

# Index 430-033

## Straight Concrete Endwalls - Single and Double 72" Pipe

**ORIGINATION**

**Date:** May 7, 2018

**Name:** Rick Jenkins

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**COMMENTARY**

Reorganized Index.

Sheet 1: General Notes and Overview. Moved specification and payment information to Specifications. Deleted design information covered in the Design Manual. Added note on quantities for estimating purposes only.

Sheets 2 and 3: Bar naming conventions Updated to reflect Horizontal, Vertical, and Bent bars.

**COMMENTS AND RESPONSES**

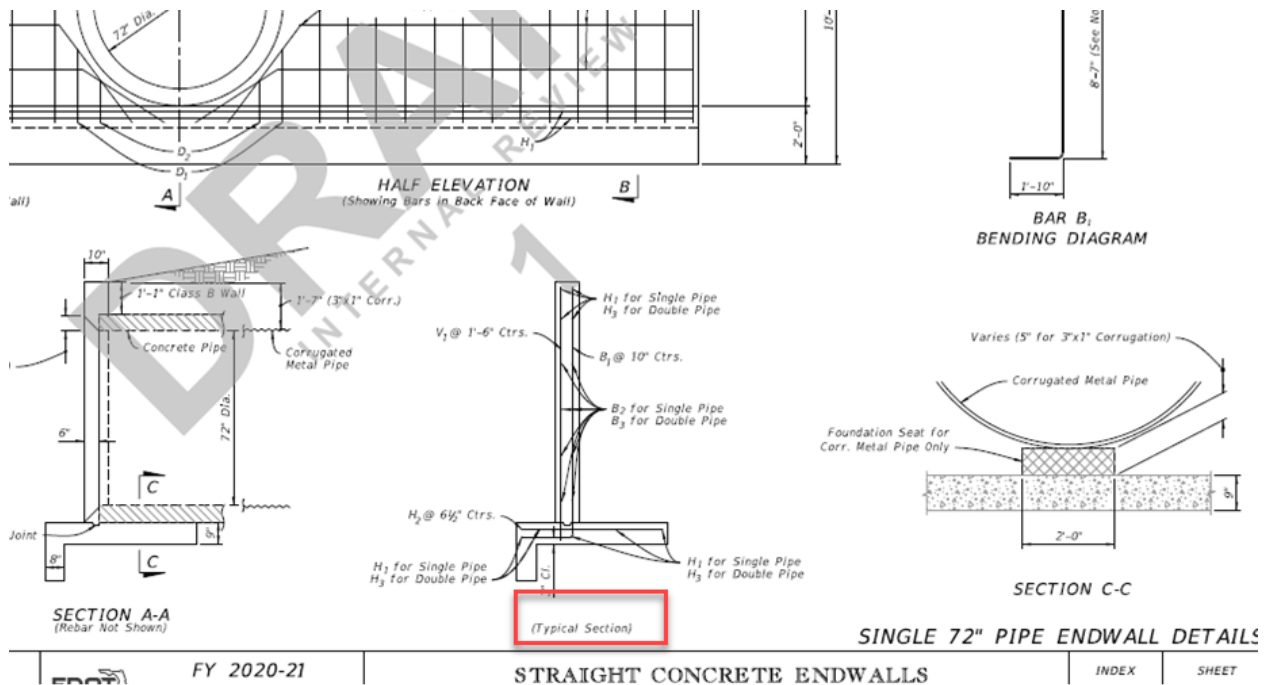
**BLACK** = Industry Review Comments    **RED** = Standard Plans Response

**Name:** Erin Yao

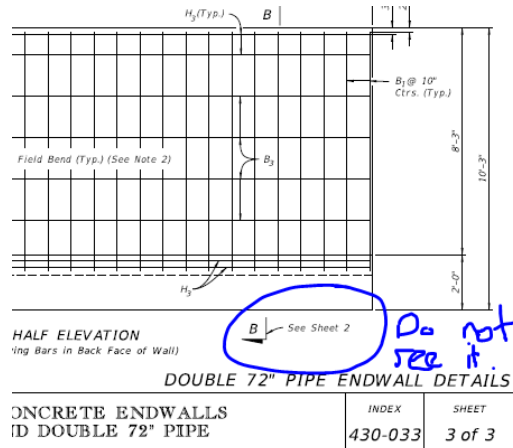
**Date:** August 8, 2019

**COMMENT:**

Sheet 2: I do not see the cut Section B-B.



