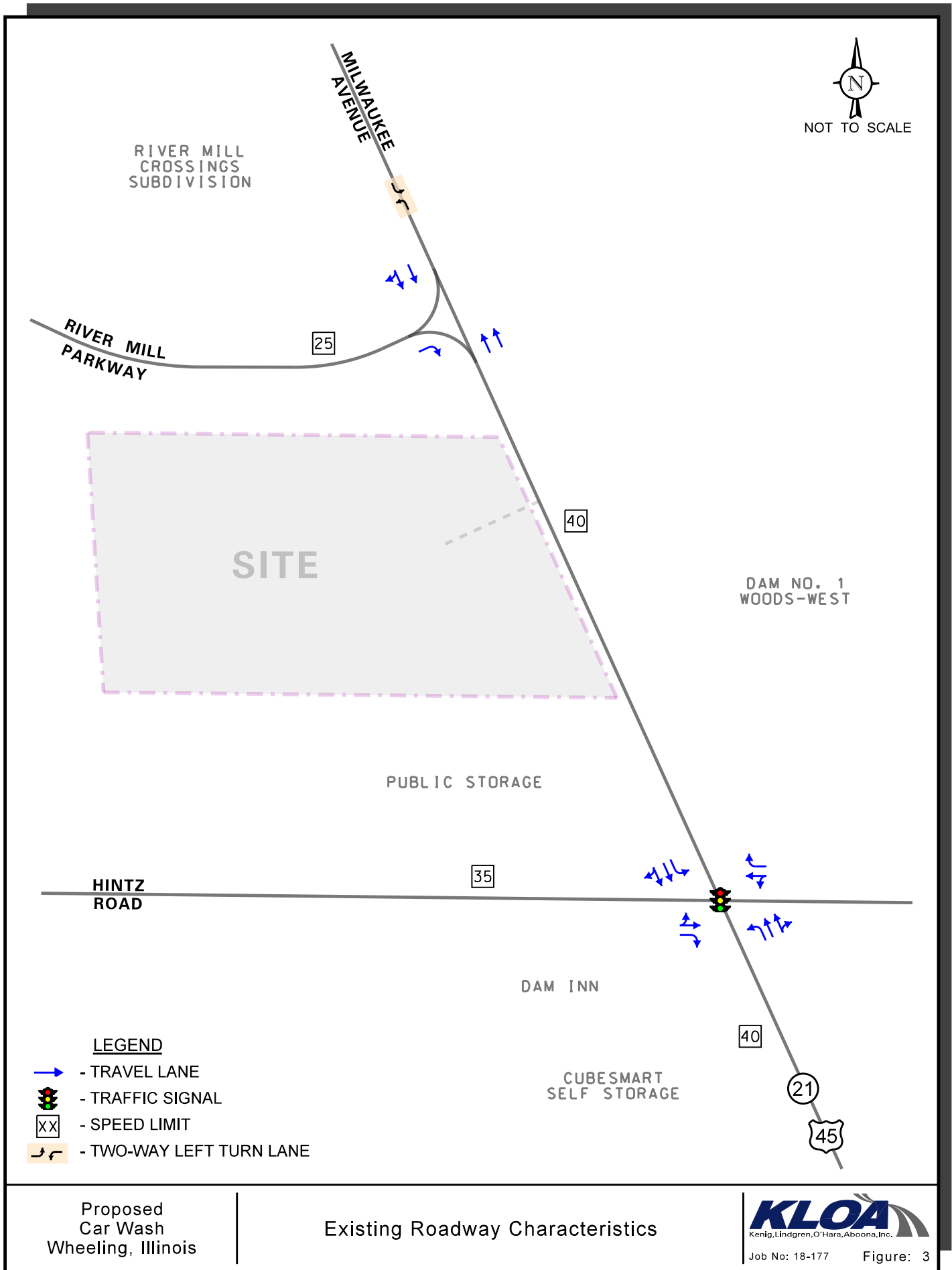
The site is located on the west side of US 45/IL 21 approximately 350 feet north of its intersection with Hintz Road. Land uses within the vicinity of the site are primarily residential/commercial to the north and west and industrial/commercial to the south and includes River Mill subdivision to the north, Future Automotive Warehouse to the west, CubeSmart Self Storage and Dam Inn to the south and the Dam #1 Woods-West Picnic Grove to the east. Additionally, the Chicago Executive Airport (PWK) is located approximately 3,000 feet to the south of the subject site.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the facility are described below and illustrated in **Figure 3**.

US 45/IL 21 (Milwaukee Avenue) is generally a north-south arterial roadway that in the vicinity of the site provides two through lanes in each direction separated by a two-way left-turn lane. At its signalized intersection with Hintz Road, US 45/IL 21 provides an exclusive left-turn lane, a through lane and a shared through/right-turn lane on both approaches. At its unsignalized intersection with River Mill Parkway, US 45/IL 21 provides two through lanes on the northbound approach and one through lane and a shared through/right-turn lane on the southbound approach. US 45/IL 21 is under the jurisdiction of the Illinois Department of Transportation (IDOT), is classified as a Strategic Regional Arterial (SRA) route, carries an annual average daily traffic (AADT) volume of 26,300 vehicles north of Hintz Road and an AADT volume of 32,900 vehicles south of Hintz Road (IDOT AADT 2017) and has a posted speed limit of 40 miles per hour.

Hintz Road is an east-west collector roadway that in the vicinity of the site provides two through lanes in each direction. At its signalized intersection with US 45/IL 21, Hintz Road provides a shared left-turn/through lane and an exclusive right-turn lane on the eastbound approach and a shared left-turn/through lane and a shared through/right-turn lane on the westbound approach. Hintz Road is under the jurisdiction of the Cook County Department of Transportation and Highways, carries an AADT volume of 9,500 vehicles (IDOT AADT 2014) and has a posted speed limit of 35 miles per hour.



River Mill Parkway is an east-west local roadway that provides one through lane in each direction and extends from US 45/IL 21 west approximately 1,050 feet to its terminus at River Walk Drive. At its unsignalized intersection with US 45/IL 21, River Mill Parkway provides one eastbound lane under stop-sign control that is physically restricted to right-turning movements only. River Mill Parkway is under the jurisdiction of the Village of Wheeling and has a posted speed limit of 25 miles per hour.

Existing Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted peak period traffic counts using Miovision Scout Collection Units on Wednesday, August 22, 2018 during the weekday morning (7:00 A.M. to 9:00 A.M.) and weekday evening (4:00 P.M. to 6:00 P.M.) peak periods and on Saturday, September 15, 2018 during the Saturday midday (12:00 P.M. to 2:00 P.M.) peak period at the intersections of US 45/IL 21 with Hintz Road and US 45/IL 21 with River Mill Parkway. The results of the traffic counts showed that the weekday morning peak hour of traffic occurs from 7:45 A.M. to 8:45 A.M., the weekday evening peak hour occurs from 4:30 P.M. to 5:30 P.M., and the Saturday midday peak hour occurs from 12:00 P.M. to 1:00 P.M. **Figure 4** illustrates the existing peak hour traffic volumes for the peak periods that the counts were performed. Copies of the traffic count summary sheets are included in the Appendix.

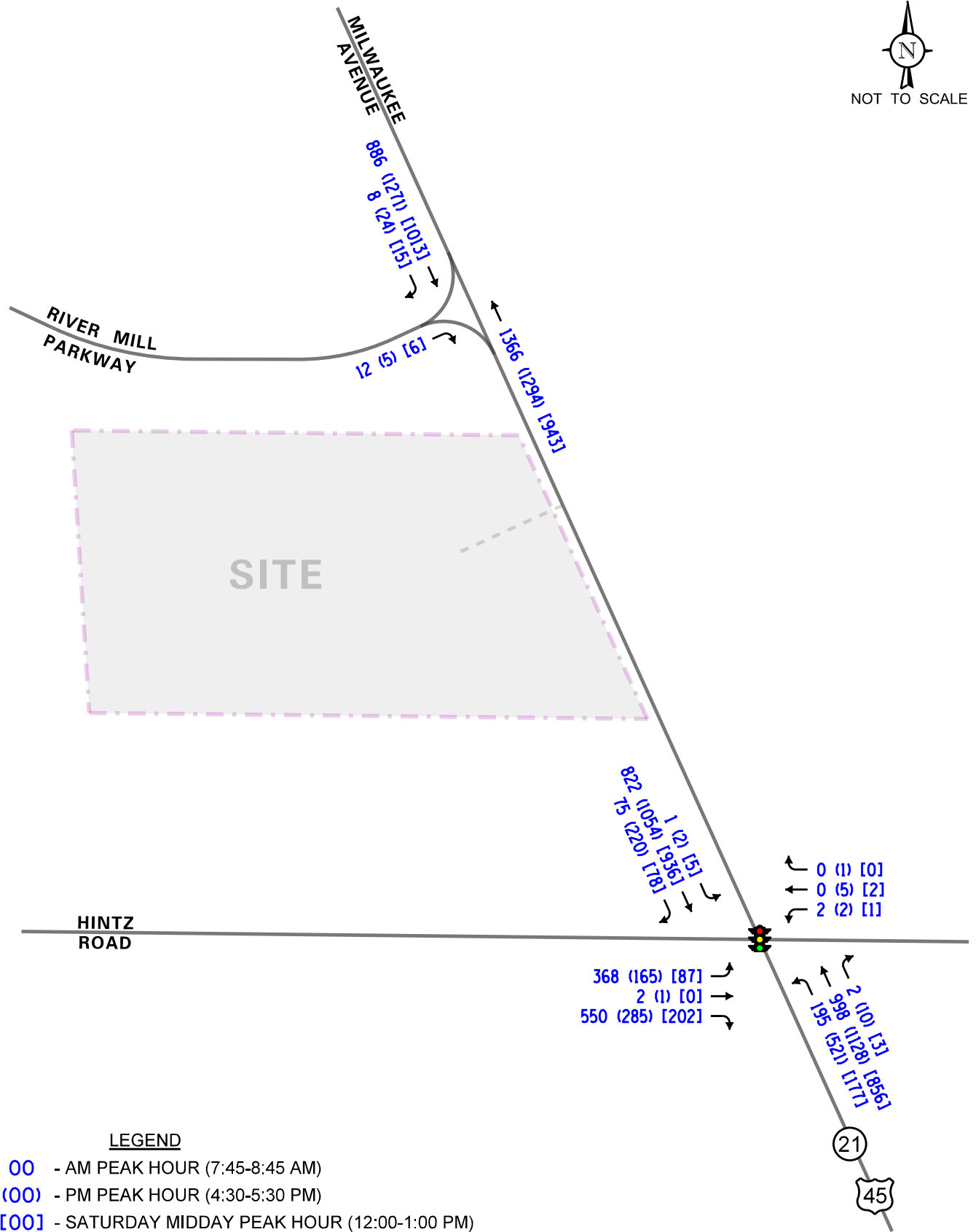
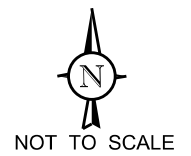
Crash Analysis

KLOA, Inc. obtained accident data¹ for the most recent available past five years (2012 to 2016) for the intersection of US 45/IL 21 with Hintz Road and US 45/IL 21 with River Mill Parkway. The crash data for the intersection of US 45/IL 21 with Hintz Road is summarized in **Table 1**. A review of the crash data indicated that the intersection of US 45/IL 21 with River Mill Parkway experienced one crash in 2013 and 2016, three crashes in 2014, two crashes in 2015. Additionally, no fatalities were reported at any of the study area intersections.

Table 1
MILWAUKEE AVENUE WITH HINTZ - CRASH SUMMARY

Year	Type of Accident Frequency						Total
	Angle	Object	Rear End	Sideswipe	Turning	Other	
2012	0	1	6	0	1	0	8
2013	0	2	7	1	1	0	11
2014	1	0	9	0	2	1	13
2015	0	1	3	3	6	0	13
2016	0	0	3	0	2	2	7
Total	1	4	28	4	12	3	52
Average/Year	< 1	< 1	5.6	< 1	2.4	< 1	10.4

¹ IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. The author is responsible for any data analyses and conclusions drawn.



LEGEND

00 - AM PEAK HOUR (7:45-8:45 AM)

(00) - PM PEAK HOUR (4:30-5:30 PM)

[00] - SATURDAY MIDDAY PEAK HOUR (12:00-1:00 PM)

Proposed
Car Wash
Wheeling, Illinois

Existing Traffic Volumes

Gap Study

A gap study was performed on US 45/IL 21 near the location of the proposed access drive during the weekday morning, weekday evening and Saturday midday peak hours in order to determine the availability of gaps or interruptions in the US 45/IL 21 traffic stream. The gap study was conducted on the same days as the traffic counts. The study examined gaps in the southbound direction along US 45/IL 21, which would allow vehicles to turn left from US 45/IL 21 into the development and right from the development onto US 45/IL 21. Additionally, gaps in both directions on US 45/IL 21 were examined which would allow vehicles to turn left from the proposed development on US 45/IL 21. The results of the gap study, showing the total number of potential movements based on gaps available for the peak hours, are summarized in **Table 2**.

Table 2
SUMMARY OF US 45/IL 21 PEAK HOUR GAP STUDY

Movement	Weekday Morning Peak Hour Available Gaps	Weekday Evening Peak Hour Available Gaps	Saturday Midday Peak Hour Available Gaps
Northbound Left-Turn Movement	618	370	504
Eastbound Right-Turn Movement	280	167	214
Eastbound Left-Turn Movement	75	33	61

3. Traffic Characteristics of the Proposed Facility

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed facility, including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Development Plan

As proposed, the site will be developed with an automated tunnel car wash with 31 parking stalls, of which 26 will be used as vacuuming stations. Access to the facility will be provided via a full access drive on US 45/IL 21 located approximately 375 feet north of Hintz Road. The drive will provide one inbound lane and one outbound lane striped for a shared left/right-turn lane with outbound movements under stop sign control. Left turn movements from US 45/IL 21 onto the proposed access drive will be accommodated via the existing two-way left-turn lane. A site plan illustrating the proposed development and site access is included in the Appendix. It should be noted that proposed access drive will reduce the number of curb cuts provided along the site frontage from two to one.

Car Wash Operations

Customers may use only the car wash or also utilize the vacuum stations that are located on the north side of the car wash tunnel. Based on observations at a similar automated car wash located on York Road in Elmhurst, Illinois, approximately 30 to 40 percent of customers use both the vacuums and the car wash.

Proposed On-Site Circulation

The single-lane automatic car wash tunnel will be an exterior-only car wash system and will have a counter-clockwise rotation. The entrance to the car wash drive-through system is located at the southwest end of the site. Vehicles will proceed along the north and west edge of the site in three lanes to approach the three individually gated, automatic pay stations to select and pay for their car wash options. The gates meter the traffic flow proceeding to the car wash tunnel entrance and will open in sequence based on the order of vehicle payment. Once the gate is lifted for the respective lane, the individual vehicle will proceed south and east to the entrance to the tunnel. Vehicles also have the option to exit the car wash queue prior to paying for a car wash and proceed east to the vacuum positions or exit the facility onto US 45/IL 21. At the entrance to the car wash tunnel, the driver will remain in the vehicle and the car wash will automatically pull the vehicle through the tunnel. On average, a vehicle will spend 45 seconds in the tunnel for a total of 80 vehicles per hour; however, this can be decreased during the peak period to as low as 30 seconds per vehicle for a maximum of 120 vehicles per hour.

After exiting the tunnel, the vehicles will proceed north and can either turn left to access the vacuum positions or right to the full movement access drive. Approximately five vehicles can be accommodated between the car wash exit and the proposed access drive. If the vehicle is delayed in exiting the tunnel, the pulling system will shut down so that vehicles in the tunnel that are following will not rear-end the exiting vehicle.

Car Wash Stacking

According to the site plan, there is storage for approximately 40 vehicles to queue while advancing to one of the three pay stations. In addition, there is storage for approximately seven vehicles between the pay stations and the entrance to the tunnel. As such, the plan provides a total stacking of approximately 47 vehicles from the entrance to the car wash to the entrance to the car wash drive-through system (located at the northeast corner of the site). Further, the car wash tunnel itself can hold approximately five vehicles at the same time.

Car Wash Wayfinding and Traffic Control Signage

The following wayfinding and traffic control signage is recommended:

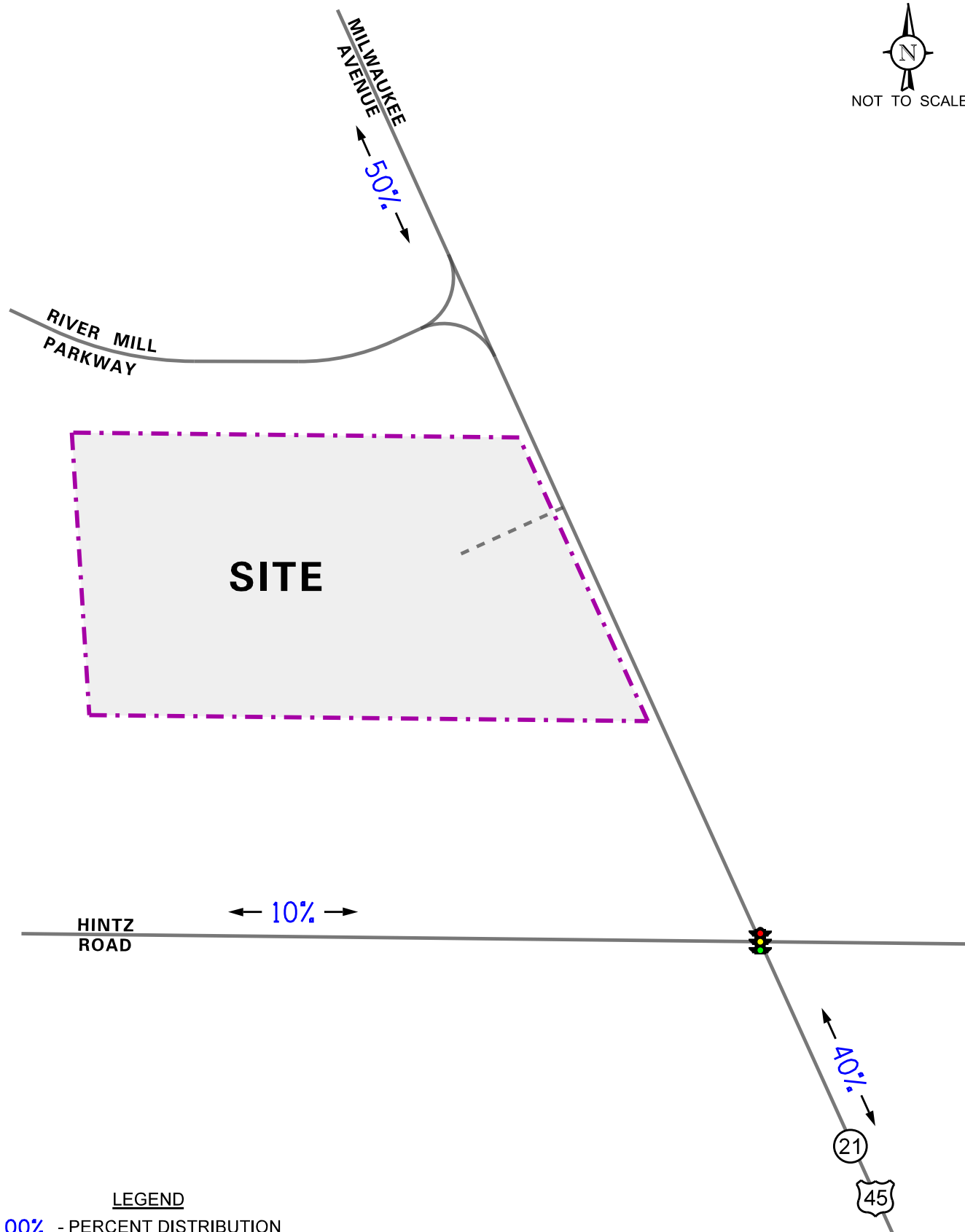
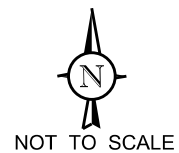
- Wayfinding signage should be posted to guide vehicles to the respective car wash stacking area to minimize vehicle turning movements within the internal site circulation area.
- Wayfinding signage should be posted at the exit of the car wash tunnel to direct vehicles exiting the car wash to either US 45/IL 21 or to the vacuum positions.
- A “DO NOT ENTER” sign should be posted at the exit of the car wash tunnel to deter opposing traffic from entering the car wash tunnel from the one-way exit direction.

Vacuum Positions

The 26 vacuum positions will be located on the north side of the car wash tunnel. An east-west, two-way drive aisle will be provided allowing flexibility for vehicles to access the vacuum area. Vehicles exiting the vacuum stations will proceed east and either exit the facility at the full access drive or enter the car wash drive-through system.

Directional Distribution of Site Traffic

The directional distribution of future site-generated trips on the roadway system is a function of several variables, including the operational characteristics of the roadway system and the ease with which drivers can travel over various sections of the roadway system without encountering congestion. The directions from which customers and employees of the proposed car wash will approach and depart the site were estimated based on existing travel patterns as determined from the traffic counts. **Figure 5** illustrates the directional distribution of future site-generated traffic volume.



Proposed
Car Wash
Wheeling, Illinois

Estimated Directional Distribution

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 18-177 Figure: 5

Estimated Site Traffic Generation

The volume of traffic estimated to be generated by the proposed car wash was determined based on surveys conducted at a similarly sized car wash and a review of trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*, 10th Edition. It should be noted that surveys conducted by ITE have shown that a considerable number of trips made to car washes are diverted from the existing traffic on the area roadways. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the home-to-work and work-to-home trips. Such diverted trips are referred to as pass-by traffic. However, in order to present a worst-case scenario, no reductions in the site-generated traffic were taken into account.

ITE Data

Based on the data provided by a single study in the ITE manual for an automated car wash (Land-Use Code 948), the typical usage is approximately 75 vehicles per hour during the weekday evening peak hour and 160 vehicles during the Saturday midday peak hour. The ITE manual does not provide data for the morning peak hour for an automated car wash. For the purposes of the analysis, it was assumed that approximately ten vehicles would be generated by the proposed car wash during the weekday morning peak hour. **Table 3** summarizes the estimated trips using the ITE rates.

KLOA Surveys

KLOA, Inc. conducted surveys at a similar automated car wash located on York Road in Elmhurst, Illinois. The car wash contains a similarly sized automated carwash and 24 vacuum stations. The trip generation surveys were performed during the morning (7:00 A.M. to 9:00 A.M.) and evening (3:00 P.M. to 6:00 P.M.) peak periods on Thursday, April 19, 2018 and the midday (12:00 P.M. to 2:00 P.M.) peak period on Saturday, April 21, 2017. It should be noted that the surveys were performed on sunny days after periods of rain and snow and therefore represent peak conditions. **Table 3** summarizes the results of the trip generation surveys. The complete Elmhurst Facility surveys are included in the appendix

Table 3
PEAK HOUR SITE-GENERATED TRAFFIC VOLUMES

ITE Land-Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Evening Peak Hour			Saturday Midday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
948	Car Wash (5,250 s.f)	5	5	10	37	38	75	80	80	160
KLOA Surveys		28	29	57	123	118	241	86	83	169

As can be seen from Table 3, the surveys conducted by KLOA, Inc. show a significantly higher trip generation during the weekday morning and weekday evening peak hours and a similar trip generation during the Saturday midday peak hours and, as such, were utilized in the study.

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed facility.

Development Traffic Assignment

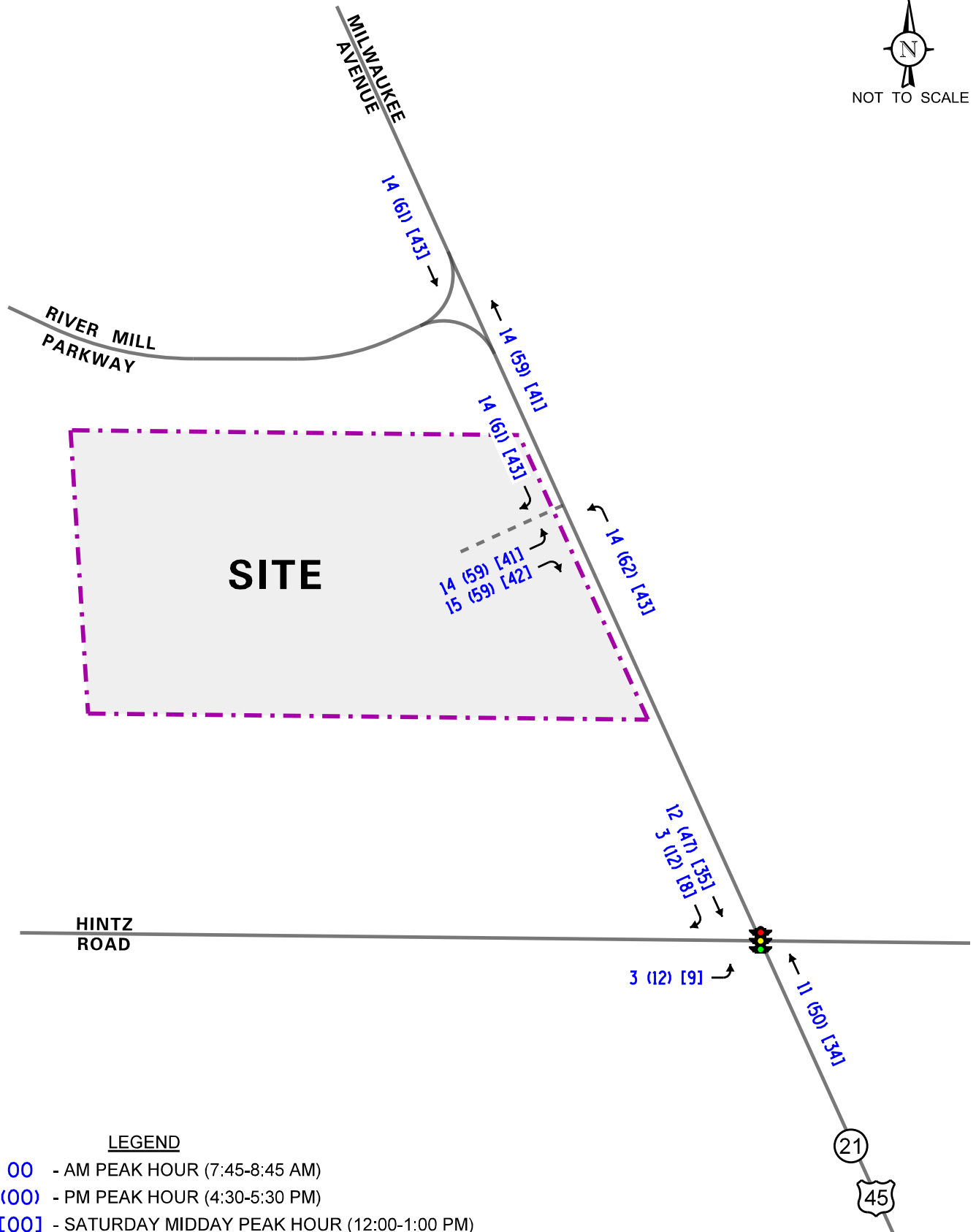
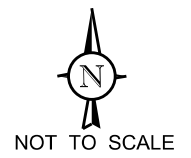
The estimated weekday morning, evening and Saturday midday peak hour traffic volumes that will be generated by the proposed facility were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). The traffic assignment for the development is illustrated in **Figure 6**.

Background Traffic Conditions

The existing traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on ADT projections provided by the Chicago Metropolitan Agency for Planning (CMAP) in a letter dated September 27, 2018, the existing traffic volumes at the intersection of US 45/IL 21 are projected to increase by less than 0.1 percent per year. In order provide a conservative analysis, the existing traffic volumes at this intersection as well as the through movements along US 45/IL 21 at River Mill Parkway were increased one percent total to represent Year 2024 background conditions. A copy of the CMAP projections letter is included in the Appendix.

Total Projected Traffic Volumes

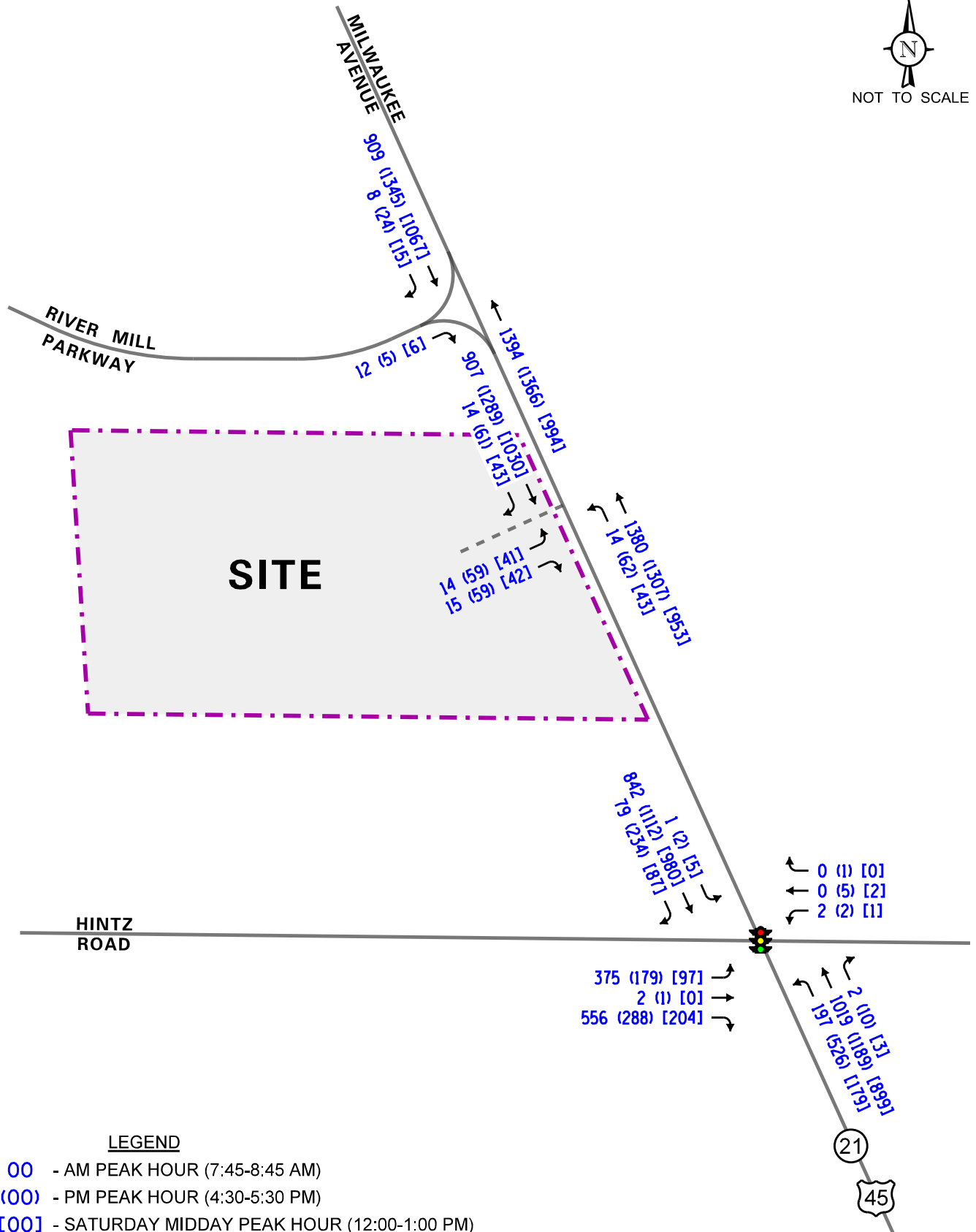
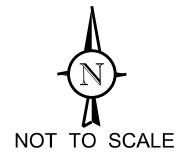
The car wash-generated traffic was added to the existing traffic volumes accounting for background growth to determine the Year 2024 total projected traffic volumes, as illustrated in **Figure 7**.



Proposed
Car Wash
Wheeling, Illinois

Estimated Site-Generated
Traffic Volumes

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 18-177 Figure: 6



Proposed
Car Wash
Wheeling, Illinois

Year 2024 Total Projected Traffic Volumes

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 18-177 Figure: 7

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning, weekday evening, and Saturday midday peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning, weekday evening, and Saturday midday peak hours for the existing (Year 2018) as well as future projected (Year 2024) traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6th edition and analyzed using the Synchro/SimTraffic 10 software. The analysis for the traffic-signal controlled intersections were accomplished using field measured cycle lengths and phasings to determine the average overall vehicle delay and levels of service. Synchro/SimTraffic 10 software was utilized to accurately represent the operation of the existing and proposed unsignalized intersections given their proximity to the signalized intersection of US 45/IL 21 with Hintz Road.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the existing and Year 2024 total projected conditions are presented in **Tables 4** through **6**. A discussion of the intersections follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 4

CAPACITY ANALYSIS RESULTS – US 45/IL 21 – SIGNALIZED

Peak Hour	Eastbound			Westbound			Northbound			Southbound			Overall
	L	T	R	L	T	R	L	T	R	L	T	R	
Year 2018 Existing Conditions	Weekday Morning Peak Hour	E	C	C – 26.5			B	B	C	A	C	C – 29.1	
		68.9	34.8				17.9	16.4	26.0	9.0	26.0		
	Weekday Evening Peak Hour	D – 48.5			D – 36.4			B – 16.6			C – 25.9		
Year 2024 Projected Conditions	Weekday Morning Peak Hour	E	B	D – 36.3			E	A	E	A	E	D – 38.3	
		64.9	16.8				57.4	8.6	58.5	8.5	58.5		
	Saturday Midday Peak Hour	C – 34.5			D – 36.3			C – 24.0			E – 58.4		
Year 2018 Existing Conditions	Weekday Morning Peak Hour	D	C	D – 36.3			A	A	B	A	B	B – 11.5	
		47.1	31.6				5.1	5.1	10.9	3.4	10.9		
	Weekday Evening Peak Hour	D – 36.2			D – 36.3			A – 5.2			B – 10.6		
Year 2024 Projected Conditions	Weekday Morning Peak Hour	E	D	C – 26.5			B	B	C	A	C	C – 29.9	
		71.6	35.4				19.1	16.7	26.5	9.0	26.5		
	Weekday Evening Peak Hour	D – 50.0			C – 26.5			B – 17.1			C – 26.5		
Year 2018 Existing Conditions	Weekday Morning Peak Hour	E	B	D – 36.3			E	A	E	A	E	D – 46.3	
		68.6	16.7				60.0	9.1	77.5	8.5	77.5		
	Weekday Evening Peak Hour	D – 36.6			C – 24.6			E – 77.4			D – 46.3		
Year 2024 Projected Conditions	Saturday Midday Peak Hour	D	C	D – 36.3			A	A	B	A	B	B – 11.9	
		49.5	32.3				5.8	5.3	11.2	3.4	11.2		
	Weekday Morning Peak Hour	D – 37.8			A – 5.4			B – 11.2			B – 11.9		

Delay is measured in seconds.

Delay is measured in seconds.

Table 5

CAPACITY ANALYSIS RESULTS – EXISTING CONDITIONS - UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
US 45/IL 21 with River Mill Parkway						
• Eastbound Approach	B	12.0	B	14.0	B	12.4
LOS = Level of Service Delay is measured in seconds.						

Table 6

CAPACITY ANALYSIS RESULTS – PROJECTED CONDITIONS - UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
US 45/IL 21 with River Mill Parkway						
• Eastbound Approach	B	12.2	B	14.5	B	12.7
US 45/IL 21 with Proposed Access Drive						
• Eastbound Approach	C	18.4	F	60.5	C	24.8
• Northbound Left Turns	B	10.1	B	13.6	B	11.2
LOS = Level of Service Delay is measured in seconds.						

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the facility-generated traffic.

US 45/IL 21 with Hintz Road

The results of the capacity analyses indicate that overall this intersection currently operates at level of service (LOS) C during the weekday morning peak hour, LOS D during the weekday evening peak hour and at LOS B during the Saturday midday peak hours. Under Year 2024 conditions, this intersection is projected to continue operating at existing levels of service during the weekday morning, weekday evening and Saturday midday peak hours with increases in delay of approximately one second, eight seconds and one second, respectively. Furthermore, all of the approaches are projected to continue operating at level of service D or better during the peak hours with increases in delay of approximately two seconds or less with the exception of the southbound approach which currently operates at LOS E during the weekday evening peak hour.

Under projected conditions, the southbound approach is projected to continue operating at LOS E during the weekday evening peak hour with increases in delay of approximately 19 seconds. This level of service is due to the existing high volume of northbound left-turning movements which utilizes 32 percent of the cycle length, limiting the amount of green time allocated to the southbound approach.

The 95th percentile queues for the southbound approach are projected to be 345 feet, 725 feet and 248 feet during the weekday morning, weekday evening and Saturday midday peak hours, respectively, which is one to two car lengths greater than existing conditions. These queues are projected to extend to/beyond the proposed full movement access drive during the weekday morning and weekday evening peak hours. However, field observations indicated that southbound queues cleared the proposed access drive with each green phase during these peak hours.

Overall, the traffic projected to be generated by the proposed car wash will have a limited impact on the operations of this intersection and no signal modifications or roadway improvements will be required.

US 45/IL 21 with River Mill Parkway

The results of the capacity analyses indicate that the eastbound approach currently operates at LOS B during the weekday morning, weekday evening and Saturday midday peak hours. Under Year 2024 projected conditions, the eastbound approach is projected to continue operating at LOS B during the peak hours with increases in delay of less than one second and 95th percentile queues of one to two vehicles. As such, the traffic projected to be generated by the proposed car wash will have a limited impact on the operations of this intersection and no roadway or traffic control improvements will be required.

US 45/IL 21 with the Full Movement Access Drive

The results of the capacity analysis indicate that the eastbound approach is projected to operate at LOS C during the weekday morning and Saturday midday peak hours and at LOS F during the weekday evening peak hour with 95th percentile queues of one to two vehicles and approximately four vehicles, respectively. Northbound left-turns onto the proposed access drive are projected to operate at LOS B during all three peak hours with 95th percentile queues of one to two vehicles, which can be accommodated by the existing striped/mountable median along US 45/IL 21.

As previously indicated, approximately five vehicles can be accommodated between the exit of the car wash tunnel and the proposed access. Additionally, approximately 30 to 40 percent of car wash users also utilize the provided vacuums. Therefore, not all of the outbound vehicles will be vehicles exiting from the car wash tunnel.

As discussed in the following section, there are generally sufficient gaps in the US 45/IL 21 traffic stream to accommodate left and right-turning movements to/from the proposed access drive, especially when taking into consideration the provision of two-stage left turning movements of vehicles exiting the proposed car wash onto US 45/IL 21.

It should be noted that the results of the capacity analyses during the weekday evening peak hour are very conservative. The trip generation utilized for the car wash represents surveys conducted at a similar facility on a peak weekday following periods of rain/snow which result in a design day for the car wash. As can be seen from Table 3, the trip generation surveys are three times higher than the trip generation based on ITE, *Trip Generation Manual*, 10th Edition which reflect a more average day trip generation.

However, this access drive should be monitored in the future to determine should outbound left-turning movements experience greater than anticipated delay during the weekday evening peak hours. If that occurs then outbound left-turning movements onto US 45/IL 21 should be prohibited via signage during the weekday evening peak period.

Gap Study Evaluation

Table 7 shows the total number of potential movements compared to the number of required gaps that are needed to accommodate the projected traffic turning to and from the proposed access drive. As shown in Table 6, there are more than sufficient gaps in the US 45/IL 21 traffic stream to accommodate the northbound left turns into the proposed development and eastbound left and right turning movements onto US 45/IL 21 during the weekday morning, weekday evening, and Saturday Midday peak hours of adjacent roadway traffic except for eastbound left-turn movements during the weekday evening peak hour. However, it should be noted that the gap study does not take into consideration the number availability of two-stage left-turn movements. These movements will be able to occur within the existing two-way left-turn lane on US 45/IL 21 with minimal conflict as the closest intersection served by the existing two-way left-turn lane is located 400 feet north of the proposed access drive. As seen in Table 6, sufficient gaps exist in the southbound traffic stream to allow the provision of a two-stage left-turn movement.

Table 7

REQUIRED GAPS – US 45/IL 21

Movement	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	Potential Movements	Required Gaps	Potential Movements	Required Gaps	Potential Movements	Required Gaps
Northbound Left-Turn	618	14	370	62	504	43
Eastbound Right-Turn	280	15	167	59	214	41
Eastbound Left-Turn	75	14	33	59	61	42

6. Conclusion

Based on the preceding analyses and recommendations, the following conclusions have been made:

- The proposed car wash will generate a limited volume of traffic, which will be reduced due to pass-by traffic.
- The study area intersections will continue operating at acceptable levels of service under future conditions.
- The trip generation utilized in the preceding evaluation represents a design condition during the weekday evening peak hour. The trip generation surveys were conducted on sunny days following periods of rain or snow and are significantly higher than the trip generation estimates published in the *ITE Trip Generation Manual*, 10th Edition.
- The proposed access drive will be adequate in accommodating the traffic projected to be generated by the proposed development.
- The existing two-way left-turn lane will adequately accommodate site traffic wanting to enter the site.
- Adequate gaps generally exist in the US 45/IL 21 traffic stream to accommodate the projected left and/or right turning movements to/from the proposed full movement access drive, especially taking into consideration the utilization of two-stage left turning movements.
- The proposed site layout will provide adequate stacking and will provide efficient internal circulation for traffic entering and exiting and on-site queueing.

Appendix

Traffic Count Summary Sheets

Site Plan

CMAP Projections Letter

Level of Service Criteria

Capacity Analysis Summary Sheets

Traffic Count Summary Sheets



Rosemont, Illinois, United States 60018
(847)518-9990

Turning Movement Data

Start Time	Hintz Road Eastbound						Hintz Road Westbound						Milwaukee Avenue Northbound						Milwaukee Avenue Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	51	0	139	0	190	0	0	0	0	0	0	0	39	188	2	0	229	0	1	182	14	0	197	616
7:15 AM	0	76	1	122	0	199	0	1	1	0	0	2	0	64	228	1	0	293	0	0	176	14	0	190	684
7:30 AM	0	76	0	143	0	219	0	0	0	0	1	0	0	44	254	0	0	298	0	0	192	17	1	209	726
7:45 AM	0	102	0	131	0	233	0	0	0	0	0	0	0	58	254	0	0	312	0	0	217	20	0	237	782
Hourly Total	0	305	1	535	0	841	0	1	1	0	1	2	0	205	924	3	0	1132	0	1	767	65	1	833	2808
8:00 AM	0	79	0	147	0	226	0	1	0	0	0	1	0	56	240	0	0	296	0	0	191	19	0	210	733
8:15 AM	0	100	0	151	0	251	0	0	0	0	0	0	0	43	242	0	0	285	0	1	204	21	0	226	762
8:30 AM	0	87	2	121	0	210	0	1	0	0	0	1	0	38	262	2	0	302	0	0	203	15	0	218	731
8:45 AM	0	86	0	99	0	185	0	1	0	0	0	1	1	56	236	0	0	293	0	0	193	15	0	208	687
Hourly Total	0	352	2	518	0	872	0	3	0	0	0	3	1	193	980	2	0	1176	0	1	791	70	0	862	2913
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	35	0	85	1	120	0	0	0	0	0	0	1	114	222	0	0	337	0	0	226	38	0	264	721
4:15 PM	0	30	0	69	1	99	0	1	2	0	1	3	0	126	237	1	1	364	1	1	270	54	0	326	792
4:30 PM	1	39	0	97	0	137	0	0	1	0	0	1	0	119	276	1	0	396	0	0	290	56	0	346	880
4:45 PM	0	33	1	60	0	94	0	0	0	0	0	0	0	141	279	1	0	421	0	1	244	56	0	301	816
Hourly Total	1	137	1	311	2	450	0	1	3	0	1	4	1	500	1014	3	1	1518	1	2	1030	204	0	1237	3209
5:00 PM	0	42	0	71	0	113	0	1	0	0	0	1	0	109	273	2	0	384	0	0	257	53	0	310	808
5:15 PM	0	50	0	57	0	107	0	1	4	1	0	6	0	152	294	6	0	452	1	1	263	55	0	320	885
5:30 PM	0	27	0	46	0	73	0	0	1	2	0	3	0	137	295	3	0	435	0	0	280	52	0	332	843
5:45 PM	0	26	0	47	2	73	0	0	2	0	0	2	0	125	274	4	0	403	0	0	279	55	0	334	812
Hourly Total	0	145	0	221	2	366	0	2	7	3	0	12	0	523	1136	15	0	1674	1	1	1079	215	0	1296	3348
Grand Total	1	939	4	1585	4	2529	0	7	11	3	2	21	2	1421	4054	23	1	5500	2	5	3667	554	1	4228	12278
Approach %	0.0	37.1	0.2	62.7	-	-	0.0	33.3	52.4	14.3	-	-	0.0	25.8	73.7	0.4	-	-	0.0	0.1	86.7	13.1	-	-	-
Total %	0.0	7.6	0.0	12.9	-	20.6	0.0	0.1	0.1	0.0	0.0	0.2	0.0	11.6	33.0	0.2	-	44.8	0.0	0.0	29.9	4.5	-	34.4	-
Lights	1	888	3	1498	-	2390	0	7	11	3	-	21	1	1342	3931	22	-	5296	2	5	3513	514	-	4034	11741
% Lights	100.0	94.6	75.0	94.5	-	94.5	-	100.0	100.0	100.0	-	100.0	50.0	94.4	97.0	95.7	-	96.3	100.0	100.0	95.8	92.8	-	95.4	95.6
Buses	0	9	0	18	-	27	0	0	0	0	0	0	1	30	22	1	-	54	0	0	13	5	-	18	99
% Buses	0.0	1.0	0.0	1.1	-	1.1	-	0.0	0.0	0.0	-	0.0	50.0	2.1	0.5	4.3	-	1.0	0.0	0.0	0.4	0.9	-	0.4	0.8
Single-Unit Trucks	0	13	1	54	-	68	0	0	0	0	-	0	0	30	63	0	-	93	0	0	91	14	-	105	266
% Single-Unit Trucks	0.0	1.4	25.0	3.4	-	2.7	-	0.0	0.0	0.0	-	0.0	0.0	2.1	1.6	0.0	-	1.7	0.0	0.0	2.5	2.5	-	2.5	2.2
Articulated Trucks	0	29	0	15	-	44	0	0	0	0	-	0	0	19	37	0	-	56	0	0	50	20	-	70	170
% Articulated Trucks	0.0	3.1	0.0	0.9	-	1.7	-	0.0	0.0	0.0	-	0.0	0.0	1.3	0.9	0.0	-	1.0	0.0	0.0	1.4	3.6	-	1.7	1.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	1	-	1	2
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.2	-	0.0	0.0
Pedestrians	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	1	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Milwaukee Avenue with Hintz
Road
Site Code:
Start Date: 08/22/2018
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hintz Road Eastbound							Hintz Road Westbound							Milwaukee Avenue Northbound							Milwaukee Avenue Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	0	102	0	131	0	233		0	0	0	0	0	0		0	58	254	0	0	312		0	0	217	20	0	237	782
8:00 AM	0	79	0	147	0	226		0	1	0	0	0	1		0	56	240	0	0	296		0	0	191	19	0	210	733
8:15 AM	0	100	0	151	0	251		0	0	0	0	0	0		0	43	242	0	0	285		0	1	204	21	0	226	762
8:30 AM	0	87	2	121	0	210		0	1	0	0	0	1		0	38	262	2	0	302		0	0	203	15	0	218	731
Total	0	368	2	550	0	920		0	2	0	0	0	2		0	195	998	2	0	1195		0	1	815	75	0	891	3008
Approach %	0.0	40.0	0.2	59.8	-	-		0.0	100.0	0.0	0.0	-	-		0.0	16.3	83.5	0.2	-	-		0.0	0.1	91.5	8.4	-	-	-
Total %	0.0	12.2	0.1	18.3	-	30.6		0.0	0.1	0.0	0.0	-	0.1		0.0	6.5	33.2	0.1	-	39.7		0.0	0.0	27.1	2.5	-	29.6	-
PHF	0.000	0.902	0.250	0.911	-	0.916		0.000	0.500	0.000	0.000	-	0.500		0.000	0.841	0.952	0.250	-	0.958		0.000	0.250	0.939	0.893	-	0.940	0.962
Lights	0	354	1	504	-	859		0	2	0	0	-	2		0	173	950	2	-	1125		0	1	777	67	-	845	2831
% Lights	-	96.2	50.0	91.6	-	93.4		-	100.0	-	-	-	100.0		-	88.7	95.2	100.0	-	94.1		-	100.0	95.3	89.3	-	94.8	94.1
Buses	0	3	0	13	-	16		0	0	0	0	-	0		0	6	9	0	-	15		0	0	3	2	-	5	36
% Buses	-	0.8	0.0	2.4	-	1.7		-	0.0	-	-	-	0.0		-	3.1	0.9	0.0	-	1.3		-	0.0	0.4	2.7	-	0.6	1.2
Single-Unit Trucks	0	4	1	26	-	31		0	0	0	0	-	0		0	11	27	0	-	38		0	0	24	2	-	26	95
% Single-Unit Trucks	-	1.1	50.0	4.7	-	3.4		-	0.0	-	-	-	0.0		-	5.6	2.7	0.0	-	3.2		-	0.0	2.9	2.7	-	2.9	3.2
Articulated Trucks	0	7	0	7	-	14		0	0	0	0	-	0		0	5	12	0	-	17		0	0	11	4	-	15	46
% Articulated Trucks	-	1.9	0.0	1.3	-	1.5		-	0.0	-	-	-	0.0		-	2.6	1.2	0.0	-	1.4		-	0.0	1.3	5.3	-	1.7	1.5
Bicycles on Road	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0		-	0.0	-	-	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-		-	-	-	-	0	-		-	-	-	-	0	-		-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-



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Count Name: Milwaukee Avenue with Hintz
Road
Site Code:
Start Date: 08/22/2018
Page No: 4

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hintz Road Eastbound							Hintz Road Westbound							Milwaukee Avenue Northbound							Milwaukee Avenue Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	1	39	0	97	0	137		0	0	1	0	0	1		0	119	276	1	0	396		0	0	290	56	0	346	880
4:45 PM	0	33	1	60	0	94		0	0	0	0	0	0		0	141	279	1	0	421		0	1	244	56	0	301	816
5:00 PM	0	42	0	71	0	113		0	1	0	0	0	1		0	109	273	2	0	384		0	0	257	53	0	310	808
5:15 PM	0	50	0	57	0	107		0	1	4	1	0	6		0	152	294	6	0	452		1	1	263	55	0	320	885
Total	1	164	1	285	0	451		0	2	5	1	0	8		0	521	1122	10	0	1653		1	2	1054	220	0	1277	3389
Approach %	0.2	36.4	0.2	63.2	-	-		0.0	25.0	62.5	12.5	-	-		0.0	31.5	67.9	0.6	-	-		0.1	0.2	82.5	17.2	-	-	-
Total %	0.0	4.8	0.0	8.4	-	13.3		0.0	0.1	0.1	0.0	-	0.2		0.0	15.4	33.1	0.3	-	48.8		0.0	0.1	31.1	6.5	-	37.7	-
PHF	0.250	0.820	0.250	0.735	-	0.823		0.000	0.500	0.313	0.250	-	0.333		0.000	0.857	0.954	0.417	-	0.914		0.250	0.500	0.909	0.982	-	0.923	0.957
Lights	1	158	1	275	-	435		0	2	5	1	-	8		0	502	1104	10	-	1616		1	2	1013	207	-	1223	3282
% Lights	100.0	96.3	100.0	96.5	-	96.5		-	100.0	100.0	100.0	-	100.0		-	96.4	98.4	100.0	-	97.8		100.0	100.0	96.1	94.1	-	95.8	96.8
Buses	0	1	0	0	-	1		0	0	0	0	-	0		0	8	5	0	-	13		0	0	5	1	-	6	20
% Buses	0.0	0.6	0.0	0.0	-	0.2		-	0.0	0.0	0.0	-	0.0		-	1.5	0.4	0.0	-	0.8		0.0	0.0	0.5	0.5	-	0.5	0.6
Single-Unit Trucks	0	1	0	9	-	10		0	0	0	0	-	0		0	6	8	0	-	14		0	0	25	4	-	29	53
% Single-Unit Trucks	0.0	0.6	0.0	3.2	-	2.2		-	0.0	0.0	0.0	-	0.0		-	1.2	0.7	0.0	-	0.8		0.0	0.0	2.4	1.8	-	2.3	1.6
Articulated Trucks	0	4	0	1	-	5		0	0	0	0	-	0		0	5	5	0	-	10		0	0	11	8	-	19	34
% Articulated Trucks	0.0	2.4	0.0	0.4	-	1.1		-	0.0	0.0	0.0	-	0.0		-	1.0	0.4	0.0	-	0.6		0.0	0.0	1.0	3.6	-	1.5	1.0
Bicycles on Road	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-		-	-	-	-	0	-	-		-	-	-	-	0		-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-



Rosemont, Illinois, United States 60018
(847)518-9990

Turning Movement Data

Start Time	Hintz Road Eastbound					Park Access Westbound					Milwaukee Avenue Northbound					Milwaukee Avenue Southbound					Int. Total				
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru		Right	Peds	App. Total	
12:00 PM	0	26	0	63	2	89	0	0	1	0	0	1	0	41	204	2	0	247	0	1	220	19	0	240	577
12:15 PM	0	21	0	48	0	69	0	0	1	0	0	1	0	41	206	1	0	248	0	0	257	19	0	276	594
12:30 PM	0	19	0	52	0	71	0	1	0	0	0	1	0	40	235	0	0	275	1	2	230	15	0	248	595
12:45 PM	0	21	0	39	0	60	0	0	0	0	0	0	0	55	211	0	0	266	1	0	217	25	0	243	569
Hourly Total	0	87	0	202	2	289	0	1	2	0	0	3	0	177	856	3	0	1036	2	3	924	78	0	1007	2335
1:00 PM	0	19	0	43	0	62	0	0	0	0	0	0	0	43	221	2	0	266	0	2	215	19	0	236	564
1:15 PM	0	17	0	37	0	54	0	0	0	0	0	0	0	39	221	1	0	261	0	0	215	22	0	237	552
1:30 PM	0	21	0	50	0	71	0	0	0	0	0	0	0	56	221	0	0	277	0	0	220	23	0	243	591
1:45 PM	0	25	0	39	0	64	0	0	0	0	0	0	0	50	221	1	0	292	0	0	187	17	0	204	560
Hourly Total	0	82	0	169	0	251	0	0	0	0	0	0	0	188	904	4	0	1096	0	2	837	81	0	920	2267
Grand Total	0	169	0	371	2	540	0	1	2	0	0	3	0	365	1760	7	0	2132	2	5	1761	159	0	1927	4602
Approach %	0.0	31.3	0.0	68.7	-	-	0.0	33.3	66.7	0.0	-	-	0.0	17.1	82.6	0.3	-	-	0.1	0.3	91.4	8.3	-	-	-
Total %	0.0	3.7	0.0	8.1	-	11.7	0.0	0.0	0.0	0.0	-	0.1	0.0	7.9	38.2	0.2	-	46.3	0.0	0.1	38.3	3.5	-	41.9	-
Lights	0	166	0	364	-	530	0	1	2	0	-	3	0	354	1740	7	-	2101	2	5	1738	150	-	1895	4529
% Lights	-	98.2	-	98.1	-	98.1	-	100.0	100.0	-	-	100.0	-	97.0	98.9	100.0	-	98.5	100.0	100.0	98.7	94.3	-	98.3	98.4
Buses	0	0	0	1	-	1	0	0	0	0	-	0	0	5	4	0	-	9	0	0	7	1	-	8	18
% Buses	-	0.0	-	0.3	-	0.2	-	0.0	0.0	-	-	0.0	-	1.4	0.2	0.0	-	0.4	0.0	0.0	0.4	0.6	-	0.4	0.4
Single-Unit Trucks	0	3	0	5	-	8	0	0	0	0	-	0	0	4	11	0	-	15	0	0	12	5	-	17	40
% Single-Unit Trucks	-	1.8	-	1.3	-	1.5	-	0.0	0.0	-	-	0.0	-	1.1	0.6	0.0	-	0.7	0.0	0.0	0.7	3.1	-	0.9	0.9
Articulated Trucks	0	0	0	1	-	1	0	0	0	0	-	0	0	2	5	0	-	7	0	0	4	3	-	7	15
% Articulated Trucks	-	0.0	-	0.3	-	0.2	-	0.0	0.0	-	-	0.0	-	0.5	0.3	0.0	-	0.3	0.0	0.0	0.2	1.9	-	0.4	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	0.0	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



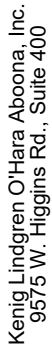
Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Milwaukee Avenue and Hintz
Road
Site Code:
Start Date: 09/15/2018
Page No: 2

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Hintz Road Eastbound							Park Access Westbound							Milwaukee Avenue Northbound							Milwaukee Avenue Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	0	26	0	63	2	89		0	0	1	0	0	1		0	41	204	2	0	247		0	1	220	19	0	240	577
12:15 PM	0	21	0	48	0	69		0	0	1	0	0	1		0	41	206	1	0	248		0	0	257	19	0	276	594
12:30 PM	0	19	0	52	0	71		0	1	0	0	0	1		0	40	235	0	0	275		1	2	230	15	0	248	595
12:45 PM	0	21	0	39	0	60		0	0	0	0	0	0		0	55	211	0	0	266		1	0	217	25	0	243	569
Total	0	87	0	202	2	289		0	1	2	0	0	3		0	177	856	3	0	1036		2	3	924	78	0	1007	2335
Approach %	0.0	30.1	0.0	69.9	-	-		0.0	33.3	66.7	0.0	-	-		0.0	17.1	82.6	0.3	-	-		0.2	0.3	91.8	7.7	-	-	-
Total %	0.0	3.7	0.0	8.7	-	12.4		0.0	0.0	0.1	0.0	-	0.1		0.0	7.6	36.7	0.1	-	44.4		0.1	0.1	39.6	3.3	-	43.1	-
PHF	0.000	0.837	0.000	0.802	-	0.812		0.000	0.250	0.500	0.000	-	0.750		0.000	0.805	0.911	0.375	-	0.942		0.500	0.375	0.899	0.780	-	0.912	0.981
Lights	0	85	0	199	-	284		0	1	2	0	-	3		0	169	848	3	-	1020		2	3	912	73	-	990	2297
% Lights	-	97.7	-	98.5	-	98.3		-	100.0	100.0	-	-	100.0		-	95.5	99.1	100.0	-	98.5		100.0	100.0	98.7	93.6	-	98.3	98.4
Buses	0	0	0	0	-	0		0	0	0	0	-	0		0	4	1	0	-	5		0	0	3	1	-	4	9
% Buses	-	0.0	-	0.0	-	0.0		-	0.0	0.0	-	-	0.0		-	2.3	0.1	0.0	-	0.5		0.0	0.0	0.3	1.3	-	0.4	0.4
Single-Unit Trucks	0	2	0	2	-	4		0	0	0	0	-	0		0	2	5	0	-	7		0	0	7	2	-	9	20
% Single-Unit Trucks	-	2.3	-	1.0	-	1.4		-	0.0	0.0	-	-	0.0		-	1.1	0.6	0.0	-	0.7		0.0	0.0	0.8	2.6	-	0.9	0.9
Articulated Trucks	0	0	0	1	-	1		0	0	0	0	-	0		0	2	2	0	-	4		0	0	2	2	-	4	9
% Articulated Trucks	-	0.0	-	0.5	-	0.3		-	0.0	0.0	-	-	0.0		-	1.1	0.2	0.0	-	0.4		0.0	0.0	0.2	2.6	-	0.4	0.4
Bicycles on Road	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	0.0	-	0.0		-	0.0	0.0	-	-	0.0		-	0.0	0.0	0.0	-	0.0		0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	2	-		-	-	-	-	0	-		-	-	-	-	0	-		-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-



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Turning Movement Data

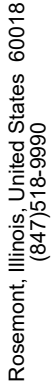
Start Time	River Mill Parkway Eastbound					Milwaukee Avenue Northbound					Milwaukee Avenue Southbound					Int. Total
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	
7:00 AM	0	0	2	0	2	0	0	252	0	252	0	210	0	0	210	464
7:15 AM	0	0	2	0	2	0	0	286	0	286	0	187	3	0	190	478
7:30 AM	0	0	7	0	7	0	0	360	0	360	0	207	1	0	208	575
7:45 AM	0	1	2	1	3	0	0	342	0	342	0	234	2	0	236	581
Hourly Total	0	1	13	1	14	0	0	1240	0	1240	0	838	6	0	844	2098
8:00 AM	0	0	2	0	2	0	0	325	0	325	0	211	2	0	213	540
8:15 AM	0	0	5	0	5	0	0	339	0	339	0	229	2	0	231	575
8:30 AM	0	0	2	0	2	0	0	322	0	322	0	212	2	0	214	538
8:45 AM	0	1	1	0	2	0	0	315	0	315	0	217	0	1	217	534
Hourly Total	0	1	10	0	11	0	0	1301	0	1301	0	869	6	1	875	2187
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	2	0	2	0	1	250	0	251	0	269	3	0	272	525
4:15 PM	0	0	1	1	1	0	1	276	0	277	0	327	4	0	331	609
4:30 PM	0	0	0	0	0	0	0	305	0	305	0	319	4	0	323	628
4:45 PM	0	1	0	0	1	0	0	319	0	319	0	312	4	0	316	636
Hourly Total	0	1	3	1	4	0	2	1150	0	1152	0	1227	15	0	1242	2398
5:00 PM	0	0	1	0	1	0	0	317	0	317	0	327	8	0	335	653
5:15 PM	0	0	3	0	3	0	1	352	0	353	0	305	8	0	313	669
5:30 PM	0	1	1	0	2	0	0	309	0	309	0	339	5	0	344	655
5:45 PM	0	0	0	2	0	0	0	287	0	287	0	318	2	0	320	607
Hourly Total	0	1	5	2	6	0	1	1265	0	1266	0	1289	23	0	1312	2584
Grand Total	0	4	31	4	35	0	3	4956	0	4959	0	4223	50	1	4273	9267
Approach %	0.0	11.4	88.6	-	-	0.0	0.1	99.9	-	-	0.0	98.8	1.2	-	-	-
Total %	0.0	0.0	0.3	-	0.4	0.0	0.0	53.5	-	53.5	0.0	45.6	0.5	-	46.1	-
Lights	0	4	30	-	34	0	3	4799	-	4802	0	4040	44	-	4084	8920
% Lights	-	100.0	96.8	-	97.1	-	100.0	96.8	-	96.8	-	95.7	88.0	-	95.6	96.3
Buses	0	0	1	-	1	0	0	29	-	29	0	21	6	-	27	57
% Buses	-	0.0	3.2	-	2.9	-	0.0	0.6	-	0.6	-	0.5	12.0	-	0.6	0.6
Single-Unit Trucks	0	0	0	-	0	0	0	70	-	70	0	97	0	-	97	167
% Single-Unit Trucks	-	0.0	0.0	-	0.0	-	0.0	1.4	-	1.4	-	2.3	0.0	-	2.3	1.8
Articulated Trucks	0	0	0	-	0	0	0	58	-	58	0	64	0	-	64	122
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	1.2	-	1.2	-	1.5	0.0	-	1.5	1.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Rosemont, Illinois, United States 60018
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Turning Movement Peak Hour Data (7:45 AM)

Start Time	River Mill Parkway Eastbound						Milwaukee Avenue Northbound						Milwaukee Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total		U-Turn	Left	Thru	Peds	App. Total		U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	0	1	2	1	3		0	0	342	0	342		0	234	2	0	236	581
8:00 AM	0	0	2	0	2		0	0	325	0	325		0	211	2	0	213	540
8:15 AM	0	0	5	0	5		0	0	339	0	339		0	229	2	0	231	575
8:30 AM	0	0	2	0	2		0	0	322	0	322		0	212	2	0	214	538
Total	0	1	11	1	12		0	0	1328	0	1328		0	886	8	0	894	2234
Approach %	0.0	8.3	91.7	-	-		0.0	0.0	100.0	-	-		0.0	99.1	0.9	-	-	-
Total %	0.0	0.0	0.5	-	0.5		0.0	0.0	59.4	-	59.4		0.0	39.7	0.4	-	40.0	-
PHF	0.000	0.250	0.550	-	0.600		0.000	0.000	0.971	-	0.971		0.000	0.947	1.000	-	0.947	0.961
Lights	0	1	10	-	11		0	0	1269	-	1269		0	840	5	-	845	2125
% Lights	-	100.0	90.9	-	91.7		-	-	95.6	-	95.6		-	94.8	62.5	-	94.5	95.1
Buses	0	0	1	-	1		0	0	10	-	10		0	6	3	-	9	20
% Buses	-	0.0	9.1	-	8.3		-	-	0.8	-	0.8		-	0.7	37.5	-	1.0	0.9
Single-Unit Trucks	0	0	0	-	0		0	0	29	-	29		0	27	0	-	27	56
% Single-Unit Trucks	-	0.0	0.0	-	0.0		-	-	2.2	-	2.2		-	3.0	0.0	-	3.0	2.5
Articulated Trucks	0	0	0	-	0		0	0	20	-	20		0	13	0	-	13	33
% Articulated Trucks	-	0.0	0.0	-	0.0		-	-	1.5	-	1.5		-	1.5	0.0	-	1.5	1.5
Bicycles on Road	0	0	0	-	0		0	0	0	-	0		0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0		-	-	0.0	-	0.0		-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	1	-		-	-	-	0	-		-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-		-	-	-	-	-		-	-	-	-	-	-



Turning Movement Peak Hour Data (4:30 PM)

Start Time	River Mill Parkway Eastbound						Milwaukee Avenue Northbound						Milwaukee Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total		U-Turn	Left	Thru	Peds	App. Total		U-Turn	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	0	0	0	0		0	0	305	0	305		0	319	4	0	323	628
4:45 PM	0	1	0	0	1		0	0	319	0	319		0	312	4	0	316	636
5:00 PM	0	0	1	0	1		0	0	317	0	317		0	327	8	0	335	653
5:15 PM	0	0	3	0	3		0	1	352	0	353		0	305	8	0	313	669
Total	0	1	4	0	5		0	1	1293	0	1294		0	1263	24	0	1287	2586
Approach %	0.0	20.0	80.0	-	-		0.0	0.1	99.9	-	-		0.0	98.1	1.9	-	-	-
Total %	0.0	0.0	0.2	-	0.2		0.0	0.0	50.0	-	50.0		0.0	48.8	0.9	-	49.8	-
PHF	0.000	0.250	0.333	-	0.417		0.000	0.250	0.918	-	0.916		0.000	0.966	0.750	-	0.960	0.966
Lights	0	1	4	-	5		0	1	1272	-	1273		0	1217	22	-	1239	2517
% Lights	-	100.0	100.0	-	100.0		-	100.0	98.4	-	98.4		-	96.4	91.7	-	96.3	97.3
Buses	0	0	0	-	0		0	0	6	-	6		0	6	2	-	8	14
% Buses	-	0.0	0.0	-	0.0		-	0.0	0.5	-	0.5		-	0.5	8.3	-	0.6	0.5
Single-Unit Trucks	0	0	0	-	0		0	0	7	-	7		0	22	0	-	22	29
% Single-Unit Trucks	-	0.0	0.0	-	0.0		-	0.0	0.5	-	0.5		-	1.7	0.0	-	1.7	1.1
Articulated Trucks	0	0	0	-	0		0	0	8	-	8		0	18	0	-	18	26
% Articulated Trucks	-	0.0	0.0	-	0.0		-	0.0	0.6	-	0.6		-	1.4	0.0	-	1.4	1.0
Bicycles on Road	0	0	0	-	0		0	0	0	-	0		0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0		-	0.0	0.0	-	0.0		-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-		-	-	-	0	-		-	-	-	0	-	-
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-



Rosemont, Illinois, United States 60018
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Start Time	River Mill Parkway Eastbound						Milwaukee Avenue Northbound						Milwaukee Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total		U-Turn	Left	Thru	Peds	App. Total		U-Turn	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	0	0	0	1	0		0	0	213	0	213		0	248	5	0	253	466
12:15 PM	0	0	1	1	1		0	0	242	0	242		0	267	3	0	270	513
12:30 PM	0	1	1	1	2		1	0	244	0	245		0	250	4	0	254	501
12:45 PM	0	0	3	0	3		0	0	236	0	236		0	248	3	0	251	490
Hourly Total	0	1	5	3	6		1	0	935	0	936		0	1013	15	0	1028	1970
1:00 PM	0	0	2	0	2		0	0	225	0	225		0	237	3	0	240	467
1:15 PM	0	0	1	0	1		0	0	251	0	251		0	239	2	0	241	493
1:30 PM	0	0	0	0	0		0	0	239	0	239		0	244	2	0	246	485
1:45 PM	0	0	0	0	0		0	0	272	0	272		0	215	1	0	216	488
Hourly Total	0	0	3	0	3		0	0	987	0	987		0	935	8	0	943	1933
Grand Total	0	1	8	3	9		1	0	1922	0	1923		0	1948	23	0	1971	3903
Approach %	0.0	11.1	88.9	-	-		0.1	0.0	99.9	-	-		0.0	98.8	1.2	-	-	-
Total %	0.0	0.0	0.2	-	0.2		0.0	0.0	49.2	-	49.3		0.0	49.9	0.6	-	50.5	-
Lights	0	1	8	-	9		1	0	1897	-	1898		0	1914	23	-	1937	3844
% Lights	-	100.0	100.0	-	100.0		100.0	-	98.7	-	98.7		-	98.3	100.0	-	98.3	98.5
Buses	0	0	0	-	0		0	0	5	-	5		0	7	0	-	7	12
% Buses	-	0.0	0.0	-	0.0		0.0	-	0.3	-	0.3		-	0.4	0.0	-	0.4	0.3
Single-Unit Trucks	0	0	0	-	0		0	0	15	-	15		0	19	0	-	19	34
% Single-Unit Trucks	-	0.0	0.0	-	0.0		0.0	-	0.8	-	0.8		-	1.0	0.0	-	1.0	0.9
Articulated Trucks	0	0	0	-	0		0	0	5	-	5		0	8	0	-	8	13
% Articulated Trucks	-	0.0	0.0	-	0.0		0.0	-	0.3	-	0.3		-	0.4	0.0	-	0.4	0.3
Bicycles on Road	0	0	0	-	0		0	0	0	-	0		0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0		0.0	-	0.0	-	0.0		-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	3	-		-	-	-	0	-		-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-		-	-	-	-	-		-	-	-	-	-	-

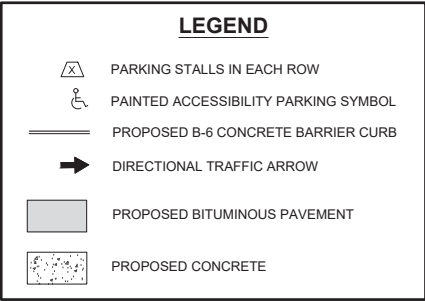


Rosemont, Illinois, United States 60018
(847)518-9990

Turning Movement Peak Hour Data (12:00 PM)

Start Time	River Mill Parkway Eastbound						Milwaukee Avenue Northbound						Milwaukee Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total		U-Turn	Left	Thru	Peds	App. Total		U-Turn	Thru	Right	Peds	App. Total	Int. Total
12:00 PM	0	0	0	1	0		0	0	213	0	213		0	248	5	0	253	466
12:15 PM	0	0	1	1	1		0	0	242	0	242		0	267	3	0	270	513
12:30 PM	0	1	1	1	2		1	0	244	0	245		0	250	4	0	254	501
12:45 PM	0	0	3	0	3		0	0	236	0	236		0	248	3	0	251	490
Total	0	1	5	3	6		1	0	935	0	936		0	1013	15	0	1028	1970
Approach %	0.0	16.7	83.3	-	-		0.1	0.0	99.9	-	-		0.0	98.5	1.5	-	-	-
Total %	0.0	0.1	0.3	-	0.3		0.1	0.0	47.5	-	47.5		0.0	51.4	0.8	-	52.2	-
PHF	0.000	0.250	0.417	-	0.500		0.250	0.000	0.958	-	0.955		0.000	0.949	0.750	-	0.952	0.960
Lights	0	1	5	-	6		1	0	923	-	924		0	992	15	-	1007	1937
% Lights	-	100.0	100.0	-	100.0		100.0	-	98.7	-	98.7		-	97.9	100.0	-	98.0	98.3
Buses	0	0	0	-	0		0	0	2	-	2		0	4	0	-	4	6
% Buses	-	0.0	0.0	-	0.0		0.0	-	0.2	-	0.2		-	0.4	0.0	-	0.4	0.3
Single-Unit Trucks	0	0	0	-	0		0	0	8	-	8		0	10	0	-	10	18
% Single-Unit Trucks	-	0.0	0.0	-	0.0		0.0	-	0.9	-	0.9		-	1.0	0.0	-	1.0	0.9
Articulated Trucks	0	0	0	-	0		0	0	2	-	2		0	7	0	-	7	9
% Articulated Trucks	-	0.0	0.0	-	0.0		0.0	-	0.2	-	0.2		-	0.7	0.0	-	0.7	0.5
Bicycles on Road	0	0	0	-	0		0	0	0	-	0		0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	0.0		0.0	-	0.0	-	0.0		-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	3	-		-	-	-	0	-		-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-		-	-	-	-	-		-	-	-	-	-	-

Site Plan



PARKING SUMMARY:

STANDARD STALLS:	5
ADA / VACUUM STALLS:	2
VACUUM STALLS:	<u>24</u>

TOTAL STALLS: 31

LOT DATA:

PIN: 03-12-300-040-0000
ADDRESS: 966 S. MILWAUKEE AVE.
WHEELING, IL 60090
ZONING: B-1
AREA: 1.645 AC

FLOODPLAIN ZONE AE
(FEMA FIRM MAP #17031C0069J, #17031C0207J)
(EFFECTIVE DATE 08/19/08)
BFE = 640.70 @ PROJECT LOCATION

PREPARED FOR:

CAR WASH
Pro Designers
Design, Development, Consulting

PREPARED BY:

TERRA
CONSULTING GROUP, LTD.

600 Busse Highway
Park Ridge, IL 60068
Ph: 847/698-6400
Fax: 847/698-6401

[illegible]

SITE IMPROVEMENTS

FOR

966 S. MILWAUKEE AVE.
WHEELING, IL 60090

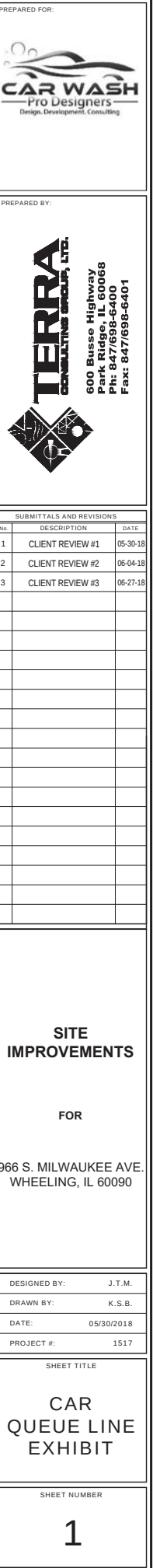
DESIGNED BY:	J.T.M.
DRAWN BY:	K.S.B.
DATE:	05/30/2018
PROJECT #:	1517

SITE EXHIBIT

SHEET NUMBER

1

- NOTES:**
1. ALL DIMENSIONS ARE FROM FACE OF CURB
EDGE OF PAVEMENT, FACE OF BUILDING
OR PERPENDICULAR TO PROPERTY LINE
UNLESS OTHERWISE NOTED.
 2. STRIPING DIMENSIONS FROM CENTER OF
STRIPE.
 3. ABBREVIATIONS:
TYP. = TYPICAL
BC = BACK OF CURB
PL = PROPERTY LINE
BL = BUILDING FACE/FOUNDATION LINE



CMAP 2040 Projections Letter



Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

September 27, 2018

Elise Purguette
Consultant
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Bolingbrook, IL 60440

Subject: *Hintz Road @ Milwaukee Avenue*
IDOT

Dear Ms. Purguette:

In response to a request made on your behalf and dated September 26, 2017, we have developed year 2040 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2040 ADT
Milwaukee Ave S of Hintz Rd	32,900	33,500
Milwaukee Ave N of Hintz Rd	26,300	26,600
E. Hintz Rd west of Milwaukee Ave	9,500	9,800

Traffic projections are developed using existing ADT data provided in the request letter and the results from the March 2018 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2040 socioeconomic projections and assumes the implementation of the GO TO 2040 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Rodriguez".

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
S:\AdminGroups\ResearchAnalysis\2018cy_TrafficForecasts\Wheeling\ck-108-18\ck-108-18.docx

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80.0
Unsignalized Intersections		
Level of Service	Average Total Delay (SEC/VEH)	
A	0 - 10	
B	> 10 - 15	
C	> 15 - 25	
D	> 25 - 35	
E	> 35 - 50	
F	> 50	
Source: <i>Highway Capacity Manual</i> , 2010.		

Capacity Analysis Summary Sheets

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖↗		↖	↖↗		↖	↖↗	
Traffic Volume (vph)	368	2	550	2	0	0	195	998	2	1	822	75
Future Volume (vph)	368	2	550	2	0	0	195	998	2	1	822	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		1	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850								0.987	
Flt Protected		0.953			0.950		0.950			0.950		
Satd. Flow (prot)	0	1737	1495	0	3429	0	1626	3438	0	1805	3377	0
Flt Permitted		0.727			0.296		0.190			0.246		
Satd. Flow (perm)	0	1325	1495	0	1069	0	325	3438	0	467	3377	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	50%	8%	0%	0%	0%	11%	5%	0%	0%	5%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	385	573	0	2	0	203	1042	0	1	934	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	40.0	40.0	16.0	40.0	40.0		16.0	62.0		8.0	54.0	
Total Split (%)	36.4%	36.4%	14.5%	36.4%	36.4%		14.5%	56.4%		7.3%	49.1%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		32.8	50.2		32.8		63.5	59.4		53.1	46.1	
Actuated g/C Ratio		0.31	0.47		0.31		0.60	0.56		0.50	0.44	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.94	0.81		0.01		0.61	0.54		0.00	0.64	
Control Delay		68.9	34.8		26.5		17.9	16.4		9.0	26.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		68.9	34.8		26.5		17.9	16.4		9.0	26.0	
LOS		E	C		C		B	B		A	C	
Approach Delay		48.5			26.5			16.6			25.9	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		264	333		0		61	218		0	264	
Queue Length 95th (ft)		#454	#500		3		97	327		2	333	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		428	726		345		349	1969		291	1540	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.90	0.79		0.01		0.58	0.53		0.00	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 105.8

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 29.1

Intersection LOS: C

Intersection Capacity Utilization 79.2%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

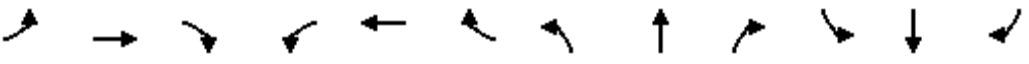
Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	62 s	40 s
 Ø5	 Ø6	 Ø8
16 s	54 s	40 s

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖↗		↖	↖↗		↖	↖↗	
Traffic Volume (vph)	165	1	285	2	5	1	521	1128	10	2	1054	220
Future Volume (vph)	165	1	285	2	5	1	521	1128	10	2	1054	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		25	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.981			0.999			0.974	
Flt Protected		0.953			0.988		0.950			0.950		
Satd. Flow (prot)	0	1741	1568	0	3499	0	1736	3536	0	1805	3370	0
Flt Permitted		0.722			0.902		0.083			0.238		
Satd. Flow (perm)	0	1319	1568	0	3194	0	152	3536	0	452	3370	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	3%	0%	0%	0%	4%	2%	0%	0%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	297	0	8	0	543	1185	0	2	1327	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	27.0	27.0	35.0	27.0	27.0		35.0	75.0		8.0	48.0	
Total Split (%)	24.5%	24.5%	31.8%	24.5%	24.5%		31.8%	68.2%		7.3%	43.6%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		18.3	55.3		18.3		79.1	75.0		49.1	42.1	
Actuated g/C Ratio		0.17	0.52		0.17		0.74	0.70		0.46	0.39	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.77	0.37		0.01		0.95	0.48		0.01	1.00	
Control Delay		64.9	16.8		36.4		57.4	8.6		8.5	58.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		64.9	16.8		36.4		57.4	8.6		8.5	58.5	
LOS		E	B		D		E	A		A	E	
Approach Delay		34.5			36.4			24.0			58.4	
Approach LOS		C			D			C			E	
Queue Length 50th (ft)		115	116		2		322	173		0	~527	
Queue Length 95th (ft)		#208	177		10		#548	282		2	#666	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		259	819		628		579	2481		264	1326	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.67	0.36		0.01		0.94	0.48		0.01	1.00	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 106.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 38.3

Intersection LOS: D

Intersection Capacity Utilization 94.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	75 s	27 s
 Ø5	 Ø6	 Ø8
35 s	48 s	27 s

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	0	202	1	2	0	177	856	3	5	936	78
Future Volume (vph)	87	0	202	1	2	0	177	856	3	5	936	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		25	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850					0.999			0.988	
Flt Protected		0.950			0.984		0.950			0.950		
Satd. Flow (prot)	0	1770	1599	0	3552	0	1736	3571	0	1805	3518	0
Flt Permitted		0.756			0.871		0.219			0.324		
Satd. Flow (perm)	0	1408	1599	0	3144	0	400	3571	0	616	3518	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	4%	1%	0%	0%	1%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	206	0	3	0	181	876	0	5	1035	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	21.0	21.0	13.0	21.0	21.0		13.0	71.0		8.0	66.0	
Total Split (%)	21.0%	21.0%	13.0%	21.0%	21.0%		13.0%	71.0%		8.0%	66.0%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		12.1	23.6		12.1		69.6	67.6		60.8	53.3	
Actuated g/C Ratio		0.14	0.27		0.14		0.80	0.78		0.70	0.61	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.46	0.48		0.01		0.38	0.32		0.01	0.48	
Control Delay		47.1	31.6		36.3		5.4	5.1		3.4	10.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		47.1	31.6		36.3		5.4	5.1		3.4	10.9	
LOS		D	C		D		A	A		A	B	
Approach Delay		36.2			36.3			5.2			10.9	
Approach LOS		D			D			A			B	
Queue Length 50th (ft)		52	104		1		22	77		1	167	
Queue Length 95th (ft)		102	172		5		44	157		3	231	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		259	438		578		475	2772		495	2467	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.34	0.47		0.01		0.38	0.32		0.01	0.42	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 87.1

Natural Cycle: 55

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 11.5

Intersection LOS: B

Intersection Capacity Utilization 63.0%

ICU Level of Service B

Analysis Period (min) 15

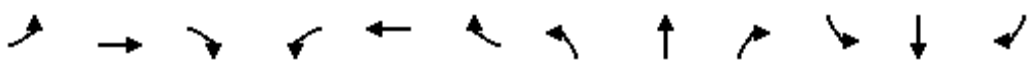
Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	71 s	21 s
 Ø5	 Ø6	 Ø8
13 s	66 s	21 s

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	2	556	2	0	0	197	1019	2	1	842	79
Future Volume (vph)	375	2	556	2	0	0	197	1019	2	1	842	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		1	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850								0.987	
Flt Protected		0.953			0.950		0.950			0.950		
Satd. Flow (prot)	0	1737	1495	0	3429	0	1626	3438	0	1805	3377	0
Flt Permitted		0.727			0.286		0.180			0.237		
Satd. Flow (perm)	0	1325	1495	0	1032	0	308	3438	0	450	3377	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	50%	8%	0%	0%	0%	11%	5%	0%	0%	5%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	393	579	0	2	0	205	1063	0	1	959	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	40.0	40.0	16.0	40.0	40.0		16.0	62.0		8.0	54.0	
Total Split (%)	36.4%	36.4%	14.5%	36.4%	36.4%		14.5%	56.4%		7.3%	49.1%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		33.3	50.7		33.3		64.0	59.9		53.5	46.5	
Actuated g/C Ratio		0.31	0.47		0.31		0.60	0.56		0.50	0.44	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.95	0.82		0.01		0.63	0.55		0.00	0.65	
Control Delay		71.6	35.4		26.5		19.1	16.7		9.0	26.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		71.6	35.4		26.5		19.1	16.7		9.0	26.5	
LOS		E	D		C		B	B		A	C	
Approach Delay		50.0			26.5			17.1			26.5	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		272	338		0		61	225		0	274	
Queue Length 95th (ft)		#467	#519		3		98	337		2	345	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		422	726		329		338	1948		282	1521	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.93	0.80		0.01		0.61	0.55		0.00	0.63	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 106.8

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 29.9

Intersection LOS: C

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	62 s	40 s
 Ø5	 Ø6	 Ø8
16 s	54 s	40 s

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	179	1	288	2	5	1	526	1189	10	2	1112	234
Future Volume (vph)	179	1	288	2	5	1	526	1189	10	2	1112	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		25	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.981			0.999			0.974	
Flt Protected		0.953			0.988		0.950			0.950		
Satd. Flow (prot)	0	1741	1568	0	3499	0	1736	3536	0	1805	3370	0
Flt Permitted		0.722			0.902		0.083			0.223		
Satd. Flow (perm)	0	1319	1568	0	3194	0	152	3536	0	424	3370	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	0%	3%	0%	0%	0%	4%	2%	0%	0%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	187	300	0	8	0	548	1249	0	2	1402	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	27.0	27.0	35.0	27.0	27.0		35.0	75.0		8.0	48.0	
Total Split (%)	24.5%	24.5%	31.8%	24.5%	24.5%		31.8%	68.2%		7.3%	43.6%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		19.0	56.2		19.0		79.2	75.1		49.0	42.0	
Actuated g/C Ratio		0.18	0.52		0.18		0.74	0.70		0.45	0.39	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.81	0.37		0.01		0.96	0.51		0.01	1.07	
Control Delay		68.6	16.7		36.2		60.0	9.1		8.5	77.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		68.6	16.7		36.2		60.0	9.1		8.5	77.5	
LOS		E	B		D		E	A		A	E	
Approach Delay		36.6			36.3			24.6			77.4	
Approach LOS		D			D			C			E	
Queue Length 50th (ft)		126	117		2		329	191		0	~587	
Queue Length 95th (ft)		#233	180		10		#556	305		2	#725	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		257	822		623		575	2467		250	1315	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.73	0.36		0.01		0.95	0.51		0.01	1.07	

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 107.7

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 46.3

Intersection LOS: D

Intersection Capacity Utilization 97.3%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	75 s	27 s
 Ø5	 Ø6	 Ø8
35 s	48 s	27 s

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	0	204	1	2	0	179	899	3	5	980	87
Future Volume (vph)	97	0	204	1	2	0	179	899	3	5	980	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		25	300		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			220			140		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850								0.988	
Flt Protected		0.950			0.984		0.950			0.950		
Satd. Flow (prot)	0	1770	1599	0	3552	0	1736	3574	0	1805	3517	0
Flt Permitted		0.756			0.873		0.203			0.310		
Satd. Flow (perm)	0	1408	1599	0	3152	0	371	3574	0	589	3517	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			30			40			40	
Link Distance (ft)		1469			167			471			384	
Travel Time (s)		28.6			3.8			8.0			6.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	4%	1%	0%	0%	1%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	99	208	0	3	0	183	920	0	5	1089	0
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0		3.0	15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0	6.5	14.0	14.0		6.5	21.0		6.5	21.0	
Total Split (s)	21.0	21.0	13.0	21.0	21.0		13.0	71.0		8.0	66.0	
Total Split (%)	21.0%	21.0%	13.0%	21.0%	21.0%		13.0%	71.0%		8.0%	66.0%	
Yellow Time (s)	4.0	4.0	3.5	4.0	4.0		3.5	4.0		3.5	4.0	
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0		3.5	6.0		3.5	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)		12.4	24.0		12.4		71.7	69.6		62.9	55.5	
Actuated g/C Ratio		0.14	0.27		0.14		0.80	0.78		0.70	0.62	

Lanes, Volumes, Timings

3: Milwaukee Avenue & Hintz Road/Dam Way

10/02/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.51	0.49		0.01		0.41	0.33		0.01	0.50	
Control Delay		49.5	32.3		36.3		5.8	5.3		3.4	11.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		49.5	32.3		36.3		5.8	5.3		3.4	11.2	
LOS		D	C		D		A	A		A	B	
Approach Delay		37.8			36.3			5.4			11.2	
Approach LOS		D			D			A			B	
Queue Length 50th (ft)		59	105		1		23	85		1	184	
Queue Length 95th (ft)		111	173		5		44	168		3	248	
Internal Link Dist (ft)		1389			87			391			304	
Turn Bay Length (ft)							300			100		
Base Capacity (vph)		249	431		557		449	2777		478	2420	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.40	0.48		0.01		0.41	0.33		0.01	0.45	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 89.6

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Milwaukee Avenue & Hintz Road/Dam Way

 Ø1	 Ø2	 Ø4
8 s	71 s	21 s
 Ø5	 Ø6	 Ø8
13 s	66 s	21 s

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	
Traffic Vol, veh/h	0	12	0	1366	886	8
Future Vol, veh/h	0	12	0	1366	886	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	9	0	4	5	37
Mvmt Flow	0	13	0	1423	923	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 466	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.08	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.39	- -	- -
Pot Cap-1 Maneuver	0 525	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 525	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 525	- -	- -
HCM Lane V/C Ratio	- 0.024	- -	- -
HCM Control Delay (s)	- 12	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.1	- -	- -

HCM 6th TWSC

1: Milwaukee Avenue & River Mill Parkway

10/02/2018

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	5	0	1294	1271	24
Future Vol, veh/h	0	5	0	1294	1271	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	2	4	8
Mvmt Flow	0	5	0	1334	1310	25

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 668	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.9	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.3	- -	- -
Pot Cap-1 Maneuver	0 405	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 405	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	14	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 405	- -	- -
HCM Lane V/C Ratio	- 0.013	- -	- -
HCM Control Delay (s)	- 14	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	6	0	943	1013	15
Future Vol, veh/h	0	6	0	943	1013	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	6	0	982	1055	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	536	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	494	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	494	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	494	-
HCM Lane V/C Ratio	-	0.013	-
HCM Control Delay (s)	-	12.4	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	12	0	1394	909	8
Future Vol, veh/h	0	12	0	1394	909	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	9	0	4	5	37
Mvmt Flow	0	13	0	1452	947	8

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 478	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.08	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.39	- -	- -
Pot Cap-1 Maneuver	0 515	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 515	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 515	- -	- -
HCM Lane V/C Ratio	- 0.024	- -	- -
HCM Control Delay (s)	- 12.2	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.1	- -	- -

HCM 6th TWSC

2: Milwaukee Avenue & Site Access

10/02/2018

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	15	14	1380	907	14
Future Vol, veh/h	14	15	14	1380	907	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	5	0
Mvmt Flow	15	16	15	1453	955	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1720	485	970	0	-	0
Stage 1	963	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	82	533	719	-	-	-
Stage 1	336	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	80	533	719	-	-	-
Mov Cap-2 Maneuver	203	-	-	-	-	-
Stage 1	329	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.4	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	719	-	299	-	-	
HCM Lane V/C Ratio	0.02	-	0.102	-	-	
HCM Control Delay (s)	10.1	-	18.4	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

HCM 6th TWSC

1: Milwaukee Avenue & River Mill Parkway

10/02/2018

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	5	0	1366	1345	24
Future Vol, veh/h	0	5	0	1366	1345	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	2	4	8
Mvmt Flow	0	5	0	1408	1387	25

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 706	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.9	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.3	- -	- -
Pot Cap-1 Maneuver	0 383	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 383	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 383	- -	- -
HCM Lane V/C Ratio	- 0.013	- -	- -
HCM Control Delay (s)	- 14.5	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -

HCM 6th TWSC

2: Milwaukee Avenue & Site Access

10/02/2018

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	59	62	1307	1289	61
Future Vol, veh/h	59	59	62	1307	1289	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	62	62	65	1376	1357	64
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2207	711	1421	0	-	0
Stage 1	1389	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 39	380	485	-	-	-
Stage 1	200	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 34	380	485	-	-	-
Mov Cap-2 Maneuver	118	-	-	-	-	-
Stage 1	173	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	60.5	0.6		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	485	-	180	-	-	
HCM Lane V/C Ratio	0.135	-	0.69	-	-	
HCM Control Delay (s)	13.6	-	60.5	-	-	
HCM Lane LOS	B	-	F	-	-	
HCM 95th %tile Q(veh)	0.5	-	4.2	-	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	6	0	994	1067	15
Future Vol, veh/h	0	6	0	994	1067	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	0	6	0	1035	1111	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	564	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	474	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	474	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	474	-
HCM Lane V/C Ratio	-	0.013	-
HCM Control Delay (s)	-	12.7	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

HCM 6th TWSC

2: Milwaukee Avenue & Site Access

10/02/2018

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	42	43	953	1030	43
Future Vol, veh/h	41	42	43	953	1030	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	43	44	45	1003	1084	45

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1699	565	1129
Stage 1	1107	-	-
Stage 2	592	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	85	473	626
Stage 1	282	-	-
Stage 2	521	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	79	473	626
Mov Cap-2 Maneuver	186	-	-
Stage 1	262	-	-
Stage 2	521	-	-

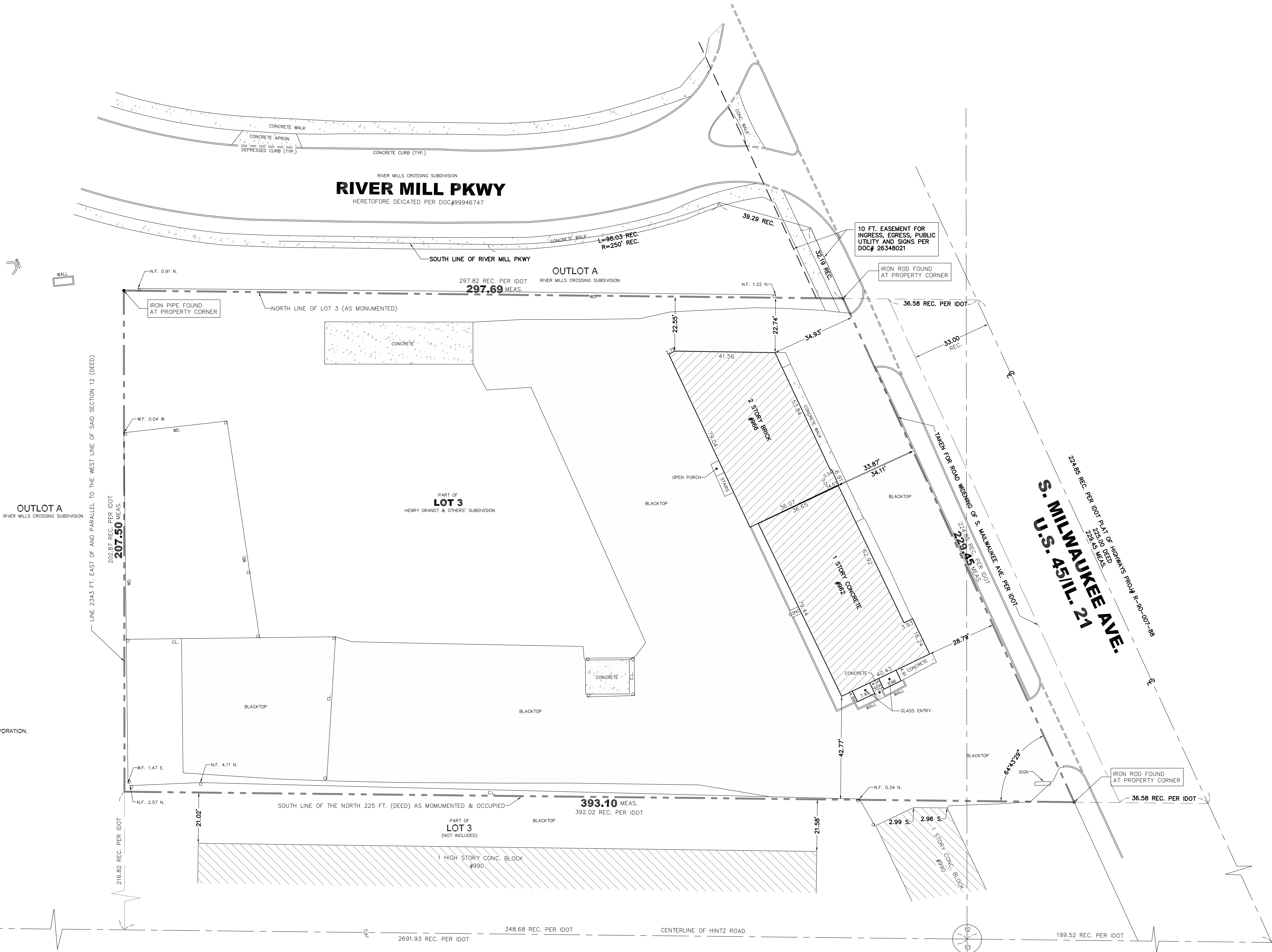
Approach	EB	NB	SB
HCM Control Delay, s	24.8	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	626	-	268	-	-
HCM Lane V/C Ratio	0.072	-	0.326	-	-
HCM Control Delay (s)	11.2	-	24.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

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www.landsurveyors.pro
andrew@landsurveyors.pro

PLAT OF SURVEY
by
ANDREW SPIEWAK LAND SURVEYOR, INC.
of

THE NORTH 225 FEET (MEASURED IN THE CENTER OF MILWAUKEE AVENUE) OF THAT PART OF LOT 3, LYING EAST OF A LINE 2343 FEET EAST OF AND PARALLEL TO THE WEST LINE OF SAID SECTION 12 IN HENRY GRANDT AND OTHERS' SUBDIVISION OF THAT PART OF THE SOUTH 1420.62 FEET OF SECTION 12, WEST OF THE CENTER OF MILWAUKEE AVENUE AND A PART OF THE NORTH 1/2 OF SECTION 13, ALL IN TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT OF SAID SUBDIVISION FILED IN THE REGISTRAR'S OFFICE OF COOK COUNTY, ILLINOIS, JANUARY 29, 1923, AS DOCUMENT 172867, IN COOK COUNTY, ILLINOIS



STATE OF ILLINOIS) s.s.
COUNTY OF COOK)
ANDREW SPIEWAK LAND SURVEYOR, INC. A PROFESSIONAL DESIGN FIRM,
LAND SURVEYING CORPORATION, LICENSE NO.: 184.006518
HEREBY CERTIFIES THAT A SURVEY HAS BEEN MADE UNDER THE DIRECTION
AND SUPERVISION OF AN ILLINOIS PROFESSIONAL LAND SURVEYOR OF THE
ABOVE DESCRIBED PROPERTY AND THAT THE PLAT HEREON DRAWN IS A CORRECT
REPRESENTATION OF SAID SURVEY. THIS PROFESSIONAL SERVICE CONFORMS TO THE
CURRENT ILLINOIS MINIMUM STANDARDS FOR BOUNDARY SURVEYS.

FIELD WORK WAS COMPLETED ON 9th DAY OF JULY A.D. 20 18.
CHICAGO, ILLINOIS, DATE OF PLAT 23rd DAY OF JULY A.D. 20 18.

BY *Andrzej F. Spiewak*
ILLINOIS PROFESSIONAL LAND SURVEYOR
ANDRZEJ F. SPIEWAK LICENSE NO. 035.003178
LICENSE EXPIRES 11/30/2018
PROFESSIONAL DESIGN FIRM, LAND SURVEYING CORPORATION,
LICENSE NO. 184.006518 EXPIRES 04/30/2019

COMMONLY KNOWN AS:
968 S. MILWAUKEE AVE.
WHEELING, IL 60090
P.I.N. 03-12-300-040-0000
LAND AREA ± 71,663 sq. ft.

Legend
WD = WOOD FENCE CL = CHAIN LINK
N.F. = NORTH FACE S.F. = SOUTH FACE
W.F. = WEST FACE E.F. = EAST FACE
I.P. = IRON PIPE I.R. = IRON ROD
I.F. = IRON FENCE
M.B. = MEASURED REC. = RECORD
● IRON ROD FOUND ○ IRON ROD SET
● IRON PIPE FOUND ○ IRON PIPE SET
+ CROSS FOUND & SET --- PROPERTY LINE

SCALE: 1 INCH EQUALS 20 FEET.
DISTANCES ARE MARKED IN FEET AND DECIMAL
PARTS THEREOF.

ORDERED BY: MICHAEL ELLIOTT
COMPANY OR ORGANIZATION: TERRA CONSULTING GROUP, LTD.

SURVEYED BY: JG MS
DRAWN BY: AM

CHECKED BY: AFS

PROJECT No: 253-18

THIS SURVEY IS VALID ONLY WITH AN EMBOSSED SEAL



Revision

J

Xpress Pay Terminal Installation Manual



INSTALLATION MANUAL

Revision J

This manual provides comprehensive installation procedures for the Xpress Pay Terminal (XPT). It includes the process of site planning, site preparation, the mechanical installation of the XPT, and the electrical wiring of the unit.

Note: DRB Systems is not responsible for the installation and electrical wiring of the XPT system. The customer and/or distributor are responsible for all procedures outlined in this manual, unless otherwise noted.

If further assistance is needed, please contact the distributor from which the XPT was purchased.

