



**Planning & Development Division**  
*Planning & Economic Development Department*

Room 160  
 411 West First Street  
 Duluth, Minnesota 55802



218-730-5580



planning@duluthmn.gov

File Number	PL 23-038	Contact	Kyle Deming	
Type	Special Use Permit – Restaurant	Planning Commission Date		March 14, 2023
Deadline for Action	Application Date	February 17, 2023	60 Days	April 18, 2023
	Date Extension Letter Mailed	February 23, 2023	120 Days	June 17, 2023
Location of Subject		Southwest corner of Anderson Rd. and Central Entrance (Mall Area)		
Applicant	The Jigsaw, LLC	Contact	Dan Regan	
Agent	Kimley-Horn	Contact	Brian Wurdeman	
Legal Description		Lot 2, Block 1, Jigsaw Division		
Site Visit Date		March 3, 2023	Sign Notice Date	February 27, 2023
Neighbor Letter Date		February 24, 2023	Number of Letters Sent	24

**Proposal**

A Special Use Permit to allow two restaurants in the Jigsaw development at the southwest corner of Central Entrance and Anderson Rd. The project will consist of a 2,500 sq. ft. restaurant and a 660 sq. ft. drive-thru coffee kiosk and related parking and landscaping.

**Recommended Action:** Approve with conditions.

	<b>Current Zoning</b>	<b>Existing Land Use</b>	<b>Future Land Use Map Designation</b>
<b>Subject</b>	MU-N	Vacant	Neighborhood Mixed Use
<b>North</b>	MU-C	Hotel and bank	Neighborhood Mixed Use
<b>South</b>	MU-N and R-1	Dwellings	Neighborhood Mixed Use and Traditional Neighborhood
<b>East</b>	MU-N	Vacant	Neighborhood Mixed Use
<b>West</b>	MU-N	Vacant	Neighborhood Mixed Use

**Summary of Code Requirements**

Sec. 50-37.10 – Special Use Permits: Planning Commission shall approve the application or approve it with modifications, if it is determined that the application meets the following criteria:

1. The application is consistent with the Comprehensive Land Use Plan;
2. The application complies with all applicable provisions of this Chapter; including without limitations to any use-specific standards applicable to the proposed use, development or redevelopment, and is consistent with any approved district plan for the area.
3. Without limiting the previous criteria, the Commission may deny any application that would result in a random pattern of development with little contiguity to existing or programmed development or would cause anticipated negative fiscal or environmental impacts on the community.

**Sec. 50-20.3.Q – Restaurant Use Specific Standards.**

1. In the R-2 and MU-N district, no use shall exceed 5,000 sq. ft. in gross floor area;
2. Drive-ins and drive-throughs for restaurants are only allowed in the MU-N, MU-C, MU-B, MU-P, F-2, F-3, F-4, and F-5 zone districts;
3. Drive-through lanes shall allow for stacking space for 5 cars;
4. When in the MU-N district, the following additional standards apply: (a) The speaker box and drive-through window must be at least 50 feet from any property line containing a residential structure; (b) Drive-through may not open before 7:00 a.m. or after 10:00 p.m. during the weekday, or before 8:00 a.m. or after 10:00 p.m. on the weekend. Drive-through may be open at 6:00 a.m. during the weekday or at 7:00 a.m. on the weekend only if all speaker boxes and drive through windows are at least 125 feet from any residential structure, or open until 11:00 pm on Friday and Saturday if all speaker boxes and drive-through windows are at least 250 feet from any residential structure, excluding any residential use or structure on the same property or within the same development; (c) Glare and noise from cars in the drive-through lane and stacking space shall be shielded from adjacent residential properties through the use of screening, fencing, and/or a dense urban screen; (d) The land use supervisor may require that the drive-through be located on the opposite side of the building from a residential use or that a masonry sound wall be constructed; (e) Restaurants are limited to one drive through lane and one speaker box;

**Comprehensive Plan Governing Principles and/or Policies and Current History (if applicable):**

Governing Principle #8 – Encourage mix of activities, uses, and densities. The two proposed restaurants would follow a fast food restaurant approved for the parcel to the west in the Jigsaw development. There are two additional sites within the Jigsaw development for additional uses.

Governing Principle #9 – Support private actions that contribute to the public realm. – Project will extend 350 feet of sidewalk along Anderson Rd. from Central Entrance to the project's entrance.

Zoning –Mixed Use-Neighborhood (MU-N) - a mix of neighborhood-scale, neighborhood serving non-residential uses and a range of residential uses located in close proximity. Non-residential uses may include small-scale retail, service and professional offices that provide goods and services to the residents of the surrounding neighborhood.

Future Land Use – Neighborhood Mixed Use - A transitional use between more intensive commercial uses and purely residential neighborhoods. Includes conversions of houses to office or live -work spaces. May include limited commercial-only space oriented to neighborhood or specialty retail markets. Site design should maintain a largely residential building character. Commercial-only uses should be adjacent to non-residential or other mixed-use areas.

**History:**

1. Site was zoned R-1 prior to 2012 when it was rezoned MU-N in implementation of the Central Entrance Small Area Plan that was adopted by City Council in 2009.
2. The site is part of the 3.5-acre Jigsaw Division plat that was approved by the Planning Commission 10/9/2018.
3. A 1950s era home on the site was removed in 2020.
4. May 11, 2021 Planning Commission approved a special use permit for a 2,287 sq. ft. restaurant (PL 21-047) on a parcel west of the proposed restaurants.
5. August 10, 2021 Planning Commission approved a minor subdivision (PL 21-120) on Lot 1 and Lot 2 to create a parcel for the restaurant approved in May 2021.

**Review and Discussion Items**

**Staff finds that:**

1. The proposed special use permit is to allow two restaurants on Lot 2 of Jigsaw Division, one, 2,500 sq. ft. with no drive-thru, and the second, 664 sq. ft. coffee kiosk with a drive-thru. The 2,500 sq. ft. restaurant is proposed to be in a building with a 3,500 sq. ft. aesthetic studio (personal service).
2. The proposed coffee kiosk includes a one-lane drive-thru with more than 5 vehicle stacking space, as is required.
3. The drive-thru may be open from 6 a.m. until 10 p.m. on weekdays and 7 a.m. until 11 p.m. on weekends since the speaker box is more than 250 feet from a residential structure. No screening is required for vehicles using the drive-thru due to its location away from residential properties.
4. The site plan shows 38 parking spaces for the two proposed restaurants and anticipated personal service use. This is within the range allowed for the three businesses (minimum of 29 parking spaces and a maximum of 43 spaces).

Here is the calculation: the personal services use requires 2.5 parking spaces per 1,000 sq. ft. of building space yielding a minimum of 8 space and maximum of 13 spaces, the coffee kiosk requires 4 spaces with a maximum of 6 spaces (6.5 parking spaces per 1,000 sq. ft. of building area for restaurants), and the other restaurant requires 16 spaces with a maximum of 24 spaces.

5. The applicant provided an updated trip generation memo indicating that vehicle trips to/from the site are not expected to increase with the proposed restaurants when compared with the original volumes forecasted in the 2018 Traffic Impact Analysis.
6. The landscape plan submitted does not provide enough trees along the Central Entrance frontage (8 are required, 3 are shown). This will need to be corrected before the building permit application.
7. HVAC mechanical units are not shown and will need to be screened from view, which can be verified at time of building permit application.
8. Trash screening is shown on the plans with compliant materials.
9. Retaining wall shown on the site plan complies with height limits, including required landscaping between terraces.
10. Ground-mounted and building mounted signs shown on the plans will need to comply with the Master Sign Plan, which is to be reviewed by the Planning Commission at this March meeting (PL 23-021).
11. Sustainability and building design standards do not apply due to the size of the structures.
12. Exterior lighting details were not provided with the plans. A photometric plan and fixture details will need to be reviewed during the building permitting process.
13. One comment: MN-DOT commented that the driveway is to be installed as permitted by them. No other comments.

#### **Staff Recommendation**

Based on the above findings, staff recommends that Planning Commission adopt the findings of fact in the staff report and approve the special use permit with the following conditions:

1. The project be limited, constructed, and maintained consistent with plans titled "Site Development Plans for The Jigsaw" by Kimley-Horn, dated 12/6/2022, including Sheet C3.0 – Site Plan, Sheet C4.0 – Grading Plan, Sheet L1.0 – Landscape Plan, and Sheet L1.1 – Landscape Details and any amendments approved by the Land Use Supervisor as listed below.
2. Applicant provide additional trees along the Central Entrance frontage to comply with the UDC.
3. Applicant provide mechanical screening details.
4. Applicant provide a photometric plan with light fixtures compliant with UDC requirements.
5. Any alterations to the approved plans that do not alter major elements of the plan may be approved by the Land Use Supervisor without further Planning Commission approval; however, no such administrative approval shall constitute a variance from the provisions of Chapter 50.





PL 23-038  
Special Use Permit -  
Restaurant  
The Jigsaw, LLC

### Area Map

**Legend**  
 Zoning Boundaries  
 Streams  
 Trout Stream (GPS)

The City of Duluth has tried to ensure that the information contained in this map or electronic document is accurate. The City of Duluth makes no warranty or guarantee concerning the accuracy or reliability. This drawing/data is neither a legally recorded map nor a survey and is not intended to be used as one. The drawing/data is a compilation of records, information and data located in various City, County and State offices and other sources affecting the area shown and is to be used for reference purposes only. The City of Duluth shall not be liable for errors contained within this data provided or for any damages in connection with the use of this information contained within.



Aerial photography flown 2021

Prepared by: City of Duluth Planning & Economic Development, February 22, 2023. Source: City of Duluth.





