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**WRITING FOR READERS**

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**A Guide for Report Writing**



**Administrative Services  
Iowa Department of Transportation  
Ames, Iowa 50010  
515-296-1372**



## I. INTRODUCTION

This manual offers some easy-to-follow guidelines for report writing. These guidelines should help establish uniform standards and eliminate confusion throughout the Department. This manual logically approaches the problem of report writing from beginning to end...from the outline stage to the first draft, through final copy. Included are sample formats to follow while writing, as well as common do's and don'ts governing style, mechanics, and illustration. The final section on publication procedures should help achieve a consistent, finished-looking product each time a publication undergoes the reproduction process.



## II. FORMAT

### A. ARRANGEMENT

Exhibit 1 contains a report arrangement which will satisfy a reader's priority of interests. Normally a reader wants to know first the results of a given study, and then how the researcher(s) arrived at them. Therefore, try to put your **SUMMARY** first. It will motivate your reader by giving the reason for the report, methodology for study conducted, and your findings.

An **INTRODUCTION** is useful but not mandatory. Usually it sets the stage for a report. For example, in your summary you might present a general description of a given industry or explain a special technique you developed for your study.

The **MEAT**, or body of your report, explains the findings you presented in your **SUMMARY**. Use the individual conclusions stated in your **SUMMARY** as jumping-off points for breaking down the chapters within the **MEAT**.

**APPENDICES** are appropriate for presenting supplementary information which is helpful but not necessary for your reader's comprehension. An **APPENDIX** is a good place for statistical data which you touch on in the **MEAT**, but which might interrupt your presentation if you include it in its entirety.

### EXHIBIT 1 REPORT ARRANGEMENT

- I. SUMMARY
  - A. PURPOSE AND SCOPE
  - B. CONCLUSIONS
  - C. RECOMMENDATIONS

- II. INTRODUCTION

- III., IV., V., etc. MEAT

- IV. APPENDICES

### B. OUTLINING

With your data in hand, first draft an outline for your whole report (Exhibit 2). Then, under the subheadings in your outline, develop topic sentences to guide the formation of paragraphs in your rough draft (Exhibit 3). Following your outline while writing the rough draft will reduce if not eliminate ponderous, rambling prose.

## EXHIBIT 2 SAMPLE OUTLINE

### IV. SYSTEM PLANS

#### A. AIR

1. Service Needs
2. Airport Planning
3. State Aircraft Pool

#### B. RIVERS

1. Port Development
2. Barge Service
3. Locks and Dams
4. Waterway User Charges

#### C. RAILROADS

1. Branch Line Analysis
2. Service Continuation Funding

#### D. HIGHWAYS

1. Use of Agricultural Land
2. Recapitalization Cycle
3. Safety

## EXHIBIT 3 SAMPLE OUTLINE WITH TOPIC SENTENCES

### IV. SYSTEM PLANS

#### A. AIR

1. Service Needs

The State Airport System Plan (SASP) specifies the aviation facilities needed to meet Iowa's immediate and future air transportation demand.

The criteria for inclusion in the Plan evolved from those used to create the base system of 25 airports.

The resources available for airport development have been limited.

## 2. Airport Planning

Airport planning efforts will vary with the service area and with the complexities of the airport.

