

REZONING (Zoning Map Amendment)

Application submittals must include all documents on this checklist as well as this page. Please use the reference guide (pg. 2) included in this packet for more information on each submittal item.

All applications shall be submitted electronically to epermitcenter@adcogov.org. If the submittal is too large to email as an attachment, the application may be sent as an unlocked OneDrive link. Alternatively, the application may be delivered on a flash drive to the One-Stop Customer Service Center. All documents should be combined in a single PDF. Once a complete application has been received, fees will be invoiced and payable online at <https://permits.adcogov.org/CitizenAccess/>.

- 1. Development Application Form (pg. 4)
- 2. Application Fees (see table)
- 3. Written Explanation of the Project
- 4. Site Plan Showing Proposed Development, including:
 - a. Proposed Building Envelope
 - b. Parking Areas
 - c. Site Access
 - d. Landscape Areas
- 5. Trip Generation Letter
- 6. Preliminary Drainage Analysis
- 7. Neighborhood Meeting Summary
- 8. Proof of Ownership (warranty deed or title policy)
- 9. Proof of Water and Sewer Services
- 10. Legal Description
- 11. Certificate of Taxes Paid
- 12. Certificate of Notice to Mineral Estate Owners/and Lessees (pg. 6)
- 13. Certificate of Surface Development (pg. 7)

Applications Fees	Amount	Due
Application	\$1,600	After complete application received

Rezoning Guide to Development Application Submittal

All development application submittals shall comprise of one (1) electronic copy (emailed or delivered on a USB). **Application submittals that do not conform to these guidelines shall not be accepted.**

3. Written Explanation of the Project:

- A clear and concise, yet thorough, description of the proposal. Please include, if applicable, timeframe, purpose of project, and improvements that will be made to the site

4. Site Plan Showing Proposed Development:

- A detailed drawing of existing and proposed improvements
- Including:
 - Streets, roads, and intersections
 - Driveways, access points, and parking areas
 - Existing and proposed structures, wells, and septic systems,
 - Easements, utility lines, and no build or hazardous areas
 - Scale, north arrow, and date of preparation
- An Improvement Location Certificate or Survey may be required during the official review

5. Trip Generation Letter:

- Shall be determined based upon the methodologies of the most current, Institute of Transportation Engineers (ITE) Trip Generation Manual for the weekday AM peak hour and weekday PM peak hour

6. Preliminary Drainage Analysis:

- A general narrative discussing the pertinent drainage characteristics and problems, and proposed drainage characteristics if the subdivision is approved

7. Neighborhood Meeting Summary:

- Please refer to Section 2-01-02 of the Adams County Development Standards and Regulations for the specific requirements regarding time, location, and notice
- A written summary shall be prepared including the materials submittal presented at the meeting, any issues identified at the meeting, and how those issues have been addressed

8. Proof of Ownership:

- A deed may be found in the Office of the Clerk and Recorder
- A title commitment is prepared by a professional title company

9. Proof of Water:

- Public utilities-A written statement from the appropriate water district indicating that they will provide service to the property **OR** a copy of a current bill from the service provider
- Private utilities- Well permit(s) information can be obtained from the Colorado State Division of Water Resources at (303) 866-3587

Proof of Sewer:

- Public utilities-A written statement from the appropriate sanitation district indicating that they will provide service to the property **OR** a copy of a current bill from the service provider
- Private utilities-A written statement from Adams County Health indicating the viability of obtaining Onsite Wastewater Treatment Systems

10. Legal Description:

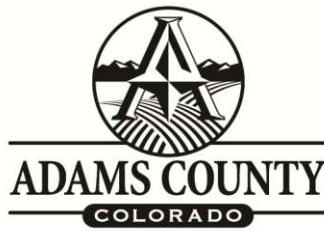
- Geographical description used to locate and identify a property
- Visit <http://gisapp.adcogov.org/quicksearch/> to find the legal description for your property

11. Certificate of Taxes Paid:

- All taxes on the subject property must be paid in full. Please contact the Adams County Treasurer's Office
- Or <http://adcogov.org/index.aspx?NID=812>

12. and 13. Certificate of Notice to Mineral Estate Owners/ Certificate of Surface Development:

- The State of Colorado requires notification to mineral rights owners of applications for surface development (i.e. zoning, plats, etc.)
- Mineral or Surface right owners may be found in the title commitment for the subject property
- You may also search the Office of the Clerk and Recorder for any recorded deeds, easements, or other documents.



Application Type:

<input type="checkbox"/> Conceptual Review	<input type="checkbox"/> Preliminary PUD	<input type="checkbox"/> Temporary Use
<input type="checkbox"/> Subdivision, Preliminary	<input type="checkbox"/> Final PUD	<input type="checkbox"/> Variance
<input type="checkbox"/> Subdivision, Final	<input checked="" type="checkbox"/> Rezone	<input type="checkbox"/> Conditional Use
<input type="checkbox"/> Plat Correction/ Vacation	<input type="checkbox"/> Special Use	<input type="checkbox"/> Other: _____

PROJECT NAME:

APPLICANT

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

OWNER

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

TECHNICAL REPRESENTATIVE (Consultant, Engineer, Surveyor, Architect, etc.)

Name: Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

DESCRIPTION OF SITE

Address: 1661 E 77th Ave

City, State, Zip: Adams County, CO 80229

Area (acres or square feet): 9.6

Tax Assessor Parcel Number: 0171935100032

Existing Zoning: A1

Existing Land Use: Greenhouse

Proposed Land Use: Light Industrial

Have you attended a Conceptual Review? YES NO

If Yes, please list PRE#: 2023-00001

I hereby certify that I am making this application as owner of the above described property or acting under the authority of the owner (attached authorization, if not owner). I am familiar with all pertinent requirements, procedures, and fees of the County. I understand that the Application Review Fee is non-refundable. All statements made on this form and additional application materials are true to the best of my knowledge and belief.

Name: TERRACE ENTERPRISES, LLC Date: 12-19-22

Owner's Printed Name

Name: 

Owner's Signature

WARE MALCOMB

ARCHITECTURE
PLANNING
INTERIORS

CIVIL ENGINEERING
BRANDING
BUILDING MEASUREMENT

April 4, 2023

RE: 1661 E. 77th Ave – Rezone Review Letter

To Whom It May Concern,

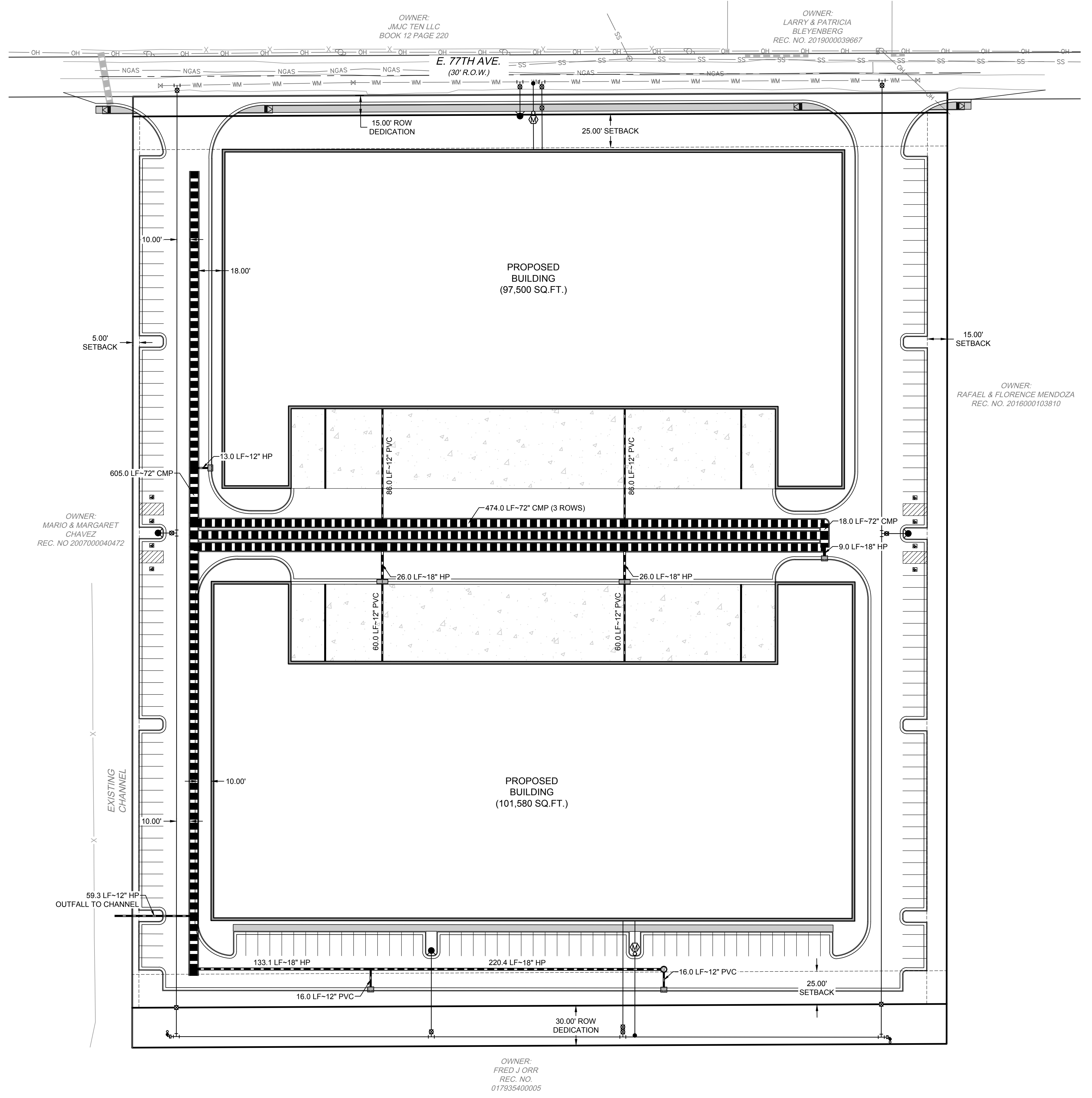
The 10.05-acre 1661 E. 77th Ave development by Prologis consists of a proposed mixed-use parcel that fronts on East 77th Ave with two light industrial warehouse/distribution buildings. The two industrial buildings total 199,080 SF with undefined uses at this time. Access to the site is anticipated to be from East 77th Ave. with internal circulation intended to separate car and truck traffic. The remainder of the industrial portion of the site is anticipated to be truck courts, driveways, parking, underground stormwater detention, water quality treatment and landscaped areas.

The site is currently zoned A1 and primarily has existing agricultural use. We would like to request a rezone of the industrial area to I-1. We believe this rezoning is in line with the surrounding parcels and supports the desired goals of the County and Community for development in the area. East 77th Ave is intended to be brought up to County standards with an Industrial half section for our property's frontage. Please see attached maps for clarification.

Please let us know if you have any questions and thank you for supporting this development!



Ted Swan, PE
Ware Malcomb

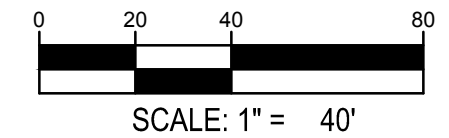


PARKING SPACES PROVIDED			
BUILDING	ACCESSIBLE PARKING SPACES	PARKING SPACES	TOTAL PARKING SPACES
NORTHERN	4	54	58
SOUTHERN	4	110	114

- NOTES**
- TOTAL 100-YR STORAGE REQUIRED: 57,325 CF
 - TOTAL STORAGE PROVIDED: 57,873 CF
 - TOTAL LENGTH OF 72" CMP: 2045 LF

GRADING LEGEND:

- PROPERTY LINE
- 5720 PROPOSED 5' CONTOUR
- 5721 PROPOSED 1' CONTOUR
- - 5720 EXISTING 5' CONTOUR
- - 5721 EXISTING 1' CONTOUR
- PROPOSED STORM LINE
- EXISTING STORM LINE
- PROPOSED STORM INLET
- EXISTING STORM INLET
- FLOW DIRECTION
- PROPOSED CONCRETE WALK
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- PROPOSED SPILL CURB & GUTTER
- EXISTING FENCE
- EXISTING FIRE HYDRANT
- PROPOSED SIGN
- EXISTING SANITARY SEWER W/ MANHOLE
- EXISTING WATERLINE & VALVE
- EXISTING GAS LINE
- EXISTING TELEPHONE LINE
- EXISTING ELECTRIC LINE
- EXISTING FIBER OPTIC LINE
- PROPOSED LIGHT POLE
- EXISTING LIGHT POLE
- EXISTING UTILITY POLE
- EXISTING ELECTRIC METER
- EXISTING TRANSFORMER
- EXISTING IRRIGATION VAULT
- PROPOSED ELECTRIC TRANSFORMER
- PROPOSED FIRE HYDRANT



WARE MALCOMB assumes no responsibility for utility locations. The utilities shown on this drawing have been plotted from the best available information. It is, however, the contractor's responsibility to field verify the location of all utilities prior to the commencement of any construction.

WARE MALCOMB
LEADING DESIGN FOR COMMERCIAL REAL ESTATE

900 south broadway
suite 320
denver, co 80209
p 303.661.3333
waremalcomb.com

FOR AND ON BEHALF OF WARE MALCOMB

1661 E 77th Ave

DETENTION STORAGE EXHIBIT

NO.	DATE	REMARKS

JOB NO.:	DEN22-0137
PA / PM:	B. MULLER
DESIGNED:	K. KLIMA
DATE:	03/01/2023
PLOT DATE:	03/08/23

SHEET	
Sheet	of

ALTA/NSPS LAND TITLE SURVEY

A PORTION OF SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35,
TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, STATE OF COLORADO

LEGAL DESCRIPTION:

(PER FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. NCS-1150542-CO,
EFFECTIVE DATE OCTOBER 12, 2022 AT 5:00)

PARCEL A:

A TRACT OF LAND LOCATED IN THE EAST 1/2 OF THE SOUTHWEST 1/4 NORTHEAST 1/4 OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE 6TH P.M., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST BOUNDARY LINE OF THE ABANDONED UNION PACIFIC RAILROAD RIGHT OF WAY AS IT WAS DESCRIBED IN DEED RECORDED JULY 16, 1908 IN BOOK 39 AT PAGE 24, WHENCE THE EAST QUARTER CORNER OF SAID SECTION BEARS NORTH 89 DEGREES 43 MINUTES EAST, A DISTANCE OF 914.7 FEET;
THENCE NORTH 89 DEGREES 49 MINUTES WEST TO A POINT WHICH IS 612.3 FEET EAST OF THE EAST BOUNDARY LINE OF THE RIGHT OF WAY FOR A DRAINAGE DITCH AS CONVEYED TO THE COUNTY OF ADAMS IN DEED RECORDED OCTOBER 4, 1938 IN BOOK 250 AT PAGE 11, SAID DISTANCE OF 612.30 FEET BEING MEASURED ALONG AN EXTENSION OF THE LAST DESCRIBED LINE AND SAID POINT BEING THE TRUE POINT OF BEGINNING;
THENCE CONTINUING NORTH 89 DEGREES 49 MINUTES WEST A DISTANCE OF 612.3 FEET TO THE EAST BOUNDARY LINE OF SAID DITCH RIGHT OF WAY;
THENCE NORTH 00 DEGREES 07 MINUTES EAST ALONG THE EAST BOUNDARY LINE OF SAID DITCH RIGHT OF WAY, A DISTANCE OF 711.4 FEET, MORE OR LESS TO THE SOUTH BOUNDARY LINE OF A 30 FOOT ROAD;
THENCE SOUTH 89 DEGREES 49 MINUTES EAST, ALONG THE SOUTH LINE OF SAID 30 FOOT ROAD, A DISTANCE OF 612.30 FEET;
THENCE SOUTH 00 DEGREES 10 MINUTES WEST, A DISTANCE OF 711.22 FEET, MORE OR LESS TO THE TRUE POINT OF BEGINNING,

EXCEPTING THEREFROM ALL IMPROVEMENTS LOCATED THEREON,

COUNTY OF ADAMS, STATE OF COLORADO.

PARCEL B:

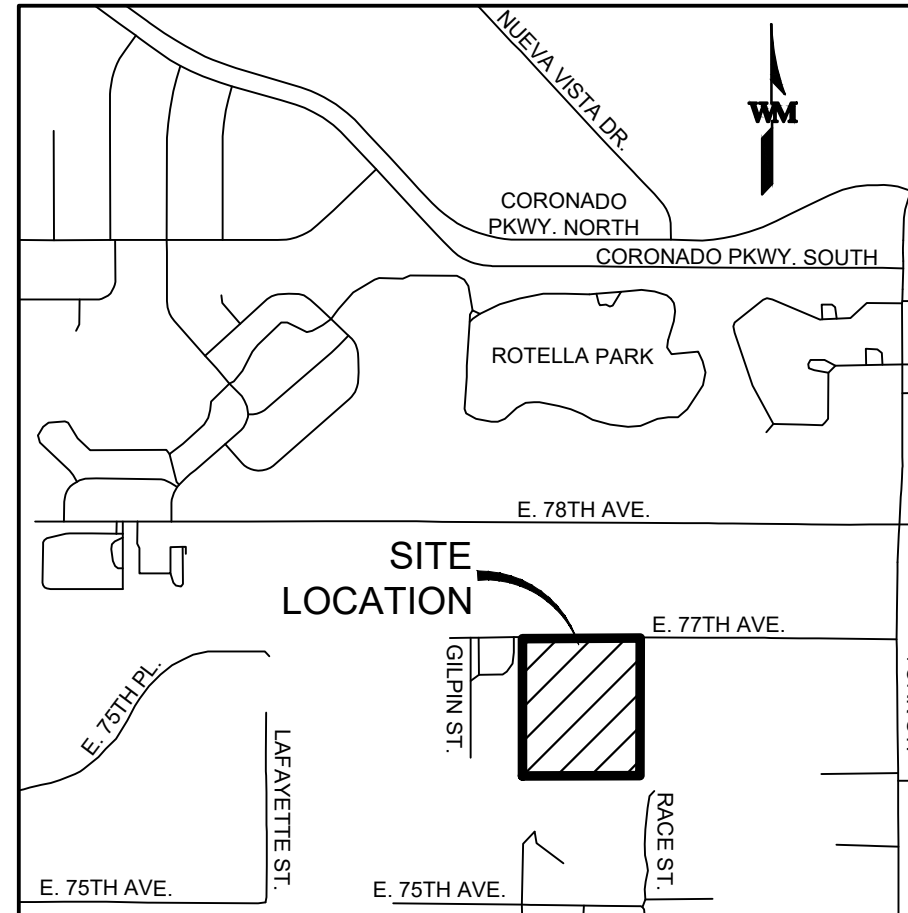
THE INFRASTRUCTURE HEREUNDER DESCRIBED BELOW:

A TRACT OF LAND LOCATED ON THE EAST 1/2 OF THE SOUTHWEST 1/4 NORTHEAST 1/4 OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE 6TH P.M., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE WEST BOUNDARY LINE OF THE ABANDONED UNION PACIFIC RAILROAD RIGHT OF WAY AS IT WAS DESCRIBED IN DEED RECORDED JULY 16, 1908 IN BOOK 39 AT PAGE 24, WHENCE THE EAST QUARTER CORNER OF SAID SECTION BEARS NORTH 89 DEGREES 43 MINUTES EAST, A DISTANCE OF 914.7 FEET;
THENCE NORTH 89 DEGREES 49 MINUTES WEST TO A POINT WHICH IS 612.3 FEET EAST OF THE EAST BOUNDARY LINE OF THE RIGHT OF WAY FOR A DRAINAGE DITCH AS CONVEYED TO THE COUNTY OF ADAMS IN DEED RECORDED OCTOBER 4, 1938 IN BOOK 250 AT PAGE 11, SAID DISTANCE OF 612.30 FEET BEING MEASURED ALONG AN EXTENSION OF THE LAST DESCRIBED LINE AND SAID POINT BEING THE TRUE POINT OF BEGINNING;

THENCE CONTINUING NORTH 89 DEGREES 49 MINUTES WEST A DISTANCE OF 612.3 FEET TO THE EAST BOUNDARY LINE OF SAID DITCH RIGHT OF WAY;
THENCE NORTH 00 DEGREES 07 MINUTES EAST ALONG THE EAST BOUNDARY LINE OF SAID DITCH RIGHT OF WAY, A DISTANCE OF 711.4 FEET, MORE OR LESS TO THE SOUTH BOUNDARY LINE OF A 30 FOOT ROAD;
THENCE SOUTH 89 DEGREES 49 MINUTES EAST, ALONG THE SOUTH LINE OF SAID 30 FOOT ROAD, A DISTANCE OF 612.30 FEET;
THENCE SOUTH 00 DEGREES 10 MINUTES WEST, A DISTANCE OF 711.22 FEET, MORE OR LESS TO THE TRUE POINT OF BEGINNING,

COUNTY OF ADAMS, STATE OF COLORADO.



VICINITY MAP
1" = 1000'

GENERAL NOTES:

- NOTICE:** ACCORDING TO COLORADO LAW YOU **MUST** COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCE MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
- ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY WARE MALCOMB TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY, AND TITLE OF RECORD, WARE MALCOMB RELIED UPON THE FOLLOWING FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. NCS-1150542-CO, EFFECTIVE DATE OCTOBER 12, 2022 AT 5:00.
- ALL LINEAL DISTANCE UNITS ARE REPRESENTED IN U.S. SURVEY FEET. THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTES OF STANDARDS AND TECHNOLOGY DEFINES THE U.S. SURVEY FOOT AS 1200/3937 METERS.
- BASIS OF BEARINGS:** BEARINGS ARE BASED ON THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, WITH A BEARING OF SOUTH 00°01'55" EAST WITH ALL BEARINGS SHOWN HEREON RELATIVE THERETO, AND IS MONUMENTED AS SHOWN HEREON.
- THE SUBJECT PROPERTY IS CONTIGUOUS WITH AND HAS DIRECT ACCESS TO EAST 77TH AVENUE, A PUBLICLY OWNED RIGHT-OF-WAY. MAINTAINED BY ADAMS COUNTY.

SURVEYOR'S CERTIFICATION:

TO: PROLOGIS L.P., A DELAWARE LIMITED PARTNERSHIP;
TERRACE ENTERPRISES, LLC, AN IDAHO LIMITED LIABILITY COMPANY;
FIRST AMERICAN TITLE INSURANCE COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6a, 6b, 11, 13, 14, 16, 18, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON DECEMBER 19, 2022.

DATE OF PLAT OR MAP: 01/30/2023



JUSTIN C. SCHEITLER
COLORADO PLS NO. 38430
FOR AND ON BEHALF OF WARE MALCOMB
900 S. BROADWAY SUITE 320
DENVER CO. 80209
303.561.3333

JOB NO.	DCS22-4067
DATE:	01/30/2023
SCALE:	1" = 200'
Sheet	1 of 8

NO.	DATE	REMARKS
DRAWN BY:	KDW	PA/PM: JCS

900 south broadway st.
suite 320
denver, co 80209
p. 303.561.3333
waremalcomb.com

WARE MALCOMB
CIVIL ENGINEERING & SURVEYING

ALTA/NSPS LAND TITLE SURVEY

A PORTION OF SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35,
TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, STATE OF COLORADO

ALTA TABLE A ITEM NOTES:

- MONUMENTS WERE PLACED AT ALL MAJOR CORNERS OF THE BOUNDARY OF THE SURVEYED PROPERTY, UNLESS ALREADY MARKED OR REFERENCED BY EXISTING MONUMENTS OR WITNESSES IN CLOSE PROXIMITY TO THE CORNER.
- ADDRESS OF THE SURVEYED PROPERTY AS OBTAINED BY THE SURVEYOR FROM THE ADAMS COUNTY ASSESSOR'S WEBSITE: 1661 E 77TH AVENUE.
- BASED ON A REVIEW OF FEMA FLOOD INSURANCE RATE MAPS, COMMUNITY PANEL NO. 08001C0604H DATED 03/15/2007, THE SUBJECT PROPERTY FALLS ENTIRELY WITHIN FLOOD ZONE X. ZONE "X" IS DEFINED AS BEING "AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN."
- THE SUBJECT PROPERTY CONTAINS A SURVEYED AREA OF 437,953 SQUARE FEET, OR 10.054 ACRES MORE OR LESS.
- PROJECT BENCHMARK:** ADAMS COUNTY BENCHMARK RTD PARK-N-RIDE 4.070000, BEING A 3.25" CAP STAMPED "4.070000 GPS 34 ZBS PLS 11434" **LOCATION:** LOCATED WEST OF THE INTERSECTION OF BROADWAY AND WEST 70TH AVENUE, AT THE RTD PARK-N-RIDE, IN THE SOUTHEAST QUADRANT OF THE PARK-N-RIDE, IN THE NORTHWEST CORNER OF AN OPEN FIELD, 157' EAST AND 1.2' SOUTH OF THE EDGE OF THE ASPHALT PARKING AREA. **ELEVATION** IS 5169.24 FEET, (NAVD 88 DATUM).
SITE BENCHMARK: SET NO. 5 REBAR , NO CAP. **LOCATION:** 5.5' WEST AND 4.0' SOUTH OF THE NORTHWEST CORNER OF THE SUBJECT PROPERTY. **ELEVATION:** 5,134.31 FEET, (NAVD 83 DATUM).
- ZONING INFORMATION: ACCORDING TO THE PZR REPORT FOR 1661 EAST 77TH AVENUE, DENVER, ADAMS COUNTY, COLORADO 80229, TITLED "ZONING AND SITE REQUIREMENTS SUMMARY" PREPARED BY THE PLANNING & ZONING RESOURCE COMPANY, PZR SITE NUMBER 162668-1, DATED 11/29/2022, THE FOLLOWING ZONING INFORMATION PERTAINS TO THE SUBJECT PROPERTY.

DATE OF EXISTING ORDINANCE: CURRENT AS UPDATED BY ONLY THE COUNTY

EXISTING ZONING DESIGNATION: A-1 DISTRICT

ADJACENT ZONING DESIGNATION: A-1 DISTRICT (S, E & W), MH DISTRICT (N)

EXISTING LAND USE: GREENHOUSE

EXISTING USE IN LEGAL NONCONFORMANCE. REQUIRES A CONDITIONAL USE PERMIT WITHIN THE A-1 DISTRICT

REQUIRED BUILDING SETBACKS	EXISTING
FRONT/CORNER: 30 FEET	EAST 77TH: 27.2 FEET (PER SURVEY)
SIDE: 10 FEET OR 1 FOOT PER 2 FEET OF HEIGHT, WHICHEVER IS GREATER.	EAST LOT LINE: 18.8 FEET (PER SURVEY)
REAR: 20 FEET	WEST LOT LINE: 17.0 FEET (PER SURVEY)
	SOUTH LOT LINE: 49.6 FEET (PER SURVEY)

BUILDING SIZE

MAXIMUM: 70 FEET

EXISTING HEIGHT: 1 TO 2 STORIES / 17.9 FEET (PER SURVEY)

BUILDING SITE AREA REQUIREMENTS: MINIMUM LOT SIZE: 2.5 ACRES. MINIMUM LOT WIDTH 150 FEET

EXISTING AREA: 10.075 ACRES (PER SURVEY)

DENSITY

BUILDING DENSITY FORMULA: NONE SPECIFIED

APPROXIMATE BUILDING FOOTPRINT: 291,615 SQUARE FEET (PER SURVEY)

PARKING

PARKING SPACE FORMULA: WAREHOUSE. 1 SPACE FOR EACH 5,000 SQUARE FEET OF GROSS FLOOR AREA. (291,615 / 5,000 = 52)

PARKING SPACES REQUIRED: 58 TOTAL PARKING SPACES

EXISTING PARKING SPACES: THERE ARE NO MARKED PARKING SPACES ON THE SUBJECT PROPERTY (PER SURVEY)

CONFORMANCE STATUS: LEGAL CONFORMING

THE ZONING LETTER ATTACHED TO THE REPORT FROM ADAMS COUNTY COMMUNITY & ECONOMIC DEVELOPMENT DEPARTMENT PLANNING & DEVELOPMENT, DATED OCTOBER 11, 2022, STATES THAT ACCORDING TO THE COUNTY'S CURRENT RECORDS ON FILE THERE ARE NO CURRENT VIOLATIONS ON THE PROPERTY.

- UNDERGROUND UTILITIES:** THIS PROPERTY CONTAINS UNDERGROUND UTILITY LINES. ON SITE UNDERGROUND UTILITY LOCATIONS WERE PROVIDED BY TOM RICHARDSON LLC ON 12/12/2022 AND SAID LOCATIONS TOGETHER WITH SURFACE EVIDENCE OF UTILITIES WERE THEN LOCATED BY WARE MALCOMB ON 12/19/2022 AND ARE SHOWN HEREON. WARE MALCOMB ACCEPTS NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE POSITION OF THESE UNDERGROUND UTILITY LINES. THE CLIENT IS ADVISED THAT EXCAVATION MAY BE REQUIRED TO OBTAIN MORE ACCURATE LOCATIONS.
- OWNERSHIP INFORMATION SHOWN HEREON IS PER THE BROOMFIELD COUNTY ASSESSOR'S WEBSITE AS RESEARCHED ON JANUARY 09, 2023 AND IS SUBJECT TO CHANGE.
- DISTANCES TO NEAREST INTERSECTIONS SHOWN HEREON.
- THERE WAS NO EVIDENCE OF RECENT EARTHMOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THIS SURVEY.
- ALL PLOTTABLE OFFSITE APPURTENANT EASEMENTS OR SERVITUDES DISCOVERED DURING THIS SURVEY ARE SHOWN HEREON.
- A CERTIFICATE OF PROFESSIONAL LIABILITY INSURANCE WILL BE FURNISHED UPON REQUEST.

SCHEDULE B-2 COMMENTS:

BASES ON A REVIEW OF FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT FOR TITLE INSURANCE NO. NCS-1150542-CO, COMMITMENT DATE OCTOBER 12, 2022 AT 5:00 PM, THE FOLLOING SURVEY COMMENTS TO THE SCHEDULE B, PART II EXCEPTIONS ARE NOTED:

EXCEPTIONS 1 THROUGH 8 ARE STANDARD EXCEPTIONS AND ARE NOT ADDRESSED BY THIS SDURVEY.

9. AN EASEMENT FOR DRAINAGE DITCH AND INCIDENTAL PURPOSES GRANTED TO COUNTY OF ADAMS, AS SET FORTH IN AN INSTRUMENT RECORDED OCTOBER 4, 1938 IN BOOK 250 AT PAGE 111.

(THE EASEMENT IS ADJACENT TO THE WEST LINE OF THE SUBJECT PROPERTY AS SHOWN HEREON.)

10. AN EASEMENT FOR WATER, SEWER LINES AND INCIDENTAL PURPOSES GRANTED TO NORTH WASHINGTON STREET WATER AND SANITATION DISTRICT, AS SET FORTH IN AN INSTRUMENT RECORDED SEPTEMBER 14, 1960 IN BOOK 866 AT PAGE 261.

(PART OF THE DOCUMENT IS ILLEGIBLE AND IT CANNOT BE DETERMINED IF THE EASEMENT STRIP AFFECTS THE SUBJECT PROPERTY.)

11. AN EASEMENT FOR DRAINAGE DITCH AND INCIDENTAL PURPOSES AS RESERVED IN DEED RECORDED OCTOBER 3, 1960 IN BOOK 870 AT PAGE 132.

