Community & Economic Development Department

adcogov.org

ADAMS COUNTY
COLORADO

4430 South Adams County Parkway
1st Floor, Suite W2000B
Brighton, CO 80601-8218

PHONE 720.523.6800

EMAIL epermitcenter@adcogov.org

Request for Comments

Case Name: 5200 Sheridan Minor Subdivision

Case Number: PLT2023-00012

at 6:00 pm

March 13, 2023

The Adams County Planning Commission is requesting comments on the following application: **Minor Subdivision Final Plat to create 4 lots on approximately 7 acres within the Commercial-4 zone district.** This request is located at 5200 SHERIDAN BLVD. The Assessor's Parcel Number is 0182518206004.

Applicant Information: Kum & Go, LC
DAN GARNEAU
1459 GRAND AVENUE
DES MOINES, IA 50309

Please forward any written comments on this application to the Community and Economic Development Department at 4430 South Adams County Parkway, Suite W2000A Brighton, CO 80601-8216 or call (720) 523-6800 by 04/07/2023 in order that your comments may be taken into consideration in the review of this case. If you would like your comments included verbatim please send your response by way of e-mail to BMarin@adcogov.org.

Once comments have been received and the staff report written, the staff report and notice of public hearing dates may be forwarded to you upon request. The full text of the proposed request and additional colored maps can be obtained by contacting this office or by accessing the Adams County web site at www.adcogov.org/current-land-use-cases.

Thank you for your review of this case.

Brayan Marin
Planner II

Community & Economic
Development Department
www.adcogov.org

ADAMS COUNTY
COLORADO

4430 South Adams County Parkway
1st Floor, Suite W2000
Brighton, CO 80601-8204
PHONE 720.523.6800
FAX 720.523.6998

DEVELOPMENT APPLICATION FORM

Application Type:

☐ Conceptual Review	☐ Preliminary PUD	☐ Temporary Use
☒ Subdivision, Preliminary	☐ Final PUD	☐ Variance
☐ Subdivision, Final	☐ Rezone	☐ Conditional Use
☐ Plat Correction/ Vacation	☐ Special Use	☐ Other: _____

PROJECT NAME: Kum & Go 2294

APPLICANT

Name(s): Dan Garneau - Kum & Go Phone #: (515) 457.6392

Address: 1459 Grand Avenue

City, State, Zip: Des Moines, IA, 50309

2nd Phone #: Email: Dan.Garneau@kumandgo.com

OWNER

Name(s): Dan Garneau - Kum & Go Phone #: (515) 457.6392

Address: 1459 Grand Avenue

City, State, Zip: Des Moines, IA, 50309

2nd Phone #: Email: Dan.Garneau@kumandgo.com

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

Name: David Pendleton - Olsson Phone #: 970-635-3745

Address: 1880 Fall River Drive, Suite 200

City, State, Zip: Loveland, CO, 80538

2nd Phone #: Email: dpendleton@olsson.com

DESCRIPTION OF SITE

Address:	5200 Sheridan Blvd
City, State, Zip:	Adams County, CO, 80212
Area (acres or square feet):	7.183 Acres (312,919 SF)
Tax Assessor Parcel Number	0182518206004
Existing Zoning:	C-4
Existing Land Use:	Commercial
Proposed Land Use:	Commercial

Have you attended a Conceptual Review? YES [x] NO [ ]

If Yes, please list PRE#: 2022-00034

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: Dan Garneau Date: February 21, 2023

Owner's Printed Name

Name:

Owner's Signature

May 19, 2022

Planning & Development
Adams County Government Center
4430 South Adams County Parkway
Brighton, CO 80601

Re: Kum & Go #2294 Conceptual Review Application

To Whom It May Concern:

SBGM Land Trust hereby authorizes Kum & Go, L.C. to apply for a conceptual review application for the property located at 5200 Sheridan Boulevard. We further authorize Kum & Go, L.C. to act on our behalf to proceed with a development review process and receive all correspondence related to the application(s).

Respectfully,

James Doyle Trustee SBGM Land Trust

February 24, 2023

Planning & Development
Adams County Government Center
4430 South Adams County Parkway
Brighton, CO 80601

Re: Kum & Go #2294 Development Review Application (52nd & Sheridan)

To Whom It May Concern:

Olsson, Inc. respectfully submits the enclosed Minor Subdivision Application for Kum & Go Store #2294, located near the northeast corner of the intersection between West 52nd Avenue & Sheridan Boulevard. The enclosed application outlines the development of a 2.09-acre portion of a 7.15-acre lot for a Kum & Go convenience store and the associated fuel canopy. The property is currently occupied by Ace Express Coaches. The property is bordered by W 52nd Ave to the south, Sheridan Blvd to the west, and W 53rd PL to the north. The project is anticipated to start construction August 2023 and anticipated finish date of construction is February 2024. No public improvements are required with this project.

The convenience store building will utilize a cast stone base & Nichiha fiber cement panel façade in three different colors with varying roof lines. HVAC equipment associated with the structure will be contained on the roof and screened from view. The interior of the building is equally finished, with burnished concrete floors, tile, and millwork cabinetry throughout. This 5,620± square foot building will incorporate Kum & Go's newest store concept with a terrific product offering and fresh food choices, such as made-to-order pizzas, sandwiches, wraps, and bakery items cooked on-site. There will be various seasonal outdoor sales items and a propane tank exchange along the front facade of the building.

The fueling islands (and overhead canopy) on the east side of the site will offer traditional passenger vehicle gasoline, diesel, and E-85 fuels. Underground fuel storage tanks will be located directly east of the main fueling canopy.

The enclosed site layout proposes to face the Kum & Go store entry to the east with two full movement access points onto W 53rd Pl on the north. Parking for the facility will be accomplished with 28 parking stalls located immediately adjacent to the building, of which two stalls will be striped as ADA accessible. This arrangement will promote adequate circulation for both delivery trucks and customers. A traffic study has been completed and the new convenience store is not anticipated to generate significant impact to the adjacent thoroughfares since much of the traffic for this store will be pulled from the existing trips on the adjacent roadway network.

It is anticipated the site will utilize Denver Water District for the domestic and irrigation services and the Denver Metro Water Recovery for the sewer service. The storm water will be routed to the northeast corner of the existing lot to a proposed detention pond before being released into W 53rd Place. The electrical service will be provided by Xcel.

Finally, the eventual landscaping plan will depict substantial greenery which will meet the County's requirements. Screening along the roadways reduces headlight spill and softens the edge of parking areas. Proposed tree plantings will be concentrated along the adjacent roadways which also adds to the public benefit.

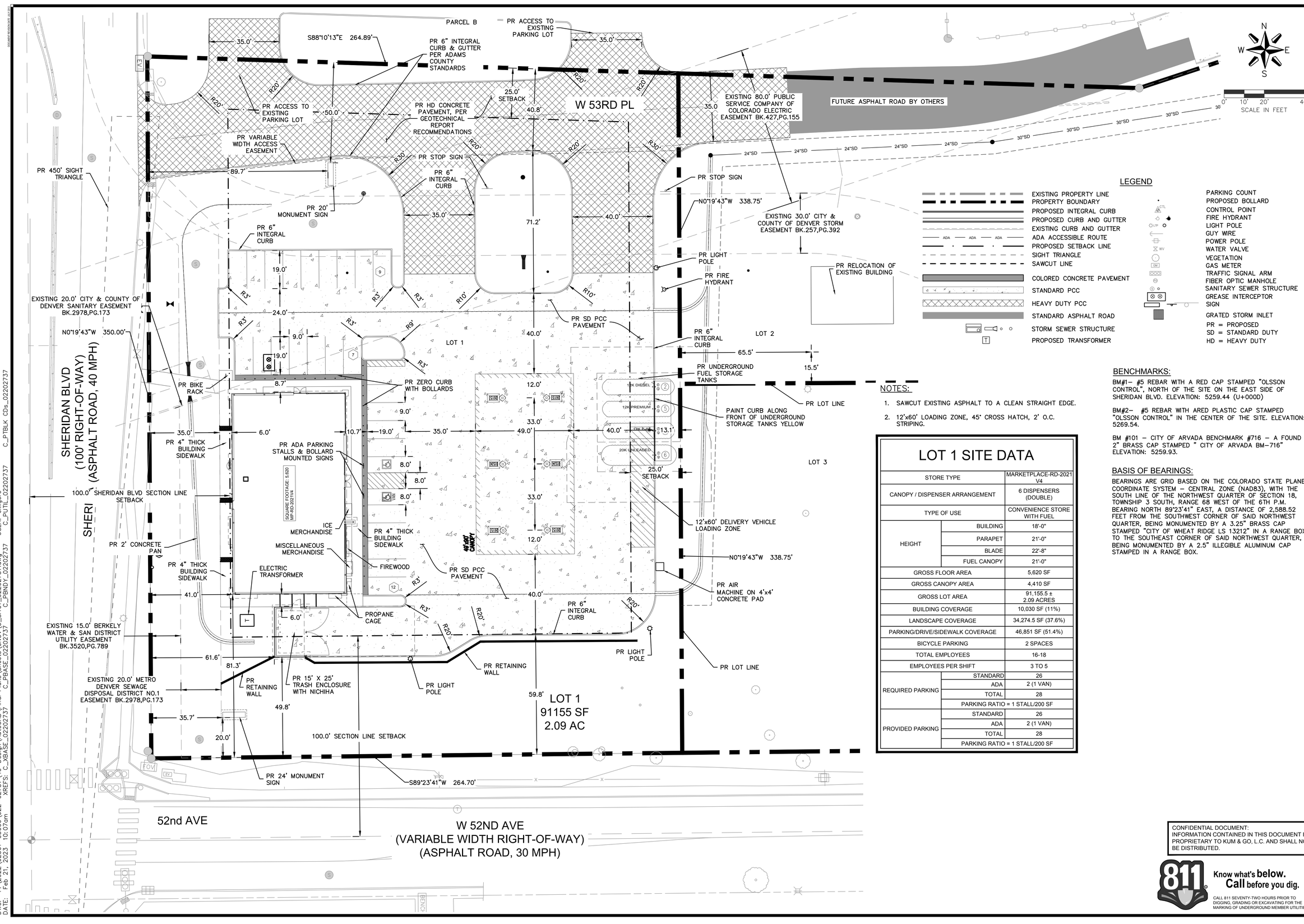
"Kum & Go is a private, family held business in its 61st year of operation and currently operates over 430 convenience stores in all types of neighborhoods. Our site design, with focused lighting, substantial landscaping and appealing architecture typically adds to the aesthetics of our neighborhoods, and our services are second to none. We love what we do, have a genuine compassion for our customers, associates, families and communities; and expect & deliver superior performance." - Kum & Go Team

We ask that you review our submittal at your earliest convenience. We appreciate your time and thank you for your consideration. Please let us know if you have any further questions or if you need any additional information concerning our application.

Regards,

David Pendleton, PE
Olsson, Inc.

Attachments: Kum & Go #2294 Final Subdivision



LEGEND

- EXISTING PROPERTY LINE
- PROPERTY BOUNDARY
- PROPOSED INTEGRAL CURB
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- ADA ACCESSIBLE ROUTE
- PROPOSED SETBACK LINE
- SIGHT TRIANGLE
- SAWCUT LINE
- COLORED CONCRETE PAVEMENT
- STANDARD PCC
- HEAVY DUTY PCC
- STANDARD ASPHALT ROAD
- STORM SEWER STRUCTURE
- PROPOSED TRANSFORMER
- PARKING COUNT
- PROPOSED BOLLARD
- CONTROL POINT
- FIRE HYDRANT
- LIGHT POLE
- GUY WIRE
- POWER POLE
- WATER VALVE
- VEGETATION
- GAS METER
- TRAFFIC SIGNAL ARM
- FIBER OPTIC MANHOLE
- SANITARY SEWER STRUCTURE
- GREASE INTERCEPTOR
- SIGN
- GRATED STORM INLET
- PR = PROPOSED
- SD = STANDARD DUTY
- HD = HEAVY DUTY

NOTES:

1. SAWCUT EXISTING ASPHALT TO A CLEAN STRAIGHT EDGE.
2. 12'x60' LOADING ZONE, 45° CROSS HATCH, 2' O.C. STRIPING.

LOT 1 SITE DATA

STORE TYPE		MARKETPLACE-RD-2021 V4
CANOPY / DISPENSER ARRANGEMENT		6 DISPENSERS (DOUBLE)
TYPE OF USE		CONVENIENCE STORE WITH FUEL
HEIGHT	BUILDING	18'-0"
	PARAPET	21'-0"
	BLADE	22'-8"
	FUEL CANOPY	21'-0"
GROSS FLOOR AREA		5,620 SF
GROSS CANOPY AREA		4,410 SF
GROSS LOT AREA		91,155.5 ± 2.09 ACRES
BUILDING COVERAGE		10,030 SF (11%)
LANDSCAPE COVERAGE		34,274.5 SF (37.6%)
PARKING/DRIVE/SIDEWALK COVERAGE		46,851 SF (51.4%)
BICYCLE PARKING		2 SPACES
TOTAL EMPLOYEES		16-18
EMPLOYEES PER SHIFT		3 TO 5
REQUIRED PARKING	STANDARD	26
	ADA	2 (1 VAN)
	TOTAL	28
	PARKING RATIO = 1 STALL/200 SF	
PROVIDED PARKING	STANDARD	26
	ADA	2 (1 VAN)
	TOTAL	28
	PARKING RATIO = 1 STALL/200 SF	

BENCHMARKS:

BM#1– #5 REBAR WITH A RED CAP STAMPED "OLSSON CONTROL", NORTH OF THE SITE ON THE EAST SIDE OF SHERIDAN BLVD. ELEVATION: 5259.44 (U+000D)

BM#2– #5 REBAR WITH ARED PLASTIC CAP STAMPED "OLSSON CONTROL" IN THE CENTER OF THE SITE. ELEVATION: 5269.54.

BM #101 – CITY OF ARVADA BENCHMARK #716 – A FOUND 2" BRASS CAP STAMPED " CITY OF ARVADA BM–716" ELEVATION: 5259.93.

BASIS OF BEARINGS:

BEARINGS ARE GRID BASED ON THE COLORADO STATE PLANE COORDINATE SYSTEM – CENTRAL ZONE (NAD83), WITH THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH P.M. BEARING NORTH 89°23'41" EAST, A DISTANCE OF 2,588.52 FEET FROM THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 3.25" BRASS CAP STAMPED "CITY OF WHEAT RIDGE LS 13212" IN A RANGE BOX, TO THE SOUTHEAST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 2.5" ILLEGIBLE ALUMINUM CAP STAMPED IN A RANGE BOX.

olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538
TEL 970.461.7733
www.olsson.com

Kum & Go

1459 Grand Avenue
Des Moines, Iowa
50309
P: 515-226-0128
F: 515-223-9873

#2294 - ADAMS COUNTY, CO
52ND AVE & SHERIDAN BLVD
SITE PLAN

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

△	DATE	REVISION DESCRIPTION

DATE: 02/24/2023

SHEET NUMBER: C1.2
6 OF 31

DWG: F:\2022\02501-03000\022-02737\40-Design\AutoCAD\Final Plans\Sheets\GNC\VC_SIT01_02202737.dwg
DATE: Feb 21, 2023 10:07am
XREFS: C_XBASE_02202737 C_PBASE_02202737 C_PBNDY_02202737 C_PUTIL_02202737 C_PTBLK
USER: ekilgore
C_PTBLK CDs_02202737

FINAL PLAT OF

KUM & GO #2294

A REPLAT OF TRACT D AND TRACT E OF BERKELEY VILLAGE FILING NO.1, AMENDMENT PLAT
BEING A PART OF THE NORTHWEST QUARTER OF SECTION 18
TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH P.M.
CITY OF ARVADA, COUNTY OF ADAMS, STATE OF COLORADO

PRELIMINARY

THIS SURVEY IS PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE. THIS SURVEY IS NOT CONSIDERED FINAL UNTIL THE LICENSED PROFESSIONAL SURVEYOR HAS REMOVED THIS PROVISIONAL NOTE AND HAS CERTIFIED AND SIGNED THIS SURVEY AS A FINAL SURVEY.

OWNERSHIP CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS THAT SBGM LAND TRUST (DATED 12/24/2008), BEING THE SOLE OWNER OF THE FOLLOWING DESCRIBED TRACT OF LAND:

A PART OF THE NORTHWEST 1/4 OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, ADAMS COUNTY, COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 18; THENCE NORTH 89 DEGREES 19 MINUTES 55 SECONDS EAST, AND ALONG THE EAST - WEST CENTERLINE OF SAID SECTION 18, A DISTANCE OF 60 FEET; THENCE NORTH 00 DEGREES 23 MINUTES 00 SECONDS WEST, A DISTANCE OF 40 FEET TO THE **POINT OF BEGINNING**; THENCE NORTH 00 DEGREES 23 MINUTES 00 SECONDS WEST, ALONG THE EAST RIGHT OF WAY LINE OF SHERIDAN BOULEVARD, A DISTANCE OF 350 FEET; THENCE SOUTH 88 DEGREES 12 MINUTES 36 SECONDS EAST, A DISTANCE OF 494.66 FEET; THENCE NORTH 71 DEGREES 40 MINUTES 00 SECONDS EAST, A DISTANCE OF 188.20 FEET; THENCE NORTH 00 DEGREES 54 MINUTES 24 SECONDS WEST, A DISTANCE OF 14.10 FEET; THENCE NORTH 89 DEGREES 19 MINUTES 55 SECONDS EAST, ALONG DISTANCE OF 228.50 FEET; THENCE SOUTH 00 DEGREES 54 MINUTES 24 SECONDS EAST, A DISTANCE OF 285.00 FEET; THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST, A DISTANCE OF 115.00 FEET; THENCE SOUTH 00 DEGREES 54 MINUTES 24 SECONDS EAST, A DISTANCE OF 125.00 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE; THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST, AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 113.50 FEET; THENCE NORTH 00 DEGREES 54 MINUTES 24 SECONDS WEST, A DISTANCE OF 10.00 FEET; THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 676.87 FEET TO THE **POINT OF BEGINNING**.

HAS BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS, STREETS AND EASEMENTS AS SHOWN ON THIS PLAT UNDER THE NAME AND STYLE OF KUM & GO #2294.

DEDICATION STATEMENTS

1. THE UNDERSIGNED DOES HEREBY DEDICATE, GRANT AND CONVEY TO ADAMS COUNTY THOSE PUBLIC EASEMENTS AND TRACTS AS SHOWN ON THE PLAT; AND FURTHER RESTRICTS THE USE OF ALL PUBLIC EASEMENT TO ADAMS COUNTY AND/OR ITS ASSIGNS, PROVIDED HOWEVER, THAT THE SOLE RIGHT AND AUTHORITY TO RELEASE OR QUITCLAIM ALL OR ANY SUCH PUBLIC EASEMENTS SHALL REMAIN EXCLUSIVELY VESTED IN ADAMS COUNTY.
2. TRACT A IS HEREBY DEDICATED TO ADAMS COUNTY FOR STORM WATER DRAINAGE PURPOSES.
3. TRACT A IS FOR STORM WATER DRAINAGE PURPOSES WITH MAINTENANCE OF THE SURFACE BEING THE RESPONSIBILITY OF THE PROPERTY OWNERS OF THIS SUBDIVISION.

OWNER SIGNATURE

BY: _____ NAME: _____

TITLE: _____ OWNER: SBGM LAND TRUST (DATED 12/24/2008)

NOTARY CERTIFICATE

STATE OF _____)
) SS
COUNTY OF _____)

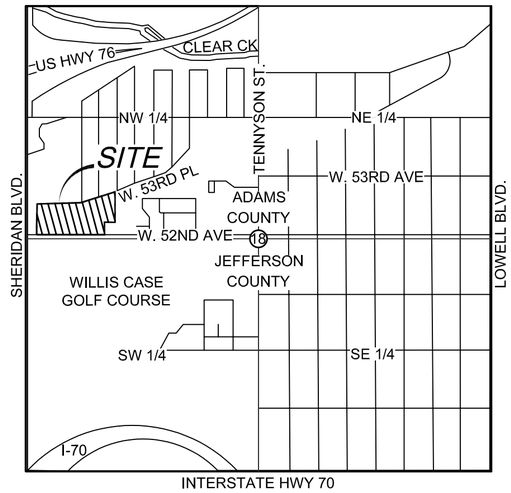
THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS 20_____, BY SBGM LAND TRUST (DATED 12/24/2008).

WITNESS MY HAND AND OFFICIAL SEAL.

(SEAL)

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____



VICINITY MAP

SECTION 18 - T3S - R68W OF THE 6TH PRINCIPAL MERIDIAN
NOT TO SCALE

SHEET INDEX

SURVEYOR'S NOTES

1. **LIMITED SCOPE OF RESPONSIBILITY STATEMENT:** THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY OLSSON TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, PUBLIC ROAD RIGHT-OF-WAY AND TITLE OF RECORD OLSSON RELIED UPON TITLE COMMITMENT NO. ABD70772511, ISSUED BY OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF MAY 12, 2022 AT 5:00 P.M. IF ANY OTHER EASEMENTS, RIGHT-OF-WAYS, VACATIONS, COURT DECREES OR OTHER ENCUMBRANCES AFFECT THIS PROPERTY, THEIR EXISTENCE IS UNKNOWN TO THIS SURVEYOR AND THEREFORE NOT SHOWN.
2. **NOTICE:** PURSUANT TO COLORADO REVISED STATUTES TITLE 13, ARTICLE 80, SECTION 105 (C.R.S. 13-80-105) - 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 COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. THE USE OF THE WORD "CERTIFY" OR "CERTIFICATION" BY A REGISTERED PROFESSIONAL LAND SURVEYOR, IN THE PRACTICE OF LAND SURVEYING, CONSTITUTES AN EXPRESSION OR PROFESSIONAL OPINION REGARDING THOSE FACTS OR FINDINGS WHICH ARE SUBJECT OF THE CERTIFICATION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.
4. OLSSON RELIED UPON THE TITLE COMMITMENT DEFINED HEREON FOR ALL INFORMATION REGARDING THE SUBDIVIDED PROPERTY. NOT ALL ITEMS IN THE TITLE COMMITMENT ARE DEFINABLE OR PLOTTABLE. ALL PERSONS OR THEIR REPRESENTATIVES LISTED ON THIS PLAT, SHOULD REVIEW THE A COPY OF THE TITLE COMMITMENT TO HAVE A FULL UNDERSTANDING OF THE ENCUMBRANCES, RESTRICTIONS, LIMITS, DEFINITIONS, AND INTENT. DOCUMENTS INCLUDE RECEPTION NUMBERS 2001056907, 2002053583, 2017112034, AND 2002053584.
5. EXISTING EASEMENTS SHOWN HEREON WERE REVIEWED FOR LOCATION AND USE ONLY BUT WERE NOT REVIEWED FOR RESTRICTIONS, EXCLUSIONS, OBLIGATIONS, CONDITIONS, OR TERMS.

GENERAL NOTES

1. BASIS OF BEARINGS: BEARINGS ARE GRID NORTH BASED ON THE COLORADO STATE PLANE COORDINATE SYSTEM - CENTRAL ZONE (NAD83), WITH THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH P.M. BEARING NORTH 89°23'41" EAST, A DISTANCE OF 2,588.52 FEET FROM THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 3.25" BRASS CAP STAMPED "CITY OF WHEAT RIDGE LS 13212" IN A RANGE BOX, TO THE SOUTHEAST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 2.5" ILLEGIBLE ALUMINUM CAP STAMPED IN A RANGE BOX.
2. ALL UNITS SHOWN HEREON ARE IN U.S. SURVEY FEET IN GROUND DISTANCES. (COMBINED SCALE FACTOR = 0.99979199)
3. GROSS LAND AREA FOR SUBJECT PROPERTY IS: 311,828 SQUARE FEET, OR 7.158 ACRES OF LAND, MORE OF LESS.
4. ALL EXTERIOR BOUNDARY MONUMENTS SHALL BE SET BY THE SURVEYOR OF RECORD PER STATE STATUTE 38.51.105.
5. THE EASEMENTS WHICH ARE DEDICATED TO ADAMS COUNTY ARE FOR THE BENEFIT OF THE APPLICABLE UTILITY PROVIDERS FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF UTILITIES. UTILITY EASEMENTS SHALL ALSO BE GRANTED WITHIN ANY ACCESS EASEMENTS AND PRIVATE STREETS IN THE SUBDIVISION. PERMANENT STRUCTURES, IMPROVEMENTS, OBJECTS, BUILDINGS, WELLS, WATER METERS AND OTHER OBJECTS THAT MAY INTERFERE WITH THE UTILITY FACILITIES OR USE THEREOF (INTERFERING OBJECTS) SHALL NOT BE PERMITTED WITHIN SAID UTILITY EASEMENTS AND THE UTILITY PROVIDERS, AS GRANTEES, MAY REMOVE ANY INTERFERING OBJECTS AT NO COST TO SUCH GRANTEES, INCLUDING, WITHOUT LIMITATION, VEGETATION.
6. MAINTENANCE ACCESS SHALL BE PROVIDED TO ADAMS COUNTY AS APPLICABLE TO ALL STORM DRAINAGE FACILITIES TO ASSURE CONTINUOUS OPERATIONAL CAPABILITY OF THE SYSTEM. THE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL DRAINAGE FACILITIES INCLUDING INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES, AND DETENTION BASINS LOCATED ON THEIR LAND UNLESS MODIFIED BY THE SUBDIVISION DEVELOPMENT AGREEMENT. SHOULD THE OWNER FAIL TO MAINTAIN SAID FACILITIES, THE COUNTY SHALL HAVE THE RIGHT TO ENTER SAID LAND FOR THE SOLE PURPOSE OF OPERATIONS AND MAINTENANCE. ALL SUCH MAINTENANCE COST WILL BE ASSESSED TO THE PROPERTY OWNERS.

SURVEYOR'S CERTIFICATE

I, NICHOLAS S. SCHRADER, A PROFESSIONAL REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS SURVEY OF THE FINAL PLAT OF KUM & GO #2294 WAS MADE UNDER MY SUPERVISION, THE ACCOMPANYING PLAT ACCURATELY AND PROPERLY SHOWS SAID SUBDIVISION, THE MONUMENTS HEREON ACTUALLY EXIST AS LOCATED AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE CORRECT.

_____
NICHOLAS S. SCHRADER, REGISTERED LAND SURVEYOR
COLORADO REGISTRATION NUMBER: 38693

ADAMS COUNTY CLERK AND RECORDER'S CERTIFICATE

_____
INSTRUMENT NUMBER

ACCEPTED FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF ADAMS COUNTY, AT BRIGHTON, COLORADO ON THIS _____ DAY OF 20____ AT _____ O'CLOCK

_____ BY: _____
ADAMS COUNTY CLERK AND RECORDER DEPUTY CLERK

olsson
1525 RALEIGH STREET, SUITE 400
DENVER, COLORADO
TEL 303.237.2072
www.olsson.com

PLATTED SUBDIVISION

APPROVED BY: NSS
PROJECT #: 022-02737
DATE: 02.16.2023

FINAL PLAT OF

KUM & GO #2294

A REPLAT OF TRACT D AND TRACT E OF BERKELEY VILLAGE FILING NO.1, AMENDMENT PLAT
BEING A PART OF THE NORTHWEST QUARTER OF SECTION 18
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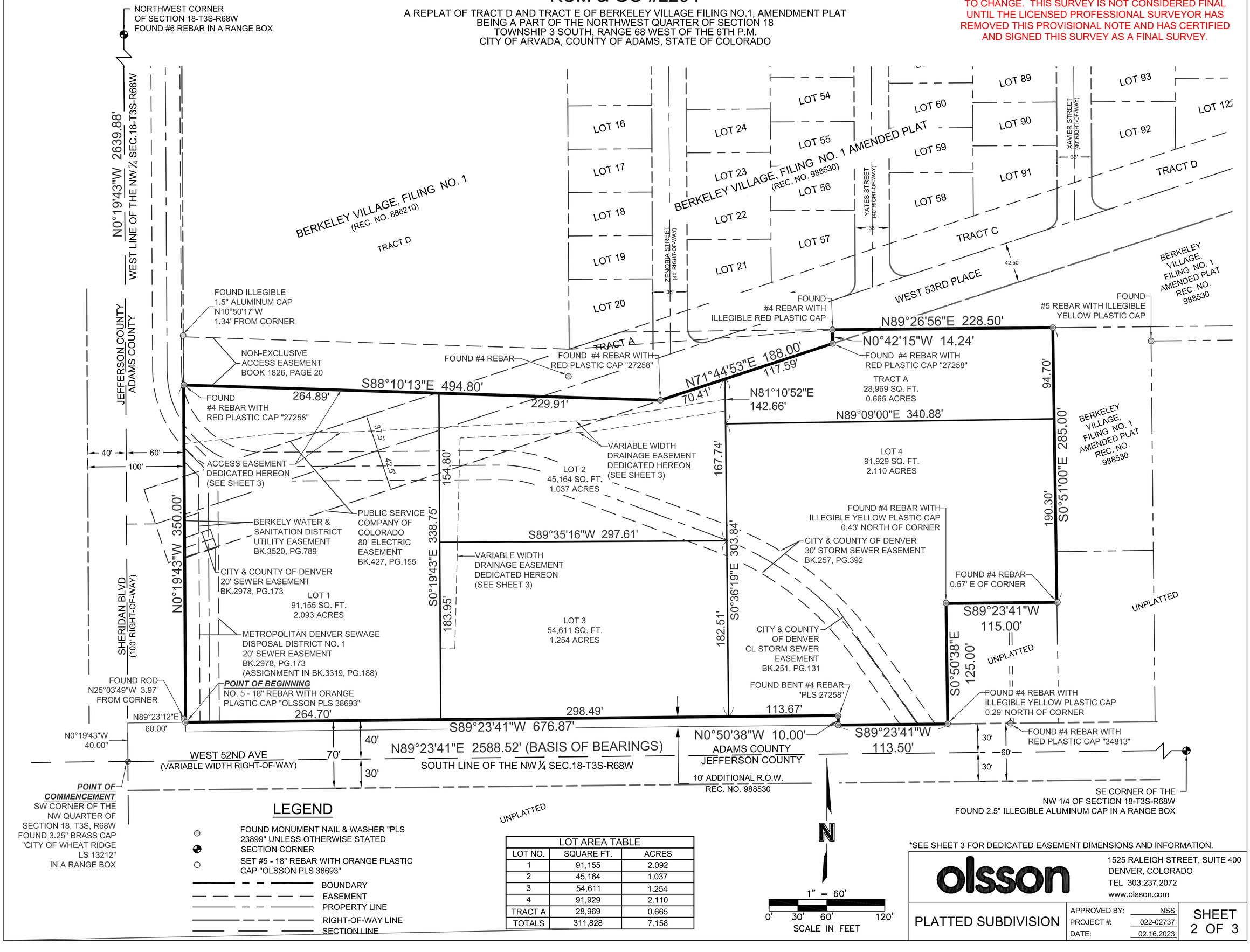

LEGEND

- FOUND MONUMENT NAIL & WASHER "PLS 23899" UNLESS OTHERWISE STATED
- SECTION CORNER
- SET #5 - 18" REBAR WITH ORANGE PLASTIC CAP "OLSSON PLS 38693"
- BOUNDARY
- EASEMENT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE

LOT AREA TABLE		
LOT NO.	SQUARE FT.	ACRES
1	91,155	2.092
2	45,164	1.037
3	54,611	1.254
4	91,929	2.110
TRACT A	28,969	0.665
TOTALS	311,828	7.158

*SEE SHEET 3 FOR DEDICATED EASEMENT DIMENSIONS AND INFORMATION.

olsson
1525 RALEIGH STREET, SUITE 400
DENVER, COLORADO
TEL 303.237.2072
www.olsson.com

PLATTED SUBDIVISION

APPROVED BY: NSS
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FINAL PLAT OF

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NORTHWEST CORNER
OF SECTION 18-T3S-R68W
FOUND #6 REBAR IN A RANGE BOX

WEST LINE OF THE NW ¼ SEC.18-T3S-R68W

JEFFERSON COUNTY
ADAMS COUNTY

BERKELEY VILLAGE, FILING NO. 1
(REC. NO. 886210)

TRACT D

LOT 16
LOT 17
LOT 18
LOT 19
LOT 20

ZENOBIA STREET
(40' RIGHT-OF-WAY)

LOT 24
LOT 23
LOT 22
LOT 21

TRACT A

TRACT B

LOT 54
LOT 55
LOT 56
LOT 57

BERKELEY VILLAGE, FILING NO. 1 AMENDED PLAT
(REC. NO. 988530)

YATES STREET
(40' RIGHT-OF-WAY)

LOT 60
LOT 59
LOT 58

LOT 89
LOT 90
LOT 91

TRACT C

XAVIER STREET
(40' RIGHT-OF-WAY)

LOT 93
LOT 92

TRACT D

WEST 53RD PLACE

42.50'

BERKELEY VILLAGE, FILING NO. 1 AMENDED PLAT REC. NO. 988530

ACCESS EASEMENT
DEDICATED HEREON

N83°45'53"E 95.10'
N88°41'42"E 84.18'
N87°08'43"E 83.53'
N87°17'46"E 155.94'
N81°10'52"E 142.66'
N81°10'52"E 141.57'
S87°17'46"W 135.38'

R=29.00'
Δ=4°55'49"
L=2.50'
CB=N86°13'48"E
CH=2.49'

VARIABLE WIDTH
DRAINAGE EASEMENT
DEDICATED HEREON

LOT 2
45,164 SQ. FT.
1.037 ACRES

LOT 1
91,155 SQ. FT.
2.093 ACRES

LOT 3
54,611 SQ. FT.
1.254 ACRES

TRACT A
28,969 SQ. FT.
0.665 ACRES

LOT 4
91,929 SQ. FT.
2.110 ACRES

60.83'
35.80'
35.56'
12'
119.24'
N0°19'43"W
108.18'
S1°25'01"W
134.64'
L1
L2
L3
110.46'
110.51'
73.48'
S89°40'17"W 15.02'

SHERIDAN BLVD
(100' RIGHT-OF-WAY)

40'
60'
100'

UNPLATTED

UNPLATTED

UNPLATTED

WEST 52ND AVE
(VARIABLE WIDTH RIGHT-OF-WAY)

70'
40'
30'

SOUTH LINE OF THE NW ¼ SEC.18-T3S-R68W

ADAMS COUNTY
JEFFERSON COUNTY

10' ADDITIONAL R.O.W.
REC. NO. 988530

30'
60'
30'

SE CORNER OF THE
NW 1/4 OF SECTION 18-T3S-R68W
FOUND 2.5" ILLEGIBLE ALUMINUM CAP IN A RANGE BOX

LEGEND

- FOUND MONUMENT NAIL & WASHER "PLS 23899" UNLESS OTHERWISE STATED
- SECTION CORNER
- SET #5 - 18" REBAR WITH ORANGE PLASTIC CAP "OLSSON PLS 38693"
- BOUNDARY
- EASEMENT
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	S0°36'19"E	21.06'
L2	S0°36'19"E	12.12'
L3	S89°40'17"W	18.39'

N

1" = 60'

0' 30' 60' 120'

SCALE IN FEET

*SEE SHEET 2 FOR BOUNDARY AND LOT INFORMATION.

olsson
1525 RALEIGH STREET, SUITE 400
DENVER, COLORADO
TEL 303.237.2072
www.olsson.com

PLATTED SUBDIVISION

APPROVED BY: NSS
PROJECT #: 022-02737
DATE: 02.16.2023

Community & Economic
Development Department
www.adcogov.org

ADAMS COUNTY
COLORADO

4430 South Adams County Parkway
1st Floor, Suite W2000
Brighton, CO 80601-8204
PHONE 720.523.6800
FAX 720.523.6998

SUBDIVISION IMPROVEMENTS AGREEMENT

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 submittals shall include one (1) hard copy of all documents and one (1) electronic copy with all documents combined in a single PDF. For hard copies, each document shall be labeled or tabbed with the corresponding checklist number.

- ☑ 1. Development Application Form (pg. 3)
- ☑ 2. Application Fee (see table)
- ☑ 3. Written Explanation of the Agreement and All Public Improvements
- ☑ 4. Copy of Proposed Subdivision Improvements Agreement
- ☑ 5. Construction Documents, including assigned case number

Application Fees	Amount	Due
SIA Agreement	$500	With application submittal

Subdivision Improvements Agreement - Guide to Development Application Submittal

The submittal documents for all Land Use/Development Applications are listed below. Detailed explanations of the submittal documents are also provided.

All development application submittals shall comprise of one (1) electronic copy (USB) and one (1) hard copy of each document. **Application submittals that do not conform to these guidelines shall not be accepted.**

---

3 and 4. Subdivision Improvements Agreement (SIA):

- 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
- This agreement addresses the manner, timing, and responsibility of completion of all required public improvements (i.e. curb, gutter, and sidewalk)
- Shall include the Word version of the Subdivision Improvements Agreement, all exhibits, and a collateral estimate

5. Construction / Engineering Design Plans:

- A set of maps and/or drawings showing how a proposed development is to be constructed.
- The plans must include:
    - site maps of the existing conditions and proposed improvements,
    - installation/construction details for all proposed improvements,
    - survey control (horizontal and vertical) for locating the improvements and,
    - all necessary specification for the products to be used.
- Construction plans are often broken out for specific improvements; for example: site plan, grading plan, waterline improvement plans, roadways improvements plans, etc.

Community & Economic
Development Department
www.adcogov.org

ADAMS COUNTY
COLORADO

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1st Floor, Suite W2000
Brighton, CO 80601-8204
PHONE 720.523.6800
FAX 720.523.6998

DEVELOPMENT APPLICATION FORM

Application Type:

☐ Conceptual Review	☐ Preliminary PUD	☐ Temporary Use
☒ Subdivision, Preliminary	☐ Final PUD	☐ Variance
☐ Subdivision, Final	☐ Rezone	☐ Conditional Use
☐ Plat Correction/ Vacation	☐ Special Use	☐ Other: _____

PROJECT NAME: Kum & Go 2294

APPLICANT

Name(s): Dan Garneau - Kum & Go Phone #: (515) 457.6392

Address: 1459 Grand Avenue

City, State, Zip: Des Moines, IA, 50309

2nd Phone #: Email: Dan.Garneau@kumandgo.com

OWNER

Name(s): Dan Garneau - Kum & Go Phone #: (515) 457.6392

Address: 1459 Grand Avenue

City, State, Zip: Des Moines, IA, 50309

2nd Phone #: Email: Dan.Garneau@kumandgo.com

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

Name: David Pendleton - Olsson Phone #: 970-635-3745

Address: 1880 Fall River Drive, Suite 200

City, State, Zip: Loveland, CO, 80538

2nd Phone #: Email: dpendleton@olsson.com

DESCRIPTION OF SITE

Address:	5200 Sheridan Blvd
City, State, Zip:	Adams County, CO, 80212
Area (acres or square feet):	7.183 Acres (312,919 SF)
Tax Assessor Parcel Number	0182518206004
Existing Zoning:	C-4
Existing Land Use:	Commercial
Proposed Land Use:	Commercial

Have you attended a Conceptual Review? YES [x] NO [ ]

If Yes, please list PRE#: 2022-00034

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: Dan Garneau Date: February 21, 2023

Owner's Printed Name

Name:

Owner's Signature

February 24, 2023

Adams County Fire Protection District
8055 Washington Street
Denver, CO, 80229

Re: Kum & Go #2294 Fire Protection Report

To Whom It May Concern:

Olsson respectfully submits the enclosed Fire Protection Report for Kum & Go Store #2294, located near the northeast corner of the intersection between West 52nd Avenue & Sheridan Boulevard. This report outlines the fire protection plan for a 2.09-Acre lot with a Kum & Go convenience store and the associated fuel canopy. The proposed Kum & Go convenience store is 5,620 SF and is a type V-B construction. The property is bordered by W 52nd Ave to the south, Sheridan Blvd to the west, and W 53rd PL to the north.

The fire protection plan for this site will include a proposed fire hydrant on the northeast side of the Kum & Go lot. The farthest corner of the Kum & Go building from this proposed fire hydrant is approximately 263.5'. Based on the 2018 International Fire Code, (Table B105.1(2)), the required fire flow for a Type V-B construction that is between 4,801-6,200 SF is 2,000 GPM for 2 hours measured at 20 psi residual pressure. Denver Water performed a fire flow test for the main that the site will be connecting to, and the test resulted in a flow of 4,780 GPM at a residual pressure of 20psi. There are two existing fire hydrants near the Kum & Go site but, they are not within 500' of the Kum & Go Building. The first existing fire hydrant is located at the northeast corner of the intersection between Sheridan Blvd & W 53rd Ave approximately 504' from the Kum & Go building. The second existing fire hydrant is located at the intersection of W 53 Pl & 74 SB approximately 627.5' from the Kum & Go building. Along with the proposed and existing fire hydrants, the Kum & Go site will have an emergency access route that circulates the site to provide adequate fire protection. The pavement used for the emergency access route will be designed to withstand the loads from a fire truck.

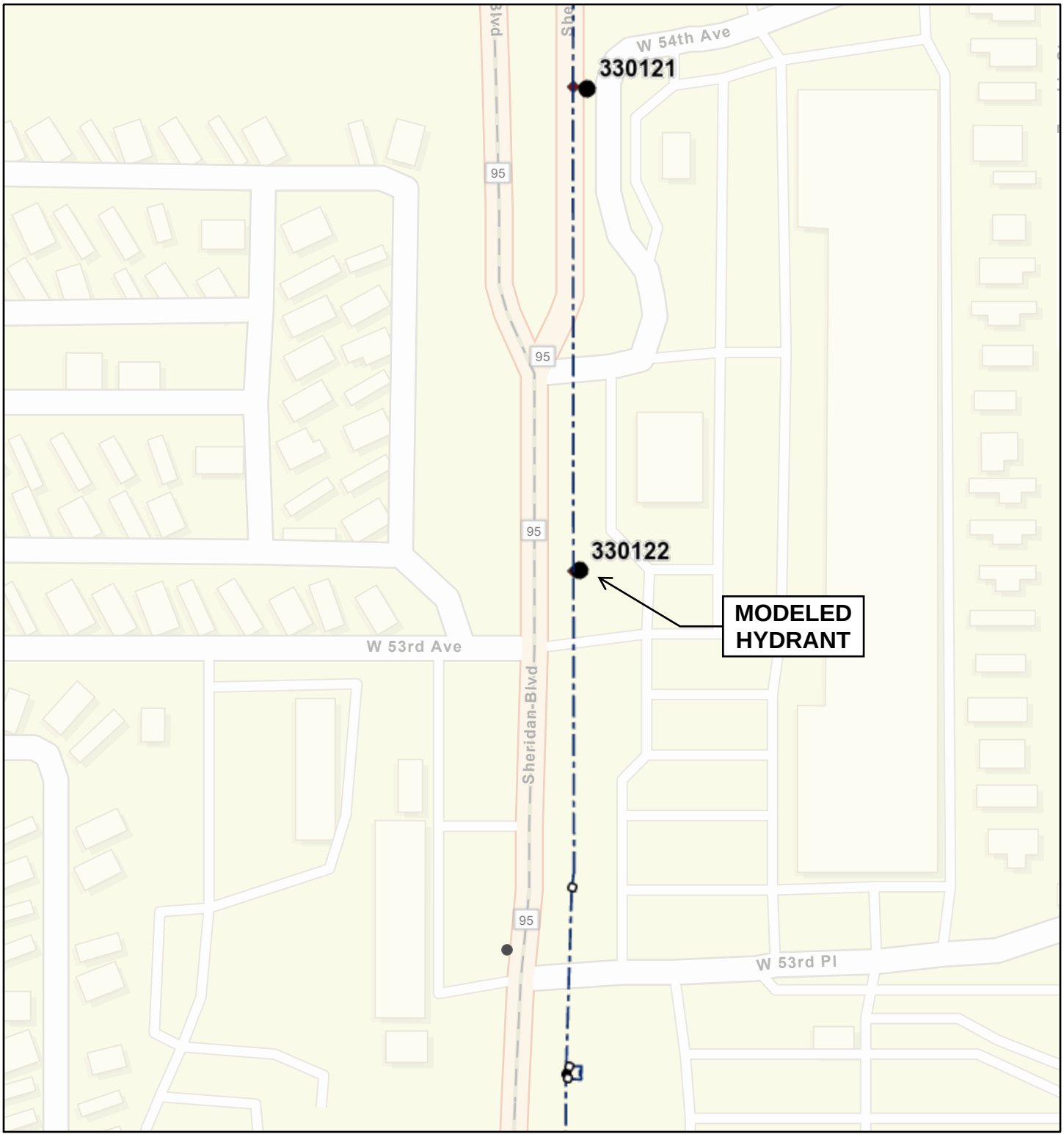
Regards,

Erica Morton, PE
Olsson, Inc.

Attachments: Kum & Go #2294 Fire Protection Plan, Denver Water Fire Flow Test

1880 Fall River Drive / Suite 200 / Loveland, CO 80538
O 970.461.7733 / **olsson.com**

5200 Sheridan Blvd



5/26/2022, 2:27:18 PM

1:2,257

0 0.01 0.03 0.05 mi

0 0.02 0.04 0.09 km

Hydraulics Engeering
Denver Water 2021

DENVER WATER

1600 West 12th Ave
Denver, CO 80204-3412
303.628.6000
denverwater.org

5/26/22

Erica Morton
Olsson
emorton@olsson.com

Re: 5200 Sheridan Blvd

Denver Water has completed an analysis to determine the available fire flow under peak day conditions for the above referenced project. The analysis was performed using the current Denver Water Distribution System all pipes computer simulation model.
Analysis was performed using EPANET Version 2. Some modeled results may have been adjusted due to measured pressure fluctuations using standardized ISO equations.

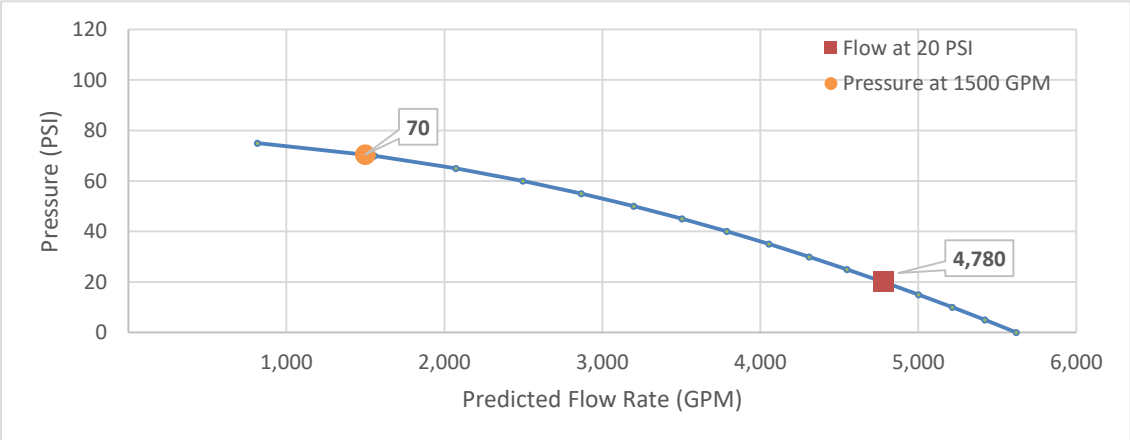
This model is field verified and represents the distribution system conditions for peak day demand for 2021 (388 mgd). Input data represents a snapshot GIS extraction of our entire transmission and distribution system at that time. Actual results may vary due to system conditions.

Results of this modeling are appropriate for fire sprinkler design but may not cover all requirements associated with fire hydrant supply to any particular site, including a "one side of loop out" scenario. Denver Water and the appropriate fire protection agency should be contacted to determine possible need for any additional on-site or off-site fire flow requirements.

For the requested location:	5200 Sheridan Blvd
Fire hydrant #:	330122
Main Size (inches):	12
Main Installed:	1974
Estimated USGS Elevation (ft):	5265
Approximate high static pressure (psi):	85
Approximate low static pressure (psi):	77

Results of the requested test are as follows

Static (psi):	77
Residual (psi):	70
Flow (gpm):	1500
Analysis performed by:	WJS



Should you have any questions regarding this analysis please contact us at 303-628-6540 or *pph@denverwater.org.*

Comments:

N
W E
S

0' 20' 40' 80'
SCALE IN FEET

olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538
TEL 970.461.7733
www.olsson.com

Kum & Go

1459 Grand Avenue
Des Moines, Iowa
50309
P: 515-226-0128
F: 515-223-9873

#2294 - ADAMS COUNTY, CO
52ND AVE & SHERIDAN BLVD
FIRE PROTECTION PLAN

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

△	DATE	REVISION DESCRIPTION

DATE: 02/24/2023

SHEET NUMBER:
1 OF 1

811 Know what's **below.** **Call** before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DWG: F:\2022\02501-03000\022-02737\40-Design\AutoCAD\EXHIBIT\2294 FIRE PLAN EXHIBIT_02.17.2023.dwg USER: ekilgore
DATE: Feb 21, 2023 9:16am XREFS: C_PBASE_02202737 C_PBNDY_02202737 C_PUTIL_02202737 C_PTBLK_OPs_02202737

Land Title Guarantee Company
Customer Distribution

PREVENT FRAUD - Please remember to call a member of our closing team when initiating a wire transfer or providing wiring instructions.

Order Number: **ABD70772511-2** Date: **01/13/2023**

Property Address: **STORE 2294 - 52ND AND SHERIDAN, ARVADA, CO**

PLEASE CONTACT YOUR CLOSER OR CLOSER'S ASSISTANT FOR WIRE TRANSFER INSTRUCTIONS

For Closing Assistance	Closer's Assistant	For Title Assistance
Derek Greenhouse 3033 EAST FIRST AVENUE, SUITE 600 DENVER, CO 80206 (303) 331-6239 (Work) (303) 393-4783 (Work Fax) dgreenhouse@ltgc.com Company License: CO44565	Emily Musselman 3033 EAST FIRST AVENUE, SUITE 600 DENVER, CO 80206 (303) 331-6266 (Work) (303) 393-3990 (Work Fax) emusselman@ltgc.com Company License: CO44565	David Knapp 5975 GREENWOOD PLAZA BLVD GREENWOOD VILLAGE, CO 80111 (303) 850-4174 (Work) dknapp@ltgc.com

KUM & GO, L.C.
Attention: STACIE HATCH
1459 GRAND AVE
DES MOINES, IA 50309
stacie.hatch@kumandgo.com
Delivered via: Electronic Mail

LEGEND PARTNERS
Attention: KYLE UNDERWOOD
5150 E YALE CIR #400
DENVER, CO 80222
(720) 529-2999 (Work)
(720) 489-7711 (Work Fax)
kunderwood@legendretailgroup.com
Delivered via: Electronic Mail

Land Title Guarantee Company
Estimate of Title Fees

Order Number: **ABD70772511-2** Date: **01/13/2023**

Property Address: **STORE 2294 - 52ND AND SHERIDAN, ARVADA, CO**

Parties: **KUM & GO, L.C., AN IOWA LIMITED LIABILITY COMPANY**

SBGM LAND TRUST (DATED 12/24/2008)

Visit Land Title's Website at **www.ltgc.com** for directions to any of our offices.

Estimate of Title insurance Fees	
"ALTA" Owner's Policy 06-17-06	$4,664.00
Deletion of Standard Exception(s)	$100.00
Tax Certificate	$27.00
	Total $4,791.00
If Land Title Guarantee Company will be closing this transaction, the fees listed above will be collected at closing.	
Thank you for your order!	

Note: The documents linked in this commitment should be reviewed carefully. These documents, such as covenants conditions and restrictions, may affect the title, ownership and use of the property. You may wish to engage legal assistance in order to fully understand and be aware of the implications of the effect of these documents on your property.

Chain of Title Documents:

Adams county recorded 01/27/2009 under reception no. 2009000005600

Adams county recorded 07/25/2003 under reception no. C1181734

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule A

Order Number: ABD70772511-2

Property Address:

STORE 2294 - 52ND AND SHERIDAN, ARVADA, CO

1. **Effective Date:**

   01/06/2023 at 5:00 P.M.

2. **Policy to be Issued and Proposed Insured:**

   "ALTA" Owner's Policy 06-17-06 $2,000,000.00
   Proposed Insured:
   KUM & GO, L.C., AN IOWA LIMITED LIABILITY COMPANY

3. **The estate or interest in the land described or referred to in this Commitment and covered herein is:**

   A FEE SIMPLE AS TO PARCEL A; AN EASEMENT AS TO PARCEL B

4. **Title to the estate or interest covered herein is at the effective date hereof vested in:**

   SBGM LAND TRUST (DATED 12/24/2008)

5. **The Land referred to in this Commitment is described as follows:**

PARCEL A:

A PART OF THE NORTHWEST 1/4 OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, ADAMS COUNTY, COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 18;
THENCE NORTH 89 DEGREES 19 MINUTES 55 SECONDS EAST, AND ALONG THE EAST - WEST CENTERLINE OF SAID SECTION 18, A DISTANCE OF 60 FEET;
THENCE NORTH 00 DEGREES 23 MINUTES 00 SECONDS WEST, A DISTANCE OF 40 FEET TO THE POINT OF BEGINNING;
THENCE NORTH 00 DEGREES 23 MINUTES 00 SECONDS WEST, ALONG THE EAST RIGHT OF WAY LINE OF SHERIDAN BOULEVARD, A DISTANCE OF 350 FEET;
THENCE SOUTH 88 DEGREES 12 MINUTES 36 SECONDS EAST, A DISTANCE OF 494.66 FEET;
THENCE NORTH 71 DEGREES 40 MINUTES 00 SECONDS EAST, A DISTANCE OF 188.20 FEET;
THENCE NORTH 00 DEGREES 54 MINUTES 24 SECONDS WEST, A DISTANCE OF 14.10 FEET;
THENCE NORTH 89 DEGREES 19 MINUTES 55 SECONDS EAST, ALONG DISTANCE OF 228.50 FEET;
THENCE SOUTH 00 DEGREES 54 MINUTES 24 SECONDS EAST, A DISTANCE OF 285.00 FEET;
THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST, A DISTANCE OF 115.00 FEET;
THENCE SOUTH 00 DEGREES 54 MINUTES 24 SECONDS EAST, A DISTANCE OF 125.00 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE;
THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST, AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 113.50 FEET;
THENCE NORTH 00 DEGREES 54 MINUTES 24 SECONDS WEST, A DISTANCE OF 10.00 FEET;
THENCE SOUTH 89 DEGREES 19 MINUTES 55 SECONDS WEST AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 676.87 FEET TO THE POINT OF BEGINNING.

PARCEL B:

A NON-EXCLUSIVE EASEMENT FOR ACCESS AS CREATED IN DEED RECORDED OCTOBER 26, 1972 IN

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule A

Order Number: ABD70772511-2

BOOK 1826 AT PAGE **20**.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B, Part I

(Requirements)

Order Number: ABD70772511-2

All of the following Requirements must be met:

This proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

Pay the agreed amount for the estate or interest to be insured.

Pay the premiums, fees, and charges for the Policy to the Company.

Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

1. RELEASE BY THE STATE OF COLORADO DEPARTMENT OF REVENUE OF STATE TAX LIEN AGAINST KUM & GO LC IN THE AMOUNT OF $1,323.24 RECORDED JANUARY 27, 2022 UNDER RECEPTION NO. **2022000008471**.
2. RELEVANT PORTIONS OF THE FULLY EXECUTED TRUST AGREEMENT OF SBGM LAND TRUST (DATED 12/24/2008), A TRUST, MUST BE FURNISHED TO LAND TITLE GUARANTEE COMPANY PRIOR TO CLOSING SO THAT THE COMPANY CAN CONFIRM THE ACCURACY OF THE STATEMENTS APPEARING IN THE STATEMENT OF AUTHORITY OR TRUST AFFIDAVIT OF PUBLIC RECORD.
3. DULY EXECUTED AND ACKNOWLEDGED STATEMENT OF AUTHORITY SETTING FORTH THE NAME OF SBGM LAND TRUST (DATED 12/24/2008) AS A TRUST. THE STATEMENT OF AUTHORITY MUST STATE UNDER WHICH LAWS THE TRUST WAS CREATED, THE MAILING ADDRESS OF THE TRUST, THE NAME AND POSITION OF THE PERSON(S) AUTHORIZED TO EXECUTE INSTRUMENTS CONVEYING, ENCUMBERING, OR OTHERWISE AFFECTING TITLE TO REAL PROPERTY ON BEHALF OF THE TRUST AND OTHERWISE COMPLYING WITH THE PROVISIONS OF SECTION 38-30-172, CRS.