PL 23-038  
Special Use Permit -  
Restaurant  
The Jigsaw, LLC

## Future Land Use Map

**Legend**

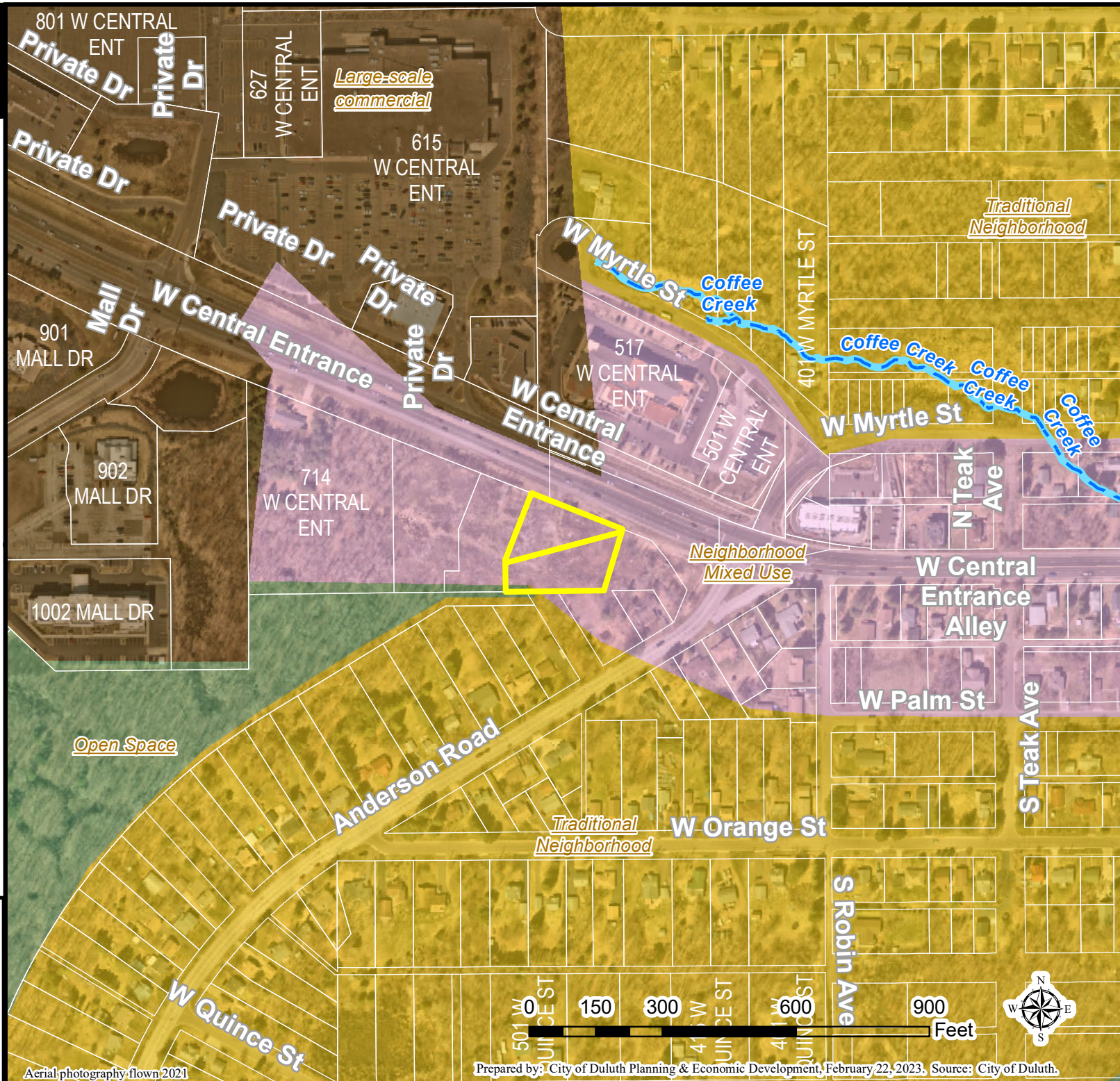
**Streams**

- Trout Stream (GPS)

**Future Land Use**

- Open Space
- Traditional Neighborhood
- Large-scale commercial
- Neighborhood Mixed Use

The City of Duluth has tried to ensure that the information contained in this map or electronic document is accurate. The City of Duluth makes no warranty or guarantee concerning the accuracy or reliability. This drawing/data is neither a legally recorded map nor a survey and is not intended to be used as one. The drawing/data is a compilation of records, information and data located in various City, County and State offices and other sources affecting the area shown and is to be used for reference purposes only. The City of Duluth shall not be liable for errors contained within this data provided or for any damages in connection with the use of this information contained within.







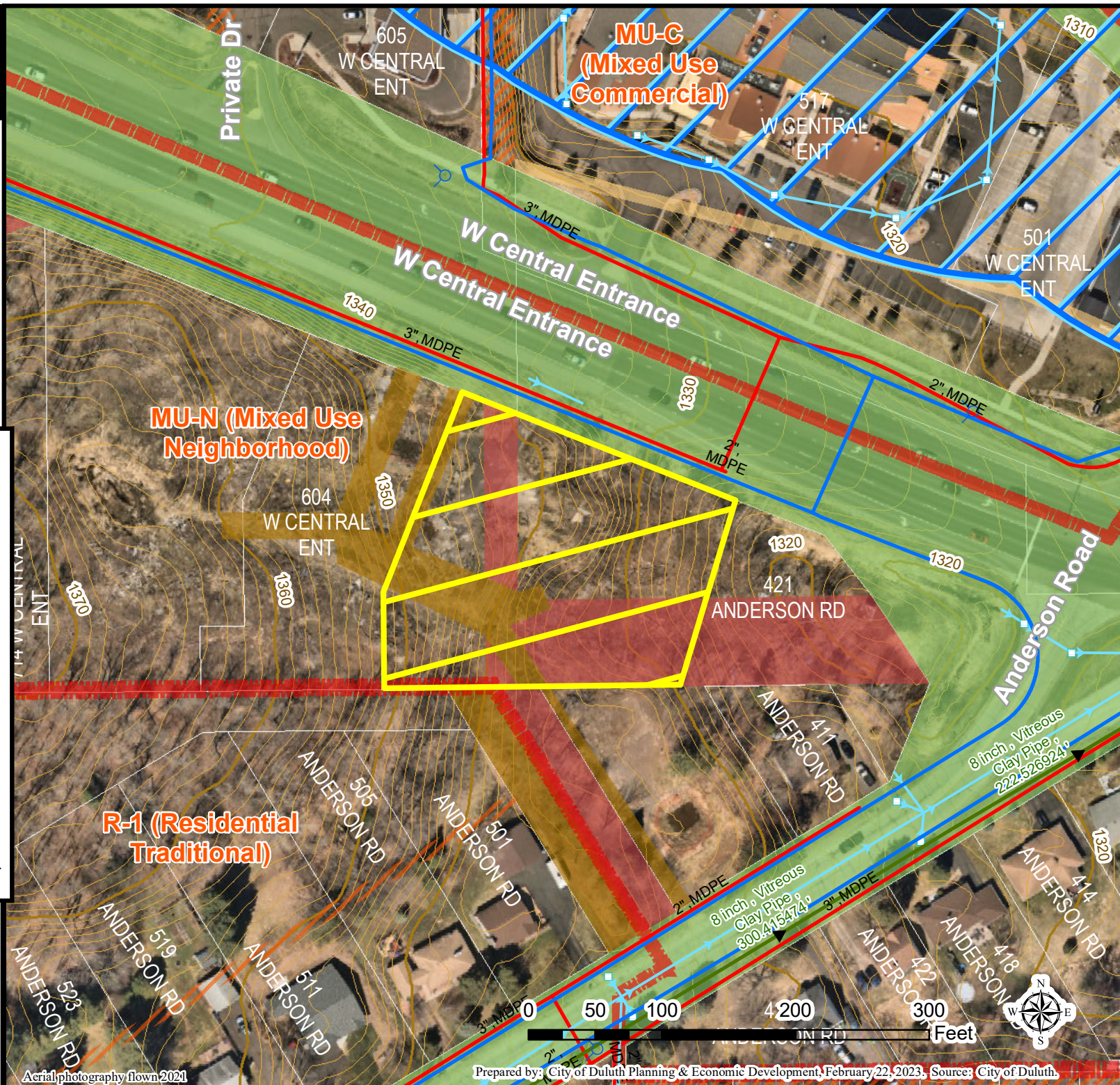
PL 23-038  
Special Use Permit -  
Restaurant  
The Jigsaw, LLC