When calling for assistance, you must have the following information available:

Xpress Pay Terminal Serial Number: _____

Distributor Name: _____

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Table of Contents

Copyright	2
Trademarks	2
1 Installation Overview.....	8
1.1 Site Planning	8
1.2 Mechanical Installation	8
1.3 Electrical Installation	8
1.4 System Setup and Configuration	9
1.5 Testing Procedures.....	9
2 Site Planning	10
2.1 Determine the Site Layout	10
2.1.1 Positioning the XPT Unit.....	10
2.1.2 Conduit Run Considerations.....	11
2.1.3 XPT Base Considerations	14
2.1.4 Gate and Merge Loop Locations	15
2.1.5 Electrical Planning.....	16
2.1.6 Site Grounding Considerations.....	16
2.1.7 Required Electrical Wiring	16
2.2 Mechanical Installation Tools.....	20
2.3 Electrical Installation Tools	20
2.4 Part Verification	21
2.4.1 Standard Installation.....	21
2.4.2 Brick-In Installation (Optional)	21
2.4.3 XPT – Base (Optional).....	21
3 Mechanical Installation	22
3.1 Standard Base Installation.....	22
3.1.1 Frame	22
3.1.2 Molded Polyethylene Sheath.....	27
3.1.3 Additional Security.....	28
3.1.4 Mount Unit to Frame.....	28
3.2 Bricking in the XPT	28
3.2.1 Pouring the Slab.....	30
3.2.2 Adaptor Plate and Anchor Bolts	33
3.2.3 Adaptor Plate with Curb or Standard Height Steel Frame	38
3.2.4 Mounting the XPT.....	41



4	Electrical Installation.....	42
4.1	Wiring External Hardware to the Control Module	42
4.2	Wiring and Configuring the External Prox Loop Detector.....	44
4.3	Wiring the Main Power.....	47
4.4	Wiring the Intercom.....	48
4.4.1	Intercom Connections	48
4.4.2	Intercom Adjustments.....	48
4.4.3	Connection Overview	49
4.5	Network Installation	51
4.5.1	Connecting the Network cable.....	52
4.6	Wiring the External Alarm.....	53
4.6.1	External Alarm Connections	53
5	System Setup and Configuration.....	54
5.1	Coin Acceptor	54
5.2	Coin Dispensers	54
5.3	Bill Dispenser	54
5.3.1	Bill Quality	55
5.3.2	Bill Loading.....	55
5.4	Adjusting the Volume.....	55
5.5	Optional Card Dispenser	55
6	Testing Field-Wired Devices.....	56
6.1	Testing the Unit.....	56
6.1.1	Gate & Merge Zone Inputs	56
6.1.2	Miscellaneous Inputs.....	57
6.1.3	Miscellaneous Outputs	58
6.1.4	Wash (Relay) Outputs	59
6.1.5	External Alarm.....	59
Appendix A.	Dimensional Schematic of the XPT.....	61
Appendix B.	XPT Technical Specs & Guidelines.....	65
Appendix C.	Magnetic Gate Installation	66
Appendix D.	Controlling Gates in Non-XPT Lanes	89
Appendix E.	Shortening the Gate Arms.....	91
Appendix F.	Lane Available Light Installation	92
Appendix G.	In-Bay Automatic Wash Controller Installation	94
Appendix H.	Custom Overlays	98



Index of Figures

Figure 1. Positioning the XPT Unit	11
Figure 2. Conduit Plan for XPT with Gate	13
Figure 3. Conduit Plan for XPT with Gate, Merge Zone, Optional Merge Loop Redundancy, and Optional Light.....	14
Figure 4. Gate Installation	15
Figure 5. Merge Loop Locations for Two Lanes	16
Figure 6. Standard Base Frame	23
Figure 7. Concrete Pad Dimensions	24
Figure 8. Frame and Sheath Installation	25
Figure 9. Positioning the Frame on a New Slab	26
Figure 10. Positioning the Frame on a Pre-Existing Slab	27
Figure 11. Bricked-In Base Options	29
Figure 12. Brick-In Mounting Positions.....	30
Figure 13. Mounting Position vs. Enclosure Placement and Size	31
Figure 14. Bottom View of XPT	32
Figure 15. Brick Enclosure Minimum Opening	33
Figure 16. Brick-In Adapter	34
Figure 17. Fill Brick Enclosure with Concrete	35
Figure 18. Positioning the Adaptor Plate.....	36
Figure 19. Flush Door and Recessed Door Mounting Options.....	37
Figure 20. Bricked-In XPT with Adaptor Plate and Standard Base Frame.....	38
Figure 21. Concrete Slab Dimensions.....	39
Figure 22. Positioning the Frame	40
Figure 23. Control Module Location	42
Figure 24. Control Module Input/Output Connectors	43
Figure 25. External Prox Loop Details.....	44
Figure 26. Magnetic Gate Control Unit.....	45
Figure 27. Optional External Prox Loop Detector	45
Figure 28. External Prox Loop Lead-In Connections.....	46
Figure 29. Line - Neutral - Ground Connections	48
Figure 30. Intercom Component Locations on the Display Module.....	49
Figure 31. Four-Wire Intercom Configuration	50
Figure 32. Three-Wire Intercom Configuration	50
Figure 33. Two-Wire Intercom Configuration.....	51
Figure 34. PoE Pass-Thru Switch and Ethernet Surge Suppressor.....	52
Figure 35. Power Module External Alarm Connection	53
Figure 36. Card Dispenser Loading	55
Figure 37. Bottom View of the XPT (case only).....	61
Figure 38. Standard XPT w/MSR.....	62
Figure 39. Brick-In XPT (No Plastic Shroud) w/MSR.....	63
Figure 40. Additional XPT Door Depth w/EMV Reader Option	64
Figure 41. Magnetic Gate conduit requirements.....	67
Figure 42. Magnetic Base Side View	68
Figure 43. Magnetic Gate Base Template.....	69
Figure 44. Adapter Plate Installation	70
Figure 45. Gate Power Wiring.....	70
Figure 46. Magnetic Gate Loop Wiring.....	71
Figure 47. Magnetic Gate – Ethernet Control.....	73
Figure 48. Single XPT Control, Single Magnetic Gate.....	74
Figure 49. Magnetic Merge Loop Wiring	75
Figure 50. Three XPT Lanes with Three Merge Loops.....	77
Figure 51. Merge Loop Separation	78
Figure 52. Loop Profile	79
Figure 53. Pave-over Loop - Concrete Installation	80
Figure 54. Pave-over Loop - Asphalt Installation.....	81
Figure 55. Assembling the Gate Arm	83
Figure 56. Open Gate Using Upper Tool Bore	84
Figure 57. Remove End Cap	85
Figure 58. Install Slot Nuts.....	85
Figure 59. Attach Flange to Gate Arm.....	86
Figure 60. Reinstall End Cap to Gate Arm	86
Figure 61. Install Flange onto the Flange Shaft.....	87
Figure 62. Balancing Springs.....	88
Figure 63. Two Magnetic Gates Controlled by a Single XPT - Master Connection Diagram	90
Figure 64. Lane Available Light Output Circuit	93



Figure 65. Wash Service Output Circuits	95
Figure 66. Wash in Use Circuit	96
Figure 67. Wash Fault Circuit.....	97



Index of Tables

Table 1. Wire Pull Chart.....	17
Table 2. Pad Dimension Requirements.....	24
Table 3. External Prox Loop Detector Settings.....	46
Table 4. External Prox Loop Detector Sensitivity Settings.....	47
Table 5. CAT-5e (or CAT-6) Wire Termination Chart	52
Table 6. External Alarm Output Pin # Chart	53
Table 7. Loop Turns Table.....	79

1 Installation Overview

The XPT provides the most versatile carwash entry system available today. The industry's most advanced carwash entry system requires the industry's most complete technical support. It must be properly installed, configured, and maintained. This manual is designed to provide you with the information needed to properly install the system.

The Xpress Pay Terminal (XPT) installation procedure is made up of three stages: site planning, mechanical installation, and electrical installation. Each stage builds upon the procedures of the previous stage.

1.1 Site Planning

In the site planning stage, you will develop your installation strategy. Proper planning leads to smooth installation, and you can save yourself hours of frustration by making sure you have everything in place before you begin the mechanical and electrical installation stages. This stage includes the following steps:

- Identify the exact location for the XPT, gates, and merge loops.
- Ensure the site has met the appropriate wiring requirements.
- Verify all equipment and parts are present and accounted for.

1.2 Mechanical Installation

In the mechanical installation stage, you will physically install the XPT unit. This stage consists of two steps, both of which will go smoothly if proper planning has been made.

- Install the physical base (either the standard base or a bricked-in foundation).
- Mount the XPT unit to the installed base.

1.3 Electrical Installation

In this stage, you will connect the wiring to the XPT. Make sure to take all appropriate precautions before you work on any high-voltage electrical wiring.

- Wire the main power.
- Wire the network connection.
- Wire any lights or third-party devices to the control module.
- Wire the security camera, intercom, and external alarm (if applicable).
- Wire the in-bay automatic controller to the control module (if applicable).



1.4 System Setup and Configuration

Most of the software configuration needed to sell wash services to customers at an XPT is done in the SiteWatch database through Site Manager. The DRB Systems Implementation staff will perform this configuration after the XPT has been installed and is operational.

1.5 Testing Procedures

System testing is performed to ensure that all the previous steps in this guide were performed correctly.

Before testing the entry system, verify or complete the following procedures:

- Wiring is completed for the terminal and any attached hardware.
- 120 VAC power is available to the hardware at the machine room circuit breakers.
- Power is on at each of the units (terminal, gate, etc.).
- The XPT software is running as indicated by an "Out of Service" screen on the terminal.

2 Site Planning

In the site planning stage you have three objectives:

- Determine the site layout.
- Ensure that all cabling requirements are met.
- Ensure that you have all the necessary tools and parts.

2.1 Determine the Site Layout

You have four primary concerns when determining the site layout. They are:

- Positioning the XPT unit.
- Designing the conduit runs.
- Determining which base you will install the XPT unit on.
- If installing gates, the position of the gates and their merge loops.

The following sections provide guidelines for determining the position of the unit. They also provide general information that should be taken into account when designing your site's layout.

2.1.1 Positioning the XPT Unit

By determining the position of the unit first, you will have all the information you will need to install the required conduit runs. You will also be able to determine the installation requirements for the unit base.

If the XPT will be facing direct sunlight, the installation of a canopy is highly recommended to reduce sun glare, make the LCD more visible, and to greatly improve barcode reader performance. A canopy also helps maintain a stable operating temperature for the XPT.

The XPT unit's placement should be based on your site layout and usage of the terminal. If you are adding a single unit at an express lane, position it just before the location in which you want XPT customers to merge with the full service customers on the way to the tunnel entrance. If you are using XPTs in all lanes, allow room for 3-5 cars to stack between the terminals and the tunnel entrance. If you are installing gates to control traffic flow, be sure to allow room for the gate after each terminal. See section 2.1.4 for more details.

If the XPT is being used as an entrance terminal for an in-bay automatic wash, it should be placed 12 feet before the entrance of the wash bay so there is room for a car sitting at the terminal to purchase a wash without interfering with the operation of the bay.

Adequate site lighting in each XPT lane is highly recommended to improve usability after dusk, improve barcode reading performance, and enhance after-hours security.

Additionally, a concrete post, or bollard, can be positioned just to the front left corner of the unit to act as a protective buffer. A typical size for this is 32" tall and 4" in diameter.

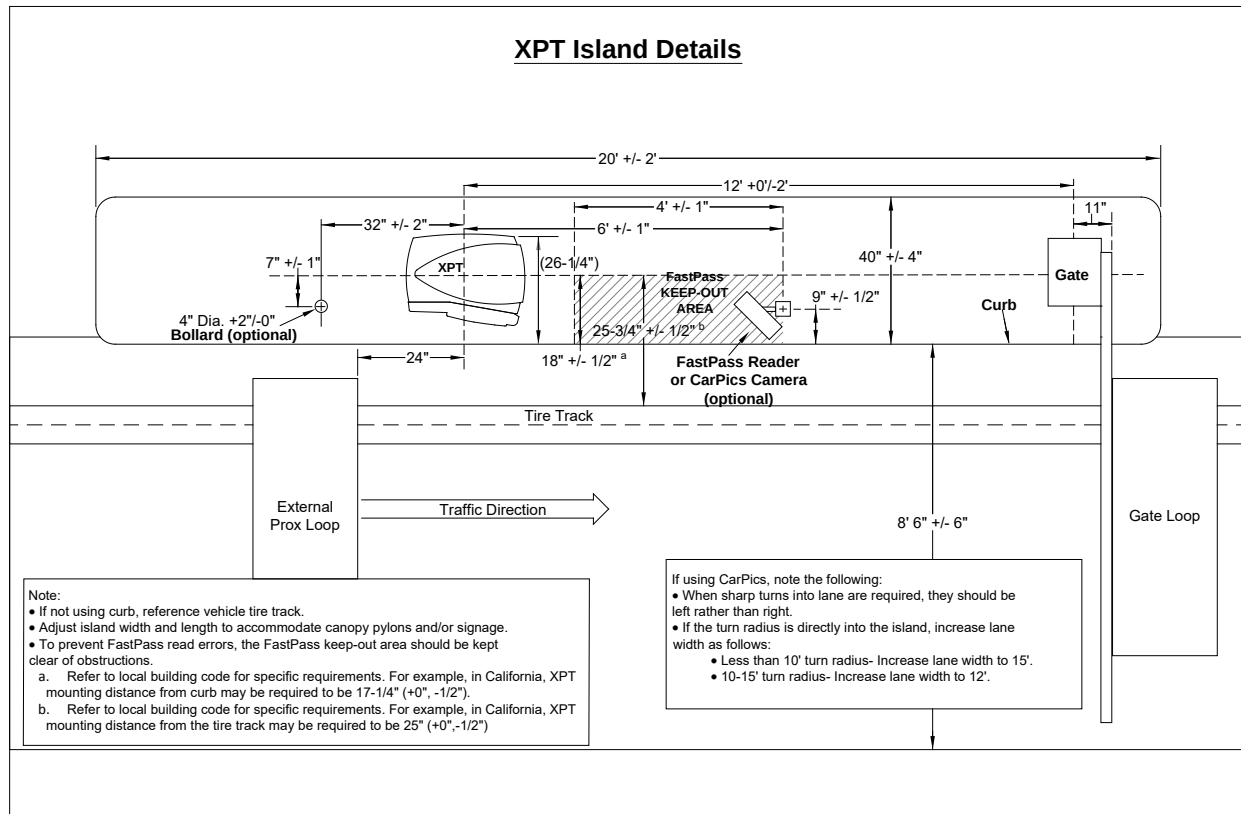


Figure 1. Positioning the XPT Unit

2.1.2 Conduit Run Considerations

The XPT has a rectangular service entrance port in the bottom of the main case that aligns to a series of 4 conduit holes in the standard base frame. The base frame conduit holes are sized for three 3/4" conduits and one 1" conduit. If more than 4 conduits are needed, they can be cut 3" to 6" shorter than the top of the base frame, and multiple wires can be pulled through the same conduit hole in the base and into the service entrance port on the XPT. If the XPT brick-in adapter is used, conduits should be routed through its rectangular cutout and cut 3" shorter than the XPT. Wires can then be pulled from the conduits up through the XPT service entrance port. See Appendix A for a detailed diagram of the XPT footprint.



Warning: Never run cabling to the XPT base outside of a conduit.

When installing the conduit:

- Conduit containing AC power wiring should be 3/4" diameter.
- Conduit containing the external prox loop leads should be 1/2" PVC (if using non-Ethernet gate).
- Conduit containing Cat-5/6 cable, external alarm wiring, security camera cable, and intercom wiring should be 1" in diameter.

While the prox loop conduit must be PVC to prevent loop interference, all other above-ground conduits should be metal rather than PVC, to prevent communication errors and maximize protection against lighting surges. However, if PVC conduit is used instead, all signal and communication wiring should be shielded, with the shield drain connected to earth ground at only one end.

Regardless of the type of conduit used, power and Class 1 signal wiring should maintain a minimum separation of **12 inches** from Class 2 signal and communications wiring, particularly where the conduits run parallel for more than 6 feet. This spacing becomes even more critical near conduits carrying motor and high voltage lighting power wiring.



Note:

Many sites contain "Floor Heat," an under-concrete heat exchanger system consisting of an elaborate network of plumbing through which antifreeze circulates. Review any site floor heat diagrams before marking and drilling into any area.

Many sites will install gates, gate loops, and merge loops. Those sites require conduit to the gate to supply AC power. A conduit also needs to be run between the gate and the XPT for Cat-5 (or better) or communication wire to control the gate, as well as a PVC conduit running from the gate to each loop area for the loop detector. The conduits carrying loop lead-in wires must be PVC to prevent loop interference.

If the site has an in-bay automatic controller interface, FastPass reader, or lane available light, each needs additional conduit runs to communicate.

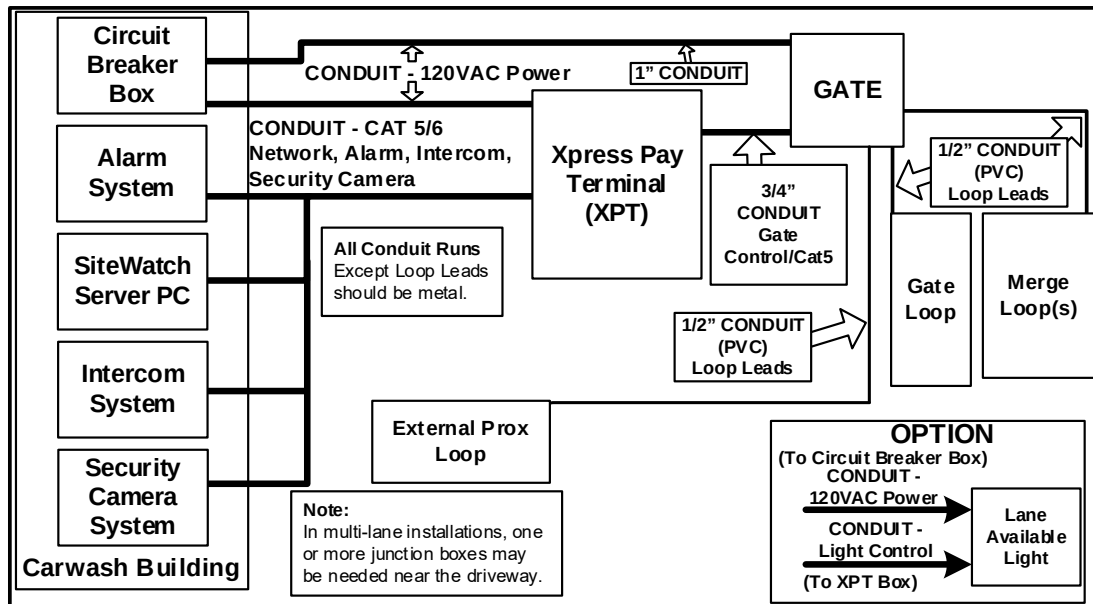


Figure 2. Conduit Plan for XPT with Gate

When a gate is added to an XPT installation, a 3/4" conduit is needed (Figure 2) to carry Cat-5 (or better) or control wiring between the terminal and the gate, as well as a PVC conduit for the gate loop in the pavement under the gate.

If there are multiple terminals and gates, merge loops are strongly recommended. An additional PVC conduit (Figure 3) is needed to connect the loop with its controller mounted in the gate housing.

If there are three or more lanes with XPTs, and the gates are not Ethernet controlled, a merge loop redundancy connection should be made between each XPT. This parallel connection allows each XPT to detect all of the merge loops if one or more XPTs are turned off. The wires connecting each XPT must not share a conduit with AC power and may require an additional 3/4" conduit. See Appendix C for more information on determining the merge loop requirements based on the site layout.



Note:

- If the gate is Ethernet controlled (the preferred method), run the external prox loop lead-in to the gate. If the gate is not Ethernet controlled, run the loop lead-in to the XPT and purchase the external prox kit.
- The gate loop and merge loop lead-ins must be run to the loop detector(s) inside the gate(s).

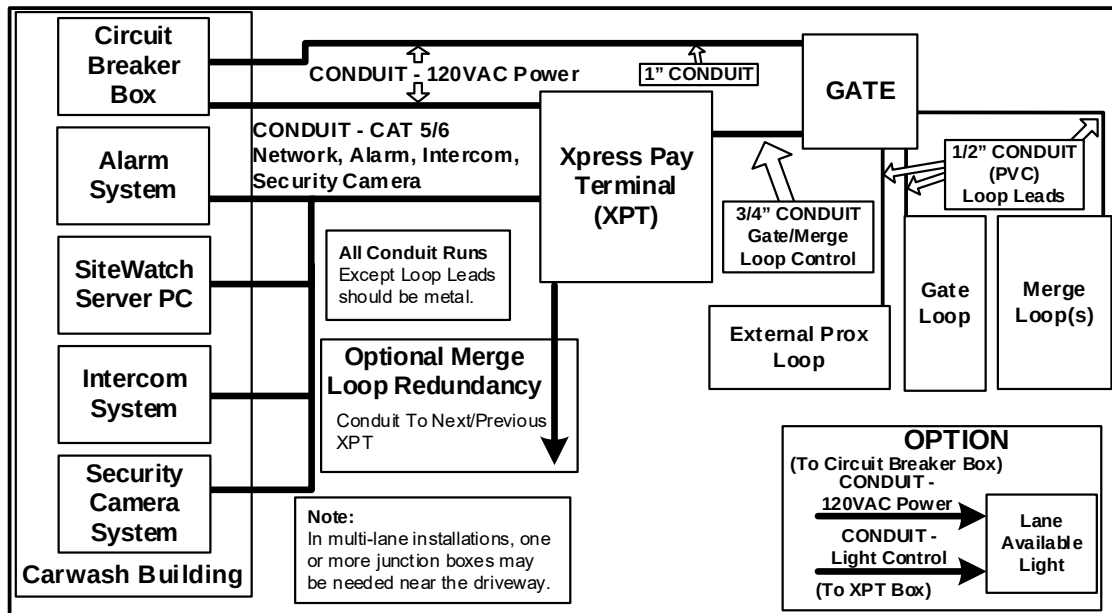


Figure 3. Conduit Plan for XPT with Gate, Merge Zone, Optional Merge Loop Redundancy, and Optional Light

2.1.3 XPT Base Considerations

The primary concern in determining what type of base to install for the XPT is security. The most secure method of installing the XPT is to build a brick enclosure around the unit, mounting it on a concrete base.

Ultimately, the distributor and owner share the responsibility for deciding whether to use a brick enclosure. If a brick enclosure is not possible, DRB Systems offers a standard base or a curb height base. The standard base is 35" tall; and the curb-height base is 29" tall, making it ideal for sites with 6" curbs.

The standard base consists of a steel frame mounted 6" deep into a 1' to 2' deep concrete slab measuring 4' wide by 4' long. DRB Systems recommends the concrete pad be 2' deep. A polyethylene sheath covers the steel frame, giving it an attractive exterior that matches the XPT. The base is extremely strong, but if the site owner wants an additional level of security, the sheath can be filled with concrete.

2.1.4 Gate and Merge Loop Locations

Sites that are installing gates to control traffic flow to the wash tunnel need to allow room for the gates between the XPT position and the queue of cars to the tunnel. The gates are typically installed 12' from the XPT centerline. Provision also needs to be made for a gate loop in or on the road surface under and even with the gate arm to close the gate after each car has passed the loop.

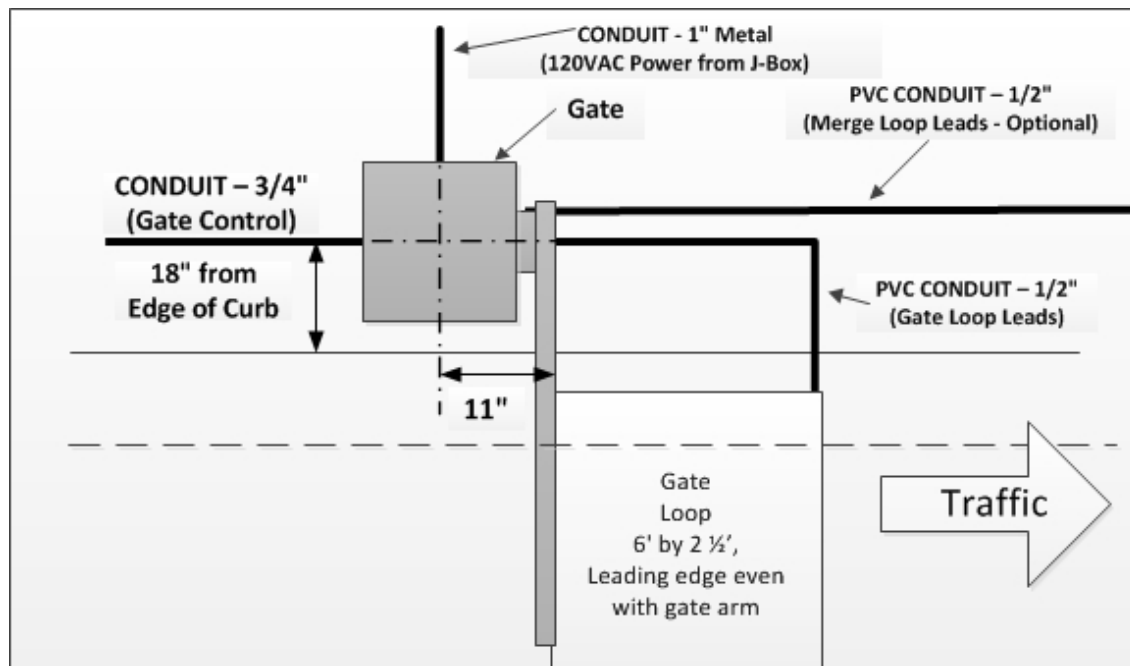


Figure 4. Gate Installation

To keep cars from getting out of order and receiving the wrong wash when using multiple lanes, it is necessary to install merge loops in the road surface. The merge loops must be placed so that a car is detected before it has completely left the gate loop, and continues to be detected by one of the merge loops until it reaches a choke point, where it cannot be passed by other cars. The trailing edge of the merge loop must also be spaced a minimum of 1 car length beyond the trailing edge of the gate loop, so that when SiteWatch opens the next gate, the next car is able to pull all the way through to the choke point.

DRB Systems includes one merge loop per gated XPT lane, in a standard system order. An example of a two lane setup is shown below.

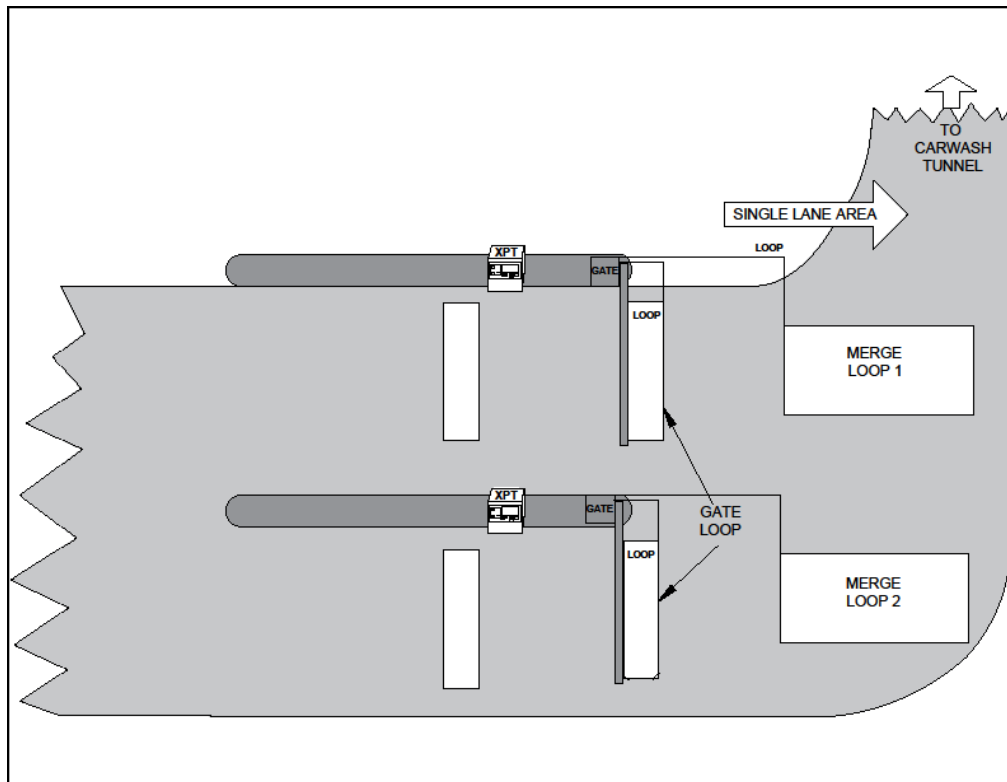


Figure 5. Merge Loop Locations for Two Lanes

See Appendix C for more details on layout and installation of gates and loops.

Some sites have a mixture of attended full service lanes and unattended self-serve lanes with XPTs. It is possible to control the gate in an attended lane from an XPT lane to allow queuing from all of the lanes to the tunnel entrance. An XPT can be used to control one attended lane gate in addition to its own.

2.1.5 Electrical Planning

After determining the positioning of the unit and the base you will be using, you will need to verify the electrical requirements of the XPT are met.

2.1.6 Site Grounding Considerations

Ensure the protective earth ground wire does not carry any motor return current. Only the neutral wire should carry return current.

2.1.7 Required Electrical Wiring

You will be connecting the main power wiring, the external prox loop, gate, merge loop interface wiring, and a Cat-5 or Cat-6 network connection to the XPT.



Note: Follow local electrical code when wiring the XPT.

2.1.7.1 Pulling Wires

There should be at least 6' of wire between the ground-level conduit and the wire terminations. The following table provides the number of wires, the wire description, and the wire color you will need to wire the XPT.

Table 1. Wire Pull Chart

Wires	Wire Description	Wire Gauge/Spec	Wire Color
3	115-120 VAC hot, neutral, earth ground. Must have a dedicated conduit run.	16AWG (min.) stranded	Black, white, green
†	External prox loop (connects to gate if using Ethernet controlled gate) † Loop wire is a continuous run with a variable number of turns.	16 or 18 AWG stranded, tinned copper with XLPE insulation rated for 600V	Any color
8	Network communications to gate (for Ethernet controlled gate only)	Cat-5e or Cat-6 Note: Must be shielded if using PVC conduit for power and signal.	Any color
6	Gate control (for non-Ethernet controlled gate only)	22 AWG stranded Note: Must be shielded if using PVC conduit for power and signal.	Electrician's discretion. Recommend using different color for each wire.
†	Gate loop † Loop wire is a continuous run with a variable number of turns.	16 or 18 AWG stranded, tinned copper with XLPE insulation rated for 600V	Any color

Wires	Wire Description	Wire Gauge/Spec	Wire Color
†	Merge loop † Loop wire is a continuous run with a variable number of turns.	16 or 18 AWG stranded, tinned copper with XLPE insulation rated for 600V	Any color
1	Merge loop signal (if using 2 or more gates)	22 AWG stranded Note: Must be shielded if using PVC conduit for power and signal.	Any color
1	SiteWatch network communications line. (Note: RJ-45 connectors are not supplied).	Cat-5e or Cat-6 Note: Must be shielded if using PVC conduit for power and signal.	Any color
7	FastPass	22 AWG stranded, shielded	Recommended to include Red, Black, Red/Black, White/Black, Blue Orange, Green, White
4	Intercom Connection	22AWG shielded twisted pair	Any color
*	In-bay automatic wash controller wiring (if applicable) * Dependent upon wash equipment requirement.	Dependent upon wash equipment requirement	See wash equipment manufacturer documentation.
2	External alarm connection	22AWG twisted pair Note: Must be shielded if using PVC conduit for power and signal.	Any color
1	Security Camera (if installed)	75Ω coaxial cable	Any color



2.1.7.2 Main Power Wiring

The XPT requires 115-120 VAC computer grade power on a dedicated 8-amp (minimum) breaker. A dedicated earth ground should be properly bonded at the breaker panel and run to the XPT.



Note: Follow local electrical code when wiring the XPT.

The XPT unit requires power wiring to be 16 AWG or larger. Failure to adhere to this standard could result in a fire or injury.

You will need sufficient wire to reach from the circuit breaker to the XPT unit, plus an additional 6' to ensure there is enough wiring to make all the electrical connections.

2.1.7.3 Intercom Wiring

The number of wires you need depends on the intercom system selected for the site. The XPT can be used with 2, 3, or 4-wire systems. Factory configuration is for a 2-wire system. See the system instructions for the intercom system selected for the site.

2.1.7.4 LAN Wiring

XPT configurations require the installation of a local area network (LAN). LAN communications are carried on a CAT-5e or CAT-6 Ethernet cable, which runs from the XPT to the SiteWatch Server.

2.1.7.5 In Bay Automatic Wash Controller Wiring

Generally, most wash manufacturers use a five-wire system to provide the arming signals for the selected wash packages. One common line and four arming input wires are fed from the wash's Programmable Logic Controller (PLC) to the XPT. In addition to these five, a Wash-In-Use Hot and Wash-In-Use Neutral are required to reset the wash electronics. Typically, these are also provided by the PLC.

You will need sufficient cabling to reach from the wash's PLC to the XPT, plus an additional 6' of wiring (measuring from the base of the unit to the end of the wires) to ensure there is enough wiring to make all the electrical connections.

Each wash manufacturer has its own color code system and wash relay pin-outs. Please review the appropriate wash documentation to prepare for the electrical stage of the installation.

2.1.7.6 External Alarm Wiring

The XPT is capable of connecting to an external alarm system through a relay on the power module. This normally open or normally closed output activates and deactivates in parallel with the internal siren.



2.1.7.7 Security Camera Wiring

The factory-installed security camera is designed to interface directly with a site camera monitoring system, and is not controlled or used by SiteWatch. The XPT provides power to the camera from an isolated 12VDC source on the display module, so the site only needs to connect to the camera's composite unbalanced video output with a standard BNC connector. A 75Ω coaxial cable should be run from the site camera monitoring system to the XPT security camera for this connection.

2.2 Mechanical Installation Tools

The following tools are recommended for the typical mechanical installation of this XPT unit and base:

- 3/4" deep well socket and socket wrench
- Open end 9/16" wrench
- Small, thin blade, flat-tip screwdriver
- Hammer
- Dual-plane level
- 50' tape measure

The following items are required only when installing the XPT into an existing concrete base:

- Hammer drill
- 2.5" concrete hammer drill bit

2.3 Electrical Installation Tools

In addition to the mechanical assembling of the XPT unit to the base (and the base to the concrete), a number of electrical connections must be made. These connections will require the use of the following common hand tools:

- Small, thin tipped, straight screwdriver (1/8" tip, for green Phoenix connectors)
- Wire strippers (capable of handling 10-23 AWG wire)
- Side cutters

The following items are required for network installation:

- RJ-45 crimp tool
- 2 RJ-45 Cat-5e or Cat-6 modular plugs
- LAN tester



2.4 Part Verification

Prior to beginning the installation, take the time to verify that all the following required parts are present and accounted for.

2.4.1 Standard Installation

The following parts will be included in the standard installation:

- XPT
- Installation and hardware service manuals
- Key set for main door
- Key set for vault door (if applicable)
- Key set for the bill dispenser cassettes (if applicable)

2.4.2 Brick-In Installation (Optional)

- Brick-in adaptor plate
- 4 anchor "J" bolts
- 4 nuts (to attach the brick-in adaptor plate to the concrete base)
- 4 mounting bolts (to attach the XPT to the brick-in adaptor plate)

2.4.3 XPT – Base (Optional)

If the owner has chosen not to brick in the XPT, verify you have received the following parts:

- Base frame
- Plastic sheath for base frame
- 3 large washers (1.06" Min O.D. X 0.12" thick)
- 3 hex nuts (½ -13)

3 Mechanical Installation



Caution:

Only mount the XPT to an approved base provided by DRB Systems. Other bases may not provide enough security or proper air circulation through the internal heat exchanger.

3.1 Standard Base Installation

The standard and curb-height bases consist of a metal tube frame, which must be mounted to a concrete slab, and a molded plastic sheath that slides over the frame. For additional security, the plastic case may be filled with concrete after sliding it over the frame.



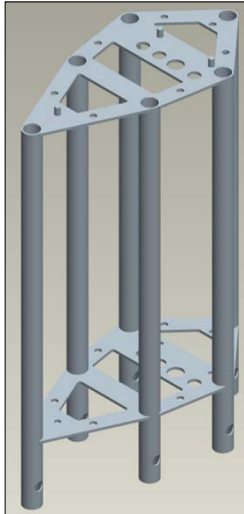
Note:

Pull all wires through conduits before mounting the base. See Section 2.1.7 for wiring requirements. Refer to Appendix A for conduit port locations.

3.1.1 Frame

The standard and curb-height base frames consist of a molded polyethylene sheath over heavy-gauge steel frame. The standard base frame is 35" tall, and the curb-height base frame is 29" tall, for sites with 6" curbs. Select the proper frame and make adjustments as necessary to achieve a height of 35" from the bottom of the XPT to the road surface. **Note:** In some areas, such as California, the required height may vary. Refer to local building code for specific requirements.

XPT Standard Base Frame



Note:

1. Refer to local building code for specific requirements. For example, in California, XPT mounting distance from curb may be required to be 17-1/4" (+0", -1/2").

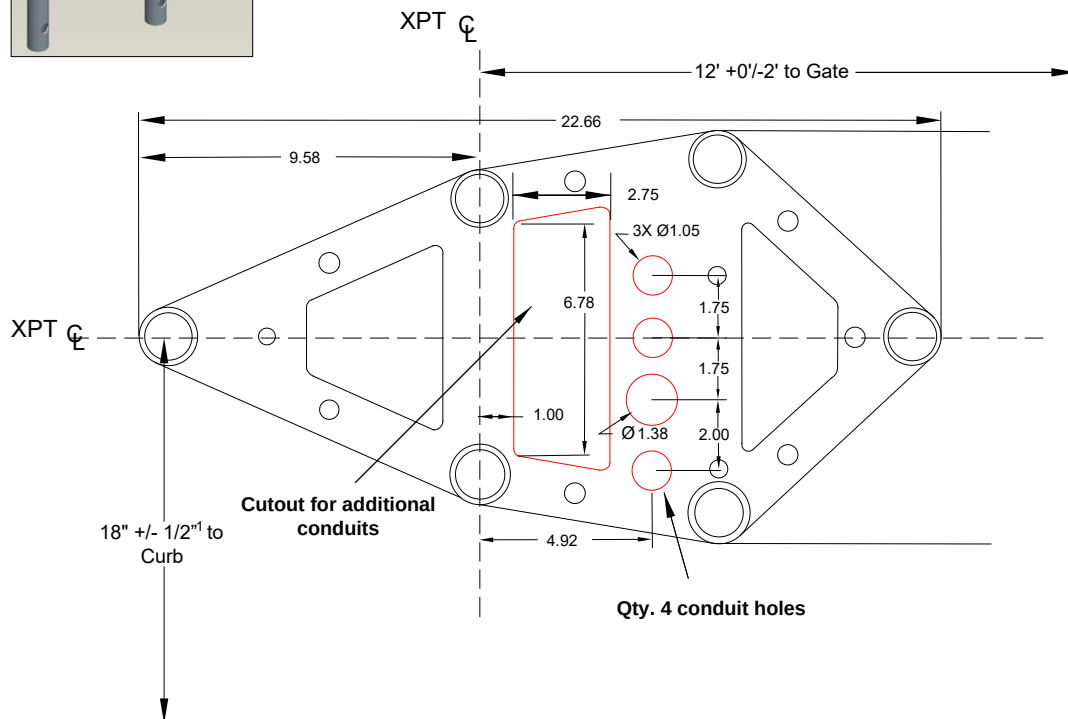


Figure 6. Standard Base Frame

When installing the XPT frame, we recommend undercutting the concrete pad, as illustrated in the figure below. This type of installation provides greater security.

The undercut pad size should have the following dimensions:

Table 2. Pad Dimension Requirements

	Minimum	Recommended
Surface Width	18"	48"
Undercut Depth	8"	24"

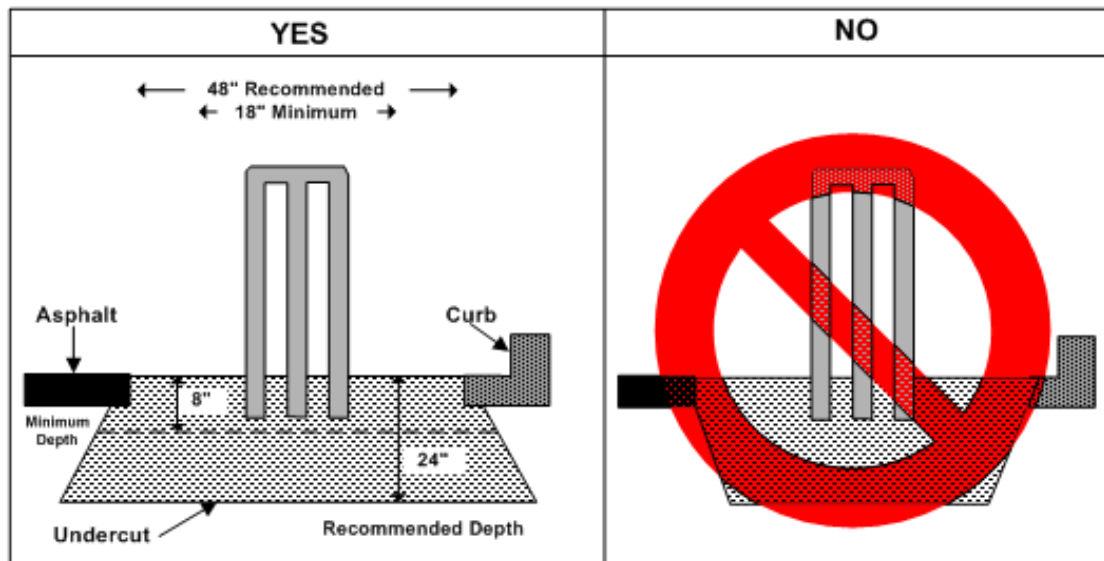


Figure 7. Concrete Pad Dimensions

If you are pouring a new slab, you will be able to simply immerse the frame into the freshly poured concrete, make sure it is level, and allow it to set with the frame in place at the proper depth.

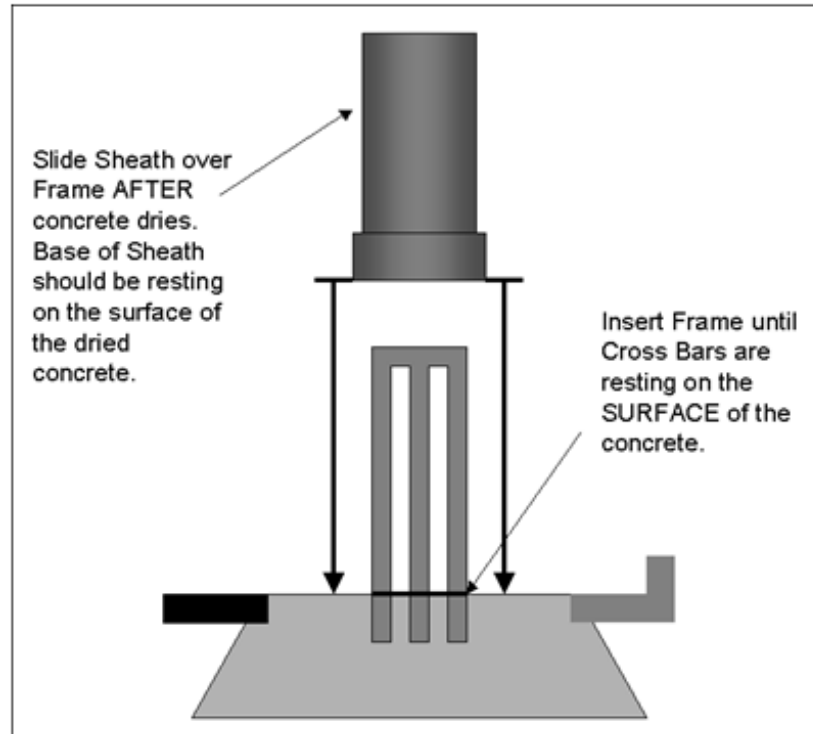


Figure 8. Frame and Sheath Installation

If you already have a slab that meets the dimensional requirements, you may drill into the concrete, fill the holes with epoxy or cement, and immerse the frame into the wet epoxy or cement. The following procedures walk you through each scenario.

3.1.1.1 New Slab

1. Verify that each conduit is properly located according to the holes and cutout in the base frame according to Figure 6.
2. Pour a slab 48" by 48" with a minimum depth of 8" (24" depth recommended), making sure you leave a minimum of 3" of conduit above the surface to keep standing water from getting into the conduit.
3. Position the XPT base frame so that the frame centerline is 18" away from the edge of the curb. **Note:** In some areas, such as California, this distance may vary. Refer to local building code for specific requirements.

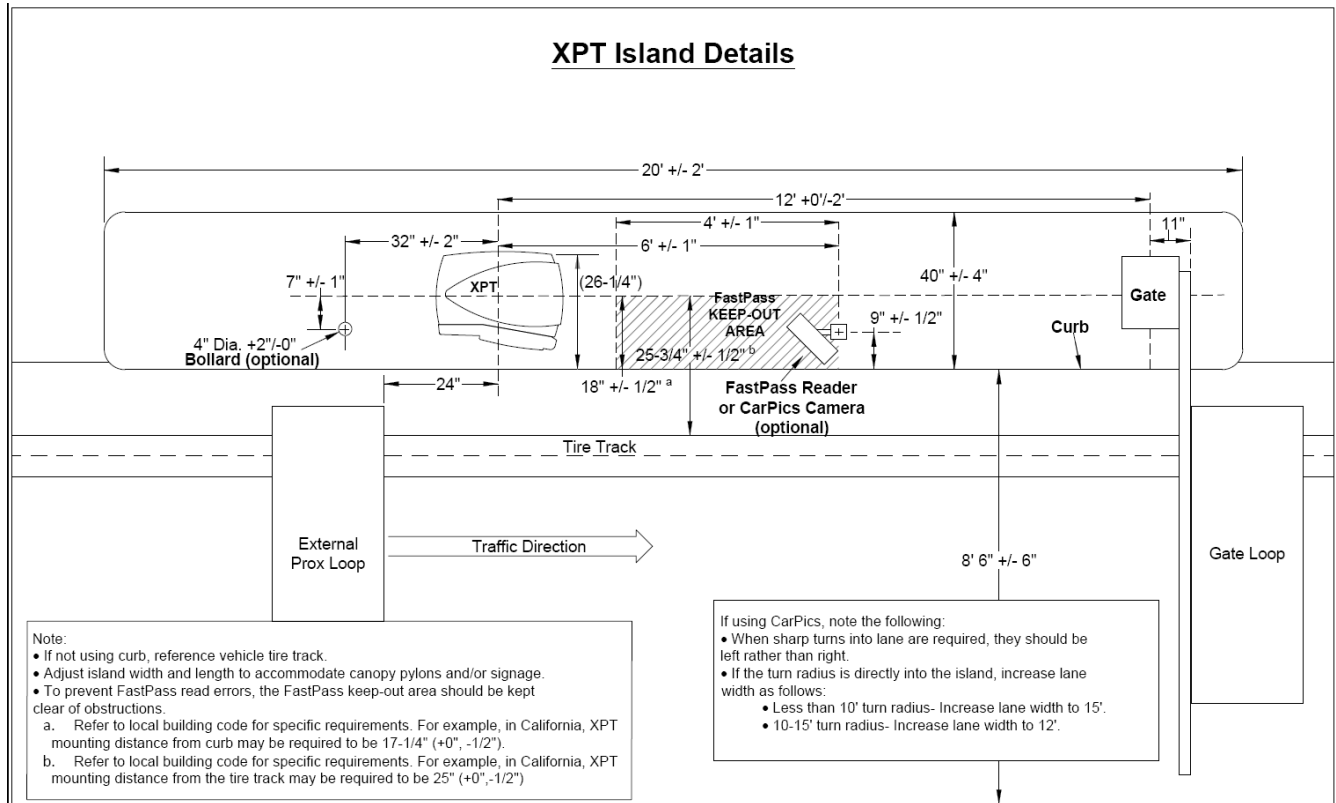


Figure 9. Positioning the Frame on a New Slab

4. Immerse the standard or curb-height base frame into the freshly poured concrete to a depth of 6". The reinforcement crosspieces are welded 6" above the bottom of the frame, and should be resting on the surface of the concrete when you have inserted the frame.
5. Ensure the frame is level by resting a dual-plane level across the top of the frame. Do not let the concrete dry with the frame unleveled. If the frame is not level, make the necessary adjustments before the concrete sets.

3.1.1.2 Pre-existing Slab

1. Position the XPT base frame so that the frame centerline is 18" away from the edge of the curb. **Note:** In some areas, such as California, this distance may vary. Refer to local building code for specific requirements.

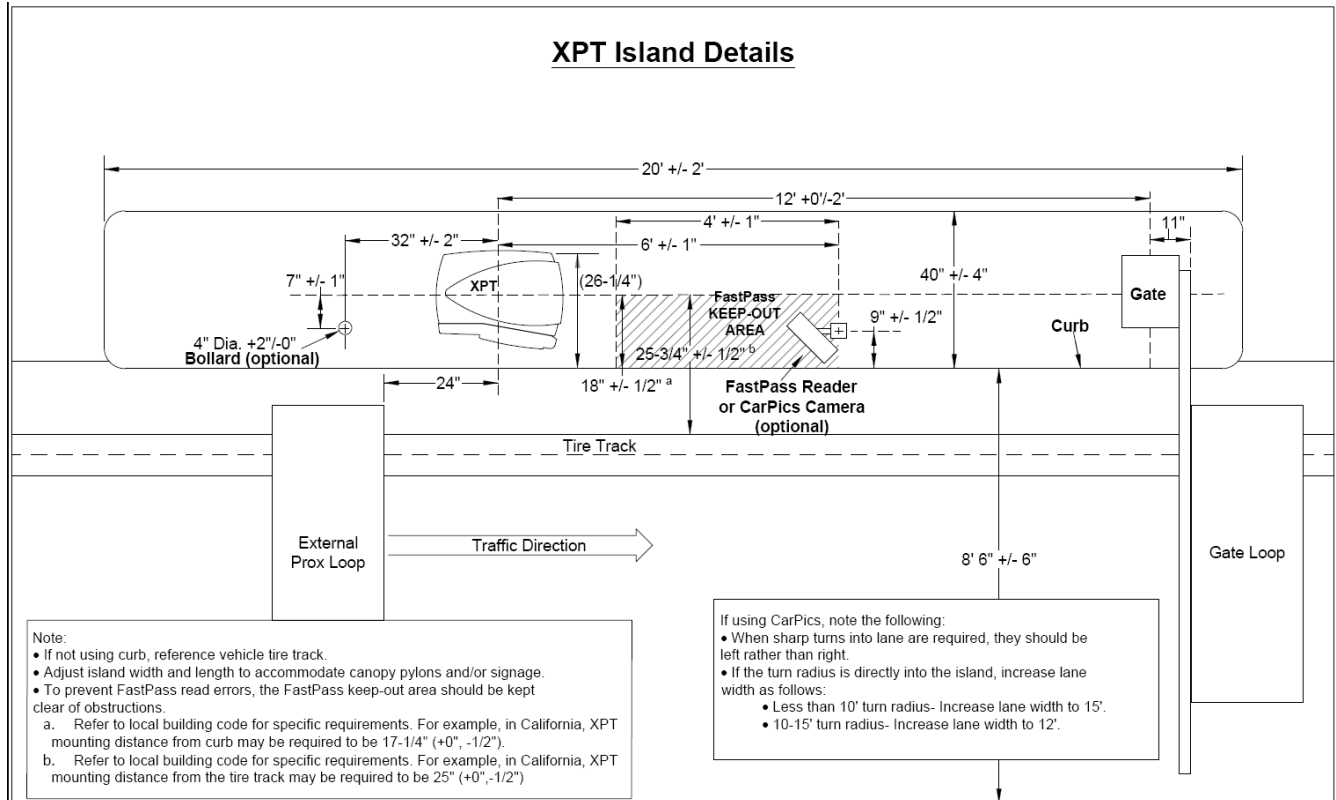


Figure 10. Positioning the Frame on a Pre-Existing Slab

2. Mark on the cement where the six legs of the stand will be inserted into the slab.
3. Using a hammer drill with a minimum 2.5" bit, drill the six holes where you marked them. The holes should be drilled 6" deep.
4. Fill each of the holes with either an epoxy solution or wet cement.
5. Insert the steel frame into the drilled and filled holes. The reinforcement crosspieces should be resting on the surface of the concrete slab.
6. Ensure the frame is level by placing a dual-plane level across the top of the frame.

3.1.2 Molded Polyethylene Sheath

When the concrete or epoxy solution has dried completely, slide the molded polyethylene sheath over the steel frame. The base of the sheath should be flush with the top of the concrete, and the top should be flush with the top of the frame.



3.1.3 Additional Security

At this stage you have the option of adding an extra level of security to the XPT by filling the base with concrete.

1. Extend the conduits, ensuring they will be aligned with the service entry port in the bottom of the XPT.
2. Tie a rope midway around the plastic sheath to prevent it from bowing out when filled with concrete.
3. Fill the sheath with concrete.
4. When the concrete dries, remove the rope.

3.1.4 Mount Unit to Frame

1. Locate the three large washers.
2. Slide the unit down over the mounting bolts while feeding the wire runs up through the service entrance port and out the door of the unit. If the correct lengths of wire were pulled, you should have approximately 3' of wire hanging down in front of the unit. Due to the weight and size of the unit, we recommend using 2-3 people to lift and seat the unit on the frame.
3. Place one large washer on each of the (2) mounting bolts on the right side of the case, and hand-tighten the mounting nuts.

Warning!: Verify the nuts are secure before tilting the bill dispenser forward in the next step. Failure to do so could cause the XPT to tip forward!

4. Unlock and open the vault door, then tilt the bill dispenser forward to gain access to the third mounting bolt.
5. Place a large washer and nut on the third mounting bolt, and then hand tighten the nut.
6. Verify the unit's final position. Use the dual-plane level to verify the unit is level. Make adjustments if necessary.
7. Fasten the 3 nuts with the socket wrench. Once you have done so, there should be no movement of the case whatsoever.

3.2 Bricking in the XPT

For security reasons, we strongly recommend bricking in XPTs located at unattended sites or in high crime areas. You have two mounting options when installing a bricked-in base:

- **Brick-in adapter plate** - Build the brick enclosure, fill it with concrete, sink the adaptor plate with anchor bolts into the wet concrete, let the concrete cure, mount the XPT, and then finish bricking in the unit. Ensure that a 1½" air gap is left between the bottom, rear, and top of the XPT case and brickwork.
- **Brick-in Adapter Plate + Standard or Curb-Height Base Frame** - Install the curb or standard height steel frame, attach the adaptor plate, build the brick enclosure around the frame, mount the XPT unit, and finish bricking in the unit. This option allows the XPT to be installed prior to the brick enclosure being built.



Note:

Do not install a metal cap on the brick-in enclosure. Doing so can interfere with FastPass reader operation.

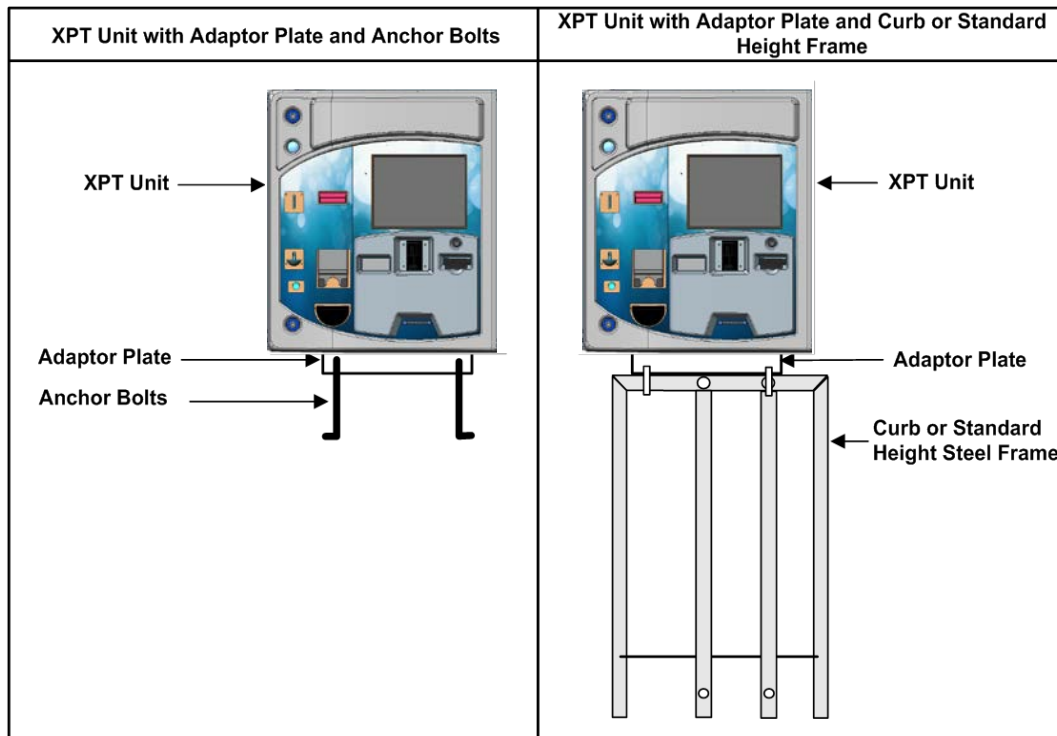


Figure 11. Bricked-In Base Options

In addition to two mounting options, there are two available mounting positions – recessed and flush mount. See Figure 12 for an example of each. **It is important to determine which mounting position will be used, as this will determine how far back the brick enclosure should be built from the edge of the curb** (as shown in Figure 13).

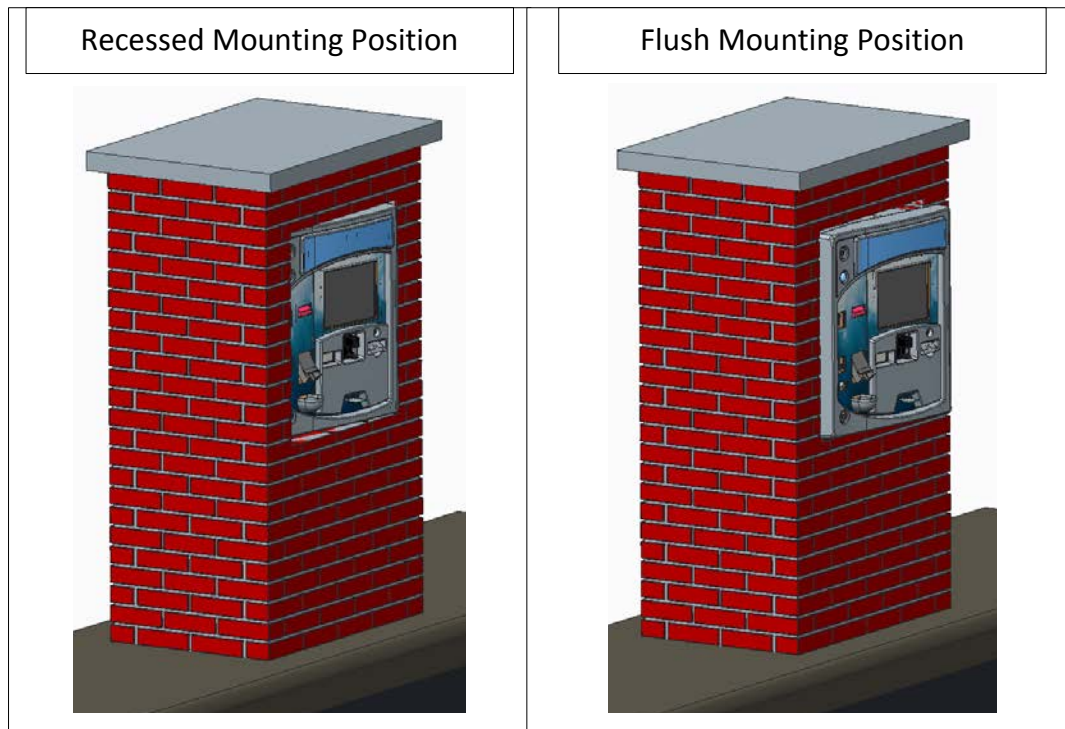


Figure 12. Brick-In Mounting Positions

3.2.1 Pouring the Slab

- The bottom of the XPT unit should be 35" from the road surface. Make appropriate adjustments to accommodate curb height, if necessary. **Note:** In some areas, such as California, the required height may vary. Refer to local building code for specific requirements.
- The center of the brick enclosure should be located 12' from the center of the gate.
- Conduit should be placed to align with the rectangular cutout in the brick-in adapter plate, as shown in Figure 16. Figure 14 also provides a low-detail footprint of the bottom of the XPT.
- Depending on whether the XPT will be mounted in recessed or flush mount position, the brick enclosures should be sized and positioned relative to the curb as shown in Figure 13. The recessed mounting position will require the brick enclosure be made deeper than if using the flush mounting position.

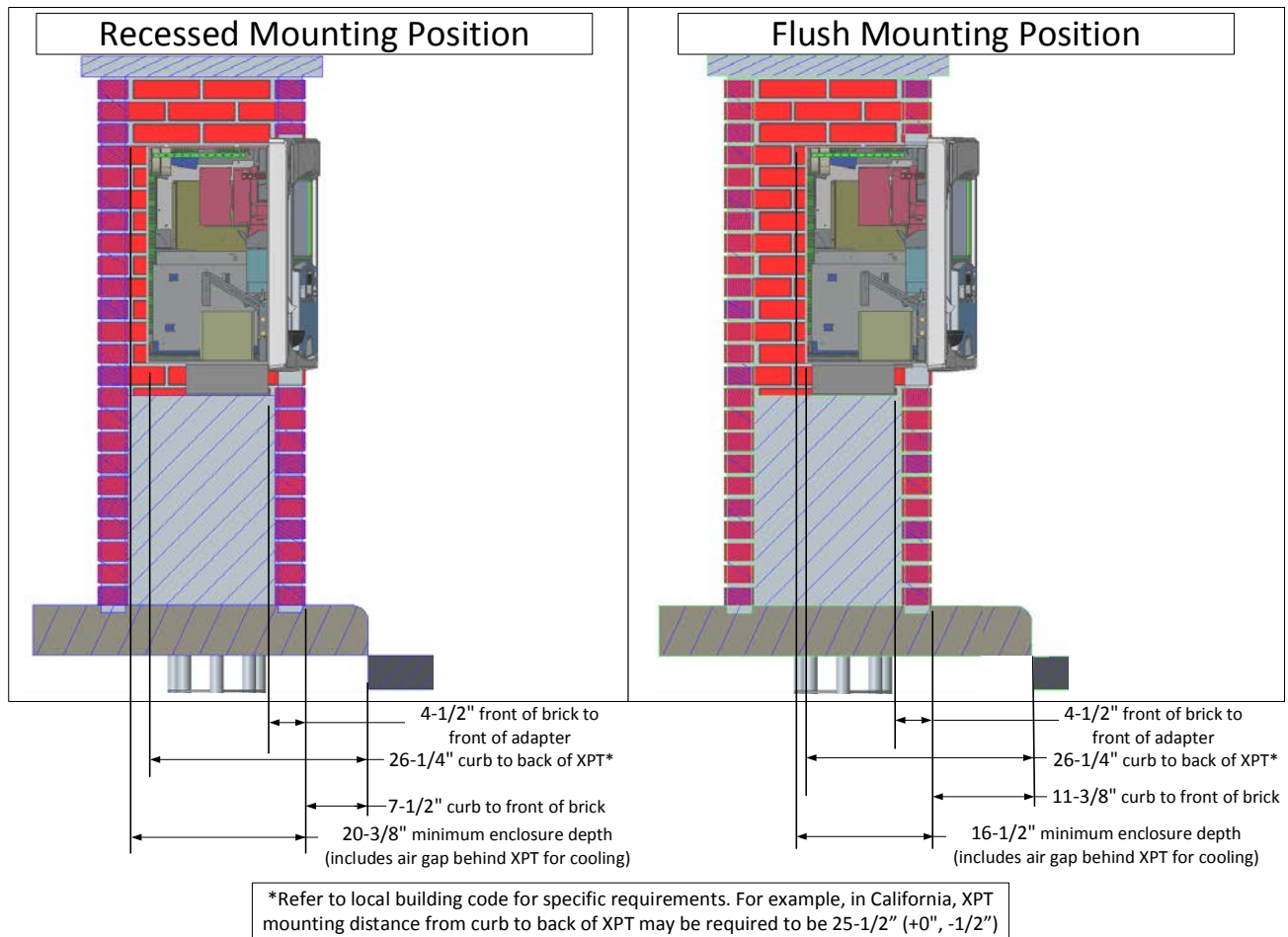


Figure 13. Mounting Position vs. Enclosure Placement and Size

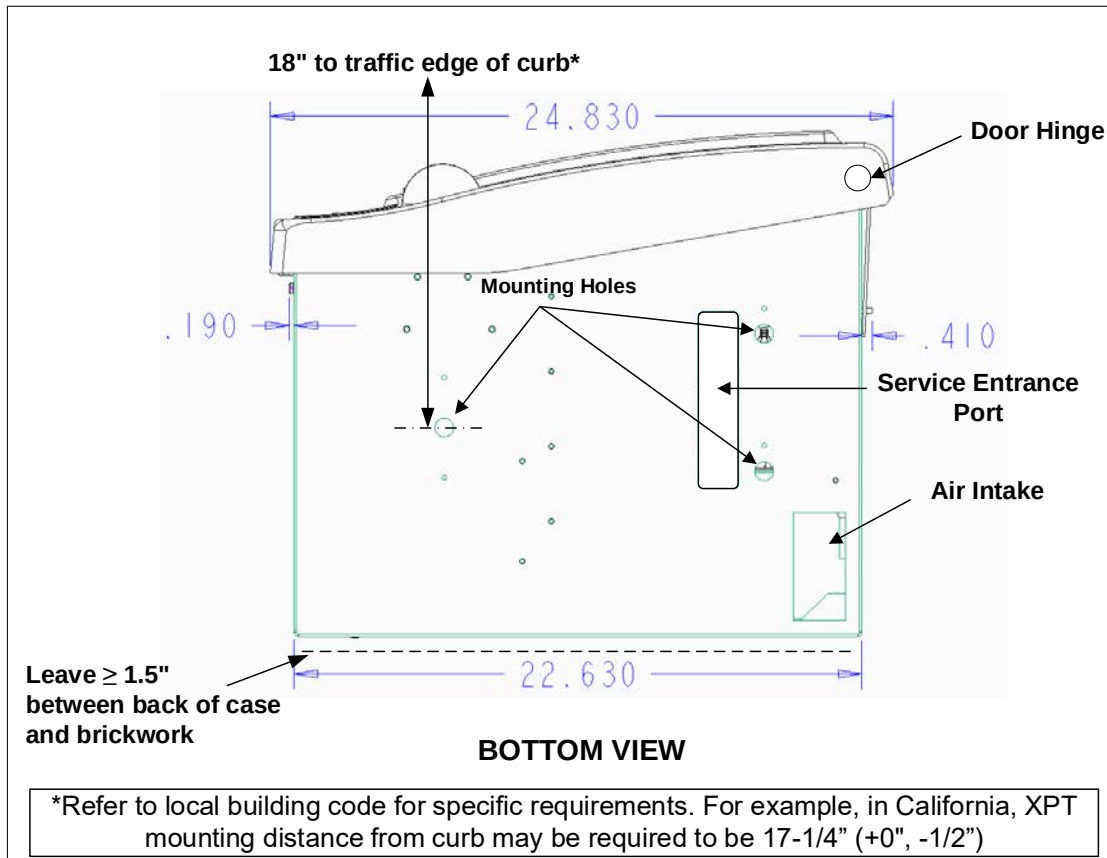


Figure 14. Bottom View of XPT

- After the brick enclosure depth has been calculated according to Figure 13, the enclosure should be sized to allow a minimum 26-3/4" wide by 30-1/4" high opening for the XPT, as shown in Figure 15. These dimensions allow the correct minimum gap around all sides of the XPT to allow the main door and vault doors to fully open without contacting the brickwork. The proper gap underneath the front of the XPT becomes even more critical if the XPT includes the coin dispensing option, because the coin cup protrudes downward several inches when the vault door is open.

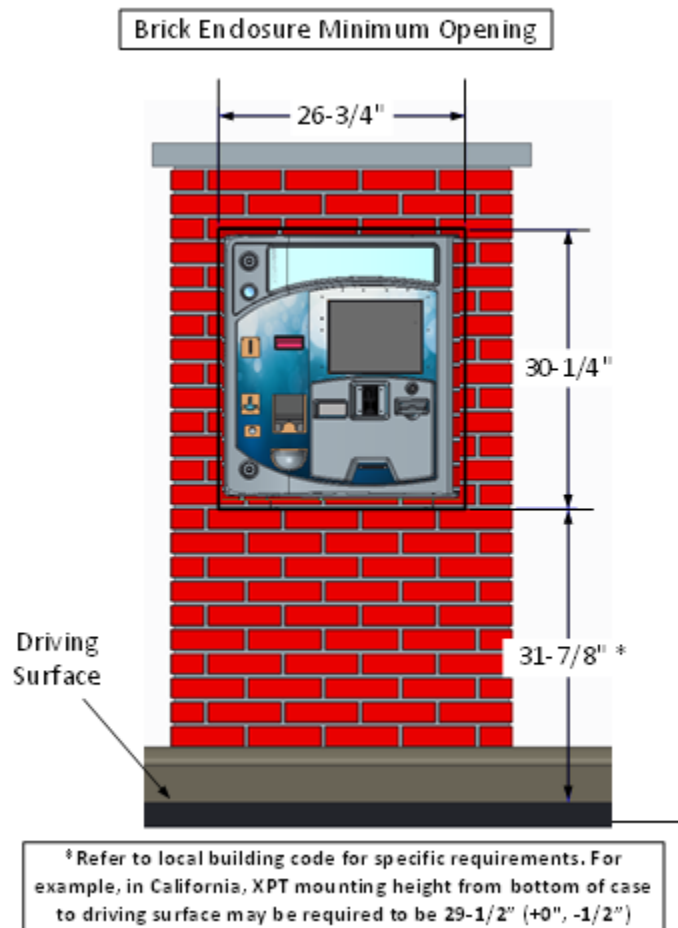


Figure 15. Brick Enclosure Minimum Opening

3.2.2 Adaptor Plate and Anchor Bolts

A brick-in adaptor plate is used to secure the XPT and provide proper air circulation required for the heat exchanger air intake and exhaust. It also offers the option of mounting the XPT with the back edge of the door flush with the front edge of the brick or recessed in the brick enclosure. The following diagrams illustrate the XPT bricked in using the adaptor plate and anchor bolts.



Note:

The brick-in adapter does not share the same centerline with the XPT. Refer to Figure 16 to determine the installed XPT centerline relative to the brick-in adapter.

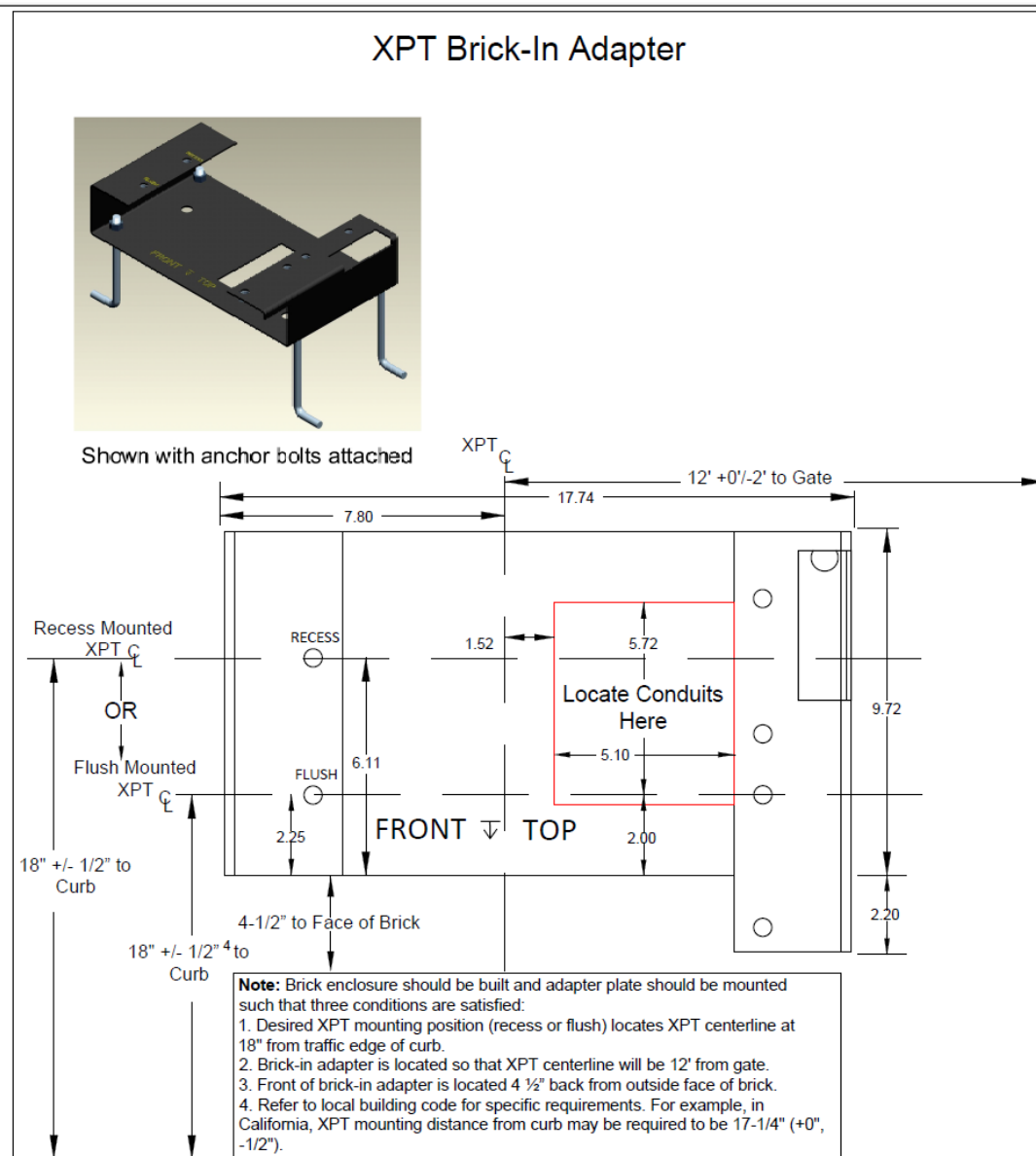


Figure 16. Brick-In Adapter

Use the following procedures when bricking in the unit using the adaptor plate and anchor bolts:

1. Make a mark on the adapter plate with a permanent marker, 10" in from the right edge of adapter. This mark indicates the XPT centerline, and should be aligned with the center of the brick enclosure.
 2. Build the brick enclosure up to 33" high, measured from the road surface.
 3. Verify conduits are properly located according to the cutout in the brick-in adapter, as shown in Figure 16.
 4. Fill the enclosure with 31" of concrete, measured from the road surface.
 5. Sink the adaptor plate with anchor bolts into the wet concrete, until the top of the adaptor plate is 35" from the road surface. Position the adaptor plate 4½" back from the front edge of the brick, and center the mark on the adapter plate created in step 1 above with the inside of the brick enclosure, as shown in Figure 18. Level the adaptor plate while the concrete is still wet.
1. **Note:** In some areas, such as California, the required height may vary. Refer to local building code for specific requirements.

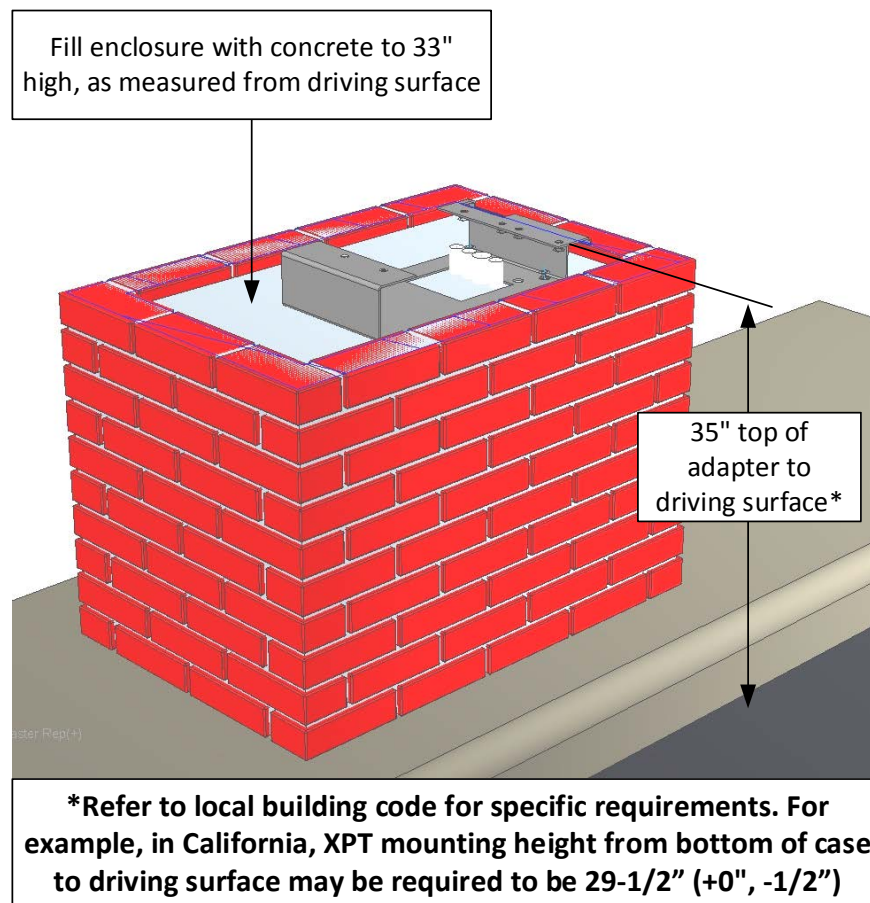


Figure 17. Fill Brick Enclosure with Concrete

Mark adapter plate at 10" from right edge to indicate XPT centerline, then align mark with center of brick enclosure

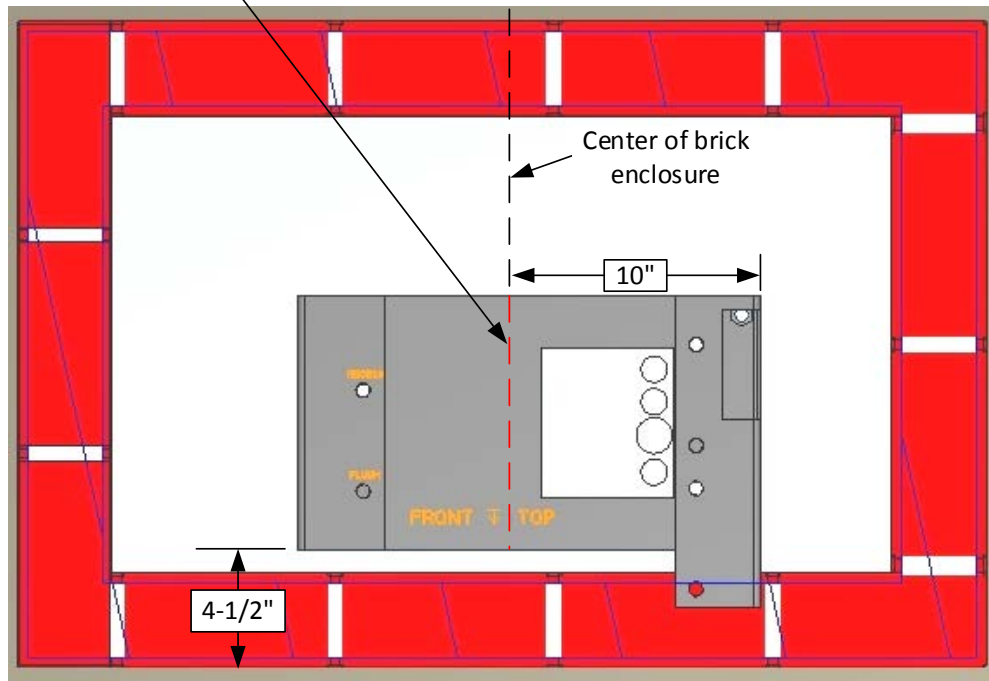


Figure 18. Positioning the Adaptor Plate

6. Allow the concrete to cure for a minimum of 24 hours.
7. Mount the XPT unit to the adaptor plate by inserting and tightening two bolts through mounting holes on the right side of the XPT case, for either a flush or recessed door configuration (see Figure 19 below).
8. **Warning! Verify the bolts are secure before proceeding to the next step to tilt the bill dispenser forward. Failure to do so could cause the XPT to tip forward and cause bodily harm.**

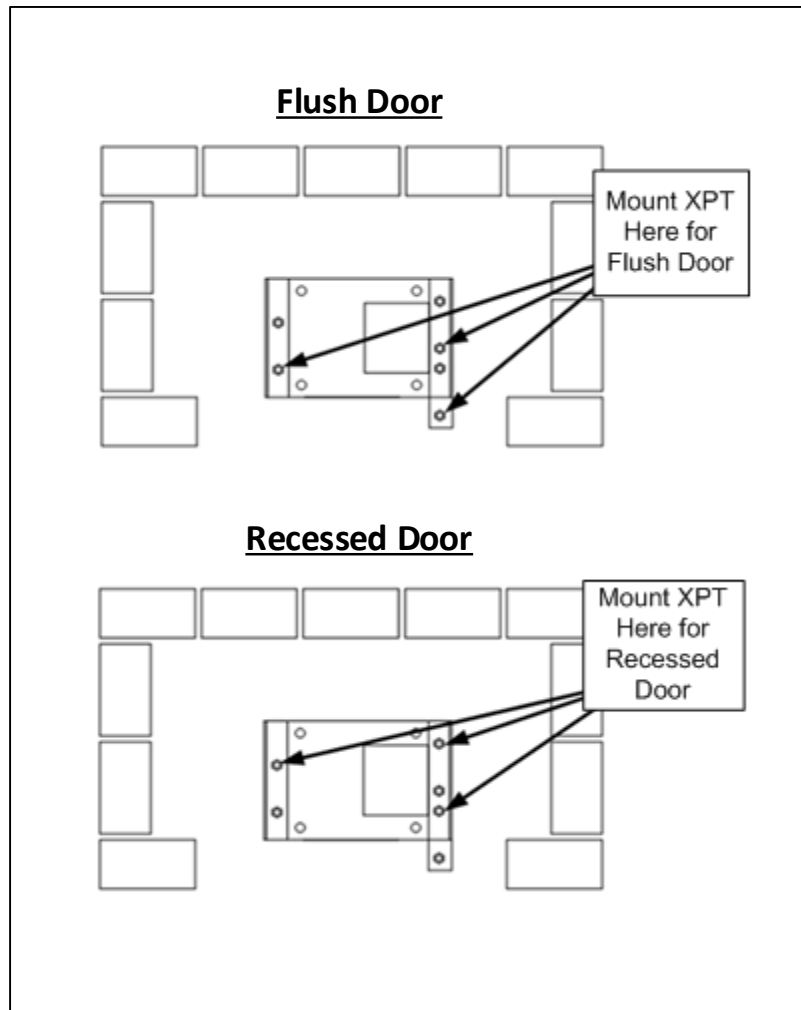


Figure 19. Flush Door and Recessed Door Mounting Options

9. Unlock and open the vault door, then tilt the bill dispenser forward to gain access to the third mounting hole.
10. Place a bolt through the third mounting hole, and then hand tighten.
11. If mounting in the recessed door position, insert bolts and tighten halfway, then pull the XPT toward the front of the bracket and finish tightening the bolts.
12. Finish bricking in the unit and verify an air gap exists between the top of the XPT and the top of the brick opening to allow the "chimney effect" to exhaust heat from the brick enclosure.

3.2.3 Adaptor Plate with Curb or Standard Height Steel Frame

When using this configuration, the curb or standard height steel frame will need to be sunk in the concrete 4" deeper than normal, to compensate for the height of the adaptor plate. The following diagram illustrates the XPT bricked in using the adaptor plate and the curb or standard height steel frame:

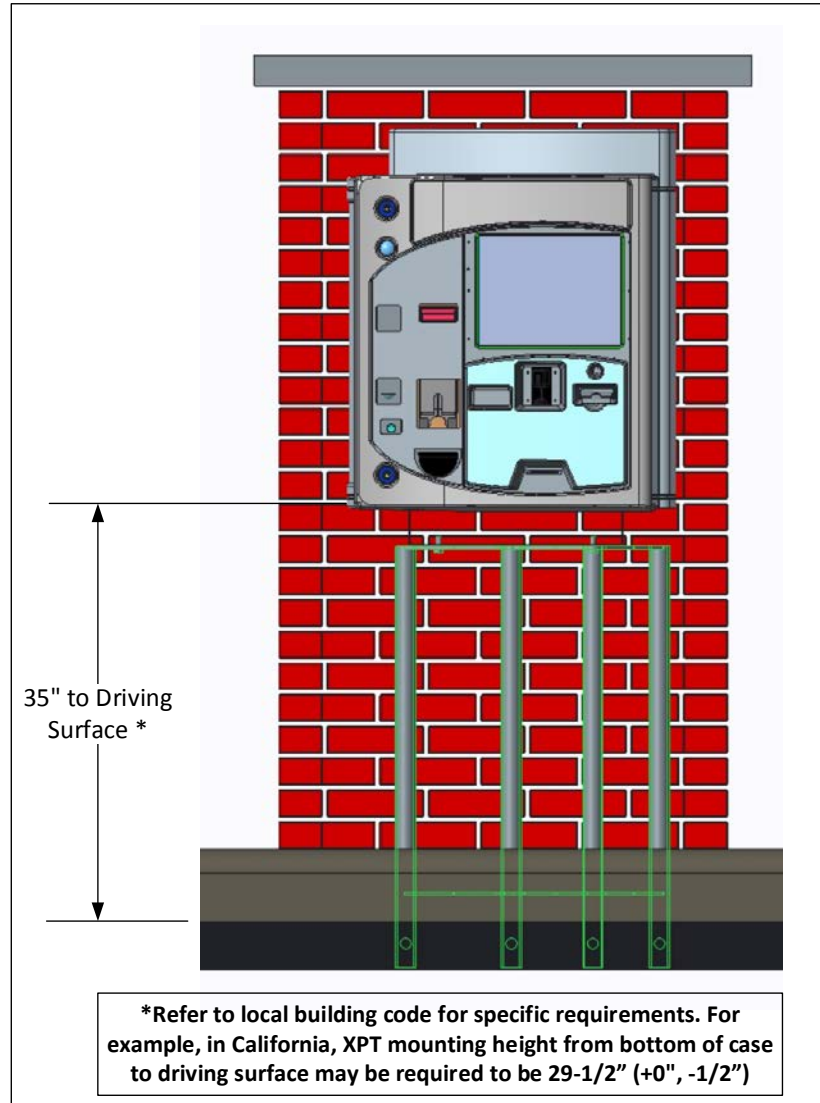


Figure 20. Bricked-In XPT with Adaptor Plate and Standard Base Frame

Use the following procedures when bricking in the XPT using the adaptor plate and the curb or standard height steel frame:

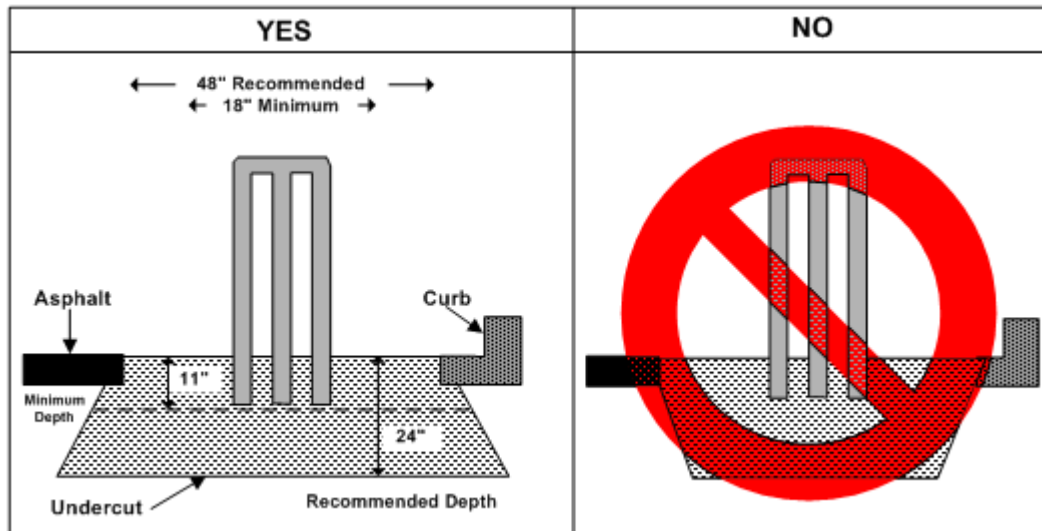


Figure 21. Concrete Slab Dimensions

When installing the base, you will first sink the steel frame 10" into concrete. We recommend the slab be 48" by 48", with a minimum depth of 11", and a recommended depth of 24". Since a brick-in adaptor plate is being added between the steel frame and the XPT, the steel frame will need to be sunk into the concrete past the reinforcement cross pieces to achieve a mounting height of 35" from the road surface to the bottom of the XPT. **Note:** In some areas, such as California, the required height may vary. Refer to local building code for specific requirements.

3.2.3.1 Concrete Slab

1. Pour a slab 48" by 48" with a minimum depth of 11" (24" depth recommended), making sure you leave a minimum of 3" of conduit above the surface to keep standing water from getting into the conduit.
2. Verify that each conduit is properly located according to the holes and cutout in the base frame according to Figure 6.
3. Position the XPT base frame so that the centerline of the frame is 18" away from the edge of the curb. If a curb is not used, reference the edge of the tire track.
Note: In some areas, such as California, this distance may vary. Refer to local building code for specific requirements.

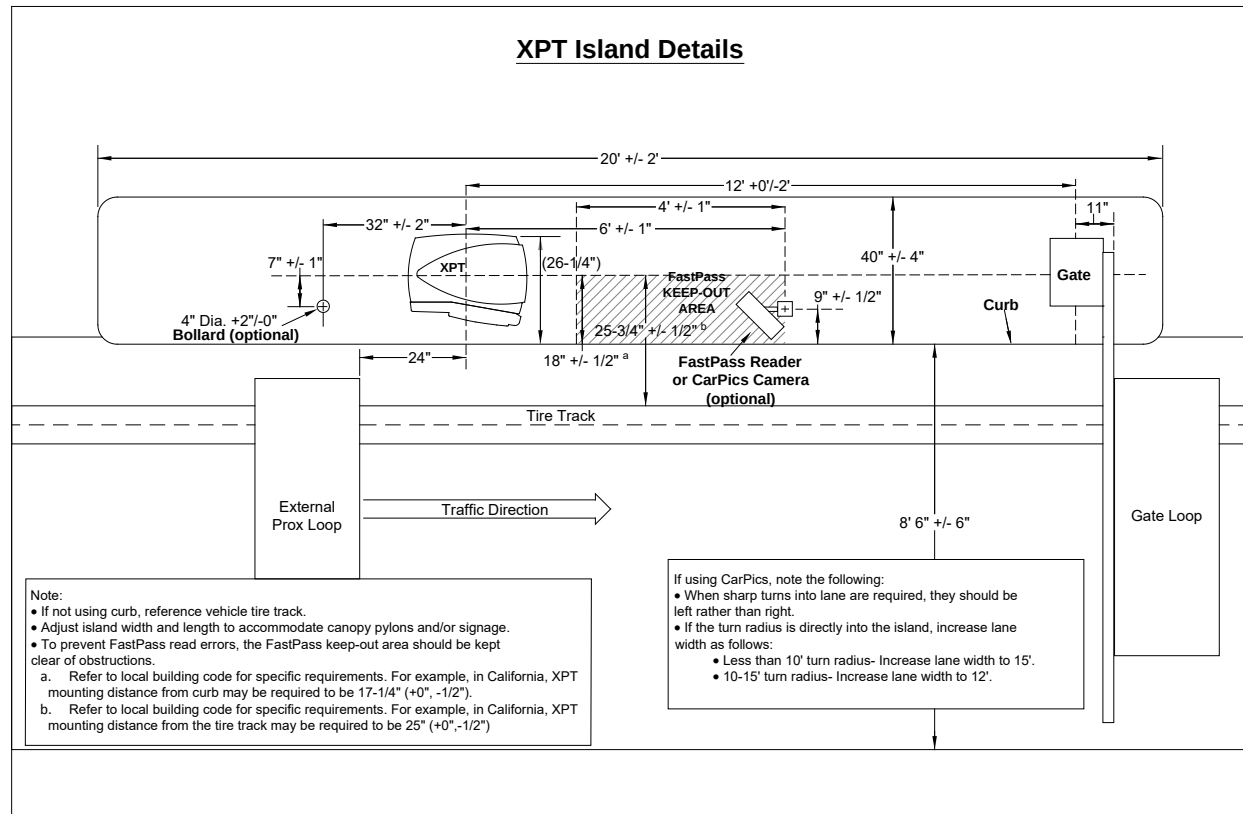


Figure 22. Positioning the Frame

Note: For additional security, rebar can be inserted into the holes in the bottom of the frame prior to inserting it into the concrete.

4. Immerse the base frame into the freshly poured concrete to a depth of 10". The reinforcement crosspieces are welded 6" above the bottom of the frame. They should be approximately 4" below the surface of the concrete after you have inserted the frame.
5. Ensure the frame is level by resting a dual-plane level across the top of the frame. Do not let the concrete dry with the frame unlevel. If the frame is not level, make the necessary adjustments before the concrete sets.



3.2.4 Mounting the XPT

The exact mounting procedures will vary depending on the design of your enclosure. The following guidelines will remain consistent regardless of your design.

- **Warning!** Secure the XPT to the base frame with two nuts on the right side of the XPT case before tilting the bill dispenser to access the third fastener. Failure to perform these steps in order could cause the XPT to tip forward.
- Make sure the conduit positioning allows the wiring to enter the XPT through the service entrance port.
- Pull all wires through conduits before mounting the unit. See **Electrical Planning** for wiring requirements.
- Bear in mind that the conduit run should protrude at least 3" to prevent standing water from accumulating in the conduit.
- Feed the wires up through the service entrance port and out the front of the unit while mounting the unit to the adaptor plate or base.
- Allow 6' of wire (measured from the ground level) to extend through the conduit.
- The bottom of the XPT should be 35" from the road surface. Make adjustments as necessary, to achieve this mounting height. **Note:** In some areas, such as California, the required height may vary. Refer to local building code for specific requirements.
- Level the unit using washers, bolts, or shims prior to tightening the mounting bolts.

4 Electrical Installation

After completing the mechanical installation, you will wire any external hardware to the control module, connect the external prox loop, connect the AC power, and connect the network cable.

4.1 Wiring External Hardware to the Control Module



Note: Follow local electrical code when wiring the XPT.

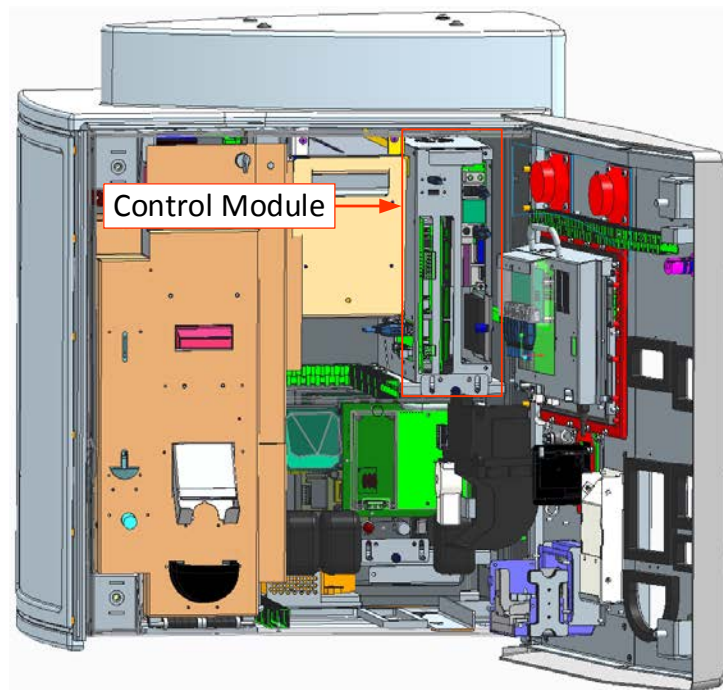


Figure 23. Control Module Location

The control module is located inside the XPT case on the right wall, above the power module. Some examples of external hardware that can be wired to the control module inputs and outputs are:

- A gate (if using non-Ethernet controlled gate) (Appendix C)
- A lane available light (Appendix F)
- An In-Bay Automatic wash controller (Appendix G)
- Other third-party devices



Warning:

Carwash equipment wiring can carry 20-120 VDC or 20-120 VAC. Disconnect the power from ALL carwash equipment before wiring to the control module.

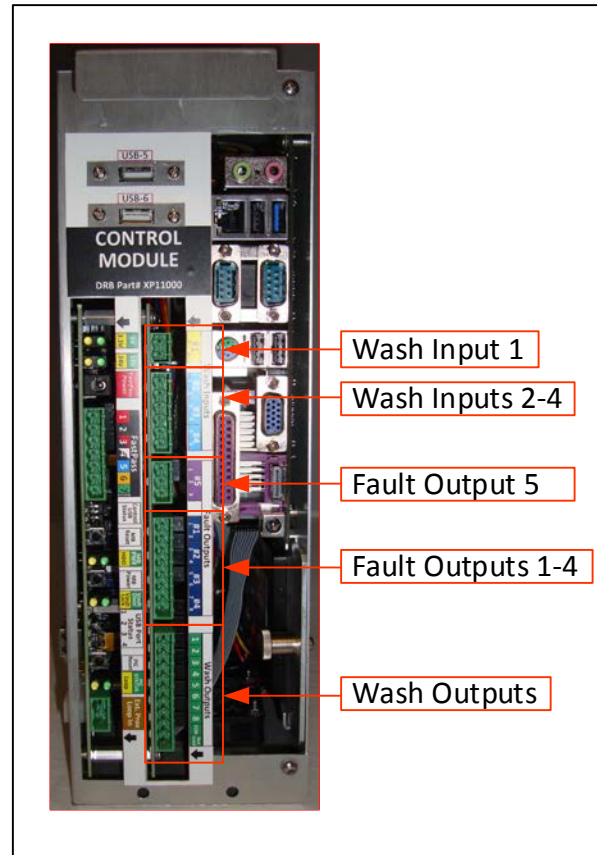


Figure 24. Control Module Input/Output Connectors

Input Ratings (all optically isolated and require external power source): 12V - 120V AC or DC; 1.25mA at 12V, 25mA at 120V

Output Ratings (all dry contacts): 1A max for Fault Outputs 1 – 4, 500mA max for Fault Output 5, 1A max combined for Wash Outputs 1-8, 120VAC or DC.

1. You will need a thin-tipped, flat head screwdriver to open and tighten the relay connections of the Phoenix connector.
2. Phoenix connectors are shipped already inserted in the appropriate sockets on the control module.
3. Remove the appropriate Phoenix connector to make the connections described for each step, making sure there is enough slack in the wire to allow the connector to be replaced on the board and for the cable to be routed through the wire duct on the right wall of the XPT.

4. Make the necessary connections between the control module and the gate (Appendix C), lane available light (Appendix F), or in-bay automatic wash controller (Appendix G).
 - When all of the connections have been made, they can be tested by pressing the Phoenix connectors back into their positions on the board.

4.2 Wiring and Configuring the External Prox Loop Detector

1. When controlling the Magnetic gate through an Ethernet connection (preferred), the external prox loop should be wired to the control unit on the Magnetic gate.
 - a. When controlling the Magnetic gate or SKIDATA gate through the discrete I/O connections, the optional external prox hardware will need to be purchased for the XPT, and the loop should be run to the XPT. Contact DRB Systems to order this optional hardware.
2. Verify the external prox loop has been installed in the pavement according to the diagram below. Installing the proximity loop too early or too late in the lane will result in poor photos. Refer to Appendix C section F for further information on loop wire specifications.

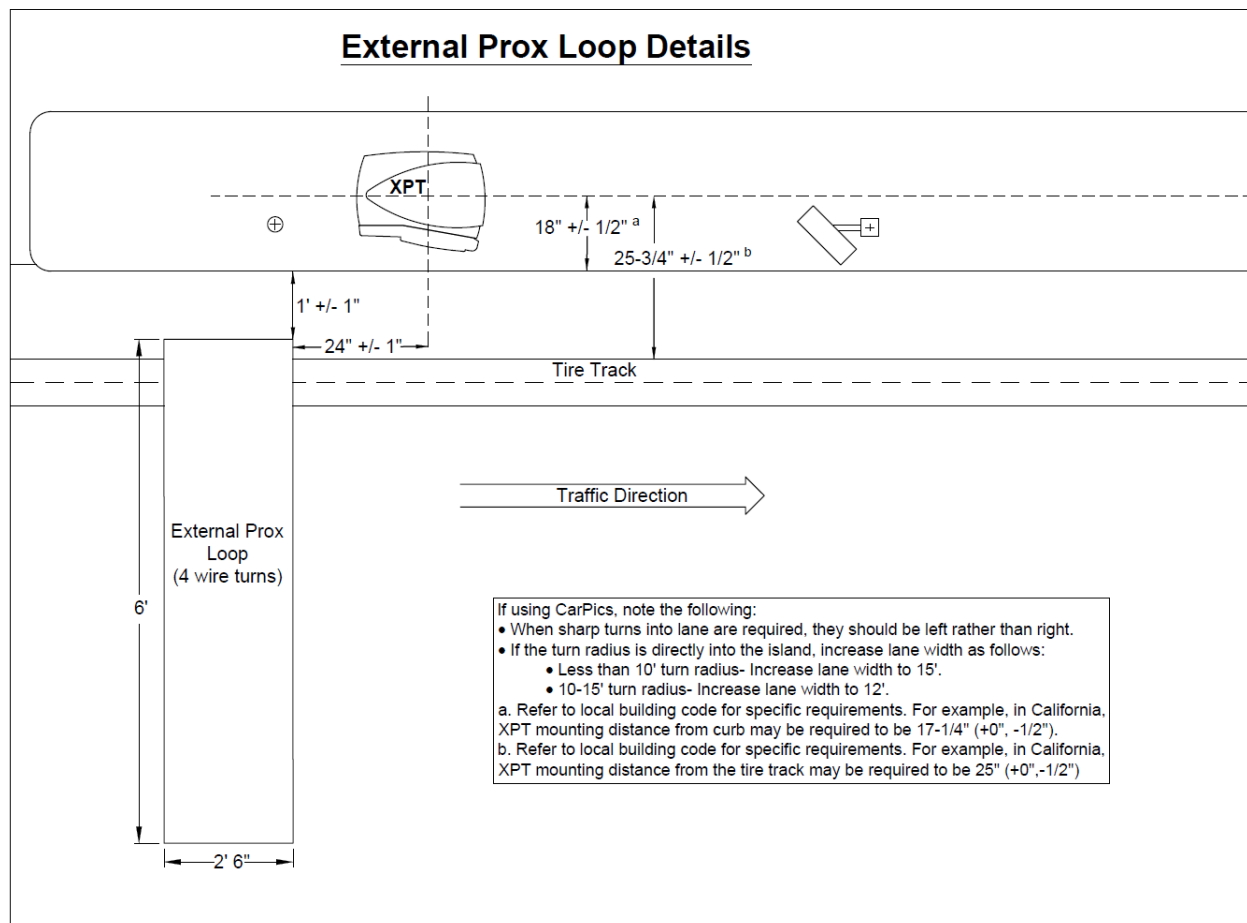


Figure 25. External Prox Loop Details

3. Wiring an external prox loop to the Magnetic gate controlled by an Ethernet connection.
 - a. Verify the loop lead in wires have been twisted at least 6 turns per foot from the edge of the loop to the connections on the Magnetic gate control unit.
 - i. Connect the external prox loop to the loop B connections on the Magnetic gate control unit.



