Introduction

Search Feature

The search feature allows a user to search the NHSW Specifications Library. Search options are:

A. Standard specs and supplements by:
   1. An agency
   2. Multiple agencies
   3. All agencies

B. Innovative and Emerging Specs in either an agency or agencies by the following divisions:

   a. Performance Related
   b. Warranty
   c. Quality Assurance
   d. Design Build
   e. Other Innovative and Emerging Specs
   f. Reference and Reports Documents

To search the Specifications Library, enter a search request in the space provided and click the **Search Specifications** button. The system will return a list of the documents that match the request. To view a document in the list, click on the link.

Users can choose multiple agencies by holding down the Ctrl key and clicking on the desired agencies from the agency list.

The Search engine locates individual files that contain the search string. The user chooses the file to view. Since all documents in the library are pdf files; a secondary search in Acrobat Reader is needed to locate the search term(s).

The Advanced Search form includes several more search features.

Search Requests Overview

The NHSW supports two types of search requests, a natural language search and a boolean search.

A natural language search is any sequence of text, like a sentence, a question, or any combination of words. After a natural language search, retrieved documents are sorted by their relevance to the search request. Weighting of retrieved documents takes into account: the number of documents each word in the search request appears in (the more documents a word appears in, the less useful it is in distinguishing relevant from irrelevant documents); the number of times each word in the request appears in the documents; and the density of hits in each document. Noise words, such as *if* and *the*, and search connectors like *not* and *or* are ignored in searches.

A boolean search request consists of a group of words or phrases linked by connectors such as AND and OR that indicate the relationship between them.

Search Type

The system's search capabilities are flexible in that it allows the user to perform the same type of search in a couple of different ways. For instance, in a boolean search, choose to manually insert connectors into the request, or simply select the appropriate option from the Search Type menu to have the connectors automatically inserted. Note that the connectors being inserted into the request are not seen; this is all done internally by the system.

All of the Words

The Search Type option, 'all of the words' inserts the connector AND between the words entered. If the words entered are *highway* and *community*, the system would process the request as: *highway and community*.

Any of the Words

The Search Type option, 'any of the words' inserts the connector OR between the words entered. If the words entered *highway* and *community*, the system would process the request as: *highway or community*.

Exact Phrase

The Search Type option, 'exact phrase', allows to search for a specific sequence of words. This is like a natural language search except that the user can include connectors like AND and OR without them being ignored as it typically occurs in the natural language search. The following request could be entered without encountering any problems: *highways and roads are needed*.

The following are examples of connectors one can manually insert while performing a boolean search.

Examples:

`apple and pear`	Both words must be present
`apple or pear`	Either word can be present
`apple w/5 pear`	*Apple* must occur within 5 words of *pear*
`apple not w/5 pear`	*Apple* must not occur within 5 words of *pear*
`apple and not pear`	Only *apple* must be present

If more than one connector is used, use parentheses to indicate precisely what to search for. For example, *apple and pear or orange juice* could mean *(apple and pear) or orange*, or it could mean *apple and (pear or orange)*.

Words and Phrases

There is no need to use any special punctuation or commands to search for a phrase. Simply enter the phrase the way it ordinarily appears. A phrase can be used anywhere in a search request. Example:

apple w/5 fruit salad

If a phrase contains a noise word, the system will skip over the noise word when searching for it. For example, a search for *statue of liberty* would retrieve any document containing the word *statue*, any intervening word, and the word *liberty*.

Punctuation inside of a search word is treated as a space. Thus, *can't* would be treated as a phrase consisting of two words: *can* and *t. 1843(c)(8)(ii)* would become *1843 c 8 ii* (four words).

On the other hand, if to look for an exact phrase, noise words and punctuation included, the user need only check the Search Type option, 'exact phrase'.

AND Connector

Use the AND connector in a search request to connect two expressions, both of which must be found in any document retrieved. For example:

apple pie and poached pear would retrieve any document that contained both phrases.

(apple or banana) and (pear w/5 grape) would retrieve any document that (1) contained either *apple* OR *banana*, AND (2) contained *pear* within 5 words of *grape*.

OR Connector

Use the OR connector in a search request to connect two expressions, at least one of which must be found in any document retrieved. For example, *apple pie or poached pear* would retrieve any document that contained *apple pie*, *poached pear*, or both.

W/N Connector

Use the W/N connector in a search request to specify that one word or phrase must occur within N words of the other. For example, *apple w/5 pear* would retrieve any document that contained *apple* within 5 words of *pear*. The following are examples of search requests using W/N:

(apple or pear) w/5 banana
(apple w/5 banana) w/10 pear
(apple and banana) w/10 pear

Some types of complex expressions using the W/N connector will produce ambiguous results and should not be used. The following are examples of ambiguous search requests:

(apple and banana) w/10 (pear and grape)
(apple w/10 banana) w/10 (pear and grape)

In general, at least one of the two expressions connected by W/N must be a single word or phrase or a group of words and phrases connected by OR. Example:

(apple and banana) w/10 (pear or grape)
(apple and banana) w/10 orange tree

The system uses two built in search words to mark the beginning and end of a file: *xfirstword* and *xlastword*. The terms are useful in order to limit a search to the beginning or end of a file. For example, *apple w/10 xlastword* would search for *apple* within 10 words of the end of a document.

