

Civil Engineering Writing Project - Grammar & Mechanics Lesson 1

SENTENCE STRUCTURE AND PUNCTUATION

1. Objectives and Terminology

By the end of this unit, you should be able to

- Distinguish between sentences, fragments, and run-on sentences.
- Punctuate sentences accurately.
- Recognize and correct the most common errors in civil engineering students' sentence structure and punctuation.

To understand this unit, you should be familiar with the following terms. If you need more explanation about subjects, predicates, or verbs, consult a grammar reference before reading this unit.

subject: The part of the sentence that tells (a) who or what does the action or (b) what the sentence is about.

predicate: The part of the sentence that tells something about the subject. It always includes a complete verb phrase.

verbs: Words that describe actions or express existence. A complete verb phrase can consist of one or more words (*drilled, was drilled, had been drilled*)

<u>subject</u>	<u>predicate (with verb underlined)</u>
Anyah Davis	<u>will lead</u> the structural inspection team.
One exploratory test boring	<u>was drilled</u> near each proposed end bent.

Other terms explained in this unit

independent clause	phrase	run-on sentence
dependent clause	fragment	comma splice

2. What makes a complete sentence?

To understand how to punctuate sentences accurately, you have to understand their structure. This section explains the basic structure and how that basic form is expanded.

1. The basic structure of a sentence – the independent clause

A sentence is an **independent clause**. This means

- (a) it has a subject and a predicate. The predicate includes the complete verb.
- (b) it can stand on its own (it expresses a complete idea).

Subjects and predicates can be compound (two or more in the independent clause). Sentences can be compound (two full independent clauses). Compounds are connected with *and, but, or* and similar words.

Sentence Examples (independent clauses) subject in green, predicate in blue	Not sentences – fragments (pieces of sentences) Do NOT write these.
<p><i>Single subject and predicate</i></p> <p>1. We evaluated pile foundations.</p> <p>2. No hydraulic controls were observed at the bridge site.</p>	<p>1A. <i>No subject:</i> Evaluated pile foundations.</p> <p>2A. <i>Incomplete predicate (no verb):</i> No hydraulic controls at the bridge site.</p> <p>2B. <i>Not a complete idea:</i> Although no hydraulic controls were observed at the bridge site.</p>

<p><i>Compound subject or predicate</i></p> <p>3. <u>Our understanding of the County’s needs and our approach to each stage of work</u> are described below.</p> <p>4. <u>The project area is topographically flat and drains to the Williams River via Thorn Creek.</u></p>	<p>3A. <i>No predicate:</i> Our understanding of the County’s needs and our approach to each stage of work.</p> <p>4A. <i>No verb in the first predicate:</i> The project area topographically flat and drains to the Williams River via Thorn Creek.</p>
<p><i>Compound sentence</i></p> <p>5. <u>Most joints were rough and irregular, but some sub-horizontal joints were smooth and curved.</u></p>	<p>5A. <i>No verb in the second sentence:</i> Most joints were rough and irregular, but some sub-horizontal joints smooth and curved.</p>

2. Additional Phrases in Sentences

Subjects and predicates can be expanded with additional **phrases**. Phrases are groups of words that work together to express an idea, but they do not contain a subject and predicate on their own. In some cases, phrases are single words. For example, *however* and *therefore* are phrases just as *in contrast* and *in conclusion* are.

Phrases can make sentences long, but each sentence still has one independent clause.

