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Memorandum

To: Thomas Reiff
Castle Rock, CO

From: Brian Horan, PE, PTOE

Date: January 6, 2025

Re: Murphy Express – Castle Rock, CO
Trip Generation Analysis

The intent of this memorandum is to satisfy the Trip Generation Analysis requirement in support of a proposed redevelopment in the Town of Castle Rock, Colorado. The proposed project would raze an existing fast-food restaurant with drive-through use and construct a gas station with convenience store use. It has been requested by the Town of Castle Rock to provide a memorandum to determine if further study will be required.

The following memorandum will address the existing conditions, proposed trip generation change, and potential traffic impacts to the surrounding network.

BACKGROUND

The Applicant is seeking to redevelop 186 Metzler Drive, Castle Rock, Colorado from the existing use of the fast-food restaurant with drive-through to the proposed gas station with convenience store use. Two access points are being proposed including one existing shared access to Metzler Dr on the southeast corner of the property and a new access approximately 86' to the northwest of the existing access point along Metzler Dr. A site plan is provided as Attachment A.

EXISTING CONDITIONS

The site is located at 186 Metzler Drive, Castle Rock, Colorado, and is zoned Planned Development (PD). The site is currently occupied by an approximately 3,554 square foot (SF) fast-food restaurant with drive-through use and is bounded by Metzler Way to the northwest, Metzler Drive to the northeast and Founders Parkway to the southwest. Nearby uses are similarly zoned and operated with commercial uses.

The site is accessed via Metzler Drive and currently has access via an existing shared access drive with the adjacent property. The site has two-way circulation through the parking field and perpendicular parking through the site.

TRIP GENERATION COMPARISON

As shown in Attachment A, the proposed redevelopment would raze the existing 3,554 SF fast-food restaurant with drive-through and replace it with a gas station and convenience store which includes 12 vehicle fueling positions (FP). A trip generation analysis comparison of the existing use to the proposed use is provided on Table 1.

Trip generation estimates were calculated utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual 11th edition rates/equations. According to ITE, in some cases the driveway volumes at a particular land use are different from the amount of traffic added to the adjacent street system. Uses such as gas station establishments attract a portion of their trips from traffic that is already present on the road network. Pass-by trips are those trips which are made as intermediate stops on the way to a primary destination. An example of a pass-by trip would be one in which a driver stops at a gas station

on their way home from work. The existing and proposed uses would experience pass-by trips. In recognition of this phenomenon and consistent with ITE published data, the following pass-by reductions were applied to the trip generation analysis:

- Fast-Food Restaurant with Drive-Through: 50% AM / 55% PM
- Gas Station with Convenience Store: 76% AM / 75% PM

Utilizing the information and methodologies provided by ITE, an estimate of the existing and proposed uses trip generation can be determined and compared. As shown on Table 1, the existing use would generate, at build out and full occupancy, the following net new trips to the network:

- 79 AM weekday peak hour (40 in/39 out),
- 52 PM weekday peak hour (27 in/25 out), and
- 747 average daily trips.

The proposed use would generate, at build out and full occupancy, the following net new trips to the network:

- 46 AM weekday peak hour (23 in/23 out),
- 55 PM weekday peak hour (28 in/27 out), and
- 688 average daily trips.

A comparison to the existing restaurant shows that the new use would generate:

- 33 ***fewer*** AM weekday peak hour (17 fewer in/16 fewer out),
- 3 ***additional*** PM weekday peak hour (1 additional in/2 additional out), and
- 59 ***fewer*** average daily trips.

SITE TRIP DISTRIBUTION

The site is accessed regionally via Founders Parkway and locally by Trail Boss Drive and Metzler Way. Direct site access is provided via Metzler Drive. A review of the area and local knowledge suggests that the majority of traffic would travel through the Founders Parkway/Metzler Way intersection. The intersection operates as a three-quarter movement intersection with a southeast bound left turn lane. Trips to/from the south would likely utilize the signalized intersection at Founders Parkway/Trail Boss Drive to the southeast of the site. The area is built out with the necessary signals and turn lanes at all major intersections. As shown in Table 1, the change of use represents similar or fewer trips for the study periods and would be distributed consistent with the existing use. The site trips for this development are shown in Figure 1.

NETWORK IMPACTS

The surrounding network infrastructure and controls are established and an additional site access point is being proposed to improve traffic flow and allow for fueling vehicles to move through the site. The proposed use would generate no new trips during the AM peak hour and similar trips during the PM peak hour when compared to the existing use. The proposed change in use would have no negative impact on the surrounding network operations.

The change in average daily trips from the proposed development would not represent an increase of 20% or more traffic to Founders Parkway, in fact it is expected to decrease. Therefore, this change in traffic would not trigger an updated access permit per the CDOT State Highway Access Code (SHAC) guidelines.

