



MISADVENTURES IN PROJECTS: ONE ENGINEER'S JOURNEY

Laura Farthing, Senior Engineer –
Water, EWEB

graphicpanic.com

OUTLINE

- Unnecessary Words
- Confusing Language
- Shifting Design Responsibilities
- Confusing Drawing Details
- Inadequate Bid Documents

UNNECESSARY WORDS

“Valves shall have an exceptionally long life”





“The Quick Connect Switchboard shall consist of the required number of vertical sections bolted together to form a rigid assembly.”

IT COULD MEAN THIS...



OR THIS...



“Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention.”

Adequate for...



SHIFTING DESIGN RESPONSIBILITY

PIPELINE DESIGN

- “Submit design calculations of each critical section of pipe wall, girth joints, and specials...”
- “...Pipe wall thickness shall be 0.250” minimum.”
- “...thickness of the steel cylinder shall be the greater of that determined by the following two formulas...”



PIPE SUPPORT DESIGN

“Design, size, and locate piping support systems throughout facility, whether shown or not.”



CONFUSING LANGUAGE

Original Wording

“To provide for the comfort and safety of the traveling public, pavement replacement work shall be completed immediately upon completion of backfilling operations at each location of the water pipeline within public roadways and bike paths.”

Alternate Wording

Repave roadways and bike paths immediately after backfilling.

Original Wording

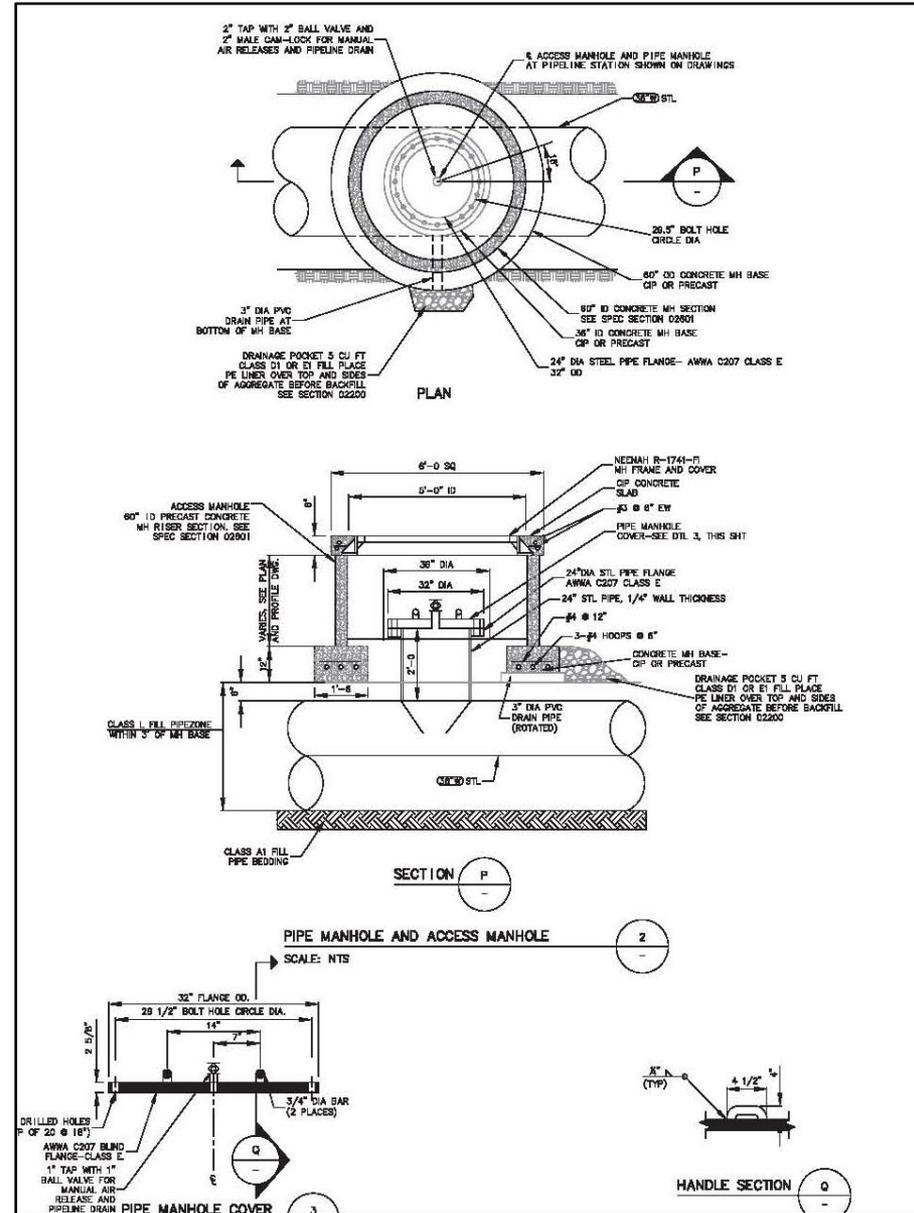
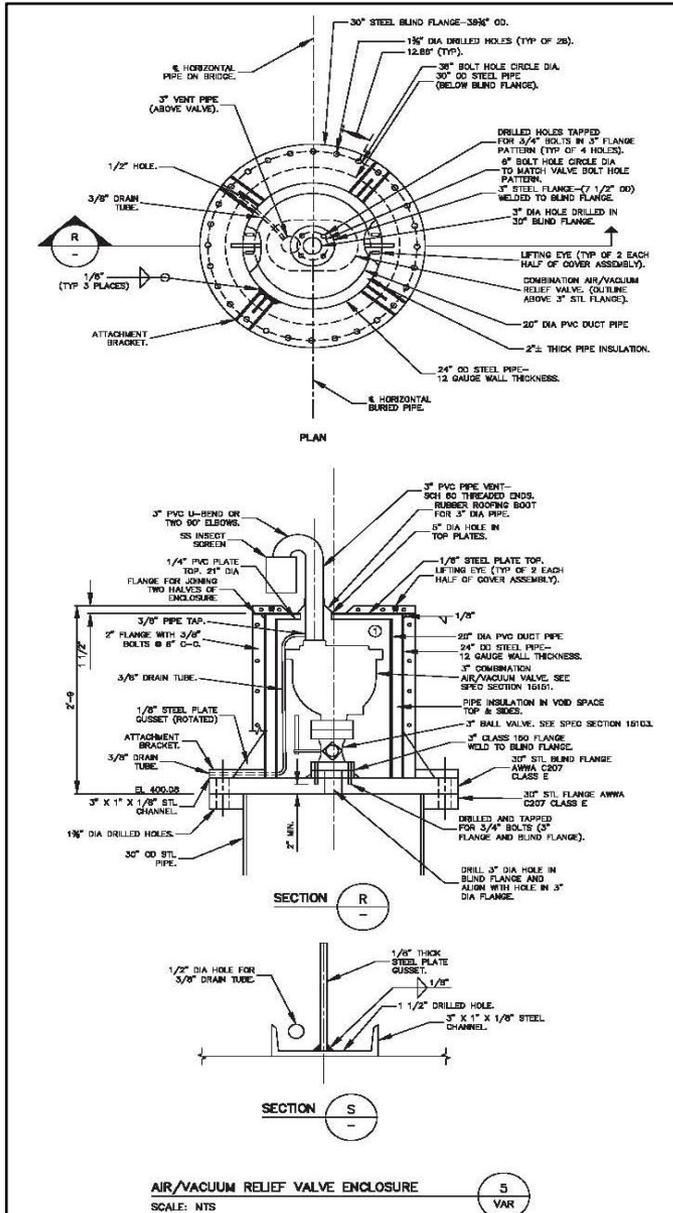
“This section contains references to the following documents. They are part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly.”