### Site Map

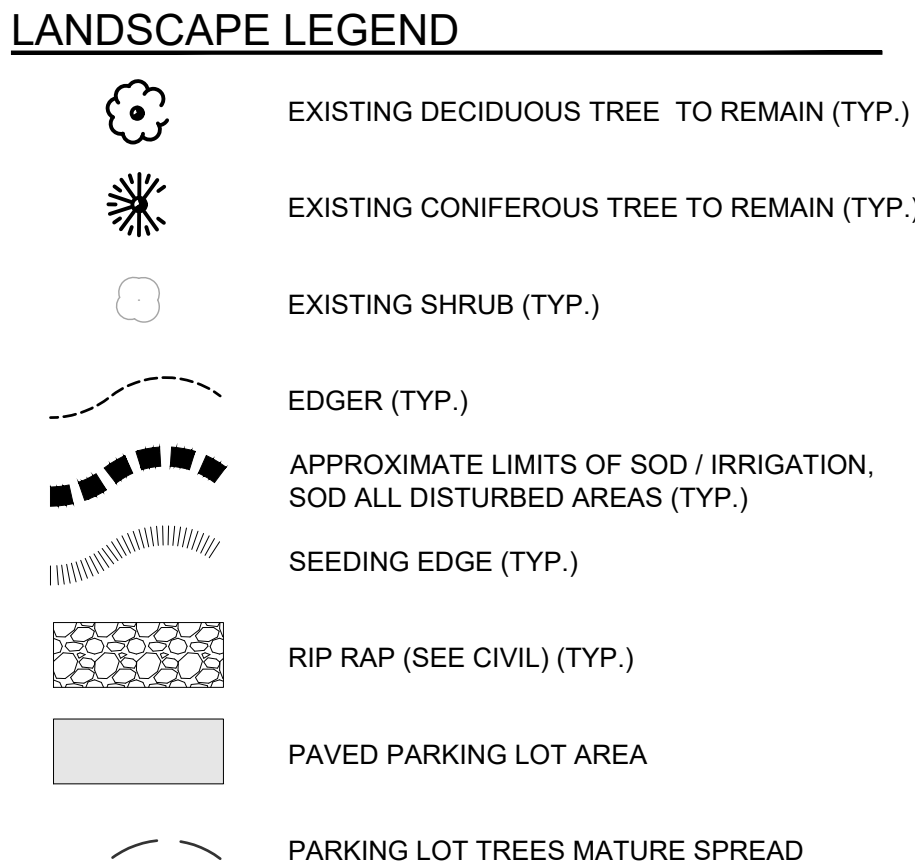
#### Legend

- Zoning Boundaries
- Shoreland (UDC)**
- Cold Water
- Distribution Main**
- Water Main
- Hydrant
- Gas Main
- Sanitary Sewer Mains**
- City of Duluth
- Storm Sewer Mains**
- Storm Sewer Pipe
- Storm Sewer Catch Basin
- Elevation**
- 1 Ft contour
- 10 Ft contour
- Undefined ROW Status
- ROW Status**
- Utility, Active
- Road, Active - currently in use
- Utility, Vacated - via recorded doc.
- Road, Vacated - vacated

The City of Duluth has tried to ensure that the information contained in this map or electronic document is accurate. The City of Duluth makes no warranty or guarantee concerning the accuracy or reliability. This drawing/data is neither a legally recorded map nor a survey and is not intended to be used as one. The drawing/data is a compilation of records, information and data located in various City, County and State offices and other sources affecting the area shown and is to be used for reference purposes only. The City of Duluth shall not be liable for errors contained within this data provided or for any damages in connection with the use of this information contained within.







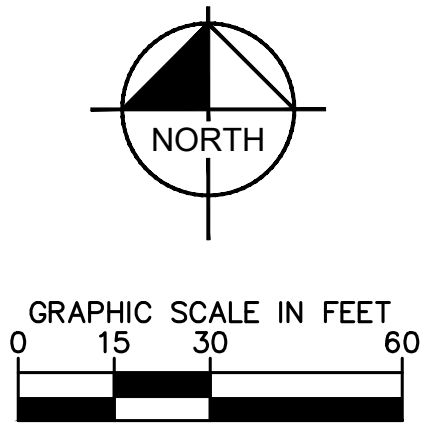
LANDSCAPE REQUIREMENTS		
CODE DESCRIPTION	REQUIRED	PROPOSED
<u>REGULAR STREET FRONTAGE:</u> 1 TREE PER 35 L.F. (+/- 626 / 35) 1 LARGE SHRUB PER 25 L.F. (+/- 626 / 25)	315 LF 18 TREES 25 +/- SHRUBS	18 TREES 48 SHRUBS
<u>INTERIOR PARKING LOT LANDSCAPING:</u> 15% OF INTERNAL PARKING LOT AREA TO BE LANDSCAPED (14,286 X 0.15)	PAVED PARKING AREA: 14,286 SF  INTERNAL LANDSCAPING REQUIRED: 2,143 SF	PROPOSED INTERNAL LANDSCAPING: 2,120 SF* INTERNAL PARKING LOT LANDSCAPE AREA TO BE CODE COMPLIANT AT TIME OF FINAL DEVELOPMENT
1 TREE PER 300 S.F. OF INTERNAL LANDSCAPE AREA (2,143 / 300)	INTERNAL LANDSCAPING TREES REQUIRED: 8	PROPOSED INTERNAL LANDSCAPING TREES: 15
TREES IN INTERNAL LANDSCAPE AREAS SHALL PROVIDE A MINIMUM OF 30% CANOPY COVERAGE OF PARKING AREAS. (14,286 X 0.30)	CANOPY COVERAGE REQUIRED: 4,286 SF	CANOPY COVER AREA: 7,730 SF**  APPROX 58% OF TOTAL PARKING AREA
<u>REPLACEMENT TREES</u>	TREES REQUIRED: 46 SPECIAL TREES*	TREES PROPOSED: 46 (7 FUTURE + 39 PROPOSED)

\*SPECIAL CATEGORIES: White pines (*Pinus strobus*), red (Norway) pines (*Pinus resinosa*), white cedars (*Thuja occidentalis*), white spruces (*Picea glauca*), eastern hemlocks (*Tsuga canadensis*), sugar maples (*Acer saccharum*), American basswoods (*Tilia americana*), American elms (*Ulmus americana*), yellow birches (*Betula alleghaniensis*) and all oak species (*Quercus*).

PLANT SCHEDULE						
TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
HL	6	GLEDITSIA TRIACANTHOS VAR. INERMIS 'IMPERIAL'	IMPERIAL HONEYLOCUST	B & B	2.5" CAL.	
UO	33	ULMUS AMERICANA 'LEWIS & CLARK' TM	PRAIRIE EXPEDITION AMERICAN ELM	36" BOX		
CONIFEROUS TREE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
BHS	4	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	B & B		6' HT.
PWP	12	PINUS STROBUS 'FASTIGIATA'	PYRAMIDAL WHITE PINE	B & B	8' HT.	
WP	4	PINUS STROBUS	WHITE PINE	B & B		6' HT.
ORNAMENTAL TREE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
RVB	3	BETULA NIGRA	RIVER BIRCH MULTI-TRUNK	B & B		6' HT.
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	SIZE
AH	41	HYDRANGEA ARBORESCENS 'ANNABELLE'	ANNABELLE SMOOTH HYDRANGEA	#5 CONT.	3.5' O.C.	
CS	11	CORNUS SERICEA 'CARDINAL'	CARDINAL DOGWOOD	#5 CONT.	5' O.C.	
DH	38	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	#5 CONT.	3' O.C.	
GJ	9	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#5 CONT.	4' O.C.	
JB	6	JUNIPERUS HORIZONTALIS 'BLUE PRINCE'	BLUE PRINCE JUNIPER	#5 CONT.	4' O.C.	
JC	39	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	#5 CONT.	4' O.C.	
JM	4	JUNIPERUS SCOPULORUM 'MEDORA'	MEDORA JUNIPER	#10 CONT.	5' O.C.	
JW	6	JUNIPERUS HORIZONTALIS 'WILTONII'	BLUE RUG JUNIPER	#5 CONT.	4' O.C.	
MGP	11	PINUS MUGO 'SLOWMOUND'	MUGO PINE	#5 CONT.	5' O.C.	
RG	18	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	#5 CONT.	5' O.C.	
ANNUALS/PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	SIZE
HA	40	HEMEROCALLIS X 'APRICOT SPARKLES'	APRICOT SPARKLES DAYLILY	#1 CONT.	18" O.C.	
NF	24	NEPETA X FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	#1 CONT.	18" O.C.	
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SIZE	SPACING
DAY	208	HEMEROCALLIS X 'APRICOT SPARKLES'	APRICOT SPARKLES DAYLILY	#1 CONT.		15" OC
KFG	79	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#1 CONT		30" OC
PDS	84	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	#1 CONT		24" OC
SDO	59	HEMEROCALLIS X 'STELLA DE ORO'	STELLA DE ORO DAYLILY	#1 CONT		18" O.C.
WLC	118	NEPETA X FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	#1 CONT		30" OC

## LANDSCAPE KEYNOTES

- ☐ A EDGER (TYP.)
- ☐ B DOUBLE SHREDDED HARDWOOD MULCH (TYP.)
- ☐ C SOD (TYP.)
- ☐ D MAINTENANCE STRIP (TYP.)





## LEGEND

NOTE TO CONTRACTOR:  
ON-SITE ROCK EXCAVATION IS ANTICIPATED. CONTRACTOR IS TO KEEP EXCAVATED ROCK ON-SITE AND PLACE WHERE SLOPES ARE STEEPEST AROUND THE PERIMETER OF THE PROPOSED DEVELOPMENT.

## SITE PLAN NOTES

- ## KEYNOTE LEGEND

- BENCHMARK NO. 1**  
T.M.H. ELEVATION = 1347.08

PROPERTY SUMMARY	
DEVELOPMENT	
EXISTING ZONING	MU-N (MIXED USE NEIGHBORHOOD)
PROPOSED ZONING	MU-N (MIXED USE NEIGHBORHOOD)
PROPOSED LOT AREA SUMMARY	
LOT 1	1.12 AC
LOT 2	0.71 AC
LOT 3	0.27 AC
LOT 4	1.55 AC
TOTAL PROPERTY	3.65 AC

**LEGEND**

  - PROPERTY LINE
  - PROPOSED 4" PICKET FENCE
  - SETBACK LINE
  - EXISTING WETLAND PROTECTION
  - RETAINING WALL
  - PROPOSED CURB AND GUTTER
  - PROPOSED CONCRETE PAVEMENT
  - PROPOSED STORMWATER MANAGEMENT SYSTEM

**NOTE TO CONTRACTOR:**  
ON-SITE ROCK EXCAVATION IS ANTICIPATED. CONTRACTOR IS TO KEEP EXCAVATED ROCK ON-SITE AND PLACE WHERE SLOPES ARE STEEPEST AROUND THE PERIMETER OF THE PROPOSED DEVELOPMENT.