   NOTE: THE STATEMENT OF AUTHORITY MUST BE RECORDED WITH THE CLERK AND RECORDER.
4. WARRANTY DEED FROM SBGM LAND TRUST (DATED 12/24/2008) TO KUM & GO, L.C., AN IOWA LIMITED LIABILITY COMPANY CONVEYING SUBJECT PROPERTY.

   NOTE: THE STATEMENT OF AUTHORITY FOR KUM & GO, L.C., AN IOWA LIMITED LIABILITY COMPANY RECORDED JANUARY 22, 2018 AS RECEPTION NO. **2018000006583** DISCLOSES KYLE J. KRAUSE, PRESIDENT & CEO; CRAIG A. BERGSTROM, CFO; CHARLES W. CAMPBELL, GENERAL COUNSEL & SECRETARY; NIKI DEPHILLIPS, SR. VICE PRESIDENT - STORE DEVELOPMENT; OR MARCUS H. HASTING, CHIEF OPERATING OFFICER AND VICE PRESIDENT AUTHORIZED TO EXECUTE LEGAL INSTRUMENTS ON BEHALF OF SAID ENTITY.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B, Part II

(Exceptions)

Order Number: ABD70772511-2

This commitment does not republish any covenants, condition, restriction, or limitation contained in any document referred to in this commitment to the extent that the specific covenant, conditions, restriction, or limitation violates state or federal law based on race, color, religion, sex, sexual orientation, gender identity, handicap, familial status, or national origin.

1. **Any facts, rights, interests, or claims thereof, not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.**
2. **Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.**
3. **Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.**
4. **Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.**
5. **Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date of the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.**
6. **(a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.**
7. **(a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water.**
8. EXISTING LEASES AND TENANCIES, IF ANY.
9. A TRACT OF LAND ABOUT 1 ROD SQUARE RESERVED AS A BURIAL GROUND IN DEED FROM JAMES BAKER IN LOUIS RAMBOZ, DATED MAY 15, 1873, RECORDED IN BOOK 48 AT PAGE **350**, OF THE RECORDS OF THE CLERK AND RECORDER OF ARAPAHOE (NOW ADAMS) COUNTY, COLORADO, KNOWN AS THE "JIM BAKER GRAVEYARD". (THE EXACT LOCATION IS NOT DEFINED).
10. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN DEED RECORDED NOVEMBER 21, 1938 IN BOOK 251 AT PAGE **131**.
11. TERMS, CONDITIONS, PROVISIONS, BURDENS, OBLIGATIONS AND EASEMENTS AS SET FORTH AND GRANTED IN DEED RECORDED SEPTEMBER 05, 1939 IN BOOK 257 AT PAGE **392**.
12. UTILITY EASEMENT AS GRANTED TO PUBLIC SERVICE COMPANY OF COLORADO IN INSTRUMENT RECORDED AUGUST 28, 1951 IN BOOK 427 AT PAGE **155**.
13. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE PLAT OF BERKELEY VILLAGE - FILING NO. 1 RECORDED MARCH 11, 1970 UNDER RECEPTION NO. **886210**.

    RATIFICATION RECORDED MAY 19, 1970 IN BOOK 1599 AT PAGE **102**.

ALTA COMMITMENT

Old Republic National Title Insurance Company

Schedule B, Part II

(Exceptions)

Order Number: ABD70772511-2

14. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE PLAT OF BERKELEY VILLAGE - FILING NO. 1 - AMENDED PLAT RECORDED JANUARY 31, 1973 UNDER RECEPTION NO. **988530**.

15. EASEMENT GRANTED TO PUBLIC SERVICE COMPANY OF COLORADO, FOR UTILITY LINES, AND INCIDENTAL PURPOSES, BY INSTRUMENT RECORDED OCTOBER 04, 1977, IN BOOK 2179 AT PAGE **212**.

16. EASEMENT GRANTED TO THE CITY AND COUNTY OF DENVER, FOR SEWER LINE, AND INCIDENTAL PURPOSES, BY INSTRUMENT RECORDED JULY 08, 1983, IN BOOK 2766 AT PAGE **418**, AND INSTRUMENT RECORDED NOVEMBER 23, 1983 IN BOOK 2814 AT PAGE **692** AND INSTRUMENT RECORDED MARCH 15, 1985, IN BOOK 2978 AT PAGE **173**.

    ASSIGNMENT OF INTEREST IN EASEMENT RECORDED MAY 19, 1987 UNDER RECEPTION NO. **B741671**.

17. RIGHT OF WAY FOR SEWER LINE AS EVIDENCED BY DEED RECORDED SEPTEMBER 11, 1987 IN BOOK 3365 AT PAGE **963**.

18. EASEMENT GRANTED TO BERKELEY WATER AND SANITATION DISTRICT, FOR WATER PIPELINES, PRESSURE REDUCING VAULT, AND INCIDENTAL PURPOSES, BY INSTRUMENT RECORDED DECEMBER 21, 1988, IN BOOK 3520 AT PAGE **789**.

LAND TITLE GUARANTEE COMPANY
DISCLOSURE STATEMENTS

Note: Pursuant to CRS 10-11-122, notice is hereby given that:

(A) The Subject real property may be located in a special taxing district.

(B) A certificate of taxes due listing each taxing jurisdiction will be obtained from the county treasurer of the county in which the real property is located or that county treasurer's authorized agent unless the proposed insured provides written instructions to the contrary. (for an Owner's Policy of Title Insurance pertaining to a sale of residential real property).

(C) The information regarding special districts and the boundaries of such districts may be obtained from the Board of County Commissioners, the County Clerk and Recorder, or the County Assessor.

Note: Effective September 1, 1997, CRS 30-10-406 requires that all documents received for recording or filing in the clerk and recorder's office shall contain a top margin of at least one inch and a left, right and bottom margin of at least one half of an inch. The clerk and recorder may refuse to record or file any document that does not conform, except that, the requirement for the top margin shall not apply to documents using forms on which space is provided for recording or filing information at the top margin of the document.

Note: Colorado Division of Insurance Regulations 8-1-2 requires that "Every title entity shall be responsible for all matters which appear of record prior to the time of recording whenever the title entity conducts the closing and is responsible for recording or filing of legal documents resulting from the transaction which was closed". Provided that Land Title Guarantee Company conducts the closing of the insured transaction and is responsible for recording the legal documents from the transaction, exception number 5 will not appear on the Owner's Title Policy and the Lenders Policy when issued.

Note: Affirmative mechanic's lien protection for the Owner may be available (typically by deletion of Exception no. 4 of Schedule B, Section 2 of the Commitment from the Owner's Policy to be issued) upon compliance with the following conditions:

(A) The land described in Schedule A of this commitment must be a single family residence which includes a condominium or townhouse unit.

(B) No labor or materials have been furnished by mechanics or material-men for purposes of construction on the land described in Schedule A of this Commitment within the past 6 months.

(C) The Company must receive an appropriate affidavit indemnifying the Company against un-filed mechanic's and material-men's liens.

(D) The Company must receive payment of the appropriate premium.

(E) If there has been construction, improvements or major repairs undertaken on the property to be purchased within six months prior to the Date of Commitment, the requirements to obtain coverage for unrecorded liens will include: disclosure of certain construction information; financial information as to the seller, the builder and or the contractor; payment of the appropriate premium fully executed Indemnity Agreements satisfactory to the company, and, any additional requirements as may be necessary after an examination of the aforesaid information by the Company.

No coverage will be given under any circumstances for labor or material for which the insured has contracted for or agreed to pay.

Note: Pursuant to CRS 10-11-123, notice is hereby given:

This notice applies to owner's policy commitments disclosing that a mineral estate has been severed from the surface estate, in Schedule B-2.

(A) That there is recorded evidence that a mineral estate has been severed, leased, or otherwise conveyed from the surface estate and that there is substantial likelihood that a third party holds some or all interest in oil, gas, other minerals, or geothermal energy in the property; and

(B) That such mineral estate may include the right to enter and use the property without the surface owner's permission.

Note: Pursuant to CRS 10-1-128(6)(a), It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policyholder or claimant for the purpose of defrauding or attempting to defraud the policyholder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

Note: Pursuant to Colorado Division of Insurance Regulations 8-1-3, notice is hereby given of the availability of a closing protection letter for the lender, purchaser, lessee or seller in connection with this transaction.

Note: Pursuant to CRS 10-1-11(4)(a)(1), Colorado notaries may remotely notarize real estate deeds and other documents using real-time audio-video communication technology. You may choose not to use remote notarization for any document.

JOINT NOTICE OF PRIVACY POLICY OF LAND TITLE GUARANTEE COMPANY, LAND TITLE GUARANTEE COMPANY OF SUMMIT COUNTY LAND TITLE INSURANCE CORPORATION AND OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY

This Statement is provided to you as a customer of Land Title Guarantee Company as agent for Land Title Insurance Corporation and Old Republic National Title Insurance Company.

We want you to know that we recognize and respect your privacy expectations and the requirements of federal and state privacy laws. Information security is one of our highest priorities. We recognize that maintaining your trust and confidence is the bedrock of our business. We maintain and regularly review internal and external safeguards against unauthorized access to your non-public personal information ("Personal Information").

In the course of our business, we may collect Personal Information about you from:

- applications or other forms we receive from you, including communications sent through TMX, our web-based transaction management system;
- your transactions with, or from the services being performed by us, our affiliates, or others;
- a consumer reporting agency, if such information is provided to us in connection with your transaction;

  and
- The public records maintained by governmental entities that we obtain either directly from those entities, or from our affiliates and non-affiliates.

Our policies regarding the protection of the confidentiality and security of your Personal Information are as follows:

- We restrict access to all Personal Information about you to those employees who need to know that information in order to provide products and services to you.
- We may share your Personal Information with affiliated contractors or service providers who provide services in the course of our business, but only to the extent necessary for these providers to perform their services and to provide these services to you as may be required by your transaction.
- We maintain physical, electronic and procedural safeguards that comply with federal standards to protect your Personal Information from unauthorized access or intrusion.
- Employees who violate our strict policies and procedures regarding privacy are subject to disciplinary action.
- We regularly assess security standards and procedures to protect against unauthorized access to Personal Information.

WE DO NOT DISCLOSE ANY PERSONAL INFORMATION ABOUT YOU WITH ANYONE FOR ANY PURPOSE THAT IS NOT STATED ABOVE OR PERMITTED BY LAW.

Consistent with applicable privacy laws, there are some situations in which Personal Information may be disclosed. We may disclose your Personal Information when you direct or give us permission; when we are required by law to do so, for example, if we are served a subpoena; or when we suspect fraudulent or criminal activities. We also may disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

Our policy regarding dispute resolution is as follows: Any controversy or claim arising out of or relating to our privacy policy, or the breach thereof, shall be settled by arbitration in accordance with the rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

Commitment For Title Insurance

Issued by Old Republic National Title Insurance Company

NOTICE

IMPORTANT—READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON. .

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, Old Republic National Title Insurance Company, a Minnesota corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured. If all of the Schedule B, Part I—Requirements have not been met within 6 months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

COMMITMENT CONDITIONS

1. DEFINITIONS
   (a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
   (b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
   (c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
   (d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
   (e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
   (f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
   (g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
   (h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
   (a) the Notice;
   (b) the Commitment to Issue Policy;
   (c) the Commitment Conditions;
   (d) Schedule A;
   (e) Schedule B, Part I—Requirements; and
   (f) Schedule B, Part II—Exceptions; and
   (g) a counter-signature by the Company or its issuing agent that may be in electronic form.

4. **COMPANY'S RIGHT TO AMEND**

   The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. **LIMITATIONS OF LIABILITY**
   (a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
      i. comply with the Schedule B, Part I—Requirements;
      ii. eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
      iii. acquire the Title or create the Mortgage covered by this Commitment.
   (b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
   (c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
   (d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
   (e) The Company shall not be liable for the content of the Transaction Identification Data, if any.

(f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
(g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

6. **LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT**
   (a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
   (b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
   (c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
   (d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
   (e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
   (f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. **IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT**

   The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.
8. **PRO-FORMA POLICY**

   The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.
9. **ARBITRATION**

   The Policy contains an arbitration clause. All arbitrable matters when the Proposed Policy Amount is $2,000,000 or less shall be arbitrated at the option of either the Company or the Proposed Insured as the exclusive remedy of the parties. A Proposed Insured may review a copy of the arbitration rules at http://www.alta.org/arbitration.

IN WITNESS WHEREOF, Land Title Insurance Corporation has caused its corporate name and seal to be affixed by its duly authorized officers on the date shown in Schedule A to be valid when countersigned by a validating officer or other authorized signatory.

Issued by:
Land Title Guarantee Company
3033 East First Avenue Suite 600
Denver, Colorado 80206
303-321-1880

Craig B. Rants, Senior Vice President

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
A Stock Company
400 Second Avenue South, Minneapolis, Minnesota 55401
(612) 371-1111

By *President*

Attest *Secretary*

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by Old Republic National Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

RECEPTION#: 2009000005600, 01/27/2009 at 03:19:32 PM, 1 OF 1, TD Pgs: 0 Doc Type:QCD Karen Long, Adams County, CO

NO DOC FEE REQUIRED

QUITCLAIM DEED

THIS DEED, made this 24th day of December, 20 08, between

JAMES W. GOYETTE

of ADAMS County, State of Colorado, **grantor**, and

SBGM LAND TRUST (DATED 12/24/2008)

whose legal address is PO BOX 306, PINE, CO 80470, **grantee**:

WITNESS, that the grantor(s), for and in consideration of the sum of $10.00 DOLLARS, the receipt and sufficiency of which is hereby acknowledged has/have remised, released, sold and QUITCLAIMED, and by these presents do/does remise, release, sell and QUITCLAIM unto the grantee(s), the grantee(s)' heirs, successors and assigns forever, all the right, title, interest, claim and demand which the grantor(s) has/have in and to the real property, together with improvements, if any situate, lying, and being in ADAMS County and State of Colorado, described as follows:

A PART OF THE NORTHWEST 1/4 OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH P.M., ADAMS COUNTY, COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 18; THENCE NORTH 89 DEG 19' 55" EAST, AND ALONG THE EAST-WEST CENTERLINE OF SAID SECTION 18, A DISTANCE OF 60 FEET; THENCE NORTH 00 DEG 23' 00" WEST, A DISTANCE OF 40 FEET TOTHE POINT OF BEGINNING; THENCE NORTH 00 DEG 23' 00" WEST, ALONG THE EAST RIGHT OF WAY LINE OF SHERIDAN BOULEVARD, A DISTANCE OF 350 FEET; THENCE SOUTH 88 DEG 12' 36" EAST, A DISTANCE OF 494.66 FEET; THENCE NORTH 71 DEG 40' 00" EAST, A DISTANCE OF 188.20 FEET; THENCE NORTH 00 DEG 54' 24" WEST, A DISTANCE OF14.10 FEET; THENCE NORTH 89 DEG 19' 55" EAST, A DISTANCE OF 228.50 FEET; THENCE SOUTH 00 DEG 54' 24" EAST, A DISTANCE OF 285.00 FEET; THENCE SOUTH 89 DEG 19' 55" WEST, A DISTANCE OF 115.00 FEET; THENCE SOUTH 00 DEG 54' 24" EAST, A DISTANCE OF 125.00 FEET TO A POINT ON THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE; THENCE SOUTH 89 DEG 19' 55" WEST, AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 113.50 FEET; THENCE NORTH 00 DEG 54' 24" WEST, A DISTANCE OF 10.00 FEET; THENCE SOUTH 89 DEG19' 55" WEST AND ALONG THE NORTH RIGHT OF WAY LINE OF WEST 52ND AVENUE, A DISTANCE OF 676.87 FEET TO THE POINT OF BEGINNING, AS WELL AS AN ACCESS EASEMENT OVER AND ACROSS PART OF THE NORTHWEST 1/4 OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 18; THENCE NORTH 89 DEG 17' 55" EAST AND ALONG THE EAST-WEST CENTERLINE OF SAID SECTION 18, A DISTANCE OF 60.0 FEET; THENCE NORTH 00 DEG 23' 00" WEST AND ALONG THE EAST RIGHT OF WAY LINE OF SHERIDAN BLVD., A DISTANCE OF 390.0 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING NORTH 00 DEG 23' 00" WEST, A DISTANCE OF 50.04 FEET; THENCE SOUTH 88 DEG 12' 36" EAST, A DISTANCE OF 400.29 FEET; THENCE NORTH71 DEG 41' 00" EAST, 56.48 FEET; THENCE NORTH 89 DEG 19' 55" EAST, 219.48 FEET; THENCE SOUTH 00 DEG 54' 24" EAST, 14.10 FEET; THENCE SOUTH 71 DEG 40 '00" WEST, 188.20 FEET; THENCE NORTH 88 DEG 12' 36" WEST, 494.66 FEET TO THE TRUE POINT OF BEGINNING, COUNTY OF ADAMS, STATE OF COLORADO

COMMONLY KNOWN AS: 5250 SHERIDAN BLVD, ARVADA, CO 80002

TO HAVE AND TO HOLD the same, together with all and singular the appurtenances and privileges thereunto belonging, or in anywise thereunto appertaining, and all the estate, right, title, interest and claim whatsoever of the grantor(s), either in law or equity, to the only proper use, benefit and behalf of the grantee(s), his/her/their heirs and assigns forever.

IN WITNESS WHEREOF, the grantor(s) has/have executed this deed on the date set forth above.

James W Goyette
JAMES W. GOYETTE

STATE OF COLORADO)
) ss.
County of Denver)

The foregoing instrument was acknowledged before me on this 24th day of December, 2008 by JAMES W. GOYETTE.

Witness my hand and official seal:

ANTHONY M. ESTRADA
Notary Public
State of Colorado

Notary Public

11/24/2011
My Commission Expires

20050131000100520 Adams Co 1/2
01/31/2005 02:57:31PM $17.89
Carol Snyder,Clerk $11.00

WARRANTY DEED

THIS DEED, Made this **27th day of January, 2005** between

Mearl F. Webb

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

Sandra G. Oliva-Rivas

whose legal address is: **5095 W 52ND AVE DENVER CO 80212**
of the County of **Adams**, State of Colorado, grantee(s).
WITNESSETH, That the grantor for and in consideration of the sum of **ONE HUNDRED SEVENTY-EIGHT THOUSAND NINE HUNDRED AND 00/100 DOLLARS** ($**178,900.00**), 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.

$9.17, 87
Documentary Fee

JAN 14 2005

also known by street and number as **5095 W 52nd Avenue**, **Denver, CO 80212**

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 ensealing 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 for taxes for the current year, a lien but not yet due and 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.

SELLER:

Mearl F. Webb

STATE OF **COLORADO**
COUNTY OF **DENVER** } SS:

The foregoing instrument was acknowledged before me this **27th day of January, 2005**,
by **Mearl F. Webb**

Witness my hand and official seal.

MERIAMLE MEDINA Notary Public

My Commission expires: **05/07/2008**

Exhibit A

That part of the Northwest ¼ of Section 18, Township 3 South, Range 68 West of the 6th Principal Meridian, described as follows:

Beginning at a point on the South line of said Northwest ¼, a distance of 1,623 feet West of the center of said Section 18;
Thence North at right angles to the South line of said Northwest ¼, a distance of 155 feet;
Thence West parallel with the South line of said Northwest ¼ a distance of 50 feet to the True Point of Beginning;
Thence West parallel with the South line of said Northwest ¼ a distance of 65 feet;
Thence South parallel with the East line of said Northwest ¼ a distance of 125 feet;
Thence East parallel with the South line of said Northwest ¼ a distance of 65 feet;
Thence North parallel with the East line of said Northwest ¼ a distance of 125 feet to the True Point of Beginning,
County of Adams, State of Colorado

RECEPTION#: 2010000074399, 10/29/2010 at 08:16:12 AM, 1 OF 3, D $12.15 TD
Pgs: 2 Doc Type:SPWTY Karen Long, Adams County, CO Recorded As Received

SPECIAL WARRANTY DEED

THIS DEED, Made this**22nd** day of **October, 2010** between

Fannie Mae a/k/a Federal National Mortgage Association organized and existing under the laws of the United States of America

grantor(s), and

Jeffrey L Jolin

whose legal address is **248 S Xavier St, , Denver CO 80212**

of the County of Adams, State of Colorado, grantee(s):

DOC FEE
Date: $12.15

WITNESS, That the grantor(s), for and in consideration of the sum of **ONE HUNDRED TWENTY-ONE THOUSAND FIVE HUNDRED AND 00/100 DOLLARS** ($121,500.00), 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(s), his heirs and assigns forever, all the real property together with improvements, if any, situate, lying and being in the County of Adams, State of COLORADO, described as follows:

See Exhibit A attached hereto and made a part hereof.

also known by street and number as 5091 West 52nd Avenue, Denver, CO 80212

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(s), 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(s), his heirs, and assigns forever. The grantor(s), for himself, his heirs and personal representatives or successors, does covenant and agree that he shall and will WARRANT AND FOREVER DEFEND the above-bargained premises in the quiet and peaceable possession of the grantee(s), his heirs and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under the grantor(s). SEE ATTACHED EXHIBIT B.

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(s) has executed this deed on the date set forth above.

SELLER:

Fannie Mae a/k/a Federal National Mortgage Association organized and existing under the laws of the United States of America

By Aronowitz and Mecklenburg, LLP as attorney in fact by Alexander Pankonin as Authorized Signer

STATE OF COLORADO
COUNTY OF Denver } ss:

The foregoing instrument was acknowledged before me this **22nd day of October, 2010** by Alexander Pankonin as authorized signer for Aronowitz & Mecklenburg, LLP as Attorney in Fact for Fannie Mae a/k/a Federal National Mortgage Association organized and existing under the laws of the United States of America

Notary Public

Witness my hand and official seal.
My **Commission** expires: 12-10-13

KRISTINE M. WILLE NOTARY PUBLIC STATE OF COLORADO

RECEPTION#: 2010000074399, 10/29/2010 at 08:16:12 AM, 2 OF 3, Doc Type:SPWTY TD
Pages: 2 Karen Long, Adams

Exhibit A

That part of the Southwest ¼ of the Northwest ¼ of Section 18, Township 3 South, Range 68 West 6th P.M., described as follows:

Beginning at a point on the South line of the Northwest ¼ of said Section 18, a distance of 1,623 feet West of the center of said Section 18; thence North at right angles to said South line, a distance of 30 feet to corner No. 1; thence West, a distance of 47 feet to corner No. 2; thence North 125 feet to corner No. 3; thence East a distance of 47 feet to corner No. 4; thence South, a distance of 125 feet to the Point of Beginning,
Except all roads, ditches, reservoirs and right-of-way, if any,
County of Adams, State of Colorado

RECEPTION#: 2010000074399, 10/29/2010 at 08:16:12 AM, 3 OF 3, Doc Type:SPWTY TD
Pages: 2 Karen Long, Adams

File #21107

EXHIBIT B

DEED RESTRICTIONS

GRANTEE HEREIN SHALL BE PROHIBITED FROM CONVEYING CAPTIONED PROPERTY TO A BONAFIDE PURCHASER FOR VALUE FOR A SALES PRICE OF GREATER THAN $**148,200** FOR A PERIOD OF **THREE MONTHS** FROM THE DATE OF THIS DEED. GRANTEE SHALL ALSO BE PROHIBITED FROM ENCUMBERING SUBJECT PROPERTY WITH A SECURITY INTEREST IN THE PRINCIPAL AMOUNT GREATER THAN **$148,200** FOR A PERIOD OF **THREE MONTHS** FROM THE DATE OF THIS DEED. THESE RESTRICTIONS SHALL RUN WITH THE LAND AND ARE NOT PERSONAL TO GRANTEE.

THE RESTRICTION SHALL TERMINATE IMMEDIATELY UPON CONVEYANCE AT ANY FORECLOSURE SALE RELATED TO A MORTGAGE OR DEED OF TRUST.

PROPERTY: 5091 West 52nd Avenue, Denver, CO 80212

Buyer Initial

Buyer Initial

Eric Kilgore

From: Gedge, Kelsey <Kgedge@MetroWaterRecovery.com>
Sent: Tuesday, September 27, 2022 10:30 AM
To: Eric Kilgore
Subject: Potential Connection near Sheridan and 52nd Ave
Attachments: SHERIDAN BOULEVARD INTERCEPTOR.pdf

Eric, good speaking with you this morning. Find attached plan/profile sheet of our Sheridan Boulevard Interceptor in this location. Hopefully the new development you are working on will be able to re-use the existing connection BEK 0043 between manholes SB 10/SB 11 that was approved in May 2008. If you are able to re-use this connection then Metro does not need to approve anything. If any work is done to repair the connection we will need to be notified at least 48 hours in advance so we can schedule an inspector to be present while that work is taking place. If you need a bigger connection then a formal connection request will need to be made by Berkely Water & Sanitation and I can help walk through that process.

When you get close to finalizing the plans we would like to review them briefly to make sure there is no conflict with our infrastructure. Let me know if you have any questions, thanks.

METRO WATER RECOVERY

Kelsey S. Gedge, P.E.
Senior Transmission System Engineering Manager
303-286-3357
MetroWaterRecovery.com

DENVER WATER

1600 West 12th Ave
Denver, CO 80204-3412
303.628.6000
denverwater.org

11-28-22

Kum & Go L.C.
ATTN: Dan Garneau
1459 Grand Ave
Des Moines, IA 50309

RE: KUM & GO #2294
ATTACHED FOR LEGAL

Dear Kum & Go L.C.

Denver Water has been asked to determine whether the property described on the attached layout is located within Denver Water's service area and eligible to receive water service from Denver Water. This letter verifies that the property is located within the City and County of Denver or one of Denver Water's Total Service Distributor service area. This property is eligible to receive water. Any project located on the property will be subject to compliance with Denver Water's Operating Rules, Regulations, Engineering Standards and applicable charges. Prior to proceeding with the project, you should determine the regulations and charges that might apply. Please check the fire requirements for the proposed development with the Fire Prevention Bureau and the availability of fire flow from existing mains with Denver Water's Hydraulics Department.

If you have questions, or you would like to schedule a meeting to discuss the proposed project, please contact Denver Water Sales Administration at 303-628-6100 (Option 2).

Sincerely,

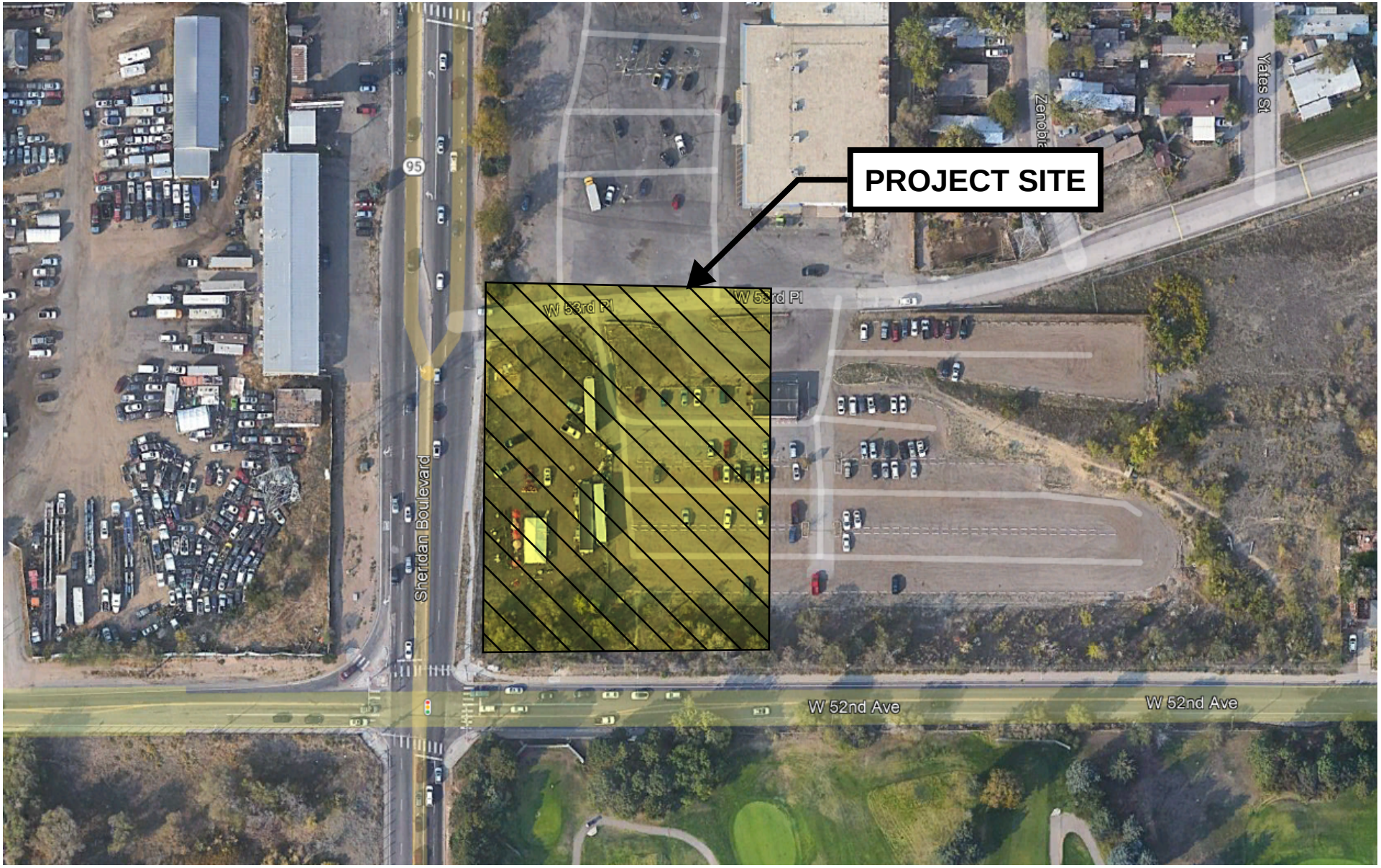
Jackson Marshall

Digitally signed by: Jackson Marshall
DN: CN = Jackson Marshall email = jackson.marshall@denverwater.org C = US O = Denver Water OU = Water Sales/Sales Admin
Date: 2021.06.11 07:51:45 -06'00'

Jackson Marshall
Sales Administration

LEGAL DESCRIPTION

SUB:BERKELEY VILLAGE FILING NO 1 DESC: PT OF BERKELEY VILLAGE FILING NO 1 TOG WITH A PT OF SEC 18/3/68 BEG AT W4 COR SEC 18 TH E 60 FT TH N 40 FT TO TRUE POB TH N 350 FT TH S 88D 12M E 494/66 FT TH N 71D 40M E 188/20 FT TH N 14/10 FT TH E 228/50 FT TH S 285 FT TH W 115 FT TH S 125 FT TO PT ON N ROW LN W 52ND AVE TH W 113/50 FT TH N 10 FT TH W ALG N ROW LN W 52ND AVE 676/87 FT TO TRUE POB 18/3/68 AND



Kum & Go #2294	Vicinity Map	olsson 1880 Fall River Drive, Suite 200 Loveland, CO 80538 Tel. 970-461-7733

Erica Morton

From: Borger, Megan J <Megan.J.Borger@xcelenergy.com>
Sent: Thursday, September 22, 2022 1:52 PM
To: Erica Morton; brett.stupp@kumandgo.com
Subject: XE: Designer Assigned for SHERIDAN BLVD AND 52ND AVE, ARVADA, CO 80002 – SN13360311
Attachments: Xcel%20Energy%20Commercial%20Load%20Worksheet%206-11-15%208-3-15.xlsx

Reference Number: SN13360311

Dear **KUM & GO**,

Thank you for choosing us as your energy service provider. Your service request for work at **SHERIDAN BLVD AND 52ND AVE, ARVADA, CO 80002** has been received.

Important: This address is what we currently have on record and must match the address on your inspection. If you would like to update or change this address, please reply to this email with the correct address.

I will be the primary point of contact for your project during the design phase. My contact information is included below. If you would prefer us to contact someone else, please provide their contact information by replying to this email (example: electrician or builder).

My current understanding of your request is:

Request for Permanent COMMERCIAL RETAIL Electric Underground Service

Electric Load: 1200
# of Electric Meters: 1
Electric Voltage: 120/208
# of Phases: 3 PH

Our Process:

In order to begin the design work for your project, I need to collect the following information:

- Electric Load information. Attached to this email you will find an Excel worksheet. Please follow the instructions contained within them to provide the detailed information we require. It is important that you return those files electronically and not fill them out by hand.
- Electric one-line diagram and panel schedules.
- Site plans. Please submit in a PDF format that clearly indicates the areas your site will reserve for the installation of our meters, conductors, poles, pipe, etc.

I will develop a design schedule and share it with you. If additional requirements arise during the design process, I will be back in touch with the primary contact for your project.

Please contact me with any questions you have during the process.

Thank you,

~Megan Borger
Xcel Energy | Responsible By Nature
Designer
P: 720-376-2084
E: Megan.J.Borger@xcelenergy.com

Xcel-Energy-Standard-For-Electric-Installation-and-Use.pdf (xcelenergy.com)

LEGAL DESCRIPTION

SUB:BERKELEY VILLAGE FILING NO 1 DESC: PT OF BERKELEY VILLAGE FILING NO 1 TOG WITH A PT OF SEC 18/3/68 BEG AT W4 COR SEC 18 TH E 60 FT TH N 40 FT TO TRUE POB TH N 350 FT TH S 88D 12M E 494/66 FT TH N 71D 40M E 188/20 FT TH N 14/10 FT TH E 228/50 FT TH S 285 FT TH W 115 FT TH S 125 FT TO PT ON N ROW LN W 52ND AVE TH W 113/50 FT TH N 10 FT TH W ALG N ROW LN W 52ND AVE 676/87 FT TO TRUE POB 18/3/68 AND

Statement Of Taxes Due

Account Number R0105441
Parcel 0182518206004

Assessed To
SBGM LAND TRUST (DATED 12/24/2008)
PO BOX 306
PINE, CO 80470-0306

Legal Description
SUB:BERKELEY VILLAGE FILING NO 1 DESC: PT OF BERKELEY VILLAGE FILING NO 1 TOG WITH A PT OF SEC 18/3/68 BEG AT W4 COR SEC 18 TH E 60 FT TH N 40 FT TO TRUE POB TH N 350 FT TH S 88D 12M E 494/66 FT TH N 71D 40M E 188/20 FT TH N 14/10 FT TH E 228/50 FT TH S 285 FT TH W 115 FT TH S 125 FT TO PT ON... Additional Legal on File

Situs Address
5200 SHERIDAN BLVD

Year	Tax	Interest	Fees	Payments	Balance
Tax Charge					
2021	$23,000.22	$0.00	$0.00	($23,000.22)	$0.00
Total Tax Charge					$0.00
Grand Total Due as of 09/22/2022					**$0.00**

Tax Billed at 2021 Rates for Tax Area 480 - 480

Authority	Mill Levy	Amount
RANGEVIEW LIBRARY DISTRICT	3.6890000	$697.07
BERKELEY WATER & SANITATION	3.3530000	$633.58
ADAMS COUNTY FIRE PROTECTIO	16.6860000	$3,152.99
GENERAL	22.9450000	$4,335.69
HYLAND HILLS PARK & RECREAT	5.1230000	$968.04
RETIREMENT	0.3140000	$59.33
ROAD/BRIDGE	1.3000000	$245.65
DEVELOPMENTALLY DISABLED	0.2570000	$48.56
SD 50 BOND (Westminster)	9.0800000	$1,715.76
SD 50 GENERAL (Westminster)	55.7200000	$10,528.86
URBAN DRAINAGE SOUTH PLATTE	0.1000000	$18.90
URBAN DRAINAGE & FLOOD CONT	0.9000000	$170.06
SOCIAL SERVICES	2.2530000	$425.73
Taxes Billed 2021	121.7200000	$23,000.22

Values	Actual	Assessed
VACANT COMMERCIAL LD	$651,600	$188,960
Total	$651,600	$188,960

Tax amounts are subject to change due to endorsement, advertising, or fees.
Please call the office to confirm amount due after August 1st.

All Tax Lien Redemption payments must be made with cash or cashier's check.

Adams County Treasurer & Public Trustee
4430 S Adams County Parkway, Suite W1000
Brighton, CO 80601
720-523-6160

CERTIFICATION OF NOTICE TO MINERAL ESTATE OWNERS

I/We, Kum & Go, LC
(the "Applicant") by signing below, hereby declare and certify as follows:

With respect to the property located at:
Physical Address: 5200 Sheridan Blvd
Legal Description: Tract D & Tract E, Berkeley Village Filing No. 1
Parcel #(s): 0182518206004

(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

_____ 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: _____ Applicant: _____

By: _____
Print Name: _____
Address: _____
_____

STATE OF COLORADO)
)
COUNTY OF ADAMS)

Subscribed and sworn to before me this _____day of _____, 20___, by _____.

Witness my hand and official seal.

My Commission expires: _____ _____
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.

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

I/We, Kum & Go, LC _____, (the "Applicant") by signing below, hereby declare and certify as follows:

Concerning the property located at:

Physical Address: 5200 Sheridan Blvd

Legal Description: Tract D & Tract E, Berkeley Village Filing No. 1

Parcel #(s): 0182518206004

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: _____ Applicant: _____

After Recording Return To:

By: _____

Print Name: _____

Address: _____

_____

STATE OF COLORADO)
)
COUNTY OF ADAMS)

Subscribed and sworn to before me this _____day of _____, 20___, by _____.

Witness my hand and official seal.

My Commission expires: _____ _____
Notary Public

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 within thirty days after the initial public hearing on all applicable land use applications.

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

I, Kum & Go, LC (the "Applicant") by signing below, hereby declare and certify as follows concerning the property located at:

Physical Address:

Legal Description: Tract D & Tract E, Berkeley Village Filing No. 1

Parcel # (s): 0182518206004

With respect to qualifying surface developments:

Access to existing and proposed mineral operations, surface facilities, flowlines, and pipelines in support of such existing and proposed operations for oil and gas exploration and production, including provisions for public roads sufficient to withstand trucks and drilling equipment or thirty-foot-wide access easements, were provided for in a "_____" area as recorded in Reception # _____ on _____.

Date: _____ Applicant: _____

By: _____

_____

Address: _____

STATE OF COLORADO)
)
COUNTY OF ADAMS)

Subscribed and sworn to before me this _____day of _____, 20___, by _____.

Witness my hand and official seal.

My Commission expires: _____ _____

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.

LEVEL III
STORM DRAINAGE STUDY REPORT

KUM & GO #2294
ADAMS COUNTY, CO
5200 SHERIDAN BOULEVARD

Prepared for:

Kum & Go, L.C.
1459 Grand Avenue
Des Moines, IA 50309
Contact: Dan Garneau
(515) 457-6392

Prepared by:

Olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538
Contact: Erica Morton, PE
(970) 461-7733

February 3, 2023

Olsson Project No. 022-02737

olsson

ENGINEER'S STATEMENT

This report and plan for the drainage design for Kum & Go #2294 was prepared by me (or under my direct supervision) and is correct to the best of my knowledge and belief. Said report has been prepared in accordance with the Adams County Development Standards and Regulations as well as the Mile High Flood District Criteria Manuals. I understand that Adams County does not and will not assume liability for drainage facilities designed by others. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Erica Morton, PE
Colorado Licensed Professional Engineer No. 59328

TABLE OF CONTENTS

APPENDICES

1.0 GENERAL LOCATION AND DESCRIPTION

This document is the Level III Storm Drainage Study Report for Kum & Go #2294. The purpose of this report is to identify onsite and offsite drainage patterns, storm sewer, inlet locations, and areas tributary to the site with the goal of safely routing developed storm water runoff to adequate outfall facilities.

Additionally, this report will address regional water quality treatment and full spectrum detention within an extended detention basin located on the property. This facility will serve the Kum & Go #2294 project, as well as the remainder of the overall property.

The proposed project is located at 5200 Sheridan Boulevard, located within Parcel A, SBGM Land Trust, QC Deed, being a portion of the northwest quarter of Section 18, Township 3 South, Range 68 West of the 6th P.M., City of Arvada, County of Adams, State of Colorado. The site is bordered on the west by Sheridan Boulevard, on the north by W 53rd Place, and on south by W 52nd Avenue.

Currently the site consists primarily of a partially paved parking lot with a central single-story building. Gravel parking lots, dirt drives, and native grass areas are located throughout the site surrounding the building and pavement area. Development of the site will require the relocation of the existing building and demolition of the majority of the parking lot areas. Parcel A is currently listed as approximately 7.183 acres and will be further subdivided within the proposed development of this project.

Parcel A will be divided into four (4) individual lots and one (1) tract. While the drainage analysis and improvements presented within this report will be for the entire Parcel A, there will be a larger focus on the approximately 2.09-acre Lot 1, which will contain the Kum & Go #2294 development.

The overall parcel generally slopes from south to north at slopes ranging from 2 percent to 50 percent. An approximately 60” diameter Denver storm sewer mainline crosses through the central portion of the parcel. This pipe, which is currently surcharged and has numerous welded manholes, is expected to be upsized in the future.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Custom Soil Resource Report for the site, approximately two-thirds of the site can be classified as Hydrologic Soil Group A. The remaining third of the site was not designated a Hydrologic Soil Group. For the purpose of this drainage analysis, the entirety of the site has been assumed as Hydrologic Soil Group A. The NRCS Soil Report for the site can be seen within Appendix C.

Per FEMA's National Flood Hazard Layer (NFHL) FIRMette Map Panel 08001C0591H, dated March 5th, 2007, the entirety of the site is located within Zone X, Area of Minimal Flood Hazard. The FEMA FIRMette Panel for the site can be seen within Appendix C.

Geotechnical Considerations:

Per the geotechnical report for the Lot 1 (*Report of Geotechnical Exploration, Kum & Go #2294*, prepared by Olsson, dated September 1st, 2022), claystone and bedrock was encountered at depths ranging from 3 feet to 8 feet below the existing grade of Lot 1.

2.0 DRAINAGE BASIN AND SUB-BASINS

Existing Basin Description:

Each of the four lots, as well as the tract, have been delineated as drainage basins within the existing conditions of Parcel A and correspond to the five existing basins. The delineation of each of these existing drainage basins can be found on the Existing Drainage Basin Map within Appendix C. Table 1 below highlights the key parameters of the existing basins.

Table 1. Existing Basin Characteristics

Basin	Description	Area *(acres)*	Imperviousness *(%)*
EX1	Lot 1	2.09	44.1%
EX2	Lot 2	1.04	35.0%
EX3	Lot 3	1.25	30.0%
EX4	Lot 4	2.11	10.2%
EX5	Tract A	0.66	2.0%

Proposed Major Basin Descriptions:

Additionally, each of the four lots, as well as the tract, have been delineated as drainage basins within the proposed conditions of each individual lot and correspond to the five major basins. Descriptions of each are as follows.

Major Basin *LOT 1* corresponds to the Lot 1 portion of Parcel A. This area, comprised of the western portion of the parcel, will contain the proposed Kum & Go #2294 development. Major Basin *Lot 1* has been further delineated into sub-basins per the drainage design of the Kum & Go #2294 development. A summary of these sub-basins can be found within the following sections of this report.

Major Basin *LOT 2* corresponds to the Lot 2 portion of Parcel A. This area, comprised of the northern half of the center area of the parcel, has been denoted as “future development”, with the assumption that the lot will contain offices/buildings, parking lots, and various landscaping and lawns throughout the lot. For the purpose of this report’s drainage analysis, Lot 2 has been assumed at an imperviousness of 85% in its entirety.

Major Basin LOT *3* corresponds to the Lot 3 portion of Parcel A. This area, comprised of the southern half of the center area of the parcel, has been denoted as "future development", with the assumption that the site will contain pavement and parking lots, with landscaping and lawns located throughout. For the purpose of this report's drainage analysis, the buildable area of Lot 3 (approximately 2/3 of the total area) has been assumed at an imperviousness of 90%. The remaining 1/3 of Lot 3 represents the very steep grass area along 52nd Avenue. The slope of this area would prove too difficult to develop and has been assumed that it will remain a grass hill in future development.

Major Basin *LOT 4* corresponds to the Lot 4 portion of Parcel A. This area, comprised of the eastern portion of the parcel, has been denoted as "future development", with the assumption that the site will be used for general storage, comprised of a mix of pavement, gravel, and landscape areas. For the purpose of this report's drainage analysis, Lot 4 has been assumed at an imperviousness of 60% in its entirety.

Major Basin *TRACT A* corresponds to the Tract A portion of Parcel A. This area, located within the northeast corner of the parcel, will contain the extended detention basin (EDB) that will serve as a regional facility for all four of the previously mentioned Lots.

The delineation of each of these major drainage basins can be found on the Proposed Major Basin Map within Appendix C. Table 2 below highlights the key parameters of the previously described major basins.

Table 2. Major Basin Characteristics

Basin	Description	Area *(acres)*	Imperviousness *(%)*
LOT 1	Proposed Site	2.09	61.92%
LOT 2	Future Site	1.04	85.00%
LOT 3	Future Site	1.25	60.67%
LOT 4	Future Site	2.11	60.00%
TRACT A	EDB	0.66	4.11%

Additionally, two "Master Basins" basins have been created in order to aid within the design of the proposed drainage infrastructure for the overall parcel. Descriptions of each of the Master Basins are as follows.

The *CAP* Master Basin represents the total area that is to be routed to the proposed EDB located within Tract A. Master Basin *CAP* is comprised of Major Basins *LOT 2, LOT 3, LOT 4, TRACT A,* as well as numerous sub-basins within the overall Major Basin *LOT 1.*

The *NO CAP* Master Basin represents the remaining area of the parcel that will not be directed to the Tract A EDB. Master Basin *NO CAP* is comprised solely of basin OS-1, a sub-basin of the overall Major Basin *LOT 1.*

The *CAP* Master Basin has been utilized to properly size the EDB, as it represents the total tributary area to the pond. Additional details and design information of the EDB itself can be found within the following sections. Table 3 below highlights the key parameters of the Master Basins.

Table 3. Master Basin Characteristics

Basin	Description	Area *(acres)*	Imperviousness *(%)*
CAP	Tributary Area	7.02	55.32%
NO CAP	Undetained Areas	0.39	90.77%

Comparisons between the existing basins, major basins, and master basins provide important information for the proposed development of the overall Parcel A.

- The development of Parcel A, both through the Kum & Go #2294 project or through the future projects of the remaining lots, will vastly increase the imperviousness of the overall parcel.
- Approximately 94.6% of the total parcel will be routed to the proposed EDB within Tract A. (*Master Basin NO CAP* vs total Parcel A area).
- The amount of area flowing offsite undetained to the north will be decreased by 6.793 acres (*Existing Basins* vs *Master Basin NO CAP*)

Proposed Basin Descriptions:

Major basin *LOT 1* has been further divided into numerous drainage basins. The delineation of each of these basins can be found on the Proposed Drainage Basin Map within Appendix C. Additional descriptions for each of the basins are as follows.

Basin R-1 consists of proposed building roof area. The majority of the runoff generated within this basin will be captured by three roof drains along the western (back) side of the building and be discharged to *Basin A* via three sidewalk chases located within the building sidewalk. Two additional roof drains, located on the north and east sides of the building, will connect to the proposed storm sewer infrastructure located underneath the canopy.

Basin R-2 consists of proposed canopy area. Runoff generated within this basin will be captured by roof drains and be conveyed to the proposed storm sewer infrastructure located underneath the canopy. This portion of the infrastructure will discharge flows into the *Basin C* grass-line swale.

Basin A consists of the area between the building and western property line; an area comprised of proposed landscaping and building sidewalk. Runoff generated within this basin will flow north via a concrete pan-lined swale before discharging into the *Basin B* swale via the culvert that routes flow underneath the sidewalk connection between the building and the Sheridan Boulevard public sidewalk.

Basin A+ consists of the landscape area between the western property line and Sheridan Boulevard sidewalk, outside of the overall Parcel A. Runoff generated within this basin will flow onto Lot 1 and contribute to *Basin A*.

Basin B consists of the northwestern landscape area. Runoff generated within this basin will be routed to an area inlet (Inlet 1.G) via a grass-lined swale. The collected runoff will then enter the proposed storm sewer infrastructure and be routed to the Tract A EDB.

Basin C consists of the landscape island between the two Lot 1 access drives. Runoff generated within this basin will be routed to an area inlet (Inlet 1.F) via a grass-lined swale. The collected runoff will then enter the proposed storm sewer infrastructure and be routed to the Tract A EDB.

Basin D consists of the landscape area between the curb and property line on the eastern edge of the Lot 1. Runoff generated within this basin will be routed to an area inlet (Inlet 1.E) via a concrete pan-lined swale. The collected runoff will then enter the proposed storm sewer infrastructure and be routed to the Tract A EDB.

Basin E consists of the pavement and parking located to the north and east of the building, as well as some additional adjacent landscape area. Runoff generated within this basin will generally drain east to a proposed 2'-wide curb opening located in the Lot 1 eastern curb line, where flows will then discharge into *Basin D.*

Basin F consists of the pavement and parking located to the south and east of the building, as well as the southern landscape area. Runoff generated within this basin will generally drain east to a proposed 2'-wide curb opening located in the Lot 1 eastern curb line, where flows will then discharge into *Basin D.*

Basin F+ consists of the landscape area between the southern property line and W 52nd Avenue sidewalk, outside of the overall Parcel A. Runoff generated within this basin will flow onto Lot 1 and contribute to *Basin F*.

Basin LOT 3+ consists of the landscape area between the southern property line and W 52nd Avenue sidewalk, outside of the overall Parcel A. Runoff generated within this basin will flow onto Lot 3 and contribute to *Major Basin LOT 3*.

Basin LOT 4+ consists of the landscape area between the southern property line and W 52nd Avenue sidewalk, outside of the overall Parcel A. Runoff generated within this basin will flow onto Lot 4 and contribute to *Major Basin LOT 4*.

Basin OS-1 consists of the proposed access drives to Lot 1, some adjacent landscape areas, and the portions of W 53rd Place located within the limits Lot 1. Runoff generated within this basin will not be collected by the proposed storm sewer system or be routed to the Tract A EDB. Instead, the runoff generated within this basin will match the existing drainage patterns for this area. The *OS-1 Basin* cannot be feasibly captured by the proposed storm sewer infrastructure, as the majority of this area is too far away and too steep to allow for any additional swales or inlets that could collect the generated runoff.

The site's proposed drainage design will conform to MS4 requirements. The sizing of all the forementioned inlets, culvert, and proposed storm sewer infrastructure can be found within Appendix B of this report. A summary of each of the basins and their generated runoff can be seen below in Table 4. The full hydrological equations and calculations can also be seen in Appendix A of this report.

Table 4. Proposed Basin Characteristics

Basin	Description	Area *(acres)*	Imperviousness *(%)*
R1	Building	0.13	90.00%
R2	Canopy	0.10	90.00%
A	Western Lawn/Swale	0.21	14.23%
A+	Offsite to Basin A	0.04	2.00%
B	Northern Lawn/Swale	0.18	6.72%
C	Drive island Lawn/Swale	0.07	2.00%
D	Eastern Lawn/Swale	0.08	12.08%
E	Northern Pavement Area	0.39	98.30%
F	Southern Pavement Area	0.53	55.09%
F+	Offsite to Basin F	0.04	2.00%
LOT 3+	Offsite to Major Basin Lot 3	0.12	2.00%
LOT 4+	Offsite to Major Basin Lot 4	0.06	2.00%
OS-1	Access Drive	0.39	90.77%

3.0 DRAINAGE BASIN CRITERIA

Development Criteria Reference and Constraints:

The design of the proposed drainage system was completed in accordance with the criteria set forth within the Adams County Development Standards and Regulations (DSR), as well as the Mile High Flood District (MHFD) Urban Storm Drainage Criteria Manuals (USDCM).

Hydrological Criteria:

Hydrologic calculations have been prepared in accordance with criteria set forth within the DSR, as well as the MHFD USDCM. Hydrologic calculations can be found within Appendix A of this report.

Hydrologic calculations have been performed by utilizing the Rational Method calculations. Imperviousness and runoff coefficients have been calculated via the equations presented within the MHFD USDCM. NOAA Atlas 14 has provided rainfall intensity values and rainfall depth values for the site. These referenced equations and resources can be found within Appendix A.

Hydraulic Criteria:

Hydraulic calculations have been prepared in accordance with the criteria set forth within the DSR, as well as the MHFD Criteria Manuals. Hydraulic calculations can be found within Appendix B of this report.

Storm pipe capacities and calculations have been performed by utilizing the Autodesk Storm and Sanitary Analysis (SSA) 2020 version software. SSA water surface profiles for the proposed storm sewer system can be found within Appendix B.

Inlet capacities and calculations have been confirmed by utilizing ADS provided capacity charts for each of the specified inlet types. These capacity charts can be found within Appendix B.

The design of the extended detention basin and its outlet structure has been performed by utilizing the Detention Design – MHFD-Detention v4.06 spreadsheet. The completed spreadsheet, as well as a detail of the outlet structure, is include within Appendix B.

Floodplain Regulations Compliance:

The entirety of the site is located within Zone X, Area of Minimal Flood Hazard.

Modifications of Criteria:

There are no proposed modifications to the drainage criteria for this project.

4.0 DRAINAGE FACILITY DESIGN

General Concept:

The extended detention basin within Tract A has been designed to support the majority of the runoff generated for the overall Parcel A in its full, future-buildout condition. *Major Basins LOT 2, LOT 3,* and *LOT 4* have been denoted as future development and are assumed to be tributary to the pond in their entireties. With the exception of *Basin OS-1*, the entirety of *Major Basin LOT 1* is also tributary to the pond. Additionally, offsite basins *A+, F+, LOT 3+,* and *LOT 4+* direct runoff onto the parcel within existing conditions, and have been accounted for within the analysis of the Tract A EDB.

The majority of the runoff generated within *Major Basin LOT 1*'s tributary basins will be conveyed via overland flow through swales and gutters before being directed to their respective inlets. The primary conveyance of runoff will be provided via the storm sewer main along W 53rd Place. Flowing from west to east, this storm main has been sized to convey the Lot 1 runoff, as well as the addition of flows to be added via the future developments within Lot 2 and Lot 3, before discharging into the Tract A EDB.

Major Basins LOT 2 and *LOT 3* will be able to route generated runoff to the concrete pan-lined swale located on their western boundaries, where flows will then be captured and routed into the storm main along W 53rd Place. However, *Major Basin LOT 4* will need to route its generated runoff north and directly into the pond.

Specific Details:

Required Storage Volumes:

Per criteria set forth within the DSR, as well as the MHFD USDCM, the parcel's proposed Tract A EDB will need to detain and release the full Water Quality Capture Volume (WQCV), the minor (5-year) storm event runoff volume, the major (100-year) storm event runoff volume, as well as an additional ½ of the WQCV.

The EDB has been designed in a manner such that WQCV is detained and released within 40 hours and that the minor (5-year) and major (100-year) storm events are attenuated and released at a rate equal to or less than the maximum allowable release rates, as defined by the DSR. The calculation for the site's maximum allowable release rates can be seen within Appendix B.

Per the calculations presented within the MHFD-Detention, Version 4.04 (February 2021), DETENTION BASIN STAGE-STORAGE TABLE BUILDER spreadsheet, the total required detention basin volume will be approximately 0.831 acre-feet. However, once the required release rates are incorporated, the basin will produce a maximum volume stored of 0.819 acre-feet. The EDB within Tract A will have a provided volume of approximately 0.857 acre-feet. This spreadsheet can be seen within Appendix B of this report.

Outlet Structure and Spillway:

The outlet structure has been designed to drain the WQCV in 40 hours and release the minor (5-year) and major (100-year) storm events at a rate equal to or less than their respective maximum allowable release rates. Runoff exiting the outlet structure will enter the proposed storm sewer infrastructure, which flows north and discharges into the existing W 53rd Place curb and gutter.

