FOR: Cleveland RFI 230	JOB NO: 49633	SHEET NO:
MADE BY: LER	CHECKED BY: KDG	BACKCHECKED BY:
DATE: 2/1/12	DATE: 2/2/12	DATE:

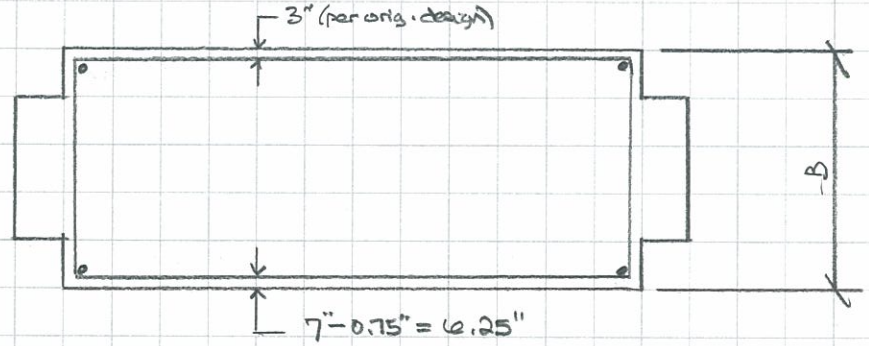
HNTB

Issue: Column bars 3PF1101 along one 15'-4" face of Ramp A5 Pier 3 column have been set out of place. The line of bars has been set 7" clear from the face of the column. Per RFC plans, the clear distance to the #11 bars should be 4½". The 3PF1101 bars on the opposite side were placed correctly.

(1) Evaluate impact to column design.

(2) Develop reinforcing detail to be used between impacted bars and face of column for T&S.

(1) Modify PIER model for reduced cage width (increased cover) to #11 long. bars at one face.



B = width for input into PIER for column steel layout

$= 60" - 3" - 6.25" - 2(0.75") + 2(3.75")$

$= 56.75"$

$= 4.7292'$

See attached excerpt from PIER Output.

New design ratio = 1.41 (reduced from 1.46 per RFI 00199).

ME-101-1204

FOR: Cleveland RFI 130	JOB NO: 49633	SHEET NO:
MADE BY: LEP	CHECKED BY: KDG	BACKCHECKED BY:
DATE: 2/1/12	DATE: 2/2/12	DATE:

HNTB

(2) Additional Steel Detail

Provide additional steel at outside face for T&S.

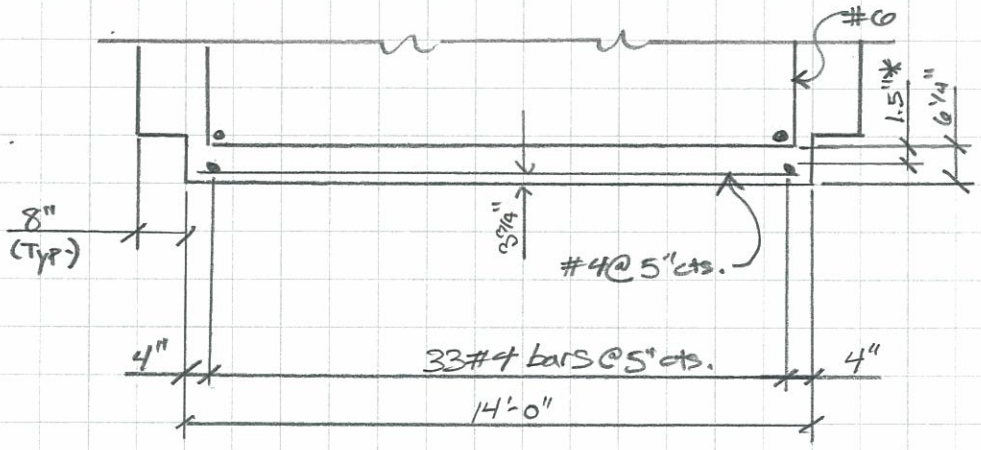
$$A_s \geq \frac{1.3\,bh}{2(b+h)f_y} \qquad (in^2/ft)$$

$$0.11 \leq A_s \leq 0.60$$

$b = 60''$
$h = 14' \rightarrow 168''$

$$A_s \geq \frac{1.3\,(60)(168)}{2(60+168)60} = 0.48\ in^2/ft$$

Use #5 @ 7" $\Rightarrow$ 0.53 in^2/ft
OR #4 @ 5" $\Rightarrow$ 0.48 in^2/ft



* min. bar spacing = 1.5".