CDOT STATE HIGHWAY ACCESS CODE (SHAC) TURN LANE ANALYSIS

The CDOT State Highway Access Code provides guidance on the need and geometry of auxiliary lanes for State roadways. The intersections along Founders Parkway (Regional Highway "R-A") were evaluated against this criterion to determine what turn lanes are required and if the existing lanes are up to standard.

Intersections along Founders Parkway were evaluated against the R-A criteria for auxiliary lanes found within the SHAC guidelines. The auxiliary lane requirements for an R-A section are as follows:

(5) Auxiliary turn lanes shall be installed according to the criteria below.

(a) A left turn deceleration lane with taper and storage length is required for any access with a projected peak hour left ingress turning volume greater than 10 vph. The taper length will be included within the required deceleration length.

(b) A right turn deceleration lane and taper length is required for any access with a projected peak hour right ingress turning volume greater than 25 vph. The taper length will be included within the required deceleration length.

(c) A right turn acceleration lane and taper length is required for any access with a projected peak hour right turning volume greater than 50 vph when the posted speed on the highway is greater than 40 mph. The taper length will be included within the required acceleration length. A right turn acceleration lane may also be required at a signalized intersection if a free-right turn is needed to maintain an appropriate level of service in the intersection.

(d) Right turn deceleration and acceleration lanes are generally not required on roadways with three or more travel lanes in the direction of the right turn except as provided in subsection 3.5.

(e) A left turn acceleration lane may be required if it would be a benefit to the safety and operation of the roadway or as determined by subsection 3.5. A left turn acceleration lane is generally not required where; the posted speed is less than 45 mph, or the intersection is signalized, or the acceleration lane would interfere with the left turn ingress movements to any other access.

With a posted speed limit of 45 mph, all deceleration lengths shall be 435 feet in length, acceleration lengths shall be 550 feet in length and tapers should be constructed at a 13.5:1 to ratio. Taper length is included within the stated acceleration or deceleration length for R-A sections.

Per the guidelines above, the following auxiliary lanes are required at the Founders Parkway/Metzer Way intersection:

- Southbound left turn deceleration lane

In existing conditions, the southbound left turn lane is approximately 150 feet, but this lane cannot be extended due to the north-westbound left-turn lane at Founders Parkway/Front Street. A north-westbound right-turn lane on Founders Parkway would not be required since there are three travel lanes in the direction of the right turn. The south-westbound approach on Metzler Way is right-out only and therefore does not require any additional lanes. No right turn or left turn acceleration lanes would be required per SHAC standards.

Per the guidelines above, the following auxiliary lanes are required at the Founders Parkway/Trail Boss Drive intersection:

- Southbound left turn deceleration lane

In existing conditions, the southbound left turn lane exceeds 550 feet and therefore meets the turn lane standard requirements. A north-westbound right turn lane is not required at this intersection since there are three travel lanes in the direction of the right turn.

All turn lanes along Founders Parkway meet SHAC standards with the exception of the south-eastbound left turn deceleration lane which is designed to the maximum extent possible based on site constraints; however it is deficient by 285'.

Table 1

Murphy USA - Founders Pkwy & Metzler Way

Site Trip Generation

Land Use	Land Use Code	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Trips
Exisiting										
Fast-Food Restaurant with Drive-Through Window	934	3,554	SF	81	78	159	61	56	117	1,661
Pass-by (AM 50%/PM 55%)				*(41)*	*(39)*	*(80)*	*(34)*	*(31)*	*(65)*	*(914)*
Net Trips				**40**	**39**	**79**	**27**	**25**	**52**	**747**
Proposed										
Gas Station with Convenience Store	945	12	FP	97	96	193	111	110	221	2,750
Pass-by (AM 76%/PM 75%)				*(74)*	*(73)*	*(147)*	*(83)*	*(83)*	*(166)*	*(2,062)*
Net Trips				**23**	**23**	**46**	**28**	**27**	**55**	**688**
Difference (Proposed minus Existing)				**(17)**	**(16)**	**(33)**	**1**	**2**	**3**	**(59)**

Note(s):

