Support for \texttt{#warning}

Summary of Changes

R1
- Reworded 15.8p1 slightly

R0
- Initial proposal

Introduction and Rationale

Almost all major C++ compilers support the \texttt{#warning} preprocessing directive to generate a diagnostic message from the preprocessor without stopping translation, as \texttt{#error} does, which can be useful for code authors who want to warn consumers of the code about non-fatal concerns. Consider a hypothetical library that does not yet support multithreading. The library author may wish to warn users about the lack of thread support but may not want to stop translation as the library can be safely consumed by an application that is also not multithreaded.

WG14 considered a similar proposal as part of WG14 N2686 at our Sept 2021 meeting and adopted the feature into C23 (straw poll results were: 17 in favor, 0 oppose, 1 abstain). The WG21 proposal is functionally identical to the WG14 proposal, with the only difference being due to existing variance in specification around how \texttt{#error} causes translation to stop. Adopting this proposal into C++ will be compatible with the same feature in C, and implementers appreciate keeping the preprocessor functionality the same between these two languages whenever possible.

Proposed Wording

The wording proposed is a diff from the working draft of WG21 N4892. Green text is new text, while red text is deleted text.

Modify the 15.1 [cpp.pre] grammar productions:

```
control-line:
  # include \texttt{pp-tokens} new-line
  \texttt{pp-import}
  # define \texttt{identifier replacement-list} new-line
  # define \texttt{identifier (} \texttt{identifier-list opt \)} replacement-list new-line
  # define \texttt{identifier (} \texttt{... \)} replacement-list new-line
  # define \texttt{identifier (} \texttt{identifier-list , \... \)} replacement-list new-line
  # undef \texttt{identifier} new-line
```
Modify the 15.8 [cpp.error] heading:

15.8 Error directive Diagnostic directives

Modify 15.8p1:

1 A preprocessing directive of either of the following forms

# error pp-tokens opt new-line
# warning pp-tokens opt new-line

causes the implementation to produce a diagnostic message that includes the specified sequence of preprocessing tokens, and, the # error directive renders the program ill-formed.

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References
[WG14 N2686]