(THE DOCUMENT AFFECTS THE SUBJECT PROPERTY. THE RIGHT-OF-WAY FOR THE DITCH IS SAID TO BE ALONG THE SOUTH PROPERTY LINE, BUT DOES NOT SPECIFY A WIDTH. THE APPROXIMATE LOCATION IS SHOWN HEREON.)

12. ANY TAX, LIEN, FEE OR ASSESSMENT BY REASON OF INCLUSION OF SUBJECT PROPERTY IN THE NORTH WASHINGTON STREET WATER AND SANITATION DISTRICT, AS EVIDENCED BY INSTRUMENT RECORDED APRIL 13, 1962 IN BOOK 978 AT PAGE 309.

(THE DOCUMENT AFFECTS THE SUBJECT PROPERTY. NOT A SURVEY MATTER, NOT ADDRESSED BY THIS SURVEY.)

13. TERMS, CONDITIONS, PROVISIONS, OBLIGATIONS AND AGREEMENTS AS SET FORTH IN THE RESOLUTIONS RECORDED SEPTEMBER 24, 1974 IN BOOK 1955 AT PAGE 326, BOOK 1955, AT PAGE 332, AND BOOK 1955 AT PAGE 339.

(THE CANALS AND DITCHES IN THE DOCUMENT ARE NOT LOCATED WITHIN THE SUBJECT PROPERTY.)

14. ANY CLAIM THAT THE TITLE IS SUBJECT TO A TRUST OR LIEN CREATED UNDER THE PERISHABLE AGRICULTURAL COMMODITIES ACT, 1930 (7 U.S.C. §§499A, ET SEQ.) OR THE PACKERS AND STOCKYARDS ACT (7 U.S.C. §§181 ET SEQ.) OR UNDER SIMILAR STATE LAWS.

(NOT A SURVEY MATTER, NOT ADDRESSED BY THIS SURVEY.)



JOB NO.	DCS22-4067
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SCALE:	1" = 200'
Sheet	2 of 8

NO.	DATE	REMARKS
DRAWN BY:	KDW	PA/PM: JCS

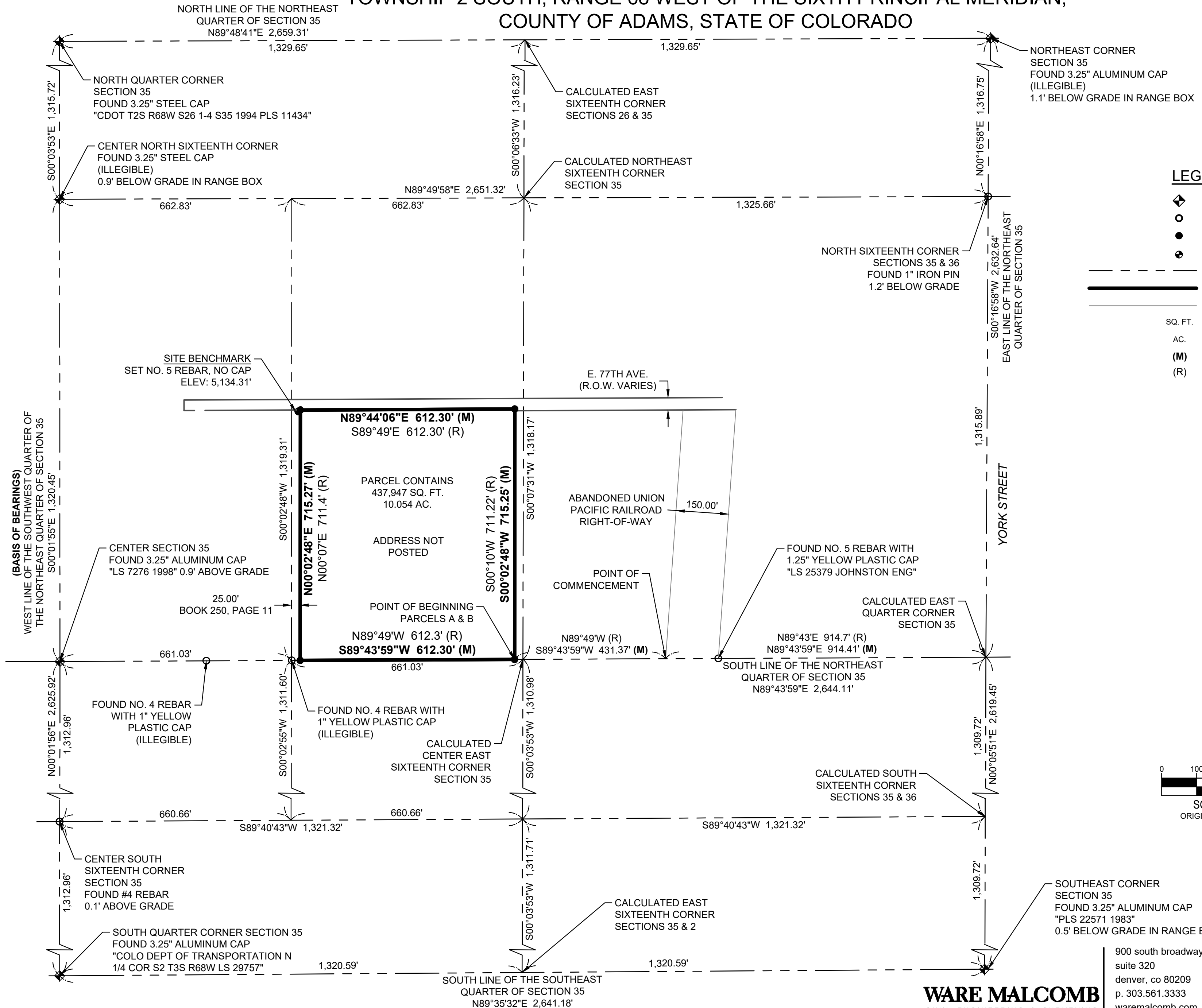
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WARE MALCOMB
CIVIL ENGINEERING & SURVEYING

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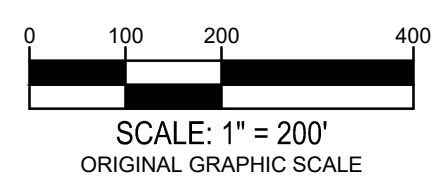
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TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, STATE OF COLORADO



LEGEND

- SECTION CORNER AS DESCRIBED
- FOUND MONUMENT AS DESCRIBED
- SET 18" #5 REBAR WITH 1.25" GREEN PLASTIC CAP MARKED "PLS 38430"
- SITE BENCHMARK AS DESCRIBED
- SECTION LINE
- SITE BOUNDARY
- LOT LINES
- SQ. FT. SQUARE FEET
- AC. ACRES
- (M) MEASURED COURSE
- (R) RECORD COURSES PER REC. NO. 20060628000654770



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suite 320
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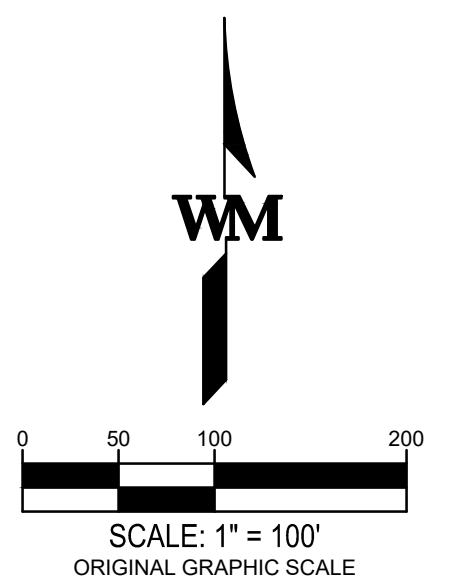
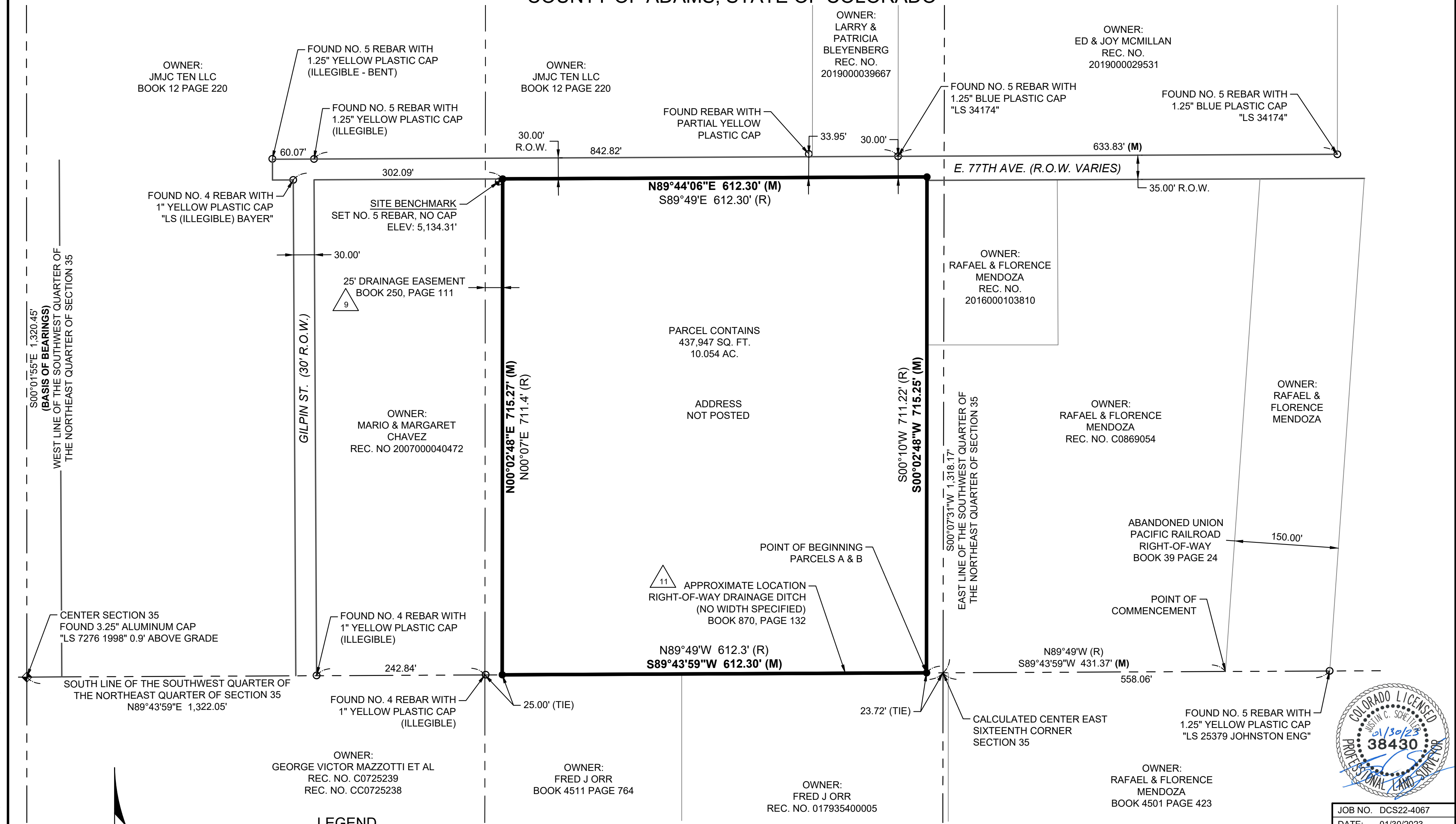
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TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF ADAMS, STATE OF COLORADO



LEGEND

- SECTION CORNER AS DESCRIBED
- FOUND MONUMENT AS DESCRIBED
- SET 18" #5 REBAR WITH 1.25" GREEN PLASTIC CAP MARKED "PLS 38430"
- SITE BENCHMARK AS DESCRIBED
- SECTION LINE
- SITE BOUNDARY
- LOT LINES
- RIGHT-OF-WAY
- SQ. FT. SQUARE FEET
- AC. ACRES
- SCHEDULE B-2 EXCEPTION ITEMS
- (M)** MEASURED COURSE
- (R)** RECORD COURSES PER REC. NO. 20060628000654770



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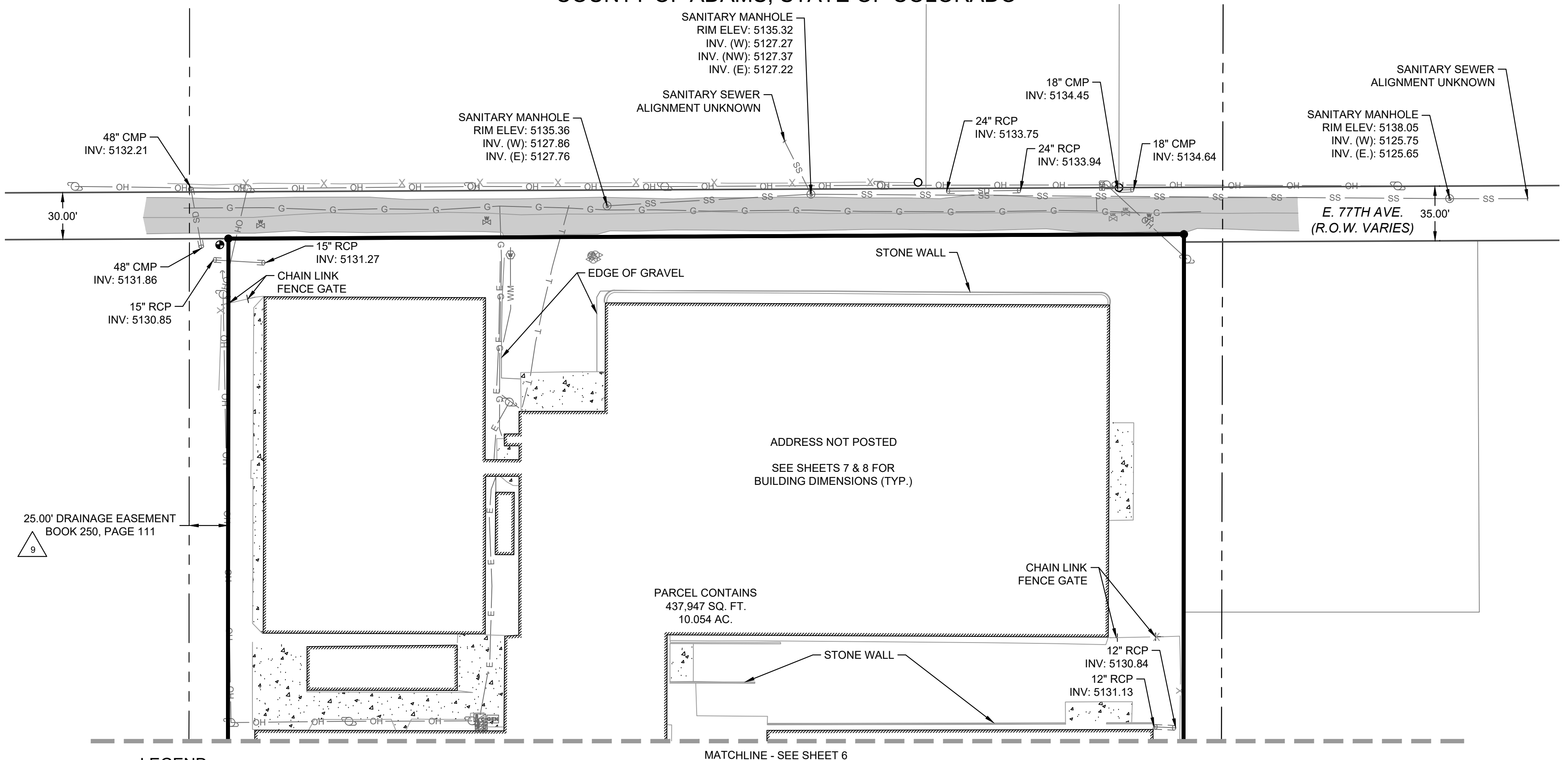
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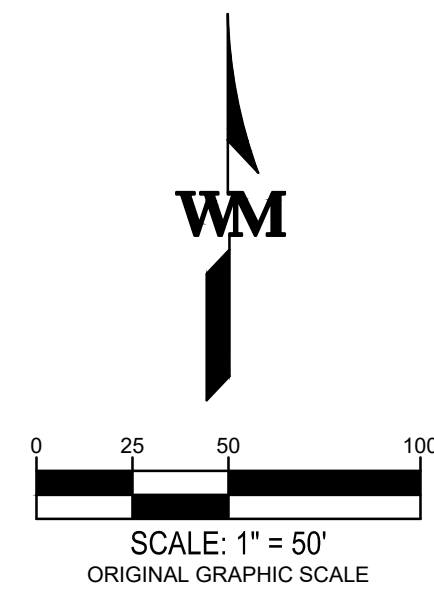
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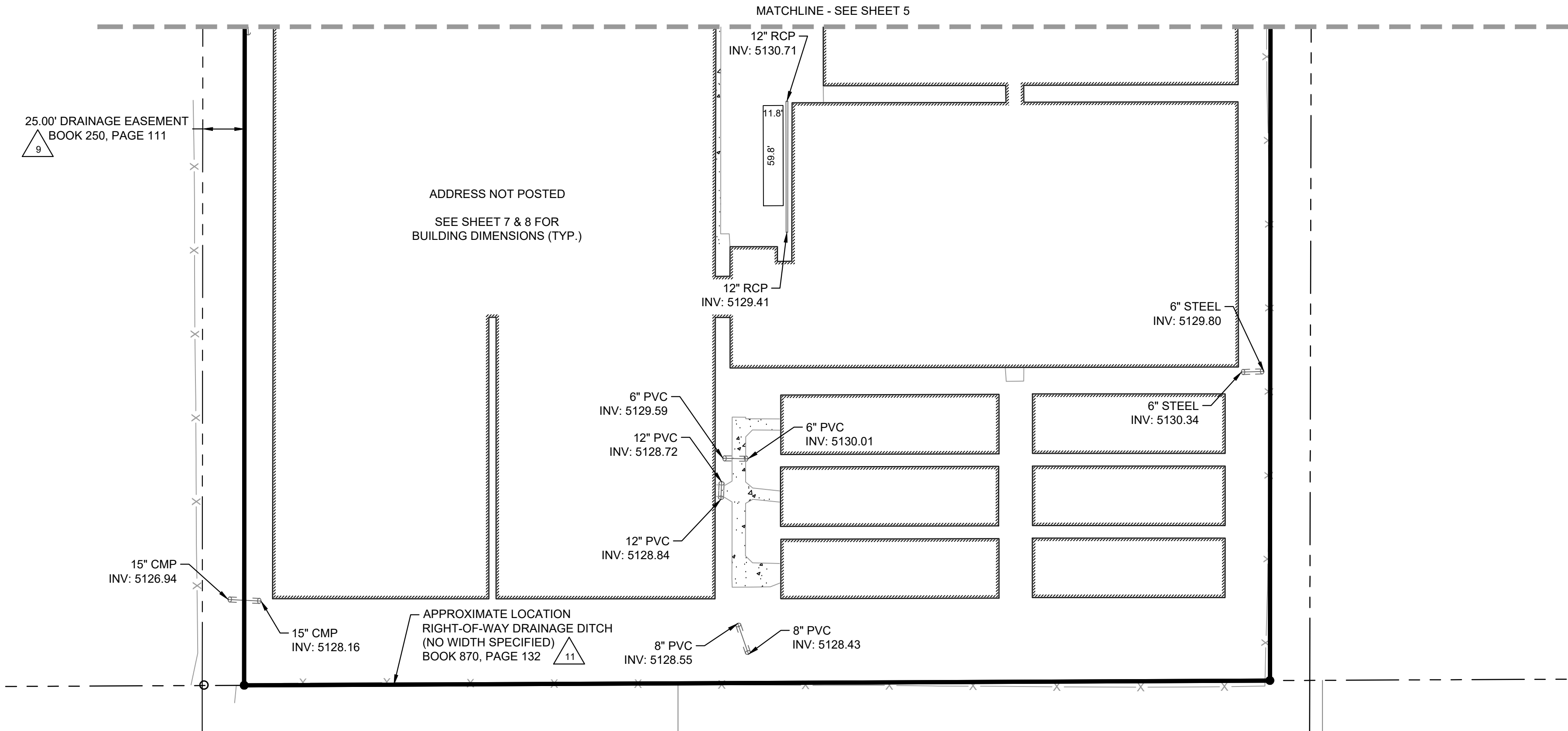
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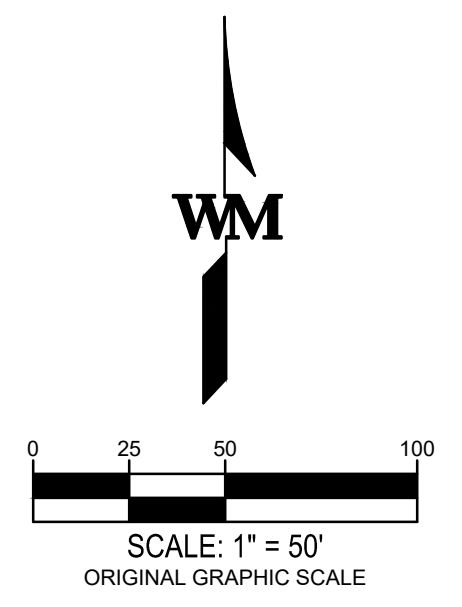
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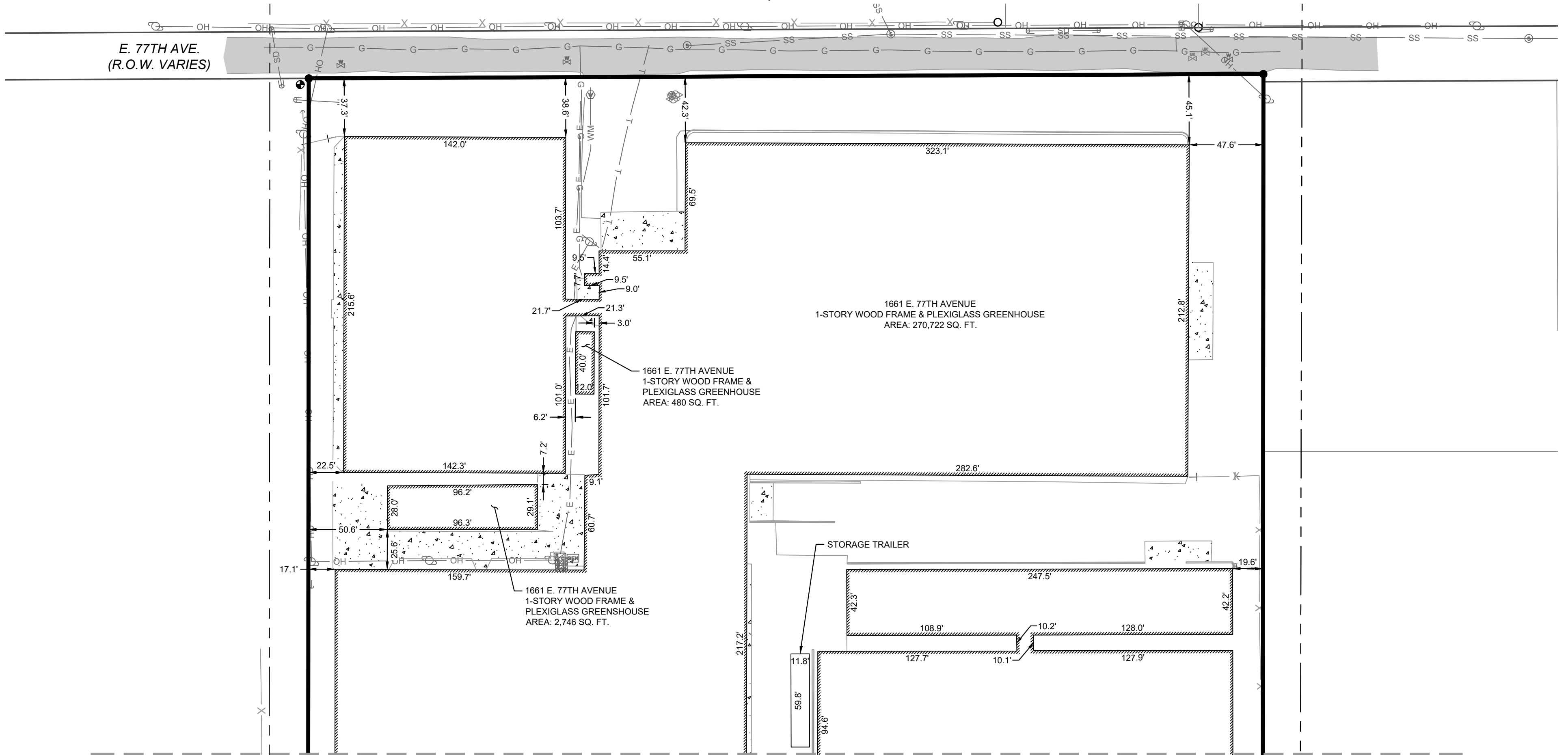
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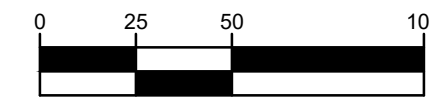
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MATCHLINE - SEE SHEET 8



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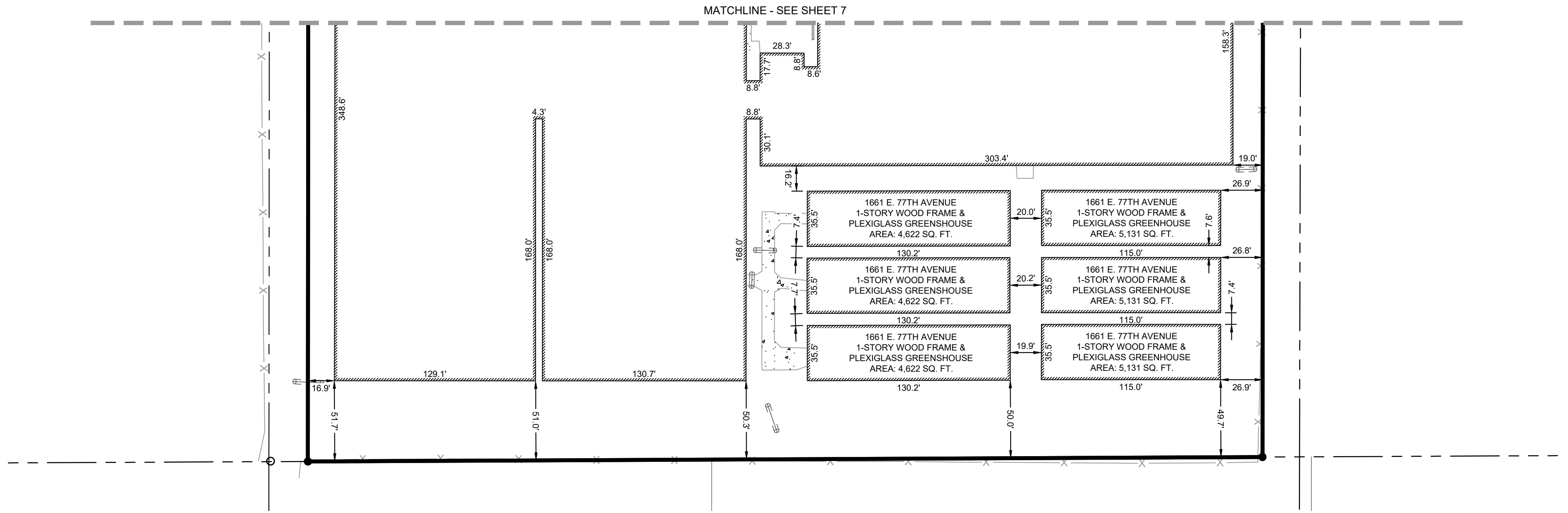


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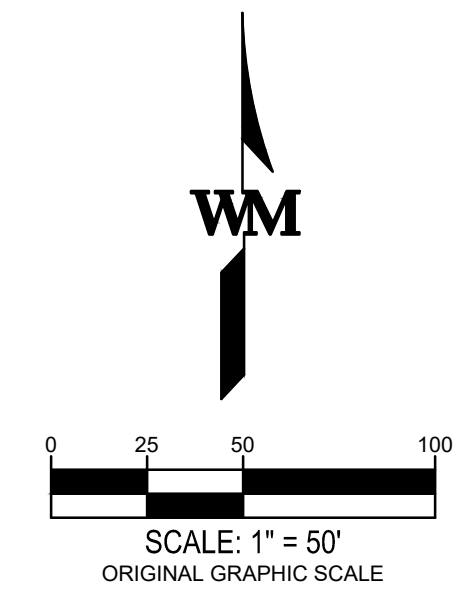
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EXHIBIT A

LEGAL DESCRIPTION:

A PARCEL OF LAND DESCRIBED AT RECEPTION NO. 20060628000654770 IN THE RECORDS OF THE ADAMS COUNTY CLERK AND RECORDER, LOCATED IN THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF ADAMS, STATE OF COLORADO, SUBORDINATELY DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTER OF SECTION 35 AND CONSIDERING THE WEST LINE OF SAID SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35 TO BEAR SOUTH 00°01'55" EAST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

THENCE NORTH 89°43'59" EAST ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35 A DISTANCE OF 686.03 FEET TO THE EAST LINE OF A 25 FOOT DRAINAGE EASEMENT RECORDED IN BOOK 250 AT PAGE 111 OF SAID RECORDS AND THE **POINT OF BEGINNING**;

THENCE NORTH 00°02'48" EAST ALONG SAID EAST LINE A DISTANCE OF 715.27 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY OF EAST 77TH AVENUE;

THENCE NORTH 89°44'06" EAST ALONG SAID SOUTH RIGHT-OF-WAY A DISTANCE OF 612.30 FEET;

THENCE SOUTH 00°02'48" WEST A DISTANCE OF 715.25 FEET TO A POINT ON SAID SOUTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35;

THENCE SOUTH 89°43'59" WEST ALONG SAID SOUTH LINE A DISTANCE OF 612.30 FEET TO THE **POINT OF BEGINNING**;

SAID PARCEL CONTAINS AN AREA OF 437,947 SQUARE FEET, OR 10.053 ACRES, MORE OR LESS.

THE LINEAL DISTANCE UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE UNITED STATES SURVEY FOOT. THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY DEFINES THE UNITED STATES SURVEY FOOT AS 1200/3937 METERS.