(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 11th Edition

FIGURE 1
SITE TRIPS

MURPHY
CASTLE ROCK, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

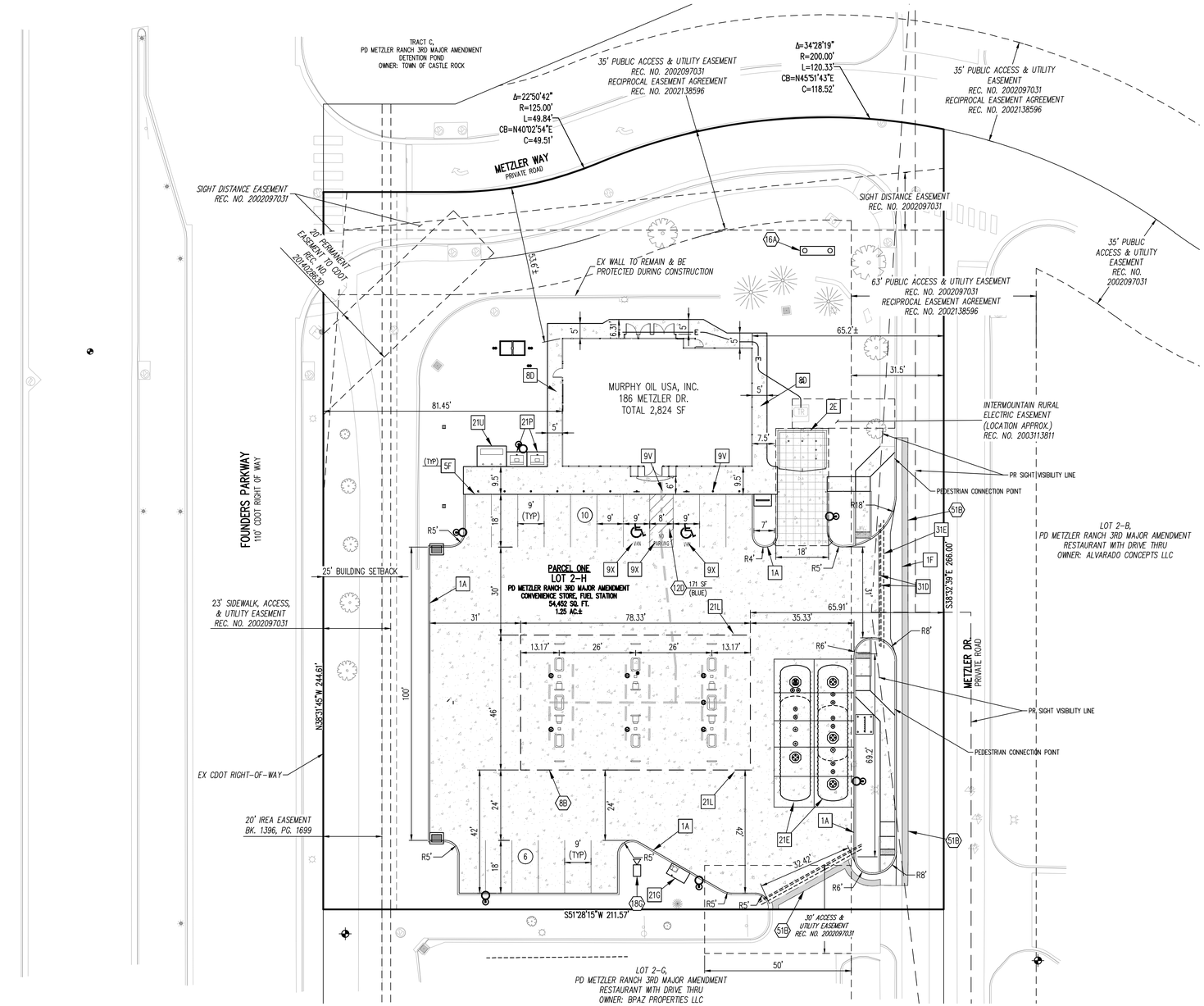
MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

CONCLUSION

As detailed above, the proposed change in use would generate fewer or similar trips than the existing use during the peak hours. The proposed change in use would have a negligible impact to the surrounding network.

I trust that the information contained herein satisfies the Trip Generation Analysis as requested by the City of Castle Rock. If you have any questions or require more information, please do not hesitate to contact me at brianhoran@gallowayus.com or 303-770-8884.

Attachment A
Conceptual Site Plan



EXISTING

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STORM SEWER (LESS THAN 12"ø)
- EXISTING SANITARY SEWER
- EXISTING WATER
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD ELECTRIC
- EXISTING FIBER OPTIC
- EXISTING GAS
- EXISTING STREET LIGHT
- EXISTING TRANSFORMER
- EXISTING ELECTRIC METER
- EXISTING ELECTRIC BOX
- EXISTING FIBER OPTIC BOX
- EXISTING GAS METER
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER VALVE
- EXISTING STORM INLET
- EXISTING FIRE HYDRANT
- EXISTING SIGN
- EXISTING TREE