Figure 26. Magnetic Gate Control Unit

4. If using the optional external prox hardware in the XPT, follow the instructions below.

Warning: The loop detector used for the external prox loop is not compatible with those used in SKIDATA gates or other equipment. Using this loop detector in other equipment can cause permanent damage.

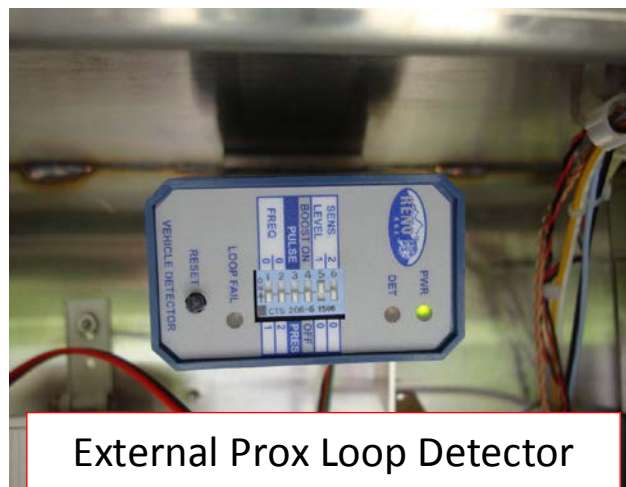


Figure 27. Optional External Prox Loop Detector

- a. Verify the loop lead-in wires have been twisted at least 6 turns per foot from the edge of the loop to the front of the control module inside the XPT.
- b. Verify the XPT power is turned off at the main power switch.

- c. Terminate the loop lead-in wires to the two pin Phoenix block labeled Ext. Prox Loop In.



Figure 28. External Prox Loop Lead-In Connections

- d. Verify the loop detector DIP switches, which are located on the front of the loop detector, are configured for the default settings:

Table 3. External Prox Loop Detector Settings

External Prox Loop Detector - DIP Switch Settings		
DIP Switch	Function	Default Setting
1	Frequency	OFF
2		OFF
3	Pulse/Presence	OFF
4	Sensitivity Boost	OFF
5	Sensitivity	ON
6		OFF



Switches 5 and 6: These two switches determine the sensitivity of the loop. There are four sensitivity settings: Low, Medium, Low (Default), Medium High, and High. A higher sensitivity level is needed if the loop is consistently not detecting a vehicle. A lower sensitivity is needed if the loop is consistently detecting a vehicle when none is actually present. The combinations of settings for these two switches are shown below.

Table 4. External Prox Loop Detector Sensitivity Settings

Sensitivity DIP Switch (5 and 6) Settings	
Low	5 OFF, 6 OFF
Med Low	5 ON, 6 OFF (Default)
Med High	5 OFF, 6 ON
High	5 ON, 6 OFF

4.3 Wiring the Main Power



Warning: Disconnect 115 VAC-120 VAC power from the main power lines at the panel box before continuing.

1. Locate the main power wires. There will be three 12-16 AWG environmentally rated wires (black, white, and green).
2. Route the main power wires to the XPT power module and remove excess wire length, leaving sufficient length to reach the AC power inlet connector.
3. Remove the 3-pin Phoenix block from the power module by loosening the two security screws on the sides of the connector. Secure the Line (black), Neutral (white) and Ground (green) wires to the appropriate terminal screws. (See Figure 29.)
4. Re-insert the 3-pin Phoenix block back into the power module. Tighten the two security screws on either side of the Phoenix block.

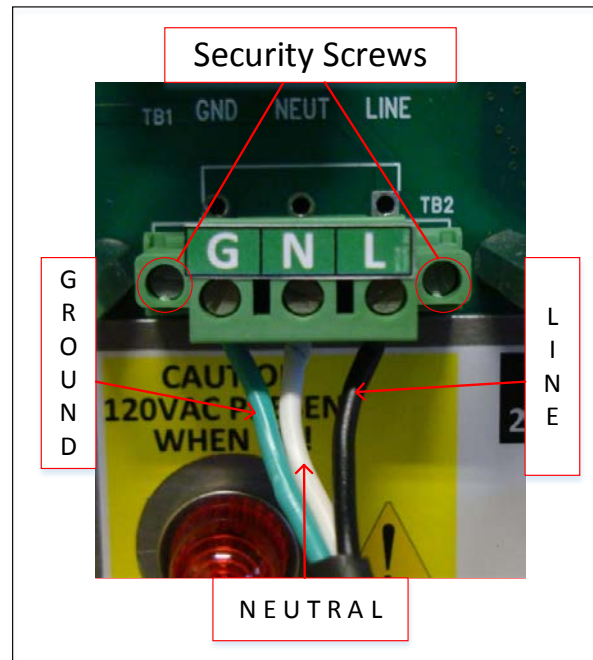


Figure 29. Line - Neutral - Ground Connections

4.4 Wiring the Intercom

The installation of an intercom is highly recommended to provide two-way communications between customers at the XPT and staff elsewhere on site. Without an intercom, the system can send a notification to staff when a customer presses the **Help** button, but the staff must walk to the terminal in order to respond to the customer.

The intercom is wired to the display module on the back of the main door. Jumpers and adjustments to control its operation are also located on that board. 2, 3, and 4-wire intercoms are supported. A digital intercom is recommended if the intercom wiring is sharing conduit with other communications wiring, but not required.

4.4.1 Intercom Connections

The intercom has two connectors which control the way in which the intercom is wired and the mode of operation. The connector labeled Intercom on the left side of the display module is the interface and connects to the customer's intercom unit. The jumpers below the intercom connector are used to select mode of operation (2, 3, or 4-wire intercom systems). Twisted pair/fully shielded cable is recommended for optimum performance.

4.4.2 Intercom Adjustments

The XPT intercom system has the ability to sense when voice band audio signals are present, and allows the speakers in the XPT to be used as an intercom. When in intercom mode, the volume control on the site-provided intercom base station adjusts the speaker volume in the XPT; the XPT volume control will have no effect on intercom volume levels.

The sensitivity and time delay of intercom mode should be adjusted (turn clockwise to increase) according to the local acoustical characteristics, such as background noise, in order for both intercom and XPT normal audio to work properly.

- **Sensitivity Adjustment:** The potentiometer labeled SENS is used to adjust the sensitivity of this circuit. The D19 LED, labeled Sensitivity, is located directly above the potentiometer, and will aid in the sensitivity adjustment.
- **Time-Out Delay Adjustment:** The potentiometer labeled DELAY is used to adjust the time-out delay after which the XPT will revert back to the normal audio mode. The D18 LED, to the right of the display module, labeled Audio Present, will aid in the time-out delay adjustment. Adjust the potentiometer to the desired delay after the last audio has been detected. Thirty seconds is normal.

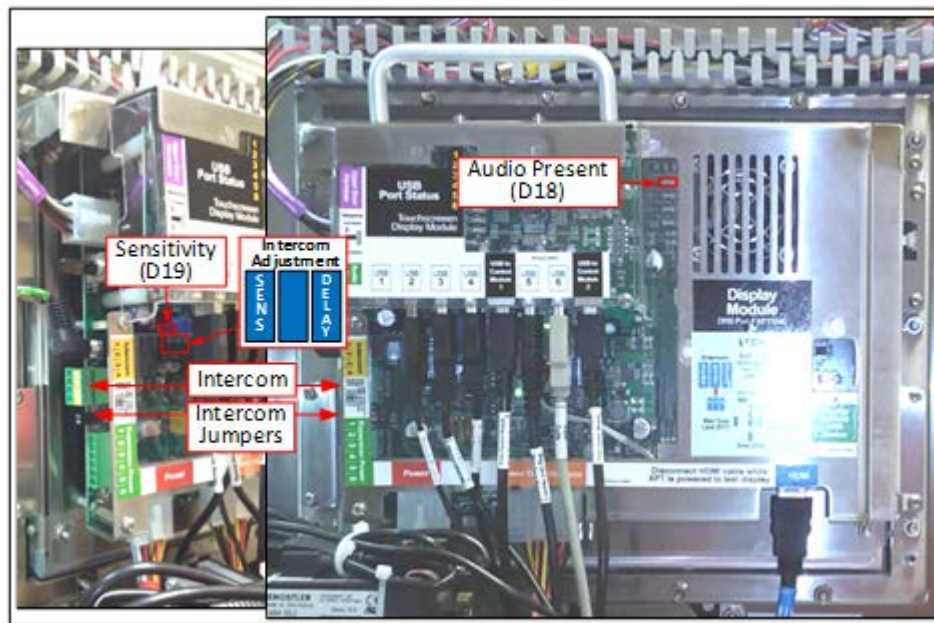


Figure 30. Intercom Component Locations on the Display Module

4.4.3 Connection Overview

Call Function: A view of the diagram below shows J34 and J35. The unit will initiate a call function by closing the contacts on an internal relay. By default, the intercom connector Pin 1 (H1) and Pin 2 (H2) will always reflect the contact closure of the internal relay. This is the default for the four-wire mode when both the call function and audio are completely separated. More detailed instructions on this follow.

Audio: When the XPT intercom mode is active, the audio section is floating and is not relative to ground. By default, the intercom connector Pin 3 (SP+) and Pin 4 (SP-) will always be connected to the audio section.

Four-Wire Intercom Configuration: Two separate pairs (four wires) are used for both the call function and audio in the four-wire configuration. In this mode, no intercom jumpers are installed. This is shown below.

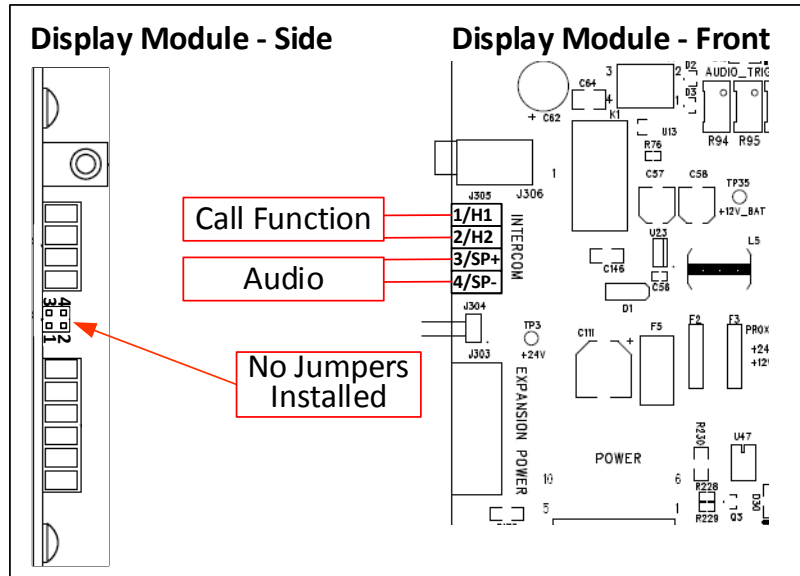


Figure 31. Four-Wire Intercom Configuration

Three-Wire Intercom Configuration: This mode requires two conductors for audio and one additional conductor for the call function. This mode uses a common ground for both audio and the call function (SP-). Jumper pins 3&4 and connect H1, SP+, and SP- as shown below.

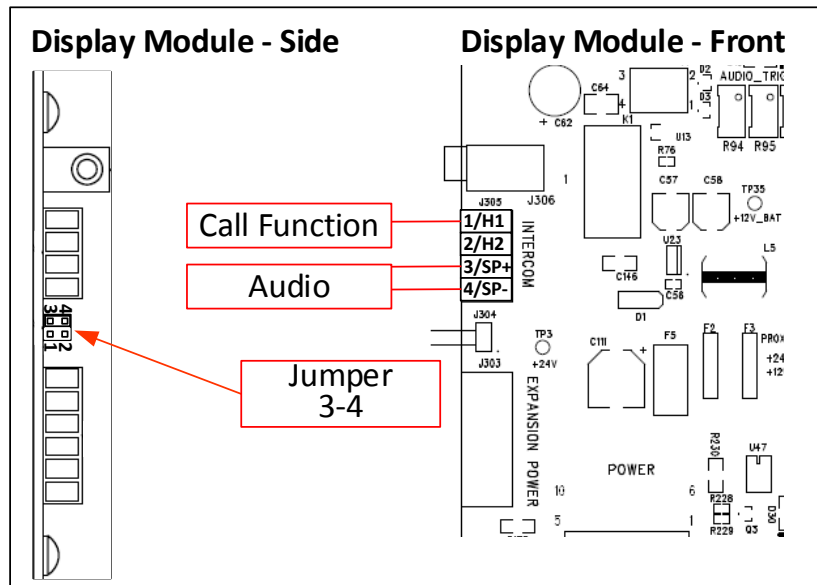


Figure 32. Three-Wire Intercom Configuration

Two-Wire Intercom Configuration: This type of intercom system has both the call function and audio sharing the two conductors. Jumper pins 3 and 4 as well as pins 1 and 2 and then connect the two conductors to SP+ and SP- as shown below.

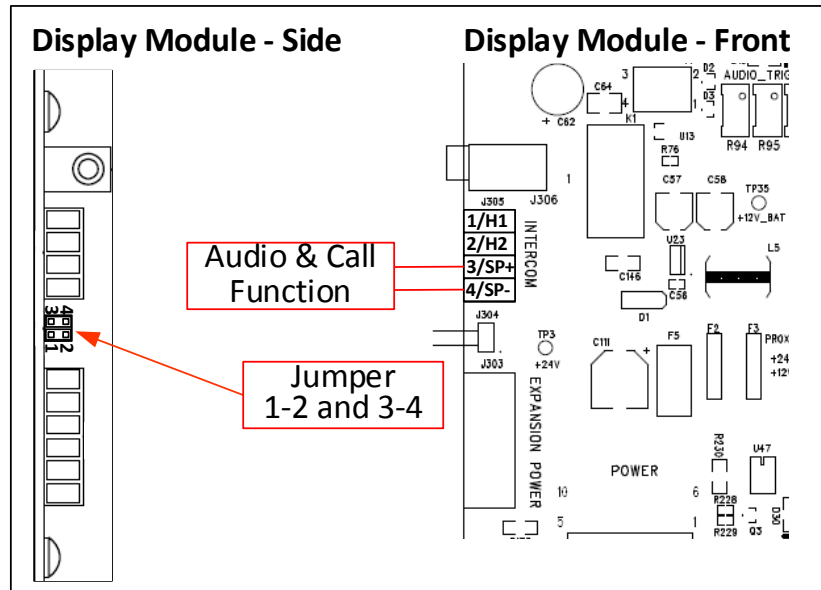


Figure 33. Two-Wire Intercom Configuration

4.5 Network Installation

The XPT needs an Ethernet network connection back to the SiteWatch Server before beginning customer operations. The only network component installed at this point is the wiring between the XPT and the router.

To install the cable, you will connect the RJ-45 modular connectors to the Ethernet cable (which should have been pulled along with the other wiring) using the RJ-45 crimp tool.

4.5.1 Connecting the Network cable

1. Terminate the Cat-5e (or Cat-6) wires to an RJ45 connector using a crimp tool. Refer to the following chart for wiring:

Table 5. CAT-5e (or CAT-6) Wire Termination Chart

Wire	Pin #
White/Orange	1
Orange	2
White/Green	3
Blue	4
White/Blue	5
Green	6
White/Brown	7
Brown	8



Note: The locking tab on the RJ45 connector should be facing downward when referring to the diagram above for wire terminations.

2. Connect the network cable by inserting the RJ-45 connector at the XPT into port 1 of the PoE pass-thru switch located inside the XPT. A patch cable connects port 3 of the PoE switch to the Ethernet surge suppressor. (See Figure 34)

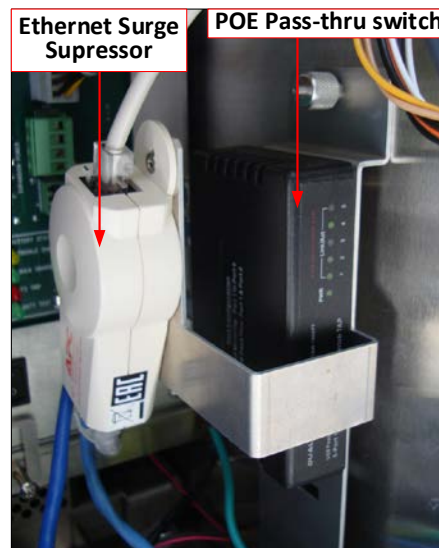


Figure 34. PoE Pass-Thru Switch and Ethernet Surge Suppressor

3. The other end of the cable will be connected to the network switch that is installed as part of the SiteWatch network.

4.6 Wiring the External Alarm

The XPT contains an internal alarm to attract attention in the event of an attempted break-in or vandalism. An external alarm system can also be connected through the power module for added security. The external alarm relay output will activate and deactivate in parallel with the internal alarm.

4.6.1 External Alarm Connections

The external alarm relay connection, J30, uses a removable Phoenix connector and can be found on the power module.

The connection can be wired as either a normally open or normally closed output, depending on the configuration of the customer's alarm system. The table below indicates the function of each pin on the external alarm connector:

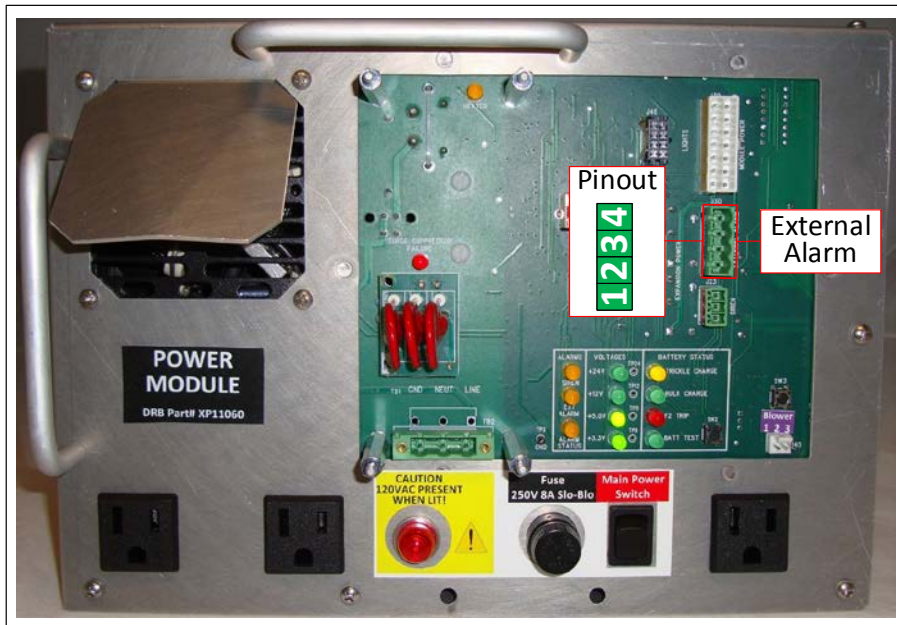


Figure 35. Power Module External Alarm Connection

Table 6. External Alarm Output Pin # Chart

External Alarm Output	
Pin #	Function
1	Common
2	Normally Closed
3	Normally Open
4	Not Used

5 System Setup and Configuration

Most of the software configuration needed to sell wash services to customers at XPTs is done in the SiteWatch database through the Site Manager program. The DRB Systems Installation staff will do this after the XPT has been installed and is operational.

However, there is some configuration needed in the XPT software to adapt it to the specific hardware configuration being used. Those steps are required before testing of the hardware is possible, and are detailed below.

5.1 Coin Acceptor

Depending on the model of XPT purchased, the coin acceptor comes from the factory programmed to accept U.S. coins (quarters and dollar coins. If the site is accepting tokens, the coin acceptor must also be programmed to accept them. See the section in the *XPT Hardware Service Manual* on programming the coin acceptor for detailed instructions.

Note that tokens accepted or dispensed should be between .80" and 1.18 diameter".

5.2 Coin Dispensers

The U.S. XPT can be ordered with or without the top coin hopper assembly. This assembly contains two cube hoppers, allowing two coin denominations to be dispensed. By default, both of the cube hoppers are configured to dispenser dollar coins. Each cube hopper is able to hold 400 U.S. dollar coins or 500 U.S. quarters, providing a total hopper assembly capacity of up to 1,000 coins.

If other coins or tokens will be dispensed, the coin dispensing wheel and guide arm must be changed as instructed in the *XPT Hardware Service Manual*. Note that tokens accepted or dispensed should be between .80" and 1.18" diameter, and between .059" and .126" thick, for reliable operation.

5.3 Bill Dispenser

The dual denomination bill dispenser can be loaded with up to 500 new U.S. bills in each cassette, for a total of 1,000 bills. Bill quality and proper bill loading are extremely important for reliable operation. Refer to the *XPT Hardware Service Manual* for periodic bill dispenser maintenance.

5.3.1 Bill Quality

The bills used for dispensing should be in good condition and not have excessive wear or folded corners, tape, or other quality issues that could prevent reliable dispensing. If using new bills, fan the edge of the stack to prevent bills from sticking together.

5.3.2 Bill Loading

It is very important that bills be in good condition and loaded correctly in order to be dispensed reliably. Many bill dispenser errors occur because of poor bill quality or improper loading. See *XPT Hardware Service Manual* for instructions on proper bill loading.

5.4 Adjusting the Volume

The audio amplifier has a volume knob on the left side of the display module. Turning the knob counterclockwise (when viewing the left side of the display module) turns the volume down; clockwise turns it up.

5.5 Optional Card Dispenser

The optional card dispenser can be loaded with up to 50 cards. If the cards include barcodes printed according to the specs provided by DRB Systems, the device is also capable of automatically reading the barcode data while the card is dispensing. Refer to the "XPT Hardware Service Manual" information on card specs and how to load them.

Warning: Only load new, clean, unbent cards to avoid maintenance and reliability issues.

To load the card dispenser:

1. Remove the weight from the top of the card stack and set aside.
2. Load a stack of cards with barcodes facing up and toward the main door, until the maximum fill line is reached.
3. Place the weight on top of the card stack.

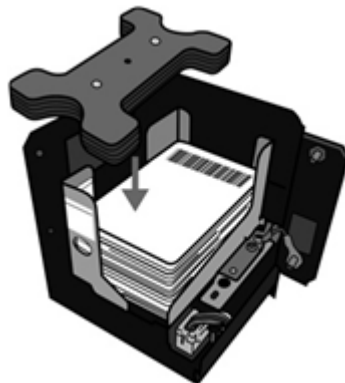


Figure 36. Card Dispenser Loading

6 Testing Field-Wired Devices

Before testing the XPT, verify and complete the following procedures:

- Wiring is completed for terminal and any attached hardware.
- 120 VAC power is available to the hardware at the machine room circuit breakers.
- Power is on at each of the units (terminal, gate, etc.).
- The XPT software is running as indicated by an "Out of Service" screen on the terminal.

6.1 Testing the Unit

You will use the XPT maintenance software to test the operation of the terminal and its peripherals. To do so, follow these instructions:

1. Unlock the top lock on the main door to activate the login screen.
2. Log in using **98** as the **Employee #** and **98** as the **Password**.
3. Press the **Enable & Test Hardware** button to open the **Enable & Test Hardware** screen.
4. Follow the instructions below to test each of the options on the **Enable & Test Hardware** screen.

If there are unexpected status messages or behavior in the test process, contact DRB Systems Knowledge Center at (330) 645-3299 to resolve the problem.

6.1.1 Gate & Merge Zone Inputs

If using a non-Ethernet controlled gate, this testing is used to synchronize the maintenance software with the actual operation of the gate and merge zone inputs. To do this, follow these steps:

1. From the **Enable & Test Hardware** screen, press the button labeled **Inputs & Outputs**. An **Inputs & Outputs** screen opens.
2. On the **Inputs & Outputs** screen, press the button labeled **Miscellaneous (Wash) Inputs**. A **Miscellaneous (Wash) Inputs** screen opens.
3. Because you can attach the wiring to any of the 4 inputs, you need to determine which ones are being used. Manually open the gate (see the gate manual for instructions) and watch to see which input changes status from **Now Off** to **Now On**, or vice versa. Usually it is wired to the input labeled **Input 1 (Spare)**.
4. When you have determined which input is the gate, check to see if the status is **Now On** when the gate is open. If it is, move on to the next step. If not, press the **Normally Open (press to change)** button beside the input; the status should change to **Now On**.

5. If there is a merge loop, drive a car over the merge zone, and then watch to see which input changes status. Usually it is wired to **Input 4 (WC)**.
6. When you have determined which input is used by the merge loop, check to see if the status is **Now On** when a vehicle is detected (check status lights on loop controller to verify the vehicle is being detected), and **Now Off** when there is none. If this is backwards, press the **Normally Open (press to change)** button beside that input to correct it.

6.1.2 Miscellaneous Inputs

If the site is queuing cars to keep them in order from the gates to the tunnel entrance, the gate control logic in SiteWatch will only open a gate if all gates are closed, and there is no car in the merge zone. For non-Ethernet controlled gates, this is done by checking the status of the wash inputs on the control module. If any of these inputs are on, the gate won't open. So it is important to be sure that the inputs are working correctly.

The inputs in this screen monitor the following connections on the control module.

- Input 1 = Wash Input 1 connector, pins 1 and 2
- Input 2 = Wash Inputs 2 - 4 connector, pins 1 and 2
- Input 3 = Wash Inputs 2 - 4 connector, pins 3 and 4
- Input 4 = Wash Inputs 2 - 4 connector, pins 5 and 6

In most cases you will not use all of the inputs.

Follow these steps to test the inputs:

1. Press the **Inputs & Outputs** button on the **Enable & Test Hardware** screen. The status should be **OK**.
2. Press the **Miscellaneous (Wash) Inputs** button on the **Inputs & Outputs** screen.
3. If there is a non-Ethernet controlled gate attached to the XPT terminal, manually open the gate.
 - The status of the input to which the gate is wired (Input 1) should change from **Now Off** to **Now On** when the gate is opened.
 - The status should stay at **Now On** as long as the gate is open.
 - The status should return to **Now Off** when the gate is closed.



Note:

If the status of Input 1 is **Now Off** when the gate is **open** and **Now On** when the gate is **closed**, press the button to the right of the input status information to change the polarity of the input.

4. If a non-Ethernet controlled gate is used, and the external prox loop is connected to the control module, drive a vehicle over the loop to activate the input.
 - The status of the Proximity Input should change from **Now Off** to **Now On** when the vehicle is at the XPT.
 - The status should stay **Now On** as long as the vehicle remains at the XPT.
 - The status should change to **Now Off** when the vehicle pulls away from the XPT.



5. If there is a wash controller with a wash in use input wired to the XPT, activate the wash in use output at the wash controller.
 - The status of the wash in use input (input 2) should change from **Now Off** to **Now On** when the wash is busy.
 - The status should stay **Now On** as long as the wash in use signal is active.
 - The status should change to **Now Off** when the wash in use signal goes off after the vehicle has left the wash.
6. If there is a wash controller with a wash fault input (input 3) wired to the XPT, activate the wash fault output at the wash controller.
 - The status of the wash fault input should change from **Now Off** to **Now On** when the signal is being sent to indicate there is a problem with the wash.
 - The status should stay **Now On** as long as the wash fault signal is active because the problem still exists.
 - The status should change to **Now Off** when the wash fault signal is turned off by the controller to indicate it is once again able to accept cars.
7. If there is a merge loop connected to a non-Ethernet controlled gate and the terminal, activate the loop (drive a car into the area just beyond the gate).
 - The status of the loop input (input 4) should change from **Now Off** to **Now On** when the car is being detected.
 - The status should stay at **Now On** as long as the car is detected.
 - The status should return to **Now Off** when the car is no longer detected.
8. Press the **EXIT** button to return to the **Inputs & Outputs** screen.

6.1.3 Miscellaneous Outputs

The outputs on this screen control the following connections on the control module.

- Output 1 = Fault Outputs 1 - 4 connector Outputs, pins 1 and 2
 - Output 2 = Fault Outputs 1 - 4 connector, pins 3 and 4
 - Output 3 = Fault Outputs 1 - 4 connector, pins 5 and 6
 - Output 4 = Fault Outputs 1 - 4 connector, pins 7 and 8
 - Output 5 = Fault Output 5 connector, pins 1, 2, and 3
1. Press the **Miscellaneous (Fault) Outputs** button on the **Inputs & Outputs** screen.
 2. Press the **Output 4 (press on/off)** button (gate control output). If a non-Ethernet gate is connected, the gate should open and stay open.
 3. Press the **Output 4 (press on/off)** button again to turn the output off before attempting to close the gate. Close the gate by driving a car over the gate loop, or using a piece of metal to simulate a car passing through the gate.
 4. If there is a lane available light attached to the XPT, press the button to the left of the output controlling it (usually output 3). The lane available light should come on and stay on until you press the button again to turn the output off.
 5. Press the **EXIT** button to return to the **Inputs & Outputs** screen.



6.1.4 Wash (Relay) Outputs

The outputs on this screen control the following connections on the control module.

- Output 1 = Wash Outputs connector, pins 1 and 9
 - Output 2 = Wash Outputs connector, pins 2 and 9
 - Output 3 = Wash Outputs connector, pins 3 and 9
 - Output 4 = Wash Outputs connector, pins 4 and 9
 - Output 5 = Wash Outputs connector, pins 5 and 9
 - Output 6 = Wash Outputs connector, pins 6 and 9
 - Output 7 = Wash Outputs connector, pins 7 and 9
 - Output 8 = Wash Outputs connector, pins 8 and 9
1. Press the **Wash (Relay) Outputs** button on the **Inputs & Outputs** screen.
 - The status for each of the outputs should be **Now Off**.
 - If the XPT has already connected to SiteWatch, and services have been configured for the outputs, those service names are shown above the status for the output.
 2. Press the button beside any output that has been wired to the in-bay automatic wash controller.
 - The status for that output should change to **Now On**.
 - The appropriate wash or service should be activated on the wash controller.
 - Press the button beside the output again to turn it back off.
 3. Repeat the test for each output that is wired to the wash controller.
 4. Press the **EXIT** button to go back to the **Inputs & Outputs** screen.
 5. Press the **EXIT** button on the **Inputs & Outputs** screen to return to the **Enable & Test Hardware** screen.

6.1.5 External Alarm

1. Press the **Security Devices** button on the **Enable & Test Hardware** screen.
2. If you have wired the site alarm system to the external alarm output on the XPT, you can test it by pressing the **Ext. Alarm Off (press to turn on)** button. Press the button again to turn the external alarm back off.
3. Press the **Exit** button to return to the **Enable & Test Hardware** screen.
4. Press the **Exit** button again to return to the **Main Status Screen**.
5. Lock the top lock on the XPT to exit maintenance mode.



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Appendix A. Dimensional Schematic of the XPT

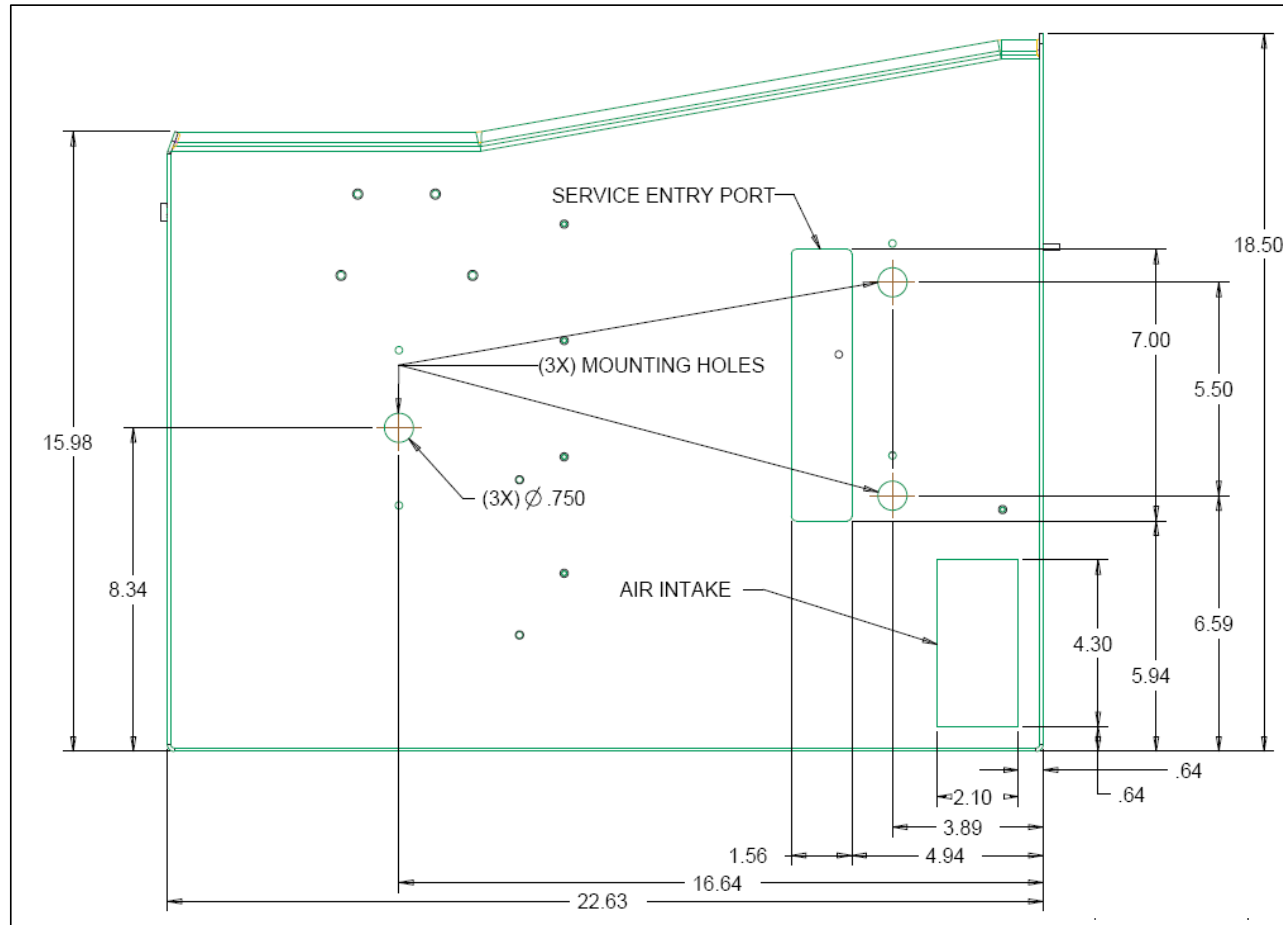


Figure 37. Bottom View of the XPT (case only)

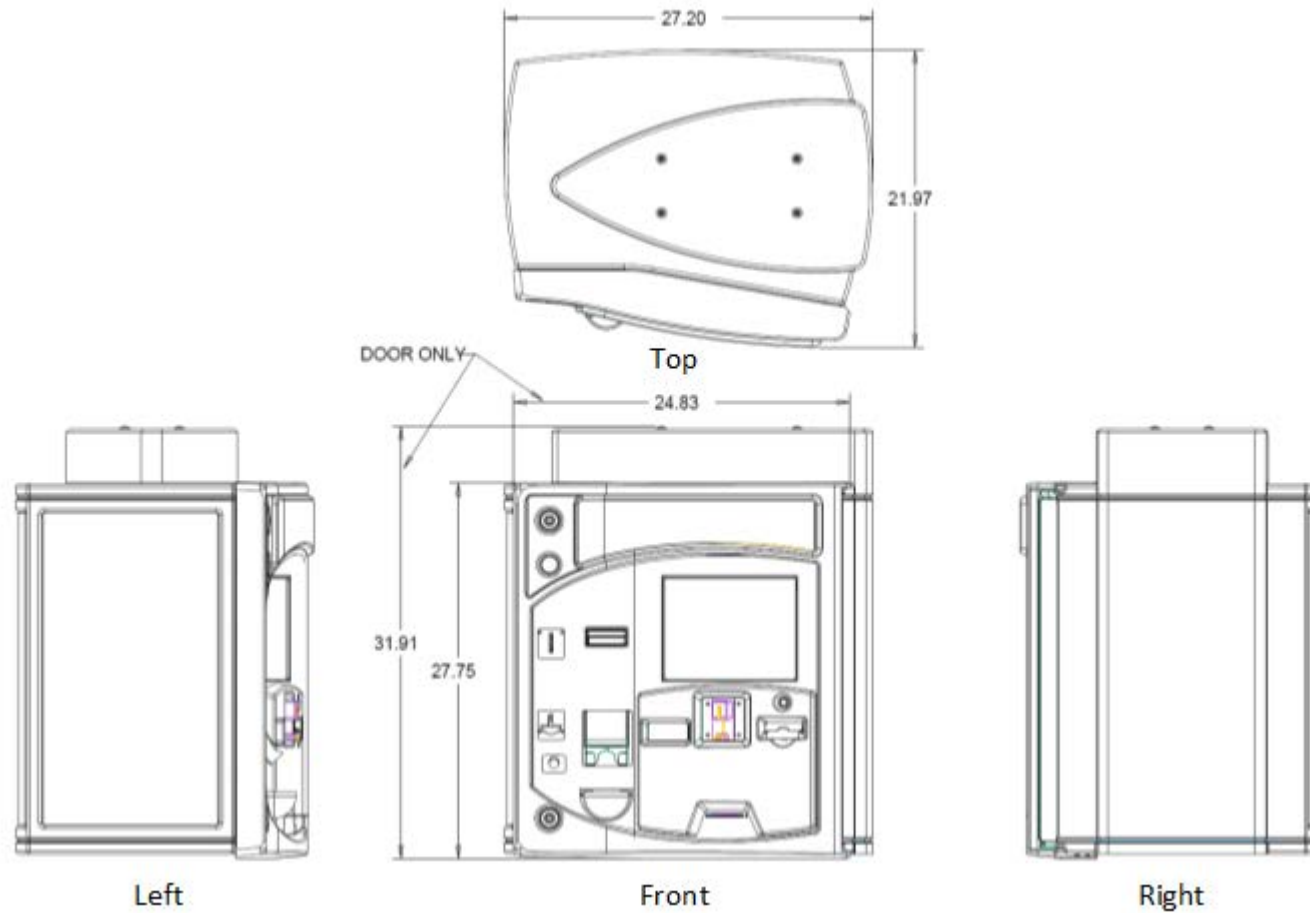


Figure 38. Standard XPT w/MSR

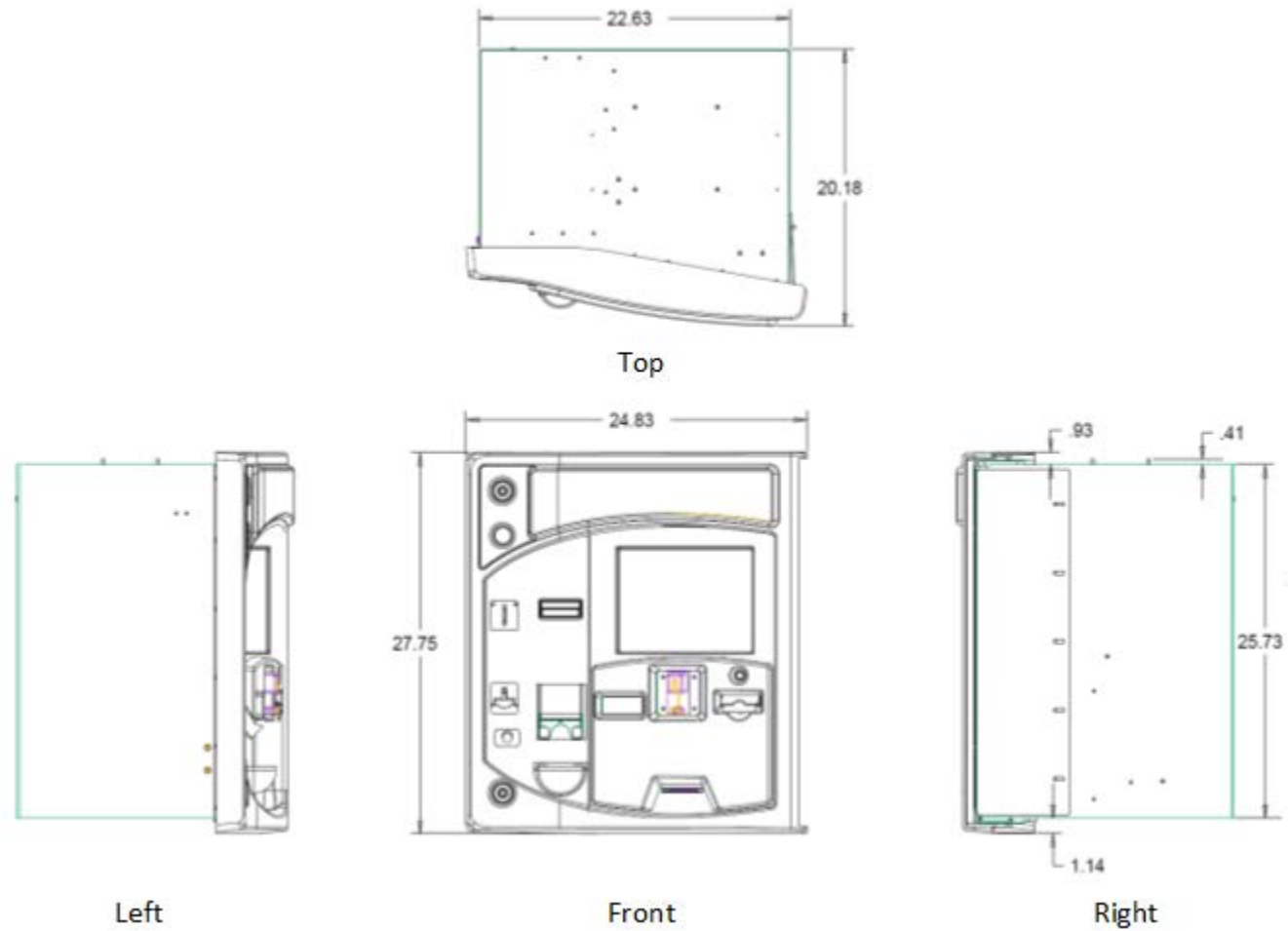


Figure 39. Brick-In XPT (No Plastic Shroud) w/MSR

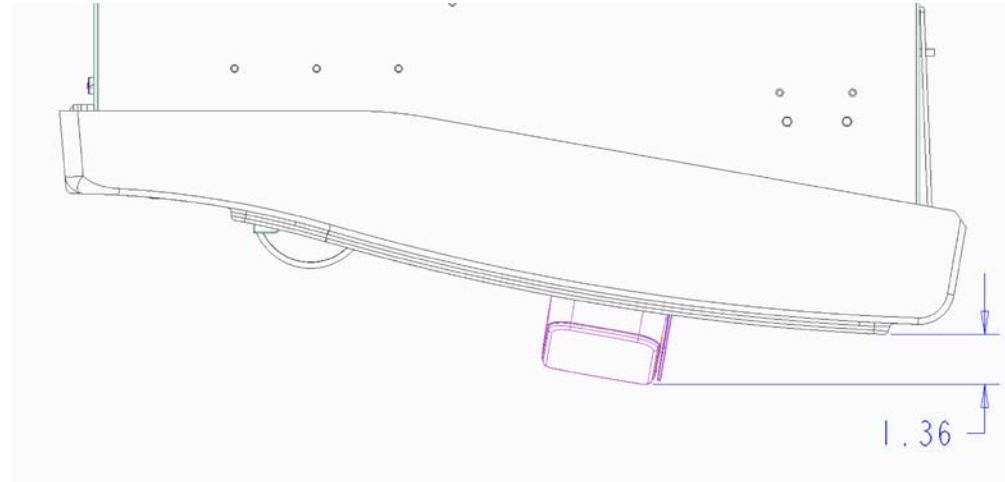


Figure 40. Additional XPT Door Depth w/EMV Reader Option



Appendix B. XPT Technical Specs & Guidelines

Rough Dimensions:

Standard XPT with plastic shroud and MSR: 32" H x 27.5" W x 22"D

Brick-In XPT without plastic shroud and MSR: 28" H x 25" W x 20.5" D

Standard height base: 35" H x 23" W x 12" D

Curb height base: 28.5" H x 23" W x 12" D

Shipping Weight:

XPT with all options: 230 lbs

Power Requirements:

120VAC, 8 Amps "computer grade power" with dedicated earth ground and dedicated circuit breaker.

Hardware Capacities:

Bill Dispenser: 1,000 New US Bills

Bill Acceptor: 1,000 Bills

Coin Dispenser Hopper: 1,000 US Quarters

Coin Acceptor; 500 US Quarters

Receipt Printer: 60mm (2.36") x 4" Diameter Thermal Transfer Paper



Appendix C. Magnetic Gate Installation

A. Physical Installation of the Gate

The following information applies only to the Magnetic Parking Pro gate. Most of the details of the gate installation are available in the documentation that comes with the gate. An overview of the issues to consider is given below.

The following tools are needed for the installation of the gate:

- Diagonal cutters
- Wire strippers
- Small, thin blade, flat-tip screwdriver
- Phillips screwdriver
- Slotted screwdriver
- Torque wrench with 5 AF hexagon socket
 - o Capable of 8.85 lb. ft. tightening torque
- Torque wrench with 10 AF hexagon socket
 - o Capable of 55.318 lb. ft. tightening torque
- 3mm Allen wrench
- 3/4" deep well socket (or sized according to ground flange anchor size)
- Torx bit, size 20

Steps for installing the gate:

The gate should be installed 12' beyond the XPT in line with the terminal. Use the parameters below to determine how many conduits will be required for the gate installation.

1. A 1" conduit between the gate and the XPT to carry Cat-5 cable from the XPT to the gate.
2. A 1" conduit bringing in the 120 VAC power for the gate. **Note:** The gate is rated at 5 amps. In order to meet local electrical code, each gate may require a dedicated power circuit. This conduit should be positioned far enough away from the gate loop to prevent electromagnetic interference (minimum 12").
3. A 1/2" PVC conduit to carry the gate loop leads to the gate.
4. A 1/2" PVC conduit to carry the merge loop leads to the gate, if installed.
5. A 1/2" PVC conduit to carry the external prox loop leads to the gate.
6. All conduits should be routed into the center point of where the gate is to be mounted to ensure the conduit will fit inside the gate. See the "Anchor bolt positioning" section below.

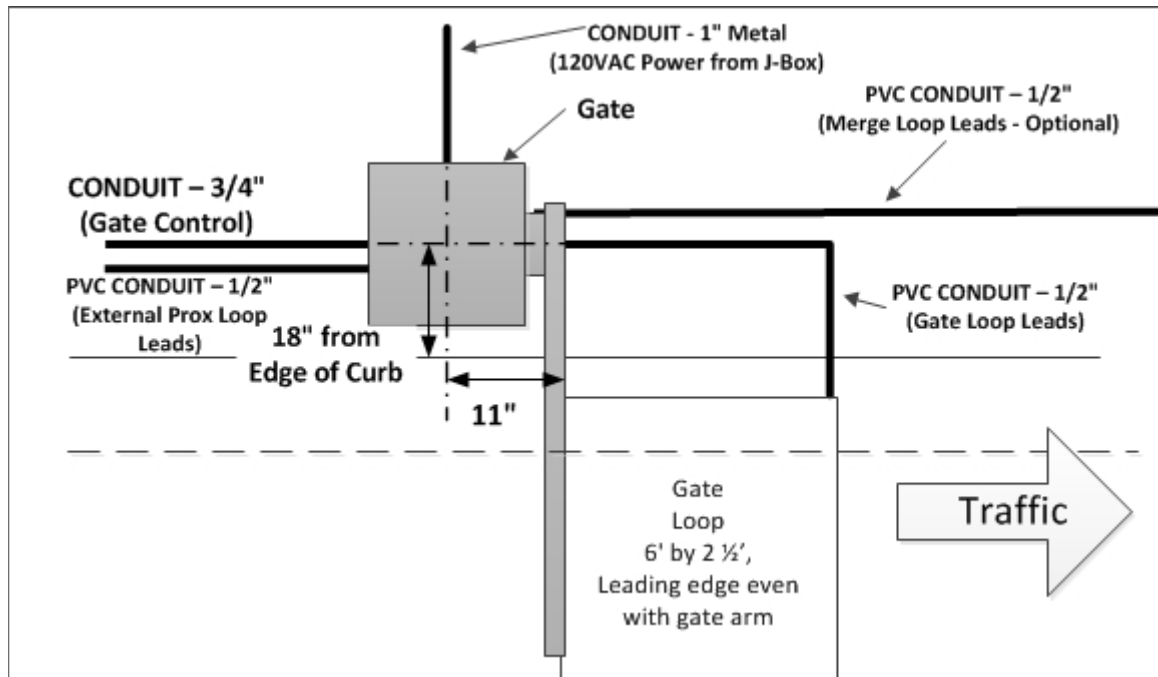


Figure 41. Magnetic Gate conduit requirements

Concrete Base

The gate should be anchored to a trowel-finished concrete foundation. The foundation should be at least 31.5" deep and 17.7" as measured parallel to the lane by 23.6" as measured perpendicular to the lane. Four holes should be drilled in the concrete and 3/8" fasteners/anchors should be used to secure the gate.

Magnetic Gate Foundation – Side View

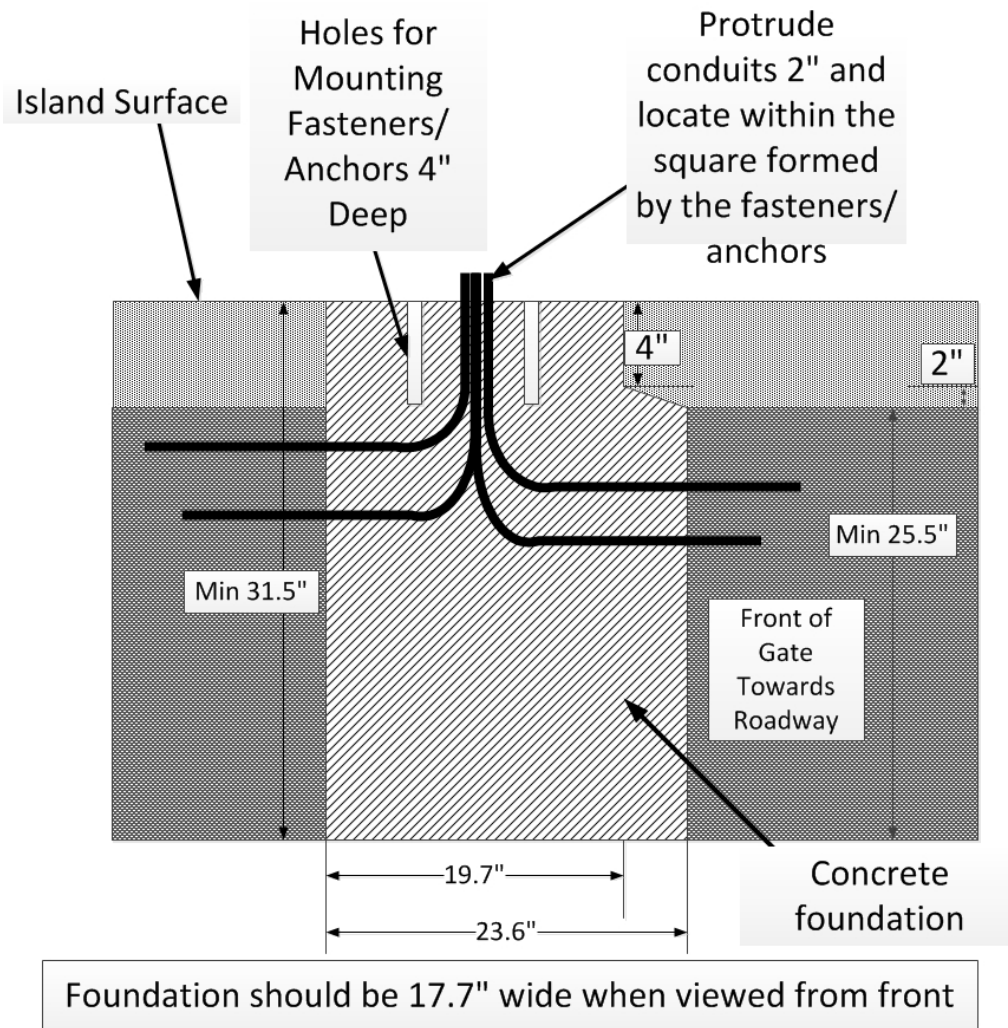


Figure 42. Magnetic Base Side View

Anchor Bolt Positioning

The gate may be secured to the concrete by using the existing securing holes on the bottom of the gate housing or using the (2) mounting plates included with the gate. To secure the gate using the securing holes on the bottom of the gate, the gate base template (included in gate packing material) should be used as a guide when installing the anchor bolts. To secure the gate using the mounting plates, the (4) anchor bolts should be installed in a 7.09" square alignment, centered to the base of the gate as shown below.

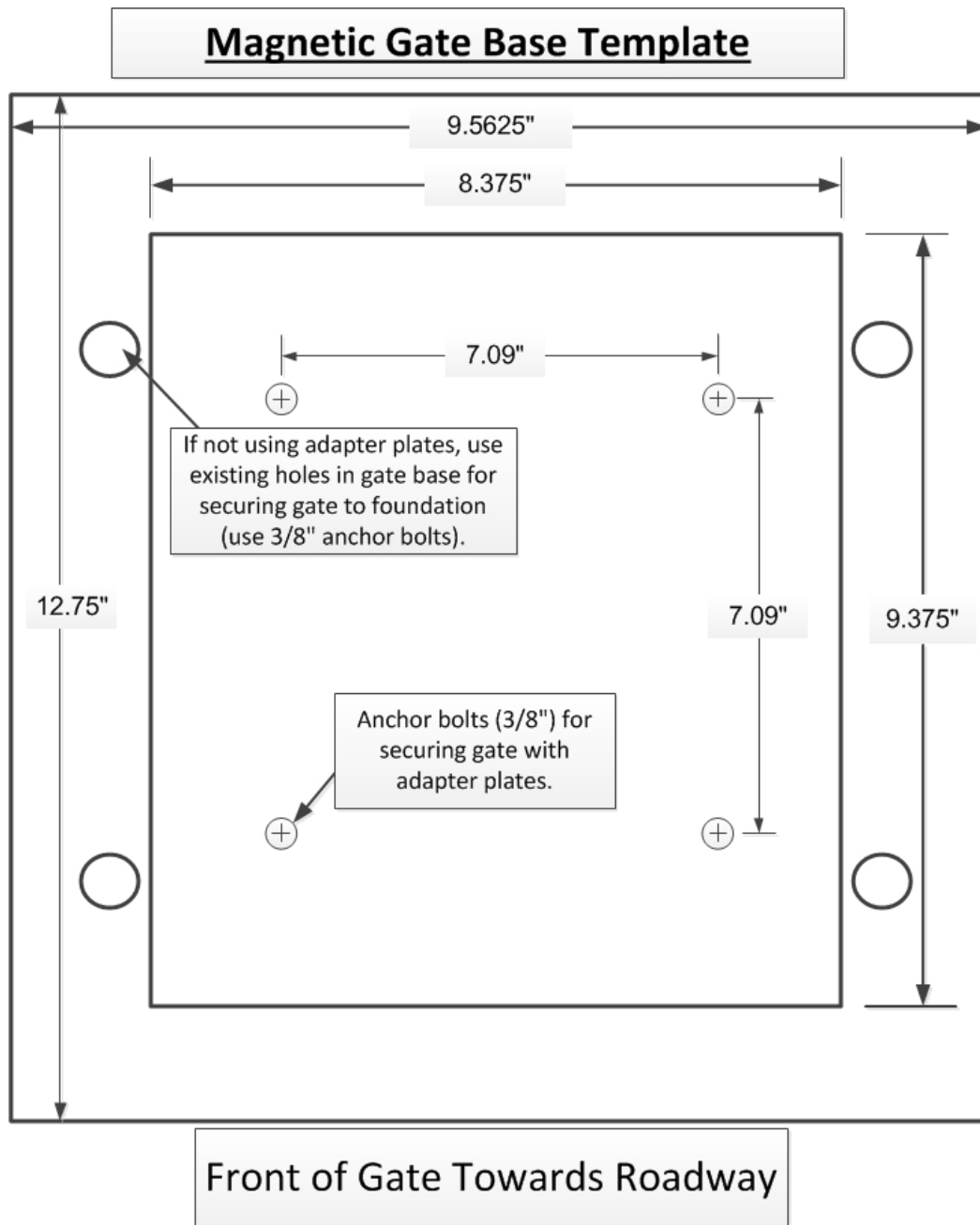


Figure 43. Magnetic Gate Base Template

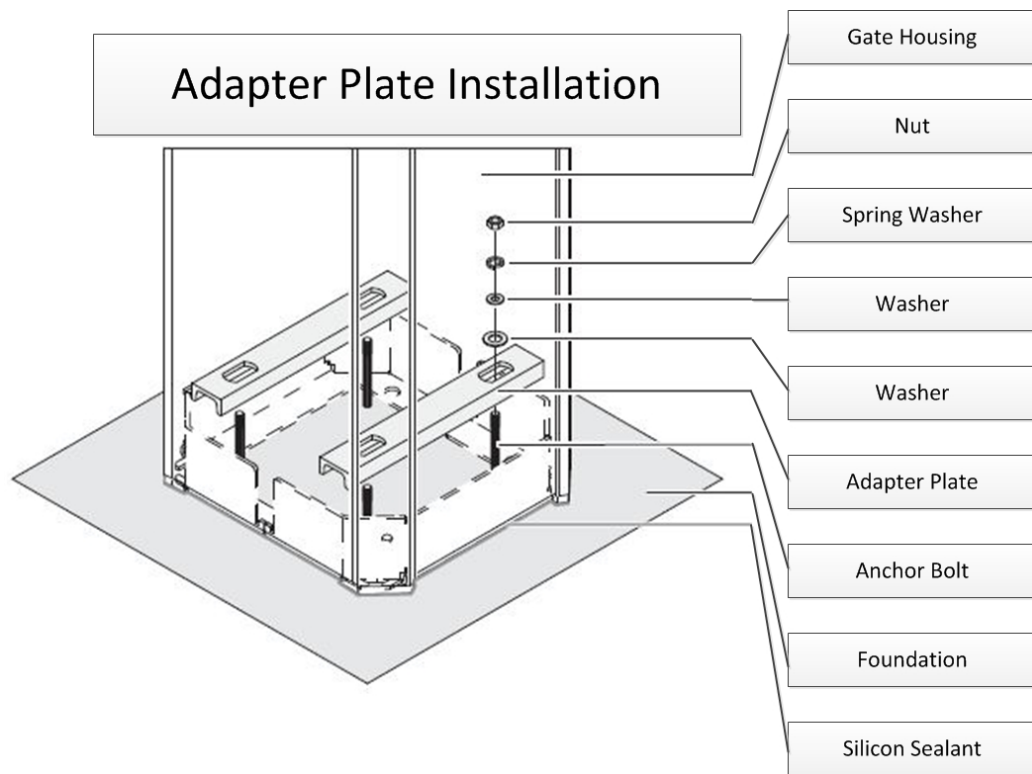
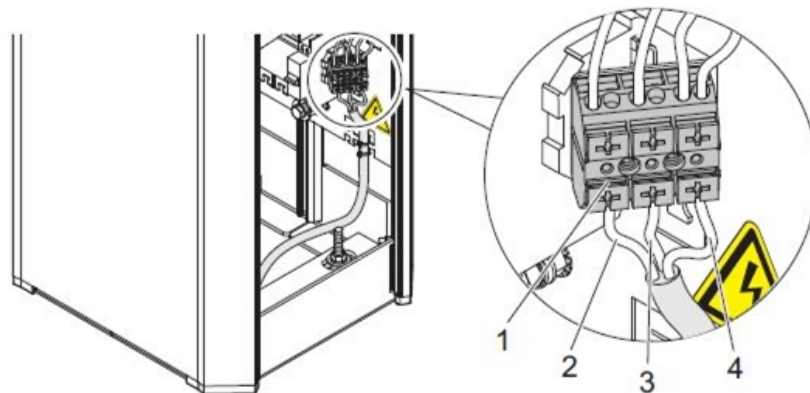


Figure 44. Adapter Plate Installation

Gate Power Wiring

Each gate is rated for 5 amps at 115 VAC and may require a dedicated circuit, depending on local code requirements. The 115 VAC site power must be wired into the bottom terminal clamps of the power distribution block as shown below.



1. Power Distribution Block
2. 120 VAC Line
3. 120VAC Neutral
4. Ground

Figure 45. Gate Power Wiring

B. Gate Loop Installation

A loop should be placed in the pavement below the gate. This loop is used to detect the presence of a vehicle, keep the gate from closing on cars, and tell the gate to close after the car is beyond it.

- The loop should be 2.5 feet long by 6 feet wide to cover the car lane under the gate arm. The leading edge of the loop should be even with the gate arm, and the trailing edge of the loop should be 2.5 feet beyond the gate arm. The loop wire should make 5 turns around the pavement saw-cut, to provide correct inductance needed for detecting automobiles.
- The loop leads should be twisted 6 turns per foot, from the edge of the loop to the loop A connections on the control unit. These twists are necessary to minimize interference and prevent false loop detection.
- If multiple gates are installed, the loop frequency setting on both channels of each loop detector should be different for adjacent gates. There are two frequency settings for each loop detector channel: high and low. For example, Gate 1 loop detector channels A and B should be set to High frequency, gate 2 loop detector channels A and B should be set to Low frequency, gate 3 loop detector channels A and B should be set to High frequency, etc.
- Refer to section F of this appendix for further information on loop specifications.
- The loop leads come into the gate and connect to A1 and A2 on the right side of the control unit as shown below.

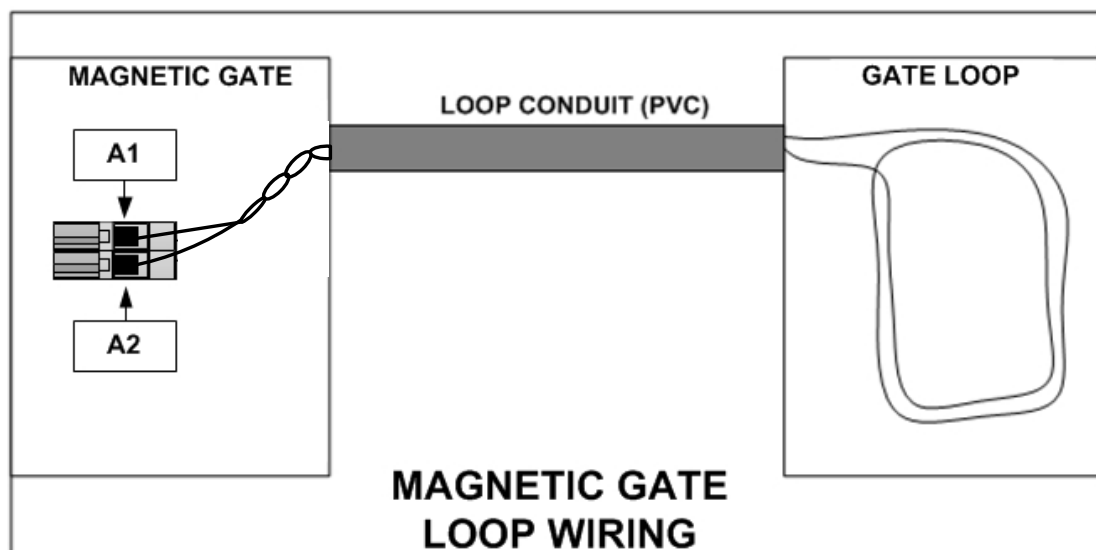


Figure 46. Magnetic Gate Loop Wiring



C. Wiring the Gate Control and Monitoring Circuits

There are two methods of controlling Magnetic gates: Ethernet and discrete I/O. The Ethernet control is the preferred method, and the Magnetic gate must contain an Ethernet module in order to use this method.

Preparation

- Make sure all power is disconnected from the gate and XPT prior to beginning this procedure.
- You will need a thin tipped, flat head screwdriver to open and tighten the relay connections on the XPT and gate.
- Locate the Wash Input 1, Wash Inputs 2-4, and Fault Outputs 4 connectors on the XPT control module. Remove those connectors to attach wires on the XPT side and then replace them when the wiring is completed.

Ethernet control: A Cat-5 cable needs to be pulled from the gate control unit, through the conduit, and into the XPT.

Discrete I/O control: At least 5 wires need to be pulled through the conduit to the XPT. If you are installing a merge loop, you must pull 1 additional wire through the conduit to the XPT. The master connection diagram for a single gate connected to a single XPT is shown in Figure 48. This diagram also illustrates the merge loop redundancy connection, for sites with 3 or more XPTs, as explained further in section F of this appendix. Note that all wires should be 18-22 gauge.

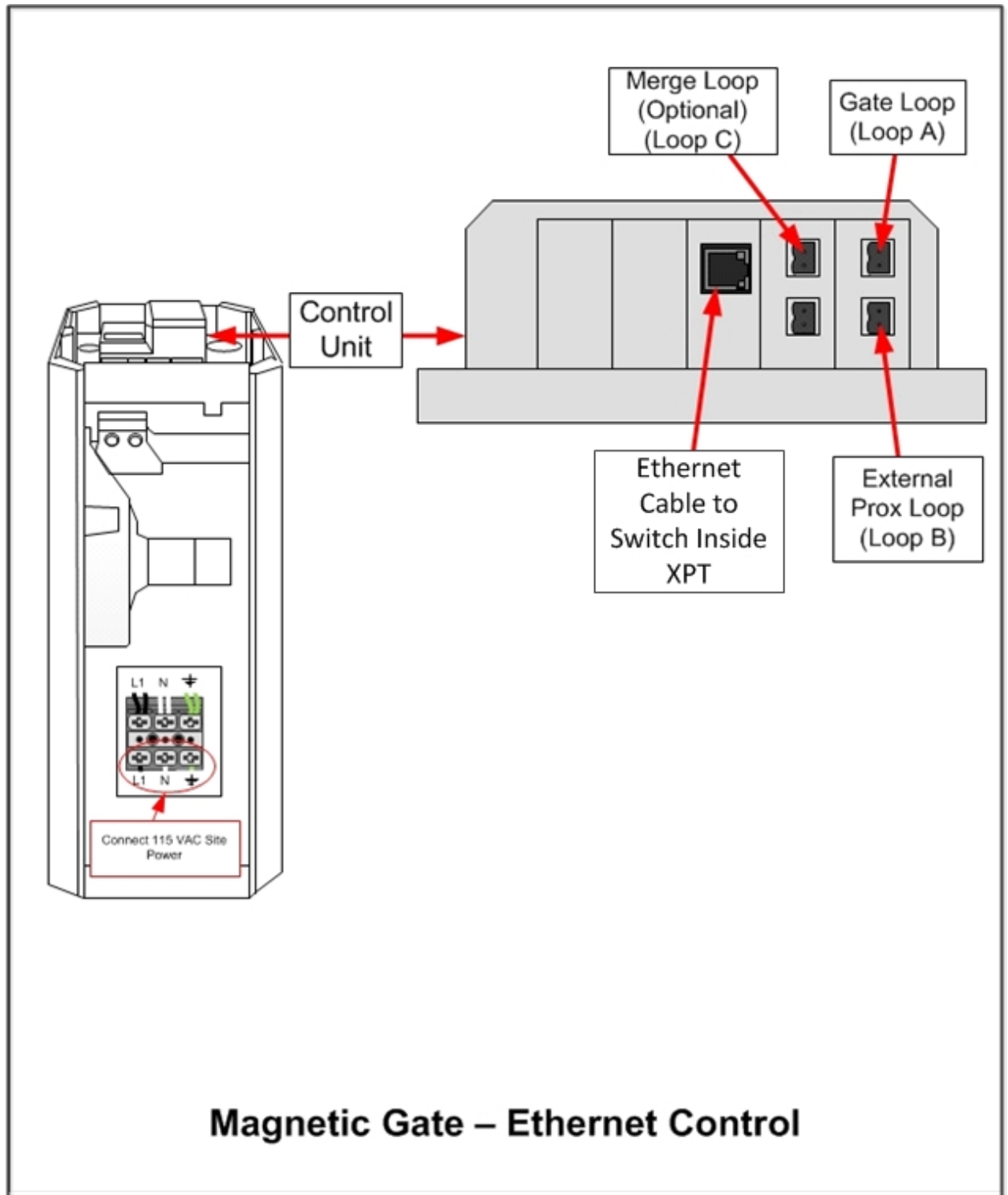


Figure 47. Magnetic Gate – Ethernet Control

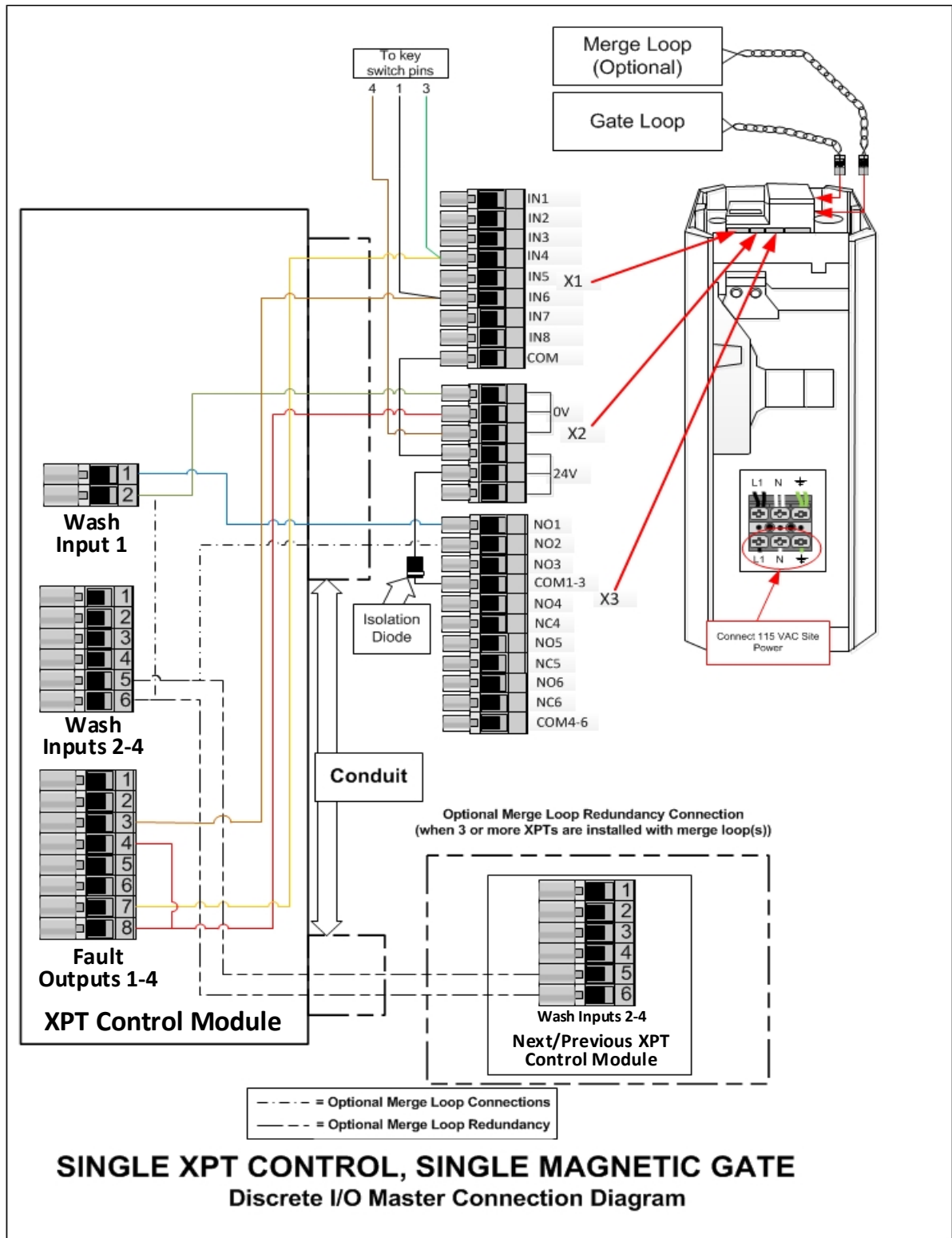


Figure 48. Single XPT Control, Single Magnetic Gate

D. Magnetic Gate Merge Loop Installation

When queuing (stacking) cars from the XPTs to the tunnel entrance, it is possible for cars to get out of order in the "merge zone" area between the terminal gates and the place where the tunnel entry area narrows to a single lane. To prevent this, merge loops are installed in the merge area to keep gates from opening until the previous car is into the choke point, where it cannot be passed by other cars. The merge loops must be placed so that a car is detected before it has completely left the gate loop, to prevent the car from becoming "lost" between the two loops. To accomplish this, the leading edge of the merge loops should be placed no farther than 12' past the trailing edge of the gate loops, so that even the shortest car remains continuously detected from the time it enters the gate loop until it leaves the merge zone. If the wash is capable of washing cars of less than 12' length (Smart Car, etc.), consider placing the merge loops even closer to the trailing edge of the gate loops. The trailing edge of the merge loops must also be spaced a minimum of 1 car length beyond the trailing edge of the gate loops, so that when SiteWatch opens the next gate, the next car is able to pull all the way through to the choke point.

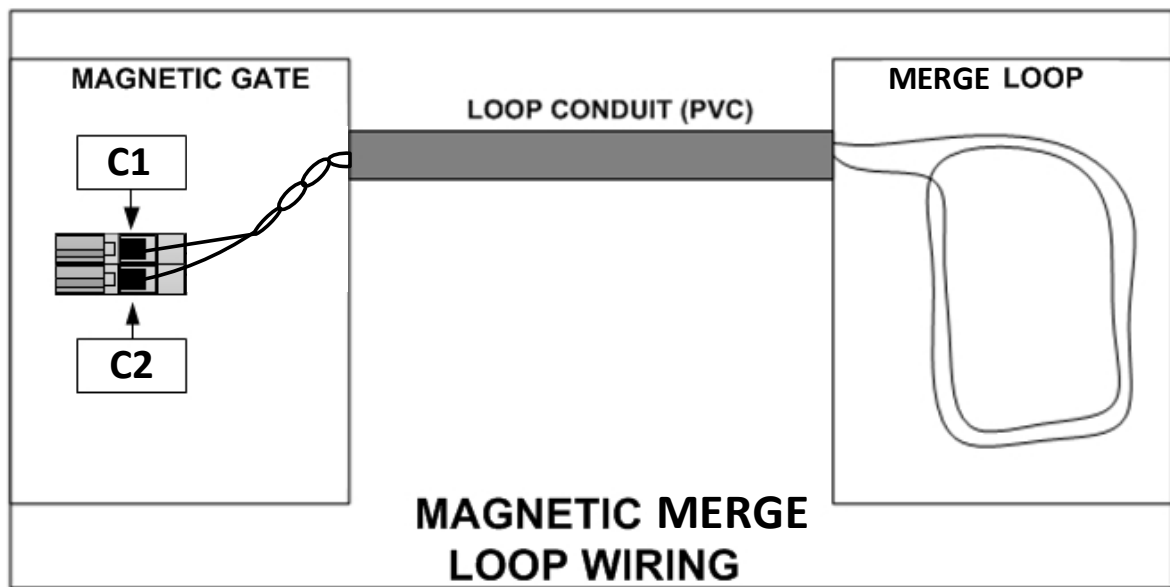


Figure 49. Magnetic Merge Loop Wiring

E. Installation of the Merge Zone Loops

DRB Systems recommends one pre-formed merge loop per gate, sized at 4' x 10', but in special circumstances, the customer can order bulk loop wire and create a custom sized merge loop. The sensitivity and size of each custom loop must be such that a vehicle can't stop in the middle of the loop area and be undetected. The size of a single merge loop should not be larger than 200 square feet, and the shortest sides should not be less than 2.5', for reliable vehicle detection. The detection height of the loop is approximately 2/3 the shortest side, so a 2 1/2' wide loop will detect metal that is approximately 1.7' off the ground. To recap, there are four important criteria that should be met when laying out a custom merge loop:

1. The leading edge of the merge loop should be no farther than 12' past the trailing edge of the gate loop.
2. The trailing edge of the merge loop should be a minimum of 1 car length beyond the trailing edge of the gate loop.
3. The shortest side of the merge loop should not be smaller than 2 1/2'.
4. The area of a single merge loop should be less than 200 square feet.

The lane layout shown in Figure 50 uses three merge loops to cover three XPT lanes. In this example, cars will remain detected by either the gate or merge loop until they've reached a choke point at which they cannot get out of order by passing each other.

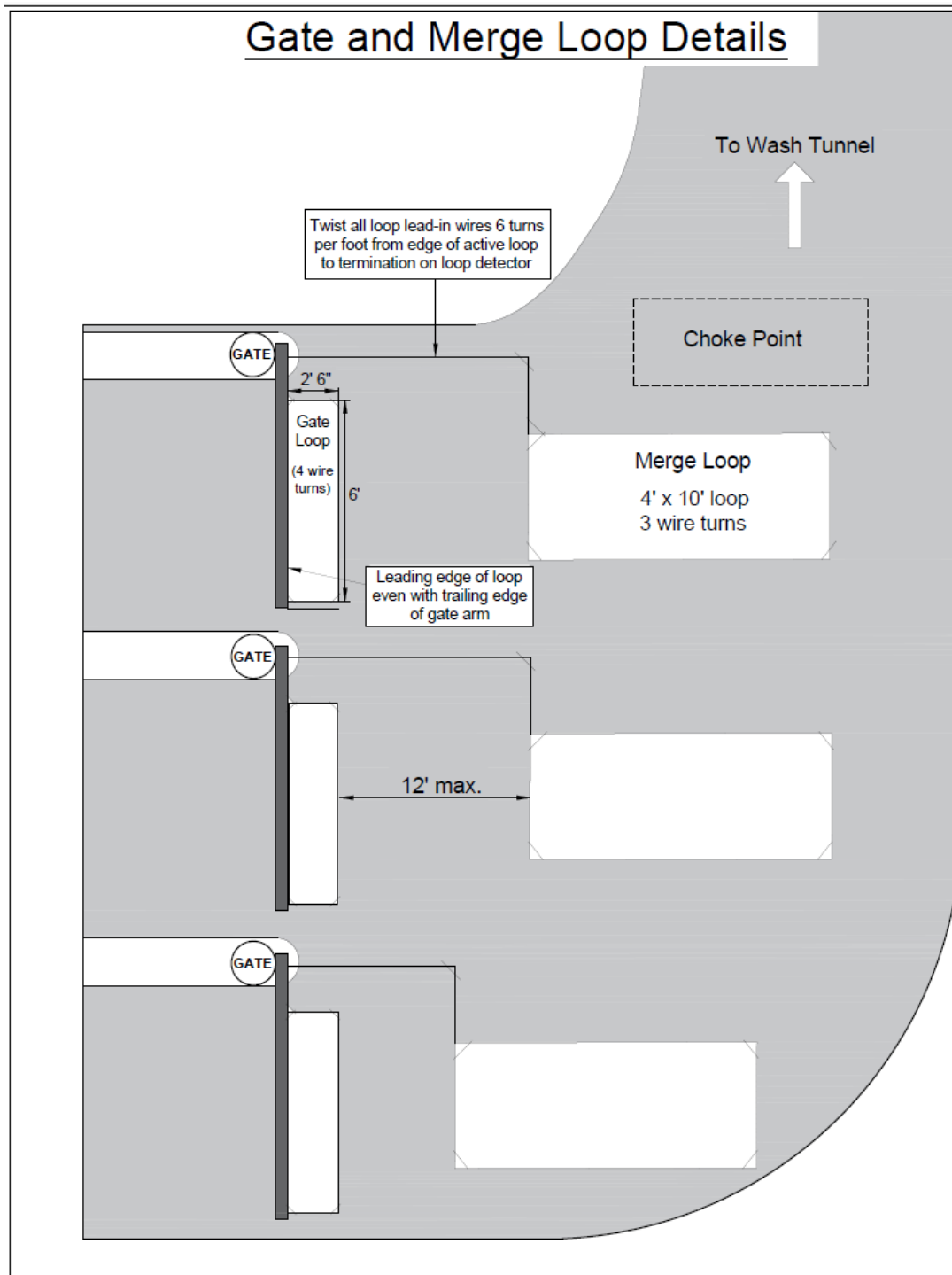


Figure 50. Three XPT Lanes with Three Merge Loops

When multiple merge loops are used, ensure that each is spaced a minimum of 3 feet, or the length of the longest short side, whichever is greater, to prevent interference. In the example shown below, one merge loop is 24' by 6' and the other is 18' by 7', so the loops would need to be spaced 7' apart. When using the recommended 4' by 10' merge loops, the minimum spacing between loops would be 4'.

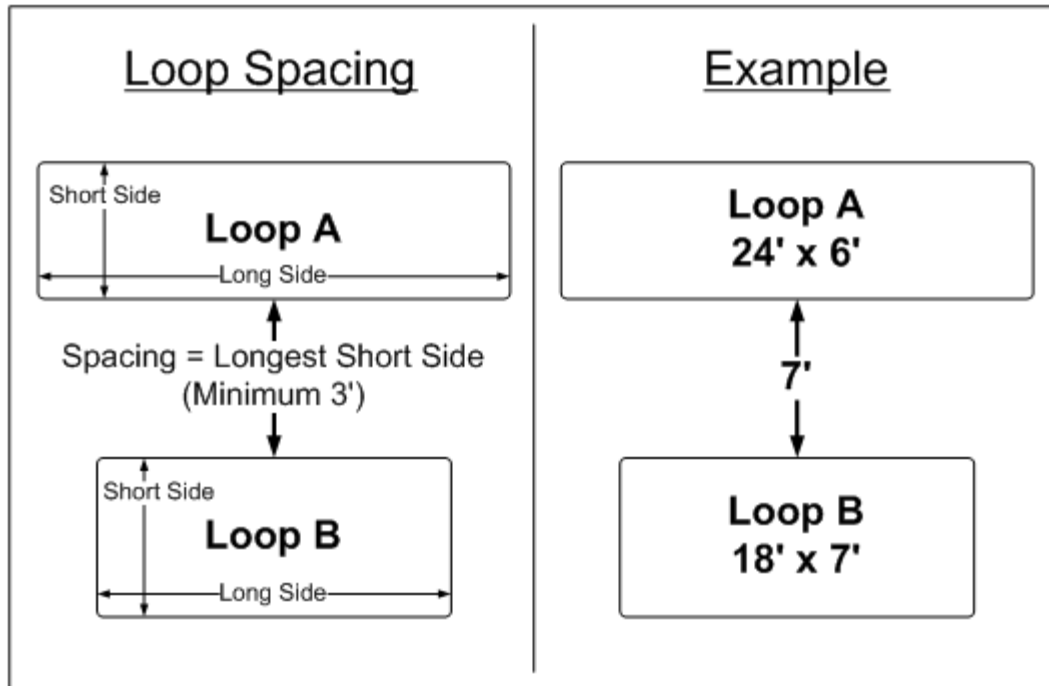


Figure 51. Merge Loop Separation

F. Loop Installation Tips

If sourcing your own merge loops, the loop wire should be 16 or 18 gauge stranded tinned copper wire with cross-linked polyethylene (XLPE) insulation rated for 600V. This wire has many superior characteristics that are needed in loop detector applications:

1. The large wire gauge keeps the serial resistance of the loop low.
2. The wire is flexible enough to bend to follow the saw cut, minimizing insulation damage.
3. The XLPE insulation has excellent moisture and solvent resistance, and ages well.

The loops can be installed in a saw cut or paved over. If using pave-over loops, it is recommended that a preformed pave-over style loop be installed. This type of loop generally encloses the wiring in non-metallic liquid tight conduit.

Table 7. Loop Turns Table

Loop Perimeter (2Length + 2Width)	Number of turns
Smaller than 10 feet	6
10 feet - 13 feet	5
13 feet - 20 feet	4 or 5
20 feet - 40 feet	3
Larger than 40 feet	2

Note: Do not use general-purpose building wire, which was designed for conduit applications. It often has a very thin sheathing of nylon, which protects it from moisture, but it is easily damaged during wire installation in the saw cut.

Sealant: Use a commercial loop sealant designed for traffic loops. Paving sealers, tar, and other products may work for a short time, but weather thermal cycles and vehicle pressure will invariably cause problems over time.

Backer Rod: Merge loops, which are much larger than the gate loop, may need backer rods. Use a backer rod to reduce the necessary amount of sealant, and to ensure that the wires are in place and do not vibrate. Any vibration or wire movement can cause a false detection.

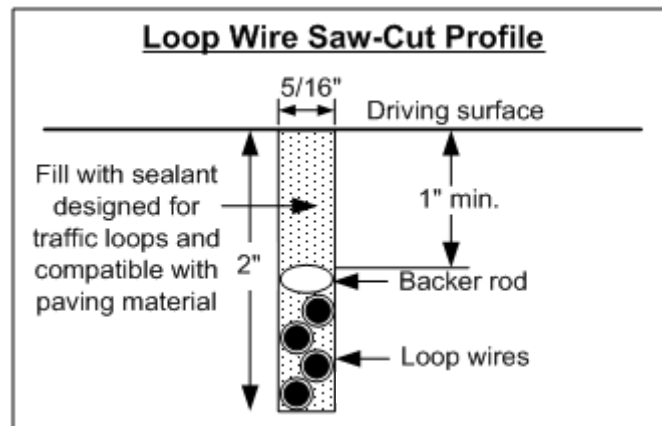


Figure 52. Loop Profile

LOOP WIRE INSTALLATION

A properly installed loop coil will provide reliable detection for a very long time with no attention or maintenance. To ensure proper installation, conform to the following guidelines:

1. Take care not to damage the loop wire insulation. Scratches on the wire insulation, sharp edges or small stones in the saw cut, and sharp tools used during the installation can damage the wire, causing false detections and detector lockup.

2. Avoid splices in loop wires, and if they must be made, they must be soldered and insulated with heat shrink tubing. The loop wire continuity (or serial resistance) will be low and constant. The current in the loop wire is too low to overcome the long-term oxidation that is inevitable with a wire nut connection.
3. The loop wire must not move or vibrate in the pavement. Any vibration of the loop wires or movement of steel rebar (if it is used) will cause false detection. Inspect the pavement before loop installation. If you see large cracks in the pavement and evidence of pavement movement, there is a potential problem. Pavement movement after you have installed the loop can damage the wire, or cause false detection. If necessary, use a backer rod to make sure that the wire is held firm in the saw cut.
4. Keep AC power at least 12" away from the loop. The loop wire **must not** be subjected to electrical noise. AC power running under the loop can cause false detection. The loop detector detects the changes in electrical currents as if they were cars.

Pave-over Loop Guidelines

Concrete Installation

Protect the loop lead-in wires with additional 1/2" flexible or rigid non-metallic conduit. Do not lay the loop directly on top of rebar or wire mesh. The loop must be at least 3" from rebar, wire mesh, or any other metal. The loop should be 3" below the road surface to provide optimal vehicle detection and maintain concrete strength over the loop. If this is not possible, the loop may be installed to an absolute minimum of 2" below the surface of the concrete. Non-metallic stakes or similar can be used to keep the loop the desired distance above the metal reinforcement.

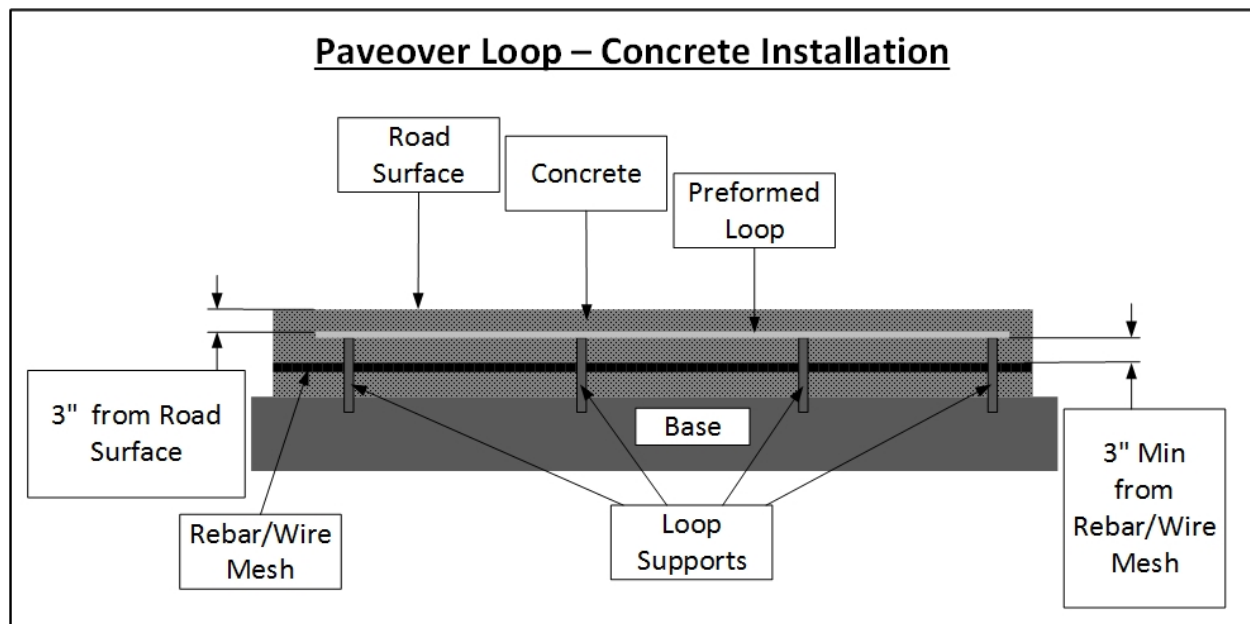


Figure 53. Pave-over Loop - Concrete Installation

Asphalt Installation

Protect the loop lead-in wires with additional 1/2" flexible or rigid non-metallic conduit. Ensure a high-temperature pave-over loop is used when installing in asphalt. The loop may be placed directly on the base surface before pouring the concrete. Use fiberglass backed mastic tape (included with high temperature preformed loops sold by Lead-In Systems) to hold the loop into position as the asphalt is being poured.

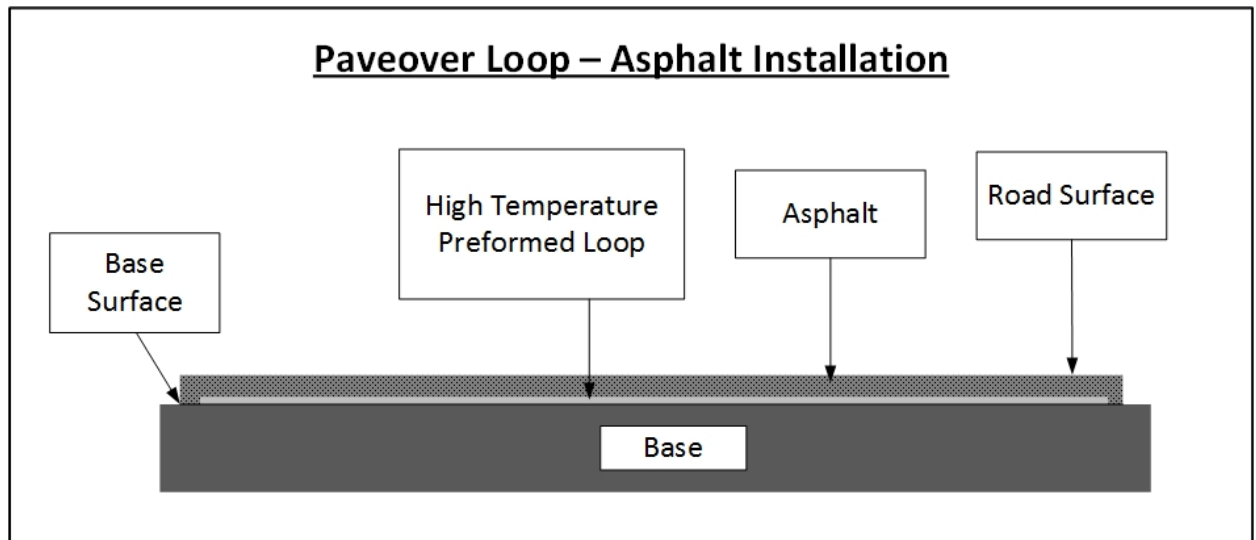


Figure 54. Pave-over Loop - Asphalt Installation

OTHER USEFUL INFORMATION

The following factors can reduce the loop detector sensitivity:

1. Underground steel reinforcing – make the loop saw cut shallow in existing concrete pavement with steel bar reinforcement (approximately 1") or use fiberglass mesh when installing new concrete pavement. If possible, the loop should be at least 3" from any steel reinforcing bars. Note that it may not be possible with pave-over loops to maintain at least 3" distance between the rebar or wire mesh. In such cases, the loop may be installed an absolute minimum of 2" below the surface of the concrete. If the thickness of the concrete will not allow for 3" separation between the steel reinforcing and the loop, fiberglass mesh must be used, or the steel reinforcing must be cut out below the loop.
2. More than one merge loop connected to one detector – connect each merge loop to a separate loop detector.
3. Loop buried too deep - the loop detector may have problems recognizing tall vehicles if it is buried more than 3" below the road surface. The detection height of the loop is calculated by multiplying the shortest leg of the loop by 2/3. For example, the detection height of a 6'x2.5' loop is 20" from the loop, not 20" from the road surface. If the loop is installed 3" below road surface, the detection height from the road surface is 17". (20" detection height) - (3" loop depth) = 17".



The following factors can cause detector lock up or intermittent detection:

1. Cross-talk between adjacent loops due to both having the same operating frequency – use a different operating frequency for each loop detector.
2. Loop wire vibration in the saw cut – use a backer rod.
3. Splices in loop wire – solder all splices.
4. Lead-in wires not twisted – twist lead-in wire at least six turns per foot.
5. Power lines close to the loop – keep the loop at least six feet away from power lines.

Merge Loop Detection Redundancy

Whenever 3 or more XPTs are installed at a site, and the gates are controlled by the discrete I/O method, a merge loop redundancy connection is necessary. This connection ensures that if one of the XPTs needs to be shut down, you can detect the merge loop wired to it on the XPTs that are still running. To do this, you need signal conduits (don't use the power conduit) between the XPTs and the connections shown in Figure 48.

G. Assemble Gate Arm Edge Protection

The edge protection is included in the gate arm packaging. It consists of two pieces of 2-meter length foam. To install the edge protection, perform the following steps:

1. Shorten the edge protection to the length of the gate arm.
2. With water, moisten the groove in the barrier arm onto which the edge protection will be pushed through.
3. Slide the edge protection into the barrier arm groove.
4. Slide further edge protection into the intended groove until the edge protection ends flush with the barrier arm.

H. Assembling the Flange and Gate Arm

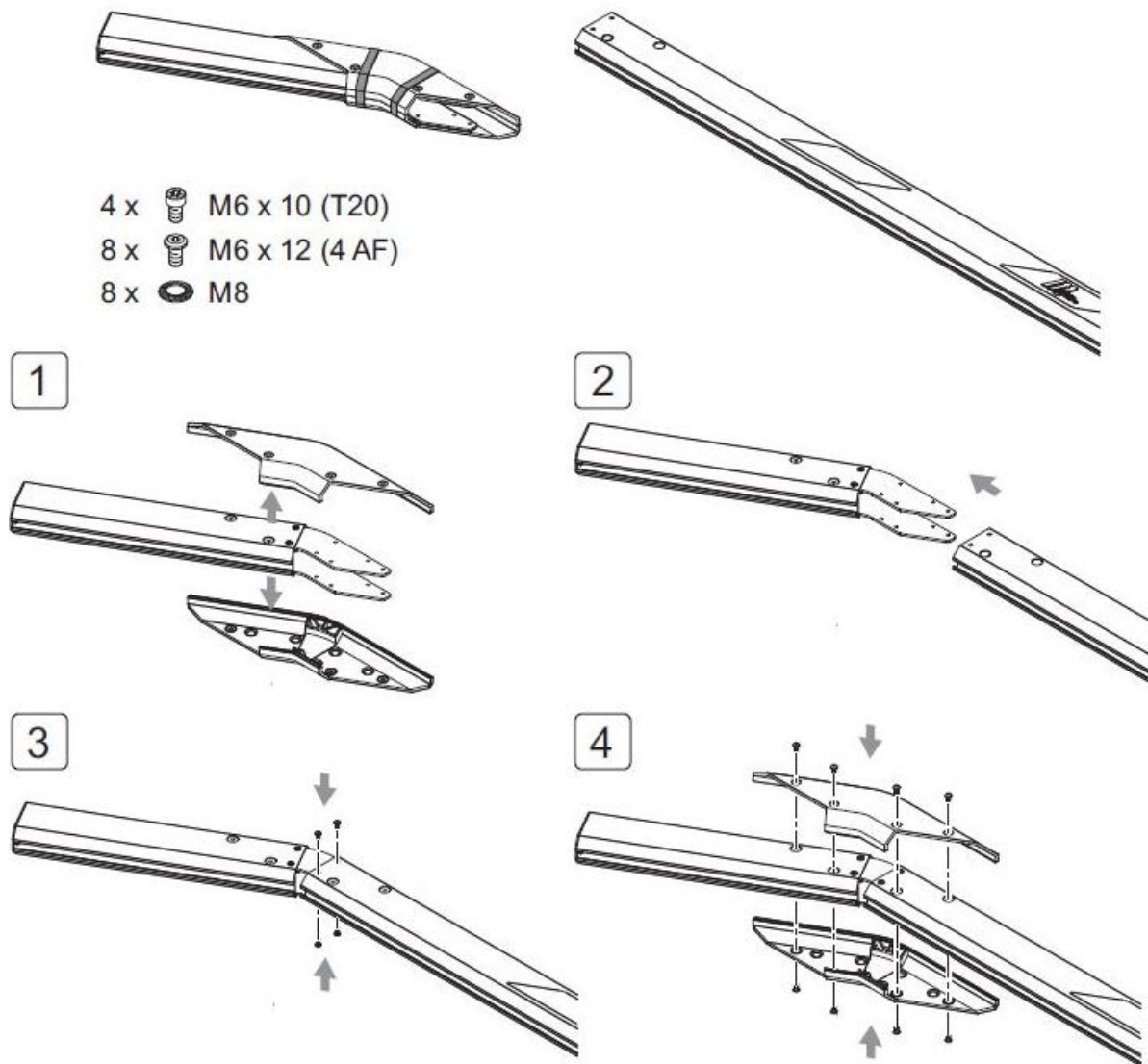


Figure 55. Assembling the Gate Arm

1. Remove rubber bands and disassemble the two half-shells from the short gate arm.
2. Slide the long gate arm over the two connection plates.
3. Attach the long gate arm to the connection plates with the 4 Torx screws. The larger holes must remain free.
4. Attach the two half-shells with the washers and the hexagon socket screws.

I. Attaching the Gate Arm to the Gate

1. Place the gate in the open position.

Warning: Ensure the gate power is off and the balancing springs in the gate are relaxed (gate is at "top-most" or "open" position). Failure to do so may result in serious injury.

If the gate is not in the "open" position, place it there by following these steps.

Warning: Ensure the area near the balancing springs is clear. Failure to do so can result in serious injury.

- a. Press a tool straight into the upper tool bore. The lever arm is pressed from its dead point.
- b. Verify that the balancing springs are relaxed (gate open).

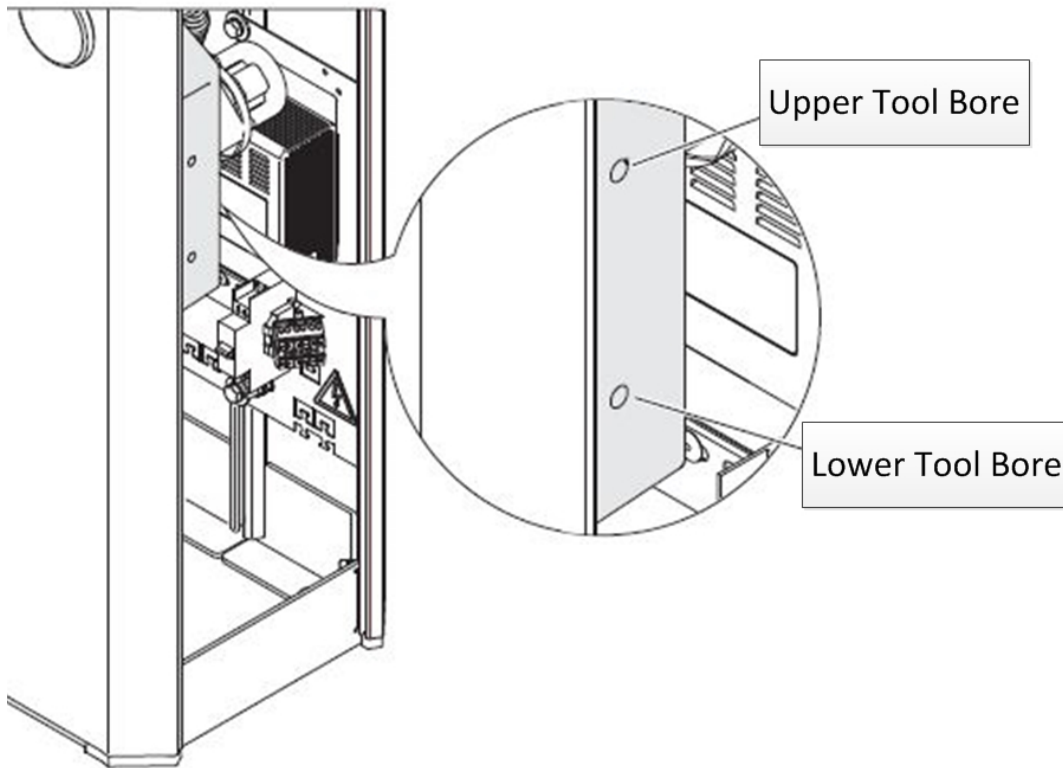


Figure 56. Open Gate Using Upper Tool Bore

2. Attach gate arm to the gate.
 - a. Remove end cap from gate arm using a Phillips screw driver.

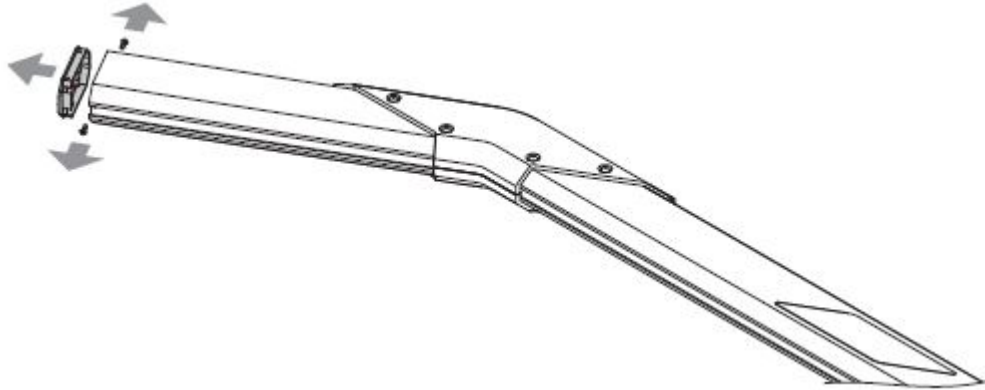


Figure 57. Remove End Cap

- b. Slide the shorter slot nut (1) and the additional sheet (2) into the groove on the underside of the gate arm. Slide the longer slot nut (3) on the upper side of the gate arm.