Alternate Wording

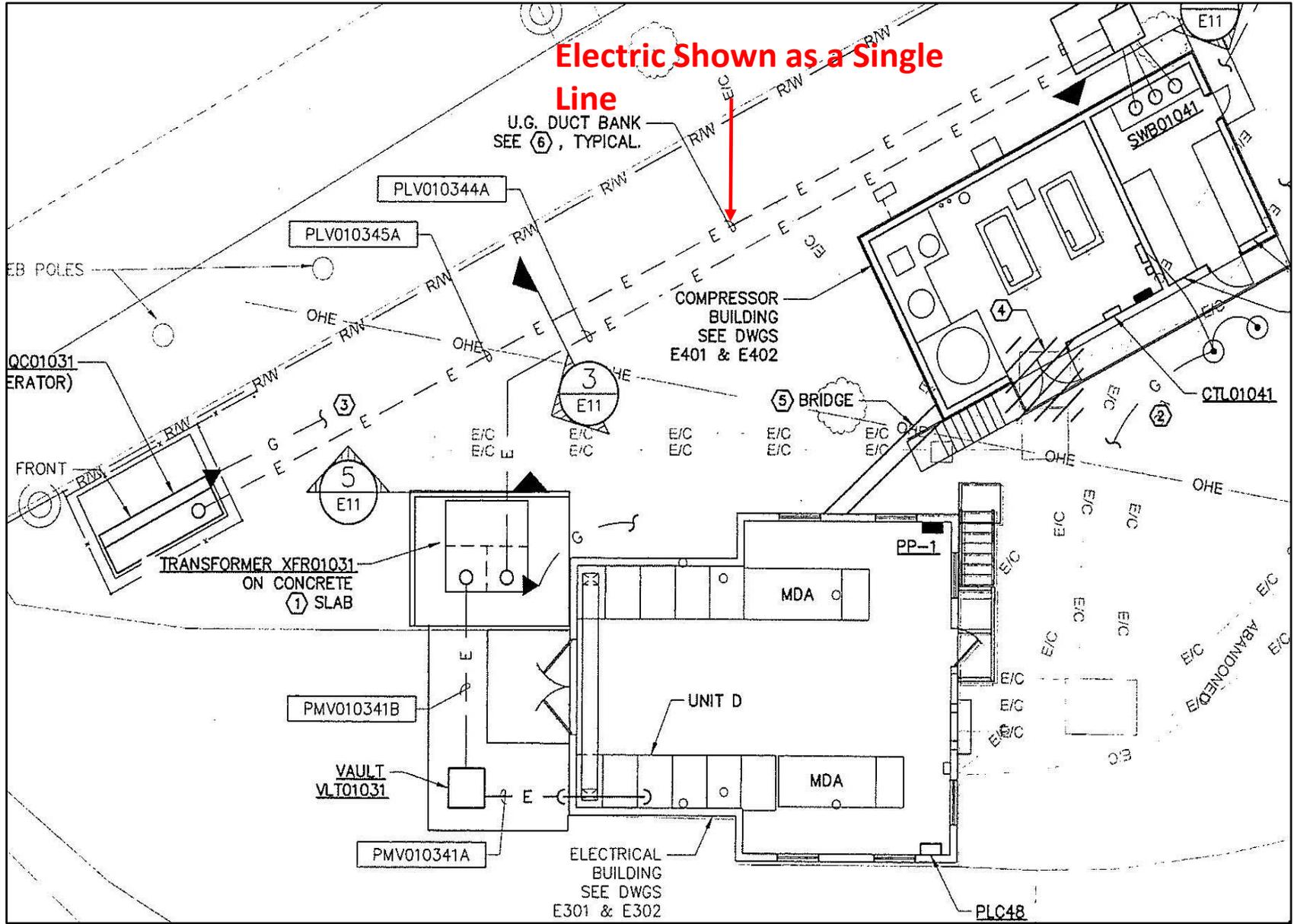
Include the following references as part of this specification.

DRAWING DETAILS

TOO MUCH OF A GOOD THING

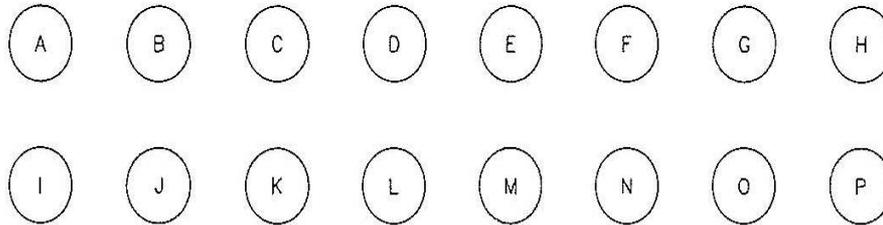


Not Enough of a Good Thing



Duct Bank Detail

Conduit Size: 4-inch



LETTER	CONDUIT NO.
A	PLV010345B
B	
C	
I	
J	
K	
D	PLV010344B
E	
F	
G	
L	
M	
N	
O	
H	PLV01010
P	PLV010411

SECTION 6 DUCT BANK TO SWB01041
SCALE: NONE -



INADEQUATE BID DOCUMENTS

Original Wording

“Prior to the start of work produce a test panel at least 48-inches by 72-inches for each nozzleman”

Alternate Wording

Prior to the start of work produce a test panel at least 48-inches by 72-inches for a minimum of two nozzleman.





January, 2013



Original Wording

“Contractor shall promptly remove from the premises and replace all defective materials as determined by the Owner’s Authorized Representative.”

Alternate Wording

Contractor shall submit a plan to remedy defective work within 7 days of being notified by the Owner’s Authorized Representative. Defective work will be cured within 30 days of being notified, unless otherwise approved.

Original Wording

“Mortar System Applicator: Trained and experienced applicator endorsed by mortar system manufacturer.”

Alternate Wording

Mortar System Applicator: Trained and experienced applicator endorsed by mortar system manufacturer and have completed 5 similar projects in the last 5 years.

April 2013



Unit Price Items

- ...Bidder agrees that the unit price represents a true measure of the labor, materials, and services required to furnish and install the item, including all allowances for overhead and profit for each type of Work.....
- Quantity: **460 cubic yards of Rock Excavation**

In-Situ Quantity



Measure and Payment



Contractor Owns Means and Methods

The Contractor can make an assessment based on the geotechnical report and past experience whether blasting is required.

NOTE: Original schedule included 5 days for excavation.

May 2012



June 2012



July 2012



August 2012



MEDIATION



“Did you want these specifications to be specific to this job?”

YES!!!

QUESTIONS