The outlet structure will be comprised of a modified CDOT Type C inlet. The inlet will contain a rectangular concrete knockout located on the front of the structure. The knockout will be covered with a bar rack (trash screen) and stainless steel orifice plate. This orifice plate will contain numerous orifices of varying heights and sizes in order to ensure the proper attenuation release of each of the specified volumes. A spillway is provided within the northwestern portion of the pond's berm and will serve as the emergency overflow path. Storm events greater than the major (100-year) storm event will pass through the spillway and flow undetained in W 53rd Place.

The sizing and calculation for the design of the outlet structure was completed by utilizing the MHFD-Detention, Version 4.04 (February 2021), DETENTION BASIN OUTLET STRUCTURE DESIGN spreadsheet. This spreadsheet, as well as a detail of the outlet structure, is included within Appendix B.

5.0 CONCLUSION

This report and the proposed drainage design for the overall Parcel A is in compliance with the Adams County DSR, the MHFD Criteria Manuals, existing drainage patterns, floodplain regulations, and all other applicable state and federal regulations.

The majority of the developed runoff generated onsite will be directed to the proposed extended detention basin. This facility will provide runoff attenuation and treatment for the overall parcel's WQCV, minor storm event, and major storm event. The outlet structure will drain the WQCV within 40 hours and release the minor and major storm events at or below their maximum allowable rates. The pond spillway will allow for greater volumes to safely overflow offsite and undetained into the adjacent roadways.

Any runoff that is not directed to the EDB will flow offsite and match the existing regional drainage patterns. As the total amount of offsite runoff has been greatly reduced through the development of the site, there are no expected adverse impacts to the existing storm sewer inlets, public roadways, or the regional historic drainage patterns.

6.0 REFERENCES

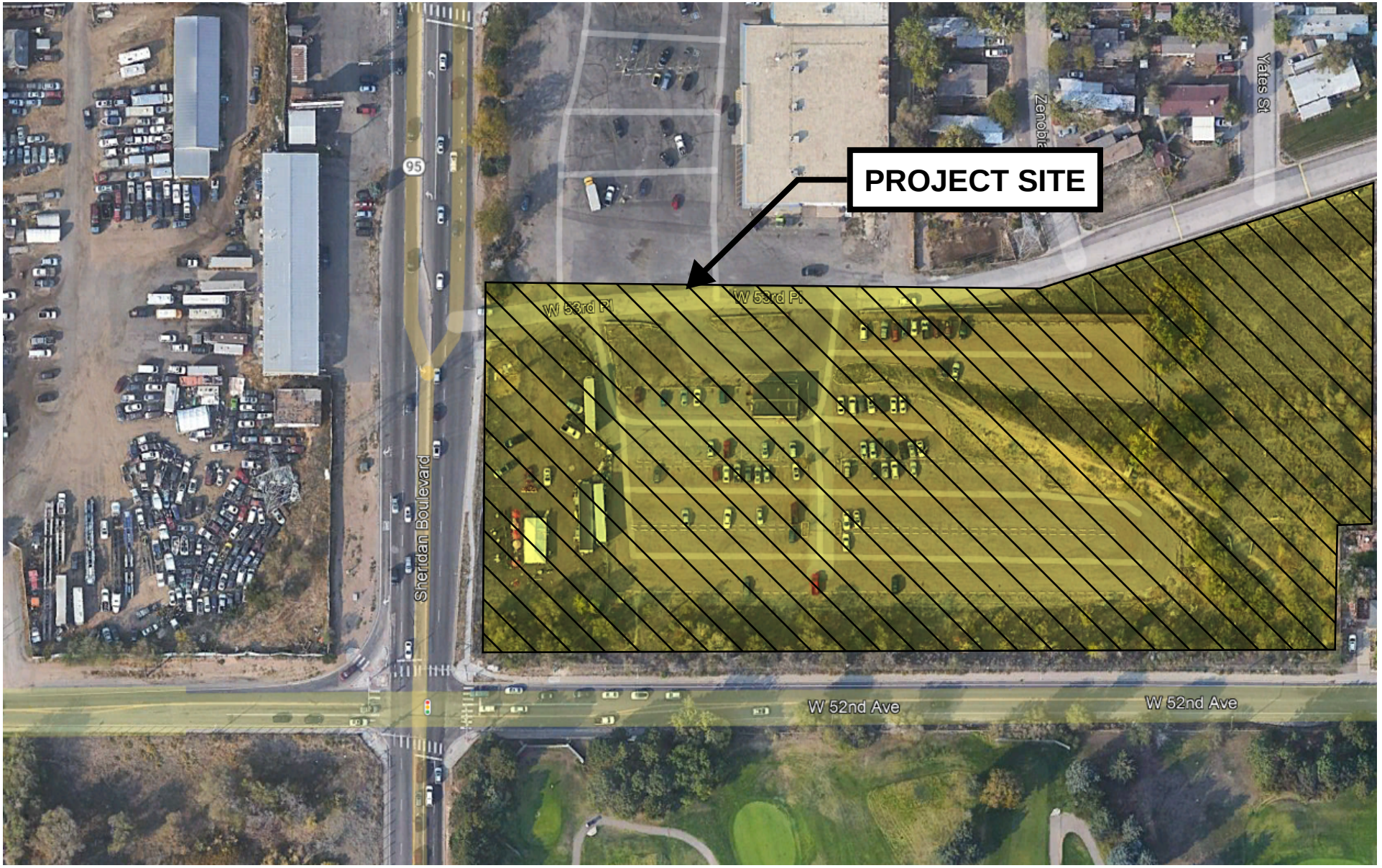
Adams County Development Standards and Regulations, Adams County, dated December 8, 2020

Urban Storm Drainage Criteria Manual, Volumes 1, 2, & 3, Mile High Flood District, dated January 2016

Report of Geotechnical Exploration, Kum & Go #2294, Olsson, dated September 1, 2022

MHFD-Detention, Version 4.04, Mile High Flood District, February 2021

APPENDIX A
HYDROLOGIC CALCULATIONS



Kum & Go #2294	Vicinity Map	olsson 1880 Fall River Drive, Suite 200 Loveland, CO 80538 Tel. 970-461-7733

Table 6-3. Recommended percentage imperviousness values

Land Use or Surface Characteristics	Percentage Imperviousness (%)
Business:	
Downtown Areas	95
Suburban Areas	75
Residential lots (lot area only):	
Single-family	
2.5 acres or larger	12
0.75 – 2.5 acres	20
0.25 – 0.75 acres	30
0.25 acres or less	45
Apartments	75
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	10
Playgrounds	25
Schools	55
Railroad yard areas	50
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	2
Lawns, clayey soil	2

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
A	$C_A = 0.84i^{1.302}$	$C_A = 0.86i^{1.276}$	$C_A = 0.87i^{1.232}$	$C_A = 0.88i^{1.124}$	$C_A = 0.85i+0.025$	$C_A = 0.78i+0.110$	$C_A = 0.65i+0.254$
B	$C_B = 0.84i^{1.169}$	$C_B = 0.86i^{1.088}$	$C_B = 0.81i+0.057$	$C_B = 0.63i+0.249$	$C_B = 0.56i+0.328$	$C_B = 0.47i+0.426$	$C_B = 0.37i+0.536$
C/D	$C_{C/D} = 0.83i^{1.122}$	$C_{C/D} = 0.82i+0.035$	$C_{C/D} = 0.74i+0.132$	$C_{C/D} = 0.56i+0.319$	$C_{C/D} = 0.49i+0.393$	$C_{C/D} = 0.41i+0.484$	$C_{C/D} = 0.32i+0.588$

$$t_c = t_i + t_t \qquad \text{Equation 6-2}$$

Where:

t_c = computed time of concentration (minutes)

t_i = overland (initial) flow time (minutes)

t_t = channelized flow time (minutes).

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}} \qquad \text{Equation 6-3}$$

Where:

t_i = overland (initial) flow time (minutes)
C_5 = runoff coefficient for 5-year frequency (from Table 6-4)
L_i = length of overland flow (ft)
S_o = average slope along the overland flow path (ft/ft).

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t} \qquad \text{Equation 6-4}$$

Where:

t_t = channelized flow time (travel time, min)
L_t = waterway length (ft)
S_o = waterway slope (ft/ft)
V_t = travel time velocity (ft/sec) = $K\sqrt{S_o}$
K = NRCS conveyance factor (see Table 6-2).

Table 6-2. NRCS Conveyance factors, K

Type of Land Surface	Conveyance Factor, K
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

$$t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}} \qquad \text{Equation 6-5}$$

Where:

t_c = minimum time of concentration for first design point when less than t_c from Equation 6-1.
L_t = length of channelized flow path (ft)
i = imperviousness (expressed as a decimal)
S_t = slope of the channelized flow path (ft/ft).

NOAA Atlas 14, Volume 8, Version 2
Location name: Arvada, Colorado, USA*
Latitude: 39.7917°, Longitude: -105.0526°
Elevation: 5270.59 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.45 (1.90-3.17)	3.06 (2.36-3.95)	4.12 (3.18-5.33)	5.06 (3.89-6.58)	6.48 (4.86-8.78)	7.66 (5.59-10.5)	8.92 (6.29-12.4)	10.3 (6.95-14.6)	12.1 (7.92-17.6)	13.7 (8.66-19.9)
10-min	1.79 (1.39-2.32)	2.24 (1.73-2.89)	3.01 (2.33-3.90)	3.71 (2.85-4.82)	4.75 (3.56-6.43)	5.61 (4.10-7.65)	6.52 (4.61-9.07)	7.51 (5.09-10.7)	8.89 (5.80-12.9)	10.0 (6.34-14.6)
15-min	1.46 (1.13-1.88)	1.82 (1.41-2.35)	2.45 (1.89-3.17)	3.02 (2.32-3.92)	3.86 (2.89-5.23)	4.56 (3.33-6.22)	5.30 (3.74-7.38)	6.10 (4.14-8.67)	7.23 (4.72-10.5)	8.13 (5.15-11.9)
30-min	1.03 (0.800-1.33)	1.28 (0.990-1.65)	1.72 (1.32-2.22)	2.11 (1.62-2.74)	2.69 (2.01-3.64)	3.17 (2.31-4.32)	3.68 (2.60-5.12)	4.23 (2.87-6.01)	5.01 (3.27-7.26)	5.63 (3.57-8.21)
60-min	0.639 (0.495-0.824)	0.791 (0.613-1.02)	1.06 (0.818-1.37)	1.30 (0.999-1.69)	1.66 (1.24-2.25)	1.96 (1.43-2.67)	2.27 (1.60-3.16)	2.61 (1.77-3.71)	3.09 (2.02-4.48)	3.47 (2.20-5.07)

9-01-04-04 TIME-INTENSITY-FREQUENCY CURVES

A time-intensity-frequency curve was developed for the County by using one-hour point rainfall values (see Table 9.3) and factors for durations of less than one hour (see Table 9.4); both obtained from the NOAA Atlas. The outcomes of this distribution are point values that were then converted to intensities and plotted as Figure 9.1. Rainfall data from the Mile High Flood District (MHFD) may be used as an alternative (see MHFD Criteria Manual).

Table 9.3—One-Hour Point Rainfall (inches)

2-Year	5-Year	10-Year	50-Year	100-Year
1.00	1.42	1.68	2.35	2.71

Table 9.4—Factors for Durations of Less than One Hour

Duration (minutes)	5	10	15	30
Ratio to 1-hour depth	0.29	0.45	0.57	0.79

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EXISTING BASINS - RUNOFF COEFFICIENT & PERCENT IMPERVIOUSNESS

Basin Name	Basin Description	Soil Type	Paved 100% *(acres)*	Building 90% *(acres)*	Gravel 40% *(acres)*	Lawn 2% *(acres)*	Total Area *(acres)*	C5	C100	Percent Impervious
EX1	Existing Lot 1	A	0.57	0.01	0.83	0.68	2.09	0.35	0.45	44.1%
EX2	Existing Lot 2	A	0.10	0.02	0.60	0.32	1.04	0.25	0.38	35.0%
EX3	Existing Lot 3	A	0.06	-	0.77	0.43	1.25	0.21	0.34	30.0%
EX4	Existing Lot 4	A	-	-	0.45	1.66	2.11	0.06	0.19	10.2%
EX5	Existing EDB Area	A	-	-	-	0.66	0.66	0.01	0.13	2.0%
						TOTAL	**7.15**	**0.19**	**0.32**	**26.4%**

MAJOR BASINS - RUNOFF COEFFICIENT & PERCENT IMPERVIOUSNESS

Basin Name	Basin Description	Routing	Soil Type	Paved 100% *(acres)*	Building 90% *(acres)*	Gravel 40% *(acres)*	Lawn 2% *(acres)*	Lot 2* 85% (acres)	Lot 3* 90% (acres)	Lot 4* 60% (acres)	Total Area *(acres)*	C5	C100	Percent Impervious
LOT 1	Proposed Site Conditions	**	A	1.07	0.23	-	0.79	-	-	-	2.09	0.53	0.59	61.92%
LOT 2	Future Build Out	CAP	A	-	-	-	-	1.04	-	-	1.04	0.70	0.77	85.00%
LOT 3	Future Build Out	CAP	A	-	-	-	0.42	-	0.84	-	1.25	0.50	0.58	60.67%
LOT 4	Future Build Out	CAP	A	-	-	-	-	-	-	2.11	2.11	0.45	0.58	60.00%
TRACT A	EDB	CAP	A	0.01	-	-	0.64	-	-	-	0.66	0.02	0.14	4.11%
										TOTAL	**7.15**	**0.48**	**0.57**	**59.16%**

* Specified percent impervious values have been assumed for each lot's future build-out condition

** The routing of Lot 1 has been further detailed through the use of additional sub-basins (below)

LOT 1 SUB-BASINS - RUNOFF COEFFICIENT & PERCENT IMPERVIOUSNESS

Basin Name	Basin Description	Routing	Soil Type	Paved 100% *(acres)*	Building 90% *(acres)*	Gravel 40% *(acres)*	Lawn 2% *(acres)*	Total Area *(acres)*	C5	C100	Percent Impervious
R1	Building	CAP	A	-	0.13	-	-	0.13	0.75	0.81	90.00%
R2	Canopy	CAP	A	-	0.10	-	-	0.10	0.75	0.81	90.00%
A	Western Lawn/Swale	CAP	A	0.03	-	-	0.19	0.21	0.11	0.22	14.23%
A+	Offsite to Basin A	CAP	A	-	-	-	0.04	0.04	0.01	0.13	2.00%
B	Northern Lawn/Swale	CAP	A	0.01	-	-	0.17	0.18	0.05	0.16	6.72%
C	Drive island Lawn/Swale	CAP	A	-	-	-	0.07	0.07	0.01	0.13	2.00%
D	Eastern Lawn/Swale	CAP	A	0.01	-	-	0.07	0.08	0.09	0.20	12.08%
E	Northern Pavement Area	CAP	A	0.39	-	-	0.01	0.39	0.85	0.88	98.30%
F	Southern Pavement Area	CAP	A	0.29	-	-	0.24	0.53	0.47	0.54	55.09%
F+	Offsite to Basin F	CAP	A	-	-	-	0.04	0.04	0.01	0.13	2.00%
LOT 3+	Offsite to Major Basin LOT 3	CAP	A	-	-	-	0.12	0.12	0.01	0.13	2.00%
LOT 4+	Offsite to Major Basin LOT 4	CAP	A	-	-	-	0.06	0.06	0.01	0.13	2.00%
OS-1	Access Drive	NO CAP	A	0.35	-	-	0.04	0.39	0.78	0.82	90.77%
							TOTAL	**2.35**	**0.47**	**0.53**	**55.25%**

MASTER BASINS - RUNOFF COEFFICIENT & PERCENT IMPERVIOUSNESS

Basin Name	Basin Description	Soil Type	Paved 100% *(acres)*	Building 90% *(acres)*	Gravel 40% *(acres)*	Lawn 2% *(acres)*	Lot 2* 85% (acres)	Lot 3* 90% (acres)	Lot 4* 60% (acres)	Total Area *(acres)*	C5	C100	Percent Impervious
CAP	Total Captured	A	0.73	0.23	-	2.07	1.04	0.84	2.11	7.02	0.44	0.54	55.32%
NO CAP	Total Uncaptured	A	0.35	-	-	0.04	-	-	-	0.39	0.78	0.82	90.77%
									TOTAL	**7.41**	**0.46**	**0.56**	**57.19%**

* Specified percent impervious values have been assumed for each lot's future build-out condition

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EXISTING BASINS - TIME OF CONCENTRATION

Basin Characteristics				INITIAL/OVERLAND Ti (Eq. 6-3)			TRAVEL TIME Tt (Eq. 6-4)						Tc		FINAL
BASIN	AREA (AC)	C5	i (%)	Li (ft)	Si (ft/ft)	Ti (min)	Lt (ft)	St (ft/ft)	SURFACE TYPE	NRCS K	VELOCITY (fps)	Tt (min)	(Eq. 6-2) (min)	(Eq. 6-5) (min)	Tc (min)
EX1	2.09	0.35	44.1%	300.0	0.07	12.42	0					0.00	12.42	18.50	12.42
EX2	1.04	0.25	35.0%	125.0	0.015	14.96	0					0.00	14.96	20.05	14.96
EX3	1.25	0.21	30.0%	185.0	0.145	9.07	0					0.00	9.07	20.90	9.07
EX4	2.11	0.06	10.2%	300.0	0.085	16.02	0					0.00	16.02	24.27	16.02
EX5	0.66	0.01	2.0%	90.0	0.062	10.26	0					0.00	10.26	25.66	10.26

MAJOR BASINS - TIME OF CONCENTRATION

Basin Characteristics				INITIAL/OVERLAND Ti (Eq. 6-3)			TRAVEL TIME Tt (Eq. 6-4)						Tc		FINAL
BASIN	AREA (AC)	C5	i (%)	Li (ft)	Si (ft/ft)	Ti (min)	Lt (ft)	St (ft/ft)	SURFACE TYPE	NRCS K	VELOCITY (fps)	Tt (min)	(Eq. 6-2) (min)	(Eq. 6-5) (min)	Tc (min)
LOT 1	2.09	0.53	61.9%	75	0.1450	3.72	325.00	0.020	PAVED	20	2.83	1.92	5.63	17.64	5.63
LOT 2	1.04	0.70	85.0%	110	0.0430	4.69	260	0.017	PAVED	20	2.60	1.67	6.36	13.14	6.36
LOT 3	1.25	0.50	60.7%	185	0.1450	6.06	0					0.00	6.06	15.69	6.06
LOT 4	2.11	0.45	60.0%	150	0.0845	7.13	150	0.015	PAVED	20	2.45	1.02	8.15	16.97	8.15
TRACT A	0.66	0.02	4.1%	25	0.1450	4.02	273	0.005	PAVED	20	1.41	3.22	7.24	32.02	7.24

LOT 1 SUB-BASINS - TIME OF CONCENTRATION

Basin Characteristics				INITIAL/OVERLAND Ti (Eq. 6-3)			TRAVEL TIME Tt (Eq. 6-4)						Tc		FINAL
BASIN	AREA (AC)	C5	i (%)	Li (ft)	Si (ft/ft)	Ti (min)	Lt (ft)	St (ft/ft)	SURFACE TYPE	NRCS K	VELOCITY (fps)	Tt (min)	(Eq. 6-2) (min)	(Eq. 6-5) (min)	Tc (min)
R1	0.13	0.75	90.0%	ROOF & BUILDING AREA Tc's TO BE SET TO MINIMUM VALUE OF 5 MINUTES											5.00
R2	0.10	0.75	90.0%	ROOF & BUILDING AREA Tc's TO BE SET TO MINIMUM VALUE OF 5 MINUTES											5.00
A	0.21	0.11	14.2%	75	0.2250	5.53	140	0.0050	PAVED	20	1.41	1.65	7.18	26.58	7.18
A+	0.04	0.01	2.0%	48	0.2250	4.87	0					0.00	4.87	25.66	5.00
B	0.18	0.05	6.7%	25	0.0475	5.68	165	0.0222	LAWN	7	1.04	2.64	8.32	26.71	8.32
C	0.07	0.01	2.0%	25	0.2500	3.41	37.5	0.0235	LAWN	7	1.07	0.58	4.00	26.10	5.00
D	0.08	0.09	12.1%	85	0.3000	5.45	230	0.0220	PAVED	20	2.97	1.29	6.74	26.36	6.74
E	0.39	0.85	98.3%	65	0.0165	3.14	150	0.0100	PAVED	20	2.00	1.25	4.39	10.39	5.00
F	0.53	0.47	55.1%	35	0.0200	5.37	180	0.0100	PAVED	20	2.00	1.50	6.87	18.43	6.87
F+	0.04	0.01	2.0%	10	0.1450	2.58	0					0.00	2.58	25.66	5.00
LOT 3+	0.12	0.01	2.0%	10	0.1450	2.58	0					0.00	2.58	25.66	5.00
LOT 4+	0.06	0.01	2.0%	10	0.1450	2.58	0					0.00	2.58	25.66	5.00
OS-1	0.39	0.78	90.8%	100	0.0650	3.12	100	0.0125	PAVED	20	2.24	0.75	3.86	11.26	5.00

MASTER BASINS - TIME OF CONCENTRATION

Basin Characteristics				INITIAL/OVERLAND Ti (Eq. 6-3)			TRAVEL TIME Tt (Eq. 6-4)						Tc		FINAL
BASIN	AREA (AC)	C5	i (%)	Li (ft)	Si (ft/ft)	Ti (min)	Lt (ft)	St (ft/ft)	SURFACE TYPE	NRCS K	VELOCITY (fps)	Tt (min)	(Eq. 6-2) (min)	(Eq. 6-5) (min)	Tc (min)
CAP	7.02	0.44	55.3%	MINIMUM OF MASTER BASIN Tc's											5.63
NO CAP	0.39	0.78	90.8%	REFERENCE LOT 1 SUB-BASIN OS-1											5.00

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EXISTING BASINS - RUNOFF CALCULATIONS

Basin Characteristics						Intensities		Sub-basin	
Basin Name	Description	Area (acres)	C5	C100	Tc (min)	I5 (in/hr)	I 100 (in/hr)	Q 5-yr (cfs)	Q 100-yr (cfs)
EX1	Existing Lot 1	2.09	0.35	0.45	12.42	2.84	6.14	2.05	5.84
EX2	Existing Lot 2	1.04	0.25	0.38	14.96	2.61	5.65	0.69	2.24
EX3	Existing Lot 3	1.25	0.21	0.34	9.07	3.22	6.97	0.84	3.01
EX4	Existing Lot 4	2.11	0.06	0.19	16.02	2.53	5.47	0.33	2.18
EX5	Existing EDB Area	0.66	0.01	0.13	10.26	3.07	6.65	0.01	0.55

MAJOR BASINS - RUNOFF CALCULATIONS

Basin Characteristics						Intensities		Sub-basin	
Basin Name	Description	Area (acres)	C5	C100	Tc (min)	I5 (in/hr)	I 100 (in/hr)	Q 5-yr (cfs)	Q 100-yr (cfs)
LOT 1	Proposed Site Conditions	2.09	0.53	0.59	5.63	3.80	8.24	4.18	10.22
LOT 2	Future Build Out	1.04	0.70	0.77	6.36	3.65	7.91	2.65	6.34
LOT 3	Future Build Out	1.25	0.50	0.58	6.06	3.71	8.04	2.34	5.88
LOT 4	Future Build Out	2.11	0.45	0.58	8.15	3.35	7.26	3.17	8.85
TRACT A	EDB	0.66	0.02	0.14	7.24	3.50	7.57	0.06	0.71

LOT 1 SUB-BASINS - RUNOFF CALCULATIONS

Basin Characteristics						Intensities		Sub-basin	
Basin Name	Description	Area (acres)	C5	C100	Tc (min)	I5 (in/hr)	I 100 (in/hr)	Q 5-yr (cfs)	Q 100-yr (cfs)
R1	Building	0.13	0.75	0.81	5.00	4.12	8.92	0.40	0.93
R2	Canopy	0.10	0.75	0.81	5.00	4.12	8.92	0.31	0.73
A	Western Lawn/Swale	0.21	0.11	0.22	7.18	3.51	7.59	0.08	0.36
A+	Offsite to Basin A	0.04	0.01	0.13	5.00	4.12	8.92	0.00	0.04
B	Northern Lawn/Swale	0.18	0.05	0.16	8.32	3.33	7.20	0.03	0.21
C	Drive island Lawn/Swale	0.07	0.01	0.13	5.00	4.12	8.92	0.00	0.08
D	Eastern Lawn/Swale	0.08	0.09	0.20	6.74	3.58	7.76	0.03	0.13
E	Northern Pavement Area	0.39	0.85	0.88	5.00	4.12	8.92	1.37	3.08
F	Southern Pavement Area	0.53	0.47	0.54	6.87	3.56	7.71	0.89	2.22
F+	Offsite to Basin F	0.04	0.01	0.13	5.00	4.12	8.92	0.00	0.05
LOT 3+	Offsite to Major Basin LOT 3	0.12	0.01	0.13	5.00	4.12	8.92	0.00	0.13
LOT 4+	Offsite to Major Basin LOT 4	0.06	0.01	0.13	5.00	4.12	8.92	0.00	0.07
OS-1	Access Drive	0.39	0.78	0.82	5.00	4.12	8.92	1.25	2.85

MASTER BASINS - RUNOFF CALCULATIONS

Basin Characteristics						Intensities		Sub-basin	
Basin Name	Description	Area (acres)	C5	C100	Tc (min)	I5 (in/hr)	I 100 (in/hr)	Q 5-yr (cfs)	Q 100-yr (cfs)
CAP	Total Captured	7.02	0.44	0.54	5.63	3.80	8.24	11.84	31.29
NO CAP	Total Uncaptured	0.39	0.78	0.82	5.00	4.12	8.92	1.25	2.85

1880 Fall River Drive, Suite 200
Loveland, CO 80538
Tel. 970-461-7733

APPENDIX B
HYDRAULIC CALCULATIONS

9-01-11-02 MAXIMUM ALLOWABLE RELEASE RATE

The maximum allowable release rates for the corresponding storm events (5 and 100-year) are as presented in Table 9.16.

Table 9.16—Allowable Release Rates (CFS/Acre)

Control Frequency	Dominant Soil Group		
	A	B	C & D
5-year	0.07	0.13	0.17
100-year	0.50	0.85	1.00

Total Tributary Area: 7.02 acres - represented by *Master Basin CAP*

5-Year: 0.07 cfs/acre * 7.02 acre = **0.491 cfs**

100-Year: 0.50 cfs/acre * 7.02 acre = **3.51 cfs**

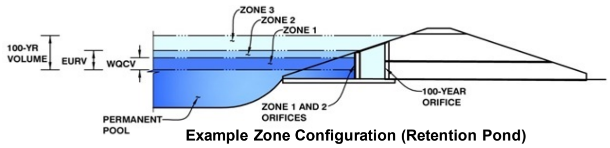
olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538
Tel. 970-461-7733

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.04 (February 2021)

Project: **KG 2294**

Basin ID: **TRACT A EDB**



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	7.02	acres
Watershed Length =	775	ft
Watershed Length to Centroid =	500	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	55.32%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.130	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.461	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1 in.) =	0.276	acre-feet	1.00	inches
5-yr Runoff Volume (P1 = 1.42 in.) =	0.416	acre-feet	1.42	inches
10-yr Runoff Volume (P1 = 1.68 in.) =	0.506	acre-feet	1.68	inches
25-yr Runoff Volume (P1 = 1.69 in.) =	0.518	acre-feet		inches
50-yr Runoff Volume (P1 = 2.35 in.) =	0.832	acre-feet	2.35	inches
100-yr Runoff Volume (P1 = 2.71 in.) =	1.037	acre-feet	2.71	inches
500-yr Runoff Volume (P1 = 3.14 in.) =	1.274	acre-feet		inches
Approximate 2-yr Detention Volume =	0.250	acre-feet		
Approximate 5-yr Detention Volume =	0.370	acre-feet		
Approximate 10-yr Detention Volume =	0.455	acre-feet		
Approximate 25-yr Detention Volume =	0.487	acre-feet		
Approximate 50-yr Detention Volume =	0.669	acre-feet		
Approximate 100-yr Detention Volume =	0.767	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.130	acre-feet
Zone 2 Volume (5-year - Zone 1) =	0.240	acre-feet
Zone 3 (100yr + 1 / 2 WQCV - Zones 1 & 2) =	0.462	acre-feet
Total Detention Basin Volume =	0.832	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

Depth Increment = 0.10 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	0	0.000		
	--	0.10	--	--	--	97	0.002	5	0.000
	--	0.20	--	--	--	341	0.008	27	0.001
	--	0.30	--	--	--	725	0.017	80	0.002
	--	0.40	--	--	--	1,249	0.029	179	0.004
	--	0.50	--	--	--	1,913	0.044	337	0.008
	--	0.60	--	--	--	2,717	0.062	568	0.013
	--	0.70	--	--	--	3,662	0.084	887	0.020
	--	0.80	--	--	--	4,702	0.108	1,305	0.030
	--	0.90	--	--	--	5,723	0.131	1,827	0.042
	--	1.00	--	--	--	6,718	0.154	2,449	0.056
	--	1.10	--	--	--	7,688	0.176	3,169	0.073
	--	1.20	--	--	--	8,604	0.198	3,983	0.091
	--	1.30	--	--	--	9,405	0.216	4,884	0.112
	--	1.40	--	--	--	10,089	0.232	5,859	0.134
	--	1.50	--	--	--	10,697	0.246	6,898	0.158
	--	1.60	--	--	--	11,123	0.255	7,989	0.183
	--	1.70	--	--	--	11,389	0.261	9,115	0.209
	--	1.80	--	--	--	11,655	0.268	10,267	0.236
	--	1.90	--	--	--	11,922	0.274	11,446	0.263
	--	2.00	--	--	--	12,190	0.280	12,651	0.290
	--	2.10	--	--	--	12,459	0.286	13,884	0.319
	--	2.20	--	--	--	12,729	0.292	15,143	0.348
	--	2.30	--	--	--	13,001	0.298	16,429	0.377
	--	2.40	--	--	--	13,273	0.305	17,743	0.407
	--	2.50	--	--	--	13,546	0.311	19,084	0.438
	--	2.60	--	--	--	13,821	0.317	20,452	0.470
	--	2.70	--	--	--	14,097	0.324	21,848	0.502
	--	2.80	--	--	--	14,373	0.330	23,272	0.534
	--	2.90	--	--	--	14,651	0.336	24,723	0.568
	--	3.00	--	--	--	14,930	0.343	26,202	0.602
	--	3.10	--	--	--	15,210	0.349	27,709	0.636
	--	3.20	--	--	--	15,491	0.356	29,244	0.671
	--	3.30	--	--	--	15,773	0.362	30,807	0.707
	--	3.40	--	--	--	16,056	0.369	32,399	0.744
	--	3.50	--	--	--	16,341	0.375	34,019	0.781
	--	3.60	--	--	--	16,626	0.382	35,667	0.819
	--	3.70	--	--	--	16,912	0.388	37,344	0.857
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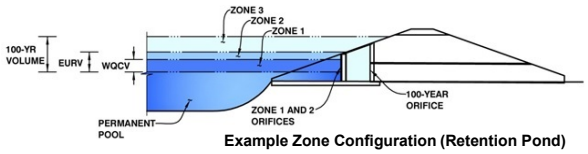
DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Project: KG 2294

Basin ID: TRACT A EDB



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.38	0.130	Orifice Plate
Zone 2 (5-year)	2.28	0.240	Circular Orifice
3 (100+1/2WQCV)	3.64	0.462	Weir&Pipe (Restrict)
Total (all zones)		0.832	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =		ft (distance below the filtration media surface)	Underdrain Orifice Area =		ft^2
Underdrain Orifice Diameter =		inches	Underdrain Orifice Centroid =		feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	3.403E-03	ft^2
Depth at top of Zone using Orifice Plate =	1.34	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	N/A	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	0.49	sq. inches (diameter = 3/4 inch)	Elliptical Slot Area =	N/A	ft^2

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.30	0.60	0.90				
Orifice Area (sq. inches)	0.49	0.49	0.49	0.49				

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Circular	Not Selected			Zone 2 Circular	Not Selected	
Invert of Vertical Orifice =	1.45	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Area =	0.10	N/A	ft^2
Depth at top of Zone using Vertical Orifice =	2.12	N/A	ft (relative to basin bottom at Stage = 0 ft)	Vertical Orifice Centroid =	0.18	N/A	feet
Vertical Orifice Diameter =	4.25	N/A	inches				

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe))

	Zone 3 Weir	Not Selected			Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	3.35	N/A	ft (relative to basin bottom at Stage = 0 ft)	Height of Grate Upper Edge, H_t =	3.35	N/A	feet
Overflow Weir Front Edge Length =	3.0	N/A	feet	Overflow Weir Slope Length =	3.00	N/A	feet
Overflow Weir Grate Slope =	0.0	N/A	H:V	Grate Open Area / 100-yr Orifice Area =	5.10	N/A	
Horiz. Length of Weir Sides =	3.00	N/A	feet	Overflow Grate Open Area w/o Debris =	6.26	N/A	ft^2
Overflow Grate Type =	Type C Grate	N/A		Overflow Grate Open Area w/ Debris =	3.13	N/A	ft^2
Debris Clogging % =	50%	N/A	%				

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected			Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.00	N/A	ft (distance below basin bottom at Stage = 0 ft)	Outlet Orifice Area =	1.23	N/A	ft^2
Outlet Pipe Diameter =	15.00	N/A	inches	Outlet Orifice Centroid =	0.63	N/A	feet
Restrictor Plate Height Above Pipe Invert =	15.00		inches	Half-Central Angle of Restrictor Plate on Pipe =	3.14	N/A	radians

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

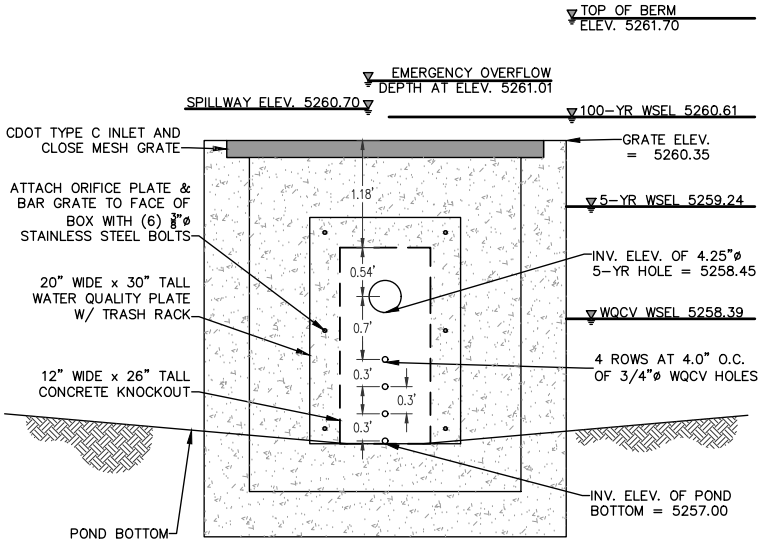
Spillway Invert Stage=	3.70	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.31	feet
Spillway Crest Length =	30.00	feet	Stage at Top of Freeboard =	4.70	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.39	acres
Freeboard above Max Water Surface =	0.69	feet	Basin Volume at Top of Freeboard =	0.86	acre-ft

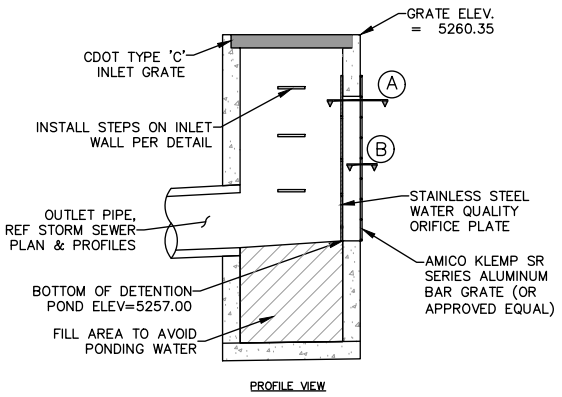
Calculated Parameters for Spillway

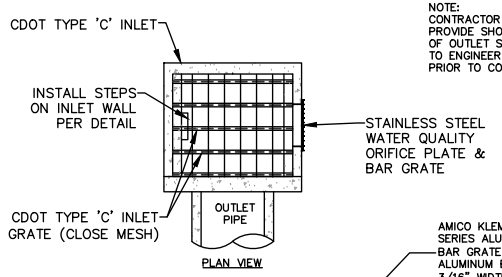
Routed Hydrograph Results

The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).

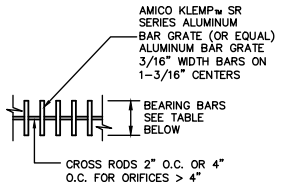
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.00	1.42	1.68	1.69	2.35	2.71	3.14
CUHP Runoff Volume (acre-ft) =	0.130	0.461	0.276	0.416	0.506	0.518	0.832	1.037	1.274
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.276	0.416	0.506	0.518	0.832	1.037	1.274
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.0	0.1	0.1	0.1	2.9	4.8	7.0
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.00	0.01	0.02	0.02	0.41	0.69	0.99
Peak Inflow Q (cfs) =	N/A	N/A	3.97	6.01	7.26	7.68	13.25	16.89	20.75
Peak Outflow Q (cfs) =	0.062	0.555	0.293	0.458	0.535	0.546	0.770	3.361	4.804
Structure Controlling Flow =	Plate	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Overflow Weir 1	Overflow Weir 1	N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.4	0.6
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	37	50	50	51	51	51	53	51	49
Time to Drain 99% of Inflow Volume (hours) =	**40**	56	54	56	57	57	61	60	59
Maximum Ponding Depth (ft) =	1.39	2.58	1.83	2.24	2.49	2.53	3.36	3.61	3.70
Area at Maximum Ponding Depth (acres) =	0.23	0.32	0.27	0.29	0.31	0.31	0.37	0.38	0.39
Maximum Volume Stored (acre-ft) =	0.132	0.463	0.244	0.356	0.435	0.447	0.729	0.823	0.857
Maximum Volume Stored (cubic ft) =	5758.053	20176.608	10617.560	15526.065	18948.777	19491.735	31758.933	35833.521	37344.044

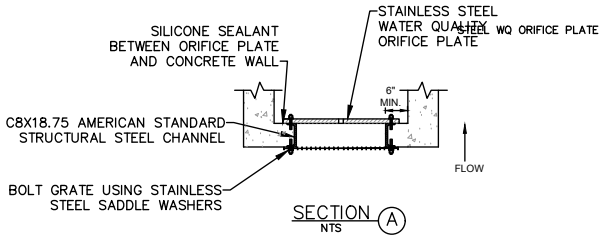






NOTE:
CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF OUTLET STRUCTURE TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.





WATER DEPTH ABOVE LOWEST OPENING, H	MINIMUM BEARING BAR SIZE, BARS ALIGNED VERTICALLY
2.0 FT.	1" x 3/16"
3.0 FT.	1-1/4" x 3/16"
4.0 FT.	1-3/4" x 3/16"
5.0 FT.	2" x 3/16"
6.0 FT.	2-1/4" x 3/16"

R VALUE=(NET OPEN AREA)/(GROSS RACK AREA)
=0.71 FOR CROSS RODS ON 2" CENTERS
=0.77 FOR CROSS RODS ON 4" CENTERS

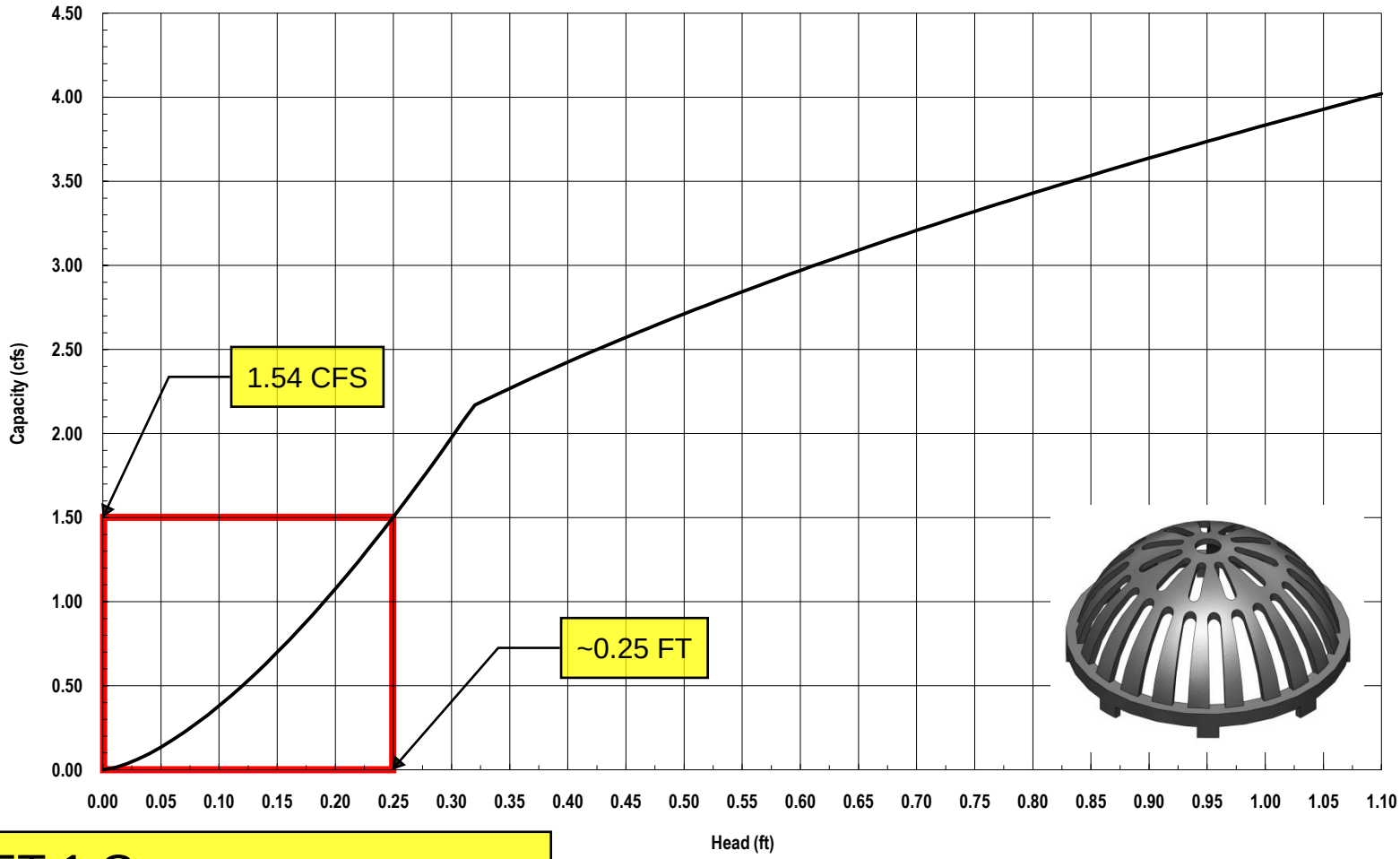
SECTION B
NTS

DETENTION POND OUTLET STRUCTURE

NOT TO SCALE

Kum & Go #2294	Outlet Structure Detail	olsson 1880 Fall River Drive, Suite 200 Loveland, CO 80538 Tel. 970-461-7733

Nyloplast 15" Dome Grate Inlet Capacity Chart



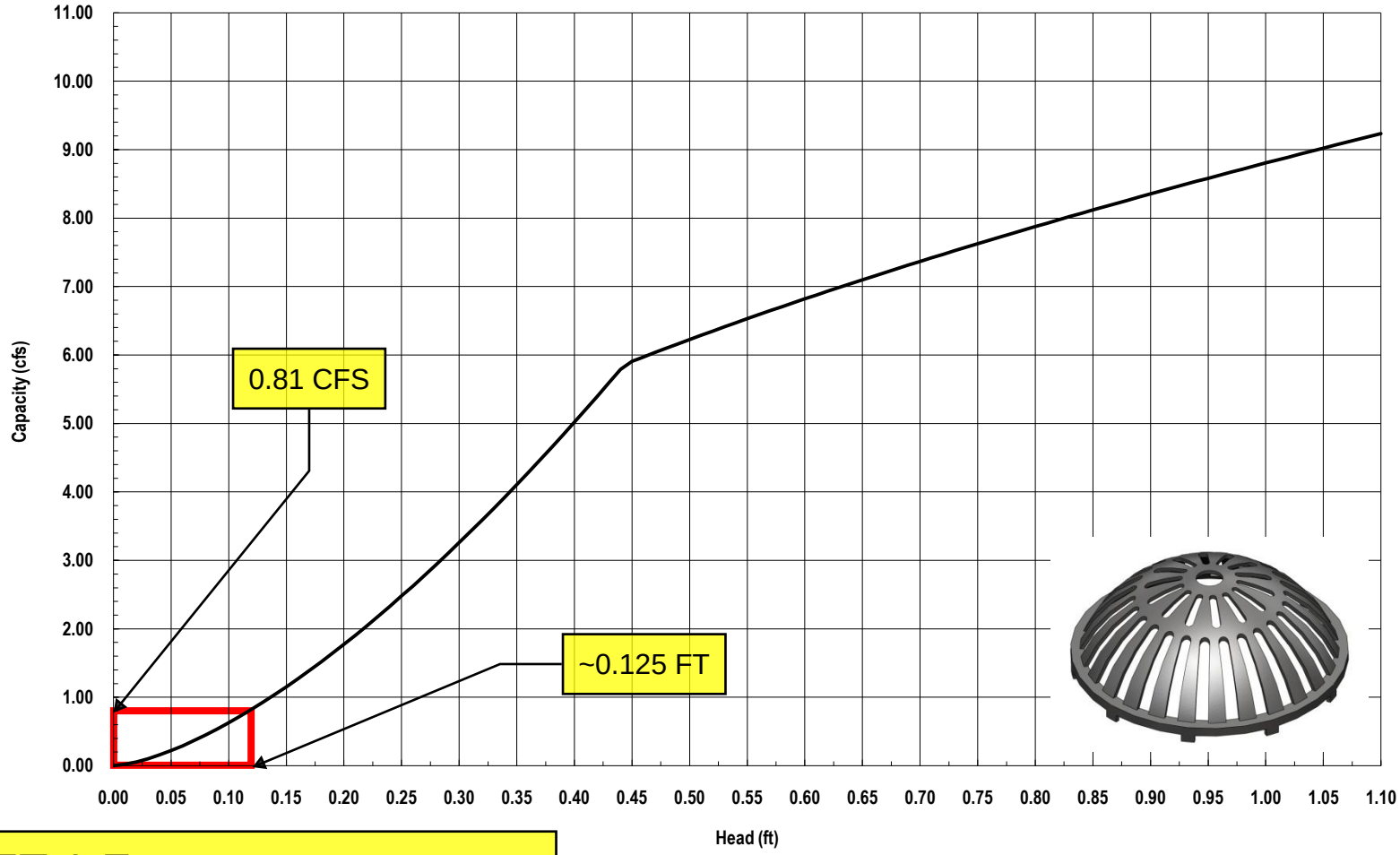
INLET 1.G

TRIBUTARY BASINS: A, A+, B, & R-1
5-YR COMPOSITE RUNOFF: 0.51 CFS
100-YR COMPOSITE RUNOFF: 1.54 CFS

AVAILABLE HEAD: 0.50 FT

Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

Nyloplast 24" Dome Grate Inlet Capacity Chart



INLET 1.F

TRIBUTARY BASINS: C, R-2
5-YR COMPOSITE RUNOFF: 0.40 CFS
100-YR COMPOSITE RUNOFF: 0.81 CFS

AVAILABLE HEAD: 0.50 FT

Nyloplast®
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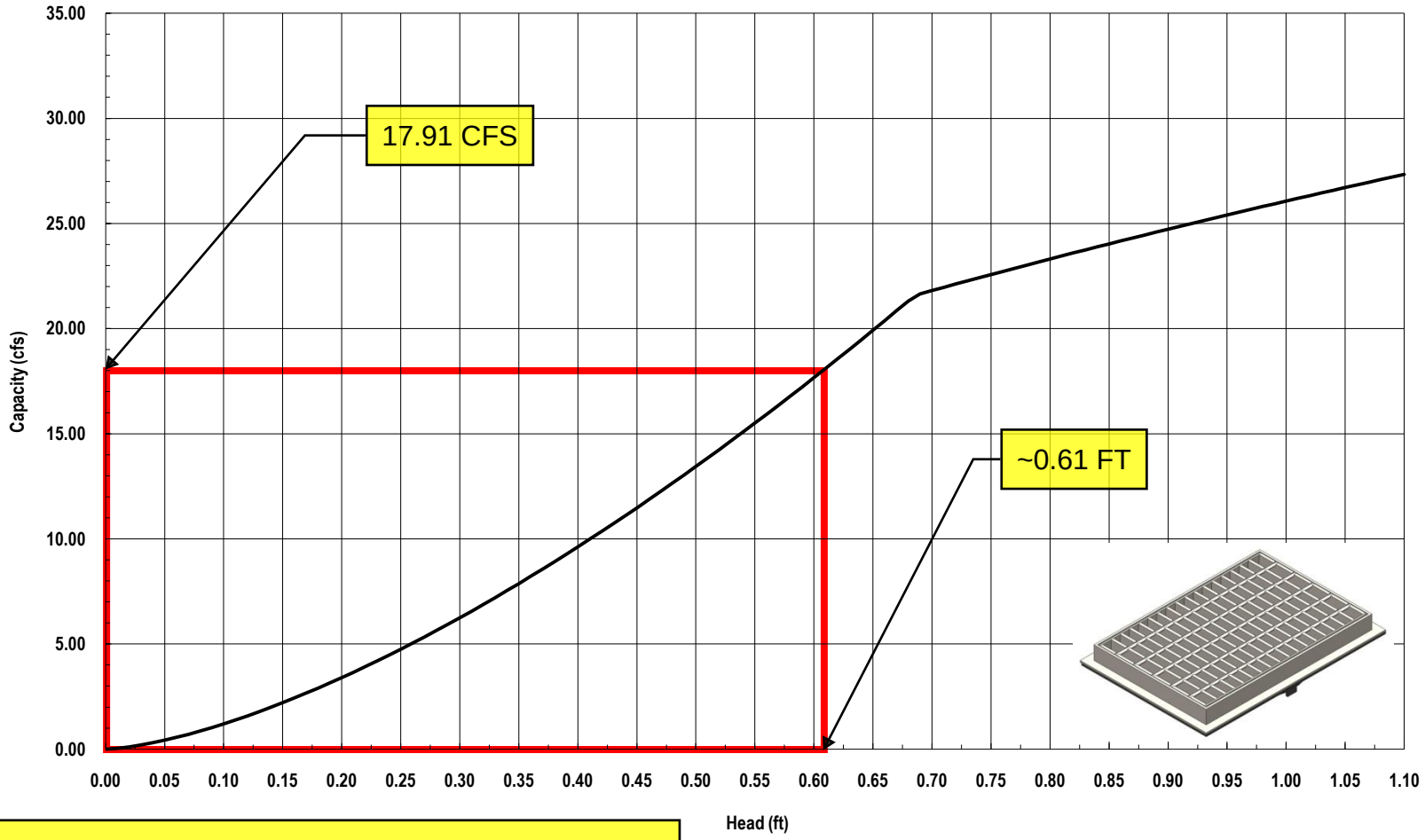
Nyloplast 2' x 3' Steel Bar / MAG Grate Inlet Capacity Chart



INLET 1.E

TRIBUTARY BASINS: D, E, F, F+, LOT 2, LOT 3, LOT 3+
5-YR COMPOSITE RUNOFF: 7.28 CFS
100-YR COMPOSITE RUNOFF: 17.91 CFS

AVAILABLE HEAD: 1.00 FT

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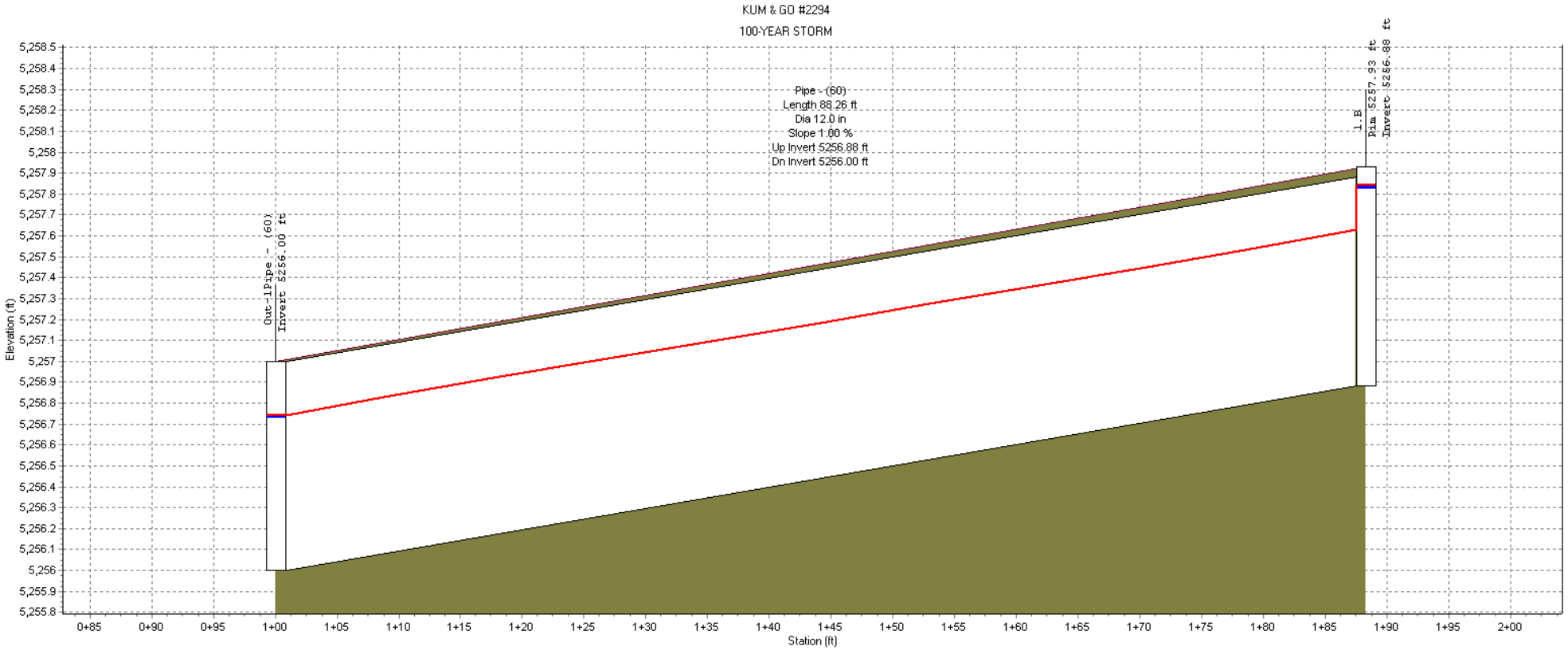
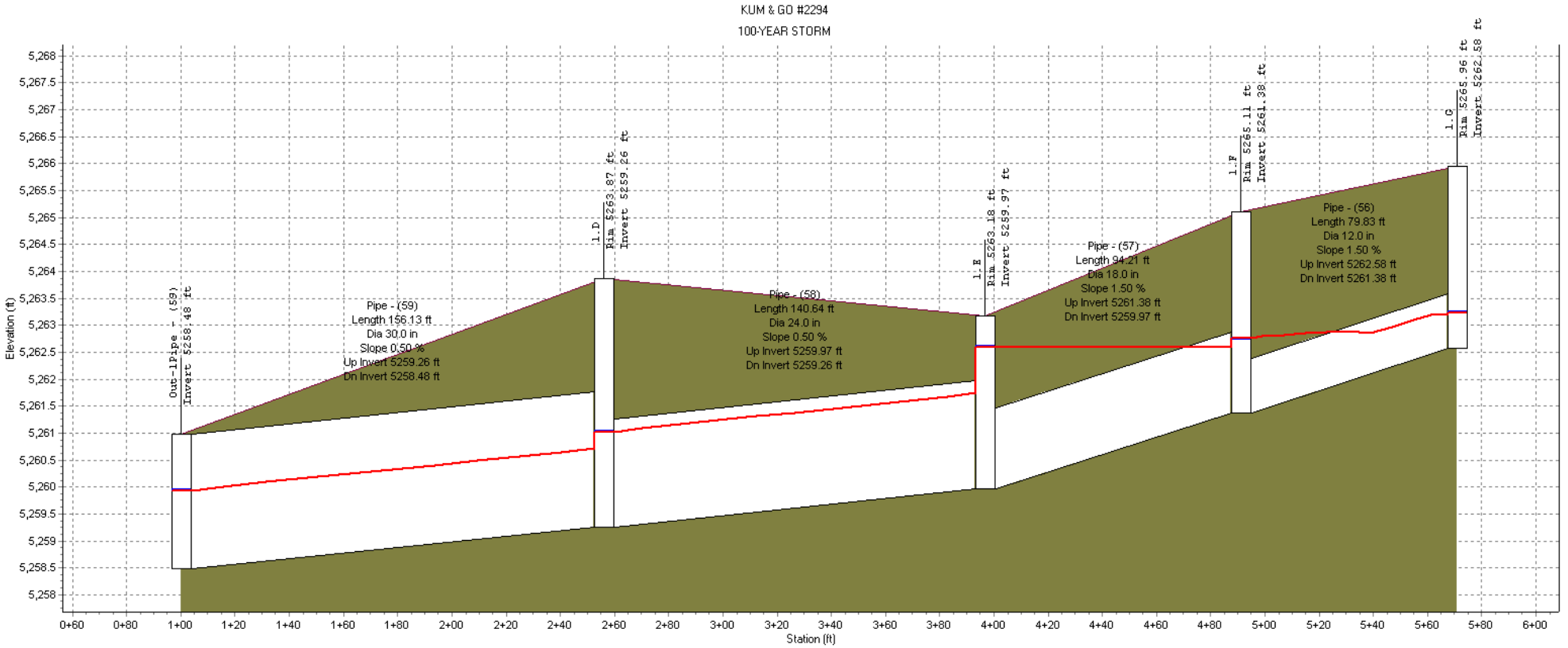