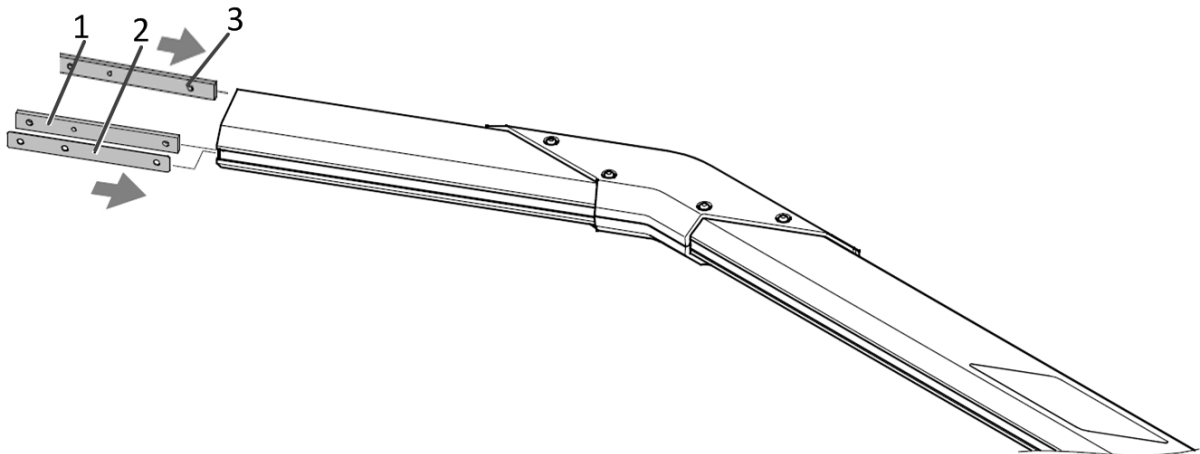


Figure 58. Install Slot Nuts

- c. Attach the flange with the 4 hexagon socket screw and the two slot nuts to the barrier arm. The shorter protrusion of the flange must point away from the gate arm. Tighten the screws to 8.85lb ft using a torque wrench with a metric #5 bit. **Note:** If the screws are tightened below 8.85lb ft, the risk of the gate arm falling off the bracket increases. If the screws are tightened above 8.85lb ft, the risk of damage to the gate increases if the arm is hit by a vehicle.

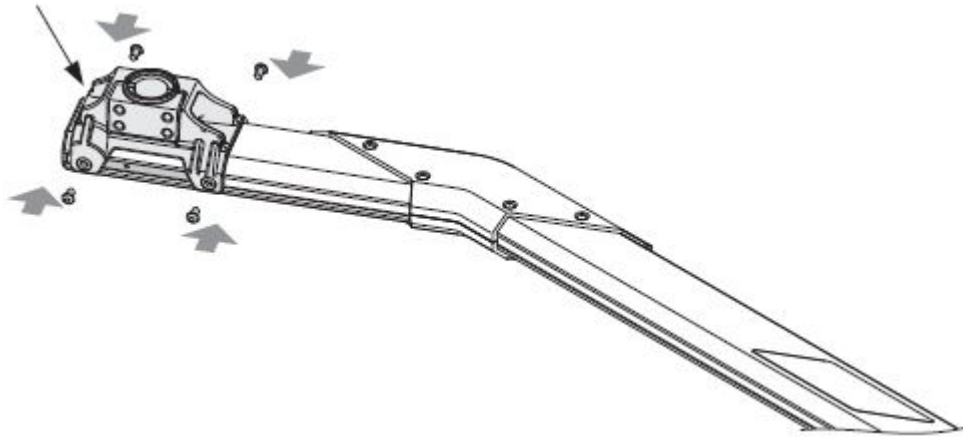


Figure 59. Attach Flange to Gate Arm

- d. Reinstall the end cap to the gate arm.

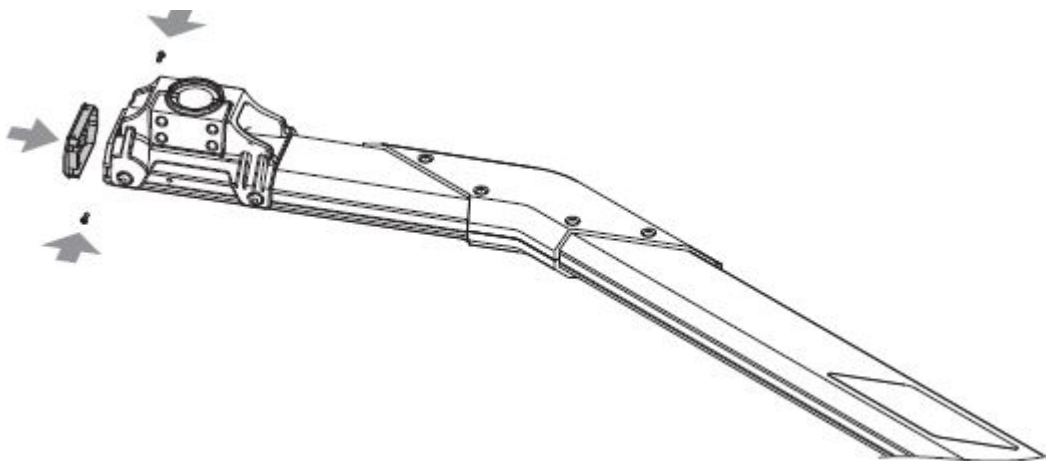


Figure 60. Reinstall End Cap to Gate Arm

- e. Push gate arm with pre-assembled flange onto the flange shaft.

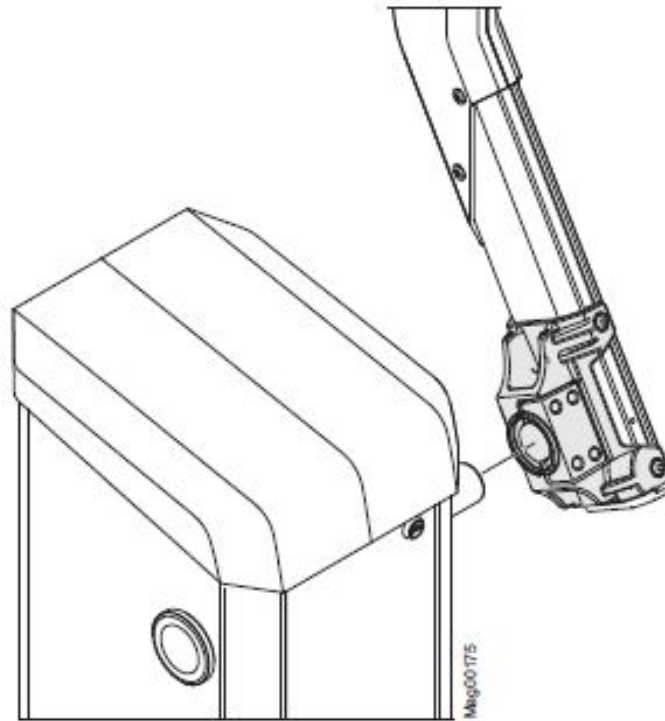


Figure 61. Install Flange onto the Flange Shaft

- f. Align the gate arm vertically.
- g. Install the flange on the flange shaft using the 4 hexagon socket screws.
- h. Tighten the screws evenly to 55.3lb ft using a torque wrench with metric #10 hex socket.

J. Balance the Gate Arm

To maximize the life of the gate motor, the spring tension must be calibrated so that the gate arm is balanced at 30 degrees. For reference, 0 degrees is horizontal, 90 degrees is vertical.

1. Ensure the gate power is off.
2. Release the gate arm from either the horizontal or vertical position by using either the upper or lower tool bores as shown in the "Attaching the gate arm to the gate" section above.
3. Manually place the gate arm at a 30 degree angle. Let go of the gate arm.
4. If the arm falls toward the horizontal position, then the spring tension is too weak.
5. If the arm rises toward the vertical position, the spring tension is too strong.
6. If needed, adjust the balancing spring tension.
 - a. Remove the gate's rear panel to gain access to the screws used to adjust the springs.

- b. Loosen the lock nuts that are holding the spring adjustment screws in place.
- c. If the gate arm rests below 30 degrees, rotate the spring adjustment screws clockwise until the gate arm balances at 30 degrees.
- d. If the gate arm rests above 30 degrees, rotate the spring adjustment screws counter clockwise until the gate arm rests at 30 degrees.
- e. Tighten the lock nuts when the gate arm is balanced.

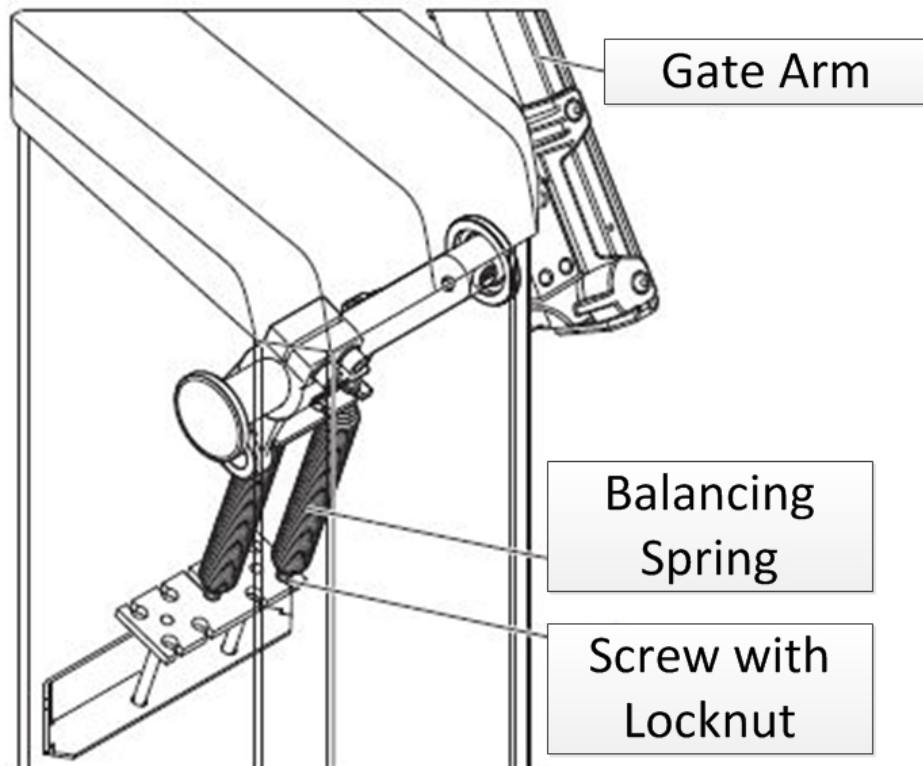


Figure 62. Balancing Springs

K. Testing the Gate Using the Key Switch

Once all wiring is complete, power can be turned on to the gate. Turn on the power supplying the gate at the source (circuit breaker) and at the gate power switch located in the bottom of the gate. Verify that the gate is operating properly by using the key switch on the left side of the gate to force the gate open and closed using the following steps.

Note: These steps only verify that the gate is correctly wired to 115 VAC site power, and that all drive mechanisms are operating properly. These steps do not test XPT control of the gate.

1. Insert the key into the key switch located on the left side of the gate.
2. Turn the key to the right and verify the gate opens.
3. Turn the key to the left. The gate is now in the automatic position.
4. Turn the key to the left again and verify the gate closes.



Appendix D. Controlling Gates in Non-XPT Lanes

Some sites have a mixture of attended full service lanes and unattended self-serve lanes with XPTs. If using non-Ethernet controlled gates, each XPT is capable of controlling a gate in its lane, plus one attended lane.



Note:

The following wiring diagrams are for two gates connected to a **single XPT**. If multiple XPTs are installed, connect each gate to each XPT individually.

A. Two Magnetic Gates Controlled by a Single XPT

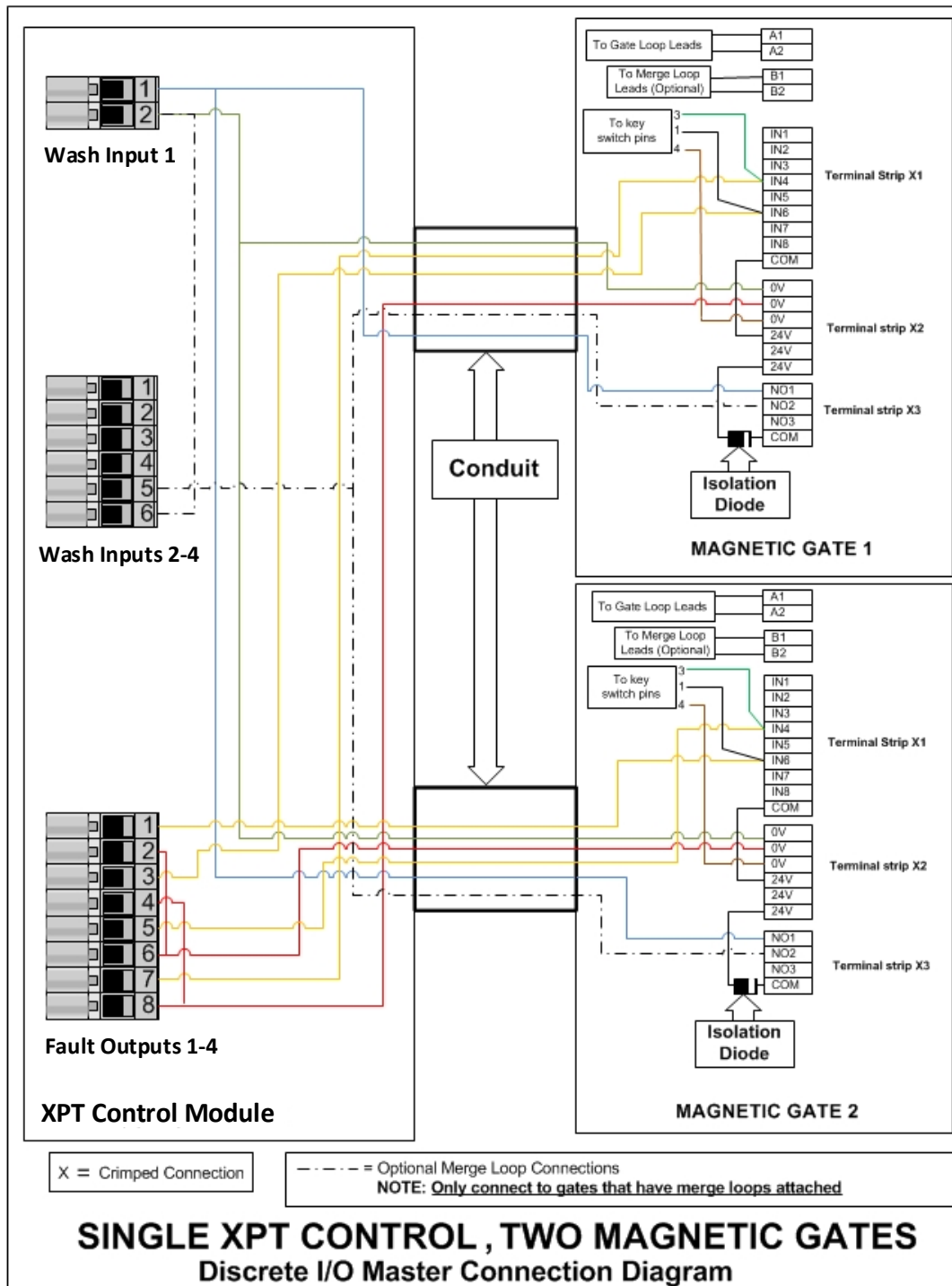


Figure 63. Two Magnetic Gates Controlled by a Single XPT - Master Connection Diagram



Appendix E. Shortening the Gate Arms

If gates are installed underneath a canopy, there must be a minimum amount of clearance from the gate mounting surface to the bottom of the canopy, to prevent the gate arm from colliding with the canopy when in the open position. The clearance required for a Magnetic gate requires 10'7". If there is not enough clearance, the gate arm can easily be shortened by cutting to the desired length. **Note:** If the Magnetic gate arm is shortened, the balancing springs **must** be recalibrated according to the "Balance the Gate Arm" section above. Failure to do so may result in damage to the gate.

A. Magnetic Gate

1. Remove the gate arm from the gate, and clamp to a stable surface for cutting.
2. Measure and mark the desired length on the gate arm, referencing from the end opposite the gate.
3. Remove the plastic cap from the end of the gate arm opposite the gate.
4. Use a power tool and blade designed for cutting aluminum, and cut the gate arm to the desired length.
5. Remove any burrs from the cut edge and reinstall the plastic cap on the end of the gate arm.
6. Reinstall the gate arm.



Appendix F. Lane Available Light Installation

Some operators have noted that customers often get in line rather than going to a terminal with an empty lane because they are concerned that the empty lane is closed or broken. The XPT lane available light feature allows you to install a Red/Green light that can be wired to turn green when the terminal is in normal operation mode, and turn red at all other times.

To take advantage of this feature, a light needs to be installed on the front side of the terminal or above the lane, and wired into the terminal's fault output relays as described below.

A. Installing the Light

The XPT is capable of controlling a lane available light relay through a control module relay output. Any light or sign can be installed as long as it contains a relay wired to turn it green or on when the coil is activated, and red or off when there is no signal to the coil. There should be one light for each XPT installed in a location that clearly indicates to carwash customers which terminal is open when that light is green.

B. Wiring the Light

Each light needs 2 conduit runs, one to bring 120-volt power to the light and a second between the light and the XPT carries the wires to control the relay turning the light on and off.

The lane available control relay powers the light such that when the relay is pulled in the light is turned on or green, and when there is no power to the relay coil, the light is off or red.

Preparation

- Make sure all power is disconnected from the light prior to beginning this procedure.
- On the control module, locate the 8-pin Phoenix connector labeled Fault Outputs 1-4, and remove it before wiring. After connecting the wires, replace the connector.

Two wires must be connected to the XPT and run to the lane available light relay and relay power source:

1. A wire must be connected to an AC or DC source capable of producing 24V or less and to the XPT control module, Fault Outputs 1-4 connector, pin 5.
2. Another wire connects to the light relay coil. The other end is pulled to the XPT where it is connected to the Fault Outputs 1-4 connector, pin 6.

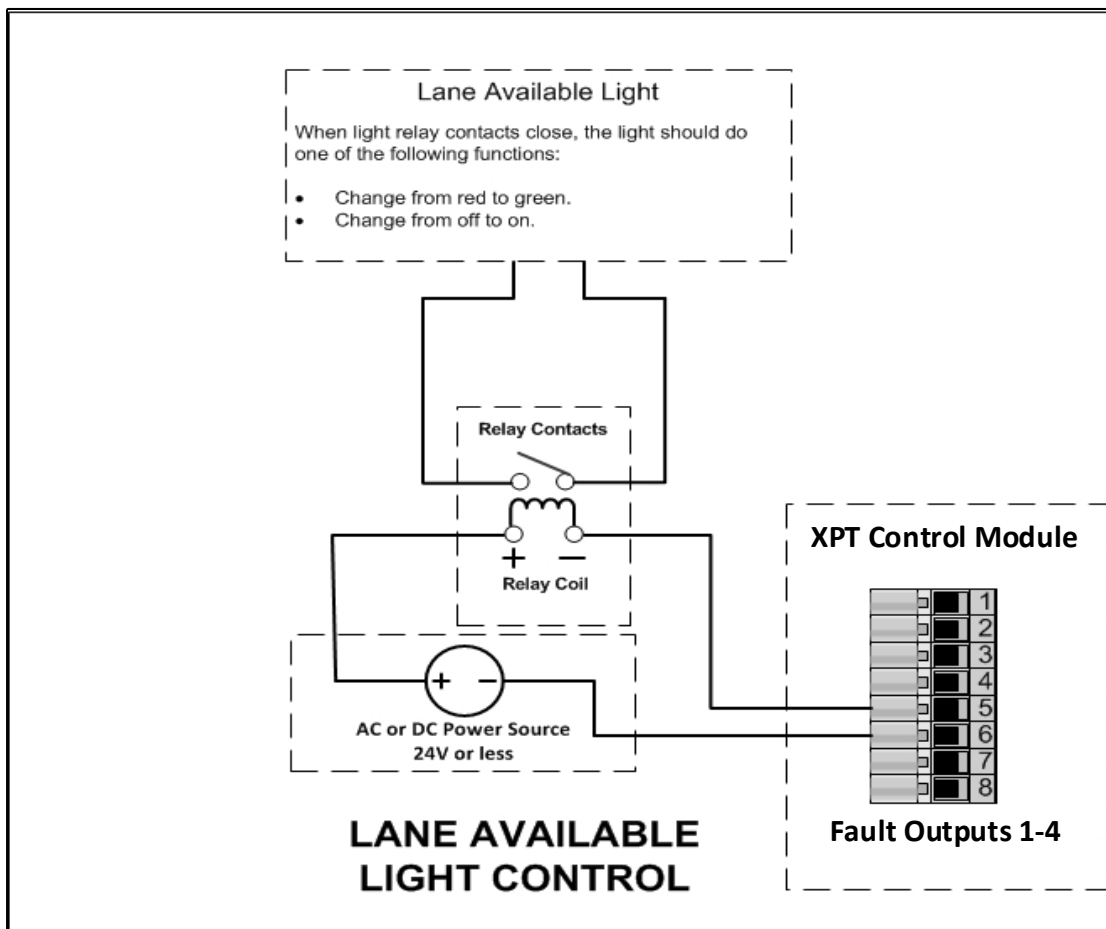


Figure 64. Lane Available Light Output Circuit



Appendix G. In-Bay Automatic Wash Controller Installation

There may be some sites with a tunnel and one or more automatic bays at the same site. There may also be instances in which the site may decide to connect their XPT directly to the tunnel controller rather than using the traditional SiteWatch connection from the SiteWatch Server to the controller through a Serial Relay Multiplexor Box (SRMB). **Note that this can only be done if it can be wired exactly as explained below.**

In either case, before the SiteWatch software can communicate to the wash controller through the XPT control module, the following wiring must be completed.

A. Connecting the Wash Relay Outputs

The XPT can support up to 8 wash services that can be programmed from the XPT to the wash controller. Most in-bay automatic wash controller manufacturers use a five-wire system to provide the arming signals for the selected wash packages. One common line and four arming input wires are connected between the wash's PLC and the XPT control module.

Each of the arming input wires signals the equipment to give only the designated wash options. When a customer purchases a wash package, the XPT sends a signal down the appropriate arming input wire through the control module.

Each wash manufacturer has its own color code system and wash relay pin-outs; therefore, it is important to review the appropriate wash documentation prior to beginning this portion of the installation. Then follow the instructions below to make the connections.

Preparation

- Make sure all power is disconnected from the XPT and the In Bay Automatic wash controller prior to beginning this procedure.
- On the XPT control module, locate the 10-pin Phoenix connector labeled Wash Outputs, and remove it before wiring. After connecting the wires, reconnect it to the control module.

The common and wash arming wires must be connected between the wash controller wash service input terminals and the Wash Outputs connector on the control module.

1. A wire must be connected between the wash relay common on the wash controller and pin 9 on the Wash Outputs connector.
2. Another wire connects to the input terminal to arm **Wash Service 1** (may be labeled differently on the controller). The other end is pulled to the XPT where it is connected to the Wash Outputs connector, pin 1.
3. Make similar connections for up to 8 wash service arming wires, with the wire for each wash service option (1, 2, 3...8) connected to the pin with the same number (1, 2, 3...8) on the Wash Outputs connector.
4. Please make a note of the wash service programmed by each wire that is connected. Pass this information to the SiteWatch installer who can then configure SiteWatch to sell the proper wash service for each one.

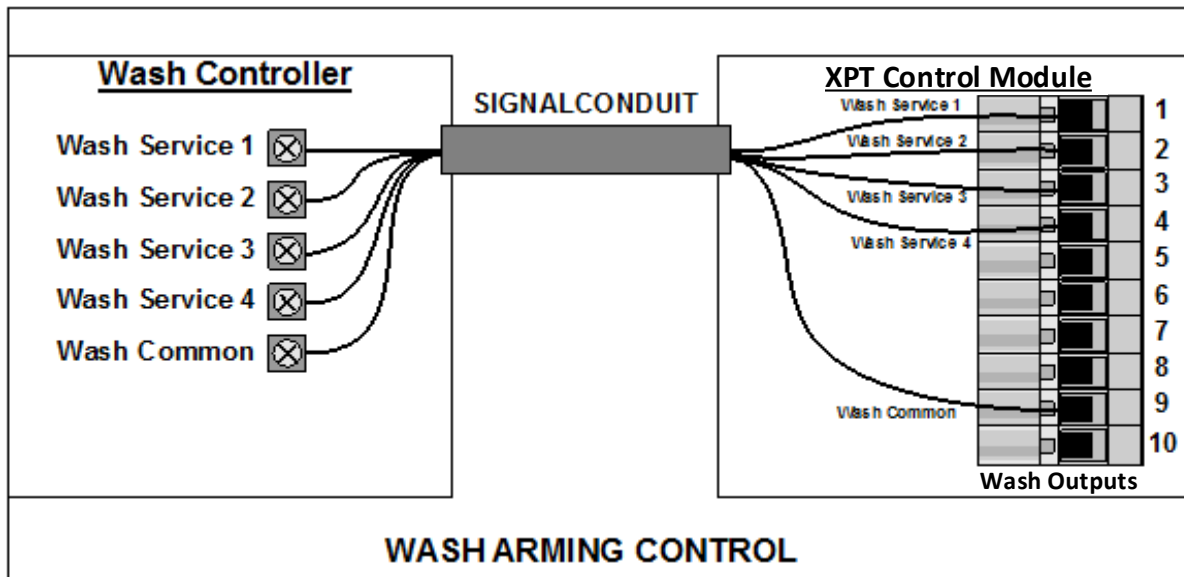


Figure 65. Wash Service Output Circuits

B. Connecting the Wash-In-Use Input

Most in-bay automatic washes provide a wash in use or "wash busy" signal to the entrance terminal to keep it from programming a wash while the wash is already busy. The XPT is able to process the next customer while the bay is busy, but will use the signal to instruct the customer to wait until the wash is clear before pulling forward.

In order for this to work, the wash in use output on the wash controller must be wired to inputs on the XPT as described below.

Preparation

- Make sure all power is disconnected from the XPT and the wash controller prior to beginning this procedure.
- On the XPT control module, locate the 8-pin Phoenix connector labeled Wash Inputs 2-4 and remove it before wiring. After connecting the wires, reconnect the connector to the control module.

To send the wash in use signal to the XPT, you need 2 wires through the conduit from the gate to the XPT. SiteWatch can be configured to use any of the input pairs on the Wash Inputs 2-4 connector, or even the Wash Input 1 connector for the wash in use signal, but normally the connection should be made as follows:

1. The HOT wash in use wire from the wash controller, goes to the XPT and attaches to the Wash Inputs 2-4 connector, pin 1, on the control module.
2. The NEUTRAL wash in use wire from the wash controller, goes to the XPT and attaches to the Wash Inputs 2-4 connector, pin 2, on the control module.
3. Inform the SiteWatch installer of the connections used for the wash in use input so they can configure SiteWatch to monitor the correct input on the control module.

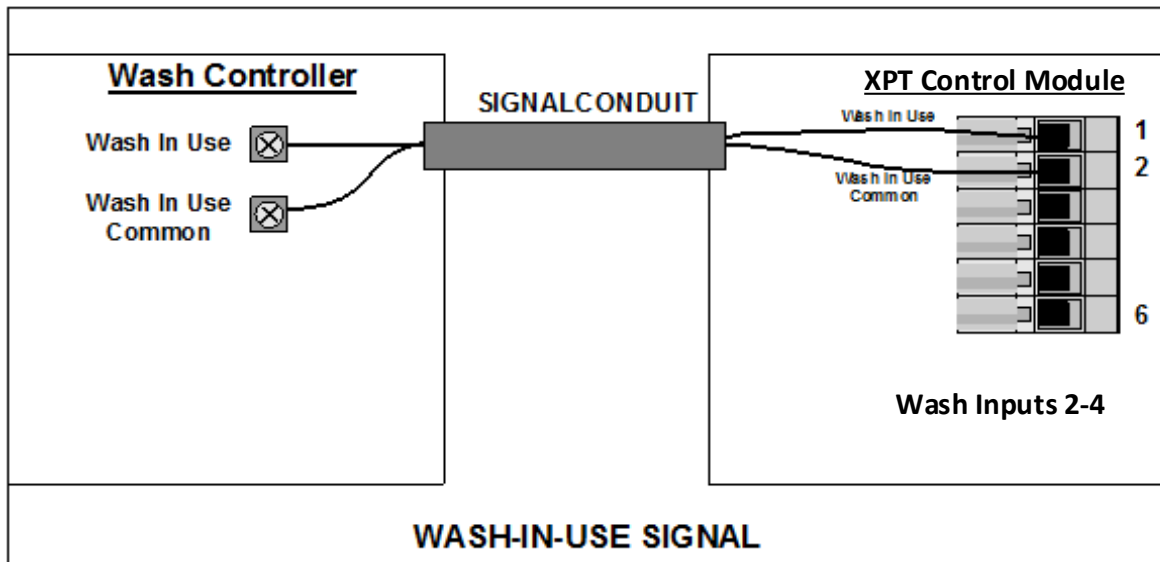


Figure 66. Wash in Use Circuit

C. Connecting the Wash Fault Input

Some wash controllers also provide a "wash fault" signal used to indicate a problem with the wash equipment that keeps it from washing cars. The XPT can use this signal to put the terminal "Out of Service" to prevent customers from purchasing a wash that cannot be delivered, and send a notification of a problem with that unit.

Some controllers send this signal through the wash in use wire, so they require no extra wiring. If this is the case, please inform the DRB Systems Installation staff so they can make the correct settings to look for the wash fault signal on the wash in use input.

For controllers that must have a separate wire to communicate wash problems to the entrance terminal, make the connections as described below.

Preparation

- Make sure all power is disconnected from the XPT and the wash controller prior to beginning this procedure.
- On the control module, locate the 8-pin Phoenix connector labeled Wash Inputs 2 - 4 and remove it before wiring. After connecting the wires, replace the connector on the board.

To communicate the wash fault signal to the XPT you need 2 wires through the conduit from the gate to the XPT. SiteWatch can be configured to use any of the Wash Inputs for the wash fault signal, but normally the connection should be made as follows:

1. The HOT wash fault wire from the wash controller goes to the XPT and attaches to the Wash Inputs 2 – 4 connector, pin 3, on the control module.
2. The NEUTRAL wash fault wire from the wash controller goes to the XPT and attaches to the Wash Inputs 2 – 4 connector, pin 4, on the control module.
3. Inform the SiteWatch installer of the connections used for the wash fault input so they can configure SiteWatch to monitor the correct input on the control module.

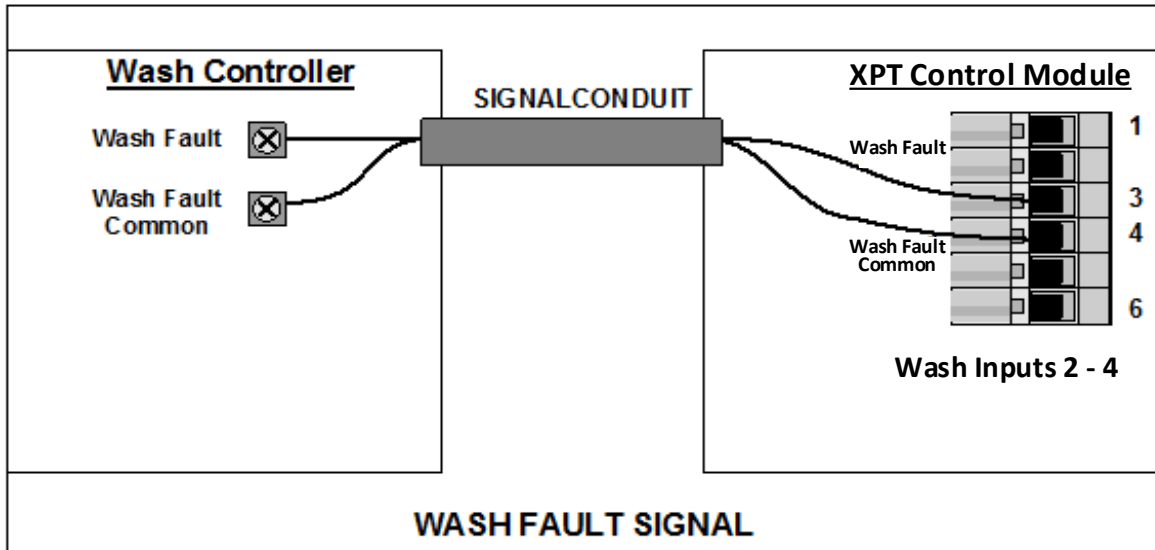


Figure 67. Wash Fault Circuit



Appendix H. Custom Overlays

The XPT is designed to accommodate custom overlays on the main door. These overlays are printed with site-specific graphics and advertisements. Please contact DRB Systems to request more information on the overlay options available.



A T O M A T I C E I C L E A S

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AVW PROJECT #EQ-1-0901

CUSTOMER:

CA AS SERVICES CO
1091 Waveland Avenue
FRANKLING PARK, IL 60131

PROJECT:

TYPICAL SHOPS AND DETAILS
FOR A 130' CAR WASH TUNNEL
FACILITY



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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

PROJECT PACKAGE

DRAWN BY

Mika Vrales

DATE

04/20/2010

REVISION

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S/O# N/A

DWG# EQ10901

PAGE# CO109010

SHEET

M00



AUTOMATIC VEHICLE WASH

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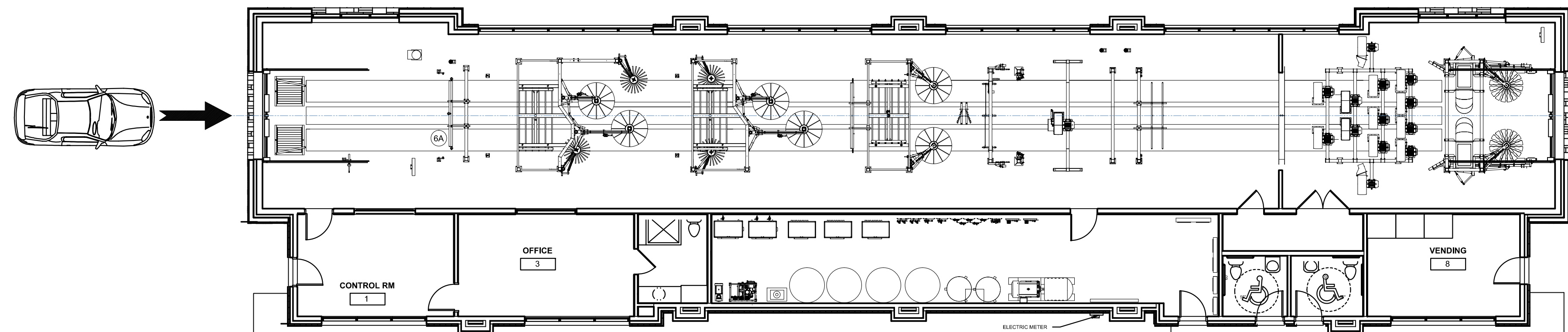
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GENERAL NOTES

CO109011	M0	LEGEND
CO109012	M1	EQUIPMENT LAYOUT
CO109013	M2	SITE LAYOUT
CO109014	M3	EQUIPMENT DESCRIPTION
CO109015	M4.1	EQUIPMENT SCHEDULE 1
CO109016	M4.2	EQUIPMENT SCHEDULE 2
CO209011	S0	CONVEYOR SLOPES
CO209012	S1	CONVEYOR PIT PLAN SECTION
CO209013	S2	SECTIONS THRU CONVEYOR PIT
CO209014	S3	CORRELATOR PIT
CO209016	S5	CONVEYOR PIT STEEL 1
CO20901	S6	CONVEYOR PIT STEEL 2
CO309011	E1	ELECTRICAL DETAILS
CO309012	E1.1	ELECTRICAL DETAILS
CO309013	E1.2	ELECTRICAL DETAILS
CO309014	E2	ELECTRICAL DETAILS
CO409011	1	MECHANICAL ROOM ELEVATIONS
CO409012	2	FLUMING SCHEMATIC WTR MANIOLD TUNNEL NEEDS
CO409013	3	FLUMING DETAILS
CO409014	4	PNEUMATIC PILING SCHEMATIC
CO409015	5	CHASEWAIP SECTIONS THRU CONVEYOR PIT
CO409016	6	CHASEWAIP PLAN POWER TO CONVEYOR
CO40901	6.1	CHASEWAIP PLAN POWER TO CONVEYOR ON SITE



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PROJECT NAME

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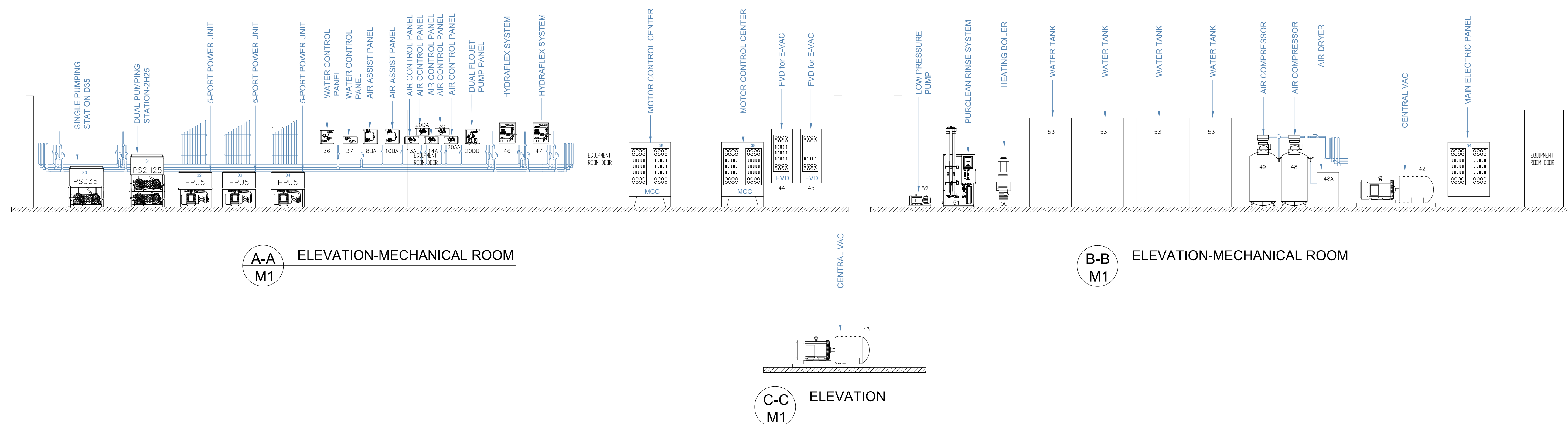
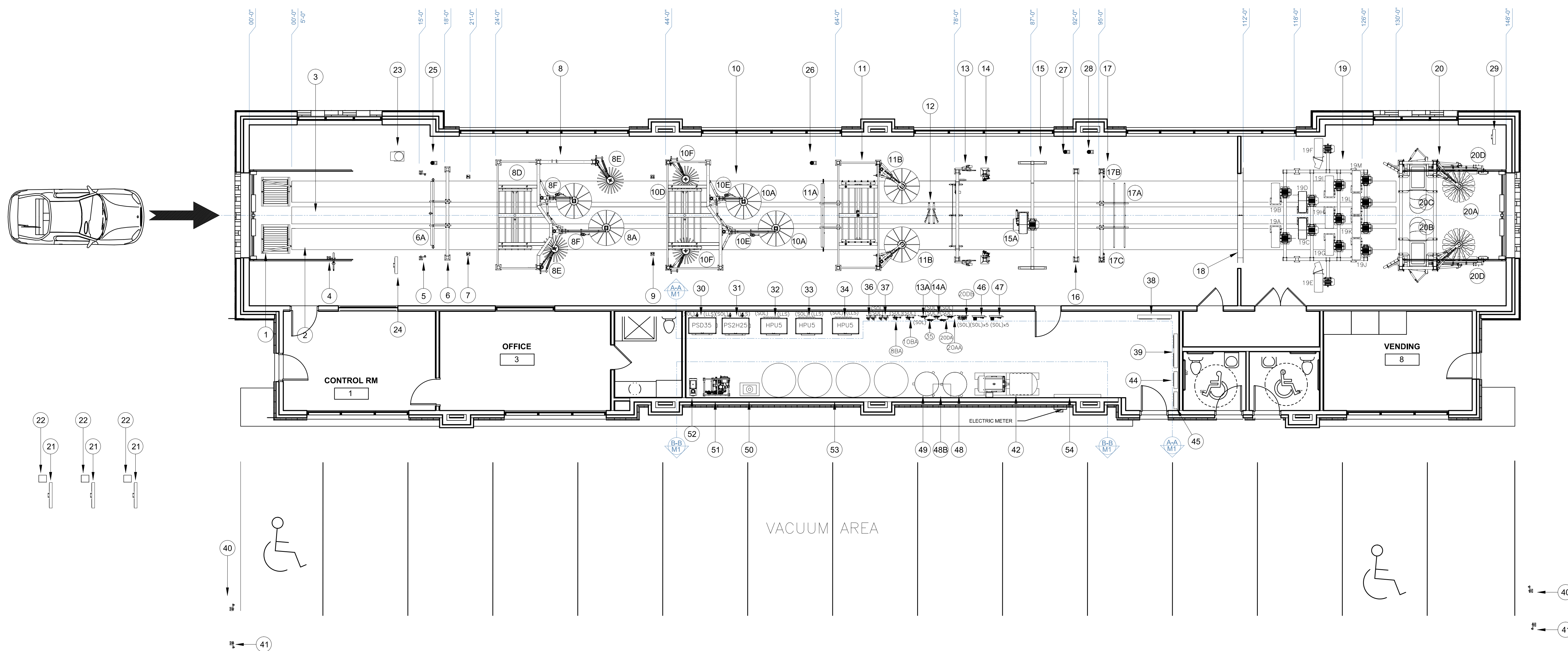
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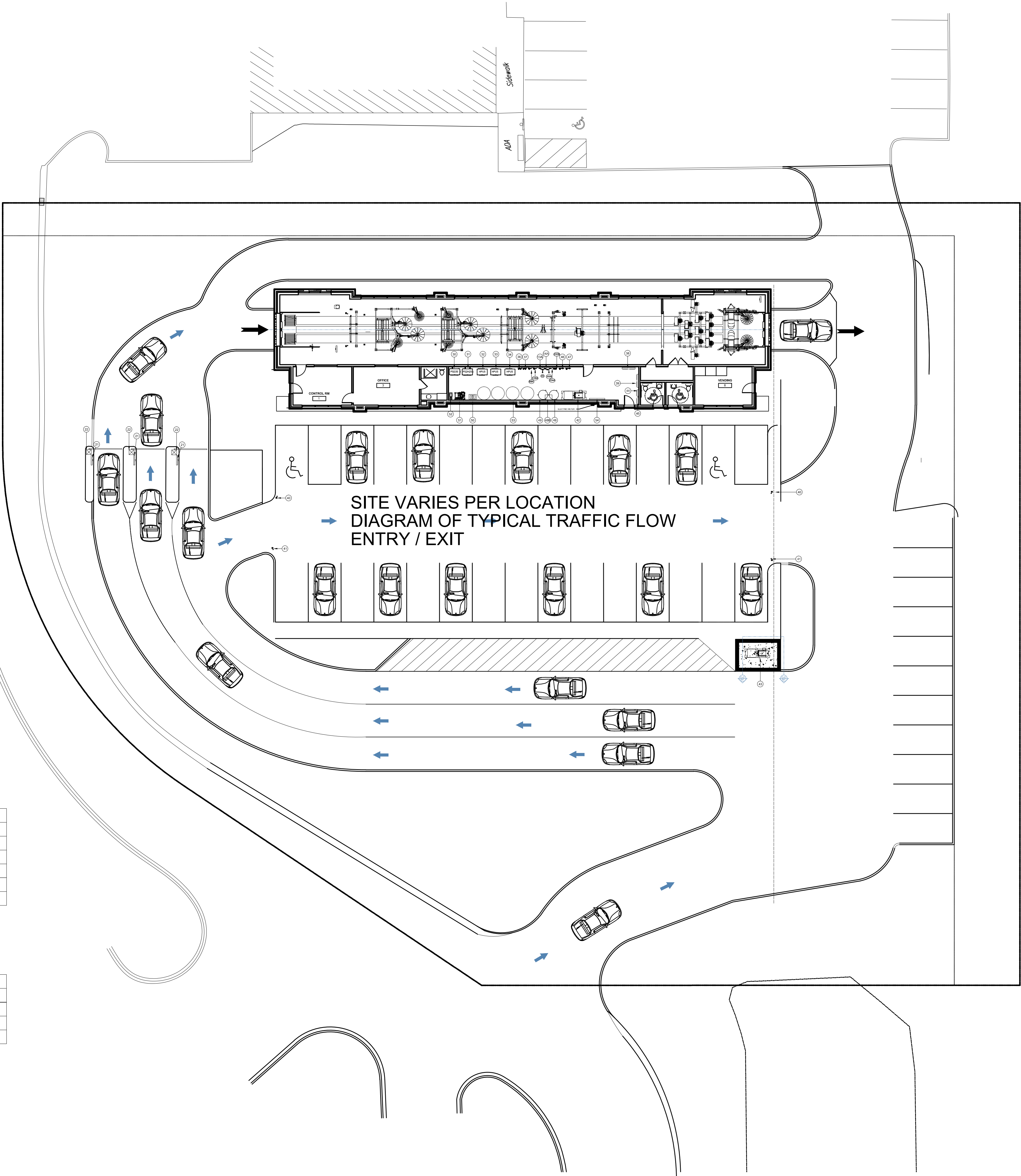
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40	HE1031530H	PHOTO EYES SET 300 STAND
22	A0CASH	AUTO CASHIER 0003
21	MT	E0CAL0UR MENU TOWER 0003
EQUIPMENT		
ITEM	ART	DESCRIPTION
EQUIPMENT LIST 0 TUNNEL		

43	E0VAC	EURO VAC CENTRAL 40H 2
42	E0VAC	EURO VAC CENTRAL 40H 1
SUPPORT		
TAG	ART	DESCRIPTION
EQUIPMENT LIST 0 MECHANICAL ROOM		



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SITE LAYOUT

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Mika Vratas

DATE

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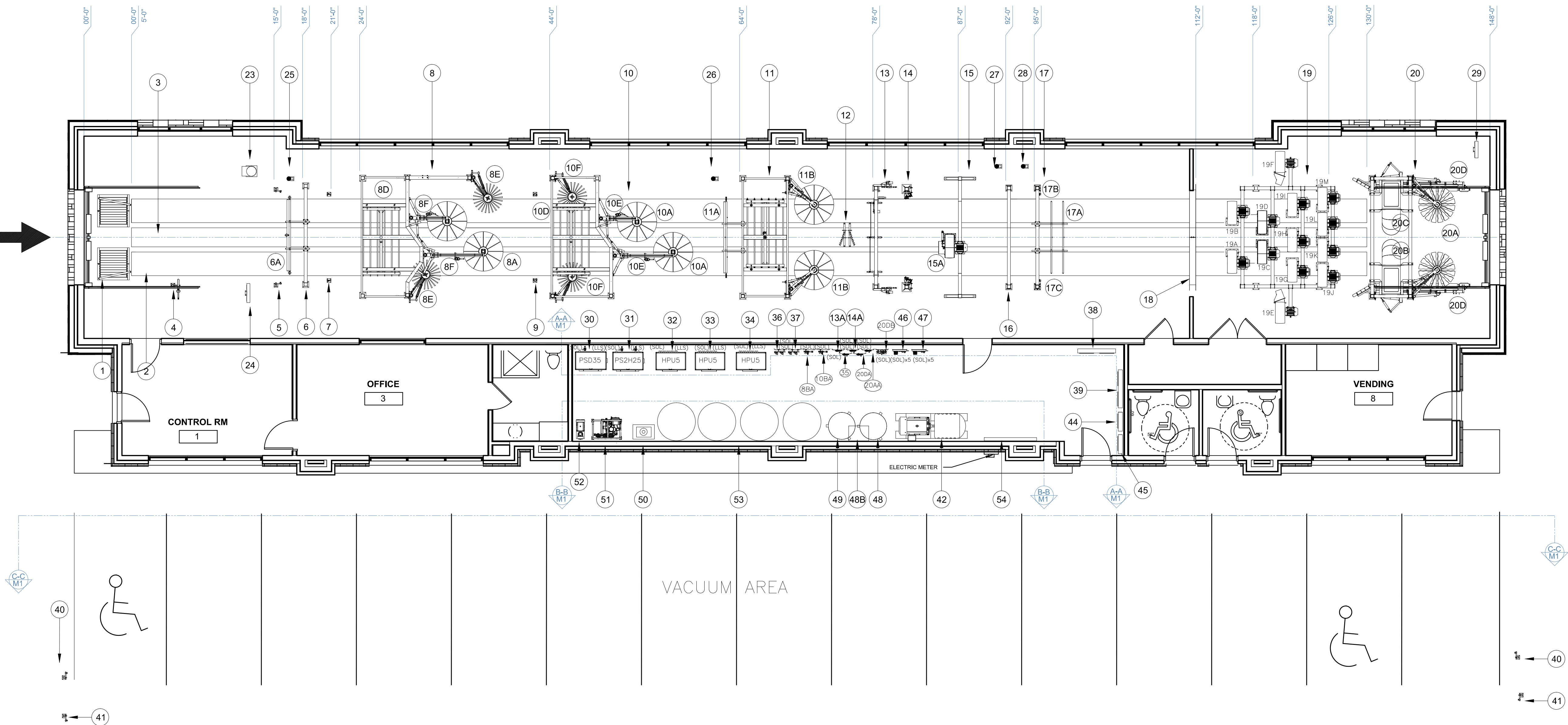
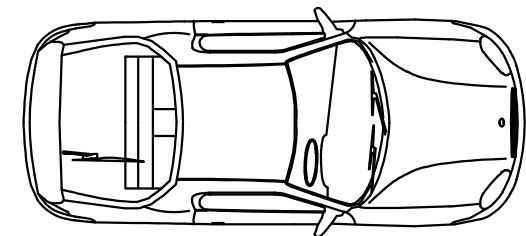
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DWG# E0010901

PAGE# CO01090103

SHEET

M2



1C	AA5C	Attached MIRROR RINSE	41	HE2031530H	PHOTO EYES SET 400 STAND	54	M00AN	MAIN ELECTRIC PANEL
1D	AA5D3	Attached TO0 MANICOLD	40	HE1031530H	PHOTO EYES SET 300 STAND	53	TANK	WATER TANK R4000102H0004
1A	AA5D2	Attached TO0 MANICOLD	29	SELIC	SECTIONAL LED CABINET	52	SR20L	LOW PRESSURE PUMP
1D	AA0	EMIT ARCH 02RAIN BARS and MIRROR RINSE	2D	L0S	LED STRIP YELLOW	51	CLEAN	URECLEAN R.O. SYSTEM
16	AA1	APPLICATOR ARCH or ULTRA GLOSS	2D	L0S	LED STRIP ORANGE	50	COIL	HEATING BOILER PACKAGE
15A	L0115D15	LOWER PRODUCER 10H0 AIR GATE	26	L0S	LED STRIP BLUE	49	AIRCO	AIR COMPRESSOR
15	L1A1C	CENTA ARCH 01 LOWER PRODUCER 15H0	25	L0S	LED STRIP BLUE	4A	AIRCO	DRYER
14	S01	PIVOTINGSWIRLING SIDE PLASTER	24	CO.S	CONFIRMATION SIGN	4D	AIRCO	AIR COMPRESSOR DRYER
13	O01	PIVOTING OSCILLATING HIGH PRESSURE ARCH	23	I0TO	INSTRUCTIONAL TOWER	4D	H0CL	HIDRAULIC SYSTEM
12	001259D	OSCILLATING PUMPER PLASTER FRONT REAR	22	A0CASH	AUTO CASHIER 003	46	H0CL	HIDRAULIC SYSTEM
11D	03109	SIDE WASHER	21	M0T	ECCALICUR MENU TOWER 0003	45	VDVAC	VD FOR EURO VAC 2
11A	SW2	Attached AVALANCHE	20D	T03CUS999	TIRE DRESSING APPLICATOR	44	VDVAC	VD FOR EURO VAC 1
11	MC2	MITTER CURTAIN 00SIDE WASHER 0 AVALANCHE	20C	HT2	SOLARONIC HEATER DRYER	43	E0VAC	EURO VAC CENTRAL 50H0 2
10E	S0111D	CURVED SOA0 FOAMER	20D	HT2	SOLARONIC HEATER DRYER	42	E0VAC	EURO VAC CENTRAL 40H0 1
10D	MM2	MITTER CURTAIN	20A	SW2	SIDE MIRROR WIPER	39	MCC	MOTOR CONTROL CENTER
10A	WA1	WRA0 AROUND	20	M01	FINISHING MODULE	3D	MCC	MOTOR CONTROL CENTER or 0e0
10	WC3	WRA0 MITTER COM00	19M	L0115D10	LOWER PRODUCER 10H0 00ADAPTER	3D	02SL34	WATER CONTROL PANEL 04 SOLENOIDS 340
9	WA1A	WHEEL RITE APPLICATOR	19L	L0115D10	LOWER PRODUCER 10H0 00ADAPTER	36	04SL34	WATER CONTROL PANEL 04 SOLENOIDS 340
0D	S0111D	CURVED SOA0 FOAMER	19L	L0115D10	LOWER PRODUCER 10H0 00ADAPTER	35	WA1D	AIR CONTROL PANEL
0E	C00405	CONTOUR CRUSH	19D	L0115D10	LOWER PRODUCER 10H0 00ADAPTER 0IV ROW	34	H0U5	00ORT HYDRAULIC POWER UNIT
0D	MM2	MITTER CURTAIN	19I	L0115D10	LOWER PRODUCER 10H0 00ADAPTER	33	H0U5	00ORT HYDRAULIC POWER UNIT
0A	WA1	WRA0 AROUND	19H	L0115D10	LOWER PRODUCER DRO0 DOWN 10H0 00ADAPTER	32	H0U5	00ORT HYDRAULIC POWER UNIT
0	WAC00405	WRA0 MITTER CONTOUR COM00	19G	L0115D10	LOWER PROD. DRO0 DOWN10H0 00ADAPTER000ROW	31	S2H25	DOUBLE STACK CUMMING STATION, 2020G0M
0	CTA1A	CHEMICAL TIRE APPLICATOR	19D	L01D N000IV 2396	PIVOTING NO0LE NO0LE FRONT TO BACK	30	SD35	SINGLE STACK CUMMING STATION, 35G0M
6A	03109	Attached AVALANCHE	19D	L0115D10	LOWER PROD. 10H0 00PIVOTING NO0LE NO0LE	20D	A0S120	DUAL 0LO0ET PUM0 PANELNON 00AMING
6	AA2	DUAL APPLICATOR ARCH 0 AVALANCHE	19C	L01D N000IV 2396	PIVOTING NO0LE NO0LE FRONT TO BACK	20DA	WA1D	AIR CONTROL PANEL
5	GS1A	URE0 GUN	19C	L0115D10	LOWER PROD. 10H0 00PIVOTING NO0LE 00 ROW	20AA	WA1D	AIR CONTROL PANEL
4	HE20315	DUAL PHOTO EYES	19D	L0115D10	LOWER PRODUCER 10H0 00ADAPTER	14A	WA1D	AIR CONTROL PANEL
3	GR	0IT GRATING	19A	L0115D10	LOWER PRODUCER 10H0 00ADAPTER 0 ROW	13A	WA1D	AIR CONTROL PANEL
2	CN3	DUAL BELT CONVE0OR 30" WIDE 01300LG.	19	L1C1010	LOWER ARCH 10010002 LOWER PRODUCER 10H0	100A	WA1SK0	AIR ASSIST KIT PANEL
1	RC4	ROLLER CORRELATOR 00GUIDE RAILS	1D	R0WA1	GLASS 0LOCK ARCHWA0	00A	WA1SK0	AIR ASSIST KIT PANEL
EQUIPMENT			EQUIPMENT			SUPPORT		
ITEM	0ART0	DESCRIPTION	ITEM	0ART0	DESCRIPTION	TAG	0ART0	DESCRIPTION
EQUIPMENT LIST 0TUNNEL			EQUIPMENT LIST 0TUNNEL			EQUIPMENT LIST 0MECHANICAL ROOM		



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GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

EQUIPMENT DESCRIPTION

DRAWN BY

Mika Vrales

DATE

04/20/2010

REVISION

2

S/O# N/A

DWG# E010901

PAGE# CO109014

SHEET

M3

SCHEDULE - WV-WETT CAR WASH																									
CAR WASH EQUIPMENT LIST				EQUIPMENT REQUIREMENTS											WORK DISTRIBUTION										
LINE ITEM	TAG	DESCRIPTION	PART #	ELECTRICAL					AIR PORT	WATER			gal/ min.	GAS (BTUH)	PLUMBING & MECHANICAL					ELECTRICAL					
				HP	PHASE	VOLTS	AMPS	C.B.		COLD	HOT	RECLAIM			SUPPLIER	ERECTORS	PLUMBED	EQ. RM.	TUNNEL	SUPPLIER	ERECTORS	PLUMBED	EQ. RM.	TUNNEL	
1	1	RC4 1	ROLLER CORRELATOR	RC4	-	1	120	-	-	-	-	-	-	-	-	DS	DS	-	-	X	-	-	-	-	X
2	2	BCN3 1	DUAL BELT CONVEYOR 3'-130'Lg	BCN3	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	-	X
3	2 A	M 1	-MOTOR		15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	-	X	
4	2 A	M 2	-MOTOR		15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	-	X	
5	2 B	RP 1	-APPROXIMITY SENSOR		-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	X	
6	2 C	VFD 1	-VARIABLE FREQUENCY DRIVE		-	-	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	
7	3	GR 1	PIT GRATING	GR	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	X	-	DS	DS	X	-	X
8	4	PGS1A 1	PREP GUN	PGS1A	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	-	X
9	5	PHE2-0315 1	DUAL PHOTO EYE	PHE2-0315	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	-	X	DS	DS	X	-	X
10	6	AA2 1	AA2 w/ AVALANVNCHE J	AA2	-	-	-	-	-	-	-	-	2.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
2	6 A	J3179 1	AVALANCHE JUNIOR	J3179	-	-	-	-	-	-	-	-	4.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
3	7	CTA1A 1	CHEMICAL TIRE APPLICATOR (TREE)	CTA1A	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	-	X	-	DS	-	-	X
4	8	WC3CB0405 1	WRAP MITTER CONTOUR COMBO	WC3CB0405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	8 A	WA1 1	-WRAP AROUND	WA1	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
6	8 AA	WA1G 1	-WRAP RETRACT KIT	WA1G	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
7	8 B	WA1-SK 1	-WRAP AIR ASSIST KIT	WA1-SK	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
8	8 BA	WA1-SKP 1	-AIR ASSIST KIT PANEL	WA1-SKP	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	DS	DS	X	X	-
9	8 BAA	SOL 1	-SOLENOID VALVE		-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	DS	-	-	-	-	ELEC	-	-	-
10	8 C	WA2F 1	-WRAP STABILIZER KIT	WA2F	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
11	8 D	MC2 1	-MITTER CURTAIN	MC2	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	X	-	DS	DS	X	-	X
12	8 E	CB0405 1	-CONTOUR BRUSH	CB0405	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	-	-	X	-	-	-	-	X
13	8 F	SF1117 1	-SOAP FOAMER (CURVED)	SF1117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
14	9	WBA1A 1	WHEEL BRITE APPLICATOR (TREE)	WBA1A	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	-	X	-	DS	-	-	X
15	10	WC3 1	WRAP MITTER COMBO	WC3	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	-	X
16	10 A	WA1 2	-WRAP AROUND	WA1	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	-	X	-	-	-	-	X
17	10 AA	WA1G 2	-WRAP RETRACT KIT	WA1G	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
18	10 B	WA1-SK 2	-WRAP AIR ASSIST KIT	WA1-SK	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
19	10 BA	WA1-SKP 2	-AIR ASSIST KIT PANEL	WA1-SKP	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	DS	DS	X	X	-
20	10 BAA	SOL 2	-SOLENOID VALVE		-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	DS	-	-	-	-	-	ELEC	-	-
21	10 C	WA2F 2	-WRAP STABILIZER KIT	WA2F	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	-	X	DS	DS	X	-	X
22	10 D	MC2 2	-MITTER CURTAIN	MC2	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	-	X	-	-	-	-	X
23	10 E	SF1117 2	-SOAP FOAMER (CURVED)	SF1117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	10 F	RB1 2	-ROCKER PANEL BRUSH 21"	RB1	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	-	X	-	-	-	-	X
25	11	SC4 1	MITTER w/SIDE WASHER	SC4	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	DS	X	-	DS	DS	X	X	-
26	11 A	SW2 1	-SIDE WASHER	SW2	-	-	-	-	-	-	-	-	2.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
27	11 B	J3179 2	-AVALANCHE JUNIOR	J3179	-	-	-	-	-	-	-	-	4.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
28	12	BB1259B 1	FRONT AND REAR OSCILLATING BUMPER BLASTER	BB1259B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	13	PO1 1	PIVOTING OSCILLATING HIH PRESSURE w/AVALANCHE&2 RAIN BARS	PO1	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	-	X
30	13 A	WA1P 1	-AIR CONTROL PANEL	WA1P	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	-	DS	-	X	-
31	13 AA	SOL 3	-SOLENOID VALVE		-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	-	-	-	-	-	-	ELEC	X	-
32	14	SB1 1	PIVOTING SWIRLING SIDE BLASTER	SB1	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	X	-
33	14 A	WA1P 2	-AIR CONTROL PANEL	WA1P	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	-	DS	-	X	-
34	14 AA	SOL 4	-SOLENOID VALVE		-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	DS	-	-	-	-	-	ELEC	-	-
35	15	BL1A-C-10 1	PENTA ARCH w/1 BLOWER PRODUCERS	BL1A-C-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	15 A	BL0115D-10 1	-BLOWER PRODUCER 10HP	BL0115D-10	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	X	DS	DS	-	-	X
37	15 AA	M 3	-MOTOR		10	3	460	12	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	X	
38	15 AB	BL1DC-2678 1	A.I.R. GATE	BL1DC-2678	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	-	X	DS	DS	-	-	X
39	16	AA1 1	APPLICATION ARCH for ULTRA GLOSS	AA1	-	-	-	-	-	-	-	-	1.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
40	17	AA0 1	AA0 w/ 2-TOP MANIFOLDS&MIRROR RINSE	AA0	-	-	-	-	-	-	-	-	0.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
41	17 A	AA5D-2 1	-SHOWER TOP MANIFOLD-DRYING	AA5D-2	-	-	-	-	-	-	-	-	4.00	-	-	DS	DS	-	-	X	DS	DS	-	-	X
42	17 B	AA5D-3 2	-SHOWER TOP MANIFOLD-RINSE	AA5D-3	-	-	-</																		

SCHEDULE - WV-WETT CAR WASH																											
CAR WASH EQUIPMENT LIST				EQUIPMENT REQUIREMENTS										WORK DISTRIBUTION													
LINE ITEM	TAG		DESCRIPTION	PART #	ELECTRICAL					AIR PORT	WATER			gal/ min.	GAS (BTUH)	PLUMBING & MECHANICAL					ELECTRICAL						
					HP	PHASE	VOLTS	AMPS	C.B.		COLD	HOT	RECLAIM			SUPPLIER	ERECTORS	PLUMBED	EQ. RM.	TUNNEL	SUPPLIER	ERECTORS	PLUMBED	EQ. RM.	TUNNEL		
85	20	FM1 1	FINISHING MODULE	FM1	-	-	-	-	-	-	-	-	-	-	-	DS	DS	-	-	-	-	-	-	-	-	-	-
86	20 A	SW2 1	SIDE MIRROR WIPER	SW2	-	-	-	-	-	-	-	-	2.00	-	-	DS	DS	-	-	X	-	DS	DS	-	-	-	X
87	20 AA	WA1P 3	-AIR CONTROL PANEL	WA1P	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	-	DS	DS	X	X	-	-
88	20 AAA	SOL 5	-SOLENOID VALVE	-	-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	DS	-	-	-	-	-	-	ELEC	-	-	-
89	20 B	HT2 1	SOLARONIC HEATERS BUT's 950 000	HT2	-	-	-	-	-	-	-	-	-	950000	-	DS.	DS.	-	-	X	-	DS	DS	-	-	-	X
90	20 BA	M 17	-MOTOR	-	2	3	460	2	-	1/4 NPT	-	X	-	-	-	-	-	DS	-	-	-	-	-	ELEC	-	-	-
91	20 C	HT2 2	SOLARONIC HEATERS BUT's 950 000	HT2	-	-	-	-	-	-	-	-	-	950000	-	DS.	DS.	-	-	X	-	DS	DS	-	-	-	X
92	20 CA	M 18	-MOTOR	-	2	3	460	2	-	1/4 NPT	-	X	-	-	-	-	-	DS	-	-	-	-	-	ELEC	-	-	-
93	20 D	TB3-CUS999 1	TIRE DRESSING APPLICATOR	TB3-CUS999	-	-	-	-	0.46	-	-	-	-	1.00	-	DS	DS	DS	-	X	-	DS	DS	-	-	-	X
94	20 DA	WA1P 4	-AIR CONTROL PANEL	WA1P	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	-	DS	DS	X	X	-	-
95	20 DAA	SOL 6	-SOLENOID VALVE	-	-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	DS	-	-	-	-	-	-	ELEC	-	-	-
96	20 DB	APS1-2F 1	-DUAL FLOJET PUMP PANEL	APS1-2F	-	-	-	-	-	X	-	-	-	-	-	DS	DS	DS	X	-	-	DS	DS	X	X	-	-
97	20 DBA	SOL 7	-SOLENOID VALVE	-	-	1	120	0.25	-	1/4 NPT	X	X	-	1.00	-	-	-	DS	-	-	-	-	-	ELEC.	-	-	-
98	21	M-T 1	EXCALIBUR MENU TOWER	E-M-T	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	X	-	-	X
99	22	ACASH 1	AUTO CASHIER	ACASH	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	-	-	-	-	-	-	-	
100	23	I-TO 1	INSTRUCTIONAL TOWER	I-TO	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	-	-	-	-	-	-	-	
101	24	CO-S 1	CONFIRMATION SIGN	CO-S	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	-	-	-	-	-	-	-	
102	25	LB-S 1	LED STRIP -BLUE	LB-S	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	ELEC.	-	-	X
103	26	LB-S 2	LED STRIP -BLUE	LB-S	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	ELEC.	-	-	X
104	27	LB-S 1	LED STRIP -ORANGE	LB-S	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	ELEC.	-	-	X
105	28	LB-S 1	LED STRIP -YELLOW	LB-S	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	ELEC.	-	-	X
106	29	SE-LC 1	SECTIONAL LED CABINET	SE-LC	-	1	120	0.25	-	-	-	-	-	-	-	DS	DS	-	-	X	-	DS	DS	ELEC.	-	-	X
107	30	PSD35 1	SINGLE PUMPING STATION	PSD35	-	-	-	-	-	-	1"	-	-	30.00	-	-	-	PLUM	X	-	-	DS	DS	-	-	-	-
108	30 A	M 19	-MOTOR	-	20	3	460	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	X	-	
109	30 B	LLS 1	-LOW LEVEL SWITCH	LLS	-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	X	-	
110	31	PS2H25 1	DOUBLE STACK PUMPING STATION	PS2H25	-	-	-	-	-	-	1"	-	-	40.00	-	-	-	PLUM	X	-	-	DS	DS	-	-	-	-
111	31 A	M 20	-MOTOR	-	15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	X	-	
112	31 B	M 21	-MOTOR	-	15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	X	-	
113	31 C	LLS 2	-LOW LEVEL SWITCH	-	-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ELEC	X	-	
114	32	HPU5 1	HYDRAULIC POWER UNIT - 5 PORT	HPU5	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	X	-	-	DS	DS	X	X	-	-
115	32 A	M 22	-MOTOR	-	15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
116	32 B	LLS 3	-LOW LEVEL SWITCH	-	-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
117	33	HPU5 2	HYDRAULIC POWER UNIT - 5 PORT	HPU5	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	X	-	-	DS	DS	X	X	-	-
118	33 A	M 23	-MOTOR	-	15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
119	33 B	LLS 4	-LOW LEVEL SWITCH	-	-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
120	34	HPU5 3	HYDRAULIC POWER UNIT - 5 PORT	HPU5	-	-	-	-	-	-	-	-	-	-	-	DS	DS	DS	X	-	-	DS	DS	X	X	-	-
121	34 A	M 24	-MOTOR	-	15	3	460	17	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
122	34 B	LLS 5	-LOW LEVEL SWITCH	-	-	1	120	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	DS	DS	ELEC	-	-	
123	35	WA1P 5	AIR CONTROL PANEL	WA1P	-	-	-	-	-	-	-	-	-	-	-	DS	DS	PLUM	X	-	-	DS	-	-	X	-	
124	35 A	SOL 8	-SOLENOID VALVE	-	-	1	120	0.25	-	1/4 NPT	-	-	-	-	-	DS	-	-	-	-	-	-	-	ELEC	X	-	
125	36	P-4SL3-4 1	WATER CONTROL PANEL	P-4SL3-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
126	36 A	SOL 9	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
127	36 B	SOL 10	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
128	36 C	SOL 11	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
129	36 D	SOL 12	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
130	37	P-2SL3-4 2	WATER CONTROL PANEL	P-2SL3-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
131	37 A	SOL 13	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
132	37 B	SOL 14	-SOLENOID VALVE	-	-	1	120	0.25	-	-	3/4"	-	-	-	-	-	-	-	-	-	-	DS	-	ELEC	-	-	
133	38	MCC 1	MOTOR CONTROL CENTER for BELT V.	-	-	3	-	-	-	-	-	-	-	-	-	DS	ELEC	-	-	X	-	DS	ELEC	ELEC	X	-	-
134	39	MCC 2	MOTOR CONTROL CENTER for Tunnel	-	-	3	-	-	-	-	-	-	-	-	-	DS	ELEC	-	-	X	-	DS					



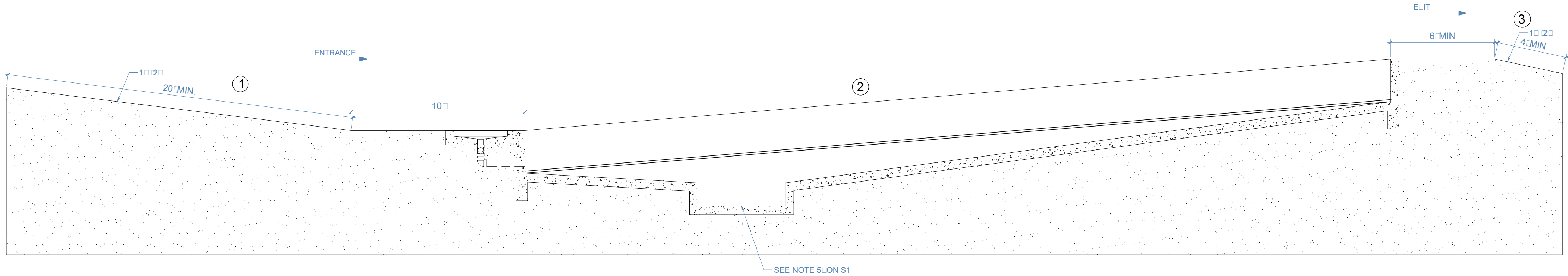
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GENERAL NOTES

NOTES

- ENTRANCE SLOPE DOWNHILL INTO WASH AT 1:20 GRADE FOR 20' MIN, THEN FLAT FOR 10' ONTO CONVEYOR.
- SLOPE EQUAL TO 1"RISE FOR EVERY 30' MIN. TO 20' MAX. RISING FROM TUNNEL'S ENTRANCE TO EXIT.
- EXIT SLOPE FLAT FOR 6' MIN. SO CAR DOES NOT ROLL OUT TOO EARLY FROM THE DRIVER, THEN DOWNHILL SLOPE FOR 4' MIN. AT 1:20 GRADE, SO THE CAR ROLLS ITSELF OFF THE CONVEYOR.

CONVEYOR AND EQUIPMENT OF A.V.W. EQUIPMENT CO.
CONTRACTOR TO VERIFY ALL DIMENSIONS
CONCRETE FOOTINGS AND STRENGTH TO COMPLY WITH LOCAL BUILDINGS CODES.
DO NOT SUBSTITUTE FOR ARCHITECTURAL PLAN.



A
S0 CONVEYOR EXIT SLOPES
SCALE 1/4" = 1'

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME WV SERVICES CAR WASH DESIGNER
PROJECT NAME

DRAWING NAME EQUIPMENT SCHEDULE 1	
DRAWN BY Mika Vrales	
DATE 04/21/2011	REVISION 2

S/O# N/A	SHEET S0
DWG# E02/0901	
PAGE# C02/0901/0	



GENERAL NOTES

NOTES ☐

1. SLOPE IS 1:1 TO 1.5 HORIZONTAL TO 1 VERTICAL. MINIMUM 30% MIN. TO 40% MIN. FROM ENTRANCE TO EXIT.
2. MINIMUM 1:1 TO 1.5 HORIZONTAL TO 1 VERTICAL TO CONVEYOR.
3. EQUIVALENT CENTERLINE TO EQUIVALENT CENTERLINE. SLOPING FROM THE CENTER OF THE TUNNEL'S ENTRANCE WALL TO THE CENTER OF THE TUNNEL'S EXIT WALL.
4. CONVEYOR PIT TO EQUIVALENT CENTERLINE. SEE DRAWING S2.
5. CONTRACTOR TO VERIFY SEWER LINE LOCATION & ELEVATION, TO SET INLETS & OUTLETS POSITION WITHIN CONVEYOR RELATIVE TO THE RECLAIM PIT POSITION.
6. ALL LATES, GRATES AND ANGLES TO BE SUPPLIED BY OWNERS CONTRACTOR UNLESS OTHERWISE NOTED.
7. SLOPE IS 1:1 TO 1.5 HORIZONTAL TO 1 VERTICAL. MINIMUM 30% MIN. TO 40% MIN. ARISING FROM TUNNEL'S ENTRANCE TO EXIT.
8. CHASEWAY & PROTRUSION THROUGH FINISHED FLOOR RELATIVE TO MCC.
9. CHASEWAY & PROTRUSION THROUGH FINISHED FLOOR RELATIVE TO PHOTO DECK.
10. SLOPE IS 1:1 TO 1.5 HORIZONTAL TO 1 VERTICAL TO CONVEYOR PIT TRENCH.

CONVEOR AND EQUIPMENT A.V.W. EQUIPMENT CO.
CONTRACTOR TO VERIFY ALL DIMENSIONS
CONCRETE FOOTINGS AND STRENGTH TO COMPLY
WITH LOCAL BUILDINGS CODES.
DO NOT SUBSTITUTE FOR ARCHITECTURAL PLAN.



CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME
CONVEYOR PIT LANE SECTION

DRAWN BY

Miika Vrahaes

DATE
04 30 201

REVISION
2

S/O# N/A

DWG# E□□2□0901

PAGE#CO209012

SHEET

S1



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GENERAL NOTES

NO. REVISION/ISSUE DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

SECTION THRU CONVEYOR PIT

DRAWN BY

Mika Vrales

DATE

04/21/2019

REVISION

2

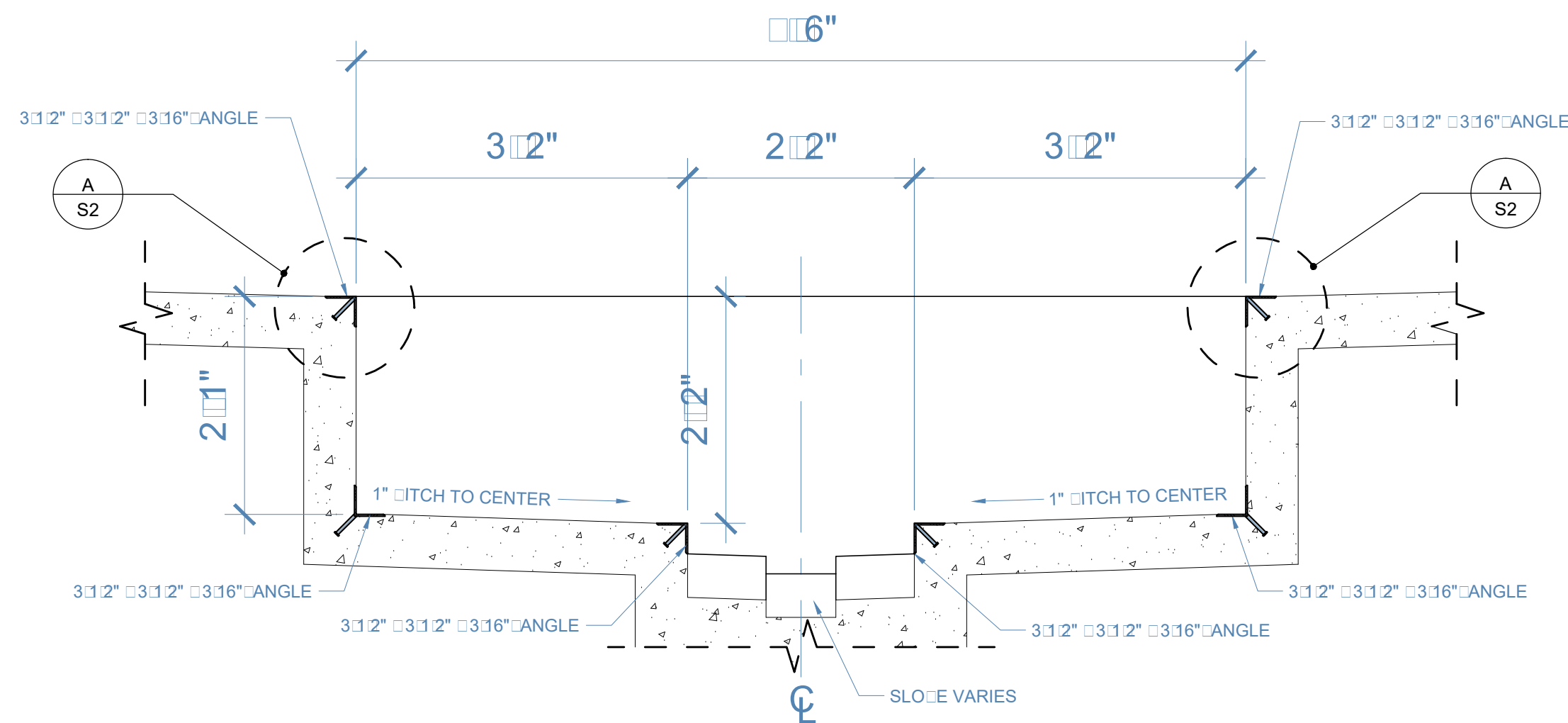
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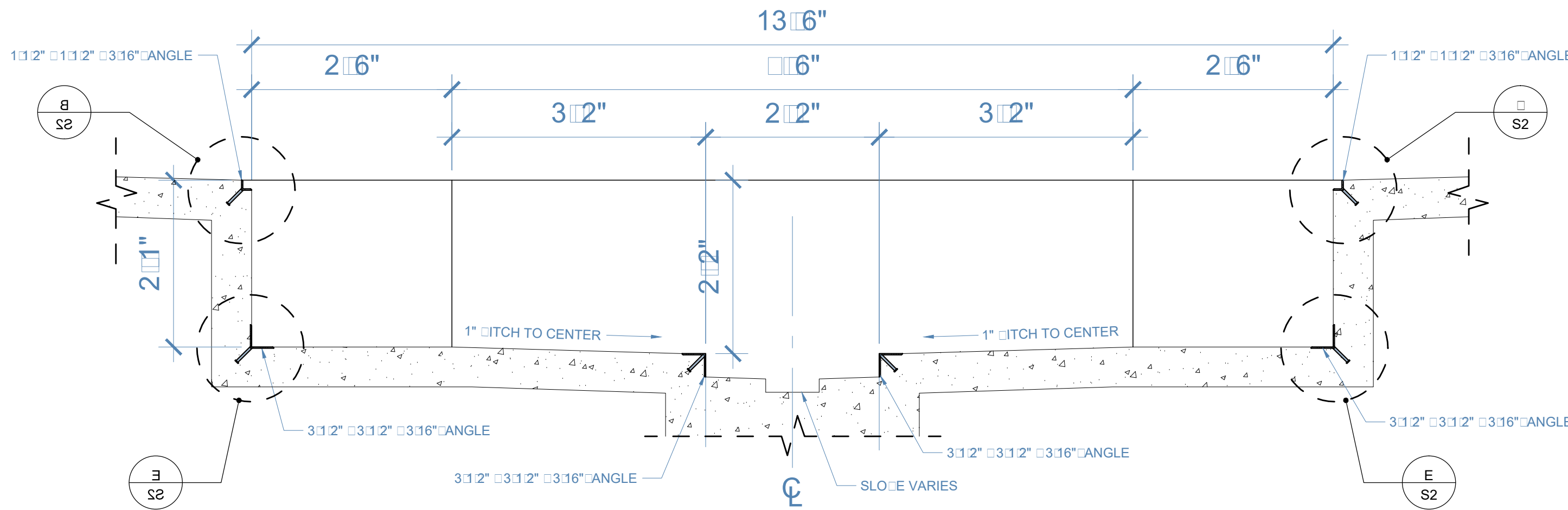
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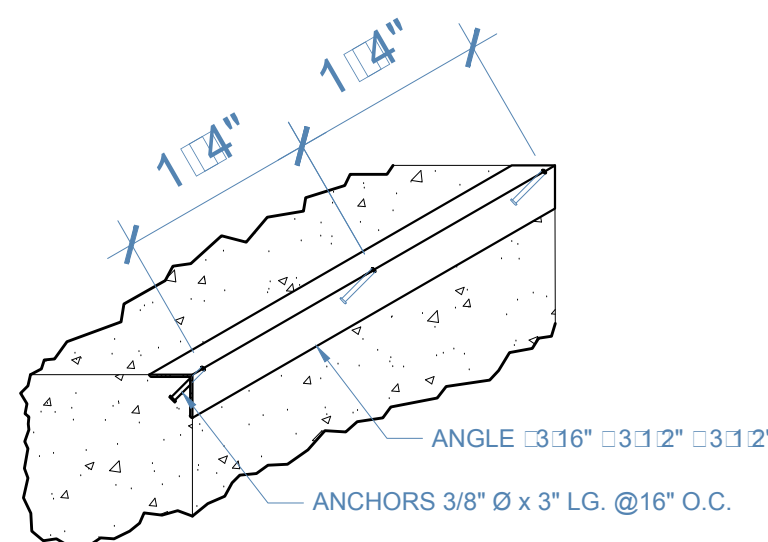
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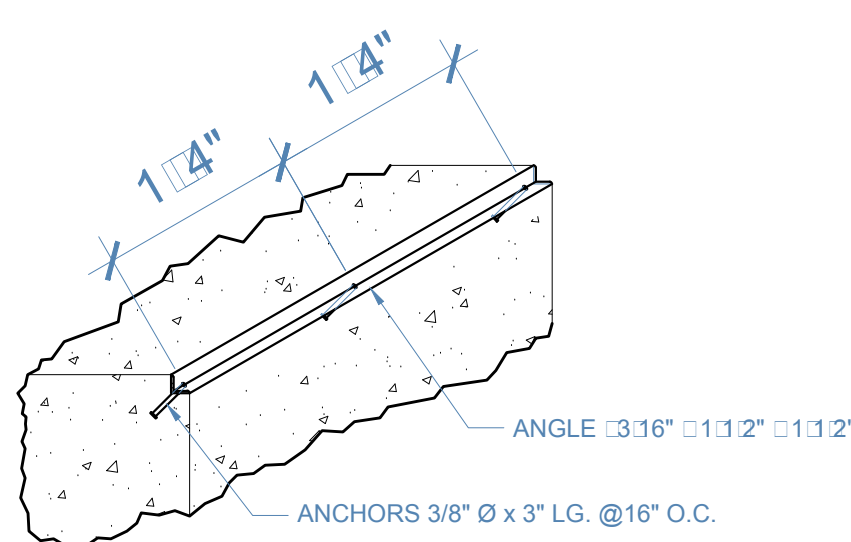
C-C SECTION
SCALE: 3/4" = 1'-0"



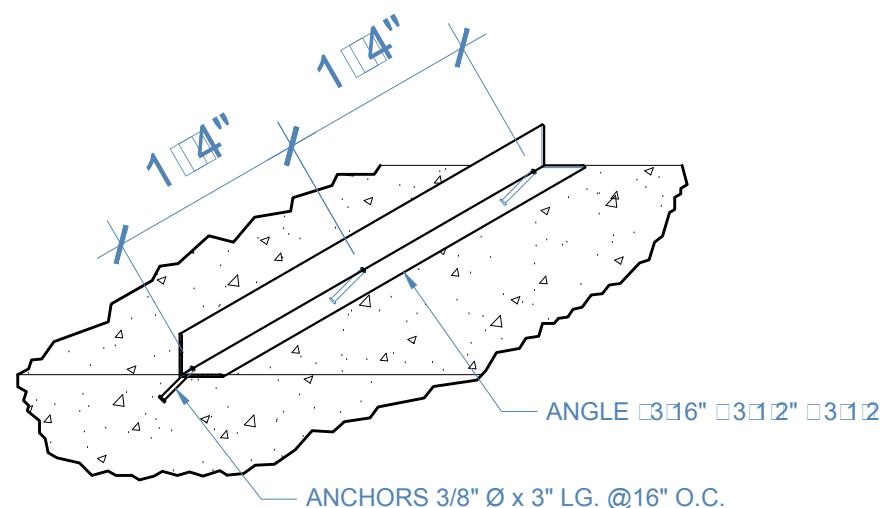
D-D SECTION
SCALE: 3/4" = 1'-0"



A-A DETAIL
SCALE: 3/4" = 1'-0"



B-B DETAIL
SCALE: 3/4" = 1'-0"



E-E DETAIL
SCALE: 3/4" = 1'-0"

CONVEYOR AND EQUIPMENT BY A.V.W. EQUIPMENT CO.

CONTRACTOR TO VERIFY ALL DIMENSIONS

CONCRETE FOOTINGS AND STRENGTH TO COMPLY
WITH LOCAL BUILDINGS CODES.

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GENERAL NOTES

NO.	REVISION/ISSUE	DATE
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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

1

DRAWING NAME

CORRELATOR KIT

DRAWN BY

Mika Vrales

DATE

04/19/2014

REVISION

1

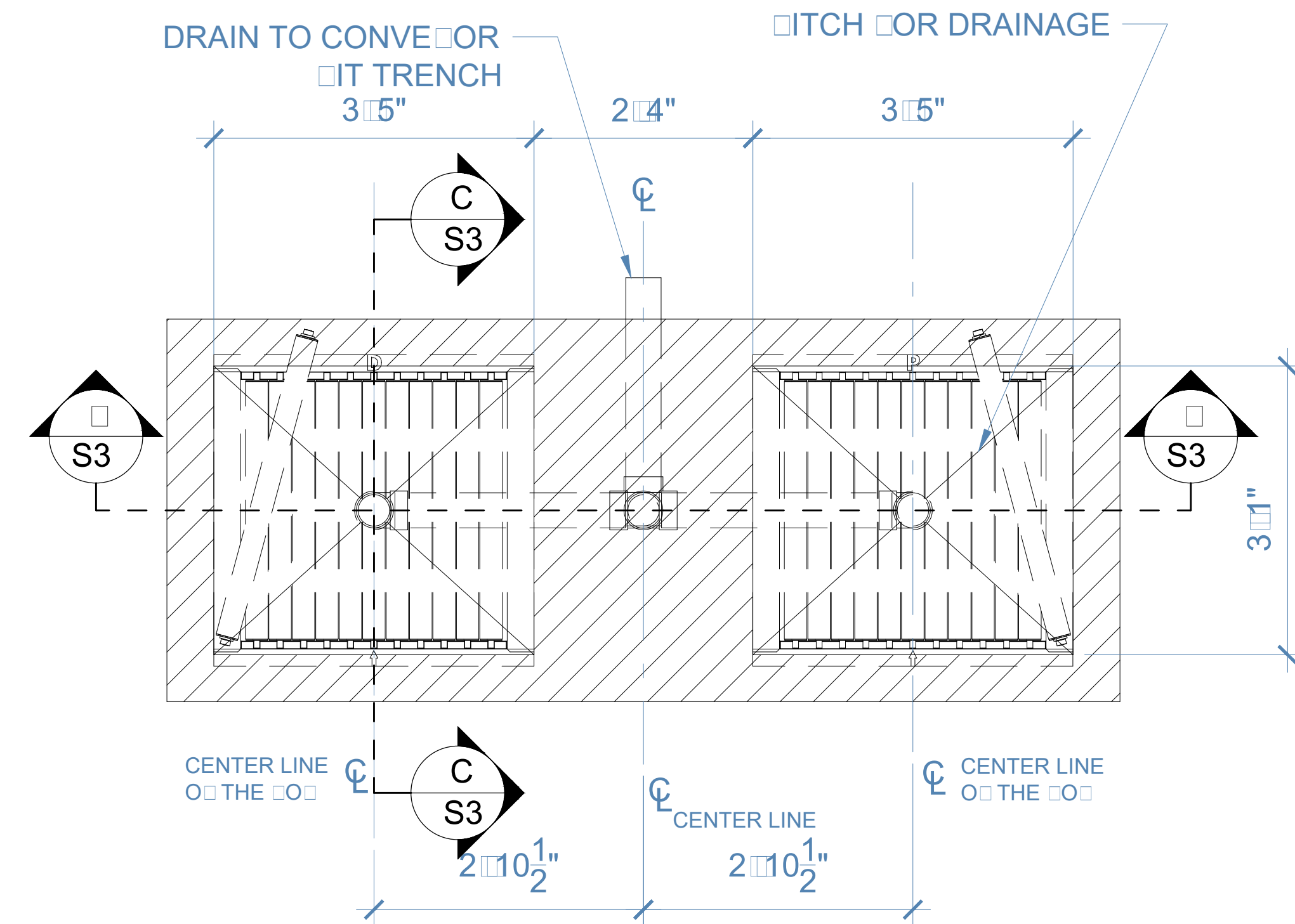
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DWG# E02/0900

PAGE# CO2/0901/4

SHEET

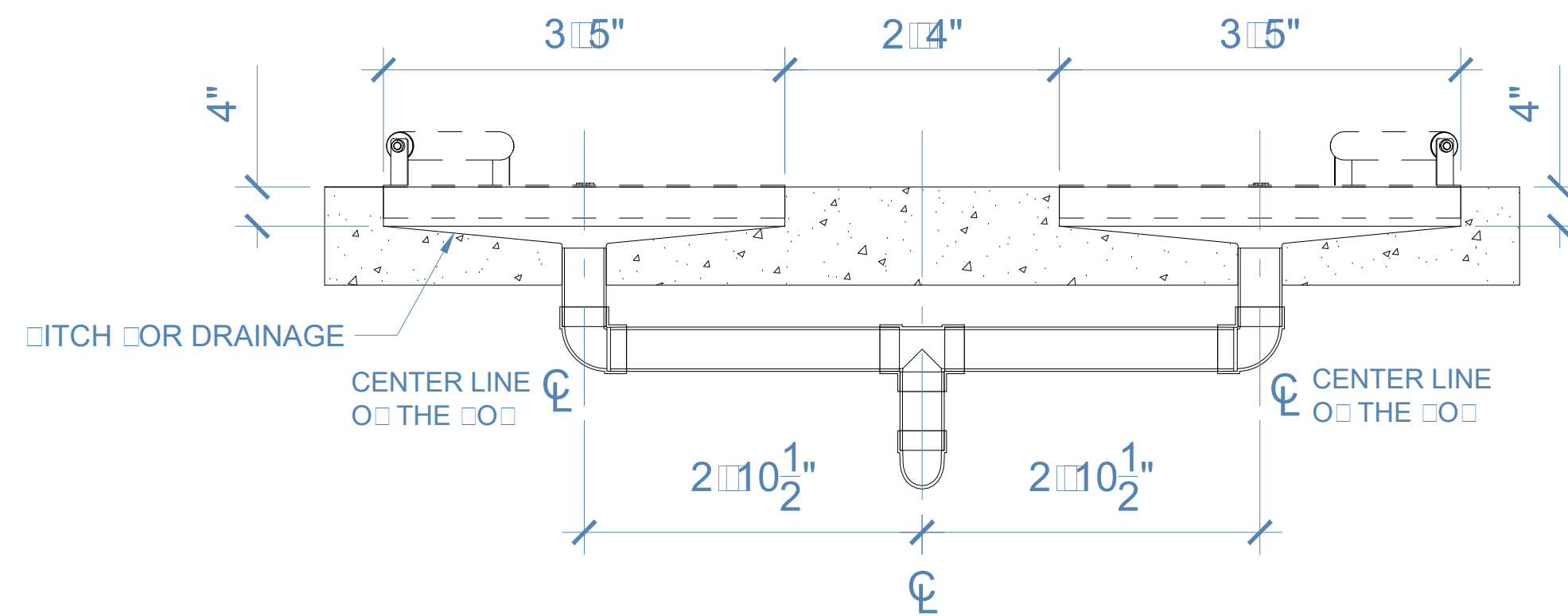
S3



A/A
S3

CORRELATOR KIT PLAN

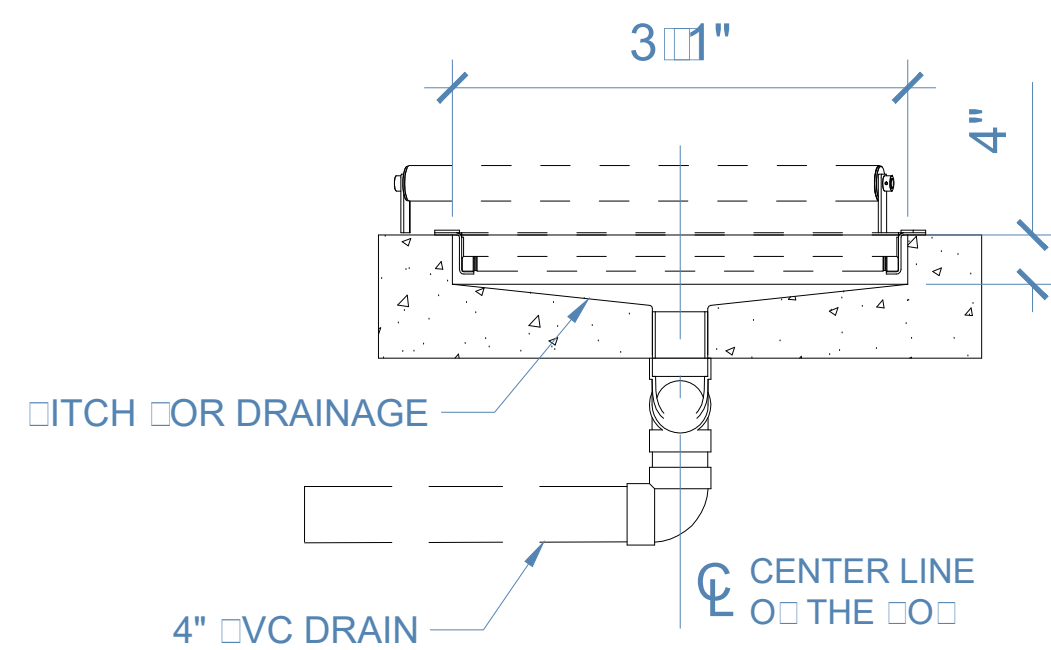
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B/B
S3

SECTION

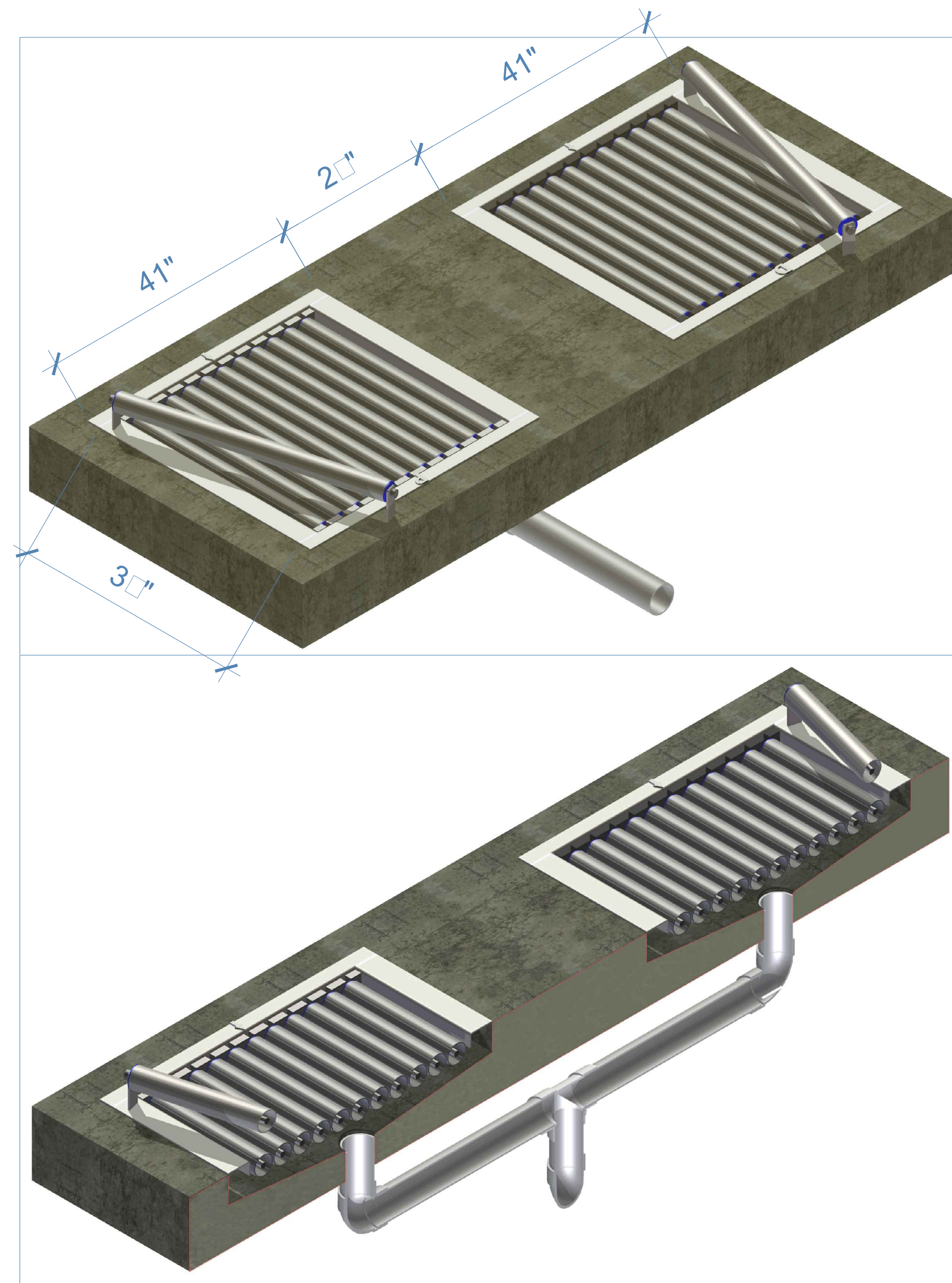
SCALE: 3/4" = 1'-0"



C/C
S3

SECTION

SCALE: 3/4" = 1'-0"



CONVEYOR AND EQUIPMENT © A.V.W. EQUIPMENT CO.

CONTRACTOR TO VERIFY ALL DIMENSIONS

CONCRETE FOOTINGS AND STRENGTH TO COMPLY WITH LOCAL BUILDINGS CODES.

DO NOT SUBSTITUTE FOR ARCHITECTURAL PLAN.