**PARKING SETBACKS:**  
5' PARKING SETBACK  
BUILDING SETBACK

**Other Labels:**  
FUTURE RESTAURANT 2,485 SF ±  
COFFEE SHOP 684 SF ±  
RESTAURANT 2,607 SF  
AESTHETIC STUDIO 3,502 SF  
WEST CENTRAL ENTRANCE  
ANDERSON ROAD  
FULL ACCESS DRIVEWAY  
SURFACE FILTRATION BASIN  
ENVIRONMENTALLY SENSITIVE AREA - CONTRACTOR IS TO NOT IMPACT EXISTING WETLAND  
PROPOSED RETAINING WALL AND FENCE - CONTRACTOR TO SUBMIT SIGNED/SEALED ENGINEERED SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.  
REFER TO CAR WASH PLANS PREPARED BY OTHERS  
REFER TO RESTAURANT PLANS PREPARED BY OTHERS  
ADD R3-5R RT TURN ONLY SIGN PANEL BELOW STOP SIGN PANEL  
F&I R4-7 KEEP RIGHT SIGN WITH OM1-2 HAZARD MARKER (MOUNT HAZARD MARKER PANEL 4 FT ABOVE GROUND SURFACE). F&I R3-4 NO U-TURN SIGN PANEL ON BACKSIDE FACING WEST.  
F&I R3-BACCA LANE USE CONTROL SIGN (LEFT-THRU-RIGHT)  
PAINT 4" EPOXY TAPER  
6-1 CURB TAPER FROM 6" HEIGHT TO 0"  
MONUMENT SIGN  
6-1 CURB TAPER FROM 6" HEIGHT TO 0"

### LEGAL DESCRIPTION OF DEVELOPMENT PARCEL:

**PARCEL 1:**  
THAT PORTION OF THE E ½ OF W ½ OF SE ¼ OF NW ¼, SECTION 20, IN TOWNSHIP 50 NORTH, OF RANGE 14, WEST OF THE FOURTH PRINCIPAL MERIDIAN, LYING SOUTH OF STATE TRUNK HIGHWAY NO. 94, ST. LOUIS COUNTY, MINNESOTA. (TORRENS PROPERTY)

**PARCEL 2:**  
ALL OF LOT 9 IN BLOCK 4, MAPLE GROVE ACRE TRACTS OF DULUTH, MINNESOTA, EXCEPT THAT PART OF SAID LOT 9 LYING NORTHERLY OF THE CENTRAL ENTRANCE ROAD AS LAID OUT THROUGH SAID BLOCK 4, DESCRIBED AS FOLLOWS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 9, RUNNING SOUTH A DISTANCE OF 87.5 FEET TO THE NORTH RIGHT OF WAY LINE OF SAID CENTRAL ENTRANCE ROAD, THENCE IN A GENERAL NORTHWESTERLY DIRECTION ALONG THE NORTH RIGHT OF WAY LINE OF SAID HIGHWAY A DISTANCE OF 66.84 FEET, THENCE DUE NORTH ALONG THE WESTERLY LINE OF SAID LOT 9 A DISTANCE OF 76.5 FEET, THENCE DUE EAST ALONG THE NORTH LINE OF SAID LOT 9 A DISTANCE OF 83.32 FEET TO THE PLACE OF BEGINNING, ST. LOUIS COUNTY, MINNESOTA. (TORRENS PROPERTY)

OVERALL SITE DATA TABLE	
Lot Area Summary	Total Property: 3.65 AC
Setback Requirements	5' Parking Setback, Building Setback
Access Points	Full Access Driveway, Proposed 15' Maintenance Access
Environmental Features	Existing Wetland, Environmentally Sensitive Area


LEGAL DESCRIPTION OF DEVELOPMENT PARCEL:

## OVERALL SITE DATA TABLE

\*CITY OF DULUTH MINIMUM REQUIRED PARKING RATIOS:  
RETAIL - 3.0 / 1,000 SF  
RESTAURANT - 6.5 / 1,000 SF  
AUTOMOBILE AND LIGHT VEHICLE REPAIR AND SERVICE - 2 / 1,000 SF  
PERSONAL SERVICE - 2.5 / 1,000 SF  
\*\*CITY OF DULUTH MAXIMUM PERMITTED PARKING RATIO: 1.5 TIMES MINIMUM REQUIRED PARKING RATIO  
\*\*\*PRELIMINARY - FINAL CAR WASH DEVELOPMENT PLANS TO BE SUBMITTED IN FUTURE

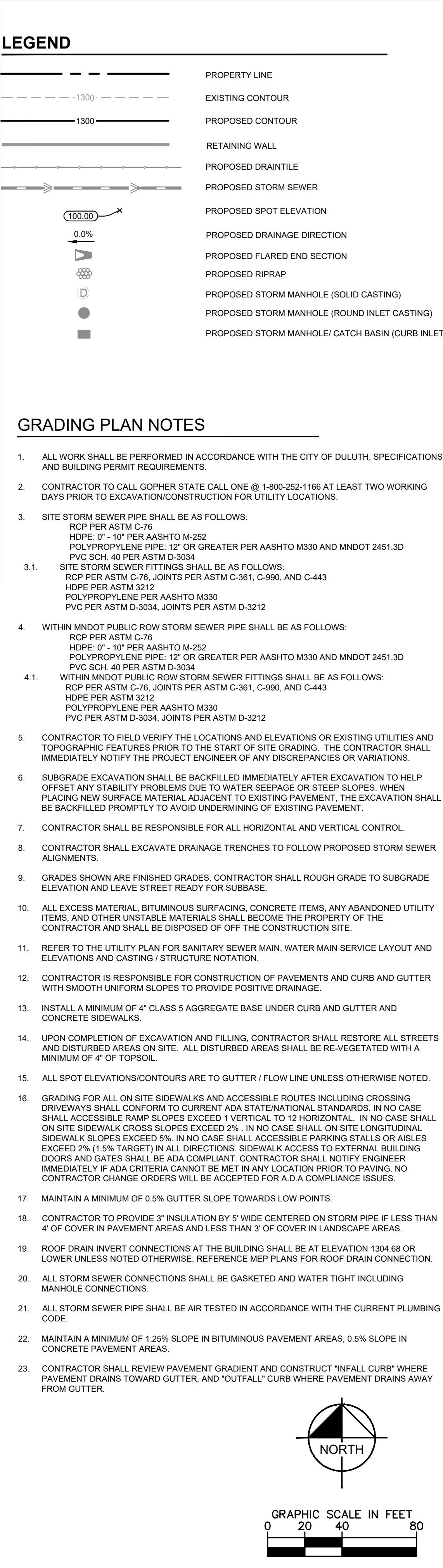
## CODE REQUIREMENTS SUMMARY

GRAPHIC SCALE IN FEET



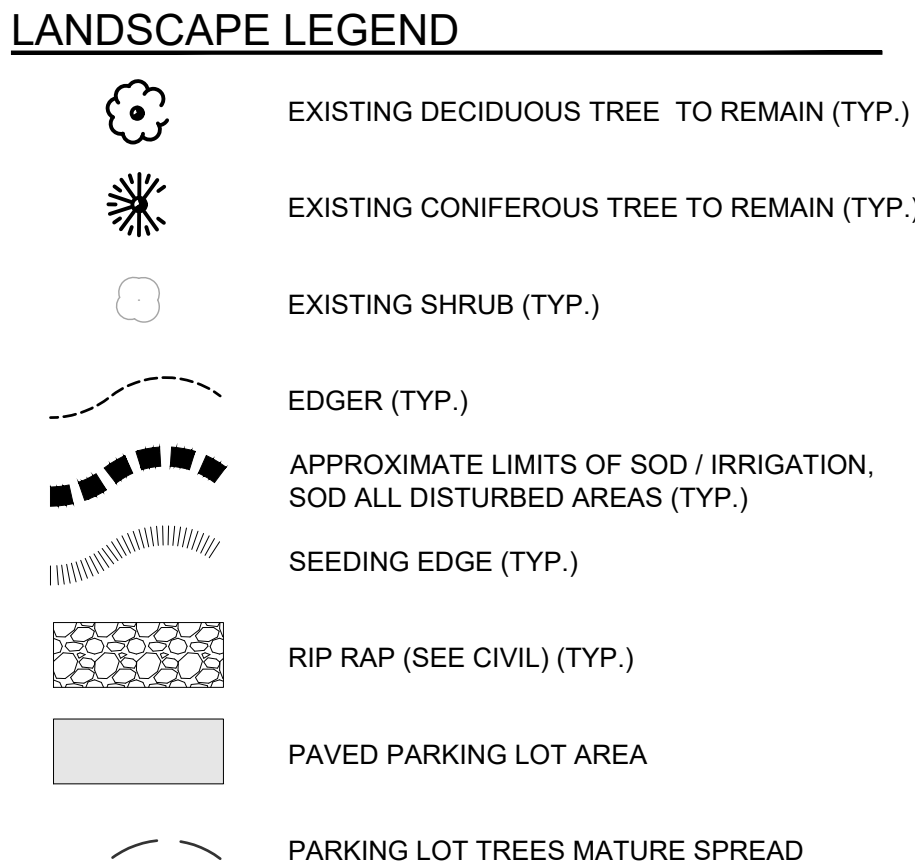
0 20 40 80





DULUTH	THE JIGSAW PREPARED FOR LAUNCH PROPERTIES	MIN	SHEET NUMBER <b>C4.0</b>	GRADING PLAN	KHA PROJECT 160334013 DATE 12/06/2022 SCALE AS SHOWN DESIGNED BY ACL DRAWN BY ACL CHECKED BY BMW	I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IT COMPLIES WITH ALL CITY, STATE AND FEDERAL REQUIREMENTS AND THE ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  <i>Brian H. Wurdehman</i>  BRIAN H. WURDEHMAN P.E.  DATE: 02/21/2018 MN LIC. NO. 53113	Kimley»Horn © 2021 KIMLEY-HORN AND ASSOCIATES, INC. 767 EUSTIS ST. SUITE 100, ST. PAUL, MN 55114 PHONE: 651-454-4197 WWW.KIMLEY-HORN.COM	No.	REVISIONS	DATE	BY





