Purchasing Division

ADDENDUM NO. 7

DATE: **January 14, 2025**
FROM: **City of Grand Junction Purchasing Division**
TO: **All Offerors**
RE: **Horizon Drive and G Road Roundabout IFB-5548-24-DD**

Offerors responding to the above referenced solicitation are hereby instructed that the requirements have been clarified, modified, superseded, and supplemented as to this date as hereinafter described.

Please make note of the following questions/answers/clarifications:

1. **Question:** Where can I find the average daily traffic volumes for Horizon Drive and G Road?
   Answer: Horizon & G Roundabout Operational Analysis has been posted and is attached.

2. **Question:** Item 42, 210-02510 Relay Sprinkler System – Can you provide clarification on the location?
   Answer: This item is to pay for the relay of sprinkler system at 705 Horizon Drive (Azteca's) and 702 Horizon Drive (Starbucks).

3. **Question:** Item 130, 623-09900 Sprinkler System. (Doesn't all the line item for Irrigation 110-129 represent the Sprinkler System)? Or is there additional?
   Answer: Item 130, 623-09900 Sprinkler System shall be used to pay for the Tree Dripperline irrigation components, which are specified on sheet 6 of 7 on the irrigation sheets.

4. **Question:** No Bid Schedule items for the following on Bid Schedule.
   a. 212-00032 Soil Conditioning, 0.19 AC.
   b. 213-00065a Type 1 Inorganic Mulch Rock, 1-1/2" Tan Granite
   c. 213-00065b Type 2 Inorganic Mulch Rock, 3" Purple La Sal
   d. 213-00065c Type 3 Inorganic Mulch Rock, 1-2 River Rock

   Answer: The bid schedule has been updated to add the bid items listed above. (attached)

5. **Question:** The project special provisions do not give a detail of the metal plants, Are they from the Desert Steel Company?
   Answer: The metal plants have been removed from the scope of this contract. They will be purchased and installed by the City. The bid schedule has been updated to account for the removal.

6. **Question:** The plans call for 1400 hours of flagging, 80 days of TCM and 30 days of TCI The bid schedule calls for **90 days** of flagging, 80 days of TCM and 30 day of TCI The addendums changed the project to 120 working days. So the new bid schedule should read 2100 flagging hours, 120 TCM days and 48 TCI days.

Answer: The bid schedule has been updated to account for the additional Flagging, TCM, and TCI hours.

7. **Question:** With the new clarification on addendum 5, will a new bid schedule be issued?
   Answer: The bid schedule has been updated to address Addendum 5's clarification.

8. **Question:** bid #76 12" plastic pipe- plans note PVC, will HDPE corrugated be accepted as an alternate?
   Answer: HDPE will not be accepted as an alternate.

Attachments:
A: Revised Bid Schedule. Submit this bid schedule with your bid on 1/17/25 prior to 10:00 AM
B: Horizon Dr and G Road Roundabout Operational Analysis

The original solicitation for the project noted above is amended as noted. All other conditions of the subject remain the same.

Respectfully,

Dolly Daniels, Senior Buyer
City of Grand Junction, Colorado

Bid Schedule: 23652 - Horizon Drive and G Road Roundabout
Addendum No. 7

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
1	201-00000	Clearing and Grubbing	1.	LS	_____	_____
2	202-00010	Removal of Tree	1.	EA	_____	_____
3	202-00019	Removal of Inlet	5.	EA	_____	_____
4	202-00021	Removal of Manhole	2.	EA	_____	_____
5	202-00035	Removal of Pipe	175.	LF	_____	_____
6	202-00090	Removal of Delineator	1.	EA	_____	_____
7	202-00190	Removal of Concrete Median Cover Material	89.	SY	_____	_____
8	202-00200	Removal of Sidewalk	424.	SY	_____	_____
9	202-00201	Removal of Curb	555.	LF	_____	_____
10	202-00202	Removal of Gutter	36.	LF	_____	_____
11	202-00203	Removal of Curb and Gutter	855.	LF	_____	_____
12	202-00204	Removal of Curb, Gutter and Sidewalk	1,009.	LF	_____	_____
13	202-00206	Removal of Concrete Curb Ramp	32.	SY	_____	_____
14	202-00210	Removal of Concrete Pavement	8.	SY	_____	_____
15	202-00220	Removal of Asphalt Mat	730.	SY	_____	_____
16	202-00240	Removal of Asphalt Mat (Planing)	6,921.	SY	_____	_____
17	202-00250	Removal of Pavement Marking	846.	SF	_____	_____
18	202-00700	Removal of Light Standard	2.	EA	_____	_____
19	202-00705	Removal of Light Standard Foundation	2.	EA	_____	_____
20	202-00827	Removal of Pull Box	7.	EA	_____	_____
21	202-00840	Removal of Traffic Signal Pole	4.	EA	_____	_____
22	202-00848	Removal of Traffic Signal Controller and Cabinet	1.	EA	_____	_____
23	203-00010	Unclassified Excavation (Complete In Place)	3,662.	CY	_____	_____
24	203-00100	Muck Excavation	1,103.	CY	_____	_____
25	203-01597	Potholing	10.	HOUR	_____	_____
26	206-00100	Structure Backfill (Class 1)	15.	CY	_____	_____
27	207-00205	Topsoil	376.	CY	_____	_____
28	207-00210	Stockpile Topsoil	376.	CY	_____	_____
29	208-00002	Erosion Log (12 inch)	260.	LF	_____	_____
30	208-00035	Aggregate Bag	50.	LF	_____	_____
31	208-00046	Prefabricated Concrete Washout Structure (Type 1)	1.	EA	_____	_____
32	208-00054	Storm Drain Inlet Protection (Type II)	11.	EA	_____	_____
33	208-00075	Prefabricated Vehicle Tracking Pad	4.	EA	_____	_____
34	208-00103	Removal and Disposal of Sediment (Labor)	20.	HOUR	_____	_____
35	208-00105	Removal and Disposal of Sediment (Equipment)	20.	HOUR	_____	_____
36	208-00106	Sweeping (Sediment Removal)	60.	HOUR	_____	_____
37	208-00107	Removal of Trash	20.	HOUR	_____	_____
38	208-00207	Erosion Control Management (ECM)	60.	DAY	_____	_____
39	208-00300	Temporary Berms	400.	LF	_____	_____
40	209-00600	Dust Palliative (Magnesium Chloride)	1,000.	GAL	_____	_____
41	210-00810	Reset Ground Sign	14.	EA	_____	_____

