SF 19-014

SUBDIVISION IMPROVEMENTS AGREEMENT

THIS AGREEMENT, made between Challenger Communities, LLC, hereinafter called the "Subdivider," and El Paso County by and through the Board of County Commissioners of El Paso County, Colorado, hereinafter called the "County," shall become effective the date of approval of the Final Plat by the Board of County Commissioners.

WITNESSETH:

WHEREAS, the Subdivider, as a condition of approval of the final plat of Bent Grass Filing 2 subdivision wishes to enter into a Subdivision Improvements Agreement, as provided for by Section 30-28-137, C.R.S., Chapter 5 of the El Paso County Engineering Criteria Manual and Chapter 8 of the El Paso County Land Development Code, all incorporated herein by reference; and

WHEREAS, pursuant to the same authority, the Subdivider is obligated to provide security or collateral sufficient in the judgment of the Board of County Commissioners to make reasonable provision for completion of certain public improvements set forth on Exhibit A attached hereto and incorporated herein; and

WHEREAS, the Subdivider wishes to provide collateral to guarantee performance of this Agreement including construction of the above-referenced improvements by means of a performance bond.

NOW, THEREFORE, in consideration of the following mutual covenants and agreements, the Subdivider and the County agree as follows:

1. The Subdivider agrees to construct and install, at its sole expense, all of those improvements as set forth on Exhibit A attached hereto. To secure and guarantee performance of its obligations as set forth herein, the Subdivider agrees to provide collateral to remain in effect at all times until the improvements are completed and accepted in accordance with Chapter 5 of the ECM. Collateral shall be posted in the form of performance bonds issued by Harco National Insurance Company in the amounts of $7,807,211.45 (2019 Financial Assurance Estimate Form), $370,810 (2019 Financial Assurance Estimate Form – Pond WU), and in the form of cash in the amount of $33,750.00 (2019 Financial Assurance Estimate Form – Woodmen/Golden Sage Protected/Permitted Phasing).

2. In addition to and notwithstanding any other provision of this Agreement, the following additional provisions shall apply to the Subdivider's obligation to construct Bent Grass Meadows Drive from its terminus just west of Sea Oats Drive to its terminus approximately 1,770 feet north of Woodmen Frontage Road including, as necessary for safety, temporary transitions around the unsafe projecting manhole cover north of Woodmen Frontage Road:

   a. Two (2) building permits for model homes may be issued following plat recording.

   b. An additional twenty-three (23) building permits will be issued following Subdivider submittal and County approval of the Paving Design Report for and commencement by Subdivider of base course installation on Bent Grass Meadows Drive.

   c. The first lift of asphalt along the length of Bent Grass Meadows Drive and asphalt transition around the projecting manhole cover must be completed in compliance with the approved construction drawings before the Subdivider commences

construction of the improvements at the intersection of Bent Grass Meadows Drive and Meridian Road.

d. An additional twenty-three (23) building permits will be issued following substantial completion of Phase 3 of the construction of the Bent Grass Meadows Drive extension improvements, as determined by the PCD Executive Director. Such construction shall be in compliance with the approved construction drawings, as set forth in the accepted Traffic Impact Study Addendum dated March 3, 2020 for the Subdivision, attached hereto as Exibit B.

3. In addition to and notwithstanding any other provision of this Agreement, the following additional provisions shall apply to the Subdivider's obligation to construct improvements to the intersection of Bent Grass Meadows Drive and Meridian Road:

a. No site plans or building permits shall be approved by the County, with the exception of those site plans and building permits associated with the two model homes identified in paragraph 2.a. above, until and unless the construction drawings for the intersection improvements have been approved by the County. No certificates of occupancy shall be authorized by the County, including for the two model homes identified in paragraph 2.a. above, until such construction drawings have been approved by the County.

c. In an effort to minimize the disruption of existing traffic flows, Subdivider shall phase construction of the intersection improvements so as to provide safe conditions for two-way traffic at the intersection at all times unless otherwise approved by El Paso County Department of Public Works (DPW) under the Traffic Control Plan required with the Work Within the Right-of-Way Permit issued by DPW.

d. As set forth herein, no more than a total of forty-eight (48) building permits may be issued in the Subdivision until the intersection improvements have been substantially completed, as determined by the ECM Administrator.

4. Subdivider is responsible for providing any renewals of collateral to ensure that there is never a lapse in security coverage. Subdivider shall procure renewal/extension/replacement collateral at least fifteen (15) days prior to the expiration of the original or renewal/extension/replacement collateral then in effect. Failure to procure renewal/extension/replacement collateral within this time limit shall be a default under this Agreement and shall allow the County to execute on the collateral. In addition, if Subdivider allows collateral to lapse at any time, no lots in the subdivision may be sold, conveyed or transferred, whether by Deed or Contract, after the expiration date of such collateral until the improvements identified on Exhibit A have been completed and final acceptance is received from the County. If replacement collateral is used for renewal, approval by Board of County Commissioners is required.

5. No lots in the subdivision shall be sold, conveyed or transferred, whether by Deed or by Contract, to any third party purchaser, except for transfers or sales between Subdivider and any direct affiliate, nor shall building permits be issued until and unless the required improvements for the subdivision have been constructed and completed in accordance with the approved construction plans and preliminary acceptance is received from the County. Under no circumstances shall lots be sold, conveyed, or transferred, whether by Deed or by Contract, by any successor direct affiliate until and unless the required improvements for the subdivision have been constructed and

completed in accordance with the approved construction plans and preliminary acceptance is received from the County. In the alternative, lots within the subdivision may be sold, conveyed or transferred and / or have building permits issued upon receipt of collateral acceptable to the County, pursuant to this Agreement, which is sufficient to guarantee construction of the improvements in the attached Exhibit A.

6. The Subdivider agrees that all of those certain public improvements to be completed as identified on Exhibit A shall be constructed in compliance with the following:

    a. All laws, resolutions and regulations of the United States, State of Colorado, El Paso County and its various agencies, affected special districts and/or servicing authorities.

    b. Such other designs, drawings, maps, specifications, sketches and other matter submitted to and approved by any of the above-stated governmental entities.

7. All improvements except the Woodmen/Golden Sage Protected/Permitted Phasing shall be completed by the Subdivider, meeting all applicable standards for preliminary acceptance, within 24 (twenty-four) months from the date of notice to proceed in the Construction Permit for the Subdivision. If the Subdivider determines that the completion date needs to be extended, the Subdivider shall submit a written request for a change in the completion date to the ECM Administrator at least 90 days in advance of the required completion date. The request shall include the reasons for the requested change in completion date, the proposed new completion date, and prove collateral is in place to cover the extension time requested. The completion date for the Subdivision may be extended one time, for a period no longer than 6 months at the discretion of the ECM Administrator. Any additional requests for extension of the completion date will be scheduled for hearing by the Board of County Commissioners. The ECM Administrator or the Board of County Commissioners may require an adjustment in the amount of collateral to take into account any increase in cost due to the delay including inflation.

    For the Woodmen/Golden Sage Protected/Permitted Phasing ("Signal Phasing"), signal modification plans shall be prepared and submitted to the County for review prior to opening Bent Grass Meadows Drive for public use. If the Signal Phasin is not warranted at the time of preliminary acceptance of the other Subdivision improvements, a follow-up traffic memorandum shall be submitted to the County prior to final acceptance of such other improvements addressing the anticipated need for and timing of the Signal Phasing. If it is determined that the Signal Phasing is not warranted at the time of full buildout of the Subdivision, the County will release the collateral for the Signal Phasing. At any time prior to release of the collateral, if it is determined that the Signal Phasing is warranted, the Subdivider shall install such improvement within six (6) months of such determination and coordinate with the County and the City of Colorado Springs for such installation.

8. It is mutually agreed pursuant to the provisions of Section 30-28-137 (3) C.R.S. that the County or any purchaser of any lot, lots, tract or tracts of land subject to a plat restriction which is the security portion of a Subdivision Improvements Agreement shall have the authority to bring an action in any District Court to compel the enforcement of any Subdivision Improvements Agreement on the sale, conveyance, or transfer of any such lot, lots, tract or tracts of land or of any other provision of this article. Such authority shall include the right to compel rescission of any sale, conveyance, or transfer of any lot, lots, tract or tracts of land contrary to the provisions of any such restrictions set forth on the plat or in any separate recorded instrument, but any such action shall be commenced

prior to the issuance of a building permit by the County where so required or otherwise prior to commencement of construction on any such lot, lots, tract or tracts of land.

9. It is further mutually agreed that, pursuant to the provisions of Section 30-28-137 (2) C.R.S., and Chapter 5 of the County's Engineering Criteria Manual, as improvements are completed, the Subdivider may apply to the Board of County Commissioners for a release of part or all of the collateral deposited with said Board. Upon inspection and approval, the Board shall release said collateral. The County agrees to respond to an inspection request in a reasonable time upon receipt of the request. If the Board determines that any of such improvements are not constructed in substantial compliance with specifications it shall furnish the Subdivider a list of specific deficiencies and shall be entitled to withhold collateral sufficient to ensure such substantial compliance. If the Board of County Commissioners determines that the Subdivider will not construct any or all of the improvements in accordance with all of the specifications, the Board of County Commissioners may withdraw and employ from the deposit of collateral such funds as may be necessary to construct the improvements in accordance with the specifications.

10. The Subdivider agrees, and both parties acknowledge that the construction of the improvements identified and guaranteed through this Subdivision Improvements Agreement shall follow the inspection, collateral, and acceptance process that is identified in Chapter 5 of the County's Engineering Criteria Manual. This is to include among other things, a Preliminary Acceptance process, replacement of performance collateral with appropriate Warranty collateral at that time, and a 2-year warranty period prior to final acceptance. Where any inconsistency exists between Chapter 5 of the Engineering Criteria Manual and the Land Development Code with respect to these inspections, collateral and acceptance processes, the Engineering Criteria Manual is the controlling document.

11. The Subdivider agrees to provide the County with a title insurance commitment at time of final platting evidencing that fee simple title of all lands in the subdivision is vested with the subdivider.

12. This Subdivision is included within the boundaries of the Woodmen Road Metropolitan District and shall not be required to participate in the El Paso County Road Impact Fee Program, in accordance with the provisions of the First Amendment to the Intergovernmental Agreement Concerning Woodmen Road adopted pursuant to Resolution No. 13-041.

13. The County agrees to approval of the final plat of Bent Grass Residential Filing No. 2 Subdivision subject to the terms and conditions of this Agreement.

14. The provisions of this Agreement supersede and replace condition #14 of approval of the final plat of this Subdivision, as set forth in Resolution No. 20-161.

15. Parties hereto mutually agree that this Agreement may be amended from time to time provided that such amendment be in writing and signed by all parties hereto.

16. This Agreement shall take effect on the date of approval of the Final Plat by the Board of County Commissioners.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals the day and year below written.

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BOARD OF COUNTY COMMISSIONERS
OF EL PASO COUNTY, COLORADO

By: _____
Mark Waller, Chair

_____
(Date Final Plat Approved)

ATTEST:

_____
County Clerk and Recorder

Approved as to form:

_____
County Attorney's Office

SUBDIVIDER
Challenger Communities, LLC

By: _____

Name: James Byers

Title: VP of Land Dev.

Subscribed, sworn to and acknowledged before me this 24th day of June, 2020 by James Byers as V.P. Community/Land Development of Challenger Communities, LLC.