ME-101:1204

----- COLUMN DESIGN RESULTS -----

AXIAL-FLEXURAL INTERACTION DATA:
Notes: Applied moment data is not magnified.
Load Ratio = Moment Capacity / (Applied Moment * Mag. Factor) unless otherwise specified.

					APPLIED LOADS					AXIAL-FLEXURAL INTERACTION				
COL NO.	ELEV. (ft)	LOCATION	AASHTO LIMIT STATE	LOAD CASE	LRFD AXIAL (kips)	LRFD MOM-L (ft-k)	MAG. FACTOR	LRFD MOM-T (ft-k)	MAG. FACTOR	CAP. MOM-L (ft-k)	CAP. MOM-T (ft-k)	AREA PROV. (sq-in)	LOAD RATIO	NG
1	662.00	BOT	STR I	242	6137	13767	1.08	8575	1.00	20915	12108	112.00	1.41	
			STIII	594	4852	-10700	1.06	6395	1.00	-19536	11024	112.00	1.72	
			STRIV	740	5631	12223	1.07	1300	1.00	22273	2216	112.00	1.70	
			STR V	4012	5843	-13040	1.07	9494	1.00	-20242	13746	112.00	1.45	
1	666.53	1/4B	STR I	242	6060	11239	1.07	8575	1.00	20345	14441	112.00	1.68	
			STIII	593	4543	-8179	1.06	8371	1.00	-18006	17466	112.00	2.09	
			STRIV	740	5539	9975	1.07	1300	1.00	22048	2691	112.00	2.07	
			STR V	4012	5766	-10646	1.07	9141	1.00	-19737	15822	112.00	1.73	
1	671.06	1/2	STR I	242	5983	8712	1.07	8575	1.00	19547	17916	112.00	2.09	
			STIII	593	4467	-6338	1.05	7494	1.00	-17536	19668	112.00	2.62	
			STRIV	740	5447	7728	1.07	1300	1.00	21771	3434	112.00	2.64	
			STR V	4012	5690	-8252	1.07	8789	1.00	-19029	18942	112.00	2.16	
1	675.59	1/4T	STR I	242	5907	6185	1.07	8575	1.00	18299	23648	112.00	2.76	
			STIII	593	4390	-4498	1.05	6623	1.00	-16797	23486	112.00	3.55	
			STRIV	740	5355	5480	1.07	1300	1.00	21385	4762	112.00	3.66	
			STR V	4012	5613	-5857	1.07	8439	1.00	-17919	24149	112.00	2.86	
1	680.12	TOP	STR I	142	5316	-3328	1.07	10214	1.00	-14347	41339	112.00	4.05	
			STIII	593	4313	-2658	1.05	5759	1.00	-15345	31605	112.00	5.49	
			STRIV	740	5263	3233	1.06	1300	1.00	20676	7814	112.00	4.90j	
			STR V	4014	5140	-3209	1.06	9355	1.00	-14522	39828	112.00	4.26	