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GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

RECLAIM PIT

DRAWN BY

Mika Vrales

DATE

04/19/2019

REVISION

1

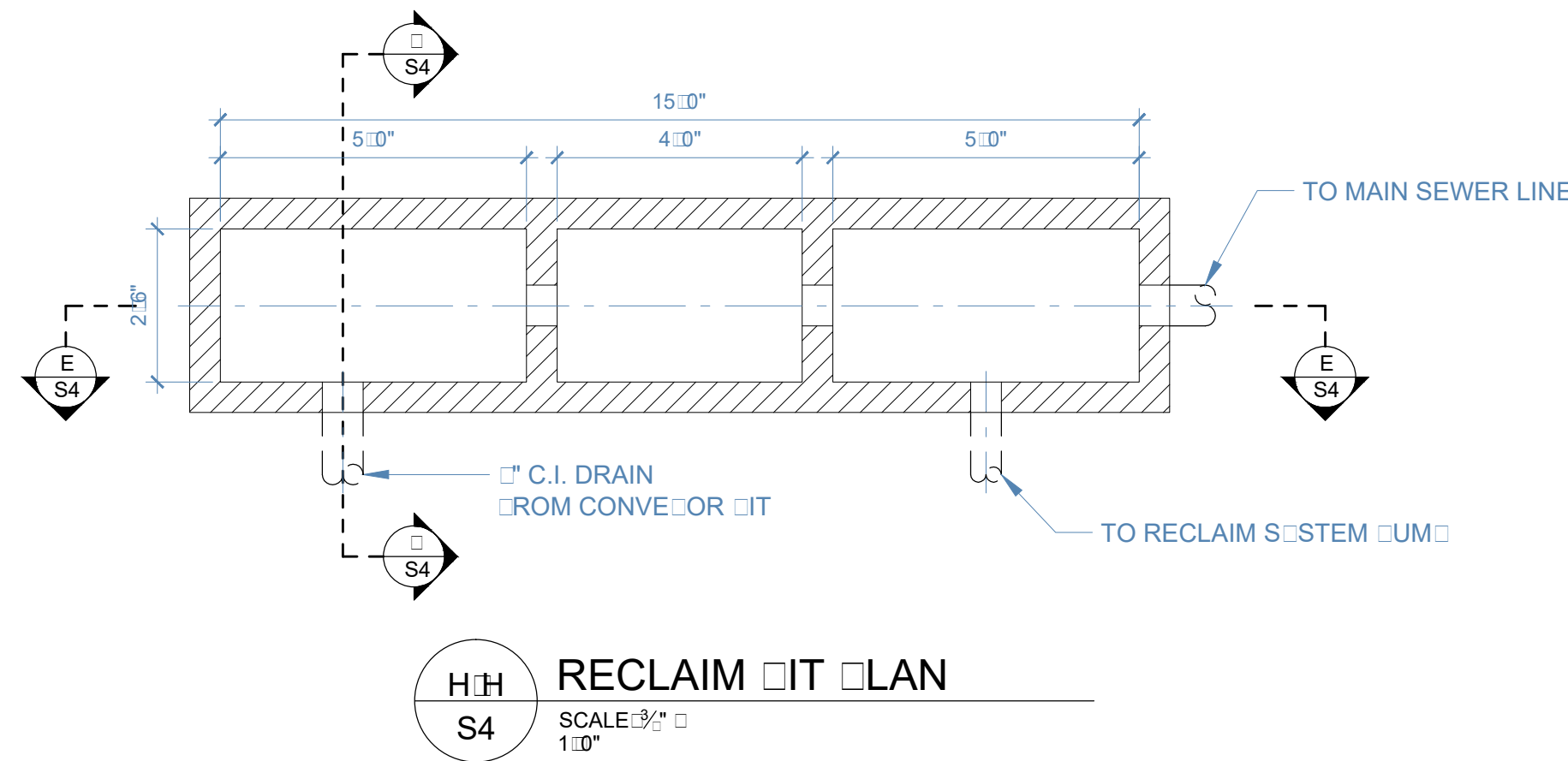
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DWG# E020901

PAGE# C0209015

SHEET

S4



CONVEYOR AND EQUIPMENT OF A.V.W. EQUIPMENT CO.

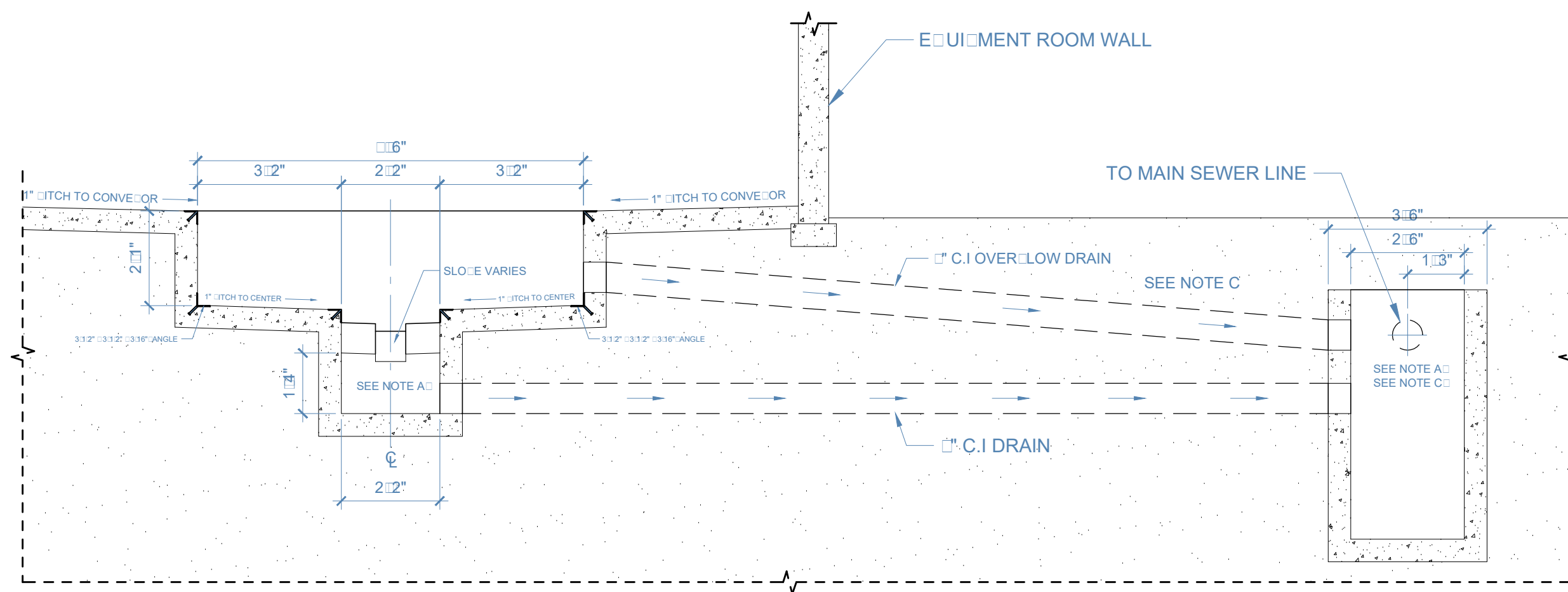
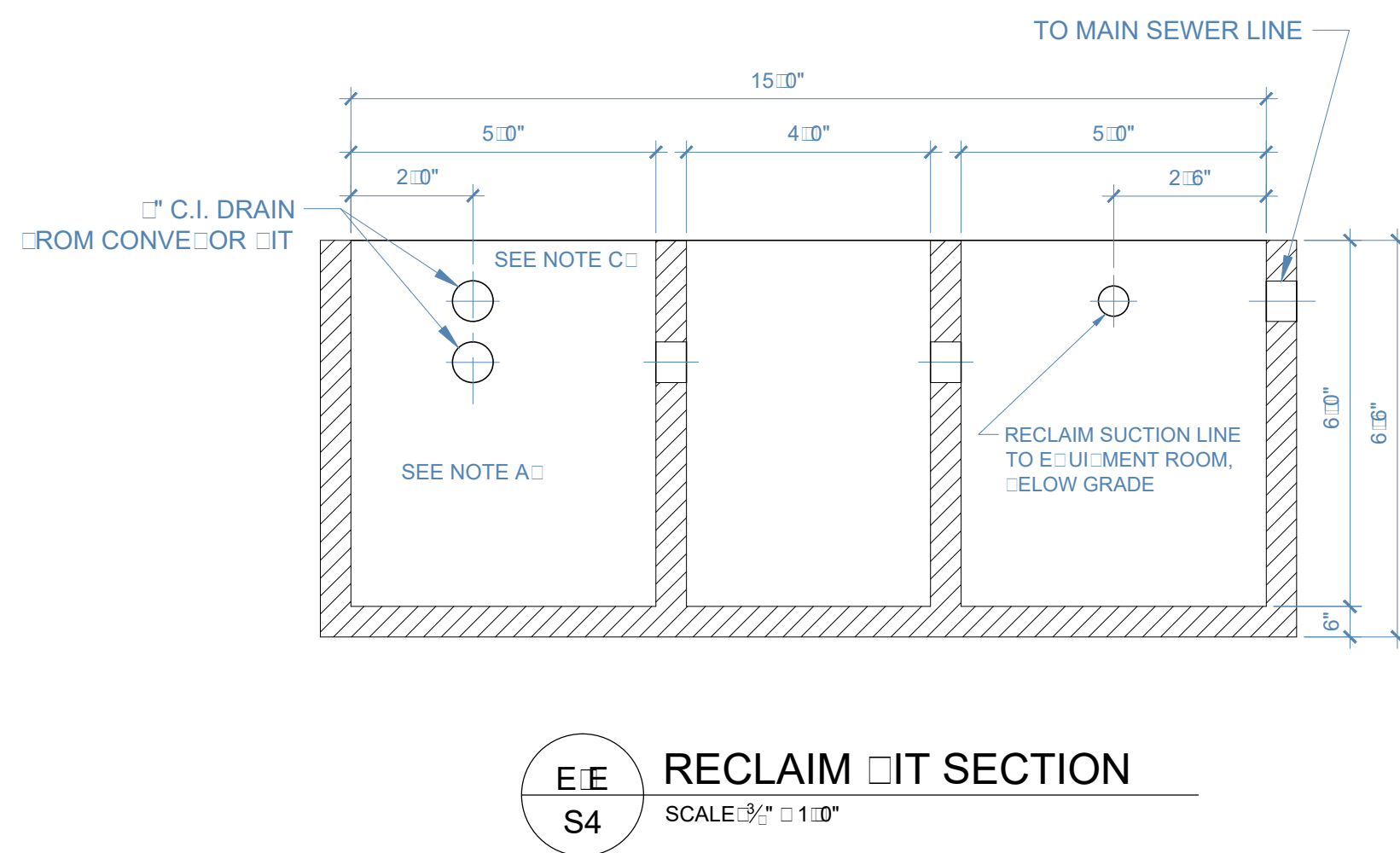
CONTRACTOR TO VERIFY ALL DIMENSIONS

CONCRETE FOOTINGS AND STRENGTH TO COMPLY
WITH LOCAL BUILDINGS CODES.

DO NOT SUBSTITUTE FOR ARCHITECTURAL PLAN.

NOTES

- LOCATION TO BE DETERMINED BY SLOPE FROM CONVEYOR PIT.
- RECLAIM PIT COVERS TO BE PROVIDED BY OTHERS.
- MATCH DOWNWARD SLOPE OF THE DRAIN LINES TO RECLAIM PIT.





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GENERAL NOTES

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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

CONVEYOR PIT STEEL 1

DRAWN BY

Mika Vrales

DATE

04/19/2019

REVISION

1

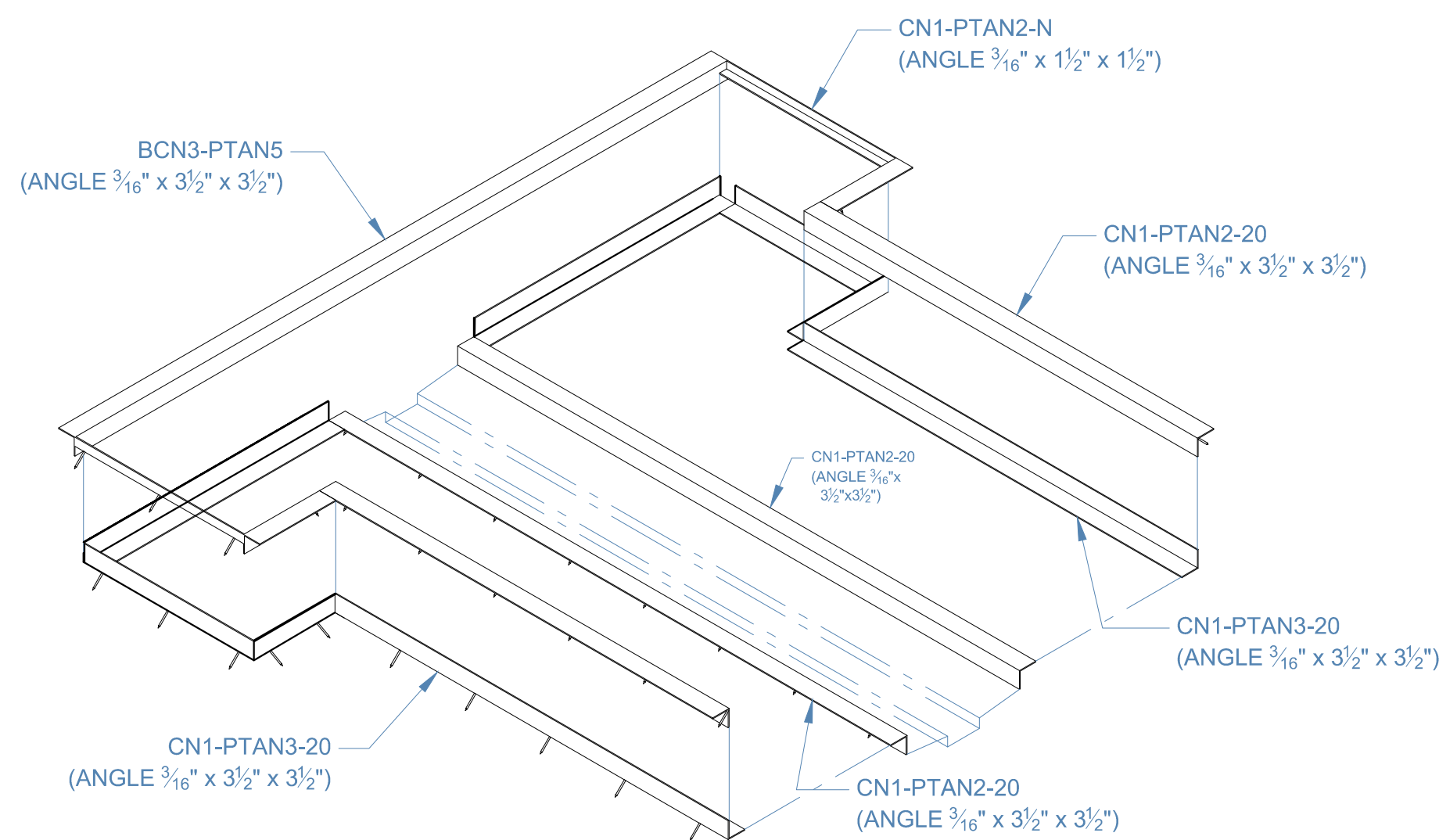
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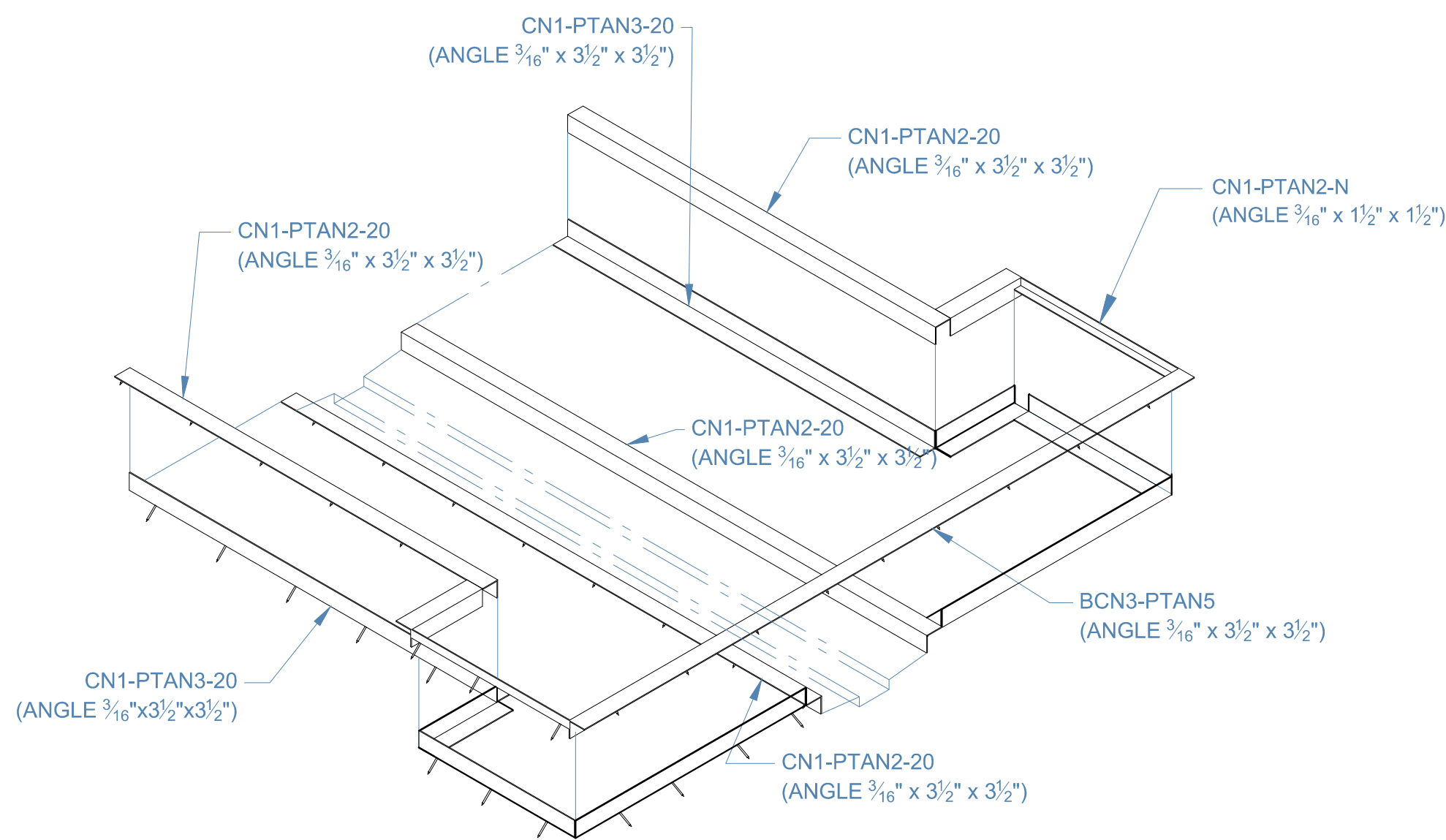
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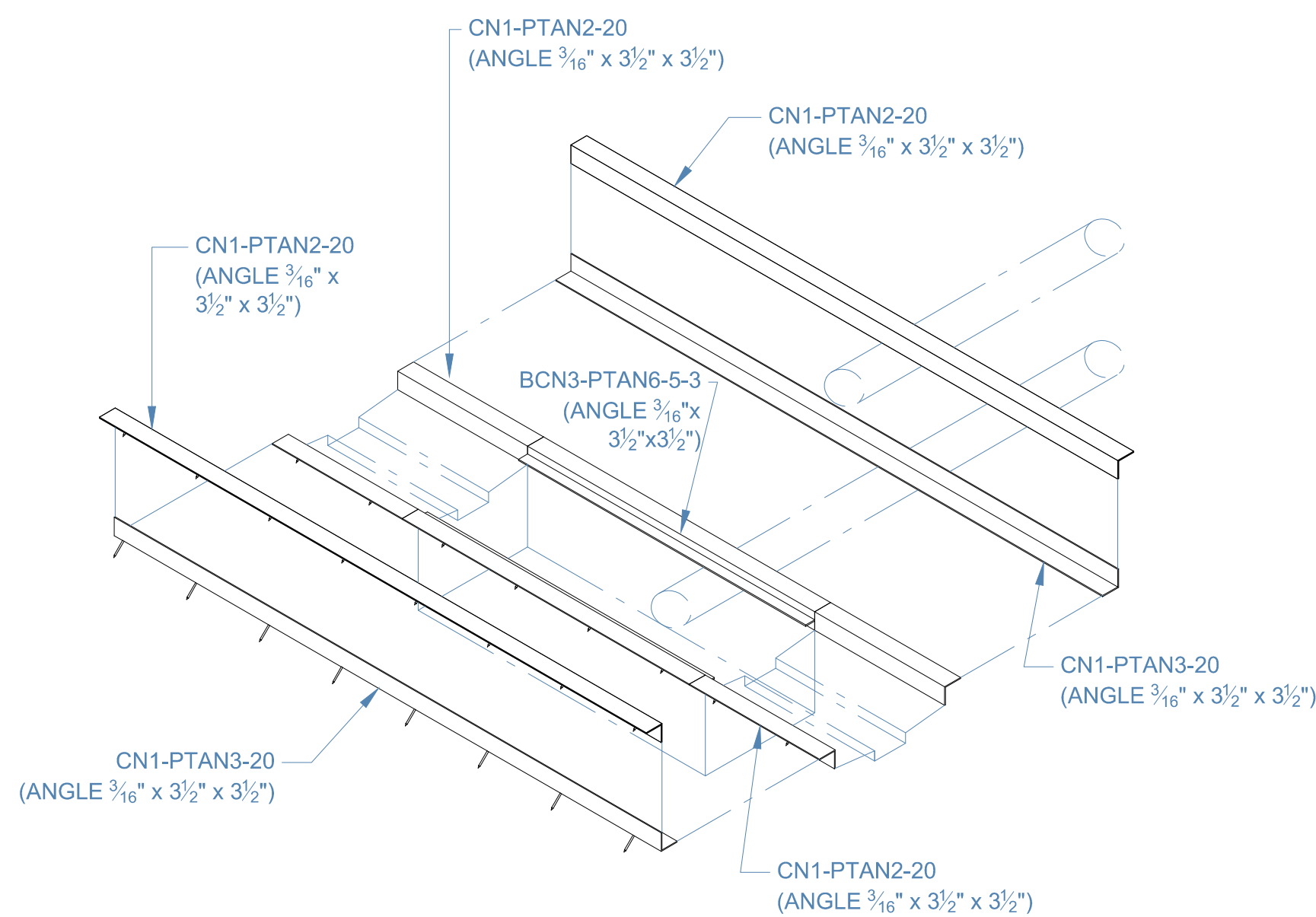
S5



A-A
S5
CONVEYOR PIT DRIVE SECTION
SCALE: 1/2" = 1'-0"



C-C
S5
CONVEYOR PIT TAKE-UP SECTION
SCALE: 1/2" = 1'-0"



B-B
S5
CONVEYOR PIT TRENCH SECTION
SCALE: 1/2" = 1'-0"



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GENERAL NOTES

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CUSTOMER NAME

**WV SERVICES
CAR WASH
DESIGNER**

PROJECT NAME

DRAWING NAME

CONVEYOR PIT STEEL 2

DRAWN BY

Mika Vratas

DATE

04/19/2019

REVISION

1

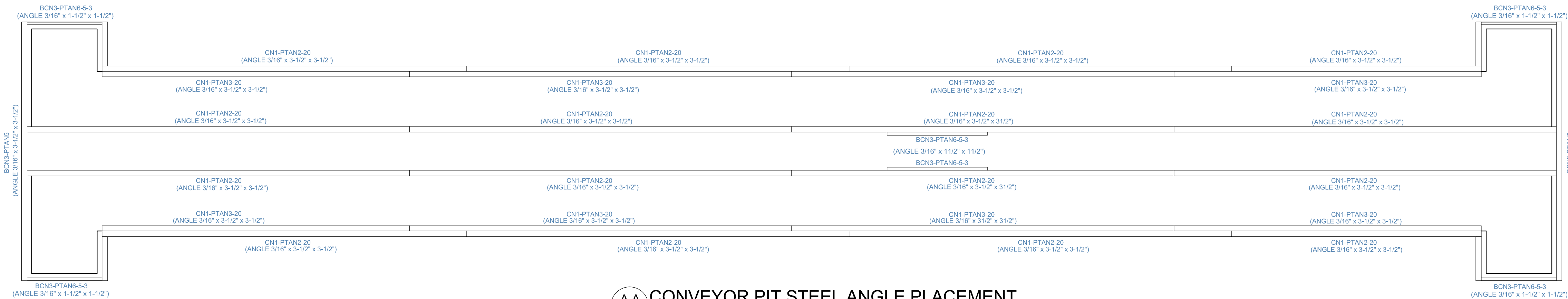
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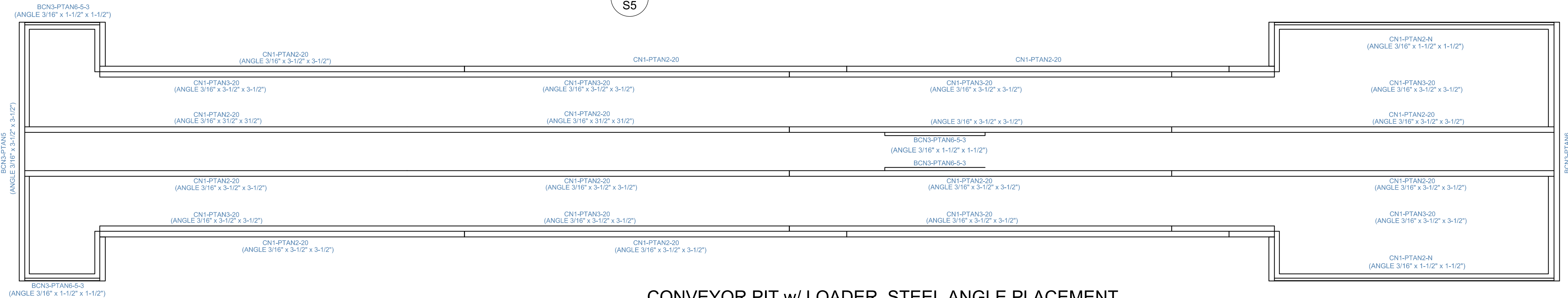
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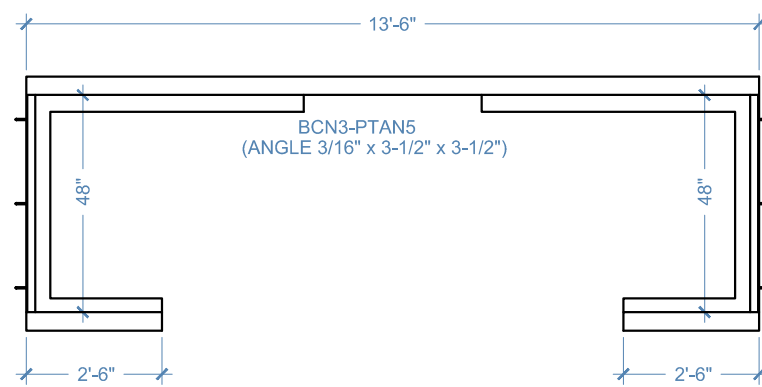
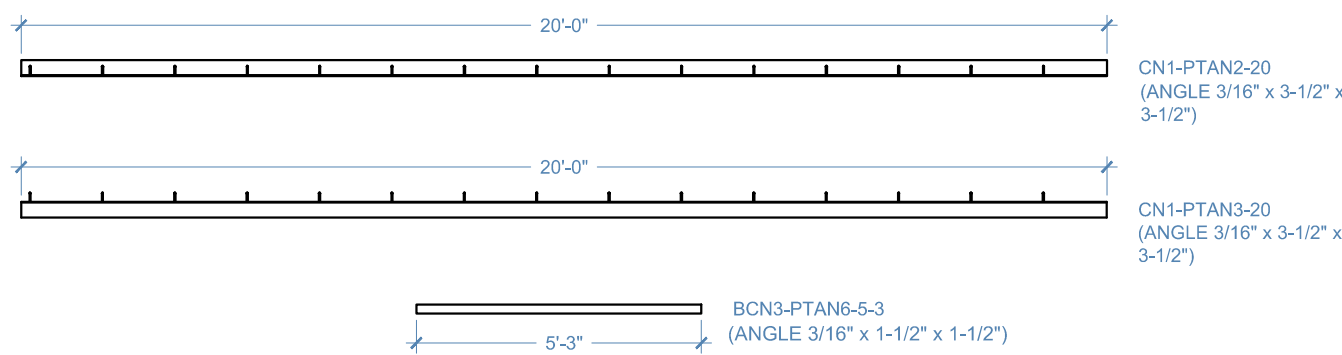
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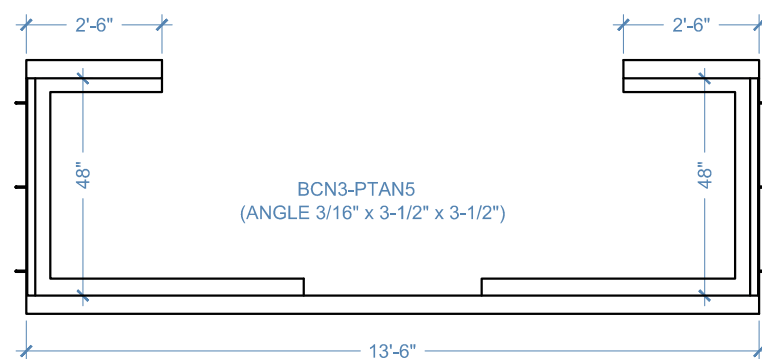
**A-A
S5** CONVEYOR PIT STEEL ANGLE PLACEMENT



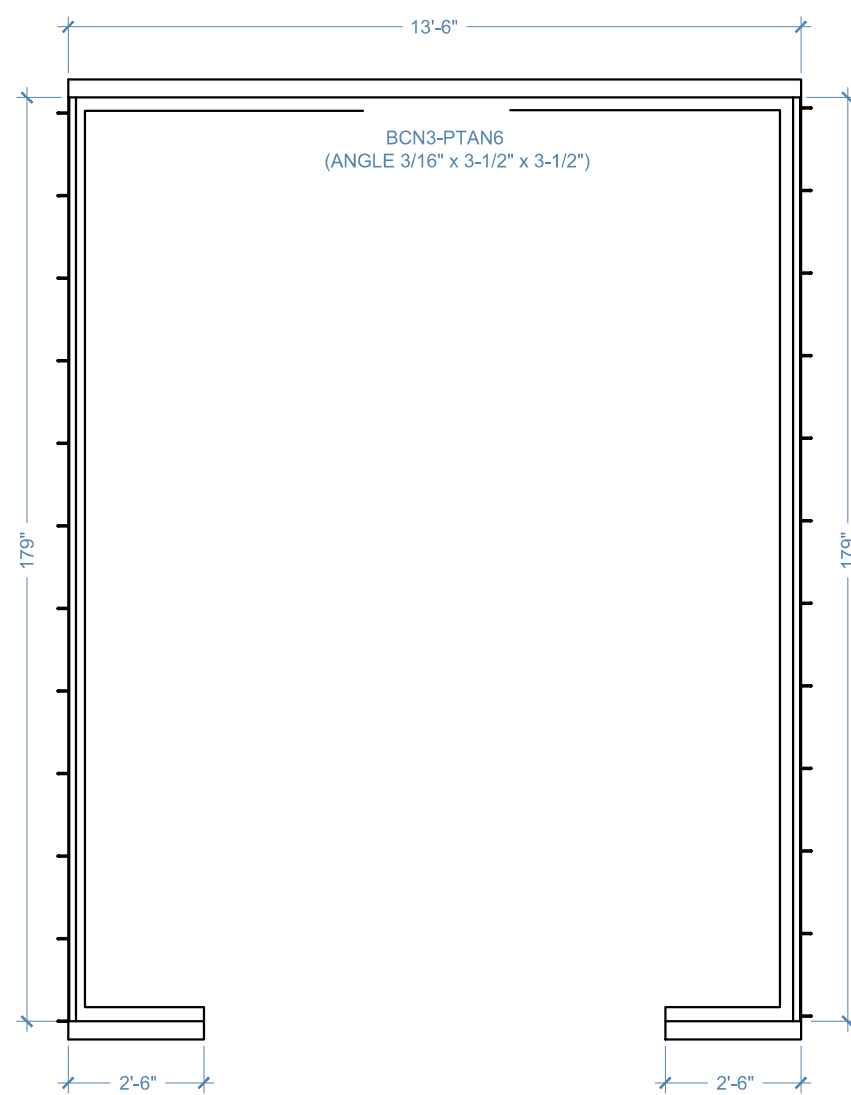
CONVEYOR PIT w/ LOADER STEEL ANGLE PLACEMENT



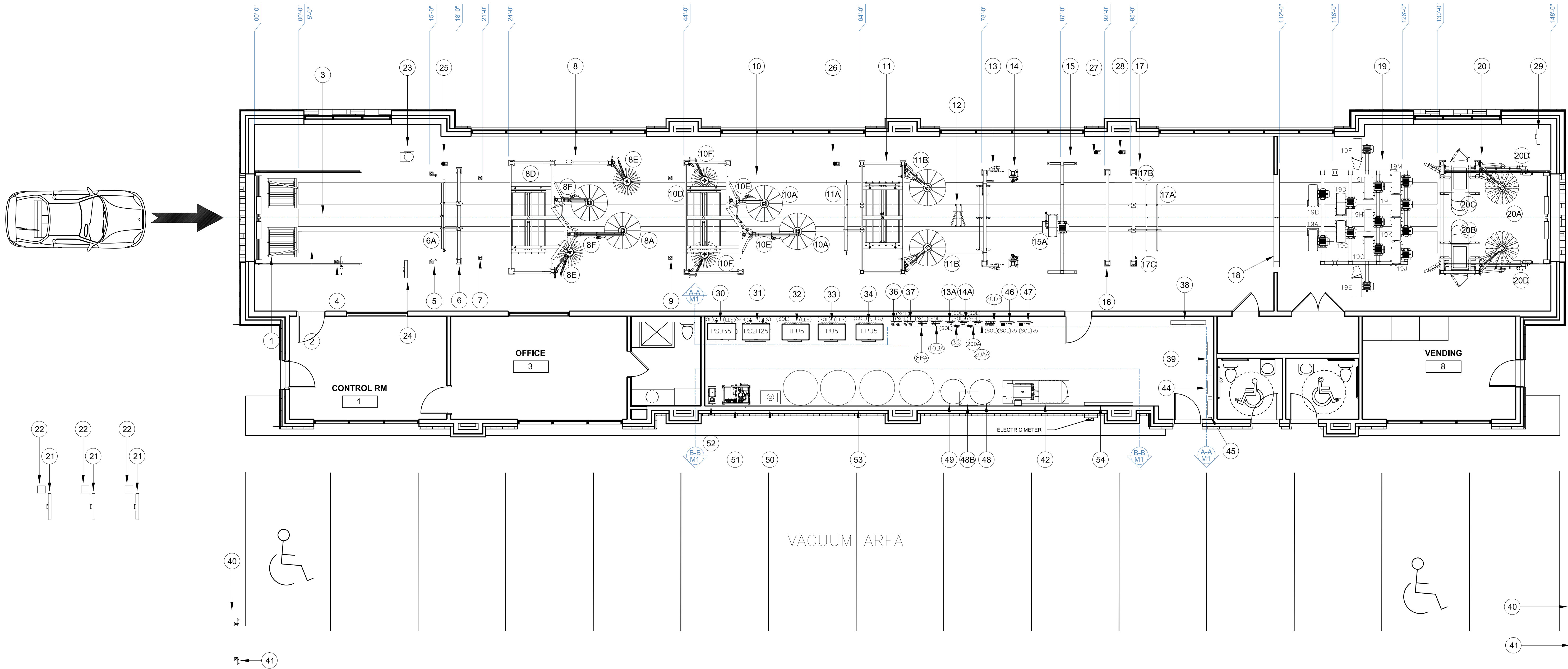
**A-A
S5** CONVEYOR PIT DRIVE REGULAR



**A-A
S5** CONVEYOR PIT TAKE-UP REGULAR



**A-A
S5** CONVEYOR PIT LOADER TAKE-UP & DRIVE w/ MAIN TAKE-UP



ELECTRICAL LEGEND

- UNCTION DO REQUIRED SEE MANUFACTURES SPECIFICATIONS
- 3 PHASE MOTOR REQUIRES ELECTRICAL DISCONNECT
- LLS LOW LEVEL SWITCH
- RS REMOTE PULSE SWITCH
- SOL SOLENOID
- SS START STOP
- 1 RUN TO MCC
- 2 INPUT TO CONTROLLER
- UNCTION DO
- 10V RUN TO CONTROLLER
- ESER PHOTO EYE SENDER/RECEIVER
- RUN TO MCC AND CONTROLLER
- NOTE ALL CONDUIT CONNECTIONS TO THE SURFACE MOUNTED

1C	AA5C	Attached MIRROR RINSE	41	HE2031530H	PHOTO EYES SET 4 STAND	54	MAN	MAIN ELECTRIC PANEL
1D	AA5D3	Attached TO MANIFOLD	40	HE1031530H	PHOTO EYES SET 30 STAND	53	TANK	WATER TANK R400102H004
1A	AA5D2	Attached TO MANIFOLD	29	SEL C	SECTIONAL LED CABINET	52	SR20L	LOW PRESSURE PUMP
1	AA0	EMITTER ARCH 2 RAIN PARS and MIRROR RINSE	2	LIS	LED STRIP YELLOW	51	CLEAN	URECLEAN R.O. SYSTEM
16	AA1	APPLICATOR ARCH or ULTRA GLOSS	2	LIS	LED STRIP ORANGE	50	COIL	HEATING BOILER PACKAGE
15A	L0115D35	LOWER PRODUCER 10H AIR GATE	26	LIS	LED STRIP BLUE	49	AIR CO	AIR COMPRESSOR
15	L1A C	CENTA ARCH 1 LOWER PRODUCER 15H	25	LIS	LED STRIP BLUE	4A	AIR CO	DRYER
14	S01	PIVOTING SWIRLING SIDE PLASTER	24	CO S	CONFIRMATION SIGN	4	AIR CO	AIR COMPRESSOR DRYER
13	O1	PIVOTING OSCILLATING HIGH PRESSURE ARCH	23	ITO	INSTRUCTIONAL TOWER	4	HOL	HYDRAULIC SYSTEM
12	1259	OSCILLATING PUMPER PLASTER FRONT REAR	22	A CASH	AUTO CASHIER 3	46	HOL	HYDRAULIC SYSTEM
11	319	SIDE WASHER	21	M T	ELECTRIC MENU TOWER 3	45	VD VAC	VD FOR EURO VAC 2
11A	SW2	Attached AVALANCHE	20D	T3CUS999	TIRE DRESSING APPLICATOR	44	VD VAC	VD FOR EURO VAC 1
11	MC2	MITTER CURTAIN SIDE WASHER AVALANCHE	20C	HT2	SOLARONIC HEATER DRYER	43	E VAC	EURO VAC CENTRAL 50H 2
10E	S0110	CURVED SOA FOAMER	20	HT2	SOLARONIC HEATER DRYER	42	E VAC	EURO VAC CENTRAL 40H 1
10D	MM2	MITTER CURTAIN	20A	SW2	SIDE MIRROR WIPER	39	MCC	MOTOR CONTROL CENTER
10A	WA1	WRA AROUND	20	M1	FINISHING MODULE	3	MCC	MOTOR CONTROL CENTER or Belt
10	WC3	WRA MITTER COMBO	19M	L0115D10	LOWER PRODUCER 10H ADAPTER	3	2SL34	WATER CONTROL PANEL 4 SOLENOIDS 34
9	WA1A	WHEEL RITE APPLICATOR	19L	L0115D10	LOWER PRODUCER 10H ADAPTER	36	4SL34	WATER CONTROL PANEL 4 SOLENOIDS 34
	S0110	CURVED SOA FOAMER	19L	L0115D10	LOWER PRODUCER 10H ADAPTER	35	WA1	AIR CONTROL PANEL
E	C0405	CONTOUR CRUSH	19	L0115D10	LOWER PRODUCER 10H ADAPTER 4 ROW	34	HU5	SHORT HYDRAULIC POWER UNIT
D	MM2	MITTER CURTAIN	19I	L0115D10	LOWER PRODUCER 10H ADAPTER	33	HU5	SHORT HYDRAULIC POWER UNIT
A	WA1	WRA AROUND	19H	L0115D10	LOWER PRODUCER DRO DOWN 10H ADAPTER	32	HU5	SHORT HYDRAULIC POWER UNIT
	WAC0405	WRA MITTER CONTOUR COMBO	19G	L0115D10	LOWER PROD. DRO DOWN 10H ADAPTER 3 ROW	31	S2H25	DOUBLE STACK PUMING STATION, 220GPM
	CTA1A	CHEMICAL TIRE APPLICATOR	19D	L10N00IV2396	PIVOTING NOZZLE NOZZLE FRONT TO BACK	30	SD35	SINGLE STACK PUMING STATION, 35GPM
6A	319	Attached AVALANCHE	19D	L0115D10	LOWER PROD. 10H PIVOTING NOZZLE NOZZLE	20D	A512	DUAL LORET PUMP PANEL NON FOAMING
6	AA2	DUAL APPLICATOR ARCH AVALANCHE	19C	L10N00IV2396	PIVOTING NOZZLE NOZZLE FRONT TO BACK	20DA	WA1	AIR CONTROL PANEL
5	GS1A	RE GUN	19C	L0115D10	LOWER PROD. 10H PIVOTING NOZZLE 3 ROW	20AA	WA1	AIR CONTROL PANEL
4	HE20315	DUAL PHOTO EYES	19	L0115D10	LOWER PRODUCER 10H ADAPTER	14A	WA1	AIR CONTROL PANEL
3	GR	GRIT GRATING	19A	L0115D10	LOWER PRODUCER 10H ADAPTER 4 ROW	13A	WA1	AIR CONTROL PANEL
2	CN3	DUAL BELT CONVEYOR 30" WIDE 130 LG.	19	L1C1010	LOWER ARCH 10H 2 LOWER PRODUCER 10H	10A	WA1SK0	AIR ASSIST KIT PANEL
1	RC4	ROLLER CORRELATOR GUIDE RAILS	1	RWA1	GLASS LOCK ARCHWAY	0A	WA1SK0	AIR ASSIST KIT PANEL
EQUIPMENT			EQUIPMENT			SUPPORT		
ITEM	PART	DESCRIPTION	ITEM	PART	DESCRIPTION	TAG	PART	DESCRIPTION
EQUIPMENT LIST TUNNEL			EQUIPMENT LIST TUNNEL			EQUIPMENT LIST MECHANICAL ROOM		



GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME
ELECTRICAL PLAN

DRAWN BY

Mika Vrales

DATE

04/21/2011

REVISION

2

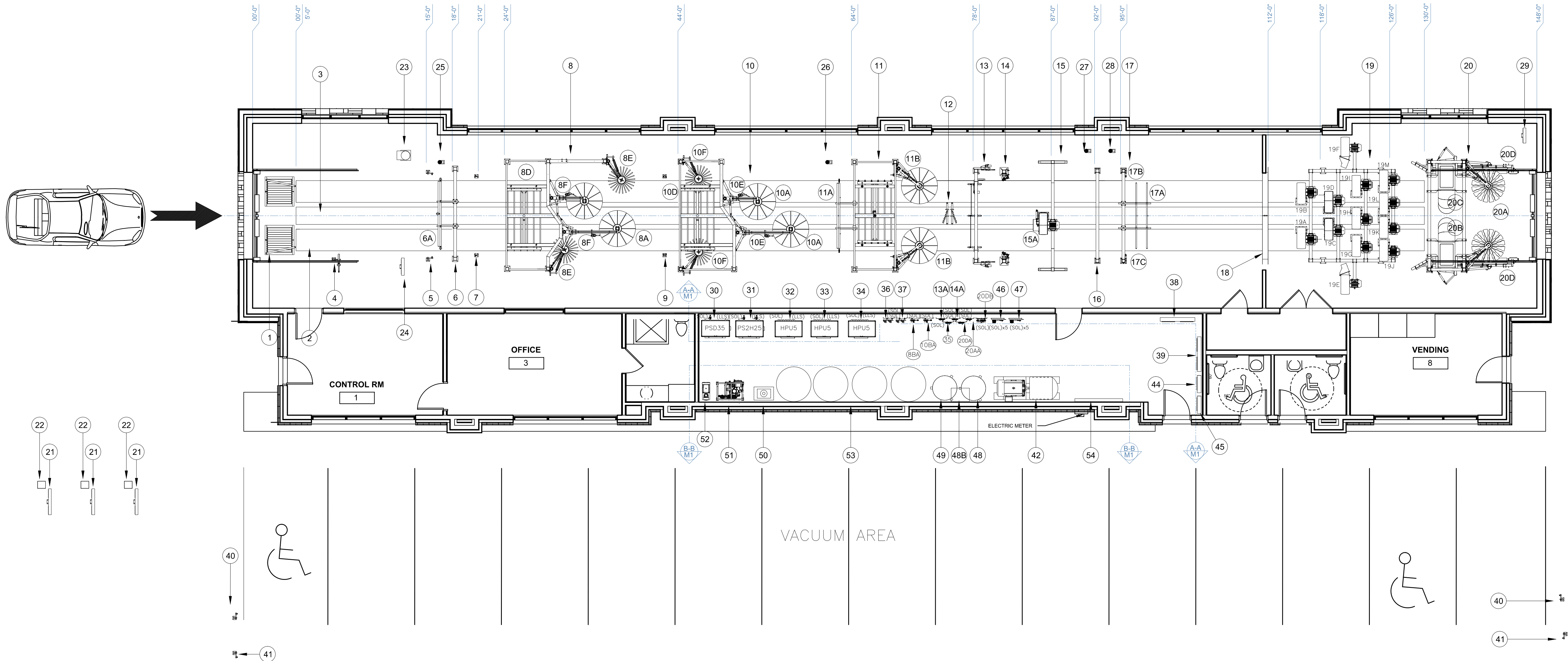
S/O# N/A

DWG# E030901

PAGE# C0309011

SHEET

E1



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GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

**WV SERVICES
CAR WASH
DESIGNER**

PROJECT NAME

DRAWING NAME

ELECTRICAL DETAILS

DRAWN BY

Mika Vrales

DATE

04/19/201

REVISION

1

S/O# N/A

DWG# E03:0901

PAGE# CO3:0901:2

SHEET

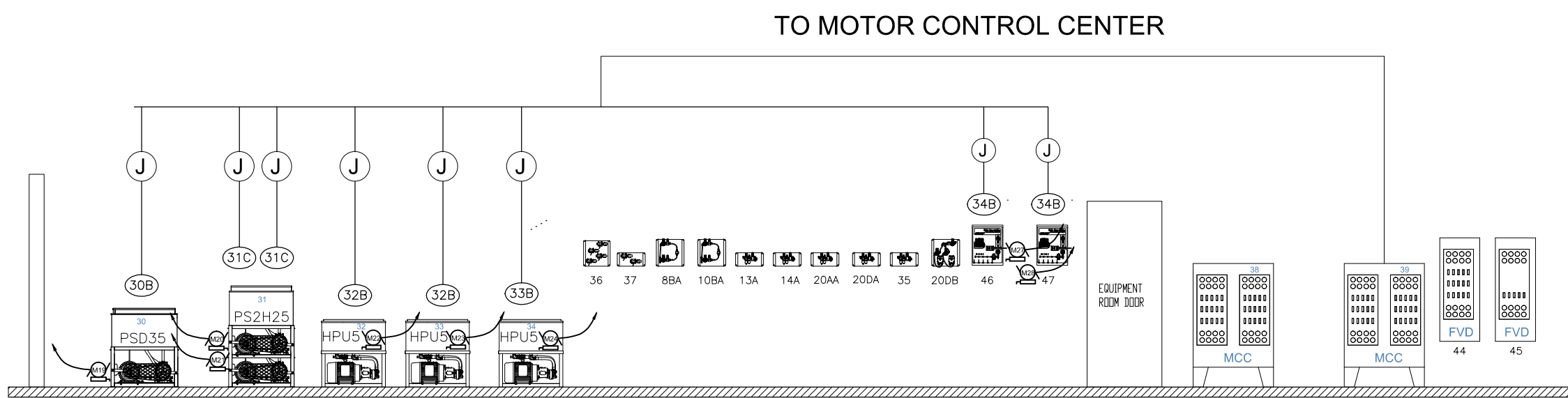
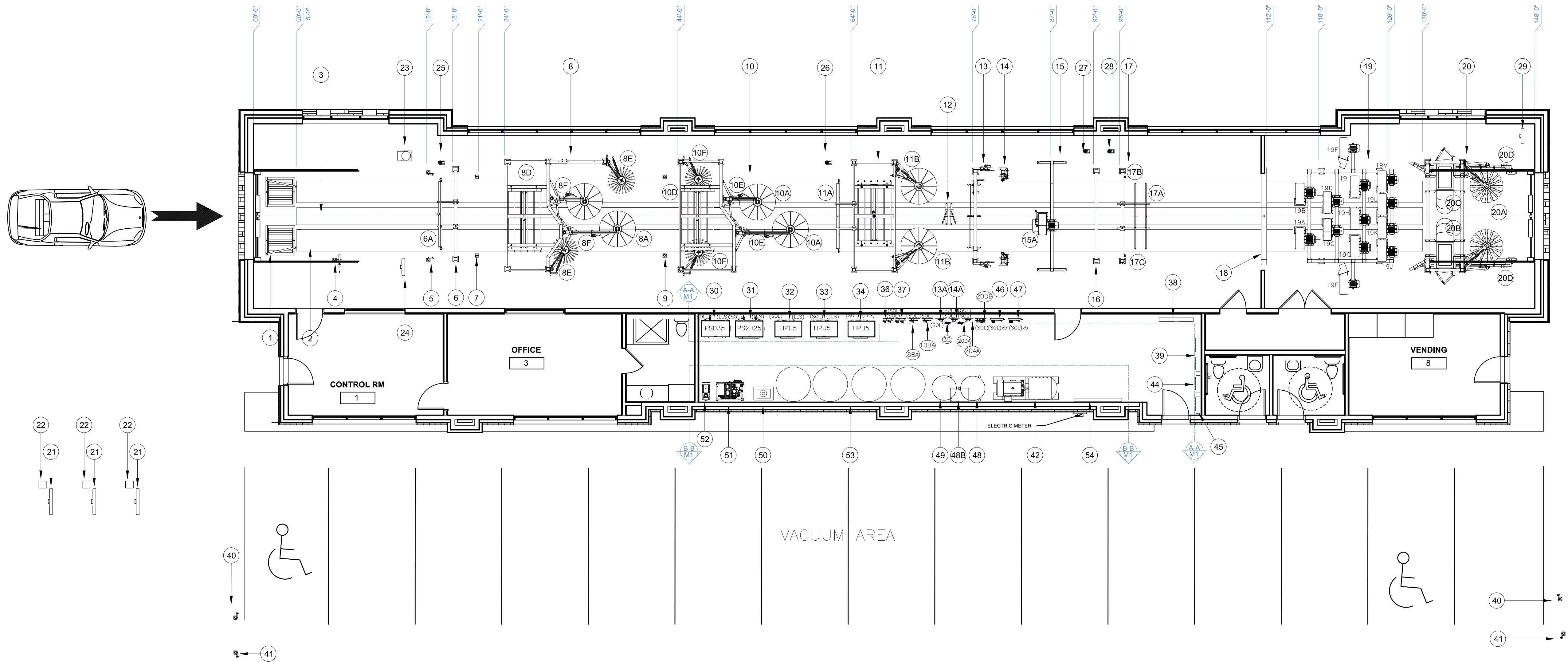
E1

ELECTRICAL LEGEND

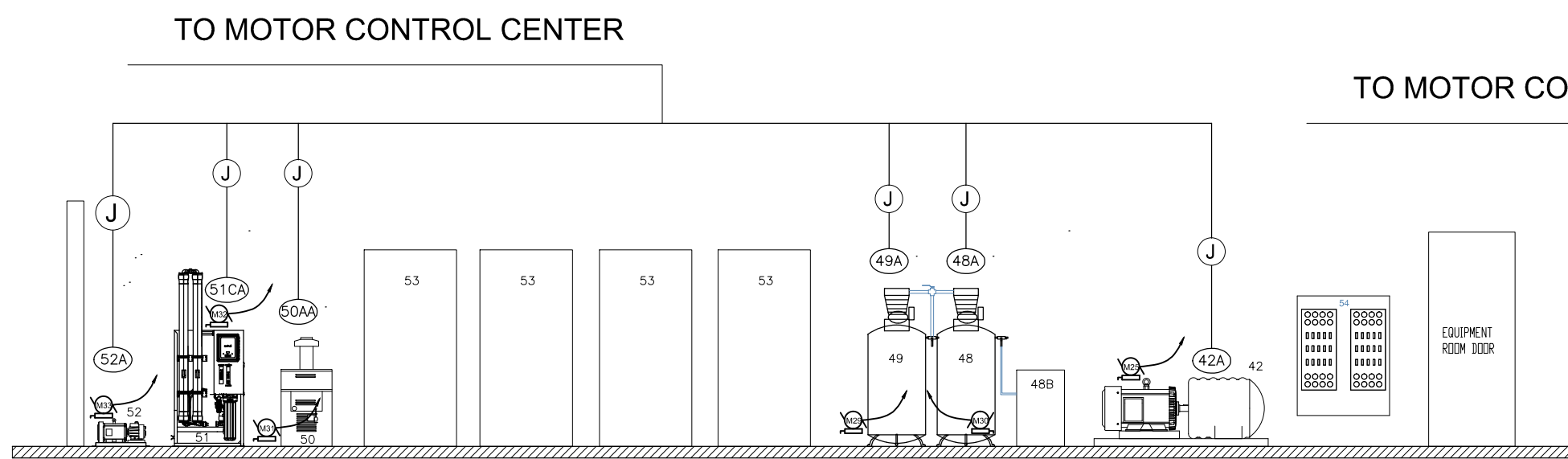
- FUNCTION REQUIRED SEE MANUFACTURES SPECIFICATIONS
- 3 PHASE MOTOR REQUIRES EXTERNAL DISCONNECT
- LLS LOW LEVEL SWITCH
- R/S REMOTE PULSE SWITCH
- SOL SOLENOID 1 RUN TO MCC
- SS START STOP 2 INPUT TO CONTROLLER
- RUN TO MCC AND CONTROLLER
- NOTE: ALL CONDUIT & CONNECTIONS TO BE SURFACE MOUNTED
- ES ESER PHOTO EYE SENDER/RECEIVER
- FUNCTION REQUIRED 10V RUN TO CONTROLLER

3	2SL3/4	WATER CONTROL PANEL 4 SOLENOIDS 3/4
36	4SL3/4	WATER CONTROL PANEL 4 SOLENOIDS 3/4
35	WA1	AIR CONTROL PANEL
34	HU5	5 PORT HYDRAULIC POWER UNIT
33	HU5	5 PORT HYDRAULIC POWER UNIT
32	HU5	5 PORT HYDRAULIC POWER UNIT
31	S2H25	DOUBLE STACK PUMPING STATION, 2x20GPM
30	SD35	SINGLE STACK PUMPING STATION, 35GPM
20D	AS1/2	DUAL FLOTUM PANEL NON FOAMING
20DA	WA1	AIR CONTROL PANEL
20AA	WA1	AIR CONTROL PANEL
14A	WA1	AIR CONTROL PANEL
13A	WA1	AIR CONTROL PANEL
10A	WA1/SK	AIR ASSIST KIT PANEL
4A	WA1/SK	AIR ASSIST KIT PANEL
SUPOORT		
TAG	ART	DESCRIPTION
EQUIPMENT LIST MECHANICAL ROOM		

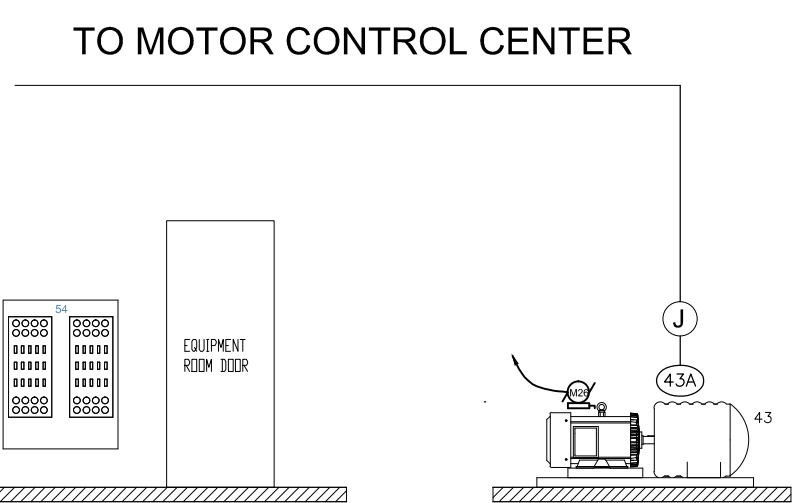
54	MAN	MAIN ELECTRIC PANEL
53	TANK	TANK 4x102H 4x4
52	SR20L	LOW PRESSURE PUMP
51	CLEAN	CURE CLEAN R.O. SYSTEM
50	OIL	HEATING OILER PACKAGE
49	AIR/CO	AIR COMPRESSOR
4A	AIR/CO	DRYER
4	AIR/CO	AIR COMPRESSOR DRYER
4	HCL	HYDRAULIC SYSTEM
46	HCL	HYDRAULIC SYSTEM
45	VD/VAC	VD FOR EURO VAC 2
44	VD/VAC	VD FOR EURO VAC 1
43	E/VAC	EURO VAC CENTRAL 50H 2
42	E/VAC	EURO VAC CENTRAL 40H 1
39	MCC	MOTOR CONTROL CENTER
3	MCC	MOTOR CONTROL CENTER for belt
SUPOORT		
TAG	ART	DESCRIPTION
EQUIPMENT LIST MECHANICAL ROOM		



A-A
M1
ELEVATION-MECHANICAL ROOM



B-B
M1
ELEVATION-MECHANICAL ROOM



C-C
M1
ELEVATION

ELECTRICAL LEGEND

- JUNCTION □ REQUIRED SEE MANUFACTURES SPECIFICATIONS
- 3 PHASE MOTOR REQUIRES EXTERNAL DISCONNECT
- LLS LOW LEVEL SWITCH
- RS REMOTE PULSE SWITCH
- SOL SOLENOID
- SS START STOP
- 1 RUN TO MCC
- 2 INPUT TO CONTROLLER
- RUN TO MCC AND CONTROLLER
- NOTE ALL CONDUIT CONNECTIONS TO BE SURFACE MOUNTED
- ES-ER PHOTO Emitter/Receiver
- JUNCTION □ 110V RUN TO CONTROLLER

3	2SL34	WATER CONTROL PANEL 4 SOLENOIDS 34
36	4SL34	WATER CONTROL PANEL 4 SOLENOIDS 34
35	WA1	AIR CONTROL PANEL
34	HU5	5 PORT HYDRAULIC POWER UNIT
33	HU5	5 PORT HYDRAULIC POWER UNIT
32	HU5	5 PORT HYDRAULIC POWER UNIT
31	S2H25	DOUBLE STACK PUMPING STATION, 220GPM
30	SD35	SINGLE STACK PUMPING STATION, 35GPM
20D	AS12	DUAL FLOW PUMP PANEL NON FOAMING
20DA	WA1	AIR CONTROL PANEL
20AA	WA1	AIR CONTROL PANEL
14A	WA1	AIR CONTROL PANEL
13A	WA1	AIR CONTROL PANEL
10A	WA1SK	AIR ASSIST KIT PANEL
1A	WA1SK	AIR ASSIST KIT PANEL
SUORT		
TAG	ART	DESCRIPTION
EQUIPMENT LIST MECHANICAL ROOM		

54	MAN	MAIN ELECTRIC PANEL
53	TANK	WATER TANK R400102H004
52	SR20L	LOW PRESSURE PUMP
51	CLEAN	CURE CLEAN R.O. SYSTEM
50	OIL	HEATING OILER PACKAGE
49	AIR CO	AIR COMPRESSOR
4A	AIR CO	DRYER
4	AIR CO	AIR COMPRESSOR DRYER
4	HCL	HYDRA CLEAN SYSTEM
46	HCL	HYDRA CLEAN SYSTEM
45	VD VAC	VD FOR EURO VAC 2
44	VD VAC	VD FOR EURO VAC 1
43	E VAC	EURO VAC CENTRAL 50H 2
42	E VAC	EURO VAC CENTRAL 40H 1
39	MCC	MOTOR CONTROL CENTER
3	MCC	MOTOR CONTROL CENTER or Controller
SUORT		
TAG	ART	DESCRIPTION
EQUIPMENT LIST MECHANICAL ROOM		



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GENERAL NOTES

NO. REVISION/ISSUE DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

ELECTRICAL DETAILS

DRAWN BY

Mika Vrales

DATE

04/19/201

REVISION

1

S/O# N/A

DWG# E03:0901

PAGE# CO3:0901:3

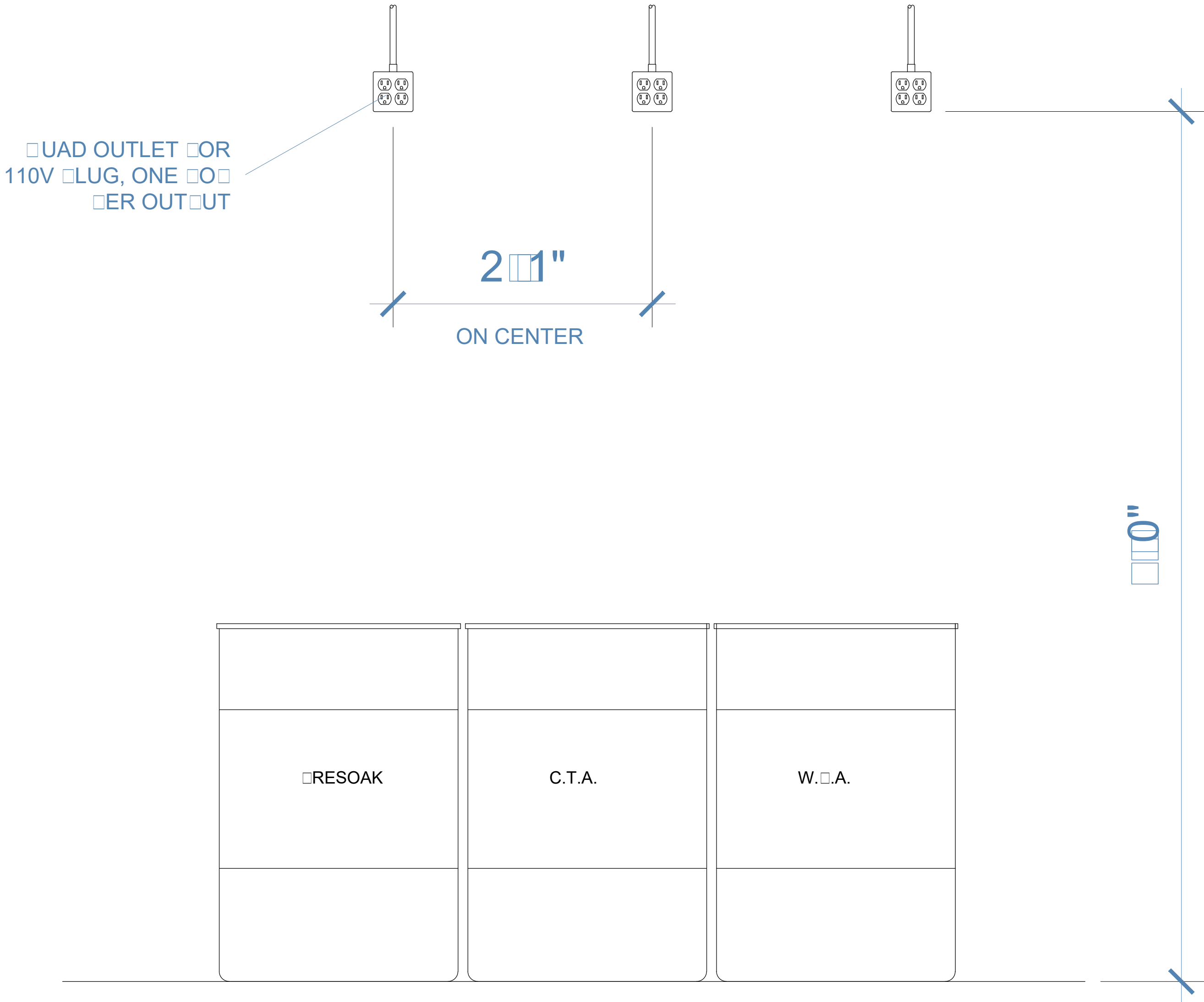
SHEET

E12



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GENERAL NOTES



ELECTRICAL DETAILS

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

ELECTRICAL DETAILS

DRAWN BY

Mika Vratnes

DATE

04/19/2018

REVISION

1

S/O# N/A

DWG# E030901

PAGE# CO309014

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E2



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GENERAL NOTES

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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME
MECHANICAL ROOM ELEVATIONS

DRAWN BY

Mika Vrales

DATE
04/20/2010

REVISION
2

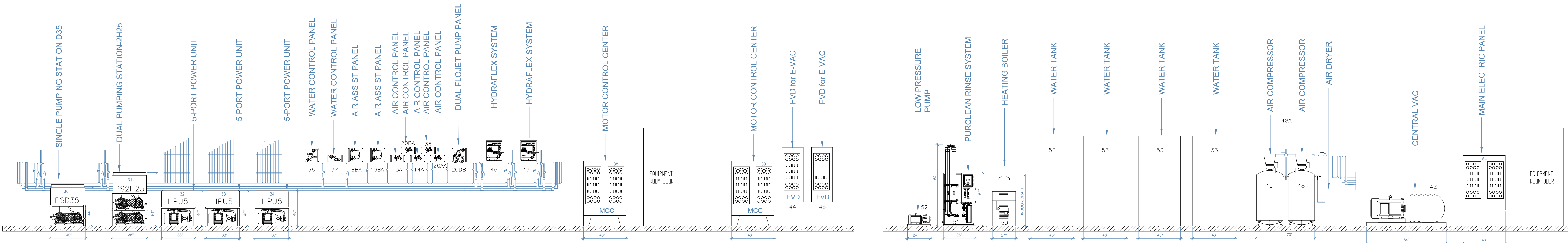
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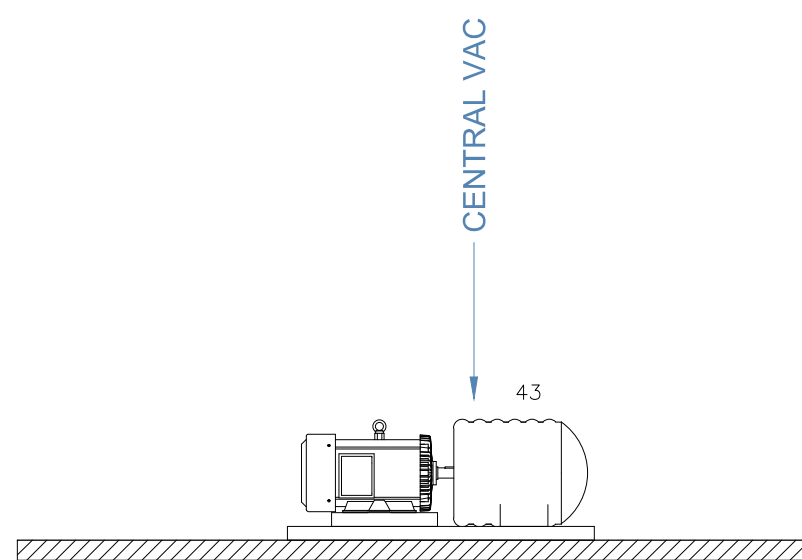
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1



A-A
M1
ELEVATION-MECHANICAL ROOM

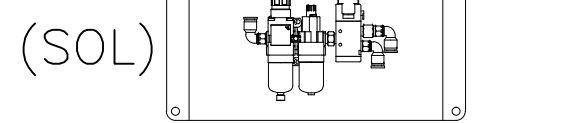
B-B
M1
ELEVATION-MECHANICAL ROOM



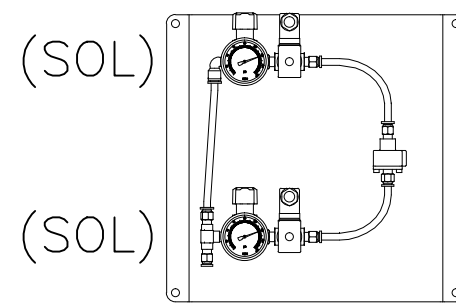
C-C
M1
ELEVATION

*ALL SOLENOIDS TO
BE WIRED w/ 110
VOLT PLUG ENDS
BY ELECTRICIAN

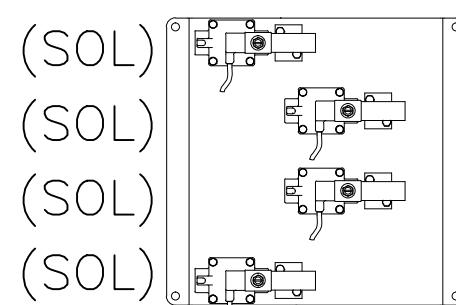
PANELS
(TO CONTROLLER)



AIR CONTROL PANEL

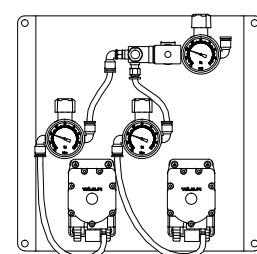


AIR ASSIST & RETRACT KIT PANEL



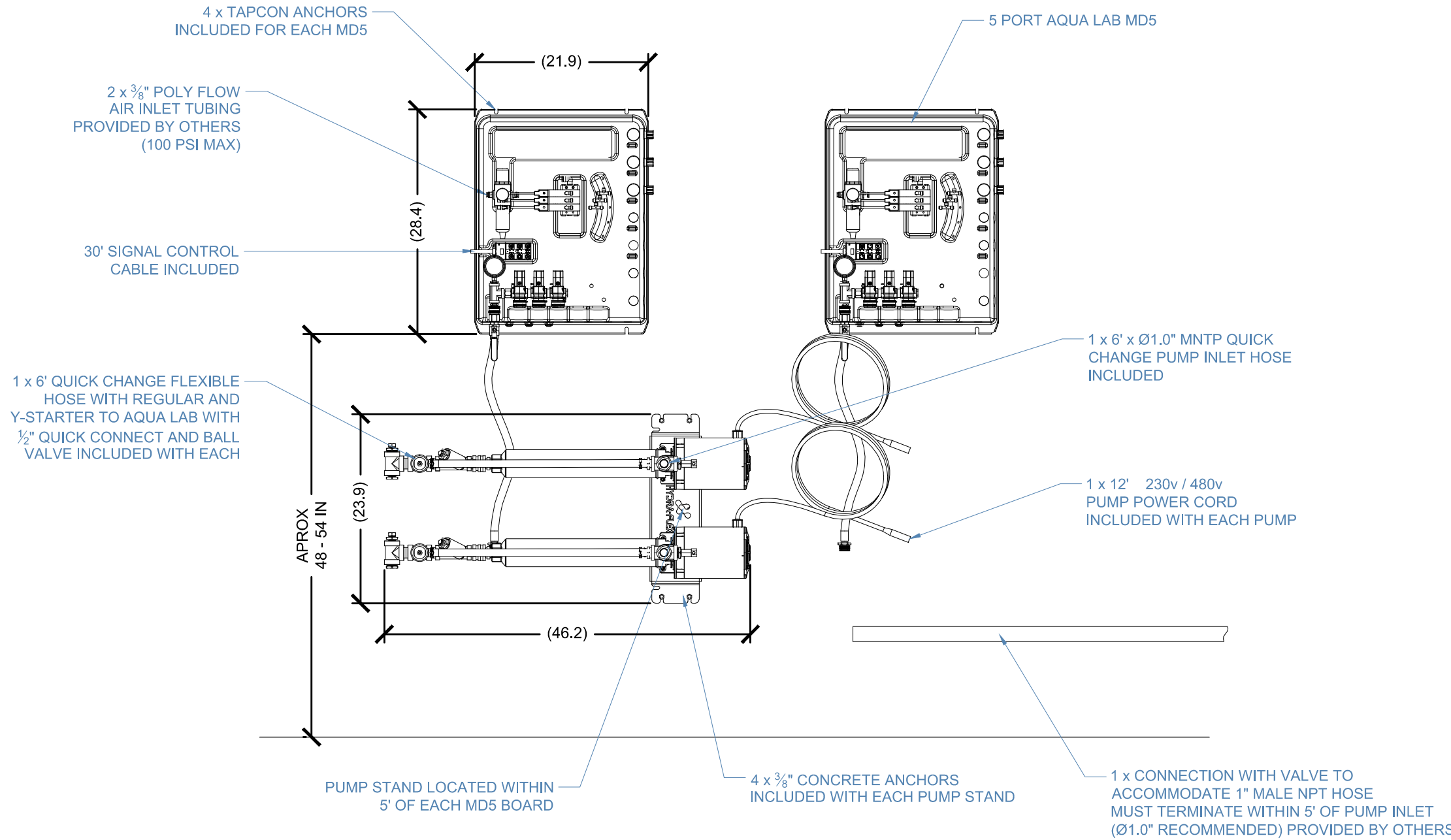
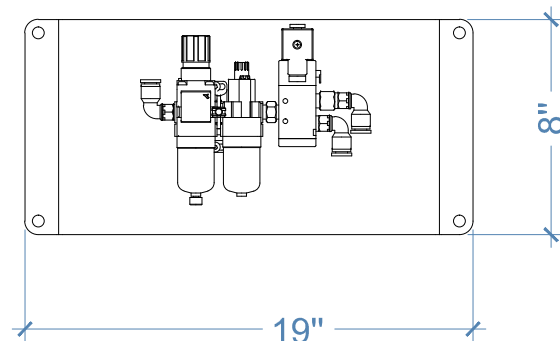
WATER CONTROL PANEL
w/ FOUR 3/4" SOLENOIDS

(SOL)



DUAL FLOJET PUMP PANEL

AIR CONTROL
PANEL



HYDRAFLEX CHEMICAL SYSTEM



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GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

WATER MANIOLD TUNNEL EEDS

DRAWN BY

Mika Vraes

DATE

04/20/201

REVISION

2

S/O# N/A

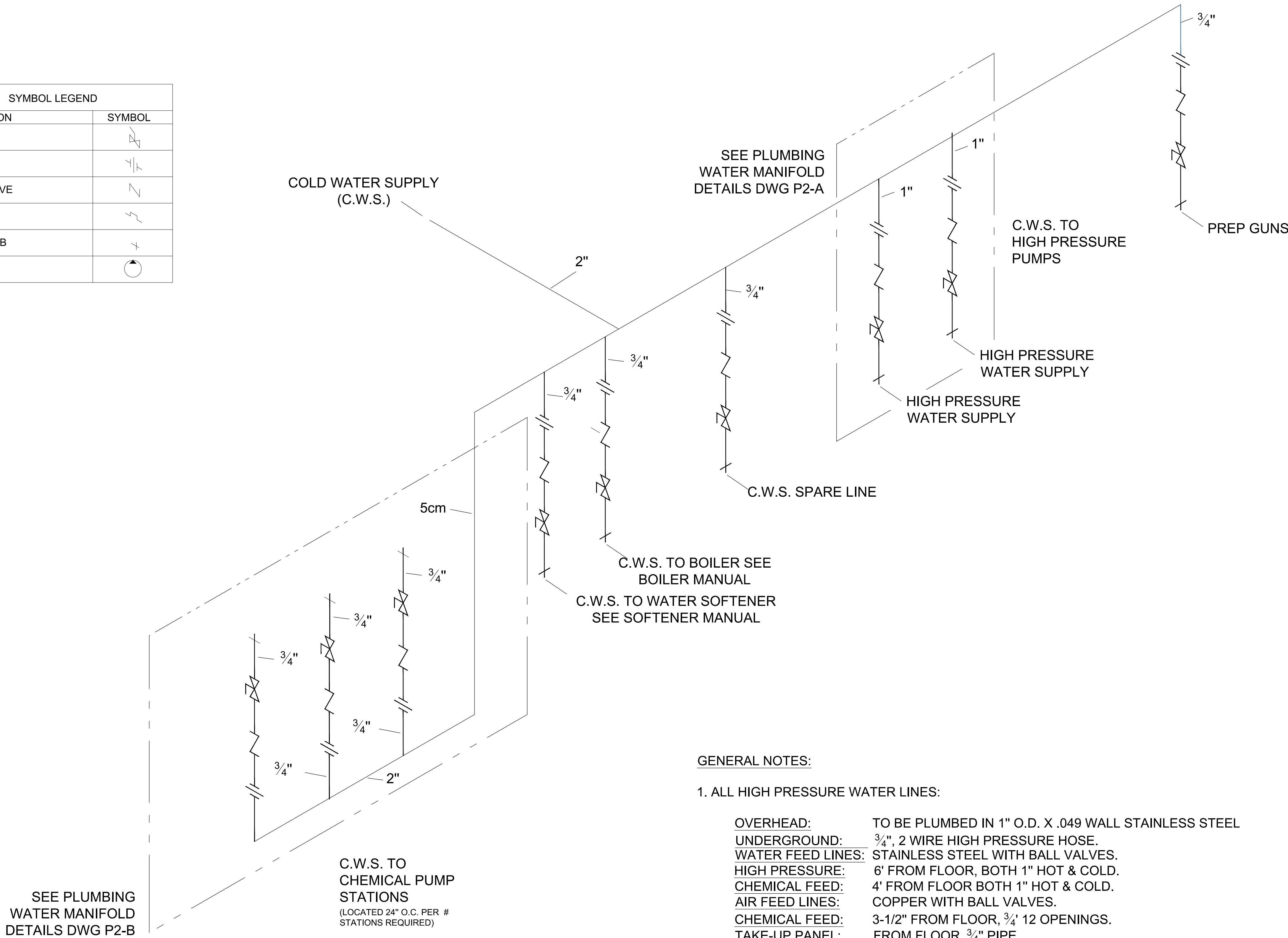
DWG# E4/0901

PAGE# CO4/0901/2

SHEET

2

SYMBOL LEGEND	
DESCRIPTION	SYMBOL
BALL	
UNION	
CHECK VALVE	
THERMO	
HOSE UBB	
PUMP	



GENERAL NOTES:

1. ALL HIGH PRESSURE WATER LINES:

OVERHEAD:

UNDERGROUND:

WATER FEED LINES:

HIGH PRESSURE:

CHEMICAL FEED:

AIR FEED LINES:

CHEMICAL FEED:

TAKE-UP PANEL:

TO BE PLUMBED IN 1" O.D. X .049 WALL STAINLESS STEEL

3/4", 2 WIRE HIGH PRESSURE HOSE.

STAINLESS STEEL WITH BALL VALVES.

6' FROM FLOOR, BOTH 1" HOT & COLD.

4' FROM FLOOR BOTH 1" HOT & COLD.

COPPER WITH BALL VALVES.

3-1/2" FROM FLOOR, 3/4" 12 OPENINGS.

FROM FLOOR, 3/4" PIPE.



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GENERAL NOTES

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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

PLUMBING DETAILS

DRAWN BY

Mika Vrales

DATE

04/20/2013

REVISION

2

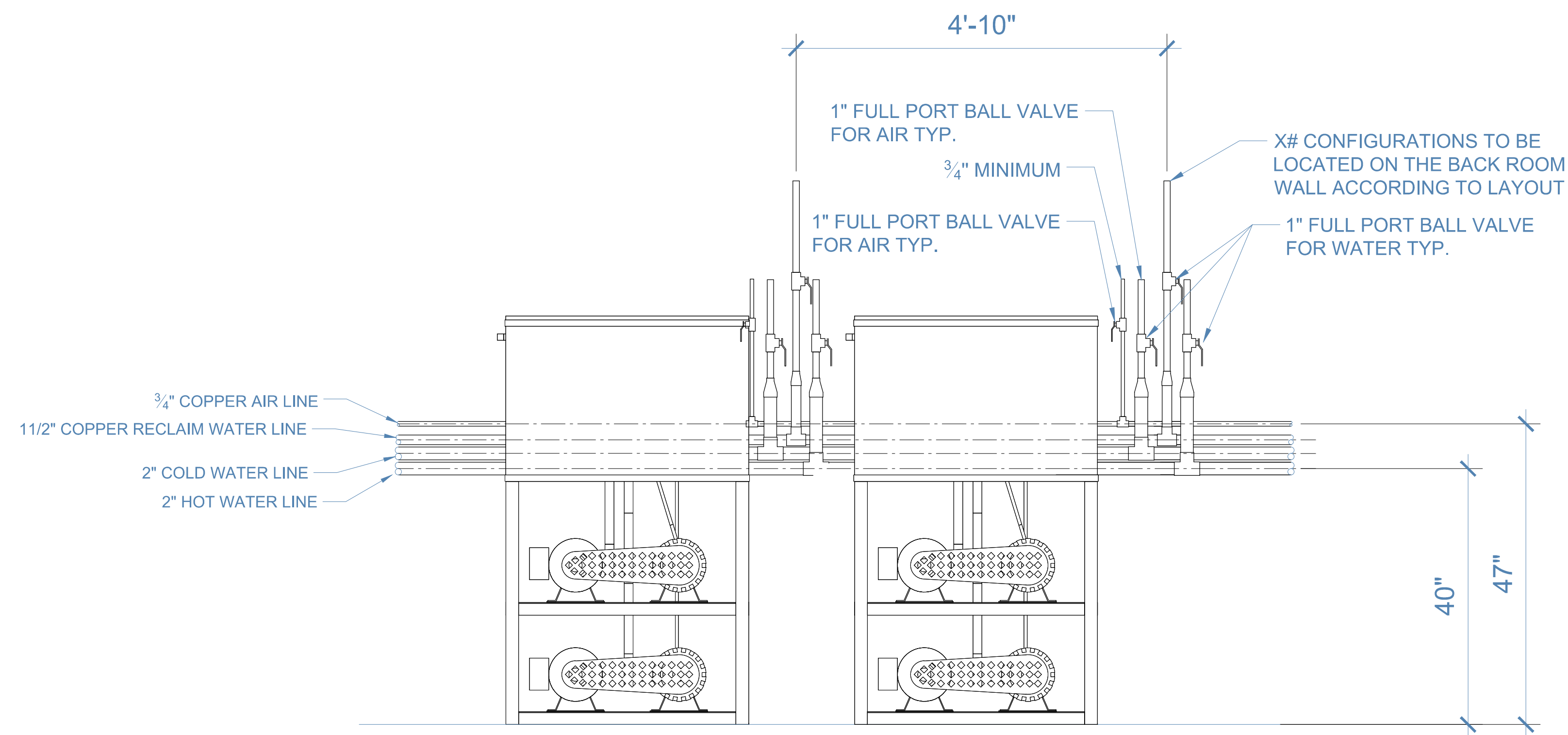
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DWG# E0410901

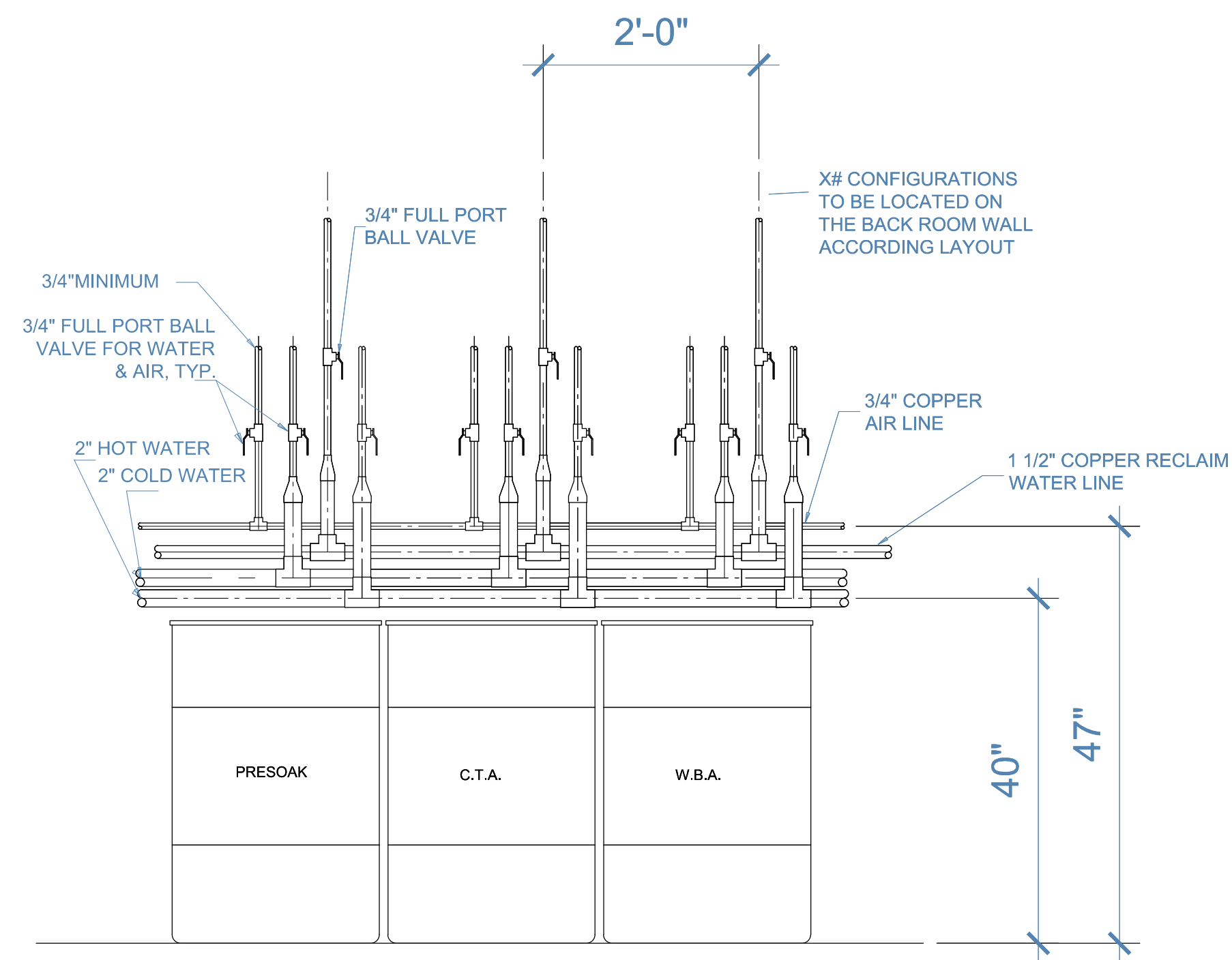
PAGE# CO4109013

SHEET

3



A PLUMBING DETAILS FOR HIGH PRESSURE PUMP STATIONS TYP.



B PLUMBING DETAILS FOR CHEMICAL PUMP STATIONS TYP.



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GENERAL NOTES

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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

PNEUMATIC PING SCHEMATIC

DRAWN BY

Mika Vraes

DATE

04/20/2014

REVISION

2

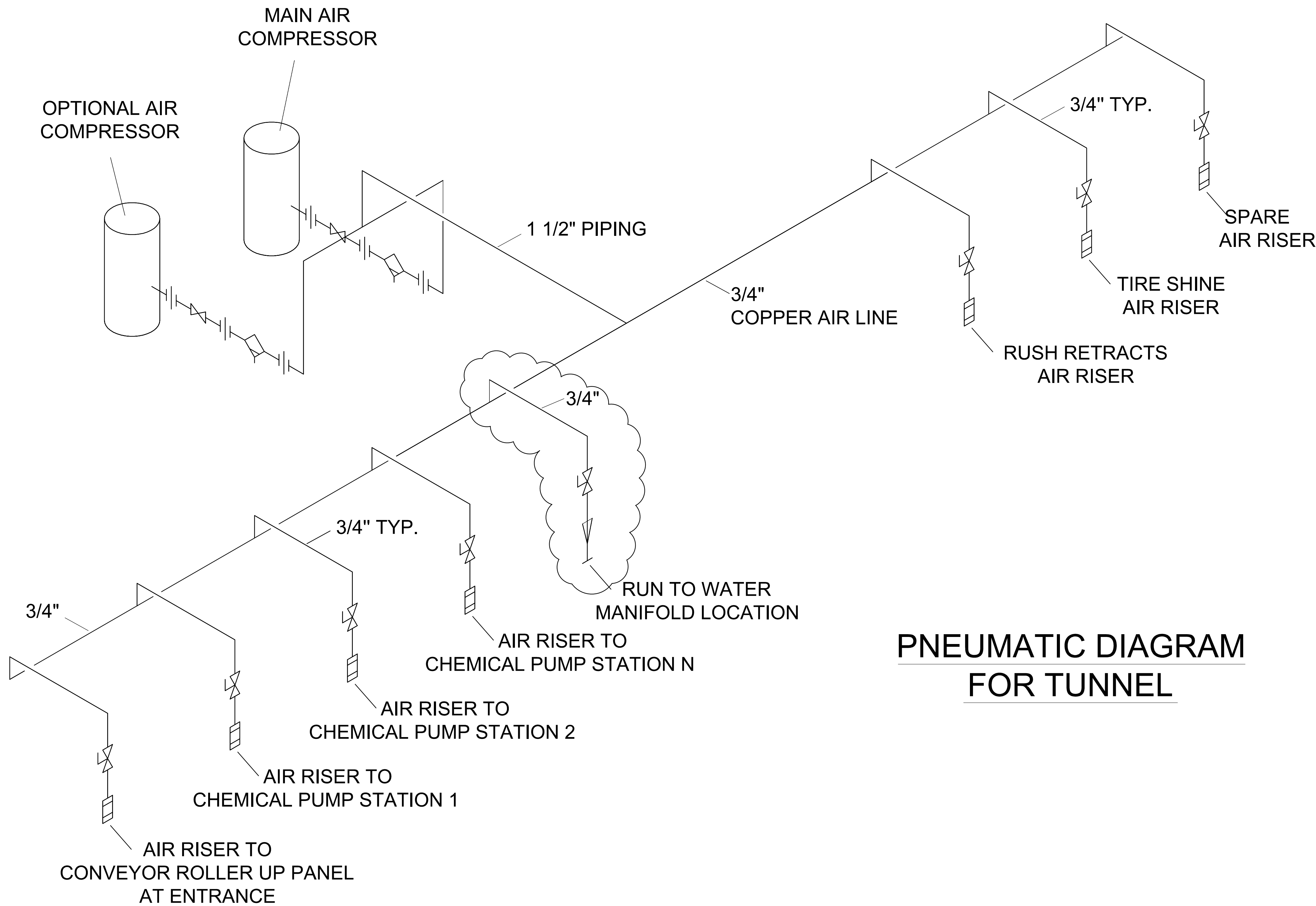
S/O# N/A

DWG# E04/0901

PAGE# CO4/0901/4

SHEET

4



PNEUMATIC DIAGRAM FOR TUNNEL

SYMBOL LEGEND		
	DESCRIPTION	SYMBOL
1	BALL VALVE	
2	UNION	
3	AIR HOSE KONECTION	
4	WATER TRAP	



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NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

CHASE SECTIONS THRU CONVEYOR PIT

DRAWN BY

Mika Vrales

DATE

04/20/2018

REVISION

2

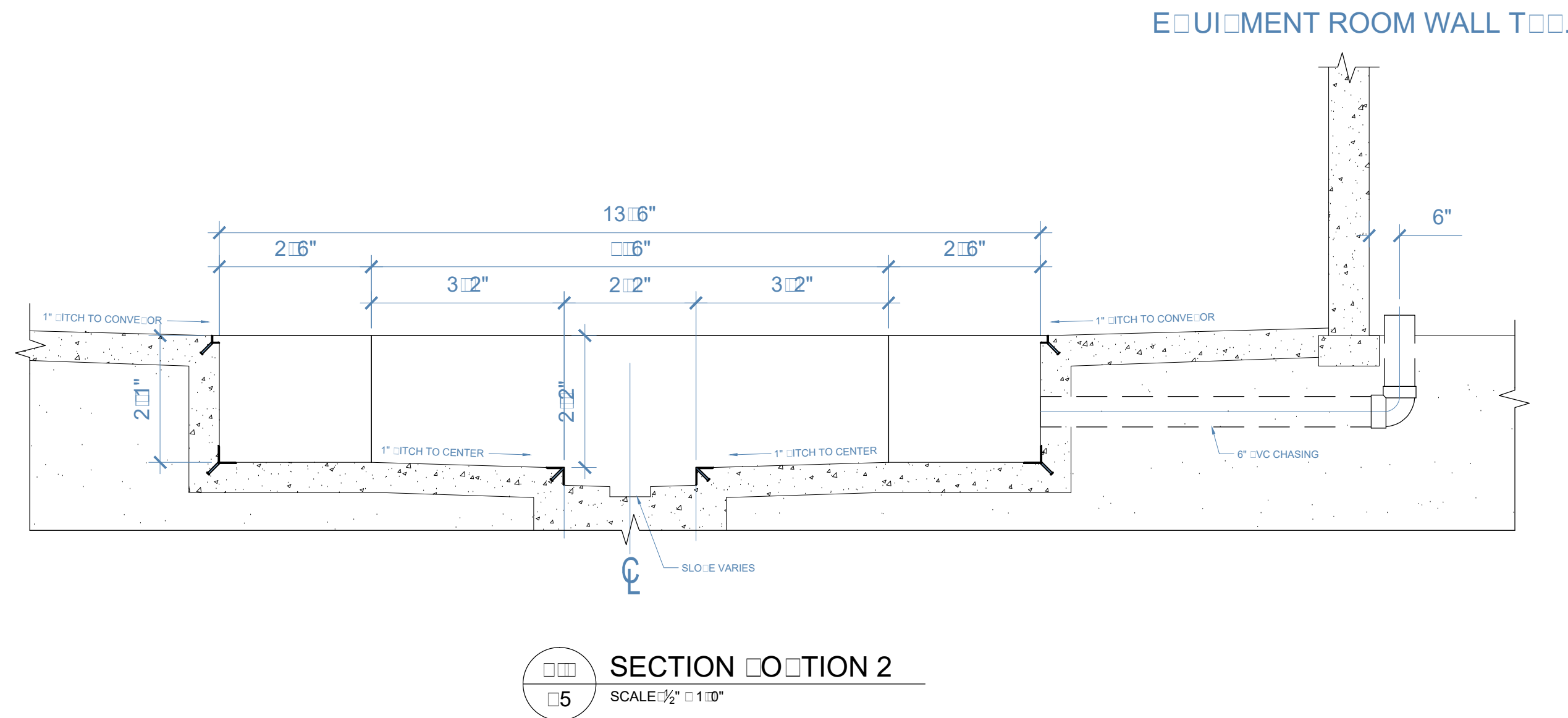
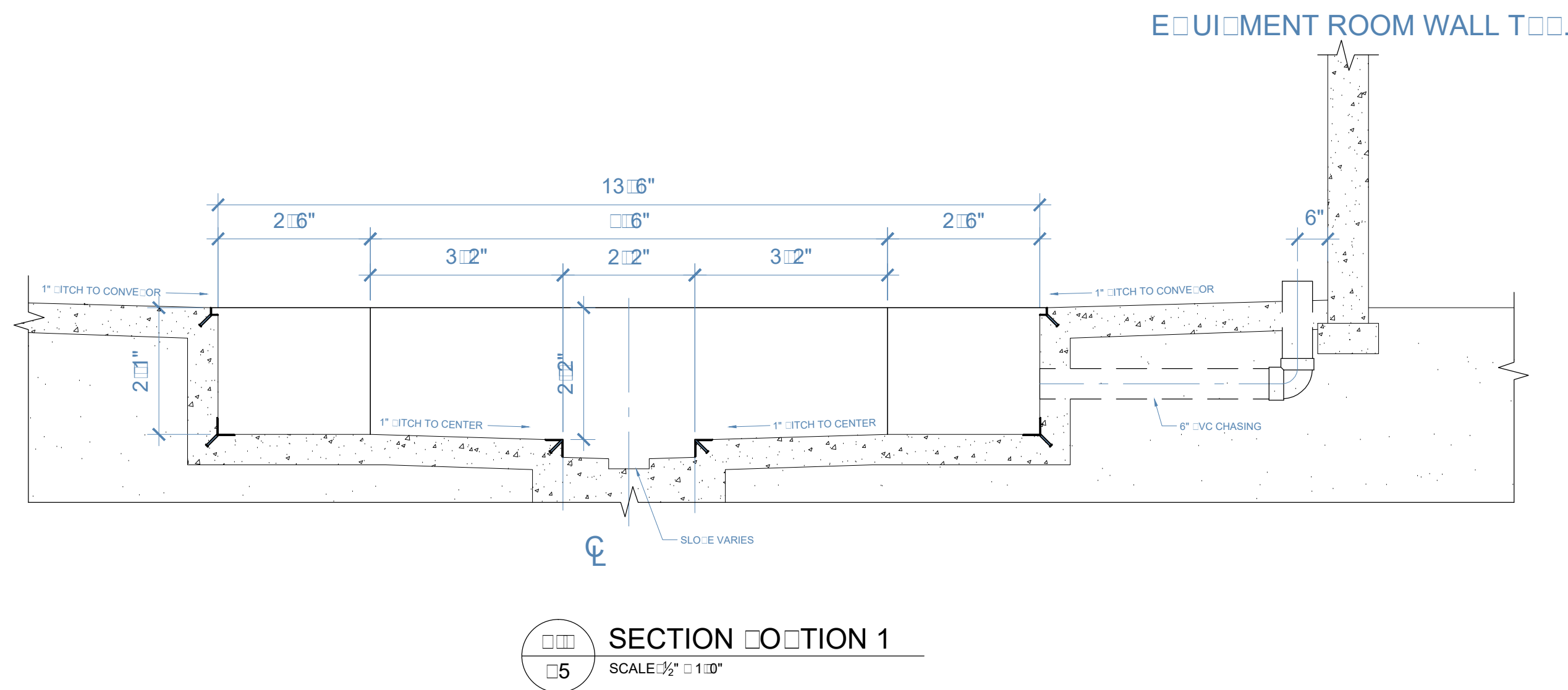
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DWG# E040901

PAGE# CO409015

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5

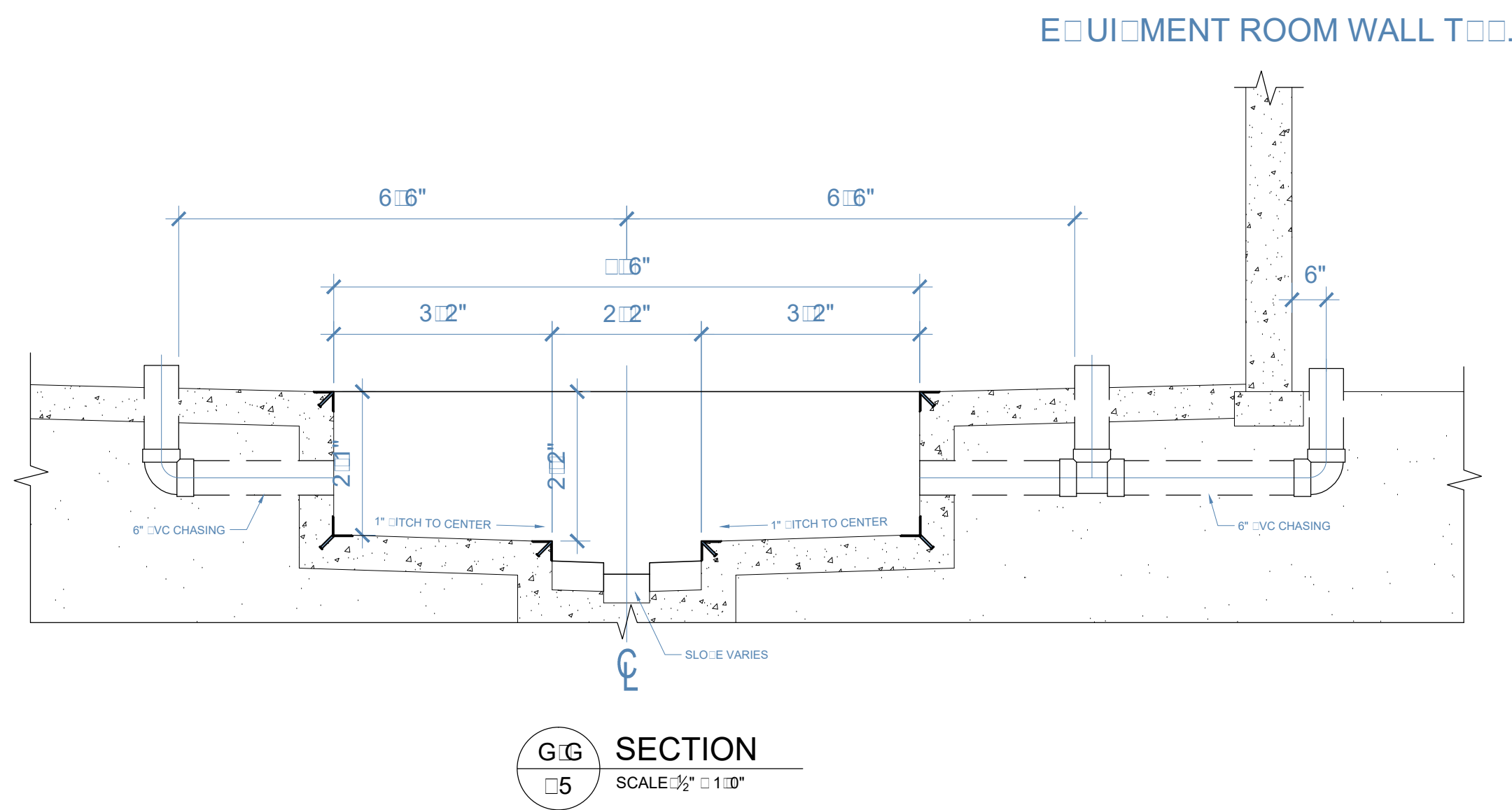


CONVEYOR AND EQUIPMENT BY A.V.W. EQUIPMENT CO.

CONTRACTOR TO VERIFY ALL DIMENSIONS

CONCRETE FOOTINGS AND STRENGTH TO COMPLY
WITH LOCAL BUILDINGS CODES.

DO NOT SUBSTITUTE FOR ARCHITECTURAL PLAN.