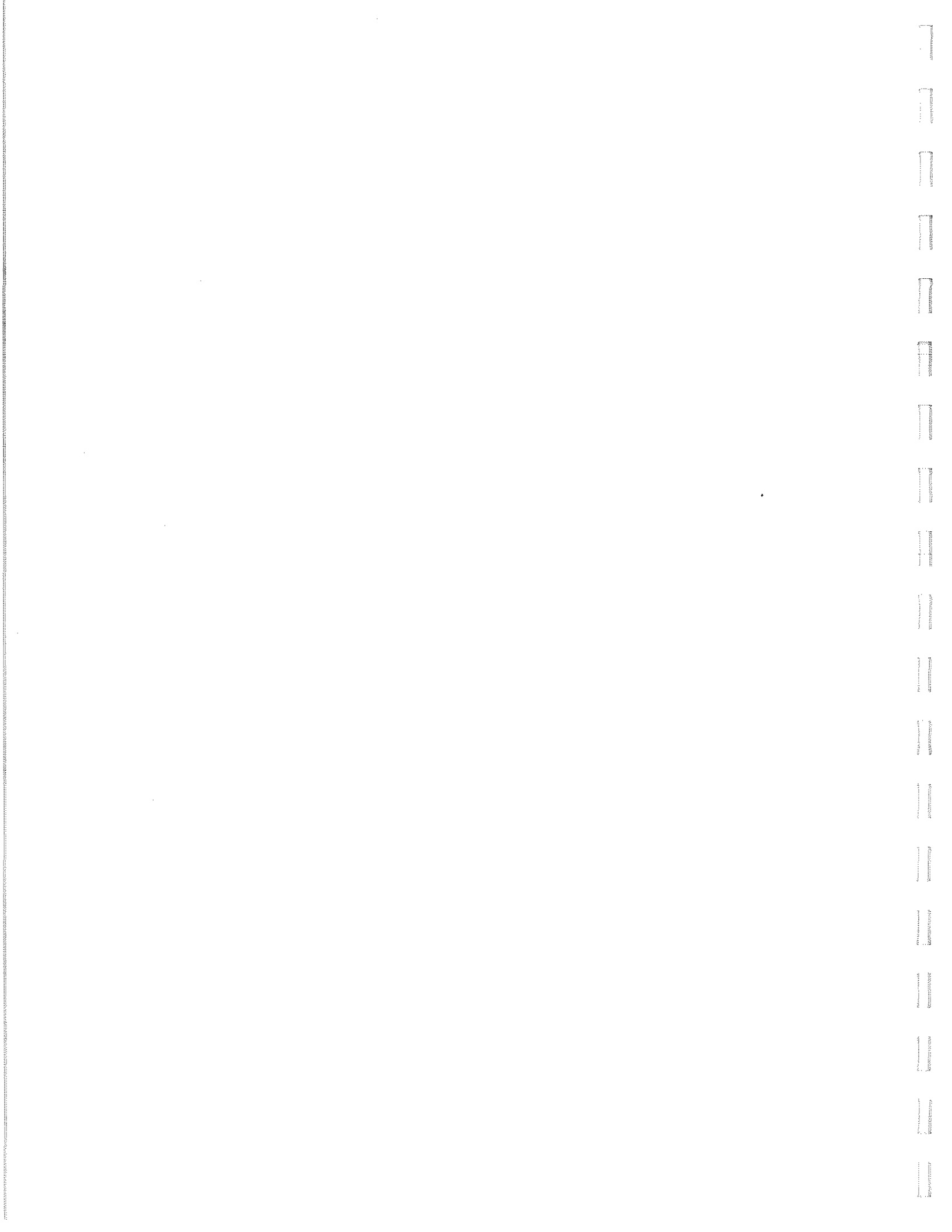
An Airport Master Plan presents the long-range development plans for a specific airport.

The Iowa DOT will provide technical and financial assistance to the airports in the State Airport System Plan.

## 3. State Aircraft Pool

The State Aircraft Pool began operating on July 1, 1976 with five aircraft.

One objective of the Pool is to make out-of-state travel more efficient.





### III. STYLE

#### A. PARAGRAPHS

Exhibit 4 shows how to develop a paragraph from one of your outline topic sentences. This example forms a paragraph from the third topic sentence under Airport Planning in Exhibit 3.

#### EXHIBIT 4 SAMPLE PARAGRAPH

The Iowa DOT will provide technical and financial assistance to the airports in the State Airport System Plan. The Federal Aviation Administration (FAA) now provides 90% of the cost of Airport Master Plans and the Iowa DOT provides 5%. Therefore, a community must provide only 5% of the total cost of its Airport Master Plan.

When generating a paragraph, remember to throw out just one thought at a time, and present it in your topic sentence. If your paragraph sounds unwieldy, break down your thought into simpler elements, or sub-thoughts, and generate a new paragraph from each one. Make sure each sentence relates to one or more sentences which precede it. In other words, stay on the track.

#### B. GRAMMAR -- WATCH OUT FOR:

##### 1. Agreement

###### DO

This **city**, with excellent highway and rail systems, **has** tried to commit local funds for port development.

A **group** of inspectors is visiting the construction site.

**One** of the problems that **have** plagued contractors **is** lack of water.

###### DON'T

This **city**, with excellent highway and rail systems, **have** tried to commit local funds for port development.

A **group** of inspectors **are** visiting the construction site.

**One** of the problems that **has** plagued contractors **is** lack of water.

##### 2. Tense -- Use the present tense when you're describing a current situation.

###### DO

That engineer **is** the inventor of a new concrete mix for pavement.

District engineers reported that the maintenance garage **is** old and deteriorating.

###### DON'T

That engineer **was** the inventor of a new concrete mix for pavement.

District engineers reported that the maintenance garage **was** old and deteriorating.

3. Comparisons -- Don't be vague.

DO

Traffic fatalities are higher this year than they were last year.

Less than ten administrators attended the conference.

Installing the traffic signals was simpler this year than last year.

The supervisor trusts the maintenance man more than the director does.

DON'T

Traffic fatalities are higher this year.

Comparatively few administrators attended the conference.

Installing the traffic signals was a relatively simple operation.

The supervisor trusts the maintenance man more than the director.

4. Careless omissions -- Include both terms in an **as** and **than** comparison.

DO

The new signing method is as efficient **as**, if not more efficient **than**, the old one.

DON'T

The new signing method is **as** efficient, if not more efficient, **than** the old one.

Make sure you don't omit part of one verb in your hurry to write the next:

DO

The device never has **been**, and never can be, used effectively in highway construction.

DON'T

The device never has and never can be used effectively in highway construction.

Don't use just one preposition where you need three.

DO

The engineer's strengths are his knowledge **of**, experience **in**, and capacity for quality maintenance.