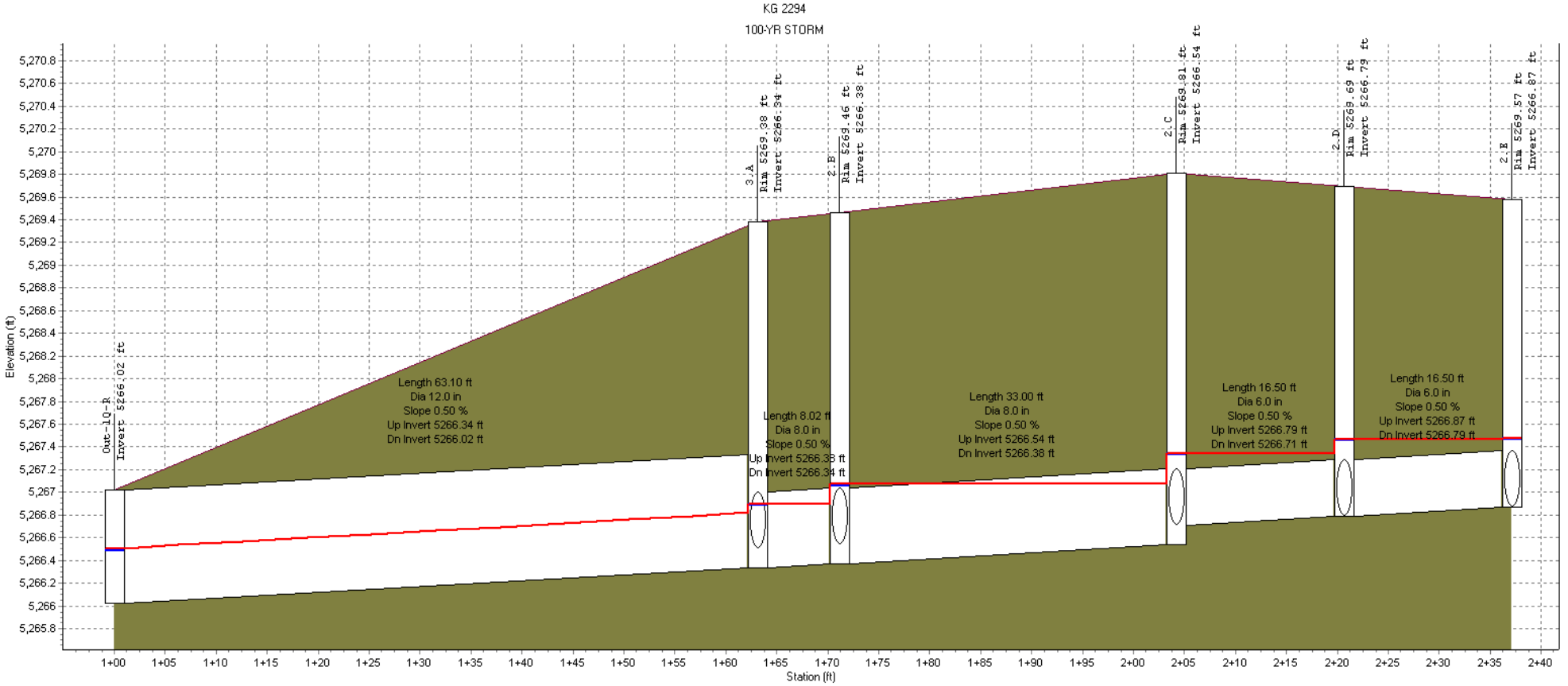
:	Out-1Pipe - (60)	1.B
Rim (ft):		5257.93
Invert (ft):	5256.00	5256.88
Min Pipe Cover (ft):		0.05
Max HGL (ft):	5256.74	5257.84

:	Pipe - (60)	
Length (ft):	88.26	
Dia (in):	12.0	
Slope (%):	1.00	
Up Invert (ft):	5256.88	
Dn Invert (ft):	5256.00	
Max Q (cfs):	3.48	
Max Vel (ft/s):	5.01	
Max Depth (ft):	0.84	



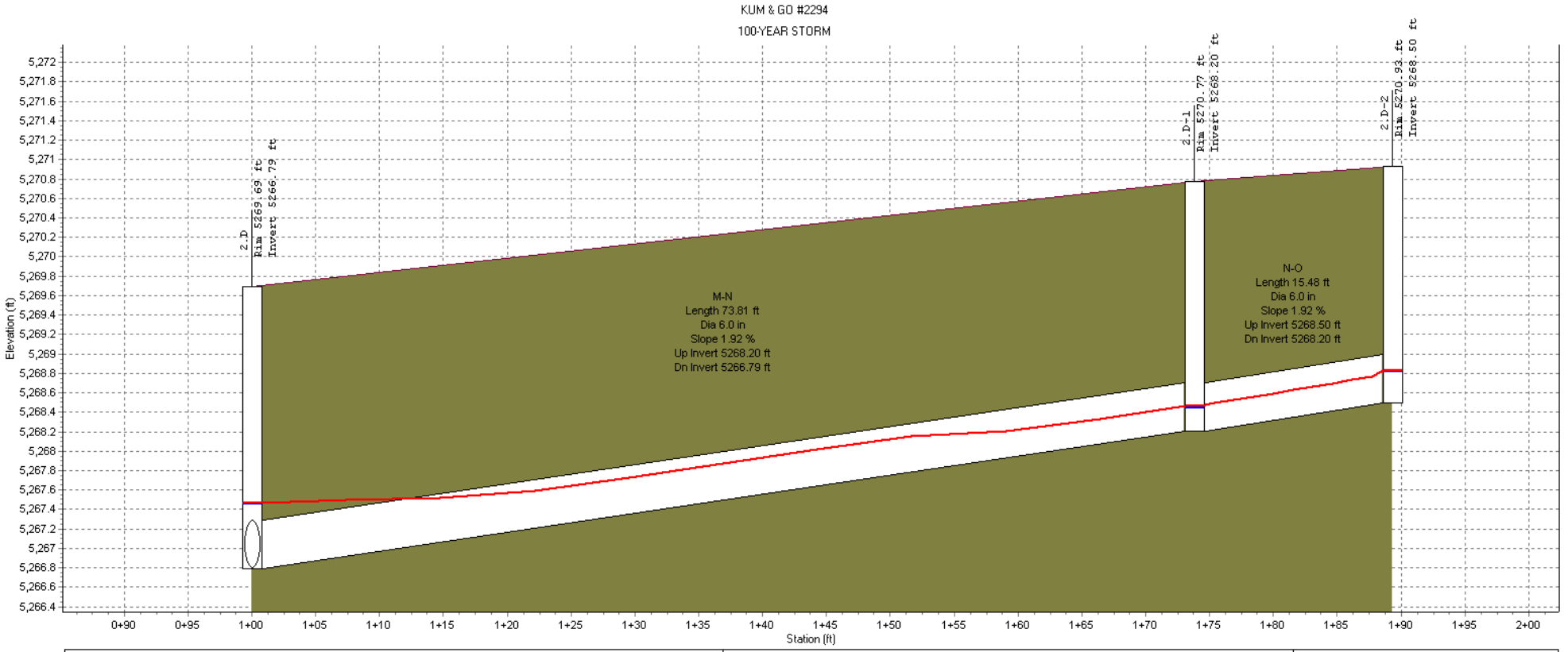
:	Out-1Pipe - (59)	1.D	1.E	1.F	1.G
Rim (ft):		5263.87	5263.18	5265.11	5265.96
Invert (ft):	5258.48	5259.26	5259.97	5261.38	5262.58
Min Pipe Cover (ft):		2.11	1.21	2.23	2.38
Max HGL (ft):	5259.93	5261.02	5262.60	5262.76	5263.23

:	Pipe - (59)	Pipe - (58)	Pipe - (57)	Pipe - (56)	
Length (ft):	156.13	140.64	94.21	79.83	
Dia (in):	30.0	24.0	18.0	12.0	
Slope (%):	0.50	0.50	1.50	1.50	
Up Invert (ft):	5259.26	5259.97	5261.38	5262.58	
Dn Invert (ft):	5258.48	5259.26	5259.97	5261.38	
Max Q (cfs):	20.03	20.01	4.29	2.69	
Max Vel (ft/s):	6.04	6.53	4.90	5.75	
Max Depth (ft):	1.61	1.88	1.44	0.83	



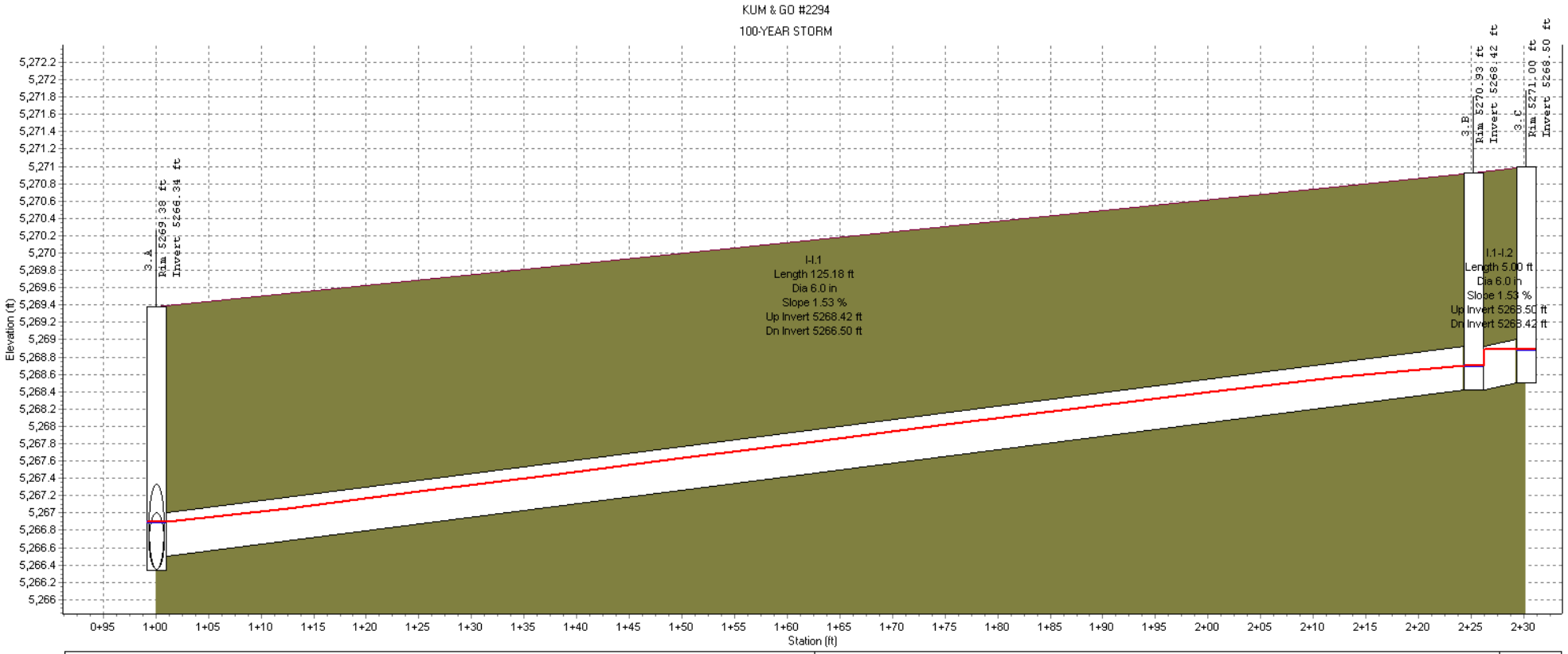
:	Out-1Q-R	3.A	2.B	2.C	2.D	2.E
Rim (ft):		5269.38	5269.46	5269.81	5269.69	5269.57
Invert (ft):	5266.02	5266.34	5266.38	5266.54	5266.79	5266.87
Min Pipe Cover (ft):		2.04	2.42	2.60	2.40	2.20
Max HGL (ft):	5266.50	5266.90	5267.07	5267.35	5267.47	5267.48

Link ID:	Q-R	Pipe - (69)	R-S	S-T	T-U
Length (ft):	63.10	8.02	33.00	16.50	16.50
Dia (in):	12.0	8.0	8.0	6.0	6.0
Slope (%):	0.50	0.50	0.50	0.50	0.50
Up Invert (ft):	5266.34	5266.38	5266.54	5266.79	5266.87
Dn Invert (ft):	5266.02	5266.34	5266.38	5266.71	5266.79
Max Q (cfs):	1.32	0.92	0.92	0.39	0.20
Max Vel (ft/s):	3.17	2.74	2.63	2.24	1.05
Max Depth (ft):	0.52	0.61	0.67	0.50	0.50



:	2.D	2.D-1	2.D-2
Rim (ft):	5269.69	5270.77	5270.93
Invert (ft):	5266.79	5268.20	5268.50
Min Pipe Cover (ft):	2.40	2.07	1.93
Max HGL (ft):	5267.47	5268.46	5268.83

:	M-N	N-O
Length (ft):	73.81	15.48
Dia (in):	6.0	6.0
Slope (%):	1.92	1.92
Up Invert (ft):	5268.20	5268.50
Dn Invert (ft):	5266.79	5268.20
Max Q (cfs):	0.45	0.46
Max Vel (ft/s):	3.49	3.81
Max Depth (ft):	0.38	0.30



:	3.A		3.B	3.C
Rim (ft):	5269.38		5270.93	5271.00
Invert (ft):	5266.34		5268.42	5268.50
Min Pipe Cover (ft):	2.04		2.00	2.00
Max HGL (ft):	5266.90		5268.70	5268.89

:	I-I.1	I.1-I.2	
Length (ft):	125.18	5.00	
Dia (in):	6.0	6.0	
Slope (%):	1.53	1.53	
Up Invert (ft):	5268.42	5268.50	
Dn Invert (ft):	5266.50	5268.42	
Max Q (cfs):	0.45	0.46	
Max Vel (ft/s):	3.33	3.32	
Max Depth (ft):	0.33	0.33	

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Feb 2 2023

CULVERT A (3.E → 3.F)

Invert Elev Dn (ft)	=	5269.58
Pipe Length (ft)	=	19.71
Slope (%)	=	0.76
Invert Elev Up (ft)	=	5269.73
Rise (in)	=	12.0
Shape	=	Circular
Span (in)	=	12.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

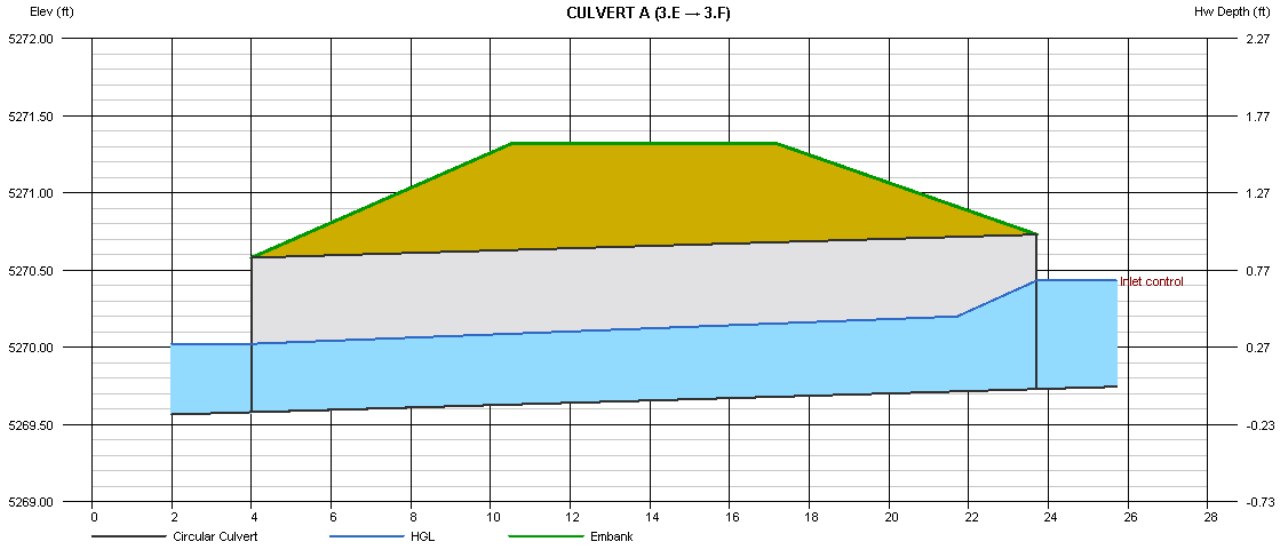
Top Elevation (ft)	=	5271.32
Top Width (ft)	=	6.63
Crest Width (ft)	=	13.75

Calculations

Qmin (cfs)	=	0.48
Qmax (cfs)	=	1.33
Tailwater Elev (ft)	=	0.00

Highlighted

Qtotal (cfs)	=	1.33
Qpipe (cfs)	=	1.33
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	3.97
Veloc Up (ft/s)	=	3.48
HGL Dn (ft)	=	5270.02
HGL Up (ft)	=	5270.22
Hw Elev (ft)	=	5270.43
Hw/D (ft)	=	0.70
Flow Regime	=	Inlet Control



Q			Veloc		Depth		HGL			
Total	Pipe	Over	Dn	Up	Dn	Up	Dn	Up	Hw	Hw/D
(cfs)	(cfs)	(cfs)	(ft/s)	(ft/s)	(in)	(in)	(ft)	(ft)	(ft)	
0.48	0.48	0.00	2.99	2.58	3.09	3.45	5269.84	5270.02	5270.12	0.39
1.33	1.33	0.00	3.97	3.48	5.31	5.88	5270.02	5270.22	5270.43	0.70

TRIBUTARY BASINS: A, A+, & R-1
5-YR COMPOSITE RUNOFF: 0.48 CFS
100-YR COMPOSITE RUNOFF: 1.33 CFS

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Feb 2 2023

TRACT A EDB SPILLWAY

Trapezoidal

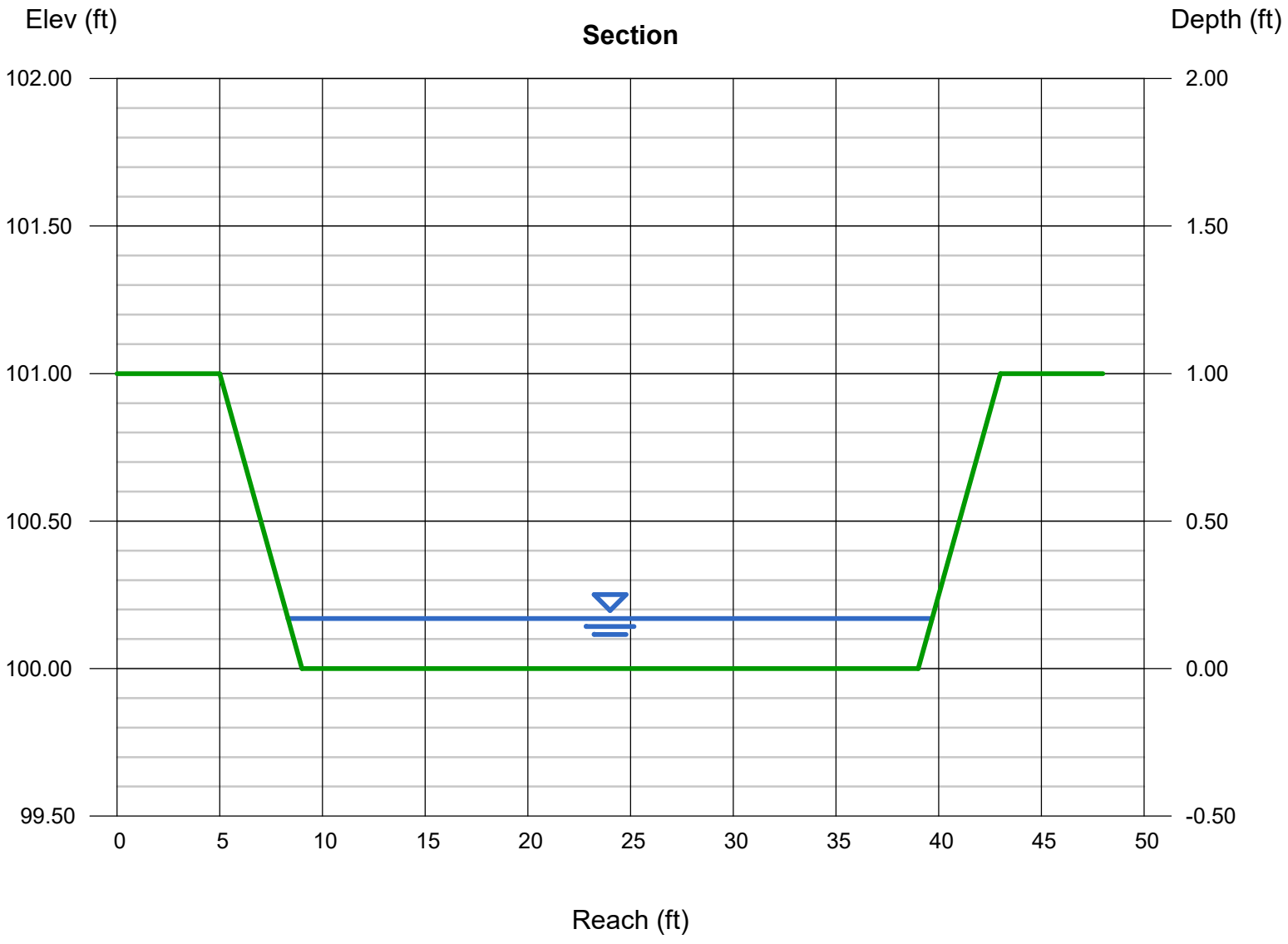
Bottom Width (ft)	= 30.00
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 16.82

Highlighted

Depth (ft)	= 0.17
Q (cfs)	= 16.82
Area (sqft)	= 5.22
Velocity (ft/s)	= 3.22
Wetted Perim (ft)	= 31.40
Crit Depth, Yc (ft)	= 0.22
Top Width (ft)	= 31.36
EGL (ft)	= 0.33



APPENDIX C
REFERENCED INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

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

August 29, 2022

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:1,870 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DUM	Dumps		5.0	34.7%
Tc	Terrace escarpments	A	6.1	41.6%
TuC	Truckton sandy loam, 3 to 5 percent slopes	A	3.4	23.7%
Totals for Area of Interest			**14.5**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

National Flood Hazard Layer FIRMette

FEMA

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
- With BFE or Depth
- 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
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Flood Risk due to Levee. See Notes.
- Area with Flood Risk due to Levee

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard
- Effective LOMRs
- Area of Undetermined Flood Hazard

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

OTHER FEATURES
- Cross Sections with 1% Annual Chance
- Water Surface Elevation
- 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

N

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 8/29/2022 at 3:29 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.

LEGEND

EXISTING MAJOR CONTOUR — — — 5280 — — —
EXISTING MINOR CONTOUR — — — 5279 — — —
EXISTING STORM SEWER — — — SD — — —
BASIN DELINEATION
DRAINAGE ARROW

A = BASIN NAME
B = BASIN AREA (ACRES)
C = PERCENT IMPERVIOUS

N W E S

1" = 60'
0' 30' 60' 120'
SCALE IN FEET

SHERIDAN BLVD

53rd PLACE

52nd AVE

TRANSMISSION TOWER

CHAIN LINK FENCE

CHAIN LINK FE

PLASTIC FENCE

TRACT A
0.66 | 2.0

GRASS

WOOD FENCE

JERSEY WALL

ASPHALT

6' CHAIN LINK FENCE

GRAVEL PARKING LOT

LOT 2
1.04 | 35.0

MORALES BILLBOARD
TOP ELEV.=5284.09

CURB STOP (TYP.)

1-STORY WOOD PANEL BUILDING
1,115 SQUARE FEET
TOP OF BUILDING ELEV.: 5279.55

LOT 1
2.09 | 44.1

LOT 4
2.11 | 10.2

DIRT

CITY & COUNTY OF DENVER
30' STORM SEWER EASEMENT
BK.257, PG.392

ER WATER LINE

XCEL GAS LINE

LOT 3
1.25 | 30.0

CITY & COUNTY OF DENVER
CL STORM SEWER EASEMENT
BK.251, PG.131

6' WOOD FENCE

FENCE CORNER 5.2' SOUTH
OF PROPERTY CORNER

FENCE ON PROPERTY LINE

FENCE CORNER 1.7' NORTH
OF PROPERTY CORNER

12" DENVER WATER LINE
(SHOWN PER MAP)

2' DIRT PATH

XCEL LINE

WIRE FENCE

4' WOOD FENCE

65.00'

47.00'

CONCRETE WALL

CENTURY LINK LINES

12" DENVER WATER LINE

XCEL LINE

COMCAST LINE

CONCRETE WALL

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www.olsson.com

Kum & Go

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Des Moines, Iowa
50309
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F: 515-223-9873

#2294 - ADAMS COUNTY, CO
52ND AVE & SHERIDAN BLVD
EXISTING DRAINAGE BASIN MAP

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

REVISION DESCRIPTION | DATE | △

DATE: 02/03/2023

SHEET NUMBER:
SHEET 1

DWG: F:\2022\02501-03000\022-02737\40-Design\Reports\GNCV\Drainage\CAD\C_XBASN_02202737.dwg USER: mbarr
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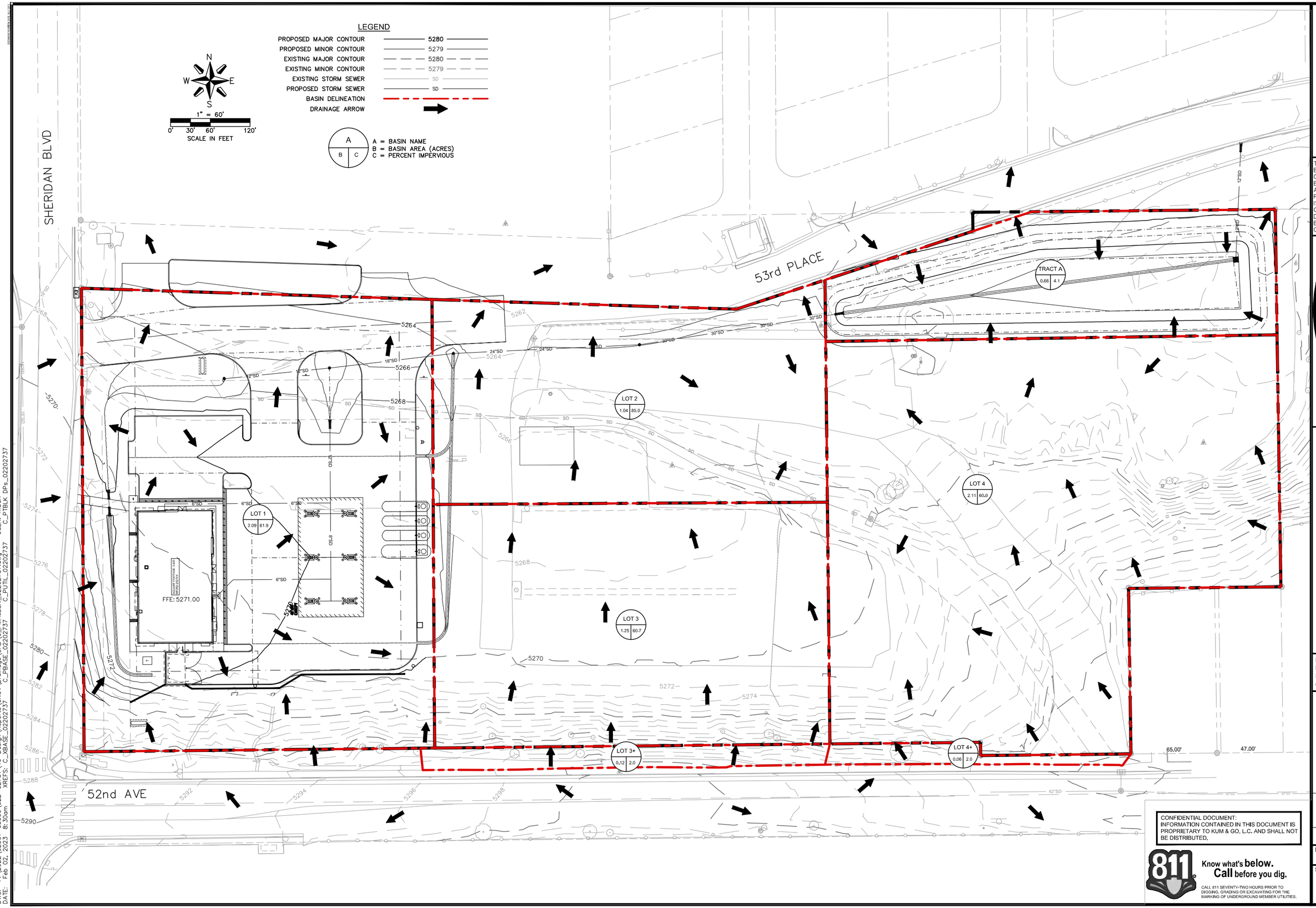

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#2294 - ADAMS COUNTY, CO
52ND AVE & SHERIDAN BLVD

PROPOSED MAJOR BASIN MAP

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

	REVISION DESCRIPTION	DATE
△		

DATE: 02/03/2023

SHEET NUMBER:
SHEET 1

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DWG: F:\2022\02501-03000\022-02737\40-Design\Reports\GNC\Drainage\CAD\C_PMA.IBSN_02202737.dwg USER: mbarr
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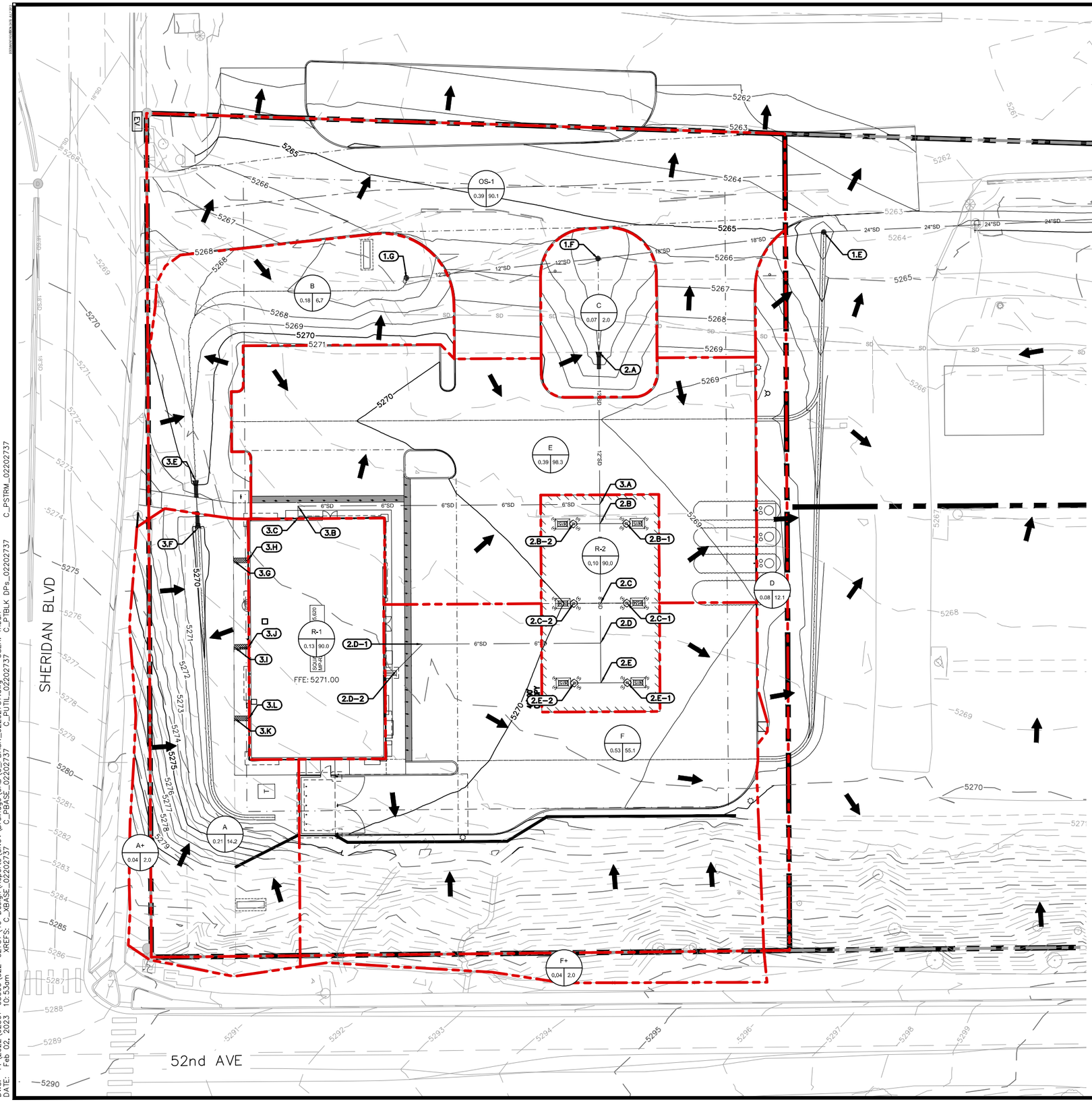
C_PBASE_02202737
XREFS: C_XBASE_02202737



N
W E
S

1" = 40'
0' 20' 40' 80'
SCALE IN FEET

A = BASIN NAME
B = BASIN AREA (ACRES)
C = PERCENT IMPERVIOUS

LEGEND

PROPOSED MAJOR CONTOUR	5280
PROPOSED MINOR CONTOUR	5279
EXISTING MAJOR CONTOUR	5280
EXISTING MINOR CONTOUR	5279
EXISTING STORM SEWER	SD
PROPOSED STORM SEWER	SD
BASIN DELINEATION	
DRAINAGE ARROW	

STORM STRUCTURE TABLE

ID	DESCRIPTION	NORTHING EASTING	RIM/GROUND/ TOC ELEV.*	INVERT IN	INVERT OUT
1.A	DAYLIGHT TO EXISTING CURB & GUTTER*	N:1714191.61 E:3127128.65		12" (S)=5256.00	
1.B	PROPOSED EDB OUTLET CONTROL STRUCTURE**	N:1714103.44 E:3127124.76	5257.49		12" (N)=5256.88
1.C	30" CONCRETE FES	N:1714063.10 E:3126828.70		30" (W)=5258.48	
1.D	36" NYLOPLAST D.B. W/ SOLID COVER	N:1714039.16 E:3126874.42	5263.87	24" (W)=5259.26	30" (E)=5259.26
1.E	30" NYLOPLAST D.B. W/ 2'x3' MAG GRATE INLET	N:1714032.52 E:3126533.93	5263.18	18" (W)=5259.97	24" (E)=5259.97
1.F	24" NYLOPLAST D.B. W/ GRATE COVER	N:1714021.55 E:3126440.36	5265.11	12" (W)=5261.38	18" (E)=5261.38
1.G	15" NYLOPLAST D.B. W/ GRATE COVER	N:1714013.48 E:3126360.94	5265.96		12" (E)=5262.58
2.A	12" CONCRETE FES	N:1713982.71 E:3126440.74		12" (S)=5266.02	
2.B	8"x6" CROSS	N:1713911.59 E:3126441.15		6" (W)=5266.54 6" (E)=5266.54 8" (S)=5266.38	8" (N)=5266.38
2.B-1	CONNECT TO CANOPY DOWNSPOUT	N:1713911.66 E:3126452.15			6" (W)=5266.84
2.B-2	CONNECT TO CANOPY DOWNSPOUT	N:1713911.53 E:3126430.15			6" (E)=5267.10
2.C	8"x6" CROSS	N:1713878.59 E:3126441.34		6" (W)=5266.71 6" (E)=5266.71 8" (S)=5266.71	8" (N)=5266.54
2.C-1	CONNECT TO CANOPY DOWNSPOUT	N:1713878.66 E:3126452.34			6" (W)=5267.18
2.C-2	CONNECT TO CANOPY DOWNSPOUT	N:1713878.53 E:3126430.34			6" (E)=5267.45
2.D	8"x6" TEE W/ TRAFFIC RATED C.O. & 8"x6" REDUCER (S)	N:1713862.09 E:3126441.43	5269.69	6" (W)=5266.79 6" (S)=5266.79	8" (N)=5266.79
2.D-1	6" 45° BEND	N:1713861.67 E:3126367.62		6" (SW)=5268.20	6" (E)=5268.20
2.D-2	CONNECT TO BUILDING DOWNSPOUT	N:1713850.67 E:3126356.74			6" (NE)=5268.50
2.E	6"x6" TEE	N:1713845.59 E:3126441.53		6" (W)=5266.87 6" (E)=5266.87	6" (N)=5266.87
2.E-1	CONNECT TO CANOPY DOWNSPOUT	N:1713845.66 E:3126452.53			6" (W)=5266.93
2.E-2	CONNECT TO CANOPY DOWNSPOUT	N:1713845.53 E:3126430.53			6" (E)=5267.22
3.A	12"x6" TEE W/ TRAFFIC RATED C.O. & 12"x8" REDUCER (S)	N:1713919.61 E:3126441.10	5269.38	6" (W)=5266.50 8" (S)=5266.34	12" (N)=5266.34
3.B	6" 90° HDPE BEND	N:1713918.89 E:3126315.93		6" (S)=5268.42	6" (E)=5268.42
3.C	CONNECT TO BUILDING DOWNSPOUT	N:1713913.89 E:3126315.95			6" (N)=5268.50
3.E	12" CONCRETE FES	N:1713929.42 E:3126273.46		12" (S)=5269.58	
3.F	12" CONCRETE FES	N:1713909.74 E:3126274.46			12" (N)=5269.73
3.G	SW CHASE TO DISCHARGE INTO SWALE	N:1713896.35 E:3126289.15		6" (E)=5270.41	
3.H	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713896.38 E:3126295.15			6" (W)=5270.50
3.I	SW CHASE TO DISCHARGE INTO SWALE	N:1713860.50 E:3126289.36		6" (E)=5270.41	
3.J	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713860.54 E:3126295.36			6" (W)=5270.50
3.K	SW CHASE TO DISCHARGE INTO SWALE	N:1713830.87 E:3126289.53		6" (E)=5270.41	
3.L	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713830.91 E:3126295.53			6" (W)=5270.50

* CONTRACTOR TO CONFIRM PREFERRED CONSTRUCTABILITY OPTIONS WITH ENGINEER
** SEE DETENTION POND OUTLET STRUCTURE DETAIL ON SHEET C2.10

STORM PIPE TABLE

NAME	SIZE	LENGTH	SLOPE
1.A→1.B	12"	88.26'	1.00%
1.C→1.D	30"	156.13'	0.50%
1.D→1.E	24"	140.64'	0.50%
1.E→1.F	18"	94.21'	1.50%
1.F→1.G	12"	79.83'	1.50%
2.A→3.A	12"	63.10'	0.50%
2.B→2.B-1	6"	11.00'	2.66%
2.B→2.B-2	6"	11.00'	5.04%
2.B→2.C	8"	33.00'	0.50%
2.C→2.C-1	6"	11.00'	4.25%
2.C→2.C-2	6"	11.00'	6.75%
2.C→2.D	8"	16.50'	0.50%
2.D-1→2.D-2	6"	15.48'	1.92%
2.D→2.D-1	6"	73.81'	1.92%
2.D→2.E	6"	16.50'	0.50%
2.E→2.E-1	6"	11.00'	0.50%
2.E→2.E-2	6"	11.00'	3.19%
3.A→2.B	8"	8.02'	0.50%
3.A→3.B	6"	125.18'	1.53%
3.B→3.C	6"	5.00'	1.53%
3.E→3.F	12"	19.71'	0.75%

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#2294 - ADAMS COUNTY, CO
52ND AVE & SHERIDAN BLVD
PROPOSED DRAINAGE BASIN MAP

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

△	DATE	REVISION DESCRIPTION

DATE: 02/03/2023

SHEET NUMBER:
SHEET 1

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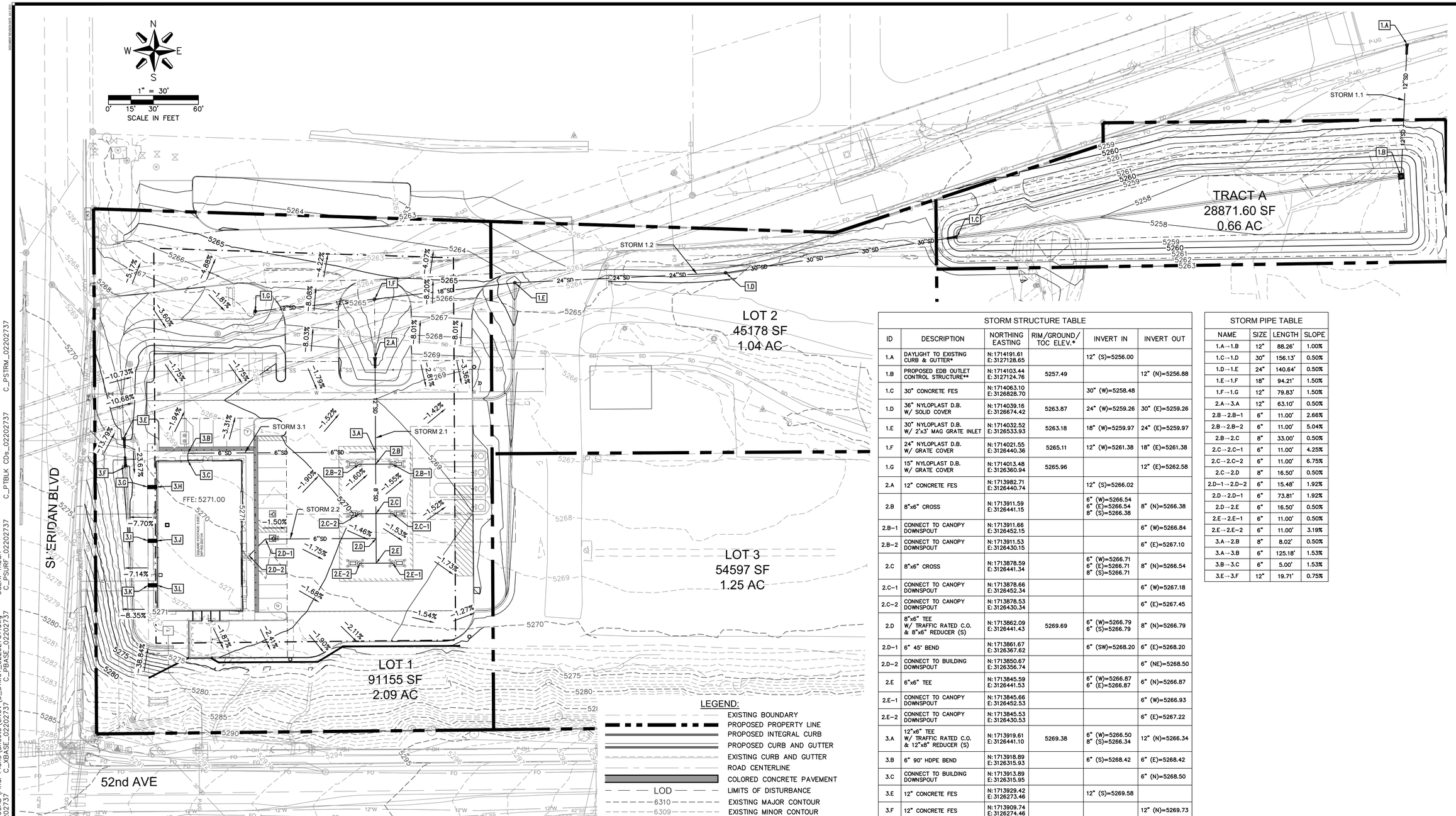

STORM STRUCTURE TABLE					
ID	DESCRIPTION	NORTHING EASTING	RIM/GROUND/ TOC ELEV.*	INVERT IN	INVERT OUT
1.A	DAYLIGHT TO EXISTING CURB & GUTTER*	N:1714191.61 E:3127128.65		12" (S)=5256.00	
1.B	PROPOSED EDB OUTLET CONTROL STRUCTURE**	N:1714103.44 E:3127124.76	5257.49		12" (N)=5256.88
1.C	30" CONCRETE FES	N:1714063.10 E:3126828.70		30" (W)=5258.48	
1.D	36" NYLOPLAST D.B. W/ SOLID COVER	N:1714039.16 E:3126674.42	5263.87	24" (W)=5259.26	30" (E)=5259.26
1.E	30" NYLOPLAST D.B. W/ 2'x3' MAG GRATE INLET	N:1714032.52 E:3126533.93	5263.18	18" (W)=5259.97	24" (E)=5259.97
1.F	24" NYLOPLAST D.B. W/ GRATE COVER	N:1714021.55 E:3126440.36	5265.11	12" (W)=5261.38	18" (E)=5261.38
1.G	15" NYLOPLAST D.B. W/ GRATE COVER	N:1714013.48 E:3126360.94	5265.96		12" (E)=5262.58
2.A	12" CONCRETE FES	N:1713982.71 E:3126440.74		12" (S)=5266.02	
2.B	8"x6" CROSS	N:1713911.59 E:3126441.15		6" (W)=5266.54 6" (E)=5266.54 8" (S)=5266.38	8" (N)=5266.38
2.B-1	CONNECT TO CANOPY DOWNSPOUT	N:1713911.66 E:3126452.15			6" (W)=5266.84
2.B-2	CONNECT TO CANOPY DOWNSPOUT	N:1713911.53 E:3126430.15			6" (E)=5267.10
2.C	8"x6" CROSS	N:1713878.59 E:3126441.34		6" (W)=5266.71 6" (E)=5266.71 8" (S)=5266.71	8" (N)=5266.54
2.C-1	CONNECT TO CANOPY DOWNSPOUT	N:1713878.66 E:3126452.34			6" (W)=5267.18
2.C-2	CONNECT TO CANOPY DOWNSPOUT	N:1713878.53 E:3126430.34			6" (E)=5267.45
2.D	8"x6" TEE W/ TRAFFIC RATED C.O. & 8"x6" REDUCER (S)	N:1713862.09 E:3126441.43	5269.69	6" (W)=5266.79 6" (S)=5266.79	8" (N)=5266.79
2.D-1	6" 45° BEND	N:1713861.67 E:3126367.62		6" (SW)=5268.20	6" (E)=5268.20
2.D-2	CONNECT TO BUILDING DOWNSPOUT	N:1713850.67 E:3126356.74			6" (NE)=5268.50
2.E	6"x6" TEE	N:1713845.59 E:3126441.53		6" (W)=5266.87 6" (E)=5266.87	6" (N)=5266.87
2.E-1	CONNECT TO CANOPY DOWNSPOUT	N:1713845.66 E:3126452.53			6" (W)=5266.93
2.E-2	CONNECT TO CANOPY DOWNSPOUT	N:1713845.53 E:3126430.53			6" (E)=5267.22
3.A	12"x6" TEE W/ TRAFFIC RATED C.O. & 12"x8" REDUCER (S)	N:1713919.61 E:3126441.10	5269.38	6" (W)=5266.50 8" (S)=5266.34	12" (N)=5266.34
3.B	6" 90° HDPE BEND	N:1713918.89 E:3126315.93		6" (S)=5268.42	6" (E)=5268.42
3.C	CONNECT TO BUILDING DOWNSPOUT	N:1713913.89 E:3126315.95			6" (N)=5268.50
3.E	12" CONCRETE FES	N:1713929.42 E:3126273.46		12" (S)=5269.58	
3.F	12" CONCRETE FES	N:1713909.74 E:3126274.46			12" (N)=5269.73
3.G	SW CHASE TO DISCHARGE INTO SWALE	N:1713896.35 E:3126289.15		6" (E)=5270.41	
3.H	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713896.38 E:3126295.15			6" (W)=5270.50
3.I	SW CHASE TO DISCHARGE INTO SWALE	N:1713860.50 E:3126289.36		6" (E)=5270.41	
3.J	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713860.54 E:3126295.36			6" (W)=5270.50
3.K	SW CHASE TO DISCHARGE INTO SWALE	N:1713830.87 E:3126289.53		6" (E)=5270.41	
3.L	BUILDING DOWNSPOUT DAYLIGHT TO SW CHASE	N:1713830.91 E:3126295.53			6" (W)=5270.50

* CONTRACTOR TO CONFIRM PREFERRED CONSTRUCTABILITY OPTIONS WITH ENGINEER
** SEE DETENTION POND OUTLET STRUCTURE DETAIL ON SHEET C2.10

STORM PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
1.A→1.B	12"	88.26'	1.00%
1.C→1.D	30"	156.13'	0.50%
1.D→1.E	24"	140.64'	0.50%
1.E→1.F	18"	94.21'	1.50%
1.F→1.G	12"	79.83'	1.50%
2.A→3.A	12"	63.10'	0.50%
2.B→2.B-1	6"	11.00'	2.66%
2.B→2.B-2	6"	11.00'	5.04%
2.B→2.C	8"	33.00'	0.50%
2.C→2.C-1	6"	11.00'	4.25%
2.C→2.C-2	6"	11.00'	6.75%
2.C→2.D	8"	16.50'	0.50%
2.D-1→2.D-2	6"	15.48'	1.92%
2.D→2.D-1	6"	73.81'	1.92%
2.D→2.E	6"	16.50'	0.50%
2.E→2.E-1	6"	11.00'	0.50%
2.E→2.E-2	6"	11.00'	3.19%
3.A→2.B	8"	8.02'	0.50%
3.A→3.B	6"	125.18'	1.53%
3.B→3.C	6"	5.00'	1.53%
3.E→3.F	12"	19.71'	0.75%

LEGEND:

- EXISTING BOUNDARY
- PROPOSED PROPERTY LINE
- PROPOSED INTEGRAL CURB
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- ROAD CENTERLINE
- COLORED CONCRETE PAVEMENT
- LOD — LIMITS OF DISTURBANCE
- 6310 — EXISTING MAJOR CONTOUR
- 6309 — EXISTING MINOR CONTOUR
- 6310 — PROPOSED MAJOR CONTOUR
- 6309 — PROPOSED MINOR CONTOUR
- SD — SD — PROPOSED STORM SEWER
- SD — SD — EXISTING STORM SEWER
- BREAK IN GRADE
- PROPOSED BOLLARD
- CONTROL POINT
- FIRE HYDRANT
- LIGHT POLE
- GUY WIRE
- POWER POLE
- WATER VALVE
- VEGETATION
- GAS METER
- TRAFFIC SIGNAL ARM
- FIBER OPTIC MANHOLE
- SANITARY SEWER STRUCTURE
- GREASE INTERCEPTOR LID
- STORM SEWER STRUCTURE
- PROPOSED TRANSFORMER
- SIGN

FLOOD ZONE:

ACCORDING TO THE FEMA FIRM MAP THE SUBJECT PROPERTY LIES WITHIN FLOOD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN) AS SHOWN ON A NATIONAL FLOOD HAZARD LAYER FIRMETTE 08001C0591H, DATED 03/05/2007.

BASIS OF BEARINGS:

BEARINGS ARE GRID BASED ON THE COLORADO STATE PLANE COORDINATE SYSTEM – CENTRAL ZONE (NAD83), WITH THE SOUTH LINE OF THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 3 SOUTH, RANGE 68 WEST OF THE 6TH P.M. BEARING NORTH 89°23'41" EAST, A DISTANCE OF 2,588.52 FEET FROM THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 3.25" BRASS CAP STAMPED "CITY OF WHEAT RIDGE LS 13212" IN A RANGE BOX, TO THE SOUTHEAST CORNER OF SAID NORTHWEST QUARTER, BEING MONUMENTED BY A 2.5" ILLEGIBLE ALUMINUM CAP STAMPED IN A RANGE BOX.

NOTES:

A. REFERENCE POINTS FOR STRUCTURES ARE AS FOLLOWS:
- CENTER OF LID FOR MANHOLES/CLEANOUTS
- CENTER OF CYLINDRICAL DRAIN BASIN FOR ALL ADS NYLOPLAST STRUCTURES.

B. STORM SEWER PIPE LENGTHS ARE MEASURED AS FOLLOWS:
- CENTER OF MANHOLES/CLEANOUTS
- INSIDE WALL OF CURB INLET
- CENTER OF GRATE INLET
- LENGTHS LISTED ARE 2D MEASUREMENTS

C. ALL PROPOSED DRAINAGE STRUCTURES AND PIPES ON THIS SITE ARE PRIVATELY OWNED AND MAINTAINED. DRAINAGE STRUCTURES AND PIPES BECOME PUBLICLY OWNED ONCE THEY CONNECT TO THE EXISTING MANHOLE. UNLESS STATED OTHERWISE (STORM PIPES ON NORTH SIDE ARE PUBLIC).