My commission expires: 8.26.2021

_____
Notary Public

JULIE K. EDMUNDS
Notary Public
State of Colorado
Notary ID # 20134054579
My Commission Expires 08-26-2021

Exhibit A – Financial Assurance Estimate

Exhibit B – TIS Report Addendum Dated March 3, 2020

EXHIBIT A

2019 Financial Assurance Estimate Form
(with pre-plat construction)

Updated: 7/16/2019

PROJECT INFORMATION

Project Name	Date	PCD File No.
[redacted]	5/17/2020	[redacted]

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)								
* Earthwork								*
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -	*
1,000-5,000; $8,000 min	4,202	CY	$ 6.00	=	$ 25,212.00		$ 25,212.00	*
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -	*
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -	*
50,001-200,000; $175,000 min		CY	$ 2.50	=	$ -		$ -	*
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -	*
* Permanent Seeding (inc. noxious weed mgmnt.)	8	AC	$ 500.00	=	$ 4,000.00		$ 4,000.00	*
* Mulching		AC	$ 750.00	=	$ -		$ -	*
* Permanent Erosion Control Blanket	12,360	SY	$ 6.00	=	$ 103,080.00		$ 103,080.00	*
* Permanent Pond/BMP Construction	3,300	CY	$ 20.00	=	$ 66,000.00		$ 66,000.00	*
* Permanent Pond/BMP (Spillway)	2	EA	$ 5,000.00	=	$ 10,000.00		$ 10,000.00	*
* Permanent Pond/BMP (Outlet Structure)	2	EA	$ 55,000.00	=	$ 110,000.00		$ 110,000.00	
Safety Fence	175	LF	$ 3.00	=	$ 525.00		$ 525.00	
Temporary Erosion Control Blanket	15,700	SY	$ 3.00	=	$ 47,100.00		$ 47,100.00	
Vehicle Tracking Control	3	EA	$ 2,370.00	=	$ 7,110.00		$ 7,110.00	
Silt Fence	16,368	LF	$ 2.50	=	$ 40,920.00		$ 40,920.00	
Temporary Seeding	5	AC	$ 628.00	=	$ 3,140.00		$ 3,140.00	
Temporary Mulch		AC	$ 750.00	=	$ -		$ -	
Erosion Bales		EA	$ 25.00	=	$ -		$ -	
Erosion Logs/Straw Waddle	760	LF	$ 5.00	=	$ 3,800.00		$ 3,800.00	
Concrete Check Dams	2	EA	$ 1,000.00	=	$ 2,000.00		$ 2,000.00	
Inlet Protection	13	EA	$ 167.00	=	$ 2,171.00		$ 2,171.00	
Sediment Basin	3	EA	$ 1,762.00	=	$ 5,286.00		$ 5,286.00	
Concrete Washout Basin	1	EA	$ 900.00	=	$ 900.00		$ 900.00	
Straw Bale Check Dams	111	EA	$ 100.00	=	$ 11,100.00		$ 11,100.00	
[insert items not listed but part of construction plans]				=	$ -		$ -	
MAINTENANCE (35% of Construction BMPs)				=	$ 43,234.45		$ 43,234.45	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 1 Subtotal**	=	**$ 485,578.45**		**$ 485,578.45**	
SECTION 2 - PUBLIC IMPROVEMENTS *								
ROADWAY IMPROVEMENTS								*
Construction Traffic Control	1	LS	$ 5,000.00	=	$ 5,000.00		$ 5,000.00	*
Aggregate Base Course (135 lbs/cf) 8" Thick	14,200	Tons	$ 28.00	=	$ 399,840.00		$ 399,840.00	*
Aggregate Base Course (135 lbs/cf)		CY	$ 50.00		$ -		$ -	*
Asphalt Pavement (3" thick)		SY	$ 14.00		$ -		$ -	*
Asphalt Pavement (4" thick)		SY	$ 19.00		$ -		$ -	*
Asphalt Pavement (6" thick)		SY	$ 29.00		$ -		$ -	*
Asphalt Pavement (147 lbs/cf) 4" Thick	9,840	Tons	$ 88.00	=	$ 839,520.00		$ 839,520.00	*
Raised Median, Paved		SF	$ 8.00	=	$ -		$ -	*
Regulatory Sign/Advisory Sign	30	EA	$ 300.00	=	$ 9,000.00		$ 9,000.00	*
Guide/Street Name Sign	16	EA	$ 300.00	=	$ 4,800.00		$ 4,800.00	*
Epoxy Pavement Marking	1,050	SF	$ 13.00	=	$ 13,650.00		$ 13,650.00	*
Thermoplastic Pavement Marking		SF	$ 23.00	=	$ -		$ -	*
Barricade - Type 3		EA	$ 200.00	=	$ -		$ -	*
Delineator - Type I		EA	$ 24.00	=	$ -		$ -	*
Curb and Gutter, Type A (6" Vertical)	7,597	LF	$ 30.00	=	$ 227,910.00		$ 227,910.00	*
Curb and Gutter, Type B (Median)		LF	$ 30.00	=	$ -		$ -	*
Curb and Gutter, Type C (Ramp)	14,000	LF	$ 30.00	=	$ 420,000.00		$ 420,000.00	*
4" Sidewalk (common areas only)		SY	$ 48.00	=	$ -		$ -	*
5" Sidewalk		SY	$ 60.00	=	$ -		$ -	*
6" Sidewalk	9,939	SY	$ 72.00	=	$ 715,536.00		$ 715,536.00	*
8" Sidewalk		SY	$ 96.00	=	$ -		$ -	*
Pedestrian Ramp	45	EA	$ 1,150.00	=	$ 51,750.00		$ 51,750.00	*
Cross Pan, local (6" thick, 6' wide to include return)	800	LF	$ 61.00	=	$ 48,800.00		$ 48,800.00	*
Cross Pan, collector (9" thick, 8' wide to include return)	240	LF	$ 92.00		$ 22,080.00		$ 22,080.00	*
Curb Chase		EA	$ 1,480.00	=	$ -		$ -	*
Guardrail Type 3 (W-Beam)		LF	$ 49.00	=	$ -		$ -	*
Guardrail Type 7 (Concrete)		LF	$ 72.00	=	$ -		$ -	*
Guardrail End Anchorage		EA	$ 2,098.00	=	$ -		$ -	*
Guardrail Impact Attenuator		EA	$ 3,767.00	=	$ -		$ -	*
Sound Barrier Fence (CMU block, 6' high)		LF	$ 78.00		$ -		$ -	*
Sound Barrier Fence (panels, 6' high)		LF	$ 80.00	=	$ -		$ -	*
Electrical Conduit, Size =		LF	$ 16.00	=	$ -		$ -	*
Traffic Signal, complete intersection		EA	$ 425,000	=	$ -		$ -	*

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2	5/12/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	*
STORM DRAIN IMPROVEMENTS								
Concrete Box Culvert (M Standard), Size (16 x 6)	240	LF	$ 2,000.00	=	$ 480,000.00		$ 480,000.00	*
18" Reinforced Concrete Pipe	1,084	LF	$ 65.00	=	$ 70,460.00		$ 70,460.00	*
24" Reinforced Concrete Pipe	136	LF	$ 78.00	=	$ 10,608.00		$ 10,608.00	*
30" Reinforced Concrete Pipe	127	LF	$ 97.00	=	$ 12,319.00		$ 12,319.00	*
36" Reinforced Concrete Pipe	245	LF	$ 120.00	=	$ 29,400.00		$ 29,400.00	*
42" Reinforced Concrete Pipe	58	LF	$ 160.00	=	$ 9,280.00		$ 9,280.00	*
48" Reinforced Concrete Pipe		LF	$ 195.00	=	$ -		$ -	*
54" Reinforced Concrete Pipe		LF	$ 245.00	=	$ -		$ -	*
60" Reinforced Concrete Pipe		LF	$ 288.00	=	$ -		$ -	*
66" Reinforced Concrete Pipe		LF	$ 332.00	=	$ -		$ -	*
72" Reinforced Concrete Pipe		LF	$ 380.00	=	$ -		$ -	*
18" Corrugated Steel Pipe		LF	$ 84.00	=	$ -		$ -	*
24" Corrugated Steel Pipe		LF	$ 96.00	=	$ -		$ -	*
30" Corrugated Steel Pipe		LF	$ 122.00	=	$ -		$ -	*
36" Corrugated Steel Pipe		LF	$ 147.00	=	$ -		$ -	*
42" Corrugated Steel Pipe		LF	$ 168.00	=	$ -		$ -	*
48" Corrugated Steel Pipe		LF	$ 178.00	=	$ -		$ -	*
54" Corrugated Steel Pipe		LF	$ 260.00	=	$ -		$ -	*
60" Corrugated Steel Pipe		LF	$ 280.00	=	$ -		$ -	*
66" Corrugated Steel Pipe		LF	$ 340.00	=	$ -		$ -	*
72" Corrugated Steel Pipe		LF	$ 400.00	=	$ -		$ -	*
78" Corrugated Steel Pipe		LF	$ 460.00	=	$ -		$ -	*
84" Corrugated Steel Pipe		LF	$ 550.00	=	$ -		$ -	*
Flared End Section (FES) RCP Size = 18 (unit cost = 6x pipe unit cost)	1	EA	$ 390.00	=	$ 1,560.00		$ 1,560.00	*
Flared End Section (FES) RCP Size = 24 (unit cost = 6x pipe unit cost)	1	EA	$ 468.00	=	$ 468.00		$ 468.00	*
Flared End Section (FES) RCP Size = 36 (unit cost = 6x pipe unit cost)	1	EA	$ 720.00	=	$ 720.00		$ 720.00	*
End Treatment- Headwall		EA		=	$ -		$ -	*
End Treatment- Wingwall		EA		=	$ -		$ -	*
End Treatment - Cutoff Wall		EA		=	$ -		$ -	*
Curb Inlet (Type R) L=5', Depth < 5'		EA	$ 5,542.00	=	$ -		$ -	*
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	$ 7,188.00	=	$ -		$ -	*
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 8,345.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', Depth < 5'		EA	$ 7,627.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'	2	EA	$ 7,861.00	=	$ 15,722.00		$ 15,722.00	*
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 9,841.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 9,918.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'	3	EA	$ 10,633.00	=	$ 31,899.00		$ 31,899.00	*
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 11,627.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 10,570.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'	5	EA	$ 11,667.00	=	$ 58,335.00		$ 58,335.00	*
Grated Inlet (Type C), Depth < 5'		EA	$ 4,640.00	=	$ -		$ -	*
Grated Inlet (Type D), Depth < 5'	1	EA	$ 5,731.00	=	$ 5,731.00		$ 5,731.00	*
Storm Sewer Manhole, Box Base	2	EA	$ 11,627.00	=	$ 23,254.00		$ 23,254.00	*
Storm Sewer Manhole, Slab Base		EA	$ 6,395.00	=	$ -		$ -	*
Geotextile (Erosion Control)		SY	$ 6.00	=	$ -		$ -	*
Rip Rap, d50 size from 6" to 24"	800	Tons	$ 80.00	=	$ 64,000.00		$ 64,000.00	*
Rip Rap, Grouted		Tons	$ 95.00	=	$ -		$ -	*
Drainage Channel Construction, Size (20 x 5)	1,300	LF	$ 200.00	=	$ 260,000.00		$ 260,000.00	*
Drainage Channel Lining, Concrete		CY	$ 570.00	=	$ -		$ -	*
Drainage Channel Lining, Rip Rap	5,672	CY	$ 112.00	=	$ 635,264.00		$ 635,264.00	*
Drainage Channel Lining, Grass	3	AC	$ 1,469.00	=	$ 4,407.00		$ 4,407.00	
Drainage Channel Lining, Other Stabilization				=	$ -		$ -	*
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 2 Subtotal**	=	**$ 4,471,313.00**		**$ 4,471,313.00**	

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2	5/12/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS	(Exception: Permanent Pond/BMP shall be itemized under Section 1)						
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"	7,979	LF	$ 64.00	=	$ 510,656.00		$ 510,656.00
Water Main Pipe (Ductile Iron), Size 8"		LF	$ 75.00	=	$ -		$ -
Gate Valves, 8"	81	EA	$ 1,858.00	=	$ 150,498.00		$ 150,498.00
Fire Hydrant Assembly, w/ all valves	28	EA	$ 6,597.00	=	$ 184,716.00		$ 184,716.00
Water Service Line Installation, inc. tap and valves	178	EA	$ 1,324.00	=	$ 235,672.00		$ 235,672.00
Fire Cistern Installation, complete		EA		=	$ -		$ -
Water Main Pipe (PVC), Size 10"	3,904	LF	$ 64.00		$ 252,336.00		$ 252,336.00
Gate Valves, 10"	13	EA	$ 2,158.00	=	$ 28,054.00		$ 28,054.00
[Insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"	10,556	LF	$ 64.00	=	$ 675,584.00		$ 675,584.00
Sanitary Sewer Manhole, Depth < 15 feet	68	EA	$ 4,386.00	=	$ 298,248.00		$ 298,248.00
Sanitary Service Line Installation, complete	178	EA	$ 1,402.00	=	$ 249,556.00		$ 249,556.00
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[Insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS	(For subdivision specific condition of approval, or PUD)						
Landscaping	1	LS	$ 210,000.00	=	$ 210,000.00		$ 210,000.00
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements			**Section 3 Subtotal**	=	**$ 2,795,320.00**		**$ 2,795,320.00**