<p>Example sentences with additional phrases additional phrases underlined</p>	<p>Explanation</p>
<p>6. <u>The purpose of the stormwater detention facility is to prevent an increase in the 10-year event peak flow rate at the junction of Mill Creek and the Mill Creek Overflow.</u></p>	<p>Additional phrases give specific information about the kind of increase.</p>
<p>7. <u>As Principal Engineer, Andrés uses his expertise and local experience to provide senior level review and quality assurance for all bridge and road-related projects.</u></p>	<p>An additional phrase provides information about the subject (<i>Andrés</i>), and an additional phrase in the predicate expresses purpose (<i>to provide...</i>).</p>
<p>8. <u>Due to the impermeable and expansive nature of the on-site soils, we do not recommend infiltration of storm water runoff into the native soils on this project.</u></p>	<p>The additional phrase tells the reason behind the idea in the independent clause.</p>
<p>9. <u>This report documents the hydraulic analysis conducted for the construction of the proposed Love Bridge over the Powder River.</u></p>	<p>The additional phrase specifies which hydraulic analysis. It contains a verb (<i>conducted</i>), but it is not a complete verb phrase (<i>was conducted</i>).</p>
<p>10. <u>We analyzed the bearing capacity of the foundations assuming a 2-foot wide continuous footing and a 4-foot square spread footing.</u></p>	<p>The additional phrase provides information about how the activities were done. It contains a verb (<i>assuming</i>) but not a complete verb phrase (<i>was assuming</i>).</p>
<p>11. <u>However, additional surveys will be conducted during the environmental studies phase.</u></p>	<p>The one-word opening phrase provides a transition from the previous sentence.</p>

3. Dependent Clauses

Sentences can also be expanded with dependent clauses. Dependent clauses have a subject and predicate, but –unlike independent clauses—they cannot stand on their own. Dependent clauses must be in a sentence with an independent clause.

There are three kinds of dependent clauses. You do not need to know their names, but you need to recognize them as dependent clauses.

<p align="center">Sentence with dependent clauses dependent clauses are underlined</p>	<p align="center">Not a sentence (fragments) Do NOT write these.</p>
<p align="center">Subordinate Clauses (begin with words like <i>because, if, although</i>)</p> <p>12. <u>Because very loose soil is present</u>, we anticipate that the traffic signals will be supported on drilled shaft foundations.</p> <p>13. <u>Many of the recommendations will have a greater effect</u> if facilities for cyclists and pedestrians are in place.</p> <p align="center">Relative Clauses (describe an object, often begin with <i>which</i> or <i>that</i>)</p> <p>14. <u>These storm sewer systems consist of one 66" and two 48" reinforced concrete culverts</u> <u>which discharge into the A-3 Channel</u> .</p> <p>15. <u>This report provides short case studies of a dozen cities</u> <u>that have made notable attempts to reduce traffic</u>.</p> <p align="center">Noun clauses (act like a noun in a sentence)</p> <p>16. <u>Therefore, we conclude</u> <u>that the slopes are unsuitable for construction of gravity walls and spread footings</u>.</p> <p>17. <u>The results of the calculations confirm</u> <u>that the Hazard Index is below the conservative risk threshold</u>.</p> <p>Note: <i>That</i> is optional in these noun clauses and in some relative clauses. See a grammar reference if you need more explanation.</p>	<p>12A. <i>Dependent clause alone:</i> Because very loose soils are present.</p> <p>13A. <i>Incomplete predicate in the dependent clause:</i> Many of the recommendations will have a greater effect if facilities for cyclists and pedestrians in place.</p> <p><i>Dependent clause separated from independent clause with a period:</i> 14A. These storm sewer systems consist of one 66" and two 48" reinforced concrete culverts. Which discharge into the A-3 Channel at this location.</p> <p>15A. This report provides short case studies of a dozen cities. That have made notable attempts to reduce traffic.</p> <p>16A. <i>No subject in the independent clause:</i> Therefore, conclude that the slopes were unsuitable for construction of gravity walls and spread footings.</p>



Some writers have problems differentiating words that create a subordinate clause ("subordinators") from words that are just additional phrases that express a meaning connection between complete sentences. The same relationship can often be expressed with the two kinds of words, but the punctuation differs:

Because makes a dependent clause that is part of a larger sentence:

Because very loose soil is present, we anticipate that the traffic signals will be supported on drilled shaft foundations.

Therefore is just an extra phrase added to an independent clause, so sentences remain separate:

Very loose soil is present. Therefore, we anticipate that the traffic signals will be supported on drilled shaft foundations.

Here are words of each type that are common in civil engineering practitioner reports. However, most of these words can be used in multiple ways, so you always have to look at clause structure. Check a grammar reference if you need more information.