I, JUSTIN C. SCHEITLER, A SURVEYOR LICENSED IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE ABOVE LEGAL DESCRIPTION AND ATTACHED EXHIBIT WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CHECKING, IS BASED ON MY KNOWLEDGE, INFORMATION AND BELIEF, IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE, AND IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

JUSTIN C. SCHEITLER, P.L.S. 38430
FOR AND ON BEHALF OF
WARE MALCOMB
900 SOUTH BROADWAY
SUITE 320
DENVER, COLORADO 80209
P 303.561.3333

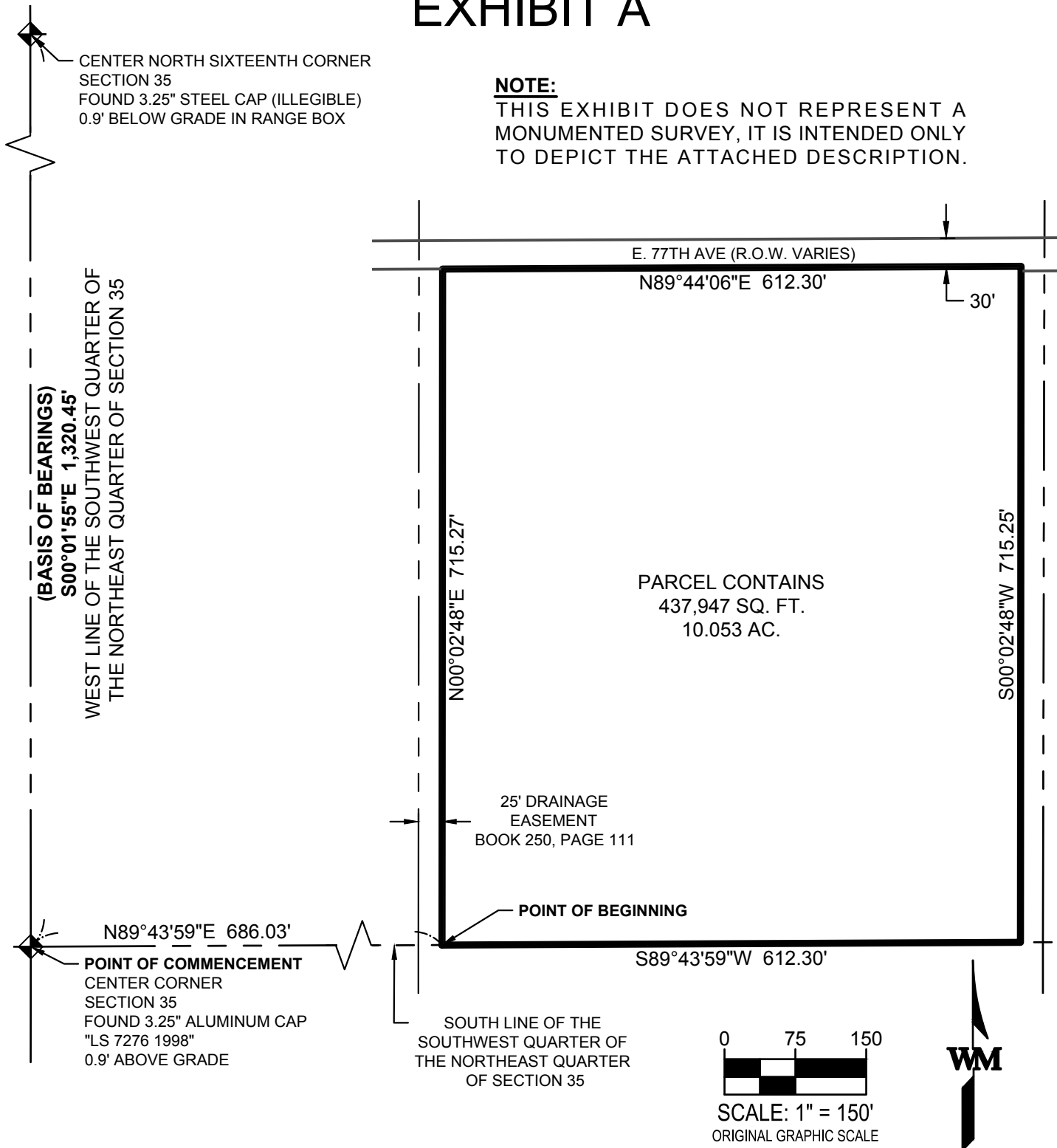


900 south broadway suite 320 denver, co 80209 p 303.561.3333 waremalcomb.com WM WARE MALCOMB CIVIL ENGINEERING & SURVEYING	PROJECT NAME: 1661 E. 77th Ave		SHEET 1 OF 2
	JOB NO.: DCS22-4067	DATE : 03/28/2023	
	DRAWN: CJD	PA/PM: JCS	

EXHIBIT A

NOTE:

THIS EXHIBIT DOES NOT REPRESENT A MONUMENTED SURVEY, IT IS INTENDED ONLY TO DEPICT THE ATTACHED DESCRIPTION.



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		JOB NO.: DCS22-4067	DATE : 03/28/2023	
		DRAWN: CJD	PA/PM: JCS	SCALE: 1" = 150'

1661 E 77th Ave

Industrial

Traffic Impact Study



Date: April 12, 2023

Submitted To:

Ware Malcomb
900 S. Broadway Suite 320
Denver, CO 80209

Submitted By:

Fox Tuttle Transportation Group, LLC
1580 Logan Street, 6th Floor
Denver, CO 80203



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APPENDIX

- Level of Service Definitions
- Existing Traffic Data
- Intersection Capacity Worksheets

1661 E 77TH AVE INDUSTRIAL PROJECT

TRAFFIC IMPACT STUDY

1.0 Introduction

The Fox Tuttle Transportation Group has prepared this traffic impact study for the proposed redevelopment of property on the south side of E 77th Avenue to the west of York Street. It is understood that the project is proposing to construct two new industrial warehouses on the property that is currently utilized as a greenhouse. The site, located in Adams County, is surrounded by various industrial businesses and single family homes. It is currently accessed exclusively from E 77th Avenue. A vicinity map is shown on **Figure 1**.

The purpose of this study is to assist in identifying potential traffic impacts within the study area as a result of the 1661 E 77th Avenue industrial project. The traffic study addresses existing, short-term, and long-term peak hour intersection conditions in the study area with and without the project-generated traffic. The information contained in this study is anticipated to be used by Adams County staff in identifying any intersection or roadway deficiencies and potential improvements for the build-out condition and long-term future scenarios. This study focused on the weekday AM and PM peak hours which represent the periods of highest volumes on the adjacent streets.

2.0 Project Description

Currently, the project property is utilized for an industrial greenhouse. The subject property currently has exclusive access from E 77th Avenue, along an unimproved street frontage. It is understood that the 1661 E 77th Avenue industrial project proposes to redevelop the property and construct two approximately 100,000± square feet industrial buildings. The redevelopment is consistent with other properties to the east on E 77th Avenue that include industrial businesses. The project proposes to provide two (2) full movement, side-street stop-control accesses on E 77th Avenue. There will be internal connectivity between the two (2) accesses for circulation and accessibility. A 30-foot right of way (ROW) dedication will be provided with redevelopment on the south side of the site for a potential future E 76th Avenue. **Figure 2** shows the site plan and proposed access locations.

3.0 Study Considerations

3.1 Data Collection

Intersection turning movement volumes were collected in March 2023 at two (2) existing intersections during the weekday AM and PM peak hours, including pedestrians and bicyclists. Daily traffic volumes were also collected on E 77th Avenue west of York Street and on York Street north of E 77th Avenue. Existing and historic traffic volumes on the study roadways were gathered from Colorado Department of Transportation’s (CDOT) Transportation Data Management System (TDMS) and CDOT’s Online Transportation Information System (OTIS). Count data is provided in the **Appendix**.

3.2 Evaluation Methodology

The traffic operations analysis addressed the unsignalized and signalized intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*¹. Existing peak hour factors were applied to the intersections for the existing and future scenarios. Study intersections were evaluated using Synchro software (v11).

3.3 Level of Service Capacity Analysis

A Level of Service analysis was conducted to determine the existing and future performance of the study area intersections and accesses to determine the most appropriate intersection traffic controls and auxiliary lanes for future conditions.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as “Level of Service” (LOS) that is defined by the *HCM*. LOS characterizes the operational conditions of an intersections traffic flow, ranging from LOS A (indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement.

¹ *Highway Capacity Manual*, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 6th Edition (2016).

Typically, LOS A through C is considered to be acceptable for the overall intersection operations and LOS D overall during peak hours is acceptable. Individual movements may be allowed to fall to LOS E at intersections if the queuing is reasonable and mitigation is not warranted. Minor movements at unsignalized intersections, such as left turns onto a major arterial, may be allowed to fall below LOS D if mitigation is not feasible or necessary. Criteria contained in the *HCM* was applied for these analyses in order to determine peak hour LOS for each scenario. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

4.0 Existing Conditions

4.1 Roadways

The study area boundaries are based on the amount of traffic to be generated by the project and potential impact to the existing roadway network. The primary public roadways that serve the project site are discussed in the following text and illustrated on **Figure 1**.

York Street is a north-south, arterial that travels through Adams County from E 88th Avenue to the north and into Denver to the south, with direct access to CO-224 and I-270. This roadway provides two (2) general purpose lanes per direction with a concrete median and auxiliary left turn lanes from SH 224 to E 78th Avenue. Future phases of the York Street expansion project will expand York Street from E 78th Avenue north to E 88th Avenue and south from SH 224 to E 58th Avenue. York Street currently serves approximately 12,000 vehicles per day (vpd) between E 77th Avenue and E 78th Avenue. The posted speed limit is 35 mph within the study area.

E 77th Avenue is an east-west roadway that extends west from York Street. This half-mile roadway provides access to industrial businesses, single-family homes and vacant properties. Most of the frontage to E 77th Avenue lacks curb and gutter and sidewalk. E 77th Avenue has a paved width of approximately 24 feet. E 77th Avenue currently serves approximately 400 vpd west of York Street. The posted speed limit is 25 mph within the study area.

E 78th Avenue is an east-west, two-lane collector street that runs from east of Washington Street to York Street. This roadway provides access to industrial and commercial businesses in the area. The roadway width is about 24 feet with one (1) through lane per direction. There are gravel shoulders with intermittent sidewalks in the area. The posted speed limit is 35 mph within the vicinity of the study area.

4.2 Intersections

The study area includes four (2) existing intersections that are listed below with the current traffic control and were analyzed for existing and future year traffic operations:

1. E 77th Avenue at York Street [side-street stop controlled]
2. E 78th Avenue at York street [signalized]

The existing lane configuration at each of the study locations are illustrated on **Figure 3**.

4.3 Pedestrian and Bicycle

The project is located in an industrial/rural area that has limited pedestrian and bicycle connections. There are no sidewalks on most of E 77th Avenue near the project site. E 78th Avenue has sidewalk on the north side of the street between Washington Street and York Street, with no sidewalk on E 78th Avenue east of York street. The York Street reconstruction project is adding sidewalk on the west side of York Street and a multi-use path on the east side of York Street along with the phased street reconstruction. Cyclists are permitted to utilize the travel lanes on the local streets.

4.4 Transit

There are no transit stops within a half mile of the project site. The nearest transit stops are at SH 224 and York St for RTD bus route 72 and E 78th Avenue and Washington Street for RTD bus route 7.

4.5 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

Currently, the study intersections operate overall at LOS B or better in both peak periods. All movements operate at LOS C or better in both peak hours. The 95th percentile queues are maintained within the existing storage lengths.

5.0 Future Conditions

5.1 Annual Growth Factor and Future Volume Methodology

In order to forecast the future peak hour traffic volumes, the growth prediction from the 2050 DRCOG FOCUS transportation demand model (TDM) was used. Modeled volume on York Street was compared between the 2020 model and the 2050 model to determine an annual growth rate. The annual growth rate used was 1.93%. The same growth rate was used for York Street and E 78th Avenue because E 78th Avenue is not included in the FOCUS model. Volume on E 77th Avenue were not grown in the background condition because of the limited connectivity of the street and stable land use.

Per Adams County Development Standards and Regulations, short term buildout is defined as year 2030 and long term horizon is year 2050. The Year 2030 background volumes are summarized on **Figure 4** and the Year 2050 background volumes are summarized on **Figure 5**.

5.2 Year 2030 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2030 background scenario and to identify any capacity constraints associated with background traffic. The background volumes, lane configuration, and traffic control are illustrated on **Figure 4**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the short-term background volumes. The details of LOS for each movement are provided in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

All of the study intersections were estimated to operate overall at LOS B or better in both peak periods in Year 2030 Background. All movements operate at LOS D or better in both peak hours. All of the 95th percentiles queues are maintained within the existing storage lengths.

5.3 Year 2050 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2050 background scenario and to identify any capacity constraints associated with background traffic in the long-term scenario. The long-term background volumes, lane configuration, and traffic control are illustrated on **Figure 5**.

The Level of Service criteria discussed previously was applied to the study area intersections to determine the impacts with the long-term background volumes. The results of capacity analysis are shown in **Table**

1 with the overall LOS and for each movement. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

All of the study intersections were estimated to operate overall at LOS B or better in both peak periods in Year 2050 Background. All of the 95th percentiles queues are maintained within the existing storage lengths.

The following intersection has one (1) movement operating at LOS F in the AM and LOS E in the PM peak hours:

- **#1 – York Street at E 77th Avenue:** The eastbound shared left and right turn movement on E 77th Avenue at York Street operates at LOS F in the AM and LOS E in the PM peak hours in the long-term horizon. The side street delay is high due to increased volume on York Street reducing the number of gaps for turning vehicles to enter York Street. The 95th percentile queues are 70 feet in the AM peak and 53 feet in the PM peak.

Recommendations: High delay on stop-controlled side streets is acceptable during peak times. 95th percentile queues are less than three (3) vehicles. To improve operations, a second eastbound approach lane to the intersection could allow right-turning vehicles to turn while left-turning vehicles are waiting. This improvement still has high delay (LOS F) for eastbound left-turning vehicles but lowers eastbound right delay to LOS C in the AM peak and LOS B in the PM peak. Additional right-of-way dedication may be required if this improvement is considered.

6.0 Future Conditions with the 1661 E 77th Avenue Industrial Project

6.1 Existing Trip Volume

The collected volumes include the existing traffic to the project site and adjacent single-family homes. Trips associated with the existing greenhouse use on the site were removed from the trip generation potential of the proposed redevelopment to accurately capture the impact of redevelopment.

6.2 Trip Generation

A trip generation estimate was performed to determine the traffic characteristics of the proposed redevelopment. The trip rates contained in the Institute of Transportation Engineers (ITE) Trip Generation

*Handbook and Manual*² were applied to estimate the traffic. The exact type of industrial land use is not known but the project team is targeting industrial businesses and warehousing operations for the two proposed buildings. Therefore, this traffic study applied the trip rates for “Industrial Park” (ITE #130). For the purpose of this analysis the project is assumed to open in 2025.

Table 3 provides the detailed trip generation estimates for the project. The proposed project is expected to experience mostly new trips, also known as ‘primary trips’, as discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered “new” trips. Primary trips would not have been made if the proposed 1661 E 77th Avenue Industrial project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Non-Auto Trips. These trips are those that are completed by walking, biking, or transit. It is likely that some employees will utilize the bus; however, for the purpose of providing a conservative analysis of site traffic impacts, a non-auto trip reduction was not applied.

The project was estimated to generate approximately 674 daily trips with 68 trips in the AM peak hour and 68 trips in the PM peak hour as detailed in **Table 3**.

Daily count data was collected to quantify the trips already being generated by the current greenhouse use on the project site. Existing trips associated with the greenhouse were subtracted from the expected trip generation of the industrial redevelopment of the project; only additional trips above what are occurring today were added to the network.

6.3 Trip Distribution and Assignment

The estimated trip volumes were distributed onto the study area street network based on existing traffic characteristics, land uses, and traffic patterns in the area, as well as regional growth and future roadway infrastructure. The existing volumes were utilized to determine where vehicles are coming from and going to within the study area, plus the route to get to major highways and anticipated destinations. The following distributions were assumed for this project and are shown on **Figure 6**:

- North on York Street north of E 78th Avenue: 5%

² *Trip Generation Handbook and Manual, 11th Edition*, Institute of Transportation Engineers, 2021.

- East on E 78th Avenue: 5%
- West on E 78th Avenue: 20%
- South on York Street: 70%

Using the distribution assumptions, the additional projected site traffic exceeding the existing greenhouse trips was assigned to the study area roadway network for the weekday AM and PM peak hour periods and shown on **Figure 6**.

6.4 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the 1661 E 77th Avenue Industrial project in the short-term scenario. The site-generated volumes were added to the Year 2030 background volumes and are illustrated on **Figure 7**. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the project trips are anticipated to have minimal impact to the short-term operations of the study intersections. The overall and individual movement levels of service were calculated to remain the same as in Year 2030 background.

The two (2) project accesses on E 77th Avenue are expected to operate at LOS A overall and on all movements.

6.5 Year 2050 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the 1661 E 77th Avenue Industrial project in the long-term scenario. The site-generated volumes were added to the Year 2050 background volumes and are illustrated on **Figure 8**. The details of the LOS for each movement are listed in **Table 1**. The 95th percentile queues are summarized in **Table 2**. The intersection Level of Service worksheets are attached in the **Appendix**.

In summary, the project trips are anticipated to have little to no impacts to the long-term operations at E 78th Avenue and York Street and minor impact to E 77th Avenue and York Street. Key operational differences with the added project trips in Year 2050 are summarized by intersection below:

-
- **E 78th Avenue and York Street:** Signal timing adjustments enable most movements to continue to operate at the same LOS with the project-added trips. The northbound left movement goes from LOS A to LOS C in the AM peak period with the project-added trips and signal timing changes to rebalance for demand.
 - **E 77th Avenue and York Street:** The eastbound approach delay increases with the project-added trips. In the AM peak the eastbound delay increases though the overall intersection performance remains LOS A. The PM peak also has increased eastbound delay with the project-added trips but does not change LOS compared to background. The intersection was also analyzed with the proposed improved lane configuration (two eastbound lanes at the intersection) as discussed in Year 2050 Background. The improved lane configuration results in the same LOS with and without the project-added trips.

The 95th percentile queues are within the existing storage space for all movements. The eastbound queue at E 77th Avenue and York Street exceeds 100 feet in the AM peak with a single approach lane. If a second approach lane is added, the eastbound left turn queue is estimated to be 75 feet. Availability of right-of-way may limit the ability to construct two eastbound approach lanes. Even with the project-added traffic, peak hour volume on E 77th Avenue at York Street is below the 100 vph threshold to meet the peak hour traffic signal warrant.

The two (2) accesses on E 77th Avenue are expected to continue operating at LOS A for all movements.

7.0 Queuing Analysis

A queuing analysis was performed to determine if the 95th percentile queues would be accommodated by the existing storage length and if any of the queues would impact an upstream intersection/access. **Table 2** provides the existing storage lengths, as well as the 95th percentile queues for each existing and future scenario as calculated by Synchro (assuming each vehicle utilizes 25 feet of space).

It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur.

All of the estimated queues at the study intersections were calculated to be maintained within the existing storage lengths. As discussed in Section 6.5, if the eastbound approach at E 77th Avenue and York Street is widened to two approach lanes at least 75 feet of storage should be provided to accommodate the maximum expected eastbound left turn queue.

8.0 Conclusions

The 1661 E 77th Avenue Industrial project proposes to redevelop an existing greenhouse to construct an 200,000± square feet of industrial space in two buildings. The site plan proposes to provide two (2) full-movement accesses on E 77th Avenue. The full buildout of this project was estimated to generate approximately 674 daily trips with 68 trips in the AM peak hour and 68 trips in the PM peak hour. The following mitigations measure should be considered to accommodate the existing/background traffic (non-project related):

- **York Street at E 77th Avenue:**

- Restripe the eastbound approach to include one left-turn lane and one right-turn lane. Existing pavement and right-of-way may not be wide enough to accommodate this improvement. A right turn only restriction for eastbound traffic could also be considered in the future as traffic on York Street increases.

The two (2) full movement accesses on E 77th Avenue were determined to adequately serve the new industrial buildings.

Tables and Figures:

Table 1 – Peak Hour Intersection LOS Summary

Table 2 – Peak Hour Estimated Queue Lengths

Table 3 – Trip Generation Summary

Figure 1 – Vicinity Map

Figure 2 – Site Plan and Access

Figure 3 – Year 2023 Existing Traffic Volumes

Figure 4 – Year 2030 Background Traffic Volumes

Figure 5 – Year 2050 Background Traffic Volumes

Figure 6 – Trip Distribution and Project-Generated Trips

Figure 7 – Year 2030 Background + Project Traffic Volumes

Figure 8 – Year 2050 Background + Project Traffic Volumes

Table 1 - Peak Hour Intersection Level of Service Summary

Intersection and Lanes Groups	2023 Existing				2030 Background				2030 Bkgrd + Project				2050 Background				2050 Background (w/ Improvements)				2050 Bkgrd + Project				2050 Bkgrd + Project (w/ Improvements)							
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak					
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS				
STOP SIGN CONTROL																																
E 77th Ave at York St	1	A	1	A	1	A	1	A	2	A	2	A	3	A	2	A	3	A	1	A	5	A	2	A	4	A	2	A				
Eastbound Left+Right	22	C	16	C	28	D	18	C	31	D	20	C	99	F	37	E			>120	F	51	F			>120	F	63	F				
Eastbound Left																	>120	F	17	C	11	B			17	C	11	B				
Eastbound Right																																
Northbound Left	10	B	8	A	11	B	9	A	11	B	9	A	15	C	9	A	15	C	9	A	16	C	9	A	16	C	9	A	16	C	9	A
Northbound Through	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
Southbound Through+Right	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A	0	A
E 77th Ave and East Site Access									5	A	5	A							5	A	5	A										
Eastbound Through+Right									0	A	0	A							0	A	0	A										
Westbound Left+Through									7	A	7	A							7	A	7	A										
Northbound Left+Right									8	A	9	A							8	A	9	A										
E 77th Ave and West Site Access									5	A	6	A							6	A	6	A										
Eastbound Through+Right									0	A	0	A							0	A	0	A										
Westbound Left+Through									7	A	7	A							7	A	7	A										
Northbound Left+Right									8	A	8	A							8	A	8	A										
SIGNAL CONTROL																																
E 78th Ave at York St	13	B	8	A	15	B	10	A	15	B	9	A	18	B	17	B					18	B	17	B								
Eastbound Left	10	A	12	B	10	B	13	B	10	B	12	B	21	C	26	C					21	C	26	C								
Eastbound Through+Right	10	A	9	A	10	B	10	A	10	B	10	A	21	C	15	B					22	C	15	B								
Westbound Left	12	B	11	B	12	B	11	B	12	B	11	B	31	C	20	B					32	C	20	B								
Westbound Through+Right	10	A	9	A	10	A	9	A	10	A	9	A	20	C	15	B					20	C	15	B								
Northbound Left	17	B	5	A	20	B	5	A	20	B	5	A	8	A	14	B					29	C	14	B								
Northbound Through+Right	10	A	7	A	10	B	9	A	10	B	8	A	8	A	18	B					8	A	18	B								
Southbound Left	11	B	11	B	12	B	13	B	12	B	12	B	11	B	22	C					11	B	22	C								
Southbound Through+Right	16	B	10	A	19	B	10	A	19	B	10	A	18	B	9	A					18	B	9	A								

Note: Delay represented in average seconds per vehicle.

Table 2 - Peak Hour 95th Percentile Queue Summary

Intersection and Lanes Groups	Existing Storage Length (Feet)	2023 Existing		2030 Background		2030 Background + Project		2050 Background		2050 Background w/ Improvements		2050 Background + Project		2050 Background + Project w/ Improvements	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
E 77th Ave at York St															
Eastbound Left+Right	-	18'	20'	23'	23'	33'	33'	70'	53'			103'	80'		
Eastbound Left	150' (proposed)									55'	40'			75'	55'
Eastbound Right	150' (proposed)									5'	5'			8'	8'
Northbound Left	275'	5'	0'	5'	3'	10'	3'	13'	3'	13'	3'	20'	3'	20'	3'
Northbound Through	-	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
Southbound Through+Right	-	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
E 77th Ave and East Site Access															
Eastbound Through+Right	-					0'	0'					0'	0'		
Westbound Left+Through	-					3'	0'					3'	0'		
Northbound Left+Right	-					0'	3'					0'	3'		
E 77th Ave and West Site Access															
Eastbound Through+Right	-					0'	0'					0'	0'		
Westbound Left+Through	-					0'	0'					0'	0'		
Northbound Left+Right	-					0'	0'					0'	0'		
E 78th Ave at York St															
Eastbound Left	200'	11'	50'	11'	57'	15'	61'	23'	86'			23'	116'		
Eastbound Through+Right	-	35'	27'	46'	29'	54'	30'	115'	37'			117'	49'		
Westbound Left	200'	28'	27'	31'	30'	40'	32'	72'	42'			73'	58'		
Westbound Through+Right	-	21'	15'	24'	16'	28'	16'	59'	31'			59'	36'		
Northbound Left	225'	15'	38'	17'	42'	20'	48'	32'	66'			33'	65'		
Northbound Through+Right	-	26'	121'	29'	144'	29'	158'	35'	312'			35'	255'		
Southbound Left	200'	13'	14'	14'	15'	14'	17'	18'	21'			18'	23'		
Southbound Through+Right	-	130'	32'	158'	36'	166'	37'	271'	53'			272'	51'		

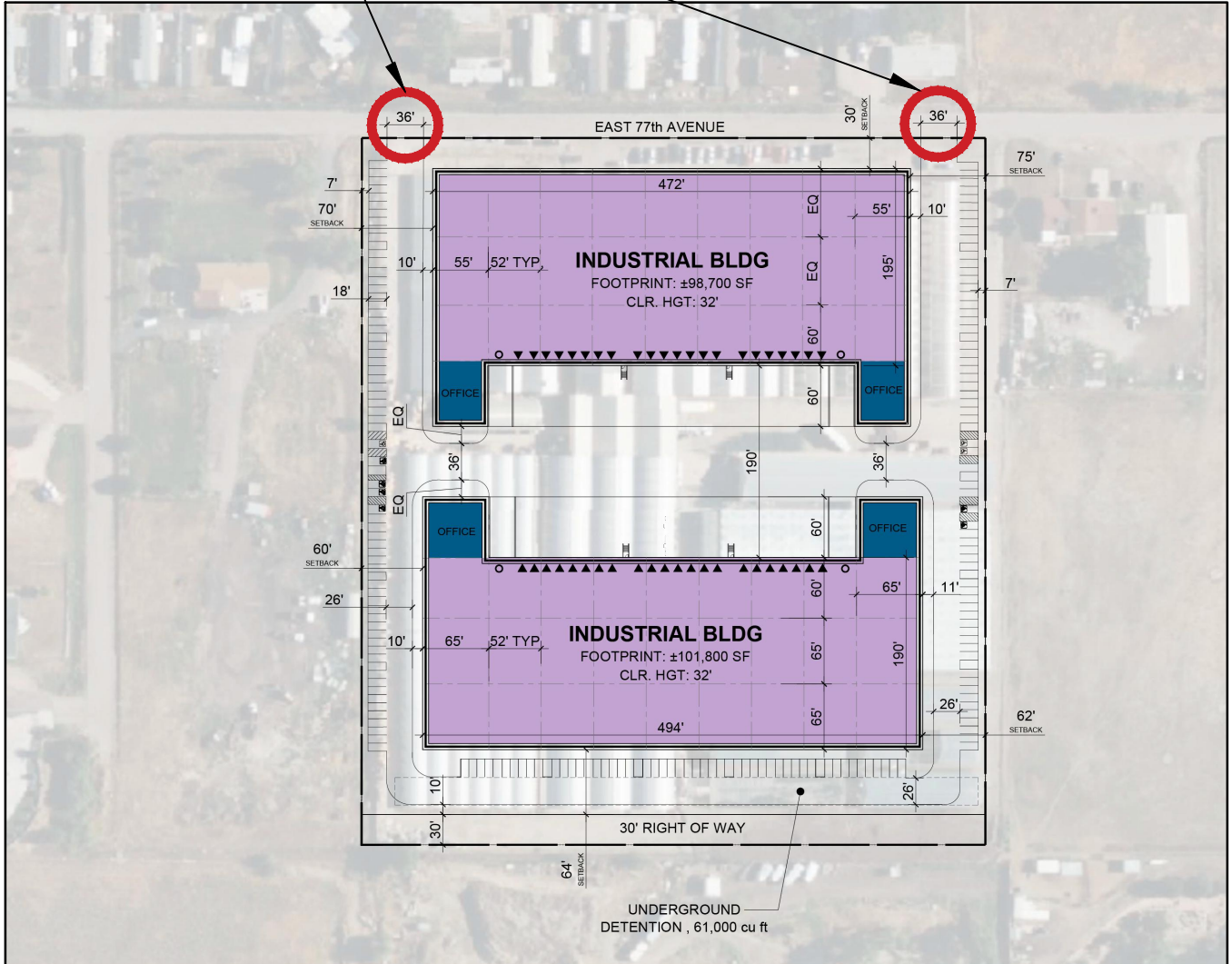
Table 3 - Trip Generation Summary

Land Use	Size	Unit	Internal Capture	Non-Auto Factor	Average Daily Trips				AM Peak Hour Trips				PM Peak Hour Trips			
					Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
<i>Site Trip Generation</i>																
ITE 130: Industrial Park	200	KSF	1.00	1.00	3.37	674	337	337	0.34	68	55	13	0.34	68	15	53
<i>Existing Count Data on E 77th Avenue East of Site</i>																
						402	204	198		53	40	13		43	7	36
<i>Existing Residential Trips</i>																
ITE 210: Single-Family Detached Housing	9	DU	1.00	1.00	9.44	85	43	42	0.74	7	2	5	0.99	9	6	3
<i>Existing Greenhouse Trips (Count Data minus Existing Residential)</i>																
						317	161	156		46	38	8		34	1	33
<i>New Added Trips (Trip Generation minus Existing Greenhouse)</i>																
						357	176	181		22	17	5		34	14	20

Source : ITE Trip Generation 10th Edition, 2017.



Proposed Access
Full Movement
Side-Street
Stop-Controlled

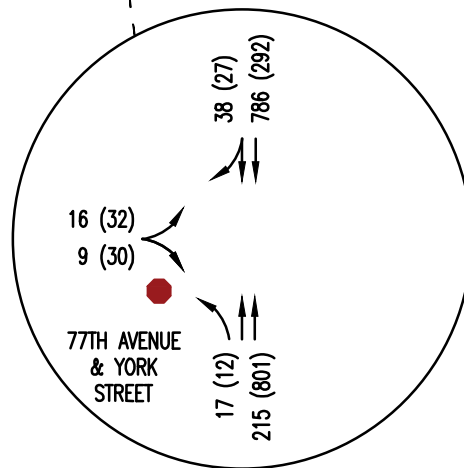
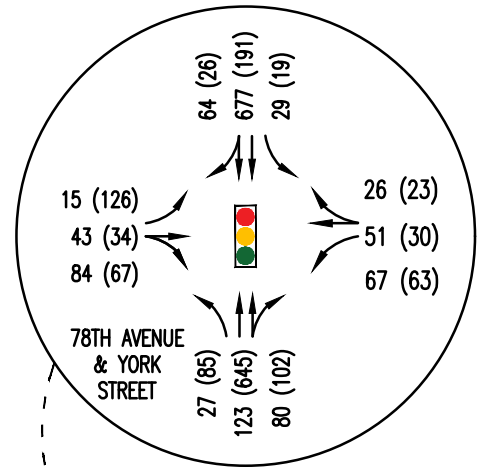


Note: This is a conceptual site plan that is used for the purpose of illustrating location and access. Refer to the design plans for most current design details.