PROJECT INFORMATION		
Dent Grass Residential Filing No. 2	5/12/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
AS-BUILT PLANS (Public Improvements Inc. Permanent WQCV BMPs)		LS	$ 40,000.00	=	$ 40,000.00		$ 40,000.00
POND/BMP CERTIFICATION (Inc. elevations and volume calculations)		LS	$ 15,000.00	=	$ 15,000.00		$ 15,000.00

Total Construction Financial Assurance $ 7,807,211.45
(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) $ 7,807,211.45
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance $ 957,921.00
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

COLORADO LICENSED GRANT BYERS PE 0054202 PROFESSIONAL ENGINEER

Engineer (P.E. Seal Required)

James Byers 4/2/20

Approved by Owner / Applicant Date

04/20/2020

Approved by El Paso County Engineer / ECM Administrator

Approved
By: Elizabeth Nijkamp
Date:05/13/2020
El Paso County Planning & Community Development

2019 Financial Assurance Estimate Form - Pond WU
(with pre-plat construction)

Updated: 7/16/2019

PROJECT INFORMATION		
[redacted]	3/20/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)							
* Earthwork							
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -
1,000-5,000; $8,000 min		CY	$ 6.00	=	$ -		$ -
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -
50,001-200,000; $175,000 min		CY	$ 2.50	=	$ -		$ -
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -
* Permanent Seeding (inc. noxious weed mgmnt.)		AC	$ 800.00	=	$ -		$ -
* Mulching		AC	$ 750.00	=	$ -		$ -
* Permanent Erosion Control Blanket		SY	$ 6.00	=	$ -		$ -
* Permanent Pond/BMP Construction	2,400	CY	$ 20.00	=	$ 48,000.00		$ 48,000.00
* Permanent Pond/BMP (Spillway)		EA	$ [redacted]	=	$ -		$ -
* Permanent Pond/BMP (Outlet Structure)	1	EA	$ [redacted]	=	$ 80,000.00		$ 80,000.00
Safety Fence		LF	$ 3.00	=	$ -		$ -
Temporary Erosion Control Blanket		SY	$ 3.00	=	$ -		$ -
Vehicle Tracking Control		EA	$ 2,370.00	=	$ -		$ -
Silt Fence		LF	$ 2.50	=	$ -		$ -
Temporary Seeding		AC	$ 628.00	=	$ -		$ -
Temporary Mulch		AC	$ 750.00	=	$ -		$ -
Erosion Bales		EA	$ 25.00	=	$ -		$ -
Erosion Logs/Straw Waddle		LF	$ 5.00	=	$ -		$ -
Rock Check Dams		EA	$ 500.00	=	$ -		$ -
Inlet Protection		EA	$ 167.00	=	$ -		$ -
Sediment Basin		EA	$ 1,762.00	=	$ -		$ -
Concrete Washout Basin		EA	$ 900.00	=	$ -		$ -
[redacted]		EA	$ [redacted]	=	$ -		$ -
(insert items not listed but part of construction plans)				=	$ -		$ -
MAINTENANCE (35% of Construction BMPs)				=	$ -		$ -
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)		**Section 1 Subtotal**		=	**$ 128,000.00**		**$ 128,000.00**
SECTION 2 - PUBLIC IMPROVEMENTS *							
ROADWAY IMPROVEMENTS							
Construction Traffic Control		LS		=	$ -		$ -
Aggregate Base Course (135 lbs/cf)		Tons	$ 28.00	=	$ -		$ -
Aggregate Base Course (135 lbs/cf)		CY	$ 50.00		$ -		$ -
Asphalt Pavement (3" thick)		SY	$ 14.00		$ -		$ -
Asphalt Pavement (4" thick)		SY	$ 19.00		$ -		$ -
Asphalt Pavement (6" thick)		SY	$ 29.00		$ -		$ -
Asphalt Pavement (147 lbs/cf) __" thick		Tons	$ 88.00	=	$ -		$ -
Raised Median, Paved		SF	$ 8.00	=	$ -		$ -
Regulatory Sign/Advisory Sign		EA	$ 300.00	=	$ -		$ -
Guide/Street Name Sign		EA		=	$ -		$ -
Epoxy Pavement Marking		SF	$ 13.00	=	$ -		$ -
Thermoplastic Pavement Marking		SF	$ 23.00	=	$ -		$ -
Barricade - Type 3		EA	$ 200.00	=	$ -		$ -
Delineator - Type I		EA	$ 24.00	=	$ -		$ -
Curb and Gutter, Type A (6" Vertical)		LF	$ 30.00	=	$ -		$ -
Curb and Gutter, Type B (Median)		LF	$ 30.00	=	$ -		$ -
Curb and Gutter, Type C (Ramp)		LF	$ 30.00	=	$ -		$ -
4" Sidewalk (common areas only)		SY	$ 48.00	=	$ -		$ -
5" Sidewalk		SY	$ 60.00	=	$ -		$ -
6" Sidewalk		SY	$ 72.00	=	$ -		$ -
8" Sidewalk		SY	$ 96.00	=	$ -		$ -
Pedestrian Ramp		EA	$ 1,150.00	=	$ -		$ -
Cross Pan, local (8" thick, 6' wide to include return)		LF	$ 61.00	=	$ -		$ -
Cross Pan, collector (9" thick, 8' wide to include return)		LF	$ 92.00		$ -		$ -
Curb Chase		EA	$ 1,480.00	=	$ -		$ -
Guardrail Type 3 (W-Beam)		LF	$ 49.00	=	$ -		$ -
Guardrail Type 7 (Concrete)		LF	$ 72.00	=	$ -		$ -
Guardrail End Anchorage		EA	$ 2,098.00	=	$ -		$ -
Guardrail Impact Attenuator		EA	$ 3,767.00	=	$ -		$ -
Sound Barrier Fence (CMU block, 6' high)		LF	$ 78.00		$ -		$ -
Sound Barrier Fence (panels, 6' high)		LF	$ 80.00	=	$ -		$ -
Electrical Conduit, Size =		LF	$ 16.00	=	$ -		$ -
Traffic Signal, complete intersection		EA	$ 425,000	=	$ -		$ -

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2	3/20/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	*
STORM DRAIN IMPROVEMENTS								
Concrete Box Culvert (M Standard), Size (W x H)		LF		=	$ -		$ -	*
18" Reinforced Concrete Pipe	126	LF	$ 65.00	=	$ 8,190.00		$ 8,190.00	*
24" Reinforced Concrete Pipe		LF	$ 78.00	=	$ -		$ -	*
30" Reinforced Concrete Pipe		LF	$ 97.00	=	$ -		$ -	*
36" Reinforced Concrete Pipe		LF	$ 120.00	=	$ -		$ -	*
42" Reinforced Concrete Pipe		LF	$ 160.00	=	$ -		$ -	*
48" Reinforced Concrete Pipe		LF	$ 195.00	=	$ -		$ -	*
54" Reinforced Concrete Pipe		LF	$ 245.00	=	$ -		$ -	*
60" Reinforced Concrete Pipe		LF	$ 288.00	=	$ -		$ -	*
66" Reinforced Concrete Pipe		LF	$ 332.00	=	$ -		$ -	*
72" Reinforced Concrete Pipe		LF	$ 380.00	=	$ -		$ -	*
18" Corrugated Steel Pipe		LF	$ 84.00	=	$ -		$ -	*
24" Corrugated Steel Pipe		LF	$ 96.00	=	$ -		$ -	*
30" Corrugated Steel Pipe		LF	$ 122.00	=	$ -		$ -	*
36" Corrugated Steel Pipe		LF	$ 147.00	=	$ -		$ -	*
42" Corrugated Steel Pipe		LF	$ 168.00	=	$ -		$ -	*
48" Corrugated Steel Pipe		LF	$ 178.00	=	$ -		$ -	*
54" Corrugated Steel Pipe		LF	$ 260.00	=	$ -		$ -	*
60" Corrugated Steel Pipe		LF	$ 280.00	=	$ -		$ -	*
66" Corrugated Steel Pipe		LF	$ 340.00	=	$ -		$ -	*
72" Corrugated Steel Pipe		LF	$ 400.00	=	$ -		$ -	*
78" Corrugated Steel Pipe		LF	$ 460.00	=	$ -		$ -	*
84" Corrugated Steel Pipe		LF	$ 550.00	=	$ -		$ -	*
Flared End Section (FES) RCP Size = 18 (unit cost = 6x pipe unit cost)	2	EA	$ 390.00	=	$ 780.00		$ 780.00	*
Flared End Section (FES) CSP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
End Treatment- Headwall		EA		=	$ -		$ -	*
End Treatment- Wingwall		EA		=	$ -		$ -	*
End Treatment - Cutoff Wall		EA		=	$ -		$ -	*
Curb Inlet (Type R) L=5', Depth < 5'		EA	$ 5,542.00	=	$ -		$ -	*
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	$ 7,188.00	=	$ -		$ -	*
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 8,345.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', Depth < 5'		EA	$ 7,627.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'		EA	$ 7,861.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 9,841.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 9,918.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'		EA	$ 10,633.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 11,627.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 10,570.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'		EA	$ 11,667.00	=	$ -		$ -	*
Grated Inlet (Type C), Depth < 5'		EA	$ 4,640.00	=	$ -		$ -	*
Grated Inlet (Type D), Depth < 5'		EA	$ 5,731.00	=	$ -		$ -	*
Storm Sewer Manhole, Box Base		EA	$ 11,627.00	=	$ -		$ -	*
Storm Sewer Manhole, Slab Base		EA	$ 6,395.00	=	$ -		$ -	*
Geotextile (Erosion Control)		SY	$ 6.00	=	$ -		$ -	*
Rip Rap, d50 size from 6" to 24"	2,298	Tons	$ 80.00	=	$ 183,840.00		$ 183,840.00	*
Rip Rap, Grouted		Tons	$ 95.00	=	$ -		$ -	*
Drainage Channel Construction, Size (W x H)		LF		=	$ -		$ -	*
Drainage Channel Lining, Concrete		CY	$ 570.00	=	$ -		$ -	*
Drainage Channel Lining, Rip Rap		CY	$ 112.00	=	$ -		$ -	*
Drainage Channel Lining, Grass		AC	$ 1,469.00	=	$ -		$ -	*
Drainage Channel Lining, Other Stabilization				=	$ -		$ -	*
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 2 Subtotal**	=	**$ 192,810.00**		**$ 192,810.00**	

PROJECT INFORMATION		
Sand Grass Residential Filing No. 2	3/20/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS	(Exception: Permanent Pond/BMP shall be itemized under Section 1)						
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"		LF	$ 64.00	=	$ -		$ -
Water Main Pipe (Ductile Iron), Size 8"		LF	$ 75.00	=	$ -		$ -
Gate Valves, 8"		EA	$ 1,858.00	=	$ -		$ -
Fire Hydrant Assembly, w/ all valves		EA	$ 6,597.00	=	$ -		$ -
Water Service Line Installation, inc. tap and valves		EA	$ 1,324.00	=	$ -		$ -
Fire Cistern Installation, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"		LF	$ 64.00	=	$ -		$ -
Sanitary Sewer Manhole, Depth < 15 feet		EA	$ 4,386.00	=	$ -		$ -
Sanitary Service Line Installation, complete		EA	$ 1,402.00	=	$ -		$ -
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS	(For subdivision specific condition of approval, or PUD)						
Landscaping	1	EA	$ 50,000.00	=	$ 50,000.00		$ 50,000.00
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements			**Section 3 Subtotal**	=	**$ 50,000.00**		**$ 50,000.00**