LANDSCAPE REQUIREMENTS		
CODE DESCRIPTION	REQUIRED	PROPOSED
<u>REGULAR STREET FRONTAGE:</u> 1 TREE PER 35 L.F. (+/- 626 / 35) 1 LARGE SHRUB PER 25 L.F. (+/- 626 / 25)	315 LF 18 TREES 25 +/- SHRUBS	18 TREES 48 SHRUBS
<u>INTERNAL PARKING LOT LANDSCAPING:</u> 15% OF INTERNAL PARKING LOT AREA TO BE LANDSCAPED (14,286 X 0.15)	PAVED PARKING AREA: 14,286 SF  INTERNAL LANDSCAPING REQUIRED: 2,143 SF	PROPOSED INTERNAL LANDSCAPING: 2,120 SF* INTERNAL PARKING LOT LANDSCAPE AREA TO BE CODE COMPLIANT AT TIME OF FINAL DEVELOPMENT
1 TREE PER 300 S.F. OF INTERNAL LANDSCAPE AREA (2,143 / 300)	INTERNAL LANDSCAPING TREES REQUIRED: 8	PROPOSED INTERNAL LANDSCAPING TREES: 15
TREES IN INTERNAL LANDSCAPE AREAS SHALL PROVIDE A MINIMUM OF 30% CANOPY COVERAGE OF PARKING AREAS. (14,286 X 0.30)	CANOPY COVERAGE REQUIRED: 4,286 SF	CANOPY COVER AREA: 7,730 SF**  APPROX 58% OF TOTAL PARKING AREA
<u>REPLACEMENT TREES</u>	TREES REQUIRED: 46 SPECIAL TREES*	TREES PROPOSED: 46 (7 FUTURE + 39 PROPOSED)

**\*SPECIAL TREES:** White pines (*Pinus strobus*), red (Norway) pines (*Pinus resinosa*), white cedars (*Thuja occidentalis*), white spruces (*Picea glauca*), eastern hemlocks (*Tsuga canadensis*), sugar maples (*Acer saccharum*), American basswoods (*Tilia americana*), American elms (*Ulmus americana*), yellow birches (*Betula alleghaniensis*) and all oak species (*Quercus*).

PLANT SCHEDULE						
TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
HL	6	GLEDITSIA TRIACANTHOS VAR. INERMIS 'IMPERIAL'	IMPERIAL HONEYLOCUST	B & B	2.5" CAL.	
UO	33	ULMUS AMERICANA 'LEWIS & CLARK' TM	PRAIRIE EXPEDITION AMERICAN ELM	36" BOX		
CONIFEROUS TREE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
BHS	4	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	B & B		6' HT.
PWP	12	PINUS STROBUS 'FASTIGIATA'	PYRAMIDAL WHITE PINE	B & B	8' HT.	
WP	4	PINUS STROBUS	WHITE PINE	B & B		6' HT.
ORNAMENTAL TREE	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE
RVB	3	BETULA NIGRA	RIVER BIRCH MULTI-TRUNK	B & B		6' HT.
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	SIZE
AH	41	HYDRANGEA ARBORESCENS 'ANNABELLE'	ANNABELLE SMOOTH HYDRANGEA	#5 CONT.	3.5' O.C.	
CS	11	CORNUS SERICEA 'CARDINAL'	CARDINAL DOGWOOD	#5 CONT.	5' O.C.	
DH	38	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	#5 CONT.	3' O.C.	
GJ	9	JUNIPERUS VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#5 CONT.	4' O.C.	
JB	6	JUNIPERUS HORIZONTALIS 'BLUE PRINCE'	BLUE PRINCE JUNIPER	#5 CONT.	4' O.C.	
JC	39	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	#5 CONT.	4' O.C.	
JM	4	JUNIPERUS SCOPULORUM 'MEDORA'	MEDORA JUNIPER	#10 CONT.	5' O.C.	
JW	6	JUNIPERUS HORIZONTALIS 'WILTONII'	BLUE RUG JUNIPER	#5 CONT.	4' O.C.	
MGP	11	PINUS MUGO 'SLOWMOUND'	MUGO PINE	#5 CONT.	5' O.C.	
RG	18	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	#5 CONT.	5' O.C.	
ANNUALS/PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SPACING	SIZE
HA	40	HEMEROCALLIS X 'APRICOT SPARKLES'	APRICOT SPARKLES DAYLILY	#1 CONT.	18" O.C.	
NF	24	NEPETA X FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	#1 CONT.	18" O.C.	
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	CONT	SIZE	SPACING
DAY	208	HEMEROCALLIS X 'APRICOT SPARKLES'	APRICOT SPARKLES DAYLILY	#1 CONT.		15" OC
KFG	79	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#1 CONT		30" OC
PDS	84	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	#1 CONT		24" OC
SDO	59	HEMEROCALLIS X 'STELLA DE ORO'	STELLA DE ORO DAYLILY	#1 CONT		18" O.C.
WLC	118	NEPETA X FAASSENII 'WALKERS LOW'	WALKERS LOW CATMINT	#1 CONT		30" OC

[illegible]





1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING.
3. SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED PLANTING SOIL. INSTALL PLANT SO THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE WITH BURLAP AND BASKET, (IF USED), INTACT.
4. SILT REMAINING TREATED BURLAP AT 6" INTERVALS.
5. BACKFILL TO WITHIN APPROXIMATELY 12" OF THE TOP OF THE ROOTBALL, THEN WATER PLANT. REMOVE THE TOP 1/3 OF THE BASKET OR THE TOP TWO HORIZONTAL RINGS WHICHEVER IS GREATER. REMOVE ALL BURLAP AND NAILS FROM THE TOP 1/3 OF THE BALL. REMOVE ALL TWINE. REMOVE OR CORRECT STEM GIRDLING ROOTS.
6. PLUMB AND BACKFILL WITH PLANTING SOIL.
7. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE SOILS AND FILL VOIDS.
8. BACK FILL VOIDS AND WATER SECOND TIME.
9. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.
10. FINAL LOCATION OF TREE TO BE APPROVED BY OWNER.



1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING OF TOP AND ROOT.
3. REMOVE CONTAINER AND SCORE OUTSIDE OF SOIL MASS TO REDIRECT AND PREVENT CIRCLING FIBROUS ROOTS. REMOVE OR CORRECT STEM GIRDLING ROOTS.
4. PLUMB AND BACKFILL WITH PLANTING SOIL.
5. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
6. BACK FILL VOIDS AND WATER SECOND TIME.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.
8. MIX IN 3-4" OF ORGANIC COMPOST.

**2** SHRUB / PERENNIAL PLANTING DETAIL

SCALE: N.T.S.