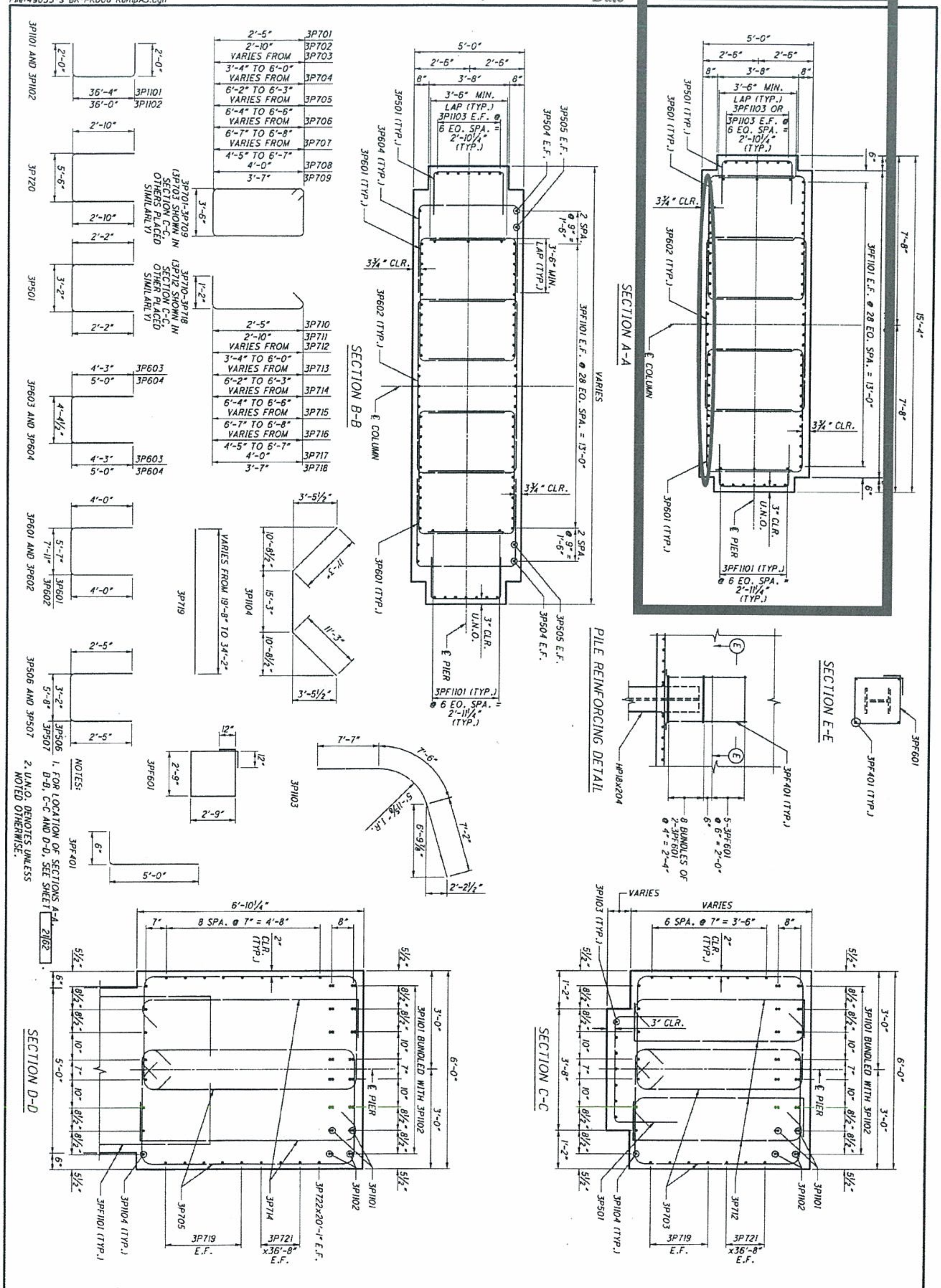
Independ[illegible] Design Quality Manager

Released For Construction

AUG 1 8 2011

Name Date

Date: 8/12/2011
Model: Sheet1
File: 49633-S-BR-PRD06-RampA5.dgn



SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
SECTION E-E
PILE REINFORCING DETAIL
3P1101 AND 3P1102
3P720
3P501
3P603 AND 3P604
3P601 AND 3P602
3P506 AND 3P507
3P1104
3P719
3P1103
3PF601
3PF401
3P1101 BUNDLED WITH 3P1102
HP18x204
VARIES FROM 19'-8" TO 34'-2"
3P701-3P709 (3P703 SHOWN IN SECTION C-C, OTHERS PLACED SIMILARLY)
3P710-3P718 (3P712 SHOWN IN SECTION C-C, OTHERS PLACED SIMILARLY)
NOTES:
1. FOR LOCATION OF SECTIONS A-A, B-B, C-C AND D-D, SEE SHEET 21/62.
2. U.N.O. DENOTES UNLESS NOTED OTHERWISE.

DESIGNED	DRAWN	REVIEWED	DATE					NO.	REVISIONS	DATE
AEC	DAL	HRH	08/12/11	BRIDGE RAMP A5	INNERBELT BRIDGE	WALSH CONSTRUCTION	HNTB	A	INTERIM SUBMITTAL	03/30/11
CHECKED DHE	CHECKED RJH	STRUCTURE FILE NUMBER 1809431						B	FINAL SUBMITTAL	06/08/11
	22/62	CUY-90-14.90 PID No. 77332/85531		PIER 3 DETAILS BRIDGE NO. CUY-90-1532 I-90 RAMP A5				1	APPROVED FOR CONSTRUCTION	08/12/11