NOT and NOT W/N

Use NOT in front of any search expression to reverse its meaning. This allows to exclude documents from a search. Example:

apple sauce and not pear

NOT standing alone can be the start of a search request. For example, *not pear* would retrieve all documents that did not contain *pear*.

If NOT is not the first connector in a request, use either AND or OR with NOT:

apple or not pear
not (apple w/5 pear)

The NOT W/ ("not within") operator allows to search for a word or phrase not in association with another word or phrase. Example:

apple not w/20 pear

Unlike the W/ operator, NOT W/ is not symmetrical. That is, *apple not w/20 pear* is not the same as pear not w/20 apple. In the *apple not w/20 pear* request, the system searches for *apple* and excludes cases where *apple* is too close to *pear*. In the *pear not w/20 apple* request, the system searches for *pear* and excludes cases where *pear* is too close to *apple*.

Search Options

To widen the scope of a search, search for synonyms of the requested word(s), or search for different variations of the requested word(s) including tense, plurality, and even misspelling. The system's search capabilities are flexible in that it allows to perform the same type of search in a couple of different ways. One can manually insert the appropriate characters into the search itself, or simply select the desired item from the Search Options to have the system automatically do it.

Search terms may include the following special characters:

&	Synonym search. Example: *fast&* matches *quick*.
~	Stemming. Example: *apply~* matches *apply*, *applies*, *applied*.
%	Fuzzy search. Example: *ba%nana* matches *banana*, *bananna*.
?	Matches any single character. Example: *appl?* matches *apply* or *apple.*
*	Matches any number of characters. Example: *appl** matches *application*
~~	Numeric range. Example: *12~~24* matches *18*.

Synonym Searching

Synonym searching finds synonyms of a word in a search request. For example, a search for *fast* would also find *quick*. synonym searching is enabled in two ways:

1. Enable synonym searching for all words in a request by checking the **Synonyms** box.
2. Or enable synonym searching selectively by adding the & character after certain words in a request. Example: *fast& cars*.

By checking the **Synonyms** box, the system expands synonyms using both a built-in thesaurus that includes synonyms and related words (holonyms, meronyms, antonyms, etc.), and a thesaurus containing user-defined synonyms.

Fuzzy Searching

Fuzzy searching will find a word even if it is misspelled. For example, a fuzzy search for *apple* will find *appple*. Fuzzy searching can be useful when searching text that may contain typographical errors, or for text that has been scanned using optical character recognition (OCR). There are two ways to add fuzziness to searches:

1. Check the **Fuzzy searching** box to enable fuzziness for all of the words in the search request.
2. Or add fuzziness selectively using the % character. The number of % characters added determines the number of differences the system will ignore when searching for a word. The position of the % characters determines how many letters at the start of the word have to match exactly. Examples:
    - ba%nana Word must begin with *ba* and have at most one difference between it and *banana.*
    - b%%anana Word must begin with *b* and have at most two differences between it and *banana.*

Stemming

Stemming extends a search to cover grammatical variations on a word. For example, a search for *fish* would also find *fishing*. A search for *applied* would also find *applying*, *applies*, and *apply*. There are two ways to add stemming to searches:

1. Check the **Stemming** box in the search form to enable stemming for all of the words in the search request. Stemming does not slow searches noticeably and is almost always helpful in making sure one finds what one wants.
2. Or, to add stemming selectively, add a ~ at the end of words that are wanted to be stemmed in a search. Example: *apply*~

Wildcards (* and ?)

A search word can contain the wildcard characters ***** and **?**. A **?** in a word matches any single character, and a ***** matches any number of characters. The wildcard characters can be in any position in a word. For example:

*appl** would match apple, application, etc.
cipl would match principle, participle, etc.
appl? would match apply and apple but not apples.
ap*ed would match applied, approved, etc.

Use of the ***** wildcard character near the beginning of a word will slow searches somewhat.

Numeric Range Searching

A numeric range search is a search for any numbers that fall within a range. To add a numeric range component to a search request, enter the upper and lower bounds of the search separated by ~~ like this:

apple w/5 12~~17

This request would find any document containing *apple* within 5 words of a number between *12* and *17*.

Numeric range searches only work with positive integers. A numeric range search includes the upper and lower bounds (so *12* and *17* would be retrieved in the above example).

For purposes of numeric range searching, decimal points and commas are treated as spaces and minus signs are ignored. For example, *-123,456.78* would be interpreted as: *123 456 78* (three numbers).