

## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Gales Creek Road at Thatcher  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	456 vph
Highest minor approach:	281 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>NO</b>
A - Minimum Vehicular Volume	350	105	400	120	456	281	319.2	197	NO
B - Interruption of Continuous Traffic	525	53	600	60	456	281	319.2	197	NO
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	165	XXXXX	XXXXX	456	281	387.6	239	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	237	XXXXX	XXXXX	456	281	XXXXX	XXXXX	<b>YES</b>

\* SHALL ONLY BE APPLIED IN UNUSUAL CASES

## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Highway 47 at Oak Street/Porter Road  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1011 vph
Highest minor approach:	241 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1011	241	707.7	169	YES
B - Interruption of Continuous Traffic	525	53	600	60	1011	241	707.7	169	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1011	241	859.35	205	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1011	241	XXXXX	XXXXX	<b>YES</b>

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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Highway 47 at Martin Road  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1032 vph
Highest minor approach:	751 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1032	751	722.4	526	YES
B - Interruption of Continuous Traffic	525	53	600	60	1032	751	722.4	526	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1032	751	877.2	638	<b>YES</b>
<b>WARRANT 3 (b) - PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1032	751	XXXXX	XXXXX	<b>YES</b>

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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Highway 47 at 24th Avenue  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1430 vph
Highest minor approach:	226 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1430	226	1001	158	YES
B - Interruption of Continuous Traffic	525	53	600	60	1430	226	1001	158	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1430	226	1215.5	192	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1430	226	XXXXX	XXXXX	<b>YES</b>

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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Highway 47 at Maple Street/Fern Hill Road  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1333 vph
Highest minor approach:	352 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1333	352	933.1	246	YES
B - Interruption of Continuous Traffic	525	53	600	60	1333	352	933.1	246	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1333	352	1133.05	299	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1333	352	XXXXX	XXXXX	<b>YES</b>

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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Highway 47 at Elm Street  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1330 vph
Highest minor approach:	270 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1330	270	931	189	YES
B - Interruption of Continuous Traffic	525	53	600	60	1330	270	931	189	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1330	270	1130.5	230	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1330	270	XXXXX	XXXXX	<b>YES</b>

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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** Adair Street at Yew Street  
**Conditions (yr, alt., etc.):** 2035 Preferred

### GENERAL INPUT PARAMETERS:

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1998 vph
Highest minor approach:	114 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	YES
Warrant Factor	70%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>YES</b>
A - Minimum Vehicular Volume	350	105	400	120	1998	114	1398.6	80	NO
B - Interruption of Continuous Traffic	525	53	600	60	1998	114	1398.6	80	YES
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	60	XXXXX	XXXXX	1998	114	1698.3	97	<b>YES</b>
<b>WARRANT 3 (b)- PEAK HOUR VOLUME</b>	XXXXX	75	XXXXX	XXXXX	1998	114	XXXXX	XXXXX	<b>YES</b>
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## SIGNAL WARRANT ANALYSIS

**Project Name:** Forest Grove TSP  
**Analyst:** SCJ Alliance  
**Date:** 3-Jan-13

**Intersection:** 19th Street at B Street  
**Conditions (yr, alt., etc.):** 2035 Preferred

**GENERAL INPUT PARAMETERS:**

Number of lanes for moving traffic:	
Major approach:	1 lanes
Minor approach:	1 lanes
Peak Hour Approach Volumes*:	
Sum of major approaches:	1133 vph
Highest minor approach:	30 vph
Factor Peak Hour --> 8th Highest Hour	
Major approach:	70% (60-80% acceptable)
Minor approach:	70% (60-80% acceptable)
Factor Peak Hour --> 4th Highest Hour	
Major approach:	85%
Minor approach:	85%
Is the population < 10,000 or speed => 40	NO
Warrant Factor	100%

	INDIVIDUAL REQUIRED		80% COMBINED REQUIRED		ACTUAL VOLUMES		4TH & 8TH HIGHEST HOUR EST.		WARRANT MET ?
	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	MAJOR VOLUME BOTH APP	MINOR VOLUME HIGH APP	
<b>WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME</b>									<b>NO</b>
A - Minimum Vehicular Volume	500	150	400	120	1133	30	793.1	21	NO
B - Interruption of Continuous Traffic	750	75	600	60	1133	30	793.1	21	NO
<b>WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME</b>	XXXXX	105	XXXXX	XXXXX	1133	30	963.05	26	<b>NO</b>
<b>WARRANT 3 (b) - PEAK HOUR VOLUME</b>	XXXXX	164	XXXXX	XXXXX	1133	30	XXXXX	XXXXX	<b>NO</b>

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