Sheet 3: Do not see it.



**RESPONSE:**

Date: August 8, 2019

Sheet 2: The label was added.

Sheet 3: The label was added.

**Name:** FHWA

**Date:** September 24, 2019

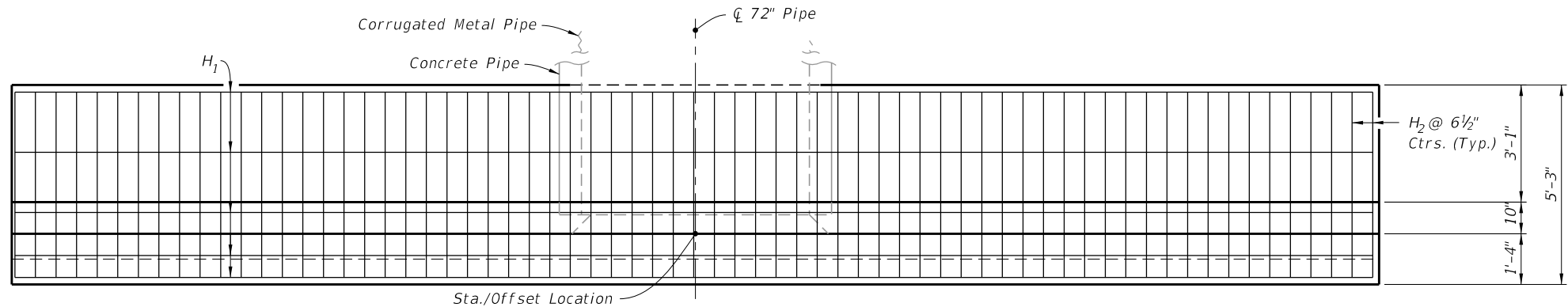
**COMMENT:** Sheet 2 & 3:

1. Check length of B2. (Also has same comment on B3)
2. Also for B2 it is recommended that a minimum length of the shorter leg of the bar be specified to avoid variability within the project or constructability issues. (Also has same comment on B3)