DON'T

The engineer's strengths are his knowledge, experience, and capacity for quality maintenance.

5. Dangling Modifiers

DO

After analyzing the rock samples, the geologist presented a report to the Commission.

DON'T ALWAYS

After analyzing the rock samples, the Commission heard the geologist's report.

## DO (cont'd)

Flying at 1,000 feet over Interstate 35, the patrol helicopter reported 50 traffic violators.

The maintenance man is having a hard time with the snowplow, although it is well designed and constructed.

## 6. Vague References

### DO

The supervisor gave his copy of the schedule to the maintenance man.

The track inspectors think the program is beneficial, but the supervisors do not.

## 7. "Squinting Modifiers"\*

### DO

The cracks the Resident Maintenance Engineer gradually found worsened. (He found them gradually.)

or

The cracks the Resident Maintenance Engineer found worsened gradually. (The cracks slowly got worse.)

The bill the DOT soundly endorsed failed in the House. (The DOT soundly endorsed the bill.)

or

The bill the DOT endorsed failed soundly in the House. (The bill was a resounding failure in the House.)

\* William J. Gallagher, *So You Have To Write a Report*, Arthur D. Little, Inc., Cambridge, 1963, p. 22.

## DON'T (cont'd)

Flying at 1,000 feet over Interstate 35, 50 traffic violators were reported by the patrol helicopter.

Although well designed and constructed, the maintenance man is having a hard time with the snowplow.

### DON'T

The supervisor gave the maintenance man his copy of the schedule. (Whose copy...the supervisor's or the maintenance man's?)

Although the track inspectors think the program is beneficial, the supervisors feel they are not getting much out of it. (Who...the supervisors or the the track inspectors?)

### DON'T

The cracks the Resident Maintenance Engineer found gradually worsened. (Does gradually modify found or worsened?)

The bill the DOT endorsed soundly failed in the House.

C. CONCISENESS -- WATCH OUT FOR:

1. Redundancy

a. Tautology

DO

Many paving innovations were introduced.

The shopping plaza in Des Moines is near the highway.

The highway is four miles long and 24 feet wide.

The Iowa method of pouring concrete has worked better than the others.

DON'T

Many new innovations in paving were introduced. (The new is unnecessary.)

The shopping plaza in Des Moines is in close proximity to the highway.

The highway's measurements are four miles long and 24 feet wide.

It is a well-known historical truism that the Iowa method of pouring concrete has worked better than the others.

b. Superfluous Adjectives

DO

Our enforcement staff members will lead the investigation.

The Deputy Director will present a report on manpower loading in the Highway Division.

Highways are just part of Iowa's transportation system.

DON'T

Our qualified enforcement staff members will lead the investigation. (The fact that they're qualified should be obvious if they're leading the investigation.)

The Deputy Director will present a complete, factual report on manpower loading in the Highway Division. (He wouldn't present an incomplete, false one, would he?)

Highways are just part of Iowa's total transportation system.

c. Superfluous Adverbs

DO

The planners are studying the data.

DON'T

The planners are presently studying the data.

or

The planners are actively studying the data.

#### DO (cont'd)

The Director's Office fields 200 to 300 inquiries each day.

Fatalities due to negligence average 23.45678 per week.

#### d. Superfluous Intensives

#### DO

The State Airport System Plan is comprehensive.

The engineers attended an intensive training course.

#### e. Useless Repetition with Garbage

#### DO

Iowa law limits the length of double-bottom truck combinations to 60 feet. Trucking interests have not won the support they need to extend the limit to 65 feet.

#### DON'T (cont'd)

The Director's Office fields approximately 200 to 300 inquiries each day.

Fatalities due to negligence average approximately 23.45678 per week.

#### DON'T

The State Airport System Plan is extremely comprehensive.

The engineers attended a very intensive training course.

#### DON'T

Currently the law in Iowa places a limit on the length of double-bottom truck combinations so that double-bottom truck combination length is limited to no more than 60 feet. Because the limit on truck combination length is 60 feet, and the trucking industry wants it to be increased from 60 feet to 65 feet, the trucking industry has tried to change the law to extend the limit on length to no more than 65 feet. Unfortunately, in their endeavor to change the limit to 65 feet for truck combinations, the trucking interests have not yet been able to win the support they need in order to change the legal limit from 60 feet to 65 feet.

## 2. Circumlocution

### a. Deadwood

#### DO

To obtain Federal financing for the Interstate 80 improvement, Project Planning staff members drafted an Environmental Impact Statement.

To develop efficient airports we need a statewide system plan.

We would like to discuss the funding for this project.

We are ready to tackle the problem of matching funds.

Scientific analysis is needed.

### b. Roundabout Expressions

#### DO

Several hangups may delay the highway's completion for more than a year.

This report outlines a statewide rail plan.

FAA funds should be available for this project next year.

#### DON'T

For the purpose of obtaining Federal financing during the course of the improvement on Interstate 80, Project Planning staff members drafted an Environmental Impact Statement.

In order to develop efficient airports we need a statewide system plan.

We would like to discuss this project in terms of funding.