Bid Schedule: 23652 - Horizon Drive and G Road Roundabout

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
42	210-02510	Relay Sprinkler System	1.	LS	_____	_____
43	210-04010	Adjust Manhole	7.	EA	_____	_____
44	210-04015	Modify Manhole	1.	EA	_____	_____
45	210-04020	Modify Inlet	1.	EA	_____	_____
46	210-04050	Adjust Valve Box	2.	EA	_____	_____
47	212-00706	Seeding (Native) Drill	0.26	AC	_____	_____
48	212-00032	Soil Conditioning	0.19	AC	_____	_____
49	212-00050	Sod	60.	SF	_____	_____
50	213-00065	Type 1 Inorganic Mulch Rock, 1-1/2" Tan Granite	77.65	CY	_____	_____
51	213-00065	Type 2 Inorganic Mulch Rock, 3" Purple La Sal	16.39	CY	_____	_____
52	213-00065	Type 3 Inorganic Mulch Rock	8.8	CY	_____	_____
53	213-00061	Mulch Tackifier	52.	LB	_____	_____
54	213-00440	Metal Landscape Border (1/8 x 4 Inch)	946.	LF	_____	_____
55	213-00700	Landscape Boulder (Small 3'x2'x2')	91.	EA	_____	_____
56	213-00705	Landscape Boulder (Large, 3'x4'x2')	1.	EA	_____	_____
57	214-00000	Landscape Maintenance	1.	LS	_____	_____
58	214-00215	Deciduous Tree (1.5 Inch Caliper)	1.	EA	_____	_____
59	214-00350	Deciduous Shrub (5 Gallon Container)	27.	EA	_____	_____
60	214-00506	Evergreen Tree (6 Foot) (Ball and Burlap)	2.	EA	_____	_____
61	214-00650	Evergreen Shrub (5 Gallon Container)	10.	EA	_____	_____
62	214-00910	Perennials (1 Gallon Container)	176.	EA	_____	_____
63	240-00015	Wildlife Biologist	40.	HOUR	_____	_____
64	250-00224	Hazardous Waster Disposal (Radioactive)	35.	CY	_____	_____
65	304-03000	Aggregate Base Course (Class 3)	1,980.	TON	_____	_____
66	304-06000	Aggregate Base Course (Class 6)	3,856.	TON	_____	_____
67	306-01000	Reconditioning	7,468.	SY	_____	_____
68	403-00721	Hot Mix Asphalt (Patching) (Asphalt)	20.	SY	_____	_____
69	403-34741	Hot Mix Asphalt (Grading SX) (75) (PG 64-22)	147.	TON	_____	_____
70	411-10255	Emulsified Asphalt (Slow-Setting)	80.	GAL	_____	_____
71	412-00600	Concrete Pavement (6 Inch)	138.	SY	_____	_____
72	412-00800	Concrete Pavement (8 Inch)	80.	SY	_____	_____
73	412-01100	Concrete Pavement (11 Inch)	5,707.	SY	_____	_____
74	412-01105	Concrete Pavement (11 Inch)	475.	SY	_____	_____
75	412-01120	Concrete Pavement (11 Inch) (Fast Track)	284.	SY	_____	_____
76	420-00133	Geotextile (Separator) (Class 2)	1,650.	SY	_____	_____
77	506-01020	Geogrid Reinforcement	1,650.	SY	_____	_____
78	603-50012	12 Inch Plastic Pipe	264.	LF	_____	_____
79	604-19005	Inlet Special (5 Foot)	2.	EA	_____	_____
80	604-19010	Inlet Special (10 Foot)	2.	EA	_____	_____

Bid Schedule: 23652 - Horizon Drive and G Road Roundabout

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
81	604-30005	Manhole Slab Base (5 Foot)	2.	EA	_____	_____
82	604-30010	Manhole Slab Base (10 Foot)	3.	EA	_____	_____
83	604-83108	8 Inch Plastic Pipe Sewer (Polyvinyl Chloride)	42.	LF	_____	_____
84	608-00000	Concrete Sidewalk	1,004.	SY	_____	_____
85	608-00010	Concrete Curb Ramp	139.	SY	_____	_____
86	608-00015	Detectable Warnings	316.	SF	_____	_____
87	609-20010	Curb Type 2 (Section B)	610.	LF	_____	_____
88	609-21023	Curb and Gutter Type 2 (Section II-B) (Special)	1,436.	LF	_____	_____
89	609-21110	Curb and Gutter Type 2 (Section I-B) (Special)	2,007.	LF	_____	_____
90	610-00026	Median Cover Material (6 Inch Patterned Concrete)	9,023.	SF	_____	_____
91	610-00100	Median Edging (Pattern Concrete)	445.	LF	_____	_____
92	612-00041	Delineator (Flexible) (Type I)	1.	EA	_____	_____
93	613-01200	2 Inch Electrical Conduit (Plastic)	2,770.	LF	_____	_____
94	613-01201	2 Inch Electrical Conduit (Plastic) (Special)	1,157.	LF	_____	_____
95	613-01201	3/4 Inch Electrical Conduit (Plastic) (Special)	100.	LF	_____	_____
96	613-07002	Type Two Pull Box	35.	EA	_____	_____
97	613-07005	Type Five Pull Box	3.	EA	_____	_____
98	613-10000	Wiring	1.	LS	_____	_____
99	613-30001	Light Standard and Luminaire Single Post Top (Pedestrian)	8.	EA	_____	_____
100	613-30002	Light Standard and Luminaire Dual Head (Pedestrian)	8.	EA	_____	_____
101	613-40012	Light Standard Foundation Special	16.	EA	_____	_____
102	613-50106	Lighting Control Center (Special)	1.	EA	_____	_____
103	614-00011	Sign Panel (Class I)	454.4	SF	_____	_____
104	614-00012	Sign Panel (Class II)	48.	SF	_____	_____
105	614-01503	Steel Sign Support (2-inch Round)(Post and Socket)	44.	EA	_____	_____
106	614-01573	Steel Sign Support (2-1/2 Inch Round NP-40)(Post & Slipbase)	17.	EA	_____	_____
107	614-80003	Rectangular Rapid Flashing Beacon	17.	EA	_____	_____
108	614-84000	Traffic Signal Pedestal Pole Steel	1.	EA	_____	_____
109	620-00002	Field Office (Class 2)	1.	EA	_____	_____
110	620-00020	Sanitary Facility	1.	EA	_____	_____
111	621-00450	Detour Pavement	1,700.	SY	_____	_____
112	623-00162	Drip Emitter Tubing	1,007.	LF	_____	_____
113	623-00164	Drip Emitter	452.	EA	_____	_____
114	623-00184	1/2 Inch Flush Unit	55.	EA	_____	_____
115	623-00600	1-1/2 Inch Plastic Pipe	1,420.	LF	_____	_____
116	623-00601	1 Inch Plastic Pipe	1,343.	LF	_____	_____
117	623-00604	4 Inch Plastic Pipe (Irrigation/Sleeve)	240.	LF	_____	_____
118	623-00606	6 Inch Plastic Pipe (Irrigation/Sleeve)	370.	LF	_____	_____