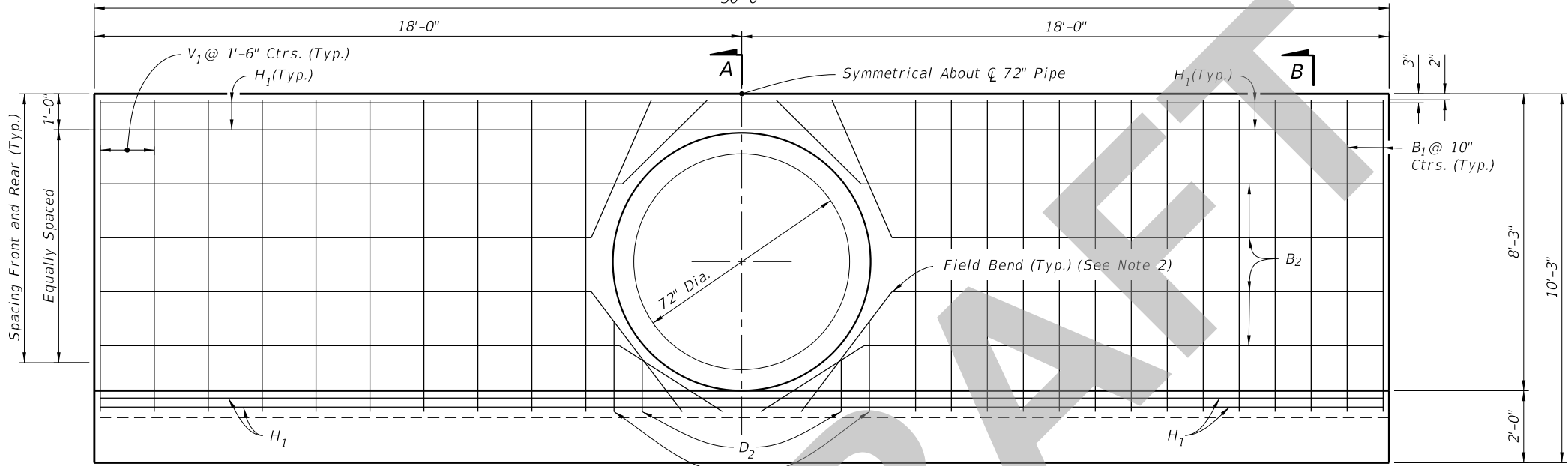
**RESPONSE:**

Date: September 26, 2019

1. For the 430-031-034 drawings, the horizontal bars used to be noted as the same bars notation, and same length. The horizontal bars that would intercept the pipe opening would then be cut near the centerline of pipe, then bent around the pipe opening. With the new drawing, the notations were changed to note whether they are bent (B) or Horizontal (H), but having the same length. The note in the Index (Note 2 in index 430-031) then directs the contractor to cut and field bend the B bars as shown. Therefore, the length shown in the tables is the full length prior to the bar being cut and bent.
2. This bend depends on the amount of cover between the rebar and pipe opening. We generally try to avoid being that precise and allow the contractor to use the approach while still meeting the requirements. These bends are shown with the same detail as the previous versions of the indexes. This comment will be evaluated for incorporation in the future revisions to the indexes.



**PLAN**  
(Showing Bars In Footing)  
36'-0"



**HALF ELEVATION**  
(Showing Bars in Front Face of Wall)

**HALF ELEVATION**  
(Showing Bars in Back Face of Wall)

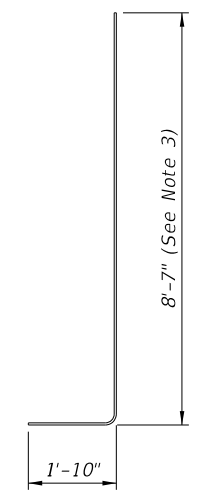
**NOTES:**  
1. 2" clearance on all reinforcement, unless otherwise shown.  
2. Cut and bend B<sub>2</sub> Bars as shown.  
3. All bar dimensions are out to out.

**LEGEND:**  
H = Horizontal Bars    B = Bent Bars  
V = Vertical Bars      D = Dowels or Diagonal Bars

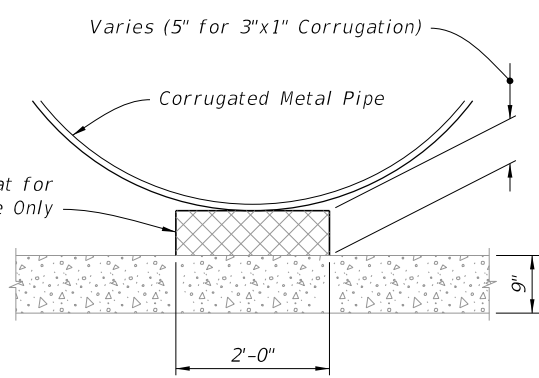
SINGLE 72" PIPE ENDWALL ESTIMATED QUANTITIES			
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	14.4	14.5
Reinforcing Steel	Lb.	1249	1249

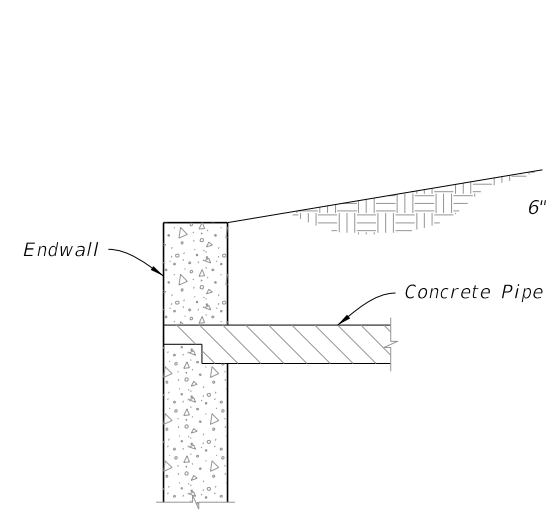
BILL OF REINFORCING STEEL			
MARK	SIZE	NO. REQD.	LENGTH
H <sub>1</sub>	4	9	35'-8"
H <sub>2</sub>	5	68	4'-11"
V <sub>1</sub>	4	20	8'-7"
B <sub>1</sub>	5	34	10'-5"
B <sub>2</sub>	4	8	35'-8"
D <sub>1</sub>	4	4	2'-6"
D <sub>2</sub>	4	4	1'-6"