D. ALL PROPOSED PIPES ARE HDPE, EXCEPT AS NOTED.

E. ALL PROPOSED ONSITE INLETS ARE TO BE EQUIPPED WITH FLEXSTORM INSERTS

F. SEE SHEETS C2.9 – ##### FOR STORM DETAILS

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F: 515-223-9873

#2294 - ARVADA, CO
52ND AVE & SHERIDAN BLVD
STORM SEWER PLAN

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

REVISION DESCRIPTION	DATE	△

DATE: 02/03/2023

SHEET NUMBER: C2.6
13 OF 31

811 Know what's **below.** **Call** before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DWG: F:\2022\02501-03000\022-02737\40-Design\AutoCAD\Final Plans\Sheets\GNCV\C_STM01_02202737.dwg
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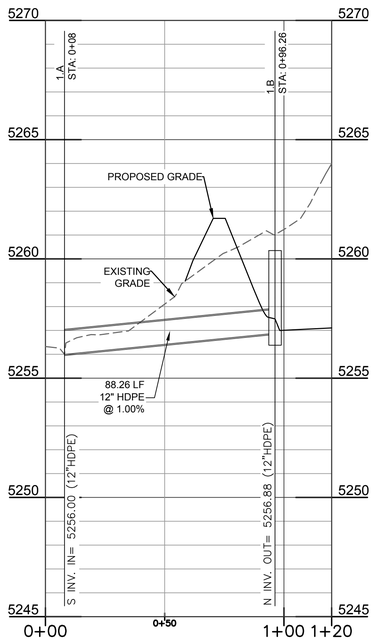
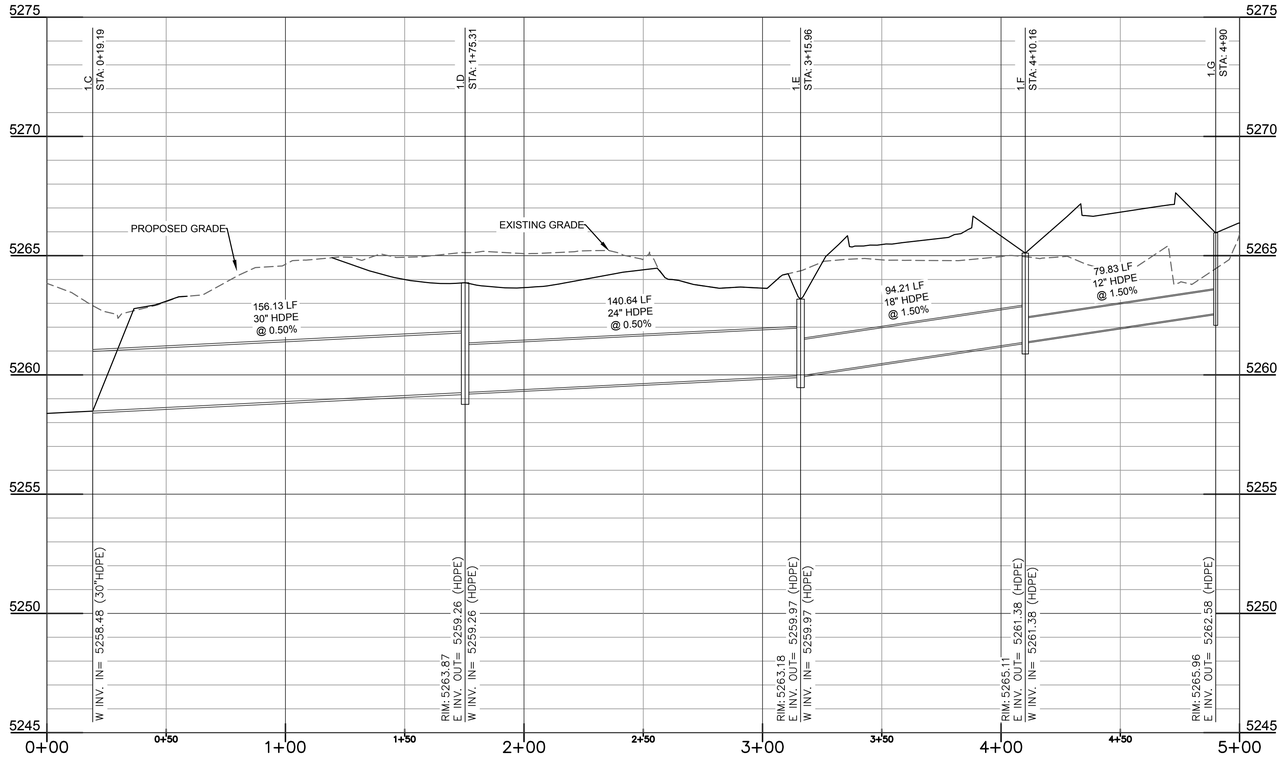
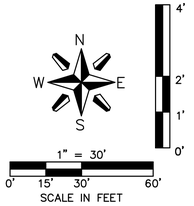
USER: mborr
XREFS: C_PSURF_02202737 C_PBASE_02202737 C_XBASE_02202737 C_PUTIL_02202737 C_PTBLK CDs_02202737 C_PSTRM_02202737

STORM 1.1



STORM 1.2





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#2294 - ARVADA, CO
52ND AVE & SHERIDAN BLVD

STORM SEWER PROFILES

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

△	DATE	REVISION DESCRIPTION

DATE: 02/03/2023

SHEET NUMBER:
C2.7
14 OF 31

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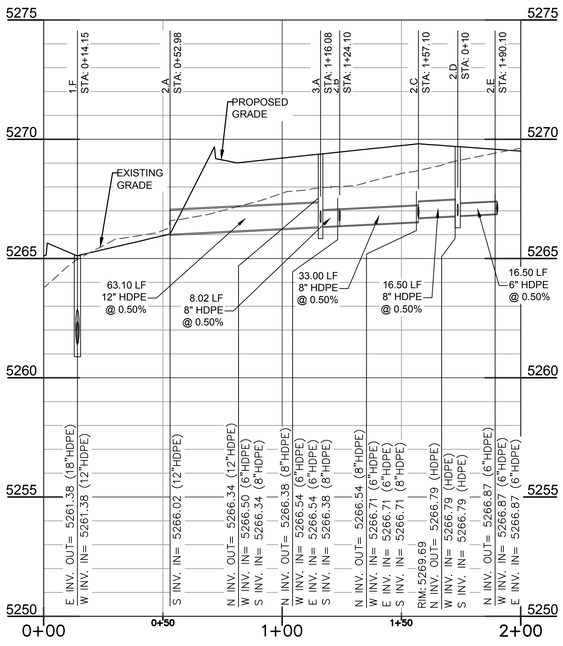
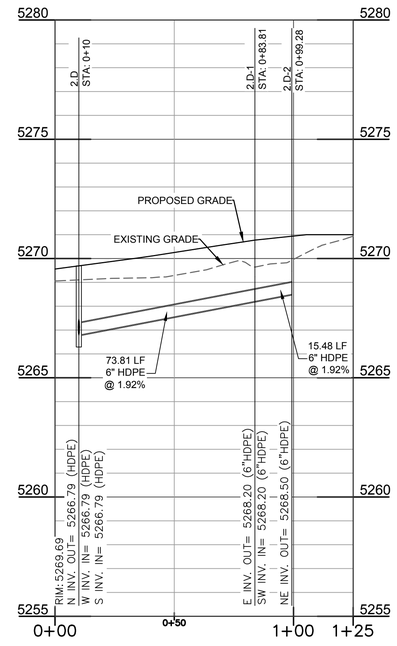
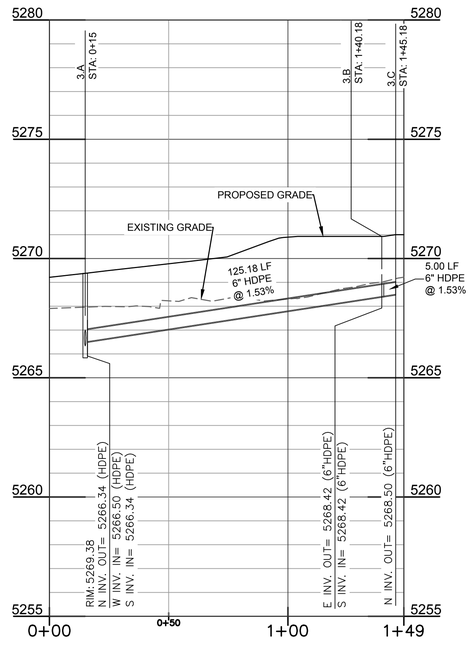
STORM 2.1

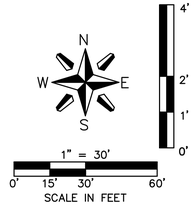


STORM 2.2



STORM 3.1





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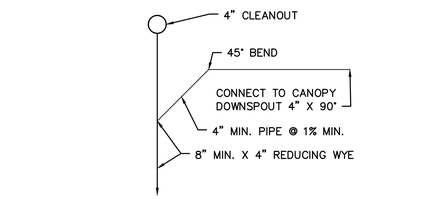
STORM SEWER PROFILES

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

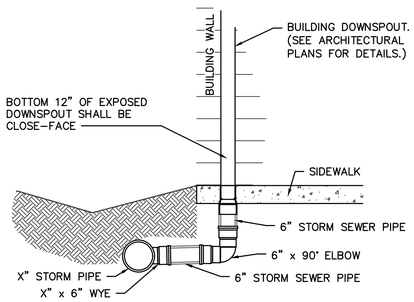
△	DATE	REVISION DESCRIPTION

DATE: 02/03/2023

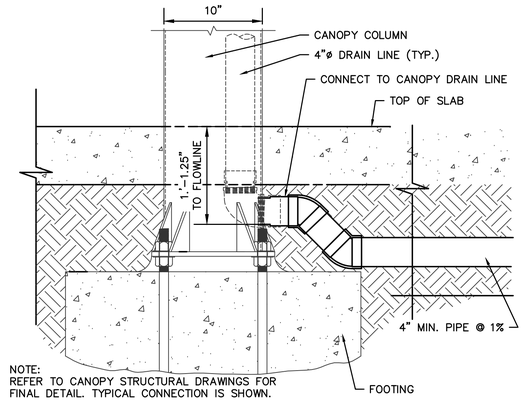
SHEET NUMBER:
C2.8
15 OF 31



A TYP. CANOPY DOWNSPOUT ROUTING DETAIL
NOT TO SCALE

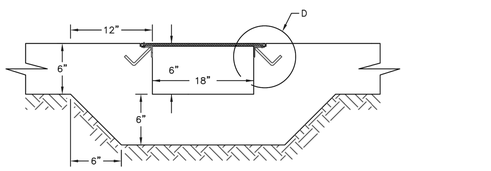


B BUILDING DOWNSPOUT CONNECTION DETAIL
NOT TO SCALE

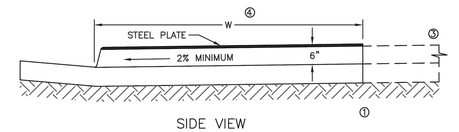


NOTE:
REFER TO CANOPY STRUCTURAL DRAWINGS FOR FINAL DETAIL. TYPICAL CONNECTION IS SHOWN.

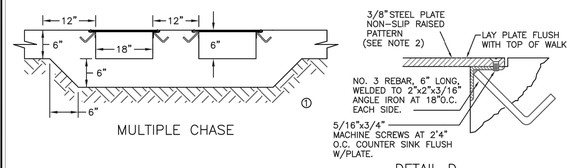
C CANOPY DRAIN SECTION
NOT TO SCALE



CHASE SECTION (TYP.)



SIDE VIEW

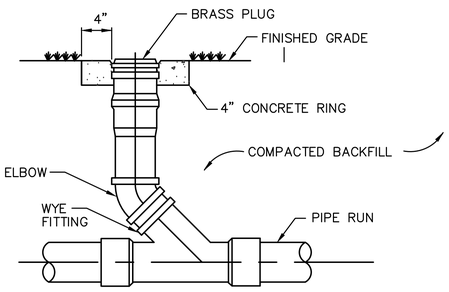


MULTIPLE CHASE

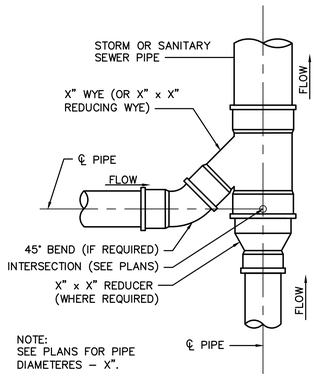
DETAIL D
NO SCALE

NOTES:
① COMPACTED SUBGRADE MATERIAL
② CHASE SECTIONS WITHIN 25' OF INTERSECTIONS OR DRIVEWAYS ARE REQUIRED TO USE 1/2" STEEL PLATE
③ CONSTRUCT CONCRETE CHANNEL WHERE REQUIRED
④ W = 5' 6" OR MATCH EXISTING

ADAMS COUNTY TRANSPORTATION DEPARTMENT /ENGINEERING	SIDEWALK CHASE DETAILS	ADAMS COUNTY TRANSPORTATION DEPARTMENT /CONSTRUCTION INSPECTION
4430 S. ADAMS COUNTY PKWY. BRIGHTON, CO 80601	REVISION DATE: 06/02/14 · FILE NAME: SWLK_CHASE_D.DWG	4430 S. ADAMS COUNTY PKWY. BRIGHTON, CO 80601

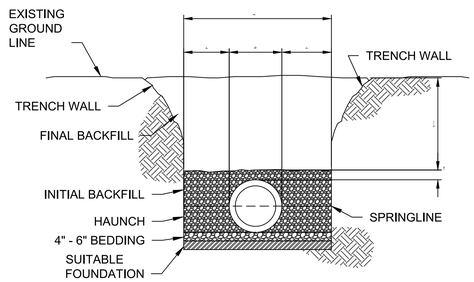


D STORM SEWER CLEANOUT IN LANDSCAPE
NOT TO SCALE

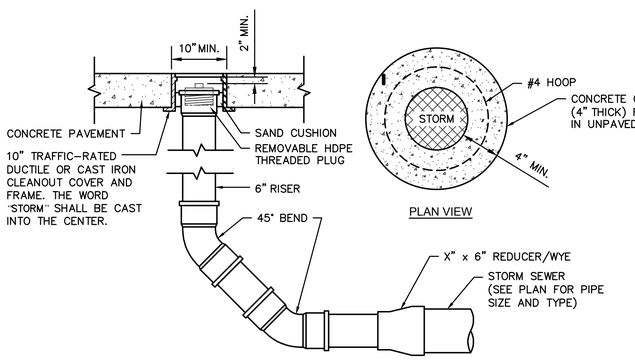


NOTE:
SEE PLANS FOR PIPE DIAMETERES – X".

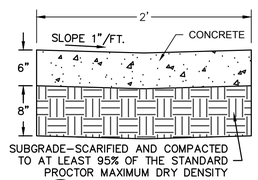
E WYE CONNECTION
NOT TO SCALE



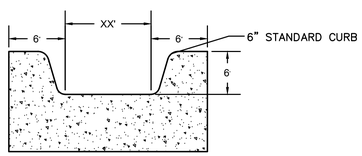
F HDPE PIPE BEDDING DETAIL
NOT TO SCALE



G STORM SEWER CLEANOUT IN PAVEMENT
NOT TO SCALE



H CONCRETE PAN
N.T.S.



I CURB CUT
NOT TO SCALE

CONFIDENTIAL DOCUMENT:
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52ND AVE & SHERIDAN BLVD

STORM SEWER DETAILS

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

REVISION DESCRIPTION | DATE | △

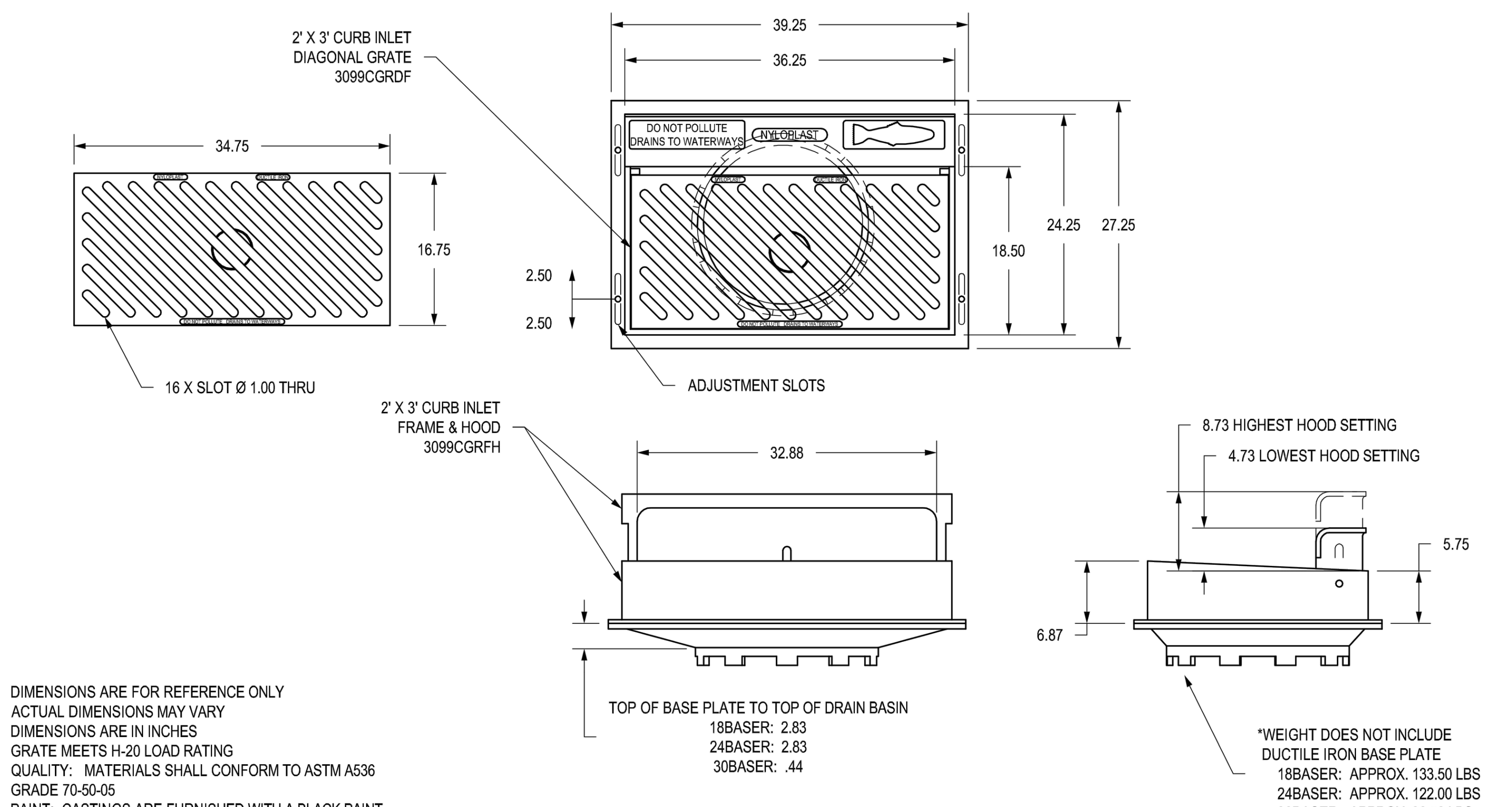
DATE: 02/03/2023

SHEET NUMBER:
C2.9
16 OF 31

DWG: F:\2022\02501-03000\022-02737\40-Design\AutoCAD\Final Plans\Sheets\GNCV\C_STM01 DET_02202737.dwg USER: mbarr
DATE: Feb 02, 2023 10:54am XREFS: C_PUTIL_02202737 C_XBASE_02202737 C_PBASE_02202737 C_PSURF_02202737
C_PTBLK CDs_02202737 C_PSTRM_02202737

3099CGRDF & 3099CGRFH

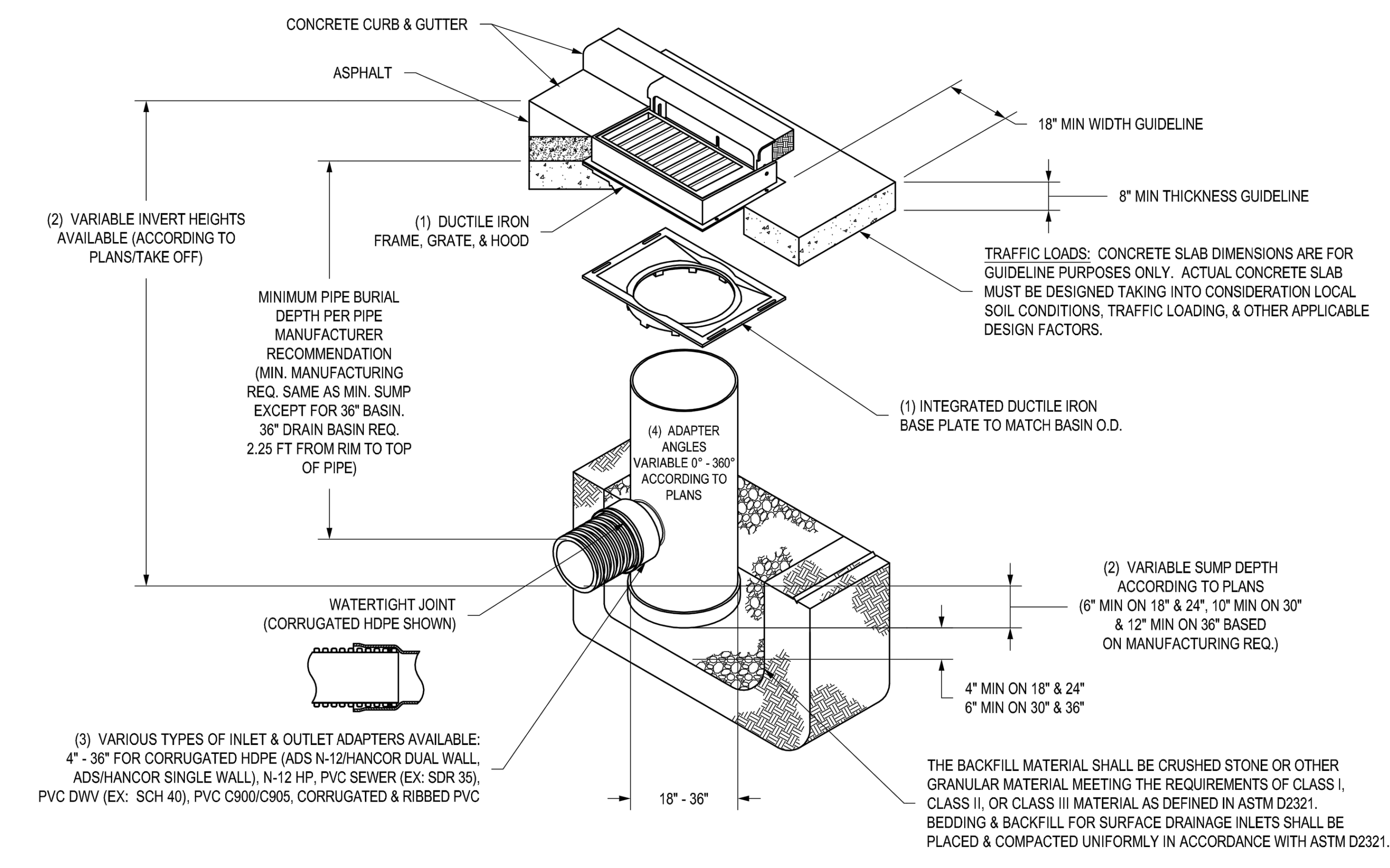
APPROX. GRATE DRAIN AREA = 232.87 SQ IN
*APPROX. WEIGHT WITH FRAME & HOOD = 344.00 LBS



DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
GRATE MEETS H-20 LOAD RATING
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO. 7002-110-057
SLOPE OF GRATE SURFACE IS 5.2%
CURB INLET FRAME INSIDE VOLUME IS APPROX 2.73 CU FT
APPROX. DRAIN AREA OF GRATE & HOOD
LOWEST SETTING = 369.54 SQ IN
LOWEST + 1" SETTING = 402.41 SQ IN
LOWEST + 2" SETTING = 435.29 SQ IN
LOWEST + 3" SETTING = 468.16 SQ IN
HIGHEST SETTING = 501.04 SQ IN

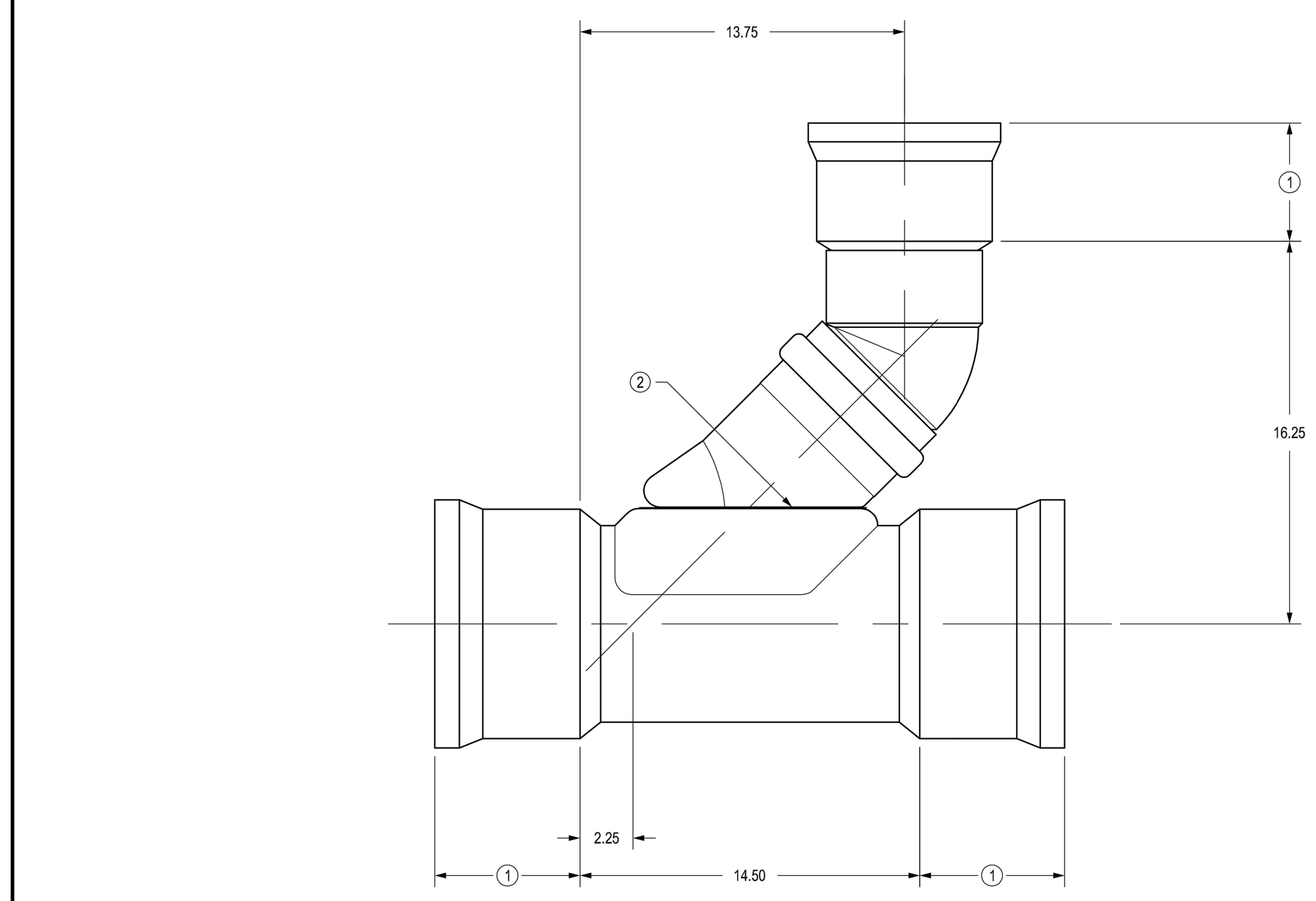
DRAWN BY EBC	MATERIAL DUCTILE IRON	ADS Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 04-10-06			
REVISED BY CCA	PROJECT NO./NAME	TITLE 2 FT X 3 FT CURB INLET DIAGONAL GRATE ASSEMBLY	
DATE 09-05-13			
DWG SIZE A	SCALE 1:16 SHEET 1 OF 1	DWG NO. 7002-110-046	REV D

NYLOPLAST 2 FT X 3FT CURB INLET STRUCTURE: 30 _ _ AGR _ _ X



1 - 18" - 30" FRAMES, GRATES, HOODS, & BASE PLATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
4 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
5 - ALL CURB INLET GRATE OPTIONS (DIAGONAL & HIGH FLOW) SHALL MEET H-20 LOAD RATING

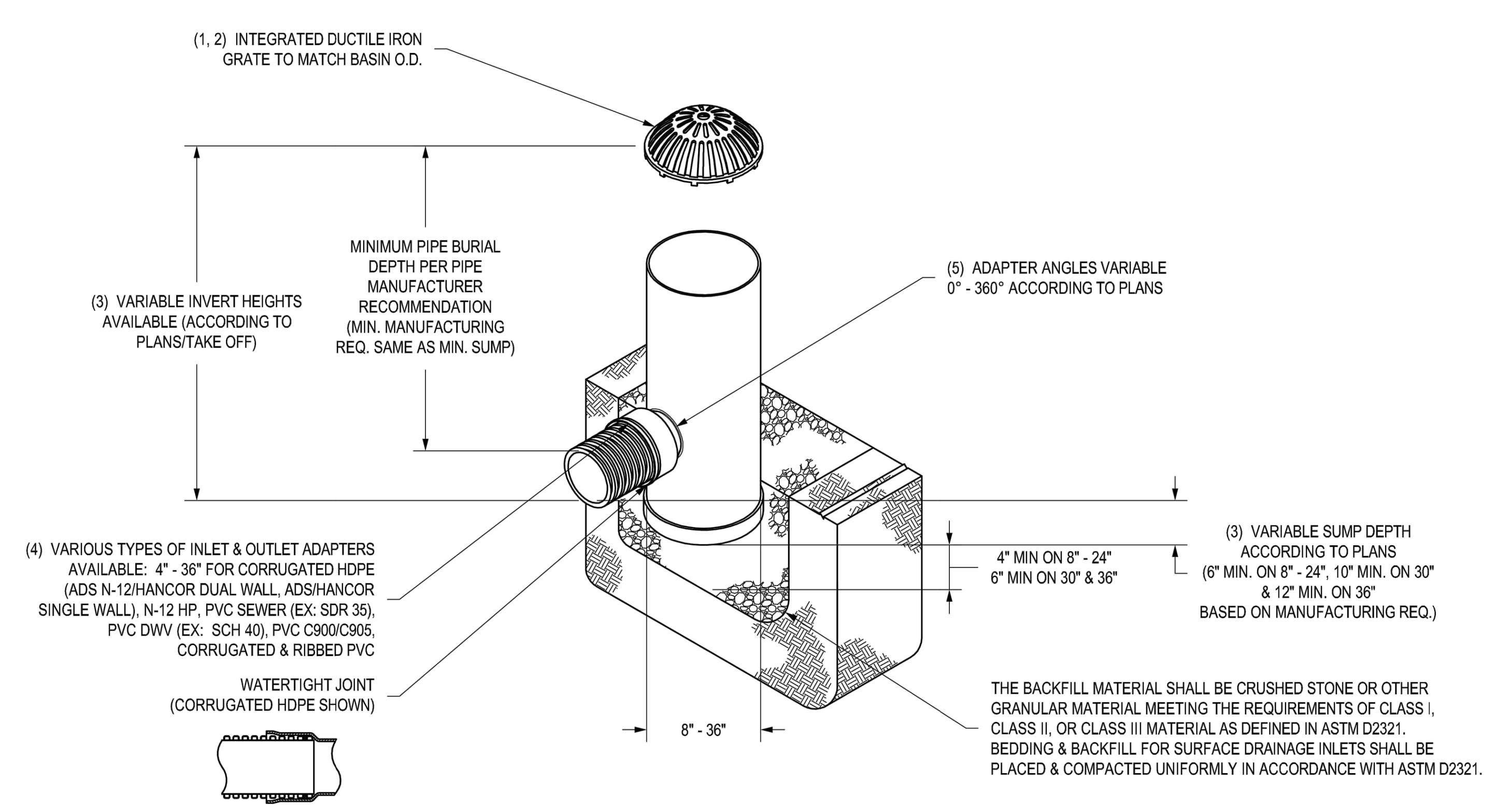
DRAWN BY EBC	MATERIAL	ADS Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-22-10			
REVISED BY NMH	PROJECT NO./NAME	TITLE DRAIN BASIN WITH 2 FT X 3 FT CURB INLET QUICK SPEC INSTALLATION DETAIL	
DATE 07-22-19			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7002-110-097	REV E



1 - SEE DRAWING NO. 7001-110-275 FOR ADS N-12 & HANCOR DUAL WALL BELL INFORMATION
2 - SEE DRAWING NO. 7003-110-031 FOR WATER TIGHT SWAGE JOINT DETAIL
3 - DIMENSIONS ARE FOR REFERENCE ONLY ACTUAL DIMENSIONS MAY VARY
4 - DIMENSIONS ARE IN INCHES

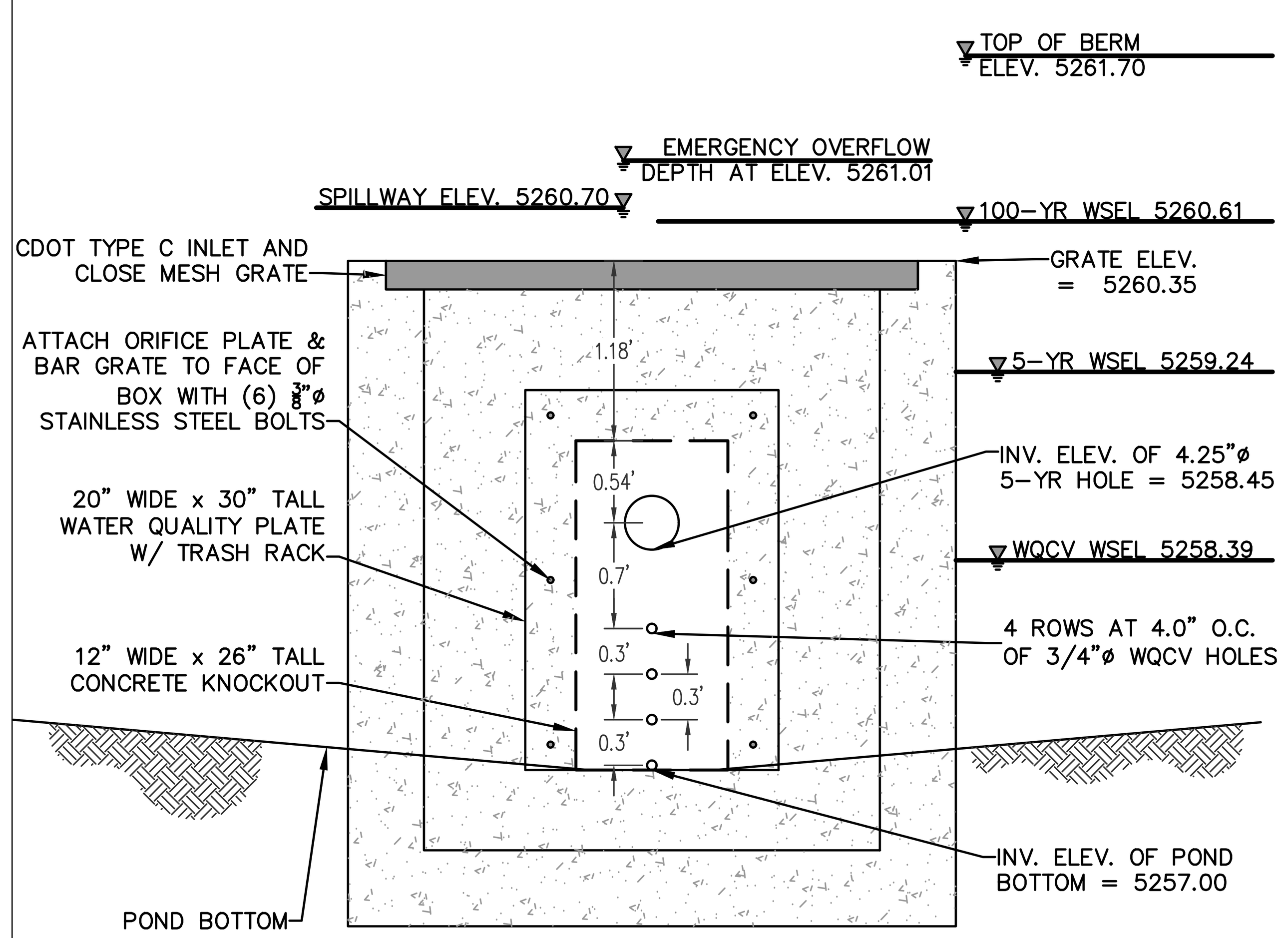
DRAWN BY EBC	MATERIAL PVC	ADS Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 12-4-06			
APPD BY CJA	PROJECT NO./NAME	TITLE 6 X 6 ADS N-12 / HANCOR DUAL WALL TEE WYE	
DATE 12-4-06			
DWG SIZE A	SCALE 1:6 SHEET 1 OF 1	DWG NO. 0836AG	REV A

NYLOPLAST DRAIN BASIN WITH DOME GRATE



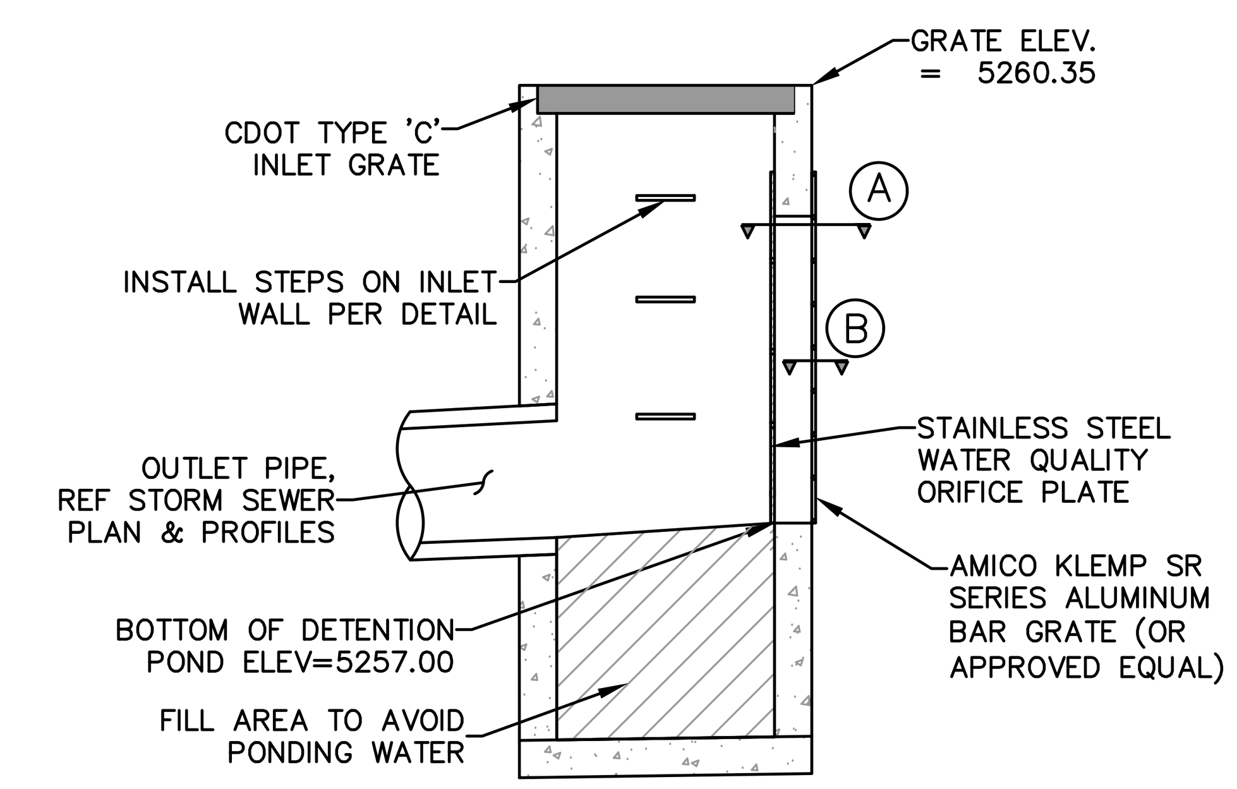
1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

DRAWN BY EBC	MATERIAL	ADS Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-25-10			
REVISED BY NMH	PROJECT NO./NAME	TITLE DRAIN BASIN WITH DOME GRATE QUICK SPEC INSTALLATION DETAIL	
DATE 06-12-18			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7001-110-387	REV E

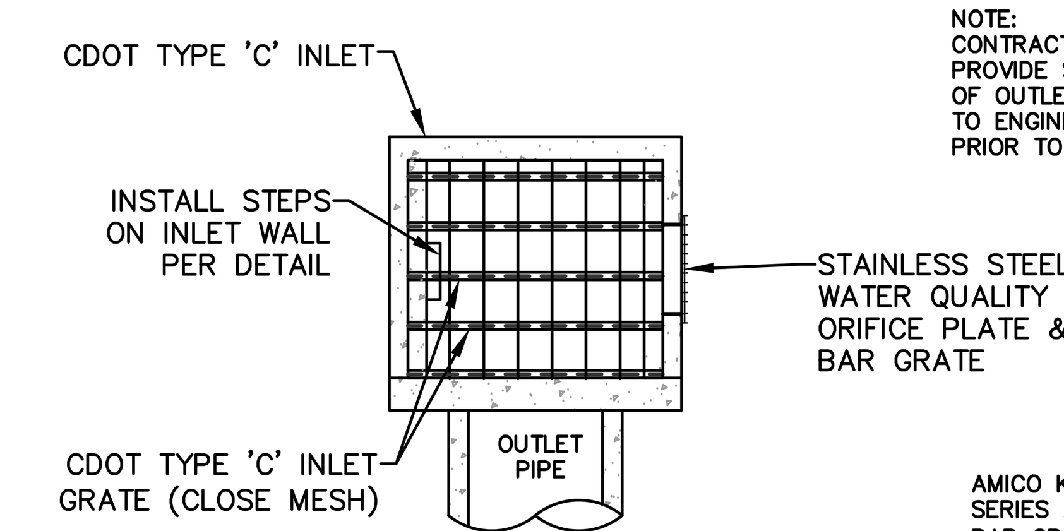


DETENTION POND OUTLET STRUCTURE

NOT TO SCALE

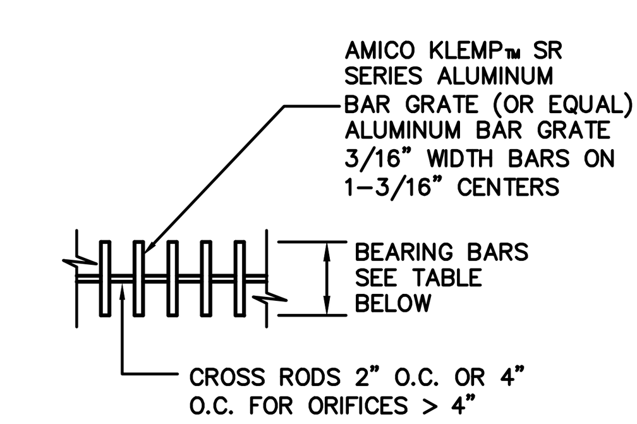


PROFILE VIEW



PLAN VIEW

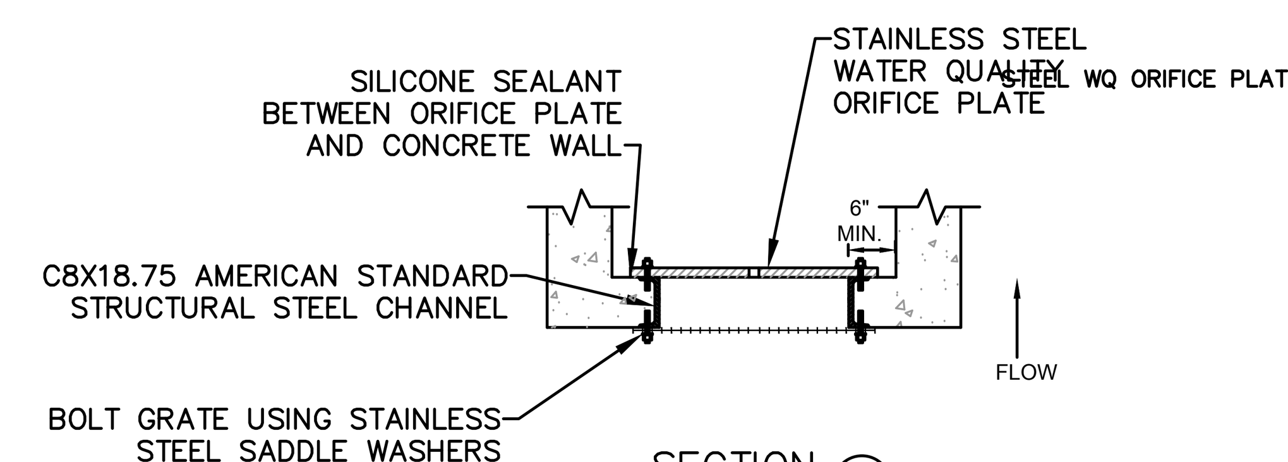
NOTE:
CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF OUTLET STRUCTURE TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.



WATER DEPTH ABOVE LOWEST OPENING, H	MINIMUM BEARING BAR SIZE, BARS ALIGNED VERTICALLY
2.0 FT.	1" x 3/16"
3.0 FT.	1-1/4" x 3/16"
4.0 FT.	1-3/4" x 3/16"
5.0 FT.	2" x 3/16"
6.0 FT.	2-1/4" x 3/16"

R VALUE=(NET OPEN AREA)/GROSS RACK AREA)
=0.71 FOR CROSS RODS ON 2" CENTERS
=0.77 FOR CROSS RODS ON 4" CENTERS

SECTION B
NTS



SECTION A
NTS

CONFIDENTIAL DOCUMENT:
INFORMATION CONTAINED IN THIS DOCUMENT IS PROPRIETARY TO KUM & GO, L.C. AND SHALL NOT BE DISTRIBUTED.

Know what's below. Call before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538
TEL 970.461.7733
www.olsson.com

THIS DOCUMENT HAS BEEN RELEASED BY OLSSON FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

Kum & Go
1459 Grand Avenue
Des Moines, Iowa
50309
P: 515-226-0128
F: 515-223-9873

#2294 - ARVADA, CO
52ND AVE & SHERIDAN BLVD
STORM SEWER DETAILS

KG PROJECT TEAM:
RDM: TC
SDM: DG
CPM: BS

REVISION DESCRIPTION
DATE

DATE: 02/03/2023

SHEET NUMBER:
C2.10
17 OF 31

DWG: F:\2022\02501-03000\022-02737\40-Design\AutoCAD\Final Plans\Sheets\GNCV\C_STM01 DET_02202737.dwg
DATE: Feb 02, 2023 10:54am
USER: mbarr
XREFS: C_PUTIL_02202737 C_XBASE_02202737 C_PBASE_02202737 C_PSURF_02202737 C_PTBLK CDs_02202737 C_PSTRM_02202737

KUM & GO #2294
ADAMS COUNTY, CO
5200 SHERIDAN BOULEVARD

County of Adams, Colorado
February 2023

Olsson Project No. 022-02737

KUM & GO
STORE # 2294
TRANSPORTATION IMPACT STUDY
Arvada, CO

Prepared For:
Kum & Go
1459 Grand Avenue
Des Moines, IA 50309

Prepared By:
Olsson
1880 Fall River Drive, Suite 200
Loveland, CO 80538

Olsson Project No. 022-02737
February 2023

olsson

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1.0 INTRODUCTION

This report studies traffic impacts regarding the proposed Kum & Go Convenience Store #2294 located on the northeast corner of the intersection at W 52nd Avenue & Sheridan Boulevard in unincorporated Adams County, Colorado between the cities of Arvada and Denver. This report will review the impacts of the proposed development on the existing roadway network at the following study intersections:

- W 52nd Avenue & Sheridan Boulevard
- W 53rd Place & Sheridan Boulevard
- W 53rd Avenue & Sheridan Boulevard

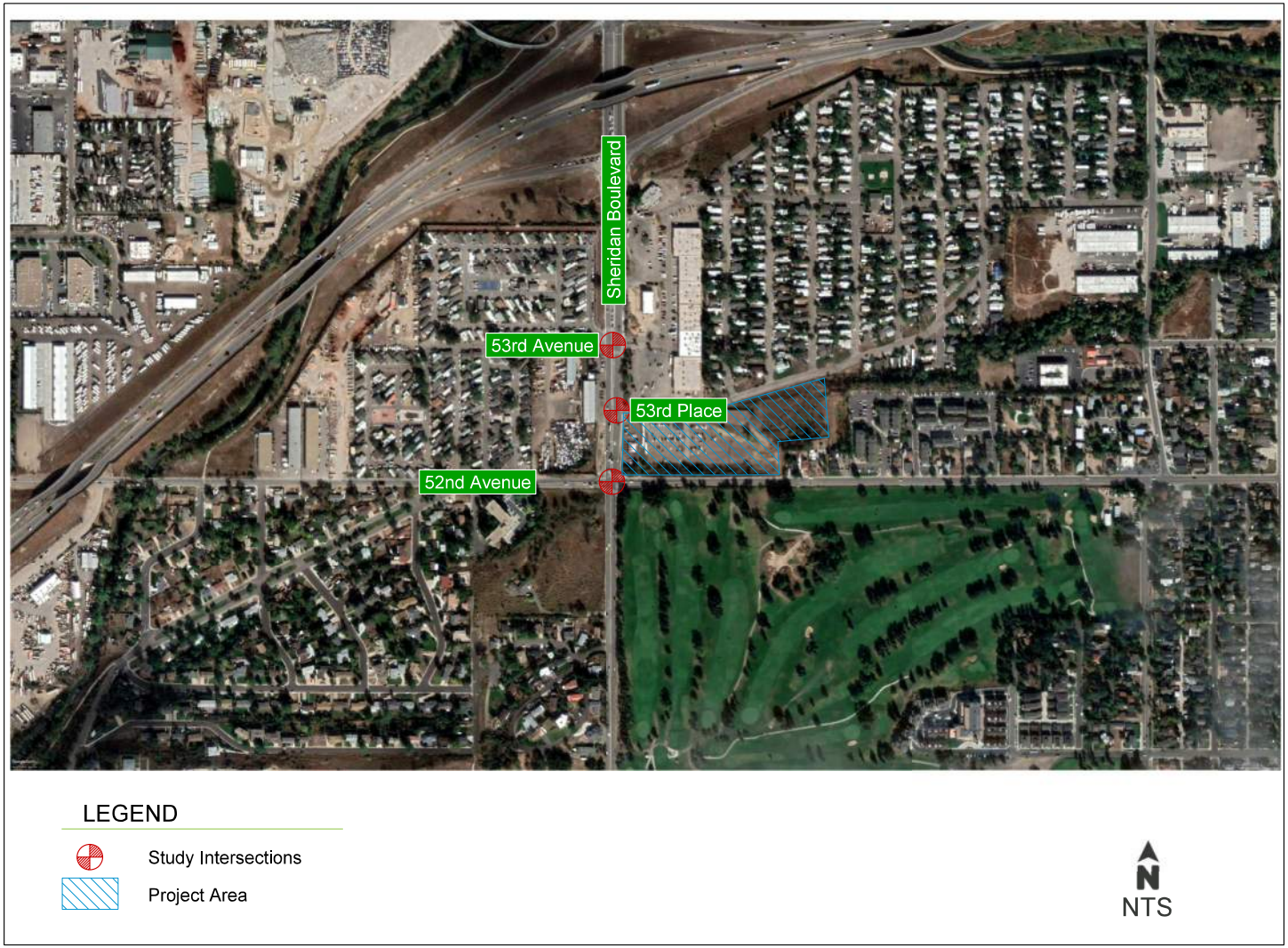
For this study, the following scenarios were analyzed:

- Existing Conditions - 2022
- Projected Background Conditions - 2024
- Projected Background + Site Conditions - 2024
- Projected Background Conditions – 2042
- Projected Background + Site Conditions – 2042

The approximate location of the development is shown on the vicinity map, **Figure 1**.

FIGURE 1

Adams County, CO
Vicinity Map



2.0 DATA COLLECTION

The data collection effort included acquiring traffic counts and documenting existing roadway geometrics.

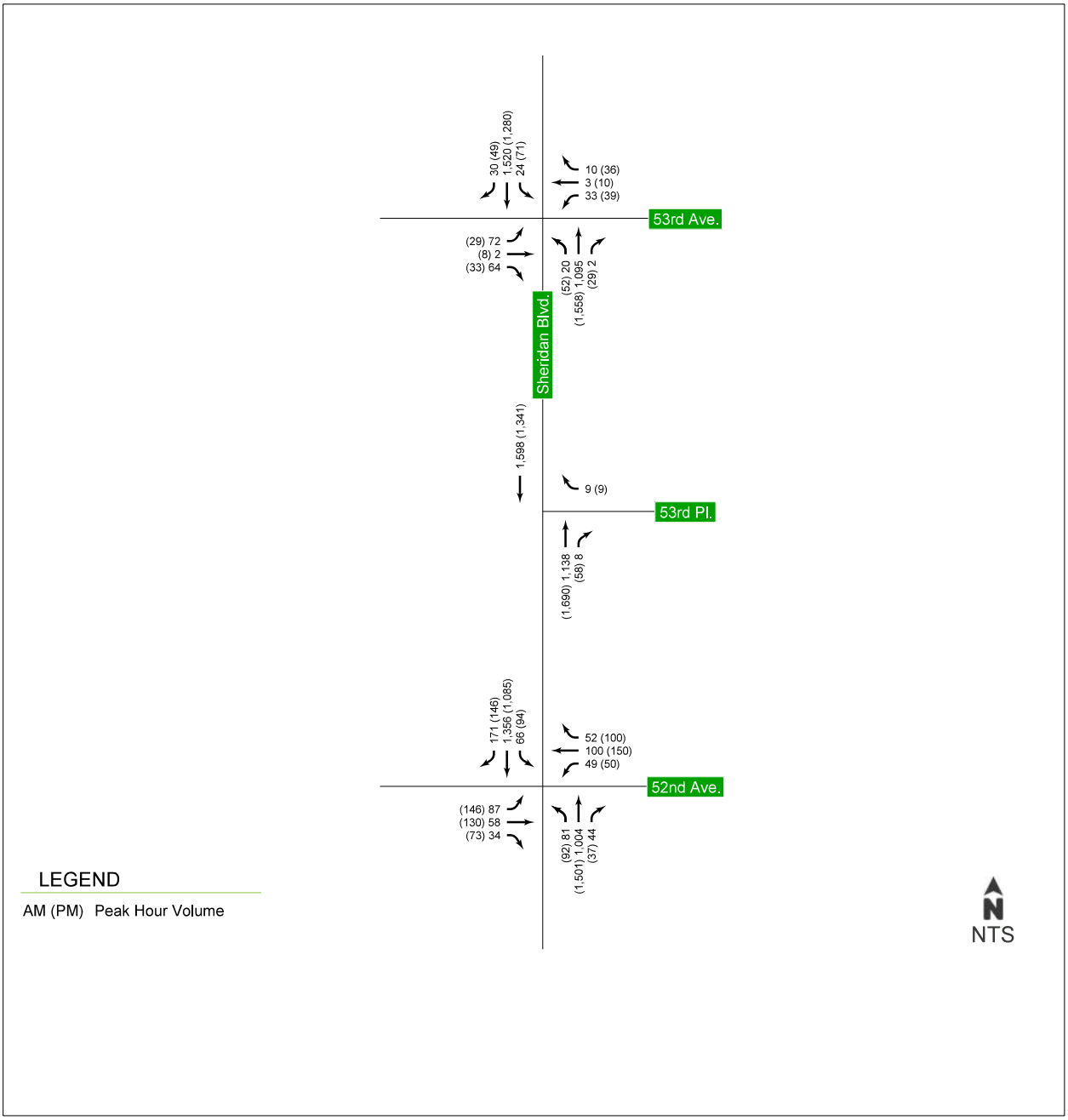
Annual daily traffic (ADT) counts were collected on Tuesday, May 10th, 2022 and turning movement counts (TMC) were collected on Wednesday, September 14th, 2022 at the study intersections. TMC were conducted during the typical weekday AM and PM peak periods from 7:00-9:00 AM and 4:00-6:00 PM. The AM peak hour period for the study area was determined to be from 7:15-8:15 AM. The PM peak hour period for the study area was determined to be from 4:30-5:30 PM.

A site visit was performed on Wednesday, September 28th, 2022 to observe roadway operations during the PM peak hour.

The existing peak hour volumes are illustrated in **Figure 2**. Count data collected for this study can be found in **Appendix A**.

FIGURE 2

Existing
Traffic Volumes



3.0 EXISTING CONDITIONS

Existing traffic conditions and site conditions were evaluated to identify any existing deficiencies and to provide a baseline for comparative purposes. The study area includes four roadways and three intersections along Sheridan Boulevard.

