HNTB	The HNTB Companies Engineers Architects Planners	Made	KDG	Date	11/29/2011	Job Number	49633
		Checked	LER	Date	11/29/2011		
For	**Cleveland Innerbelt**	Backchk'd	KDG	Date	11/29/2011	Sheet No.	

Abutment Modification - Pile Layout

The contractor has requested a modification to the pile layout to remove the pile stagger in the remaining piles to be driven for the Unit 3 Forward Abutment.

Six pile on the left side of the Abutment have already been driven with a stagger between rows. See the attached design sketch for the proposed Pile Layout.

The current abutment design ignored the stagger of the pile. Since the number of pile in each row remains the same the number of pile per unit length of the abutment does not change from the current design, therefore no change is required to the pile load or estimated pile length.

The pile spacing was increased in one place.

Check footing reinforcing for adequacy between this larger pile spacing.

Form Abutment Design:

Abut DL =	11.25	k/ft
A.S. DL =	4.74	k/ft
Max Girder DL=	284.1	k
LL Girder Truck=	83.7	k
LL Girder Lane=	54.7	k
Girder Spacing=	11.5	ft

Girder DL= 284.1 / 11.5 = 24.70 k/ft

LL (+Impact) = (83.7*1.33+54.7) / 11.5
= 14.44 k/ft

Girder loads are conservitivly assumed as distributed loads since no girder reactions are located between the piles that are spaced at 7.5'.

Pile Spacing = 7.5 ft

M=w*L^2/8

w = 1.25*(11.25+4.74+24.7) + 1.75*(14.44)
= 76.13 k/ft

Mu = 76.13* 7.5^2 /8 = 535.29 k*ft

phi*Mn = 770.8 (from Design Calc.)

OK

UNIT 3 FWD: ABUT. 49633

EDG 11-29-11
LER 11/29/11
EDG 11-29-11