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2	3/29/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
AS-BUILT PLANS (Public Improvements inc. Permanent WQCV BMPs)		LS		=	$ -		$ -
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS		=	$ -		$ -

Total Construction Financial Assurance $ 370,810.00
(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) $ 370,810.00
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance $ 64,162.00
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

COLORADO LICENSED
RONALD GRANT BYERS
PE.0054202
PROFESSIONAL ENGINEER

Engineer (P.E. Seal Required)

James Byers 4/2/20

Approved by Owner / Applicant Date

04/20/2020

Approved by El Paso County Engineer / ECM Administrator

Approved
By: Elizabeth Nijkamp
Date:05/13/2020
El Paso County Planning & Community Development

EXHIBIT A

2019 Financial Assurance Estimate Form
(with pre-plat construction)

Updated: 7/16/2019

PROJECT INFORMATION

Project Name	Date	PCD File No.
Bent Grass Residential Filing No. 2 - Woodmen Traffic Signal	7/28/2020	SF-19-014

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)							
* Earthwork							
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -
1,000-5,000; $8,000 min		CY	$ 6.00	=	$ -		$ -
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -
50,001-200,000; $175,000 min		CY	$ 2.50	=	$ -		
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -
* Permanent Seeding (inc. noxious weed mgmnt.)		AC	$ 800.00	=	$ -		
* Mulching		AC	$ 750.00	=	$ -		$ -
* Permanent Erosion Control Blanket		SY	$ 6.00	=	$ -		$ -
* Permanent Pond/BMP Construction		CY	$ 20.00	=			
* Permanent Pond/BMP (Spillway)		EA	$ 5,000.00	=	$ -		$ -
* Permanent Pond/BMP (Outlet Structure)		EA	$ 55,000.00	=	$ -		
Safety Fence		LF	$ 3.00	=	$ -		
Temporary Erosion Control Blanket		SY	$ 3.00	=	$ -		$ -
Vehicle Tracking Control		EA	$ 2,370.00	=	$ -		$ -
Silt Fence		LF	$ 2.50	=			$ -
Temporary Seeding		AC	$ 626.00	=	$ -		$ -
Temporary Mulch		AC	$ 750.00	=	$ -		$ -
Erosion Bales		EA	$ 25.00	=	$ -		$ -
Erosion Logs/Straw Waddle		LF	$ 5.00	=	$ -		$ -
Rock Check Dams		EA	$ 500.00	=	$ -		$ -
Inlet Protection		EA	$ 167.00	=	$ -		$ -
Sediment Basin		EA	$ 1,762.00	=	$ -		
Concrete Washout Basin		EA	$ 900.00	=	$ -		$ -
Straw Bale Check Dams		EA	$ 100.00	=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
MAINTENANCE (35% of Construction BMPs)				=	$ -		$ -
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)			**Section 1 Subtotal**	=	$ -		$ -
SECTION 2 - PUBLIC IMPROVEMENTS *							
ROADWAY IMPROVEMENTS							
Construction Traffic Control		LS	$ 5,000.00	=	$ -		$ -
Aggregate Base Course (135 lbs/cf) 8" Thick		Tons	$ 28.00	=	$ -		$ -
Aggregate Base Course (135 lbs/cf)		CY	$ 50.00		$ -		$ -
Asphalt Pavement (3" thick)		SY	$ 14.00		$ -		$ -
Asphalt Pavement (4" thick)		SY	$ 19.00		$ -		$ -
Asphalt Pavement (6" thick)		SY	$ 29.00		-		$ -
Asphalt Pavement (147 lbs/cf) 4" Thick		Tons	$ 88.00	=	$ -		$ -
Raised Median, Paved		SF	$ 8.00	=	$ -		$ -
Regulatory Sign/Advisory Sign		EA	$ 300.00	=	$ -		$ -
Guide/Street Name Sign		EA	$ 300.00	=	$ -		$ -
Epoxy Pavement Marking		SF	$ 13.00	=	$ -		$ -
Thermoplastic Pavement Marking		SF	$ 23.00	=	$ -		$ -
Barricade - Type 3		EA	$ 200.00	=	$ -		$ -
Delineator - Type I		EA	$ 24.00	=	$ -		$ -
Curb and Gutter, Type A (6" Vertical)		LF	$ 30.00	=	$ -		$ -
Curb and Gutter, Type B (Median)		LF	$ 30.00	=	$ -		$ -
Curb and Gutter, Type C (Ramp)		LF	$ 30.00	=	$ -		$ -
4" Sidewalk (common areas only)		SY	$ 48.00	=	$ -		$ -
5" Sidewalk		SY	$ 60.00	=	$ -		$ -
6" Sidewalk		SY	$ 72.00	=	$ -		$ -
8" Sidewalk		SY	$ 96.00		$ -		$ -
Pedestrian Ramp		EA	$ 1,150.00	=	$ -		$ -
Cross Pan, local (8" thick, 6' wide to include return)		LF	$ 61.00	=	$ -		$ -
Cross Pan, collector (9" thick, 8' wide to include return)		LF	$ 92.00		$ -		$ -
Curb Chase		EA	$ 1,480.00	=	$ -		$ -
Guardrail Type 3 (W-Beam)		LF	$ 49.00	=	$ -		$ -
Guardrail Type 7 (Concrete)		LF	$ 72.00	=	$ -		$ -
Guardrail End Anchorage		EA	$ 2,098.00	=	$ -		$ -
Guardrail Impact Attenuator		EA	$ 3,767.00	=	$ -		$ -
Sound Barrier Fence (CMU block, 6' high)		LF	$ 78.00		$ -		$ -
Sound Barrier Fence (panels, 6' high)		LF	$ 80.00	=	$ -		$ -
Electrical Conduit. Size =		LF	$ 16.00	=	$ -		$ -
Partial Traffic Signal	1	EA	$ 33,750	=	$ 33,750.00		$ 33,750.00

PROJECT INFORMATION

Bent Grass Residential Filing No. 2 - Woodmen Traffic Signal	7/28/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
STORM DRAIN IMPROVEMENTS							
Concrete Box Culvert (M Standard), Size (16 x 6)		LF		=	$ -		$ -
18" Reinforced Concrete Pipe		LF	$ 65.00	=	$ -		$ -
24" Reinforced Concrete Pipe		LF	$ 78.00	=	$ -		$ -
30" Reinforced Concrete Pipe		LF	$ 97.00	=	$ -		$ -
36" Reinforced Concrete Pipe		LF	$ 120.00	=	$ -		$ -
42" Reinforced Concrete Pipe		LF	$ 160.00	=	$ -		$ -
48" Reinforced Concrete Pipe		LF	$ 195.00	=	$ -		$ -
54" Reinforced Concrete Pipe		LF	$ 245.00	=	$ -		$ -
60" Reinforced Concrete Pipe		LF	$ 288.00	=	$ -		$ -
66" Reinforced Concrete Pipe		LF	$ 332.00	=	$ -		$ -
72" Reinforced Concrete Pipe		LF	$ 380.00	=	$ -		$ -
18" Corrugated Steel Pipe		LF	$ 84.00	=	$ -		$ -
24" Corrugated Steel Pipe		LF	$ 96.00	=	$ -		$ -
30" Corrugated Steel Pipe		LF	$ 122.00	=	$ -		$ -
36" Corrugated Steel Pipe		LF	$ 147.00	=	$ -		$ -
42" Corrugated Steel Pipe		LF	$ 168.00	=	$ -		$ -
48" Corrugated Steel Pipe		LF	$ 178.00	=	$ -		$ -
54" Corrugated Steel Pipe		LF	$ 260.00	=	$ -		$ -
60" Corrugated Steel Pipe		LF	$ 280.00	=	$ -		$ -
66" Corrugated Steel Pipe		LF	$ 340.00	=	$ -		$ -
72" Corrugated Steel Pipe		LF	$ 400.00	=	$ -		$ -
78" Corrugated Steel Pipe		LF	$ 460.00	=	$ -		$ -
84" Corrugated Steel Pipe		LF	$ 550.00	=	$ -		$ -
Flared End Section (FES) RCP Size = 18 (unit cost = 6x pipe unit cost)		EA	$ 390.00	=	$ -		$ -
Flared End Section (FES) RCP Size = 24 (unit cost = 6x pipe unit cost)		EA	$ 468.00	=	$ -		$ -
Flared End Section (FES) RCP Size = 36 (unit cost = 6x pipe unit cost)		EA	$ 720.00	=	$ -		$ -
End Treatment- Headwall		EA		=	$ -		$ -
End Treatment- Wingwall		EA		=	$ -		$ -
End Treatment - Cutoff Wall		EA		=	$ -		$ -
Curb Inlet (Type R) L=5', Depth < 5'		EA	$ 5,542.00	=	$ -		$ -
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	$ 7,188.00	=	$ -		$ -
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 8,345.00	=	$ -		$ -
Curb Inlet (Type R) L =10', Depth < 5'		EA	$ 7,627.00	=	$ -		$ -
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'		EA	$ 7,861.00	=	$ -		$ -
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 9,841.00	=	$ -		$ -
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 9,918.00	=	$ -		$ -
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'		EA	$ 10,633.00	=	$ -		$ -
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 11,627.00	=	$ -		$ -
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 10,570.00	=	$ -		$ -
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'		EA	$ 11,667.00	=	$ -		$ -
Grated Inlet (Type C), Depth < 5'		EA	$ 4,640.00	=	$ -		$ -
Grated Inlet (Type D), Depth < 5'		EA	$ 5,731.00	=	$ -		$ -
Storm Sewer Manhole, Box Base		EA	$ 11,627.00	=	$ -		$ -
Storm Sewer Manhole, Slab Base		EA	$ 6,395.00	=	$ -		$ -
Geotextile (Erosion Control)		SY	$ 6.00	=	$ -		$ -
Rip Rap, d50 size from 6" to 24"		Tons	$ 80.00	=	$ -		$ -
Rip Rap, Grouted		Tons	$ 95.00	=	$ -		$ -
Drainage Channel Construction, Size (26 x 5)		LF	$ 200.00	=	$ -		$ -
Drainage Channel Lining, Concrete		CY	$ 570.00	=	$ -		$ -
Drainage Channel Lining, Rip Rap		CY	$ 112.00	=	$ -		$ -
Drainage Channel Lining, Grass		AC	$ 1,469.00	=	$ -		$ -
Drainage Channel Lining, Other Stabilization				=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)		**Section 2 Subtotal**		=	**$ 33,750.00**		**$ 33,750.00**

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2 - Woodmen Traffic Signal	7/28/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS	(Exception: Permanent Pond/BMP shall be itemized under Section 1)						
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"		LF	$ 64.00	=	$ -		$ -
Water Main Pipe (Ductile Iron), Size 8"		LF	$ 75.00	=	$ -		$ -
Gate Valves, 8"		EA	$ 1,858.00	=	$ -		$ -
Fire Hydrant Assembly, w/ all valves		EA	$ 6,597.00	=	$ -		$ -
Water Service Line Installation, Inc. tap and valves		EA	$ 1,324.00	=	$ -		$ -
Fire Cistern Installation, complete		EA		=	$ -		$ -
Water Main Pipe (PVC), Size 10"		LF	$ 84.00		$ -		$ -
Gate Valves, 10"		EA	$ 2,158.00	=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"		LF	$ 64.00	=	$ -		$ -
Sanitary Sewer Manhole, Depth < 15 feet		EA	$ 4,386.00	=	$ -		$ -
Sanitary Service Line Installation, complete		EA	$ 1,402.00	=	$ -		$ -
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS	(For subdivision specific condition of approval, or PUD)						
Landscaping		LS	$ 210,000.00	=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements			**Section 3 Subtotal**	=	$ -		$ -

PROJECT INFORMATION		
Bent Grass Residential Filing No. 2 - Woodmen Traffic Signal	7/28/2020	SF-19-014
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
AS-BUILT PLANS (Public improvements inc. Permanent WQCV BMPs)		LS	$ -	=	$ -		$ -
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS	$ -	=	$ -		$ -

Total Construction Financial Assurance $ 33,750.00
(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) $ 33,750.00
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance $ 6,750.00
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

COLORADO LICENSED RONALD GRANT DS... PE 0058... PROFESSIONAL ENGINEER

Engineer (P.E. Seal Required) 07/28/2020

Approved by Owner / Applicant Date 7/28/2020

Approved by El Paso County Engineer / ECM Administrator

Approved
By: Elizabeth Nijkamp
Date:07/29/2020
El Paso County Planning & Community Development

EXHIBIT B

LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: http://www.lsctrans.com

March 3, 2020

Jim Byers
VP of Community Development
Challenger Homes
8605 Explorer Dr, Suite 250
Colorado Springs, CO 80920

RE: Bent Grass Residential Filing No. 2
El Paso County, Colorado
TIS Report Addendum
LSC #194460

Dear Jim:

LSC Transportation Consultants, Inc. completed a traffic impact study (TIS) for the Bent Grass Residential Filing No. 2 dated January 24, 2020. This memorandum is an addendum to that report to address a County comment about the initial impact of the Bent Grass Meadows Drive connection and the first 48 lots of the proposed Filing No. 2 development at intersection of the Woodmen north frontage road and Bent Grass Meadows Boulevard.