Bid Schedule: 23652 - Horizon Drive and G Road Roundabout

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
119	623-01708	1 Inch Backflow Preventor	1.	EA	_____	_____
120	623-01808	1 Inch Pressure Reducing Valve	1.	EA	_____	_____
121	623-01908	1 Inch Strainer	1.	EA	_____	_____
122	623-02006	3/4 Inch Drain Valve	1.	EA	_____	_____
123	623-03108	1 Inch Automatic Control Valve	5.	EA	_____	_____
124	623-03112	1-1/2 Inch Automatic Control Valve	1.	EA	_____	_____
125	623-04000	2-wire Control, including decoders, grounding (Special)	1.	LS	_____	_____
126	623-04002	Power Source Wire	130.	LF	_____	_____
127	623-04006	3/4 Inch Quick Coupler Valve	5.	EA	_____	_____
128	623-04520	1-1/2 Inch Ball Valve (Special)	5.	EA	_____	_____
129	623-06900	Valve Box	5.	EA	_____	_____
130	623-07601	1 Inch Flow Sensor (Special)	1.	EA	_____	_____
131	623-08148	60 Station Automatic Controller (Special)	1.	EA	_____	_____
132	623-09900	Sprinkler System	1.	LS	_____	_____
133	625-00000	Construction Surveying	1.	LS	_____	_____
134	626-00000	Mobilization	1.	LS	_____	_____
135	626-01000	Public Information Services	1.	LS	_____	_____
136	627-00013	Pavement Marking Paint (High Build)	1.	GAL	_____	_____
137	627-00008	Modified Epoxy Pavement Marking	11.	GAL	_____	_____
138	627-02010	Preformed Plastic Pavement Marking (Type II)	973.	SF	_____	_____
139	627-30407	Preformed Thermoplastic Pavement Marking (Word-Symbol) (Special)	776.	SF	_____	_____
140	627-30411	Preformed Thermoplastic Pavement Marking (Xwalk-Stop Line) (Special)	1,048.	SF	_____	_____
141	630-00000	Flagging	2,100.	HOUR	_____	_____
142	630-00007	Traffic Control Inspection	48.	DAYS	_____	_____
143	630-00012	Traffic Control Management	120.	DAYS	_____	_____
144	630-80336	Barricade (Type 3 M-B) (Temporary)	12.	EA	_____	_____
145	630-80341	Construction Traffic Sign (Panel Size A)	126.	EA	_____	_____
146	630-80342	Construction Traffic Sign (Panel Size B)	44.	EA	_____	_____
147	630-80343	Construction Traffic Sign (Panel Size C)	8.	EA	_____	_____
148	630-80344	Construction Sign Panel (Special)	112.	SF	_____	_____
149	630-80355	Portable Message Sign Panel	4.	EA	_____	_____
150	630-80357	Advance Warning Flashing or Sequencing Arrow Panel (B Type)	5.	EA	_____	_____
151	630-80360	Drum Channelizing Device	140.	EA	_____	_____
152	630-80364	Drum Channelizing Device (With Light) (Steady)	20.	EA	_____	_____
153	630-80370	Barrier (Temporary)	200.	LF	_____	_____
154	630-80380	Traffic Cone	20.	EA	_____	_____
155	630-80390	Channelizing Device (Special)	90.	EA	_____	_____
156	630-85010	Impact Attenuator (Temporary)	2.	EA	_____	_____
157	632-00000	Night Work Lighting	30.	DAY	_____	_____

Bid Schedule: 23652 - Horizon Drive and G Road Roundabout

Item No.	CDOT, City Ref.	Description	Quantity	Units	Unit Price	Total Price
158	700-70023	F/A On The Job Trainee	3,200.	FA		$ 3,200.00
159	700-70019	F/A Asphalt Cement Cost Adjustment	2,000.	FA		$ 2,000.00
160	700-70016	F/A Fuel Cost Adjustment	2,500.	FA		$ 2,500.00
161	700-70111	F/A Project First Program	1,000.	FA		$ 1,000.00
162	700-70013	F/A Concrete Pavement Incentive	50,000.	FA		$ 50,000.00
163	700-70010	F/A Minor Contract Revisions	115,600.	FA		$ 115,600.00
			- - -	- - -	- - -	
				Bid Amount:		**$** _____

Bid Amount:

_____ **dollars**

Technical Memorandum

To: Lee Cooper, PE - City of Grand Junction
Ken Haley, PE – City of Grand Junction

From: *Troy Pankratz, PE*

Date: September 9, 2021

Subject: Horizon Drive and G Road / 27 ½ Road Roundabout
Grand Junction, CO
Roundabout Operational Analysis

Introduction and Background

Mead & Hunt has completed a traffic analysis study for the proposed roundabout to be located at the intersection of Horizon Drive and G Road / 27 ½ Road in the City of Grand Junction, Colorado.

Traffic Volumes and Analysis Inputs

The existing traffic turning movement counts for the weekday AM and PM peak periods were collected on February 18, 2021 and provided by the City of Grand Junction. Peak hours were identified as 8:15 AM to 9:15 AM and 4:30 PM to 5:30 PM. City engineering staff provided a 2.0% value for the annual growth projections. Future traffic volumes for the year 2043 were predicted for the intersection by applying this 2.0% annual growth rate linearly for 22 years. A total percentage of 3% articulated trucks was estimated for all approaches utilizing the intersection. See Attachment A for the raw counts and Attachment B for the 2043 forecasted peak hour volumes.

Capacity Analysis

The operation of the roundabout was analyzed with Highway Capacity Software (HCS) Roundabouts Version 7.9.5 which relies on the Highway Capacity Manual procedures for traffic analysis. The HCS capacity analysis data is documented in Attachment C.

The layout of the roundabout intersection would provide two lane entries on the Horizon Drive roadway to accommodate traffic volumes and maintain continuity with the corridor lanes. The G Road approaches were tested as single lane entries but did not provide acceptable operations in the 2043 design year.