At the present time we are ready to tackle the problem of matching funds.

Analysis with an approach of a scientific nature is needed.

#### DON'T

There are several hangups which may delay the highway's completion for more than a year.

It is the purpose of this report to outline a statewide rail plan.

It is expected that FAA funds will be available for this project next year.

## D. CLARITY -- WATCH OUT FOR:

### 1. Misplaced Modifiers -- Misplacing "only" is very easy to do.

#### DO

Depending on what you mean:

Only the DOT is testing that new tread design for truck tires.  
or

#### DON'T

The DOT only is testing that new tread design for truck tires.

## DO (cont'd)

The DOT is only testing that new tread design for truck tires.

or

The DOT is testing only that new tread design for truck tires.

The Iowa State Patrolman reported a hijacked truck on I-80.

2. Jargon -- If you want the layman to understand...

## DO

The new "Electrac" system has improved the traction of trucks on slippery surfaces. When there is a difference in the rate of rotation, between driving wheels (e.g., when one wheel is in the mud) special sensors on the wheels sense it. They automatically brake the spinning wheel, shifting the drive power to the wheel that is not spinning. Once on the road surface, the automatic brake releases and both wheels rotate normally.

Railroads have increased their combination service, whereby a truck trailer can be loaded at a piggyback terminal and carried by piggyback to its terminal destination.

3. Hedging

## DO

There may be a market for that new diesel engine.

The cost of the construction project was \$1,434,823.13.

The new stretch of highway will be 4 to 5 miles long.

## DON'T (cont'd)

A truck was reported to be hijacked on I-80 by the Iowa State Patrolman.

## DON'T

"Electrac" is a new electronic differential control system which activates individual wheel brakes to control wheel spin. It uses the normal vehicle differential and is essentially "off" except when the electronics detect a spin condition.

Railroads have increased their combination service, whereby a truck trailer can be loaded at a TOFC terminal and transported by rail carrier on flatcar to its terminal destination.

## DON'T

It appears that there could possibly be a potential market for that new diesel engine.

The cost of the construction project was roughly \$1,434,823.13.

The new stretch of highway will be approximately 4-5 miles long.

4. Abbreviations and Acronyms -- The first time you use an abbreviation or acronym, spell out its meaning and then put the abbreviation or acronym in parentheses immediately thereafter.

#### DO

The Iowa Department of Transportation (DOT) will produce the first statewide transit system plan. In compiling the material for the plan, the DOT will distribute questionnaires to other states about their transit systems.

#### DON'T

The Iowa DOT will produce the first statewide transit system plan. In compiling the material for the plan, the DOT will distribute questionnaires to other states about their transit systems.

### E. READABILITY -- WATCH OUT FOR:

1. Sentence Length -- Use your good judgment; there's a happy medium between choppy and unwieldy.

#### DO

The DOT will develop a State Transit Plan, based on the Regional Transit Development Programs. It will integrate existing and proposed transit systems into areawide systems.

#### DON'T

The DOT will develop a State Transit Plan. It will base this development on the Regional Transit Development Programs. Existing and proposed transit programs will be integrated. The Plan will combine these into areawide systems.

The area planning agency in each of the 16 planning regions is preparing a Regional Transit Development Program. Its format should be easy to follow, and it will be the first step in refining the Regional System Concept.

As the first step in refining the Regional Transit System Concept, the area planning agency in each of the 16 planning regions is preparing a Regional Transit Development Program, which should be easy for all agencies to follow because of its format.

2. Starting Sentences -- Variety makes it easy on your reader.

#### DO

Having thoroughly tested the new concrete mix, the DOT recommended it for the project.

#### DON'T

Start all your sentences the same way -- it'll bog your reader down.

After thorough testing, the DOT recommended the new concrete mix for the project.



## DO (cont'd)

After thoroughly testing the new concrete mix, the DOT recommended it for the project.

When it had thoroughly tested the new concrete mix, the DOT recommended it for the project.

### 3. Coordination and Subordination

#### DO

Because the urban transit study was superficial, the Commissioners were disappointed. (Draws sound cause-and-effect relationship between the quality of the study and the Commissioners' disappointment)

#### 4. Position

#### DO

The proposed relocation of Iowa 9 was discussed at the last two Commission meetings. (Most important information--the relocation--is up front)

### 5. Inversion -- Attracts your reader's attention.

#### DO

Seldom does the engineer deliver a comprehensible presentation on highway alignment planning.

Angry and bored, the Commissioners, decided to quit early.

Gradually but accurately the draftsmen drew up the proposed relocation.

#### DON'T

The urban transit study was superficial, and the Commissioners were disappointed. (Not clear whether the Commissioners were disappointed with the study or with something else)

#### DON'T

At the last two Commission meetings, the proposed relocation of Iowa 9 was discussed. (Most important information--the subject--is buried)

#### DON'T

It is seldom that we find an engineer who can deliver a comprehensible presentation on highway alignment planning.

The Commissioners decided to quit early because they were angry and bored.

The draftsmen drew up the proposed relocation, gradually but accurately.