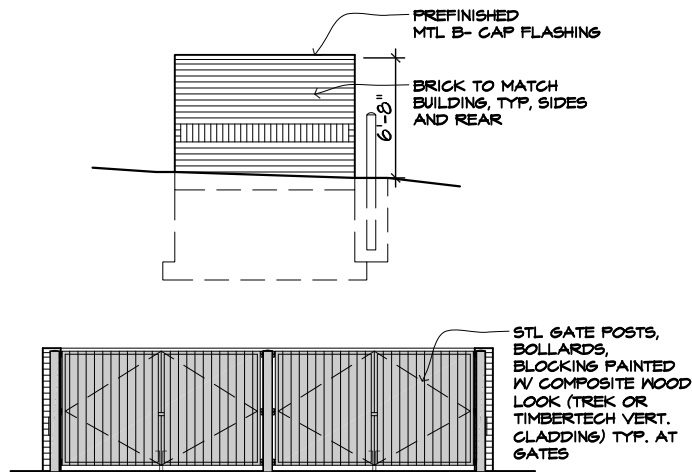
L1.1



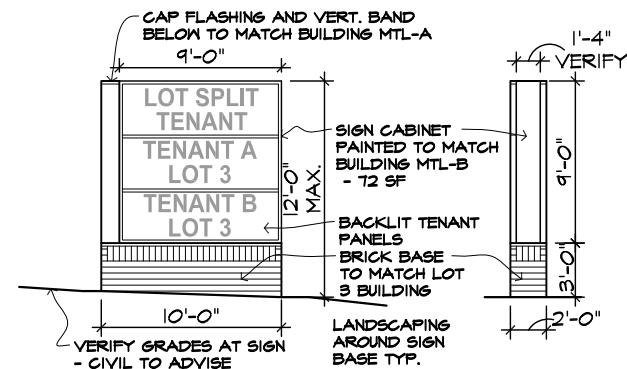
- LANDSCAPE NOTES

1. CONTRACTOR SHALL CONTACT COMMON GROUND ALLIANCE AT 811 OR CALL811.COM TO VERIFY LOCATIONS OF ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY PLANTS OR LANDSCAPE MATERIAL.
2. ACTUAL LOCATION OF PLANT MATERIAL IS SUBJECT TO FIELD AND SITE CONDITIONS.
3. NO PLANTING WILL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
4. ALL SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO SUBMISSION OF ANY BID AND/OR QUOTE BY THE LANDSCAPE CONTRACTOR.
5. CONTRACTOR SHALL PROVIDE TWO YEAR GUARANTEE OF ALL PLANT MATERIALS. THE GUARANTEE BEGINS ON THE DATE OF THE LANDSCAPE ARCHITECT'S OR OWNER'S WRITTEN ACCEPTANCE OF THE INITIAL PLANTING. REPLACEMENT PLANT MATERIAL SHALL HAVE A ONE YEAR GUARANTEE COMMENCING UPON PLANTING.
6. ALL PLANTS TO BE SPECIMEN GRADE, MINNESOTA-GROWN AND/OR HARDY. SPECIMEN GRADE SHALL ADHERE TO, BUT IS NOT LIMITED BY, THE FOLLOWING STANDARDS:
  - ALL PLANTS SHALL BE FREE FROM DISEASE, PESTS, WOUNDS, SCARS, ETC.
  - ALL PLANTS SHALL BE FREE FROM NOTICEABLE GAPS, HOLES, OR DEFORMITIES.
  - ALL PLANTS SHALL BE FREE FROM BROKEN OR DEAD BRANCHES.
  - ALL PLANTS SHALL HAVE HEAVY, HEALTHY BRANCHING AND LEAFING.
  - CONIFEROUS TREES SHALL HAVE AN ESTABLISHED MAIN LEADER AND A HEIGHT TO WIDTH RATIO OF NO LESS THAN 5:3.
7. PLANTS TO MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2014 OR MOST CURRENT VERSION) REQUIREMENTS FOR SIZE AND TYPE SPECIFIED.
8. PLANTS TO BE INSTALLED AS PER MNLA & ANSI STANDARD PLANTING PRACTICES.
9. PLANTS SHALL BE IMMEDIATELY PLANTED UPON ARRIVAL AT SITE. PROPERLY HEEL-IN MATERIALS IF NECESSARY; TEMPORARY ONLY.
10. PRIOR TO PLANTING, FIELD VERIFY THAT THE ROOT COLLAR/ROOT FLAIR IS LOCATED AT THE TOP OF THE BALLED & BURLAP TREE. IF THIS IS NOT THE CASE, SOIL SHALL BE REMOVED DOWN TO THE ROOT COLLAR/ROOT FLAIR. WHEN THE BALLED & BURLAP TREE IS PLANTED, THE ROOT COLLAR/ROOT FLAIR SHALL BE EVEN OR SLIGHTLY ABOVE FINISHED GRADE.
11. OPEN TOP OF BURLAP ON BB MATERIALS; REMOVE POT ON POTTED PLANTS; SPLIT AND BREAK APART PEAT POTS.
12. PRUNE PLANTS AS NECESSARY - PER STANDARD NURSERY PRACTICE AND TO CORRECT POOR BRANCHING OF EXISTING AND PROPOSED TREES.
13. WRAP ALL SMOOTH-BARKED TREES - FASTEN TOP AND BOTTOM. REMOVE BY APRIL 1ST.
14. STAKING OF TREES AS REQUIRED; REPOSITION, PLUMB AND STAKE IF NOT PLUMB AFTER ONE YEAR.
15. THE NEED FOR SOIL AMENDMENTS SHALL BE DETERMINED UPON SITE SOIL CONDITIONS PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT FOR THE NEED OF ANY SOIL AMENDMENTS.
16. BACKFILL SOIL AND TOPSOIL TO ADHERE TO MNDOT STANDARD SPECIFICATION 3877 (SELECT TOPSOIL BORROW) AND TO BE EXISTING TOP SOIL FROM SITE FREE OF ROOTS, ROCKS LARGER THAN ONE INCH, SUBSOIL DEBRIS, AND LARGE WEEDS UNLESS SPECIFIED OTHERWISE. MINIMUM 4" DEPTH TOPSOIL FOR ALL LAWN GRASS AREAS AND 12" DEPTH TOPSOIL FOR TREE, SHRUBS, AND PERENNIALS.
17. MULCH TO BE AT ALL TREE, SHRUB, PERENNIAL, AND MAINTENANCE AREAS. TREE AND SHRUB PLANTING BEDS SHALL HAVE 4" DEPTH OF DOUBLE SHREDDED HARDWOOD MULCH. DOUBLE SHREDDED HARDWOOD MULCH TO BE USED AROUND ALL PLANTS WITHIN TURF AREAS. PERENNIAL AND ORNAMENTAL GRASS BEDS SHALL HAVE 2" DEPTH DOUBLE SHREDDED HARDWOOD MULCH. MULCH TO BE FREE OF DELETERIOUS MATERIAL AND COLORED DARK BROWN, OR APPROVED EQUAL. ROCK MULCH TO BE DARK GREY TRAP ROCK, 1 1/2" TO 3" DIAMETER, AT MINIMUM 3" DEPTH, OR APPROVED EQUAL. ROCK MULCH TO BE ON COMMERCIAL GRADE FILTER FABRIC, BY TYPAR, OR APPROVED EQUAL WITH NO EXPOSURE. MULCH AND FABRIC TO BE APPROVED BY OWNER PRIOR TO INSTALLATION. MULCH TO MATCH EXISTING CONDITIONS (WHERE APPLICABLE).
18. EDGING TO BE COMMERCIAL GRADE VALLEY-VIEW BLACK DIAMOND (OR EQUAL) POLY EDGING OR SPADED EDGE, AS INDICATED. POLY EDGING SHALL BE PLACED WITH SMOOTH CURVES AND STAKED WITH METAL SPIKES NO GREATER THAN 4 FOOT ON CENTER WITH BASE OF TOP BEAD AT GRADE. FOR MOWERS TO CUT ABOVE WITHOUT DAMAGE. UTILIZE CURBS AND SIDEWALKS FOR EDGING WHERE POSSIBLE. SPADED EDGE TO PROVIDE V-SHAPED DEPTH AND WIDTH TO CREATE SEPARATION BETWEEN MULCH AND GRASS. INDIVIDUAL TREE, SHRUB, OR RAIN-GARDEN BEDS TO BE SPADED EDGE, UNLESS NOTED OTHERWISE. EDGING TO MATCH EXISTING CONDITIONS (WHERE APPLICABLE).
19. ALL DISTURBED AREAS TO BE SODDED OR SEEDED, UNLESS OTHERWISE NOTED. SOD TO BE STANDARD MINNESOTA GROWN AND HARDY BLUEGRASS MIX, FREE OF LAWN WEEDS. ALL TOPSOIL AREAS TO BE RAKED TO REMOVE DEBRIS AND ENSURE DRAINAGE. SLOPES OF 3:1 OR GREATER SHALL BE STAKED. SEED AS SPECIFIED AND PER MNDOT SPECIFICATIONS. IF NOT INDICATED ON LANDSCAPE PLAN, SEE EROSION CONTROL PLAN.
20. PROVIDE IRRIGATION TO ALL PLANTED AREAS ON SITE. IRRIGATION SYSTEM TO BE DESIGN/BUILD BY LANDSCAPE CONTRACTOR. LANDSCAPE CONTRACTOR TO PROVIDE SHOP DRAWINGS TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION OF IRRIGATION SYSTEM. CONTRACTOR TO PROVIDE OPERATION MANUALS, AS-BUILT PLANS, AND NORMAL PROGRAMMING. SYSTEM SHALL BE WINTERIZED AND HAVE SPRING STARTUP DURING FIRST YEAR OF OPERATION. SYSTEM SHALL HAVE ONE-YEAR WARRANTY ON ALL PARTS AND LABOR. ALL INFORMATION ABOUT INSTALLATION AND SCHEDULING CAN BE OBTAINED FROM THE GENERAL CONTRACTOR.
21. CONTRACTOR SHALL PROVIDE NECESSARY WATERING OF PLANT MATERIALS UNTIL THE PLANT IS FULLY ESTABLISHED OR IRRIGATION SYSTEM IS OPERATIONAL. OWNER WILL NOT PROVIDE WATER FOR CONTRACTOR.
22. REPAIR, REPLACE, OR PROVIDE SOD/SEED AS REQUIRED FOR ANY ROADWAY BOULEVARD AREAS ADJACENT TO THE SITE DISTURBED DURING CONSTRUCTION.
23. REPAIR ALL DAMAGE TO PROPERTY FROM PLANTING OPERATIONS AT NO COST TO OWNER.
24. MAINTAIN TREES, SHRUBS, AND OTHER PLANTS UNTIL PROJECT COMPLETION, BUT IN NO CASE, LESS THAN FOLLOWING PERIOD, 1 YEAR AFTER PROJECT COMPLETION. MAINTAIN TREES, SHRUBS, AND OTHER PLANTS BY PRUNING, CULTIVATING, AND WEEDING AS REQUIRED FOR HEALTHY GROWTH. RESTORE PLANTING SAUCERS, TIGHTEN AND REPAIR STAKE AND GUY SUPPORTS AND RESET TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED. RESTORE OR REPLACE DAMAGED WRAPPINGS. SPRAY AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE. REPLENISH MULCH TO THE REQUIRED DEPTH. MAINTAIN LAWNS FOR 45 DAYS AFTER INSTALLING SOD INCLUDING MOWING WHEN SOD RECIPTS 4" IN HEIGHT. WEED PLANTING BEDS AND MULCH SAUCERS AT MINIMUM ONCE A MONTH DURING THE GROWING SEASON. PROVIDE A MONTHLY REPORT TO THE OWNER ON WEEDING AND OTHER MAINTENANCE RESPONSIBILITIES.