Common subordinators (dependent clause cannot stand on its own)				Common transition words (adds a phrase, clause stands on its own)		
after	because	if	while	consequently	otherwise	thus
although	before	since		however	similarly	
				in addition	therefore	

3. Accurate Sentence Punctuation

1. Sentences usually end with a period.

A question ends with a question mark (?). An exclamation ends with an exclamation point (!). Both are uncommon in civil engineering writing.

2. Sentences that introduce a list end with a colon (:).

Example

The program also accounts for uncertainty in each of following (1) earthquake magnitude, (2) rupture length for a given magnitude, (3) location of the rupture zone, (4) maximum possible magnitude of a given earthquake, and (5) acceleration at the site from a given earthquake along each fault.

Not a sentence before the list, so does not need a colon

Our report includes a description of our work, a discussion of site conditions, a summary of laboratory testing, and a discussion of engineering analyses.

3. If two sentences are short and their content is closely related, they can be connected with a semi-colon (;) but a period is also accurate. In civil engineering writing, it is usually best to avoid using only a semi-colon to connect sentences because the relationship is not explicit. Instead, use a word that makes the connection explicit. Then punctuate for the type of clause you create.

Example - because makes the relationship explicit and creates a dependent clause that must be connected to the independent clause

This condition was expected **because** previously disturbed soil is often unstable.

Example - therefore makes the relationship explicit but does not create a dependent clause. A period is the most straightforward punctuation. A semi-colon is also acceptable.

Modifications to increase horizontal clearance are not feasible. **Therefore**, they are excluded from estimated upgrade costs.

Modifications to increase horizontal clearance are not feasible; **therefore**, they are excluded from estimated upgrade costs.

Ineffective example - semi-colon is acceptable but leaves the relationship implicit

This condition was expected; previously disturbed soil is often unstable.

See Grammar and Mechanics Lesson 6 for more about using semi-colons.

4. Compound subjects and predicates do not take a comma within the subject or predicate. Compound sentences take a comma before the connecting word.

Examples of compound subject and compound predicate (no commas)

Our understanding of the County's needs and our approach to each stage of work are described below.

The project area is topographically flat and drains to the Williams River via Thorn Creek.

Example of compound sentence with comma

It would be difficult to maintain two lanes of traffic without constructing a temporary river crossing, but one-way controlled traffic could be moved through the site with temporary signals.

See Grammar and Mechanics Lesson 4 for more about using commas.



Sentences often become difficult to punctuate when they cover too many different ideas and contain too many different clauses. If you find a sentence difficult to punctuate, ask yourself if the sentence structure and content need to be simplified first. See how in Language Units 3 and 4.

4. Common Errors to Avoid

1. **(A) Do not use a comma to connect sentences** (an error traditionally called a "comma splice").

(B) Do not connect sentences using no punctuation or connecting word (an error traditionally called a "run-on sentence").

Be especially careful with sentences that begin with *however* and *therefore*.

Incorrect

Recoveries for all laboratory control samples were within acceptable ranges, therefore, no qualification of the data was necessary.

To begin the experiment, the machine was turned on, the deformation and load data were then recorded into the computer.

Correct

Recoveries for all laboratory control samples were within acceptable ranges. **Therefore**, no qualification of the data was necessary.

To begin the experiment, the machine was turned on. **The** deformation and load data were then recorded into the computer.

To begin the experiment, the machine was turned on, **and** the deformation and load data were then recorded into the computer.

Practice 1

Find and correct the comma splice or run-on sentence errors in these examples from student papers. For this practice, change only punctuation.

- a) During a seminar about Google on April 7, 2014, speakers talked about projects Google is working on and described civil engineers' role in making the projects a success. Google is expanding their work around the world, because of that, new structures, roads, and other infrastructure need to be built.
- b) Due to the elevation of the pedestrian bridge, park users get a unique view of the garden. Another benefit of the preferred site is proximity to the traffic bridge. The garden contains sensitive vegetation and wildlife, by placing the bridge close to the traffic bridge, damage caused to the vegetation by the construction process will be minimized. The parking lot can be used for equipment and material staging.
- c) The water-cement ratio of concrete has a direct relationship to ultimate compressive strength and therefore modulus of elasticity. The ultimate compressive strength and modulus of elasticity did not vary greatly within mixes however the tested mixes did vary greatly from published values. Greater quality control for the mixes was needed to attain the expected results.