REPORT CONTENTS

The report contains the following as a supplement/addendum to the TIS Report:

- Updated short-term background traffic volumes based on development of approved land uses only.
- The projected average weekday and peak-hour vehicle-trips to be generated by the site following buildout of the first 48 lots.
- The assignment of the projected Phase 1 site-generated traffic volumes to the study area roadways and intersections
- The projected Phase 1 short-term traffic volumes on the study area roadway network
- The projected levels of service at the key area intersections.
- A vehicle queueing analysis at the intersection of Woodmen north frontage road/Bent Grass Meadows Drive.

SF1914

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the roadways without the Bent Grass Residential Filing No. 2 traffic. The short-term (Year 2020) background traffic volumes are shown in Figure 1. The background traffic volumes are based on the existing traffic volumes shown in Figure 3 of the January 24, 2020 TIS with a portion of the volumes assumed to be rerouted with the construction of Bent Grass Meadows Drive between the existing sections located north of the Woodmen frontage road and west of Meridian Road. The short-term background traffic volumes also include additional traffic projected to be generated **buildout of Falcon Marketplace** located northwest of the intersection of Woodmen Road/Meridian Road. As buildout of Falcon Marketplace has been assumed, these short-term volumes may be conservative if commercial buildout takes several years to occur.

The short-term background traffic volumes shown in Figure 1 **do not** include additional traffic projected to be generated by buildout of the Bent Grass East Commercial development (as was assumed in the January 24, 2020 TIS). The short-term background traffic volumes also assume a right-in-only access to Woodmen Road just west of Meridian Road. Through traffic on Meridian Road was assumed to grow based on two percent growth per year.

TRIP GENERATION

Estimates of the vehicle-trips generated by the first phase of Bent Grass Residential Filing No. 2 have been made using the nationally published trip generation rates found in *Trip Generation, 10th Edition* by the Institute of Transportation Engineers (ITE). The results of the trip generation estimate are shown in Table 2.

Following buildout of the first 48 lots of the Bent Grass Residential Filing No. 2 the site can be expected to generate about 453 vehicle-trips on the average weekday, with about half entering and half exiting in a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about nine vehicles would enter, and 27 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 30 vehicles would enter, and 18 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

When the external trip distribution percentages (from Figure 6 of the January 24, 2020 TIS) are applied to the trip generation estimates (from Table 1), the resulting Phase 1 site-generated traffic volumes can be determined. Figure 2 shows the short-term Phase 1 only site-generated traffic volume estimates. The short-term site-generated traffic volumes assume Bent Grass Meadows Drive has been constructed between Meridian Road and the Woodmen frontage road.

TOTAL TRAFFIC

Figure 3 shows the projected short-term total traffic volumes at the site access points and key area intersections. The short-term total traffic volumes are the sum of the short-term background traffic volumes from Figure 1 plus the short-term Phase 1 site-generated traffic volumes from Figure 2.

PROJECTED LEVELS OF SERVICE

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 2 shows the level of service delay ranges.

Table 2
Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections Average Control Delay (seconds per vehicle)	Unsignalized Intersections Average Control Delay (seconds per vehicle)[1]
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more

(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

The site access points and key area intersections were analyzed to determine the projected short-term levels of service based on the unsignalized method of analysis procedures found in the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board or using Synchro. Figures 2 and 3 show the level of service analysis results. The level of service technical reports are attached.

Meridian/Bent Grass Meadows

The intersection of Meridian/Bent Grass Meadows is currently two-way, stop sign controlled. It is our understanding that this intersection will be required to be converted to traffic signal control with any additional development within Bent Grass East Commercial located southwest of this

intersection. It is likely that this intersection would need to be converted to signal control, even without additional development, once Bent Grass Meadows Drive is constructed between the two existing sections north of the Woodmen frontage road and west of Meridian Road. As a signal-controlled intersection, all movements are projected to operate at LOS D or better during the peak hours based on the Phase 1 short-term total traffic volumes.

Per El Paso County requirement alternatives to a conventional, signalized, full-movement intersection were analyzed as part of the January 24, 2020 TIS.

Woodmen/Golden Sage

All movements at the intersection of Woodmen/Golden Sage are projected to operate at LOS D or better during the peak hours based on the projected Phase 1 short-term total traffic volumes.

Woodmen Frontage Road/Golden Sage

The intersection of the Woodmen frontage road/Golden Sage is currently stop sign-controlled. All movements at this intersection are projected to operate at LOS B or better during the peak hours, based on the projected Phase 1 short-term total traffic volumes.

Woodmen Frontage Road/Bent Grass Meadows

All movements at the stop sign-controlled intersection of the Woodmen frontage road/Bent Grass Meadows are projected to operate at LOS B or better during the peak hours, based on the projected short-term and 2040 total traffic volumes.

Site Access Points

Both full-movement site access points to Bent Grass Meadows Drive are projected to operate at LOS A for all movements as stop sign-controlled intersections based on the Phase 1 short-term total traffic volumes.

VEHICLE QUEUING ANALYSIS

A queuing analysis was performed using Synchro/SimTraffic at the intersection of the Woodmen north frontage road and Bent Grass Meadows Drive. The Phase 1 short-term total peak-hour traffic volumes were entered into the Synchro model. The simulation was run five times. The queuing reports are attached.

The projected maximum eastbound approach queue on the Woodmen north frontage road approaching Bent Grass Meadows Drive is about 61 feet based on the Phase 1 short-term total morning peak-hour volume. There is about 135 feet of stacking distance Bent Grass Meadows Drive and the first access point to the west.

IMPROVEMENTS – PHASING AND TIMING

Per the applicant, the following is a phasing schedule for the roadway improvements:

Bent Grass Meadows extension

- *Phase 1 - County Approval of Construction Drawings for Bent Grass Filing 2. March 2020*
- *Phase 2 - Complete Bent Grass Meadows Drive extension (west of channel crossing) wet utilities, curb gutter, and pave (by August 1, 2020)*
- *Phase 3 - Complete Bent Grass Meadows Drive extension (east of channel crossing) wet utilities, curb gutter, and pave (mid-July, 2020)*

Bent Grass Meadows and Meridian Intersection

- *Phase 1 - County Approval of Intersection plans. June 1, 2020*
- *Phase 2 - Construct Meridian south bound acceleration lane, order culverts if pre-fab. (+/- 3 weeks) Start June 8th*
- *Phase 3 - Construction of right-turn lane from Bent Grass Meadows Drive, east-bound lane closure, add lane, and southside culvert construction (1 Month)*
- *Phase 4 - Construction of northern lane west bound Bent Grass Meadows Drive, west-bound lane closure, add lane, and northside culvert construction (1 Month)*
- *Phase 5 - Installation of Span Wire Traffic Signal for Intersection (projected start 1st week Sept.)*
- *Phase 6 - Install signal loop wire, final lane striping, and pave. (10 days)*
- *Phase 7 - Remove Traffic Control and open Intersection. (by October 1, 2020)*

Regarding the eastbound left-turn lane improvement on the Woodmen North Frontage Road at the Bent Grass Meadows Drive intersection, it is our understanding that this will be the responsibility of the Bent Grass Metropolitan District and this left-turn lane will be constructed as part of future improvements.

* * * * *

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Please contact me if you have any questions.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.
Principal

JCH:KDF:jas

Enclosures: Table 1
Figures 1-3
Level of Service Reports
Queuing Reports

Tables and Figures

TRANSPORTATION
CONSULTANTS, INC.

Table 1
Trip Generation Estimate
Bent Grass Residential Filing No. 2

Phase	Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates [1] Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	Total Trips Generated Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out
1	210	Single-Family Detached Housing	48 DU [2]	9.44	0.19	0.56	0.62	0.37	453	9	27	30	18
2	210	Single-Family Detached Housing	131 DU	9.44	0.19	0.56	0.62	0.37	1,237	24	73	82	48
			179 DU						**1,690**	**33**	**100**	**112**	**66**

Notes:
(1) Source: "*Trip Generation, 10th Edition, 2017*" by the Institute of Transportation Engineers (ITE)
(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc.