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CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

CHASEWAYS PLAN POWER TO CONVEYOR

DRAWN BY

Mika Vratas

DATE

04/21/2016

REVISION

2

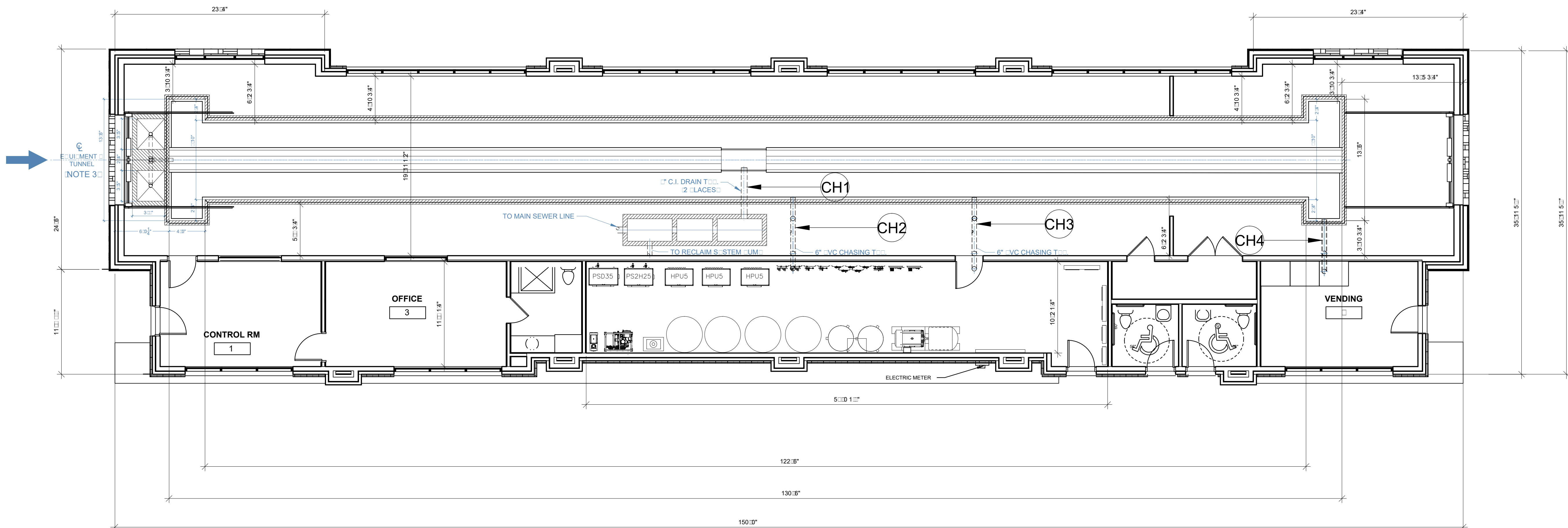
S/O# N/A

DWG# E040901

PAGE# CO409016

SHEET

6



CONVEYOR PIT CHASEWAYS

CH1	8" PIPE TO RECLAIM TANKS
CH2	6" PIPE TO MECHANICAL ROOM
CH3	6" PIPE TO MECHANICAL ROOM
CH4	6" PIPE TO MCC



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GENERAL NOTES

NO.	REVISION/ISSUE	DATE

CUSTOMER NAME

WV SERVICES
CAR WASH
DESIGNER

PROJECT NAME

DRAWING NAME

CHASEWASH POWER TO CONVEYOR

DRAWN BY

Mika Vratas

DATE

04/21/2011

REVISION

2

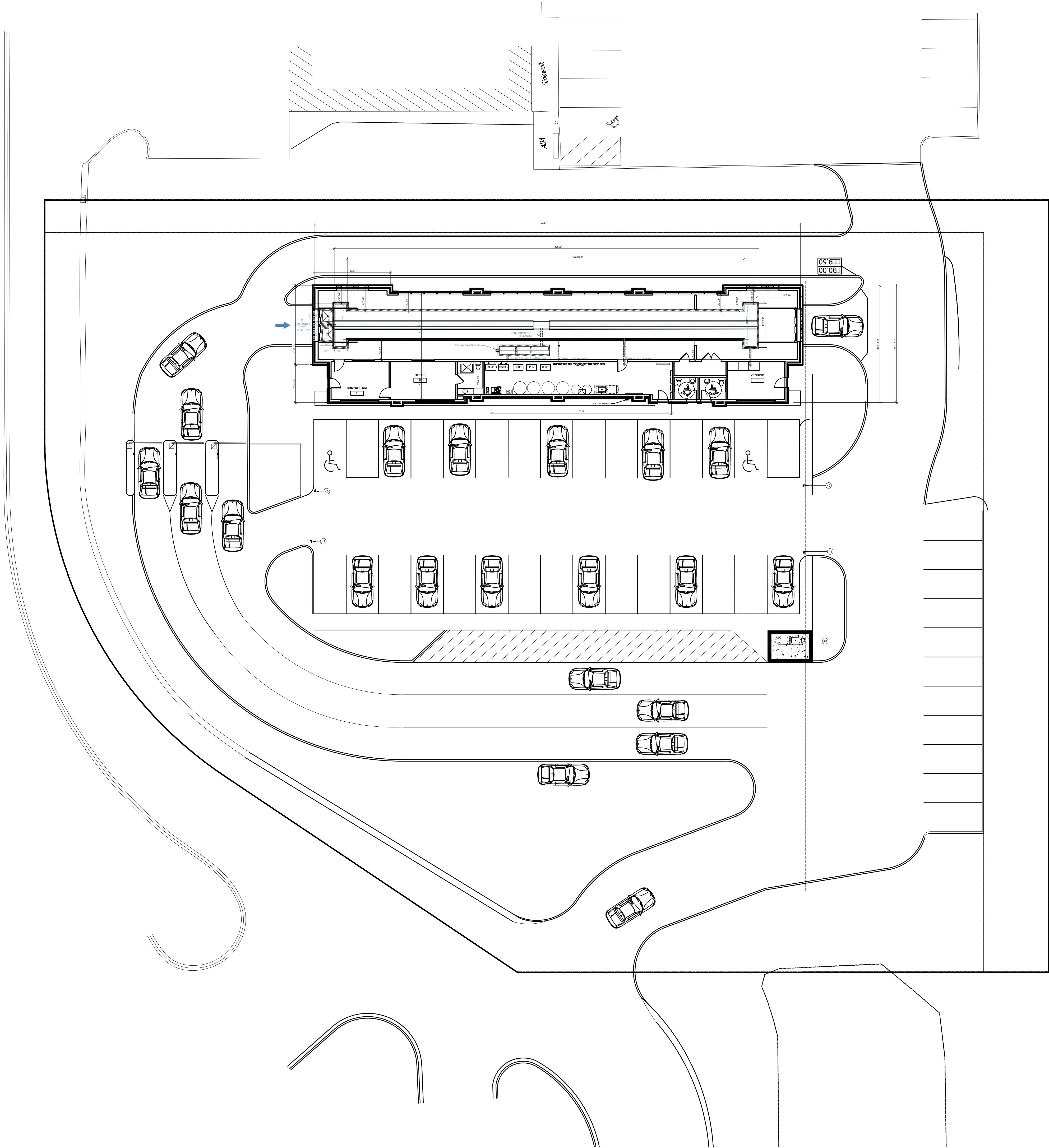
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DWG# E0410901

PAGE# C0410901

SHEET

6.1



REQUEST FOR PLAN COMMISSION ACTION
STAFF PROJECT REVIEW

TO: Chairperson Ruffatto and Members of the
Wheeling Plan Commission

FROM: Andrew C. Jennings, Director of Community Development
Steve Robles, Assistant Director of Community Development

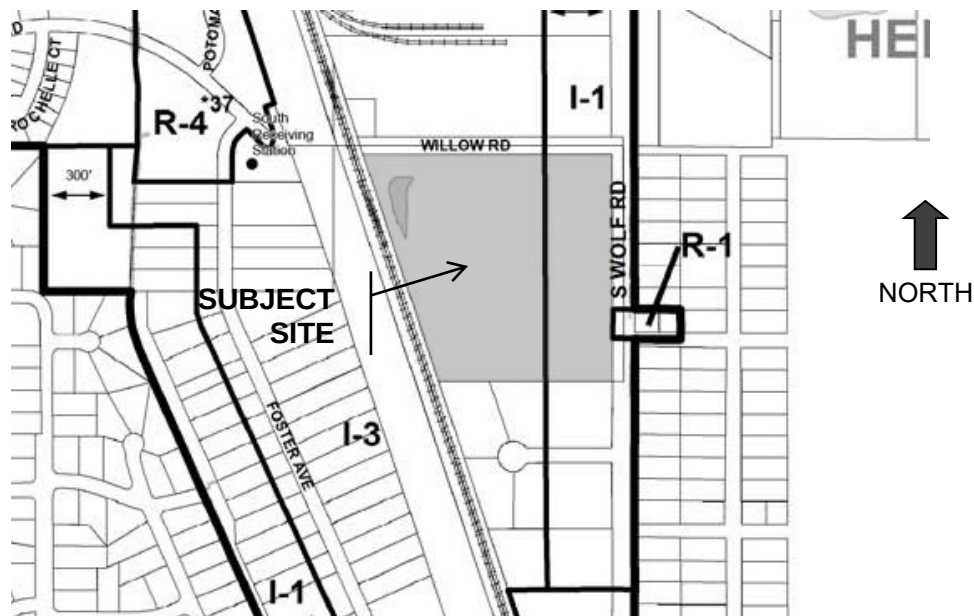
RE: **Docket No. 2018-27**
Pace Northwest Garage Relocation
1600 S. Wolf Road
Special Use-Site Plan Approval of a Ground Transportation
Service, Large

DATE OF REPORT: October 30, 2018

DATE OF MEETING: November 8, 2018

PROJECT OVERVIEW: The petitioner is requesting special use-site plan approval for the establishment of a ground transportation service (large facility) at 1600 S. Wolf Rd.

LOCATION MAP:



GENERAL PROPERTY INFORMATION

<u>Applicant Name:</u>	Pace Bus/TJ Ross, Executive Director
<u>Property Owner Name:</u>	Allstate Insurance Co.
<u>Common Property Address:</u>	1600 S. Wolf Rd
<u>Common Location:</u>	Located at the southwest corner of Willow Road and S. Wolf Road

<u>Neighboring Property Land Use(s):</u>	North: Industrial (Crescent Cardboard) West: Transportation (Railroad) South: Industrial East: Single-Family Residential (Prospect Heights)
<u>Comprehensive Plan Designation:</u>	Industrial
<u>Property size:</u>	Total Lot: 989, 683.32 sq. ft./22.72 acres Building: 428,430 sq. ft.
<u>Existing Use of Property:</u>	Industrial
<u>Proposed Use of Property:</u>	Ground transportation service, large facility
<u>Existing Property Zoning:</u>	I-1 – Light Industrial and Office District I-3 – General Industrial District
<u>Previous Zoning Action on Property:</u>	669 Parking variation (511 to 212 spaces), Ordinance No. 2454, passed June 20, 1988.

DESCRIPTION OF PROPOSAL

The applicant, Pace Suburban Bus Service (a division of the Regional Transit Authority), is operating its Northwest Transit Operations Center within Des Plaines, which has been identified as functionally obsolete. After a review of various potential locations, Pace has determined the subject site is ideally suited for the relocation of the facility, which can accommodate indoor storage of vehicles near the I-294 Tollway. The additional capacity is necessary to support new programs (Milwaukee ART, additional service on I-90, etc.). The building is also large enough to allow for a consolidation of other functions and eliminate the need to rent space for a print shop and van pool.

Pace has indicated the building would be converted into a storage and maintenance garage for approximately 120 buses (105 buses operating daily) from Pace's Northwest Division, with an ultimate capacity of 150 buses (including vehicles in maintenance and storage). The existing office space would be utilized by Pace as a maintenance office, print shop, van pool office, and administrative office, housing approximately 280 employees.

Approximately 59,000 square feet of building at the northwest corner of the existing building (closest to the railroad tracks) would be demolished to accommodate a compressed natural gas (CNG) fueling area and allow buses to easily enter the building. All buses at this proposed facility will operate on CNG. The existing diesel fueled buses will continue to operate from the current Des Plaines facility until they are converted to operate on CNG. Pace estimates that this process will take approximately three years to fully relocate to the Wheeling facility from Des Plaines.

SITE PLAN REVIEW

Site Plan: The existing site will receive minor changes to improve the function of the site for the Pace transit operations. The easternmost driveway along Willow Road will be removed to concentrate non-bus traffic to the central driveway. The westernmost driveway will remain for the sole use of bus ingress/egress. To avoid any conflicts between bus traffic and non-bus vehicles on the property, 14 parking spaces and a parking lot island in the western portion of the parking lot will be removed so that the parking area and driveway will be separated.

At the south end of the building, a new loading/receiving dock is proposed to be accessed from the adjoining parking lot. The south parking lot will be modified to add a lane/drive aisle from the Wolf Road driveway to the new loading dock. There are currently no loading areas or overhead doors located on the south façade.

A new exterior Compressed Natural Gas (CNG) fueling area will be installed at the northwest corner of the building as the entire bus fleet will run on CNG (no diesel fueled buses will operate from the Wheeling facility). The space will be created by the demolition of a 59,000 square foot prior building addition and will also serve as main bus access into the building. A 23' tall canopy will be installed over the fueling pumps and ancillary above ground CNG equipment will be located within the same enclosure area. An 8' tall, open metal security fence will be installed around the perimeter of the CNG area. The CNG fueling area will only service Pace buses and not be available/accessible for public use.

New pedestrian sidewalks will also be installed along both the Wolf Road and Willow Road street frontages of the subject property.

Building size: While the majority of the existing building will be repurposed by Pace, the existing 428,430 square foot building will reduce in size through the demolition of a previous attached addition. 59,000 square feet of existing building at the northwest corner of the building will be demolished to accommodate a new exterior compressed natural gas (CNG) fueling area and also provide bus entry to the interior of the building. As noted by the petitioner, the removal of this section will expose the existing exterior brick wall that had been covered by the former addition.

Floor Plan: The interior of the existing building will be renovated to support bus storage, maintenance, and operations/administration. This will include removal of structural steel columns to allow interior bus movements and interior renovation to separate bus maintenance, storage and administration functions. An existing interior recessed truck loading dock will be infilled.

Parking and Traffic Impacts: A total of 327 existing parking spaces are provided at the subject site, which is split between two parking lots; a main parking area north of the building (accessed from Willow Road) and a smaller lot south of the building (accessed from Wolf Road). With the proposed removal of 33 spaces (14 from the north lot and 19 from the south lot), the parking will be reduced to 294 total parking stalls. Based on the proposed use as a “ground transportation service (large)”, the Village’s off-street parking regulations do not include a

specific off-street parking ratio for such use. Under this scenario, the Plan Commission can determine the acceptable parking provisions for the site based on its proposed use. Staff has confirmed with Pace that the maximum number of total employees at any one time will be 280, which is based upon employment levels experienced at the Des Plaines facility. Employee parking requirements by the Village are 1 space per employee, which would require at least 280 parking stalls which is provided at the subject site, plus 14 surplus spaces.

Pace undertook a traffic study to determine potential impacts on the surrounding road network based on the proposed ground transportation service facility. The report conducted by CMT, Inc. utilized the existing Pace operations at the Northwest Division facility in Des Plaines to determine the estimated number of trips by the bus fleet and estimated arrival/departure time periods. Based on the trips associated with transit vehicles and other users with Pace (office, maintenance, etc. vehicles), the report finds the majority of transit related vehicles (busses and paratransit vehicles) do not operate within the peak hour of the adjacent roadways. The peak hour of the adjacent streets is consistent with the peak hour of office staff that would be generated by the proposed use; however, these trips are consistent with the current office trips generated by the current building user.

Per the traffic study, the following are approximate peak times – entering the site:

6:30 AM	Maintenance	15 vehicles
7:30 AM	Office and Transit	30 office and 6 transit
8:30 AM	Transit	25 vehicles
6:00 PM	Transit and Fuel	17 transit and 2 fuel

Per the traffic study, the following are approximate peak times – exiting the site:

6:00 AM	Transit	28 vehicles
3:30 PM	Office and Transit	18 office and 15 transit
6:30 PM	Office	50 vehicles

It should be noted that transit vehicles leaving the site begin as early as 4:00 AM (based on current Des Plaines operations), but these trips would not conflict with peak morning trips based on the surrounding industrial and residential uses.

The report also identifies 3 roadway improvements to improve operational performance on Willow Road:

1. Willow Road left turn lanes - Restripe Willow Road between S. Wolf Road and the primary PACE driveway (455 feet) to provide an exclusive westbound left turn lane for pace buses. The existing street width is sufficient to extend the left turn lane that currently exists at the S. Wolf Road/Willow Road intersection. No pavement widening is required to provide these exclusive turn lane lengths. The Willow Road/Wolf Road intersection is to remain signalized. The capacity analysis for the build condition results in acceptable intersection levels of service (LOS C) or better for all study area intersections. **The proposed site plan illustrates restriping of Willow Road to provide a turning lane within the center of Willow Road. The restriping should be subject to final review by the Engineering Division and be installed prior to any transit vehicle operations from the subject site.**

2. PACE access closure - Close the existing access to the PACE site on Willow Road that is located 125 feet west of the S. Wolf Road/Willow Road intersection. The capacity analysis focused on the primary access to the PACE site on Willow Road which is located 500 feet west of the Wolf Road/Willow Road intersection. Analysis for a single access point is to result in a worst-case delay for traffic leaving the site. **The proposed site plan shows the removal of this driveway and should be completed prior to any transit vehicle operations from the subject site**
3. Willow Road/Wolf Road West Radii - An existing deficiency that should be improved as an overall area improvement is an increase to Willow Road/Wolf Road turning radii or more extensive geometric widening of Willow Rd to the west. The existing radii on the west side of Wolf Road at the Willow Road intersection are 25 to 30 feet and appear to be deficient for the type of truck and vehicle usage that currently exists on the west leg of Willow Rd (in contrast to the existing radii on the east leg which appear to have a radius that is approximately 50 foot for primarily a residential area). With the current geometry and turn conditions, both northbound and southbound to westbound vehicles infringe on the eastbound left turn lane. Correcting this existing deficiency appears to involve relocating signal lights and will require coordination with IDOT as well as the Villages of Wheeling and potentially Prospect Heights. **The widening for the west half of the Willow Road/Wolf Road intersection will require coordination between Pace, the Village, and IDOT before any site work may occur. Prior to any transit vehicle operations from the subject site, the intersection should be widened subject to obtaining all necessary approvals from the Village and IDOT.**

APPEARANCE REVIEW

Elevation plans: Modifications to the existing building's exterior are minimal. The most substantial alteration is the removal of a prior building addition at the northwest corner of the building for the CNG fueling area. Since this addition was not part of the original building, the removal will expose the existing exterior brick wall that had been covered by the former addition. Any damaged to exterior wall caused by the addition and/or its removal should be repaired to original conditions. The exterior loading dock doors will be removed and replaced with coordinating masonry to match the existing exterior materials.

Building height: No building additions or changes to the building's height is proposed.

Landscaping plans: The subject site is currently well landscaped and the majority of the existing landscape will remain. A single tree within a parking lot island and a row of foundation plantings on the south side of the building will be removed based on the proposed site modifications. New landscaping is proposed around the perimeter of the CNG enclosure area, which is only visible from Willow Road; however, the quantity and type of landscape species are not identified on the plan. No landscaping is proposed on the south side of the building to replace the plantings removed due to the proposed loading dock addition. The Plan Commission should consider incorporating a condition that prior to the issuance of a permit for the CNG fueling area, the landscape plan be revised to specify the quantity and species of the new landscaping.

Exterior lighting: The exterior lighting will be reused and updated with LED light fixtures. The new CNG fueling area at the northwest corner of the building will include new lighting under the canopy and four new light poles. This will be an increase in lighting levels in this area of the site since there is an existing building located in the same area. Despite the increase in lighting levels in this area, the CNG fueling area is located approximately 200' south of Willow Road and the property immediately adjacent to the fueling area is the Canadian National Railroad line; therefore, the impact will be minimal.

STANDARDS FOR SPECIAL USE

Following are standards for special use with the petitioner's responses. **(Staff comments are in bold.)**

1. State why the Special Use is necessary for the public convenience at the proposed location. (Explain how the proposed use will benefit residents, the neighborhood or the community-at-large.)

"The Special Use is necessary for the public convenience because permitted Pace to operate a public transit bus storage and maintenance facility will expand public transit opportunities to residents and help make a positive local economic impact. The facility will serve as an origin for public bus transit, providing residents with a more affordable and environmentally responsible option to commute to location in Wheeling as well as other areas along I-90 and I-294 corridors. Bus service from the facility will allow commuters to connect to existing bus routes along the 27-mile stretch of I-90 between Elgin and O'Hare Airport and, upon completion of the Central Tri-State Tollway reconstruction project, with future bus routes along the 22-mile stretch of I-294 between Balmoral Avenue and 95th Street. In addition, the facility will employ approximately 280 people, providing local businesses, such as stores, restaurants, and gas stations, with patrons, and it will also generate employment opportunities for residents."

The proposed use will be complimentary to the adjacent industrial uses along Wolf Road and will serve as a positive reuse of a large industrial building that has become obsolete for the current owner.

2. State how the special use will not alter the essential character of the area in which it is to be located. (Explain how the proposed special use is appropriate for the neighborhood or shopping center and how the overall character will not be affected by the special use.)

"The Special Use will not alter the essential character of the area in which it is to be located. The facility is appropriate for the neighborhood given not only the industrial zoning classification of the location and adjacent parcels, but also the businesses operating on those parcels. A printing/communications center currently operates at the location. Businesses operating on the adjacent parcels include a cardboard company to the north; printing, lamination, concrete construction, and wholesale florist companies to the south; and the North Central Service commuter rail line, a tree services company, and a small transportation center to the west. In addition, the facility will not have a negative visual impact on the character of the neighborhood as Pace plans to remodel,

rather than demolish, the existing building at the location; the building façade along Wolf and Willow Roads will remain unchanged, and bus operations and maintenance will be wholly contained within the building, and buses will only be seen entering or exiting the location from the northwest corner along Willow Road. If, however, indoor fueling is not allowed, a portion of the existing building along the North Central Service commuter rail line will be removed to accommodate an outdoor fueling canopy.”

The proposed ground transportation service (large) will be conducted indoors within the existing industrial building and will not alter the character of the area from the current.

3. State how the location and size of the Special Use, the nature and intensity of the operation involved in or conducted in connection with it, the size of the site in relation to it, and the location of the site with respect to streets giving access to it, will be in harmony with and will not impede the normal, appropriate, and orderly development of the district in which it is to be located and the development of surrounding properties. (Explain how the proposed use will allow the surrounding area to develop appropriately. Is the use too large for the site? Will it be in a location on the lot that will cause conflicts with adjacent properties? Does the use create noise, odor, smoke, or light that will affect other properties?)

“The Special Use will be in harmony with and not impede the normal, appropriate and orderly development of the district in which the Special Use is to be located and the development of the adjacent properties. The location and adjacent properties are already developed and are being used for industrial purposes. The Special Use also does not change the location of the existing building or parking areas and therefore will not cause conflicts with adjacent properties. The location’s approximate 23 acres and 429,950 square foot building will amply support 280 employees and approximately 160 buses. The Special Use will not create noise, odor, smoke or light that will negatively affect the adjacent properties as the facility will house compressed natural gas (CNG) fueled buses that minimize smoke, odor, and noise. The existing lighting at the location will remain, but may be changed from high pressure sodium to modern LED. If outdoor fueling is required, a portion of the northwest corner of the existing building will be removed and replaced with a fueling canopy which the lighting will point downwards.”

The proposed use will reuse the existing building and the proposed modifications to the building will not expand the footprint.

4. State how the location, nature and height of buildings, walls and fences, and the nature and extent of the landscaping on the site shall be such that the use will not hinder or discourage the appropriate development and use of adjacent land and buildings, or will not impair the value thereof. (Explain how the proposed use will not prevent development on adjacent properties. Will the proposed use have a negative impact on existing adjacent land uses?)

“The location and adjacent properties are already developed and are being used for industrial purposes, and the proposed remodeling to the existing building will not have a negative impact on adjacent land uses. The proposed remodeling will not change the

building's facade, height, or location. If, however, indoor fueling is not allowed, a portion of the existing building along the North Central Service commuter rail line will be removed to accommodate an outdoor fueling canopy. New ornamental fencing will be used modestly to secure the facility. If required, rooftop mechanical equipment on the facility will be screened. The existing landscaping at the location will remain, except for an additional landscape bed to be installed adjacent to the middle/north side of the existing building where the loading dock doors are located."

Minor exterior alterations are anticipated that would not impact the development of the adjacent area. The proposed compresses natural gas fueling area will be located on the back side of the building (adjacent to the rail line) and be screened by landscaping.

5. State how the parking areas will be of adequate size for the particular use, properly located, and suitably screened from adjoining residential uses, entrance and exit drives shall be laid out so as to prevent traffic hazards and nuisances, and the development will not cause traffic congestion. (Is adequate parking provided? Is parking area visible from adjacent homes? Are the entrance and exit drives designed for safe access to the site? Will the special use generate so much traffic as to cause congestion? Will visitors to the special use access the site through residential streets?)

"The location already includes parking areas, which are adequate for the Special Use. Residential streets are not currently used to access the location and will not be used to access the Special Use. In addition, the existing drives at the location will allow for safe access to and from the Special Use. Buses will enter and exit the location using the existing drive at the northwest corner along Willow Road ("bus drive"), and automobiles will enter and exit the location using either the existing primary drive immediately to the east of the bus drive or the drive at the southeast corner along Wolf Road. Because the Special Use's bus and automobile traffic will occur before or after peak-hour morning and afternoon traffic, peak-hour traffic will not be impacted. Pace's traffic study recommends, and Pace is amenable to, closing the drive at the northeast corner along Willow Road and restriping Willow Road between Wolf Road and the primary drive to provide an exclusive left-hand turn lane."

The current parking for allocated for the unit is sufficient. The parking areas will receive enhanced LED lighting and a third driveway along Willow Road will be removed to improve traffic on Willow Road.

6. State how the property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulation in that zone. (Other than the special use listed in this application, the proposal must meet all other requirements of the Zoning Code. Note any other exceptions.)

"Pace wants to use the property for the sole purpose of operating a public transit bus storage and maintenance facility for Pace's Northwest Division, which is currently operating out of a functionally obsolete facility in Des Plaines. As the Wheeling Municipal Code requires a special use for the operation of such a facility at the property, Pace can only move forward with its plans if the special use is granted. If the special use

is not granted, the property will be of no value to Pace and will not yield a reasonable rate of return.”

The substantial size of the current building was developed specifically for Allstate Insurance Company and large industrial spaces of this size are no longer common. The proposed use as a ground transportation service, allows for the operation to occur inside the building, minimizing the impacts to the community.

STAFF REVIEW

Fire Department Review: The Fire Department has provided a comment memo dated October 19, 2018, and identified the CNG fueling facility shall be private and only for Pace vehicles. The remainder of review items will be addressed at permit.

Engineering Division Review: The Engineering Division has reviewed the plans and submitted a memo dated October 23, 2018, and recommends the investment by the proposed property purchaser in the roadway resurfacing and/or reconstruction be part of the special use process. Construction work on the roadway section should take place before the proposed use is operational on this property. The remainder of review items will be addressed at permit.

Staff Recommended Action: Staff recommends approval of the special use for a ground transportation service (large facility).

PROPOSED MOTION

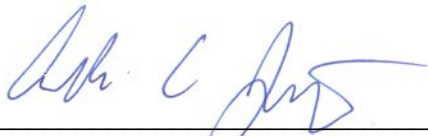
If the Plan Commission finds that the petitioner has satisfied the requirements for the granting of the Special Use and Site Plan for the ground transportation service (large facility), an appropriate motion would be to:

Recommend approval of Docket No. 2018-27, granting Special Use-Site Plan Approval as required under Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19-07 Industrial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, in order to establish a ground transportation service, large, at 1600 S. Wolf Road, located in Wheeling, Illinois:

- Cover letters, dated August 31, 2018 and October 2, 2018
- Floor plan, dated June 13, 2018
- Site plan,
- Northwest corner and CNG rendering, dated October 2, 2018
- CNG canopy example, dated October 2, 2018
- Site Landscape plan
- Proposed Site Plan Improvements Old Willow Road Access/East Entrance
- Proposed Site Plan Improvements Old Willow Road Access/West Entrance
- Security fence images
- Photometric lighting plans, received October 31, 2018
- Traffic Impact Study, dated September 26, 2018

And with the following conditions of approval:

1. The west exterior wall shall be repaired to its original condition to the greatest extent possible following the removal of the building addition in that area.
2. Prior to the issuance of a permit for the CNG fueling area, the landscape plan be revised to specify the quantity and species of the new landscaping.
3. Investment by the proposed property purchaser in the roadway resurfacing and/or reconstruction to be completed prior to any bus operations at the subject property. (Are they paying us or doing the work or TBD?)
4. The restriping of Willow Road to provide a turning lane within the center of Willow Road shall be subject to final review by the Engineering Division and be installed prior to any transit vehicle operations from the subject site.
5. The existing access to the subject site on Willow Road that is located 125 feet west of the Wolf Road/Willow Road intersection shall be removed and the area restored prior to any transit vehicle operations from the subject site.
6. Prior to any transit vehicle operations from the subject site, the west half of the Willow Road/Wolf Road intersection shall be widened subject to obtaining all necessary approvals from the Village and IDOT.
7. The site geometric plan shall be adjusted to remove conflicts identified in the Fire Department review of the turning radius diagram provided on November 2, 2018.



Andrew C. Jennings, AICP
Director of Community Development



Steve Robles, AICP
Assist Director of Community Development

Attachments:

[Cover letters](#)

[Survey](#)

[Site plan](#)

[Floor plan](#)

[Proposed Site Plan Improvements Old Willow Road Access/East Entrance](#)

[Proposed Site Plan Improvements Old Willow Road Access/West Entrance](#)

[Existing Conditions Northwest corner](#)

[Northwest Garage and CNG rendering](#)

[CNG canopy example](#)

[Site Landscape plan](#)

[Security fence images](#)

[Photometric lighting plans and specifications](#)

[Traffic Impact Study](#)

[Fire Department comment memo, dated October 19 and November 2, 2018](#)

[Engineering Division comment memo](#)



Thomas J. Ross
Executive Director

August 31, 2018

Village of Wheeling Plan Commission and Board
2 Community Boulevard
Wheeling, Illinois 60090

Re: Application for Special Use Permit - 1600 S. Wolf Road, Wheeling, Illinois

Dear Village of Wheeling Plan Commission and Board:

Pace, the Suburban Bus Division of the Regional Transportation Authority, ("Pace") is currently in the process of acquiring the property at 1600 S. Wolf Road, Wheeling, Illinois ("Property") for its use as a public transit bus storage and maintenance facility. Pace needs to acquire this Property because as detailed herein, Pace's existing Northwest Operating Division, located at 900 E. Northwest Highway, Des Plaines, Illinois ("Northwest Division"), is functionally obsolete. Pace hereby submits its completed applications and supporting documentation for your consideration and approval of Pace's request for a Special Use Permit.

The Suburban Bus Division of the Regional Transportation Authority was created in 1983 by the Regional Transportation Authority Act to unify the numerous disparate suburban bus agencies that existed at that time. Pace is governed by a 13-member Board of Directors comprised of current and former suburban mayors and the Commissioner of the Mayor's Office for People with Disabilities for the City of Chicago.

One of the largest bus services in North America, and the backbone of the Chicago suburbs, Pace covers 3,446 square miles, an area larger than the state of Delaware and about 15 times the size of the City of Chicago. Pace is the premier suburban transit provider in Northeastern Illinois, transporting people safely and efficiently to work, school, and other regional destinations. Pace's family of public transportation services offer affordable and environmentally responsible transit options for the residents of 284 municipalities in Cook, Will, DuPage, Kane, Lake, and McHenry counties, serving tens of thousands of daily riders. Pace's innovative approach to public transportation gives the agency a national reputation as an industry leader.

Following its creation, Pace initially focused on unification efforts and renewing its bus divisions and fleet. Once those efforts were successfully completed, Pace turned its focus to multiple strategic planning and long-range planning efforts during the late 1980s and throughout the 1990s. In 2002, Pace launched "Vision 2020: Blueprint for the Future," the biggest transit initiative ever proposed for Chicago's suburbs.

The plan is based on a series of limited stop routes on arterial streets, tollway and expressway express bus services, and local "on demand" services. The I-90 express bus system and the soon-to-be-implemented Milwaukee Pulse Arterial Rapid Bus Service are components of the Vision 2020 plan.

Accessibility has always been a hallmark of Pace service. Pace provided "Section 504" service to people with disabilities several years before this type of service was required by the Americans with Disabilities Act. By 2006, Pace had established itself as a leader in providing efficient, quality service to people with disabilities, and the Illinois legislature designated that Pace would assume responsibility for ADA paratransit in Chicago from the Chicago Transit Authority. That move made Pace the largest provider of paratransit service in the United States.

Pace established one of the largest vanpool programs in the nation and became the regional ridesharing administrator for Northeastern Illinois in 2006, bringing coordination of carpools into the program. PaceRideShare.com is the outlet for these services, offering commuters the ability to create a profile and gather information on others with similar travel patterns to form carpools or vanpools.

The following is a summary of Pace:

Chairman:	Richard Kwasneski
Executive Director:	Thomas J. Ross
Headquarters:	550 W. Algonquin Road, Arlington Heights, IL 60005
Operating Divisions:	12
Service Area:	3,446 square miles, larger than the state of Delaware and about 15 times the size of the City of Chicago; it covers six counties - suburban Cook, DuPage, Kane, Lake, McHenry and Will - and 284 municipalities.
Population of service area:	Approximately 8.3 Million Residents
Total ridership in 2017:	35,620,887
Regular one-way fare:	Ventra: \$2.00 Adult \$1.00 Reduced Cash: \$2.25 Adult \$1.10 Reduced
Facilities:	Nine Transportation and Transfer Centers, 18 Boarding and Turnaround Facilities, Nine Park and Ride Facilities
Fixed bus routes:	209
Transit Bus Fleet:	815
Paratransit buses:	442
Vanpools:	784
Employees:	1,866

Pace's Northwest Division was identified in the 2010 Regional Transportation Authority capital asset condition assessment "as functionally obsolete, with half of the bus fleet stored outside, year-round in all weather conditions." The facility currently operates 124 buses and is a conglomeration of buildings that were constructed beginning in 1965 on a 5.6-acre parcel.

The maintenance area has nine bays built to accommodate 96-inch-wide buses, but those bays were replaced with 102-inch-wide buses in the mid-1980s. Currently, the Northwest Division provides over 5.7 million passenger trips per year in a service area spanning Lake Michigan on the east, Harper College on the west, Irving Park Road on the south, and Hawthorn Mall on the north. This service is provided in conjunction with Pace's Northshore Division in Evanston, River Division in Elgin, and North Cook ADA paratransit services contractor.

Employing approximately 280 people and operating 24 hours per day, seven days per week, the Northwest Division urgently needs to be relocated. Without relocating the Northwest Division, Pace's capacity to provide public transit services in north Cook County will be limited. The expansion of service on I-90 in 2017 required an addition of 26 buses to the fleet. To accommodate this increase in fleet size, Pace had to lease a facility in East Dundee. The implementation of the Milwaukee ART in the fourth quarter of 2018 will require an additional seven buses. Completion of the reconstruction of I-294 (which includes a bus lane) by the end of 2026 will put additional demands on the Northwest Division as new service is implemented in that corridor.

Pace's search for land to relocate the Northwest Division has taken more than six years and Pace has viewed more than 60 sites. During that time, land prices have increased from between \$5 and \$10 per square foot to over \$20 per square foot and 20-acre parcels located near the existing Northwest Division are rare.

The factors that make the Property an attractive new location for the Northwest Division are:

- Location – The Property allows convenient access to I-294 at the Willow Road interchange and to I-90.
- Size - The Property is large enough to sustain a fleet of up to 175 transit buses and allows us to move Pace's print shop and a portion of Pace's vanpool operation from rental space to the Property.
- Reuse of existing building – The existing building can be modified for Pace's proposed use of the Property, lowering the total project cost below that of a new building.

The site plan submitted with Pace's applications proposes reuse of the existing building by gutting the existing building and leaving the exterior facade with all bus operations, storage, and maintenance taking place indoors. If, however, indoor fueling is not allowed, a portion of the existing building along the North Central Service commuter line will be removed to accommodate an outdoor fueling canopy. This proposed storage and maintenance facility will house compressed natural gas (CNG) fueled buses, the use of which minimizes smoke, odor, and noise. Pace has recently completed renovation of its South Operating Division in Markham, Illinois where the fleet is 100% CNG fueled.

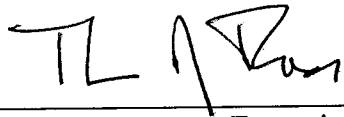
The traffic study submitted with Pace's applications recommends only two roadway improvements to Willow Road to accommodate Pace's proposed use of the Property: (1) restripe Willow Road between Wolf Road and the Property's primary driveway to provide an exclusive left-hand turn lane (the existing street width is sufficient to extend the left-hand turn lane that

exists at the Wolf Road/Willow Road intersection) and (2) close the existing access drive at the northeast corner of the Property. Although Wolf Road is not currently planned for reconstruction, Pace is willing to assist the Village of Wheeling in advocating for funding and reconstruction of Wolf Road between Camp McDonald Road and Palatine Road to bring Wolf Road up to standards.

Pace has a reputation of being a good neighbor in the communities where Pace's Operating Divisions are located and we welcome the opportunity to become a part of the Village of Wheeling.

Sincerely,

PACE, THE SUBURBAN BUS DIVISION OF
THE REGIONAL TRANSPORTATION
AUTHORITY

By: 

41-3

Thomas J. Ross, Executive Director



Memorandum

DATE: October 2, 2018

TO: Village of Wheeling Plan Commission

FROM: T.J. Ross, Executive Director

SUBJECT: Project Description: Special Use Permit – 1600 S. Wolf Road

Pace participated in a Concept Review with the Village of Wheeling Board on June 16, 2018, and is currently in the process of acquiring the property at 1600 S. Wolf Road in Wheeling, with the intention to renovate the existing building and property to replace its existing Northwest Operating Division located at 900 E. Northwest Highway in Des Plaines, including the following modifications:

1. **Building Renovation** - The architectural design modifications to the existing building enable approximately 85% of building area to remain, including the existing brick masonry and glass fenestration on the north, east, and south facades, in order to continue the existing harmonious relationship with the surrounding neighboring properties. The interior of the existing building will be renovated to support bus storage, maintenance, and operations/administration. Work will include removal of structural steel columns to allow interior bus movements and interior renovation to separate bus maintenance, storage, and administration functions. The existing interior recessed truck loading dock will be infilled, and the exterior loading dock doors will be removed and replaced with coordinating masonry to maintain the high quality exterior materials.
2. **Operational Functions** - In addition to relocating approximately 120 buses (~105 operating daily) from Pace's Northwest Division, Pace will have capacity for 150 buses including those in maintenance and storage. Additional support spaces may include relocation of Pace's Vanpool Offices and van storage, and small print shop from leased facilities to this location. Approximately 280 employees will support this facility.
3. **Traffic Impact** – Pace undertook a traffic impact study to determine the health of the existing intersection and potential impact of the change in use for the property. There was no significant impact to traffic as modeled by the traffic impact study, however Pace noticed that improvements to Old Willow Road and the Wolf Road intersection are currently needed to support the existing large truck traffic in the area. Pace met with the Village of Wheeling Public Works Department and intends to support the resurfacing/reconstruction of Willow Road north of the property, including restriping to extend the existing left turn lane further west as a center two-way left turn lane, to improve traffic flow, and improvements to the currently deficient curb radii at the west half of the intersection. In addition, Pace intends to close and remove the eastmost Old Willow Road parking driveway entrance.

4. **CNG Fueling** - Removal of northwest building portion of approximately 59,000 SF of the 1978/88 additions to expose and reuse the original masonry exterior wall, and provide a small exterior area (under canopy) and CNG equipment yard, for bus fueling along the railroad tracks. All buses at this new facility will operate on Compressed Natural Gas (CNG). During the transition from Diesel to CNG vehicles for those routes operated by Northwest Division, the Diesel fueled buses will continued to operate from the existing Des Plaines location. Only CNG vehicles will operate from the Wheeling location.
5. **Site Work/Operational Layout** - With exception of outdoor fueling, all bus operations and maintenance will occur in the interior of the building to minimize noise and disruption to the surrounding properties. Buses will enter the site from the north along a slightly widened existing access drive at the northwest corner of the property. All buses will enter and exit the west side of the building. The existing parking provided is more than adequate for Pace's needs, so no additional passenger vehicle parking is required. Employee and visitor passenger vehicles will enter the facility from the center driveway entrance on Willow Road, and be separated from bus traffic. Pace intends to provide sidewalk connections along the south edge of Willow Road and the west edge of Wolf Road.
6. **Landscaping/Site Security** – Pace intends to maintain the well planned and maintained landscaping and grounds surrounding the existing building, replacing a few unhealthy trees and supplementing where pavement removals dictate placement of turf grass at the east most driveway entrance along Willow Road. An 8 foot high, high durability ornamental fence will be installed surrounding the fueling area, encompassing the area of the removed portion of the existing building. Bus access will be through automated security gates. Much of the northwest corner of the site/building is screened by the plantings surrounding the detention basin and large willow trees.

ALTA - NSPS LAND TITLE SURVEY
LOT 2 IN ALLSTATE INSURANCE COMPANY'S ADDITION TO WHEELING



License No. 184-000613

CONSULTANTS

FINAL

ALTA-NSPS LAND TITLE SURVEY

Lot 2, in Allstate Insurance Company's Addition to Wheeling, being a Subdivision of the North 25 Acres of that part of the East Half of the Southeast Quarter and the South 40 feet of that part of the Northeast Quarter lying East of the Minneapolis, St. Paul and Sault Ste. Marie Railroad of Section 23, Township 42 North, Range 11, East of the Third Principal Meridian, in Cook County, Illinois.



09/26/18



OWNER :
ALLSTATE INSURANCE COMPANY

CEW	9/26/18	FINAL/FINAL
CEW	9/21/18	ATTORNEY REVIEW
CEW	9/20/18	ATTORNEY REVIEW
CEW	9/19/18	ATTORNEY REVIEW
CEW	9/11/18	FINAL
MARK	DATE	DESCRIPTION

PROJECT NO: 180232-01-02
CAD DWG FILE: EX-SHEET 1.DWG
DESIGNED BY:
DRAWN BY: JRO
CHECKED BY: CEW
APPROVED BY:
COPYRIGHT: CRAWFORD, MURPHY & TILLY, INC. 2018

SHEET TITLE

EXHIBIT 1

SHEET 1 OF 2

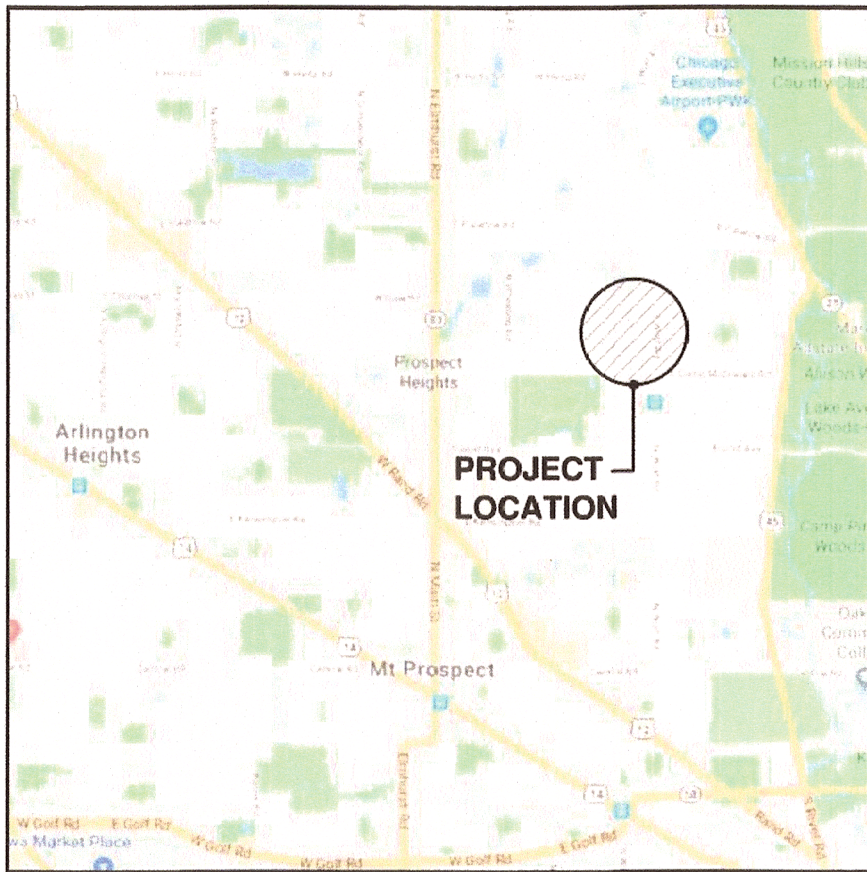
- LEGEND**
- FLAG POLE
 - FIRE HYDRANT
 - WATERVALVE
 - VALVE VAULT
 - SIGN
 - FLOOD LIGHT
 - TELEPHONE BOX
 - SANITARY MANHOLE
 - FLARED END SECTION
 - STREET LIGHT
 - HANDHOLE
 - CATCH BASIN
 - BOLLARD
 - POWER POLE
 - STORM MANHOLE
 - GAS VALVE
 - TRANSFORMER
 - VENT PIPE
 - TRAFFIC SIGNAL
 - TRAFFIC SIGNAL MAST ARM

- UGE UNDERGROUND ELECTRIC
- OHE OVERHEAD ELECTRIC
- T UNDERGROUND TELEPHONE
- BUILDING SETBACK
- PARKING SETBACK
- PROPERTY LINE

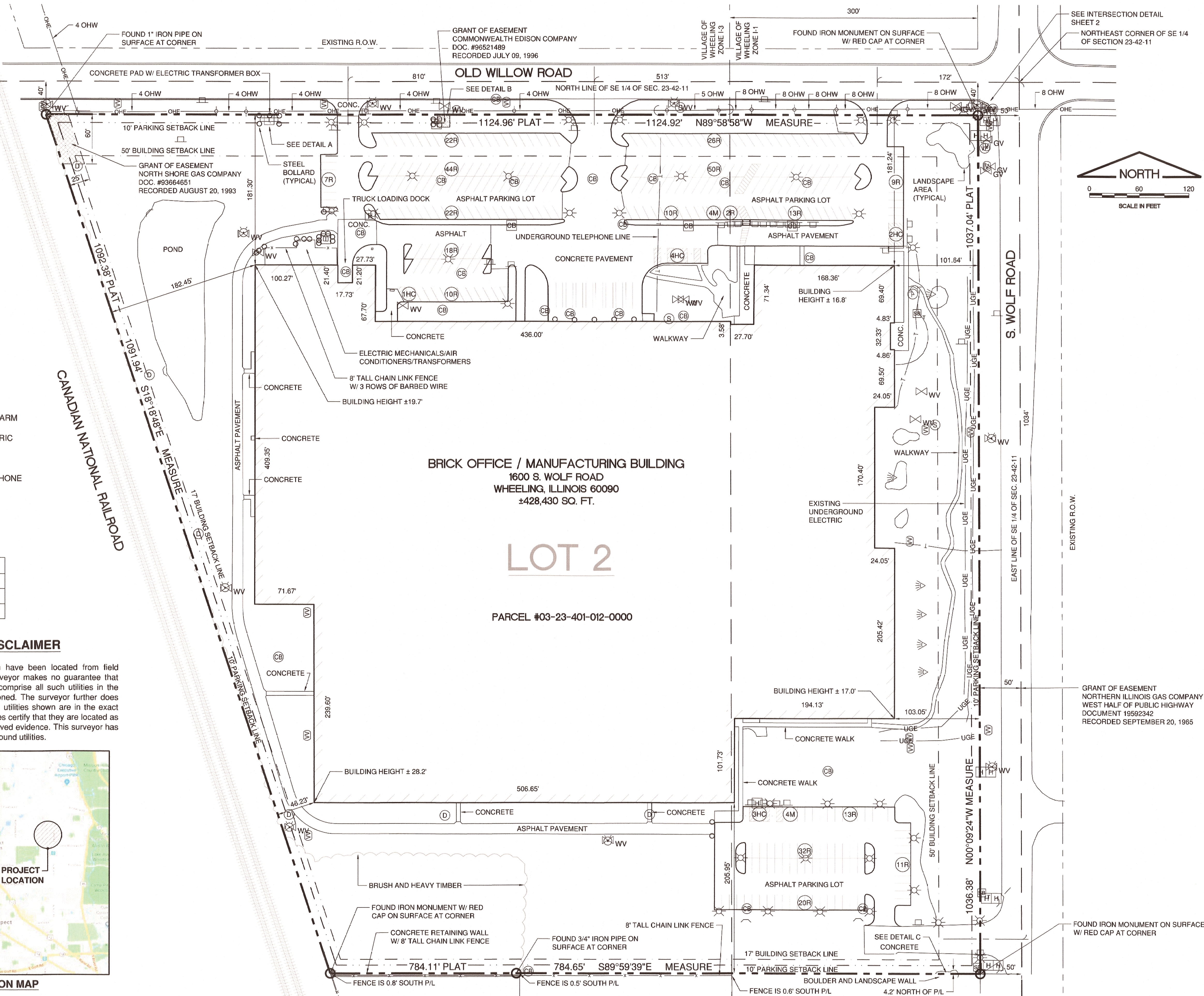
PARKING SPACES	SYMBOL
HANDICAP = 10	HC
MOTORCYCLE = 8	M
REGULAR = 309	R
TOTAL = 327	

UTILITY DISCLAIMER

The underground utilities shown have been located from field survey information only. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from observed evidence. This surveyor has not physically located the underground utilities.

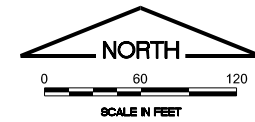


LOCATION MAP



License No. 184-000613

CONSULTANTS



PROPOSED 5'
CONCRETE
SIDEWALK

GRANT OF EASEMENT
NORTHERN ILLINOIS GAS COMPANY
WEST HALF OF PUBLIC HIGHWAY
DOCUMENT 19592342
RECORDED SEPTEMBER 20, 1965



OWNER :

THE SUBURBAN BUS DIVISION
OF THE REGIONAL
TRANSPORTATION AUTHORITY

MARK	DATE	DESCRIPTION
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PROJECT NO:	180232-01-02
-------------	--------------

CAD DWG FILE:

DESIGNED BY:

DRAWN BY: _____

CHECKED BY: KDN

APPROVED BY: _____

COPYRIGHT: CRAWFORD MURPHY & TILLY, INC. 2012

COPYRIGHT: CRAWFORD, MURPHY & TILLY, INC. 2013

SHEET TITLE

SITE PLAN

SHEET 2 OF 9

PARKING SUMMARY

N. SIDE BUILDING

EXISTING - 246 SPACES
TO BE REMOVED - 14 REGULAR SPACES

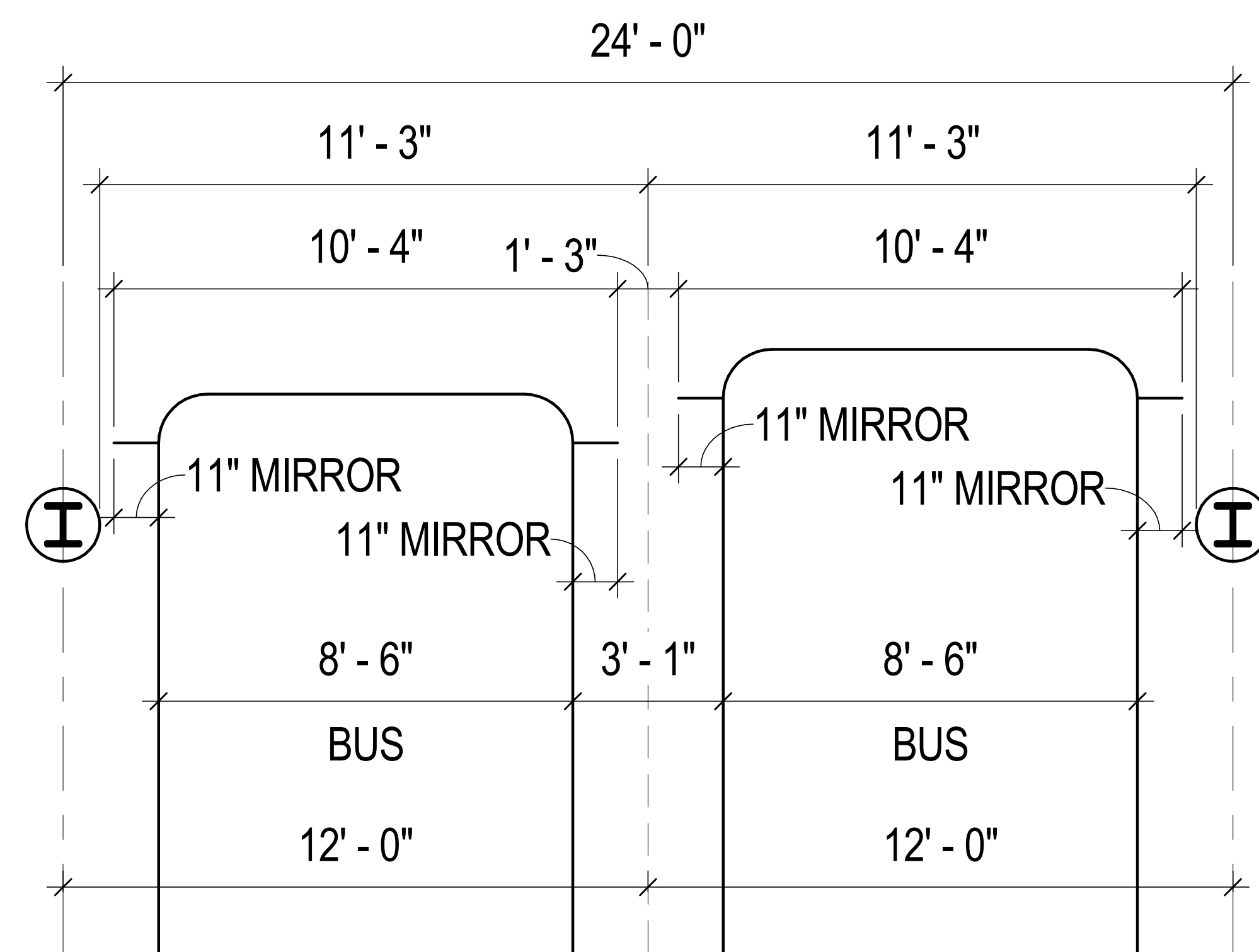
NET - 232 SPACES

SE CORNER OF PROPERTY

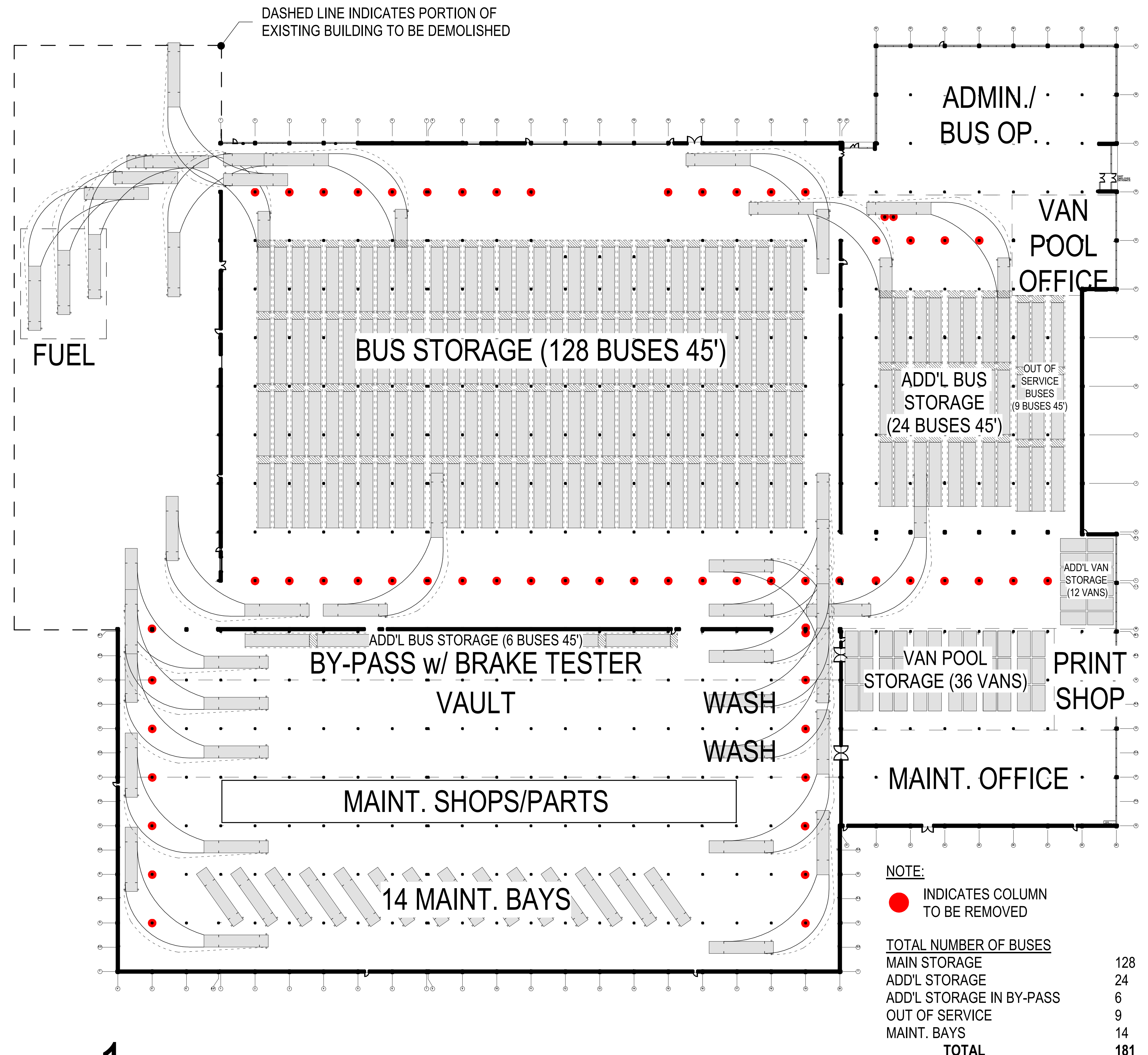
EXISTING - 81 SPACES
PROPOSED TO REMAIN - 62 SPACES

TOTAL - 294 SPACES

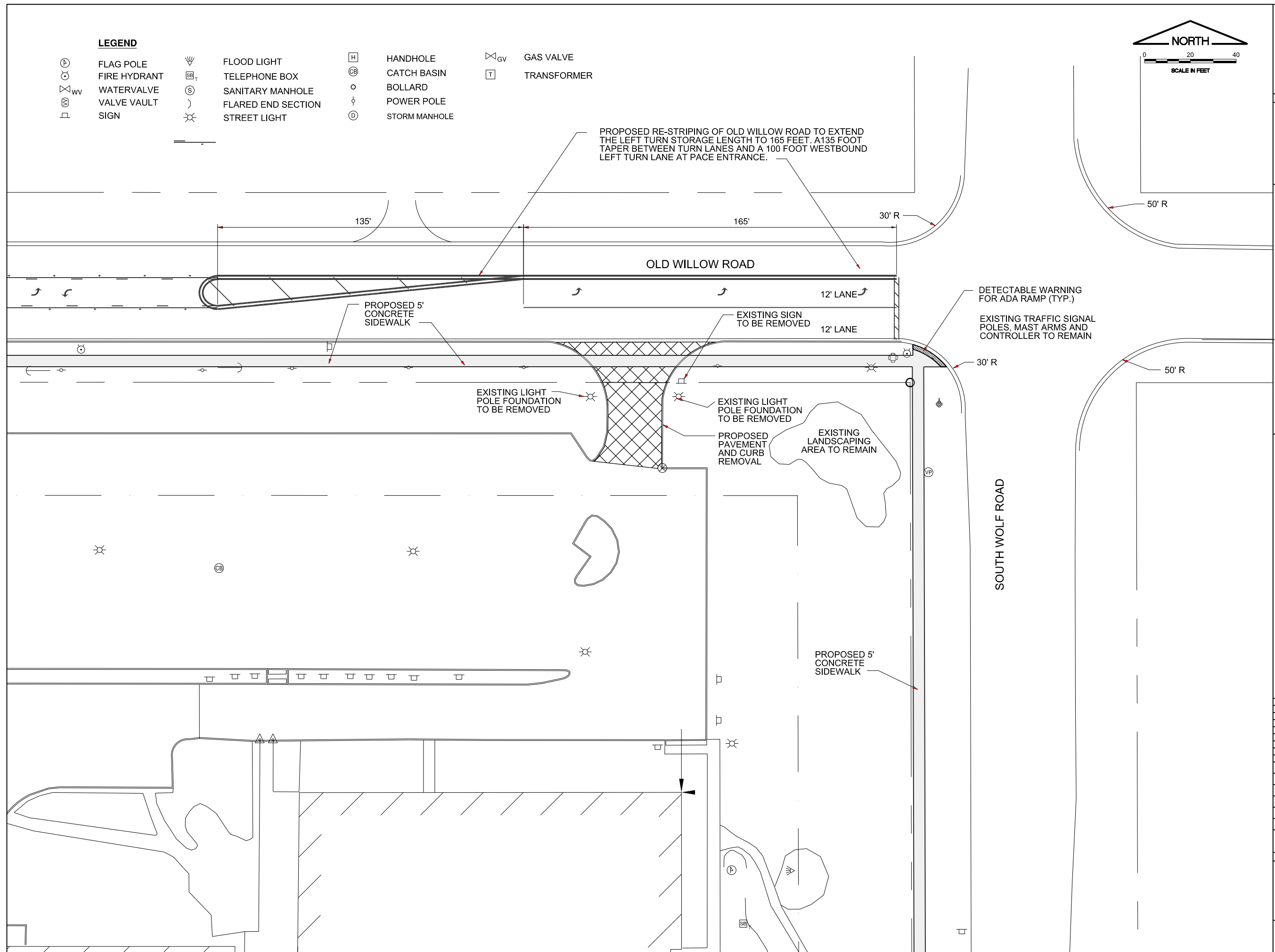
BUILDING SQUARE FOOTAGE	
ADMIN. & BUS OP.	18,800 SF
BUS STORAGE	147,900 SF
ADD'L BUS STORAGE & OUT OF SERVICE BUSES	49,600 SF
BUS BY-PASS w/ BRAKE TESTER	17,850 SF
BUS VAULT AND WASH	34,500 SF
BUS MAINTENANCE AND PARTS	69,450 SF
MAINTENANCE OFFICE	13,100 SF
PRINT SHOP	3,200 SF
VAN POOL OFFICE	5,100 SF
VAN POOL STORAGE	11,050 SF
TOTAL	370,550 SF



2 BUS LANE SPACING



1 PLAN - OPTION 1



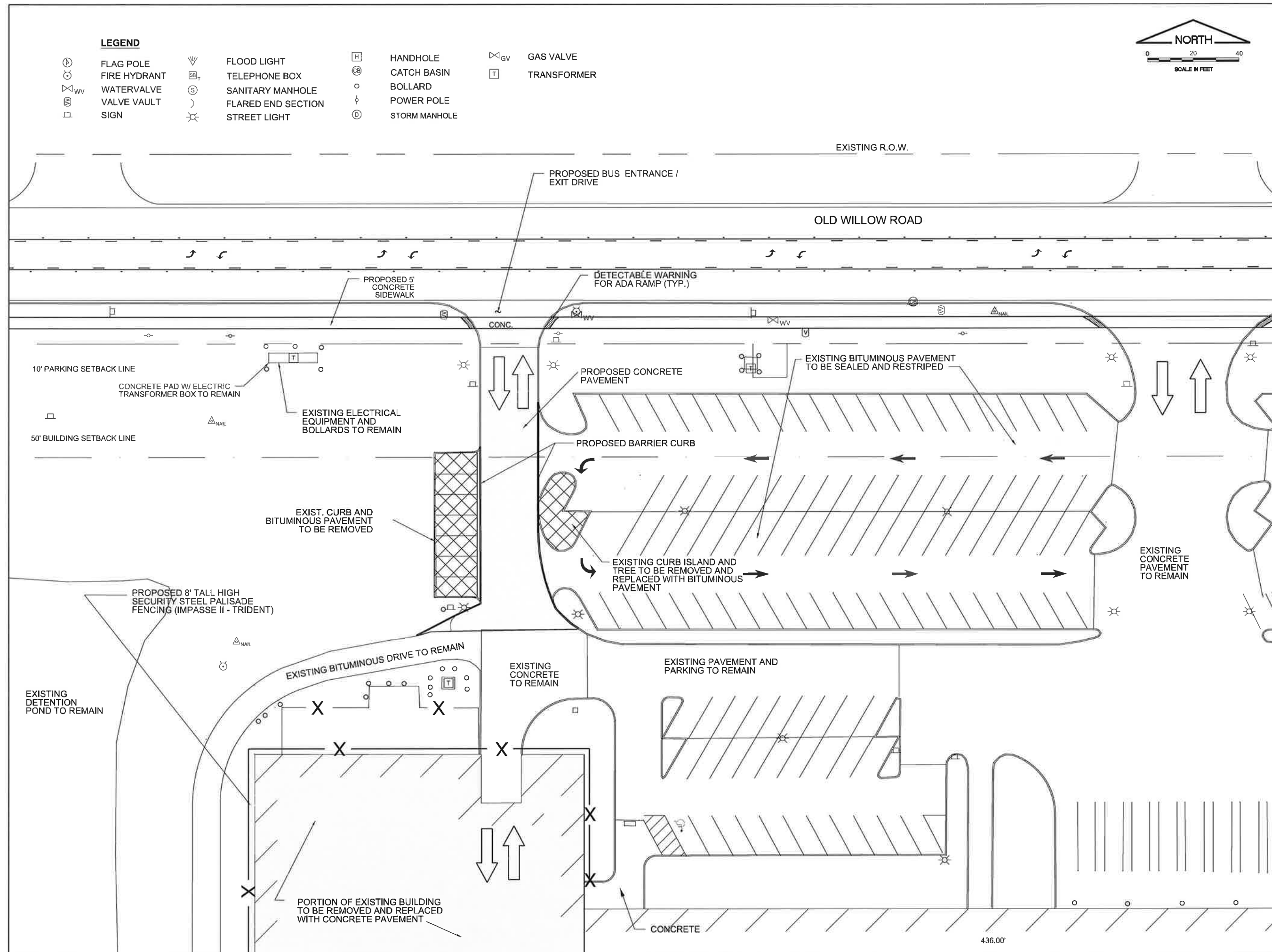
CONSULTANTS



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DATE		DESCRIPTION
PROJECT NO: 180232-01-02		
CAD DWG FILE:		
DESIGNED BY:		
DRAWN BY:		
CHECKED BY: KDN		
APPROVED BY:		
COPYRIGHT: CRAWFORD, MURPHY & TILLY, INC. 2013		

PROPOSED SITE PLAN
IMPROVEMENTS OLD
WILLOW ROAD
ACCESS /EAST ENTRANCE

DETAIL 1B



License No. 184-000613

CONSULTANTS



OWNER : PACE
THE SUBURBAN BUS DIVISION
OF THE REGIONAL
TRANSPORTATION AUTHORITY

M	A	R	K
D	A	T	E
D	E	S	C
I	P	T	I
O	N		
P	R	O	J
E	C	T	:
180232-01-02			
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DESIGNED BY:			
DRAWN BY:			
CHECKED BY:	KDN		
APPROVED BY:			
COPYRIGHT:	CRAWFORD, MURPHY & TILLY, INC.	2013	

SHEET TITLE

**PROPOSED SITE PLAN
IMPROVEMENTS OLD
WILLOW ROAD
ACCESS /WEST ENTRANCE**

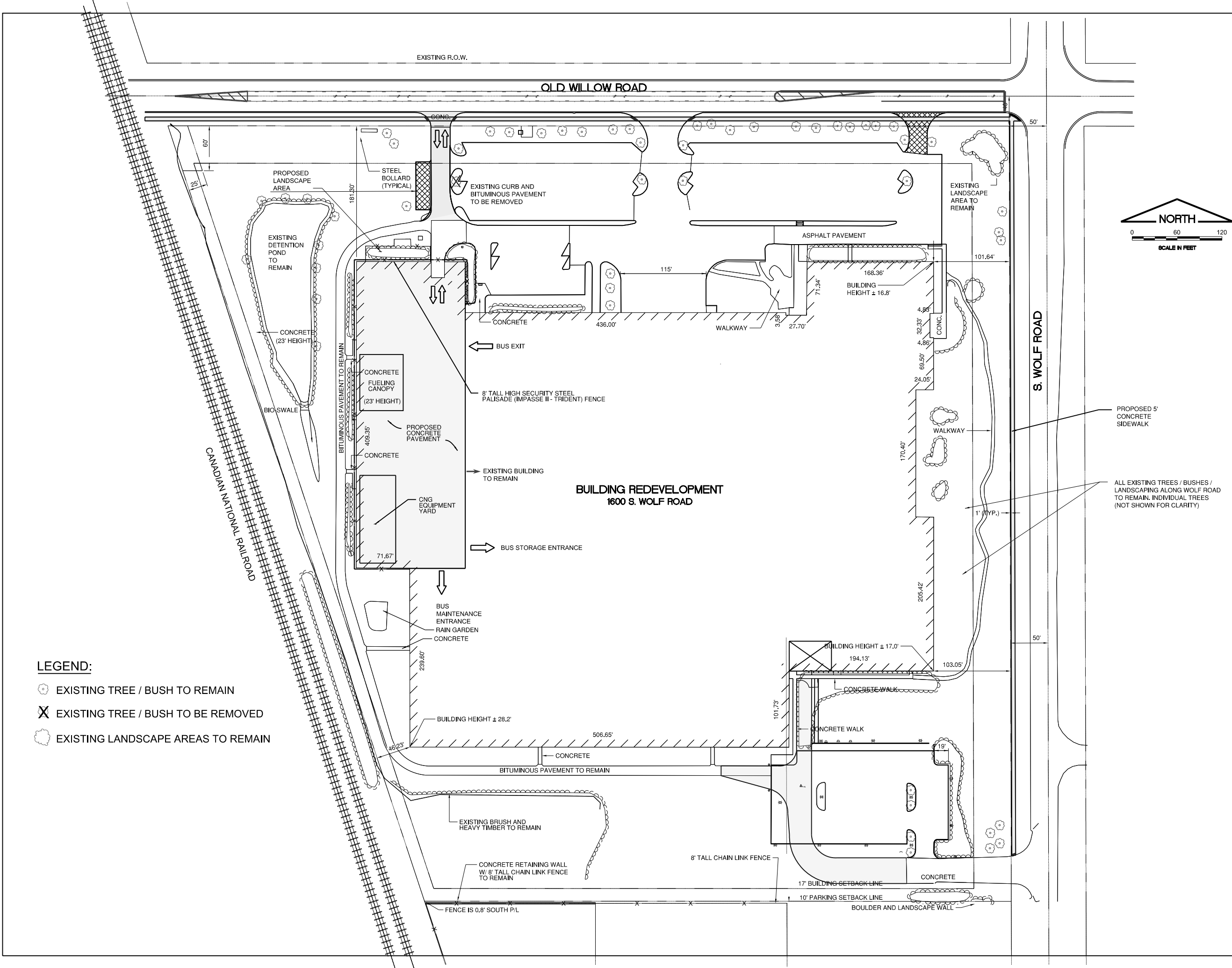
DETAIL 1A







Similar CNG Fueling Canopy (South Division) - October 2, 2018



LEGEND:

- EXISTING TREE / BUSH TO REMAIN
- EXISTING TREE / BUSH TO BE REMOVED
- EXISTING LANDSCAPE AREAS TO REMAIN



License No. 184-000613

CONSULTANTS



OWNER :
PACE
THE SUBURBAN BUS DIVISION
OF THE REGIONAL
TRANSPORTATION AUTHORITY

MARK	DATE	DESCRIPTION
PROJECT NO: 180232-01-02		
CAD DWG FILE:		
DESIGNED BY:		
DRAWN BY:		
CHECKED BY: KDN		
APPROVED BY:		
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SHEET TITLE
**SITE LANDSCAPE
PLAN**



AESTHETIC APPEAL. UNPARALLELED PROTECTION.

Traditional security fences of chain link or wire mesh *are no longer enough* to meet today's increased security demands. Ameristar's Impasse II security fence offers the *resistive strength* of heavy-duty *steel pales secured vertically* to a framework of *specially formed rails and I-beam posts*. The stylish design of the Impasse II, combined with its strength and security, *provides a successful first line of defense*.



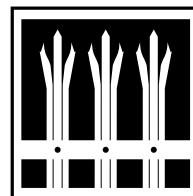
Primary applications for Impasse II ornamental steel fence systems include:

- **Military Sites**
- **Government Facilities**
- **Petroleum & Chemical Facilities**
- **Power Plants & Substations**
- **Airports**
- **Data Centers**
- **Ports of Entry**
- **Water Treatment & Storage**

IMPASSE II®

HIGH SECURITY STEEL PALISADE FENCE

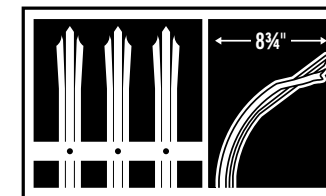
2.75"w x 14ga PALES | 2"x 2"x11ga RAILS | 3"x 2.75" x 12ga & 4"x 2.75" x 11ga I-BEAM POSTS



TRIDENT™

The Impasse Trident *pale rises above the topmost rail and terminates with a menacing triple-pointed splayed spear tip*. The intimidating look of the Trident corrugated pale is a *visual deterrent* to any who would dare to intrude.

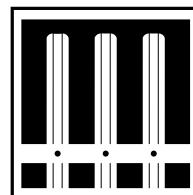
- 3-RAIL PANELS | 6', 7', 8', 9' & 10' HEIGHTS
- 2-RAIL PANELS | 6', 7' & 8' HEIGHTS



GAUNTLET™

Gauntlet is designed with *high-tensile steel corrugated pales that rise above the topmost rail with an outward curve* and terminate with a triple-pointed splayed spear tip. The outward curved pales *discourage attempts to gain access* by would be intruders.

- 3-RAIL PANELS | 6', 7', 8', 9' & 10' HEIGHTS
- 2-RAIL PANELS | 6', 7' & 8' HEIGHTS



STRONGHOLD™

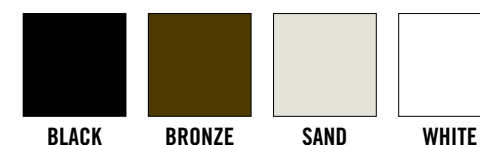
The *blunt, slightly rounded tip* of the Stronghold offers strength when necessary, while providing *safety and security to the general public*. The Stronghold features the *same structural configurations of its high-security counterparts*.

- 3-RAIL PANELS | 6', 7', 8', 9' & 10' HEIGHTS
- 2-RAIL PANELS | 6', 7' & 8' HEIGHTS

ANTI-SCALE OPTION

The Impasse II *Anti-Scale fence system* has *decreased pale spacing*, which helps deter the assailant from climbing, and *increases the delay time when trying to cut or pry through the fence*.

COLOR OPTIONS



Custom colors also available





PERMACOAT™

Impasse II is protected by the unique PermaCoat process. Our **PRE-GALVANIZED STEEL BASE MATERIAL** is subjected to an **11-STAGE PROCESS** to cleanse & prepare the steel for a **DUAL TOP-COAT FINISH**. PermaCoat's corrosion resistant abilities far surpass those of painted surfaces and have a "no-mar" polyester powder top coat. This dual coating not only provides **RESISTANCE FROM WEATHERING** but also reduces scratch & burnishing marks typically encountered during shipping.



PRE-TREATMENT

1
ALKALINE WASH
Cleans metal for proper adhesion of zinc phosphate

2
FIXIDINE RINSE
Rinses excess alkaline prior to zinc phosphate application

3
ZINC PHOSPHATE
Corrosion resistant layer that assists in bonding powder coating

4
CLEAR WATER RINSE
A bit of clean H2O to prep for the next phase

5
NON-CHROMATE SEAL
Barrier to prevent moisture from reaching base metal

6
CLEAR WATER RINSE
Final wash in H2O to remove any excess debris or particles

7
DRYING OVEN
Eliminates all moisture prior to double coating

ONCE COMPLETED, THESE 7-STAGES WILL HAVE **REMOVED EVERYTHING** FROM THE SURFACE OF THE STEEL THAT **MIGHT INHIBIT** THE FINISH FROM **PROPERLY ADHERING** DURING THE **NEXT 4-STAGES** OF THE COATING PROCESS.

DOUBLECOATING

8
EPOXY POWDER COAT
Epoxy powder is electrostatically applied

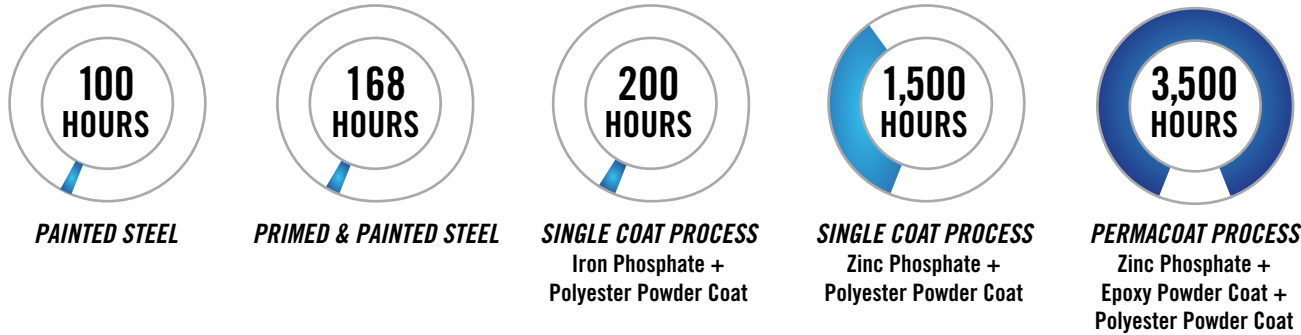
9
EPOXY GEL OVEN
Powder is gelled & cured to finish coat

10
POLYESTER POWDER
TGIC powder is electro-statically applied

11
FINISH CURING OVEN
Seals finish for years of maintenance free use

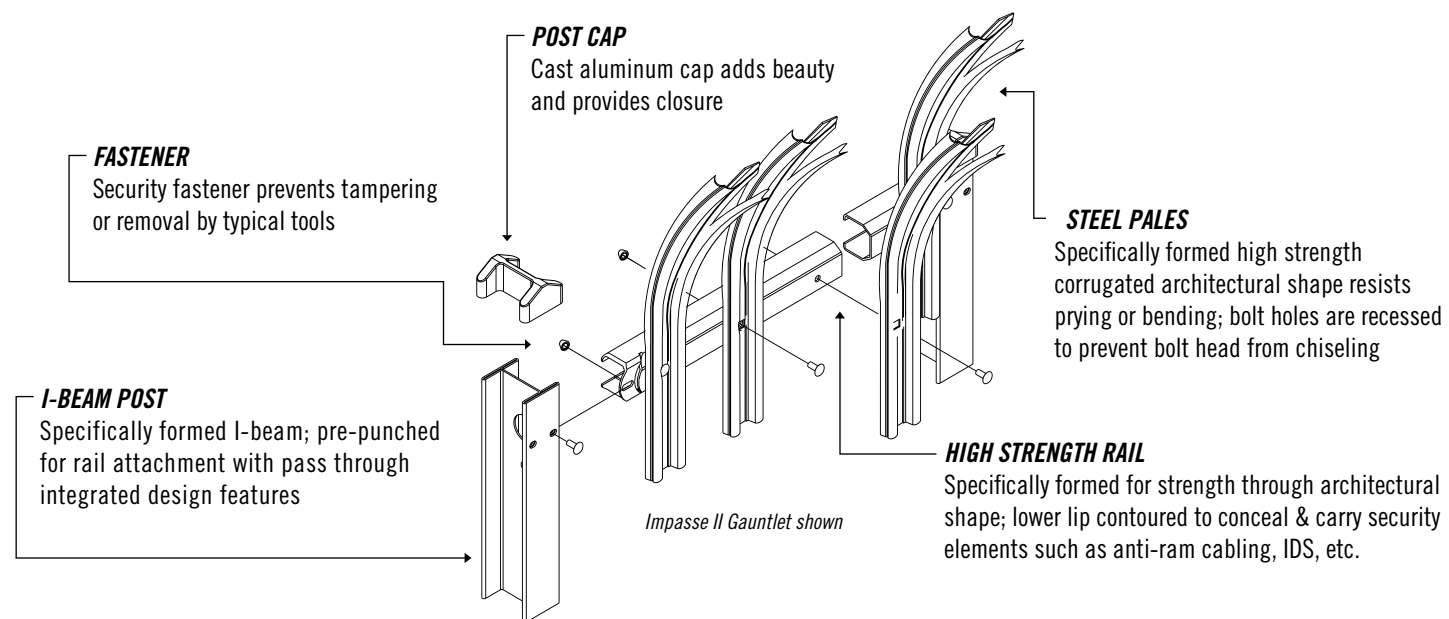
CORROSIONTESTING

Corrosion occurs more easily without the proper preparation & protection, which is why Ameristar has put our fence products to the test based on ASTM B117 standards. *The results speak for themselves.*



IMPASSABLE DESIGN

Impasse II panels and posts are manufactured using **HIGH-TENSILE PRE-GALVANIZED G-90 STEEL**. Each component has been **ROLL-FORMED** into a unique profile that yields significant strength properties. Impasse II's distinct design enables the fence to **TRAVERSE AGGRESSIVE CHANGES IN GRADE IN ORDER TO MAINTAIN SECURITY** along any perimeter. Each connection point of the Impasse II system is secured with **TAMPER-PROOF FASTENERS** providing the **HIGHEST LEVEL OF SECURITY & VERSATILITY**.



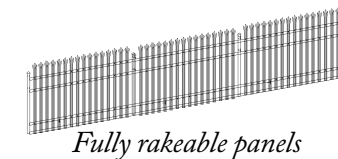
PRIVACY SCREENING OPTION

A security fence should cover multiple aspects of perimeter security, which is why Ameristar created the steel privacy screening option for its Impasse high security fence system. Secured by each adjacent pale, the overlapping design achieves the maximum level of opacity for visual screening.



RAKEABLE VS STAIR-STEP

Biasability at a minimum of 25% that requires no additional assembly. This unique feature eliminates unsightly stair-stepping panels.



DESIGN INTEGRATION

The Impasse II framework is a raceway for wiring, conduits & security cabling required around the perimeter of a project. This integrated design eliminates the need for costly trenching & boring becoming a value added solution for perimeter security upgrades.



(inside of rail shown above / view from protected side)

When installing these security elements use Impasse II as a platform:

- **Communication & Video Cables**
- **Intrusion Detection / Fiber Optic Cables**
- **Access Control Wiring**
- **Conduits**
- **Anti-Ram Cabling (Stalwart IS)**



Certified by the US Department of Homeland Security as a method of risk management against acts of terrorism



Ameristar's Impasse II is backed by over 30 years of excellence in the fencing industry

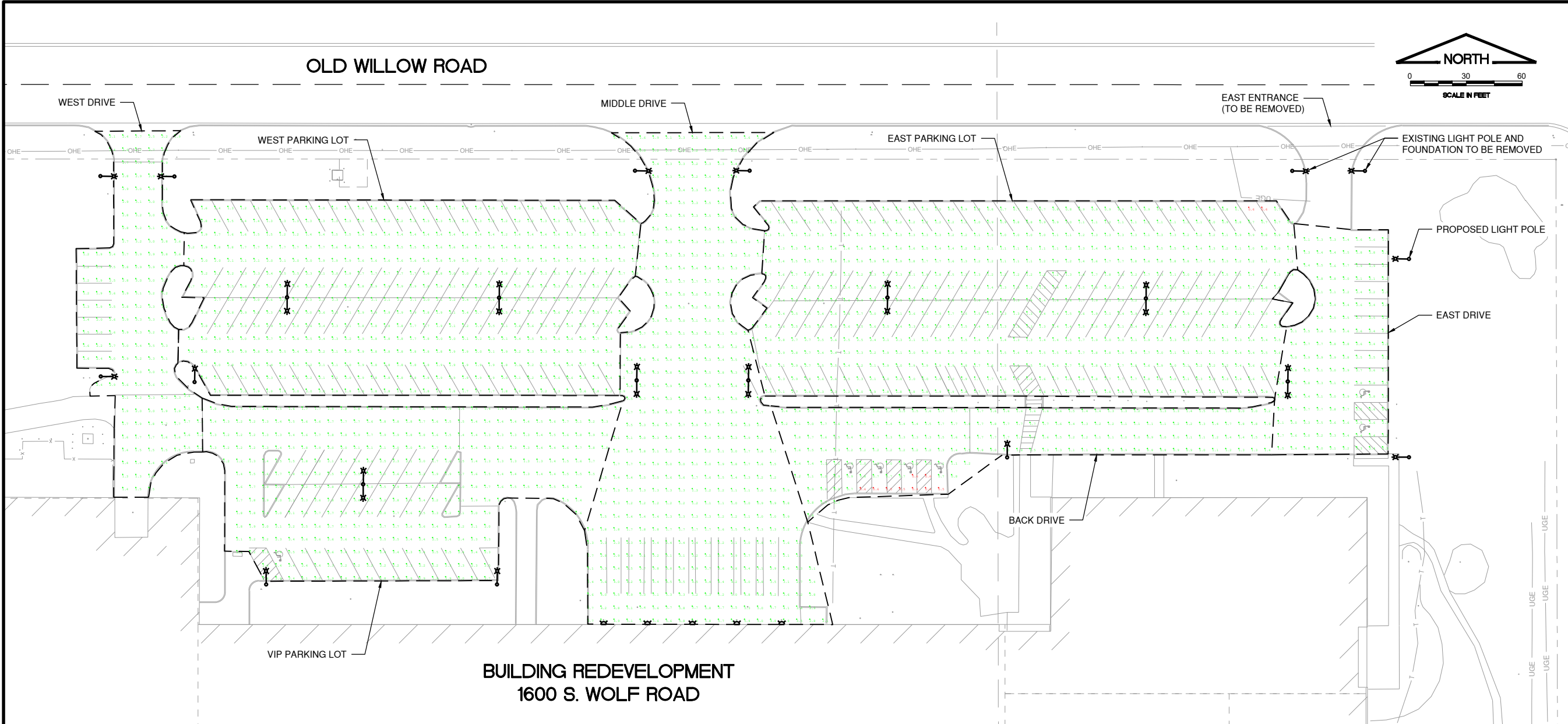


Ameristar products are manufactured domestically in Tulsa, Oklahoma



Manufactured from up to 96% recycled domestic steel, Impasse II products earn project LEED points

Path: L:\PaceBus\18023201-02\Draw\Roadway\CADD_Sheets\Photometric Exhibit.dwg
Date: Wednesday, October 31, 2018 1:13:47 PM



LIGHT FIXTURE SCHEDULE					
MANUFACTURER	MAKE	MODEL #	LAMP	WATTS (W)	LUMEN OUTPUT (Fc)
AMERICAN ELECTRIC	ASA	ASA-23-S-RN-RM	HPS	250	15,053
LITHONIA	DSX1	DSX1-P5-30K-T3M	LED	138	14,704
LITHONIA	DSXW2	DSXW2 LED-30C-1000-30K-T3M	LED	109	10,505

* LED FIXTURE WAS CHOSEN TO MATCH EXISTING HPS LIGHT FIXTURE LUMEN OUTPUT

EXISTING HIGH PRESSURE SODIUM (HPS) FIXTURE ILLUMINANCE (Fc) WITH 0.7 LLF					
LOCATION	AVERAGE	MAXIMUM	MINIMUM	AVG/MIN	MAX/MIN
BACK DRIVE	0.77	3.7	0.0	N.A.	N.A.
EAST DRIVE	1.14	3.8	0.0	N.A.	N.A.
EAST PARKING LOT	1.63	4.8	0.2	8.15	24.00
MIDDLE DRIVE	0.99	3.9	0.0	N.A.	N.A.
VIP PARKING LOT	1.72	5.2	0.3	5.73	17.33
WEST DRIVE	2.40	5.8	0.4	6.00	14.50
WEST PARKING LOT	1.99	5.5	0.6	3.32	9.17

- LEGEND**
- 30-FOOT SQUARE STEEL POLE WITH (1) SHOE BOX TYPE LUMINAIRE, POWDER COATED DARK BRONZE.
 - 30-FOOT SQUARE STEEL POLE WITH (2) BACK-TO-BACK SHOE BOX TYPE LUMINAIRES, POWDER COATED DARK BRONZE.
 - 20-FOOT WALL MOUNTED LUMINAIRE (DSXW2), POWDER COATED DARK BRONZE.

PROPOSED LIGHT EMITTING DIODE (LED) FIXTURE ILLUMINANCE (Fc) WITH 0.8 LLF					
LOCATION	AVERAGE	MAXIMUM	MINIMUM	AVG/MIN	MAX/MIN
BACK DRIVE	1.33	2.4	0.4	3.33	6.00
EAST DRIVE	2.39	4.0	1.1	2.17	3.64
EAST PARKING LOT	1.77	4.0	0.6	2.95	6.67
MIDDLE DRIVE	2.71	5.8	0.7	3.87	8.29
VIP PARKING LOT	1.97	4.0	1.2	1.64	3.33
WEST DRIVE	2.45	3.5	1.2	2.04	2.92
WEST PARKING LOT	2.04	4.1	0.9	2.27	4.56

* LED FIXTURE CALCULATIONS ARE SHOWN IN THE PLAN VIEW (GREEN AREAS ≥ 0.6 Fc, RED AREAS ≤ 0.5 Fc)



License No. 184-000613

CONSULTANTS

PACE



OWNER :
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THE SUBURBAN BUS DIVISION
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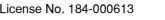
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PROJECT NO: 180232-01-02
CAD DWG FILE: EX-SHEET 1.DWG
DESIGNED BY: CPT
DRAWN BY: CPT
CHECKED BY: AB
APPROVED BY: KDN
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SHEET TITLE
NORTH PARKING LOT
PHOTOMETRIC
CALCULATIONS

EXHIBIT 1-A

SHEET 1 OF 3



CONSULTANTS



PROPOSED LIGHT EMITTING DIODE (LED) FIXTURE ILLUMINANCE (Fc) WITH 0.8 LLF					
LOCATION	AVERAGE	MAXIMUM	MINIMUM	AVG/MIN	MAX/MIN
CNG FUELING LOT	1.76	5.5	0.8	2.20	6.88
CNG FUELING CANOPY	5.57	8.9	2.1	2.65	4.24

LEGEND

- 

OWNER :

THE SUBURBAN BUS DIVISION
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PROJECT NO:	180232-01-02
CAD DWG FILE:	EX-SHEET 1.DWG
DESIGNED BY:	CPT
DRAWN BY:	CPT
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SHEET TITLE

CNG FUELING LOT PHOTOMETRIC CALCULATIONS

EXHIBIT 1-B

SHEET 2 OF 3



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PACE



PAGE
THE SUBURBAN BUS DIVISION
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MARK	DATE	DESCRIPTION

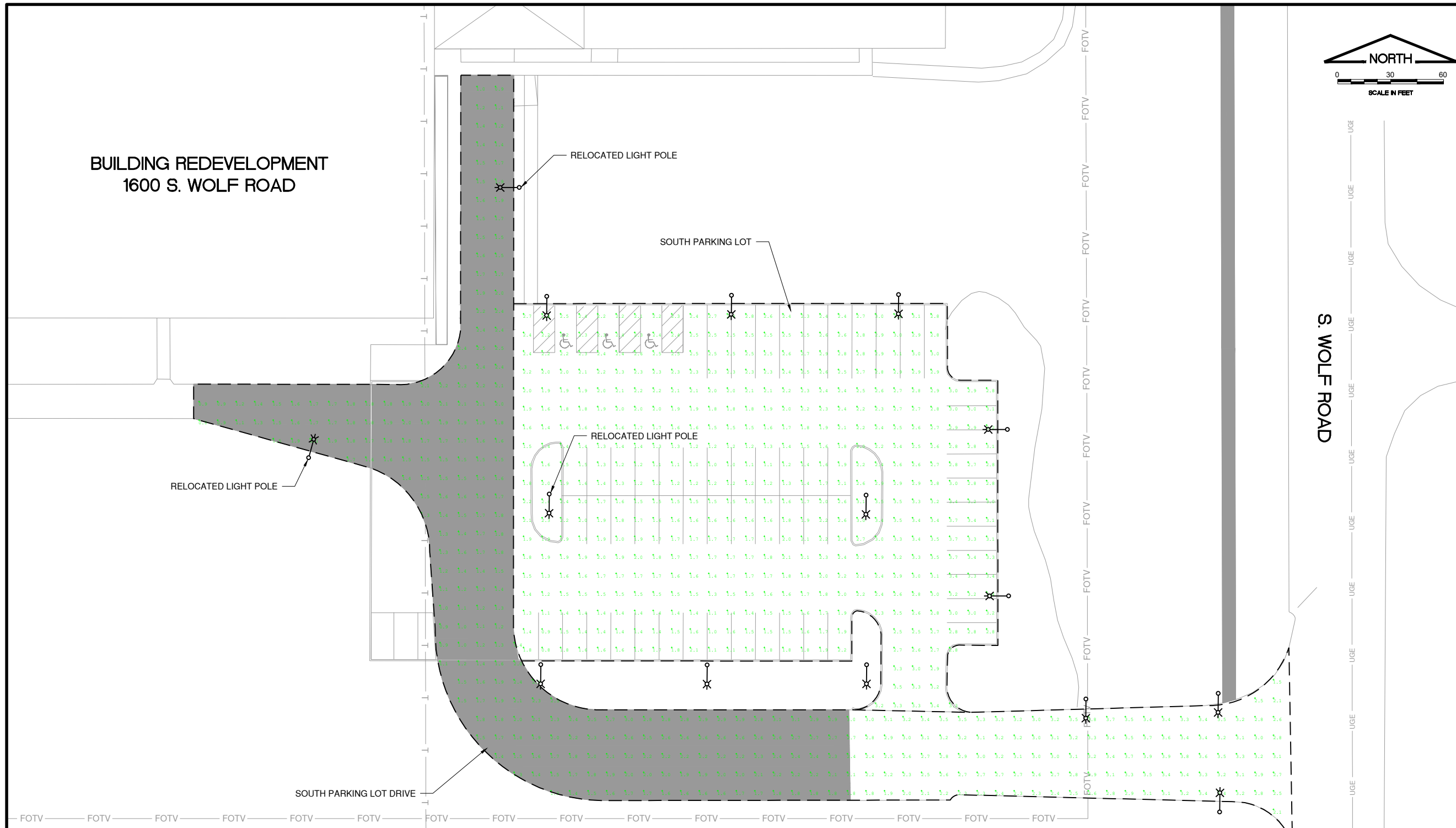
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DESIGNED BY:	CPT
DRAWN BY:	CPT
CHECKED BY:	AB
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SHEET TITLE

SOUTH PARKING LOT
PHOTOMETRIC
CALCULATIONS

EXHIBIT 1-C

SHEET 3 OF 3



LIGHT FIXTURE SCHEDULE					
MANUFACTURER	MAKE	MODEL #	LAMP	WATTS (W)	LUMEN OUTPUT (Fc)
LITHONIA	DSX1	DSX1-P5-30K-T3M	LED	138	14,704
LITHONIA	DSXW2	DSXW2 LED-30C-1000-30K-T3M	LED	109	10,505

PROPOSED LIGHT EMITTING DIODE (LED) FIXTURE ILLUMINANCE (Fc) WITH 0.8 LLF					
LOCATION	AVERAGE	MAXIMUM	MINIMUM	AVG/MIN	MAX/MIN
SOUTH PARKING LOT	2.15	3.7	0.8	2.69	4.63
SOUTH PARKING LOT DRIVE	2.20	3.9	0.8	2.75	4.88

* FIXTURE CALCULATIONS ARE SHOWN IN THE PLAN VIEW (GREEN AREAS $\geq 0.6 F_c$, RED AREAS $\leq 0.5 F_c$)

LEGEND

-  30-FOOT SQUARE STEEL POLE WITH (1) SHOE BOX TYPE LUMINAIRE, POWDER COATED DARK BRONZE.
-  30-FOOT SQUARE STEEL POLE WITH (2) BACK-TO-BACK SHOE BOX TYPE LUMINAIRES, POWDER COATED DARK BRONZE.



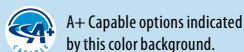
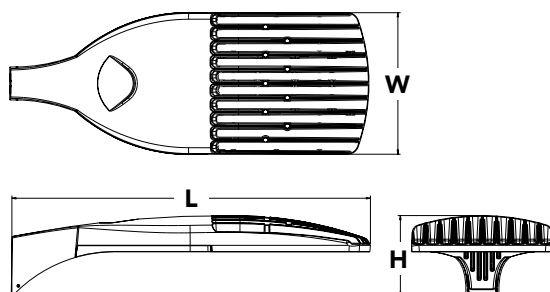
D-Series Size 1 LED Area Luminaire

d#series



Specifications

EPA:	1.01 ft ² (0.09 m ²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height:	7-1/2" (19.0 cm)
Weight (max):	27 lbs (12.2 kg)



Catalog

Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a **shaded background**. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability¹
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **shaded background**¹

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: [Link to Roam](#); [Link to DTL DLL](#)

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA DDBXD

DSX1LED					
Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX1 LED	Forward optics P1 P4 P7 P2 P5 P8 P3 P6 P9 Rotated optics P10 ¹ P12 ¹ P11 ¹ P13 ¹	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted ²	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control ^{2,3} LCCO Left corner cutoff ^{2,3} RCCO Right corner cutoff ^{2,3}	MVOLT ^{4,5} 120 ⁶ 208 ^{5,6} 240 ^{5,6} 277 ⁶ 347 ^{5,6,7} 480 ^{5,6,7}	Shipped included SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor ⁸ RPUMBA Round pole universal mounting adaptor ⁸ Shipped separately KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish) ⁹
Control options				Other options	Finish (required)
Shipped installed NLTAIR2 nLight AIR generation 2 enabled ¹⁰ PER NEMA twist-lock receptacle only (controls ordered separate) ¹¹ PER5 Five-wire receptacle only (controls ordered separate) ^{11,12} PER7 Seven-wire receptacle only (controls ordered separate) ^{11,12} DMG 0-10V dimming extend out back of housing for external control (leads exit fixture) DS Dual switching ^{13,14} PIR Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc ^{5,15,16} PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc ^{5,15,16} PIRHN Network, Bi-Level motion/ambient sensor ¹⁷ PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc ^{5,15,16}				Shipped installed HS House-side shield ²¹ SF Single fuse (120, 277, 347V) ⁶ DF Double fuse (208, 240, 480V) ⁶ L90 Left rotated optics ¹ R90 Right rotated optics ¹ Shipped separately BS Bird spikes ²² EGS External glare shield ²²	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white
PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc ^{5,15,16} BL30 Bi-level switched dimming, 30% ^{5,14,18} BL50 Bi-level switched dimming, 50% ^{5,14,18} PNMTDD3 Part night, dim till dawn ^{5,19} PNMT5D3 Part night, dim 5 hrs ^{5,19} PNMT6D3 Part night, dim 6 hrs ^{5,19} PNMT7D3 Part night, dim 7 hrs ^{5,19} FAO Field adjustable output ²⁰					



Ordering Information

Accessories

Ordered and shipped separately.

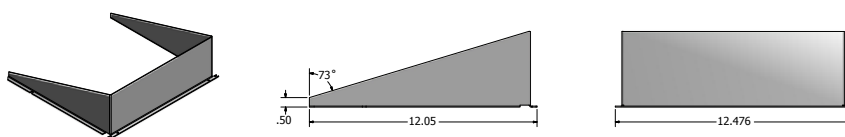
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) ²³
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ²³
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ²³
DSHORT SBK U	Shorting cap ²³
DSX1HS 30C U	House-side shield for 30 LED unit ²¹
DSX1HS 40C U	House-side shield for 40 LED unit ²¹
DSX1HS 60C U	House-side shield for 60 LED unit ²¹
PUMBA DOBXD U*	Square and round pole universal mounting bracket (specify finish) ²⁴
KMA8 DOBXD U	Mast arm mounting bracket adaptor (specify finish) ⁴

For more control options, visit [DTL](#) and [ROAM](#) online.

NOTES

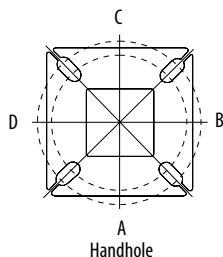
- 1 P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
- 2 AMBPC is not available with BLC, LCCO, RCCO or P4, P7, P8, P9 or P13.
- 3 Not available with HS.
- 4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- 5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
- 6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- 7 Not available in P1 or P10. Not available with BL30, BL50 or PNMT options.
- 8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
- 9 Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
- 10 Must be ordered with PIRHN.
- 11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
- 12 If ROAM[®] node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR. Node with integral dimming. Shorting cap included.
- 13 Provides 50/50 fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
- 14 Requires (2) separately switched circuits.
- 15 Reference Motion Sensor table on page 3.
- 16 Reference PER table on page 3 to see functionality.
- 17 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit [this link](#).
- 18 Not available with 347V, 480V, PNMT, DS. For PER5 or PER7, see PER Table on page 3. Requires isolated neutral.
- 19 Not available with 347V, 480V, DS, BL30, BL50. For PER5 or PER7, see PER Table on page 3. Separate Dusk to Dawn required.
- 20 Not available with other dimming controls options.
- 21 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
- 22 Must be ordered with fixture for factory pre-drilling.
- 23 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
- 24 For retrofit use only.

External Glare Shield



Drilling

HANDHOLE ORIENTATION



Tenon Mounting Slipfitter**

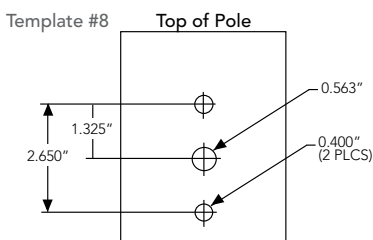
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Pole drilling nomenclature: # of heads at degree from handhole (default side A)					
DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS
1 @ 90°	2 @ 280°	2 @ 90°	3 @ 120°	3 @ 90°	4 @ 90°
Side B	Side B & D	Side B & C	Round pole only	Side B, C, & D	Sides A, B, C, D

Note: Review luminaire spec sheet for specific nomenclature

Pole top or tenon O.D.	4.5" @ 90°	4" @ 90°	3.5" @ 90°	3" @ 90°	4.5" @ 120°	4" @ 120°	3.5" @ 120°	3" @ 120°
DSX SPA	Y	Y	Y	N	-	-	-	-
DSX RPA	Y	Y	N	N	Y	Y	Y	Y
DSX SPUMBA	Y	N	N	N	-	-	-	-
DSX RPUMBA	N	N	N	N	Y	Y	Y	N

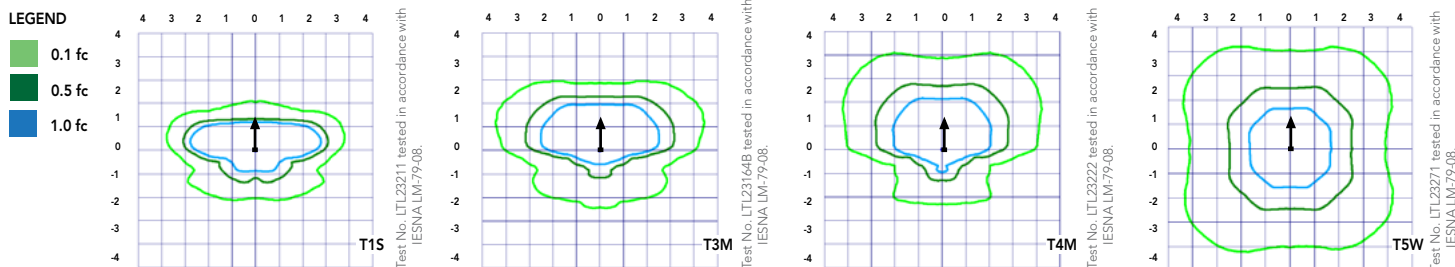
*3 fixtures @120 require round pole top/tenon.



Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's [D-Series Area Size 1 homepage](#).

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').



One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • [www.lithonia.com](#)
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DSX1-LED
Rev. 07/25/18
Page 2 of 7

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25000	50000	100000
Lumen Maintenance Factor	1.00	0.96	0.92	0.85

Electrical Load

	Performance Package	LED Count	Drive Current	Wattage	Current (A)					
					120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	30	530	54	0.45	0.26	0.23	0.19	0.10	0.12
	P2	30	700	70	0.59	0.34	0.30	0.25	0.20	0.16
	P3	30	1050	102	0.86	0.50	0.44	0.38	0.30	0.22
	P4	30	1250	125	1.06	0.60	0.52	0.46	0.37	0.27
	P5	30	1400	138	1.16	0.67	0.58	0.51	0.40	0.29
	P6	40	1250	163	1.36	0.78	0.68	0.59	0.47	0.34
	P7	40	1400	183	1.53	0.88	0.76	0.66	0.53	0.38
	P8	60	1050	207	1.74	0.98	0.87	0.76	0.64	0.49
	P9	60	1250	241	2.01	1.16	1.01	0.89	0.70	0.51
Rotated Optics (Requires L90 or R90)	P10	60	530	106	0.90	0.52	0.47	0.43	0.33	0.27
	P11	60	700	137	1.15	0.67	0.60	0.53	0.42	0.32
	P12	60	1050	207	1.74	0.99	0.87	0.76	0.60	0.46
	P13	60	1250	231	1.93	1.12	0.97	0.86	0.67	0.49

Motion Sensor Default Settings

Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer.

PER Table

Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✓	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✓	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion (ROAM on/off only)	⊘	⚠	Wires Capped inside fixture	⚠	Wires Capped inside fixture	Wires Capped inside fixture
Future-proof*	⊘	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture
Future-proof* with Motion	⊘	⚠	Wires Capped inside fixture	✓	Wires Capped inside fixture	Wires Capped inside fixture

✓ Recommended

⊘ Will not work

⚠ Alternate

*Future-proof means: Ability to change controls in the future.



Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics																								
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	P1	54W	T1S	6,457	2	0	2	120	6,956	2	0	2	129	7,044	2	0	2	130	3,640	1	0	1	70
				T2S	6,450	2	0	2	119	6,949	2	0	2	129	7,037	2	0	2	130	3,813	1	0	1	73
				T2M	6,483	1	0	1	120	6,984	2	0	2	129	7,073	2	0	2	131	3,689	1	0	1	71
				T3S	6,279	2	0	2	116	6,764	2	0	2	125	6,850	2	0	2	127	3,770	1	0	1	73
				T3M	6,468	1	0	2	120	6,967	1	0	2	129	7,056	1	0	2	131	3,752	1	0	1	72
				T4M	6,327	1	0	2	117	6,816	1	0	2	126	6,902	1	0	2	128	3,758	1	0	1	72
				TFTM	6,464	1	0	2	120	6,963	1	0	2	129	7,051	1	0	2	131	3,701	1	0	1	71
				T5VS	6,722	2	0	0	124	7,242	3	0	0	134	7,334	3	0	0	136	3,928	2	0	0	76
				T5S	6,728	2	0	1	125	7,248	2	0	1	134	7,340	2	0	1	136	3,881	2	0	0	75
				T5M	6,711	3	0	1	124	7,229	3	0	1	134	7,321	3	0	2	136	3,930	2	0	1	76
				T5W	6,667	3	0	2	123	7,182	3	0	2	133	7,273	3	0	2	135	3,820	3	0	1	73
				BLC	5,299	1	0	1	98	5,709	1	0	2	106	5,781	1	0	2	107					
				LCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80					
				RCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80					
30	700	P2	70W	T1S	8,249	2	0	2	118	8,886	2	0	2	127	8,999	2	0	2	129	4,561	1	0	1	67
				T2S	8,240	2	0	2	118	8,877	2	0	2	127	8,989	2	0	2	128	4,777	1	0	1	70
				T2M	8,283	2	0	2	118	8,923	2	0	2	127	9,036	2	0	2	129	4,622	1	0	2	68
				T3S	8,021	2	0	2	115	8,641	2	0	2	123	8,751	2	0	2	125	4,724	1	0	1	69
				T3M	8,263	2	0	2	118	8,901	2	0	2	127	9,014	2	0	2	129	4,701	1	0	2	69
				T4M	8,083	2	0	2	115	8,708	2	0	2	124	8,818	2	0	2	126	4,709	1	0	2	69
				TFTM	8,257	2	0	2	118	8,896	2	0	2	127	9,008	2	0	2	129	4,638	1	0	2	68
				T5VS	8,588	3	0	0	123	9,252	3	0	0	132	9,369	3	0	0	134	4,922	2	0	0	72
				T5S	8,595	3	0	1	123	9,259	3	0	1	132	9,376	3	0	1	134	4,863	2	0	0	72
				T5M	8,573	3	0	2	122	9,236	3	0	2	132	9,353	3	0	2	134	4,924	3	0	1	72
				T5W	8,517	3	0	2	122	9,175	4	0	2	131	9,291	4	0	2	133	4,787	3	0	1	70
				BLC	6,770	1	0	2	97	7,293	1	0	2	104	7,386	1	0	2	106					
				LCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79					
				RCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79					
30	1050	P3	102W	T1S	11,661	2	0	2	114	12,562	3	0	3	123	12,721	3	0	3	125					
				T2S	11,648	2	0	2	114	12,548	3	0	3	123	12,707	3	0	3	125					
				T2M	11,708	2	0	2	115	12,613	2	0	2	124	12,773	2	0	2	125					
				T3S	11,339	2	0	2	111	12,215	3	0	3	120	12,370	3	0	3	121					
				T3M	11,680	2	0	2	115	12,582	2	0	2	123	12,742	2	0	2	125					
				T4M	11,426	2	0	3	112	12,309	2	0	3	121	12,465	2	0	3	122					
				TFTM	11,673	2	0	2	114	12,575	2	0	3	123	12,734	2	0	3	125					
				T5VS	12,140	3	0	1	119	13,078	3	0	1	128	13,244	3	0	1	130					
				T5S	12,150	3	0	1	119	13,089	3	0	1	128	13,254	3	0	1	130					
				T5M	12,119	4	0	2	119	13,056	4	0	2	128	13,221	4	0	2	130					
				T5W	12,040	4	0	3	118	12,970	4	0	3	127	13,134	4	0	3	129					
				BLC	9,570	1	0	2	94	10,310	1	0	2	101	10,440	1	0	2	102					
				LCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76					
				RCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76					
30	1250	P4	125W	T1S	13,435	3	0	3	107	14,473	3	0	3	116	14,657	3	0	3	117					
				T2S	13,421	3	0	3	107	14,458	3	0	3	116	14,641	3	0	3	117					
				T2M	13,490	2	0	2	108	14,532	3	0	3	116	14,716	3	0	3	118					
				T3S	13,064	3	0	3	105	14,074	3	0	3	113	14,252	3	0	3	114					
				T3M	13,457	2	0	2	108	14,497	2	0	2	116	14,681	2	0	2	117					
				T4M	13,165	2	0	3	105	14,182	2	0	3	113	14,362	2	0	3	115					
				TFTM	13,449	2	0	3	108	14,488	2	0	3	116	14,672	2	0	3	117					
				T5VS	13,987	4	0	1	112	15,068	4	0	1	121	15,259	4	0	1	122					
				T5S	13,999	3	0	1	112	15,080	3	0	1	121	15,271	3	0	1	122					
				T5M	13,963	4	0	2	112	15,042	4	0	2	120	15,233	4	0	2	122					
				T5W	13,872	4	0	3	111	14,944	4	0	3	120	15,133	4	0	3	121					
				BLC	11,027	1	0	2	88	11,879	1	0	2	95	12,029	1	0	2	96					
				LCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72					
				RCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72					
30	1400	P5	138W	T1S	14,679	3	0	3	106	15,814	3	0	3	115	16,014	3	0	3	116					
				T2S	14,664	3	0	3	106	15,797	3	0	3	114	15,997	3	0	3	116					
				T2M	14,739	3	0	3	107	15,878	3	0	3	115	16,079	3	0	3	117					
				T3S	14,274	3	0	3	103	15,377	3	0	3	111	15,572	3	0	3	113					
				T3M	14,704	2	0	3	107	15,840	3	0	3	115	16,040	3	0	3	116					
				T4M	14,384	2	0	3	104	15,496	3	0	3	112	15,692	3	0	3	114					
				TFTM	14,695	2	0	3	106	15,830	3	0	3	115	16,030	3	0	3	116					
				T5VS	15,283	4	0	1	111	16,464	4	0	1	119	16,672	4	0	1	121					
				T5S	15,295	3	0	1	111	16,477	4	0	1	119	16,686	4	0	1	121					
				T5M	15,257	4	0	2	111	16,435	4	0	2	119	16,644	4	0	2	121					
				T5W	15,157	4	0	3	110	16,328	4	0	3	118	16,534	4	0	3	120					
				BLC	12,048	1	0	2	87	12,979	1	0	2	94	13,143	1	0	2	95					
				LCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71					
					8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71					

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1

electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.





D-Series Size 2 LED Wall Luminaire



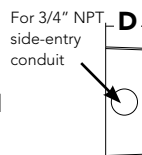
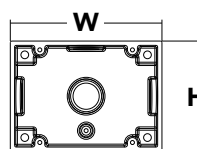
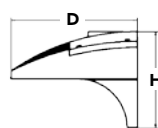
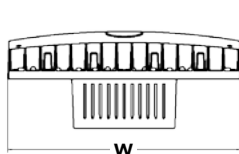
d^{series}

Specifications Luminaire

Width: 18-1/2" (47.0 cm)
Depth: 10" (25.4 cm)
Height: 7-5/8" (19.4 cm)

Back Box (BBW)

Width: 5-1/2" (14.0 cm)
Depth: 1-1/2" (3.8 cm)
Height: 4" (10.2 cm)
BBW Weight: 1 lbs (0.5 kg)



A+ Capable options indicated by this color background.

Catalog
Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL[®] controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability¹
- This luminaire is part of an A+ Certified solution for ROAM[®] or XPoint[™] Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background¹

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: [Link to Roam](#); [Link to DTL DLL](#)

Ordering Information

EXAMPLE: DSXW2 LED 30C 700 40K T3M MVOLT DDBTXD

DSXW2 LED							
Series	LEDs	Drive Current	Color temperature	Distribution	Voltage	Mounting	Control Options
DSXW2 LED	20C 20 LEDs (two engines) 30C 30 LEDs (three engines)	350 350 mA 530 530 mA 700 700 mA 1000 1000 mA ¹ (1 A)	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted ²	T2S Type II Short T2M Type II Medium T3S Type III Short T3M Type III Medium T4M Type IV Medium TFTM Forward Throw Medium ASYDF Asymmetric diffuse	MVOLT ³ 120 ⁴ 208 ⁴ 240 ⁴ 277 ⁴ 347 ^{4,5} 480 ^{4,5}	Shipped included (blank) Surface mounting bracket Shipped separately ⁶ BBW Surface-mounted back box (for conduit entry)	Shipped installed PE Photoelectric cell, button type ⁷ PER NEMA twist-lock receptacle only (control ordered separate) ⁸ PER5 Five-wire receptacle only (control ordered separate) ^{8,9} PER7 Seven-wire receptacle only (control ordered separate) ^{8,9} DMG 0-10V dimming driver (control ordered separate) PIR 180° motion/ambient light sensor, <15' mtg ht ^{10,11} PIRH 180° motion/ambient light sensor, 15-30' mtg ht ^{10,11} PIR1FC3V Motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc ^{11,12} PIRH1FC3V Motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc ^{11,12}

Other Options

Finish (required)

Shipped installed

SF Single fuse (120, 277, 347V)³
DF Double fuse (208, 240, 480V)³
HS House-side shield⁴
SPD Separate surge protection¹³

Shipped separately¹³

BSW Bird-deterrent spikes
WG Wire guard
VG Vandal guard

DDBXD Dark bronze
DBLXD Black
DNAXD Natural aluminum
DWHXD White

DSSXD Sandstone
DDBTXD Textured dark bronze
DBLBXD Textured black
DNATXD Textured natural aluminum

DWHGXD Textured white
DSSTXD Textured sandstone



Ordering Information

Accessories

Ordered and shipped separately.

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) ¹⁴
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ¹⁴
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ¹⁴
DSHORT SBK U	Shorting cap (Included when ordering PER, PER5 or PER7) ¹⁴
DSXWHS U	House-side shield (one per light engine)
DSXWBSW U	Bird-deterrent spikes
DSXW2WG U	Wire guard accessory
DSXW2VG U	Vandal guard accessory
DSXW2BBW	Back box accessory
DOBXD U	(Specify finish)

For more control options, visit [DTL](#) and [ROAM](#) online.

NOTES

- 1000mA is not available with AMBPC.
- AMBPC is not available with 1000mA.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
- Available with 30 LED/700mA options only (DSXW2 LED 30C 700). DMG option not available.
- Also available as a separate accessory; see Accessories information.
- Photocontrol (PE) requires 120, 208, 240, 277 or 347 voltage option. Not available with motion/ambient light sensors (PIR or PIRH).
- Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
- If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
- Reference Motion Sensor table on page 3.
- Reference PER Table on page 3 for functionality.
- PIR and PIR1FC3V specify the [SensorSwitch SBGR-10-ODP](#) control; PIRH and PIRH1FC3V specify the [SensorSwitch SBGR-6-ODP](#) control; see [Motion Sensor Guide](#) for details. Dimming driver standard. Not available with PER5 or PER7. Separate on/off required.
- See the electrical section on page 2 for more details.
- Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item. See PER Table.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K					40K					50K				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	350 mA	25W	T2S	2,783	1	0	1	111	2,989	1	0	1	120	3,008	1	0	1	120
			T2M	2,709	1	0	1	108	2,908	1	0	1	116	2,926	1	0	1	117
			T3S	2,748	1	0	1	110	2,951	1	0	1	118	2,969	1	0	1	119
			T3M	2,793	1	0	1	112	2,999	1	0	1	120	3,018	1	0	1	121
			T4M	2,756	1	0	1	110	2,959	1	0	1	118	2,977	1	0	1	119
			TFTM	2,753	1	0	1	110	2,956	1	0	1	118	2,975	1	0	1	119
	530 mA	36W	T2S	4,030	1	0	1	112	4,327	1	0	1	120	4,354	1	0	1	121
			T2M	3,920	1	0	1	109	4,210	1	0	1	117	4,236	1	0	1	118
			T3S	3,978	1	0	1	111	4,272	1	0	1	119	4,299	1	0	1	119
			T3M	4,044	1	0	2	112	4,343	1	0	2	121	4,370	1	0	2	121
			T4M	3,990	1	0	1	111	4,284	1	0	1	119	4,310	1	0	1	120
			TFTM	3,987	1	0	1	111	4,281	1	0	1	119	4,308	1	0	1	120
	700 mA	47W	T2S	5,130	1	0	1	109	5,509	1	0	1	117	5,544	1	0	1	118
			T2M	4,991	1	0	2	106	5,360	1	0	2	114	5,393	1	0	2	115
			T3S	5,066	1	0	1	108	5,440	1	0	1	116	5,474	1	0	1	116
			T3M	5,148	1	0	2	110	5,529	1	0	2	118	5,563	1	0	2	118
			T4M	5,080	1	0	2	108	5,455	1	0	2	116	5,488	1	0	2	117
			TFTM	5,075	1	0	2	108	5,450	1	0	2	116	5,484	1	0	2	117
	1000 mA	73W	T2S	7,147	2	0	2	98	7,675	2	0	2	105					
			T2M	6,954	2	0	2	95	7,467	2	0	2	102					
			T3S	7,057	1	0	2	97	7,579	1	0	2	104					
			T3M	7,172	2	0	3	98	7,702	2	0	3	106					
			T4M	7,076	1	0	2	97	7,599	1	0	2	104					
			TFTM	7,071	1	0	2	97	7,594	1	0	2	104					
30C (30 LEDs)	350 mA	36W	T2S	4,160	1	0	1	116	4,467	1	0	1	124	4,494	1	0	1	125
			T2M	4,048	1	0	1	112	4,346	1	0	2	121	4,373	1	0	2	121
			T3S	4,108	1	0	1	114	4,411	1	0	1	123	4,438	1	0	1	123
			T3M	4,174	1	0	2	116	4,483	1	0	2	125	4,510	1	0	2	125
			T4M	4,119	1	0	1	114	4,423	1	0	2	123	4,450	1	0	2	124
			TFTM	4,115	1	0	1	114	4,419	1	0	1	123	4,446	1	0	1	124
	530 mA	54W	T2S	6,001	1	0	1	111	6,444	1	0	1	119	6,484	1	0	1	120
			T2M	5,838	1	0	2	108	6,270	2	0	2	116	6,308	2	0	2	117
			T3S	5,926	1	0	2	110	6,364	1	0	2	118	6,403	1	0	2	119
			T3M	6,023	1	0	2	112	6,467	1	0	2	120	6,507	1	0	2	121
			T4M	5,942	1	0	2	110	6,380	1	0	2	118	6,420	1	0	2	119
			TFTM	5,937	1	0	2	110	6,376	1	0	2	118	6,415	1	0	2	119
	700 mA	71W	T2S	7,403	2	0	2	104	8,170	2	0	2	115	8,221	2	0	2	116
			T2M	7,609	2	0	2	107	7,949	2	0	2	112	7,998	2	0	2	113
			T3S	7,513	1	0	2	106	8,068	1	0	2	114	8,118	1	0	2	114
			T3M	7,635	2	0	3	108	8,199	2	0	3	115	8,250	2	0	3	116
			T4M	7,534	1	0	2	106	8,089	1	0	2	114	8,140	1	0	2	115
			TFTM	7,527	1	0	2	106	8,082	2	0	2	114	8,134	2	0	2	115
	1000 mA	109W	T2S	10,468	2	0	2	96	11,241	2	0	2	103					
			T2M	10,184	2	0	3	93	10,936	2	0	3	100					
			T3S	10,335	2	0	2	95	11,099	2	0	2	102					
			T3M	10,505	2	0	3	96	11,280	2	0	3	103					
			T4M	10,365	2	0	2	95	11,129	2	0	2	102					
			TFTM	10,356	2	0	2	95	11,121	2	0	3	102					

Note:

Available with phosphor-converted amber LED's (nomenclature AMBPC). These LED's produce light with 97+% >530 nm. Output can be calculated by applying a 0.7 factor to 4000 K lumen values and photometric files.



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	1.00
40°C	104°F	0.98

Electrical Load

LEDs	Drive Current (mA)	System Watts	Current (A)					
			120V	208V	240V	277V	347V	480V
20C	350	25 W	0.23	0.13	0.12	0.10	-	-
	530	36 W	0.33	0.19	0.17	0.14	-	-
	700	47 W	0.44	0.25	0.22	0.19	-	-
	1000	74 W	0.68	0.39	0.34	0.29	-	-
30C	350	36 W	0.33	0.19	0.17	0.14	-	-
	530	54 W	0.50	0.29	0.25	0.22	-	-
	700	71 W	0.66	0.38	0.33	0.28	0.23	0.16
	1000	109 W	1.01	0.58	0.50	0.44	-	-

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the **DSXW2 LED 30C 1000** platform in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	0.95	0.92	0.87

Motion Sensor Default Settings

Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
*PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer

PER Table

Control	PER (3 wire)	PER5 (5 wire)		PER7 (7 wire)		
			Wire 4/Wire5		Wire 4/Wire5	Wire 6/Wire7
Photocontrol Only (On/Off)	✓	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM	⊘	✓	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
ROAM with Motion	⊘	⚠	Wired to dimming leads on driver	⚠	Wired to dimming leads on driver	Wires Capped inside fixture
Futureproof*	⊘	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture
Futureproof* with Motion	⊘	⚠	Wired to dimming leads on driver	✓	Wired to dimming leads on driver	Wires Capped inside fixture

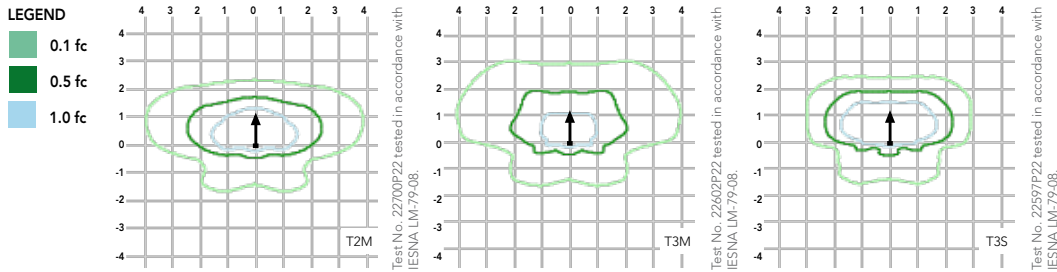
✓ Recommended

⊘ Will not work

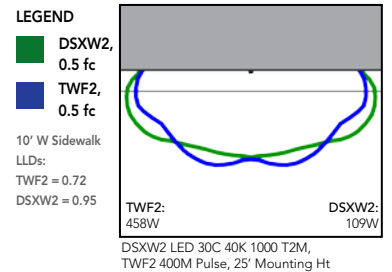
⚠ Alternate

*Futureproof means: Ability to change controls in the future.

Isofootcandle plots for the DSXW2 LED 30C 1000 40K. Distances are in units of mounting height (25').



Distribution overlay comparison to 400W metal halide.



FEATURES & SPECIFICATIONS

INTENDED USE

The energy savings, long life and easy-to-install design of the D-Series Wall Size 2 make it the smart choice for building-mounted doorway and pathway illumination for nearly any facility.

CONSTRUCTION

Two-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance. The LED driver is mounted to the door to thermally isolate it from the light engines for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65).

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses provide multiple photometric distributions tailored specifically to building mounted applications. Light engines are available in 3000 K (70 min. CRI), 4000 K (70 min. CRI) or 5000 K (70 min. CRI) configurations.

ELECTRICAL

Light engine(s) consist of 10 high-efficacy LEDs mounted to a metal-core circuit board to maximize heat dissipation and promote long life (L87/100,000 hrs at 25°C). Class 1 electronic drivers have a power factor >90%, THD <20%, and a minimum 2.5KV surge rating. When ordering the SPD option, a separate surge protection device is installed within the luminaire which meets a minimum Category C Low (per ANSI/IEEE C62.41.2).

INSTALLATION

Included universal mounting bracket attaches securely to any 4" round or square outlet box for quick and easy installation. Luminaire has a slotted gasket wireway and attaches to the mounting bracket via corrosion-resistant screws.

LISTINGS

CSA certified to U.S. and Canadian standards. Rated for -40°C minimum ambient.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY

Five-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



CNY LED

LED Canopy/Ceiling Luminaire



Catalog
Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

	CNY LED P1/P2	CNY LED P3/P4
Width:	10"	14"
Height:	4.5"	6"
Depth:	10"	14"
Weight:	6.5lbs	13lbs

Introduction

The CNY LED canopy luminaires are energy efficient and budget friendly, perfect for replacing up to 400W metal halide luminaires while saving up to 80% energy costs. Quick mount mechanism significantly reduces the installation time. CNY LED luminaires are DLC Premium listed and deliver quick payback!

With an expected service life of more than 10 years, the CNY LED eliminates frequent lamp and ballast replacements associated with traditional technologies.

Ordering Information

EXAMPLE: CNY LED P1 50K MVOLT DDB

CNY LED				
Series	Performance Package	Color Temperature ¹	Voltage	Finish
CNY LED	P1 4,500 lumens P2 6,600 lumens P3 11,100 lumens P4 14,000 lumens	40K 4000K 50K 5000K	MVOLT ² 120-277V	DDB Dark bronze WH White

Accessories

Ordered and shipped separately.

CNYBCP 14 Inch x 14 Inch Beauty Cover Plate

NOTES

1. Correlated color temperature (CCT) shown is nominal per ANSI C78, 377-2008.
2. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3. Available with P1 only.

FEATURES & SPECIFICATIONS

INTENDED USE

CNY LED luminaires are ideal, energy-efficient replacements for up to 400W MH canopy or ceiling luminaires. The CNY LED provides years of maintenance-free illumination for schools, malls, offices, parking areas, covered walkways and loading docks.

CONSTRUCTION

Cast-aluminum, corrosion-resistant housing with polyester powder paint for lasting durability. Castings are sealed with a one-piece gasket. Rated for outdoor installations, -40°C minimum ambient. Frosted lens is designed for uniform light distribution.

ELECTRICAL

Includes an MVOLT (120-277V) driver. LEDs maintain 70% of light output at 50,000 or more hours of service life (L70/50,000 hours).

INSTALLATION

Mounts to a recessed junction box or surface mount with three conduit entry points. Can be pendant mounted with ¾ NPT pendant stem provided by others. Quick mount mechanism significantly reduces installation time - no need to open the luminaire for installation.

LISTINGS

UL Listed to U.S. and Canadian safety standards for wet locations. Tested in accordance with IESNA LM-79 and LM-80 standards. DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY

Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



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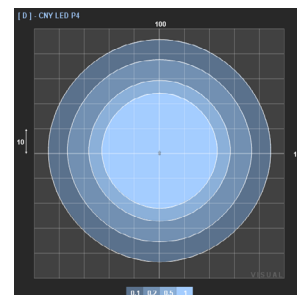
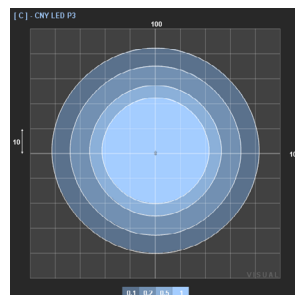
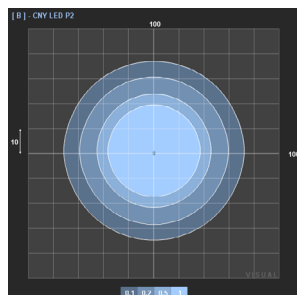
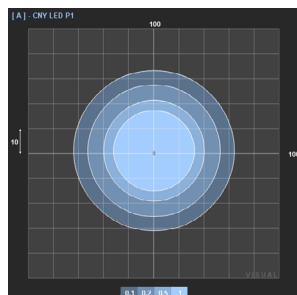
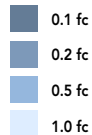
CNY LED
Rev. 08/02/18

Photometric Diagrams

Full photometric data report available within 2 weeks from request. Contact [Acuity Tech Support](#).

OFM LED P1 50K MVOLT DDB HP17 M4 - Mounting height = 10'

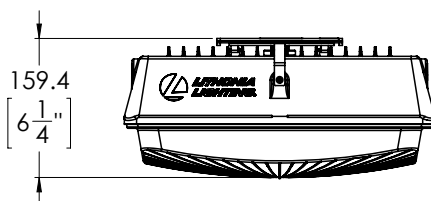
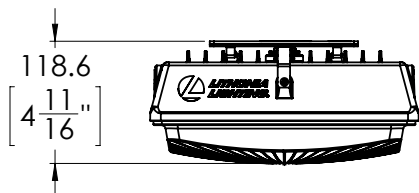
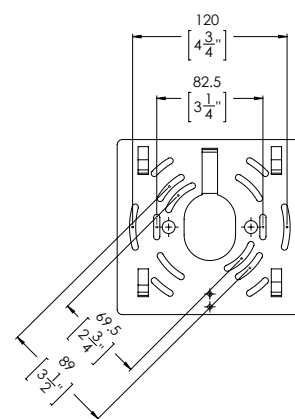
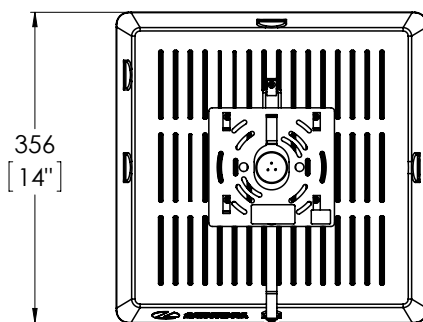
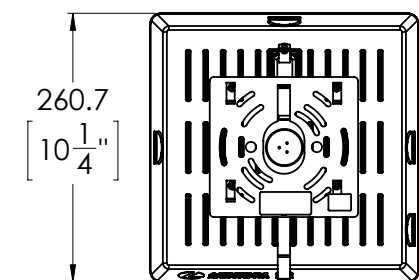
LEGEND



Performance Data

Performance Package	Lumens	Input Power	Lumens Per Watt
CNY LED P1	4,500	35W	127
CNY LED P2	6,600	52W	128
CNY LED P3	11,000	86W	128
CNY LED P4	13,900	109W	128

Line Art



Traffic Impact Study

The Village of Wheeling, IL

1600 S. WOLF ROAD REDEVELOPMENT

September 26, 2018



Prepared for:

PACE Suburban Bus
550 W. Algonquin Road
Arlington Heights, IL 60005

The Village of Wheeling
2 Community Boulevard
Wheeling, IL 60090

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TABLE OF CONTENTS

Appendices	0
Executive Summary	1
Overview	3
Figure 1: Area Map	3
Figure 2: Existing Zoning Map.....	4
Figure 3: Study Area	5
Existing Conditions	5
Photo 1: S. Wolf Road at Old Willow Road.....	6
Data Collection.....	6
Table A: AM Peak (7:00-8:00 AM) Traffic Volumes	6
Table B: PM Peak (4:00-5:00 PM) Traffic Volumes	7
Trip Generation/Distribution	7
Figure 4a: Entering Site Volumes.....	8
Figure 4b: Exiting Site Volumes	8
Trip Distribution	9
Analysis	9
Capacity Analysis	9
Figure 5a: SITE traffic (AM peak, 7-8 AM).....	10
Figure 5b: SITE traffic (PM peak, 4-5 PM).....	10
Figure 6a: Design Hour traffic Volumes (AM peak, 7-8 AM)	11
Figure 6b: Design Hour traffic Volumes (P peak, 4-5 PM)	11
Table C: Capacity Analysis Summary	12
Turn Lane Analysis.....	13
Table D: Storage Lane Lengths	13
Conclusions	14

APPENDICES

- Appendix A:** Traffic Data (AM Peak)
- Appendix B:** Traffic Data (PM Peak)
- Appendix C:** PACE Data
- Appendix D:** Capacity Analysis
- Appendix E:** Storage Lane Lengths

EXECUTIVE SUMMARY

A transit facility is proposed at an existing site located at 1600 S. Wolf Road in the Village of Wheeling, IL-- the southwest quadrant of the S. Wolf Road and Old Willow Road intersection. The existing site has a 429,950 SF building that was the former Allstate Print Communication Center which provided printing and mailing services across the U.S. A traffic impact study was performed in accordance with the Institute of Transportation Engineers (ITE) Traffic Access and Impact Studies for Site Development. **Figure 3** shows the Study Area for this study.

Documentation to estimate trips of the proposed land use is not available in the ITE Trip Generation Manual. Therefore, the number of trips by the bus fleet, types of vehicles (bus or paratransit), and estimated arrival/departure time periods was based on the existing operations of the Northwest Division facility in Des Plaines. Operations at the Northwest Division facility are to be relocated to the Wheeling site. Transit trips by time of day from the Northwest Division facility were used to estimate trip generation of transit vehicles for the Wheeling site. **Figure 4** shows the estimated trips by time of day used for the study.

The trips associated with transit vehicles and other users associated with the PACE facility (office, maintenance, etc) found the majority of transit related vehicles do not operate within the peak hour of the adjacent roadway. However, the peak hour of the adjacent street is consistent with the peak hour of the generator due to the office staff schedule. No adjustments to the trip generation (i.e., reduction of trips) were made to account for traffic generated by the previous tenant. The assumption that all trips of the proposed land use are new trips to the existing network results in a conservative analysis. **Figure 6** shows the design hour volumes used for the study.

The proposed land use is compatible with existing land uses north of the existing site. However, three roadway improvements are proposed to improve operational performance on Old Willow Road.

1. **Old Willow Road left turn lanes.** Restripe Old Willow Road between S. Wolf Road and the primary PACE driveway (455 feet) to provide an exclusive westbound left turn lane. The existing street width is sufficient to extend the left turn lane that currently exists at the S. Wolf Road/Old Willow Road intersection. No pavement widening is required to provide these exclusive turn lane lengths. The Old Willow Road/Wolf Road intersection is to remain signalized. The capacity analysis for the BUILD condition results in acceptable intersection levels of service (LOS C) or better for all study area intersections. See **Table C** for a capacity analysis summary.
2. **PACE access closure.** Close the existing access to the PACE site on Old Willow Road that is located 125 feet west of the S. Wolf Road/Old Willow Road intersection. The capacity analysis focused on the primary access to the PACE site on Old Willow Road which is located 500 feet west of the Wolf Road/Old Willow Road intersection. Analysis for a single access point is to result in a worst-case delay for traffic leaving the site.
3. **Old Willow Road/Wolf Road West Radii.** An existing deficiency that should be improved as an overall area improvement is an increase to Old Willow Road/Wolf Road turning radii or more extensive geometric widening of Old Willow Rd to the west. The existing radii on the west side of Wolf Road at the Old Willow Road intersection are 25 to 30 feet and appear to be deficient for the type of truck and vehicle usage that currently exists on the west leg of Old Willow Rd. (This is in contrast to the existing radii on the east leg which appear to

be have a radius that is approximately 50 foot for primarily a residential area.) With the current geometry and turn conditions, both northbound and southbound to westbound vehicles infringe on the eastbound left turn lane. Correcting this existing deficiency appears to involve relocating signal lights and will require coordination with IDOT as well as the Villages of Wheeling and potentially Prospect Heights.

OVERVIEW

A traffic impact study was performed in accordance with the Institute of Transportation Engineers (ITE) Traffic Access and Impact Studies for Site Development. The Village of Wheeling, IL requested PACE Suburban Bus to perform a traffic study as part of a special use review process for zoning.

The existing site is located at 1600 S. Wolf Road in the Village of Wheeling, IL-- the southwest quadrant of the S. Wolf Road and Old Willow Road intersection. **Figure 1** is an area map showing the existing site (red box) in relation to adjacent land uses within the Village:

- Chicago Executive Airport (PWK) – 0.5 miles north
- Fed Ex Ground distribution facility – 0.27 miles north
- Crescent Cardboard Co (CCC) – 100 Willow Road

Land uses south of E. Palatine Road are located within two zoning districts. **Figure 2** shows the existing zoning boundaries.

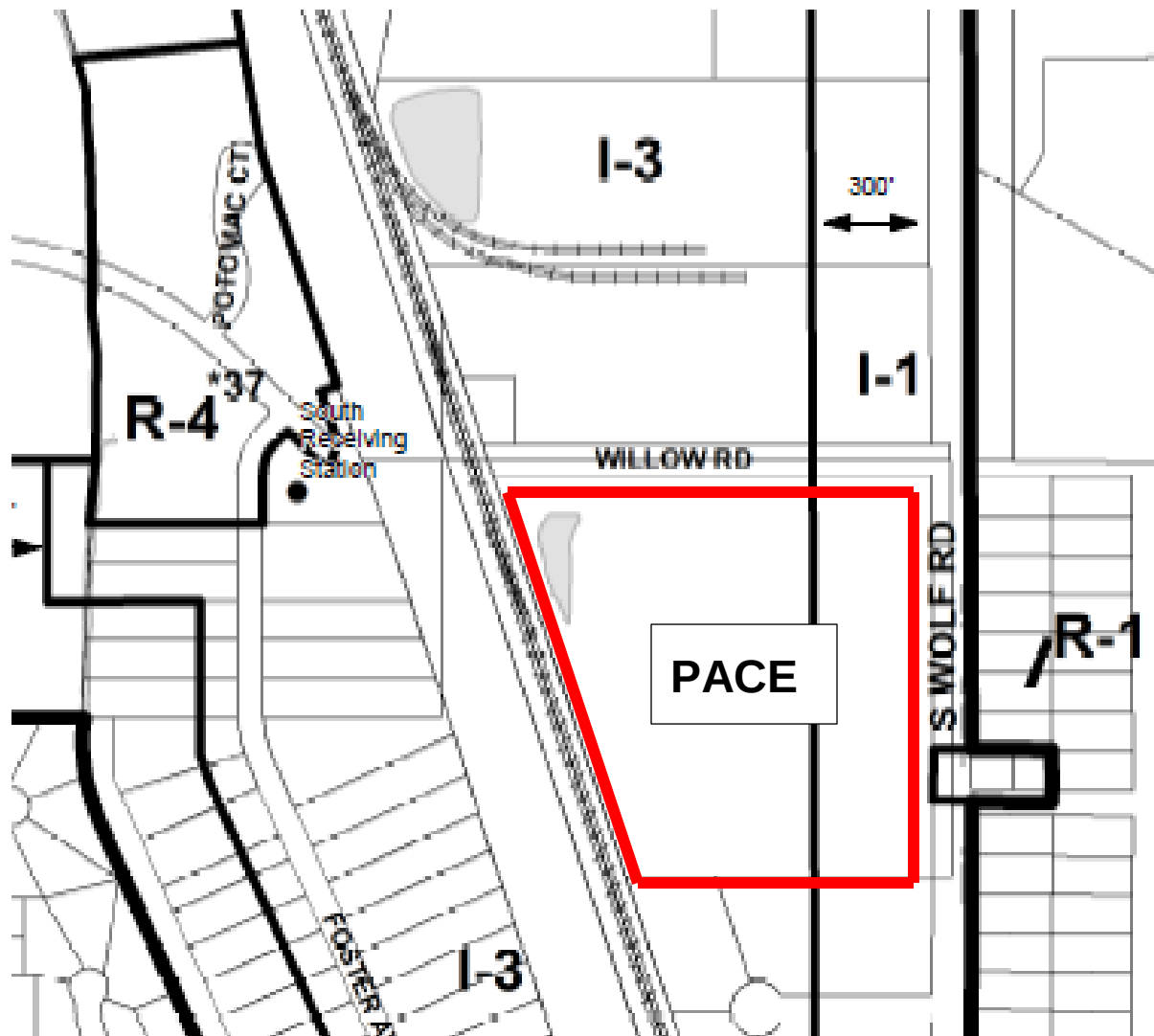
- I-1 Light Industrial and Office
- I-3 General Industrial

The Prospect Heights Metra Station is located 0.5 miles south of the existing site. More than 10 bus stops exist within 1 mile of the PACE site along Wolf Road (Route 221). Route 221 serves both the industrial land uses but also residential land uses on the east side of Wolf Road in the City of Prospect Heights.

FIGURE 1: AREA MAP



FIGURE 2: EXISTING ZONING MAP

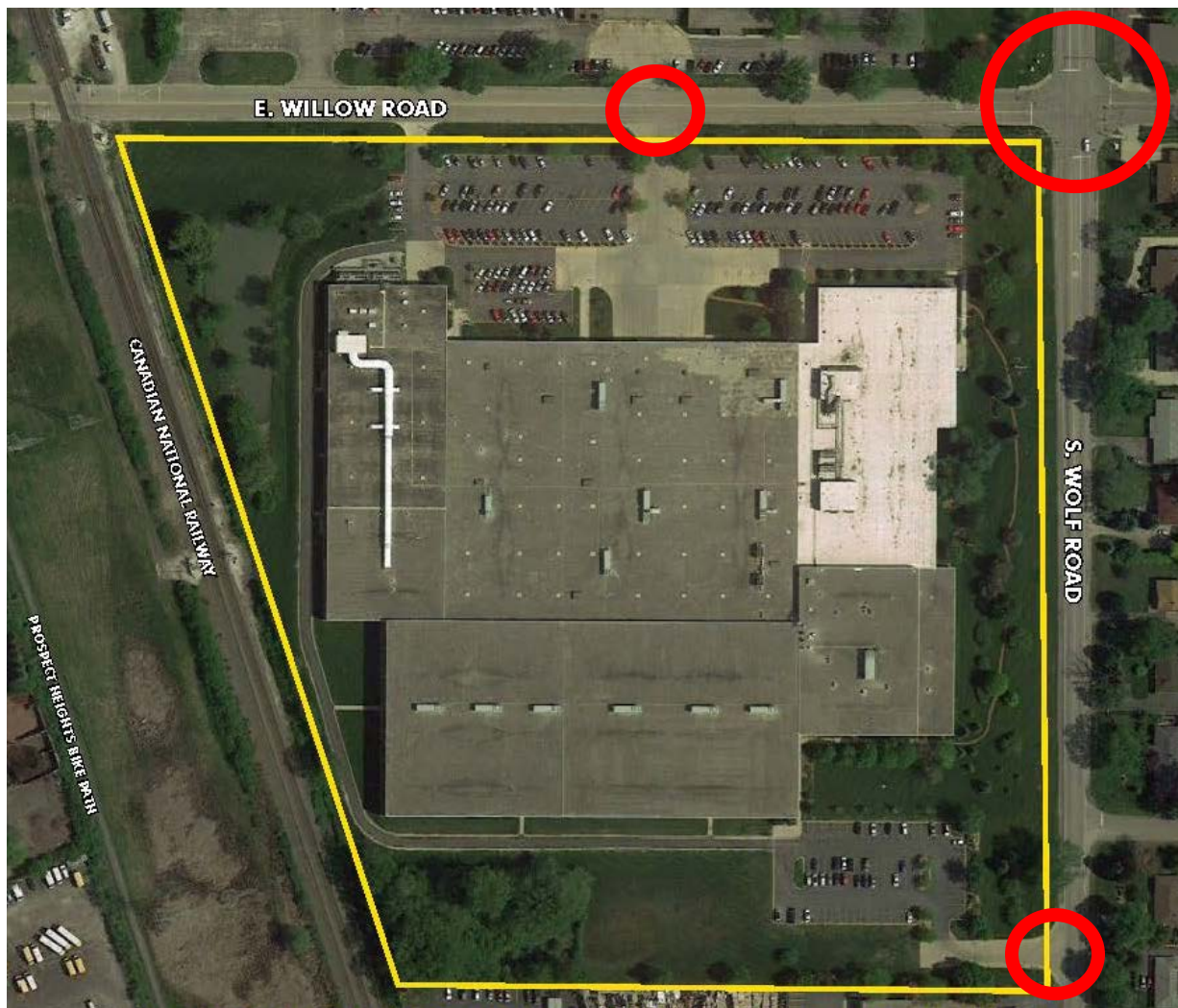


The existing site has a 429,950 SF building that was the former Allstate Print Communication Center which provided printing and mailing services across the U.S. The study area includes the following intersections/access points.

- | | |
|--|--------------|
| • Site driveways and Old Willow Road (3) | unsignalized |
| • Site driveway and S. Wolf Road (1) | unsignalized |
| • S.Wolf Road and Old Willow Road | signalized |

Figure 3 shows the proposed study area and the existing access points included as part of the traffic study.

FIGURE 3: STUDY AREA



EXISTING CONDITIONS

S. Wolf Road is a 2-lane roadway having 12 ft lanes and a variable width shoulder. The average shoulder width is 5 feet with the shoulder being paved north of Willow Road and a graded (gravel) shoulder south of Willow Road. Exclusive left turn lanes (12 ft wide) exist at the signalized intersection of Willow Road/Seminole Drive. Posted speed limit on Wolf Road is 40 miles per hour.

Willow Road is a 2-lane roadway having 18 ft lanes and a curbed section. The total pavement width is 36 feet. Exclusive left turn lanes (12 ft wide) exist at the signalized intersection of Willow Road/Seminole Drive. Posted speed limit on Willow Road is 30 miles per hour. No parking is permitted on Willow Road within the study limits.

The existing radii on the NW and SW quadrants of the Willow Road/Wolf Road intersection are equal to 25 to 30 feet. Encroachment into the opposing turn lanes or off-tracking behind the curb would be expected for turning vehicles larger than a passenger vehicle.

Protected/permissive left turn phasing exists on all approaches to the signalized intersection. The existing signal operation is fully actuated. Maximum cycle length was 90 seconds for the AM and PM periods.

PHOTO 1: S. WOLF ROAD AT OLD WILLOW ROAD



DATA COLLECTION

Manual turning movement counts were collected at the S.Wolf Road and Old Willow Road intersection on July 10 and 11, 2018 for the time periods listed below. The data collection also classified vehicles into 3 subgroups: passenger vehicles/light trucks, medium trucks (buses and other single-unit vehicles), and large semi-trucks (with articulated trailers). Pace, FedEx, UPS, and SEPTRAN accounted for the majority of the medium SU vehicles

- AM weekday peak – Wednesday (7/11/18), 7:00 to 9:00 AM. Existing truck traffic comprised primarily of SEPTRAN buses and FedEx trucks. Traffic data for the AM period is shown in **Appendix A**. The AM peak hour volumes are summarized in **Table A**.

TABLE A: AM PEAK (7:00-8:00 AM) TRAFFIC VOLUMES

	NB Wolf Road				SB Wolf Road				EB Old Willow				WB Old Willow			
	L	T	R	total	L	T	R	total	L	T	R	total	L	T	R	total
7:00	1	95	6	102	12	69	7	88	11	5	3	19	24	2	50	76
7:15	3	96	7	106	5	65	14	84	19	6	8	33	28	5	45	78
7:30	1	127	2	130	6	70	10	86	14	8	7	29	27	3	51	81
7:45	9	112	5	126	10	67	6	83	19	8	7	34	23	2	26	51
Total	14	430	20	464	33	271	37	341	63	27	25	115	102	12	172	286
PHF	0.39	0.85	0.71	0.89	0.69	0.97	0.66	0.97	0.83	0.84	0.78	0.85	0.91	0.60	0.84	0.88

- PM weekday peak – Tuesday (7/10/18), 3:00-6:00 PM. Traffic data for the PM period is shown in **Appendix B**. The PM peak hour volumes are summarized in **Table B**.

TABLE B: PM PEAK (4:00-5:00 PM) TRAFFIC VOLUMES

	NB Wolf Road				SB Wolf Road				EB Old Willow				WB Old Willow			
	L	T	R	total	L	T	R	total	L	T	R	total	L	T	R	total
16:00	2	95	29	126	41	168	17	226	16	6	10	32	22	9	23	54
16:15	2	88	19	109	42	100	13	155	8	1	4	13	19	12	18	49
16:30	2	72	20	94	61	140	22	223	9	7	4	20	17	18	19	54
16:45	5	80	31	116	33	142	13	188	15	8	9	32	22	14	20	56
Total	11	335	99	445	177	550	65	792	48	22	27	97	80	53	80	213
PHF	0.55	0.88	0.80	0.88	0.73	0.82	0.74	0.88	0.75	0.69	0.68	0.76	0.91	0.74	0.87	0.95

No multi-cycle queues were observed during data collection.

TRIP GENERATION/DISTRIBUTION

Documentation to estimate trips of the proposed land use is not available in the ITE Trip Generation Manual. The number of trips by the bus fleet, types of vehicles (bus or paratransit), and estimated arrival/departure time periods was based on the existing operations of the Northwest Division facility in Des Plaines. Operations at the Northwest Division facility are to be relocated to the Wheeling site.

Transit trips by time of day from the Northwest Division facility were used to estimate trip generation of transit vehicles for the Wheeling site. **Appendix C** contains time stamp data of entering and exiting vehicles that occur at the Northwest Division facility. Other users of the facility obtained from PACE include the following:

1. **Office staff.** Normal work hours for office staff is 8:00AM to 4:30 PM. A total of 50 vehicles are estimated to arrive between 7:00 and 8:00 AM with the majority (30 vehicles) arriving between 7:30 and 8:00 AM. All 50 vehicles are assumed to depart between 4:30 and 5:00 PM. These numbers are assumed to represent conservative trip generation estimates.
2. **Maintenance staff.** Maintenance staff work comprise 15 vehicles for a single work shift. First shift starts at 6:30 AM and ends at 3:30 PM. Maintenance staff arrive before the AM peak period whereas 15 vehicles leave between 3:30 and 4:00 PM. The second shift starts at 2:30 PM and ends at 11:00 PM – trips associated with second shift are outside the AM and PM peak periods. Third shift starts at 10:30PM and ends at 7:00 AM – a total of 15 vehicles leave between 7:00 and 7:30 AM.
3. **Fuel delivery.** A total of 5 trucks are associated with fuel delivery between the hours of 6:00 PM and 2:00 AM. Fuel delivery trucks operate outside of the typical AM and PM peak periods.

The trips associated with transit vehicles and other users associated with the PACE facility (office, maintenance, etc) by time of day (military time) were summarized in **Figure 4a** (Entering Vehicles) and **Figure 4b** (Exiting Vehicles). The figures show the majority of transit related vehicles do not operate within the peak hour of the adjacent roadway. However, the peak hour of the adjacent street is consistent with the peak hour of the generator due to the office staff schedule.

Note that no adjustments to the trip generation (i.e., reduction of trips) were made to account for traffic generated by the previous tenant. The assumption that all trips of the proposed land use are new trips to the existing network results in a conservative analysis.

FIGURE 4A: ENTERING SITE VOLUMES

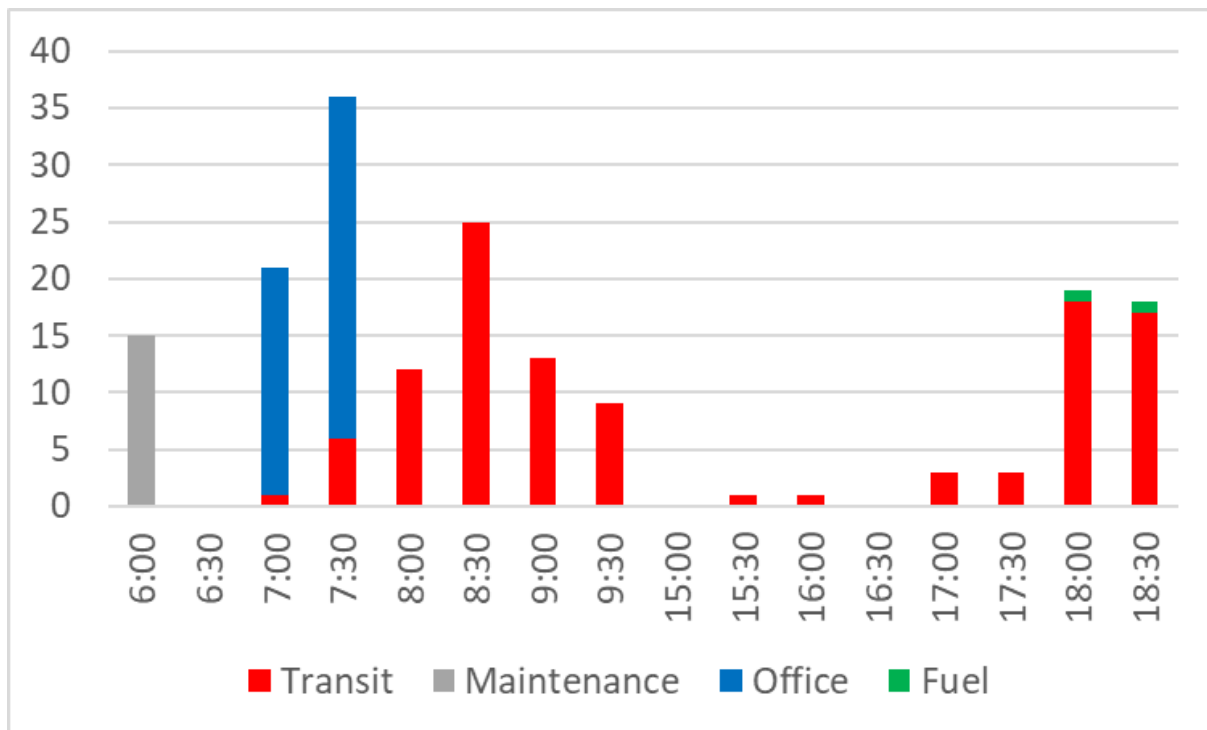
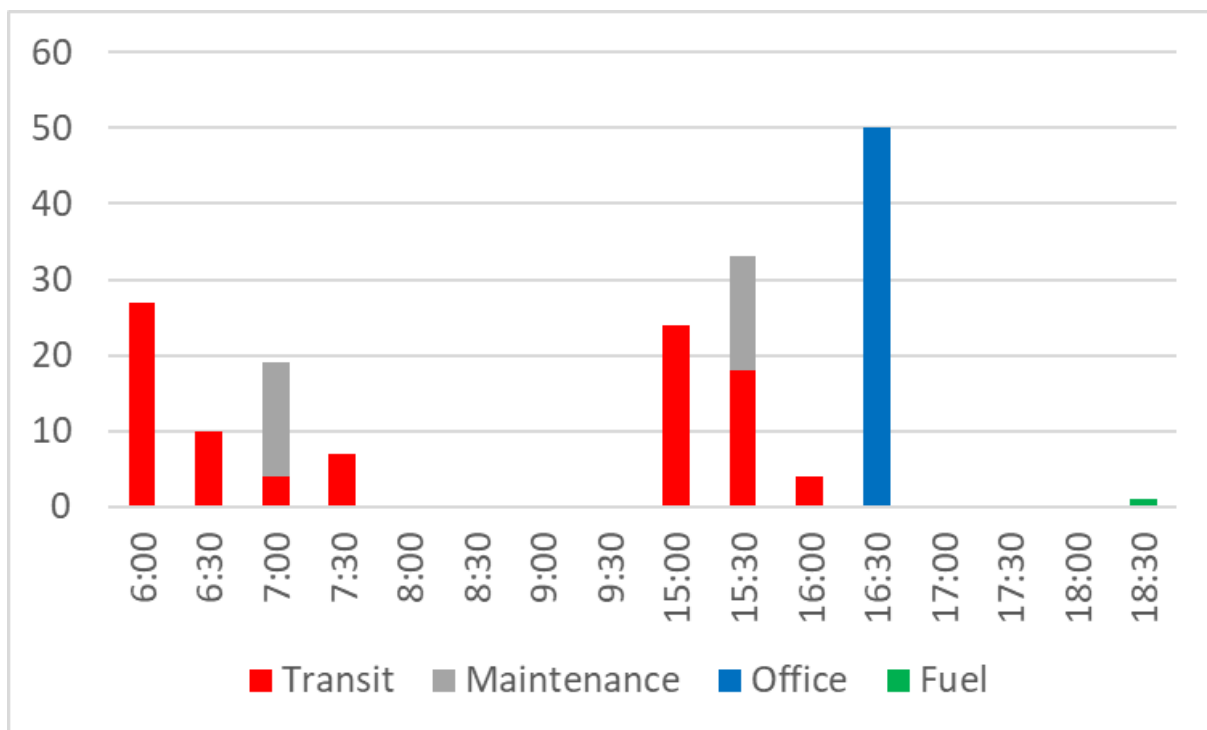


FIGURE 4B: EXITING SITE VOLUMES



Captured trips and pass-by trips are not applicable to the proposed land use.

TRIP DISTRIBUTION

The directional distribution of office staff will be based on the following existing distribution of traffic at the S. Wolf Road and Old Willow Road intersection and the preference to use S. Wolf Road to Palatine Road for transit buses. The bus fleet will be directed to use the Palatine Road (IL 68) interchange before diverting to specific routes. The general distribution of traffic by cardinal direction is summarized below:

West: 20%

South: 20%

East: 20%.

North: 40%

Figures 5a and 5b show the site traffic assigned to the study intersection with a breakdown of office and transit vehicles (AM and PM peak hours). **Figures 6a and 6b** show the total traffic volumes for the future condition.

ANALYSIS

The proposed modifications to the development is to occur as a single phase. The design hour volumes are for Opening Day (2018).

CAPACITY ANALYSIS

Capacity analysis was performed for the AM and PM peak periods of a typical weekday. Two (2) conditions were analyzed to assess impacts to the existing roadway network.

- NO BUILD condition (2018)
- BUILD condition (2018). A growth rate is not proposed to increase background growth rates. The land uses surrounding the existing site have been operational for more than 20 years with the exception of the FedEx Ground site (c. 2004). Major changes to traffic volumes or patterns are not anticipated thus are not analyzed to evaluate traffic operations of the proposed site.

Basic parameters to be applied when optimizing the capacity analysis are noted below:

- The capacity analysis output will use the HCS algorithms of Synchro software.
- A cycle length of 90 seconds will be used for analysis for the peak periods to match the existing cycle length.
- The peak hour factor is based on default HCM values (0.92).
- Total lost time = 2 seconds (minimum)
- Arrival type = 3
- Upstream filter = 1
- Right turns on red are not permitted for any development scenario for purposes of the capacity analysis.

FIGURE 5A: SITE TRAFFIC (AM PEAK, 7-8 AM)

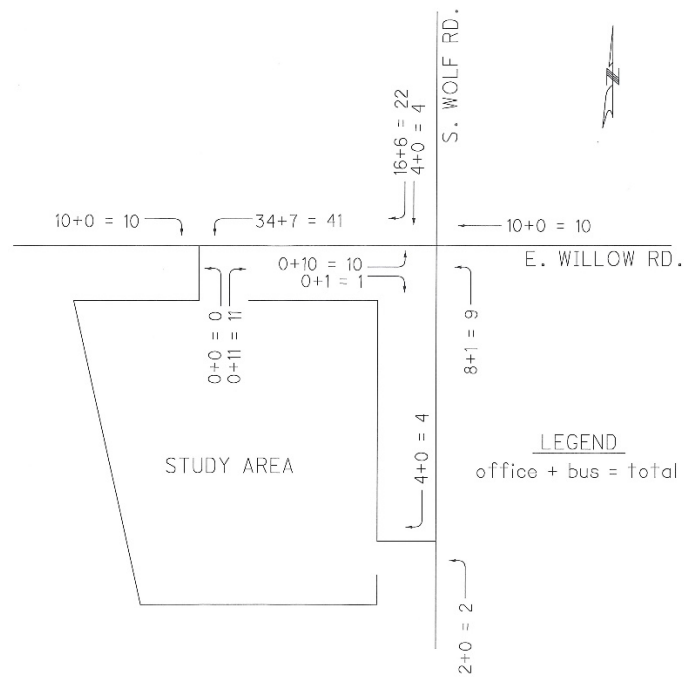


FIGURE 5B: SITE TRAFFIC (PM PEAK, 4-5 PM)

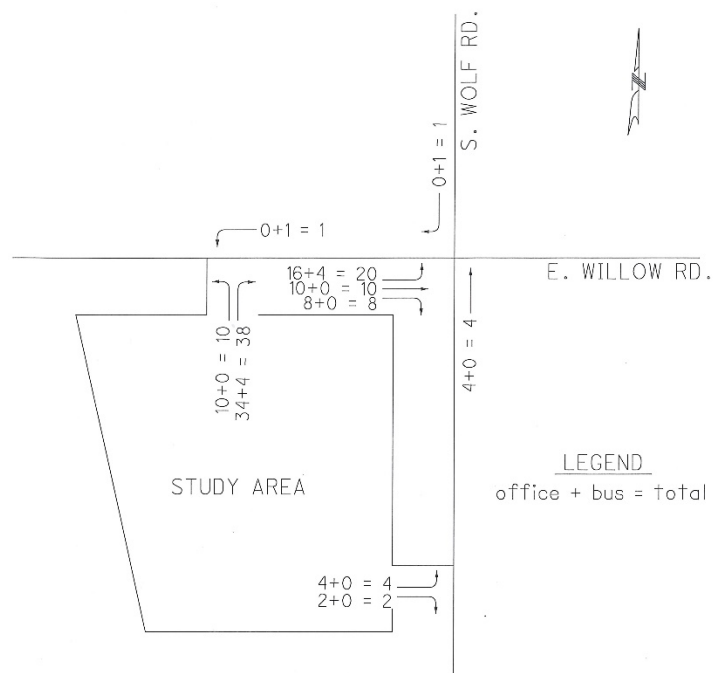


FIGURE 6A: DESIGN HOUR TRAFFIC VOLUMES (AM PEAK, 7-8 AM)

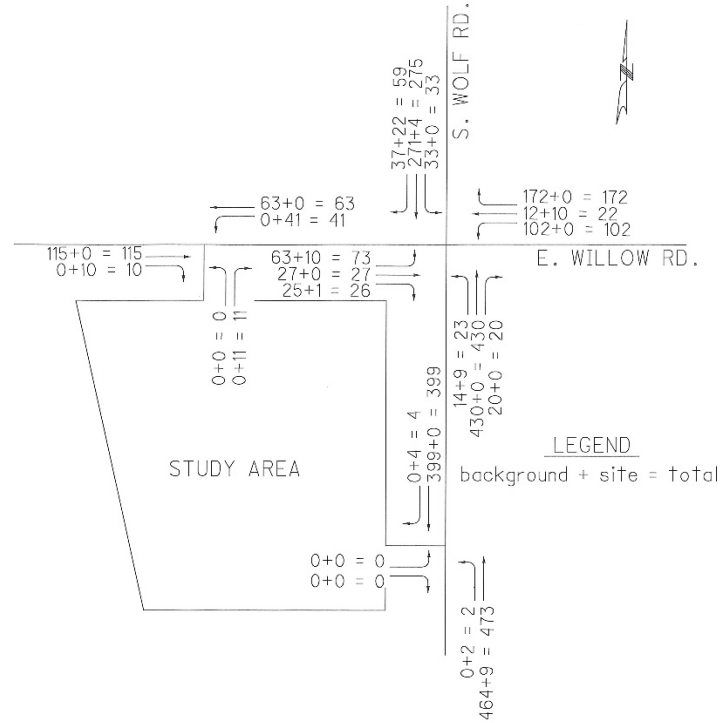
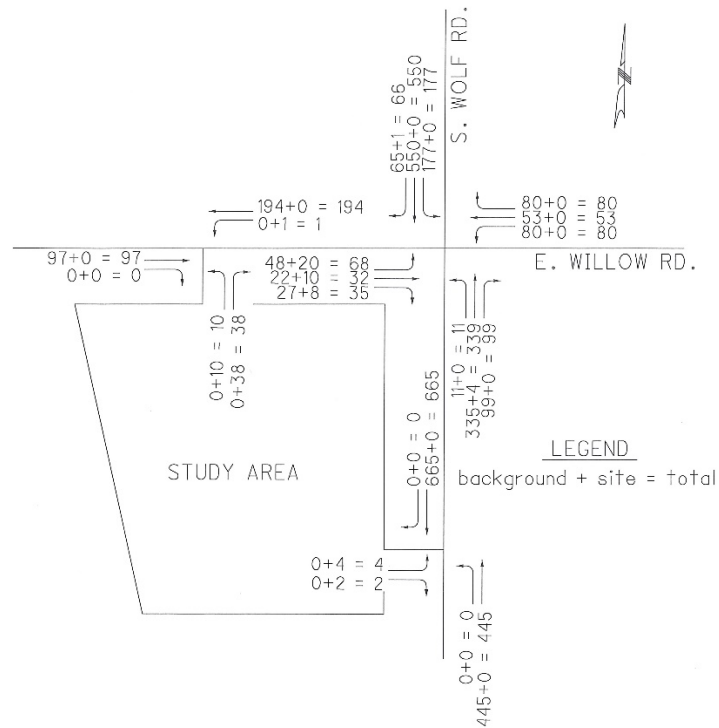


FIGURE 6B: DESIGN HOUR TRAFFIC VOLUMES (P PEAK, 4-5 PM)



- The change (yellow) and clearance (all red) intervals used for the existing conditions analysis shall remain consistent throughout the scenarios unless pavement widening causes them to increase in length. The values used in the HCS calculations will be shown.
- Delay were balanced by critical movement per approach.

The capacity analysis summary shown in **Table C** provides the intersection level of service (LOS). HCS output for each of the scenarios are contained in **Appendix D**.

The capacity analysis assumed that the existing signalized intersection at Wolf Road/Old Willow Road remains signalized. Two existing access points to the development remain unsignalized:

- **PACE Access (Wolf).** Located 1,000 feet south of the S. Wolf Road/Old Willow Road intersection on S. Wolf Road. The parking lot is to be used by maintenance staff.
- **PACE Access (Willow).** For purposes of analysis, the primary access to the PACE site on Old Willow Road is located 500 feet west of the Wolf Road/Old Willow Road intersection. Analysis for a single access point is to result in a worst-case delay for traffic leaving the site.

The capacity analysis for the BUILD condition results in acceptable intersection levels of service (LOS C) or better for all study area intersections.

The proposed improvements for the BUILD condition include the extension of an exclusive turn lane on Old Willow Road at the primary PACE access. Repaint Old Willow Road to provide a westbound exclusive left turn lane (3-lane section). The existing roadway width is sufficient to accommodate a 3-lane section similar to the eastbound approach at the signalized intersection.

Other improvements related to extending the existing storage lane lengths are outlined in the following section.

TABLE C: CAPACITY ANALYSIS SUMMARY

INTERSECTION		Wolf Rd/ Old Willow	PACE Access (Wolf)	PACE Access (Willow)
NO BUILD	AM PEAK	24.0 (C)	N/A	N/A
	PM PEAK	24.7 (C)	N/A	N/A
BUILD	AM PEAK	24.6 (C)	7.9 (A) ²	10.1 (B) ¹
	PM PEAK	26.1 (C)	20.0 (C) ¹	9.5 (A) ¹
Note 1: Delay on side street having stop control				
Note 2: Delay for turning movement from major street.				

TURN LANE ANALYSIS

Turn lane warrant analysis were completed for turning movements at the S. Wolf Road and Old Willow Road intersection. The storage lane length calculations were performed using the following assumptions:

- Calculations of the turn lane lengths are based on methodology contained in the IDOT Bureau of Local Roads and Streets Manual, Chapter 34, Intersections, Section 3, Auxiliary Turn Lanes.
- A 90-second cycle length was used when calculating storage lane lengths at signalized intersections.
- Storage lengths at unsignalized intersections were based upon the minimum lengths for deceleration.
- The storage lane length calculations were based on the 2018 design hour.
- A design speed of 30 MPH was used for all approaches on Willow Road west of the intersection.

The distance between the centerline of the PACE access on Old Willow Road and the existing eastbound stop line at S. Wolf Road is 455 feet. The roadway section is proposed to be repainted as a 3-lane section with the following dimensions:

- A 165 ft left turn lane on the eastbound approach of Old Willow Road at the S. Wolf Road intersection. The existing storage is only 100 feet. The red time queue is less than 100 feet in both the AM and PM peak hours.
- A 135-ft taper between the opposing left turn lanes
- A 100-ft westbound left turn lane at the PACE access on Old Willow Road.

See **Appendix E** for the evaluation of existing storage lengths versus red-time queues. No changes are proposed to the existing storage lane lengths at the S. Wolf Road and Old Willow Road intersection with the except of the eastbound approach.

TABLE D: STORAGE LANE LENGTHS

Intersection	Approach - Left Turn Lane	Existing Storage (feet)	Red Time Queue (Max of AM and PM Peak)	Min Storage for Decel Length (feet)	Proposed Storage (feet)
Willow Road at PACE Access	Westbound	0	0	100	100
Wolf Road at Old Willow Road	Eastbound	100	45	100	165
	Westbound	185	61	100	185
	Northbound	155	14	145	155
	Southbound	185	81	145	185

CONCLUSIONS

Three roadway improvements are proposed for operational purposes on Old Willow Road.

1. **Old Willow Road left turn lanes.** Restripe Old Willow Road between S. Wolf Road and the primary PACE driveway (455 feet) to provide an exclusive westbound left turn lane. The existing street width is sufficient to extend the left turn lane that currently exists at the S. Wolf Road/Old Willow Road intersection. No pavement widening is required to provide these exclusive turn lane lengths.
2. **PACE access closure.** Close the existing access to the PACE site on Old Willow Road that is located 125 feet west of the S. Wolf Road/Old Willow Road intersection.
3. **Increase Old Willow Road/Wolf Road turning radii.** The existing radii on the west side of Wolf Road at the Old Willow Road intersection are 25 to 30 feet. Turning templates for existing truck deliveries and future buses should be performed to determine the preferred radii for design vehicles. Construction costs should include traffic signal reconstruction, potential utility conflicts, and curb/sidewalk redesign.

CARS

Time Period	7:00-7:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	66	12	5	0	88	6	1	0	49	23	2	0	10	3	5	0

Time Period	7:15-7:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	63	5	14	0	96	7	3	0	44	27	5	0	18	8	6	0

Time Period	7:30-7:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	65	5	9	1	123	2	1	0	50	26	3	2	13	7	7	1

Time Period	7:45-8:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	59	9	6	0	106	5	8	0	26	23	2	1	17	7	8	1

Time Period	8:00-8:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	67	12	8	0	75	6	2	0	26	14	4	1	19	10	4	1

Time Period	8:15-8:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	64	14	5	0	111	8	4	0	32	20	4	1	11	7	8	1

Time Period	8:30-8:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	67	6	8	0	60	7	2	0	35	18	5	1	13	6	4	0

Time Period	8:45-9:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	74	13	6	1	95	9	2	0	32	19	2	1	10	7	5	0

MEDIUM TRUCKS

Time Period	7:00-7:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	2	0	0		6	0	0		0	1	0		0	0	0	
Time Period	7:15-7:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	1	0	0		0	0	0		0	1	0		0	0	0	
Time Period	7:30-7:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	5	1	0		4	0	0		0	1	0		0	0	1	
Time Period	7:45-8:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	6	1	0		5	0	1		0	0	0		1	0	0	
Time Period	8:00-8:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	4	0	0		3	0	0		1	0	0		4	0	0	
Time Period	8:15-8:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	3	0	2		3	0	0		0	0	0		0	0	0	
Time Period	8:30-8:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	8	0	1		3	0	0		0	2	0		1	0	0	
Time Period	8:45-9:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	7	3	3		0	0	1		0	0	0		0	1	0	

HEAVY TRUCKS

Time Period	7:00-7:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	1	0	2		1	0	0		0	0	0		1	0	0	
Time Period	7:15-7:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	1	0	0		0	0	0		0	0	0		1	0	0	
Time Period	7:30-7:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	0	0	1		0	0	0		0	0	0		1	0	0	
Time Period	7:45-8:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	2	0	0		1	0	0		0	0	0		1	0	0	
Time Period	8:00-8:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	1	0	0		1	0	0		0	0	0		0	0	0	
Time Period	8:15-8:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	1	0	3		1	0	0		0	0	0		0	0	0	
Time Period	8:30-8:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	4	0	2		2	0	0		0	0	0		1	0	0	
Time Period	8:45-9:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	2	0	0		1	0	0		0	0	0		0	0	0	

15-minute
summary

Hour
summary

284

300

329

2961209

2631188

3031191

2561118

2941116

	NORTH LEG				EAST LEG				SOUTH LEG				WEST LEG			
	SOUTHBOUND				WESTBOUND				NORTHBOUND				EASTBOUND			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
PASSENGER																
7:00	12	66	5	0	23	2	49	0	1	88	6	0	10	5	3	0
7:15	5	63	14	0	27	5	44	0	3	96	7	0	18	6	8	0
7:30	5	65	9	1	26	3	50	2	1	123	2	0	13	7	7	1
7:45	9	59	6	0	23	2	26	1	8	106	5	0	17	8	7	1
MULTI UNIT = 18 WHEEL SEMI																
7:00	0	1	2		0	0	0		0	1	0		1	0	0	
7:15	0	1	0		0	0	0		0	0	0		1	0	0	
7:30	0	0	1		0	0	0		0	0	0		1	0	0	
7:45	0	2	0		0	0	0		0	1	0		1	0	0	
SINGLE UNIT = MEDIUM TRUCK																
7:00	0	2	0		1	0	1		0	6	0		0	0	0	
7:15	0	1	0		1	0	1		0	0	0		0	0	0	
7:30	1	5	0		1	0	1		0	4	0		0	1	0	
7:45	1	6	0		0	0	0		1	5	0		1	0	0	

AM Peak Hour

P=passenger

18=18 Wheel Semi Trailer

M=Medium Trucks

	NBL				NBT				NBR				SBL				SBT				SBR			
	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total
7:00	1	0	0	1	88	1	6	95	6	0	0	6	12	0	0	12	66	1	2	69	5	2	0	7
7:15	3	0	0	3	96	0	0	96	7	0	0	7	5	0	0	5	63	1	1	65	14	0	0	14
7:30	1	0	0	1	123	0	4	127	2	0	0	2	5	0	1	6	65	0	5	70	9	1	0	10
7:45	8	0	1	9	106	1	5	112	5	0	0	5	9	0	1	10	59	2	6	67	6	0	0	6
Total	13	0	1	14	413	2	15	430	20	0	0	20	31	0	2	33	253	4	14	271	34	3	0	37
%Trucks	7%				4%				0%				6%				7%				8%			

For Capacity Analysis Purposes, if the truck percentage is 0% then assume 1%

	EBL				EBT				EBR				WBL				WBT				WBR			
	P	18	M	Total	P	18	M	Total	P	18	HT	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total
7:00	10	1	0	11	5	0	0	5	3	0	0	3	23	0	1	24	2	0	0	2	49	0	1	50
7:15	18	1	0	19	6	0	0	6	8	0	0	8	27	0	1	28	5	0	0	5	44	0	1	45
7:30	13	1	0	14	7	0	1	8	7	0	0	7	26	0	1	27	3	0	0	3	50	0	1	51
7:45	17	1	1	19	8	0	0	8	7	0	0	7	23	0	0	23	2	0	0	2	26	0	0	26
0:00	58	4	1	63	26	0	1	27	25	0	0	25	99	0	3	102	12	0	0	12	169	0	3	172
	8%				4%				0%				3%				0%				2%			

PACE Traffic Study

APPENDIX B: TRAFFIC DATA (PM PEAK)



CARS

Time Period	3:00-3:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	55	8	2	0	38	6	0	0	15	10	0	0	11	6	1	0

Time Period	3:15-3:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	77	17	3	0	56	18	0	0	12	11	4	0	12	3	0	1

Time Period	3:30-3:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	123	34	10	0	70	16	0	0	21	19	5	0	19	6	3	0

Time Period	3:45-4:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	115	30	7	0	79	23	0	0	18	15	7	1	12	5	3	0

Time Period	4:00-4:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	166	40	12	0	92	28	2	0	22	21	9	0	15	10	6	1

Time Period	4:15-4:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	100	40	12	0	87	19	2	0	17	19	11	0	8	3	1	4

Time Period	4:30-4:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	140	60	18	0	72	20	0	0	18	17	17	0	9	3	4	0

Time Period	4:45-5:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	142	30	13	0	80	30	3	1	20	22	14	0	15	9	6	0

Time Period	5:00-5:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	135	55	16	0	91	20	3	0	17	20	6	0	7	7	5	0

Time Period	5:15-5:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	117	35	17	1	90	21	4	1	17	17	11	1	5	3	3	0

Time Period	5:30-5:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	142	30	13	0	73	27	5	0	18	18	14	0	8	7	2	1

Time Period	5:45-6:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	113	32	18	0	81	31	2	0	19	20	9	1	6	6	4	1

MEDIUM TRUCKS

Time Period	3:00-3:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	2	0	1		3	0	0		1	1	0		0	0	0	

Time Period	3:15-3:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	2	0	1		1	0	0		1	0	0		0	0	0	

Time Period	3:30-3:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	0	1	2		0	0	0		0	1	0		0	0	0	

Time Period	3:45-4:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	0	0	0		2	0	0		0	0	0		1	1	0	

Time Period	4:00-4:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	0	0	5		3	1	0		1	1	0		0	0	0	

Time Period	4:15-4:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	0	0	0		1	0	0		0	0	0		0	1	0	

Time Period	4:30-4:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	0	0	2		0	0	0		1	1	0		0	0	0	

Time Period	4:45-5:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped
Count #	2	0	0		1	1	0		0	0	0		0	0	0	

Time Period	5:00-5:15															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	0	1	0		0	0	0		0	1	0		0	0	0	

Time Period	5:15-5:30															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	1	0	0		3	0	0		1	0	1		0	0	0	

Time Period	5:30-5:45															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	1	1	0		1	0	0		1	2	0		1	0	0	

Time Period	5:45-6:00															
Leg	N				S				E				W			
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB	
Count #	1	0	0		2	0	0		0	0	0		0	0	0	

HEAVY TRUCKS

Time Period	3:00-3:15																15-minute Subtotal	Hour Subtotal
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	0	0	0		0	0	0		0	0	0		0	0	0		160	
Time Period	3:15-3:30																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	1	0	1		0	0	0		0	0	0		0	0	0		221	
Time Period	3:30-3:45																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	0	0	0		1	0	0		0	0	0		0	1	0		332	
Time Period	3:45-4:00																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	1	0	1		0	0	0		0	0	0		2	0	0		323	1036
Time Period	4:00-4:15																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped		
Count #	1	0	2		0	0	0		0	0	0		1	0	0		439	1315
Time Period	4:15-4:30																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped		
Count #	2	0	1		0	0	0		0	0	0		0	0	0		328	1422
Time Period	4:30-4:45																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped		
Count #	1	0	2		2	0	0		0	0	0		3	1	0		391	1481
Time Period	4:45-5:00																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB	Ped	NB	EB	WB	Ped	NB	SB	WB	Ped	NB	SB	EB	Ped		
Count #	1	0	0		1	0	0		0	0	0		2	0	0		393	1551
Time Period	5:00-5:15																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	3	0	0		4	0	0		0	0	0		0	0	0		391	1503
Time Period	5:15-5:30																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	3	0	0		4	0	0		0	0	0		0	0	0		356	1531
Time Period	5:30-5:45																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	1	0	0		1	0	0		0	0	0		0	0	0		367	1507
Time Period	5:45-6:00																	
Leg	N				S				E				W					
Direction of Travel	SB	EB	WB		NB	EB	WB		NB	SB	WB		NB	SB	EB			
Count #	2	0	0		5	0	0		0	0	0		0	0	0		353	1467

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	NORTH LEG				EAST LEG				SOUTH LEG				WEST LEG			
2	SOUTHBOUND				WESTBOUND				NORTHBOUND				EASTBOUND			
3	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	
4																
5	PASSENGER															
6																
7	16:00	40	166	12	0	21	9	22	0	2	92	28	0	15	6	10
8	16:15	40	100	12	0	19	11	17	0	2	87	19	0	8	1	3
9	16:30	60	140	18	0	17	17	18	0	0	72	20	0	9	4	3
10	16:45	30	142	13	0	22	14	20	0	3	80	30	1	15	6	9
11																
12	MULTI UNIT = 18 WHEEL SEMI															
13																
14	16:00	1	2	0		0	0	0		0	0	0		1	0	0
15	16:15	2	0	1		0	0	0		0	0	0		0	0	0
16	16:30	1	0	2		0	0	0		2	0	0		0	3	1
17	16:45	1	0	0		0	0	0		1	0	0		0	2	0
18																
19	SINGLE UNIT = MEDIUM TRUCK															
20																
21	16:00	0	0	5		1	0	1		0	3	1		0	0	0
22	16:15	0	0	0		0	1	1		0	1	0		0	0	1
23	16:30	0	0	2		0	1	1		0	0	0		0	0	0
24	16:45	2	0	0		0	0	0		1	0	1		0	0	0
25																

P=passenger

18=18 Wheel Semi Trailer

M=Medium Trucks

	NBL				NBT				NBR				SBL				SBT				SBR			
	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total
16:00	2	0	0	2	92	0	3	95	28	0	1	29	40	1	0	41	166	2	0	168	12	0	5	17
16:15	2	0	0	2	87	0	1	88	19	0	0	19	40	2	0	42	100	0	0	100	12	1	0	13
16:30	0	2	0	2	72	0	0	72	20	0	0	20	60	1	0	61	140	0	0	140	18	2	2	22
16:45	3	1	1	5	80	0	0	80	30	0	1	31	30	1	2	33	142	0	0	142	13	0	0	13
Total	7	3	1	11	331	0	4	335	97	0	2	99	170	5	2	177	548	2	0	550	55	3	7	65
%Trucks	36%				1%				2%				4%				0%				15%			

For Synchro Coding Purposes, if the truck percentage is 0% then assume 1%

	EBL				EBT				EBR				WBL				WBT				WBR			
	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total	P	18	M	Total
16:00	15	1	0	16	6	0	0	6	10	0	0	10	21	0	1	22	9	0	0	9	22	0	1	23
16:15	8	0	0	8	1	0	0	1	3	0	1	4	19	0	0	19	11	0	1	12	17	0	1	18
16:30	9	0	0	9	4	3	0	7	3	1	0	4	17	0	0	17	17	0	1	18	18	0	1	19
16:45	15	0	0	15	6	2	0	8	9	0	0	9	22	0	0	22	14	0	0	14	20	0	0	20
	47	1	0	48	17	5	0	22	25	1	1	27	79	0	1	80	51	0	2	53	77	0	3	80
	2%				23%				7%				1%				4%				4%			

PACE Traffic Study

APPENDIX C: PACE TRANSIT DATA



PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
240 - 2wSD_on	40' Bus	7:05	423	Notre Dame H.S.	7:27	wlwfg
223 - 6SD_off	40' Bus	7:29	221	Cumberland CNW Stn	7:40	wlwfg
223 - 6mutfSD_on	40' Bus	7:29	221	Cumberland CNW Stn	7:40	wlwfg
250 - 13mutfSD_on	40' Bus	7:26	250	Maine East	7:48	wlwfg
240 - 4mutfSD_on	40' Bus	7:28	240	Maine East	7:50	wlwfg
240 - 2mutfSD_on	40' Bus	7:33	240	Maine East	7:55	wlwfg
230 - 4mutfSD_on	40' Bus	7:36	230	Maine West	7:55	wlwfg
250 - 12mutfSD_on	40' Bus	7:43	250	Maine West	8:02	wlwfg
210 - 1SD_off	40' Bus	7:52	210	Glenbrook Hospital	8:04	wlwfg
210 - 1mutfSD_on	40' Bus	7:52	210	Glenbrook Hospital	8:04	wlwfg
270 - 5	PULSE BUS	7:46	270	Golf Mill (J.C. Penney)	8:04	wlwfg
209 - 1mutfSD_on	40' Bus	7:51	209	Des Plaines	8:06	wlwfg
209 - 1SD_off	40' Bus	7:51	209	Des Plaines	8:06	wlwfg
230 - 3	40' Bus	7:56	221	Rand Business / Center Dr	8:06	wlwfg
423 - 2mutfSD_on	40' Bus	7:39	423	LOCUST / LAKE	8:08	wlwfg
696 - 1	40' Bus	7:48	696	Harper College	8:12	wlwfg
640 - 1	30' bus	8:08	640	BAXTER MAIN ENTERANCE	8:25	wlwfg
421 - 6SD_on	40' Bus	8:21	620	ALLSTATE Willow Plaza	8:29	wlwfg
421 - 6SD_off	40' Bus	8:21	620	ALLSTATE Willow Plaza	8:29	wlwfg
210 - 2	40' Bus	8:21	210	Glenbrook Hospital	8:33	wlwfg
694 - 1	30' bus	8:20	694	Bosch Tool Corp	8:37	wlwfg
223 - 3	40' Bus	8:14	223	Touhy/Elmhurst	8:38	wlwfg
290 - 2	40' Bus	8:07	290	Cumberland CTA Station	8:39	wlwfg
270 - 2	PULSE BUS	8:29	270	Glenbrook Hospital	8:41	wlwfg
221 - 5wSD_on	40' Bus	8:22	221	Maine West	8:41	wlwfg
619 - 1	40' Bus	8:34	619	ALLSTATE Willow Plaza	8:42	wlwfg
250 - 17wSD_on	40' Bus	8:25	250	Maine West	8:44	wlwfg
209 - 1wSD_on	40' Bus	8:25	230	Maine West	8:44	wlwfg
623 - 1	40' Bus	8:41	623	ALLSTATE Willow Plaza	8:49	wlwfg
241 - 1wSD_on	40' Bus	8:25	241	Dee/Talcott	8:50	wlwfg
241 - 2wSD_on	40' Bus	8:25	241	Maine South	8:51	wlwfg
221 - 2	40' Bus	8:40	221	Cumberland CNW Stn	8:51	wlwfg
210 - 1wSD_on	40' Bus	8:30	240	Maine East	8:52	wlwfg
250 - 15wSD_on	40' Bus	8:30	250	Maine East	8:52	wlwfg
423 - 2wSD_on	40' Bus	8:30	240	Maine East	8:52	wlwfg
240 - 5wSD_on	40' Bus	8:30	240	Maine East	8:52	wlwfg

PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
250 - 16wSD_on	40' Bus	8:30	250	Maine East	8:52	wlwfg
223 - 6wSD_on	40' Bus	8:26	240	Maine South	8:52	wlwfg
633 - 1	40' Bus	8:40	633	Walgreens 108 Building	8:54	wlwfg
326 - 1	40' Bus	8:40	230	Des Plaines	8:55	wlwfg
631 - 1	30' bus	8:42	631	Wolters/Kluwer	8:57	wlwfg
626 - 9	40' Bus	8:37	626	Tower Overlook	8:57	wlwfg
234 - 3	40' Bus	8:42	234	Des Plaines	8:57	wlwfg
270 - 6	PULSE BUS	8:41	270	Golf Mill (J.C. Penney)	8:59	wlwfg
635 - 1	40' Bus	8:45	635	Old World Industries	9:00	wlwfg
627 - 1	40' Bus	8:46	627	TAKEDA	9:00	wlwfg
632 - 1	40' Bus	8:50	632	Deerfield & Castlewood	9:05	wlwfg
270 - 7	40' Bus	8:47	272	Buffalo Grove Park Lot	9:06	wlwfg
221 - 3	40' Bus	8:55	221	Cumberland CNW Stn	9:06	wlwfg
234 - 6	40' Bus	8:58	234	Dundee/Wolf	9:08	wlwfg
638 - 1	Van Pool Vehicles	8:51	638	HSBC 1100 Cellular AH	9:11	wlwfg
634 - 1	40' Bus	9:00	634	HARRIS	9:15	wlwfg
223 - 7	40' Bus	8:41	606	Woodfield Corp Center	9:16	wlwfg
226 - 2	40' Bus	9:04	226	Des Plaines	9:19	wlwfg
221 - 4	40' Bus	9:10	221	Cumberland CNW Stn	9:21	wlwfg
223 - 4	40' Bus	8:54	223	Rosemont CTA Station	9:22	wlwfg
290 - 8	40' Bus	8:57	290	Park Ridge Metra	9:22	wlwfg
223 - 8	40' Bus	9:11	223	Touhy/Elmhurst	9:35	wlwfg
270 - 3	PULSE BUS	9:25	270	Glenbrook Hospital	9:37	wlwfg
326 - 2wSD_on	40' Bus	9:09	326	Norridge Commons	9:41	wlwfg
326 - 2mutfSD_on	40' Bus	9:09	326	Norridge Commons	9:41	wlwfg
626 - 3	40' Bus	9:21	626	Tower Overlook	9:41	wlwfg
326 - 2SD_off	40' Bus	9:09	326	Norridge Commons	9:41	wlwfg
230 - 2	40' Bus	9:14	606	Rosemont CTA Station	9:42	wlwfg
240 - 1	40' Bus	9:26	240	Golf Mill (J.C. Penney)	9:44	wlwfg
696 - 3	40' Bus	9:48	696	Randhurst	9:57	wlwfg
234 - 5	40' Bus	9:46	209	Des Plaines	10:01	wlwfg
626 - 1	40' Bus	9:42	626	Tower Overlook	10:02	wlwfg
240 - 3	40' Bus	9:32	240	Cumberland CTA Station	10:04	wlwfg
230 - 1	35' Bus	9:50	230	Des Plaines	10:05	wlwfg
225 - 2	40' Bus	9:48	272	Buffalo Grove Park Lot	10:07	wlwfg
223 - 9	40' Bus	9:47	223	Touhy/Elmhurst	10:11	wlwfg

PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
604 - 3	40' Bus	9:52	604	Northwest Transportation Center	10:16	wlwfg
225 - 1	40' Bus	10:07	270	Golf Mill (J.C. Penney)	10:25	wlwfg
326 - 3	35' Bus	10:02	326	Rosemont CTA Station	10:30	wlwfg
626 - 4	40' Bus	10:11	626	Tower Overlook	10:31	wlwfg
223 - 5	40' Bus	10:05	223	Rosemont CTA Station	10:33	wlwfg
626 - 2	40' Bus	10:37	626	Tower Overlook	10:57	wlwfg
696 - 5	40' Bus	10:49	696	Randhurst	10:58	wlwfg
627 - 7f	30' bus	12:31	627	BRAESIDE METRA STATION	12:51	wlwfg
221 - 9SD_on	40' Bus	15:42	221	Wolf / Euclid	15:45	wlwfg
226 - 6	30' bus	15:50	226	Oakton/Harlem	16:14	wlwfg
223 - 12	40' Bus	16:33	223	Rosemont CTA Station	17:01	wlwfg
250 - 11	40' Bus	16:44	606	Rosemont CTA Station	17:12	wlwfg
208 - 4	40' Bus	16:55	606	Rosemont CTA Station	17:23	wlwfg
423 - 5	40' Bus	17:14	606	Rosemont CTA Station	17:42	wlwfg
230 - 7	40' Bus	17:22	230	Rosemont CTA Station	17:50	wlwfg
223 - 13	40' Bus	17:23	223	Rosemont CTA Station	17:51	wlwfg
635 - 2	30' bus	17:45	635	LAKE-COOK METRA	18:01	wlwfg
633 - 2	30' bus	17:46	633	LAKE-COOK METRA	18:02	wlwfg
208 - 2	40' Bus	17:35	606	Rosemont CTA Station	18:03	wlwfg
422 - 2SD_on	40' Bus	17:27	422	Linden CTA	18:05	wlwfg
422 - 2SD_off	40' Bus	17:27	422	Linden CTA	18:05	wlwfg
270 - 12SD_off	40' Bus	17:56	270	Glenbrook Hospital	18:08	wlwfg
270 - 12SD_on	40' Bus	17:56	270	Glenbrook Hospital	18:08	wlwfg
250 - 7	40' Bus	17:43	223	Rosemont CTA Station	18:11	wlwfg
620 - 3	40' Bus	17:42	620	Skokie Swift	18:15	wlwfg
423 - 1	40' Bus	18:08	234	Dundee/Wolf	18:18	wlwfg
226 - 9	40' Bus	18:08	226	Des Plaines	18:23	wlwfg
290 - 4	40' Bus	17:58	290	Park Ridge Metra	18:23	wlwfg
623 - 3	40' Bus	18:08	623	Glen of Glvw Metra Sta	18:26	wlwfg
234 - 1	40' Bus	18:11	209	Des Plaines	18:26	wlwfg
627 - 3	40' Bus	18:10	627	LAKE-COOK METRA	18:26	wlwfg
619 - 2	40' Bus	18:12	619	Des Plaines	18:27	wlwfg
270 - 4	PULSE BUS	18:10	270	Golf Mill (J.C. Penney)	18:28	wlwfg
626 - 5	40' Bus	17:55	626	Skokie Swift	18:28	wlwfg
632 - 2	40' Bus	18:12	632	Deerfield Metra	18:30	wlwfg
638 - 2	Van Pool Vehicles	18:10	638	ARLINGTON PARK METRA	18:30	wlwfg

PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
606 - 4	40' Bus	18:03	606	Rosemont CTA Station	18:31	wlwfg
631 - 2	40' Bus	18:15	631	LAKE-COOK METRA	18:31	wlwfg
634 - 3	40' Bus	18:16	634	LAKE-COOK METRA	18:32	wlwfg
208 - 7	40' Bus	18:19	208	Des Plaines	18:34	wlwfg
270 - 14	40' Bus	18:20	270	Golf Mill (J.C. Penney)	18:38	wlwfg
270 - 11SD_off	40' Bus	18:29	270	Glenbrook Hospital	18:41	wlwfg
270 - 11SD_on	40' Bus	18:29	270	Glenbrook Hospital	18:41	wlwfg
326 - 4	35' Bus	18:12	326	Norridge Commons	18:44	wlwfg
226 - 5	40' Bus	18:28	241	Golf Mill (J.C. Penney)	18:46	wlwfg
290 - 12	40' Bus	18:29	240	Golf Mill (J.C. Penney)	18:47	wlwfg
221 - 6	40' Bus	18:37	221	Cumberland CNW Stn	18:48	wlwfg
640 - 2	30' bus	18:31	640	BRAESIDE METRA STATION	18:51	wlwfg
209 - 2	40' Bus	18:43	234	Dundee/Wolf	18:53	wlwfg
290 - 10	40' Bus	18:28	290	Park Ridge Metra	18:53	wlwfg
250 - 19	40' Bus	18:31	250	O'Hare Kiss & Fly People Mover	18:57	wlwfg
626 - 8	40' Bus	18:29	626	Skokie Swift	19:02	wlwfg
221 - 7	40' Bus	18:59	221	River Rd/ Old Willow	19:02	wlwfg
223 - 11	40' Bus	18:35	223	Rosemont CTA Station	19:03	wlwfg
230 - 5	40' Bus	18:44	230	Algonquin/Linneman	19:05	wlwfg
221 - 1	40' Bus	18:55	221	Cumberland CNW Stn	19:06	wlwfg
223 - 1	40' Bus	18:39	223	Rosemont CTA Station	19:07	wlwfg
290 - 6	40' Bus	18:43	290	Park Ridge Metra	19:08	wlwfg
270 - 13	PULSE BUS	18:50	270	Golf Mill (J.C. Penney)	19:08	wlwfg
241 - 3SD_on	40' Bus	18:54	241	Golf Mill (J.C. Penney)	19:12	wlwfg
241 - 3SD_off	40' Bus	18:54	241	Golf Mill (J.C. Penney)	19:12	wlwfg
226 - 4	40' Bus	18:50	226	Oakton/Hamilton	19:13	wlwfg
423 - 3	40' Bus	18:36	423	Linden CTA	19:14	wlwfg
240 - 6	40' Bus	18:59	240	Golf Mill (J.C. Penney)	19:17	wlwfg
604 - 5SD_off	40' Bus	18:54	604	Northwest Transportation Center	19:18	wlwfg
604 - 5SD_on	40' Bus	18:54	604	Northwest Transportation Center	19:18	wlwfg
226 - 1	40' Bus	19:03	226	Des Plaines	19:18	wlwfg
230 - 8SD_on	40' Bus	19:07	230	Des Plaines	19:22	wlwfg
230 - 8SD_off	40' Bus	19:07	230	Des Plaines	19:22	wlwfg
694 - 2	30' bus	19:05	694	Dana Point	19:22	wlwfg
423 - 6SD_off	40' Bus	19:09	209	Des Plaines	19:24	wlwfg
423 - 6SD_on	40' Bus	19:09	209	Des Plaines	19:24	wlwfg

PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
221 - 8	40' Bus	18:57	221	Rosemont CTA Station	19:25	wlwfg
208 - 1	40' Bus	19:13	208	Des Plaines	19:28	wlwfg
270 - 10SD_on	PULSE BUS	19:11	270	Golf Mill (J.C. Penney)	19:29	wlwfg
270 - 10SD_off	PULSE BUS	19:11	270	Golf Mill (J.C. Penney)	19:29	wlwfg
422 - 3SD_off	40' Bus	19:00	422	Old Orchard	19:30	wlwfg
626 - 11	40' Bus	18:57	626	Skokie Swift	19:30	wlwfg
422 - 3SD_on	40' Bus	19:00	422	Old Orchard	19:30	wlwfg
270 - 1	PULSE BUS	19:19	270	Glenbrook Hospital	19:31	wlwfg
250 - 6	40' Bus	18:48	250	Davis L	19:34	wlwfg
250 - 8	40' Bus	19:09	250	O'Hare Kiss & Fly People Mover	19:35	wlwfg
290 - 13	40' Bus	19:11	290	Park Ridge Metra	19:36	wlwfg
696 - 2	40' Bus	19:28	696	Randhurst	19:37	wlwfg
234 - 4	40' Bus	19:30	221	Cumberland CNW Stn	19:41	wlwfg
240 - 7	40' Bus	19:24	240	Golf Mill (J.C. Penney)	19:42	wlwfg
225 - 3	40' Bus	19:26	270	Golf Mill (J.C. Penney)	19:44	wlwfg
226 - 8SD_on	40' Bus	19:35	234	Dundee/Wolf	19:45	wlwfg
226 - 8SD_off	40' Bus	19:35	234	Dundee/Wolf	19:45	wlwfg
230 - 6SD_on	40' Bus	19:33	230	Des Plaines	19:48	wlwfg
230 - 6SD_off	40' Bus	19:33	230	Des Plaines	19:48	wlwfg
250 - 10	40' Bus	19:30	423	Glenview Metra Station	19:50	wlwfg
606 - 2SD_on	40' Bus	19:27	604	Northwest Transportation Center	19:51	wlwfg
606 - 2SD_off	40' Bus	19:27	604	Northwest Transportation Center	19:51	wlwfg
290 - 7	40' Bus	19:41	208	GARAGE	19:53	wlwfg
626 - 10	40' Bus	19:22	626	Skokie Swift	19:55	wlwfg
210 - 3	40' Bus	19:23	210	SKOKIE SWIFT AT OAKTON	19:56	wlwfg
234 - 7SD_off	40' Bus	19:44	209	Des Plaines	19:59	wlwfg
234 - 7SD_on	40' Bus	19:44	209	Des Plaines	19:59	wlwfg
290 - 16	40' Bus	19:42	290	Park Ridge Metra	20:07	wlwfg
604 - 1	40' Bus	19:54	604	Hintz/Buffalo Grove	20:07	wlwfg
226 - 3	40' Bus	19:37	326	Norridge Commons	20:09	wlwfg
423 - 4	40' Bus	19:18	210	Lincolnwood Town Center	20:10	wlwfg
226 - 7	40' Bus	19:56	270	Golf Mill (J.C. Penney)	20:14	wlwfg
422 - 1	40' Bus	19:39	422	Linden CTA	20:17	wlwfg
606 - 3	40' Bus	19:54	606	Northwest Transportation Center	20:18	wlwfg
696 - 4	40' Bus	20:12	696	Randhurst	20:21	wlwfg
208 - 3	40' Bus	20:07	208	Des Plaines	20:22	wlwfg

PULL END						
Block	Vehicle Group	Leave Service	Route	Leave Place	Pull Time	Garage
234 - 2	40' Bus	19:44	423	Harlem Kennedy CTA	20:26	wlwfg
290 - 11	40' Bus	20:00	422	Old Orchard	20:30	wlwfg
696 - 6SD_on	40' Bus	21:06	696	Randhurst	21:15	wlwfg
696 - 6SD_off	40' Bus	21:06	696	Randhurst	21:15	wlwfg
604 - 4	40' Bus	21:14	604	Hintz/Buffalo Grove	21:27	wlwfg
223 - 14SD_off	40' Bus	21:04	223	Rosemont CTA Station	21:32	wlwfg
223 - 14SD_on	40' Bus	21:04	223	Rosemont CTA Station	21:32	wlwfg
250 - 5	40' Bus	21:43	250	O'Hare Kiss & Fly People Mover	22:09	wlwfg
604 - 2	40' Bus	22:04	604	Hintz/Buffalo Grove	22:17	wlwfg
208 - 5	40' Bus	22:21	208	Des Plaines	22:36	wlwfg
290 - 15SD_off	40' Bus	22:07	290	Cumberland CTA Station	22:39	wlwfg
290 - 15SD_on	40' Bus	22:07	290	Cumberland CTA Station	22:39	wlwfg
270 - 8	PULSE BUS	22:39	270	Golf Mill (J.C. Penney)	22:57	wlwfg
208 - 9	40' Bus	22:48	208	GARAGE	23:00	wlwfg
208 - 8	40' Bus	23:02	208	Des Plaines	23:17	wlwfg
208 - 6	40' Bus	22:40	208	Davis L	23:26	wlwfg
270 - 9	PULSE BUS	23:14	270	Golf Mill (J.C. Penney)	23:32	wlwfg
606 - 1	40' Bus	23:07	606	Rosemont CTA Station	23:35	wlwfg
250 - 9	40' Bus	23:11	250	O'Hare Kiss & Fly People Mover	23:37	wlwfg
250 - 4	40' Bus	23:41	250	O'Hare Kiss & Fly People Mover	24:07	wlwfg
290 - 1	40' Bus	24:06	606	Rosemont CTA Station	24:34	wlwfg
290 - 9	40' Bus	24:25	250	Des Plaines	24:40	wlwfg
223 - 10	40' Bus	25:16	223	Touhy/Wolf	25:36	wlwfg
250 - 18f	40' Bus	25:15	250	O'Hare Kiss & Fly People Mover	25:41	wlwfg
290 - 14	40' Bus	25:39	290	Park Ridge Metra	26:04	wlwfg
223 - 2	40' Bus	25:44	223	Rosemont CTA Station	26:12	wlwfg
250 - 18muwt	40' Bus	26:44	422	UPS Northbrook	26:59	wlwfg

PULL START						
Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
225 - 1	40' Bus	4:16	290	Howard CTA Station	5:15	wlwfg
290 - 1	40' Bus	4:25	290	Park Ridge Metra	4:50	wlwfg
290 - 2	40' Bus	4:30	290	Cumberland CTA Station	5:02	wlwfg
223 - 1	40' Bus	4:31	223	Rosemont CTA Station	4:59	wlwfg
223 - 2	40' Bus	4:32	606	Rosemont CTA Station	5:00	wlwfg
223 - 3	40' Bus	4:36	606	Northwest Transportation Center	5:00	wlwfg
422 - 1	40' Bus	4:38	270	Golf Mill (J.C. Penney)	4:56	wlwfg
208 - 1	40' Bus	4:39	208	Davis L	5:25	wlwfg
223 - 4	40' Bus	4:40	223	Rosemont CTA Station	5:08	wlwfg
208 - 2	40' Bus	4:44	604	Hintz/Buffalo Grove	4:57	wlwfg
226 - 1	40' Bus	4:45	226	Oakton / Dianne	5:08	wlwfg
221 - 1	40' Bus	4:45	223	Rosemont CTA Station	5:13	wlwfg
226 - 2	40' Bus	4:46	226	Des Plaines	5:01	wlwfg
290 - 4	40' Bus	4:50	290	Cumberland CTA Station	5:22	wlwfg
423 - 1	40' Bus	4:53	423	Harlem Kennedy CTA	5:35	wlwfg
223 - 5	40' Bus	4:55	223	Rosemont CTA Station	5:23	wlwfg
208 - 3	40' Bus	4:56	209	Des Plaines	5:11	wlwfg
250 - 4	40' Bus	4:58	270	Golf Mill (J.C. Penney)	5:16	wlwfg
696 - 1	40' Bus	5:07	606	Rosemont CTA Station	5:35	wlwfg
225 - 2	40' Bus	5:10	234	Dundee/Wolf	5:20	wlwfg
626 - 9	40' Bus	5:10	626	Skokie Swift	5:43	wlwfg
696 - 2	40' Bus	5:11	272	Golf Mill (J.C. Penney)	5:29	wlwfg
250 - 5	40' Bus	5:11	250	O'Hare Kiss & Fly People Mover	5:37	wlwfg
250 - 6	40' Bus	5:12	423	Glenview Metra Station	5:32	wlwfg
221 - 2	40' Bus	5:12	221	Wolf / Piper	5:13	wlwfg
234 - 1	40' Bus	5:13	234	Des Plaines	5:28	wlwfg
270 - 2	PULSE BUS	5:13	270	Glenbrook Hospital	5:25	wlwfg
270 - 1	PULSE BUS	5:13	270	Golf Mill (J.C. Penney)	5:31	wlwfg
230 - 1	35' Bus	5:13	326	Norridge Commons	5:45	wlwfg
226 - 3	40' Bus	5:15	226	Oakton / Dianne	5:38	wlwfg
290 - 6	40' Bus	5:15	290	Cumberland CTA Station	5:47	wlwfg
208 - 4	40' Bus	5:15	208	Des Plaines	5:30	wlwfg
290 - 7	40' Bus	5:16	290	Howard CTA Station	6:15	wlwfg
604 - 1	40' Bus	5:16	250	Davis L	6:02	wlwfg
223 - 6wSD_on	40' Bus	5:17	223	Rosemont CTA Station	5:45	wlwfg
223 - 6mutfSD_on	40' Bus	5:17	223	Rosemont CTA Station	5:45	wlwfg