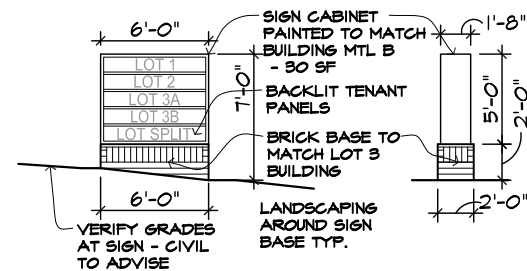




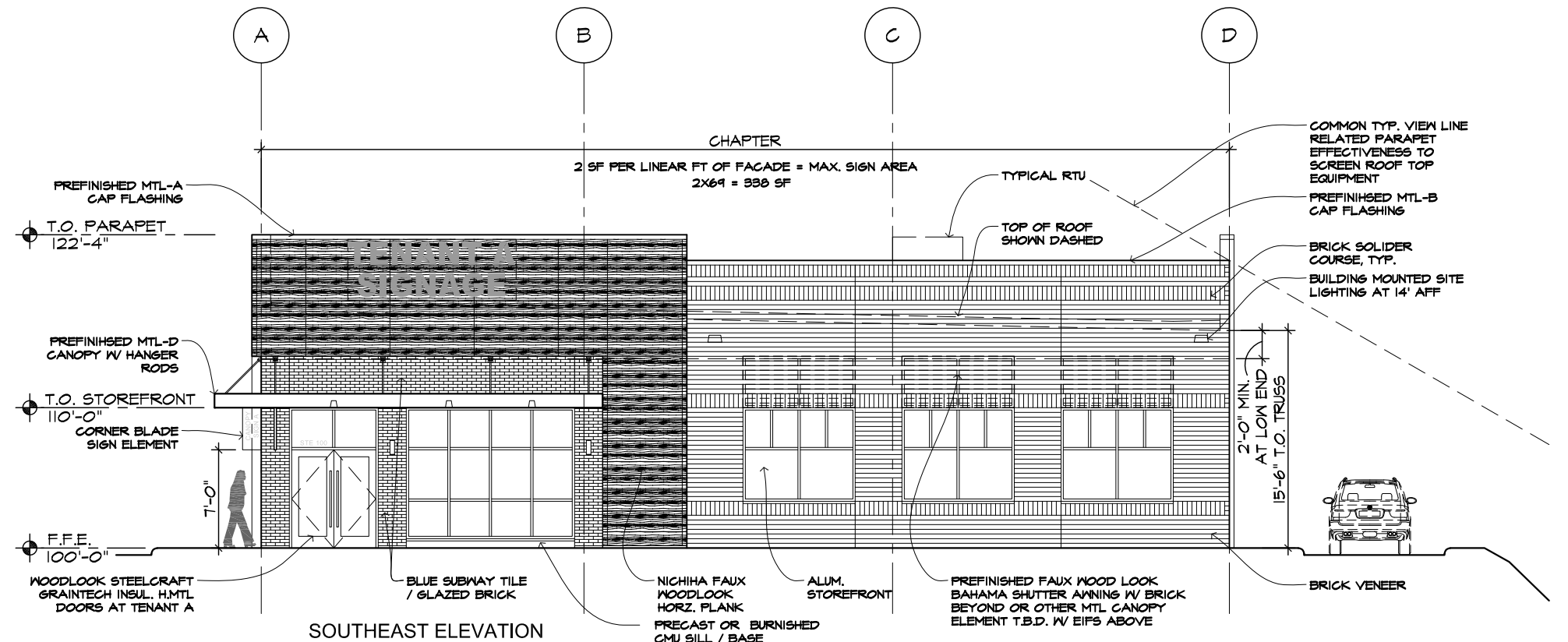
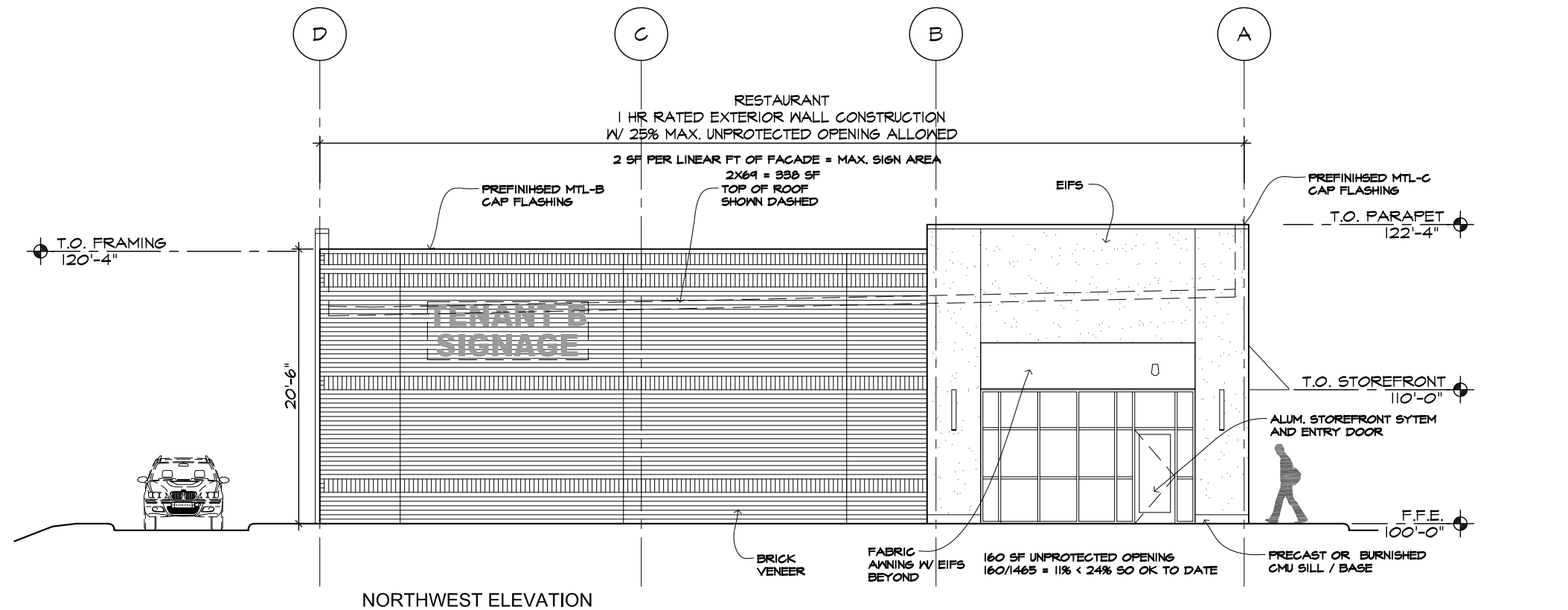
TYPICAL TRASH ENCLOSURE



MONUMENT SIGN AT WEST CENTRAL ENTRANCE



MONUMENT SIGN AT ANDERSON RD



**ARCHITECTURAL CONSORTIUM L.L.C.**

1600 West Lake Street, Suite 127 612-436-4030  
Minneapolis, MN 55408 www.archconsort.com

PREPARED FOR:



**LAUNCH PROPERTIES**

**RETAIL BUILDING SHELL**

LOT 3 @ JIGSAW DEVELOPMENT  
604 WEST CENTRAL ENTRANCE  
DULUTH, MN 55811

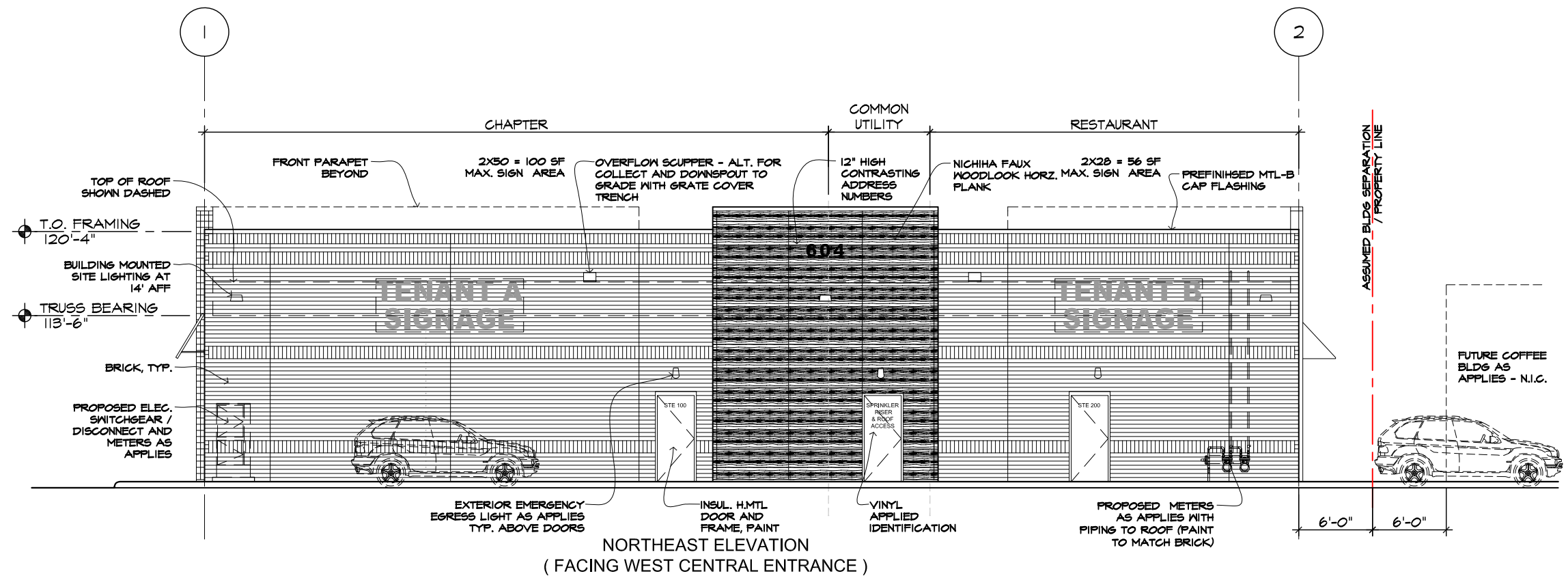
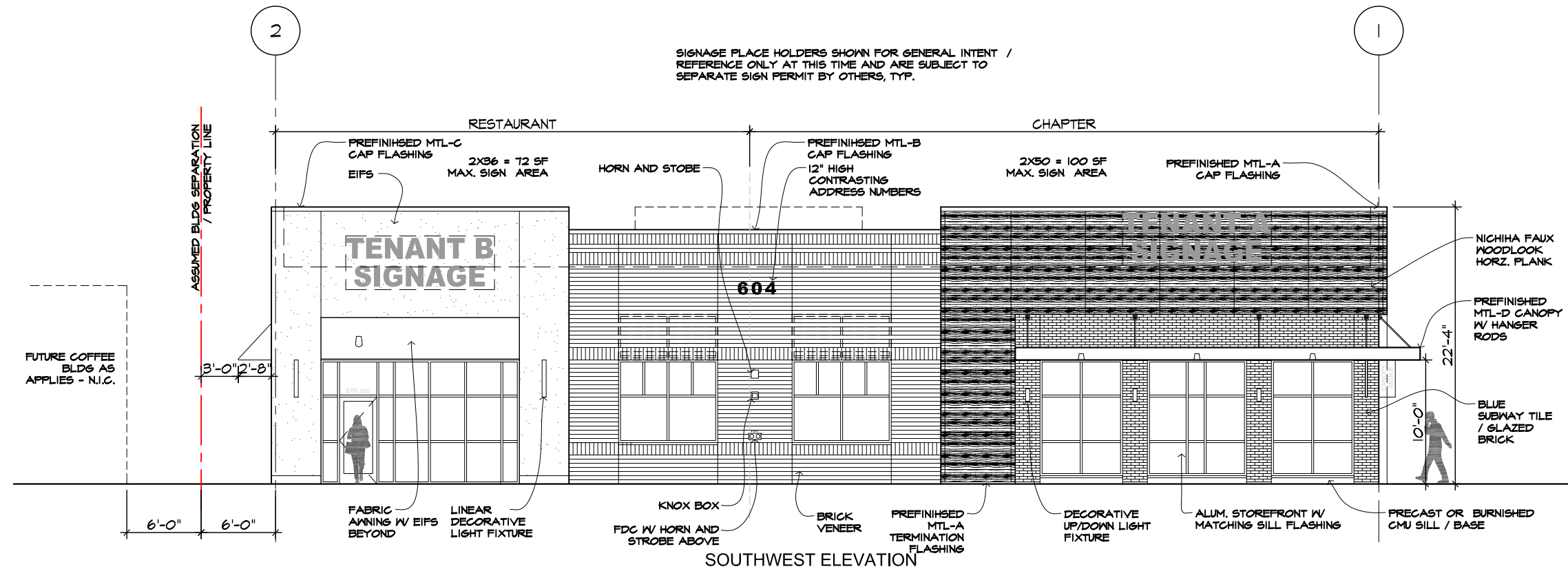
**EXTERIOR ELEVATIONS**