3.1 Network Characteristics

Four roadways are located within the study area, including: Sheridan Boulevard; W 52nd Avenue; W 53rd Place; and W 53rd Avenue. Referencing the City of Arvada's 2014 Comprehensive Plan and Transportation *Future Roadway Improvement Needs* Map, current roadway characteristics were determined and are summarized in **Table 1**.

Table 1. Existing Network Summary

Roadway	Functional Classification	Existing Typical Section	Existing Median Type	Existing Posted Speed
Sheridan Boulevard	Principal Arterial	4-Lane with dedicated turn lanes	Raised	45 mph
W 52nd Avenue	Minor Arterial	2-Lane	None	30 mph
W 53rd Avenue	Collector	2-Lane	Raised on eastern leg, none on western leg	15 mph
W 53rd Place	Collector	2-Lane	None	10 mph

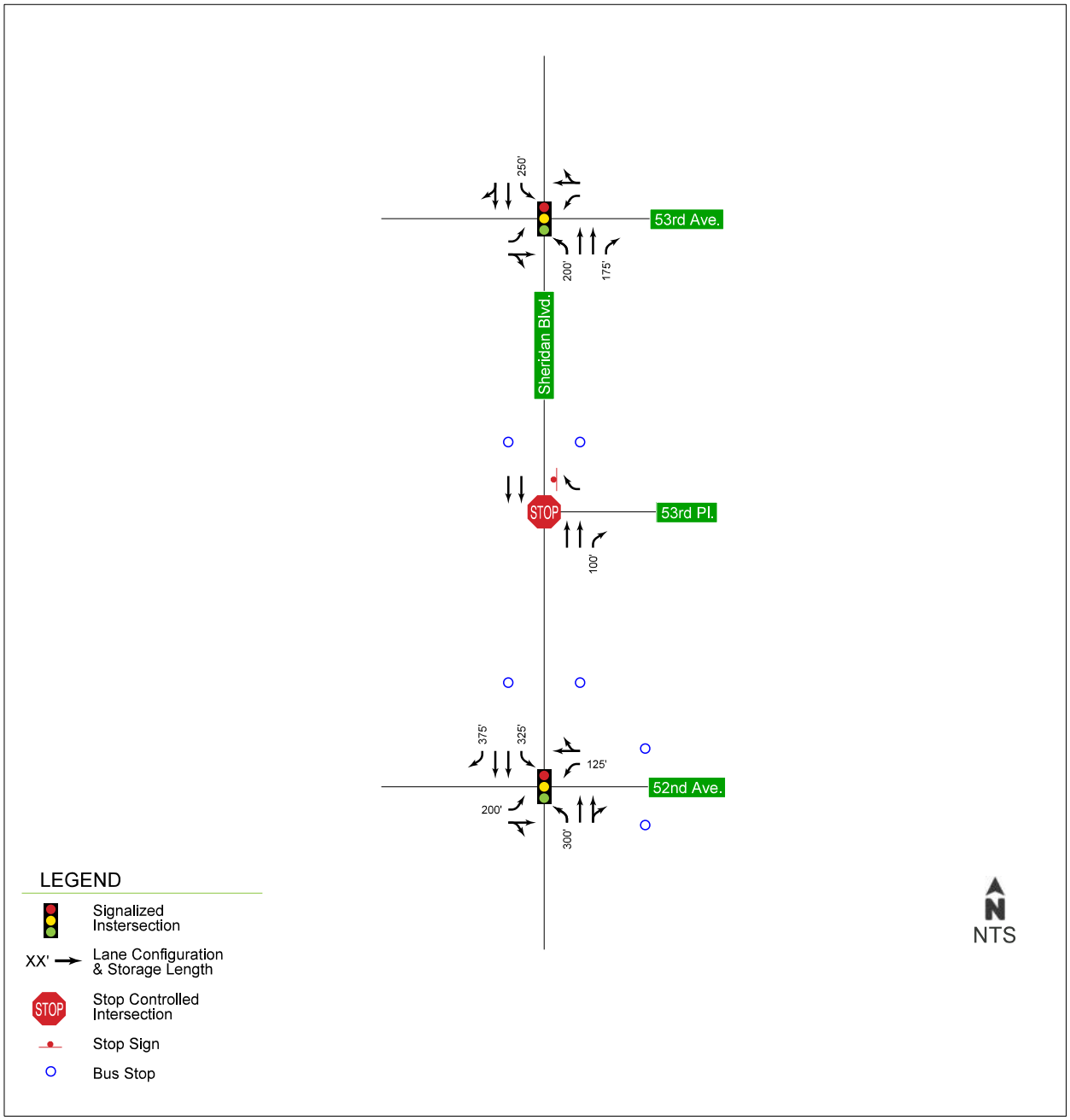
The roadway network was analyzed at three intersections that have varied stop control, lane configuration, and pedestrian movements.

In the existing condition, there is inadequate sight distance for the westbound right-turn at 52nd Avenue and Sheridan Boulevard due to the Willis Case Gold Course retaining wall. Approximately 115 feet of sight distance is available for vehicles at present to see northbound vehicles along Sheridan Boulevard. *Table 3-1* of the *CDOT Elements of Design Manual (2018)* recommends at least 360 feet of sight distance, not accounting for grade separation, for a roadway with a 45-mph design speed. This lack of sight distance is addressed in the existing condition by having a right-turn only on red sign installed for this movement.

See **Figure 3** for a map of the existing lane configuration and traffic control.

FIGURE 3

Existing
Lane Configuration and Traffic Control



3.2 Pedestrian Accommodations

Pedestrian facilities are discontinuous throughout the study area. Additionally, the multiple existing pedestrian facilities along Sheridan Boulevard appear to not be ADA-compliant. It was observed during the site visit that pedestrians are walking where no sidewalks are currently present.

Along 52nd Avenue to the east of Sheridan Boulevard, a continuous sidewalk is present on the north side of the roadway and adjacent to the proposed site, while the south side of the roadway contains a only portion of a sidewalk which terminates just after the transit stop on this side of the roadway. A sidewalk is present on the south side of 52nd Avenue to the west of Sheridan Boulevard, but not on the north side of the roadway.

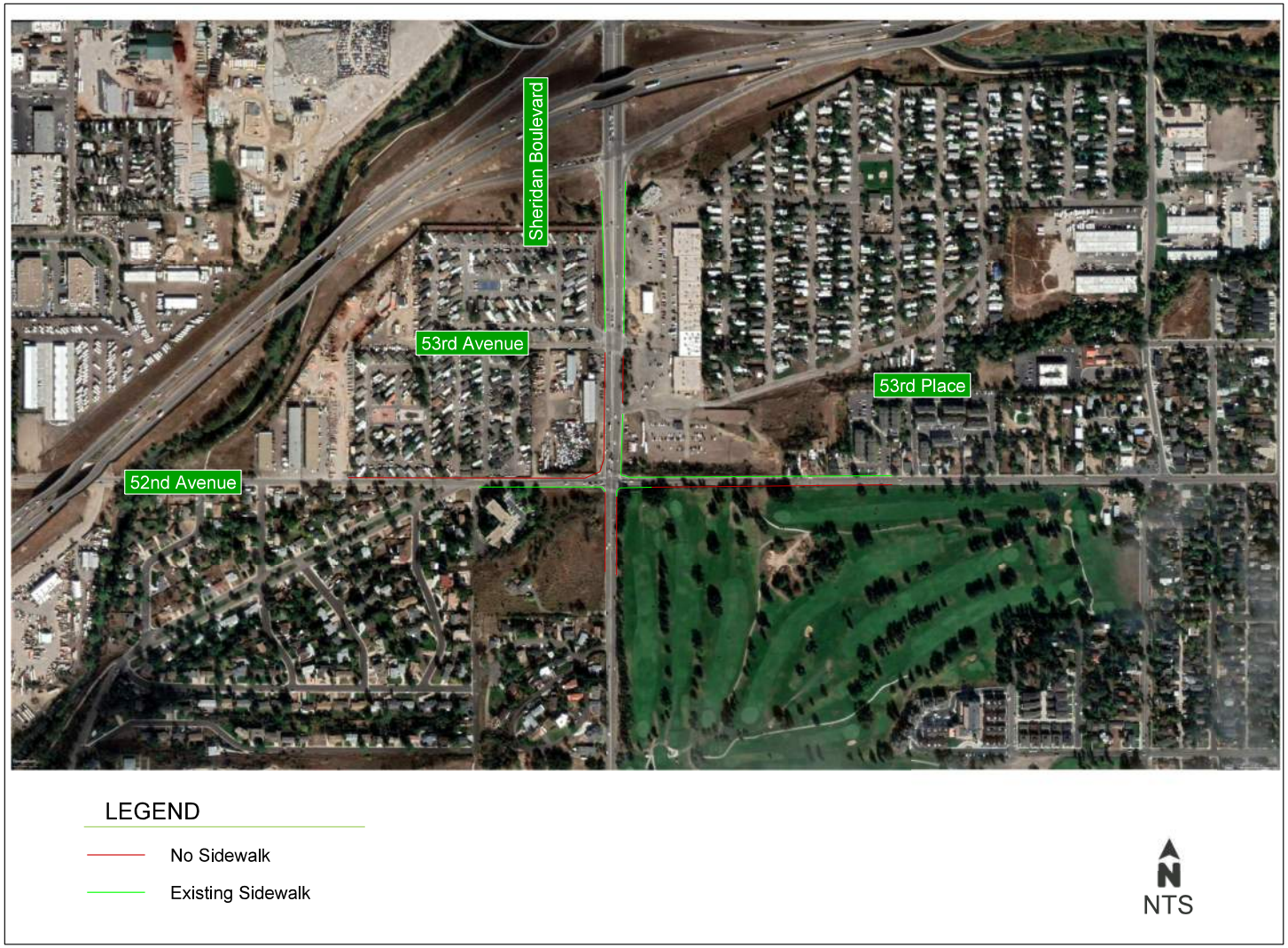
Along Sheridan Boulevard, sidewalks exist on both sides of the roadway south of 52nd Avenue. On the east side of Sheridan Boulevard, a sidewalk is present between 52nd Avenue and W 53rd Place, ends between W 53rd Place and W 53rd Avenue, and continues again along both sides of Sheridan Boulevard north of W 53rd Place. Sidewalks are not present on the west side of Sheridan Boulevard between W 53rd Avenue and W 52nd Avenue, yet several pedestrian ramps are in place.

Sidewalks do not currently exist on either W 53rd Avenue or W 53rd Place, within the study area.

See **Figure 4** for a map of the existing pedestrian infrastructure. **Appendix B** also has images of the existing pedestrian facility deficiencies.

FIGURE 4

Existing
Pedestrian Infrastructure



3.3 Transit

Transit stops exist along Sheridan Boulevard on either side of the roadway between W 52nd Avenue and W 53rd Avenue, including a transit stop on Sheridan Boulevard directly adjacent to the project site between W 52nd Avenue and W 53rd Place. W 52nd Avenue also has transit stops adjacent to the project site, east of Sheridan Boulevard. Transit stops do not exist along W 53rd Avenue or W 53rd Place.

3.4 Bicycle Facilities

A single bike shoulder exists within the study area, along W 52nd Avenue, east of Sheridan Boulevard and adjacent to the proposed site. Nearing the intersection of Sheridan Boulevard and W 52nd Avenue, the bike shoulder does not provide adequate space for bicycle use, and eventually ends before reaching the intersection. Moving eastward along W 52nd Avenue, the shoulder becomes gradually wider and more suitable for bicycle transportation, however nowhere along this bike shoulder is it signed or striped with bike symbols. No other bicycle facilities exist within the study area.

3.5 Warrant Analysis

Turn Lane Warrants

CDOT's *Recommended Outline for Traffic Impact Study (2008) and State Highway Access Code (2002)* were used to determine whether turn lanes are currently warranted at the study intersections. The peak hour of the site and the peak hour of the adjacent street traffic were also used when considering the need for a turn lane. Operations of all study intersections will be reviewed (**Section 5.5**) to determine if turn lanes are recommended based on existing operations.

Based on the existing volumes and guidelines from Section 3 of the *State Highway Access Code*, no additional turn lanes are recommended based on the existing conditions.

Existing lane configurations and traffic control for the study network are illustrated in **Figure 3.**

3.6 Capacity Analysis

Capacity analysis was performed for the study intersections utilizing the existing lane configurations and traffic control. Capacity analysis was conducted using Synchro, Version 11, based on the Highway Capacity Manual (HCM) delay methodologies. For simplicity, the amount of control delay is equated to a grade or Level of Service (LOS) based on thresholds of driver acceptance. The amount of delay is assigned a letter grade A through F, LOS A representing little or no delay and LOS F representing very high delay. **Table 2** shows the delays associated with each LOS grade for signalized and unsignalized intersections, respectively. Queuing is evaluated using the 95th percentile queue length. The 95th-percentile queue length represents the queue length that has a five percent probability of being exceeded during the peak hour period.

Table 2. Intersection LOS Criteria

Level-of-Service	Average Control Delay (seconds)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50
Highway Capacity Manual (HCM 6th Ed.)		

The Denver Regional Council of Governments (DRCOG) *Traffic Study Guidelines* was referenced to determine acceptable levels of service based on regional guidance. The following guidance is provided:

- An overall intersection LOS D is typically acceptable on arterial and collector roadways.
- An overall intersection LOS C is typically acceptable for all other roadways.
- Individual turning movements should operate with LOS E or better for all intersections.

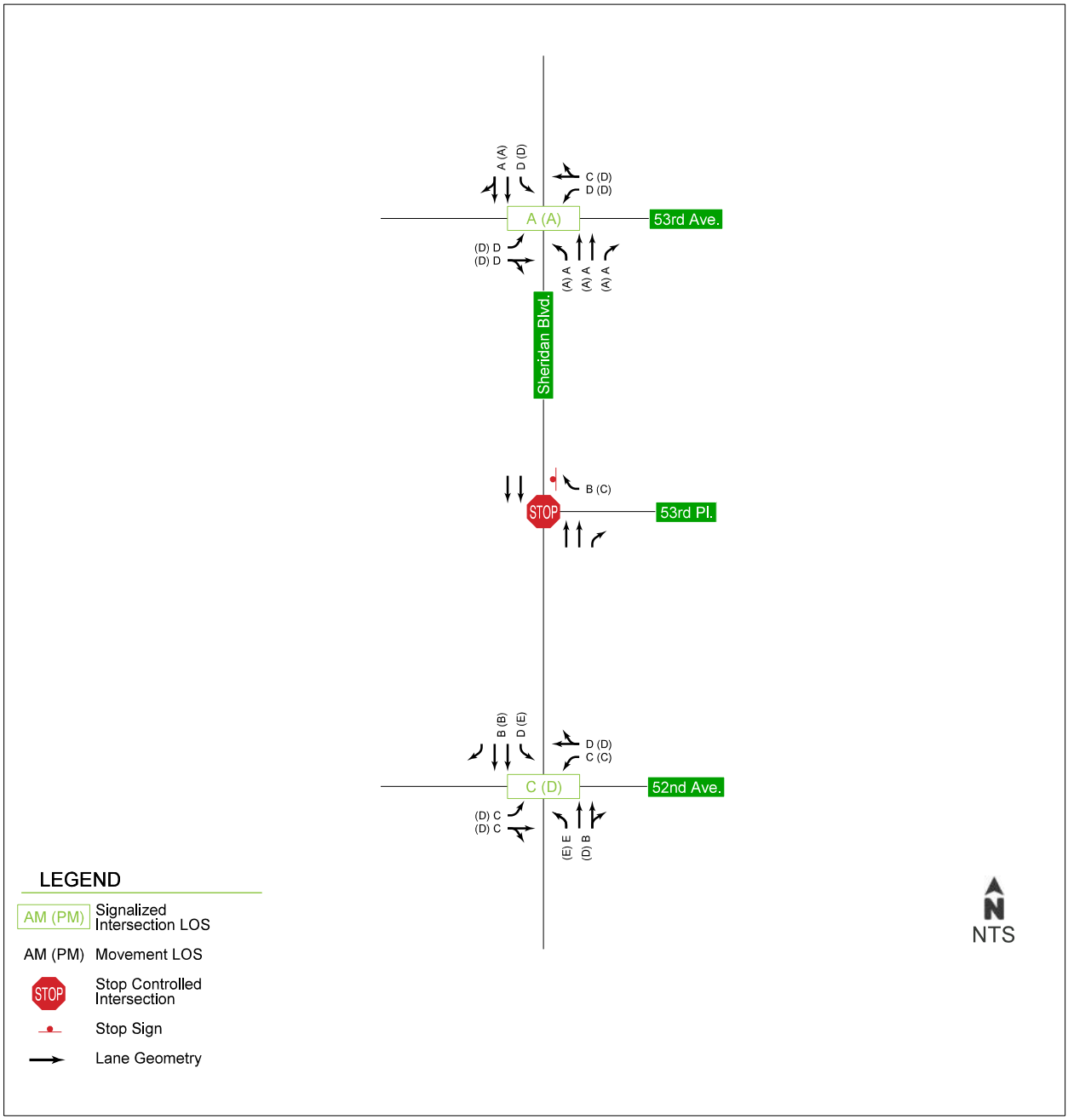
Timing signal plans were assumed to be optimized for a 90 second cycle length for the study intersections.

Unsignalized capacity analysis was also conducted for W 53rd Place. Based on the capacity analysis results, all movements at the unsignalized intersections operate at LOS C or better with acceptable queues during both peak hour periods.

The existing conditions capacity analysis summary is illustrated in **Figure 5**. Detailed results may be found in **Appendix B**.

FIGURE 5

Existing
Capacity Analysis



4.0 PROPOSED SITE CONDITIONS

Conditions with the proposed development in place were evaluated to identify any potential geometric improvements that could be attributed to the additional traffic associated with the proposed development. The proposed project is the redevelopment of a property previously operating as a short-term parking lot. The previous short-term parking lot is proposed to be consolidated and will continue in operation. The proposed Kum and Go site will consist of a 5,620 square foot convenience market with 24-vehicle fueling positions. The site also proposes the subdivision of two additional commercial lots into one long term storage facility (20,000 square feet) and one multifamily subdivision (50 homes). The proposed site plan is illustrated in **Figure 6**.

4.1 Proposed Development Trip Generation and Distribution

Trip generation was conducted for the proposed land use and the previous land use to determine the impact of potential site traffic on the roadway network. The Institute of Transportation Engineers (ITE) provides methods for estimating traffic volumes of common land uses in the Trip Generation Manual (11th Edition). The land uses that most resemble the proposed site are:

- Land Use Code 945 (Convenience Store/Gas Station)
- Land Use Code 220 (Multifamily Housing (Low-Rise))
- Land Use Code 151 (Mini-Warehouse)

Based on the *ITE Trip Generation Manual*, trip generation characteristics were developed for the proposed site. Trip generation characteristics expected for the site are shown in **Table 3**. Detailed trip generation information is provided in **Appendix A**.

Table 3. Proposed Development Trip Generation

ITE Code	Land Use	Units	Weekday	AM Peak Hour		PM Peak Hour	
				Enter	Exit	Enter	Exit
945	Convenience Store/Gas Station	24 Pumps	6,363	193	192	221	221
220	Multifamily Housing (Low-Rise)	50 Units	337	5	15	16	10
151	Mini-Warehouse	20,000 SF	29	1	1	1	2
90	Park-and-Ride Lot	78 Stalls	339	23	23	22	22
Total			**7,068**	**222**	**231**	**260**	**255**

Trip generation for the proposed site was compared to expected trip generation in addition to the previous land use which will is expected to remain. The land use that most resembles the existing use is Land Use Code 90 (Park-and-Ride Lot with Bus or Light Rail Service). Trip generation characteristics for the existing land use are shown in **Table 4**.

Table 4. Existing Land Use Trip Generation

ITE Code	Land Use	Units	Average Weekday	AM Peak Hour		PM Peak Hour	
				Enter	Exit	Enter	Exit
90	Park-and-Ride Lot	78 Stalls	339	23	23	22	22

Table 5 provides a comparison of the proposed land use to the existing land use. This land use comparison presents total development trips; trip reduction (pass-by) was not considered for this comparison.

Table 5. Land Use Comparison

Land Use	Average Weekday	AM Peak Hour			PM Peak Hour		
		Total	Enter	Exit	Total	Enter	Exit
Existing Use (To Remain)	339	46	23	23	44	22	22
Proposed Uses	6,729	407	199	208	471	238	233
NET SITE TRIPS	**+6,729**	**+407**	**+199**	**+208**	**+471**	**+238**	**+233**

Referencing **Table 5**, the proposed redevelopment of the property is expected to generate approximately 6,729 more trips during a typical weekday, 407 more AM peak hour trips and 471 more PM peak hour trips.

Pass-by trip characteristics specifically for the gasoline station were determined using data provided in the errata sheets of the *ITE Trip Generation Handbook (3rd Edition).* Pass-by trips are made by traffic already on the roadway and passing the site, versus making a direct trip to the development site (referred to as primary trips). According to the data provided in the *ITE Trip Generation Handbook,* pass-by trips account for approximately 60% of the total trips for the LUC 945 Convenience Store/Gas Station land use during the AM and 56% during the PM peak periods. Trip generation data considering pass-by trips for the proposed Kum and Go are illustrated in **Table 6.**

Table 6. Proposed LUC 945 Trip Generation Considering Pass-By

Trips	AM Peak Hour			PM Peak Hour		
	Total	Enter	Exit	Total	Enter	Exit
Primary Trips	154	77	77	194	97	97
Pass-by Trips (60% AM, 56% PM)	231	116	115	248	124	124
Total Site Trips	385	193	192	442	221	221

Trip distribution is the process for assigning trips to the study intersections. Several methodologies can be used to determine the trip distribution of a project. In many cases, a gravity model is developed, and calculations based on productions and attractions (households and jobs) are developed. For this site, the gasoline station/convenience store is the dominating trip generator, so the best method and most common process is to utilize the existing travel patterns on the adjacent roadways as business to the gasoline station/convenience store is highly

dependent on traffic local to the site. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The primary and pass-by trip distribution percentages used for this study are illustrated in **Figure 7.**

Direct access to the site is through the 53rd Place RIRO intersection. It is also possible to access the site from the intersection of W 53rd Avenue & Sheridan Boulevard and is the only method for southbound traffic to enter/exit the site, so a large percentage of the overall traffic is anticipated to use this cut through method. It is anticipated that 25 percent of entering trips will be accessing the site with a southbound left turn. The other 75 percent of entering trips will utilize the RIRO at W 53rd Place & Sheridan Boulevard. This northbound site traffic is further divided into the three legs of the intersection to the south (W 52nd Avenue & Sheridan Boulevard). The site trips entering at 52nd Avenue & Sheridan Boulevard are anticipated to be 35 percent northbound through, 20 percent eastbound left turns, and 20 percent westbound right turns. Pass-by traffic will follow the percentages laid out above for the AM and PM peak hours accordingly.

The expected peak hour site trips for the proposed development are shown in **Figure 8**. Detailed trip distribution information is provided in **Appendix A**.

4.2 Access Characteristics

The proposed redevelopment is located within an existing commercial development on the northeast quadrant of Sheridan Boulevard & W 52nd Avenue. As shown on the site plan (**Figure 6**), access to the overall development is provided at an existing access along Sheridan Boulevard at W 53rd Place. This intersection is intended to be a RIRO access to the existing commercial development and the proposed Kum & Go site. Direct access to the sites is provided via two separate driveways along W 53rd Place, at the northern border of the proposed site. As noted previously, while the access point at W 53rd Place is intended to function as RIRO, a break in the existing raised median along Sheridan Boulevard at this intersection may allow for unwarranted and potentially dangerous southbound left turns into and westbound left turns out of the site location.

4.3 Site Circulation and Connectivity

Internal site circulation and connectivity were evaluated via a desktop review of the site plan. The proposed redevelopment will alter the existing circulation of the site by reducing uncontrolled movements within the site. Two existing drive aisles currently used for access will be redeveloped with curbs to restrict irregular movement within the site. Two other drive aisles currently existing are proposed to remain. Within the gas station lot, 28 parking spaces are proposed to be included with two of those spaces signed and striped for handicapped parking. The proposed site includes a sidewalk connection to the existing sidewalk directly west of the site and two bike parking spots. No pedestrian facilities are planned along W 53rd Place. Access to the site from public roadways utilizes existing access points with no new access proposed.

FIGURE 6

Site Plan

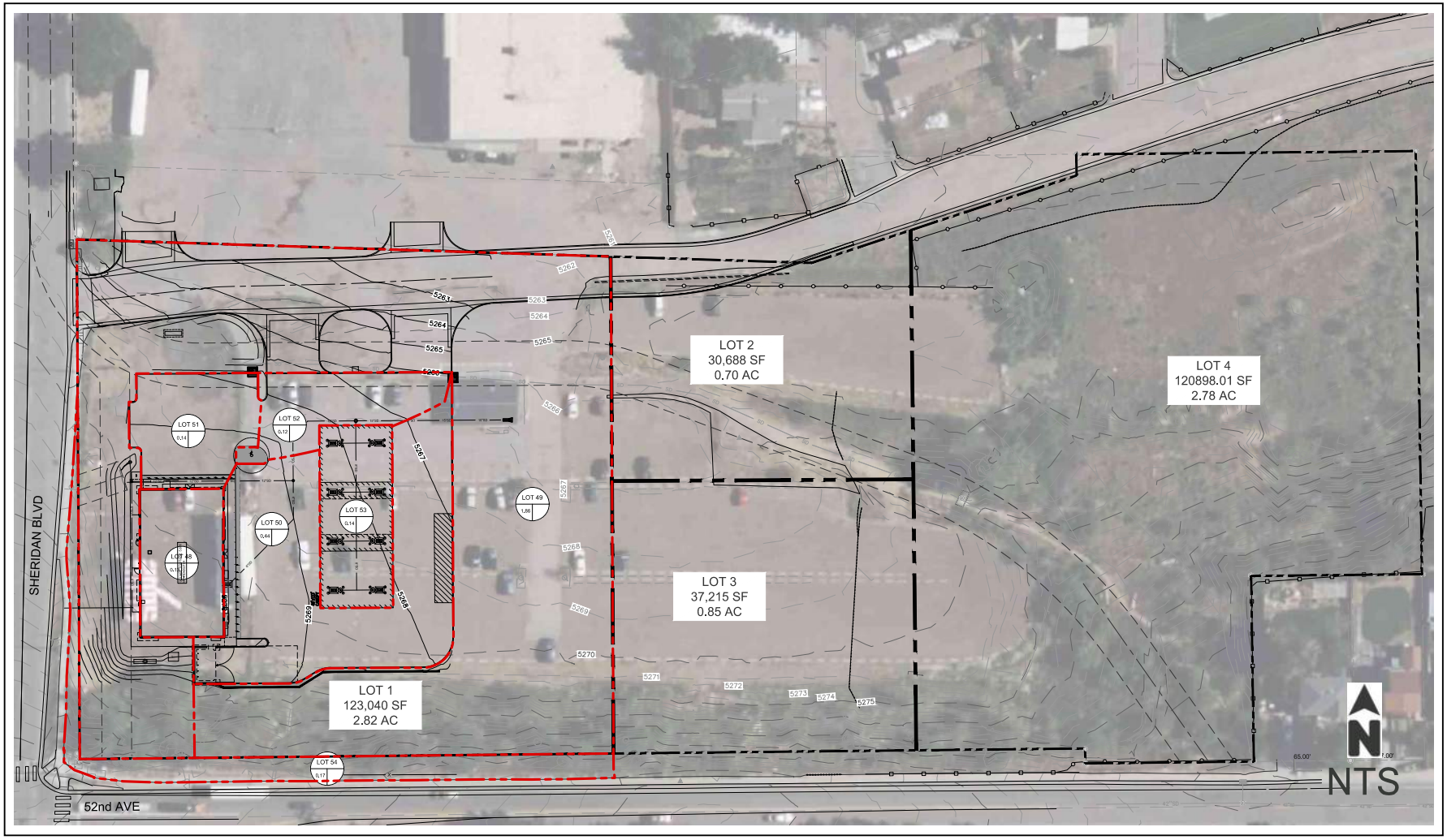


FIGURE 7
Trip Distribution

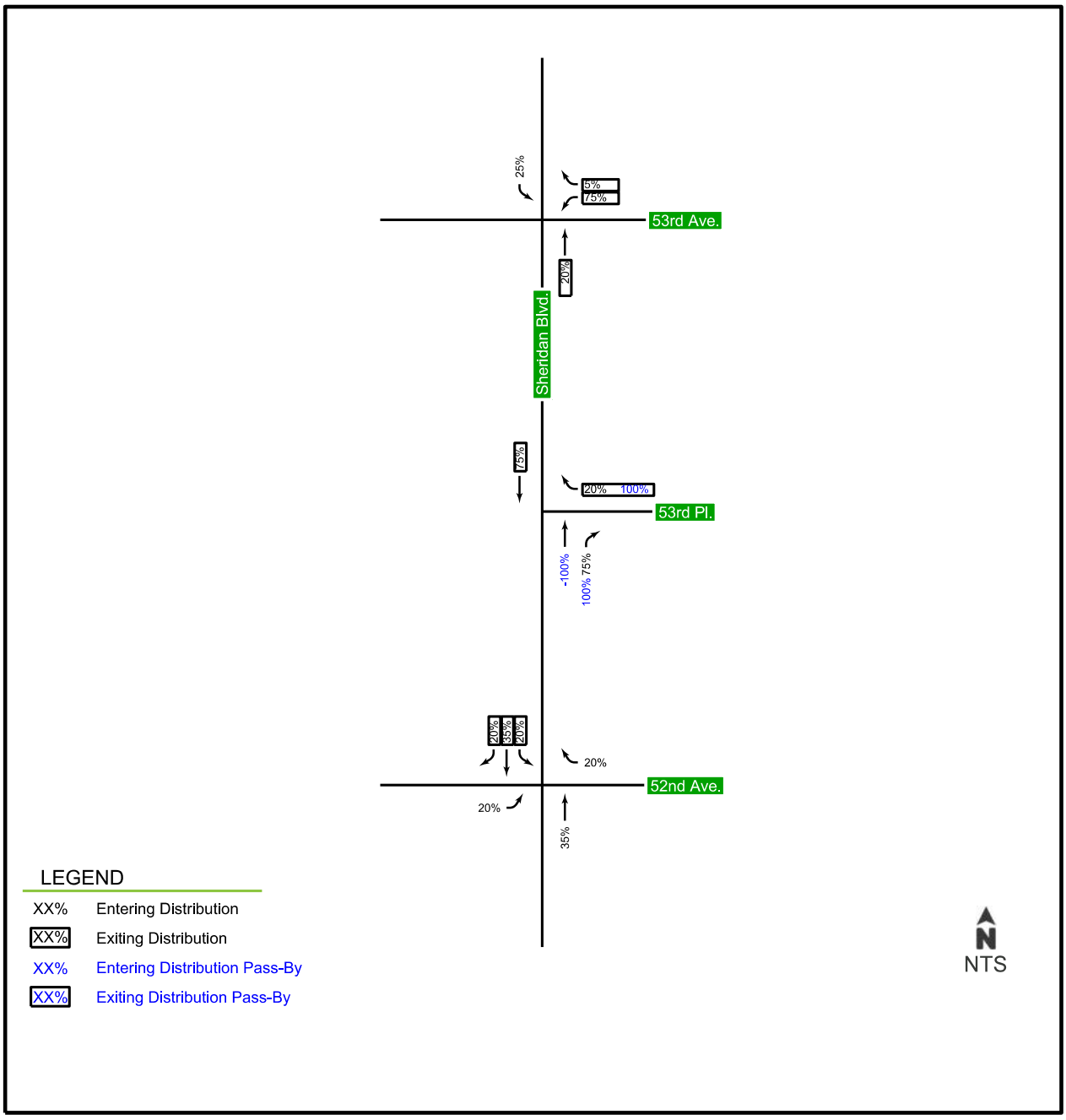
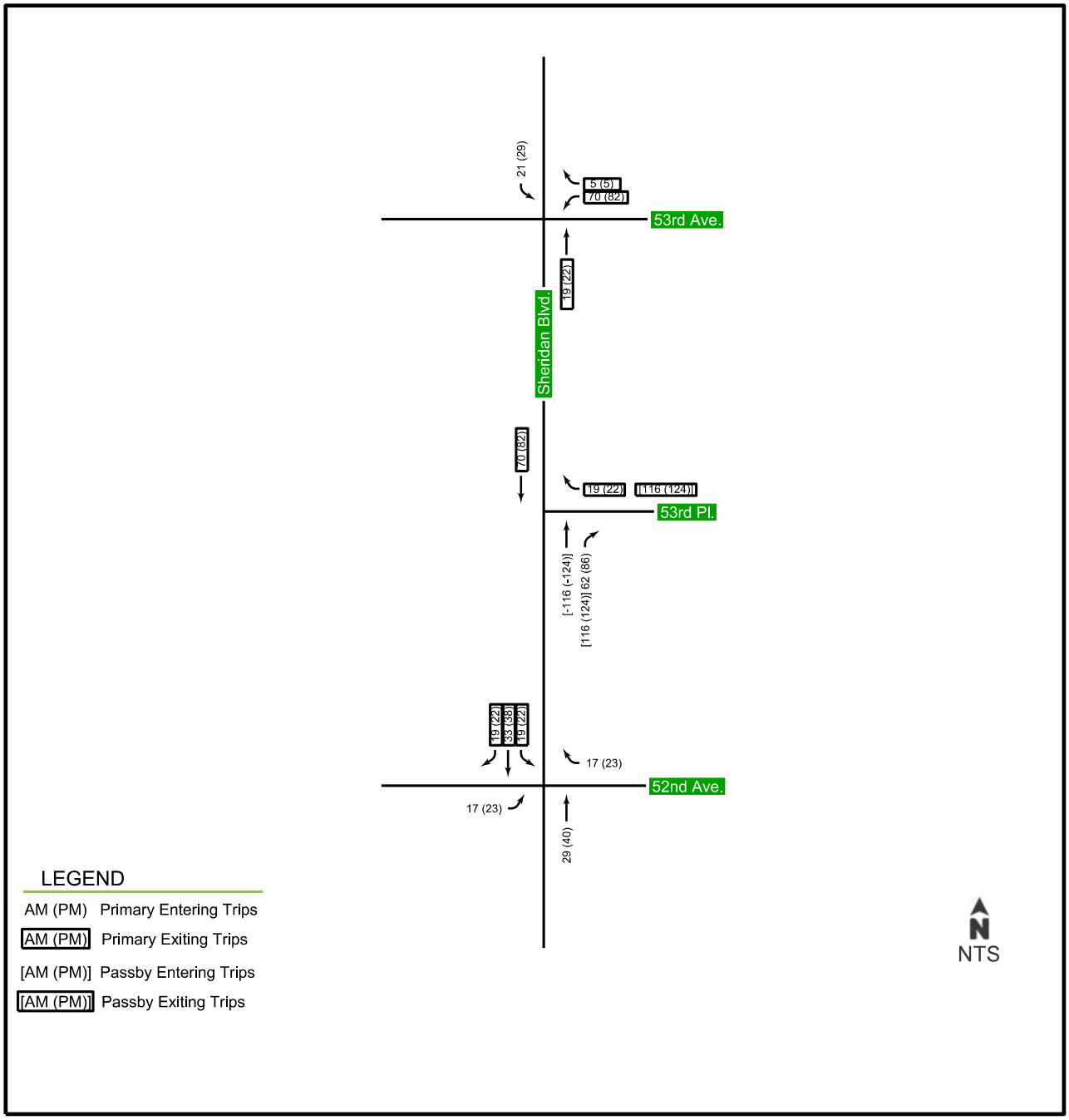


FIGURE 8
Site Trips



5. PROJECTED BACKGROUND CONDITIONS

5.1 Background Traffic

To obtain the background volumes for the horizon year in 2024 and 2042, an annual growth rate of 0.75% was applied to both Sheridan Boulevard and W 52nd Avenue. The rate was determined based off historical ADT data available from DRCOG and the CDOT Online Transportation Information System (OTIS) database. No annual growth rate was applied to W 53rd Place or W 53rd Avenue since these areas are primarily residential and fully developed. Therefore, it is reasonable to assume that no substantial growth in traffic volumes will be realized. It is assumed that no changes to the lane configuration will occur for any of these future scenarios.

Projected background volumes for 2024 and 2042 are illustrated in **Figure 9** and are further broken down in **Appendix C** and **Appendix E**. Projected background lane configuration is not expected to change. Projected background capacity analysis for 2024 and 2042 are illustrated in **Figure 10** and are further broken down in **Appendix D** and **Appendix F**.

FIGURE 9

2024 and 2042
Background Volumes

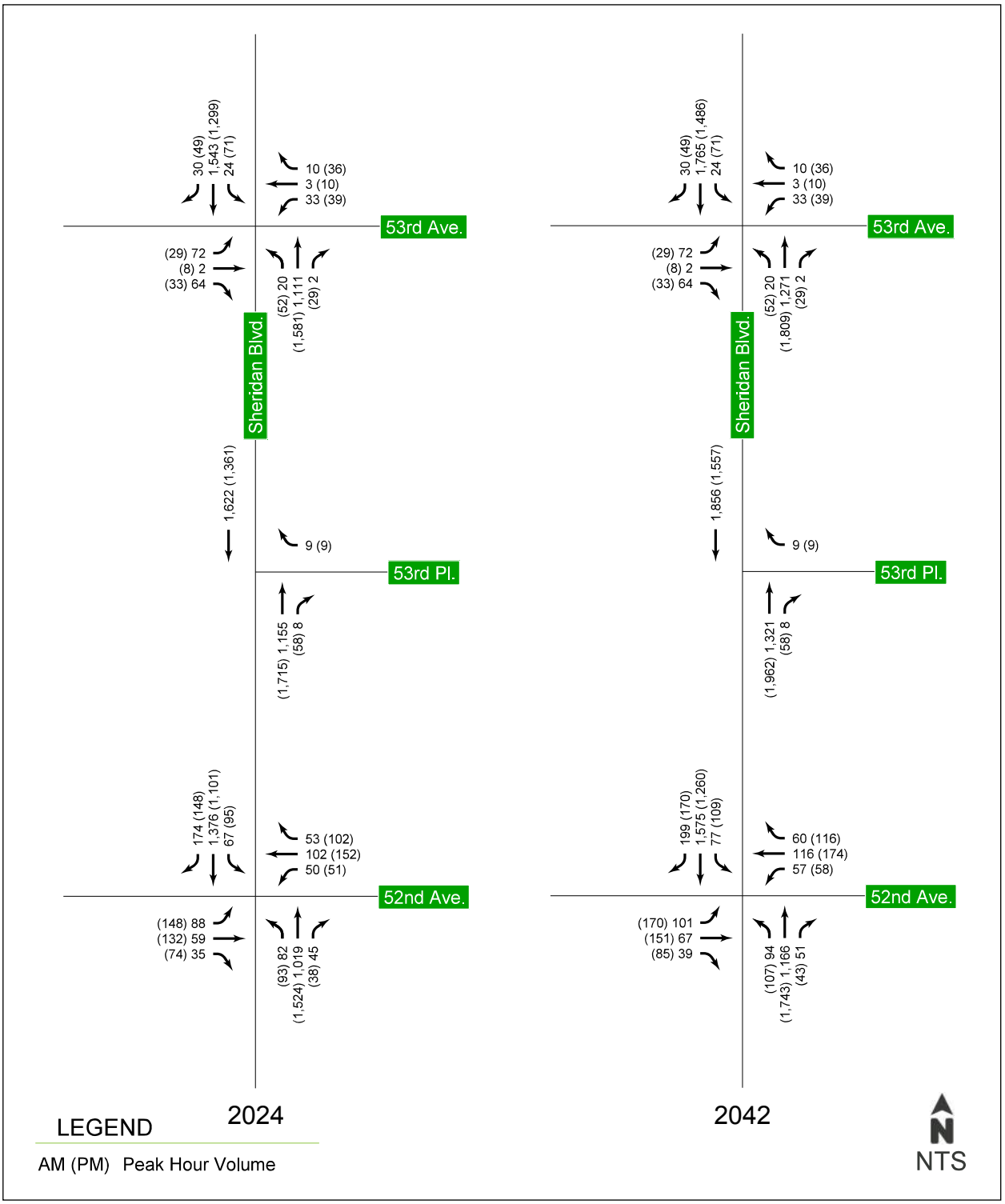
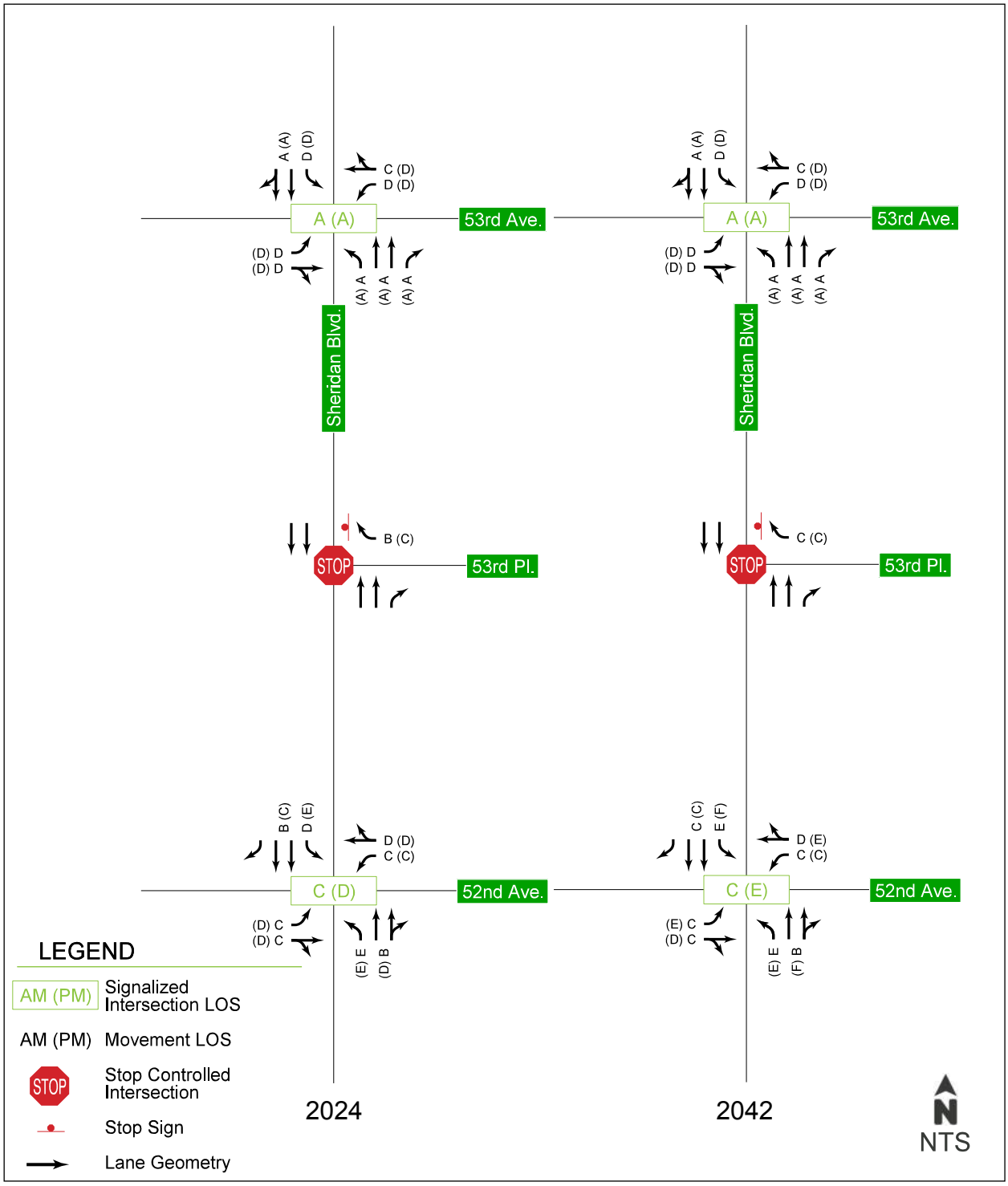


FIGURE 10

2024 and 2042
Background Capacity



5.2 Total Traffic

Expected site trips were combined with background traffic for the 2024 Background + Site and in 2042 Background + Site. These volume scenarios were generated on the trip generation, distribution, and assignment calculations discussed earlier in the report. Total Traffic Volumes for 2024 + Site and 2042 + Site are shown in **Figure 11** and are further broken down in **Appendix C** and **Appendix E**. The capacity of both the 2024 + Site and 2042 + Site is also shown in **Figure 12** and are further broken down in **Appendix D** and **Appendix F**.

FIGURE 11

2024 and 2042
Background + Site Volumes

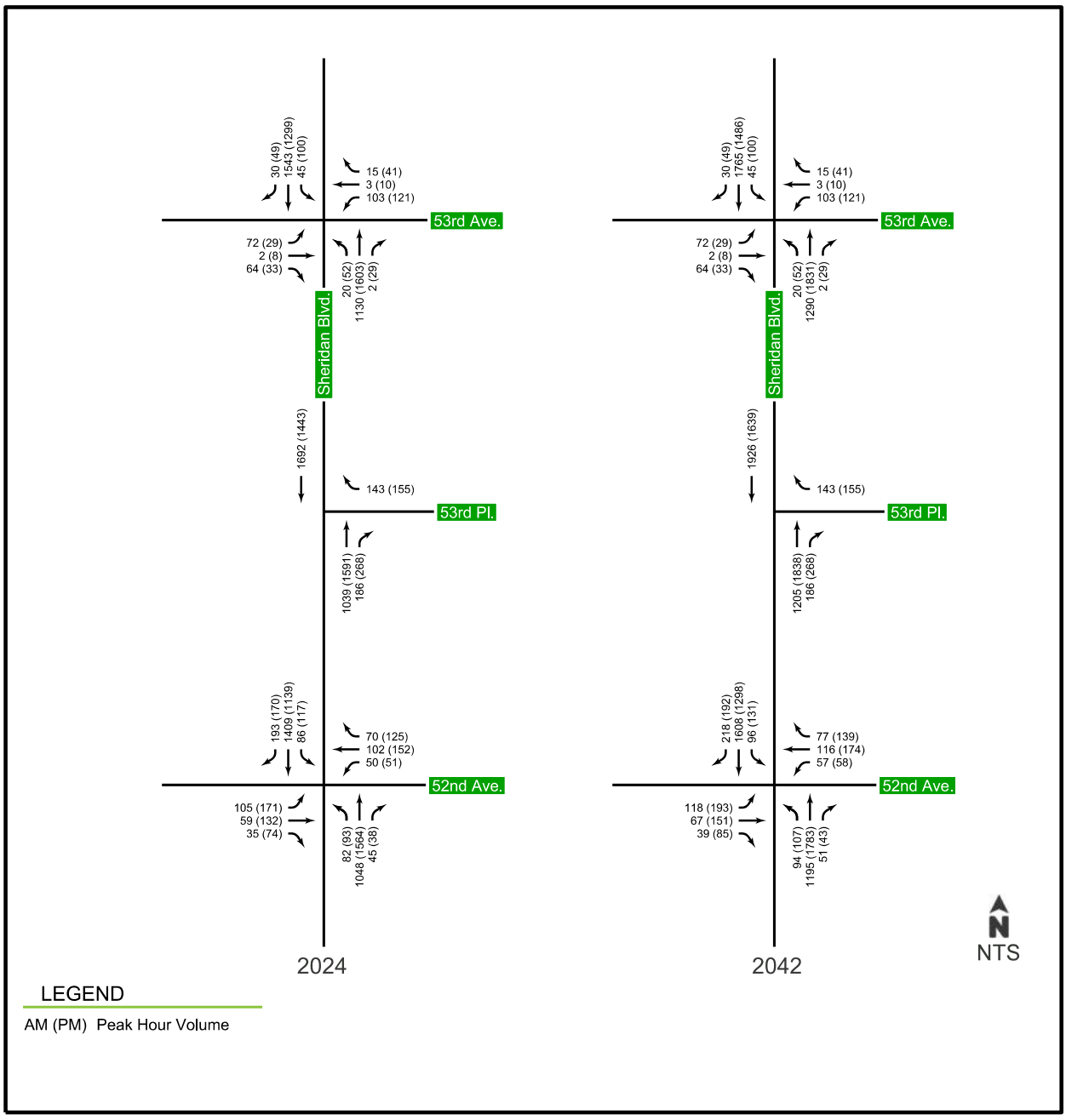
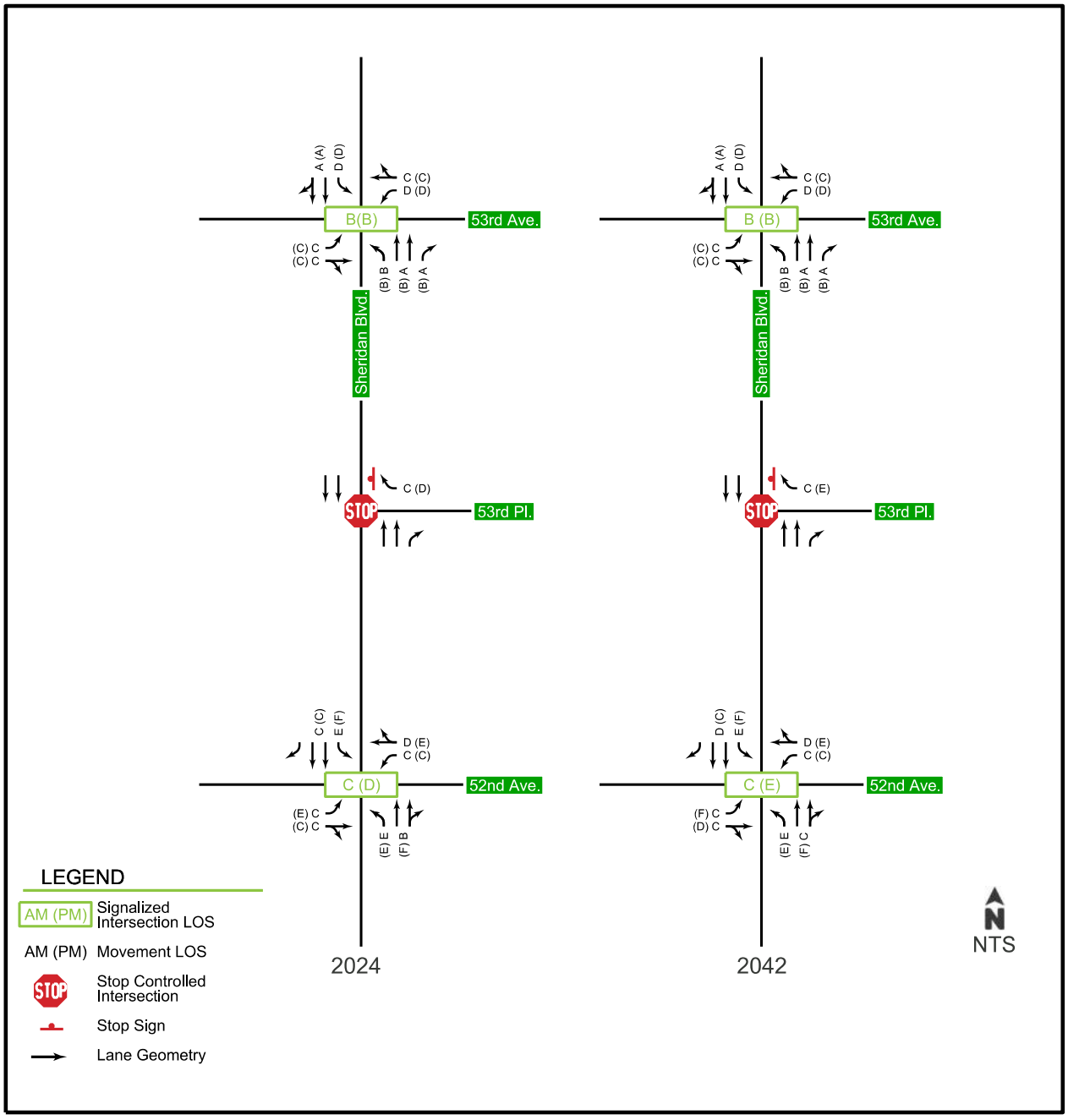


FIGURE 12

2024 and 2042
Background + Site Capacity



5.3 Projected Capacity Analysis

5.3.1 2024 Background and 2024 Background + Site Capacity Analysis

Capacity analyses for the 2024 Background and the 2024 Background + Site indicate that the two signalized intersections are impacted by the addition of the proposed site (W 52nd Avenue & Sheridan Boulevard and W 53rd Avenue & Sheridan Boulevard). The one way stop controlled intersection at W 53rd Place & Sheridan Boulevard was also impacted.

Table 7 below shows the impact of the site to W 52nd Avenue & Sheridan Boulevard. The LOS in the AM and PM is consistent. Adjusting signal timings for this intersection could decrease delay.

Table 7. 2024 W 52nd Avenue & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2024 LOS	
	Background	Background + Site
AM	C	C
PM	D	D

Table 8 below shows the impact of the site to W 53rd Avenue & Sheridan Boulevard. By adding the site, the overall delay in the AM and PM peak is expected to increase 3 seconds to 11 seconds overall delay and LOS B.

Table 8. 2024 W 53rd Avenue & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2024 LOS	
	Background	Background + Site
AM	A	B
PM	A	B

Table 9 below shows the impact of the site to W 53rd Place & Sheridan Boulevard. The LOS in the AM degrades slightly which is to be expected with the substantial increase in westbound right turn vehicles. The AM LOS still falls within the acceptable range. Similar to the AM peak, the PM peak hour LOS for westbound right goes from C to D. The PM LOS still falls within the acceptable range.

Table 9. 2024 W 53rd Place & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2024 WBR LOS	
	Background	Background + Site
AM	B	C
PM	C	D

The analysis for the 2024 Background traffic can be found in **Appendix C** and the analysis for the 2024 Background + Site can be found in **Appendix D**.

5.3.2 2042 Background and 2042 Background + Site Capacity Analysis

Capacity analyses for the 2042 Background and the 2042 Background + Site further indicate that the two signalized intersections are impacted by the addition of the proposed site (W 52nd Avenue & Sheridan Boulevard and W 53rd Avenue & Sheridan Boulevard) while also identifying that the current lane configuration will not meet projected growth. The one way stop controlled intersection at W 53rd Place & Sheridan Boulevard will also continue to be impacted.

Table 10 below shows the impact of the site to W 52nd Avenue & Sheridan Boulevard. The LOS in the AM maintains LOS C in the background condition and the plus site condition with intersection operations staying within the acceptable range. In the PM the LOS stays at LOS E in the background condition and the plus site condition. This poor LOS is caused by the intersection being over capacity. Notably in the PM peak hour the northbound through/right approach, the southbound left-turn, and the eastbound left-turn are all expected to operate at LOS F with delays estimated between 100 to 165 seconds given the assumed timing plan.

A longer cycle length and retiming may improve operations, however, a greater improvement in operations would occur if a second northbound left turn lane was constructed along with dedicated right turn lanes in each direction.

Table 10. 2042 W 52nd Avenue & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2042 LOS	
	Background	Background + Site
AM	C	C
PM	**E**	**E**

Table 11 below shows the impact of the site to W 53rd Avenue & Sheridan Boulevard. The LOS in the AM and PM is consistent with no significant LOS changes with the increased site volume or projected growth.

Table 11. 2042 W 53rd Avenue & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2042 LOS	
	Background	Background + Site
AM	A	B
PM	A	B

Table 12 on the following page shows the impact of the site to W 53rd Place & Sheridan Boulevard. The LOS in the AM stays consistent at LOS C and is expected to operate within the acceptable range. In the PM the overall expected operations are expected to degrade from LOS C to LOS E. This increase in delay is caused by the lack of gaps in the northbound traffic to allow for westbound right turns, however LOS E is still considered acceptable for individual movements along minor legs of arterial roadways.