PULL START						
Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
240 - 1	40' Bus	5:17	240	Golf Mill (J.C. Penney)	5:35	wlwfg
223 - 6SD_off	40' Bus	5:17	223	Rosemont CTA Station	5:45	wlwfg
234 - 2	40' Bus	5:20	209	Des Plaines	5:35	wlwfg
230 - 2	40' Bus	5:20	230	Des Plaines	5:35	wlwfg
221 - 3	40' Bus	5:22	221	Rosemont CTA Station	5:50	wlwfg
604 - 2	40' Bus	5:24	604	Hintz/Buffalo Grove	5:37	wlwfg
223 - 7	40' Bus	5:25	223	Rosemont CTA Station	5:53	wlwfg
226 - 4	40' Bus	5:26	241	Dempster/Greenwood	5:45	wlwfg
626 - 2	40' Bus	5:27	626	Skokie Swift	6:00	wlwfg
208 - 5	40' Bus	5:29	208	Des Plaines	5:44	wlwfg
250 - 8	40' Bus	5:30	208	Northwest Transportation Center	6:00	wlwfg
250 - 7	40' Bus	5:30	250	O'Hare Kiss & Fly People Mover	5:56	wlwfg
250 - 9	40' Bus	5:31	290	Cumberland CTA Station	6:03	wlwfg
696 - 3	40' Bus	5:31	696	Randhurst	5:40	wlwfg
326 - 1	40' Bus	5:32	326	Rosemont CTA Station	6:00	wlwfg
604 - 3	40' Bus	5:35	604	Northwest Transportation Center	6:05	wlwfg
210 - 1mutfSD_on	40' Bus	5:35	210	Glenbrook Hospital	5:47	wlwfg
210 - 1SD_off	40' Bus	5:35	210	Glenbrook Hospital	5:47	wlwfg
210 - 1wSD_on	40' Bus	5:35	210	Glenbrook Hospital	5:47	wlwfg
290 - 8	40' Bus	5:38	290	Park Ridge Metra	6:03	wlwfg
234 - 3	40' Bus	5:38	209	Des Plaines	5:53	wlwfg
270 - 3	PULSE BUS	5:39	270	Golf Mill (J.C. Penney)	5:57	wlwfg
223 - 8	40' Bus	5:40	223	Rosemont CTA Station	6:08	wlwfg
250 - 10	40' Bus	5:41	250	O'Hare Kiss & Fly People Mover	6:13	wlwfg
221 - 4	40' Bus	5:42	221	Wolf / Piper	5:43	wlwfg
234 - 4	40' Bus	5:42	240	Golf Mill (J.C. Penney)	6:00	wlwfg
290 - 9	40' Bus	5:44	270	Glenbrook Hospital	5:56	wlwfg
230 - 3	40' Bus	5:44	230	Thacker/Wolf	5:58	wlwfg
208 - 6	40' Bus	5:44	604	Hintz/Buffalo Grove	5:57	wlwfg
290 - 10	40' Bus	5:45	423	Willow / Patriot	6:00	wlwfg
626 - 3	40' Bus	5:47	626	Skokie Swift	6:20	wlwfg
290 - 11	40' Bus	5:49	270	Golf Mill (J.C. Penney)	6:07	wlwfg
208 - 7	40' Bus	5:50	230	Des Plaines	6:05	wlwfg
209 - 1SD_off	40' Bus	5:52	234	Dundee/Wolf	6:02	wlwfg
209 - 1wSD_on	40' Bus	5:52	234	Dundee/Wolf	6:02	wlwfg
209 - 1mutfSD_on	40' Bus	5:52	234	Dundee/Wolf	6:02	wlwfg

PULL START						
Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
223 - 9	40' Bus	5:52	223	Rosemont CTA Station	6:20	wlwfg
627 - 1	40' Bus	5:54	620	Skokie Swift	6:27	wlwfg
223 - 10	40' Bus	5:55	272	Golf Mill (J.C. Penney)	6:13	wlwfg
696 - 4	40' Bus	6:01	696	Randhurst	6:10	wlwfg
694 - 1	30' bus	6:01	694	Dana Point	6:18	wlwfg
240 - 2wSD_on	40' Bus	6:04	423	Harlem Kennedy CTA	6:46	wlwfg
240 - 2mutfSD_on	40' Bus	6:04	423	Harlem Kennedy CTA	6:46	wlwfg
640 - 1	30' bus	6:06	640	BRAESIDE METRA STATION	6:26	wlwfg
250 - 11	40' Bus	6:06	241	Dempster/Greenwood	6:25	wlwfg
240 - 3	40' Bus	6:07	240	Golf Mill (J.C. Penney)	6:25	wlwfg
696 - 5	40' Bus	6:07	606	Rosemont CTA Station	6:35	wlwfg
634 - 1	40' Bus	6:08	635	LAKE-COOK METRA	6:24	wlwfg
234 - 5	40' Bus	6:08	234	Des Plaines	6:23	wlwfg
270 - 4	PULSE BUS	6:09	270	Golf Mill (J.C. Penney)	6:27	wlwfg
210 - 2	40' Bus	6:10	210	Glenbrook Hospital	6:22	wlwfg
626 - 1	40' Bus	6:12	626	Skokie Swift	6:45	wlwfg
326 - 2mutfSD_on	40' Bus	6:13	250	Harlem/Golf	6:35	wlwfg
423 - 2wSD_on	40' Bus	6:13	423	Harlem Kennedy CTA	6:55	wlwfg
423 - 2mutfSD_on	40' Bus	6:13	423	Harlem Kennedy CTA	6:55	wlwfg
326 - 3	35' Bus	6:14	221	Wolf / Piper	6:15	wlwfg
270 - 5	PULSE BUS	6:14	270	Glenbrook Hospital	6:26	wlwfg
619 - 1	40' Bus	6:15	619	Des Plaines	6:30	wlwfg
240 - 4mutfSD_on	40' Bus	6:16	240	Central / Lyman	6:30	wlwfg
423 - 3	40' Bus	6:17	423	Willow/Waukegan Rds	6:35	wlwfg
270 - 6	PULSE BUS	6:19	270	Golf Mill (J.C. Penney)	6:37	wlwfg
226 - 5	40' Bus	6:23	226	Oakton / Dianne	6:46	wlwfg
230 - 4mutfSD_on	40' Bus	6:23	230	Stillwell/Devon	6:50	wlwfg
423 - 4	40' Bus	6:25	423	Glenview Metra Station	6:45	wlwfg
250 - 12mutfSD_on	40' Bus	6:26	240	Central/Shermer	6:45	wlwfg
208 - 8	40' Bus	6:29	208	Des Plaines	6:44	wlwfg
421 - 6SD_on	40' Bus	6:30	421	Wilmette Metra Station	7:05	wlwfg
626 - 4	40' Bus	6:32	626	Skokie Swift	7:05	wlwfg
250 - 13mutfSD_on	40' Bus	6:38	250	Oakton/Greenwood	7:01	wlwfg
631 - 1	30' bus	6:43	631	LAKE-COOK METRA	6:59	wlwfg
632 - 1	40' Bus	6:43	632	LAKE-COOK METRA	6:59	wlwfg
635 - 1	40' Bus	6:43	635	LAKE-COOK METRA	6:59	wlwfg

PULL START						
Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
633 - 1	40' Bus	6:43	633	LAKE-COOK METRA	6:59	wlwfg
270 - 7	40' Bus	6:49	270	Golf Mill (J.C. Penney)	7:07	wlwfg
234 - 6	40' Bus	6:53	234	Dundee/Wolf	7:03	wlwfg
623 - 1	40' Bus	6:56	623	Glen of Glw Metra Sta	7:14	wlwfg
638 - 1	Van Pool Vehicles	7:00	638	ARLINGTON PARK METRA	7:20	wlwfg
4421 - 6SD_off	40' Bus	7:15	620	Skokie Swift	7:48	wlwfg
326 - 2SD_off	40' Bus	7:17	326	Rosemont CTA Station	7:45	wlwfg
326 - 2wSD_on	40' Bus	7:17	326	Rosemont CTA Station	7:45	wlwfg
241 - 1wSD_on	40' Bus	7:32	241	Cumberland CTA Station	8:04	wlwfg
241 - 2wSD_on	40' Bus	7:42	241	Oakton/Harlem	8:06	wlwfg
250 - 15wSD_on	40' Bus	7:47	250	Oakton/Greenwood	8:10	wlwfg
250 - 16wSD_on	40' Bus	7:53	250	Harlem/Golf	8:15	wlwfg
240 - 5wSD_on	40' Bus	7:54	240	Central / Lyman	8:08	wlwfg
221 - 5wSD_on	40' Bus	7:58	221	Wolf / Euclid	8:01	wlwfg
250 - 17wSD_on	40' Bus	7:59	250	Ellinwood/Pearson	8:15	wlwfg
627 - 7f	30' bus	11:31	627	TAKEDA	11:45	wlwfg
270 - 8	PULSE BUS	11:44	270	Golf Mill (J.C. Penney)	12:02	wlwfg
230 - 5	40' Bus	12:34	230	Des Plaines	12:49	wlwfg
270 - 9	PULSE BUS	13:30	270	Jefferson Park Station	14:20	wlwfg
250 - 18muwt	40' Bus	13:46	250	O'Hare Kiss & Fly People Mover	14:18	wlwfg
250 - 18f	40' Bus	13:46	250	O'Hare Kiss & Fly People Mover	14:18	wlwfg
290 - 12	40' Bus	13:59	290	Park Ridge Metra	14:24	wlwfg
606 - 1	40' Bus	14:02	209	Des Plaines	14:17	wlwfg
221 - 6	40' Bus	14:03	223	Oakton/Hamilton	14:26	wlwfg
604 - 4	40' Bus	14:06	606	Northwest Transportation Center	14:36	wlwfg
4423 - 5	40' Bus	14:07	423	Linden CTA	14:45	wlwfg
290 - 13	40' Bus	14:18	290	Park Ridge Metra	14:43	wlwfg
221 - 7	40' Bus	14:24	223	Rosemont CTA Station	14:52	wlwfg
626 - 5	40' Bus	14:25	626	Tower Overlook	14:45	wlwfg
226 - 6	30' bus	14:30	226	Jefferson Park Station	15:20	wlwfg
221 - 8	40' Bus	14:32	221	Rosemont CTA Station	15:00	wlwfg
226 - 7	40' Bus	14:36	241	Cumberland CTA Station	15:08	wlwfg
250 - 19	40' Bus	14:37	241	Golf Mill (J.C. Penney)	14:55	wlwfg
270 - 10SD_on	PULSE BUS	14:38	270	Notre Dame H.S.	15:00	wlwfg
606 - 2SD_on	40' Bus	14:38	423	Loyola Academy	15:05	wlwfg
423 - 6SD_on	40' Bus	14:38	423	Loyola Academy	15:05	wlwfg

PULL START						
Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
422 - 2SD_on	40' Bus	14:38	422	Loyola Academy	15:05	wlwfg
606 - 3	40' Bus	14:40	240	Cumberland CTA Station	15:12	wlwfg
223 - 11	40' Bus	14:43	223	Oakton/Hamilton	15:06	wlwfg
326 - 4	35' Bus	14:43	326	Norridge Commons	15:15	wlwfg
606 - 4	40' Bus	14:44	223	Rosemont CTA Station	15:12	wlwfg
223 - 12	40' Bus	14:44	221	Cumberland CNW Stn	14:55	wlwfg
230 - 6SD_on	40' Bus	14:46	423	LOCUST / LAKE	15:15	wlwfg
240 - 6	40' Bus	14:47	240	Golf Mill (J.C. Penney)	15:05	wlwfg
290 - 14	40' Bus	14:48	290	Cumberland CTA Station	15:20	wlwfg
230 - 7	40' Bus	14:50	230	Des Plaines	15:05	wlwfg
634 - 3	40' Bus	14:51	635	UNDERWRITERS LAB	15:11	wlwfg
422 - 2SD_off	40' Bus	14:52	422	Linden CTA	15:30	wlwfg
626 - 8	40' Bus	14:55	626	Tower Overlook	15:15	wlwfg
223 - 13	40' Bus	14:55	221	Wolf / Piper	14:56	wlwfg
226 - 8SD_on	40' Bus	14:59	241	Maine South	15:25	wlwfg
696 - 6SD_on	40' Bus	14:59	241	Maine South	15:25	wlwfg
290 - 15SD_on	40' Bus	14:59	240	Dee/Talcott	15:24	wlwfg
270 - 11SD_on	40' Bus	15:03	240	Maine East	15:25	wlwfg
604 - 5SD_on	40' Bus	15:03	240	Maine East	15:25	wlwfg
270 - 12SD_on	40' Bus	15:03	240	Maine East	15:25	wlwfg
422 - 3SD_on	40' Bus	15:03	250	Maine East	15:25	wlwfg
223 - 14SD_on	40' Bus	15:03	240	Maine East	15:25	wlwfg
209 - 2	40' Bus	15:03	209	Des Plaines	15:18	wlwfg
241 - 3SD_on	40' Bus	15:04	241	Maine South	15:30	wlwfg
290 - 15SD_off	40' Bus	15:05	290	Cumberland CTA Station	15:37	wlwfg
234 - 7SD_on	40' Bus	15:06	250	Maine West	15:25	wlwfg
230 - 8SD_on	40' Bus	15:06	230	Maine West	15:25	wlwfg
221 - 9SD_on	40' Bus	15:06	221	Maine West	15:25	wlwfg
270 - 13	PULSE BUS	15:07	270	Golf Mill (J.C. Penney)	15:25	wlwfg
225 - 3	40' Bus	15:11	225	Oakton/Harlem	15:35	wlwfg
240 - 7	40' Bus	15:12	240	Golf Mill (J.C. Penney)	15:30	wlwfg
241 - 3SD_off	40' Bus	15:13	241	Cumberland CTA Station	15:45	wlwfg
423 - 6SD_off	40' Bus	15:13	423	Harlem Kennedy CTA	15:55	wlwfg
290 - 16	40' Bus	15:15	290	Park Ridge Metra	15:40	wlwfg
626 - 11	40' Bus	15:15	626	Tower Overlook	15:35	wlwfg
234 - 7SD_off	40' Bus	15:22	209	Des Plaines	15:37	wlwfg

PULL START

Block	Vehicle Group	Pull Time	Route	In-service Place	In-service Time	Garage
270 - 14	40' Bus	15:22	270	Glenbrook Hospital	15:34	wlwfg
226 - 9	40' Bus	15:22	226	Oakton / Dianne	15:45	wlwfg
226 - 8SD_off	40' Bus	15:26	226	Oakton/Harlem	15:50	wlwfg
270 - 11SD_off	40' Bus	15:27	270	Golf Mill (J.C. Penney)	15:45	wlwfg
619 - 2	40' Bus	15:28	619	OWI Sanders	15:37	wlwfg
632 - 2	40' Bus	15:32	632	BAXTER MAIN ENTERANCE	15:49	wlwfg
208 - 9	40' Bus	15:35	208	Northwest Transportation Center	16:05	wlwfg
626 - 10	40' Bus	15:35	626	Tower Overlook	15:55	wlwfg
623 - 3	40' Bus	15:37	623	ASTELLAS PHARM	15:45	wlwfg
620 - 3	40' Bus	15:37	620	ALLSTATE South Bldg	15:44	wlwfg
270 - 10SD_off	PULSE BUS	15:37	270	Golf Mill (J.C. Penney)	15:55	wlwfg
230 - 8SD_off	40' Bus	15:38	230	Algonquin/Linneman	15:59	wlwfg
606 - 2SD_off	40' Bus	15:38	606	Woodfield Corp Center	16:13	wlwfg
223 - 14SD_off	40' Bus	15:41	225	Oakton/Harlem	16:05	wlwfg
627 - 3	40' Bus	15:41	627	DISCOVER	15:58	wlwfg
635 - 2	30' bus	15:42	635	Walgreens 4050 Commercial Dr.	15:57	wlwfg
640 - 2	30' bus	15:46	640	Walgreens 4050 Commercial Dr.	16:01	wlwfg
631 - 2	40' Bus	15:47	631	DISCOVER	16:04	wlwfg
633 - 2	30' bus	15:51	633	WALGREEN 300 WILMOT	16:05	wlwfg
422 - 3SD_off	40' Bus	15:51	290	Touhy Ave & Overhill Ave	16:18	wlwfg
604 - 5SD_off	40' Bus	15:51	604	Northwest Transportation Center	16:21	wlwfg
638 - 2	Van Pool Vehicles	15:55	638	HSBC 1100 Cellular AH	16:15	wlwfg
230 - 6SD_off	40' Bus	15:57	606	Woodfield Corp Center	16:32	wlwfg
270 - 12SD_off	40' Bus	16:07	270	Golf Mill (J.C. Penney)	16:25	wlwfg
694 - 2	30' bus	16:10	694	RAULAND-BORG	16:27	wlwfg
210 - 3	40' Bus	16:28	210	Glenbrook Hospital	16:40	wlwfg
696 - 6SD_off	40' Bus	16:29	696	Randhurst	16:38	wlwfg

PACE Traffic Study

APPENDIX D: CAPACITY ANALYSIS



HCM 2010 Signalized Intersection Summary

3: S. Wolf Road & E. Willow Road

08/20/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	27	25	102	12	172	14	430	20	33	271	37
Future Volume (veh/h)	63	27	25	102	12	172	14	430	20	33	271	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1863	1863	1900	1827	1827	1900	1776	1776	1900
Adj Flow Rate, veh/h	68	29	27	111	13	187	15	467	22	36	295	40
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	2	2	4	4	4	7	7	7
Cap, veh/h	252	125	117	389	16	233	452	728	34	351	680	92
Arrive On Green	0.07	0.14	0.14	0.08	0.16	0.16	0.02	0.42	0.42	0.05	0.44	0.44
Sat Flow, veh/h	1740	870	810	1774	104	1490	1740	1731	82	1691	1531	208
Grp Volume(v), veh/h	68	0	56	111	0	200	15	0	489	36	0	335
Grp Sat Flow(s),veh/h/ln	1740	0	1681	1774	0	1594	1740	0	1812	1691	0	1738
Q Serve(g_s), s	2.5	0.0	2.3	4.1	0.0	9.5	0.4	0.0	16.8	0.9	0.0	10.4
Cycle Q Clear(g_c), s	2.5	0.0	2.3	4.1	0.0	9.5	0.4	0.0	16.8	0.9	0.0	10.4
Prop In Lane	1.00		0.48	1.00		0.94	1.00		0.04	1.00		0.12
Lane Grp Cap(c), veh/h	252	0	242	389	0	249	452	0	762	351	0	772
V/C Ratio(X)	0.27	0.00	0.23	0.29	0.00	0.80	0.03	0.00	0.64	0.10	0.00	0.43
Avail Cap(c_a), veh/h	310	0	385	426	0	366	564	0	762	420	0	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	29.7	25.2	0.0	31.9	12.7	0.0	18.1	13.2	0.0	15.0
Incr Delay (d2), s/veh	0.6	0.0	0.5	0.4	0.0	7.8	0.0	0.0	4.1	0.1	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.1	2.0	0.0	4.7	0.2	0.0	9.2	0.4	0.0	5.3
LnGrp Delay(d),s/veh	26.4	0.0	30.2	25.6	0.0	39.7	12.7	0.0	22.2	13.3	0.0	16.8
LnGrp LOS	C		C	C		D	B		C	B		B
Approach Vol, veh/h	124			311			504			371		
Approach Delay, s/veh	28.1			34.7			21.9			16.5		
Approach LOS	C			C			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	39.0	12.4	17.3	8.0	40.9	11.4	18.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	7.0	33.0	8.0	18.0	7.0	33.0	8.0	18.0				
Max Q Clear Time (g_c+I1), s	2.9	18.8	6.1	4.3	2.4	12.4	4.5	11.5				
Green Ext Time (p_c), s	0.0	4.6	0.0	1.3	0.0	5.4	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay	24.0											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

3: S. Wolf Road & E. Willow Road

08/20/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	22	27	80	53	80	11	335	99	177	550	65
Future Volume (veh/h)	48	22	27	80	53	80	11	335	99	177	550	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1759	1759	1900
Adj Flow Rate, veh/h	54	25	30	90	60	90	12	376	111	199	618	73
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	8	8	8
Cap, veh/h	243	81	97	328	80	121	242	583	172	418	758	90
Arrive On Green	0.06	0.10	0.10	0.08	0.12	0.12	0.02	0.42	0.42	0.09	0.49	0.49
Sat Flow, veh/h	1774	770	924	1774	672	1008	1774	1381	408	1675	1544	182
Grp Volume(v), veh/h	54	0	55	90	0	150	12	0	487	199	0	691
Grp Sat Flow(s),veh/h/ln	1774	0	1694	1774	0	1680	1774	0	1789	1675	0	1726
Q Serve(g_s), s	2.0	0.0	2.3	3.4	0.0	6.8	0.3	0.0	16.9	5.0	0.0	26.6
Cycle Q Clear(g_c), s	2.0	0.0	2.3	3.4	0.0	6.8	0.3	0.0	16.9	5.0	0.0	26.6
Prop In Lane	1.00		0.55	1.00		0.60	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	243	0	177	328	0	201	242	0	755	418	0	848
V/C Ratio(X)	0.22	0.00	0.31	0.27	0.00	0.75	0.05	0.00	0.65	0.48	0.00	0.81
Avail Cap(c_a), veh/h	292	0	347	351	0	344	364	0	755	482	0	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	32.4	27.6	0.0	33.3	15.1	0.0	18.0	12.6	0.0	16.9
Incr Delay (d2), s/veh	0.5	0.0	1.0	0.4	0.0	5.5	0.1	0.0	4.2	0.8	0.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.1	1.7	0.0	3.4	0.1	0.0	9.1	2.3	0.0	14.5
LnGrp Delay(d),s/veh	28.7	0.0	33.4	28.1	0.0	38.7	15.2	0.0	22.2	13.4	0.0	25.4
LnGrp LOS	C		C	C		D	B		C	B		C
Approach Vol, veh/h	109			240			499			890		
Approach Delay, s/veh	31.1			34.7			22.0			22.7		
Approach LOS	C			C			C			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	39.0	12.0	14.2	7.6	44.4	10.8	15.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	10.0	33.0	7.0	16.0	7.0	36.0	7.0	16.0				
Max Q Clear Time (g_c+I1), s	7.0	18.9	5.4	4.3	2.3	28.6	4.0	8.8				
Green Ext Time (p_c), s	0.2	6.9	0.0	0.8	0.0	4.4	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay	24.7											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

3: S. Wolf Road & E. Willow Road

08/20/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	27	26	102	22	172	23	430	20	33	275	59
Future Volume (veh/h)	73	27	26	102	22	172	23	430	20	33	275	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1900	1863	1863	1900	1827	1827	1900	1759	1759	1900
Adj Flow Rate, veh/h	79	29	28	111	24	187	25	467	22	36	299	64
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	7	7	7	2	2	2	4	4	4	8	8	8
Cap, veh/h	258	130	125	404	30	234	417	706	33	334	588	126
Arrive On Green	0.07	0.16	0.16	0.08	0.16	0.16	0.04	0.41	0.41	0.05	0.42	0.42
Sat Flow, veh/h	1691	830	801	1774	183	1424	1740	1731	82	1675	1404	301
Grp Volume(v), veh/h	79	0	57	111	0	211	25	0	489	36	0	363
Grp Sat Flow(s),veh/h/ln	1691	0	1631	1774	0	1606	1740	0	1812	1675	0	1705
Q Serve(g_s), s	3.0	0.0	2.4	4.0	0.0	9.9	0.6	0.0	17.2	0.9	0.0	12.3
Cycle Q Clear(g_c), s	3.0	0.0	2.4	4.0	0.0	9.9	0.6	0.0	17.2	0.9	0.0	12.3
Prop In Lane	1.00		0.49	1.00		0.89	1.00		0.04	1.00		0.18
Lane Grp Cap(c), veh/h	258	0	255	404	0	264	417	0	739	334	0	714
V/C Ratio(X)	0.31	0.00	0.22	0.27	0.00	0.80	0.06	0.00	0.66	0.11	0.00	0.51
Avail Cap(c_a), veh/h	285	0	416	418	0	410	507	0	739	403	0	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	28.9	24.4	0.0	31.5	13.1	0.0	18.8	13.8	0.0	16.8
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.4	0.0	6.1	0.1	0.0	4.6	0.1	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.1	2.0	0.0	4.8	0.3	0.0	9.5	0.4	0.0	6.3
LnGrp Delay(d),s/veh	25.7	0.0	29.4	24.7	0.0	37.7	13.2	0.0	23.4	13.9	0.0	19.4
LnGrp LOS	C		C	C		D	B		C	B		B
Approach Vol, veh/h	136			322			514			399		
Approach Delay, s/veh	27.2			33.2			22.9			18.9		
Approach LOS	C			C			C			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.8	38.0	12.4	18.2	8.9	38.9	11.7	18.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	7.0	32.0	7.0	20.0	7.0	32.0	7.0	20.0				
Max Q Clear Time (g_c+I1), s	2.9	19.2	6.0	4.4	2.6	14.3	5.0	11.9				
Green Ext Time (p_c), s	0.0	4.5	0.0	1.4	0.0	5.3	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay	24.6											
HCM 2010 LOS	C											

Intersection

Int Delay, s/veh 1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	10	41	63	0	11
Future Vol, veh/h	115	10	41	63	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	100	100
Mvmt Flow	125	11	45	68	0	12

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	136
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1448
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1448
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	712	-	-	1448	-
HCM Lane V/C Ratio	0.017	-	-	0.031	-
HCM Control Delay (s)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

HCM 2010 TWSC
8: S. Wolf Road & Wolf Access

08/20/2018

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	2	473	299	4
Future Vol, veh/h	0	0	2	473	299	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2	514	325	4

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	845	327	329
Stage 1	327	-	-
Stage 2	518	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	333	714	1231
Stage 1	731	-	-
Stage 2	598	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	332	714	1231
Mov Cap-2 Maneuver	332	-	-
Stage 1	731	-	-
Stage 2	597	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1231	-	-	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-
HCM Control Delay (s)	7.9	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 2010 Signalized Intersection Summary

3: S. Wolf Road & E. Willow Road

08/20/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	32	35	80	53	80	11	339	99	177	550	66
Future Volume (veh/h)	68	32	35	80	53	80	11	339	99	177	550	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1863	1863	1900	1863	1863	1900	1743	1743	1900
Adj Flow Rate, veh/h	76	36	39	90	60	90	12	381	111	199	618	74
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	2	2	2	2	2	2	9	9	9
Cap, veh/h	224	82	88	289	70	105	275	644	188	443	807	97
Arrive On Green	0.07	0.10	0.10	0.07	0.10	0.10	0.02	0.46	0.46	0.08	0.53	0.53
Sat Flow, veh/h	1757	809	876	1774	672	1008	1774	1386	404	1660	1527	183
Grp Volume(v), veh/h	76	0	75	90	0	150	12	0	492	199	0	692
Grp Sat Flow(s),veh/h/ln	1757	0	1685	1774	0	1679	1774	0	1790	1660	0	1710
Q Serve(g_s), s	3.2	0.0	3.6	3.8	0.0	7.6	0.3	0.0	17.5	5.1	0.0	27.6
Cycle Q Clear(g_c), s	3.2	0.0	3.6	3.8	0.0	7.6	0.3	0.0	17.5	5.1	0.0	27.6
Prop In Lane	1.00		0.52	1.00		0.60	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	224	0	170	289	0	176	275	0	832	443	0	903
V/C Ratio(X)	0.34	0.00	0.44	0.31	0.00	0.85	0.04	0.00	0.59	0.45	0.00	0.77
Avail Cap(c_a), veh/h	247	0	176	305	0	176	383	0	832	497	0	903
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.4	0.0	36.4	31.1	0.0	37.9	14.4	0.0	17.0	12.0	0.0	16.1
Incr Delay (d2), s/veh	0.9	0.0	1.8	0.6	0.0	31.3	0.1	0.0	3.1	0.7	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.8	1.9	0.0	5.0	0.1	0.0	9.3	2.4	0.0	14.4
LnGrp Delay(d),s/veh	32.3	0.0	38.2	31.7	0.0	69.2	14.4	0.0	20.1	12.7	0.0	22.3
LnGrp LOS	C		D	C		E	B		C	B		C
Approach Vol, veh/h	151			240			504			891		
Approach Delay, s/veh	35.2			55.1			19.9			20.1		
Approach LOS	D			E			B			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	46.0	12.2	14.7	7.7	51.4	11.9	15.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	10.0	40.0	7.0	9.0	7.0	43.0	7.0	9.0				
Max Q Clear Time (g_c+I1), s	7.1	19.5	5.8	5.6	2.3	29.6	5.2	9.6				
Green Ext Time (p_c), s	0.2	8.6	0.0	0.4	0.0	6.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	26.1											
HCM 2010 LOS	C											

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	97	0	1	194	10	38
Future Vol, veh/h	97	0	1	194	10	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	11	11
Mvmt Flow	105	0	1	211	11	41

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	105
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1486
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1486
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	852	-	-	1486	-
HCM Lane V/C Ratio	0.061	-	-	0.001	-
HCM Control Delay (s)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 TWSC
8: S. Wolf Road & Wolf Access

08/20/2018

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	2	0	445	665	0
Future Vol, veh/h	4	2	0	445	665	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	2	0	484	723	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1207	723	723
Stage 1	723	-	-
Stage 2	484	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	203	426	879
Stage 1	481	-	-
Stage 2	620	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	426	879
Mov Cap-2 Maneuver	203	-	-
Stage 1	481	-	-
Stage 2	620	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	879	-	246	-	-
HCM Lane V/C Ratio	-	-	0.027	-	-
HCM Control Delay (s)	0	-	20	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

PACE Traffic Study

APPENDIX E: STORAGE LANE LENGTHS



Wolf Road at Willow / Old Willow Road

TURN LANE STORAGE REQUIREMENTS

95% Queue Storage Length

		95% Car Queue AM	95% Car Queue PM	95% Vehicle Queue AM	95% Vehicle Queue PM
LANE	MOVEMENT	(# Vehicles)	(# Vehicles)	(feet)	(feet)
SBL	AD				
SBT/SBR	AB/AC				
NBL	BC				
NBT	BA				
NBR	BD				
EBL	CA				
EBT	CD				
EBR	CB				
WBL	DB				
WBT/WBR	DC/DA				

Project Information

Project:	Pace Traffic Impact Study		
Major Road:	Wolf Road	Direction:	North-South
Minor Road:	Willow / Old Willow Road	Direction:	East-West
Design Year:	2040		
Date:	8/20/2018		
By:	CMC		
Checked By:			

Red Time Queue

LANE	MOVEMENT	DHV		% TRUCK		2	V / 3600		CYCLE		Used G/C						RED TIME		25	Tf		N	LENGTH	
		AM	PM	AM	PM		AM	PM	AM	PM	g	g _u	G/C	g	g _u	G/C	AM	PM		AM	PM		AM	PM
SBL	AD	33	177	7	4	2	0.009	0.049	90	90	7	0	0.078	6	20.7	0.297	83	63	25	1.07	1.04	2	20	81
SBT/SBR	AB/AC	334	616	4	2	2	0.093	0.171	90	90	24	0	0.267	41	0	0.456	66	49	25	1.04	1.02	3	106	143
NBL	BC	23	11	6	36	2	0.006	0.003	90	90	7	0	0.078	6	9.3	0.170	83	75	25	1.06	1.36	2	14	8
NBT/R	BA/BD	450	438	7	1	2	0.125	0.122	90	90	24	0	0.267	41	0	0.456	66	49	25	1.07	1.01	2	221	151
EBL	CA	73	68	8	2	2	0.020	0.019	90	90	7	0	0.078	6	10	0.178	83	74	25	1.08	1.02	2	45	36
EBT/R	CD/CB	53	67	2	15	2	0.015	0.019	90	90	34	0	0.378	19	0	0.211	56	71	25	1.02	1.15	1	42	76
WBL	DB	102	80	3	1	2	0.028	0.022	90	90	7	0	0.078	6	13.3	0.214	83	71	25	1.03	1.01	2	61	40
WBT/WBR	DC/DA	194	133	2	4	2	0.054	0.037	90	90	34	0	0.378	19	0	0.211	56	71	25	1.02	1.04	1	154	136

Existing and Proposed Evaluation

LANE	MOVEMENT	Existing Storage Length (feet)	Minimum Decel Storage Length (feet)	95% Queue AM (feet)	95% Queue PM (feet)	Red Time Queue AM (feet)	Red Time Queue PM (feet)	Max of Decel, 95th Queue, and Red Time Queue	Criteria for Storage Length Selection	Selected Length (Round to nearest 5')	95th Percentile Design Exception (Yes or No)	Red Time Queue Design Exception (Yes or No)	Note
SBL	AD	185	145	0	0	20	81	185	Existing	185		No	
SBT/SBR	AB/AC			0	0	106	143	143					
NBL	BC	155	145	0	0	14	8	155	Existing	155		No	
NBT/R	BA/BD			0	0	221	151	221					
EBL	CA	100	100	0	0	45	36	100	Existing	100		No	Extend Storage from existing 100' to Proposed approximately 165' as back to back left turn lanes for Pace entrance
EBT/R	CD/CB			0	0	42	76	76					
WBL	DB	185	100	0	0	61	40	185	Existing	185		No	
WBT/WBR	DC/DA			0	0	154	136	154					



MEMO – Fire Prevention Bureau

TO: Steve Robles, Assistant Director of Community Development

FROM: Ronald S. Antor, Fire Inspector

CC: Andrew Jennings, Director of Community Development
Keith MacIsaac, Fire Chief
Brooke Casolari, Village Planner
FPB File

DATE: October 19, 2018

SUBJECT: Special Use Application for Public Transit Bus Storage and Maintenance Facility with a Compressed Natural Gas (CNG) Fueling Station – Pace – 1600 South Wolf Road – Documents received for review by the Wheeling Fire Department, October 4, 2018.

The Wheeling Fire Department has reviewed the documents and drawings related to the above referenced project and have the following comments:

Site Plan

1. The site plan reviewed includes an existing 429,550 +/- square foot industrial building. Approximately 59,000 square feet of the existing structure will be removed and this area repurposed to provide a compressed natural gas (CNG) vehicle fueling facility.
2. The submittal document shows minimal changes to the existing site roadway improvements. Items to be noted related to the site plan are as follows:
 - a. The existing northeast site entrance along Old Willow Road is proposed to be removed. This will leave two entrance drives to the site for Fire Department access.
 - b. The existing fire access road along the west and south of the structure will remain.
 - c. A turning radius analysis for the revision to the west bus drive entrance to the fire access route around the building will need to be provided to the Fire Department for review. The radius currently shown is 25'. This radius will need to accommodate the turning radius of the Fire Department's apparatus.
 - d. A limited number of existing parking spaces will be removed at the north side of the building.
 - e. The new CNG fueling facility will be located at the northwest corner of the building. Approximately 59,000 square feet of the existing structure will be removed and the fueling facility located within this area.

Mr. Steve Robles

Subject: Special Use Application for Public Transit Bus Storage and Maintenance Facility with a Compressed Natural Gas (CNG) Fueling Station – Pace – 1600 South Wolf Road – Documents received for review by the Wheeling Fire Department, October 4, 2018.

October 19, 2018

Page 2

- f. The CNG Fueling area will be secured by an 8 foot high ornamental security fence. Entry to the area will be via an automatic security gate.

This gate shall be provided with a back-up power supply and a Fire Department Knox brand key switch to allow for Fire Department access during an emergency.

Gates for the exiting of occupants in accordance with the exiting requirements in Chapter 10 of the International Building Code need to be provided in the fence. These gates shall also be provided with hardware meeting the core requirements in Chapter 10 of the International Building Code.

- g. The fire access routes need to be reviewed during the construction phase and fire lanes shall be posted as required by the Fire Department.
3. The current submittal shows an existing looped yard hydrant water main system around the building. This system is also located along the fire apparatus access route. This system shall be reconfigured to become a private water system and shall be provided with two points of connection to the municipal water system.
4. The petitioner's submittal shows no revisions to the existing municipal water services to the site.
5. A fire hydrant shall also be provided within 50 feet of the building's Fire Department Connection (FDC). This hydrant shall be supplied from the Village's municipal water system.
6. Trees and light fixtures along the drives that are fire access routes shall not hang over the drives/parking lots in a manner that hinders Fire Department access. A minimum of 13'6" overhead clearance shall be provided over the fire apparatus access routes.
7. A clear space of at least 4-feet shall be maintained around the circumference of any fire hydrants. This includes light fixtures, transformers, and landscaping.
8. Site landscaping features, utilities, or similar obstructions shall not impede access to fire protection equipment, i.e. building Fire Department Connection (FDC).

1600 South Wolf Road - Pace – Building Remodeling

1. Based on the information provided for review, the proposed building occupancy would be a mixed use occupancy consisting of (S)Storage Use Group and (B)Business Use Group occupancies, as defined in the 2012 Edition of the International Building Code (IBC) and Fire Prevention Codes (IFC).
2. No fueling of vehicles will be allowed within the structure.
3. All construction for the building remodeling would need to comply with the Village's Building and Fire Prevention Codes (2012 Editions of the International Building Code & International Fire Code – with amendments). Some of the code requirements that this would include are:

Mr. Steve Robles

Subject: Special Use Application for Public Transit Bus Storage and Maintenance Facility with a Compressed Natural Gas (CNG) Fueling Station – Pace – 1600 South Wolf Road – Documents received for review by the Wheeling Fire Department, October 4, 2018.

October 19, 2018

Page 3

- a. Modifications to the building's existing fire sprinkler system shall be designed and installed in accordance with NFPA 13.
- b. The building's existing fire alarm system will need to be modified or replaced in accordance with NFPA 72.

1600 South Wolf Road - Pace – CNG Fueling Facility

1. The proposed Compressed Natural Gas Motor Fuel-Dispensing Facility is to be a private facility and its use limited to Pace vehicles.
2. The facility operation shall comply with the Village's Fire Prevention Code, specifically Section 2208 as it specifically relates to the design and operation of CNG fueling stations
3. The petitioner shall present a copy of the training program to be utilized to train all users of the fueling facility to the Wheeling Fire Prevention Bureau for review. Any subsequent revisions to the training program shall also be presented to the Wheeling Fire Prevention Bureau for review.
4. The facility operation shall comply with the Village's Fire Prevention Code, specifically Section 2208 as it specifically relates to the design and operation of CNG fueling stations

At this time there are no other Fire Department comments related to the project as presented in the documents reviewed.

Steve Robles

Subject: FW: Pace - AutoTurn exhibit

From: Ronald Antor

Sent: Friday, November 2, 2018 2:20 PM

To: Steve Robles <SRobles@wheelingil.gov>

Cc: Kyle Goetzelmann <KGoetzelmann@wheelingil.gov>; Andrew C. Jennings <AJennings@wheelingil.gov>

Subject: RE: Pace - AutoTurn exhibit

Steve –

I looked at the AutoTurn exhibit that was provided and there are a couple of items that need to be resolved.

The first item is that when turning onto the property portions of the fire apparatus cross over the curb line on the west side of the drive and over the lawn area at that point. The second item is that in order to make the right turn from the entry drive into the fire apparatus access route the fire apparatus needs to cross over completely into the on-coming traffic lane before making the turn into the fire apparatus access route. This apparatus movement also has the vehicle crossing over the curblane and against what appears to be a series of protective bollards. Finally, the radius of the pavement on the west side of the entry drive needs to be adjusted to accommodate the vehicle movement.

Ron



MEMORANDUM

TO: Steve Robles, Assistant Director of Community Development
Brooke Casolari, Senior Planner

FROM: Kyle Goetzelmann, Civil Engineer I

COPY: Jon Tack, Village Engineer

DATE: October 23rd, 2018

SUBJECT: Pace – Special Use
1600 S. Wolf Rd. - Review Comments

The Engineering Division received a project description, traffic impact study, utility plan, landscape plan, cover letter and alta survey for the subject project on October 4th, 2018. The Engineering Division has completed a review of the above referenced submittal and offers the following comments at this time:

1. Engineering believes that the expected substantial increase in heavy vehicles using this section of municipal roadway will put undue pressure on its integrity. The existing roadway base is made of a suspect sub-base material, and as such, the increase in heavy bus vehicles will accelerate the rate of deterioration and the need for reconstruction. Consideration for investment by the proposed property purchaser in the roadway resurfacing and/or reconstruction is requested as part of the special use process. Construction work on this roadway section should take place before the proposed use is operational on this property.
2. All exterior parking lot flatwork will require an engineering permit from the Village of Wheeling and IDOT if in their right-of-way.
3. Any modifications made to Village or IDOT owned roadways will need to be reviewed. This can be included in the Village of Wheeling engineering permit submittal.
4. If more than ½ acre of the site is disturbed, a Metropolitan Water Reclamation District (MWRD) permit will be required.

1. CALL TO ORDER

Chairman Ruffatto called the meeting to order at 6:30 p.m. on Thursday, October 25, 2018.

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

Present were Commissioners Blinova, Creech, Johnson, Kalis, Powers and Ruffatto. Commissioner Dorband was absent with prior notice. Also, present were Brooke Casolari, Senior Planner, Steve Robles, Assistant Director of Community Development, Mallory Milluzzi, Village Attorney, Jon Tack, Village Engineer and Mr. Ron Antor, Fire Inspector.

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4. CHANGES TO THE AGENDA

Ms. Casolari reported that “Item C” under “Items for Review” will be continued without discussion. The petitioner has asked that it be continued to November 8th.

5. CITIZEN CONCERNS AND COMMENTS - None

6. CONSENT ITEMS

- A) [Docket No. SCBA 18-47](#)
McDonald's
1355 Lake Cook Road
Appearance Approval of Wall Signs

Commissioner Powers moved, seconded by Commissioner Johnson to approve the following consent item.

Approve Docket No. SCBA 18-47 to grant appearance approval of the wall signs, as shown on the following exhibits submitted August 27, 2018 (except as noted) by Identity Services, for McDonald's located at 1355 Lake Cook Road, Wheeling, Illinois:

- Building elevation plans, October 9, 2018 (2 sheets),
- Golden arch sign plans (5 sheets),
- McDonald's wordmark sign plans (2 sheets), and
- Playplace sign plans (3 sheets).

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None
ABSENT: Commissioners Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

7. ITEMS FOR REVIEW

- A) [Docket No. 2018-25](#)
Tracy's Bistro
18 W. Dundee Road
Special Use-Site Plan Approval of a Sit-Down Restaurant

See Findings of Fact and Recommendation for Docket No. 2018-25.

Commissioner Kalis moved, seconded by Commissioner Blinova to recommend approval of Docket No. 2018-25, to grant Special Use-Site Plan Approval as required under Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, to permit a Sit-Down Restaurant in accordance with the following exhibits submitted March 20, 2018 by Tracy's Café, to be located at 18 W. Dundee Road, Wheeling Illinois:

- Cover letter, and
- Floor plan

And with the following conditions of approval:

1. The seating capacity shall not exceed a total of fourteen (14) seats;
2. The hours of operation shall be consistent with liquor licensing;
3. Gaming shall be contingent upon approval of a Class NV liquor license; and
4. An outdoor smoking area with the receptacle shall be designated prior to occupancy.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Kalis, Powers
NAYS: Commissioners Johnson, Ruffatto
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being four affirmative votes, the motion was approved.

Commissioner Johnson moved, seconded by Commissioner Powers to close Docket No. 2018-25.

The motion was approved by a voice vote.

- B)** [Docket No. 2018-26](#)
 Mini Donut Factory
 1067 Lake Cook Road
 Special Use-Site Plan Approval of a Sit-Down Restaurant

See Findings of Fact and Recommendation for Docket No. 2018-26.

Commissioner Johnson moved, seconded by Commissioner Kalis to recommend approval of Docket No. 2018-26 to grant Special Use-Site Plan Approval as required under Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, to permit a Sit-Down Restaurant in accordance with the following exhibits submitted September 28, 2018 by Mini Donut Factory, to be located at 1067 Lake Cook Road, Wheeling Illinois:

- Cover letter, and
- Floor plan

And with the following condition of approval:

1. The dry storage and grease basin requirements listed in the Health Officer's review memo, dated October 17, 2018, shall be addressed on the permit plan submittal.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

Commissioner Powers moved, seconded by Commissioner Johnson to close Docket No. 2018-26. The motion was approved by a voice vote.

- C)** [Docket No. 2018-23](#) (To be continued without discussion)
 H2O Express Car Wash
 966 S. Milwaukee Avenue
 Special Use-Site Plan Approval of a Car Wash

Commissioner Johnson moved, seconded by Commissioner Creech to continue Docket No. 2018-23 to November 8, 2018.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

- D)** [Docket No. 2018-24A&B](#) (Continued from October 11, 2018 hearing.)
 Auto Cars Imports
 170 Shepard Avenue
 (2018-24A) Zoning Variation to Reduce the Required Parking
 (2018-24B) Special Use-Site Plan Approval for a Light Motor Vehicle Repair
 Facility

See Findings of Fact and Recommendation for Docket No. 2018-24A&B.

Commissioner Johnson moved, seconded by Commissioner Kalis to recommend approval of Docket No. 2018-24A, granting a variation from Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19.11 General Development Standards, Chapter 19.11 General Development Standards, Section 19.11.010 Off-Street Parking and Loading, Section E Parking Standards, Subsection 1 Minimum Required Parking per Land Use Category, and associated sections, to reduce the required parking for the proposed light motor vehicle repair facility, from forty-two (42) to fourteen (14), which consists of a twenty eight (28) parking stall variation, for Auto Cars Imports, to be located at 170 Shepard Avenue, Wheeling Illinois.

And with the following condition of approval:

1. That the parking variation may be increased by one stall in order to meet the access requirements to the FDC; and
2. The parking variation may be increased if the parking stalls on the east side of the building obstruct exiting or utilities.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Johnson, Powers
NAYS: Commissioners Kalis, Ruffatto, Creech
ABSENT: Commissioners Dorband
PRESENT: None
ABSTAIN: None

There being three affirmative votes, the motion did not pass.

Commissioner Powers moved, seconded by Commissioner Johnson to recommend approval of Docket No. 2018-24B to grant special use-site plan approval for a light motor vehicle repair facility in accordance with the following exhibits submitted by Auto Cars Imports to be located at 170 Shepard Avenue, Wheeling, Illinois:

- Cover letter, August 9, 2018, and
- Site/floor plan, October 15, 2018.

And with the following condition of approval:

1. That the proposed parking stalls on the east side of the building shall be removed if they obstruct exiting or utilities.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Johnson, Powers
NAYS: Commissioners Creech, Kalis, Ruffatto
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being three affirmative votes, the motion was denied.

Commissioner Johnson moved, seconded by Commissioner Powers to close Docket No. 2018-24A&B. The motion was approved by a voice vote.

The Commission took a break at 7:41 p.m. and reconvened at 7:47 p.m.

8. APPROVAL OF MINUTES – [September 13, 2018](#) (including partial Findings for Docket Nos. 2018-23 and 2018-24), September 20, 2018 and October 11, 2018 (including partial Findings for Docket No. 2018-24)

Commissioner Powers moved, seconded by Commissioner Johnson to approve the minutes dated September 13, 2018 as presented.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

Commissioner Powers moved, seconded by Commissioner Johnson to approve the minutes dated September 20, 2018 as presented.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto

NAYS: None
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

Commissioner Johnson moved, seconded by Commissioner Blinova to approve the minutes dated October 11, 2018 as corrected. The motion was approved by a voice vote.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

9. OTHER BUSINESS

Ms. Casolari reported there was a field change that Staff had determined was minor enough that could be allowed through the building permit process. The Learning Center in the Town Center was recently approved for a Special Use for child daycare with two different fences approved for the project. The fence surrounding the playground on the west side of the building was illustrated in the photograph and was approved, the petitioner is now requesting that the design and material be changed to a composite material with a cedar texture and semi-transparent. The change has been made and approved by Staff. The new fence is the same height as the original fence.

Commissioner Creech questioned if it had horizontal slats or shadow box, he wanted it to be consistent. Ms. Casolari thought it had vertical boards.

Ms. Casolari provided an update on the Plan Commission holiday schedule. The November 1st meeting has been canceled since there were six meetings back-to-back between October and November. There will be a special meeting on November 8th which will be treated like a normal Plan Commission meeting. There is a workshop with the Village Board scheduled on November 15th regarding the Station Area Plan. Details have not yet been determined. There are meetings on December 6th and 20th. Commissioner Johnson is unavailable on December 6th. Chairman Ruffatto asked the Commission to give advance notice if they could not attend a meeting.

Commissioner Johnson had no comments.

Commissioner Blinova had no comments.

Commissioner Powers referred to the last petition and felt there was a disconnect with how the

variation of 28 was determined. He felt the petitioner was trying to use the property pretty creatively. Ms. Milluzzi explained there were three other tenants that needed parking. Commissioner Powers didn't believe the petitioner would need all of the parking because he was using a lot on the inside for storage. He mentioned that the petitioner probably had 60% of the tenant space. Chairman Ruffatto referred to the Code and that it would set a bad precedent going forward for any type of use that wants to come in and could refer to the approved parking variation of 28. Chairman Ruffatto referred to the Code and Ordinances that the petitioner needs to adhere to and that a variation of 28 would be an issue. Chairman Ruffatto personally doesn't think there is a disconnect and he feels that exceptions can't be made for everything that comes in. Commissioner Johnson believes the indoor storage should somehow be factored in. Chairman Ruffatto reminded the Commission that it was outdoor parking being approved. Ms. Milluzzi explained it was tied to the Standards and how the Commission feels. Commissioner Johnson mentioned that the petitioner testified there were only 8-10 cars a day.

Commissioner Kalis had no comments.

Commissioner Creech had no comments.

Chairman Ruffatto received a number of inquiries about Code enforcement. He mentioned Dundee Dogs and that the excess signs were still there. He expressed a concern about enforcement. He asked for Staff input. Mr. Robles explained that Staff tries to work toward voluntarily compliance by working with the owner/operator after receiving the complaint without having to go through ticket issuance and adjudication. He explained there were operators that were repeat offenders. The approach is to work with them to let them understand the process and regulations of the Code. There are some operators that will continue to receive fines and buck the system. He understands that it appears nothing was being done but there was a lot of behind the scenes work Staff was doing to try to achieve compliance. Staff needs to give them the necessary time to achieve the compliance and they have the right to go through an appeals process/ adjudication process which all takes time.

Commissioner Creech questioned the necessary time. Chairman Ruffatto questioned the process after a call has been made to the hotline. Mr. Robles explained once a complaint is received it was inspected to see if there is a violation. There are times when it may appear there are violations, but everything complies. If the inspector goes out and observes a violation, they will contact the owner/operator to make them aware of the violation and give them a timeframe for compliance. The timeframe varies depending on the violation. If it is something that can be done easily within a week then the inspector may go back on a Monday and return on a Friday to see if it is corrected. They may give them through a weekend if it's a homeowner to take into consideration a work schedule. It varies depending on the type of violation. Ms. Milluzzi explained if the violation hasn't been corrected, a formal citation gets issued. The citation is to appear in a adjudication which is usually two to three weeks out to give them sufficient notice. They may get additional time to come into compliance and if not, it gets closed out with a fine and then if they are still not coming into compliance and they don't appear, they would need to go to Circuit Court in order to enforce it which wouldn't get heard until 35-60 days.

Commissioner Johnson felt the excessive signs at Dundee Dogs could be resolved in about half an hour by removing the signs. He has personally called the compliance hotline. He felt it should be

a simple fix. Commissioner Johnson feels it is unfair to the other restaurants.

Mr. Robles wanted to let the Plan Commission know that Staff has been in receipt of a concept review request for a proposed Plan Unit Development which will go to the November 5th Village Board meeting. The property is at the northeast corner of Dundee and Northgate Parkway.

Chairman Ruffatto will try to make it to the November 8th meeting but regardless Commissioner Johnson will be the Chairman.

10. ADJOURNMENT

Commissioner Kalis moved, seconded by Commissioner Powers to adjourn the meeting at 8:08 p.m. All were in favor on a unanimous voice vote and the meeting was adjourned.

Respectfully submitted,

Steve Powers, Secretary
Wheeling Plan Commission

**DISTRIBUTED TO THE COMMISSION 11.02.2018
FOR APPROVAL ON 11.08.2018**

**DRAFT FINDINGS OF FACT
AND RECOMMENDATION**

To: Village President and Board of Trustees

From: Wheeling Plan Commission/Sign Code Board of Appeal

Re: [Docket No. 2018-24A&B](#)
Auto Cars Imports
170 Shepard Avenue
(2018-24A) Zoning Variation to Reduce the Required Parking
(2018-24B) Special Use-Site Plan Approval for a Light Motor Vehicle Repair Facility

2018-24 Steve Vago, President of Auto Cars Imports LTD, tenant, is seeking the following for the property at 170 Shepard Avenue, which is zoned I-3 General Industrial District:

2018-24A Variation from Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19.11 General Development Standards, Section 19.11.010 Off-Street Parking and Loading, Section E Parking Standards, Subsection 1 Minimum Required Parking per Land Use Category, and associated sections to reduce the required parking for a motor vehicle (light) repair facility; and

2018-24B Special Use-Site Plan Approval as required under Chapter 19-07 Industrial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, to establish a motor vehicle (light) repair facility.

Chairman Ruffatto called Docket No. 2018-24A&B on September 13, 2018. Present were Commissioners Blinova, Creech, Johnson, Powers and Ruffatto. Commissioners Dorband and Kalis were absent with prior notice. Also present were Brooke Casolari, Senior Planner, Mallory Milluzzi, Village Attorney, Kyle Goetzelmann, Civil Engineer and Mr. Ron Antor, Fire Inspector.

Commissioner Powers read the following statement.

A zoning variation is intended to be a method of adjustment to equalize regulations where Title 19 of the Village of Wheeling (Zoning) has created an unnecessary hardship. A variation is designed to allow affected property owners the same rights and privileges that others enjoy in the same zoning district. In order to be granted a variation a petitioner is required to demonstrate through testimony to the Plan Commission at the public hearing why their request meets the conditions of the village code including, but not limited to, how their individual situation is unique or unusual. Prior to the public hearing the petitioner provides written statements meant to show that their request for variation meets the standards established in Title 19. The Commission Chairperson will typically direct that these statements be entered into the record without a full reading of them at the hearing. Based upon the testimony and supporting materials submitted, the Plan Commission will make findings in support of, or against, the petitioner's testimony and report those findings to the Village Board.

Ms. Casolari stated the Staff Reports and submittals of the petitioner were part of the public record.

Mr. Steve Vago, 170 Shepard Avenue, Wheeling, IL and Ms. Patty Cantore, 170 Shepard Avenue, Wheeling, IL were present and sworn in.

Mr. Vago wants to run an automotive repair business for imports and American vehicles. They have been in business since 1962 and plan to move to the Village of Wheeling.

Ms. Cantore confirmed they were taken over suite D, E and F at the back of the lot which is approximately ½ of the building at over 10,000 square feet. Suite A is vacant, and C has been rented for 20+ years. There will be 8 lifts inside with 3 offices, breakroom and 3 exiting bathrooms. There will be a maximum of 8 employees. There are 4 lifts against the north wall, 2 toward the middle and 2 toward the south wall. There are three offices with two being utilized. One office will be extra. They are moving to utilize a larger space. The fourth office will be the parts room and will be utilized for their electronics to run the business. The open space in the southwest corner will remain open space. It is a large building for them and at this time they have no plans to do anything with the open space. The building includes a customer waiting area. They think the space will work well for them. They provide a service to pick up and drop off customers and also pick up vehicles from people's work.

Chairman Ruffatto opened the discussion to the public, no one came forward.

In reply to Commissioner Johnson's question, Ms. Cantore confirmed their current business is in Northbrook with 8 lifts and is approximately 8,000 square feet. Commissioner Johnson asked about their current parking space. Mr. Vago explained their current space is too cut-up and too impacted versus the wide open space at the Wheeling location. Ms. Cantore stated they share their existing property with the building owner with 14 employees. Mr. Vago stated they could use 15-20 parking spaces during the day depending on the turnover of cars. They work on import vehicles, both old and new. Their current business in Northbrook is located south of Willow, off of Shermer. They work on referrals since they are not on a main thoroughfare.

Commissioner Johnson questioned if the rooms drawn on the plan were existing. Mr. Vago confirmed they were not changing anything on the interior except for painting. He stated that all of the oil drums were above ground and their lifts were electronic and also above ground.

In reply to Commissioner Johnson's question, Mr. Vago confirmed they were working to possibly purchase the building and he would take over the landscaping.

Commissioner Creech questioned the reason the petitioner chose the proposed building. Mr. Vago explained they looked at a few buildings within Wheeling and talked with Brooke. He looked at the building with a friend and the layout was perfect since the mechanics need to be apart. Commissioner Creech understood the shop part. Ms. Cantore explained their customer base was a wide range from Schaumburg to the lake shore. She has a notebook of garage numbers, so they can pick up the cars. It's a nice service for their customers. Wheeling is very centrally located for their customer base. Commissioner Creech questioned if the petitioner worked on all types of car repairs. Mr. Vago explained they don't do body work or framework, it's just mechanical work. They send engines to a machine shop but still pull the motors and put back them back in. Commissioner

Creech's experience with mechanic shops is that they seem to have a lot of cars all over the place especially with foreign cars waiting for parts. Ms. Cantore explained it was rare that it happened. She agreed German parts for Mercedes took 10 days but they didn't run into an issue with other cars. Steve doesn't work on anything that comes off the street. His guys are 25+ year techs. Commissioner Creech expressed concern there was no parking and they would be sharing the space with two other businesses. He felt even if they rented the entire building, there wouldn't be enough parking. Ms. Cantore explained there wouldn't be enough parking for any type of business that would go into the space. Commissioner Creech agreed it was very limited but felt the proposed use was pretty busy. Ms. Cantore stated they had approximately 10 cars in and out throughout the day. Commissioner Creech referred to the 8 employees. Mr. Vago stated that only 5 of their employees drive to work. Suite B & C were allotted 2 parking spaces and there is no current tenant in Suite A. The existing tenant wants a month-to-month lease and would probably be moving out soon. Steve mentioned he has a connection with a dealer in Schaumburg, so they could use offsite parking if needed. Commissioner Creech referred to the 40 parking space variation being requested. Ms. Cantore explained all of the lifts could be placed on the north half of the building to decrease the variation. Commissioner Creech had an issue with having a car left outside. Commissioner Creech mentioned there would be trash for the metal. Mr. Vago explained the waste container was currently located within the building and is picked up twice a week and the metal container is picked up when it's full.

Commissioner Powers agreed with Commissioner Creech regarding the proposed 40 parking space variation. When Commissioner Powers visited the site, he didn't think there was any room in the back on the east side.

Commissioner Powers felt the building and site needed some work. He referred to the parking lot and landscaping. He mentioned the bollards in the back needed to be painted.

Commissioner Powers expressed concern about needing more parking space on the outside. He felt a 40 parking space variation was a lot.

Ms. Cantore referred to a picture of the building in Wheeling after they cleaned the entire property by trimming the bushes, cutting the grass and cutting down the debris. Commissioner Powers appreciated their efforts but also thinks it needs mulch and other landscaping.

Commissioner Powers agrees there is work that needs to be done but he has an issue with the proposed variation. Ms. Cantore explained all of the lifts could be on the north side of the building and then the northwest corner could be considered automotive space at 4,621 square feet which is equal to approximately 24 vehicles with office space at 404 square feet. She was unsure where the double office space came from. She recalculated it at needing approximately 30 parking spaces and the variation of 4 spaces.

Chairman Ruffatto referred to the current 40 parking space variation which is based upon the configuration the petitioner provided. Ms. Cantore disagreed with the calculation. Ms. Casolari explained the calculation was based upon the lift locations in the open areas, so Staff had counted the entire space as auto repair area. The plan states warehouse but in reality, there are overhead garage doors on both sides and there needs to be maneuvering of the vehicles to the lifts and maybe

staging of the vehicles in the area and that is the reason Staff believes the entire space should be considered auto repair space. Auto repair is calculated at 5,800 square feet, warehouse at 3,600 square feet and office (breakroom and waiting area) at 800 square feet which was calculated at a variation of 40 parking spaces. Ms. Cantore explained if they needed to maneuver space, it wouldn't be an issue to put all of the lifts on the north side of the building, so it would be all automotive and the south side as open space/warehouse and office. She explained there was another 4 spaces that could be utilized inside on the southwest side of the building. The space also has a drain through it. Chairman Ruffatto asked if it would be an issue for the Fire Department. Mr. Antor confirmed there were no issues and would be no different than the cars being worked on.

Commissioner Powers had issues about the condition of the building. Mr. Vago has an estimate for tuckpointing and mentioned the roof and heating and air conditions were newer.

Chairman Ruffatto asked if they owned the building. Mr. Vago confirmed they did not own the building but were in the process of working with the bank to purchase it. Chairman Ruffatto questioned if they signed any papers. Mr. Vago is currently leasing to own. Chairman Ruffatto questioned if he had signed papers before going to the Plan Commission. Mr. Vago explained the receiver was not easy to deal with, so they were working with the realtor and the receiver and they came to an agreement to work together with the bank, but the foreclosure procedure was not easy.

Commissioner Blinova questioned if there was parking on the east side. Ms. Cantore confirmed there was no parking on the east side. Mr. Antor confirmed the east side had a driveway and was a fire access route because it goes to the east of the cell tower equipment. He said there was room for a couple of spaces but noted there were doors. Mr. Goetzelmann explained the petitioner would need Fire Department access, but it would need to be dimensionally shown to work. Ms. Casolari agreed that Staff would need to work together and would need a scaled dimension site plan that would accurately show the location and size of stalls.

Commissioner Blinova expressed concern with the paving by the trash enclosure. Ms. Cantore would like to do improvements to the building but without it being their building they couldn't do anything but landscaping and window cleaning. They will fill in the holes because of the cars.

Commissioner Blinova questioned the number of cars they would want to store inside the new facility. Ms. Cantore explained they would store one on each lift and then have the open space. If parking was an issue, they had the open space in the southeast corner of the building they could utilize for vehicles. The previous owner used it to park.

Commissioner Blinova questioned if they owned a tow truck. Mr. Vago confirmed they did not own a tow truck but used three towing services located in Wheeling.

In reply to Chairman Ruffatto's question, Mr. Vago confirmed the 2½ yard trash container was currently stored outside. Chairman Ruffatto explained if it was outside, it needed to be enclosed. Ms. Cantore stated they were willing to move it indoors at night. Chairman Ruffatto explained it would need to be inside or outside all of the time.

Chairman Ruffatto looked at their current site on Google Maps. He questioned if they had the entire building. Steve confirmed there were 3 tenants including their business. Chairman Ruffatto saw a lot of cars on the current site using Google Maps. Ms. Cantore stated their neighbor had 14 employees. Chairman Ruffatto noted about 20 cars were stacked in a manner that were probably part of their business. Ms. Cantore explained their neighbor stacks their cars since they all arrive and depart at the same time. Chairman Ruffatto explained if the Commission were to vote on it tonight, it would probably not be favorable since there was a concern about the 40 parking space variation. It needs to be resolved and the only way for it to be resolved is if they changed their configuration and worked with Staff. Chairman Ruffatto did not approve of a 40 parking space variation.

Chairman Ruffatto explained the Commission needed to see a landscape plan. Ms. Cantore stated they did not plan to do any landscaping until they owned the property. They would keep the property clean. Mr. Vago had estimates for everything that needs to be done on the outside.

Chairman Ruffatto questioned if the four overhead doors on the east side would be used. Ms. Cantore explained if all of the lifts were located on the north side, there would only be 2 doors on the east side and 2 on the west side that would be utilized. Chairman Ruffatto explained the site plan needs to be modified to reduce the variation and work with Staff.

Chairman Ruffatto questioned if the petitioner wanted to adjust the site plan that would reduce the variation or if they wanted the Plan Commission to vote on it as is with the 40 stall variation. She confirmed they never needed 40 parking spaces in the last 7 years at their existing business.

Mr. Vago explained that he would need 30 spaces since there were spaces in the open space inside the building. Chairman Ruffatto noted there were only 24 spaces on the property with 18 available for their use. He recommended the petitioner return with a new configuration and work with Staff to see the updated variation. Ms. Casolari explained Staff would need an accurate plan that shows their desired design and intended use of the areas. Staff would then calculate the new parking requirement. Ms. Cantore agreed to reconfigure the floorplan and resubmit it to Staff.

Chairman Ruffatto questioned what should happen with the conditions (building, parking lot, bollards, etc.). Ms. Casolari agreed they could be addressed. She questioned if the petitioner was willing to do some of the work. Ms. Casolari questioned if striping could be done. Ms. Cantore agreed that the parking lot would need to be redone before the striping. Mr. Vago agreed to repair it, but the receiver would not allow him to seal it. He wants to do everything to make it presentable. Ms. Casolari questioned if an option could be given to give them a certain amount of time to do some of the improvements maybe after purchasing the property. She suggested a condition of approval that "If and when in 18 months the petitioner had ownership of the property then they would make the improvements by such and such date." Commissioner Creech wanted it to be specific. He didn't want the person to do all the work and they would only gain a few more spots and were still looking for a large variation. He did not want to give the petitioner any false hopes.

Chairman Ruffatto announced that he will do a surprise visit to their current space to see the parking in order to determine how it would be used in the future.

Ms. Casolari announced the next opportunity for the petitioner to return was October 11th but they would need the revised materials by September 27th. She questioned if it was feasible. Ms. Cantore agreed it was feasible.

Commissioner Powers moved, seconded by Commissioner Blinova to continue Docket No. 2018-24B to October 11th.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Powers, Ruffatto
NAYS: None
ABSENT: Commissioners Dorband and Kalis
PRESENT: None
ABSTAIN: None

There being five affirmative votes, the motion was approved.

Commissioner Powers moved, seconded by Commissioner Johnson to continue Docket No. 2018-24A to October 11, 2018.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Powers, Ruffatto
NAYS: None
ABSENT: Commissioners Dorband and Kalis
PRESENT: None
ABSTAIN: None

There being five affirmative votes, the motion was approved.

October 11, 2018 Public Hearing

Chairman Ruffatto called Docket No. 2018-24A&B on October 11, 2018. Present were Commissioners Blinova, Creech, Johnson, Kalis, Powers and Ruffatto. Commissioner Dorband was absent with prior notice. Also, present were Brooke Casolari, Senior Planner, Steve Robles, Assistant Director of Community Development, Mallory Milluzzi, Village Attorney, Kyle Goetzelmann, Civil Engineer and Mr. Ron Antor, Fire Inspector.

Ms. Casolari stated the Staff Reports and submittals of the petitioner were part of the public record.

Mr. Steve Vago, 170 Shepard Avenue, Wheeling, IL and Ms. Patty Cantore, 170 Shepard Avenue, Wheeling, IL were present and previously sworn in.

Ms. Cantore confirmed the floor plan was revised and had been submitted. She referred to two existing spaces on the southeast side of the building that are parallel to the building. They want to

add four spaces to the east side toward the north. They submitted another 15 spaces inside the building in addition to the 8 lift spaces. The stripes will be restriped since the striping is very light.

Ms. Cantore confirmed the trash is located inside the building on the southwest side.

Chairman Ruffatto referred to three different drawings that made it very confusing. Ms. Cantore confirmed all the lifts are located on the northside of the building and the parking is on the southside of the building.

Chairman Ruffatto asked about the variation being requested. Ms. Casolari explained the original variation during the first hearing on September 13th was for 40 cars. He suggested that there should be some debate on whether the Commission was accepting of the floorplan with the dimensions as shown. Ms. Casolari explained the petitioner's resubmittal is trying to reduce the number.

Commissioner Johnson was confused to the variation the petitioner was seeking. Ms. Casolari explained they were seeking a parking variation from the required amount of parking. The exact number has not yet been determined. Ms. Milluzzi explained the reason it hadn't been determined was based on the Staff Report and the Reports from Engineering and Fire. Staff is not supportive of all the parking spaces shown on the plans. The Plan Commission needs to determine if they will accept those parking spaces on the plan in order to calculate the variation number. It is not clear if all the parking spaces meet Code. The spaces on the exterior don't seem to meet the Code requirements as drawn and the interior may not as well and would depend on discussion about access.

Commissioner Johnson questioned if the Fire Department had issues with the parking on the east side. Mr. Antor noted the petitioner had indicated the two spaces on the east side at the front of the building were existing. From a Fire Department standpoint, the two spaces would be a moot point since they were parallel up against the building. There is also a man door by the double doors along with a gas meter by the four spaces. Actual dimensions were not provided so he was unsure if it was possible that the four angle parking spaces fit between the two utilities and exits from the buildings since it hadn't been demonstrated. If the parking were allowed there at an angle, it may extend into the drive that runs the length of the building. It's an older drive so it doesn't meet the current fire lane requirement of 20' wide. The parked vehicles may hang over into the access point. On the interior, they have provided space between the vehicles to allow occupants to exit the vehicles. In the square room with spaces 9-15, it may be doable, but he was not convinced that spaces 1-8 would work well. Ms. Cantore pointed out that there was a wall between spaces 4 and 5. There is an overhead door in front of space 1 and parking spaces 5, 6, 7 and 8 would use the overhead door off to the right. Mr. Antor explained that in one drawing it showed a scale of 2' per line per the square grid so there might be only 3 cars that could fit instead of 4. Ms. Cantore explained the 4 cars would all be compact cars on the east side of the building. Mr. Antor had a discussion with the petitioner during the week explaining that he would not be convinced that they could guarantee they would always be compact cars. He agrees it's a good intent, but they may end up getting 2 or 3 full size cars because the cars will be based on the type of cars that come in for service. Ms. Cantore explained they would have 30 other spaces for standard and large sized vehicles. Mr. Antor understood but explained the business was subject to the type of cars that came into the shop. Ms.

Cantore agreed but explained they were allowing $\frac{1}{4}$ to $\frac{3}{4}$ for compact cars. She mentioned there were SUVs that were also considered compact.

Chairman Ruffatto questioned the dimensions of spaces 5, 6, 7 and 8. Ms. Cantore confirmed the spaces were 10' long x 6' (120") with 3' in between the vehicles. She stated an average compact car was between 100' and 109' fit.

Commissioner Johnson questioned the dimension of the concrete pad on the outside on the east side. Ms. Cantore confirmed the further overhead doors were 16' and the other doors were approximately 17'. The drive enlarges as you go down, but the fire lane is bigger and narrows down to 8.8' from the pole to the blacktop concrete. Mr. Antor confirmed a fire truck could go down that side of the building from the adjacent building and loop around.

Mr. Antor pulled up the dimensions of a 2018 Honda Civic sedan and the width of the car without the mirrors is 5.9' and the overall length is 15.19'. Ms. Cantore explained there was plenty of room to add to spaces 5, 6, 7 and 8. There is 8' of extra space for spaces 5 – 8 and 11, 12 and 13.

Commissioner Creech had no questions.

Commissioner Powers had no questions.

Commissioner Kalis questioned if they were stacking the vehicles in spaces 1, 2, 3, 4, 5, 6, 7 and 8. Ms. Cantore confirmed they were stacking the vehicles with no way out. Customers were not permitted to get in or out of their vehicles in the shop due to their insurance policy. Commissioner Kalis questioned how the vehicle in space 4 would get out in an emergency. Ms. Cantore explained the vehicle in space 4 would be parked overnight waiting on a part and would not be an employee. They only showed where cars would be allowed if needed to be parked inside.

Commissioner Blinova questioned where the vehicles that were towed in and not drive-able be parked overnight. Ms. Cantore confirmed they would be parked on one of the lifts. She explained that no start cars that were towed in go on a lift immediately.

Chairman Ruffatto referred to the sizes of a Honda Civic Sedan at 177-182" and a Toyota Corolla at 183" long. He questioned if all the 8 lifts were now going to be positioned in the large area by spaces 9, 10, 11, 12, 13 and 14. Ms. Cantore confirmed all the lifts would be on the north side of the building. Chairman Ruffatto noted that two of the lifts were in front of an overhead door. Ms. Cantore explained they were not exit doors that needed to be opened. She explained if there was an exit sign over the door it needed to be clear. Mr. Antor agreed. She explained the lifts were not blocking. There is a man door to the north. The lifts go in and were not flushed against the overhead doors. There is an overhead door for each lift that they could use to drive in and drive out. It was also the same for the lifts to the west. Chairman Ruffatto noted that one of the diagrams was not correct. Ms. Cantore agreed the one diagram was only showing the location of the trash container. Chairman Ruffatto explained it would have been helpful to have everything on one diagram.

Chairman Ruffatto questioned if they had the entire building in Northbrook. Ms. Cantore confirmed that 3 businesses shared it. He referred to the cars parked to the east and questioned where they belonged. Mr. Vago confirmed they were service cars and cars from the other two businesses. Ms. Cantore explained it was difficult to differentiate the cars between the three businesses.

Chairman Ruffatto stated that Staff and the Fire Department were not in favor of the layout or the outdoor parking. He was asking each Commissioner if they agreed with the recommendation of the Fire Department Report that the four spaces were not allowed in calculating the variation.

Ms. Cantore explained if the four vehicles on the east side of the building were to hang over or block, they could not maneuver with their business.

Commissioner Johnson felt the cars would be sticking out too far but would be OK with two more parallel spaces to the building. He was not in agreement with the diagonal spaces.

Chairman Ruffatto questioned if Mr. Goetzelmann looked at the parallel spaces regarding size. Mr. Goetzelmann did not measure them but felt the two parallel spaces at the southeast corner of the building appeared to be 12' or 13' long if the scale was correct and would not meet the standard of 20'. Ms. Cantore stated the parallel spaces were existing and were 40' from front to back. Mr. Goetzelmann noted the scale was then incorrect. If they were 20' long by 10' wide they would meet the Code requirement.

Chairman Ruffatto asked the Commission if they were in favor of the four diagonal spaces and two parallel spaces in the front.

Commissioner Johnson was not in favor of the four diagonal spaces.

Commissioner Blinova was not in favor of the four diagonal spaces. She was in favor of the two parallel spaces in the front.

Commissioner Powers was not in favor of the four diagonal spaces. He was in favor of the two parallel spaces.

Commissioner Kalis was not in favor of the four diagonal spaces. He was in favor of the two parallel spaces.

Commissioner Creech was not in favor of the four diagonal spaces. He was in favor of the two parallel spaces.

Chairman Ruffatto stated the Commission was not in favor of the four diagonal spaces.

He questioned what the parking variation would be with the 15 spaces within the building and the 17 spaces outside. Ms. Casolari explained the parking variation before adding any additional indoor or outdoor parking was 40. If they added in two spaces, the parking variation would be 38.

Commissioner Kalis questioned if long term parking was the same as the regular parking requirement. Ms. Casolari explained Staff was trying to figure it out since the Code was not completely clear.

Chairman Ruffatto confirmed the parking variation was 38.

In reply to Commissioner Johnson's question, Ms. Casolari confirmed the petitioner's unit requires 50 spaces. Commissioner Kalis questioned if the other unit had a parking variation. Ms. Casolari confirmed there was no current variation on the building. She explained they need to accommodate parking for the other units, one of which is occupied, and one is not. The calculation for the entire property is 72 parking spaces.

Chairman Ruffatto personally felt a parking variation of 38 spaces was excessive and would set a dangerous precedent.

Chairman Ruffatto questioned if there was a wall between parking spaces 5-8 and 9 and 10. Ms. Cantore confirmed there was a wall on the side of 9 and 10.

Chairman Ruffatto stated that the Commission was going to adhere to the Fire Department and Engineering's review and that it would be a parking variation of 38 spaces. He requested that the variation of 38 needed to be included. Ms. Casolari noted that only the two parallel parking stalls on the east side of the building were permitted.

Chairman Ruffatto questioned if the variation would go down if the indoor parking was taken into consideration. Ms. Milluzzi confirmed it would go down to 23 spaces. Chairman Ruffatto still felt it was excessive. Commissioner Creech questioned if the indoor parking space would be required to be the Code's minimum dimensions of 18.5' x 9' or 20' x 10'. Mr. Goetzelmann was unsure if the Code specified a difference between indoor versus outdoor. Commissioner Creech felt the Code had a minimum and should be carried to indoors and well as what is required for outside. Ms. Milluzzi explained it could be required as a condition. Commissioner Creech questioned the number of parking spaces on the inside based on the size of the vehicles discussed.

Chairman Ruffatto took a poll regarding if the indoor parking should be up to Code which would reduce the number of spaces. Commissioner Creech felt the parking variation should be up to the dimensions of the Code. Commissioner Johnson mentioned it was vehicle storage and not public parking. Ms. Casolari suggested considering the parking variation of 38 taking into consideration that there is additional parking indoors. It is not to Code and not for larger vehicles but would allow some amount of compact vehicle storage. Chairman Ruffatto agreed to the language.

In reply to Commissioner Johnson's question, Chairman Ruffatto confirmed the 38 parking space variation accounted the two parallel parking spaces but not any of the 15 spaces. Ms. Casolari wanted to take a closer look to see if parallel parking of the proposed angle parking was allowed or if it would obstruct an exit or a utility. Ms. Cantore confirmed there was no obstruction and was a clear 45'. Mr. Antor had a photograph of the side of the building showing the items. Commissioner Powers calculated a parking variation of 23 spaces if the indoor parking was taken into consideration. Commissioner Creech felt it was still excessive. Chairman Ruffatto was not in favor

of considering the indoor parking as part of the parking variation. He felt if they should be taken into consideration, he wanted those spaces to be up to Code.

Ms. Milluzzi mentioned that the calculation for the 50 was originally based on a certain amount of warehousing space. If the area in the southern part was designated only as parking and storage, it would adjust the calculation required parking spaces because the amount of warehousing and auto repair might be decreased. It could not be calculated without knowing what the Plan Commission was willing to allow. Part of the hope of the petitioner, was to decrease the amount of the total warehouse space for the parking requirement. Chairman Ruffatto questioned if it had been decreased. Ms. Milluzzi explained the Commission needs to determine the warehouse space as well as the number of spaces. Commissioner Powers noted there was no floorplan provided with dimensions, so it could not be calculated.

Ms. Cantore explained when she submitted the floorplan prior to the first meeting, she was advised that the figuring of the space was up to Staff since there was no Code for compact vehicles. Chairman Ruffatto felt the parking spaces within the building were not part of the variation. The variation is at 38 irrespective if it might be reduced with the warehousing space. Ms. Casolari confirmed the 38 variation includes the 8 lifts.

Ms. Casolari explained if the Commission wanted to make a motion tonight, they could leave it open to Staff to determine the variation. Chairman Ruffatto was not in agreement. Ms. Milluzzi recommended determining what the Commission was comfortable in allowing regarding indoor vehicle storage and what requirements they would want for the storage. She explained there were a couple of options, the standard parking stall requirements to be required for the indoor and another option was to do something less than that knowing it wasn't for public parking and used for the storage of vehicles (standard economy vehicle) waiting for repair. Giving them the flexibility and knowing the square footage and realistically taking it into account and designating the area of the floorplan as non-auto repair and non-warehouse so that the number of square footage could be determined by Staff. Whatever the Commission is comfortable with and coming back with an actual number and a floorplan that shows everything (lifts, designated parking, doors, etc.).

Mr. Vago explained he calculated the floorplan and it was the same as his current shop. He was not shoving cars in to gain parking spaces. Ms. Milluzzi didn't feel the lift area was as much a concern for maneuvering but was where the cars were shown for the parking.

Chairman Ruffatto felt since there were too many unknowns, he wanted one diagram that showed the lifts, indoor parking, outdoor parking and for the petitioner to designate the warehouse space office space and etc. The Commission needs to see it all on one diagram. If the petitioner wants the Commission to consider any indoor parking for the variation, it needs to be to Code. The variation is for outdoor parking, so the Commission will not take into consideration any indoor parking. Ms. Milluzzi questioned if the Commission was allowing the petitioner to designate the area for storage as part of the building and not for the other areas so that the total parking calculation could be adjusted if they designated the area as vehicle storage. It wouldn't count toward warehousing and repair square foot requirements. Chairman Ruffatto agreed.

In reply to Commissioner Blinova's question, Mr. Vago confirmed they had 2 poles on the lifts, so they could put one car up and one car under. Chairman Ruffatto reminded the Commission the lifts would not be considered as part of the variation. It is only outdoor parking.

Chairman Ruffatto explained the only difference will be the amount of auto repair space, warehouse space and office space. Ms. Cantore confirmed the office space would remain the same, the difference is with warehouse and automotive space. Chairman Ruffatto asked that the petitioner work with Brooke in getting the correct numbers. He explained there was not enough information to vote on it.

Commissioner Johnson questioned the maximum number of cars the petitioner had at one time at their current place. Ms. Cantore stated she could not answer the question but stated they had an average of 3.1 cars daily, 23.54 cars weekly and 90 cars per eight months.

Commissioner Johnson questioned how long they stored cars. Ms. Cantore stated that most cars were turned around in the same day.

Mr. Vago requested an earlier continuation date. Ms. Casolari stated the agenda for the October 25th meeting was full with 3 public hearings. Mr. Vago asked if there was anything that could be done to schedule it for an earlier date since it was difficult for him to cover the expenses of two buildings since it was a family business. Chairman Ruffatto expressed a concern that the plans were not consistent but requested that it be scheduled on October 25th. He asked that the requested information be submitted to Staff by October 15th.

Commissioner Powers moved, seconded by Commissioner Johnson to continue Docket No. 2018-24A to October 25, 2018.

On the roll call, the vote was as follows:

AYES:	Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS:	None
ABSENT:	Commissioner Dorband
PRESENT:	None
ABSTAIN:	None

There being six affirmative votes, the motion was approved.

Commissioner Powers moved, seconded by Commissioner Johnson to continue Docket No. 2018-24B to October 25, 2018.

On the roll call, the vote was as follows:

AYES:	Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS:	None
ABSENT:	Commissioner Dorband
PRESENT:	None

ABSTAIN: None

There being six affirmative votes, the motion was approved.

In reply to Ms. Cantore's question, Chairman Ruffatto explained the indoor parking did not need to be designated on the plan since it was not being considered. Ms. Casolari explained the petitioner needed to provide the plan that designates office, warehouse, lifts and just note the vehicle parking/storage. They do not need to provide the calculation.

October 11, 2018 Public Hearing

Chairman Ruffatto called Docket No. 2018-24A&B on October 25, 2018. Present were Commissioners Blinova, Creech, Johnson, Kalis, Powers and Ruffatto. Commissioner Dorband was absent with prior notice. Also, present were Brooke Casolari, Senior Planner, Steve Robles, Assistant Director of Community Development, Mallory Milluzzi, Village Attorney, Jon Tack, Village Engineer, Civil Engineer and Mr. Ron Antor, Fire Inspector.

Ms. Casolari stated the Staff Reports and submittals of the petitioner were part of the public record.

Mr. Steve Vago, 170 Shepard Avenue, Wheeling, IL and Ms. Patty Cantore, 170 Shepard Avenue, Wheeling, IL were present and previously sworn in.

Chairman Ruffatto asked the petitioner to explain the changes from the October 11th meeting. Ms. Cantore explained everything was put onto one site plan including the two existing parking spaces in the southeast and the two spaces on the east side.

Chairman Ruffatto mentioned the current variation was 32 after the square footage of all of the areas was calculated.

Commissioner Powers questioned if the diagonal parking on the east side was removed. Ms. Cantore explained they changed it to two parallel parking spaces between the lift doors.

In reply to Commissioner Powers' question, Ms. Milluzzi explained it was determined at the last meeting that the indoor parking would not be included in the calculation for parking spaces. Ms. Casolari explained it was being calculated as auto storage which has a parking requirement of zero. It does not hold the indoor storage space against the petitioner in terms of their total parking requirement.

Commissioner Powers was unsure how fair it was to require a landscaping plan for just the one unit. He was OK without a landscaping plan but would want to see a plan if the petitioner took ownership of the building.

Commissioner Creech had no comments.

Commissioner Johnson questioned if they took over the entire building would they rent out the other units or expand their business. Ms. Cantore explained they hadn't given much thought to it.

Commissioner Kalis had no comments.

Commissioner Blinova had no comments.

Chairman Ruffatto asked for the hours of operation. Ms. Cantore confirmed they were open Monday – Friday and were not opened on the weekends.

Ms. Milluzzi explained the Commission needed to determine if they would allow the parallel parking on the outside because it would alter the variation and site plan.

Mr. Antor stated that it appeared the spaces were existing with yellow striping on the ground, but it wasn't clear where they were located. He went through the GIS files for the Village going back to 1998 with 10 years of aerial images and there was no clear indication of any parking spaces. There were two exit doors in that area and would probably not be able to be stacked the way they are but would need to be separated because of where the doors were located. Depending on the size, they may be acceptable. Chairman Ruffatto questioned if they were the spaces designated 25 and 26. Mr. Antor confirmed they were the ones located in front of the building. Ms. Casolari included a photograph in the packet but didn't have it for the overhead display. She confirmed there were two exiting doors shown in the location of the two parallel parking spaces. Mr. Cantore stated the doors were north of the 40' so it would not interfere with the two parking spaces. Mr. Antor confirmed there was a door between 25 and 26 and a door adjacent to the brick building so there would be a space between the two parking spaces. Commissioner Johnson thought there would be enough space if they left enough space between the two spaces. Chairman Ruffatto suggested adding a condition that indicates that the two parking spaces designated as 25 and 26 could not be built in front of the two exit doors. They must fit with one in between the exit door and one in front of the door facing south.

Chairman Ruffatto questioned if spaces 1 and 2 were in front of any overhead. Ms. Cantore confirmed they were to the south of the small door and to the north of the small door. Chairman Ruffatto asked for Mr. Antor's comments. Mr. Antor felt it appeared the two spaces would fit between the doors, utilities and the garage doors. It would be tight but not uncommon for a building.

Commissioner Johnson questioned if the gas meter had bollards. Mr. Antor confirmed it currently didn't have bollards, but they would be required once they receive their building permit.

Ms. Casolari explained if the Commission allowed the four parking stalls on the east side of the building the parking variation would be for 28. Chairman Ruffatto confirmed it would be a variation for 28 but for him it was still too high and would set a precedent in the future.

Ms. Casolari added the following condition of approval based on the Commission's comments for the special use:

1. That the proposed parking stalls on the east side of the building shall be removed if they obstruct exiting or utilities.

Ms. Casolari added the following based on the Commissioner's comments for the variation.

- The variation is for 28 parking stalls.

Ms. Casolari added the following conditions of approval based on the Commission's comments for the variation:

1. That the parking variation may be increased by one stall in order to meet the access requirements to the FCS; and
2. The parking variation may be increased if the parking stalls on the east side of the building obstruct exiting or utilities.

Commissioner Johnson moved, seconded by Commissioner Kalis to recommend approval of Docket No. 2018-24A, granting a variation from Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19.11 General Development Standards, Chapter 19.11 General Development Standards, Section 19.11.010 Off-Street Parking and Loading, Section E Parking Standards, Subsection 1 Minimum Required Parking per Land Use Category, and associated sections, to reduce the required parking for the proposed light motor vehicle repair facility, from forty-two (42) to fourteen (14), which consists of a twenty eight (28) parking stall variation, for Auto Cars Imports, to be located at 170 Shepard Avenue, Wheeling Illinois.

And with the following conditions of approval:

1. That the parking variation may be increased by one stall for access to the FDC; and
2. The parking variation may be increased if the parking stalls on the east side of the building obstruct exiting or utilities.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Johnson, Powers
NAYS: Commissioners Kalis, Ruffatto, Creech
ABSENT: Commissioners Dorband
PRESENT: None
ABSTAIN: None

There being three affirmative votes, the motion did not pass.

Commissioner Powers moved, seconded by Commissioner Johnson to recommend approval of Docket No. 2018-24B to grant special use-site plan approval for a light motor vehicle repair facility in accordance with the following exhibits submitted by Auto Cars Imports to be located at 170 Shepard Avenue, Wheeling, Illinois:

- Cover letter, August 9, 2018, and
- Site/floor plan, October 15, 2018.

And with the following condition of approval:

1. That the proposed parking stalls on the east side of the building shall be removed if they obstruct exiting or utilities.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Johnson, Powers

NAYS: Commissioners Creech, Kalis, Ruffatto

ABSENT: Commissioner Dorband

PRESENT: None

ABSTAIN: None

There being three affirmative votes, the motion did not pass.

Commissioner Johnson moved, seconded by Commissioner Powers to close Docket No. 2018-24A&B. The motion was approved by a voice vote.

Respectfully submitted,

Jim Ruffatto, Chairman
Wheeling Plan Commission/
Sign Code Board of Appeals

**DISTRIBUTED TO THE COMMISSION 11.02.2018
FOR APPROVAL ON 11.08.2018**

**DRAFT FINDINGS OF FACT
AND RECOMMENDATION**

To: Village President and Board of Trustees

From: Wheeling Plan Commission/Sign Code Board of Appeal

Re: [Docket No. 2018-25](#)
Tracy's Bistro
18 W. Dundee Road
Special Use-Site Plan Approval of a Sit-Down Restaurant

Silver Hawk Restaurant Group, LLC, lessee, is seeking Special Use-Site Plan Approval as required under Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, in order to establish a sit-down restaurant at 18 W. Dundee Road, which is zoned B-3 General Commercial and Office District.

Chairman Ruffatto called Docket No. 2018-25 on October 25, 2018. Present were Commissioners Blinova, Creech, Johnson, Kalis, Powers and Ruffatto. Commissioner Dorband was absent with prior notice. Also, present were Brooke Casolari, Senior Planner, Steve Robles, Assistant Director of Community Development, Mallory Milluzzi, Village Attorney, Jon Tact, Village Engineer and Mr. Ron Antor, Fire Inspector.

Commissioner Powers read the following statement.

A zoning Special Use, as defined in Title 19, of the village of Wheeling (Zoning), is a use of parcel of land that requires review and consideration before approval due to circumstances or effects on the surrounding properties that may adversely affect them. In order to be considered for a special use the petitioner is required to demonstrate through testimony to the Plan Commission at the public hearing why their request meets the conditions of the village code including, but not limited to, how the proposed use will not damage the enjoyment or use of the surrounding properties. Prior to the public hearing the petitioner provides written statements meant to show that their request for a special use meets the standards established in Title 19. The Commission Chairperson will typically direct that these statements be entered into the record without a full reading of them at the hearing. Based upon the testimony and supporting materials submitted, the Plan Commission will make findings in support of, or against, the petitioner's testimony and report those findings to the Village Board.

Ms. Casolari stated the Staff Reports and submittals of the petitioner were part of the public record.

Mr. Tim Axarides, 2123 Feldott, Naperville, Owner, was present and sworn in.

Mr. Axarides started the business in 2012 with many upscale locations. They have done focus groups and makes sure their businesses and locations were always clean. They have taken the gaming industry up a notch and it helps them pay their bills. They do a lot of community service and are excited to be in Wheeling.

Chairman Ruffatto asked for a description of their floorplan, hours operations and number of employees.

Mr. Axarides stated they try and hire locally and will employ about six to seven employees. There will be about two to three full-time employees. The average age of customers is between 45 and 65. Their locations are upscale with a lot of brick, wooden floors and modern lighting. They have a seating capacity of 14. They do not have bar, but they do serve alcohol with a maximum of 3 drinks. Their customers will be able to have a cappuccino, wine or spirit drink and use their free wi-fi. He feels they are more of an upscale Starbucks and will always do the right thing.

Chairman Ruffatto opened the discussion to the audience.

From the audience, Ms. Diane Fuller, 127 North Wolf Road was present and sworn in.

Ms. Fuller questioned the number and type of gaming provided at the establishment. She expressed concern with the location near schools, walkers and parks. She questioned the hours of operation and who would govern the taxes. She was discouraged because there were already so many gaming locations in Wheeling. Mr. Axarides confirmed they have 5 video gaming terminals (slot machines, video poker) with wagers between a penny and \$2. Their hours are between 8:00a and 1:00a Monday through Friday, he was unsure about the weekend hours. The Illinois Gaming Board governs their taxes. Their establishment is for 21 years old and older. He understands the concerns since he has children. They spend a lot of money on training and have apps that require a swap of a driver's license. A driver's license is required to enter into the establishment. The video games cannot be seen by someone walking by the establishment.

Commissioner Johnson questioned what makes Tracy's Bistro different from all of the other gaming establishments in the Village of Wheeling. He referred to the 16 gaming establishments in the Village. Mr. Axarides explained the biggest difference was their customer service and he thinks they have better food. His store is in the top 15 in the State.

Commissioner Johnson mentioned that it appeared all of the food was microwaved. Mr. Axarides explained it was more of a convection oven. They offer personalized pizzas and a few more items than the other establishments.

Commissioner Johnson mentioned the layout showed 15 seats and 25 in the package that was distributed this evening. Mr. Axarides stated they changed it but did not have time to change it in the packets. He reconfirmed they would have 14 seats and don't think parking will be an issue. He agreed to remove 1 more seat for a total of 14.

Commissioner Blinova checked their reviews and some mentioned that gaming was a downside since their establishments were so good. She asked for comments from the petitioner. Mr. Axarides explained their other locations were full blown restaurants and they've done phenomenal. In 2012, when gaming came in the whole landscape changed and it helped them survive. Without the gaming, a lot of the restaurants and bars would not survive. He explained they do the best they can and do everything the right way. He understands what the reviews were saying but it has been a savior to them and the community. They do not have any issue if someone comes in and doesn't play a game.

Commissioner Blinova questioned if he was comfortable with having two other gaming venues within a mile of his establishment. Mr. Axarides explained he was comfortable with it since they were a good operator and do things right. They are proud of their coffees and small menu. People come in to relax.

Commissioner Powers questioned if a condition needed to be added that the hours of operation would coincide with the liquor license. Ms. Milluzzi explained the Commission could add a condition if they wanted.

Commissioner Powers assumed the petitioner was using the common trash enclosure for the shopping center.

Commissioner Kalis appreciated the petitioner's high level of standards.

In reply to Commissioner Kalis' question, Mr. Axarides confirmed they have 15 locations up and running and they were under construction for another seven locations. Commissioner Kalis questioned if all of them had gaming. Mr. Axarides confirmed they all had gaming.

Commissioner Kalis doesn't have an issue with the competition.

Commissioner Kalis questioned how the petitioner enforces the 3 drink limit. Mr. Axarides explained each of their employees are trained and keeps a tab for each customer. If someone is drinking 2 in an hour it would be less than the 3 limit. They police it. People don't drink a lot at his locations and usually just have one or two drinks. Commissioner Kalis questioned if the 3 drink limit was advertised in the restaurant. Mr. Axarides explained they train their employees to assess the situation and if someone sits for 8 hours they might have a fourth drink but if they have 3 pretty quickly, they stop them.

Commissioner Kalis questioned if they need to address repairing the façade once the existing signage is removed. Chairman Ruffatto explained today's approval is only for the special use.

Commissioner Creech has no additional questions.

Chairman Ruffatto questioned how the drawing would be addressed to show 14 seats. Ms. Casolari explained it was up to the petitioner how they laid out the seats. Mr. Axarides agreed to change the seating to 14. They will add a smaller table to a larger table. It will be updated for the Village Board presentation.

Chairman Ruffatto questioned the location of the smoking area. Mr. Axarides explained there wasn't a designated smoking area near his unit. Ms. Casolari explained in the past it has been addressed by designating an area on the site at least 10' from any door of any unit including a smoking receptacle. Mr. Axarides confirmed they would have 2 receptacles and will work with the landlord. Chairman Ruffatto wants the area designated prior to any permitting. The entire Commission present agreed.

Mr. Antor felt it was a simple occupancy from a construction and fire prevention standpoint.

Commissioner Kalis moved, seconded by Commissioner Blinova to recommend approval of Docket No. 2018-25, to grant Special Use-Site Plan Approval as required under Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, to permit a Sit-Down Restaurant in accordance with the following exhibits submitted March 20, 2018 by Tracy's Café, to be located at 18 W. Dundee Road, Wheeling Illinois:

- Cover letter, and
- Floor plan

And with the following conditions of approval:

1. The seating capacity shall not exceed a total of fourteen (14) seats;
2. The hours of operation shall be consistent with liquor licensing;
3. Gaming shall be contingent upon approval of a Class NV liquor license; and
4. An outdoor smoking area with a receptacle shall be designated prior to occupancy.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Kalis, Powers
NAYS: Commissioners Johnson, Ruffatto
ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being four affirmative votes, the motion was approved.

Commissioner Johnson moved, seconded by Commissioner Powers to close Docket No. 2018-25. The motion was approved by a voice vote.

Respectfully submitted,

Jim Ruffatto, Chairman
Wheeling Plan Commission/
Sign Code Board of Appeals

**DISTRIBUTED TO THE COMMISSION 11.02.2018
FOR APPROVAL ON 11.08.2018**

**DRAFT FINDINGS OF FACT
AND RECOMMENDATION**

To: Village President and Board of Trustees

From: Wheeling Plan Commission/Sign Code Board of Appeal

Re: [Docket No. 2018-26](#)
Mini Donut Factory
1067 Lake Cook Road
Special Use-Site Plan Approval of a Sit-Down Restaurant

Mini Donut Factory, contract lessee, is seeking Special Use-Site Plan Approval as required under Title 19, Zoning, of the Wheeling Municipal Code, Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, in order to establish a sit-down restaurant at 1067 Lake Cook Road, which is zoned B-2 Neighborhood Commercial District

Chairman Ruffatto called Docket No. 2018-26 on October 25, 2018. Present were Commissioners Blinova, Creech, Johnson, Kalis, Powers and Ruffatto. Commissioner Dorband was absent with prior notice. Also, present were Brooke Casolari, Senior Planner, Steve Robles, Assistant Director of Community Development, Mallory Milluzzi, Village Attorney, Jon Tack, Village Engineer and Mr. Ron Antor, Fire Inspector.

Ms. Casolari stated the Staff Reports and submittals of the petitioner were part of the public record.

Mr. Jay Presser was present on behalf of the petitioner and was sworn in.

Mini Donut Factory operates three locations in the Chicagoland area (Gurnee Mills Mall, Chicago Ridge Mall and Harlem Irving Plaza) and are similar to Annie's Pretzels. They make mini donuts with toppings. In the mall locations they only sell pretzels and water, but the Wheeling location will sell mini donuts, non-branded coffee, soft drinks, water and smoothies/slushies. They will have seating at the Wheeling location with a maximum of 15. The space is existing and will include a simple counter similar to a Subway. The donuts are ordered in one area and then you pay on the other side.

Chairman Ruffatto opened the discussion to the public. No one came forward.

Commissioner Creech had no comments.

Mr. Presser noted at their mall locations there is a venting system under the counter. They are putting a hooded venting system at the Wheeling location to make sure there is no odor.

Commissioner Kalis questioned if the dry storage had been provided. Mr. Presser confirmed they did not have a problem with the dry storage or grease trap.

Commissioner Powers had no questions.

Commissioner Blinova had no questions.

Commissioner Johnson had no questions.

Chairman Ruffatto questioned if the donuts were visible when the donuts were being made. Mr. Presser confirmed it took about 40 seconds to a minute to make the donuts and the process was visible to the customers. Ice cream is sold as a topping (1 oz scoop). They mentioned their non-branded coffee did not conflict with Starbucks.

Chairman Ruffatto questioned why they changed from a mall location to a standalone restaurant. Mr. Presser reported there were two similar locations in Florida that were successful, but they were not affiliated with this owner. They want to do the outside concept since mall traffic was declining and because they are instituting their first franchisee in San Diego.

Chairman Ruffatto questioned if the donuts were served in buckets. Mr. Presser explained the largest container they sell is a 2 dozen flat box. The donuts are laid side-by-side in the box.

In reply to Chairman Ruffatto's question, Mr. Presser confirmed the hours of operation as 6:30 a.m. to 8:30 p.m.

Mr. Presser stated that the owner, Mr. Popkov was a longtime Wheeling resident.

In replay to Chairman Ruffatto's question, Engineering and the Fire Department had no questions or concerns.

Commissioner Johnson moved, seconded by Commissioner Kalis to recommend approval of Docket No. 2018-26 to grant Special Use-Site Plan Approval as required under Chapter 19-06 Commercial Districts, Chapter 19-10 Use Regulations, Chapter 19-12 Site Plan Approval Requirements, and associated sections, to permit a Sit-Down Restaurant in accordance with the following exhibits submitted September 28, 2018 by Mini Donut Factory, to be located at 1067 Lake Cook Road, Wheeling Illinois:

- Cover letter, and
- Floor plan

And with the following condition of approval:

1. The dry storage and grease basin requirements listed in the Health Officer's review memo, dated October 17, 2018, shall be addressed on the permit plan submittal.

On the roll call, the vote was as follows:

AYES: Commissioners Blinova, Creech, Johnson, Kalis, Powers, Ruffatto
NAYS: None

ABSENT: Commissioner Dorband
PRESENT: None
ABSTAIN: None

There being six affirmative votes, the motion was approved.

Commissioner Powers moved, seconded by Commissioner Johnson to close Docket No. 2018-26.
The motion was approved by a voice vote.

Respectfully submitted,

Jim Ruffatto, Chairman
Wheeling Plan Commission/
Sign Code Board of Appeals

**DISTRIBUTED TO THE COMMISSION 11.02.2018
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