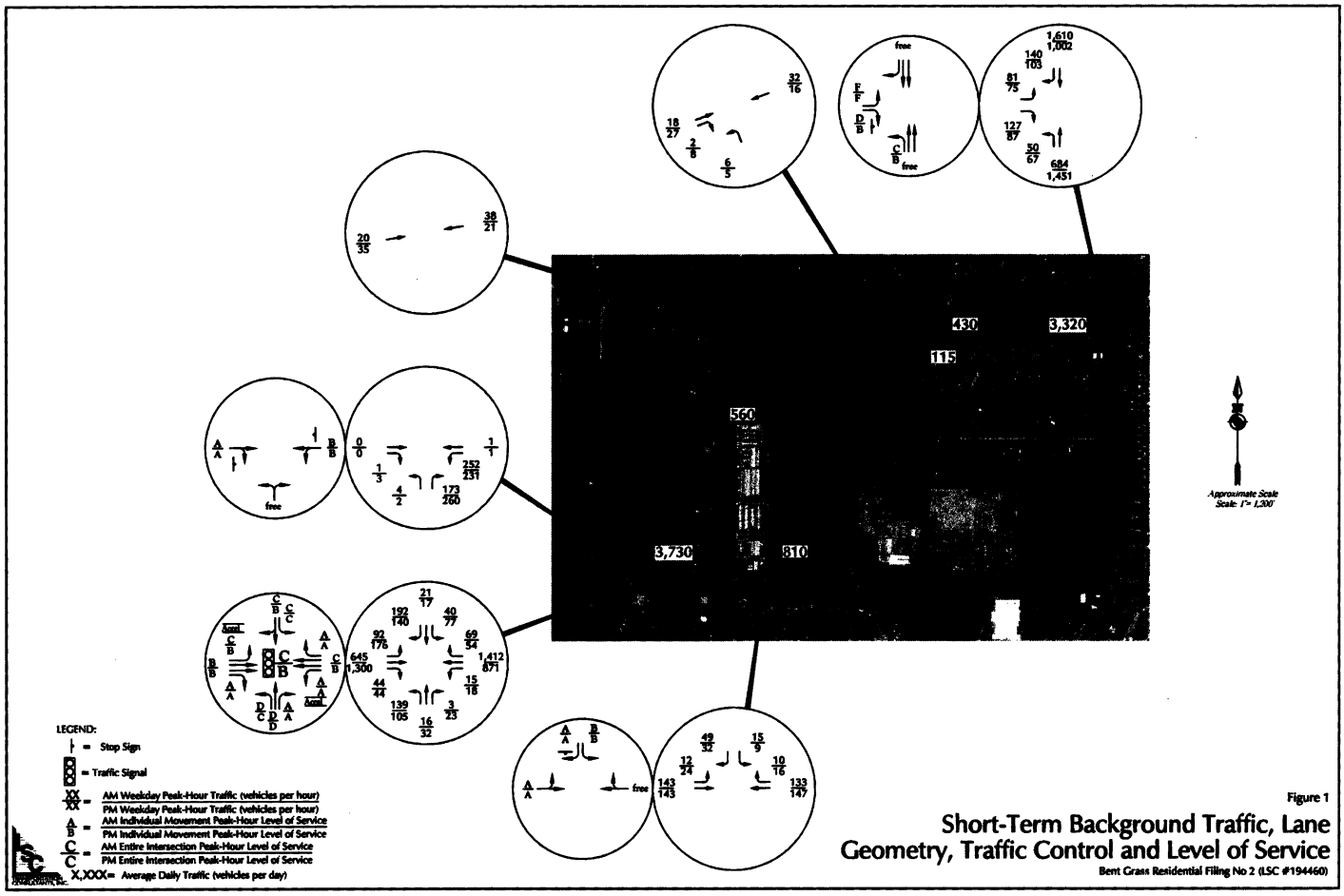
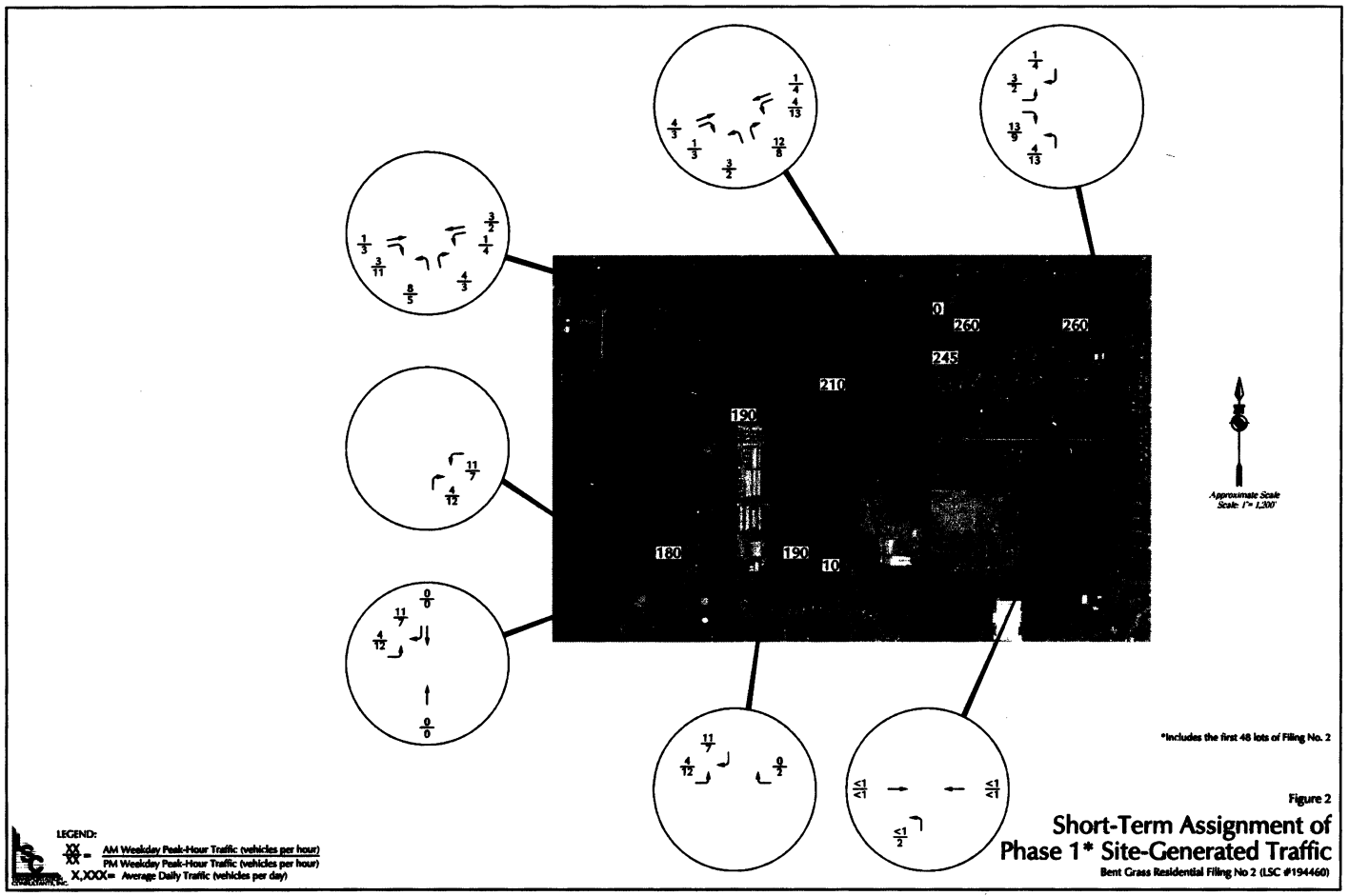


Figure 1

Short-Term Background Traffic, Lane Geometry, Traffic Control and Level of Service

Bent Grass Residential Filing No 2 (LSC #194460)



*Includes the first 48 lots of Filing No. 2

Figure 2

Short-Term Assignment of Phase 1* Site-Generated Traffic

Bent Grass Residential Filing No 2 (LSC #194460)

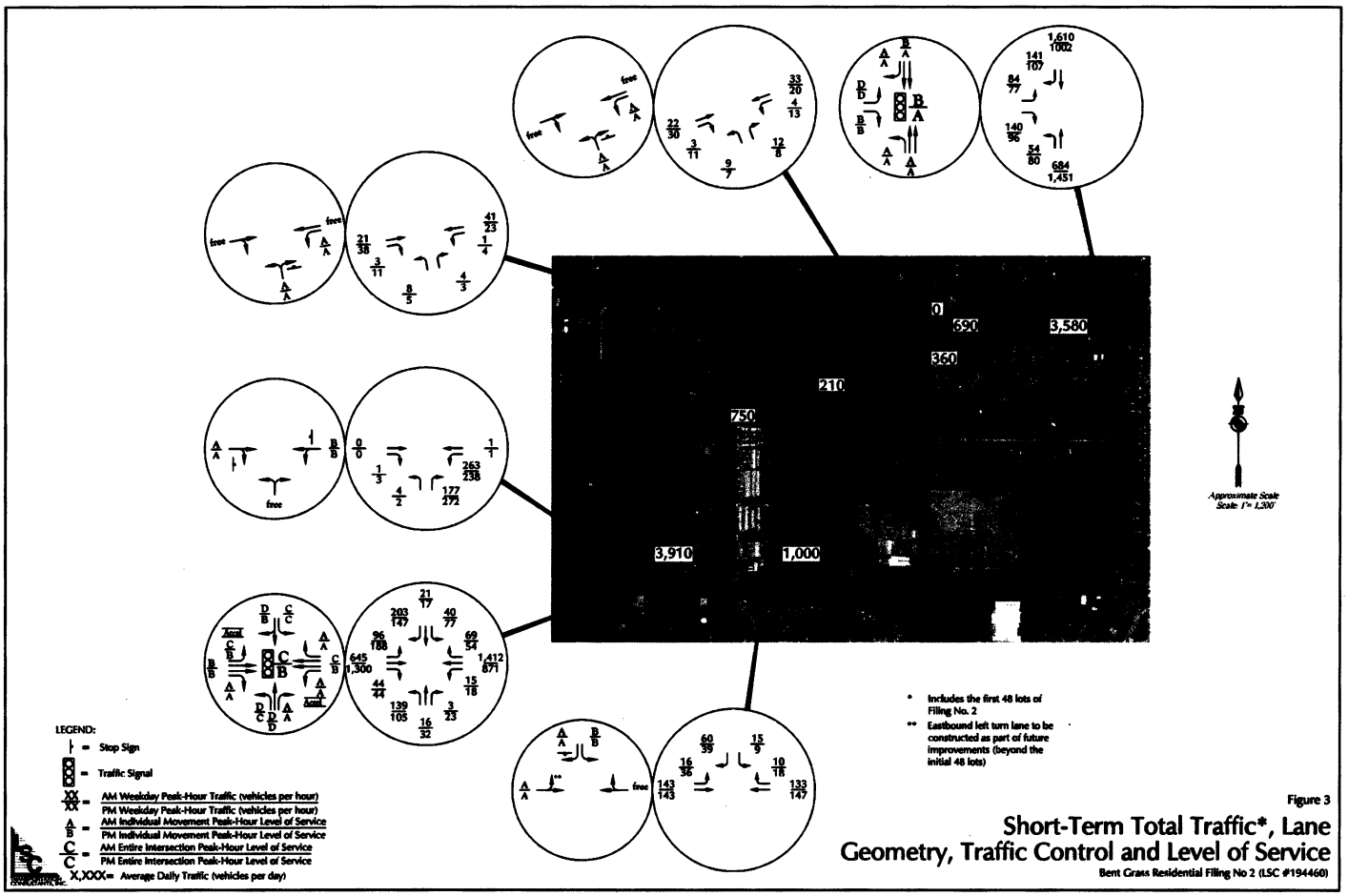
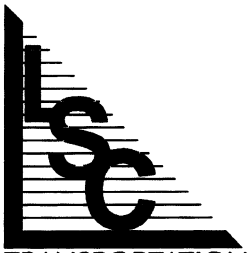


Figure 3

Short-Term Total Traffic*, Lane Geometry, Traffic Control and Level of Service

Bent Grass Residential Filing No 2 (LSC #194460)

Levels of Service



Int Delay, s/veh	8.3

Lane Configurations	↰	↱	↰	↑↑	↑↑	↱
Traffic Vol, veh/h	81	127	50	684	1610	140
Future Vol, veh/h	81	127	50	684	1610	140
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	0	700	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	86	86	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	132	58	795	1830	159

Conflicting Flow All	2344	915	1989	0	-	0
Stage 1	1830	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 30	275	286	-	-	-
Stage 1	113	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 24	275	286	-	-	-
Mov Cap-2 Maneuver	~ 75	-	-	-	-	-
Stage 1	90	-	-	-	-	-
Stage 2	565	-	-	-	-	-

HCM Control Delay, s	111.4	1.4	0
HCM LOS	F		

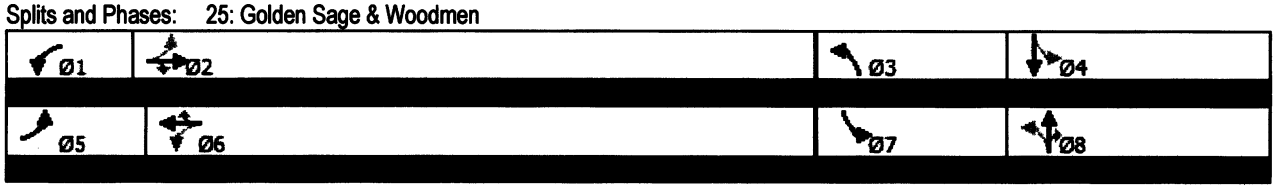
Capacity (veh/h)	286	-	75	275	-	-
HCM Lane V/C Ratio	0.203	-	1.125	0.481	-	-
HCM Control Delay (s)	20.8	-	239.5	29.7	-	-
HCM Lane LOS	C	-	F	D	-	-
HCM 95th %tile Q(veh)	0.7	-	6.2	2.4	-	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Configurations											
Traffic Volume (vph)	92	645	44	15	1412	69	139	16	3	40	21
Future Volume (vph)	92	645	44	15	1412	69	139	16	3	40	21
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0	11.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	54.0	54.0	10.0	53.0	53.0	15.0	21.0	21.0	15.0	21.0
Total Split (%)	11.0%	54.0%	54.0%	10.0%	53.0%	53.0%	15.0%	21.0%	21.0%	15.0%	21.0%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	55.6	54.4	54.4	54.3	49.7	49.7	22.5	16.7	16.7	20.1	11.2
Actuated g/C Ratio	0.60	0.58	0.58	0.58	0.53	0.53	0.24	0.18	0.18	0.22	0.12
v/c Ratio	0.52	0.34	0.05	0.04	0.84	0.09	0.65	0.06	0.01	0.13	0.77
Control Delay	22.1	12.0	0.1	8.1	25.5	0.7	42.1	36.5	0.0	26.2	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	12.0	0.1	8.1	25.5	0.7	42.1	36.5	0.0	26.2	33.9
LOS	C	B	A	A	C	A	D	D	A	C	C
Approach Delay		12.6			24.1			40.6			32.7
Approach LOS		B			C			D			C