1661 E 77TH AVENUE TRAFFIC IMPACT STUDY - ADAMS COUNTY, CO
SITE PLAN AND ACCESS

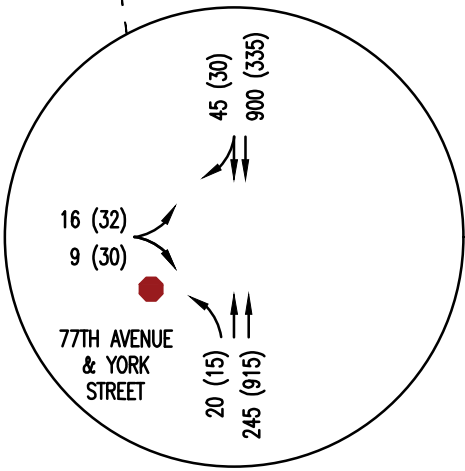
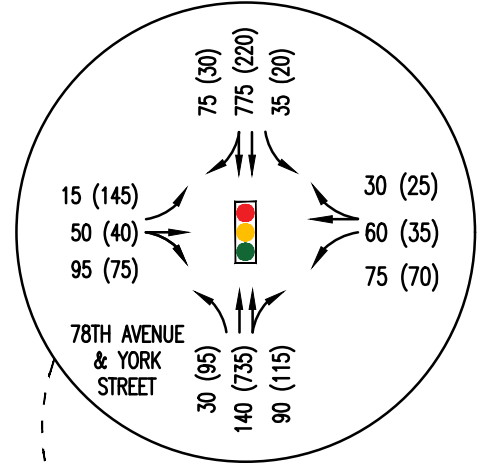
FT Project #	23029	Original Scale	NTS	Date	04/05/2023	Drawn by	SKK	Figure #	2
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KEY

XX (XX) AM (PM) PEAK HOUR TRIP VOLUME
 XX,XXX DAILY TRIP VOLUME
 → LANE CONFIGURATION

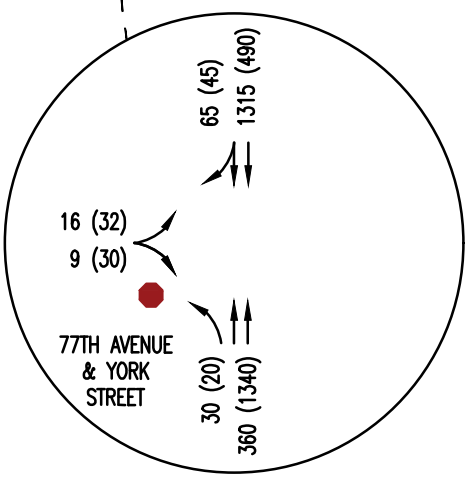
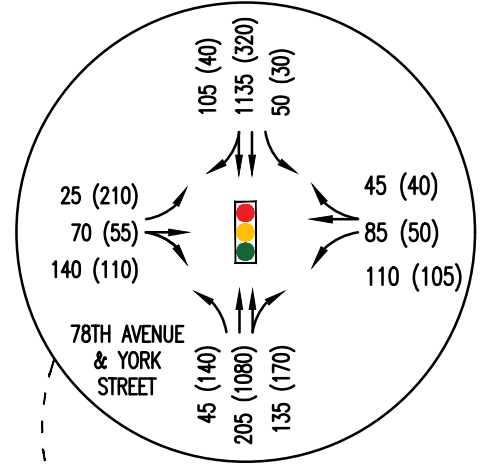




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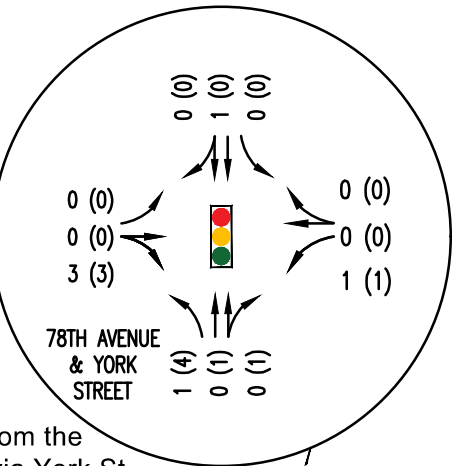
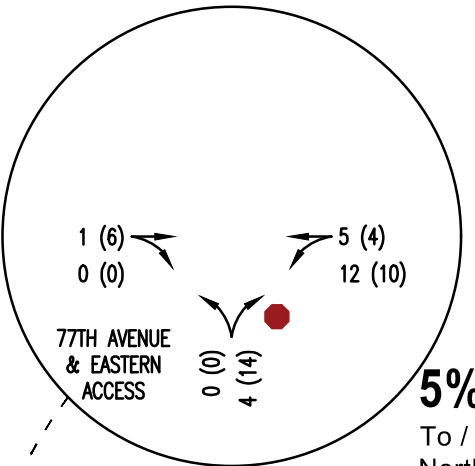
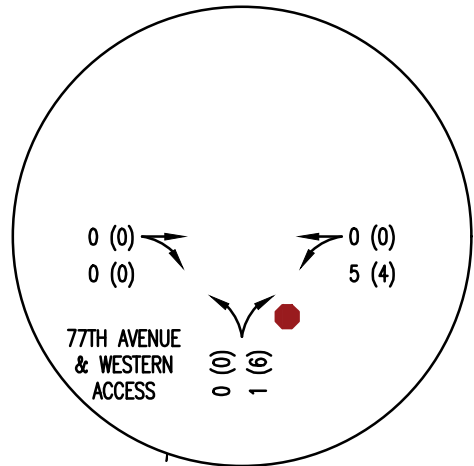
XX (XX) AM (PM) PEAK HOUR TRIP VOLUME
 XX,XXX DAILY TRIP VOLUME
 → LANE CONFIGURATION





KEY

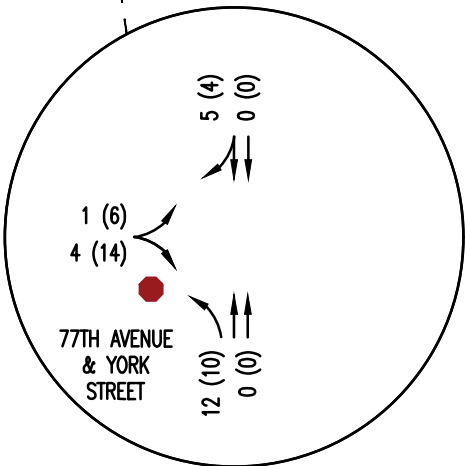
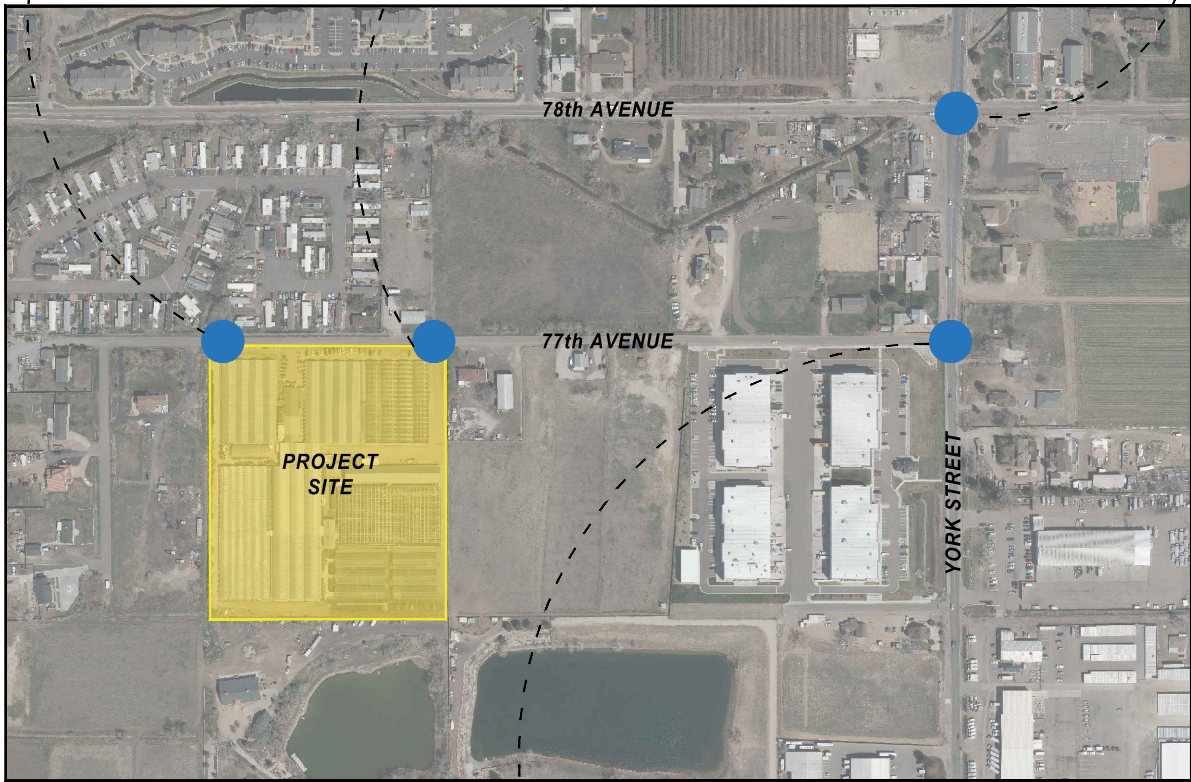
XX (XX) AM (PM) PEAK HOUR TRIP VOLUME
 XX,XXX DAILY TRIP VOLUME
 → LANE CONFIGURATION



5%
To / From the North via York St

20%
To / From the West via 78th Ave

5%
To / From the East via 78th Ave



70%
To / From the South via York Street



NOTE: VOLUMES ON THIS FIGURE ARE ONLY THE NEW ADDED TRIPS IN ADDITION TO THE CURRENT TRIPS ASSOCIATED WITH THE EXISTING GREENHOUSE USE ON THE SITE.

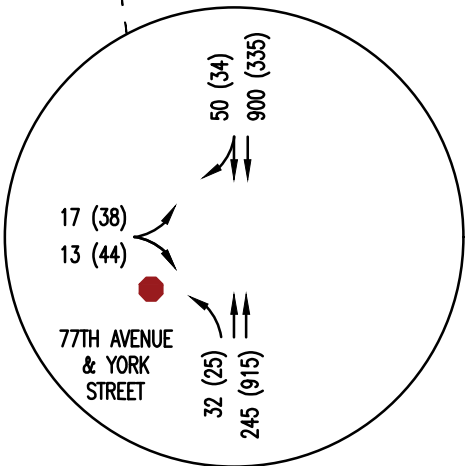
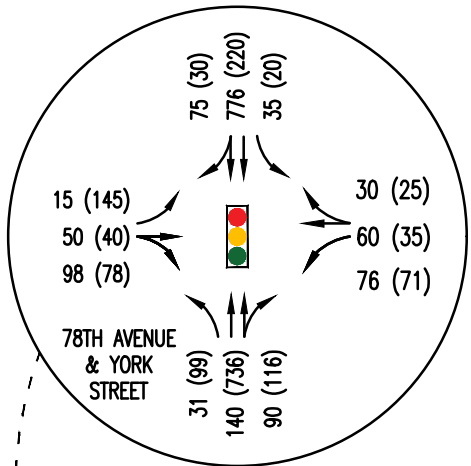
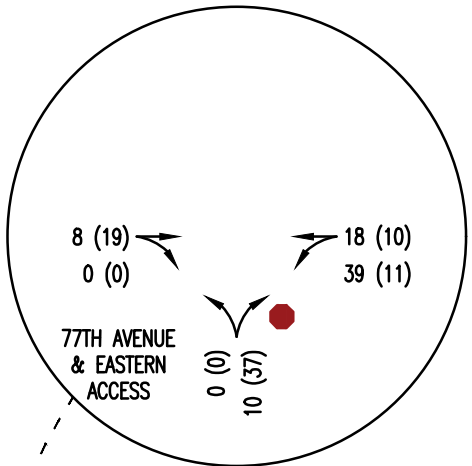
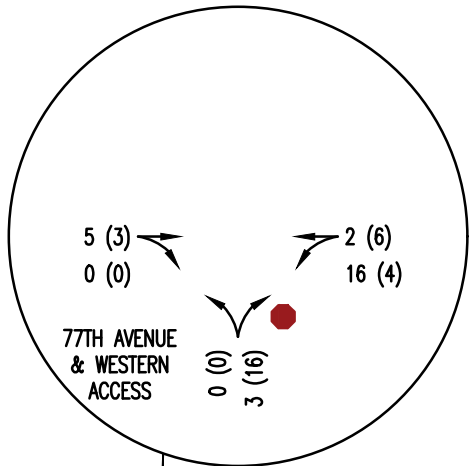
KEY

- XX (XX) AM (PM) PEAK HOUR TRIP VOLUME
- XX,XXX DAILY TRIP VOLUME
- LANE CONFIGURATION



1661 E 77TH AVENUE TRAFFIC IMPACT STUDY - ADAMS COUNTY, CO
ADDITIONAL SITE-GENERATED TRIPS AND DISTRIBUTION

FT Project #	23029	Original Scale	NTS	Date	04/11/2023	Drawn by	SKK	Figure #	6
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KEY

XX (XX) AM (PM) PEAK HOUR TRIP VOLUME

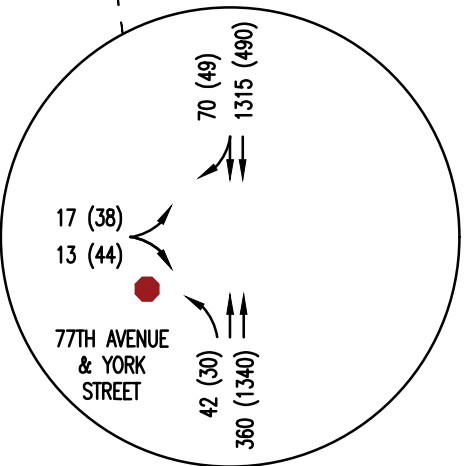
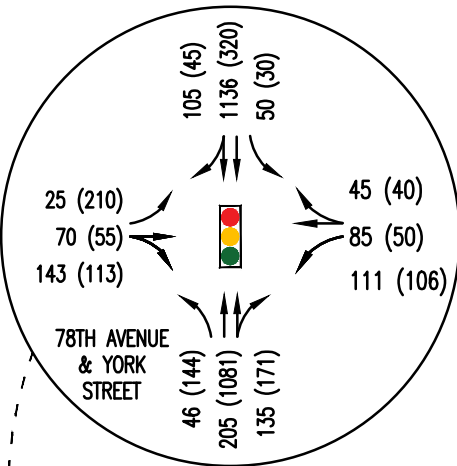
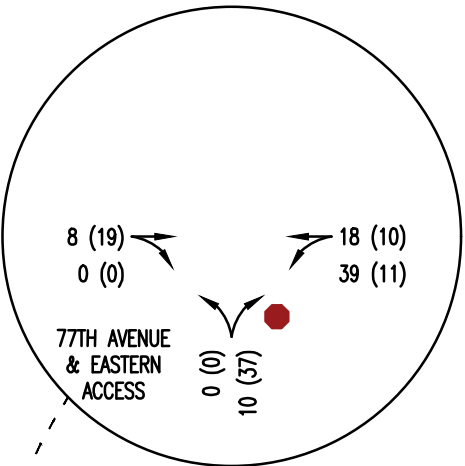
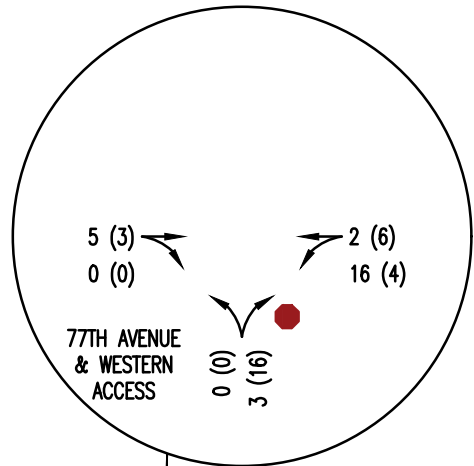
XX,XXX DAILY TRIP VOLUME

→ LANE CONFIGURATION



1661 E 77TH AVENUE TRAFFIC IMPACT STUDY - ADAMS COUNTY, CO
 YEAR 2030 BACKGROUND + PROJECT TRAFFIC VOLUMES

FT Project #	23029	Original Scale	NTS	Date	04/11/2023	Drawn by	SKK	Figure #	7
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KEY

XX (XX) AM (PM) PEAK HOUR TRIP VOLUME

XX,XXX DAILY TRIP VOLUME

→ LANE CONFIGURATION



1661 E 77TH AVENUE TRAFFIC IMPACT STUDY - ADAMS COUNTY, CO
 YEAR 2050 BACKGROUND + PROJECT TRAFFIC VOLUMES

FT Project #	23029	Original Scale	NTS	Date	04/11/2023	Drawn by	SKK	Figure #	8
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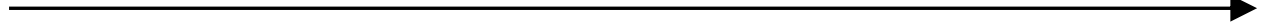
Appendix:

Level of Service Definitions

Existing Traffic Data

Intersection Capacity Worksheets





Level of Service Definitions

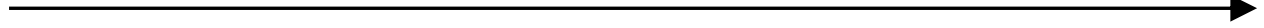


LEVEL OF SERVICE (LOS) DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, “Levels of Service” (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers can maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome, and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however, the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion.

* Delay ranges based on 2010 Highway Capacity Manual Criteria



Existing Traffic Data



Location: E 77th Ave E/O Project Site
 Date Range: 3/21/2023 - 3/27/2023
 Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	3/21/2023			3/22/2023			3/23/2023			3/24/2023			3/25/2023			3/26/2023			3/27/2023					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
1:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
4:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
5:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
6:00 AM	3	9	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	9	12
7:00 AM	13	40	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	40	53
8:00 AM	16	15	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	15	31
9:00 AM	5	10	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	10	15
10:00 AM	12	15	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	15	27
11:00 AM	11	15	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	15	26
12:00 PM	22	16	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	16	38
1:00 PM	18	16	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	16	34
2:00 PM	8	7	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7	15
3:00 PM	11	12	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	12	23
4:00 PM	15	16	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	16	31
5:00 PM	36	7	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	7	43
6:00 PM	7	9	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	9	16
7:00 PM	13	7	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	7	20
8:00 PM	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4
9:00 PM	3	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	6
10:00 PM	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3
11:00 PM	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4
Total	198	204	402	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	204	402
Percent	49%	51%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49%	51%	-
AM Peak	08:00	07:00	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	08:00	07:00	07:00
Vol.	16	40	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	40	53
PM Peak	17:00	12:00	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17:00	12:00	17:00
Vol.	36	16	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	16	43

1. Mid-week average includes data between Tuesday and Thursday.

Location: York St BTWN E 77th Ave & E 78th Ave
 Date Range: 3/21/2023 - 3/27/2023
 Site Code: 02

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	3/21/2023			3/22/2023			3/23/2023			3/24/2023			3/25/2023			3/26/2023			3/27/2023					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	29	14	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	14	43
1:00 AM	17	24	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	24	41
2:00 AM	18	20	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	20	38
3:00 AM	23	57	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	57	80
4:00 AM	24	120	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	120	144
5:00 AM	91	395	486	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91	395	486
6:00 AM	141	744	885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	141	744	885
7:00 AM	229	816	1,045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	229	816	1,045
8:00 AM	184	509	693	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	184	509	693
9:00 AM	191	320	511	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	191	320	511
10:00 AM	198	255	453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	255	453
11:00 AM	255	288	543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	255	288	543
12:00 PM	293	266	559	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	293	266	559
1:00 PM	285	241	526	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	285	241	526
2:00 PM	347	253	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	253	600
3:00 PM	621	311	932	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	621	311	932
4:00 PM	696	312	1,008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	696	312	1,008
5:00 PM	812	321	1,133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	812	321	1,133
6:00 PM	494	268	762	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	494	268	762
7:00 PM	308	227	535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	308	227	535
8:00 PM	238	155	393	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	238	155	393
9:00 PM	197	106	303	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	197	106	303
10:00 PM	97	62	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97	62	159
11:00 PM	59	41	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	41	100
Total	5,847	6,125	11,972	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,847	6,125	11,972
Percent	49%	51%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49%	51%	-
AM Peak	11:00	07:00	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11:00	07:00	07:00
Vol.	255	816	1,045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	255	816	1,045
PM Peak	17:00	17:00	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17:00	17:00	17:00
Vol.	812	321	1,133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	812	321	1,133

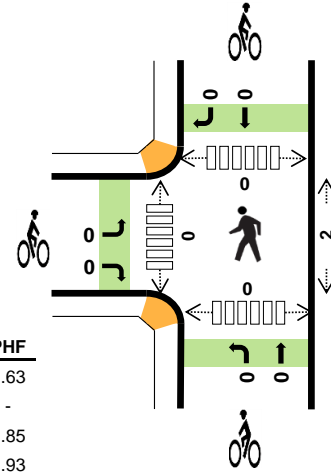
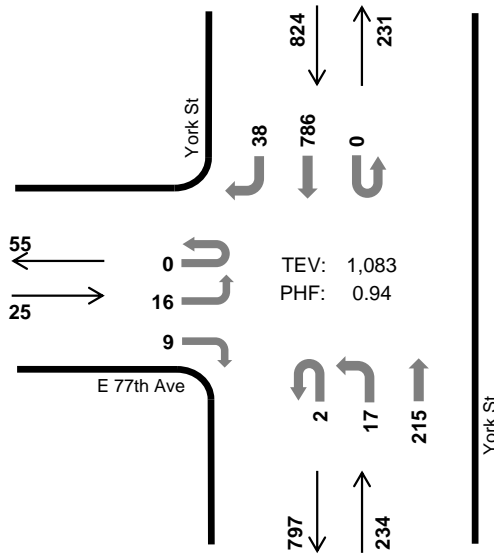
1. Mid-week average includes data between Tuesday and Thursday.

York St E 77th Ave



Peak Hour

Date: 03/21/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	4.0%	0.63
WB	-	-
NB	6.8%	0.85
SB	3.3%	0.93
TOTAL	4.1%	0.94

Two-Hour Count Summaries

Interval Start	E 77th Ave				N/A				York St				York St				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		Northbound		Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	3	0	1	0	0	0	0	0	4	40	0	0	0	181	10	239	0	
7:15 AM	0	2	0	5	0	0	0	0	2	9	48	0	0	0	198	13	277	0	
7:30 AM	0	3	0	1	0	0	0	0	0	0	62	0	0	0	217	5	288	0	
7:45 AM	0	8	0	2	0	0	0	0	0	4	65	0	0	0	190	10	279	1,083	
8:00 AM	0	1	0	4	0	0	0	0	0	3	51	0	0	0	148	3	210	1,054	
8:15 AM	0	3	0	5	0	0	0	0	2	3	34	0	0	0	127	3	177	954	
8:30 AM	0	1	0	4	0	0	0	0	0	9	42	0	0	0	125	3	184	850	
8:45 AM	0	0	0	1	0	0	0	0	1	2	48	0	0	0	114	3	169	740	
Count Total	0	21	0	23	0	0	0	0	5	34	390	0	0	0	1,300	50	1,823	0	
Peak Hour	All	0	16	0	9	0	0	0	0	2	17	215	0	0	0	786	38	1,083	0
	HV	0	0	0	1	0	0	0	0	0	1	15	0	0	0	27	0	44	0
	HV%	-	0%	-	11%	-	-	-	-	0%	6%	7%	-	-	-	3%	0%	4%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	7	10	0	0	0	0	0	1	0	0	0	1
7:15 AM	1	0	5	8	14	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	4	7	11	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	4	5	9	0	0	0	0	0	1	0	0	0	1
8:00 AM	2	0	3	6	11	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	0	1	5	8	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	6	5	12	0	0	0	0	0	0	0	0	0	0
8:45 AM	1	0	6	3	10	0	0	0	0	0	0	1	0	0	1
Count Total	7	0	32	46	85	0	0	0	0	0	2	1	0	0	3
Peak Hr	1	0	16	27	44	0	0	0	0	0	2	0	0	0	2

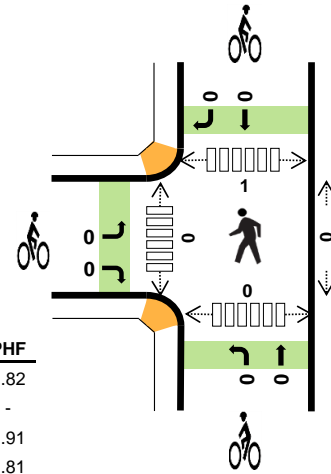
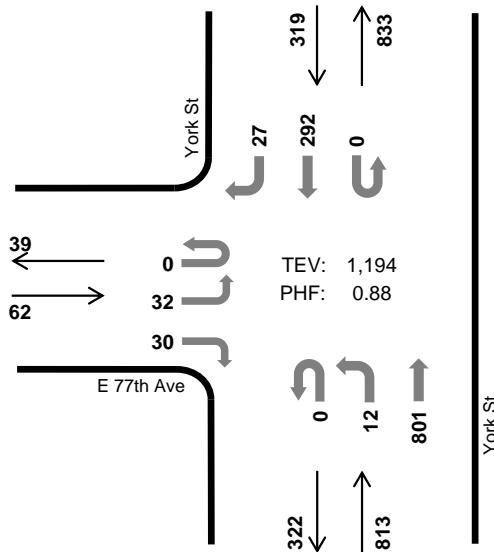
Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	E 77th Ave				N/A				York St				York St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	7	0	10	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	8	0	14	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	11	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	3	0	0	0	5	0	9	44
8:00 AM	0	0	0	2	0	0	0	0	0	0	3	0	0	0	6	0	11	45
8:15 AM	0	0	0	2	0	0	0	0	0	0	1	0	0	0	5	0	8	39
8:30 AM	0	0	0	1	0	0	0	0	0	1	5	0	0	0	5	0	12	40
8:45 AM	0	0	0	1	0	0	0	0	0	0	6	0	0	0	3	0	10	41
Count Total	0	0	0	7	0	0	0	0	0	2	30	0	0	0	46	0	85	0
Peak Hour	0	0	0	1	0	0	0	0	0	1	15	0	0	0	27	0	44	0
Two-Hour Count Summaries - Bikes																		
Interval Start	E 77th Ave			N/A			York St			York St			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		

York St E 77th Ave



Peak Hour

Date: 03/21/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.0%	0.82
WB	-	-
NB	3.0%	0.91
SB	3.8%	0.81
TOTAL	3.0%	0.88

Two-Hour Count Summaries

Interval Start	E 77th Ave				N/A				York St				York St				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	7	0	6	0	0	0	0	0	4	181	0	0	0	89	0	287	0	
4:15 PM	0	2	0	4	0	0	0	0	1	3	184	0	1	0	68	5	268	0	
4:30 PM	0	6	0	2	0	0	0	0	0	5	180	0	0	0	74	4	271	0	
4:45 PM	0	1	0	0	0	0	0	0	0	1	162	0	0	0	67	5	236	1,062	
5:00 PM	0	8	0	10	0	0	0	0	0	3	221	0	0	0	91	7	340	1,115	
5:15 PM	0	12	0	7	0	0	0	0	0	2	209	0	0	0	74	5	309	1,156	
5:30 PM	0	4	0	10	0	0	0	0	0	3	180	0	0	0	67	8	272	1,157	
5:45 PM	0	8	0	3	0	0	0	0	0	4	191	0	0	0	60	7	273	1,194	
Count Total	0	48	0	42	0	0	0	0	1	25	1,508	0	1	0	590	41	2,256	0	
Peak Hour	All	0	32	0	30	0	0	0	0	0	12	801	0	0	0	292	27	1,194	0
	HV	0	0	0	0	0	0	0	0	0	1	23	0	0	0	12	0	36	0
	HV%	-	0%	-	0%	-	-	-	-	-	8%	3%	-	-	-	4%	0%	3%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	6	4	11	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	7	3	10	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	6	2	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	9	3	12	0	0	0	0	0	0	4	0	0	4
5:00 PM	0	0	7	6	13	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	6	2	8	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	5	4	9	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0
Count Total	1	0	52	24	77	0	0	0	0	0	0	7	1	0	8
Peak Hr	0	0	24	12	36	0	0	0	0	0	0	0	1	0	1

Two-Hour Count Summaries - Heavy Vehicles														15-min Total	Rolling One Hour			
Interval Start	E 77th Ave				N/A				York St				York St					
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	1	5	0	0	0	4	0		
4:15 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	3	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0		
5:00 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0		
5:15 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0		
5:30 PM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	4	0		
5:45 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0		
Count Total	0	0	0	1	0	0	0	0	0	2	50	0	0	0	24	0		
Peak Hour	0	0	0	0	0	0	0	0	0	1	23	0	0	0	12	0		

Two-Hour Count Summaries - Bikes														15-min Total	Rolling One Hour
Interval Start	E 77th Ave			N/A			York St			York St					
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0			
Count Total	0	0	0	0	0	0	0	0	0	0	0	0			
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0			

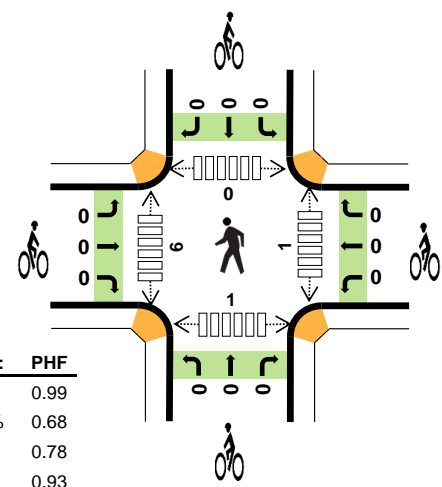
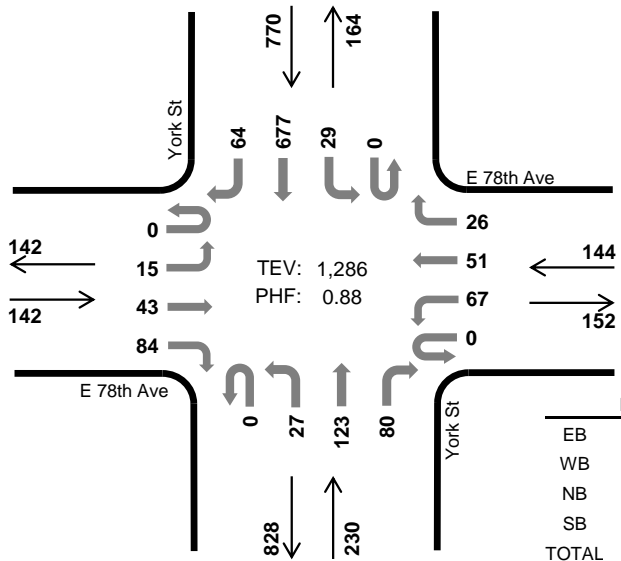
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

York St E 78th Ave



Peak Hour

Date: 03/21/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	4.2%	0.99
WB	11.1%	0.68
NB	6.5%	0.78
SB	1.9%	0.93
TOTAL	4.0%	0.88