SCALE: 3/32" = 1'-0" @ 11X17  
3/16" = 1'-0" @ 22X34

PROJECT NUMBER: 22-1069-01  
ISSUED DATE: 11/30/22  
DRAWN BY: ES  
CHECKED BY: KA

**A3.2**





**ARCHITECTURAL  
CONSORTIUM L.L.C.**

1600 West Lake Street, Suite 127 612-436-4030  
Minneapolis, MN 55408 www.archconsort.com

PREPARED  
FOR:



**LAUNCH  
PROPERTIES**

## RETAIL BUILDING SHELL

LOT 3 @ JIGSAW DEVELOPMENT  
604 WEST CENTRAL ENTRANCE  
DULUTH, MN 55811

## EXTERIOR ELEVATIONS

SCALE: 3/32" = 1'-0" @ 11X17  
3/16" = 1'-0" @ 22X34

PROJECT NUMBER: 22-1069-01  
ISSUED DATE: 11/30/22  
DRAWN BY: ES  
CHECKED BY: KA

**A3.1**





## MEMORANDUM

Date: December 5, 2022

To: Launch Properties

From: Jacob Rojer, P.E., PTOE  
Brian Wurdeman, P.E.

Subject: Launch Properties Jigsaw Site – Trip Generation Memo  
W Central Entrance at Anderson Road, Duluth, MN

---

## INTRODUCTION

Launch Properties is proposing to develop an +/- 3.77-acre site located on the southwest corner of W Central Entrance and Anderson Road in Duluth, MN. This memorandum will discuss the trip generation of the site and compare it to the initial Traffic Impact Analysis completed in 2018.

## 2018 TRAFFIC STUDY TRIP GENERATION

The trip generation for the 2018 proposed development was prepared based on information provided in the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition. For each of the land use categories, the average rate for the peak hour of the adjacent street was used. Trips related to the 7,500 SF of retail space were generated using Land Use Code (LUC) 820, Shopping Center. The 2,100 SF of restaurant space with the drive-through window was considered LUC 937 (Coffee/Donut Shop with Drive-Through Window) based on the proposed tenant. The remaining 7,600 SF of restaurant space was considered LUC 930 (Fast Casual Restaurant). Internal capture was applied to the forecasted trip generation to account for shared trips and trips that are already on the roadway network, and was calculated consistent with ITE's Trip Generation Handbook, 3rd Edition. Internal capture was calculated between the retail and restaurant uses. Pass-by for the coffee shop was calculated based on rates for the fast-food with drive-through land use. Pass-by for the other restaurants was calculated based on rates for a high-turnover (sit-down) restaurant. **Table 1** provides a summary of the trip generation calculation.



**Table 1: 2018- Traffic Study Proposed Site Trip Generation**

Land Use Description	Intensity	PM Peak Hour		
		In	Out	Total
Shopping Center (ITE 820)	7,500 SF	13	15	28
Fast Casual Restaurant (ITE 930)	7,600 SF	60	49	109
Coffee/Donut Shop with Drive-Through Window (ITE 937)	2,100 SF	46	46	92
<b>Total Traffic</b>		<b>119</b>	<b>110</b>	<b>229</b>
<i>Retail Internal Capture Reduction</i>		-7	-4	-11
<i>Restaurant Internal Capture Reduction</i>		-4	-7	-11
<b>Total Driveway Traffic</b>		<b>108</b>	<b>99</b>	<b>207</b>
<i>Retail Pass-By Capture (34%)</i>		-2	-2	-4
<i>Restaurant Pass-By Capture (43%)</i>		-25	-25	-50
<i>Coffee Shop Pass-By Capture (50%)</i>		-22	-22	-44
<b>Net New Vehicle Trips</b>		<b>59</b>	<b>50</b>	<b>109</b>

## PROPOSED TRIP GENERATION

The trip generation for proposed development has been prepared based on information provided in the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition. For each of the land use categories, the average rate for the peak hour of the adjacent street was used. Trips related to the 3,502 SF for Chapter Aesthetic Studio were generated using Land Use Code (LUC) 822, Strip Retail Plaza (<40k). The 2,507 SF of restaurant space without the drive-through was considered using LUC 933 (Fast Food Restaurant w/o Drive-Through) and the 2,265 SF of restaurant with the drive-through window was considered LUC 934 (Fast Food Restaurant with Drive-Through) based on the proposed tenant. 600 SF of drive thru coffee was considered using LUC 937 (Coffee/Donut Shop with Drive-Through Window) and a 1 tunnel automatic car wash was considered using LUC 948 (Automated Car Wash). Internal capture was applied to the forecasted trip generation to account for shared trips and trips that are already on the roadway network, and was calculated consistent with ITE's Trip Generation Handbook, 3rd Edition. Internal capture was calculated between the retail and restaurant uses. Pass-by for the coffee shop was calculated based on rates for the fast-food with drive-through land use to remain consistent with the original 2018 traffic study. Pass-by for the other restaurants was calculated based on rates for a high-turnover (sit-down) restaurant. **Table 2** provides a summary of the trip generation calculation.



**Table 2: Proposed Site Trip Generation**

Land Use	Intensity	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Strip Retail Plaza (<40k) (ITE 822)	3,502 SF	8	5	3	23	11	12
Fast Food w/o Drive-Through (ITE 933)	2,507 SF	-	-	-	83	42	41
Fast Food with Drive-Through (ITE 934)	2,265 SF	101	52	49	75	39	36
Coffee/Donut Shop with Drive-Through (ITE 937)	600 SF	52	27	25	23	12	11
Automated Car Wash (ITE 948)	1 Tunnel	-	-	-	78	39	39
<b><u>Total Trips</u></b>		<b><u>161</u></b>	<b><u>84</u></b>	<b><u>77</u></b>	<b><u>282</u></b>	<b><u>143</u></b>	<b><u>139</u></b>
<i>Internal Capture Reduction</i>		0	0	0	-80	-40	-40
<b><u>Total Driveway Traffic</u></b>		<b><u>161</u></b>	<b><u>84</u></b>	<b><u>77</u></b>	<b><u>202</u></b>	<b><u>103</u></b>	<b><u>99</u></b>
<i>Pass-By Capture</i>		-93	-48	-45	-49	-27	-22
<b><u>Net New Vehicle Trips</u></b>		<b><u>68</u></b>	<b><u>36</u></b>	<b><u>32</u></b>	<b><u>153</u></b>	<b><u>76</u></b>	<b><u>77</u></b>

## TRIP GENERATION COMPARISON

The previous 2018 traffic study only analyzed PM peak hour trips. **Table 3** shows a comparison of the 2018 assumed land uses and the proposed land uses. It is anticipated that the proposed site will generate a similar number of trips in the PM peak hours as the 2018 traffic study. All recommendations and conclusions from the 2018 Traffic Study remain valid for the site.

**Table 3: Proposed Site Trip Generation Comparison**

Scenario	AM Peak Hour			PM Peak Hour		
	Total	In	Out	Total	In	Out
Proposed Site Driveway Trips	161	84	77	202	103	99
2018 Traffic Study Driveway Trips	-	-	-	207	108	99
<b>Change in Trips</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-5</b>	<b>-5</b>	<b>0</b>