Cycle Length: 100
Actuated Cycle Length: 93.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.8 Intersection LOS: C
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



Int Delay, s/veh	6.7

Lane Configurations													
Traffic Vol, veh/h	0	0	1	252	1	0	4	0	173	0	0	0	
Future Vol, veh/h	0	0	1	252	1	0	4	0	173	0	0	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	78	78	78	87	87	87	87	87	87	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	0	0	1	290	1	0	5	0	199	0	0	0	

Conflicting Flow All	-	210	1	112	111	-	1	0	0	199	0	0	
Stage 1	-	1	-	110	110	-	-	-	-	-	-	-	
Stage 2	-	209	-	2	1	-	-	-	-	-	-	-	
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-	
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-	
Pot Cap-1 Maneuver	0	687	1084	866	779	0	1622	-	-	1373	-	-	
Stage 1	0	895	-	895	804	0	-	-	-	-	-	-	
Stage 2	0	729	-	1021	895	0	-	-	-	-	-	-	
Platoon blocked, %								-	-		-	-	
Mov Cap-1 Maneuver	-	684	1084	863	776	-	1622	-	-	1373	-	-	
Mov Cap-2 Maneuver	-	684	-	863	776	-	-	-	-	-	-	-	
Stage 1	-	895	-	891	801	-	-	-	-	-	-	-	
Stage 2	-	726	-	1020	895	-	-	-	-	-	-	-	

HCM Control Delay, s	8.3			11.3			0.2			0			
HCM LOS	A			B									

Capacity (veh/h)	1622	-	-	1084	863	1373	-	-					
HCM Lane V/C Ratio	0.003	-	-	0.001	0.337	-	-	-					
HCM Control Delay (s)	7.2	0	-	8.3	11.3	0	-	-					
HCM Lane LOS	A	A	-	A	B	A	-	-					
HCM 95th %tile Q(veh)	0	-	-	0	1.5	0	-	-					

Int Delay, s/veh	2					
Lane Configurations		↰	↑		↖	↗
Traffic Vol, veh/h	12	143	133	10	15	49
Future Vol, veh/h	12	143	133	10	15	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	174	160	12	18	59

Conflicting Flow All	172	0	-	0	370	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	204	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1405	-	-	-	630	878
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	830	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1405	-	-	-	622	878
Mov Cap-2 Maneuver	-	-	-	-	622	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	830	-

HCM Control Delay, s	0.6		0		9.8	
HCM LOS					A	

Capacity (veh/h)	1405	-	-	-	622	878	
HCM Lane V/C Ratio	0.01	-	-	-	0.029	0.067	
HCM Control Delay (s)	7.6	0	-	-	11	9.4	
HCM Lane LOS	A	A	-	-	B	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.2	

Int Delay, s/veh 2.4

Lane Configurations						
Traffic Vol, veh/h	75	87	67	1451	1002	103
Future Vol, veh/h	75	87	67	1451	1002	103
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	0	700	-	-	330
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	96	96	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	101	70	1511	1002	103

Conflicting Flow All	1898	501	1105	0	-	0
Stage 1	1002	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 61	515	628	-	-	-
Stage 1	316	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 54	515	628	-	-	-
Mov Cap-2 Maneuver	155	-	-	-	-	-
Stage 1	281	-	-	-	-	-
Stage 2	359	-	-	-	-	-

HCM Control Delay, s	32.6	0.5	0
HCM LOS	D		

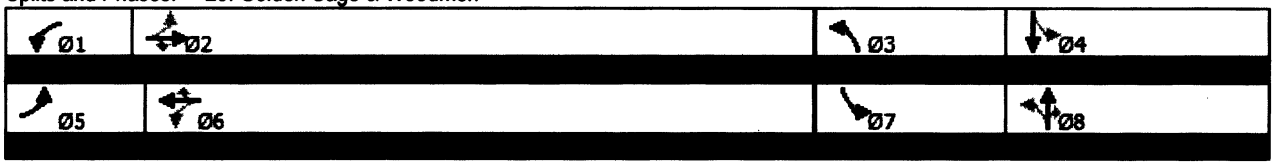
Capacity (veh/h)	628	-	155	515	-	-
HCM Lane V/C Ratio	0.111	-	0.563	0.196	-	-
HCM Control Delay (s)	11.4	-	54.6	13.7	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	2.9	0.7	-	-

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Configurations											
Traffic Volume (vph)	176	1300	44	18	871	54	105	32	23	77	17
Future Volume (vph)	176	1300	44	18	871	54	105	32	23	77	17
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0	11.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	54.0	54.0	10.0	53.0	53.0	15.0	21.0	21.0	15.0	21.0
Total Split (%)	11.0%	54.0%	54.0%	10.0%	53.0%	53.0%	15.0%	21.0%	21.0%	15.0%	21.0%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	57.6	56.3	56.3	55.1	49.1	49.1	20.5	11.0	11.0	16.5	8.0
Actuated g/C Ratio	0.63	0.62	0.62	0.60	0.54	0.54	0.22	0.12	0.12	0.18	0.09
v/c Ratio	0.51	0.65	0.05	0.08	0.49	0.06	0.48	0.17	0.09	0.31	0.63
Control Delay	12.9	14.8	0.1	7.4	14.9	0.1	33.3	40.2	0.5	30.3	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	14.8	0.1	7.4	14.9	0.1	33.3	40.2	0.5	30.3	19.2
LOS	B	B	A	A	B	A	C	D	A	C	B
Approach Delay		14.1			13.9			29.9			22.9
Approach LOS		B			B			C			C

Cycle Length: 100
Actuated Cycle Length: 91.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 69.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



Int Delay, s/veh 5.6

Lane Configurations		↱			↰↑			↔			↔	
Traffic Vol, veh/h	0	0	3	231	1	0	2	0	260	0	0	0
Future Vol, veh/h	0	0	3	231	1	0	2	0	260	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	266	1	0	2	0	299	0	0	0

Conflicting Flow All	-	304	1	157	155	-	1	0	0	299	0	0
Stage 1	-	1	-	154	154	-	-	-	-	-	-	-
Stage 2	-	303	-	3	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	609	1084	809	737	0	1622	-	-	1262	-	-
Stage 1	0	895	-	848	770	0	-	-	-	-	-	-
Stage 2	0	664	-	1020	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	608	1084	805	736	-	1622	-	-	1262	-	-
Mov Cap-2 Maneuver	-	608	-	805	736	-	-	-	-	-	-	-
Stage 1	-	895	-	846	768	-	-	-	-	-	-	-
Stage 2	-	663	-	1016	895	-	-	-	-	-	-	-

HCM Control Delay, s	8.3			11.7			0.1			0		
HCM LOS	A			B								

Capacity (veh/h)		1622	-	-	1084	805	1262	-	-			
HCM Lane V/C Ratio		0.001	-	-	0.004	0.331	-	-	-			
HCM Control Delay (s)		7.2	0	-	8.3	11.7	0	-	-			
HCM Lane LOS		A	A	-	A	B	A	-	-			
HCM 95th %tile Q(veh)		0	-	-	0	1.5	0	-	-			

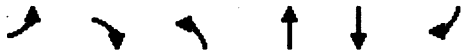
Int Delay, s/veh	1.6

Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	24	143	147	16	9	32
Future Vol, veh/h	24	143	147	16	9	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	83	83	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	164	177	19	12	41

Conflicting Flow All	196	0	-	0	407	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	220	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1377	-	-	-	600	855
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1377	-	-	-	587	855
Mov Cap-2 Maneuver	-	-	-	-	587	-
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	817	-

HCM Control Delay, s	1.1	0	9.8
HCM LOS			A

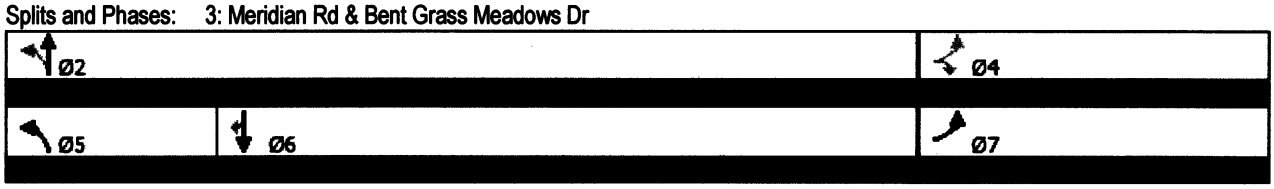
Capacity (veh/h)	1377	-	-	-	587	855	
HCM Lane V/C Ratio	0.02	-	-	-	0.02	0.048	
HCM Control Delay (s)	7.7	0	-	-	11.3	9.4	
HCM Lane LOS	A	A	-	-	B	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.2	



Lane Configurations						
Traffic Volume (vph)	84	140	54	684	1610	141
Future Volume (vph)	84	140	54	684	1610	141
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effct Green (s)	9.4	9.4	62.9	62.9	53.5	53.5
Actuated g/C Ratio	0.11	0.11	0.76	0.76	0.65	0.65
v/c Ratio	0.44	0.47	0.29	0.29	0.80	0.15
Control Delay	39.5	11.3	6.4	3.5	15.6	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	11.3	6.4	3.5	15.6	1.7
LOS	D	B	A	A	B	A
Approach Delay	21.9			3.7	14.5	
Approach LOS	C			A	B	

Cycle Length: 90
Actuated Cycle Length: 82.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 12.1 Intersection LOS: B
Intersection Capacity Utilization 61.5% ICU Level of Service B
Analysis Period (min) 15

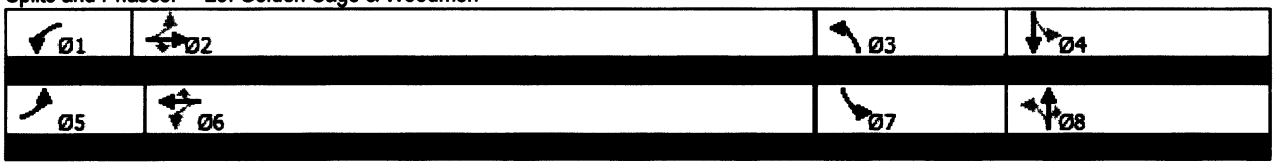
Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Lane Configurations											
Traffic Volume (vph)	96	645	44	15	1412	69	139	16	3	40	21
Future Volume (vph)	96	645	44	15	1412	69	139	16	3	40	21
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0	11.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	54.0	54.0	10.0	53.0	53.0	15.0	21.0	21.0	15.0	21.0
Total Split (%)	11.0%	54.0%	54.0%	10.0%	53.0%	53.0%	15.0%	21.0%	21.0%	15.0%	21.0%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	55.6	54.4	54.4	54.3	49.7	49.7	22.9	17.1	17.1	20.6	11.8
Actuated g/C Ratio	0.59	0.58	0.58	0.58	0.53	0.53	0.24	0.18	0.18	0.22	0.13
v/c Ratio	0.55	0.34	0.05	0.04	0.85	0.09	0.66	0.06	0.01	0.13	0.79
Control Delay	23.8	12.3	0.1	8.2	26.0	0.7	42.8	36.5	0.0	26.1	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	12.3	0.1	8.2	26.0	0.7	42.8	36.5	0.0	26.1	36.5
LOS	C	B	A	A	C	A	D	D	A	C	D
Approach Delay		13.0			24.6			41.3			34.9
Approach LOS		B			C			D			C

Cycle Length: 100
Actuated Cycle Length: 93.6
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 23.5 Intersection LOS: C
Intersection Capacity Utilization 80.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



Int Delay, s/veh	6.9

Lane Configurations		↱			↰			↔			↔	
Traffic Vol, veh/h	0	0	1	263	1	0	4	0	177	0	0	0
Future Vol, veh/h	0	0	1	263	1	0	4	0	177	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	302	1	0	5	0	203	0	0	0