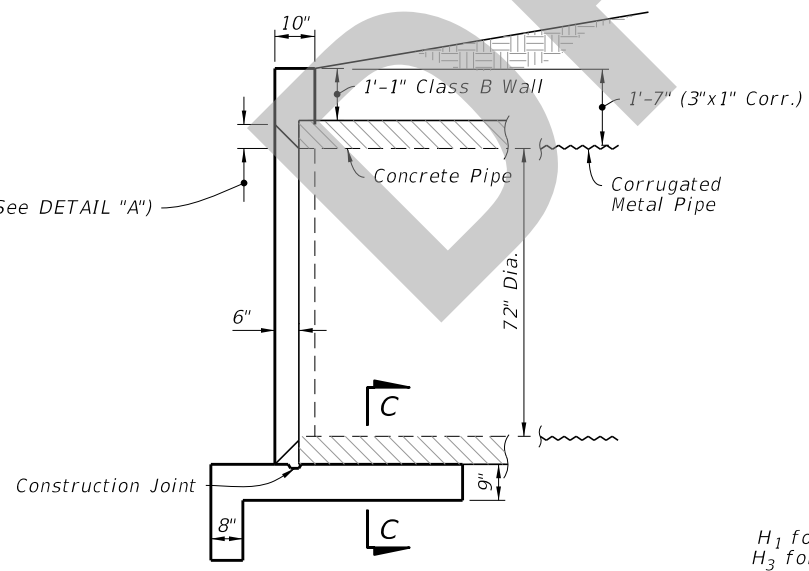
**BAR B<sub>1</sub>**  
**BENDING DIAGRAM**



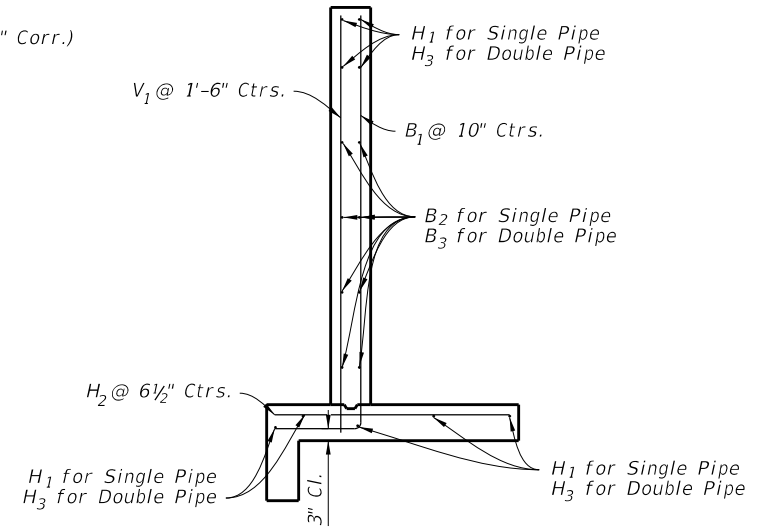
**SECTION C-C**



**DETAIL "A"**  
(Concrete Pipe Optional Entrance)



**SECTION A-A**  
(Rebar Not Shown)



**SECTION B-B**  
(Typical Section)

**SINGLE 72" PIPE ENDWALL DETAILS**

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LAST REVISION 11/01/19	DESCRIPTION:	 FY 2020-21 STANDARD PLANS	<b>STRAIGHT CONCRETE ENDWALLS</b> <b>SINGLE AND DOUBLE 72" PIPE</b>	INDEX 430-033	SHEET 2 of 3
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**DOUBLE 72" PIPE ENDWALL  
ESTIMATED QUANTITIES**

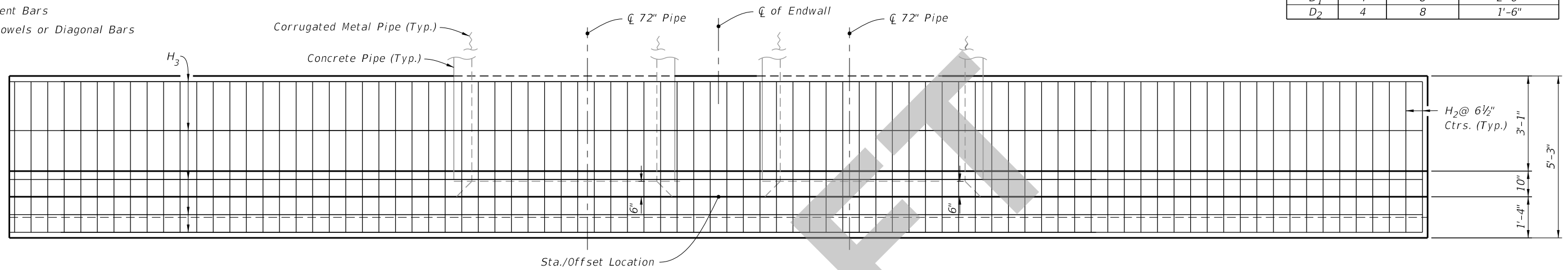
ITEM	UNIT	RCP	CMP
Class II Concrete	Cu. Yd.	17.5	17.8
Reinforcing Steel	Lb.	1519	1519