Two-Hour Count Summaries

Interval Start	E 78th Ave Eastbound				E 78th Ave Westbound				York St Northbound				York St Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	3	7	26	0	11	12	0	0	2	26	15	0	3	155	12	272	0	
7:15 AM	0	4	11	21	0	15	8	2	0	4	31	13	0	1	173	17	300	0	
7:30 AM	0	4	14	17	0	25	10	8	0	11	36	18	0	7	186	13	349	0	
7:45 AM	0	4	11	20	0	16	21	16	0	10	30	34	0	18	163	22	365	1,286	
8:00 AM	0	6	4	15	0	18	17	11	0	3	34	14	0	8	119	13	262	1,276	
8:15 AM	0	6	3	9	0	11	16	1	0	7	23	7	0	3	110	12	208	1,184	
8:30 AM	0	6	7	14	0	17	4	1	0	5	29	8	1	3	93	13	201	1,036	
8:45 AM	0	2	5	17	0	10	3	0	1	4	35	9	0	3	85	12	186	857	
Count Total	0	35	62	139	0	123	91	39	1	46	244	118	1	46	1,084	114	2,143	0	
Peak Hour	All	0	15	43	84	0	67	51	26	0	27	123	80	0	29	677	64	1,286	0
	HV	0	0	3	3	0	9	3	4	0	1	12	2	0	0	15	0	52	0
	HV%	-	0%	7%	4%	-	13%	6%	15%	-	4%	10%	3%	-	0%	2%	0%	4%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	3	3	4	11	0	0	0	0	0	1	1	0	0	2
7:15 AM	4	5	4	3	16	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	5	5	4	14	0	0	0	0	0	0	2	0	1	3
7:45 AM	1	3	3	4	11	0	0	0	0	0	0	3	0	0	3
8:00 AM	3	3	3	3	12	0	0	0	0	0	0	0	0	0	0
8:15 AM	1	3	1	3	8	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	2	5	3	11	0	0	0	0	0	0	0	1	0	1
8:45 AM	1	1	6	3	11	0	0	0	0	0	0	0	1	0	1
Count Total	12	25	30	27	94	0	0	0	0	0	1	6	2	1	10
Peak Hour	6	16	15	15	52	0	0	0	0	0	1	6	0	1	8

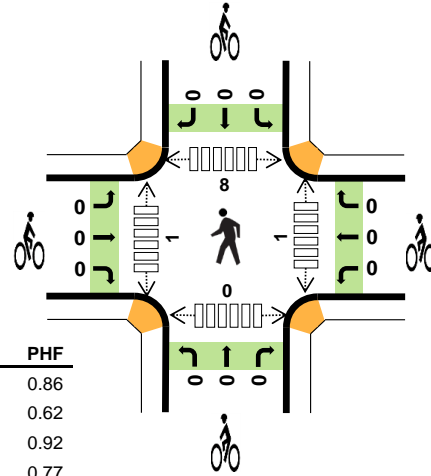
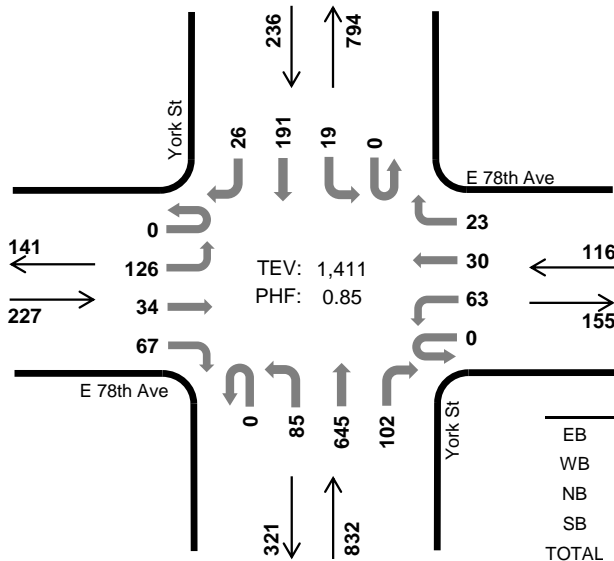
Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	E 78th Ave				E 78th Ave				York St				York St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	1	0	0	3	0	0	0	0	3	0	0	0	0	4	0	11	0
7:15 AM	0	0	2	2	0	3	0	2	0	0	4	0	0	0	3	0	16	0	
7:30 AM	0	0	0	0	0	3	1	1	0	1	3	1	0	0	4	0	14	0	
7:45 AM	0	0	0	1	0	0	2	1	0	0	2	1	0	0	4	0	11	52	
8:00 AM	0	0	1	2	0	2	0	1	0	0	2	1	0	1	2	0	12	53	
8:15 AM	0	1	0	0	0	2	0	1	0	0	1	0	0	0	3	0	8	45	
8:30 AM	0	0	1	0	0	2	0	0	0	0	4	1	0	0	3	0	11	42	
8:45 AM	0	0	0	1	0	1	0	0	0	0	4	2	0	0	1	2	11	42	
Count Total	0	1	5	6	0	16	3	6	0	1	23	6	0	1	24	2	94	0	
Peak Hour	0	0	3	3	0	9	3	4	0	1	12	2	0	0	15	0	52	0	
Two-Hour Count Summaries - Bikes																			
Interval Start	E 78th Ave			E 78th Ave			York St			York St			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																			

York St E 78th Ave



Peak Hour

Date: 03/21/2023
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	2.6%	0.86
WB	2.6%	0.62
NB	2.9%	0.92
SB	3.4%	0.77
TOTAL	2.9%	0.85

Two-Hour Count Summaries

Interval Start	E 78th Ave Eastbound				E 78th Ave Westbound				York St Northbound				York St Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	39	6	12	0	20	10	6	0	17	149	15	0	4	54	9	341	0	
4:15 PM	0	21	8	11	0	19	9	3	1	10	161	22	0	1	42	2	310	0	
4:30 PM	0	26	10	11	0	27	8	4	0	18	149	23	0	3	40	4	323	0	
4:45 PM	0	33	9	11	0	16	7	1	0	16	118	24	0	4	45	11	295	1,269	
5:00 PM	0	42	8	16	0	22	13	12	0	21	178	27	0	5	63	9	416	1,344	
5:15 PM	0	25	9	17	0	16	6	6	0	27	160	27	0	5	45	12	355	1,389	
5:30 PM	0	24	9	18	0	12	5	2	0	16	161	18	0	5	45	2	317	1,383	
5:45 PM	0	35	8	16	0	13	6	3	0	21	146	30	0	4	38	3	323	1,411	
Count Total	0	245	67	112	0	145	64	37	1	146	1,222	186	0	31	372	52	2,680	0	
Peak Hour	All	0	126	34	67	0	63	30	23	0	85	645	102	0	19	191	26	1,411	0
	HV	0	2	2	2	0	2	1	0	0	3	11	10	0	0	8	0	41	0
	HV%	-	2%	6%	3%	-	3%	3%	0%	-	4%	2%	10%	-	0%	4%	0%	3%	0

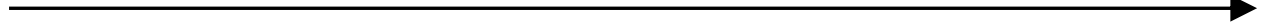
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	1	5	4	12	0	0	0	0	0	0	0	0	0	0
4:15 PM	4	0	8	2	14	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	3	6	2	14	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	3	7	1	12	0	0	0	0	0	0	0	0	0	0
5:00 PM	2	2	7	4	15	0	0	0	0	0	1	0	2	0	3
5:15 PM	3	1	7	0	11	0	0	0	0	0	0	0	5	0	5
5:30 PM	0	0	4	4	8	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	6	0	7	0	0	0	0	0	0	1	1	0	2
Count Total	16	10	50	17	93	0	0	0	0	0	1	1	8	0	10
Peak Hour	6	3	24	8	41	0	0	0	0	0	1	1	8	0	10

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	E 78th Ave				E 78th Ave				York St				York St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	1	0	0	1	0	0	0	0	4	1	0	1	3	0	12	0
4:15 PM	0	0	3	1	0	0	0	0	0	0	2	6	0	0	2	0	14	0
4:30 PM	0	0	3	0	0	1	2	0	0	0	2	4	0	1	1	0	14	0
4:45 PM	0	0	1	0	0	2	1	0	0	0	3	4	0	0	1	0	12	52
5:00 PM	0	0	1	1	0	1	1	0	0	0	5	2	0	0	4	0	15	55
5:15 PM	0	1	1	1	0	1	0	0	0	0	2	3	0	0	0	0	11	52
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	0	8	46
5:45 PM	0	1	0	0	0	0	0	0	0	0	1	3	0	0	0	0	7	41
Count Total	0	3	10	3	0	6	4	0	0	3	22	25	0	2	15	0	93	0
Peak Hour	0	2	2	2	0	2	1	0	0	3	11	10	0	0	8	0	41	0

Two-Hour Count Summaries - Bikes																		
Interval Start	E 78th Ave			E 78th Ave			York St			York St			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.
























***Intersection Capacity Worksheets:
Existing***



HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2023 AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	43	84	67	51	26	27	123	80	29	677	64
Future Volume (veh/h)	15	43	84	67	51	26	27	123	80	29	677	64
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1841	1767	1856	1841	1885	1722	1870	1900	1678	1900
Adj Flow Rate, veh/h	16	47	104	100	84	63	44	145	136	72	744	88
Peak Hour Factor	0.92	0.92	0.81	0.67	0.61	0.41	0.61	0.85	0.59	0.40	0.91	0.73
Percent Heavy Veh, %	0	7	4	9	3	4	1	12	2	0	15	0
Cap, veh/h	594	199	440	554	394	295	286	664	576	536	1148	136
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1260	497	1101	1168	984	738	665	1659	1440	1116	2871	339
Grp Volume(v), veh/h	16	0	151	100	0	147	44	143	138	72	413	419
Grp Sat Flow(s),veh/h/ln	1260	0	1598	1168	0	1723	665	1636	1463	1116	1594	1617
Q Serve(g_s), s	0.4	0.0	2.8	2.8	0.0	2.5	2.6	2.6	2.8	2.1	9.4	9.4
Cycle Q Clear(g_c), s	2.9	0.0	2.8	5.6	0.0	2.5	12.0	2.6	2.8	4.9	9.4	9.4
Prop In Lane	1.00		0.69	1.00		0.43	1.00		0.98	1.00		0.21
Lane Grp Cap(c), veh/h	594	0	639	554	0	689	286	654	585	536	638	647
V/C Ratio(X)	0.03	0.00	0.24	0.18	0.00	0.21	0.15	0.22	0.24	0.13	0.65	0.65
Avail Cap(c_a), veh/h	594	0	639	554	0	689	286	654	585	536	638	647
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	0.0	8.9	10.8	0.0	8.9	15.8	8.9	8.9	10.6	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	0.9	0.7	0.0	0.7	1.1	0.8	0.9	0.5	5.0	5.0
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	0.1	0.0	0.9	0.7	0.0	0.8	0.4	0.8	0.8	0.5	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.9	0.0	9.8	11.5	0.0	9.6	16.9	9.6	9.9	11.1	16.0	15.9
LnGrp LOS	A	A	A	B	A	A	B	A	A	B	B	B
Approach Vol, veh/h		167			247			325			904	
Approach Delay, s/veh		9.8			10.4			10.7			15.5	
Approach LOS		A			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		14.0		4.9		11.4		7.6				
Green Ext Time (p_c), s		0.7		0.7		2.9		0.8				
Intersection Summary												
HCM 6th Ctrl Delay				13.2								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y*		Y	↑↑	↑↑	
Traffic Vol, veh/h	16	9	17	215	786	38
Future Vol, veh/h	16	9	17	215	786	38
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	32	20	36	259	864	52






















Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1092	458	916	0	0
Stage 1	890	-	-	-	-
Stage 2	202	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-
Pot Cap-1 Maneuver	212	526	716	-	-
Stage 1	366	-	-	-	-
Stage 2	818	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	201	526	716	-	-
Mov Cap-2 Maneuver	201	-	-	-	-
Stage 1	348	-	-	-	-
Stage 2	818	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22	1.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	716	-	264	-	-
HCM Lane V/C Ratio	0.051	-	0.197	-	-
HCM Control Delay (s)	10.3	-	22	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2023 PM Existing

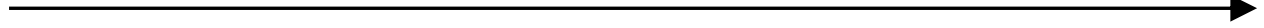
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	126	34	67	63	30	23	85	645	102	19	191	26
Future Volume (veh/h)	126	34	67	63	30	23	85	645	102	19	191	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	1856	1856	1856	1900	1841	1870	1752	1900	1841	1900
Adj Flow Rate, veh/h	168	37	73	88	52	48	108	709	120	21	251	48
Peak Hour Factor	0.75	0.92	0.92	0.72	0.58	0.48	0.79	0.91	0.85	0.92	0.76	0.54
Percent Heavy Veh, %	2	6	3	3	3	0	4	2	10	0	4	0
Cap, veh/h	630	218	429	613	355	328	525	1216	206	370	1175	221
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.40	0.40	0.40
Sat Flow, veh/h	1295	544	1074	1273	888	820	1063	3040	514	672	2937	553
Grp Volume(v), veh/h	168	0	110	88	0	100	108	414	415	21	148	151
Grp Sat Flow(s),veh/h/ln	1295	0	1618	1273	0	1708	1063	1777	1778	672	1749	1741
Q Serve(g_s), s	4.3	0.0	2.0	2.2	0.0	1.7	1.8	3.9	3.9	1.0	2.5	2.6
Cycle Q Clear(g_c), s	6.0	0.0	2.0	4.1	0.0	1.7	4.4	3.9	3.9	4.9	2.5	2.6
Prop In Lane	1.00		0.66	1.00		0.48	1.00		0.29	1.00		0.32
Lane Grp Cap(c), veh/h	630	0	647	613	0	683	525	711	711	370	699	696
V/C Ratio(X)	0.27	0.00	0.17	0.14	0.00	0.15	0.21	0.58	0.58	0.06	0.21	0.22
Avail Cap(c_a), veh/h	630	0	647	613	0	683	525	711	711	370	699	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.5	0.0	8.7	10.0	0.0	8.6	3.6	3.1	3.1	11.0	8.8	8.9
Incr Delay (d2), s/veh	1.0	0.0	0.6	0.5	0.0	0.5	0.9	3.5	3.5	0.3	0.7	0.7
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	1.1	0.0	0.6	0.6	0.0	0.5	0.3	1.3	1.3	0.1	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	0.0	9.3	10.5	0.0	9.1	4.5	6.6	6.6	11.3	9.5	9.6
LnGrp LOS	B	A	A	B	A	A	A	A	A	B	A	A
Approach Vol, veh/h		278			188			937			320	
Approach Delay, s/veh		10.6			9.7			6.3			9.7	
Approach LOS		B			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		6.4		8.0		6.9		6.1				
Green Ext Time (p_c), s		4.4		0.8		1.3		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			8.0									
HCM 6th LOS			A									

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	32	30	12	801	292	27
Future Vol, veh/h	32	30	12	801	292	27
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	48	40	16	880	365	32

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	853	199	397	0	0
Stage 1	381	-	-	-	-
Stage 2	472	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-
Pot Cap-1 Maneuver	302	815	1116	-	-
Stage 1	666	-	-	-	-
Stage 2	600	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	298	815	1116	-	-
Mov Cap-2 Maneuver	298	-	-	-	-
Stage 1	657	-	-	-	-
Stage 2	600	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.9	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1116	-	419	-	-
HCM Lane V/C Ratio	0.014	-	0.209	-	-
HCM Control Delay (s)	8.3	-	15.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-
























***Intersection Capacity Worksheets:
2030 Background***



HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2030 AM Background
 1661 E 77th Ave TIS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	50	95	75	60	30	30	140	90	35	775	75
Future Volume (veh/h)	15	50	95	75	60	30	30	140	90	35	775	75
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1841	1767	1856	1841	1885	1722	1870	1900	1678	1900
Adj Flow Rate, veh/h	16	54	117	112	98	73	49	165	153	88	852	103
Peak Hour Factor	0.92	0.92	0.81	0.67	0.61	0.41	0.61	0.85	0.59	0.40	0.91	0.73
Percent Heavy Veh, %	0	7	4	9	3	4	1	12	2	0	15	0
Cap, veh/h	572	202	438	536	395	294	246	665	575	514	1145	138
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1233	505	1094	1147	988	736	592	1662	1438	1078	2863	346
Grp Volume(v), veh/h	16	0	171	112	0	171	49	162	156	88	474	481
Grp Sat Flow(s),veh/h/ln	1233	0	1599	1147	0	1723	592	1636	1463	1078	1594	1615
Q Serve(g_s), s	0.4	0.0	3.2	3.3	0.0	3.0	3.5	3.0	3.2	2.7	11.4	11.4
Cycle Q Clear(g_c), s	3.4	0.0	3.2	6.5	0.0	3.0	14.9	3.0	3.2	5.9	11.4	11.4
Prop In Lane	1.00		0.68	1.00		0.43	1.00		0.98	1.00		0.21
Lane Grp Cap(c), veh/h	572	0	640	536	0	689	246	654	585	514	638	646
V/C Ratio(X)	0.03	0.00	0.27	0.21	0.00	0.25	0.20	0.25	0.27	0.17	0.74	0.74
Avail Cap(c_a), veh/h	572	0	640	536	0	689	246	654	585	514	638	646
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	9.1	11.3	0.0	9.0	17.9	9.0	9.1	11.0	11.5	11.5
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.9	0.0	0.9	1.8	0.9	1.1	0.7	7.7	7.6
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	0.1	0.0	1.0	0.8	0.0	1.0	0.5	1.0	0.9	0.6	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	10.1	12.1	0.0	9.9	19.7	9.9	10.2	11.8	19.2	19.1
LnGrp LOS	B	A	B	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h		187			283			367			1043	
Approach Delay, s/veh		10.1			10.8			11.3			18.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		16.9		5.4		13.4		8.5				
Green Ext Time (p_c), s		0.3		0.7		2.5		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				15.1								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	16	9	20	245	900	45
Future Vol, veh/h	16	9	20	245	900	45
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	32	20	43	295	989	62






















Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1254	526	1051	0	0
Stage 1	1020	-	-	-	-
Stage 2	234	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-
Pot Cap-1 Maneuver	167	474	635	-	-
Stage 1	313	-	-	-	-
Stage 2	789	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	156	474	635	-	-
Mov Cap-2 Maneuver	156	-	-	-	-
Stage 1	292	-	-	-	-
Stage 2	789	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.7	1.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	635	-	210	-	-
HCM Lane V/C Ratio	0.067	-	0.248	-	-
HCM Control Delay (s)	11.1	-	27.7	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2030 PM Background
 1661 E 77th Ave TIS

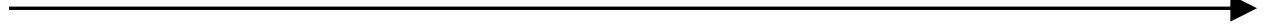
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	40	75	70	35	25	95	735	115	20	220	30
Future Volume (veh/h)	145	40	75	70	35	25	95	735	115	20	220	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	1856	1856	1856	1900	1841	1870	1752	1900	1841	1900
Adj Flow Rate, veh/h	193	43	82	97	60	52	120	808	135	22	289	56
Peak Hour Factor	0.75	0.92	0.92	0.72	0.58	0.48	0.79	0.91	0.85	0.92	0.76	0.54
Percent Heavy Veh, %	2	6	3	3	3	0	4	2	10	0	4	0
Cap, veh/h	619	223	425	599	367	318	500	1219	204	333	1172	224
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.40	0.40	0.40
Sat Flow, veh/h	1281	557	1063	1256	917	795	1019	3047	509	604	2929	560
Grp Volume(v), veh/h	193	0	125	97	0	112	120	471	472	22	171	174
Grp Sat Flow(s),veh/h/ln	1281	0	1620	1256	0	1712	1019	1777	1779	604	1749	1740
Q Serve(g_s), s	5.1	0.0	2.3	2.4	0.0	1.9	2.3	5.1	5.1	1.2	2.9	3.0
Cycle Q Clear(g_c), s	7.0	0.0	2.3	4.7	0.0	1.9	5.3	5.1	5.1	6.3	2.9	3.0
Prop In Lane	1.00		0.66	1.00		0.46	1.00		0.29	1.00		0.32
Lane Grp Cap(c), veh/h	619	0	648	599	0	685	500	711	711	333	699	696
V/C Ratio(X)	0.31	0.00	0.19	0.16	0.00	0.16	0.24	0.66	0.66	0.07	0.24	0.25
Avail Cap(c_a), veh/h	619	0	648	599	0	685	500	711	711	333	699	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	8.8	10.3	0.0	8.7	3.9	3.2	3.2	11.9	9.0	9.0
Incr Delay (d2), s/veh	1.3	0.0	0.7	0.6	0.0	0.5	1.1	4.8	4.8	0.4	0.8	0.9
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	1.3	0.0	0.7	0.6	0.0	0.6	0.4	1.7	1.7	0.2	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	9.4	10.9	0.0	9.2	5.0	8.0	8.0	12.3	9.8	9.9
LnGrp LOS	B	A	A	B	A	A	A	A	A	B	A	A
Approach Vol, veh/h		318			209			1063			367	
Approach Delay, s/veh		11.1			10.0			7.7			10.0	
Approach LOS		B			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.3		9.0		8.3		6.7				
Green Ext Time (p_c), s		4.8		0.9		1.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			8.9									
HCM 6th LOS			A									

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	32	30	15	915	335	30
Future Vol, veh/h	32	30	15	915	335	30
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	48	40	20	1005	419	36

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	980	228	455	0	0
Stage 1	437	-	-	-	-
Stage 2	543	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-
Pot Cap-1 Maneuver	251	781	1061	-	-
Stage 1	624	-	-	-	-
Stage 2	552	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	246	781	1061	-	-
Mov Cap-2 Maneuver	246	-	-	-	-
Stage 1	612	-	-	-	-
Stage 2	552	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1061	-	358	-	-
HCM Lane V/C Ratio	0.019	-	0.245	-	-
HCM Control Delay (s)	8.5	-	18.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-
























***Intersection Capacity Worksheets:
2050 Background***



HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2050 AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	70	140	110	85	45	45	205	135	50	1135	105
Future Volume (veh/h)	25	70	140	110	85	45	45	205	135	50	1135	105
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1841	1767	1856	1841	1885	1722	1870	1900	1678	1900
Adj Flow Rate, veh/h	27	76	173	164	139	110	74	241	229	125	1247	144
Peak Hour Factor	0.92	0.92	0.81	0.67	0.61	0.41	0.61	0.85	0.59	0.40	0.91	0.73
Percent Heavy Veh, %	0	7	4	9	3	4	1	12	2	0	15	0
Cap, veh/h	328	146	333	302	288	228	200	900	803	557	1584	182
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1149	487	1109	1068	960	759	392	1636	1459	938	2880	331
Grp Volume(v), veh/h	27	0	249	164	0	249	74	241	229	125	688	703
Grp Sat Flow(s),veh/h/ln	1149	0	1597	1068	0	1719	392	1636	1459	938	1594	1618
Q Serve(g_s), s	1.2	0.0	7.8	9.0	0.0	7.1	11.1	4.7	5.0	4.9	20.5	20.7
Cycle Q Clear(g_c), s	8.3	0.0	7.8	16.8	0.0	7.1	31.9	4.7	5.0	9.9	20.5	20.7
Prop In Lane	1.00		0.69	1.00		0.44	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	328	0	479	302	0	516	200	900	803	557	877	890
V/C Ratio(X)	0.08	0.00	0.52	0.54	0.00	0.48	0.37	0.27	0.29	0.22	0.78	0.79
Avail Cap(c_a), veh/h	328	0	479	302	0	516	200	900	803	557	877	890
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	17.4	24.4	0.0	17.2	23.4	7.1	7.2	9.9	10.7	10.7
Incr Delay (d2), s/veh	0.5	0.0	4.0	6.8	0.0	3.2	5.2	0.7	0.9	0.9	7.0	7.1
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	0.3	0.0	3.0	2.7	0.0	3.0	1.2	1.4	1.4	1.0	7.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.4	31.2	0.0	20.4	28.6	7.9	8.1	10.8	17.7	17.8
LnGrp LOS	C	A	C	C	A	C	C	A	A	B	B	B
Approach Vol, veh/h		276			413			544			1516	
Approach Delay, s/veh		21.4			24.7			10.8			17.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		22.5		37.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		33.9		10.3		22.7		18.8				
Green Ext Time (p_c), s		0.0		0.9		6.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				17.5								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	16	9	30	360	1315	65
Future Vol, veh/h	16	9	30	360	1315	65
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	32	20	64	434	1445	89






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1835	767	1534	0	-	0
Stage 1	1490	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-	-
Pot Cap-1 Maneuver	69	326	411	-	-	-
Stage 1	177	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	326	411	-	-	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	149	-	-	-	-	-
Stage 2	694	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	98.9	2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	411	-	85	-	-
HCM Lane V/C Ratio	0.155	-	0.612	-	-
HCM Control Delay (s)	15.4	-	98.9	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.5	-	2.8	-	-

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2050 PM Background
 1661 E 77th Ave TIS

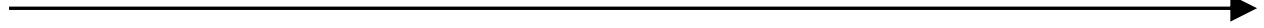
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	55	110	105	50	40	140	1080	170	30	320	45
Future Volume (veh/h)	210	55	110	105	50	40	140	1080	170	30	320	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	1856	1856	1856	1900	1841	1870	1752	1900	1841	1900
Adj Flow Rate, veh/h	280	60	120	146	86	83	177	1187	200	33	421	83
Peak Hour Factor	0.75	0.92	0.92	0.72	0.58	0.48	0.79	0.91	0.85	0.92	0.76	0.54
Percent Heavy Veh, %	2	6	3	3	3	0	4	2	10	0	4	0
Cap, veh/h	451	181	363	433	292	282	496	1522	255	201	1458	285
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1216	539	1078	1195	868	837	881	3045	510	396	2916	570
Grp Volume(v), veh/h	280	0	180	146	0	169	177	690	697	33	251	253
Grp Sat Flow(s),veh/h/ln	1216	0	1617	1195	0	1705	881	1777	1778	396	1749	1738
Q Serve(g_s), s	12.1	0.0	4.6	5.7	0.0	4.0	8.1	17.5	17.7	4.1	4.6	4.7
Cycle Q Clear(g_c), s	16.1	0.0	4.6	10.3	0.0	4.0	12.8	17.5	17.7	21.8	4.6	4.7
Prop In Lane	1.00		0.67	1.00		0.49	1.00		0.29	1.00		0.33
Lane Grp Cap(c), veh/h	451	0	544	433	0	573	496	888	889	201	874	869
V/C Ratio(X)	0.62	0.00	0.33	0.34	0.00	0.29	0.36	0.78	0.78	0.16	0.29	0.29
Avail Cap(c_a), veh/h	451	0	544	433	0	573	496	888	889	201	874	869
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	13.6	17.5	0.0	13.4	11.8	11.2	11.3	20.3	8.0	8.0
Incr Delay (d2), s/veh	6.3	0.0	1.6	2.1	0.0	1.3	2.0	6.6	6.9	1.7	0.8	0.8
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	3.8	0.0	1.7	1.6	0.0	1.5	1.6	6.7	6.9	0.4	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	0.0	15.3	19.6	0.0	14.8	13.8	17.9	18.2	22.0	8.9	8.9
LnGrp LOS	C	A	B	B	A	B	B	B	B	C	A	A
Approach Vol, veh/h		460			315			1564			537	
Approach Delay, s/veh		21.6			17.0			17.5			9.7	
Approach LOS		C			B			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		23.0		32.0		23.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		27.5		18.5		27.5		18.5				
Max Q Clear Time (g_c+I1), s		19.7		18.1		23.8		12.3				
Green Ext Time (p_c), s		5.5		0.1		1.2		0.8				
Intersection Summary												
HCM 6th Ctrl Delay				16.7								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	32	30	20	1340	490	45
Future Vol, veh/h	32	30	20	1340	490	45
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	48	40	27	1473	613	54

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1431	334	667	0	0
Stage 1	640	-	-	-	-
Stage 2	791	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-
Pot Cap-1 Maneuver	128	668	879	-	-
Stage 1	493	-	-	-	-
Stage 2	412	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	124	668	879	-	-
Mov Cap-2 Maneuver	124	-	-	-	-
Stage 1	478	-	-	-	-
Stage 2	412	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	37.2	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	879	-	197	-	-
HCM Lane V/C Ratio	0.03	-	0.445	-	-
HCM Control Delay (s)	9.2	-	37.2	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	2.1	-	-



***Intersection Capacity Worksheets:
2050 Background Improved
(second eastbound approach lane on E 77th Avenue at York Street)***



Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑↑	↑↑	
Traffic Vol, veh/h	16	9	30	360	1315	65
Future Vol, veh/h	16	9	30	360	1315	65
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	100	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	32	20	64	434	1445	89

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1835	767	1534	0	-	0
Stage 1	1490	-	-	-	-	-
Stage 2	345	-	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-	-
Pot Cap-1 Maneuver	69	326	411	-	-	-
Stage 1	177	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	326	411	-	-	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	149	-	-	-	-	-
Stage 2	694	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	84.1	2	0
HCM LOS	F		

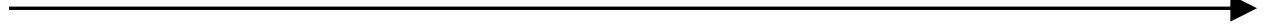
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	411	-	58	326	-	-
HCM Lane V/C Ratio	0.155	-	0.552	0.061	-	-
HCM Control Delay (s)	15.4	-	126.2	16.8	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.5	-	2.2	0.2	-	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑↑	↑↑	
Traffic Vol, veh/h	32	30	20	1340	490	45
Future Vol, veh/h	32	30	20	1340	490	45
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	100	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	48	40	27	1473	613	54

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1431	334	667	0	-	0
Stage 1	640	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-	-
Pot Cap-1 Maneuver	128	668	879	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	124	668	879	-	-	-
Mov Cap-2 Maneuver	124	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.7	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	879	-	124	668	-	-
HCM Lane V/C Ratio	0.03	-	0.385	0.06	-	-
HCM Control Delay (s)	9.2	-	51.2	10.7	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.6	0.2	-	-



***Intersection Capacity Worksheets:
2030 Background +
Project***



HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2030 AM Background + Project
 1661 E 77th Ave TIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	50	98	76	60	30	31	140	90	35	776	75
Future Volume (veh/h)	15	50	98	76	60	30	31	140	90	35	776	75
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1841	1767	1856	1841	1885	1722	1870	1900	1678	1900
Adj Flow Rate, veh/h	16	54	121	113	98	73	51	165	153	88	853	103
Peak Hour Factor	0.92	0.92	0.81	0.67	0.61	0.41	0.61	0.85	0.59	0.40	0.91	0.73
Percent Heavy Veh, %	0	7	4	9	3	4	1	12	2	0	15	0
Cap, veh/h	572	197	442	533	395	294	246	665	575	514	1145	138
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1233	493	1105	1143	988	736	592	1662	1438	1078	2864	346
Grp Volume(v), veh/h	16	0	175	113	0	171	51	162	156	88	475	481
Grp Sat Flow(s),veh/h/ln	1233	0	1597	1143	0	1723	592	1636	1463	1078	1594	1615
Q Serve(g_s), s	0.4	0.0	3.3	3.3	0.0	3.0	3.6	3.0	3.2	2.7	11.5	11.5
Cycle Q Clear(g_c), s	3.4	0.0	3.3	6.6	0.0	3.0	15.1	3.0	3.2	5.9	11.5	11.5
Prop In Lane	1.00		0.69	1.00		0.43	1.00		0.98	1.00		0.21
Lane Grp Cap(c), veh/h	572	0	639	533	0	689	246	654	585	514	638	646
V/C Ratio(X)	0.03	0.00	0.27	0.21	0.00	0.25	0.21	0.25	0.27	0.17	0.74	0.74
Avail Cap(c_a), veh/h	572	0	639	533	0	689	246	654	585	514	638	646
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	9.1	11.3	0.0	9.0	18.0	9.0	9.1	11.0	11.5	11.5
Incr Delay (d2), s/veh	0.1	0.0	1.1	0.9	0.0	0.9	1.9	0.9	1.1	0.7	7.7	7.6
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	0.1	0.0	1.0	0.8	0.0	1.0	0.6	1.0	0.9	0.6	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	10.2	12.2	0.0	9.9	19.9	9.9	10.2	11.8	19.3	19.2
LnGrp LOS	B	A	B	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h		191			284			369			1044	
Approach Delay, s/veh		10.2			10.8			11.4			18.6	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		17.1		5.4		13.5		8.6				
Green Ext Time (p_c), s		0.2		0.8		2.5		0.9				
Intersection Summary												
HCM 6th Ctrl Delay				15.2								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	17	13	32	245	900	50
Future Vol, veh/h	17	13	32	245	900	50
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	34	29	68	295	989	68