Conflicting Flow All	-	214	1	114	113	-	1	0	0	203	0	0
Stage 1	-	1	-	112	112	-	-	-	-	-	-	-
Stage 2	-	213	-	2	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	684	1084	863	777	0	1622	-	-	1369	-	-
Stage 1	0	895	-	893	803	0	-	-	-	-	-	-
Stage 2	0	726	-	1021	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	681	1084	860	774	-	1622	-	-	1369	-	-
Mov Cap-2 Maneuver	-	681	-	860	774	-	-	-	-	-	-	-
Stage 1	-	895	-	889	800	-	-	-	-	-	-	-
Stage 2	-	723	-	1020	895	-	-	-	-	-	-	-

HCM Control Delay, s	8.3		11.5		0.2	0
HCM LOS	A		B			

Capacity (veh/h)	1622	-	-	1084	860	1369	-	-
HCM Lane V/C Ratio	0.003	-	-	0.001	0.353	-	-	-
HCM Control Delay (s)	7.2	0	-	8.3	11.5	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1.6	0	-	-

Int Delay, s/veh	2.3					

Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	16	143	133	10	15	60
Future Vol, veh/h	16	143	133	10	15	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	174	160	12	18	72

Conflicting Flow All	172	0	-	0	380	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	214	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1405	-	-	-	622	878
Stage 1	-	-	-	-	863	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1405	-	-	-	612	878
Mov Cap-2 Maneuver	-	-	-	-	612	-
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	822	-

HCM Control Delay, s	0.8	0	9.8
HCM LOS			A

Capacity (veh/h)	1405	-	-	-	612	878	
HCM Lane V/C Ratio	0.014	-	-	-	0.03	0.082	
HCM Control Delay (s)	7.6	0	-	-	11.1	9.5	
HCM Lane LOS	A	A	-	-	B	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.3	

Int Delay, s/veh	1.5

Lane Configurations						
Traffic Vol, veh/h	21	3	1	41	8	4
Future Vol, veh/h	21	3	1	41	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	3	1	45	9	4

Conflicting Flow All	0	0	26	0	72	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1588	-	932	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1588	-	931	1051
Mov Cap-2 Maneuver	-	-	-	-	874	-
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	975	-

HCM Control Delay, s	0	0.2	8.9
HCM LOS			A

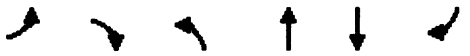
Capacity (veh/h)	926	-	-	1588	-	
HCM Lane V/C Ratio	0.014	-	-	0.001	-	
HCM Control Delay (s)	8.9	-	-	7.3	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Int Delay, s/veh	2.6					
Lane Configurations						
Traffic Vol, veh/h	22	3	4	33	9	12
Future Vol, veh/h	22	3	4	33	9	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	3	4	36	10	13

Conflicting Flow All	0	0	27	0	70	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1587	-	934	1050
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	978	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1587	-	931	1050
Mov Cap-2 Maneuver	-	-	-	-	873	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	978	-

HCM Control Delay, s	0	0.8	8.8
HCM LOS			A

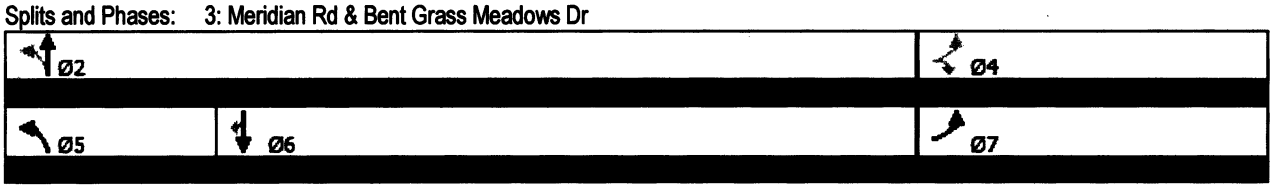
Capacity (veh/h)	966	-	-	1587	-	
HCM Lane V/C Ratio	0.024	-	-	0.003	-	
HCM Control Delay (s)	8.8	-	-	7.3	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	



Lane Configurations						
Traffic Volume (vph)	77	96	80	1451	1002	107
Future Volume (vph)	77	96	80	1451	1002	107
Turn Type	pm+pt	Perm	pm+pt	NA	NA	Perm
Protected Phases	7		5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	7	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.0	23.0	23.0
Total Split (s)	25.0	25.0	15.0	65.0	50.0	50.0
Total Split (%)	27.8%	27.8%	16.7%	72.2%	55.6%	55.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effct Green (s)	9.4	9.3	63.0	64.0	54.6	54.6
Actuated g/C Ratio	0.12	0.12	0.79	0.80	0.68	0.68
v/c Ratio	0.44	0.40	0.19	0.53	0.42	0.10
Control Delay	39.2	11.2	3.8	4.9	8.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	11.2	3.8	4.9	8.6	2.0
LOS	D	B	A	A	A	A
Approach Delay	23.7			4.8	8.0	
Approach LOS	C			A	A	

Cycle Length: 90
Actuated Cycle Length: 80.2
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 7.3 Intersection LOS: A
Intersection Capacity Utilization 52.7% ICU Level of Service A
Analysis Period (min) 15

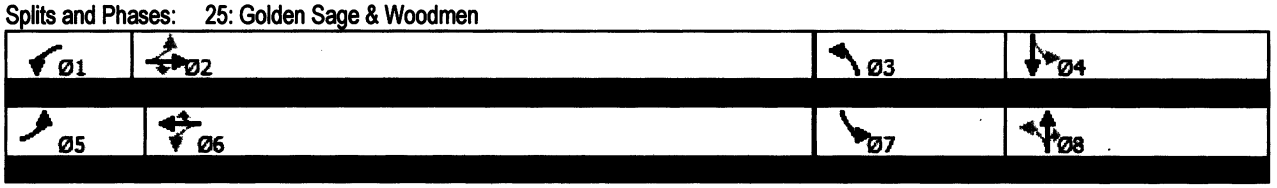
Splits and Phases: 3: Meridian Rd & Bent Grass Meadows Dr



Lane Configurations											
Traffic Volume (vph)	188	1300	44	18	871	54	105	32	23	77	17
Future Volume (vph)	188	1300	44	18	871	54	105	32	23	77	17
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		1	6		3	8		7	4
Permitted Phases	2		2	6		6	8		8	4	
Detector Phase	5	2	2	1	6	6	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0
Minimum Split (s)	10.0	11.0	11.0	10.0	11.0	11.0	10.0	21.0	21.0	10.0	21.0
Total Split (s)	11.0	54.0	54.0	10.0	53.0	53.0	15.0	21.0	21.0	15.0	21.0
Total Split (%)	11.0%	54.0%	54.0%	10.0%	53.0%	53.0%	15.0%	21.0%	21.0%	15.0%	21.0%
Yellow Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-3.0	-3.0	-1.0	-3.0	-3.0	-1.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	57.6	56.3	56.3	55.1	49.1	49.1	20.6	11.1	11.1	16.6	8.0
Actuated g/C Ratio	0.63	0.62	0.62	0.60	0.54	0.54	0.23	0.12	0.12	0.18	0.09
v/c Ratio	0.55	0.65	0.05	0.08	0.49	0.06	0.47	0.17	0.09	0.31	0.64
Control Delay	14.2	14.8	0.1	7.4	15.0	0.1	33.2	40.1	0.5	30.2	19.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	14.8	0.1	7.4	15.0	0.1	33.2	40.1	0.5	30.2	19.1
LOS	B	B	A	A	B	A	C	D	A	C	B
Approach Delay		14.3			14.0			29.9			22.7
Approach LOS		B			B			C			C

Cycle Length: 100
Actuated Cycle Length: 91.4
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 70.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 25: Golden Sage & Woodmen



Int Delay, s/veh	5.6											
Lane Configurations		↱			↰			↔			↔	
Traffic Vol, veh/h	0	0	3	238	1	0	2	0	272	0	0	0
Future Vol, veh/h	0	0	3	238	1	0	2	0	272	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	274	1	0	2	0	313	0	0	0

Conflicting Flow All	-	318	1	164	162	-	1	0	0	313	0	0
Stage 1	-	1	-	161	161	-	-	-	-	-	-	-
Stage 2	-	317	-	3	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	6.22	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	598	1084	801	730	0	1622	-	-	1247	-	-
Stage 1	0	895	-	841	765	0	-	-	-	-	-	-
Stage 2	0	654	-	1020	895	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	597	1084	797	729	-	1622	-	-	1247	-	-
Mov Cap-2 Maneuver	-	597	-	797	729	-	-	-	-	-	-	-
Stage 1	-	895	-	839	763	-	-	-	-	-	-	-
Stage 2	-	653	-	1016	895	-	-	-	-	-	-	-

HCM Control Delay, s	8.3		11.9		0.1		0	
HCM LOS	A		B					

Capacity (veh/h)	1622	-	-	1084	797	1247	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.345	-	-	-
HCM Control Delay (s)	7.2	0	-	8.3	11.9	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1.5	0	-	-

Int Delay, s/veh	2					

Lane Configurations		↰	↱		↰	↱
Traffic Vol, veh/h	36	143	147	18	9	39
Future Vol, veh/h	36	143	147	18	9	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	83	83	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	164	177	22	12	50

Conflicting Flow All	199	0	-	0	434	188	
Stage 1	-	-	-	-	188	-	
Stage 2	-	-	-	-	246	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1373	-	-	-	579	854	
Stage 1	-	-	-	-	844	-	
Stage 2	-	-	-	-	795	-	
Platoon blocked, %			-	-	-		
Mov Cap-1 Maneuver	1373	-	-	-	560	854	
Mov Cap-2 Maneuver	-	-	-	-	560	-	
Stage 1	-	-	-	-	816	-	
Stage 2	-	-	-	-	795	-	

HCM Control Delay, s	1.5	0	9.9
HCM LOS			A

Capacity (veh/h)	1373	-	-	-	560	854	
HCM Lane V/C Ratio	0.03	-	-	-	0.021	0.059	
HCM Control Delay (s)	7.7	0	-	-	11.6	9.5	
HCM Lane LOS	A	A	-	-	B	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.2	

Int Delay, s/veh 1.2

Lane Configurations						
Traffic Vol, veh/h	38	11	4	23	5	3
Future Vol, veh/h	38	11	4	23	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	12	4	25	5	3

Conflicting Flow All	0	0	53	0	80	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1553	-	922	1022
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1553	-	919	1022
Mov Cap-2 Maneuver	-	-	-	-	866	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	989	-

HCM Control Delay, s	0	1.1	9
HCM LOS			A

Capacity (veh/h)	919	-	-	1553	-	
HCM Lane V/C Ratio	0.009	-	-	0.003	-	
HCM Control Delay (s)	9	-	-	7.3	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Int Delay, s/veh	2.6

Lane Configurations						
Traffic Vol, veh/h	30	11	13	20	7	8
Future Vol, veh/h	30	11	13	20	7	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	12	14	22	8	9

Conflicting Flow All	0	0	45	0	89	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1563	-	912	1033
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	972	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1563	-	904	1033
Mov Cap-2 Maneuver	-	-	-	-	853	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	972	-

HCM Control Delay, s	0	2.9	8.9
HCM LOS			A

Capacity (veh/h)	940	-	-	1563	-	
HCM Lane V/C Ratio	0.017	-	-	0.009	-	
HCM Control Delay (s)	8.9	-	-	7.3	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Queuing Reports

TRANSPORTATION
CONSULTANTS, INC.

Queuing and Blocking Report

Intersection: 40: frontage rd & Bent Grass Meadows Dr

Directions Served	LT	L	R
Maximum Queue (ft)	61	46	60
Average Queue (ft)	8	13	35
95th Queue (ft)	36	39	53
Link Distance (ft)	1221	1889	1889
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

Intersection: 40: frontage rd & Bent Grass Meadows Dr

Directions Served	LT	L	R
Maximum Queue (ft)	39	35	34
Average Queue (ft)	5	5	22
95th Queue (ft)	26	25	41
Link Distance (ft)	1221	1889	1889
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			