PROPOSED

- BOUNDARY LINE
- CONCRETE PAVING
- REINFORCED CONCRETE PAVING
- PROPOSED ADA PATH
- PROPOSED CDOT TYPE 13 STORM INLET

SITE NOTES

8B	OVERHEAD CANOPY
8D	PROPOSED 5' CONCRETE SIDEWALK
12A	4" YELLOW LANE STRIPE (SEE SIZE INDICATED AT SYMBOL
12D	4" WIDE PAINTED STRIPES. 2' O.C. @ 45° (SEE SIZE INDICATED AT SYMBOL)
14J	GC TO INSTALL (1) 4" PVC SLEEVE FOR IRRIGATION LINE. (SEE UTILITY PLAN FOR INSTALLATION REQUIREMENTS)
14K	GC TO INSTALL (2) 4" PVC SLEEVES FOR FUTURE USE (SEE UTILITY PLAN FOR INSTALLATION REQUIREMENTS)
16A	MURPHY FREE STANDING SIGN
17A	TRANSFORMER
18G	CONSTRUCTION CAMERA (COORDINATE WITH MOUSA PM ON LOCATION)
21E	UNDERGROUND STORAGE TANKS (1-25,000 GAL. & 1-26,000 GAL.)
21G	AIR/VACUUM UNIT WITH 4'X7' CONCRETE SLAB
21K	MURPHY EXPRESS ID SIGN PER APPROVED RENDERING
21L	PRICE SIGN PER APPROVED ELEVATION
51B	LIMITS OF SAWCUT AND PAVEMENT REMOVAL

SITE DETAILS

1A	INTEGRAL CONCRETE CURB
1E	CURB CUT W/ SEDIMENT PAD (PER MHFD DETAIL RR-5)
1F	CROSSPAN (PER TOWN OF CASTLE ROCK, DTL CG-9
2E	DUMPSTER ENCLOSURE
3D	CONCRETE SIDEWALK
3K	CONCRETE SIDEWALK AROUND BUILDING
3L	SEGMENTAL RETAINING WALL
3M	GRASSED SWALE
5B	TRAFFIC SIGN IN BOLLARD
5F	STEEL BOLLARD W/COVER (SINGLE)
9U	ACCESSIBLE PARKING SYMBOL (SEE PAINT COLOR INDICATED AT SYMBOL)
9V	ACCESSIBLE PARKING SIGN MOUNTED IN BOLLARD
9X	"NO PARKING" PAINTED ON PAVEMENT
12G	"STOP" SIGN
21E	UNDERGROUND STORAGE TANKS (1-25,000 GAL. & 1-26,000 GAL.)
21K	MURPHY EXPRESS ID SIGN PER APPROVED RENDERING
21L	PRICE SIGN PER APPROVED ELEVATION
21P	5'x7' ICE UNIT (SEE NUMBER INDICATED AT SYMBOL)
21U	7'x10' CONCRETE SLAB FOR PROPANE TANKS
31D	INSTALL (2) PVC SCH. 40 (D2665) SLEEVES 30" BELOW FINAL GRADE UNDER DRIVEWAY. EXTEND SLEEVES 2 FEET BEYOND BACK OF PROPOSED CURB OR EDGE OF PAVEMENT. STAKE BOTH ENDS OF EACH SLEEVE WITH CAPPED VERTICAL PVC PIPE, 12" ABOVE GRADE.DO NOT ALLOW SOIL OR WATER TO ENTER SLEEVES DURING OR AFTER CONSTRUCTION.
31E	INSTALL (1) PVC SCH. 40 (D2665) SLEEVES 30" BELOW FINAL GRADE UNDER DRIVEWAY FOR IRRIGATION LINE. EXTEND SLEEVES 2 FEET BEYOND BACK OF PROPOSED CURB OR EDGE OF PAVEMENT. STAKE BOTH ENDS OF SLEEVE WITH CAPPED VERTICAL PVC PIPE, 12" ABOVE GRADE. DO NOT ALLOW SOIL OR WATER TO ENTER SLEEVES DURING OR AFTER CONSTRUCTION.
51B	LIMITS OF SAWCUT AND PAVEMENT REMOVAL

SITE DEVELOPMENT PLAN
LOT 2-H, METZLER RANCH FILING NO. 3, 1ST AMENDMENT
TOWN OF CASTLE ROCK PROJECT NO: SDP24-0001

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PRELIMINARY
NOT FOR BIDDING
NOT FOR CONSTRUCTION

MURPHY OIL USA, INC.
MURPHY USA
200 PEACH STREET
EL DORADO, AR 71730

SITE DEVELOPMENT PLAN
MURPHY OIL USA #6665
SDP24-0001

186 METZLER DRIVE
CASTLE ROCK, COLORADO

#	Date	Issue / Description	Init.

Project No:	MOC000089
Drawn By:	ASA, BLB
Checked By:	KG, CMWJ
Date:	11/11/2024

SITE PLAN

SDP24-0001

C-1
Sheet 2 of 10