Proposed Geometry

The proposed lane configuration consists of two lane entries on both Northbound and Southbound Horizon Drive, a thru/right lane & a left turn lane on Eastbound G Road, and a thru/left & a partial right-

turn bypass lane on Westbound G Road. A conceptual layout of the proposed lane configuration is shown in Figure 1. A summary of the operations for the G Road single lane test and for the proposed lane configuration is shown in Table 1.

Figure 1 – Proposed Lane Configuration

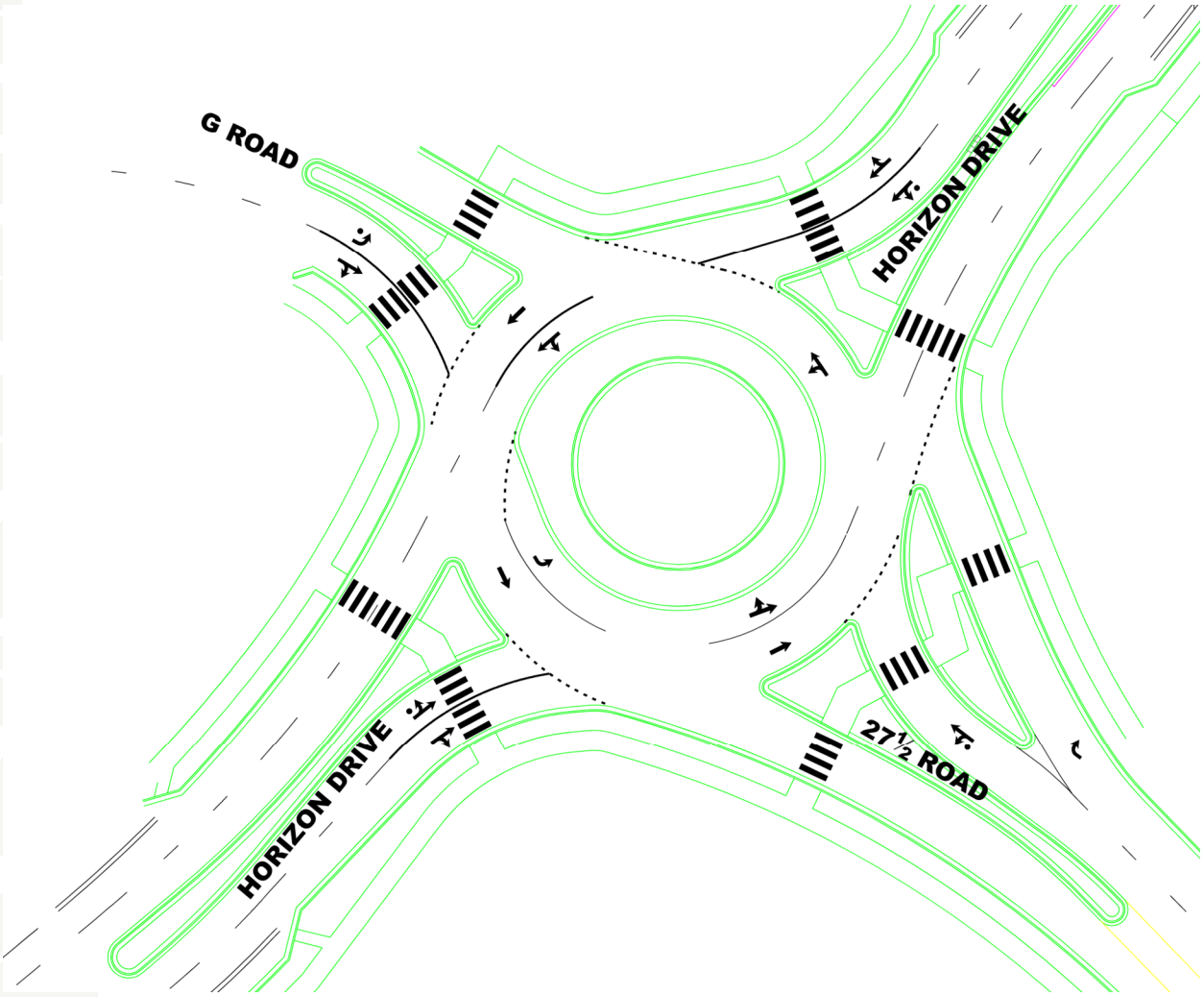


Table 1 – Operational Analysis Summary

		2043 AM Peak Hour			2043 PM Peak Hour		
	Approach	**LOS**	**Average Vehicle Delay (sec)**	**95th Percentile Queue (veh)***	**LOS**	**Average Vehicle Delay (sec)**	**95th Percentile Queue (veh)***
Roundabout w/ Single Lane Entries on G Road	**Eastbound G Road**	B	14.9	3.0	F	69.5	11.0
	Westbound G Road	F	78.5	24.3	E	45.7	12.8
	Northbound Horizon Dr.	A	7.8	1.2	D	32.5	7.6
	Southbound Horizon Dr.	A	8.4	2.6	B	14.0	6.9
	Overall	D	34.2		D	30.8	
Roundabout w/ Two Lane Entry on EB G Road & Partial Bypass on WB G Road	**Eastbound G Road**	B	10.1	1.3	D	26.4	4.9
	Westbound G Road	C	24.2	10.6	C	18.7	5.6
	Northbound Horizon Dr.	A	7.8	1.2	D	32.5	7.6
	Southbound Horizon Dr.	A	8.4	2.6	B	14.0	6.9
	Overall	B	14.1		C	20.9	

*Maximum queue length shown if multiple lane entries analyzed

Attachment A. Raw 2021 Traffic Counts

City of Grand Junction

333 West Avenue
Grand Junction, CO, 81501
Transportation Engineering

City of Grand Junction
2021 Horizon Dr AM-PM TM's

File Name : 2021 Turning Movements
Site Code : 04444411
Start Date : 2/18/2021
Page No : 1