Table 12. 2042 W 53rd Place & Sheridan Boulevard Capacity Analysis Comparison

Level-of-Service	2042 WBR LOS	
	Background	Background + Site
AM	C	C
PM	C	E

5.4 Pedestrian and Multimodal Analysis

While most of the trips to the site will be vehicles for refueling, the site is surrounded by many mobile homes, single family homes, and apartments, in addition to a variety of commercial destinations directly north of the proposed site which will result in more pedestrian trips. Additionally, a portion of the site trips will be solely to the convenience store as customers or employees, many of which are potential sources of non-motorized trips. There is an opportunity to design the site such that the ability to make these trips by other means than a single-occupancy vehicle is more desirable, safe, and comfortable. Improving the quality of multimodal transportation facilities will also encourage greater use of these modes of transportation and may thereby build potential to decrease trips from single occupancy vehicles and limit future traffic growth.

Amenities already included in the site plan, such as the location of the site itself, next to on-street bike lanes (W 52nd Avenue), public sidewalks, and transit stops from both directions on W 52nd Avenue & Sheridan Boulevard, are expected to encourage alternative transportation throughout the site. The provision of on-site pedestrian and bicycle facilities will help to tie the site into existing active transportation infrastructure. Additional site features to encourage active transportation could include offering bike amenities in the convenience store, bike parking, and providing local transit information in the convenience store.

5.5 Improvements to Mitigate Site Traffic

The intersection at W 52nd Avenue & Sheridan Boulevard is expected to operate at LOS E in the PM peak hour by 2042, which is beyond the acceptable threshold. The addition of the proposed site results in and increase in overall intersection delay from 66 seconds to 77 seconds (both LOS E). To reduce delay to an acceptable LOS, large-scale capital improvements would be required including an additional northbound left turn lane and retiming the signal. Adding dedicated right turn lanes in each direction would also reduce vehicular delay.

6.0 RECOMMENDATIONS AND CONCLUSIONS

The purpose of this study is to establish the expected traffic volumes that would be generated by a proposed site including a Kum & Go Convenience Store gas station, warehouse facility, park and go lot, and multi-family residences located on the northeast corner of the intersection at W 52nd Avenue & Sheridan Boulevard in unincorporated Adams County, Colorado between the cities of Arvada and Denver. Based on the preceding analysis, the following can be concluded:

- The project is expected to generate an additional 6,729 daily trips, 407 AM peak hour trips, and 471 PM peak hour trips.
- The movements at the intersection of W 53rd Avenue & Sheridan Boulevard are expected to operate with acceptable levels of service.
- The movements at the intersection of W 53rd Place & Sheridan Boulevard are expected to operate with acceptable levels of service.
- The movements at the intersection of W 52nd Avenue & Sheridan Boulevard operate acceptably in the 2024 opening day scenario. However, by the 2042 scenario, intersection is expected to operate at LOS E during the PM peak hour for both the background and the plus site condition which does not comply with DRCOG and Adams County traffic operation standards. The operational deficiency is primarily related to background traffic growth. Due to this, and the potential for significant impacts of intersection widening, the expansion of the intersection should be considered as part of a larger effort to address overall intersection operations. If roadway widening improvements are deemed appropriate, the following should be considered first: construction of a second northbound left turn lane and construction of an exclusive northbound right turn lane. Retiming this intersection should also take place.
- The width of the westbound through/right shared lane at 52nd Avenue & Sheridan Boulevard is currently 17 feet. If this is widened to 22 feet then this approach can be striped with separate westbound through and westbound right lanes, thus improving intersection operations at less cost than a full lane widening project.
- Pedestrian facilities are inconsistent throughout the study area beyond the site boundaries and existing pedestrian facilities along Sheridan Boulevard are not consistently ADA compliant. Uniform pedestrian facilities compliant with ADA standards are recommended.
- Due to the crossflow of traffic to and from the site through the commercial development to the north via 53rd Avenue & Sheridan Boulevard, additional signing and striping improvements should be made to improve site circulation adjacent to this intersection. Consider restricting the flow through the parking lot if queues and vehicle-pedestrian conflicts are deemed to be a problem in the future. Current site observations during the PM peak hour do not suggest that internal site navigation is an issue.

APPENDIX A

Data Collection

All Traffic Data Services

SITE 1_E - W 53RD PL EAST OF SHERIDAN BLVD

EB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	1	0	0	1
	5/10/2022 12:15:00 AM	0	0	0	0
	5/10/2022 12:30:00 AM	1	0	0	1
	5/10/2022 12:45:00 AM	1	0	0	1
	Hour	3	0	0	3
	5/10/2022 1:00:00 AM	0	0	0	0
	5/10/2022 1:15:00 AM	1	0	0	1
	5/10/2022 1:30:00 AM	1	0	0	1
	5/10/2022 1:45:00 AM	0	0	0	0
	Hour	2	0	0	2
	5/10/2022 2:00:00 AM	1	0	0	1
	5/10/2022 2:15:00 AM	0	0	0	0
	5/10/2022 2:30:00 AM	1	0	0	1
	5/10/2022 2:45:00 AM	0	0	0	0
	Hour	2	0	0	2
	5/10/2022 3:00:00 AM	0	0	0	0
	5/10/2022 3:15:00 AM	0	0	0	0
	5/10/2022 3:30:00 AM	0	0	0	0
	5/10/2022 3:45:00 AM	0	0	0	0
	Hour	0	0	0	0
	5/10/2022 4:00:00 AM	1	0	0	1
	5/10/2022 4:15:00 AM	0	0	0	0
	5/10/2022 4:30:00 AM	0	0	0	0
	5/10/2022 4:45:00 AM	0	0	0	0
	Hour	1	0	0	1
	5/10/2022 5:00:00 AM	0	0	0	0
	5/10/2022 5:15:00 AM	0	0	0	0
	5/10/2022 5:30:00 AM	0	0	0	0
	5/10/2022 5:45:00 AM	0	0	0	0
	Hour	0	0	0	0
	5/10/2022 6:00:00 AM	1	0	0	1
	5/10/2022 6:15:00 AM	0	0	0	0
	5/10/2022 6:30:00 AM	2	0	0	2
	5/10/2022 6:45:00 AM	4	0	0	4
	Hour	7	0	0	7
	5/10/2022 7:00:00 AM	3	1	0	4
	5/10/2022 7:15:00 AM	1	1	0	2
	5/10/2022 7:30:00 AM	5	0	0	5
	5/10/2022 7:45:00 AM	2	1	0	3
	Hour	11	3	0	14
	5/10/2022 8:00:00 AM	7	0	0	7
	5/10/2022 8:15:00 AM	1	0	0	1
	5/10/2022 8:30:00 AM	4	0	0	4
	5/10/2022 8:45:00 AM	6	0	0	6
	Hour	18	0	0	18
	5/10/2022 9:00:00 AM	6	0	0	6
	5/10/2022 9:15:00 AM	1	0	0	1
	5/10/2022 9:30:00 AM	4	0	0	4
	5/10/2022 9:45:00 AM	1	0	0	1
	Hour	12	0	0	12
	5/10/2022 10:00:00 AM	5	0	0	5
	5/10/2022 10:15:00 AM	7	0	0	7
	5/10/2022 10:30:00 AM	6	0	0	6
	5/10/2022 10:45:00 AM	3	0	0	3
	Hour	21	0	0	21
	5/10/2022 11:00:00 AM	6	0	0	6
	5/10/2022 11:15:00 AM	3	0	0	3
	5/10/2022 11:30:00 AM	3	0	0	3
	5/10/2022 11:45:00 AM	9	0	0	9
	Hour	21	0	0	21
	Total	98	3	0	101
	Percentage	97.0%	3.0%	0.0%	

All Traffic Data Services

SITE 1_E - W 53RD PL EAST OF SHERIDAN BLVD

EB	Time	Lights	Mediums	Trucks	Total
	5/10/2022 12:00:00 PM	5	1	0	6
	5/10/2022 12:15:00 PM	7	1	0	8
	5/10/2022 12:30:00 PM	10	0	0	10
	5/10/2022 12:45:00 PM	7	0	0	7
	Hour	29	2	0	31
	5/10/2022 1:00:00 PM	5	0	0	5
	5/10/2022 1:15:00 PM	4	0	0	4
	5/10/2022 1:30:00 PM	5	2	0	7
	5/10/2022 1:45:00 PM	14	0	1	15
	Hour	28	2	1	31
	5/10/2022 2:00:00 PM	5	0	0	5
	5/10/2022 2:15:00 PM	8	0	0	8
	5/10/2022 2:30:00 PM	6	0	0	6
	5/10/2022 2:45:00 PM	5	0	0	5
	Hour	24	0	0	24
	5/10/2022 3:00:00 PM	4	0	0	4
	5/10/2022 3:15:00 PM	12	1	0	13
	5/10/2022 3:30:00 PM	12	1	0	13
	5/10/2022 3:45:00 PM	13	0	0	13
	Hour	41	2	0	43
	5/10/2022 4:00:00 PM	20	0	1	21
	5/10/2022 4:15:00 PM	13	0	0	13
	5/10/2022 4:30:00 PM	10	0	0	10
	5/10/2022 4:45:00 PM	12	0	0	12
	Hour	55	0	1	56
	5/10/2022 5:00:00 PM	8	0	0	8
	5/10/2022 5:15:00 PM	6	0	0	6
	5/10/2022 5:30:00 PM	20	0	0	20
	5/10/2022 5:45:00 PM	11	0	0	11
	Hour	45	0	0	45
	5/10/2022 6:00:00 PM	17	0	0	17
	5/10/2022 6:15:00 PM	12	0	0	12
	5/10/2022 6:30:00 PM	18	0	0	18
	5/10/2022 6:45:00 PM	14	0	0	14
	Hour	61	0	0	61
	5/10/2022 7:00:00 PM	10	0	0	10
	5/10/2022 7:15:00 PM	9	0	0	9
	5/10/2022 7:30:00 PM	7	0	0	7
	5/10/2022 7:45:00 PM	4	0	0	4
	Hour	30	0	0	30
	5/10/2022 8:00:00 PM	7	0	0	7
	5/10/2022 8:15:00 PM	4	0	0	4
	5/10/2022 8:30:00 PM	11	0	0	11
	5/10/2022 8:45:00 PM	8	0	0	8
	Hour	30	0	0	30
	5/10/2022 9:00:00 PM	2	0	0	2
	5/10/2022 9:15:00 PM	5	0	0	5
	5/10/2022 9:30:00 PM	7	0	0	7
	5/10/2022 9:45:00 PM	4	0	0	4
	Hour	18	0	0	18
	5/10/2022 10:00:00 PM	2	0	0	2
	5/10/2022 10:15:00 PM	5	0	0	5
	5/10/2022 10:30:00 PM	2	0	0	2
	5/10/2022 10:45:00 PM	3	0	0	3
	Hour	12	0	0	12
	5/10/2022 11:00:00 PM	1	0	0	1
	5/10/2022 11:15:00 PM	0	0	0	0
	5/10/2022 11:30:00 PM	1	0	0	1
	5/10/2022 11:45:00 PM	2	0	0	2
	Hour	4	0	0	4
	Total	377	6	2	385
	Percentage	97.9%	1.6%	0.5%	
	Grand Total	475	9	2	486
	Percentage	97.7%	1.9%	0.4%	

All Traffic Data Services

SITE 1_E - W 53RD PL EAST OF SHERIDAN BLVD

WB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	0	0	0	0
	5/10/2022 12:15:00 AM	1	0	0	1
	5/10/2022 12:30:00 AM	0	0	0	0
	5/10/2022 12:45:00 AM	1	0	0	1
	Hour	2	0	0	2
	5/10/2022 1:00:00 AM	0	0	0	0
	5/10/2022 1:15:00 AM	0	0	0	0
	5/10/2022 1:30:00 AM	0	0	0	0
	5/10/2022 1:45:00 AM	0	0	0	0
	Hour	0	0	0	0
	5/10/2022 2:00:00 AM	0	0	0	0
	5/10/2022 2:15:00 AM	0	0	0	0
	5/10/2022 2:30:00 AM	0	0	0	0
	5/10/2022 2:45:00 AM	0	0	0	0
	Hour	0	0	0	0
	5/10/2022 3:00:00 AM	0	0	0	0
	5/10/2022 3:15:00 AM	0	0	0	0
	5/10/2022 3:30:00 AM	0	0	0	0
	5/10/2022 3:45:00 AM	0	0	0	0
	Hour	0	0	0	0
	5/10/2022 4:00:00 AM	0	0	0	0
	5/10/2022 4:15:00 AM	1	0	0	1
	5/10/2022 4:30:00 AM	0	0	0	0
	5/10/2022 4:45:00 AM	0	0	0	0
	Hour	1	0	0	1
	5/10/2022 5:00:00 AM	1	0	0	1
	5/10/2022 5:15:00 AM	2	0	0	2
	5/10/2022 5:30:00 AM	2	0	0	2
	5/10/2022 5:45:00 AM	1	0	0	1
	Hour	6	0	0	6
	5/10/2022 6:00:00 AM	2	0	0	2
	5/10/2022 6:15:00 AM	1	0	0	1
	5/10/2022 6:30:00 AM	4	0	0	4
	5/10/2022 6:45:00 AM	4	0	0	4
	Hour	11	0	0	11
	5/10/2022 7:00:00 AM	3	1	0	4
	5/10/2022 7:15:00 AM	1	0	0	1
	5/10/2022 7:30:00 AM	5	0	0	5
	5/10/2022 7:45:00 AM	5	0	0	5
	Hour	14	1	0	15
	5/10/2022 8:00:00 AM	3	0	0	3
	5/10/2022 8:15:00 AM	2	0	0	2
	5/10/2022 8:30:00 AM	2	0	0	2
	5/10/2022 8:45:00 AM	1	0	0	1
	Hour	8	0	0	8
	5/10/2022 9:00:00 AM	5	0	0	5
	5/10/2022 9:15:00 AM	1	0	0	1
	5/10/2022 9:30:00 AM	3	0	0	3
	5/10/2022 9:45:00 AM	2	0	0	2
	Hour	11	0	0	11
	5/10/2022 10:00:00 AM	0	1	0	1
	5/10/2022 10:15:00 AM	4	0	0	4
	5/10/2022 10:30:00 AM	0	0	0	0
	5/10/2022 10:45:00 AM	2	0	0	2
	Hour	6	1	0	7
	5/10/2022 11:00:00 AM	3	0	0	3
	5/10/2022 11:15:00 AM	2	0	0	2
	5/10/2022 11:30:00 AM	0	0	0	0
	5/10/2022 11:45:00 AM	1	0	0	1
	Hour	6	0	0	6
	Total	65	2	0	67
	Percentage	97.0%	3.0%	0.0%	

All Traffic Data Services

SITE 1_E - W 53RD PL EAST OF SHERIDAN BLVD

WB	Time	Lights	Mediums	Trucks	Total
	5/10/2022 12:00:00 PM	1	0	0	1
	5/10/2022 12:15:00 PM	2	1	0	3
	5/10/2022 12:30:00 PM	4	0	0	4
	5/10/2022 12:45:00 PM	1	0	0	1
	Hour	8	1	0	9
	5/10/2022 1:00:00 PM	1	0	0	1
	5/10/2022 1:15:00 PM	0	0	0	0
	5/10/2022 1:30:00 PM	4	0	0	4
	5/10/2022 1:45:00 PM	0	0	0	0
	Hour	5	0	0	5
	5/10/2022 2:00:00 PM	4	0	0	4
	5/10/2022 2:15:00 PM	0	0	0	0
	5/10/2022 2:30:00 PM	0	0	0	0
	5/10/2022 2:45:00 PM	3	0	0	3
	Hour	7	0	0	7
	5/10/2022 3:00:00 PM	4	0	0	4
	5/10/2022 3:15:00 PM	5	0	0	5
	5/10/2022 3:30:00 PM	2	0	0	2
	5/10/2022 3:45:00 PM	4	0	0	4
	Hour	15	0	0	15
	5/10/2022 4:00:00 PM	2	0	0	2
	5/10/2022 4:15:00 PM	2	0	0	2
	5/10/2022 4:30:00 PM	5	0	0	5
	5/10/2022 4:45:00 PM	2	0	0	2
	Hour	11	0	0	11
	5/10/2022 5:00:00 PM	1	0	0	1
	5/10/2022 5:15:00 PM	7	0	0	7
	5/10/2022 5:30:00 PM	1	0	0	1
	5/10/2022 5:45:00 PM	3	0	0	3
	Hour	12	0	0	12
	5/10/2022 6:00:00 PM	1	0	0	1
	5/10/2022 6:15:00 PM	3	0	0	3
	5/10/2022 6:30:00 PM	4	0	0	4
	5/10/2022 6:45:00 PM	1	0	0	1
	Hour	9	0	0	9
	5/10/2022 7:00:00 PM	5	0	0	5
	5/10/2022 7:15:00 PM	2	0	0	2
	5/10/2022 7:30:00 PM	4	0	0	4
	5/10/2022 7:45:00 PM	0	0	0	0
	Hour	11	0	0	11
	5/10/2022 8:00:00 PM	3	0	0	3
	5/10/2022 8:15:00 PM	1	0	0	1
	5/10/2022 8:30:00 PM	0	0	0	0
	5/10/2022 8:45:00 PM	4	0	0	4
	Hour	8	0	0	8
	5/10/2022 9:00:00 PM	2	0	0	2
	5/10/2022 9:15:00 PM	0	0	0	0
	5/10/2022 9:30:00 PM	0	0	0	0
	5/10/2022 9:45:00 PM	1	0	0	1
	Hour	3	0	0	3
	5/10/2022 10:00:00 PM	0	0	0	0
	5/10/2022 10:15:00 PM	1	0	0	1
	5/10/2022 10:30:00 PM	1	0	0	1
	5/10/2022 10:45:00 PM	1	0	0	1
	Hour	3	0	0	3
	5/10/2022 11:00:00 PM	0	0	0	0
	5/10/2022 11:15:00 PM	0	0	0	0
	5/10/2022 11:30:00 PM	0	0	0	0
	5/10/2022 11:45:00 PM	1	0	0	1
	Hour	1	0	0	1
	Total	93	1	0	94
	Percentage	98.9%	1.1%	0.0%	
	Grand Total	158	3	0	161
	Percentage	98.1%	1.9%	0.0%	

All Traffic Data Services

SITE 2_N - SHERIDAN BLVD NORTH OF W 52ND AVE

NB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	29	1	0	30
	5/10/2022 12:15:00 AM	26	0	1	27
	5/10/2022 12:30:00 AM	29	0	1	30
	5/10/2022 12:45:00 AM	27	0	0	27
	Hour	111	1	2	114
	5/10/2022 1:00:00 AM	13	1	0	14
	5/10/2022 1:15:00 AM	14	0	0	14
	5/10/2022 1:30:00 AM	13	0	0	13
	5/10/2022 1:45:00 AM	16	0	0	16
	Hour	56	1	0	57
	5/10/2022 2:00:00 AM	14	0	0	14
	5/10/2022 2:15:00 AM	8	0	0	8
	5/10/2022 2:30:00 AM	15	0	0	15
	5/10/2022 2:45:00 AM	16	0	0	16
	Hour	53	0	0	53
	5/10/2022 3:00:00 AM	5	0	1	6
	5/10/2022 3:15:00 AM	10	0	2	12
	5/10/2022 3:30:00 AM	17	0	0	17
	5/10/2022 3:45:00 AM	17	0	1	18
	Hour	49	0	4	53
	5/10/2022 4:00:00 AM	9	0	0	9
	5/10/2022 4:15:00 AM	13	0	0	13
	5/10/2022 4:30:00 AM	32	0	0	32
	5/10/2022 4:45:00 AM	36	0	0	36
	Hour	90	0	0	90
	5/10/2022 5:00:00 AM	39	2	1	42
	5/10/2022 5:15:00 AM	44	1	1	46
	5/10/2022 5:30:00 AM	63	4	0	67
	5/10/2022 5:45:00 AM	94	0	0	94
	Hour	240	7	2	249
	5/10/2022 6:00:00 AM	113	4	0	117
	5/10/2022 6:15:00 AM	141	2	4	147
	5/10/2022 6:30:00 AM	183	7	3	193
	5/10/2022 6:45:00 AM	213	6	6	225
	Hour	650	19	13	682
	5/10/2022 7:00:00 AM	220	4	1	225
	5/10/2022 7:15:00 AM	261	4	2	267
	5/10/2022 7:30:00 AM	283	7	2	292
	5/10/2022 7:45:00 AM	290	7	2	299
	Hour	1054	22	7	1083
	5/10/2022 8:00:00 AM	255	12	3	270
	5/10/2022 8:15:00 AM	269	11	7	287
	5/10/2022 8:30:00 AM	230	16	2	248
	5/10/2022 8:45:00 AM	251	4	6	261
	Hour	1005	43	18	1066
	5/10/2022 9:00:00 AM	195	13	4	212
	5/10/2022 9:15:00 AM	228	11	3	242
	5/10/2022 9:30:00 AM	219	9	3	231
	5/10/2022 9:45:00 AM	188	10	2	200
	Hour	830	43	12	885
	5/10/2022 10:00:00 AM	176	8	3	187
	5/10/2022 10:15:00 AM	197	13	1	211
	5/10/2022 10:30:00 AM	210	9	3	222
	5/10/2022 10:45:00 AM	237	9	4	250
	Hour	820	39	11	870
	5/10/2022 11:00:00 AM	208	10	3	221
	5/10/2022 11:15:00 AM	219	12	2	233
	5/10/2022 11:30:00 AM	251	7	4	262
	5/10/2022 11:45:00 AM	260	8	5	273
	Hour	938	37	14	989
	Total	5,896	212	83	6,191
	Percentage	95.2%	3.4%	1.3%	

All Traffic Data Services

SITE 2_N - SHERIDAN BLVD NORTH OF W 52ND AVE

NB Time	Lights	Mediums	Trucks	Total
5/10/2022 12:00:00 PM	228	15	7	250
5/10/2022 12:15:00 PM	262	11	5	278
5/10/2022 12:30:00 PM	241	9	3	253
5/10/2022 12:45:00 PM	240	10	3	253
Hour	971	45	18	1034
5/10/2022 1:00:00 PM	232	11	7	250
5/10/2022 1:15:00 PM	202	3	5	210
5/10/2022 1:30:00 PM	284	16	8	308
5/10/2022 1:45:00 PM	279	9	4	292
Hour	997	39	24	1060
5/10/2022 2:00:00 PM	267	2	5	274
5/10/2022 2:15:00 PM	293	11	6	310
5/10/2022 2:30:00 PM	296	8	2	306
5/10/2022 2:45:00 PM	356	7	2	365
Hour	1212	28	15	1255
5/10/2022 3:00:00 PM	375	19	5	399
5/10/2022 3:15:00 PM	344	9	7	360
5/10/2022 3:30:00 PM	410	13	2	425
5/10/2022 3:45:00 PM	374	7	2	383
Hour	1503	48	16	1567
5/10/2022 4:00:00 PM	403	6	3	412
5/10/2022 4:15:00 PM	411	5	2	418
5/10/2022 4:30:00 PM	429	5	1	435
5/10/2022 4:45:00 PM	377	4	2	383
Hour	1620	20	8	1648
5/10/2022 5:00:00 PM	480	4	0	484
5/10/2022 5:15:00 PM	404	6	2	412
5/10/2022 5:30:00 PM	459	4	1	464
5/10/2022 5:45:00 PM	398	4	1	403
Hour	1741	18	4	1763
5/10/2022 6:00:00 PM	393	6	1	400
5/10/2022 6:15:00 PM	355	2	0	357
5/10/2022 6:30:00 PM	348	2	0	350
5/10/2022 6:45:00 PM	304	2	0	306
Hour	1400	12	1	1413
5/10/2022 7:00:00 PM	279	3	0	282
5/10/2022 7:15:00 PM	235	1	0	236
5/10/2022 7:30:00 PM	203	2	0	205
5/10/2022 7:45:00 PM	197	1	0	198
Hour	914	7	0	921
5/10/2022 8:00:00 PM	224	2	0	226
5/10/2022 8:15:00 PM	205	0	0	205
5/10/2022 8:30:00 PM	186	0	0	186
5/10/2022 8:45:00 PM	170	2	0	172
Hour	785	4	0	789
5/10/2022 9:00:00 PM	165	1	0	166
5/10/2022 9:15:00 PM	149	0	0	149
5/10/2022 9:30:00 PM	122	0	0	122
5/10/2022 9:45:00 PM	126	0	0	126
Hour	562	1	0	563
5/10/2022 10:00:00 PM	118	1	0	119
5/10/2022 10:15:00 PM	104	0	0	104
5/10/2022 10:30:00 PM	88	0	0	88
5/10/2022 10:45:00 PM	85	0	0	85
Hour	395	1	0	396
5/10/2022 11:00:00 PM	78	2	0	80
5/10/2022 11:15:00 PM	60	0	0	60
5/10/2022 11:30:00 PM	48	0	0	48
5/10/2022 11:45:00 PM	35	0	1	36
Hour	221	2	1	224
Total	12,321	225	87	12,633
Percentage	97.5%	1.8%	0.7%	
Grand Total	18,217	437	170	18,824
Percentage	96.8%	2.3%	0.9%	

All Traffic Data Services

SITE 2_N - SHERIDAN BLVD NORTH OF W 52ND AVE

SB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	17	2	1	20
	5/10/2022 12:15:00 AM	21	0	0	21
	5/10/2022 12:30:00 AM	18	0	0	18
	5/10/2022 12:45:00 AM	21	1	0	22
	Hour	77	3	1	81
	5/10/2022 1:00:00 AM	13	0	0	13
	5/10/2022 1:15:00 AM	12	1	0	13
	5/10/2022 1:30:00 AM	7	0	0	7
	5/10/2022 1:45:00 AM	15	1	0	16
	Hour	47	2	0	49
	5/10/2022 2:00:00 AM	10	0	0	10
	5/10/2022 2:15:00 AM	8	0	0	8
	5/10/2022 2:30:00 AM	5	0	0	5
	5/10/2022 2:45:00 AM	8	0	1	9
	Hour	31	0	1	32
	5/10/2022 3:00:00 AM	5	1	0	6
	5/10/2022 3:15:00 AM	7	0	0	7
	5/10/2022 3:30:00 AM	10	0	0	10
	5/10/2022 3:45:00 AM	15	0	0	15
	Hour	37	1	0	38
	5/10/2022 4:00:00 AM	15	0	0	15
	5/10/2022 4:15:00 AM	19	0	0	19
	5/10/2022 4:30:00 AM	31	1	0	32
	5/10/2022 4:45:00 AM	34	1	0	35
	Hour	99	2	0	101
	5/10/2022 5:00:00 AM	55	0	0	55
	5/10/2022 5:15:00 AM	66	3	0	69
	5/10/2022 5:30:00 AM	111	5	0	116
	5/10/2022 5:45:00 AM	148	5	2	155
	Hour	380	13	2	395
	5/10/2022 6:00:00 AM	145	7	0	152
	5/10/2022 6:15:00 AM	229	11	0	240
	5/10/2022 6:30:00 AM	282	6	2	290
	5/10/2022 6:45:00 AM	310	12	2	324
	Hour	966	36	4	1006
	5/10/2022 7:00:00 AM	255	3	0	258
	5/10/2022 7:15:00 AM	366	9	2	377
	5/10/2022 7:30:00 AM	358	11	0	369
	5/10/2022 7:45:00 AM	367	8	0	375
	Hour	1346	31	2	1379
	5/10/2022 8:00:00 AM	381	6	7	394
	5/10/2022 8:15:00 AM	349	5	1	355
	5/10/2022 8:30:00 AM	347	9	5	361
	5/10/2022 8:45:00 AM	316	13	2	331
	Hour	1393	33	15	1441
	5/10/2022 9:00:00 AM	228	7	3	238
	5/10/2022 9:15:00 AM	234	4	1	239
	5/10/2022 9:30:00 AM	210	9	1	220
	5/10/2022 9:45:00 AM	233	8	5	246
	Hour	905	28	10	943
	5/10/2022 10:00:00 AM	216	6	4	226
	5/10/2022 10:15:00 AM	238	11	4	253
	5/10/2022 10:30:00 AM	207	4	3	214
	5/10/2022 10:45:00 AM	240	7	4	251
	Hour	901	28	15	944
	5/10/2022 11:00:00 AM	223	9	5	237
	5/10/2022 11:15:00 AM	220	15	1	236
	5/10/2022 11:30:00 AM	239	3	1	243
	5/10/2022 11:45:00 AM	249	12	4	265
	Hour	931	39	11	981
	Total	7,113	216	61	7,390
	Percentage	96.3%	2.9%	0.8%	

All Traffic Data Services

SITE 2_N - SHERIDAN BLVD NORTH OF W 52ND AVE

SB	Time	Lights	Mediums	Trucks	Total
	5/10/2022 12:00:00 PM	201	2	6	209
	5/10/2022 12:15:00 PM	203	12	5	220
	5/10/2022 12:30:00 PM	222	9	2	233
	5/10/2022 12:45:00 PM	225	10	1	236
	Hour	851	33	14	898
	5/10/2022 1:00:00 PM	232	10	3	245
	5/10/2022 1:15:00 PM	230	6	2	238
	5/10/2022 1:30:00 PM	201	5	3	209
	5/10/2022 1:45:00 PM	196	7	2	205
	Hour	859	28	10	897
	5/10/2022 2:00:00 PM	214	7	10	231
	5/10/2022 2:15:00 PM	251	8	3	262
	5/10/2022 2:30:00 PM	259	4	3	266
	5/10/2022 2:45:00 PM	255	9	3	267
	Hour	979	28	19	1026
	5/10/2022 3:00:00 PM	241	7	4	252
	5/10/2022 3:15:00 PM	292	8	1	301
	5/10/2022 3:30:00 PM	332	6	5	343
	5/10/2022 3:45:00 PM	373	7	0	380
	Hour	1238	28	10	1276
	5/10/2022 4:00:00 PM	395	9	1	405
	5/10/2022 4:15:00 PM	355	4	2	361
	5/10/2022 4:30:00 PM	381	3	2	386
	5/10/2022 4:45:00 PM	349	1	0	350
	Hour	1480	17	5	1502
	5/10/2022 5:00:00 PM	354	1	0	355
	5/10/2022 5:15:00 PM	352	3	0	355
	5/10/2022 5:30:00 PM	408	4	3	415
	5/10/2022 5:45:00 PM	315	3	0	318
	Hour	1429	11	3	1443
	5/10/2022 6:00:00 PM	309	2	0	311
	5/10/2022 6:15:00 PM	302	2	0	304
	5/10/2022 6:30:00 PM	286	1	0	287
	5/10/2022 6:45:00 PM	219	3	0	222
	Hour	1116	8	0	1124
	5/10/2022 7:00:00 PM	213	1	1	215
	5/10/2022 7:15:00 PM	211	0	0	211
	5/10/2022 7:30:00 PM	169	1	0	170
	5/10/2022 7:45:00 PM	167	1	0	168
	Hour	760	3	1	764
	5/10/2022 8:00:00 PM	147	1	0	148
	5/10/2022 8:15:00 PM	182	2	0	184
	5/10/2022 8:30:00 PM	139	0	0	139
	5/10/2022 8:45:00 PM	161	0	0	161
	Hour	629	3	0	632
	5/10/2022 9:00:00 PM	125	1	0	126
	5/10/2022 9:15:00 PM	114	3	0	117
	5/10/2022 9:30:00 PM	119	0	0	119
	5/10/2022 9:45:00 PM	95	0	0	95
	Hour	453	4	0	457
	5/10/2022 10:00:00 PM	65	0	0	65
	5/10/2022 10:15:00 PM	82	0	0	82
	5/10/2022 10:30:00 PM	47	1	0	48
	5/10/2022 10:45:00 PM	40	0	0	40
	Hour	234	1	0	235
	5/10/2022 11:00:00 PM	51	0	0	51
	5/10/2022 11:15:00 PM	30	1	0	31
	5/10/2022 11:30:00 PM	34	0	0	34
	5/10/2022 11:45:00 PM	27	0	2	29
	Hour	142	1	2	145
	Total	10,170	165	64	10,399
	Percentage	97.8%	1.6%	0.6%	
	Grand Total	17,283	381	125	17,789
	Percentage	97.2%	2.1%	0.7%	

All Traffic Data Services

SITE 2_E - W 52ND AVE EAST OF SHERIDAN BLVD

EB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	7	0	0	7
	5/10/2022 12:15:00 AM	5	0	0	5
	5/10/2022 12:30:00 AM	0	0	0	0
	5/10/2022 12:45:00 AM	3	0	0	3
	Hour	15	0	0	15
	5/10/2022 1:00:00 AM	1	0	0	1
	5/10/2022 1:15:00 AM	4	0	0	4
	5/10/2022 1:30:00 AM	3	0	0	3
	5/10/2022 1:45:00 AM	0	0	0	0
	Hour	8	0	0	8
	5/10/2022 2:00:00 AM	2	0	0	2
	5/10/2022 2:15:00 AM	4	0	0	4
	5/10/2022 2:30:00 AM	0	0	0	0
	5/10/2022 2:45:00 AM	1	0	0	1
	Hour	7	0	0	7
	5/10/2022 3:00:00 AM	1	0	0	1
	5/10/2022 3:15:00 AM	0	0	0	0
	5/10/2022 3:30:00 AM	0	0	1	1
	5/10/2022 3:45:00 AM	1	0	0	1
	Hour	2	0	1	3
	5/10/2022 4:00:00 AM	4	0	0	4
	5/10/2022 4:15:00 AM	3	0	0	3
	5/10/2022 4:30:00 AM	3	0	0	3
	5/10/2022 4:45:00 AM	4	0	0	4
	Hour	14	0	0	14
	5/10/2022 5:00:00 AM	3	0	0	3
	5/10/2022 5:15:00 AM	5	1	0	6
	5/10/2022 5:30:00 AM	7	0	0	7
	5/10/2022 5:45:00 AM	7	0	0	7
	Hour	22	1	0	23
	5/10/2022 6:00:00 AM	10	0	0	10
	5/10/2022 6:15:00 AM	16	1	0	17
	5/10/2022 6:30:00 AM	17	0	0	17
	5/10/2022 6:45:00 AM	17	1	0	18
	Hour	60	2	0	62
	5/10/2022 7:00:00 AM	18	0	0	18
	5/10/2022 7:15:00 AM	26	2	0	28
	5/10/2022 7:30:00 AM	23	0	0	23
	5/10/2022 7:45:00 AM	51	1	0	52
	Hour	118	3	0	121
	5/10/2022 8:00:00 AM	39	0	0	39
	5/10/2022 8:15:00 AM	45	1	0	46
	5/10/2022 8:30:00 AM	38	2	0	40
	5/10/2022 8:45:00 AM	136	1	0	137
	Hour	258	4	0	262
	5/10/2022 9:00:00 AM	39	1	0	40
	5/10/2022 9:15:00 AM	27	2	0	29
	5/10/2022 9:30:00 AM	28	0	0	28
	5/10/2022 9:45:00 AM	23	1	0	24
	Hour	117	4	0	121
	5/10/2022 10:00:00 AM	38	2	0	40
	5/10/2022 10:15:00 AM	27	1	0	28
	5/10/2022 10:30:00 AM	38	1	0	39
	5/10/2022 10:45:00 AM	51	2	0	53
	Hour	154	6	0	160
	5/10/2022 11:00:00 AM	36	1	0	37
	5/10/2022 11:15:00 AM	26	2	0	28
	5/10/2022 11:30:00 AM	51	0	0	51
	5/10/2022 11:45:00 AM	40	1	0	41
	Hour	153	4	0	157
	Total	928	24	1	953
	Percentage	97.4%	2.5%	0.1%	

All Traffic Data Services

SITE 2_E - W 52ND AVE EAST OF SHERIDAN BLVD

EB	Time	Lights	Mediums	Trucks	Total
	5/10/2022 12:00:00 PM	52	0	0	52
	5/10/2022 12:15:00 PM	53	2	0	55
	5/10/2022 12:30:00 PM	48	1	0	49
	5/10/2022 12:45:00 PM	45	1	0	46
	Hour	198	4	0	202
	5/10/2022 1:00:00 PM	49	0	0	49
	5/10/2022 1:15:00 PM	49	1	0	50
	5/10/2022 1:30:00 PM	58	0	0	58
	5/10/2022 1:45:00 PM	35	2	0	37
	Hour	191	3	0	194
	5/10/2022 2:00:00 PM	54	1	0	55
	5/10/2022 2:15:00 PM	50	3	0	53
	5/10/2022 2:30:00 PM	64	1	0	65
	5/10/2022 2:45:00 PM	61	1	0	62
	Hour	229	6	0	235
	5/10/2022 3:00:00 PM	39	0	0	39
	5/10/2022 3:15:00 PM	71	0	0	71
	5/10/2022 3:30:00 PM	64	1	0	65
	5/10/2022 3:45:00 PM	84	1	0	85
	Hour	258	2	0	260
	5/10/2022 4:00:00 PM	68	0	0	68
	5/10/2022 4:15:00 PM	66	2	0	68
	5/10/2022 4:30:00 PM	68	1	0	69
	5/10/2022 4:45:00 PM	68	1	0	69
	Hour	270	4	0	274
	5/10/2022 5:00:00 PM	61	0	0	61
	5/10/2022 5:15:00 PM	71	1	0	72
	5/10/2022 5:30:00 PM	64	2	1	67
	5/10/2022 5:45:00 PM	65	1	0	66
	Hour	261	4	1	266
	5/10/2022 6:00:00 PM	50	0	0	50
	5/10/2022 6:15:00 PM	59	1	0	60
	5/10/2022 6:30:00 PM	45	0	0	45
	5/10/2022 6:45:00 PM	71	3	0	74
	Hour	225	4	0	229
	5/10/2022 7:00:00 PM	53	0	0	53
	5/10/2022 7:15:00 PM	35	0	0	35
	5/10/2022 7:30:00 PM	28	0	0	28
	5/10/2022 7:45:00 PM	33	0	0	33
	Hour	149	0	0	149
	5/10/2022 8:00:00 PM	33	0	0	33
	5/10/2022 8:15:00 PM	37	0	0	37
	5/10/2022 8:30:00 PM	45	0	0	45
	5/10/2022 8:45:00 PM	35	0	0	35
	Hour	150	0	0	150
	5/10/2022 9:00:00 PM	25	1	0	26
	5/10/2022 9:15:00 PM	21	0	0	21
	5/10/2022 9:30:00 PM	21	0	0	21
	5/10/2022 9:45:00 PM	17	0	0	17
	Hour	84	1	0	85
	5/10/2022 10:00:00 PM	16	1	0	17
	5/10/2022 10:15:00 PM	20	0	0	20
	5/10/2022 10:30:00 PM	17	0	0	17
	5/10/2022 10:45:00 PM	10	0	0	10
	Hour	63	1	0	64
	5/10/2022 11:00:00 PM	7	1	0	8
	5/10/2022 11:15:00 PM	9	0	0	9
	5/10/2022 11:30:00 PM	8	0	0	8
	5/10/2022 11:45:00 PM	10	0	0	10
	Hour	34	1	0	35
	Total	2,112	30	1	2,143
	Percentage	98.6%	1.4%	0.0%	
	Grand Total	3,040	54	2	3,096
	Percentage	98.2%	1.7%	0.1%	

All Traffic Data Services

SITE 2_E - W 52ND AVE EAST OF SHERIDAN BLVD

WB	Time	Lights	Mediums	Trucks	Total
	5/10/2022	3	0	0	3
	5/10/2022 12:15:00 AM	3	1	0	4
	5/10/2022 12:30:00 AM	3	0	0	3
	5/10/2022 12:45:00 AM	0	0	0	0
	Hour	9	1	0	10
	5/10/2022 1:00:00 AM	3	0	0	3
	5/10/2022 1:15:00 AM	1	0	0	1
	5/10/2022 1:30:00 AM	3	0	0	3
	5/10/2022 1:45:00 AM	1	0	0	1
	Hour	8	0	0	8
	5/10/2022 2:00:00 AM	1	0	0	1
	5/10/2022 2:15:00 AM	1	0	0	1
	5/10/2022 2:30:00 AM	2	0	0	2
	5/10/2022 2:45:00 AM	5	0	0	5
	Hour	9	0	0	9
	5/10/2022 3:00:00 AM	1	0	0	1
	5/10/2022 3:15:00 AM	0	0	0	0
	5/10/2022 3:30:00 AM	1	0	0	1
	5/10/2022 3:45:00 AM	2	0	0	2
	Hour	4	0	0	4
	5/10/2022 4:00:00 AM	2	0	0	2
	5/10/2022 4:15:00 AM	3	0	0	3
	5/10/2022 4:30:00 AM	0	0	0	0
	5/10/2022 4:45:00 AM	5	0	0	5
	Hour	10	0	0	10
	5/10/2022 5:00:00 AM	9	0	0	9
	5/10/2022 5:15:00 AM	5	1	0	6
	5/10/2022 5:30:00 AM	11	0	0	11
	5/10/2022 5:45:00 AM	18	0	0	18
	Hour	43	1	0	44
	5/10/2022 6:00:00 AM	18	1	0	19
	5/10/2022 6:15:00 AM	15	0	0	15
	5/10/2022 6:30:00 AM	26	2	0	28
	5/10/2022 6:45:00 AM	28	1	0	29
	Hour	87	4	0	91
	5/10/2022 7:00:00 AM	30	2	0	32
	5/10/2022 7:15:00 AM	53	2	0	55
	5/10/2022 7:30:00 AM	61	1	0	62
	5/10/2022 7:45:00 AM	56	0	0	56
	Hour	200	5	0	205
	5/10/2022 8:00:00 AM	46	2	1	49
	5/10/2022 8:15:00 AM	58	1	0	59
	5/10/2022 8:30:00 AM	35	3	0	38
	5/10/2022 8:45:00 AM	41	1	1	43
	Hour	180	7	2	189
	5/10/2022 9:00:00 AM	31	4	0	35
	5/10/2022 9:15:00 AM	39	0	0	39
	5/10/2022 9:30:00 AM	44	4	1	49
	5/10/2022 9:45:00 AM	41	0	0	41
	Hour	155	8	1	164
	5/10/2022 10:00:00 AM	48	1	1	50
	5/10/2022 10:15:00 AM	55	1	0	56
	5/10/2022 10:30:00 AM	31	1	0	32
	5/10/2022 10:45:00 AM	37	0	0	37
	Hour	171	3	1	175
	5/10/2022 11:00:00 AM	46	1	0	47
	5/10/2022 11:15:00 AM	44	3	0	47
	5/10/2022 11:30:00 AM	50	3	0	53
	5/10/2022 11:45:00 AM	51	0	0	51
	Hour	191	7	0	198
	Total	1,067	36	4	1,107
	Percentage	96.4%	3.3%	0.4%	

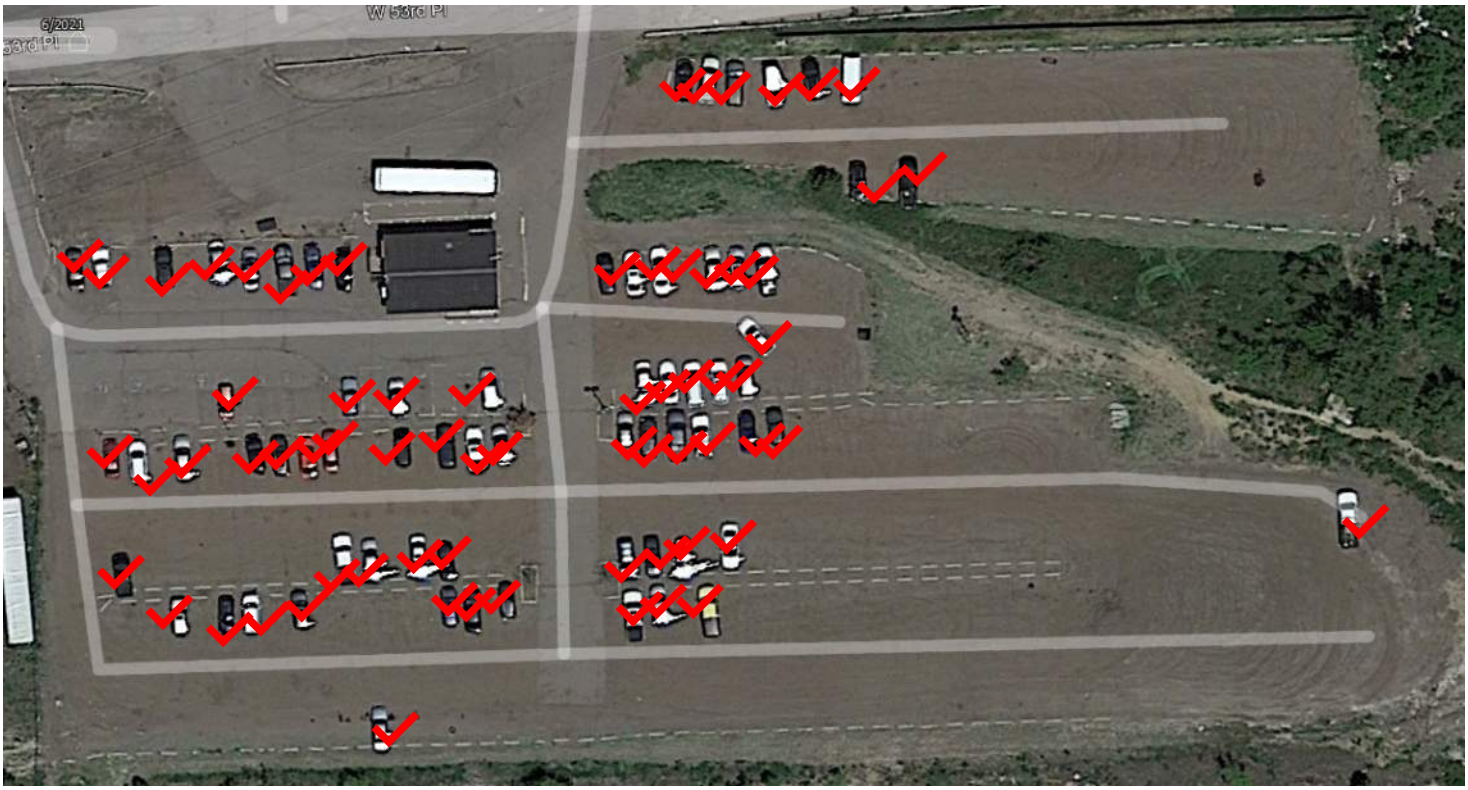
All Traffic Data Services

SITE 2_E - W 52ND AVE EAST OF SHERIDAN BLVD

WB	Time	Lights	Mediums	Trucks	Total
	5/10/2022 12:00:00 PM	53	1	0	54
	5/10/2022 12:15:00 PM	43	0	0	43
	5/10/2022 12:30:00 PM	47	0	0	47
	5/10/2022 12:45:00 PM	46	1	1	48
	Hour	189	2	1	192
	5/10/2022 1:00:00 PM	58	2	0	60
	5/10/2022 1:15:00 PM	55	2	0	57
	5/10/2022 1:30:00 PM	54	2	0	56
	5/10/2022 1:45:00 PM	54	0	0	54
	Hour	221	6	0	227
	5/10/2022 2:00:00 PM	43	0	0	43
	5/10/2022 2:15:00 PM	47	2	0	49
	5/10/2022 2:30:00 PM	60	2	0	62
	5/10/2022 2:45:00 PM	49	2	0	51
	Hour	199	6	0	205
	5/10/2022 3:00:00 PM	43	1	0	44
	5/10/2022 3:15:00 PM	42	1	0	43
	5/10/2022 3:30:00 PM	71	3	0	74
	5/10/2022 3:45:00 PM	62	2	0	64
	Hour	218	7	0	225
	5/10/2022 4:00:00 PM	51	1	0	52
	5/10/2022 4:15:00 PM	67	2	0	69
	5/10/2022 4:30:00 PM	76	0	0	76
	5/10/2022 4:45:00 PM	63	2	1	66
	Hour	257	5	1	263
	5/10/2022 5:00:00 PM	70	0	1	71
	5/10/2022 5:15:00 PM	80	0	1	81
	5/10/2022 5:30:00 PM	58	2	0	60
	5/10/2022 5:45:00 PM	51	1	0	52
	Hour	259	3	2	264
	5/10/2022 6:00:00 PM	46	1	0	47
	5/10/2022 6:15:00 PM	51	1	0	52
	5/10/2022 6:30:00 PM	54	1	0	55
	5/10/2022 6:45:00 PM	52	0	0	52
	Hour	203	3	0	206
	5/10/2022 7:00:00 PM	49	0	0	49
	5/10/2022 7:15:00 PM	30	0	0	30
	5/10/2022 7:30:00 PM	42	0	0	42
	5/10/2022 7:45:00 PM	31	1	0	32
	Hour	152	1	0	153
	5/10/2022 8:00:00 PM	29	1	0	30
	5/10/2022 8:15:00 PM	34	0	0	34
	5/10/2022 8:30:00 PM	31	0	0	31
	5/10/2022 8:45:00 PM	24	1	0	25
	Hour	118	2	0	120
	5/10/2022 9:00:00 PM	30	0	0	30
	5/10/2022 9:15:00 PM	16	0	0	16
	5/10/2022 9:30:00 PM	18	0	0	18
	5/10/2022 9:45:00 PM	8	1	0	9
	Hour	72	1	0	73
	5/10/2022 10:00:00 PM	9	0	0	9
	5/10/2022 10:15:00 PM	11	0	0	11
	5/10/2022 10:30:00 PM	10	0	0	10
	5/10/2022 10:45:00 PM	10	0	0	10
	Hour	40	0	0	40
	5/10/2022 11:00:00 PM	7	0	0	7
	5/10/2022 11:15:00 PM	10	1	0	11
	5/10/2022 11:30:00 PM	7	0	0	7
	5/10/2022 11:45:00 PM	5	0	0	5
	Hour	29	1	0	30
	Total	1,957	37	4	1,998
	Percentage	97.9%	1.9%	0.2%	
	Grand Total	3,024	73	8	3,105
	Percentage	97.4%	2.4%	0.3%	


W 58rd Pl
10/2021
2022


W 53rd Pl
5/2021
2022


W 53rd Pl
6/2021


10/2019
W 53rd Pl


9/2020
2022
W 53rd Pl

Pedestrian Facilities

P1. 53rd Place intersection at Sheridan Boulevard, east side of the roadway.

P2. 53rd Place intersection at Sheridan Boulevard, east side of the roadway looking south along Sheridan Boulevard.

P3. East side of Sheridan Boulevard, between 53rd Place and 52nd Avenue.

P4. Pedestrian facilities, bike lane, and transit stop along 52nd Avenue, looking east from Sheridan Boulevard.

P5. Pedestrian facilities and transit stop along the south side of 52nd Avenue, looking east from Sheridan Boulevard.

P6. West side of Sheridan Boulevard, looking north from 52nd Avenue. Sidewalk ramp with pedestrian use evident.