2. Do not punctuate a sentence fragment as a complete sentence.

Fragments include an incomplete predicate, a dependent clause or a phrase.

Incorrect

LOS is the total average delay of vehicles for all movements through an intersection. This index is used to grade the intersection's level of operation. It is measured on a scale of A to F. A **representing** free flow conditions (best operating conditions) and F **representing** long delays (worse operating conditions).

Correct

LOS is the total average delay of vehicles for all movements through an intersection. This index is used to grade the intersection's level of operation. It is measured on a scale of A to F. A **represents** free flow conditions (best operating conditions) and F **represents** long delays (worse operating conditions).

LOS is the total average delay of vehicles for all movements through an intersection. This index is used to grade the intersection's level of operation. It is measured on a scale of A to F **with** A **representing** free flow conditions (best operating conditions) and F **representing** long delays (worse operating conditions).

Practice 2

Find and correct the sentence fragment errors in these examples from student papers. Revise the punctuation or the sentence structure.

- a) The United States uses more than half of the world's oil and more than a quarter of all the world's energy. Although a recent push has been made in the United States for a more responsible view of environmental impact. With a strong consumer market, it can be difficult to promote sustainable alternatives. One way the US can continue to grow ethically is to use more sustainable practices in as many engineering areas as possible.

- b) Mr. Acevedo committed two ethics violations. First, by stamping plans for the development with the knowledge that a contractor with the development was engaging in fraudulent professional practices. Secondly, by not reporting the violations to the board.
- c) As the U.S. has realized that it needs to pay more attention to sustainable material usage, construction materials have changed rapidly in recent years. With significant improvements in the recycling of demolition waste materials like concrete, timber, and steel. Being able to reuse these materials has positive effects, not only does it save money on projects but it also reduces the need for new material construction.

More Practice

Practice 3

Correct any sentence punctuation errors in the following student writing. Change punctuation and revise sentence structure as needed.

- a) The signal timing cycle length for State Street northbound and southbound was 82.5 seconds and for Mandela Place eastbound and westbound was 84 seconds. Which was effective in moving traffic through the intersection with minimal delay.
- b) Thanks for putting that together, looks good [An e-mail message]
- c) To develop effective systems, design conditions must first be stated, these conditions drive load calculations and are the basis for the design, therefore it is also important that these conditions accurately reflect the conditions in which the systems will operate.
- d) Tested an undisturbed sample using a Geomatic dead load consolidometer and dial gauges that measured vertical and horizontal deformations over a two-week period.
- e) A site investigation and feasibility study were the first steps in the process and provided the information needed to develop design alternatives. Specifically, these steps included the following components; a review of the literature, a review of permitting regulations, surface water modeling, a detailed site survey, and a geotechnical investigation. Each of these is described in detail below.

Practice 4

Below are paragraphs from a Design Acceptance Package for a bridge replacement project. The sentence punctuation and capitalization have been removed, but commas within sentences are shown. Add correct punctuation and capitalization for the sentences.

In the vicinity of Bridge No. 0648A, Interstate 77 is a four lane divided freeway each direction has two 12-foot lanes, 10-foot outside shoulders and 6-foot inside shoulders the eastbound on-ramp from Highway 420 also crosses the bridge before merging with I-77 south of the bridge as a result, the bridge varies in width

Traffic at the site is low enough that a single lane of traffic in each direction will be adequate during construction therefore, to expedite construction of the replacement structure, two alternatives have been evaluated both alternatives detour traffic through the use of a crossover that would detour eastbound traffic into the No. 1 westbound lane while westbound traffic would continue to use the No. 2 westbound lane under the first option, the bridge would be replaced using conventional construction techniques that would require traffic to be detoured for approximately 6

months under the second option, traffic would be detoured for only a short duration (approximately two weeks) while an entire new bridge (that would be constructed adjacent to the highway) would be transported into place

Since traffic volumes in the area can be adequately conveyed during construction by a single lane of traffic in each direction, the bridge will be replaced all at one time rather than one-half width at a time this will result in significant cost and time savings to the project

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