Groups Printed- All Vehicles

	From North					From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:15 AM	6	50	32	0	88	77	26	4	0	107	6	35	1	0	42	0	10	12	0	22	259
07:30 AM	12	84	52	0	148	88	28	13	0	129	1	53	0	0	54	1	38	15	0	54	385
07:45 AM	8	116	48	0	172	120	34	19	0	173	4	72	0	0	76	1	27	27	0	55	476
Total	26	250	132	0	408	285	88	36	0	409	11	160	1	0	172	2	75	54	0	131	1120
08:00 AM	14	118	50	0	182	132	42	8	0	182	8	92	1	0	101	1	39	23	0	63	528
*** BREAK ***																					
Total	14	118	50	0	182	132	42	8	0	182	8	92	1	0	101	1	39	23	0	63	528
*** BREAK ***																					
04:30 PM	17	114	99	1	231	66	27	10	0	103	10	90	5	1	106	4	38	15	0	57	497
04:45 PM	18	100	101	3	222	60	23	9	1	93	21	122	2	1	146	0	40	15	1	56	517
Total	35	214	200	4	453	126	50	19	1	196	31	212	7	2	252	4	78	30	1	113	1014
05:00 PM	19	107	90	1	217	68	27	9	0	104	20	116	5	0	141	1	40	21	0	62	524
05:15 PM	24	130	132	1	287	57	24	10	0	91	20	121	1	0	142	6	38	19	0	63	583
Grand Total	118	819	604	6	1547	668	231	82	1	982	90	701	15	2	808	14	270	147	1	432	3769
Apprch %	7.6	52.9	39	0.4		68	23.5	8.4	0.1		11.1	86.8	1.9	0.2		3.2	62.5	34	0.2		
Total %	3.1	21.7	16	0.2	41	17.7	6.1	2.2	0	26.1	2.4	18.6	0.4	0.1	21.4	0.4	7.2	3.9	0	11.5	

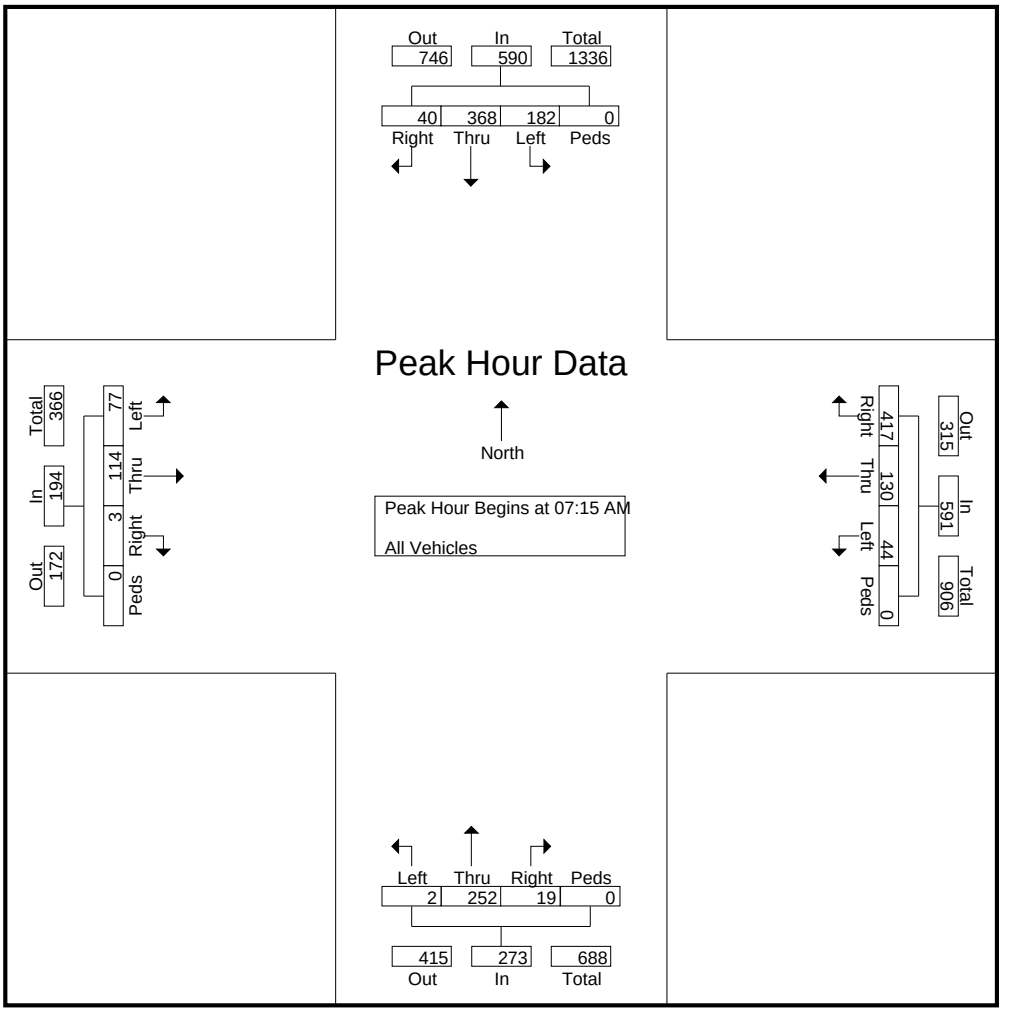
City of Grand Junction

333 West Avenue
Grand Junction, CO, 81501
Transportation Engineering

City of Grand Junction
2021 Horizon Dr AM-PM TM's

File Name : 2021 Turning Movements
Site Code : 04444411
Start Date : 2/18/2021
Page No : 2

	From North					From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	6	50	32	0	88	77	26	4	0	107	6	35	**1**	0	42	0	10	12	0	22	259
07:30 AM	12	84	**52**	0	148	88	28	13	0	129	1	53	0	0	54	**1**	38	15	0	54	385
07:45 AM	8	116	48	0	172	120	34	**19**	0	173	4	72	0	0	76	1	27	**27**	0	55	476
08:00 AM	**14**	**118**	50	0	**182**	**132**	**42**	8	0	**182**	**8**	**92**	1	0	**101**	1	**39**	23	0	**63**	**528**
Total Volume	40	368	182	0	590	417	130	44	0	591	19	252	2	0	273	3	114	77	0	194	1648
% App. Total	6.8	62.4	30.8	0		70.6	22	7.4	0		7	92.3	0.7	0		1.5	58.8	39.7	0		
PHF	.714	.780	.875	.000	.810	.790	.774	.579	.000	.812	.594	.685	.500	.000	.676	.750	.731	.713	.000	.770	.780