Daily Trip Generation

ITE Code/Page	Land Use	Size		Trip Gen. Avg. Rate/Eq.	Daily Trips	Trip Distribution Enter	Trip Distribution Exit	Daily Trips Enter	Daily Trips Exit
220	Multifamily Housing (Low-Rise)	50	Units	6.74	337	50%	50%	169	168
945	Convenience Store/Gas Station	24	# of Pumps	265.12	6,363	50%	50%	3,181	3,182
151	Mini-Warehouse	20,000	/1,000 SF	1.45	29	50%	50%	15	14
Total					**6,729**			**3,365**	**3,364**

AM Peak Hour Trip Generation

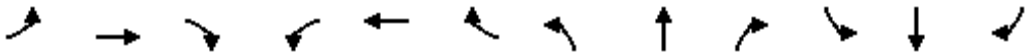
ITE Code/Page	Land Use	Size		Trip Gen. Avg. Rate/Eq.	AM Peak Hour Trips	Trip Distribution Enter	Trip Distribution Exit	AM Peak Hour Trips Enter	AM Peak Hour Trips Exit
220	Multifamily Housing (Low-Rise)	50	Units	0.40	20	24%	76%	5	15
945	Convenience Store/Gas Station	24	# of Pumps	16.06	385	50%	50%	77	77
151	Mini-Warehouse	20,000	/1,000 SF	0.09	2	59%	41%	1	1
Total					**407**			**83**	**93**

PM Peak Hour Trip Generation

ITE Code/Page	Land Use	Size		Trip Gen. Avg. Rate/Eq.	PM Peak Hour Trips	Trip Distribution Enter	Trip Distribution Exit	PM Peak Hour Trips Enter	PM Peak Hour Trips Exit
220	Multifamily Housing (Low-Rise)	50	Units	0.51	26	63%	37%	16	10
945	Convenience Store/Gas Station	24	# of Pumps	18.42	442	50%	50%	97	97
151	Mini-Warehouse	20,000	/1,000 SF	0.15	3	47%	53%	1	2
Total					**471**			**114**	**109**

APPENDIX B

Existing Conditions Analysis - 2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	2	64	33	3	10	20	1095	2	24	1520	30
Future Volume (veh/h)	72	2	64	33	3	10	20	1095	2	24	1520	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	2	70	36	3	11	22	1190	2	26	1652	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	4	147	161	33	122	270	3707	6	49	2814	56
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.70	0.70	0.70	0.03	0.79	0.79
Sat Flow, veh/h	1400	44	1548	1328	351	1287	293	5264	9	1781	3563	71
Grp Volume(v), veh/h	78	0	72	36	0	14	22	770	422	26	822	863
Grp Sat Flow(s),veh/h/ln	1400	0	1592	1328	0	1639	293	1702	1869	1781	1777	1858
Q Serve(g_s), s	4.2	0.0	3.3	2.1	0.0	0.6	2.5	6.7	6.7	1.1	14.1	14.2
Cycle Q Clear(g_c), s	4.8	0.0	3.3	5.4	0.0	0.6	10.0	6.7	6.7	1.1	14.1	14.2
Prop In Lane	1.00		0.97	1.00		0.79	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	214	0	151	161	0	155	270	2398	1316	49	1403	1467
V/C Ratio(X)	0.36	0.00	0.48	0.22	0.00	0.09	0.08	0.32	0.32	0.53	0.59	0.59
Avail Cap(c_a), veh/h	432	0	399	368	0	410	270	2398	1316	149	1403	1467
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	34.4	0.0	33.4	36.0	0.0	32.2	6.5	4.4	4.4	37.4	3.2	3.2
Incr Delay (d2), s/veh	1.0	0.0	2.3	0.7	0.0	0.2	0.6	0.4	0.6	8.5	1.8	1.7
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	1.5	0.0	1.4	0.7	0.0	0.2	0.2	1.9	2.2	0.6	3.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	0.0	35.8	36.7	0.0	32.4	7.1	4.8	5.0	45.9	5.0	5.0
LnGrp LOS	D	A	D	D	A	C	A	A	A	D	A	A
Approach Vol, veh/h		150			50			1214			1711	
Approach Delay, s/veh		35.6			35.5			4.9			5.6	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	59.3		11.9		66.0		11.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	6.5	50.5		19.5		61.5		19.5				
Max Q Clear Time (g_c+I1), s	3.1	12.0		6.8		16.2		7.4				
Green Ext Time (p_c), s	0.0	11.2		0.4		20.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		7.2	
HCM 6th LOS		A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	58	34	49	100	52	81	1004	44	66	1356	171
Future Volume (veh/h)	87	58	34	49	100	52	81	1004	44	66	1356	171
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	63	37	53	109	57	88	1091	48	72	1474	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	156	92	282	142	74	113	1871	82	93	1877	
Arrive On Green	0.06	0.14	0.14	0.04	0.12	0.12	0.06	0.54	0.54	0.05	0.53	0.00
Sat Flow, veh/h	1781	1105	649	1781	1157	605	1781	3467	153	1781	3554	1585
Grp Volume(v), veh/h	95	0	100	53	0	166	88	559	580	72	1474	0
Grp Sat Flow(s),veh/h/ln	1781	0	1754	1781	0	1761	1781	1777	1843	1781	1777	1585
Q Serve(g_s), s	3.7	0.0	4.2	2.1	0.0	7.3	3.9	17.0	17.0	3.2	26.9	0.0
Cycle Q Clear(g_c), s	3.7	0.0	4.2	2.1	0.0	7.3	3.9	17.0	17.0	3.2	26.9	0.0
Prop In Lane	1.00		0.37	1.00		0.34	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	238	0	248	282	0	216	113	959	994	93	1877	
V/C Ratio(X)	0.40	0.00	0.40	0.19	0.00	0.77	0.78	0.58	0.58	0.78	0.79	
Avail Cap(c_a), veh/h	238	0	392	316	0	394	144	959	994	144	1877	
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	0.00
Uniform Delay (d), s/veh	28.6	0.0	31.4	28.9	0.0	34.2	37.1	12.4	12.4	37.7	15.3	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.1	0.3	0.0	5.7	18.6	2.6	2.5	13.0	3.4	0.0
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	1.6	0.0	1.8	0.9	0.0	3.4	2.3	6.7	7.0	1.7	10.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	32.5	29.2	0.0	39.9	55.7	15.0	14.9	50.7	18.7	0.0
LnGrp LOS	C	A	C	C	A	D	E	B	B	D	B	
Approach Vol, veh/h		195			219			1227			1546	
Approach Delay, s/veh		31.1			37.3			17.9			20.2	
Approach LOS		C			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	47.9	8.0	15.9	9.6	47.0	9.5	14.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	42.5	5.0	18.0	6.5	42.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.2	19.0	4.1	6.2	5.9	28.9	5.7	9.3
Green Ext Time (p_c), s	0.0	8.4	0.0	0.3	0.0	8.8	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

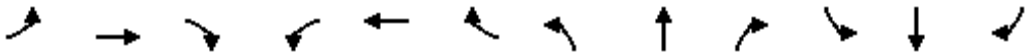
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1138	8	0	1598
Future Vol, veh/h	0	9	1138	8	0	1598
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	1237	9	0	1737

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	619	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	432	-
HCM Lane V/C Ratio	-	-	0.023	-
HCM Control Delay (s)	-	-	13.5	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	8	33	39	10	36	52	1558	29	71	1280	49
Future Volume (veh/h)	29	8	33	39	10	36	52	1558	29	71	1280	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	9	36	42	11	39	57	1693	32	77	1391	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	27	108	169	30	105	340	3551	67	100	2800	107
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.69	0.69	0.69	0.06	0.80	0.80
Sat Flow, veh/h	1355	327	1308	1361	361	1279	369	5159	97	1781	3491	133
Grp Volume(v), veh/h	32	0	45	42	0	50	57	1117	608	77	707	737
Grp Sat Flow(s),veh/h/ln	1355	0	1635	1361	0	1640	369	1702	1853	1781	1777	1846
Q Serve(g_s), s	1.8	0.0	2.0	2.3	0.0	2.2	4.7	11.9	11.9	3.3	10.2	10.2
Cycle Q Clear(g_c), s	4.0	0.0	2.0	4.4	0.0	2.2	6.1	11.9	11.9	3.3	10.2	10.2
Prop In Lane	1.00		0.80	1.00		0.78	1.00		0.05	1.00		0.07
Lane Grp Cap(c), veh/h	165	0	135	169	0	135	340	2343	1275	100	1425	1481
V/C Ratio(X)	0.19	0.00	0.33	0.25	0.00	0.37	0.17	0.48	0.48	0.77	0.50	0.50
Avail Cap(c_a), veh/h	375	0	388	380	0	389	340	2343	1275	240	1425	1481
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	35.7	0.0	33.7	35.8	0.0	33.8	5.0	5.6	5.6	36.3	2.5	2.5
Incr Delay (d2), s/veh	0.6	0.0	1.4	0.8	0.0	1.7	1.1	0.7	1.3	11.8	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	0.8	0.0	0.9	0.4	3.4	3.9	1.7	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	35.2	36.5	0.0	35.5	6.1	6.3	6.9	48.1	3.8	3.7
LnGrp LOS	D	A	D	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		77			92			1782			1521	
Approach Delay, s/veh		35.6			36.0			6.5			6.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	58.1		10.9		67.0		10.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	10.5	47.5		18.5		62.5		18.5				
Max Q Clear Time (g_c+I1), s	5.3	13.9		6.0		12.2		6.4				
Green Ext Time (p_c), s	0.1	18.3		0.2		15.5		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	130	73	50	150	100	92	1501	37	94	1085	146
Future Volume (veh/h)	146	130	73	50	150	100	92	1501	37	94	1085	146
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	141	79	54	163	109	100	1632	40	102	1179	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	220	123	250	187	125	127	1720	42	128	1726	
Arrive On Green	0.06	0.20	0.20	0.04	0.18	0.18	0.07	0.49	0.49	0.07	0.49	0.00
Sat Flow, veh/h	1781	1126	631	1781	1045	699	1781	3545	87	1781	3554	1585
Grp Volume(v), veh/h	159	0	220	54	0	272	100	816	856	102	1179	0
Grp Sat Flow(s),veh/h/ln	1781	0	1757	1781	0	1745	1781	1777	1855	1781	1777	1585
Q Serve(g_s), s	5.1	0.0	10.1	2.1	0.0	13.3	4.8	38.3	38.6	4.9	22.4	0.0
Cycle Q Clear(g_c), s	5.1	0.0	10.1	2.1	0.0	13.3	4.8	38.3	38.6	4.9	22.4	0.0
Prop In Lane	1.00		0.36	1.00		0.40	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	216	0	344	250	0	313	127	862	900	128	1726	
V/C Ratio(X)	0.73	0.00	0.64	0.22	0.00	0.87	0.79	0.95	0.95	0.80	0.68	
Avail Cap(c_a), veh/h	216	0	363	279	0	360	169	862	900	128	1726	
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	0.00
Uniform Delay (d), s/veh	31.7	0.0	32.4	27.9	0.0	35.0	40.0	21.5	21.6	40.0	17.3	0.0
Incr Delay (d2), s/veh	12.2	0.0	3.5	0.4	0.0	18.1	16.0	20.2	20.2	28.5	2.2	0.0
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	1.6	0.0	4.5	0.9	0.0	7.1	2.7	19.4	20.4	3.1	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	0.0	35.9	28.3	0.0	53.1	56.0	41.6	41.8	68.5	19.6	0.0
LnGrp LOS	D	A	D	C	A	D	E	D	D	E	B	
Approach Vol, veh/h		379			326			1772			1281	
Approach Delay, s/veh		39.2			49.0			42.5			23.5	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	47.0	8.2	21.6	10.8	47.0	9.6	20.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	42.5	5.1	18.1	8.3	40.5	5.1	18.1
Max Q Clear Time (g_c+I1), s	6.9	40.6	4.1	12.1	6.8	24.4	7.1	15.3
Green Ext Time (p_c), s	0.0	1.6	0.0	0.6	0.0	7.9	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	36.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1690	58	0	1341
Future Vol, veh/h	0	9	1690	58	0	1341
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	1837	63	0	1458

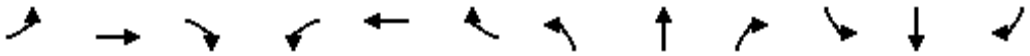
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	919	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	273	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	273	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	273	-
HCM Lane V/C Ratio	-	-	0.036	-
HCM Control Delay (s)	-	-	18.7	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

APPENDIX C

Projected Background Conditions Analysis - 2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	2	64	33	3	10	20	1111	2	24	1543	30
Future Volume (veh/h)	72	2	64	33	3	10	20	1111	2	24	1543	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	2	70	36	3	11	22	1208	2	26	1677	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	4	147	161	33	122	264	3708	6	49	2815	55
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.70	0.70	0.70	0.03	0.79	0.79
Sat Flow, veh/h	1400	44	1548	1328	351	1287	286	5264	9	1781	3565	70
Grp Volume(v), veh/h	78	0	72	36	0	14	22	781	429	26	834	876
Grp Sat Flow(s),veh/h/ln	1400	0	1592	1328	0	1639	286	1702	1869	1781	1777	1858
Q Serve(g_s), s	4.2	0.0	3.3	2.1	0.0	0.6	2.6	6.9	6.9	1.1	14.5	14.6
Cycle Q Clear(g_c), s	4.8	0.0	3.3	5.4	0.0	0.6	10.5	6.9	6.9	1.1	14.5	14.6
Prop In Lane	1.00		0.97	1.00		0.79	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	214	0	151	161	0	155	264	2398	1316	49	1403	1467
V/C Ratio(X)	0.36	0.00	0.48	0.22	0.00	0.09	0.08	0.33	0.33	0.53	0.59	0.60
Avail Cap(c_a), veh/h	432	0	399	368	0	410	264	2398	1316	149	1403	1467
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	34.4	0.0	33.4	36.0	0.0	32.2	6.7	4.4	4.4	37.4	3.2	3.3
Incr Delay (d2), s/veh	1.0	0.0	2.3	0.7	0.0	0.2	0.6	0.4	0.7	8.5	1.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.4	0.7	0.0	0.2	0.2	1.9	2.2	0.6	3.3	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	0.0	35.8	36.7	0.0	32.4	7.3	4.8	5.1	45.9	5.1	5.1
LnGrp LOS	D	A	D	D	A	C	A	A	A	D	A	A
Approach Vol, veh/h		150			50			1232			1736	
Approach Delay, s/veh		35.6			35.5			4.9			5.7	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	59.3		11.9		66.0		11.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	6.5	50.5		19.5		61.5		19.5				
Max Q Clear Time (g_c+I1), s	3.1	12.5		6.8		16.6		7.4				
Green Ext Time (p_c), s	0.0	11.4		0.4		20.5		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			7.3									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	59	35	50	102	53	82	1019	45	67	1376	174
Future Volume (veh/h)	88	59	35	50	102	53	82	1019	45	67	1376	174
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	96	64	38	54	111	58	89	1108	49	73	1496	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	157	93	283	144	75	114	1865	82	94	1872	
Arrive On Green	0.06	0.14	0.14	0.04	0.12	0.12	0.06	0.54	0.54	0.05	0.53	0.00
Sat Flow, veh/h	1781	1100	653	1781	1157	605	1781	3466	153	1781	3554	1585
Grp Volume(v), veh/h	96	0	102	54	0	169	89	568	589	73	1496	0
Grp Sat Flow(s),veh/h/ln	1781	0	1753	1781	0	1762	1781	1777	1843	1781	1777	1585
Q Serve(g_s), s	3.7	0.0	4.3	2.1	0.0	7.5	4.0	17.5	17.5	3.3	27.8	0.0
Cycle Q Clear(g_c), s	3.7	0.0	4.3	2.1	0.0	7.5	4.0	17.5	17.5	3.3	27.8	0.0
Prop In Lane	1.00		0.37	1.00		0.34	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	238	0	250	283	0	219	114	956	992	94	1872	
V/C Ratio(X)	0.40	0.00	0.41	0.19	0.00	0.77	0.78	0.59	0.59	0.78	0.80	
Avail Cap(c_a), veh/h	238	0	391	316	0	393	144	956	992	144	1872	
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	0.00
Uniform Delay (d), s/veh	28.6	0.0	31.5	28.9	0.0	34.2	37.2	12.7	12.7	37.7	15.6	0.0
Incr Delay (d2), s/veh	1.1	0.0	1.1	0.3	0.0	5.7	19.0	2.7	2.6	13.6	3.7	0.0
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	1.6	0.0	1.8	0.9	0.0	3.5	2.3	7.0	7.2	1.8	10.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	32.6	29.2	0.0	40.0	56.2	15.4	15.3	51.3	19.3	0.0
LnGrp LOS	C	A	C	C	A	D	E	B	B	D	B	
Approach Vol, veh/h		198			223			1246			1569	
Approach Delay, s/veh		31.2			37.3			18.2			20.8	
Approach LOS		C			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	47.9	8.0	16.0	9.7	47.0	9.5	14.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	42.5	5.0	18.0	6.5	42.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.3	19.5	4.1	6.3	6.0	29.8	5.7	9.5
Green Ext Time (p_c), s	0.0	8.5	0.0	0.3	0.0	8.5	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

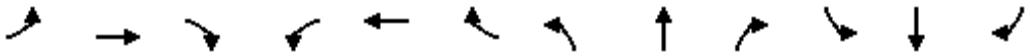
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1155	8	0	1622
Future Vol, veh/h	0	9	1155	8	0	1622
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	1255	9	0	1763

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	628	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	426	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	426	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	426	-
HCM Lane V/C Ratio	-	-	0.023	-
HCM Control Delay (s)	-	-	13.6	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	8	33	39	10	36	52	1581	29	71	1299	49
Future Volume (veh/h)	29	8	33	39	10	36	52	1581	29	71	1299	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	9	36	42	11	39	57	1718	32	77	1412	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	27	108	169	30	105	334	3552	66	100	2801	105
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.69	0.69	0.69	0.06	0.80	0.80
Sat Flow, veh/h	1355	327	1308	1361	361	1279	362	5161	96	1781	3493	131
Grp Volume(v), veh/h	32	0	45	42	0	50	57	1133	617	77	717	748
Grp Sat Flow(s),veh/h/ln	1355	0	1635	1361	0	1640	362	1702	1853	1781	1777	1847
Q Serve(g_s), s	1.8	0.0	2.0	2.3	0.0	2.2	4.8	12.1	12.1	3.3	10.4	10.5
Cycle Q Clear(g_c), s	4.0	0.0	2.0	4.4	0.0	2.2	6.5	12.1	12.1	3.3	10.4	10.5
Prop In Lane	1.00		0.80	1.00		0.78	1.00		0.05	1.00		0.07
Lane Grp Cap(c), veh/h	165	0	135	169	0	135	334	2343	1275	100	1425	1481
V/C Ratio(X)	0.19	0.00	0.33	0.25	0.00	0.37	0.17	0.48	0.48	0.77	0.50	0.50
Avail Cap(c_a), veh/h	375	0	388	380	0	389	334	2343	1275	240	1425	1481
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	35.7	0.0	33.7	35.8	0.0	33.8	5.1	5.7	5.7	36.3	2.6	2.6
Incr Delay (d2), s/veh	0.6	0.0	1.4	0.8	0.0	1.7	1.1	0.7	1.3	11.8	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	0.8	0.0	0.9	0.4	3.5	4.0	1.7	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	35.2	36.5	0.0	35.5	6.2	6.4	7.0	48.1	3.8	3.8
LnGrp LOS	D	A	D	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		77			92			1807			1542	
Approach Delay, s/veh		35.6			36.0			6.6			6.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	58.1		10.9		67.0		10.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	10.5	47.5		18.5		62.5		18.5				
Max Q Clear Time (g_c+I1), s	5.3	14.1		6.0		12.5		6.4				
Green Ext Time (p_c), s	0.1	18.6		0.2		15.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			7.7									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	132	74	51	152	102	93	1524	38	95	1101	148
Future Volume (veh/h)	148	132	74	51	152	102	93	1524	38	95	1101	148
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	161	143	80	55	165	111	101	1657	41	103	1197	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	222	124	250	189	127	129	1715	42	128	1719	
Arrive On Green	0.06	0.20	0.20	0.04	0.18	0.18	0.07	0.48	0.48	0.07	0.48	0.00
Sat Flow, veh/h	1781	1127	630	1781	1043	701	1781	3544	87	1781	3554	1585
Grp Volume(v), veh/h	161	0	223	55	0	276	101	829	869	103	1197	0
Grp Sat Flow(s),veh/h/ln	1781	0	1757	1781	0	1744	1781	1777	1855	1781	1777	1585
Q Serve(g_s), s	5.1	0.0	10.2	2.2	0.0	13.5	4.9	39.6	40.0	5.0	23.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	10.2	2.2	0.0	13.5	4.9	39.6	40.0	5.0	23.0	0.0
Prop In Lane	1.00		0.36	1.00		0.40	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	216	0	346	250	0	316	129	860	898	128	1719	
V/C Ratio(X)	0.75	0.00	0.64	0.22	0.00	0.87	0.79	0.96	0.97	0.81	0.70	
Avail Cap(c_a), veh/h	216	0	362	279	0	360	168	860	898	128	1719	
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	0.00
Uniform Delay (d), s/veh	31.8	0.0	32.4	27.8	0.0	35.0	40.1	21.9	22.0	40.2	17.7	0.0
Incr Delay (d2), s/veh	13.3	0.0	3.6	0.4	0.0	18.8	16.4	23.1	23.3	30.2	2.4	0.0
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	1.7	0.0	4.6	0.9	0.0	7.2	2.7	20.6	21.7	3.2	9.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	0.0	36.1	28.2	0.0	53.8	56.4	45.0	45.3	70.4	20.0	0.0
LnGrp LOS	D	A	D	C	A	D	E	D	D	E	C	
Approach Vol, veh/h		384			331			1799			1300	
Approach Delay, s/veh		39.9			49.5			45.8			24.0	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	47.0	8.2	21.8	10.8	47.0	9.6	20.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	42.5	5.1	18.1	8.3	40.5	5.1	18.1
Max Q Clear Time (g_c+I1), s	7.0	42.0	4.2	12.2	6.9	25.0	7.1	15.5
Green Ext Time (p_c), s	0.0	0.5	0.0	0.6	0.0	7.8	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	38.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1715	58	0	1361
Future Vol, veh/h	0	9	1715	58	0	1361
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	1864	63	0	1479

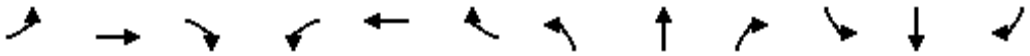
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	932	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	268	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	268	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	268	-
HCM Lane V/C Ratio	-	-	0.037	-
HCM Control Delay (s)	-	-	18.9	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

APPENDIX D

Projected Background + Site Conditions Analysis - 2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	2	64	103	3	15	20	1130	2	45	1543	30
Future Volume (veh/h)	72	2	64	103	3	15	20	1130	2	45	1543	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	2	70	112	3	16	22	1228	2	49	1677	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	7	230	231	38	204	233	3408	6	73	2647	52
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.65	0.65	0.65	0.04	0.74	0.74
Sat Flow, veh/h	1393	44	1548	1328	256	1368	286	5264	9	1781	3565	70
Grp Volume(v), veh/h	78	0	72	112	0	19	22	794	436	49	834	876
Grp Sat Flow(s),veh/h/ln	1393	0	1592	1328	0	1624	286	1702	1869	1781	1777	1858
Q Serve(g_s), s	4.2	0.0	3.3	6.8	0.0	0.8	3.4	8.9	8.9	2.2	18.9	19.0
Cycle Q Clear(g_c), s	5.1	0.0	3.3	10.1	0.0	0.8	14.5	8.9	8.9	2.2	18.9	19.0
Prop In Lane	1.00		0.97	1.00		0.84	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	280	0	237	231	0	242	233	2204	1210	73	1319	1379
V/C Ratio(X)	0.28	0.00	0.30	0.48	0.00	0.08	0.09	0.36	0.36	0.67	0.63	0.63
Avail Cap(c_a), veh/h	401	0	375	346	0	382	233	2204	1210	140	1319	1379
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	32.5	0.0	31.4	35.9	0.0	30.4	10.6	6.7	6.7	39.2	5.2	5.2
Incr Delay (d2), s/veh	0.5	0.0	0.7	1.6	0.0	0.1	0.8	0.5	0.8	10.3	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.3	2.3	0.0	0.3	0.3	2.9	3.3	1.2	5.6	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	32.1	37.5	0.0	30.5	11.4	7.2	7.6	49.5	7.5	7.4
LnGrp LOS	C	A	C	D	A	C	B	A	A	D	A	A
Approach Vol, veh/h		150			131			1252			1759	
Approach Delay, s/veh		32.6			36.5			7.4			8.6	
Approach LOS		C			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.9	58.1		16.8		66.0		16.8				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	6.5	50.5		19.5		61.5		19.5				
Max Q Clear Time (g_c+I1), s	4.2	16.5		7.1		21.0		12.1				
Green Ext Time (p_c), s	0.0	11.3		0.4		19.6		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		10.4	
HCM 6th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	59	35	50	102	70	82	1048	45	86	1409	193
Future Volume (veh/h)	105	59	35	50	102	70	82	1048	45	86	1409	193
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	64	38	54	111	76	89	1139	49	93	1532	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	168	100	294	140	96	114	1798	77	119	1850	
Arrive On Green	0.06	0.15	0.15	0.04	0.14	0.14	0.06	0.52	0.52	0.07	0.52	0.00
Sat Flow, veh/h	1781	1100	653	1781	1035	708	1781	3471	149	1781	3554	1585
Grp Volume(v), veh/h	114	0	102	54	0	187	89	583	605	93	1532	0
Grp Sat Flow(s),veh/h/ln	1781	0	1753	1781	0	1743	1781	1777	1843	1781	1777	1585
Q Serve(g_s), s	4.5	0.0	4.3	2.1	0.0	8.5	4.0	19.3	19.3	4.2	29.8	0.0
Cycle Q Clear(g_c), s	4.5	0.0	4.3	2.1	0.0	8.5	4.0	19.3	19.3	4.2	29.8	0.0
Prop In Lane	1.00		0.37	1.00		0.41	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	233	0	268	294	0	235	114	920	955	119	1850	
V/C Ratio(X)	0.49	0.00	0.38	0.18	0.00	0.79	0.78	0.63	0.63	0.78	0.83	
Avail Cap(c_a), veh/h	233	0	385	326	0	382	141	920	955	141	1850	
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	0.00
Uniform Delay (d), s/veh	28.8	0.0	31.3	28.6	0.0	34.4	37.8	14.2	14.2	37.7	16.6	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.9	0.3	0.0	6.0	19.7	3.3	3.2	20.9	4.4	0.0
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	2.0	0.0	1.8	0.9	0.0	3.9	2.4	7.9	8.1	2.5	12.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	0.0	32.2	28.9	0.0	40.4	57.6	17.5	17.4	58.6	21.0	0.0
LnGrp LOS	C	A	C	C	A	D	E	B	B	E	C	
Approach Vol, veh/h		216			241			1277			1625	A
Approach Delay, s/veh		31.2			37.8			20.2			23.1	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	47.0	8.0	17.0	9.8	47.2	9.5	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	42.5	5.0	18.0	6.5	42.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	6.3	21.3	4.1	6.3	6.0	31.8	6.5	10.5
Green Ext Time (p_c), s	0.0	8.5	0.0	0.3	0.0	7.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	156	1039	186	0	1692
Future Vol, veh/h	0	156	1039	186	0	1692
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	170	1129	202	0	1839

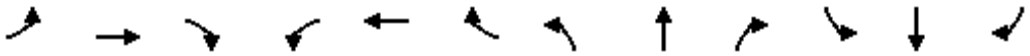
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	565	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	468	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	468	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	468	-
HCM Lane V/C Ratio	-	-	0.362	-
HCM Control Delay (s)	-	-	17	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	1.6	-

HCM 6th Signalized Intersection Summary
2: W 53rd Ave

02/14/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	8	33	121	10	41	52	1603	29	100	1299	49
Future Volume (veh/h)	29	8	33	121	10	41	52	1603	29	100	1299	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	9	36	132	11	45	57	1742	32	109	1412	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	48	191	252	47	192	294	3173	58	139	2607	98
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.61	0.61	0.61	0.08	0.75	0.75
Sat Flow, veh/h	1348	327	1308	1361	321	1313	362	5163	95	1781	3493	131
Grp Volume(v), veh/h	32	0	45	132	0	56	57	1148	626	109	717	748
Grp Sat Flow(s),veh/h/ln	1348	0	1635	1361	0	1634	362	1702	1853	1781	1777	1847
Q Serve(g_s), s	1.8	0.0	2.0	7.9	0.0	2.5	6.7	16.4	16.4	5.0	14.4	14.4
Cycle Q Clear(g_c), s	4.3	0.0	2.0	9.9	0.0	2.5	10.1	16.4	16.4	5.0	14.4	14.4
Prop In Lane	1.00		0.80	1.00		0.80	1.00		0.05	1.00		0.07
Lane Grp Cap(c), veh/h	242	0	239	252	0	239	294	2092	1139	139	1326	1379
V/C Ratio(X)	0.13	0.00	0.19	0.52	0.00	0.23	0.19	0.55	0.55	0.78	0.54	0.54
Avail Cap(c_a), veh/h	343	0	361	354	0	361	294	2092	1139	223	1326	1379
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	33.5	0.0	31.4	35.7	0.0	31.6	9.0	9.4	9.4	37.9	4.5	4.5
Incr Delay (d2), s/veh	0.2	0.0	0.4	1.7	0.0	0.5	1.5	1.0	1.9	9.2	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	2.7	0.0	1.0	0.6	5.6	6.3	2.5	4.2	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	0.0	31.8	37.4	0.0	32.1	10.5	10.4	11.3	47.1	6.1	6.1
LnGrp LOS	C	A	C	D	A	C	B	B	B	D	A	A
Approach Vol, veh/h		77			188			1831			1574	
Approach Delay, s/veh		32.6			35.8			10.7			8.9	
Approach LOS		C			D			B			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.0	56.0		16.7		67.0		16.7				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	10.5	47.5		18.5		62.5		18.5				
Max Q Clear Time (g_c+I1), s	7.0	18.4		6.3		16.4		11.9				
Green Ext Time (p_c), s	0.1	17.4		0.2		15.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		11.7	
HCM 6th LOS		B	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	132	74	51	152	125	93	1564	38	117	1139	170
Future Volume (veh/h)	171	132	74	51	152	125	93	1564	38	117	1139	170
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	186	143	80	55	165	136	101	1700	41	127	1238	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	236	132	265	184	152	128	1689	41	126	1688	
Arrive On Green	0.06	0.21	0.21	0.04	0.19	0.19	0.07	0.48	0.48	0.07	0.47	0.00
Sat Flow, veh/h	1781	1127	630	1781	948	782	1781	3547	85	1781	3554	1585
Grp Volume(v), veh/h	186	0	223	55	0	301	101	850	891	127	1238	0
Grp Sat Flow(s),veh/h/ln	1781	0	1757	1781	0	1730	1781	1777	1855	1781	1777	1585
Q Serve(g_s), s	5.1	0.0	10.3	2.2	0.0	15.1	5.0	42.5	42.5	6.3	25.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	10.3	2.2	0.0	15.1	5.0	42.5	42.5	6.3	25.0	0.0
Prop In Lane	1.00		0.36	1.00		0.45	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	209	0	368	265	0	336	128	846	884	126	1688	
V/C Ratio(X)	0.89	0.00	0.61	0.21	0.00	0.90	0.79	1.00	1.01	1.01	0.73	
Avail Cap(c_a), veh/h	209	0	368	292	0	351	166	846	884	126	1688	
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	0.00
Uniform Delay (d), s/veh	33.6	0.0	31.9	27.3	0.0	35.1	40.7	23.4	23.4	41.5	18.9	0.0
Incr Delay (d2), s/veh	34.3	0.0	2.8	0.4	0.0	23.8	17.0	31.8	32.5	82.9	2.9	0.0
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	3.5	0.0	4.6	0.9	0.0	8.4	2.8	23.8	25.0	5.6	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	0.0	34.7	27.7	0.0	58.9	57.8	55.2	55.8	124.3	21.7	0.0
LnGrp LOS	E	A	C	C	A	E	E	F	F	F	C	
Approach Vol, veh/h		409			356			1842			1365	A
Approach Delay, s/veh		49.8			54.1			55.7			31.3	
Approach LOS		D			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	47.0	8.2	23.2	10.9	46.9	9.6	21.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	42.5	5.1	18.1	8.3	40.5	5.1	18.1
Max Q Clear Time (g_c+I1), s	7.3	44.5	4.2	12.3	7.0	27.0	7.1	17.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6	0.0	7.4	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	46.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	155	1591	268	0	1443
Future Vol, veh/h	0	155	1591	268	0	1443
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	168	1729	291	0	1568

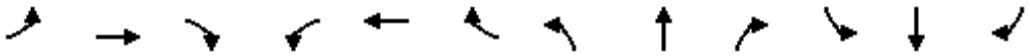
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	865	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	297	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	297	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	297	-
HCM Lane V/C Ratio	-	-	0.567	-
HCM Control Delay (s)	-	-	31.9	-
HCM Lane LOS	-	-	D	-
HCM 95th %tile Q(veh)	-	-	3.3	-

APPENDIX E

Projected Background Conditions Analysis – 2042



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	2	64	33	3	10	20	1271	2	24	1765	30
Future Volume (veh/h)	72	2	64	33	3	10	20	1271	2	24	1765	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	2	70	36	3	11	22	1382	2	26	1918	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	4	147	161	33	122	215	3708	5	49	2823	48
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.70	0.70	0.70	0.03	0.79	0.79
Sat Flow, veh/h	1400	44	1548	1328	351	1287	226	5265	8	1781	3575	61
Grp Volume(v), veh/h	78	0	72	36	0	14	22	893	491	26	950	1001
Grp Sat Flow(s),veh/h/ln	1400	0	1592	1328	0	1639	226	1702	1869	1781	1777	1859
Q Serve(g_s), s	4.2	0.0	3.3	2.1	0.0	0.6	3.8	8.2	8.2	1.1	18.8	19.1
Cycle Q Clear(g_c), s	4.8	0.0	3.3	5.4	0.0	0.6	16.3	8.2	8.2	1.1	18.8	19.1
Prop In Lane	1.00		0.97	1.00		0.79	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	214	0	151	161	0	155	215	2398	1316	49	1403	1468
V/C Ratio(X)	0.36	0.00	0.48	0.22	0.00	0.09	0.10	0.37	0.37	0.53	0.68	0.68
Avail Cap(c_a), veh/h	432	0	399	368	0	410	215	2398	1316	149	1403	1468
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	34.4	0.0	33.4	36.0	0.0	32.2	8.9	4.6	4.6	37.4	3.7	3.7
Incr Delay (d2), s/veh	1.0	0.0	2.3	0.7	0.0	0.2	0.9	0.4	0.8	8.5	2.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.4	0.7	0.0	0.2	0.2	2.3	2.6	0.6	4.4	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	0.0	35.8	36.7	0.0	32.4	9.9	5.1	5.4	45.9	6.3	6.3
LnGrp LOS	D	A	D	D	A	C	A	A	A	D	A	A
Approach Vol, veh/h		150			50			1406			1977	
Approach Delay, s/veh		35.6			35.5			5.3			6.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.7	59.3		11.9		66.0		11.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	6.5	50.5		19.5		61.5		19.5				
Max Q Clear Time (g_c+I1), s	3.1	18.3		6.8		21.1		7.4				
Green Ext Time (p_c), s	0.0	13.2		0.4		24.6		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			7.8									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	67	39	57	116	60	94	1166	51	77	1575	199
Future Volume (veh/h)	101	67	39	57	116	60	94	1166	51	77	1575	199
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	73	42	62	126	65	102	1267	55	84	1712	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	168	96	285	158	82	130	1824	79	108	1825	
Arrive On Green	0.06	0.15	0.15	0.05	0.14	0.14	0.07	0.53	0.53	0.06	0.51	0.00
Sat Flow, veh/h	1781	1114	641	1781	1163	600	1781	3470	150	1781	3554	1585
Grp Volume(v), veh/h	110	0	115	62	0	191	102	648	674	84	1712	0
Grp Sat Flow(s),veh/h/ln	1781	0	1755	1781	0	1762	1781	1777	1843	1781	1777	1585
Q Serve(g_s), s	4.4	0.0	4.9	2.4	0.0	8.7	4.7	22.5	22.6	3.8	37.4	0.0
Cycle Q Clear(g_c), s	4.4	0.0	4.9	2.4	0.0	8.7	4.7	22.5	22.6	3.8	37.4	0.0
Prop In Lane	1.00		0.37	1.00		0.34	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	231	0	264	285	0	239	130	934	969	108	1825	
V/C Ratio(X)	0.48	0.00	0.44	0.22	0.00	0.80	0.79	0.69	0.70	0.78	0.94	
Avail Cap(c_a), veh/h	231	0	382	311	0	383	140	934	969	140	1825	
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	0.00
Uniform Delay (d), s/veh	29.0	0.0	32.0	28.8	0.0	34.7	37.7	14.7	14.7	38.3	18.9	0.0
Incr Delay (d2), s/veh	1.5	0.0	1.1	0.4	0.0	6.0	23.7	4.2	4.1	18.6	10.8	0.0
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	1.9	0.0	2.1	1.0	0.0	4.0	2.8	9.3	9.6	2.2	16.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	0.0	33.1	29.2	0.0	40.7	61.4	18.9	18.8	56.9	29.7	0.0
LnGrp LOS	C	A	C	C	A	D	E	B	B	E	C	
Approach Vol, veh/h		225			253			1424			1796	
Approach Delay, s/veh		31.8			37.8			21.9			31.0	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	48.0	8.3	16.9	10.5	47.0	9.5	15.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	42.5	5.0	18.0	6.5	42.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.8	24.6	4.4	6.9	6.7	39.4	6.4	10.7
Green Ext Time (p_c), s	0.0	8.9	0.0	0.4	0.0	2.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	28.0
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

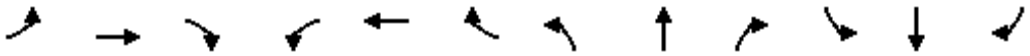
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1321	8	0	1856
Future Vol, veh/h	0	9	1321	8	0	1856
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	1436	9	0	2017

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	718	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	371	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	371	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	371	-
HCM Lane V/C Ratio	-	-	0.026	-
HCM Control Delay (s)	-	-	15	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	8	33	39	10	36	52	1809	29	71	1486	49
Future Volume (veh/h)	29	8	33	39	10	36	52	1809	29	71	1486	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	9	36	42	11	39	57	1966	32	77	1615	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	27	108	169	30	105	281	3562	58	100	2817	92
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.69	0.69	0.69	0.06	0.80	0.80
Sat Flow, veh/h	1355	327	1308	1361	361	1279	298	5175	84	1781	3512	115
Grp Volume(v), veh/h	32	0	45	42	0	50	57	1293	705	77	815	853
Grp Sat Flow(s),veh/h/ln	1355	0	1635	1361	0	1640	298	1702	1855	1781	1777	1850
Q Serve(g_s), s	1.8	0.0	2.0	2.3	0.0	2.2	6.8	14.9	14.9	3.3	13.1	13.2
Cycle Q Clear(g_c), s	4.0	0.0	2.0	4.4	0.0	2.2	11.1	14.9	14.9	3.3	13.1	13.2
Prop In Lane	1.00		0.80	1.00		0.78	1.00		0.05	1.00		0.06
Lane Grp Cap(c), veh/h	165	0	135	169	0	135	281	2343	1277	100	1425	1484
V/C Ratio(X)	0.19	0.00	0.33	0.25	0.00	0.37	0.20	0.55	0.55	0.77	0.57	0.58
Avail Cap(c_a), veh/h	375	0	388	380	0	389	281	2343	1277	240	1425	1484
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	35.7	0.0	33.7	35.8	0.0	33.8	6.5	6.1	6.1	36.3	2.8	2.8
Incr Delay (d2), s/veh	0.6	0.0	1.4	0.8	0.0	1.7	1.6	0.9	1.7	11.8	1.7	1.6
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	0.6	0.0	0.8	0.8	0.0	0.9	0.5	4.3	5.0	1.7	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	35.2	36.5	0.0	35.5	8.1	7.0	7.8	48.1	4.5	4.5
LnGrp LOS	D	A	D	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		77			92			2055			1745	
Approach Delay, s/veh		35.6			36.0			7.3			6.4	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	58.1		10.9		67.0		10.9				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	10.5	47.5		18.5		62.5		18.5				
Max Q Clear Time (g_c+I1), s	5.3	16.9		6.0		15.2		6.4				
Green Ext Time (p_c), s	0.1	20.7		0.2		20.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		8.1
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	151	85	58	174	116	107	1743	43	109	1260	170
Future Volume (veh/h)	170	151	85	58	174	116	107	1743	43	109	1260	170
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	164	92	63	189	126	116	1895	47	118	1370	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	239	134	246	209	139	145	1677	41	125	1641	
Arrive On Green	0.06	0.21	0.21	0.04	0.20	0.20	0.08	0.47	0.47	0.07	0.46	0.00
Sat Flow, veh/h	1781	1125	631	1781	1047	698	1781	3544	88	1781	3554	1585
Grp Volume(v), veh/h	185	0	256	63	0	315	116	946	996	118	1370	0
Grp Sat Flow(s),veh/h/ln	1781	0	1757	1781	0	1745	1781	1777	1855	1781	1777	1585
Q Serve(g_s), s	5.1	0.0	12.1	2.5	0.0	15.8	5.7	42.5	42.5	5.9	30.3	0.0
Cycle Q Clear(g_c), s	5.1	0.0	12.1	2.5	0.0	15.8	5.7	42.5	42.5	5.9	30.3	0.0
Prop In Lane	1.00		0.36	1.00		0.40	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	206	0	372	246	0	348	145	841	878	125	1641	
V/C Ratio(X)	0.90	0.00	0.69	0.26	0.00	0.91	0.80	1.13	1.13	0.94	0.83	
Avail Cap(c_a), veh/h	206	0	372	268	0	352	165	841	878	125	1641	
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	0.00
Uniform Delay (d), s/veh	33.6	0.0	32.6	27.3	0.0	35.1	40.5	23.6	23.6	41.6	21.2	0.0
Incr Delay (d2), s/veh	36.5	0.0	5.2	0.5	0.0	25.9	21.3	71.4	74.6	63.2	5.2	0.0
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	3.6	0.0	5.6	1.1	0.0	9.1	3.3	33.0	35.2	4.8	12.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	0.0	37.9	27.9	0.0	61.0	61.8	95.1	98.2	104.8	26.3	0.0
LnGrp LOS	E	A	D	C	A	E	E	F	F	F	C	
Approach Vol, veh/h		441			378			2058			1488	
Approach Delay, s/veh		51.4			55.5			94.7			32.6	
Approach LOS		D			E			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	47.0	8.5	23.5	11.8	46.0	9.6	22.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	42.5	5.1	18.1	8.3	40.5	5.1	18.1
Max Q Clear Time (g_c+I1), s	7.9	44.5	4.5	14.1	7.7	32.3	7.1	17.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	5.6	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	65.8
HCM 6th LOS	E

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	1962	58	0	1557
Future Vol, veh/h	0	9	1962	58	0	1557
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	10	2133	63	0	1692

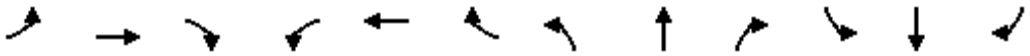
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1067	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	218	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	218	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	218	-
HCM Lane V/C Ratio	-	-	0.045	-
HCM Control Delay (s)	-	-	22.3	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.1	-

APPENDIX F

Projected Background + Site Conditions Analysis - 2042



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	2	64	103	3	15	20	1290	2	45	1765	30
Future Volume (veh/h)	72	2	64	103	3	15	20	1290	2	45	1765	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	2	70	112	3	16	22	1402	2	49	1918	33
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	7	230	231	38	204	187	3409	5	73	2654	46
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.65	0.65	0.65	0.04	0.74	0.74
Sat Flow, veh/h	1393	44	1548	1328	256	1368	226	5266	8	1781	3575	61
Grp Volume(v), veh/h	78	0	72	112	0	19	22	906	498	49	950	1001
Grp Sat Flow(s),veh/h/ln	1393	0	1592	1328	0	1624	226	1702	1869	1781	1777	1859
Q Serve(g_s), s	4.2	0.0	3.3	6.8	0.0	0.8	5.0	10.6	10.6	2.2	24.5	24.8
Cycle Q Clear(g_c), s	5.1	0.0	3.3	10.1	0.0	0.8	21.9	10.6	10.6	2.2	24.5	24.8
Prop In Lane	1.00		0.97	1.00		0.84	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	280	0	237	231	0	242	187	2204	1210	73	1319	1381
V/C Ratio(X)	0.28	0.00	0.30	0.48	0.00	0.08	0.12	0.41	0.41	0.67	0.72	0.72
Avail Cap(c_a), veh/h	401	0	375	346	0	382	187	2204	1210	140	1319	1381
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	32.5	0.0	31.4	35.9	0.0	30.4	14.3	7.0	7.0	39.2	5.9	5.9
Incr Delay (d2), s/veh	0.5	0.0	0.7	1.6	0.0	0.1	1.3	0.6	1.0	10.3	3.4	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	1.3	2.3	0.0	0.3	0.3	3.4	3.9	1.2	7.5	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	32.1	37.5	0.0	30.5	15.5	7.6	8.1	49.5	9.3	9.3
LnGrp LOS	C	A	C	D	A	C	B	A	A	D	A	A
Approach Vol, veh/h		150			131			1426			2000	
Approach Delay, s/veh		32.6			36.5			7.9			10.3	
Approach LOS		C			D			A			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	7.9	58.1		16.8		66.0		16.8				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	6.5	50.5		19.5		61.5		19.5				
Max Q Clear Time (g_c+I1), s	4.2	23.9		7.1		26.8		12.1				
Green Ext Time (p_c), s	0.0	12.3		0.4		22.3		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	67	39	57	116	77	94	1195	51	96	1608	218
Future Volume (veh/h)	118	67	39	57	116	77	94	1195	51	96	1608	218
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	73	42	62	126	84	102	1299	55	104	1748	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	179	103	297	154	103	130	1755	74	132	1801	
Arrive On Green	0.06	0.16	0.16	0.05	0.15	0.15	0.07	0.51	0.51	0.07	0.51	0.00
Sat Flow, veh/h	1781	1114	641	1781	1047	698	1781	3474	147	1781	3554	1585
Grp Volume(v), veh/h	128	0	115	62	0	210	102	664	690	104	1748	0
Grp Sat Flow(s),veh/h/ln	1781	0	1755	1781	0	1745	1781	1777	1844	1781	1777	1585
Q Serve(g_s), s	5.0	0.0	4.9	2.4	0.0	9.8	4.7	24.8	24.9	4.8	40.2	0.0
Cycle Q Clear(g_c), s	5.0	0.0	4.9	2.4	0.0	9.8	4.7	24.8	24.9	4.8	40.2	0.0
Prop In Lane	1.00		0.37	1.00		0.40	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	227	0	283	297	0	257	130	898	932	132	1801	
V/C Ratio(X)	0.56	0.00	0.41	0.21	0.00	0.82	0.79	0.74	0.74	0.79	0.97	
Avail Cap(c_a), veh/h	227	0	376	322	0	373	138	898	932	138	1801	
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	0.00
Uniform Delay (d), s/veh	29.4	0.0	31.7	28.5	0.0	34.8	38.4	16.4	16.4	38.3	20.1	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.9	0.3	0.0	8.9	24.4	5.4	5.3	24.9	15.3	0.0
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	2.4	0.0	2.1	1.1	0.0	4.7	2.9	10.6	11.0	3.0	18.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.6	0.0	32.6	28.8	0.0	43.7	62.7	21.9	21.7	63.2	35.5	0.0
LnGrp LOS	C	A	C	C	A	D	E	C	C	E	D	
Approach Vol, veh/h		243			272			1456			1852	A
Approach Delay, s/veh		32.6			40.3			24.7			37.0	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	47.0	8.3	18.0	10.6	47.1	9.5	16.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	42.5	5.0	18.0	6.5	42.5	5.0	18.0
Max Q Clear Time (g_c+I1), s	6.8	26.9	4.4	6.9	6.7	42.2	7.0	11.8
Green Ext Time (p_c), s	0.0	8.4	0.0	0.4	0.0	0.3	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

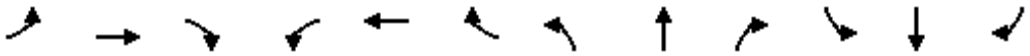
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	143	1205	186	0	1926
Future Vol, veh/h	0	143	1205	186	0	1926
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	155	1310	202	0	2093

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	655	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	409	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	409	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	409	-
HCM Lane V/C Ratio	-	-	0.38	-
HCM Control Delay (s)	-	-	19.1	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	1.7	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	8	33	121	10	41	52	1831	29	100	1486	49
Future Volume (veh/h)	29	8	33	121	10	41	52	1831	29	100	1486	49
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	32	9	36	132	11	45	57	1990	32	109	1615	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	48	191	252	47	192	243	3181	51	139	2621	86
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.61	0.61	0.61	0.08	0.75	0.75
Sat Flow, veh/h	1348	327	1308	1361	321	1313	298	5176	83	1781	3512	115
Grp Volume(v), veh/h	32	0	45	132	0	56	57	1308	714	109	815	853
Grp Sat Flow(s),veh/h/ln	1348	0	1635	1361	0	1634	298	1702	1855	1781	1777	1850
Q Serve(g_s), s	1.8	0.0	2.0	7.9	0.0	2.5	9.3	20.1	20.2	5.0	18.0	18.2
Cycle Q Clear(g_c), s	4.3	0.0	2.0	9.9	0.0	2.5	16.5	20.1	20.2	5.0	18.0	18.2
Prop In Lane	1.00		0.80	1.00		0.80	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	242	0	239	252	0	239	243	2092	1140	139	1326	1381
V/C Ratio(X)	0.13	0.00	0.19	0.52	0.00	0.23	0.23	0.63	0.63	0.78	0.61	0.62
Avail Cap(c_a), veh/h	343	0	361	354	0	361	243	2092	1140	223	1326	1381
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	33.5	0.0	31.4	35.7	0.0	31.6	11.5	10.1	10.1	37.9	5.0	5.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	1.7	0.0	0.5	2.2	1.4	2.6	9.2	2.1	2.1
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	0.6	0.0	0.8	2.7	0.0	1.0	0.7	6.9	7.9	2.5	5.3	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	0.0	31.8	37.4	0.0	32.1	13.7	11.5	12.7	47.1	7.1	7.1
LnGrp LOS	C	A	C	D	A	C	B	B	B	D	A	A
Approach Vol, veh/h		77			188			2079			1777	
Approach Delay, s/veh		32.6			35.8			12.0			9.6	
Approach LOS		C			D			B			A	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.0	56.0		16.7		67.0		16.7				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s	10.5	47.5		18.5		62.5		18.5				
Max Q Clear Time (g_c+I1), s	7.0	22.2		6.3		20.2		11.9				
Green Ext Time (p_c), s	0.1	18.3		0.2		19.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			12.4									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	151	85	58	174	139	107	1783	43	131	1298	192
Future Volume (veh/h)	193	151	85	58	174	139	107	1783	43	131	1298	192
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	210	164	92	63	189	151	116	1938	47	142	1411	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	241	135	248	194	155	145	1675	40	125	1637	
Arrive On Green	0.06	0.21	0.21	0.04	0.20	0.20	0.08	0.47	0.47	0.07	0.46	0.00
Sat Flow, veh/h	1781	1125	631	1781	963	769	1781	3546	86	1781	3554	1585
Grp Volume(v), veh/h	210	0	256	63	0	340	116	967	1018	142	1411	0
Grp Sat Flow(s),veh/h/ln	1781	0	1757	1781	0	1732	1781	1777	1855	1781	1777	1585
Q Serve(g_s), s	5.1	0.0	12.1	2.5	0.0	17.6	5.8	42.5	42.5	6.3	32.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	12.1	2.5	0.0	17.6	5.8	42.5	42.5	6.3	32.0	0.0
Prop In Lane	1.00		0.36	1.00		0.44	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	187	0	375	248	0	348	145	839	876	125	1637	
V/C Ratio(X)	1.12	0.00	0.68	0.25	0.00	0.98	0.80	1.15	1.16	1.14	0.86	
Avail Cap(c_a), veh/h	187	0	375	270	0	348	164	839	876	125	1637	
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	0.00
Uniform Delay (d), s/veh	33.9	0.0	32.6	27.3	0.0	35.7	40.6	23.8	23.8	41.8	21.7	0.0
Incr Delay (d2), s/veh	102.4	0.0	5.0	0.5	0.0	41.7	21.4	82.2	85.5	122.7	6.2	0.0
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	6.9	0.0	5.5	1.1	0.0	11.3	3.4	35.5	37.9	7.0	13.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	136.2	0.0	37.5	27.8	0.0	77.4	62.0	105.9	109.3	164.6	28.0	0.0
LnGrp LOS	F	A	D	C	A	E	E	F	F	F	C	
Approach Vol, veh/h		466			403			2101			1553	A
Approach Delay, s/veh		82.0			69.7			105.1			40.4	
Approach LOS		F			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	47.0	8.5	23.7	11.8	46.0	9.6	22.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	42.5	5.1	18.1	8.3	40.5	5.1	18.1
Max Q Clear Time (g_c+I1), s	7.3	44.5	4.5	14.1	7.8	34.0	7.1	19.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	4.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	77.4
HCM 6th LOS	E

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	155	1838	268	0	1639
Future Vol, veh/h	0	155	1838	268	0	1639
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	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	168	1998	291	0	1782

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	999	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	242	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	242	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	48.1	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	242	-
HCM Lane V/C Ratio	-	-	0.696	-
HCM Control Delay (s)	-	-	48.1	-
HCM Lane LOS	-	-	E	-
HCM 95th %tile Q(veh)	-	-	4.6	-

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ACI PAYMENTS, INC.

Adams County - Building Safety, CO

Building Permit Payments

Confirmation Number:	526723
Payment Date:	Wednesday, March 8, 2023 10:28AM PT
Payment Time:	

Payer Information

Name:	Juel Rae
Street Address:	1880 Fall River Drive Suite 200 Loveland, CO 80538 United States
Daytime Phone Number:	(970) 635 - 3735
E-mail Address:	jrae@olsson.com
Permit Number:	64754
Site Street Address:	1880 Fall River Drive Suite 200
Site Zip Code:	80538

Card Information

Card Type:	Visa
Card Number:	**********1081

Payment Information

Payment Type:	Building Permit Payments
Payment Amount:	$2,300.00
Convenience Fee:	$65.55
Total Payment:	$2,365.55

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Back

Rayleen Swarts

From: CPD ePermit Center
Sent: Tuesday, March 7, 2023 4:53 PM
To: Juel Rae
Subject: RE: PLT2023-00012 - Kum & Go #2294 Minor Subdivision Submittal

Thank you for your application. Your case number **PLT2023-00012 - Kum & Go #2294 Minor Subdivision Submittal** - Fees due are as follows:

Application Fee:	$1,600.00
CO. Geo.	600.00
Soils Conservation	100.00
Total fees due:	$2,300.00

Payments can now be made online through our E-Permit Center. Please complete the steps below:

1. Please visit our E-Permit Center
2. Register and log in to your account
3. Type the case number**, PLT2023-00012**, in the search field in the top right corner
4. Select the "Payments" tab and click "Fees"

5. Click the blue Link that says "Pay Fees"
6. **Please send us a copy of your receipt for payment, to our email, EPermitCenter@adcogov.org, and we will save it to your case. We will put it to review as soon as payment is received.**

Thank you.

Rayleen Swarts
One Stop Customer Center
Permit Specialist - *Community & Economic Development*
ADAMS COUNTY, COLORADO
4430 S. Adams County Parkway, Suite W2000B
Brighton, CO 80601
o: 720.523.6800 | f: 720-523-6967
epermitcenter@adcogov.org

Our hours are Monday - Friday from 8:00am - 4:30pm. We are available by phone by calling 720-523-6800 and email EPermitCenter@adcogov.org

---

From: Juel Rae <jrae@olsson.com>
Sent: Monday, March 6, 2023 4:31 PM
To: CPD ePermit Center <epermitcenter@adcogov.org>
Cc: David Pendleton <dpendleton@olsson.com>; Dan Garneau <Dan.Garneau@kumandgo.com>; Lia Campbell <LCampbell@adcogov.org>
Subject: PLT2023-00012 - Kum & Go #2294 Minor Subdivision Submittal

Rayleen,

I granted permission to epermitcenter@adcogov.org to access the folders. Is there another email address I should add?

Thank You,

Juel Rae

From: CPD ePermit Center <epermitcenter@adcogov.org>
Sent: Monday, March 6, 2023 4:25 PM
To: Juel Rae <jrae@olsson.com>; CPD ePermit Center <epermitcenter@adcogov.org>
Cc: David Pendleton <dpendleton@olsson.com>; Dan Garneau <Dan.Garneau@kumandgo.com>; Lia Campbell <LCampbell@adcogov.org>
Subject: RE: Kum & Go #2294 Minor Subdivision Submittal

I am sorry, I am unable to open the link.

Rayleen Swarts
One Stop Customer Center
Permit Specialist - *Community & Economic Development*
ADAMS COUNTY, COLORADO
4430 S. Adams County Parkway, Suite W2000B
Brighton, CO 80601
o: 720.523.6800 | f: 720-523-6967
epermitcenter@adcogov.org
We are open Monday - Friday from 8:00am-4:30pm. We are available by phone by calling 720-523-6800 and email epermitcenter@adcogov.org.

From: Juel Rae <jrae@olsson.com>
Sent: Monday, March 06, 2023 4:18 PM
To: CPD ePermit Center <epermitcenter@adcogov.org>
Cc: David Pendleton <dpendleton@olsson.com>; Dan Garneau <Dan.Garneau@kumandgo.com>; Lia Campbell <LCampbell@adcogov.org>
Subject: RE: Kum & Go #2294 Minor Subdivision Submittal

Please be cautious: This email was sent from outside Adams County

Rayleen,

Thank you for the information. Am I using my organization's OneDrive? If so, please see the link below.

Here is the link: Kum & Go #2294 Minor Subdivision Submittal

If you'd like me to upload documents to the County's OneDrive, please let me know.

Thank You,

Juel Rae

From: CPD ePermit Center <epermitcenter@adcogov.org>
Sent: Monday, March 6, 2023 4:05 PM
To: Juel Rae <jrae@olsson.com>; CPD ePermit Center <epermitcenter@adcogov.org>
Cc: David Pendleton <dpendleton@olsson.com>; Dan Garneau <Dan.Garneau@kumandgo.com>; Lia Campbell <LCampbell@adcogov.org>
Subject: RE: Kum & Go #2294 Minor Subdivision Submittal

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Juel,

We only accept **One Drive** for loading documents for applications.

Thank you.

Rayleen Swarts
One Stop Customer Center
Permit Specialist - *Community & Economic Development*
ADAMS COUNTY, COLORADO
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epermitcenter@adcogov.org
We are open Monday - Friday from 8:00am-4:30pm. We are available by phone by calling 720-523-6800 and email epermitcenter@adcogov.org.

From: Juel Rae <jrae@olsson.com>
Sent: Monday, March 06, 2023 4:01 PM
To: CPD ePermit Center <epermitcenter@adcogov.org>
Cc: David Pendleton <dpendleton@olsson.com>; Dan Garneau <Dan.Garneau@kumandgo.com>; Lia Campbell <LCampbell@adcogov.org>
Subject: Kum & Go #2294 Minor Subdivision Submittal

Please be cautious: This email was sent from outside Adams County

To Whom It May Concern:

On Behalf of our client, Kum & Go, we are submitting the Kum & Go #2294 (5200 Sheridan Blvd) Minor Subdivision application for the County's first review.

Please use the link below to download the submittal documents.

Upon acceptance of the submittal package, I would like to pay the review fee over the phone by credit card.

Thank you for your time in this manner.

Citrix Attachments — Expires September 2, 2023

6b. 2294-Application_02.21.2023.pdf	738 KB
6c. 2294-Project Narrative_9.22.22.docx	638 KB

8. 2294-Fire Protection Report_02.21.23.pdf	1 MB
9a. 2294-Title_01.13.2023.pdf	361 KB
9b. 2294-Deed_1.27.09.pdf	2 MB
10a. 2294-Proof of Sewer_11.28.2022.pdf	139 KB
10b. 2294-Proof of Water_11.28.2022.pdf	2 MB
11. 2294-Proof of Utilities_09.22.2022.pdf	276 KB
12. 2294-Legal Description_9.22.22.pdf	46 KB
13. 2294-Statement of Taxes Due_9.22.22.pdf	12 KB
14. 2294-Mineral Certificate_02.21.2023.pdf	584 KB
15. 2294-Surface Development Certificate_02.21.2023.pdf	607 KB
16a. 2294-Level 3 Drainage Study_02.03.2023.pdf	14 MB
16b. 2294-TIS_02.23.2023.pdf	4 MB
1a. 2294-Application_02.21.2023.pdf	738 KB
1b. 2294-Authorization Letter_5.19.22.pdf	260 KB
3. 2294-Project Narrative_9.22.22.pdf	144 KB
4. 2294-SITE PLAN_02.21.2023.pdf	557 KB
5. 2294-PLAT_02.16.2023.pdf	4 MB
6a. 2294-SIA Application_02.21.2023.pdf	98 KB

Download Attachments

Juel Rae uses Citrix Files to share documents securely. Learn more.

Juel Rae
(She, Her, Hers)
Administrative Coordinator / Civil

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