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1307	529	1057	0	0
Stage 1	1023	-	-	-	-
Stage 2	284	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-
Pot Cap-1 Maneuver	154	471	631	-	-
Stage 1	312	-	-	-	-
Stage 2	745	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	137	471	631	-	-
Mov Cap-2 Maneuver	137	-	-	-	-
Stage 1	278	-	-	-	-
Stage 2	745	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.5	2.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	631	-	203	-	-
HCM Lane V/C Ratio	0.108	-	0.31	-	-
HCM Control Delay (s)	11.4	-	30.5	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	1.3	-	-

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	8	0	39	18	0	10
Future Vol, veh/h	8	0	39	18	0	10
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	2	2
Mvmt Flow	9	0	42	20	0	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	9	0	113
Stage 1	-	-	-	-	9
Stage 2	-	-	-	-	104
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1611	-	884
Stage 1	-	-	-	-	1014
Stage 2	-	-	-	-	920
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1611	-	861
Mov Cap-2 Maneuver	-	-	-	-	861
Stage 1	-	-	-	-	1014
Stage 2	-	-	-	-	896

Approach	EB	WB	NB
HCM Control Delay, s	0	5	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1073	-	-	1611	-
HCM Lane V/C Ratio	0.01	-	-	0.026	-
HCM Control Delay (s)	8.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	5	0	16	2	0	3
Future Vol, veh/h	5	0	16	2	0	3
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	2	2
Mvmt Flow	5	0	17	2	0	3






















Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	5	0	41
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	36
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1616	-	970
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	986
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1616	-	959
Mov Cap-2 Maneuver	-	-	-	-	959
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	975

Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1078	-	-	1616	-
HCM Lane V/C Ratio	0.003	-	-	0.011	-
HCM Control Delay (s)	8.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2030 PM Background + Project
 1661 E 77th Ave TIS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	40	78	71	35	25	99	736	116	20	220	30
Future Volume (veh/h)	145	40	78	71	35	25	99	736	116	20	220	30
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	1856	1856	1856	1900	1841	1870	1752	1900	1841	1900
Adj Flow Rate, veh/h	193	43	85	99	60	52	125	809	136	22	289	56
Peak Hour Factor	0.75	0.92	0.92	0.72	0.58	0.48	0.79	0.91	0.85	0.92	0.76	0.54
Percent Heavy Veh, %	2	6	3	3	3	0	4	2	10	0	4	0
Cap, veh/h	619	217	430	596	367	318	500	1217	205	333	1172	224
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.40	0.40	0.40
Sat Flow, veh/h	1281	543	1074	1252	917	795	1019	3043	512	603	2929	560
Grp Volume(v), veh/h	193	0	128	99	0	112	125	472	473	22	171	174
Grp Sat Flow(s),veh/h/ln	1281	0	1618	1252	0	1712	1019	1777	1778	603	1749	1740
Q Serve(g_s), s	5.1	0.0	2.3	2.5	0.0	1.9	2.4	5.1	5.1	1.2	2.9	3.0
Cycle Q Clear(g_c), s	7.0	0.0	2.3	4.8	0.0	1.9	5.4	5.1	5.1	6.3	2.9	3.0
Prop In Lane	1.00		0.66	1.00		0.46	1.00		0.29	1.00		0.32
Lane Grp Cap(c), veh/h	619	0	647	596	0	685	500	711	711	333	699	696
V/C Ratio(X)	0.31	0.00	0.20	0.17	0.00	0.16	0.25	0.66	0.66	0.07	0.24	0.25
Avail Cap(c_a), veh/h	619	0	647	596	0	685	500	711	711	333	699	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	0.0	8.8	10.4	0.0	8.7	3.9	3.2	3.2	11.9	9.0	9.0
Incr Delay (d2), s/veh	1.3	0.0	0.7	0.6	0.0	0.5	1.2	4.9	4.9	0.4	0.8	0.9
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	1.3	0.0	0.7	0.6	0.0	0.6	0.4	1.7	1.7	0.2	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	9.5	11.0	0.0	9.2	5.1	8.1	8.1	12.3	9.8	9.9
LnGrp LOS	B	A	A	B	A	A	A	A	A	B	A	A
Approach Vol, veh/h		321			211			1070			367	
Approach Delay, s/veh		11.1			10.0			7.7			10.0	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.4		9.0		8.3		6.8				
Green Ext Time (p_c), s		4.8		0.9		1.5		0.6				
Intersection Summary												
HCM 6th Ctrl Delay				8.9								
HCM 6th LOS				A								

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	38	44	25	915	335	34
Future Vol, veh/h	38	44	25	915	335	34
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	57	59	33	1005	419	40

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1008	230	459	0	0
Stage 1	439	-	-	-	-
Stage 2	569	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-
Pot Cap-1 Maneuver	240	779	1057	-	-
Stage 1	623	-	-	-	-
Stage 2	535	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	233	779	1057	-	-
Mov Cap-2 Maneuver	233	-	-	-	-
Stage 1	604	-	-	-	-
Stage 2	535	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1057	-	362	-	-
HCM Lane V/C Ratio	0.032	-	0.319	-	-
HCM Control Delay (s)	8.5	-	19.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	19	0	11	10	0	37
Future Vol, veh/h	19	0	11	10	0	37
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	2	2
Mvmt Flow	21	0	12	11	0	40

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	21	0	56 21
Stage 1	-	-	-	-	21 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1595	-	952 1056
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	987 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1595	-	944 1056
Mov Cap-2 Maneuver	-	-	-	-	944 -
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	979 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1056	-	-	1595	-
HCM Lane V/C Ratio	0.038	-	-	0.007	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	3	0	4	6	0	16
Future Vol, veh/h	3	0	4	6	0	16
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	2	2
Mvmt Flow	3	0	4	7	0	17

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	3	0	18
Stage 1	-	-	-	-	3
Stage 2	-	-	-	-	15
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1619	-	1000
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1008
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1619	-	998
Mov Cap-2 Maneuver	-	-	-	-	998
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1006






















Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1081	-	-	1619	-
HCM Lane V/C Ratio	0.016	-	-	0.003	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

***Intersection Capacity Worksheets:
2050 Background +
Project***

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2050 AM Background + Project
 1661 E 77th Ave TIS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	70	143	111	85	45	46	205	135	50	1136	105
Future Volume (veh/h)	25	70	143	111	85	45	46	205	135	50	1136	105
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1841	1767	1856	1841	1885	1722	1870	1900	1678	1900
Adj Flow Rate, veh/h	27	76	177	166	139	110	75	241	229	125	1248	144
Peak Hour Factor	0.92	0.92	0.81	0.67	0.61	0.41	0.61	0.85	0.59	0.40	0.91	0.73
Percent Heavy Veh, %	0	7	4	9	3	4	1	12	2	0	15	0
Cap, veh/h	328	144	335	299	288	228	200	900	803	557	1584	182
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1149	479	1116	1064	960	759	391	1636	1459	938	2881	331
Grp Volume(v), veh/h	27	0	253	166	0	249	75	241	229	125	688	704
Grp Sat Flow(s),veh/h/ln	1149	0	1595	1064	0	1719	391	1636	1459	938	1594	1618
Q Serve(g_s), s	1.2	0.0	7.9	9.2	0.0	7.1	11.3	4.7	5.0	4.9	20.5	20.8
Cycle Q Clear(g_c), s	8.3	0.0	7.9	17.1	0.0	7.1	32.1	4.7	5.0	9.9	20.5	20.8
Prop In Lane	1.00		0.70	1.00		0.44	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	328	0	479	299	0	516	200	900	803	557	877	890
V/C Ratio(X)	0.08	0.00	0.53	0.56	0.00	0.48	0.38	0.27	0.29	0.22	0.79	0.79
Avail Cap(c_a), veh/h	328	0	479	299	0	516	200	900	803	557	877	890
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	17.5	24.6	0.0	17.2	23.5	7.1	7.2	9.9	10.7	10.7
Incr Delay (d2), s/veh	0.5	0.0	4.1	7.3	0.0	3.2	5.3	0.7	0.9	0.9	7.0	7.1
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	0.3	0.0	3.1	2.7	0.0	3.0	1.2	1.4	1.4	1.0	7.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.6	31.9	0.0	20.4	28.8	7.9	8.1	10.8	17.7	17.8
LnGrp LOS	C	A	C	C	A	C	C	A	A	B	B	B
Approach Vol, veh/h		280			415			545			1517	
Approach Delay, s/veh		21.6			25.0			10.8			17.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		22.5		37.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		34.1		10.3		22.8		19.1				
Green Ext Time (p_c), s		0.0		0.9		6.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				17.6								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	18	13	42	360	1315	70
Future Vol, veh/h	18	13	42	360	1315	70
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	36	29	89	434	1445	96

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1888	771	1541	0	0
Stage 1	1493	-	-	-	-
Stage 2	395	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-
Pot Cap-1 Maneuver	63	324	408	-	-
Stage 1	176	-	-	-	-
Stage 2	656	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	49	324	408	-	-
Mov Cap-2 Maneuver	49	-	-	-	-
Stage 1	138	-	-	-	-
Stage 2	656	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	146.2	2.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	408	-	79	-	-
HCM Lane V/C Ratio	0.219	-	0.821	-	-
HCM Control Delay (s)	16.3	-	146.2	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.8	-	4.1	-	-

Intersection						
Int Delay, s/veh	4.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	9	0	39	18	0	10
Future Vol, veh/h	9	0	39	18	0	10
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	2	2
Mvmt Flow	10	0	42	20	0	11

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	10	0	114
Stage 1	-	-	-	-	10
Stage 2	-	-	-	-	104
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1610	-	882
Stage 1	-	-	-	-	1013
Stage 2	-	-	-	-	920
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1610	-	859
Mov Cap-2 Maneuver	-	-	-	-	859
Stage 1	-	-	-	-	1013
Stage 2	-	-	-	-	896

Approach	EB	WB	NB
HCM Control Delay, s	0	5	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1071	-	-	1610	-
HCM Lane V/C Ratio	0.01	-	-	0.026	-
HCM Control Delay (s)	8.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection						
Int Delay, s/veh	5.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	5	0	16	2	0	4
Future Vol, veh/h	5	0	16	2	0	4
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	2	2
Mvmt Flow	5	0	17	2	0	4






















Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	5	0	41
Stage 1	-	-	-	-	5
Stage 2	-	-	-	-	36
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1616	-	970
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	986
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1616	-	959
Mov Cap-2 Maneuver	-	-	-	-	959
Stage 1	-	-	-	-	1018
Stage 2	-	-	-	-	975

Approach	EB	WB	NB
HCM Control Delay, s	0	6.4	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1078	-	-	1616	-
HCM Lane V/C Ratio	0.004	-	-	0.011	-
HCM Control Delay (s)	8.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th Signalized Intersection Summary
 11: York St & E 78th Ave

2050 PM Background + Project
 1661 E 77th Ave TIS

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	55	113	106	50	40	144	1081	171	30	321	45
Future Volume (veh/h)	210	55	113	106	50	40	144	1081	171	30	321	45
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1811	1856	1856	1856	1900	1841	1870	1752	1900	1841	1900
Adj Flow Rate, veh/h	280	60	123	147	86	83	182	1188	201	33	422	83
Peak Hour Factor	0.75	0.92	0.92	0.72	0.58	0.48	0.79	0.91	0.85	0.92	0.76	0.54
Percent Heavy Veh, %	2	6	3	3	3	0	4	2	10	0	4	0
Cap, veh/h	451	178	365	431	292	282	496	1521	256	201	1459	285
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1216	530	1086	1191	868	837	880	3043	512	395	2918	569
Grp Volume(v), veh/h	280	0	183	147	0	169	182	691	698	33	252	253
Grp Sat Flow(s),veh/h/ln	1216	0	1616	1191	0	1705	880	1777	1778	395	1749	1738
Q Serve(g_s), s	12.1	0.0	4.7	5.8	0.0	4.0	8.4	17.5	17.8	4.1	4.6	4.7
Cycle Q Clear(g_c), s	16.1	0.0	4.7	10.5	0.0	4.0	13.1	17.5	17.8	21.9	4.6	4.7
Prop In Lane	1.00		0.67	1.00		0.49	1.00		0.29	1.00		0.33
Lane Grp Cap(c), veh/h	451	0	543	431	0	573	496	888	889	201	874	869
V/C Ratio(X)	0.62	0.00	0.34	0.34	0.00	0.29	0.37	0.78	0.78	0.16	0.29	0.29
Avail Cap(c_a), veh/h	451	0	543	431	0	573	496	888	889	201	874	869
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	13.7	17.6	0.0	13.4	11.9	11.3	11.3	20.3	8.0	8.0
Incr Delay (d2), s/veh	6.3	0.0	1.7	2.2	0.0	1.3	2.1	6.7	6.9	1.8	0.8	0.8
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	3.8	0.0	1.7	1.7	0.0	1.5	1.6	6.7	6.9	0.4	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	0.0	15.3	19.7	0.0	14.8	14.0	17.9	18.2	22.1	8.9	8.9
LnGrp LOS	C	A	B	B	A	B	B	B	B	C	A	A
Approach Vol, veh/h		463			316			1571			538	
Approach Delay, s/veh		21.6			17.1			17.6			9.7	
Approach LOS		C			B			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.0		23.0		32.0		23.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		27.5		18.5		27.5		18.5				
Max Q Clear Time (g_c+I1), s		19.8		18.1		23.9		12.5				
Green Ext Time (p_c), s		5.5		0.1		1.2		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				16.7								
HCM 6th LOS				B								

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	38	44	30	1340	490	49
Future Vol, veh/h	38	44	30	1340	490	49
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	-	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	57	59	40	1473	613	58

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1459	336	671	0	0
Stage 1	642	-	-	-	-
Stage 2	817	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-
Pot Cap-1 Maneuver	122	666	876	-	-
Stage 1	492	-	-	-	-
Stage 2	400	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	116	666	876	-	-
Mov Cap-2 Maneuver	116	-	-	-	-
Stage 1	469	-	-	-	-
Stage 2	400	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	876	-	200	-	-
HCM Lane V/C Ratio	0.046	-	0.577	-	-
HCM Control Delay (s)	9.3	-	45	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	3.2	-	-

Intersection						
Int Delay, s/veh	5.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	19	0	11	10	0	37
Future Vol, veh/h	19	0	11	10	0	37
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	2	2
Mvmt Flow	21	0	12	11	0	40

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	21	0	56 21
Stage 1	-	-	-	-	21 -
Stage 2	-	-	-	-	35 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1595	-	952 1056
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	987 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1595	-	944 1056
Mov Cap-2 Maneuver	-	-	-	-	944 -
Stage 1	-	-	-	-	1002 -
Stage 2	-	-	-	-	979 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	8.5
HCM LOS			A

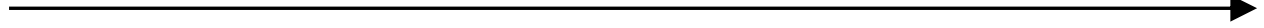
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1056	-	-	1595	-
HCM Lane V/C Ratio	0.038	-	-	0.007	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	5.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Vol, veh/h	3	0	4	6	0	16
Future Vol, veh/h	3	0	4	6	0	16
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	2	2
Mvmt Flow	3	0	4	7	0	17

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	3	0	18
Stage 1	-	-	-	-	3
Stage 2	-	-	-	-	15
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1619	-	1000
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1008
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1619	-	998
Mov Cap-2 Maneuver	-	-	-	-	998
Stage 1	-	-	-	-	1020
Stage 2	-	-	-	-	1006

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1081	-	-	1619	-
HCM Lane V/C Ratio	0.016	-	-	0.003	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



***Intersection Capacity Worksheets:
2050 Background
+ Project Improved
(second eastbound approach lane on E 77th Avenue at York Street)***



Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑↑	↑↑	
Traffic Vol, veh/h	18	13	42	360	1315	70
Future Vol, veh/h	18	13	42	360	1315	70
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	125	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	50	45	47	83	91	73
Heavy Vehicles, %	0	11	6	7	3	0
Mvmt Flow	36	29	89	434	1445	96

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1888	771	1541	0	-	0
Stage 1	1493	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Critical Hdwy	6.8	7.12	4.22	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.41	2.26	-	-	-
Pot Cap-1 Maneuver	63	324	408	-	-	-
Stage 1	176	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	49	324	408	-	-	-
Mov Cap-2 Maneuver	49	-	-	-	-	-
Stage 1	138	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	110.7	2.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	408	-	49	324	-	-
HCM Lane V/C Ratio	0.219	-	0.735	0.089	-	-
HCM Control Delay (s)	16.3	-	185.7	17.2	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.8	-	3	0.3	-	-

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↑↑	↑↑	
Traffic Vol, veh/h	38	44	30	1340	490	49
Future Vol, veh/h	38	44	30	1340	490	49
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	125	270	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	75	75	91	80	84
Heavy Vehicles, %	0	0	8	3	4	0
Mvmt Flow	57	59	40	1473	613	58

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1459	336	671	0	-	0
Stage 1	642	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.26	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.28	-	-	-
Pot Cap-1 Maneuver	122	666	876	-	-	-
Stage 1	492	-	-	-	-	-
Stage 2	400	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	116	666	876	-	-	-
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36.3	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	876	-	116	666	-	-
HCM Lane V/C Ratio	0.046	-	0.489	0.088	-	-
HCM Control Delay (s)	9.3	-	62.6	10.9	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	2.2	0.3	-	-

APPLICANT'S CERTIFICATION CONCERNING QUALIFYING SURFACE DEVELOPMENT,
PURSUANT TO C.R.S. §24-65.5-103.3 (1)(b)

I/We, TERRACE ENTERPRISES, LLC
_____, (the "Applicant") by signing below, hereby declare and certify as follows:

Concerning the property located at:

Physical Address: 1661 E. 79TH AVE, DENVER, CO 80229

Legal Description: SEE EXHIBIT A

Parcel #(s): 1

With respect to qualifying surface developments, that (PLEASE CHECK ONE):

No mineral estate owner has entered an appearance or filed an objection to the proposed application for development within thirty days after the initial public hearing on the application; or

The Applicant and any mineral estate owners who have filed an objection to the proposed application for development or have otherwise filed an entry of appearance in the initial public hearing regarding such application no later than thirty days following the initial public hearing on the application have executed a surface use agreement related to the property included in the application for development, the provisions of which have been incorporated into the application for development or are evidenced by a memorandum or otherwise recorded in the records of the clerk and recorder of the county in which the property is located so as to provide notice to transferees of the Applicant, who shall be bound by such surface use agreements; or

The application for development provides:

- (i) Access to mineral operations, surface facilities, flowlines, and pipelines in support of such operations existing when the final public hearing on the application for development is held by means of public roads sufficient to withstand trucks and drilling equipment or thirty-foot-wide access easements;
- (ii) An oil and gas operations area and existing well site locations in accordance with section 24-65.5-103.5 of the Colorado Revised Statutes; and
- (iii) That the deposit for incremental drilling costs described in section 24-65.5-103.7 of the Colorado Revised Statutes has been made.

Date: 4-11-23 Applicant: TERRACE ENTERPRISES, LLC

After Recording Return To:


By: 
Print Name: BYRON R. CHRISMAN
Address: 864 W.S. BOULDER RD
LOUISVILLE, CO 80027

EXHIBIT A

The Land referred to herein below is situated in the County of Adams, State of Colorado, and is described as follows:

A tract of land located in the East 1/2 of the Southwest 1/4 Northeast 1/4 of Section 35, Township 2 South, Range 68

West of the 6th P.M., being more particularly described as follows:

Beginning at a point in the West boundary line of the abandoned Union Pacific Railroad right of way as it was described in

Deed recorded July 16, 1908 in [Book 39 at Page 24](#), whence the East Quarter corner of said Section bears North 89

degrees 43 minutes East, a distance of 914.7 feet;

Thence North 89 degrees 49 minutes West to a point which is 612.3 feet East of the East boundary line of the right of

way for a drainage ditch as conveyed to the County of Adams in Deed recorded October 4, 1938 in [Book 250 at Page 11](#),

said distance of 612.30 feet being measured along an extension of the last described line and said point being the True

Point of Beginning;

Thence continuing North 89 degrees 49 minutes West a distance of 612.3 feet to the East boundary line of said ditch

right of way;

Thence North 00 degrees 07 minutes East along the East boundary line of said ditch right of way, a distance of 711.4

feet, more or less to the South boundary line of a 30 foot road;

Thence South 89 degrees 49 minutes East, along the South line of said 30 foot road, a distance of 612.30 feet;

Thence South 00 degrees 10 minutes West, a distance of 711.22 feet, more or less to the True Point of Beginning,

County of Adams,

State of Colorado.

DRAINAGE REPORT

1661 E 77th Avenue

Adams County, CO

JN: DEN22-0137

Prepared for:

Prologis

4545 Airport Way
Denver, CO 80239

Prepared by:

Ware Malcomb

900 South Broadway, Ste. 320
Denver, CO 80209
P: 303.561.3333
F: 303.561.3339

Ted Swan, PE No. 43903
Director of Civil Engineering

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- Drainage SF2 & SF3 Rational Method Calculations

APPENDIX C

- Drainage Plan

ENGINEER’S CERTIFICATION

I hereby certify that this report (plan) for the Preliminary Drainage design of **1661 E 77th Avenue** was prepared by me or under my direct supervision in accordance with the provisions of Adams County Storm Drainage Design and Technical Criteria for the owners thereof. I understand that Adams County does not and will not assume liability for drainage facilities designed by others.

Date

Ted Swan, PE No. 43903

Director of Civil Engineering

For and on Behalf of Ware Malcomb

DEVELOPER’S STATEMENT

Prologis hereby certifies that the drainage facilities for **Prologis** shall be constructed according to the design presented in this report. I understand that Adams County does not and will not assume liability for the drainage facilities designed and/or certified by my engineer. I understand that Adams County reviews drainage plans pursuant to Colorado Revised Statutes Title 30, Article 28; but cannot, on behalf of **Prologis**, guarantee that final drainage design review will absolve **Prologis** and/or their successors and/or assigns the future liability for improper design. I further understand that approval of the Final Plat and/or Final Development Plan does not imply approval of my engineer’s drainage design.

Date

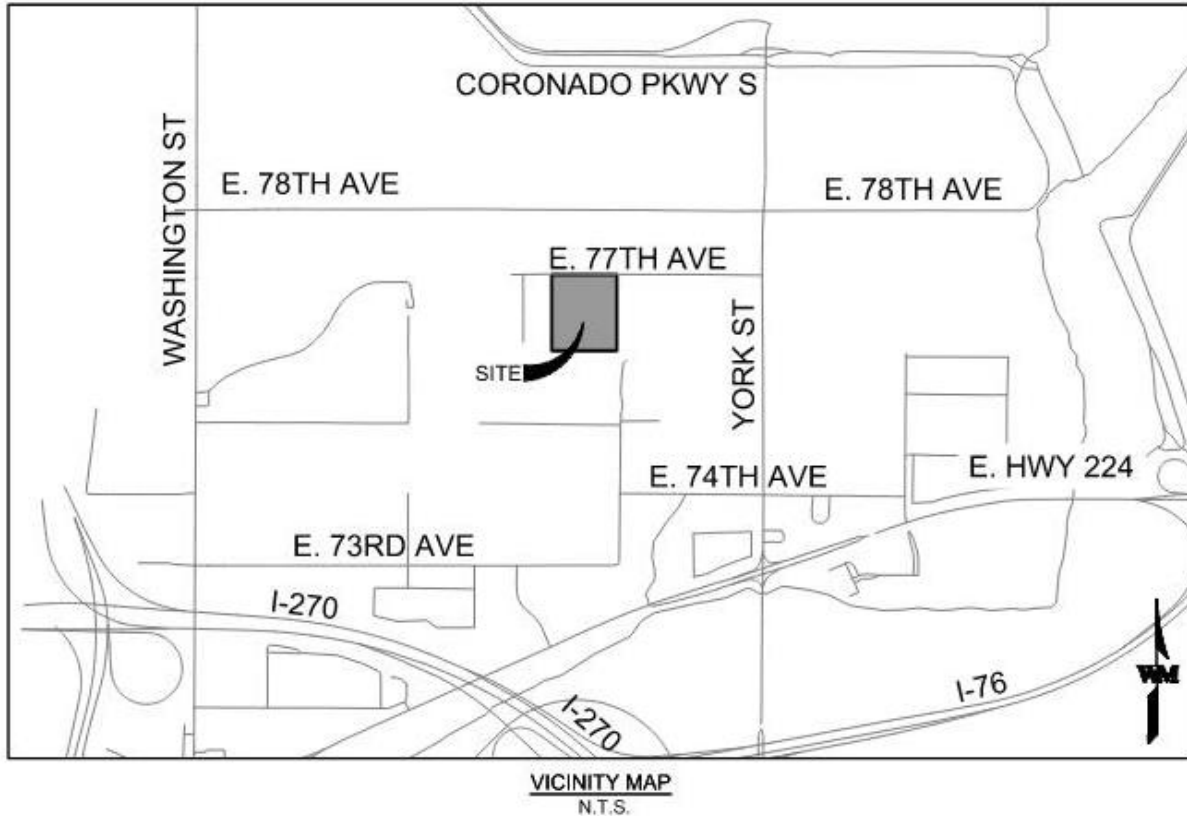
Name of Developer (print)

Authorized Signature

1.0 GENERAL LOCATION AND DESCRIPTION

A. LOCATION

This project consists of 10.05+/- acres located at 1661 E 77th Ave, Denver, CO 80229. The site is bounded to the north by E 77th Ave and to the west, east, and south by existing private property. The site is located in a portion of the Northeast Quarter of Section 35, Township 2 South, Range 68 West of the Sixth Principal Meridian, Adams County, State of Colorado. See Vicinity Map below.



B. PROJECT DESCRIPTION

The proposed development consists of the construction of two light industrial buildings with an area of 194,650 square-feet. The remainder of the site is anticipated to be truck courts, driveways, parking, underground stormwater detention and water quality treatment, and landscaped areas. Access to the site is anticipated to be solely from 77th Ave with internal site circulation.

2.0 PRE-DEVELOPMENT SITE CONDITIONS

A. EXISTING CONDITIONS

The 10.05-acre site has multiple existing structures with the land use of greenhouse. The site's slopes are variable with a subtle slope from northeast to southwest.

Existing soil conditions encountered on the property, according to the United States Department of Agriculture Natural Resource Conservation Service (NRCS) Web Soil Survey, are classified as Hydrologic Soil Group C. Group C soils are known to have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission. Please see Appendix A for the NRCS Soil Report.

B. OVERALL BASIN DESCRIPTION

There is an existing drainage ditch located on the western edge of the site that runs from north to south. The existing ditch flows south, conveying drainage to nearby ponds eventually overflowing to the South Platte River.

According to the National Flood Hazard Layer FIRMette provided by FEMA, the site is located in an area of minimal flood hazard (Zone X) shown in FIRM panel number 08001C0604H effective March 5, 2007. Please see Appendix A for the FEMA Flood map.

There are no existing master drainage reports for this project site.

3.0 DESCRIPTION OF PROPOSED DEVELOPMENT

GENERAL CONCEPT

The proposed development consists of the construction of two light industrial buildings with a footprint area of 194,650 square-feet. Basins have been divided based on the storm lines, which will flow to the proposed underground stormwater detention system. The majority of the site will flow to the underground detention system. Less than 20% of the site, 1.39 acres, will flow offsite. Most offsite flows will be directed south, west, or east. The total proposed imperviousness of the site is 78%.

4.0 STORMWATER IMPROVEMENTS, CONVEYANCE AND DRAINAGE FACILITIES

A. STORMWATER IMPROVEMENTS

Stormwater will be directed via sheet flow to curb and gutter or concrete pan, captured by inlets, and conveyed via storm pipes to outfall to the proposed underground detention system. Runoff collected on roof areas will be conveyed to sump inlets. The proposed stormwater system will majorly improve existing stormwater conveyance as there is no existing system.

B. DRAINAGE FACILITIES

Stormwater in Major Basin A will flow to inlets and roof drains that will ultimately outfall into the underground detention system along the western edge and middle of the project site. The underground detention system will release flows into the existing drainage ditch along the western edge of the site by utilizing a pump. The elevation of the existing ditch is above the proposed bottom elevation of the underground detention system, so a pump is proposed to facilitate flow into the existing drainage ditch. If the pump stops operating correctly, the underground detention system will continue to detain water. In the case of a large storm event where the underground detention system fills completely and the pump was not operating correctly, the stormwater will outlet from the two sump inlets, pond, and overflow west into the existing ditch which will then follow existing flow patterns.

C. MAJOR BASINS

Major Basin A is split up into ten sub-basins. Basin A includes 8.67 acres, with a proposed imperviousness of 90%. This basin covers the parking lot, landscaped areas, sidewalks, and roofs. All basins ultimately outfall to the underground stormwater detention and water quality treatment pipes.

Four basins flow offsite: OS-1, OS-2, OS-3, and OS-4. All offsite basins include landscaped area and have a proposed imperviousness of 2%. OS-1 includes 0.09 acres on the western edge of the site. OS-2 is located on the northern edge of the site and is 0.49 acres. OS-3 includes 0.24 acres on the eastern edge of the site and OS-4 is 0.57 acres located on the southern edge of the site. Please see Runoff Summary below and Appendix C for the Drainage Map.

RUNOFF SUMMARY						
BASIN LABEL	DESIGN POINT	AREA	LOCAL (CFS)		ACCUMULATIVE (CFS)	
			Q5	Q100	Q5	Q100
A1		0.9	3.1	6.7		
A2		1.2	3.8	8.1		
A3		0.8	3.1	6.4		
	1				6.6	13.8
A4		1.1	3.7	7.8		
A5		1.2	3.9	8.2		
A6		0.9	3.3	6.8		
	2				6.9	14.5
A7		1.1	3.8	7.9		

A8		0.3	1.2	2.6		
A9		0.3	1.2	2.4		
	3				2.3	4.9
A10		0.8	2.9	6.2		
OS1		0.1	0.0	0.4		
OS2		0.5	0.1	1.9		
OS3		0.2	0.0	0.8		
OS4		0.6	0.1	2.1		

5.0 DRAINAGE CRITERIA

A. HYDROLOGIC CRITERIA

In accordance with Adams County Storm Drainage Design and Stormwater Quality Regulations, the minor storm for the proposed development type was evaluated as the 5-year storm, and the major storm was evaluated as the 100-year storm. The design storms were found using Adams County Storm Drainage Design and Stormwater Quality Regulations chapter (Chapter 9), Table 9.3 – *One-Hour Point Rainfall (inches)* as 1.42 inches for the 5-year storm and 2.71 inches for the 100-year storm (see Appendix A).