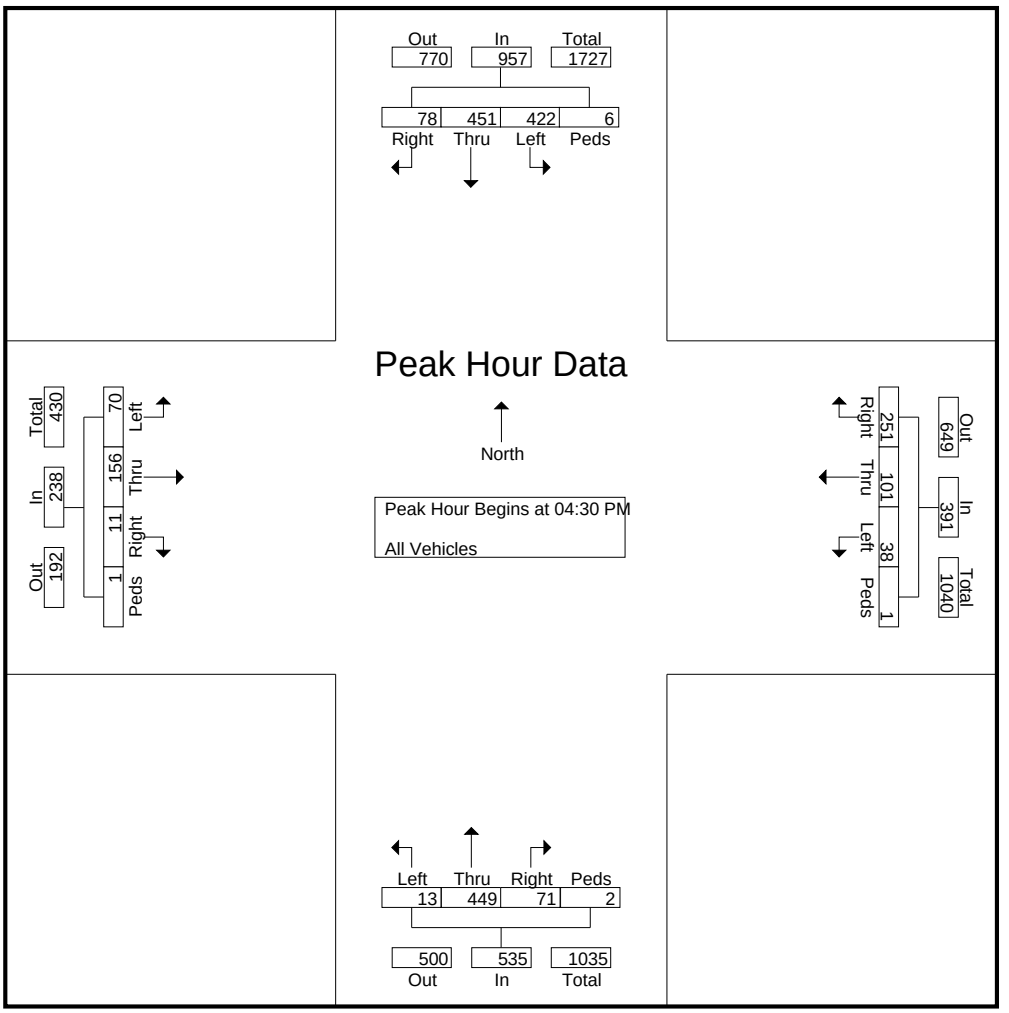
City of Grand Junction

333 West Avenue
Grand Junction, CO, 81501
Transportation Engineering

City of Grand Junction
2021 Horizon Dr AM-PM TM's

File Name : 2021 Turning Movements
Site Code : 04444411
Start Date : 2/18/2021
Page No : 3

	From North					From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	17	114	99	1	231	66	**27**	**10**	0	103	10	90	**5**	**1**	106	4	38	15	0	57	497
04:45 PM	18	100	101	**3**	222	60	23	9	**1**	93	**21**	**122**	2	1	**146**	0	**40**	15	**1**	56	517
05:00 PM	19	107	90	1	217	**68**	27	9	0	**104**	20	116	5	0	141	1	40	**21**	0	62	524
05:15 PM	**24**	**130**	**132**	1	**287**	57	24	10	0	91	20	121	1	0	142	**6**	38	19	0	**63**	**583**
Total Volume	78	451	422	6	957	251	101	38	1	391	71	449	13	2	535	11	156	70	1	238	2121
% App. Total	8.2	47.1	44.1	0.6		64.2	25.8	9.7	0.3		13.3	83.9	2.4	0.4		4.6	65.5	29.4	0.4		
PHF	.813	.867	.799	.500	.834	.923	.935	.950	.250	.940	.845	.920	.650	.500	.916	.458	.975	.833	.250	.944	.910