## 6. Parallel Construction

### DO

All the computer programmers were trained in developing the models and in applying them to projects.

The Commission approved two of the proposed airport master plans and rejected three.

The DOT will establish two new Assistant District Engineer positions and will staff them with Iowa State graduates.

The new Associate Director is highly intelligent, innovative, and reliable.

Each paper that he writes and each presentation that he gives increases his popularity.

## 7. Order of Importance

### DO

The Aeronautics Director is a graduate of Iowa State, an able executive, an excellent pilot, and a Girl Scout Troop Leader. (Descending Order)

The Director was concerned about filling the Deputy Director vacancy, reviewing the Iowa 9 project, and naming the dog. (Descending Order)

## 8. Vivid Verbs

### DO

The pavement design was refined.

### DON'T

All the computer programmers were trained in developing the models and how to apply them to projects.

Two of the proposed airport master plans were approved, and the Commission handed down denials in the other three cases.

The DOT will establish two new Assistant District Engineer positions and they will be staffed with Iowa State graduates.

The new Deputy Director is highly intelligent, has a tendency toward innovation, and can be relied upon.

Each paper and presentation that he writes and gives, in that order, increases his popularity.

### DON'T

The Aeronautics Director is an excellent pilot, a graduate of Iowa State, a Girl Scout Troop Leader, and an able executive. (Haphazard)

The Director was concerned about reviewing the Iowa 9 project, the name for the dog, and filling a Deputy Director vacancy. (Haphazard)

### DON'T

A further refinement in the design of the pavement was accomplished.

## DO (cont'd)

Each week the Reproduction Department prints highway contract lettings.

The funding proposal contradicts last week's plan.

9. Voice Choice -- Use the active voice as often as possible.

## DO

The engineer found the new pavement weak.

The Commission will review the construction project this Tuesday.

10. Clichés

## DO

We haven't finished TransPlan.

Here's the Regional Transit Plan.

That contractor can build that bridge just as cheaply.

We shouldn't run into any funding cuts.

11. Sentence Sound

## DO

Although he was unfamiliar with the material, the engineer gave an orderly presentation.

The first phase of the construction project is almost done.

The Development Support staff members will continue the hearing past midnight, not because they'd like to, but because they need to.

## DON'T

The lettings of highway contracts are printed in the Reproduction Department each week.

The funding proposal is in contradiction to last week's plan.

## DON'T

The new pavement was found by the engineer to be weak.

The construction project will be reviewed by the Commission this Tuesday.

## DON'T

We aren't out of the woods yet on TransPlan.

Here's the Regional Transit Plan in a nutshell.

By the same token, that contractor can build that bridge just as cheaply.

We shouldn't run into any funding cuts in the foreseeable future.

## DON'T

In spite of his unfamiliarity with the material, the engineer's presentation appeared particularly orderly.

The first phase of the construction project is fairly nearly complete.

The Development Support staff members don't want to continue the hearing past midnight. However, they will do it because it is essential.

F. MECHANICS -- SEE THE FOLLOWING EXAMPLES FOR CORRECT USE OF PUNCTUATION, NUMBERS, AND REFERENCES.

1. Punctuation

a. Comma

The Commissioners discussed highway improvements, public transit funding, and airport planning. (Sets off separate elements)

The automobile is not, however, the most energy-intensive mode for short trips. (Sets off parenthetical expressions)

Having reviewed the Regional Transit Plans, the Public Transit Director presented his findings to the Commission. (Sets off introductory clauses)

The bridge, which collapsed about a year ago, needs to be replaced. (Sets off nonrestrictive clauses)

Muhammad Ali, the Transportation Regulation Board Chairman, is familiar with the most recent abandonment case. (Sets off appositional phrases)

He was a major contributor to the bridge replacement, not as an engineer, but as a manager. (Sets off contrasting expressions)

The longer we wait to commit highway funding, the longer our recapitalization cycle will be. (Sets off idioms -- The longer...the longer)

b. Semicolon

Steve McQueen, Aeronautics Division Director; Robert Redford, Public Transit Division Director; and Dustin Hoffman, River Division Director gave presentations at the Commission meeting. (Separates components set off by commas)

Steve McQueen directs the Aeronautics Division; Dustin Hoffman directs the River Division. (Instead of a conjunction in a compound sentence -- in this case the semicolon replaces the conjunction and)

The dry weather is causing problems for contractors; that is, some aquifers aren't providing water any more. (In front of such words as **for example** and **that is**, when they introduce an explanatory phrase - or sentence)

The Right-of-Way Agent was incompetent; therefore, he was fired. (In front of conjunctive adverbs, such as **therefore**, **however**, **moreover**, and **thus**)

c. Colon

Dear Mr. Kojak: (After the salutation in a business letter)

The DOT has six modal Divisions: Aeronautics, Highways, Public Transit, Rivers, Motor Vehicles, and Railroads. (Introduces a series)

Our proposal to the Commissioners must be cohesive: the Commissioners make the final decision. (Sets off clauses when the second explains the first)