The peak discharge for the storm sewer analysis was calculated using the following Rational Method formula:

$$Q=CiA$$

Where:

Q = peak discharge (cfs)

C = runoff coefficient from USDCM Volume 1 Table 6-4

i = rainfall intensity (inches/hour) from NOAA Precipitation Frequency Data Server

A = drainage area (acres)

Runoff coefficients, or “C” values, have been calculated for the site in accordance with USDCM Vol. 1, Ch. 6 criteria. Refer to Appendix B for the weighted “C” values used in the included calculations.

B. HYDRAULIC CRITERIA

Hydraulic calculations for the anticipated on-site drainage have been performed in accordance with Adams County Regulations and MHFD Criteria. On-site storm conveyance infrastructure has been designed to convey runoff for the 5-year and the 100-year storm events.

There are no major drainage ways on-site.

6.0 EROSION AND SEDIMENT CONTROL

A. EROSION CONTROL OBJECTIVES AND STRATEGIES

Erosion and sediment control will be provided during construction of the development as quality measures to protect the natural features and soils.

B. DESCRIPTION OF TEMPORARY STORMWATER CONVEYANCE AND QUALITY CONTROL FACILITIES

Temporary stormwater conveyance and quality control facilities include:

1. To minimize disturbed area and protect natural features and soil: limits of construction, construction phasing
2. Soil stabilization and slope protection: surface roughening, temporary and permanent seeding
3. Storm drain inlet and outlet protection: inlet protection and outlet protection
4. Retention of sediment on-site: erosion ditch and sediment basin
5. Construction entrance/exit stabilization: vehicle tracking control and stabilized staging area
6. Additional CMs: concrete washout area

7.0 SUMMARY

C. COMPLIANCE WITH STANDARDS

This report has been prepared in accordance with Adams County Stormwater Drainage Design and Stormwater Quality Control Regulations and Mile High Flood District Criteria. The proposed drainage facilities shall safely and effectively convey significant storm events to an adequate outfall.

Less than 20% of the site, 1.39 acres, will flow offsite. These flows are not captured onsite due to being impractical to route flows to the underground detention storage facility. The total proposed imperviousness of the site is 78%.

D. SUMMARY OF CONCEPT

The site is designed so that the industrial development has an effective stormwater system that conveys flows into the proposed underground detention storage facility, which has been designed to withstand the 5-year and 100-year storm event. Adjacent and surrounding developments will not be negatively impacted by the design as outlined within this report.

8.0 REFERENCES

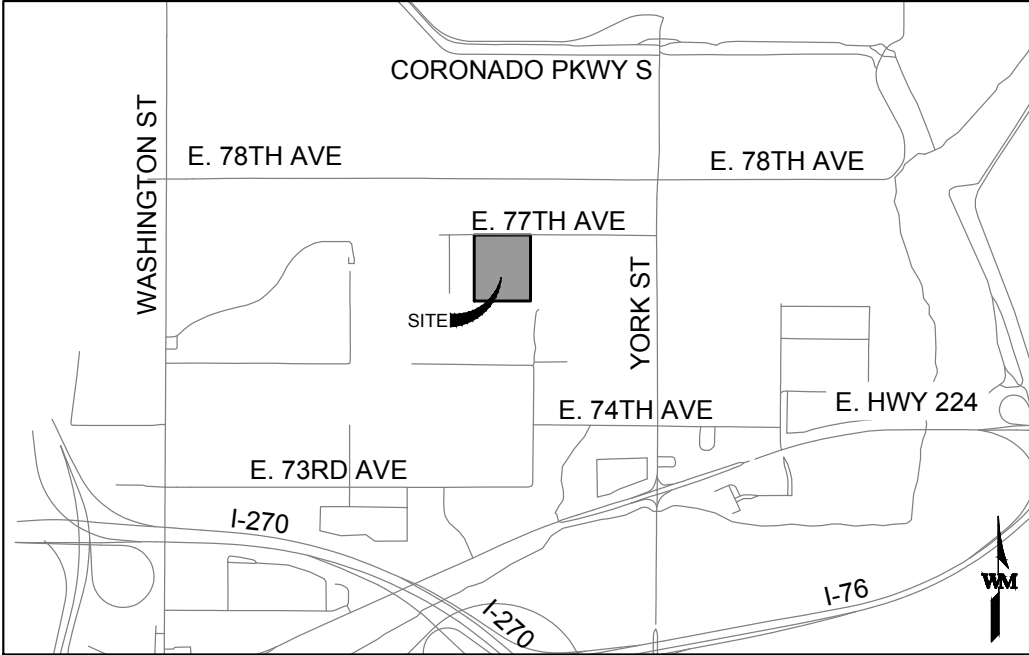
1. *Adams County Stormwater Drainage Design and Stormwater Quality Control Regulations*, Adams County, CO, December 8, 2020.
2. *Mile High Flood District (MHFD) Drainage Criteria Manual*, Volumes 1, 2, and 3, Latest revisions.
3. *Natural Resources Conservation Service*, Web Soil Survey, accessed online in March 2023.
4. *Federal Emergency Management Agency*, National Flood Hazard Layer FIRMette, accessed online in March 2023.

APPENDIX A

Vicinity Map

NRCS Soil Information

FEMA Flood Insurance Rate Map



VICINITY MAP
N.T.S.

Custom Soil Resource Report for Adams County Area, Parts of Adams and Denver Counties, Colorado



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

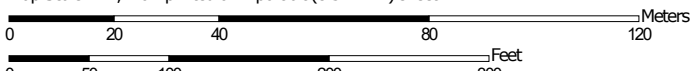
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,440 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties, Colorado
 Survey Area Data: Version 19, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NuA	Nunn clay loam, 0 to 1 percent slopes	10.1	100.0%
Totals for Area of Interest		10.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Adams County Area, Parts of Adams and Denver Counties, Colorado

NuA—Nunn clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t1ng
Elevation: 4,100 to 5,700 feet
Mean annual precipitation: 14 to 15 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 152 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nunn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Pleistocene aged alluvium and/or eolian deposits

Typical profile

Ap - 0 to 6 inches: clay loam
Bt1 - 6 to 10 inches: clay loam
Bt2 - 10 to 26 inches: clay loam
Btk - 26 to 31 inches: clay loam
Bk1 - 31 to 47 inches: loam
Bk2 - 47 to 80 inches: loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 7 percent
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 0.5
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Custom Soil Resource Report

Minor Components

Heldt

Percent of map unit: 10 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY042CO - Clayey Plains

Hydric soil rating: No

Wages

Percent of map unit: 5 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

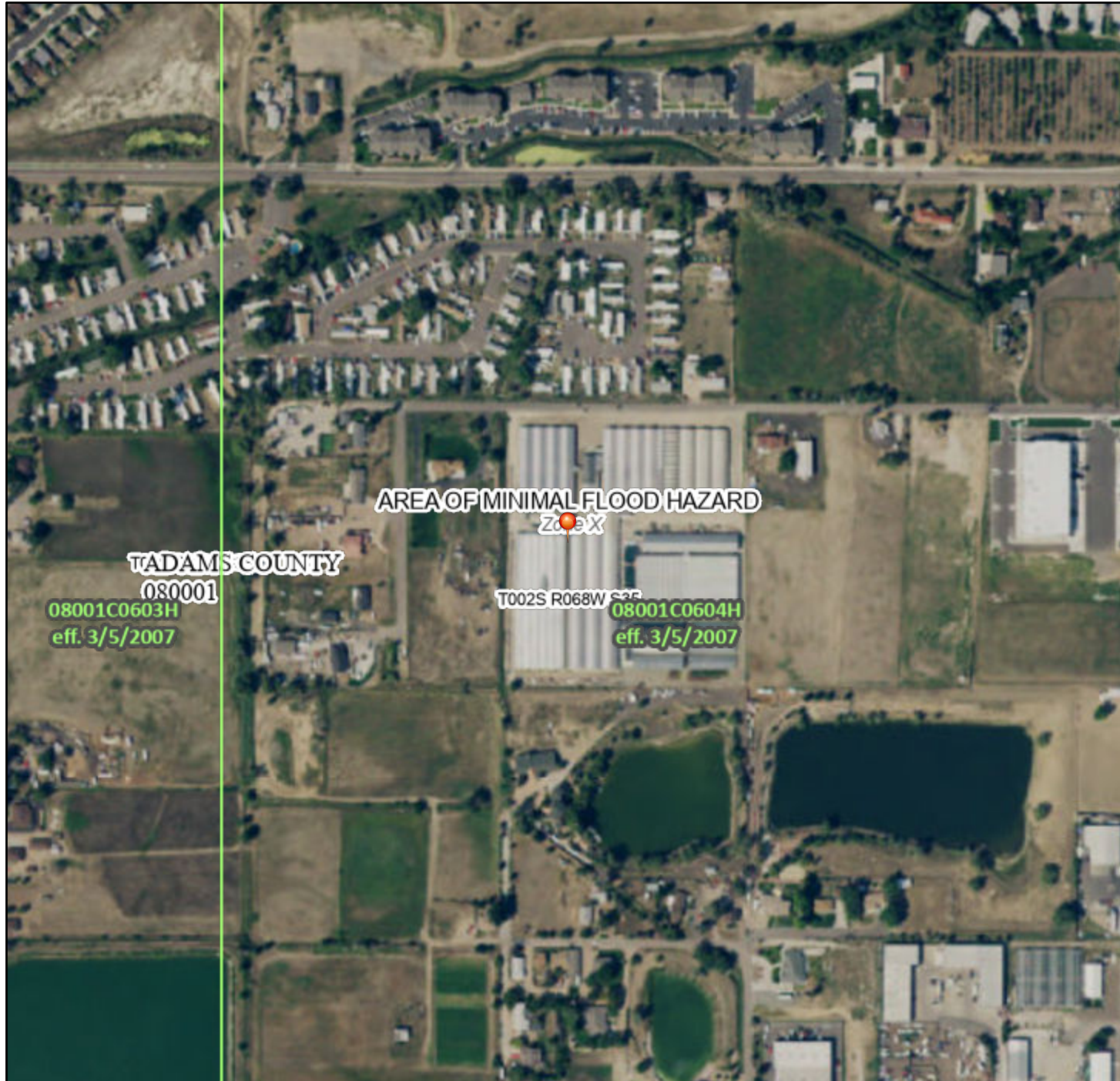
United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

National Flood Hazard Layer FIRMette



104°58'15"W 39°50'22"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	
	Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
	With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
	Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD	
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
	Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
	Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
	Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS	
	NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
	Effective LOMRs
	Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES	
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall

OTHER FEATURES	
	20.2 Cross Sections with 1% Annual Chance Water Surface Elevation 17.5
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature

MAP PANELS	
	Digital Data Available
	No Digital Data Available
	Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/6/2023 at 5:41 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

Drainage Impervious Percentages and "C" Valued Concentration
Drainage Time of Concentration
Drainage SF2 & SF3 Rational Method Calculations

WARE MALCOMB

ARCHITECTURE | PLANNING | INTERIORS
BRANDING | CIVIL ENGINEERING

PROJECT: 1661 E 77th AVE

JOB NO.: DEN22-0137

CALC. BY: K. KLIMA

DATE: 3/14/2023

= FORMULA CELLS
 = USER INPUT CELLS

Project Location	
User Input	▼

IDF Rainfall Data

T _d	P ₁ : 1-hour Rainfall Depths (inches)	
	Minor Storm	Major Storm
	5-Year	100-Year
Minutes	1.42	2.71
5	4.82	9.19
10	3.84	7.33
20	2.79	5.33
30	2.23	4.25
40	1.87	3.57
50	1.62	3.09
60	1.44	2.74
120	0.88	1.68

Equation 5-1 $I = (28.5 * P_1) / (10 + T_d)^{0.786}$
 I = rainfall intensity (inches per hour)
 P₁ = 1-hour point rainfall depth (inches)
 T_d = storm duration (minutes)

Reference:

- 1) Urban Drainage and Flood Control District - Urban Storm Drainage Criteria Manual Volume 1, 2017
- 2) NOAA Atlas 14, Volume 8, Version 2
http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=co

PROJECT: 1661 E 77th AVE
 JOB NO.: DEN22-0137
 CALC. BY: K. KLIMA
 DATE: 3/14/2023

Impervious Percentages - from Urban Drainage Table 6-3

Asphalt	100%	Future	90%
Concrete	90%	Land Use 6	0%
Roof	90%	Land Use 7	0%
Landscape	2%	Land Use 8	0%

SOIL TYPE: (use equation from Table 6-4)

 = FORMULA CELLS
 = USER INPUT CELLS

PROPOSED COMPOSITE IMPERVIOUSNESS

Basin	Area (ac)	Weighted Impervious and C Values					Areas (ac)							
		Imp.	C ₂	C ₅	C ₁₀	C ₁₀₀	Asphalt	Concrete	Roof	Landscape	Future	Land Use 6	Land Use 7	Land Use 8
A1	0.92	87%	0.71	0.75	0.78	0.84	0.77	0.03		0.12				
A2	1.17	90%	0.74	0.77	0.80	0.85			1.17					
A3	0.82	94%	0.77	0.80	0.83	0.87	0.31	0.51						
A4	1.12	90%	0.74	0.77	0.80	0.85			1.12					
A5	1.17	90%	0.74	0.77	0.80	0.85			1.17					
A6	0.88	94%	0.77	0.80	0.83	0.87	0.34	0.54						
A7	1.12	90%	0.74	0.77	0.80	0.85			1.12					
A8	0.33	91%	0.75	0.78	0.81	0.86	0.28	0.03		0.03				
A9	0.31	91%	0.75	0.78	0.81	0.86	0.26	0.02		0.03				
A10	0.85	86%	0.70	0.74	0.77	0.84	0.73			0.12				
OS1	0.09	2%	0.01	0.05	0.15	0.49				0.09				
OS2	0.49	2%	0.01	0.05	0.15	0.49				0.49				
OS3	0.24	2%	0.01	0.05	0.15	0.49				0.24				
OS4	0.57	2%	0.01	0.05	0.15	0.49				0.57				
TOTAL	10.05	78%	0.63	0.67	0.71	0.80	2.68	1.13	4.57	1.68				
TOTAL ONSITE	8.67	90%	0.74	0.77	0.80	0.85	2.68	1.13	4.57	0.29				

STANDARD FORM SF-2
TIME OF CONCENTRATION SUMMARY

Project: **1661 E 77th AVE**
 Job No.: **DEN22-0137**
 Checked By: **xxxxxxxxxx**

SUB-BASIN DATA				INITIAL/OVERLAND TIME (t)			TRAVEL TIME (t)					t _c CHECK (URBANIZED BASINS)				FINAL t _c	REMARKS
Basin	i	C _s	AREA A _c	LENGTH Ft	SLOPE %	t _i Min	LENGTH Ft	C _v	SLOPE %	VEL. FPS	t _t Min	COMP. t _c	TOT. LENGTH Ft	S _o %	t _c (Equation 6-5) Min	Min	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
A1	0.87	0.75	0.92	74	2.0	4.34	303	20	2.0	2.83	1.79	6.1	377	0.50	15.4	6.12	
A2	0.90	0.77	1.17	258	2.0	7.54							258	2.00	12.1	7.54	
A3	0.94	0.80	0.82	130	2.0	4.85	112	20	2.0	2.83	0.66	5.5	242	1.24	11.7	5.51	
A4	0.90	0.77	1.12	252	2.0	7.46							252	2.00	12.1	7.46	
A5	0.90	0.77	1.17	230	2.0	7.12							230	2.00	12.0	7.12	
A6	0.94	0.80	0.88	130	2.0	4.83	112	20	2.0	2.83	0.66	5.5	242	1.24	11.7	5.49	
A7	0.90	0.77	1.12	226	2.0	7.06							226	2.00	11.9	7.06	
A8	0.91	0.78	0.33	38	2.0	2.81	153	20	2.0	2.83	0.90	3.7	191	0.61	12.4	5.00	
A9	0.91	0.78	0.31	40	2.0	2.90	128	20	2.0	2.83	0.75	3.7	168	0.71	12.1	5.00	
A10	0.86	0.74	0.85	60	2.0	3.98	344	20	2.0	2.83	2.03	6.0	404	0.40	16.4	6.01	
OS1	0.02	0.05	0.09	22	4.0	5.62							22	4.00	25.9	5.62	
OS2	0.02	0.05	0.49	40	2.7	8.63							40	2.70	26.1	8.63	
OS3	0.02	0.05	0.24	32	1.0	10.71							32	1.00	26.2	10.71	
OS4	0.02	0.05	0.57	41	1.8	9.99							41	1.80	26.2	9.99	

Equation 6-3 $t_i = ((0.395(1.1 - C_s) \sqrt{L}) / (S_o^{0.33}))$
 Equation 6-5 $t_c = (26 - 17i) + (L / (60(14i + 9) \sqrt{S_o}))$

= FORMULA CELLS
 = USER INPUT CELLS

NRCS Conveyance Factor K Table - Cv Value	
Heavy Meadow	2.5
Tillage/Field	5
Short Pasture and Lawns	7
Nearly Bare Ground	10
Grassed Waterway	15
Paved Areas and Shallow Paved Swales	20

Calculated By: **K. KLIMA**
 Date: **3/14/2023**
 Checked By: **xxxxxxxxxx**
 5-Year
 1-hour rainfall= **1.42**

STANDARD FORM SF-3
 STORM DRAINAGE SYSTEM DESIGN
 (RATIONAL METHOD PROCEDURE)

Project: **1661 E 77th AVE**
 Job No.: **DEN22-0137**
 Design Storm: **5-Year**

= FORMULA CELLS
 = USER INPUT CELLS

BASIN	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			LENGTH (FT)	VELOCITY (FPS)	t _r (MIN)	REMARKS
	DESIGN POINT	AREA DESIGN	AREA (AC)	RUNOFF COEFF	t _c (MIN)	C * A (AC)	I (IN/HR)	Q (CFS)	t _c (MIN)	S (C * A) (CA)	I (IN/HR)	Q (CFS)	SLOPE (%)	STREET FLOW	DESIGN FLOW (CFS)	SLOPE (%)	PIPE DIAM. (IN.)				
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
A1			0.9	0.7	6.1	0.7	4.6	3.1							3.1	30.6%	18.0	9.0	32.9	0.0	Basin A1
A2			1.2	0.8	7.5	0.9	4.3	3.8							3.8	4.4%	12.0	60.0	9.5	0.1	Basin A2
A3			0.8	0.8	5.5	0.7	4.7	3.1													Basin A3
	1								7.6	1.6	4.2	6.6			6.6	2.0%	18.0	26.0	8.4	0.1	Basin A2 + Basin A3
A4			1.1	0.8	7.5	0.9	4.3	3.7							3.7	8.1%	12.0	86.0	12.9	0.1	Basin A4
A5			1.2	0.8	7.1	0.9	4.3	3.9							3.9	4.4%	12.0	60.0	9.5	0.1	Basin A5
A6			0.9	0.8	5.5	0.7	4.7	3.3													Basin A6
	2								7.2	1.6	4.3	6.9			6.9	2.0%	18.0	26.0	8.4	0.1	Basin A5 + Basin A6
A7			1.1	0.8	7.1	0.9	4.4	3.8							3.8	8.1%	12.0	86.0	12.9	0.1	Basin A7
A8			0.3	0.8	5.0	0.3	4.8	1.2							1.2	1.0%	18.0	236.0	5.9	0.7	Basin A8
A9			0.3	0.8	5.0	0.2	4.8	1.2							1.2	13.1%	12.0	16.0	16.4	0.0	Basin A9
	3								5.7	0.5	4.7	2.3			2.3	1.5%	18.0	133.0	7.3	0.3	Basin A8 + Basin A9
A10			0.8	0.7	6.0	0.6	4.6	2.9							2.9	53.8%	12.0	14.0	33.3	0.0	Basin A10
OS1			0.09	0.05	5.6	0.00	4.67	0.0													
OS2			0.49	0.05	8.6	0.03	4.06	0.1													
OS3			0.24	0.05	10.7	0.01	3.74	0.0													
OS4			0.57	0.05	10.0	0.03	3.84	0.1													

Calculated By: K. KLIMA
 Date: 3/14/2023
 Checked By: xxxxxxxxxx
 100-Year
 1-hour rainfall= 2.71

STANDARD FORM SF-3
 STORM DRAINAGE SYSTEM DESIGN
 (RATIONAL METHOD PROCEDURE)

Project: 1661 E 77th AVE
 Job No.: DEN22-0137
 Design Storm: 100-Year


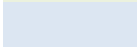
= FORMULA CELLS
 = USER INPUT CELLS

BASIN	DIRECT RUNOFF								TOTAL RUNOFF				STREET		PIPE			LENGTH (FT)	VELOCITY (FPS)	t _r (MIN)	REMARKS
	DESIGN POINT	AREA DESIGN	AREA (AC)	RUNOFF COEFF	t _c (MIN)	C * A (AC)	I (IN/HR)	Q (CFS)	t _c (MIN)	S (C * A) (CA)	I (IN/HR)	Q (CFS)	SLOPE (%)	STREET FLOW	DESIGN FLOW (CFS)	SLOPE (%)	PIPE DIAM. (IN.)				
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
A1			0.9	0.8	6.1	0.8	8.7	6.7							6.7	30.6%	18.0	9.0	32.9	0.0	Basin A1
A2			1.2	0.9	7.5	1.0	8.1	8.1							8.1	4.4%	12.0	60.0	9.5	0.1	Basin A2
A3			0.8	0.9	5.5	0.7	9.0	6.4													Basin A3
	1								7.6	1.7	8.1	13.8			13.8	2.0%	18.0	26.0	8.4	0.1	Basin A2 + Basin A3
A4			1.1	0.9	7.5	1.0	8.2	7.8							7.8	8.1%	12.0	86.0	12.9	0.1	Basin A4
A5			1.2	0.9	7.1	1.0	8.3	8.2							8.2	4.4%	12.0	60.0	9.5	0.1	Basin A5
A6			0.9	0.9	5.5	0.8	9.0	6.8													Basin A6
	2								7.2	1.8	8.2	14.5			14.5	2.0%	18.0	26.0	8.4	0.1	Basin A5 + Basin A6
A7			1.1	0.9	7.1	1.0	8.3	7.9							7.9	8.1%	12.0	86.0	12.9	0.1	Basin A7
A8			0.3	0.9	5.0	0.3	9.2	2.6							2.6	1.0%	18.0	236.0	5.9	0.7	Basin A8
A9			0.3	0.9	5.0	0.3	9.2	2.4							2.4	13.1%	12.0	16.0	16.4	0.0	Basin A9
	3								5.7	0.5	8.9	4.9			4.9	1.5%	18.0	133.0	7.3	0.3	Basin A8 + Basin A9
A10			0.8	0.8	6.0	0.7	8.7	6.2							6.2	53.8%	12.0	14.0	33.3	0.0	Basin A10
OS1			0.1	0.5	5.6	0.0	8.9	0.4													
OS2			0.49	0.49	8.628	0.240	7.75	1.9													
OS3			0.24	0.49	10.710	0.119	7.13	0.8													
OS4			0.57	0.49	9.985	0.280	7.34	2.1													

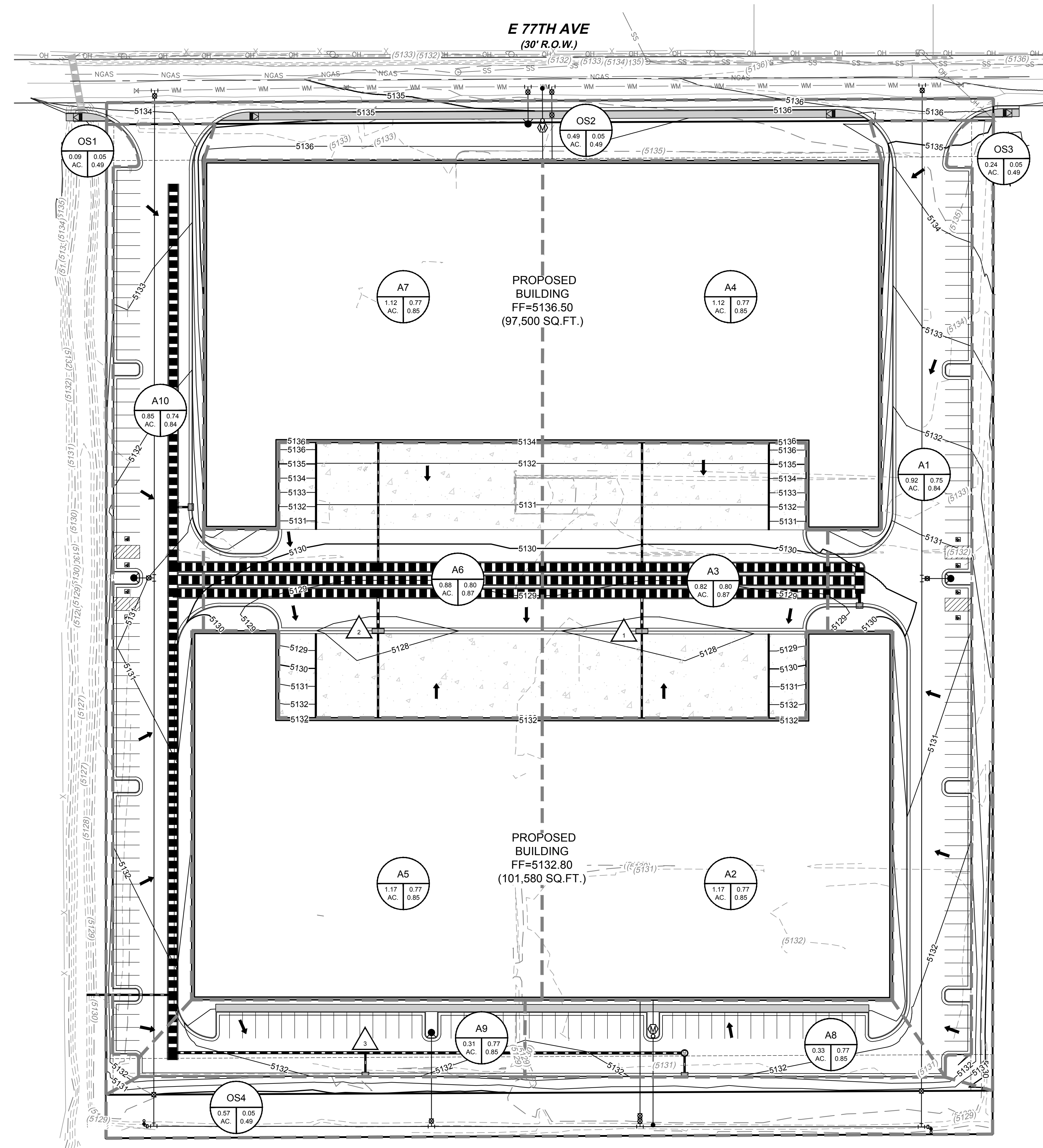
PROJECT: 1661 E 77th AVE
 JOB NO.: DEN22-0137
 CALC. BY: K. KLIMA
 DATE: 3/14/2023

WARE MALCOMB
 ARCHITECTURE | PLANNING | INTERIORS
 BRANDING | CIVIL ENGINEERING

RUNOFF SUMMARY						
BASIN LABEL	DESIGN POINT	AREA	LOCAL (CFS)		ACCUMULATIVE (CFS)	
			Q5	Q100	Q5	Q100
A1		0.9	3.1	6.7		
A2		1.2	3.8	8.1		
A3		0.8	3.1	6.4		
	1				6.6	13.8
A4		1.1	3.7	7.8		
A5		1.2	3.9	8.2		
A6		0.9	3.3	6.8		
	2				6.9	14.5
A7		1.1	3.8	7.9		
A8		0.3	1.2	2.6		
A9		0.3	1.2	2.4		
	3				2.3	4.9
A10		0.8	2.9	6.2		
OS1		0.1	0.0	0.4		
OS2		0.5	0.1	1.9		
OS3		0.2	0.0	0.8		
OS4		0.6	0.1	2.1		

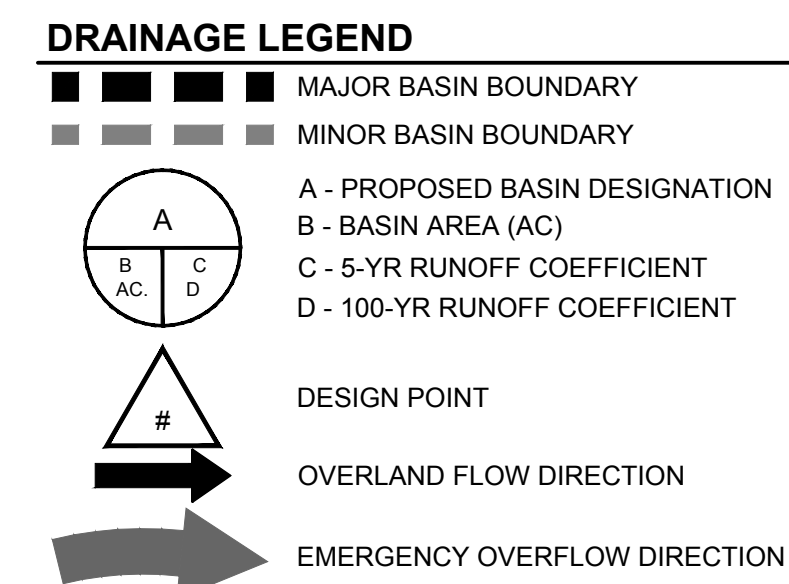
 = FORMULA CELLS
 = USER INPUT CELLS

APPENDIX C
Drainage Plan



LEGEND

EXISTING	PROPOSED
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)
--- (Dashed)	--- (Dashed)