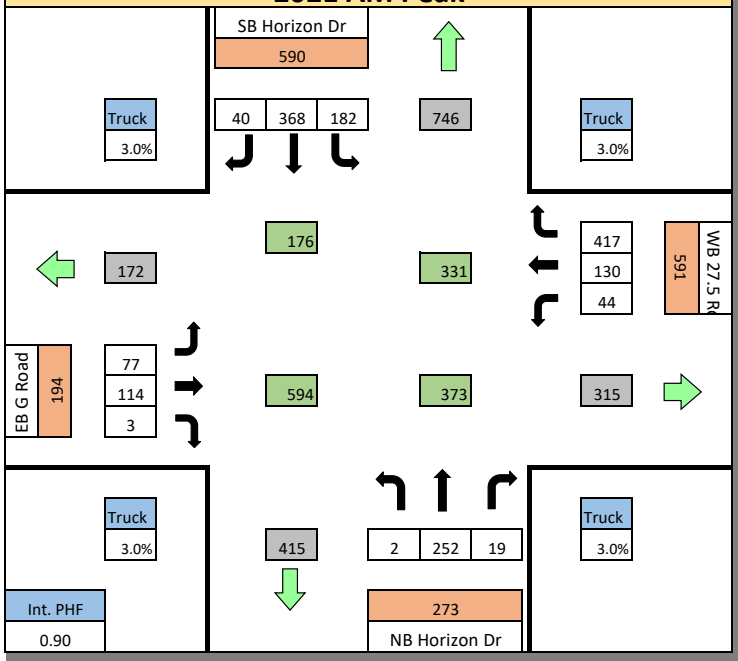


Attachment B. 2021 Existing Counts and 2043 Projected Peak Hour Volumes

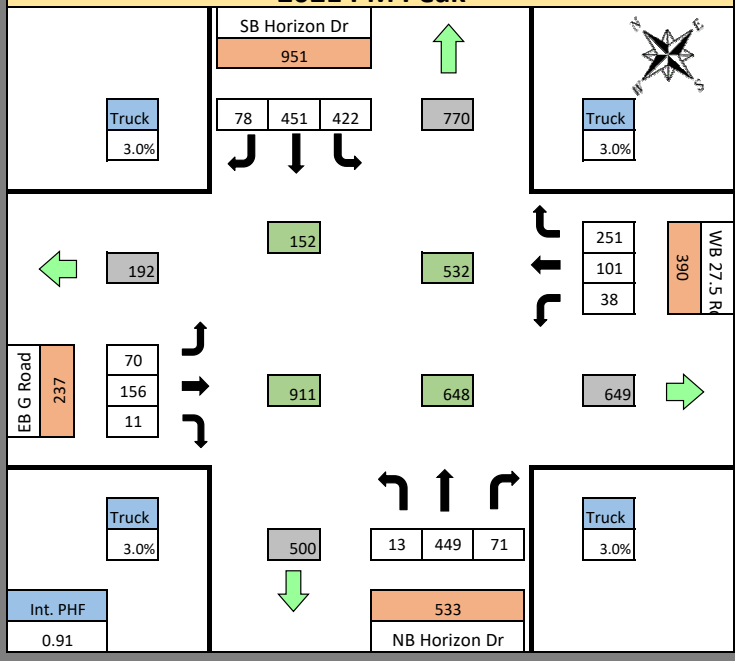
Traffic Volumes

Intersection	Horizon Drive and G Road / 27 1/2 Road	**Analysis Year**	2021/2043	**Date**	8/25/2021
Project ID		**Location**	Grand Junction, CO	**Prepared By**	TJP

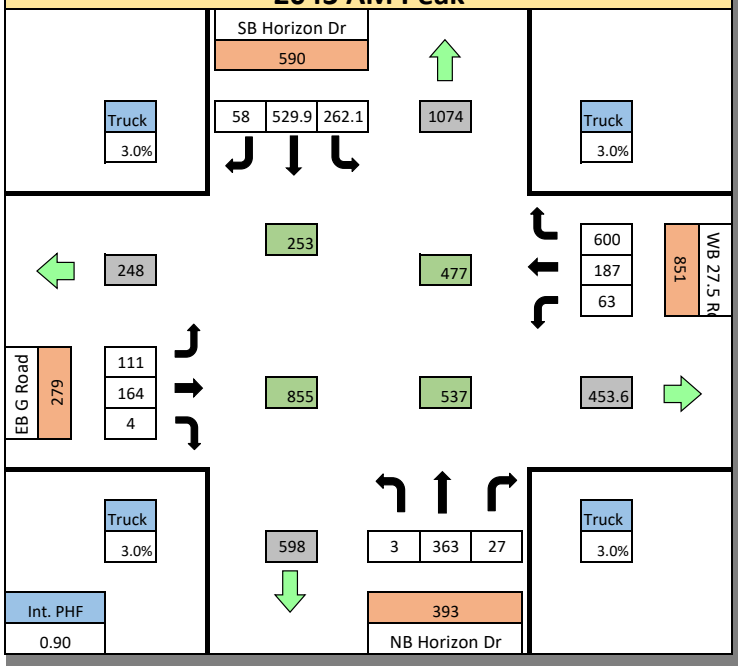
2021 AM Peak



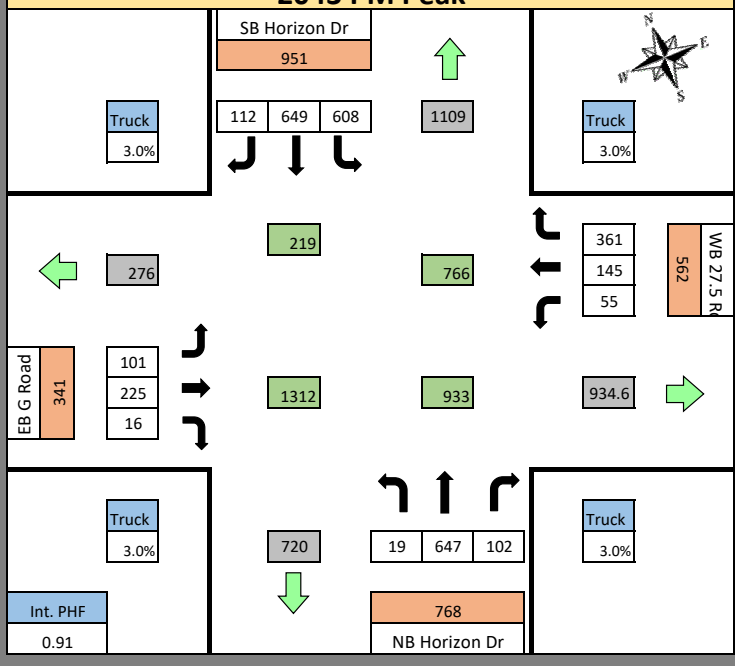
2021 PM Peak



2043 AM Peak



2043 PM Peak



Attachment C. HCS Capacity Analysis Output

HCS7 Roundabouts Report

General Information

Analyst	Mead & Hunt
Agency or Co.	Grand Junction, CO
Date Performed	8/25/2021
Analysis Year	2043
Time Analyzed	AM
Project Description	2% GROWTH 1 LANE

Site Information

Intersection	HORIZON DRIVE AND G RO...
E/W Street Name	G ROAD
N/S Street Name	HORIZON DRIVE
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.90
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	2	0	0	0	2	0
Lane Assignment			LTR				LTR		LT		TR		LT		TR	
Volume (V), veh/h	0	111	164	4	0	63	187	600	0	3	363	27	0	262	530	58
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	127	188	5	0	72	214	687	0	3	415	31	0	300	607	66
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	2				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.3276			4.3276		4.6453	4.3276		4.5436	4.5436	
Follow-Up Headway (s)		2.5352			2.5352		2.6667	2.5352		2.5352	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		320			973		211	238		457	516	
Entry Volume, veh/h		311			945		205	231		444	501	
Circulating Flow (v_c), pc/h	979			545			615			289		
Exiting Flow (v_{ex}), pc/h	519			283			1229			684		
Capacity (c_{pce}), pc/h		618			894		767	842		1092	1092	
Capacity (c), veh/h		600			867		744	817		1060	1060	
v/c Ratio (x)		0.52			1.09		0.28	0.28		0.42	0.47	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		14.9			78.5		8.0	7.5		7.9	8.8	
Lane LOS		B			F		A	A		A	A	
95% Queue, veh		3.0			24.3		1.1	1.2		2.1	2.6	
Approach Delay, s/veh	14.9			78.5			7.8			8.4		
Approach LOS	B			F			A			A		
Intersection Delay, s/veh | LOS	34.2						D					