Howard Cosell said: "In this State one dollar out of every four is spent on transportation! In recognition of that important role, the Governor proposed the formation of a Department of Transportation in 1974. The Legislature responded with the necessary legislation and added the task of developing the first State Transportation Plan for delivery in early 1976. This is that plan...on time, to specification, prepared by a department that is now working 500 people **below** its authorized level...and still shrinking!" (Introduces a long or formal quotation)

d. Dash

Speed limits, long truck, bicycle paths - the DOT is concerned about all these issues. (Before an expression which sums up a series of specific items--in this case, the words **all these**)

The bridge collapsed - without our realizing it - immediately after we transported the Track Geometry Car across. (Makes parenthetical expressions stand out clearly)

e. Hyphen

foot-pound; ton-mile (With compound nouns)

low-speed drill; four-lane highway (With compound adjectives)

tn-mi; pass-mi (With abbreviations of hyphenated terms)

one-half complete; one-third section (With fractions used as modifiers)

re-evaluate; re-enforce; re-enact; re-elect (With the prefix **re** when the verb it precedes starts with **e**)

f. Apostrophe

Department's transportation plan; Deputy Chief Engineer's office (To show possessives)

6's and 7's; abc's (To form plurals of numbers and letters)

#### g. Quotation Marks

President Carter said: "We need to declare the moral equivalent of war on the energy shortage." (With direct quotations)

"Senate Unit Okays Locks-and-Dam 26, User Charge" appears in the May 9 issue of *Traffic World*. (For titles of articles in newspapers, magazines, and trade journals)

#### h. Parentheses

TransPlan 77 includes system plans for: (1) air, (2) rivers, (3) railroads, (4) public transit, (5) highways, and (6) pipelines. (For enclosing numbers enumerating words or phrases in a series)

The Iowa Department of Transportation (formerly the Iowa State Highway Commission) is headquartered in Ames. (To enclose additional explanations)

According to the AAR piggyback revenue freight traffic for the week of May 13 totaled 13,131 cars. (To indicate references within a publication)

Monies from the General Fund for city roads and streets have decreased. (See Figure 11.) (To call out illustrations or tables when you don't reference them within a sentence)

$E=mc^2$

(13) (For the numbers of equations when they appear in text)

#### i. Brackets

"That city [Des Moines] doesn't have much traffic congestion during commuting times."

"That road must only be 10 [actually 15] years old. [For inserting editorial comments or corrections in quoted matter]

"The Iowa Department of Transit [sic] ..." [Shows that an original error is quoted exactly]

### 2. Numbers

a. Generally, spell out the figures 0 through 9; i.e., zero, one, two, three, four, five, six, seven, eight, and nine.

b. When a number has more than four digits, use a comma; i.e., 10,000. When four-digit numbers appear in tabular form, however, use commas in them also; i.e.,

1,000  
2,000  
3,000  
4,000  
5,000  
15,000

c. When one number follows another, spell out the first one, even if it is more than nine; i.e., fourteen 6-inch pavement samples. Also, do not spell out numbers less than 10 (an exception to rule a. above when they precede a hyphen; i.e., 4-inch plywood, 6-inch soil sample.)

d. Another exception to rule a. above: Use figures when listing statistics, even if some figures are less than 10; i.e., "They studied 15 soil samples, 4 gravel samples, and 2 area maps."

e. To avoid typographical errors, write out large numbers; i.e., \$23 billion, 7.5 million vehicle-miles.

f. Be consistent in the number of decimal places throughout tabular material or statistics. For example, if you decide to carry the figures in a table out to three decimal places (e.g., 1.567) you should not have any figures which are carried out to two or four decimal places (e.g., 1.57 or 1.5678) in that same table.

### 3. References

If you don't want to put a list of references at the end of your publication, you can refer to books, magazine articles, Department publications, and journals in footnotes. If you do decide to go the reference list route, number your references consecutively as they occur in your report; then list them in this order at the end. Following are some samples which show the proper format for references or footnotes.

#### a. Book

Earl O. Heady, William A. Huemoeller, Kenneth J. Nicol, and Brent W. Spaulding, **Land Use: Ongoing Developments in the North Central Region**, Center for Agricultural and Rural Development-Iowa State University, Ames, 1976, p. 52.

#### b. Magazine Article

Merwin H. Dick, "Grade Crossings: Federal Funding is Beginning to Pay Off," **Railway Age**, Vol. 178, No. 9, May 9, 1977, p. 39.

#### c. Journal

G. A. Sweitzer, **Land Acquisition Journal**, 23, 476 (1976).

d. Department Publication

Iowa Department of Transportation, **Energy & Transportation for the Future**, Ames, Iowa, May 1977.

e. Paper

Arrigo P. Mongini and John E. Harman, "Social and Economic Factors Affecting Future Automobile Usage" (paper presented to the Transportation Research Board, Ann Arbor, Michigan, August 1975).

Bibliographies

Your bibliography may differ from your list of references as it may include publications which are not referenced in the text. Your bibliography should include all the works which provided background for your study. Compile your bibliography in alphabetical order, by author's last name or company name. Also put all your books in one group, all your magazines in another group, and so on.