WARE MALCOMB
LEADING DESIGN FOR COMMERCIAL REAL ESTATE

900 south broadway
suite 320
denver, co 80209
p 303.561.3333
waremalcomb.com

FOR AND ON BEHALF
OF WARE MALCOMB

1661 E 77th Ave

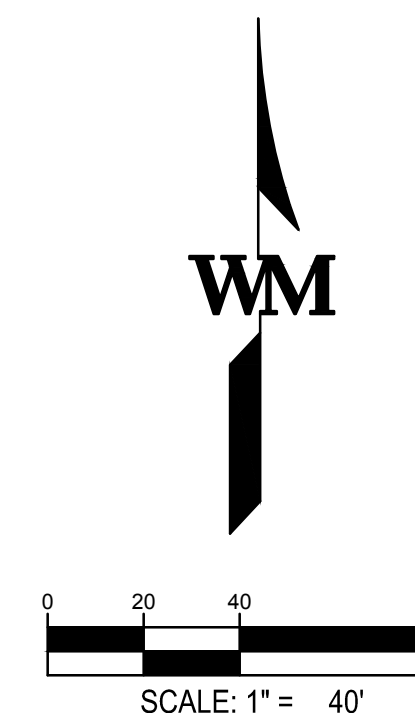
REMARKS

JOB NO.:	DEN22-0137
PA / PM:	B.MULLER
DESIGNED:	K.KLIMA
DATE:	03/01/2023
PLOT DATE:	03/21/23

SHEET

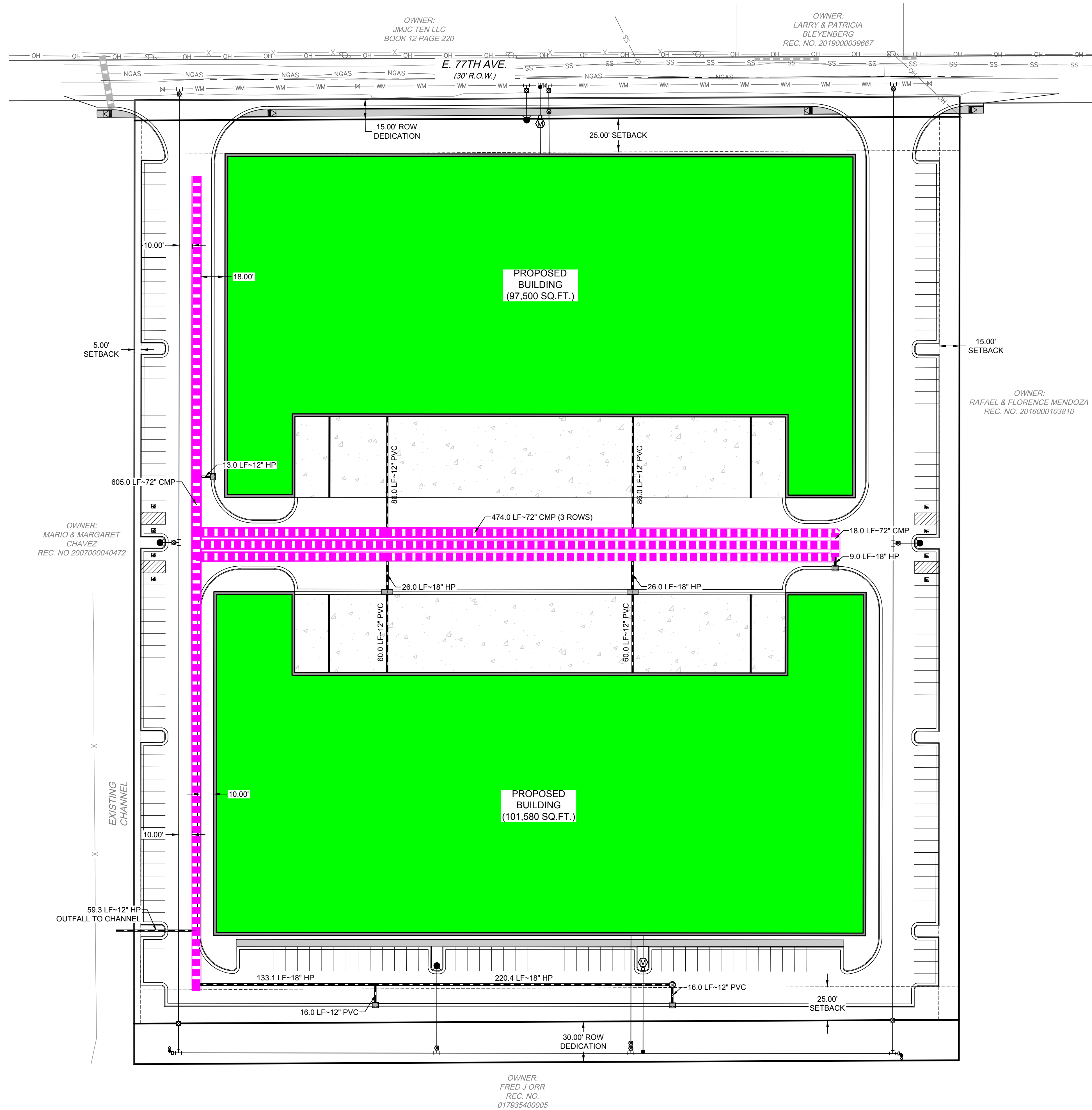
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WARE MALCOMB assumes no responsibility for utility locations. The utilities shown on this drawing have been plotted from the best available information. It is, however, the contractors responsibility to field verify the location of all utilities prior to the commencement of any construction.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB, AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK. NOT FOR CONSTRUCTION



PARKING SPACES PROVIDED			
BUILDING	ACCESSIBLE PARKING SPACES	PARKING SPACES	TOTAL PARKING SPACES
NORTHERN	4	54	58
SOUTHERN	4	110	114

- NOTES**
- TOTAL 100-YR STORAGE REQUIRED: 57,325 CF
 - TOTAL STORAGE PROVIDED: 57,873 CF
 - TOTAL LENGTH OF 72" CMP: 2045 LF

LEGEND:

- PROPERTY LINE
- PROPOSED 5' CONTOUR
- PROPOSED 1' CONTOUR
- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- PROPOSED UNDERGROUND DETENTION
- PROPOSED STORM LINE
- EXISTING STORM LINE
- PROPOSED STORM INLET
- EXISTING STORM INLET

WARE MALCOMB
LEADING DESIGN FOR COMMERCIAL REAL ESTATE

900 south broadway
suite 320
denver, co 80209
p 303.661.3333
waremalcomb.com

FOR AND ON BEHALF OF WARE MALCOMB

1661 EAST 77TH AVE
ADAMS COUNTY, COLORADO

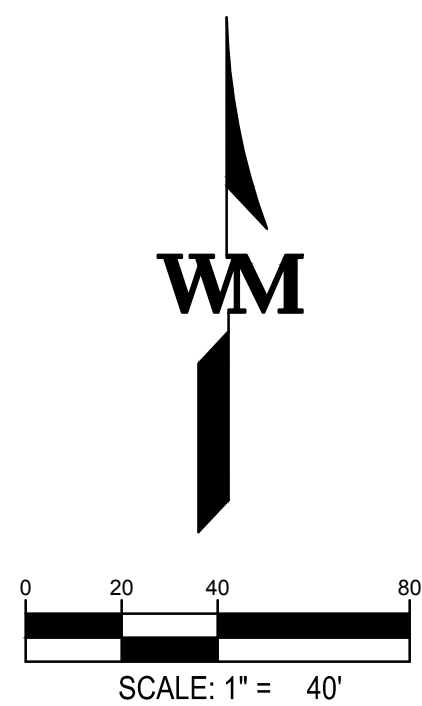
DETENTION STORAGE EXHIBIT

NO.	DATE	REMARKS

JOB NO.:	DEN22-0137
PA / PM:	T. SWAN
DESIGNED:	B. MULLER
DATE:	2023/04/05
PLOT DATE:	04/05/23

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WARE MALCOMB assumes no responsibility for utility locations. The utilities shown on this drawing have been plotted from the best available information. It is, however, the contractors responsibility to field verify the location of all utilities prior to the commencement of any construction.



TREASURER & PUBLIC TRUSTEE

ADAMS COUNTY, COLORADO

Certificate Of Taxes Due

Account Number R0070660
 Parcel 0171935100032
 Assessed To
 TERRACE ENTERPRISES LLC
 1661 E 77TH AVE
 DENVER, CO 80229

Certificate Number 2022-223883
 Order Number FCAD_1150542
 Vendor ID 2
 DATA TRACE
 30005 LADYFACE CT STE 200
 AGOURA HILLS, CA 91301

Legal Description	Situs Address				
SECT,TWN,RNG:35-2-68 DESC: BEG AT A PT ON W BDRY LN ROW OF U P RR WHENCE E4 COR SEC 35 BRS N 89D 43M E 914/7 FT TH W TO A 0 PT WHICH IS 612/3 FT E OF E BDRY LN OF ROW FOR DRAINAGE DT SD PT BEING TRUE POB TH CONT W 612/3 FT TO E BDRY LN SD DT ROW TH N 711/4 FT M/L TO S BDRY LN OF A 30 FT RD TH E 612/3 FT TH S 711/22 FT M/L TO POB 10A					
Year	Tax	Interest	Fees	Payments	Balance
Tax Charge					
2021	\$5,722.22	\$0.00	\$0.00	(\$5,722.22)	\$0.00
Total Tax Charge					\$0.00
Grand Total Due as of 12/20/2022					\$0.00

Tax Billed at 2021 Rates for Tax Area 085 - 085

Authority	Mill Levy	Amount	Values	Actual	Assessed
RANGEVIEW LIBRARY DISTRICT	3.6890000	\$213.96	AG BUSINESS LAND	\$200,000	\$58,000
ADAMS COUNTY FIRE PROTECTIO	16.6860000	\$967.79	Total	\$200,000	\$58,000
ADAMS COUNTY	27.0690000	\$1,570.00			
NORTH WASHINGTON WATER & SA	0.7750000	\$44.95			
SD 1	49.4400000	\$2,867.52			
URBAN DRAINAGE SOUTH PLATTE	0.1000000	\$5.80			
URBAN DRAINAGE & FLOOD CONT	0.9000000	\$52.20			
Taxes Billed 2021	98.6590000	\$5,722.22			

ALL TAX SALE AMOUNTS ARE SUBJECT TO CHANGE DUE TO ENDORSEMENT OF CURRENT TAXES BY THE LIENHOLDER OR TO ADVERTISING AND DISTRAINT WARRANT FEES. CHANGES MAY OCCUR; PLEASE CONTACT THE TREASURY PRIOR TO MAKING A PAYMENT AFTER AUGUST 1. TAX LIEN SALE REDEMPTION AMOUNTS MUST BE PAID BY CASH OR CASHIER'S CHECK.

SPECIAL TAXING DISTRICTS AND THE BOUNDARIES OF SUCH DISTRICTS MAY BE ON FILE WITH THE BOARD OF COUNTY COMMISSIONERS, THE COUNTY CLERK, OR, THE COUNTY ASSESSOR.

This certificate does not include land or improvements assessed under a separate account number, personal property taxes, transfer tax, or, miscellaneous tax collected on behalf of other entities, special or local improvement district assessments, or mobile homes, unless specifically mentioned.

I, the undersigned, do hereby certify that the entire amount of taxes due upon the above described parcels of real property and all outstanding lien sales for unpaid taxes as shown by the records in my office from which the same may still be redeemed with the amount required for redemption on this date are as noted herein. In witness whereof, I have hereunto set my hand and seal.

TREASURER & PUBLIC TRUSTEE, ADAMS COUNTY, Lisa L. Culpepper,
 J.D.

Treasurer, Adams County, Lisa L. Culpepper J.D.



4430 S. Adams County Parkway
 Brighton, CO 80601



TREASURER & PUBLIC TRUSTEE

ADAMS COUNTY, COLORADO

Certificate Of Taxes Due

Account Number R0070671
 Parcel 0171935100056
 Assessed To
 TERRACE ENTERPRISES LLC
 1661 E 77TH AVE
 DENVER, CO 80229

Certificate Number 2022-223884
 Order Number FCAD_1150542-2
 Vendor ID 2
 DATA TRACE
 30005 LADYFACE CT STE 200
 AGOURA HILLS, CA 91301

Legal Description	Situs Address
SECT,TWN,RNG:35-2-68 DESC: IMPS ONLY BEG AT A PT ON W BDRY LN ROW OF U P RR WHENCE E4 COR SEC 35 BRS N 89D 43M E 914/7 FT TH W TO A PT WHICH IS 612/3 FT E OF E BDRY LN OF ROW FOR DRAINAGE DT SD PT BEING TRUE POB TH CONT W 612/3 FT TO E BDRY LN SD DT ROW TH N 711/4 FT M/L TO S BDRY LN OF A 30 FT RD TH E 612/3 FT TH S 711/22 FT M/L TO POB 10A	1661 E 77TH AVE

Year	Tax	Interest	Fees	Payments	Balance
Tax Charge					
2021	\$72,393.02	\$0.00	\$0.00	(\$72,393.02)	\$0.00
Total Tax Charge					\$0.00
Grand Total Due as of 12/20/2022					\$0.00

Tax Billed at 2021 Rates for Tax Area 085 - 085

Authority	Mill Levy	Amount	Values	Actual	Assessed
RANGEVIEW LIBRARY DISTRICT	3.6890000	\$2,706.88	AG BUSINESS IMPRV	\$2,530,247	\$733,770
ADAMS COUNTY FIRE PROTECTIO	16.6860000	\$12,243.69	Total	\$2,530,247	\$733,770
ADAMS COUNTY	27.0690000	\$19,862.42			
NORTH WASHINGTON WATER & SA	0.7750000	\$568.67			
SD 1	49.4400000	\$36,277.59			
URBAN DRAINAGE SOUTH PLATTE	0.1000000	\$73.38			
URBAN DRAINAGE & FLOOD CONT	0.9000000	\$660.39			
Taxes Billed 2021	98.6590000	\$72,393.02			

ALL TAX SALE AMOUNTS ARE SUBJECT TO CHANGE DUE TO ENDORSEMENT OF CURRENT TAXES BY THE LIENHOLDER OR TO ADVERTISING AND DISTRAINT WARRANT FEES. CHANGES MAY OCCUR; PLEASE CONTACT THE TREASURY PRIOR TO MAKING A PAYMENT AFTER AUGUST 1. TAX LIEN SALE REDEMPTION AMOUNTS MUST BE PAID BY CASH OR CASHIER'S CHECK.

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This certificate does not include land or improvements assessed under a separate account number, personal property taxes, transfer tax, or, miscellaneous tax collected on behalf of other entities, special or local improvement district assessments, or mobile homes, unless specifically mentioned.

I, the undersigned, do hereby certify that the entire amount of taxes due upon the above described parcels of real property and all outstanding lien sales for unpaid taxes as shown by the records in my office from which the same may still be redeemed with the amount required for redemption on this date are as noted herein. In witness whereof, I have hereunto set my hand and seal.

TREASURER & PUBLIC TRUSTEE, ADAMS COUNTY, Lisa L. Culpepper,
 J.D.

Treasurer, Adams County, Lisa L. Culpepper J.D.



4430 S. Adams County Parkway
 Brighton, CO 80601

WARE MALCOMB

ARCHITECTURE

PLANNING

INTERIORS

CIVIL ENGINEERING

BRANDING

BUILDING MEASUREMENT

CERTIFICATION OF NOTICE TO MINERAL ESTATE OWNERS

I/We, Terrace Enterprises, LLC
(the "Applicant") by signing below, hereby declare and certify as follows:

With respect to the property located at:

Physical Address: 1661 E. 77th Ave., Denver, CO 80229

Legal Description: See Exhibit A

Parcel #(s): One

(PLEASE CHECK ONE):

 On the day of , 20 , which is not less than thirty days before the initial public hearing, notice of application for surface development was provided to mineral estate owners pursuant to section 24-65.5-103 of the Colorado Revised Statutes;

or

X

I/We have searched the records of the Adams County Tax Assessor and the Adams County Clerk and Recorder for the above identified parcel and have found that no mineral estate owner is identified therein.

Date: 4-12-23 Applicant: Terrace Enterprises, LLC

By: [Signature]

Print Name: Byron R. Chrisman

Address: 864 W South Boulder Rd., #200
Louisville, CO 80027

STATE OF COLORADO)

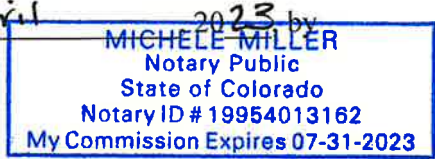
)

COUNTY OF ADAMS)

Subscribed and sworn to before me this 12th day of April

Byron R. Chrisman.

Witness my hand and official seal.



My Commission expires: 7-31-23

[Signature]

Notary Public

After Recording Return To:

Name and Address of Person Preparing Legal Description:

A recorded copy of this Certification shall be submitted to the Adams County Community and Economic Development Department with all applicable land use applications.

EXHIBIT A

The Land referred to herein below is situated in the County of Adams, State of Colorado, and is described as follows:

A tract of land located in the East 1/2 of the Southwest 1/4 Northeast 1/4 of Section 35, Township 2 South, Range 68

West of the 6th P.M., being more particularly described as follows:

Beginning at a point in the West boundary line of the abandoned Union Pacific Railroad right of way as it was described in

Deed recorded July 16, 1908 in [Book 39 at Page 24](#), whence the East Quarter corner of said Section bears North 89

degrees 43 minutes East, a distance of 914.7 feet;

Thence North 89 degrees 49 minutes West to a point which is 612.3 feet East of the East boundary line of the right of

way for a drainage ditch as conveyed to the County of Adams in Deed recorded October 4, 1938 in [Book 250 at Page 11](#),

said distance of 612.30 feet being measured along an extension of the last described line and said point being the True

Point of Beginning;

Thence continuing North 89 degrees 49 minutes West a distance of 612.3 feet to the East boundary line of said ditch

right of way;

Thence North 00 degrees 07 minutes East along the East boundary line of said ditch right of way, a distance of 711.4

feet, more or less to the South boundary line of a 30 foot road;

Thence South 89 degrees 49 minutes East, along the South line of said 30 foot road, a distance of 612.30 feet;

Thence South 00 degrees 10 minutes West, a distance of 711.22 feet, more or less to the True Point of Beginning,

County of Adams,

State of Colorado.

Neighborhood Meeting Summary

Prologis

1661 East 77th Avenue, Adams County

Prologis hosted a Neighborhood Meeting regarding a comprehensive plan amendment and rezoning of roughly ten acres known as 1661 East 77th Avenue from 7:00 PM to approximately 8:00 PM on April 5th, 2023, at Botany Lane Greenhouse, 1661 East 77th Avenue, Denver, Colorado, 80229.

Twenty-one notices of the meeting were timely mailed to owners of property within 500 feet of the subject properties. Attendees included three of the property owners who received notice, Prologis's Stephanie O'Neil and David Mecham, current property owners and the design team.

Attendees:

Ted Swan – Ware Malcomb

Brian Muller – Ware Malcomb

Steve Smith – Ware Malcomb

Rob Kiester – Ware Malcomb

Stephanie O'Neil – Prologis

David Mecham – Prologis

Ed McMillan – Neighbor

Fred & Coleen Orr – Neighbor

Rafael Mendoza – Neighbor

Ms. O'Neil briefly described the proposed project in general, including its proposed use, design, architecture, and landscape.

Eight questions were raised, as follows:

1. What will be the orientation of the buildings?

Answer: The buildings will be oriented so that the truck docks are internal, and fronts of the buildings will be facing 77th and future 76th respectively.

2. Will there be screening or fencing?

Answer: Landscaping will be provided meeting Adams County code. Fencing will be provided if required by tenant generally for safety or security concerns.

3. How big are the buildings?

Answer: The buildings are about 100,000 SF each.

4. Where is your detention?

Answer: Detention will be provided underground and released to existing drainage channel west of the property.

5. What are you doing for storm drainage?

Answer: Storm inlets and pipes will be provided to capture flows and drained to proposed underground detention vault.

6. What is the clear height of the buildings?

Answer: 32' clear height.

7. Will there be sidewalks? Will they connect to York?

Answer: We are only responsible to build the local industrial half section in our property frontage, which includes curb & gutter and sidewalk.

8. Are there setbacks?

Answer: There are landscape and building setbacks. (15' side, 5' side and 25' front and rear). Additionally, we are required to dedicate 30' to the County on both 77th and future 76th.

After the presentation, the applicant invited individuals to view the graphics informally and remained available for questions.

WARRANTY DEED

THIS DEED, Made this 12 day of June 2006, between

Avallone Ventures, LLC, a Colorado Limited Liability Company and Lloyd Enterprises, Inc., Profit Sharing Plan as their interests appear (As to Parcel A) and Bryce Avallone and Amanda P. Avallone and Lloyd Enterprises Inc., Profit Sharing Plan as their interests appear (As to Parcel B)

of the County of Adams, State of Colorado, grantor and

Terrace Enterprises, LLC, an Idaho limited liability company

whose legal address is:

of the County of Adams, State of Colorado, grantee:

WITNESSETH, That the grantor for and in consideration of the sum of Three Million One Hundred Thousand Dollars and NO/100's (\$3,100,000.00) the receipt and sufficiency of which is hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm, unto the grantee, his heirs and assigns forever, all the real property together with improvements, if any, situate, lying and being in the County of Adams, and State of COLORADO, described as follows:

See Exhibit A attached hereto and made a part hereof.

Date
\$ 310⁰⁰
State Doc, Fee

also known by street and number as **1661 East 77th Avenue, Denver, CO 80229**

TOGETHER with all and singular the hereditaments and appurtenances thereunto belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and all the estate, right, title, interest, claim and demand whatsoever of the grantor, either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances.

TO HAVE AND TO HOLD the said premises above bargained and described, with the appurtenances, unto the grantee, his heirs and assigns forever. And the grantor, for himself, his heirs, and personal representatives, does covenant, grant, bargain and agree to and with the grantee, his heirs and assigns, that at the time of the ensembling and delivery of these presents, he is well seized of the premises above conveyed, has good, sure, perfect, absolute and indefeasible estate of inheritance, in law, in fee simple, and has good right, full power and lawful authority to grant, bargain, sell and convey the same in manner and form as aforesaid, and that the same are free and clear from all former and other grants, bargains, sales, liens, taxes, assessments, encumbrances and restrictions of whatever kind or nature soever, except all taxes and assessments for the current year, a lien but not yet due or payable, and those specific Exceptions described by reference to recorded documents as reflected in the Title Documents accepted by Buyer in accordance with section 8a "Title Review", of the contract dated, between the parties.

The grantor shall and will **WARRANT AND FOREVER DEFEND** the above-bargained premises in the quiet and peaceable possession of the grantee his heirs and assigns, against all and every person or persons lawfully claiming the whole or any part thereof. The singular number shall include the plural, the plural the singular, and the use of any gender shall be applicable to all genders.

IN WITNESS WHEREOF, the grantor has executed this deed on the date set forth above.

SELLERS:

Avallone Ventures, LLC (Parcel A)

Lloyd Enterprises, Inc. (Parcel A)

By: [Signature]
Its:

By: [Signature]
Its:

By: [Signature]
Bryce Avallone (Parcel B)

[Signature]
Amanda P. Avallone (Parcel B)

Lloyd Enterprises Inc. (Parcel B)

By: [Signature]
Its:

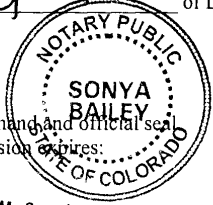
Return: Terrace Ent. LLC
1661 E. 77 Ave
Denver, Co. 80229

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3

STATE OF COLORADO
COUNTY OF DENVER

}ss:

The foregoing instrument was acknowledged before me this 12th day of June 2006, by
Bryce Avallone as Manager of Avallone Ventures, LLC and
Bryce Avallone as President of Lloyd Enterprises Inc. as to Parcel A and Bryce
Avallone and Amanda P. Avallone as to Parcel B and Bryce Avallone as
President of Lloyd Enterprises Inc. as to Parcel B.



Sonya Bailey
Notary Public

Witness my hand and official seal
My Commission expires:

My Commission Expires 6-24-06

Exhibit A

Parcel A:

A tract of land located in the East ½ of the Southwest ¼ Northeast ¼ of Section 35, Township 2 South, Range 68 West of the 6th P.M., being more particularly described as follows:

Beginning at a point in the West boundary line of the abandoned Union Pacific Railroad right of way as it was described in Deed recorded July 16, 1908 in Book 39 at Page 24, whence the East Quarter corner of said Section bears North 89 degrees 43 minutes East, a distance of 914.7 feet;

Thence North 89 degrees 49 minutes West to a point which is 612.3 feet East of the East boundary line of the right of way for a drainage ditch as conveyed to the County of Adams in Deed recorded October 4, 1938 in Book 250 at Page 11, said distance of 612.30 feet being measured along an extension of the last described line and said point being the True Point of beginning;

Thence continuing North 89 degrees 49 minutes West a distance of 612.3 feet to the East boundary line of said ditch right of way;

Thence North 00 degrees 07 minutes East along the East boundary line of said ditch right of way, a distance of 711.4 feet, more or less to the South boundary line of a 30 foot road;

Thence South 89 degrees 49 minutes East, along the South line of said 30 foot road, a distance of 612.30 feet;

Thence South 00 degrees 10 minutes West, a distance of 711.22 feet, more or less to the True Point of Beginning,

County of Adams,
State of Colorado.

Except improvements on the above property (also referenced as infrastructure)

Parcel B:

The infrastructure thereunder to the legal description described below:

A tract of land located in the E ½ of the SW ¼ NE ¼ of Section 35, Township Township 2 South, Range 68 West of the 6th P.M., being more particularly described as follows:

Beginning at a point in the West boundary line of the abandoned Union Pacific Railroad right-of-way as it was described in deed recorded July 16, 1908, in Book 39 at Page 24, whence the East Quarter corner of said Section 35 bears North 89°43' East, a distance of 914.7 feet;

Thence North 89°49' West to a point which is 612.3 feet East of the East boundary line of the right of way for a drainage ditch as conveyed to the County of Adams in deed recorded October 4, 1938, in Book 250 at Page 11, said distance of 612.3 feet being measured along an extension of the last described line and said point being the True Point of Beginning;

Thence continuing North 89°49' West a distance of 612.3 feet to the East boundary line of said ditch right of way;

Thence North 0°07' East along the East boundary line of said ditch right of way, a distance of 711.4 feet, more or less, to the South boundary line of a 30 foot road;

Thence South 89°49' East along the South line of said 30 foot road, a distance of 612.3 feet;

Thence South 0°10' West, a distance of 711.22 feet, more or less, to the True Point of Beginning,

County of Adams,
State of Colorado.

North Washington Street

Water and Sanitation

District

3172 E. 78th Avenue, Denver, CO 80229 303 / 288 – 6664

To Whom It May Concern:

Dear Sir/Madame:

The North Washington Street Water and Sanitation District (“District”) provides the following in response to your request for water and sanitary sewer service dated April 6, 2023 related to the property located at 1661 E 77th Ave. (“Property”). The District can provide water and sewer service to the Property based on conditions set forth herein. The following are general requirements for water and sanitary sewer service. The District Rules and Regulations and the standards and requirements of Denver Water and Metro Wastewater Reclamation District must be complied with as an on-going condition of service.

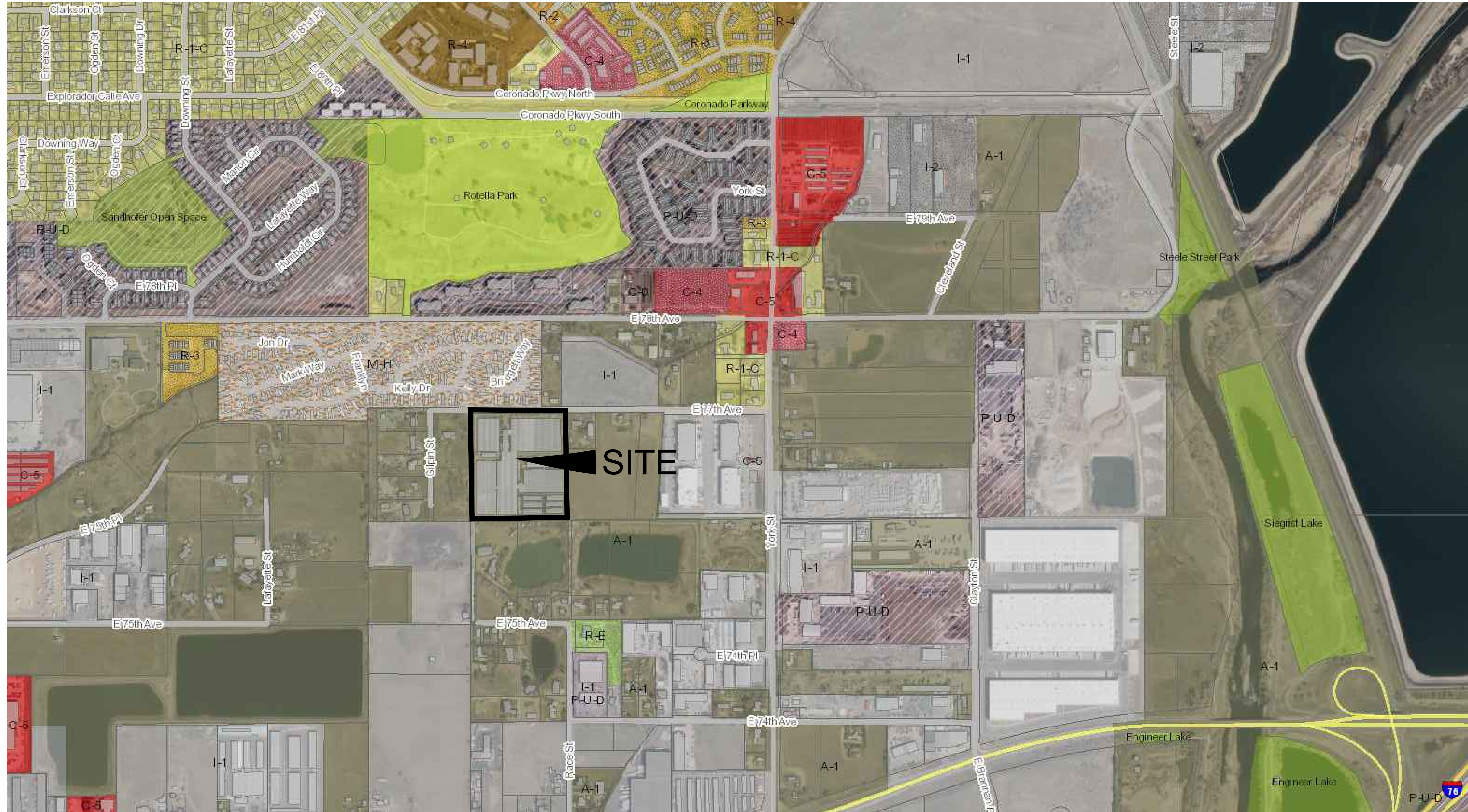
The subject Property is understood to be entirely within the service and boundary area of the District based on your assertions. The District makes no representation or warranty in regard to the Property boundaries and applicant is responsible for verification of same. If the Property is outside of the District’s boundaries, applicant is responsible for undertaking and paying all costs to include the Property within the District’s boundaries. Treatment of sewage generated within the District is provided by the Metro Wastewater Reclamation District. Treatment and provision of water within the District is provided by Denver Water. Conditions for water and sanitary service from the District include meeting the requirements contained herein and payment of all fees and costs as provided in District’s Rules and Regulations along with those of Denver Water and Metro Wastewater Reclamation District. Timing of water and sanitary availability is subject to further coordinated by the Town and District.

Water and Sanitary availability are subject to review and acceptance of design documents from owner/developer of the Property, by the District. Appropriate right-of-way easements and agreements are required for all water and sanitary sewer extensions. Jurisdictional coordination, approvals, permitting, license agreements and easements are to be completed prior to acceptance of plans. All costs associated with collection and distribution system improvements required to serve the Property are the responsibility of the owner/developer including guarantee of improvements and warranty periods.

Receipt of service is also subject to all costs being paid by owner/developer for engineering, reviews, construction, observation, and inspections at the then current rate fee structure established by the District, including establishing an imprest account with the District as a deposit for such accounts. Please be aware that proper tap connection and development fees are required to be paid, at the most recent fee schedule, prior to connection to the District main.



Mike DeMattee,
District Manager



WARE MALCOMB
 LEADING DESIGN FOR COMMERCIAL REAL ESTATE
 900 south broadway
 suite 320
 denver, co 80209
 p 303.661.3333
 waremalcomb.com

FOR AND ON BEHALF OF WARE MALCOMB

1661 EAST 77TH AVE
ADAMS COUNTY, COLORADO

NO.	DATE	REMARKS

JOB NO.:	DEN22-0137
PA / PM:	T. SWAN
DESIGNED:	B. MULLER
DATE:	2023/04/05
PLOT DATE:	04/05/23

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THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK. NOT FOR CONSTRUCTION