**BILL OF REINFORCING STEEL**

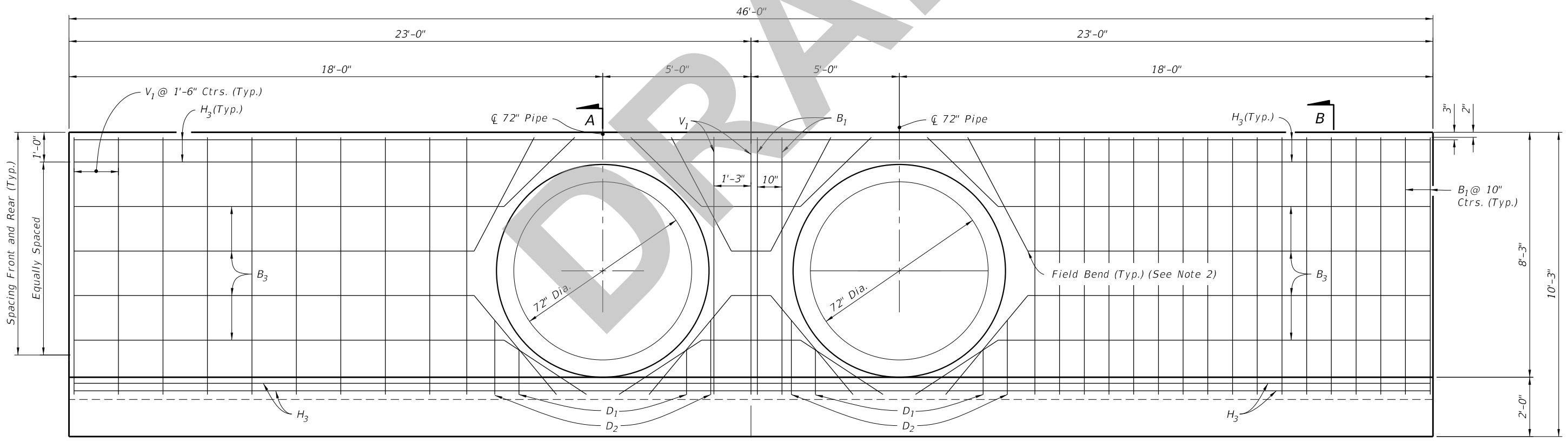
MARK	SIZE	NO. REQD.	LENGTH
H <sub>2</sub>	5	85	4'-11"
H <sub>3</sub>	4	9	45'-8"
V <sub>1</sub>	4	23	8'-7"
B <sub>1</sub>	5	38	10'-5"
B <sub>3</sub>	4	8	45'-8"
D <sub>1</sub>	4	8	2'-6"
D <sub>2</sub>	4	8	1'-6"

- NOTES:**
- 2" clearance on all reinforcement, unless otherwise shown.
  - Cut and bend B<sub>3</sub> Bars as shown.
  - All bar dimensions are out to out.

- LEGEND:**
- H = Horizontal Bars
  - V = Vertical Bars
  - B = Bent Bars
  - D = Dowels or Diagonal Bars



**PLAN**  
(Showing Bars In Footing)



**HALF ELEVATION**  
(Showing Bars in Front Face of Wall)

**HALF ELEVATION**  
(Showing Bars in Back Face of Wall)

**DOUBLE 72" PIPE ENDWALL DETAILS**

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LAST REVISION	DESCRIPTION:
11/01/19	


**FY 2020-21  
STANDARD PLANS**

**STRAIGHT CONCRETE ENDWALLS  
SINGLE AND DOUBLE 72" PIPE**

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