For example:

**BOOKS**

Heady, Earl O., Huemoeller, William A., Nicol, Kenneth J., and Spaulding, Brent W., **Land Use: Ongoing Developments in the North Central Region**, Center for Agricultural and Rural Development - Iowa State University, Ames, 1976.

U.S. Department of Transportation, **Summary of National Transportation Statistics**, U.S. Government Printing Office, Washington, D.C., 1974.

**MAGAZINES**

Dick, Merwin H., "Grade Crossings: Federal Funding is Beginning to Pay Off," **Railway Age**, Vol. 178, No. 9, May 9, 1977.

Neumann, Alfred E., "Railroads Want Higher Rates in the North Central Region," Vol. 170, No. 8, May 23, 1977.

Ray, J. R., and Ray, T. P., "Operating and Cost Data: 747, DC-10 and L-1011 - Third Quarter, 1975," **Aviation Week and Space Technology**, February 9, 1976.








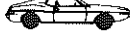


G. **ILLUSTRATIONS - USE GRAPHS AND TABLES WHEREVER POSSIBLE TO PRESENT TECHNICAL INFORMATION. WATCH OUT FOR:**



1. Tables - Use for detailed technical data. Keep tables self-explanatory; each one should be able to stand alone without the text.

DO

**Table 9**  
**1976 Cost Of Owning & Operating**  
**An Automobile**

IOWA-BASED OPERATION														
TOTAL COSTS: CENTS PER MILE														
SIZE							TOTAL COST							
	ORIGINAL VEHICLE COST DEPRECIATED	MAINTENANCE ACCESSORIES, PARTS & TIRES	GAS & OIL (EXCLUDING TAXES)	GARAGE, PARKING	INSURANCE	STATE & FEDERAL TAXES	Fixed Cost	Variable Cost						
STANDARD														
WITH STANDARD EQUIPMENT. WEIGH MORE THAN 4,000 LBS. EMPTY.	5.46¢	4.20¢	3.37¢	1.44¢	1.66¢	1.50¢	17.63¢							
	5.46	—	.09	4.11	—	3.37	1.32	.12	1.66	—	.66	.84	9.19	8.44
INTERMEDIATE														
WEIGH MORE THAN 3,600 LBS BUT LESS THAN 4,000 LBS. EMPTY.	4.84¢	3.82¢	2.83¢	1.44¢	1.57¢	1.26¢	15.76¢							
	4.84	—	.09	3.73	—	2.83	1.32	.12	1.57	—	.56	.70	8.38	7.38
COMPACT														
WEIGH MORE THAN 2,700 LBS. BUT LESS THAN 3,600 LBS. EMPTY.	3.70¢	3.44¢	2.56¢	1.44¢	1.50¢	1.09¢	13.73¢							
	3.70	—	.09	3.35	—	2.56	1.32	.12	1.50	—	.45	.64	7.06	6.67
SUB-COMPACT														
WEIGH LESS THAN 2,700 LBS. EMPTY.	3.13¢	3.10¢	1.84¢	1.44¢	1.50¢	.87¢	11.88¢							
	3.13	—	.09	3.01	—	1.84	1.32	.12	1.50	—	.406	.462	6.45	5.43