HCS7 Roundabouts Report

General Information

Analyst	Mead & Hunt
Agency or Co.	Grand Junction, CO
Date Performed	8/25/2021
Analysis Year	2043
Time Analyzed	PM
Project Description	2.0% GROWTH 1 LANE

Site Information

Intersection	HORIZON DRIVE AND G RO...
E/W Street Name	G ROAD
N/S Street Name	HORIZON DRIVE
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.91
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	2	0	0	0	2	0
Lane Assignment			LTR				LTR		LT		TR		LT		TR	
Volume (V), veh/h	0	101	225	16	0	55	145	361	0	19	647	102	0	608	649	112
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	114	255	18	0	62	164	409	0	22	732	115	0	688	735	127
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	2				2				2				1			
Pedestrians Crossing, p/h	2				2				3				9			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.3276			4.3276		4.6453	4.3276		4.5436	4.5436	
Follow-Up Headway (s)		2.5352			2.5352		2.6667	2.5352		2.5352	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		387			635		408	461		729	822	
Entry Volume, veh/h		376			617		397	447		707	798	
Circulating Flow (v_c), pc/h	1485			868			1057			248		
Exiting Flow (v_{ex}), pc/h	1058			313			1255			815		
Capacity (c_{pce}), pc/h		402			679		511	578		1133	1133	
Capacity (c), veh/h		390			659		496	561		1091	1091	
v/c Ratio (x)		0.96			0.94		0.80	0.80		0.65	0.73	

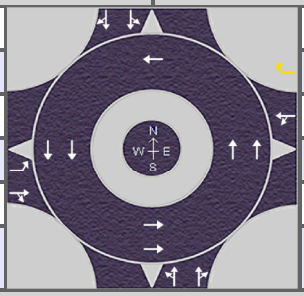
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		69.5			45.7		34.4	30.9		12.4	15.3	
Lane LOS		F			E		D	D		B	C	
95% Queue, veh		11.0			12.8		7.5	7.6		5.0	6.9	
Approach Delay, s/veh	69.5			45.7			32.5			14.0		
Approach LOS	F			E			D			B		
Intersection Delay, s/veh | LOS	30.8						D					

HCS7 Roundabouts Report

General Information

Analyst	Mead & Hunt
Agency or Co.	Grand Junction, CO
Date Performed	8/25/2021
Analysis Year	2043
Time Analyzed	AM
Project Description	2.0% GROWTH 2 LANE



Site Information

Intersection	HORIZON DRIVE AND G RO...
E/W Street Name	G ROAD
N/S Street Name	HORIZON DRIVE
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.90
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	2	0	0	0	2	0
Lane Assignment	L		TR				LT		LT		TR		LT		TR	
Volume (V), veh/h	0	111	164	4	0	63	187	600	0	3	363	27	0	262	530	58
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	127	188	5	0	72	214	687	0	3	415	31	0	300	607	66
Right-Turn Bypass	None				Yielding				None				None			
Conflicting Lanes	2				2				2				1			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276			4.3276	4.9763	4.6453	4.3276		4.5436	4.5436	
Follow-Up Headway (s)	2.6667	2.5352			2.5352	2.6087	2.6667	2.5352		2.5352	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	127	193			286	687	211	238		457	516	
Entry Volume, veh/h	123	187			278	667	205	231		444	501	
Circulating Flow (v_c), pc/h	979			545			615			289		
Exiting Flow (v_{ex}), pc/h	519			283			542			684		
Capacity (c_{pce}), pc/h	548	618			894	794	767	842		1092	1092	
Capacity (c), veh/h	533	600			867	771	744	817		1060	1060	
v/c Ratio (x)	0.23	0.31			0.32	0.87	0.28	0.28		0.42	0.47	

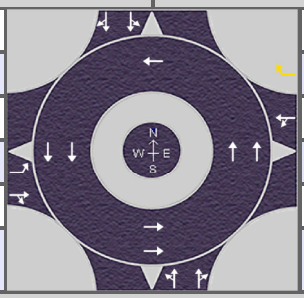
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	9.9	10.3			7.7	31.0	8.0	7.5		7.9	8.8	
Lane LOS	A	B			A	D	A	A		A	A	
95% Queue, veh	0.9	1.3			1.4	10.6	1.1	1.2		2.1	2.6	
Approach Delay, s/veh	10.1			24.2			7.8			8.4		
Approach LOS	B			C			A			A		
Intersection Delay, s/veh | LOS	14.1						B					

HCS7 Roundabouts Report

General Information

Analyst	Mead & Hunt
Agency or Co.	Grand Junction, CO
Date Performed	8/25/2021
Analysis Year	2043
Time Analyzed	PM
Project Description	2.0% GROWTH



Site Information

Intersection	HORIZON DRIVE AND G RO...
E/W Street Name	G ROAD
N/S Street Name	HORIZON DRIVE
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.91
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	1	1	0	0	0	1	0	0	0	2	0	0	0	2	0
Lane Assignment	L		TR				LT		LT		TR		LT		TR	
Volume (V), veh/h	0	101	225	16	0	55	145	361	0	19	647	102	0	608	649	112
Percent Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Flow Rate (v_{PCE}), pc/h	0	114	255	18	0	62	164	409	0	22	732	115	0	688	735	127
Right-Turn Bypass	None				Yielding				None				None			
Conflicting Lanes	2				2				2				1			
Pedestrians Crossing, p/h	2				2				3				9			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.6453	4.3276			4.3276	4.9763	4.6453	4.3276		4.5436	4.5436	
Follow-Up Headway (s)	2.6667	2.5352			2.5352	2.6087	2.6667	2.5352		2.5352	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	114	273			226	409	408	461		729	822	
Entry Volume, veh/h	111	265			219	397	397	447		707	798	
Circulating Flow (v_c), pc/h	1485			868			1057			248		
Exiting Flow (v_{ex}), pc/h	1058			313			846			815		
Capacity (c_{pce}), pc/h	344	402			679	582	511	578		1133	1133	
Capacity (c), veh/h	334	390			659	565	496	561		1091	1091	
v/c Ratio (x)	0.33	0.68			0.33	0.70	0.80	0.80		0.65	0.73	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	17.7	30.1			9.8	23.5	34.4	30.9		12.4	15.3	
Lane LOS	C	D			A	C	D	D		B	C	
95% Queue, veh	1.4	4.9			1.5	5.6	7.5	7.6		5.0	6.9	
Approach Delay, s/veh	26.4			18.7			32.5			14.0		
Approach LOS	D			C			D			B		
Intersection Delay, s/veh | LOS	20.9						C					