



# **AUTOMATIC TRAFFIC RECORDERS**

**2010 - 2020**

**Prepared by**

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**In Cooperation With**

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## INTRODUCTION

**This report contains graphic comparisons of daily and monthly traffic collected on Iowa's highway system at 174 Permanent Continuous Automatic Traffic Recorder locations. Eighteen (18) stations are located on the Rural Interstate system, thirteen (13) are on the Municipal Interstate system, eighty (80) are on the Rural Primary system, twenty-four (24) are on the Municipal Primary system, twenty-five (25) are on the Rural Secondary system and fourteen (14) are on the Municipal Street system. The map on page 26 shows the general location of count sites. Specific descriptions of locations, along with AADT's for the previous eleven years for each station, start on page 19. Sites without an AADT for 2020 were not used not in the calculations or graphs.**

**The report compares travel trends from 1980 to present. Traffic is shown for rural, municipal and statewide travel.**

**Factors for estimating Design Hour Volumes from Annual Average Daily Traffic are shown by highway system. The values are developed from the straight-line relationships between Design Hour Volume and Annual Average Daily Traffic for the period of 2011 - 2020.**

**Information from the permanent traffic recorders indicates a 11.5% decrease in statewide travel from 2019 to 2020. The estimated vehicle miles of travel for 2020 is 29.91 billion. Final 2020 traffic figures will be published near June 2021, when all traffic data collected during 2020 has been processed.**

**More travel occurs on Friday than any other day of the week on all road systems. Sunday is the lowest travel day on all systems except Rural Interstate. This is typical of other years.**

## TRAFFIC VOLUME VARIATIONS

ON

## IOWA ROAD SYSTEMS

	2020 COMPARED TO 2019
RURAL INTERSTATE	- 14.8 %
RURAL PRIMARY	- 11.0 %
RURAL SECONDARY	- 5.0 %
<b>RURAL TOTAL</b>	<b>- 10.4 %</b>
MUNICIPAL INTERSTATE	- 16.3 %
MUNICIPAL PRIMARY	- 11.6 %
MUNICIPAL STREETS	- 12.5 %
<b>MUNICIPAL TOTAL</b>	<b>- 13.0 %</b>
<b>STATE TOTAL</b>	<b>- 11.5 %</b>

Data collected at continuous automatic traffic recorder locations (see pages 19 – 25) were utilized to compute the above percentages. The rural, municipal and state totals were weighted based on estimated vehicle miles of travel.

## SUMMARY OF ANALYSIS

### Analysis of the Thirtieth Highest Hour at the Permanent Continuous Automatic Traffic Recorder Stations 2011 - 2020

Permanent automatic traffic recorder data is collected on a continuing basis in Iowa to facilitate the expansion of the short-time manual and portable recorder traffic counts to Annual Average Daily Traffic and to make possible a means of estimating design hour volumes from the Annual Average Daily Traffic. A record of the 50 highest hourly volumes at each rural automatic recorder station has been kept since 1949 and at each urban station since 1959, making possible the fitting of first-degree curves to desired design hours periodically as the data has been accumulated.

From permanent automatic traffic recorder data a straight-line relationship between the design hour volume and the Annual Average Daily Traffic can be expressed mathematically as:

$$Y = a + bx$$

Where Y = nth high hour volume (design hour)  
 x = Annual Average Daily Traffic  
 a = A constant of minimum relationship  
 b = The slope relationship which can be expressed as a percentage of the Annual Average Daily Traffic

The constant "a" and the relationship "b" have been recomputed for the 30th highest hour as the data for each succeeding year has become available. Table 1 shows the 30th high hour results computed from data collected over a ten-year period, 2011 through 2020.

Table 1

#### Calculations of Design Hour Volumes (30th high hour) From Annual Average Daily Traffic

	PRIMARY		INTERSTATE		SECONDARY		CITY STREET	
	"a" Constant	"b" %AADT	"a" Constant	"b" %AADT	"a" Constant	"b" %AADT	"a" Constant	"b" %AADT
Rural	17.32	10.75	394.10	9.60	3.84	12.52	-	-
Municipal	-16.58	10.99	2.49	10.80	-	-	48.35	10.16