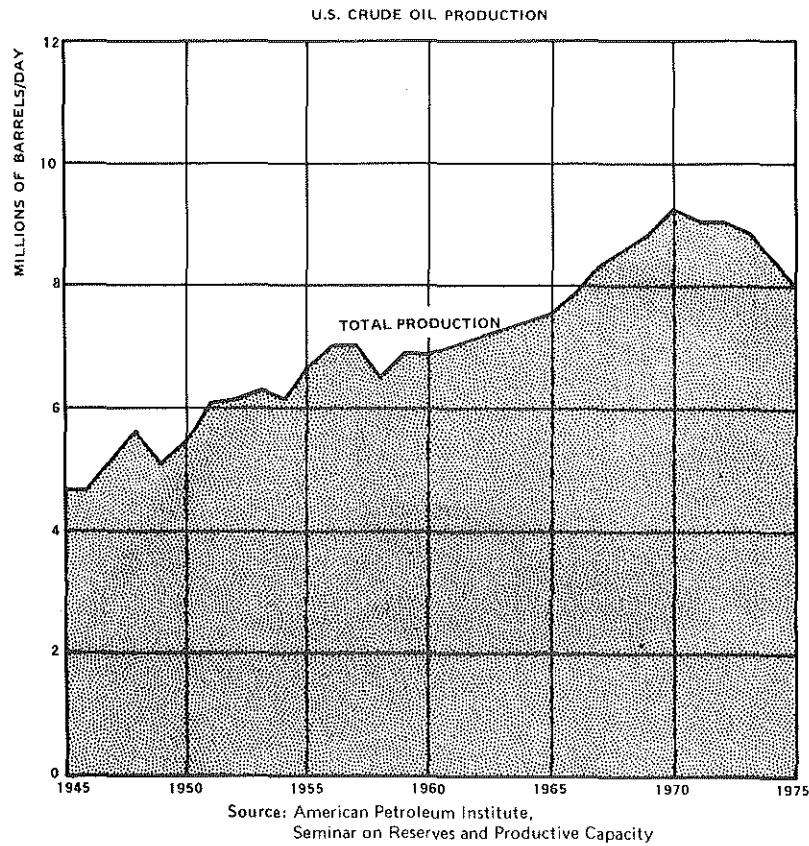
DON'T

**TABLE 12**

Vehicle Type	Rural Interstate	Other Rural Primary	Urban Freeway	Total - All Roads
<b>Automobiles</b>				
million gallons	716	629	459	1804
percent of auto fuel	0.99%	0.85%	0.62%	2.44%
percent of TDTE*	0.49%	0.43%	0.31%	1.23%
<b>Single Unit Trucks</b>				
million gallons	219	192	67	498
percent of single-unit truck fuel	0.99%	0.86%	0.39%	2.24%
percent of TDTE	0.15%	0.13%	0.05%	0.34%
<b>Combination Trucks</b>				
million gallons	106	86	14	206
percent of combination truck fuel	1.23%	1.00%	0.16%	2.39%
percent of TDTE	0.07%	0.06%	0.01%	0.14%
<b>Total</b>				
million gallons	1041	907	560	2508
percent of TDTE	0.71%	0.62%	0.38%	1.71%

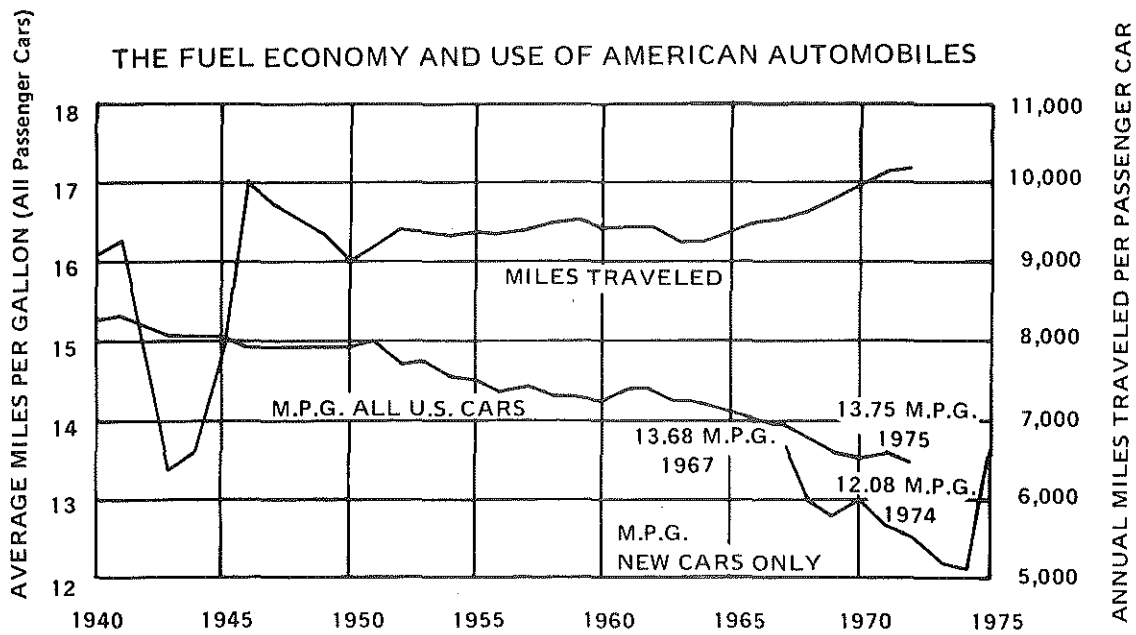
2. Graphs - Use to show general trends. Don't plot too much detailed information on any one graph.

DO



DON'T

FIGURE 12



(The above information would be easier to comprehend if miles traveled, miles per gallon for all U.S. cars, and miles per gallon for new cars only were all presented on separate graphs or if two of the above curves were on overlays. Putting all this on one graph crowds it and discourages the reader.) Be careful when deciding on types of graphics; e.g., pie charts vs. bar graphs, making sure the type you choose best communicates your message. Usually, pie charts work best for showing percentages, like the percentages of energy used by the various economic sectors. Bar graphs generally work best for showing comparisons, like the amounts of highway funding used for bridge repair over the past five years.

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## 3. Review and Approval Process

Following a uniform review and approval process will ensure that all organizational levels with the "need to know" have a chance to review your final draft. Generally, the process should follow the lines of organization upward and through the Technical Editor. For example, if a Section Head generates a document, he or she would need to submit it to the Office Director, then the Division Director, then the Technical Editor, and then the Director's Office for approval. Any one of these levels can waive review; but all should be given the opportunity to review it. Another example: If a Division Director generates a document, the final draft needs to be reviewed only by the Technical Editor and then the Director's Office.

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