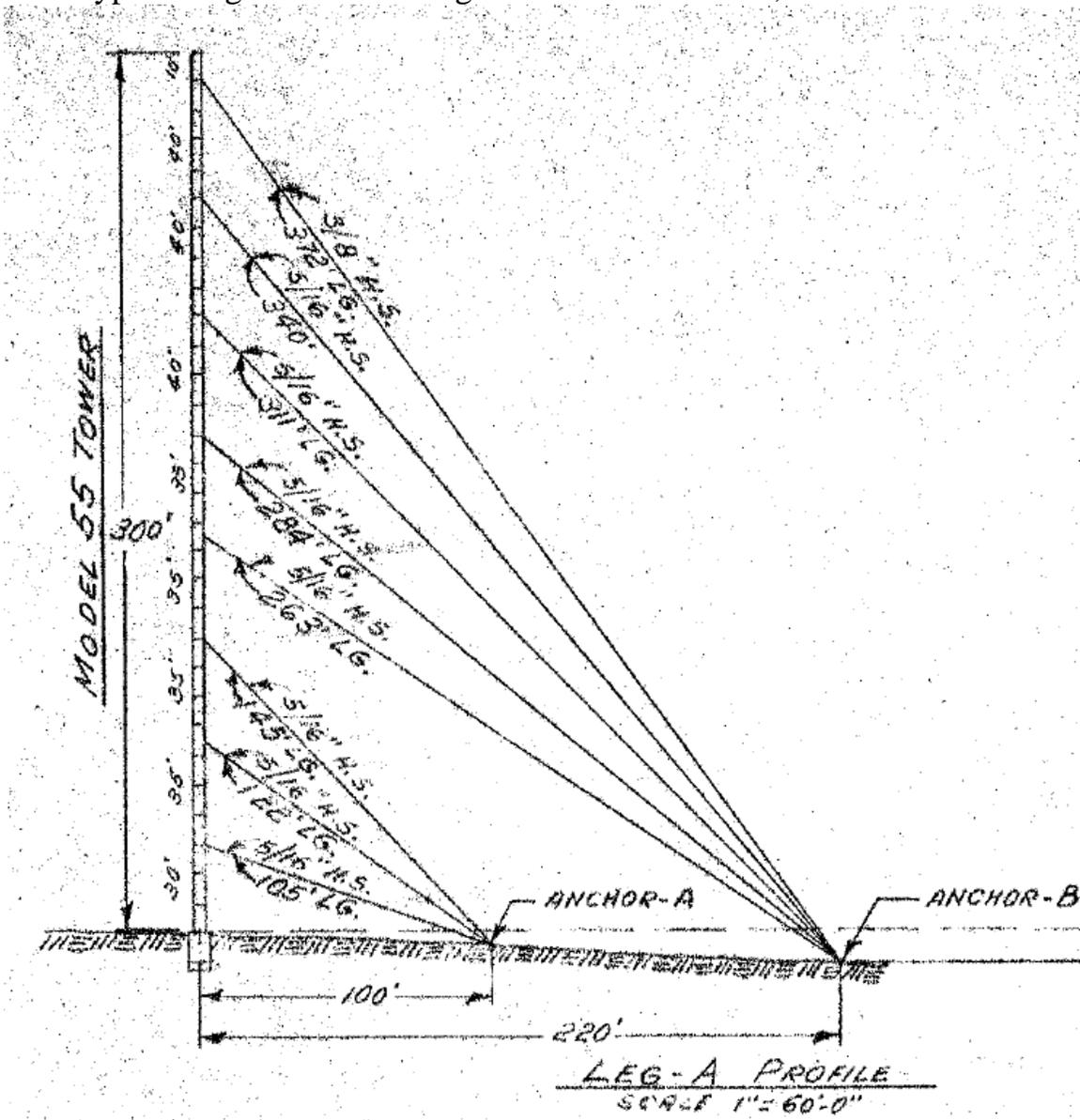
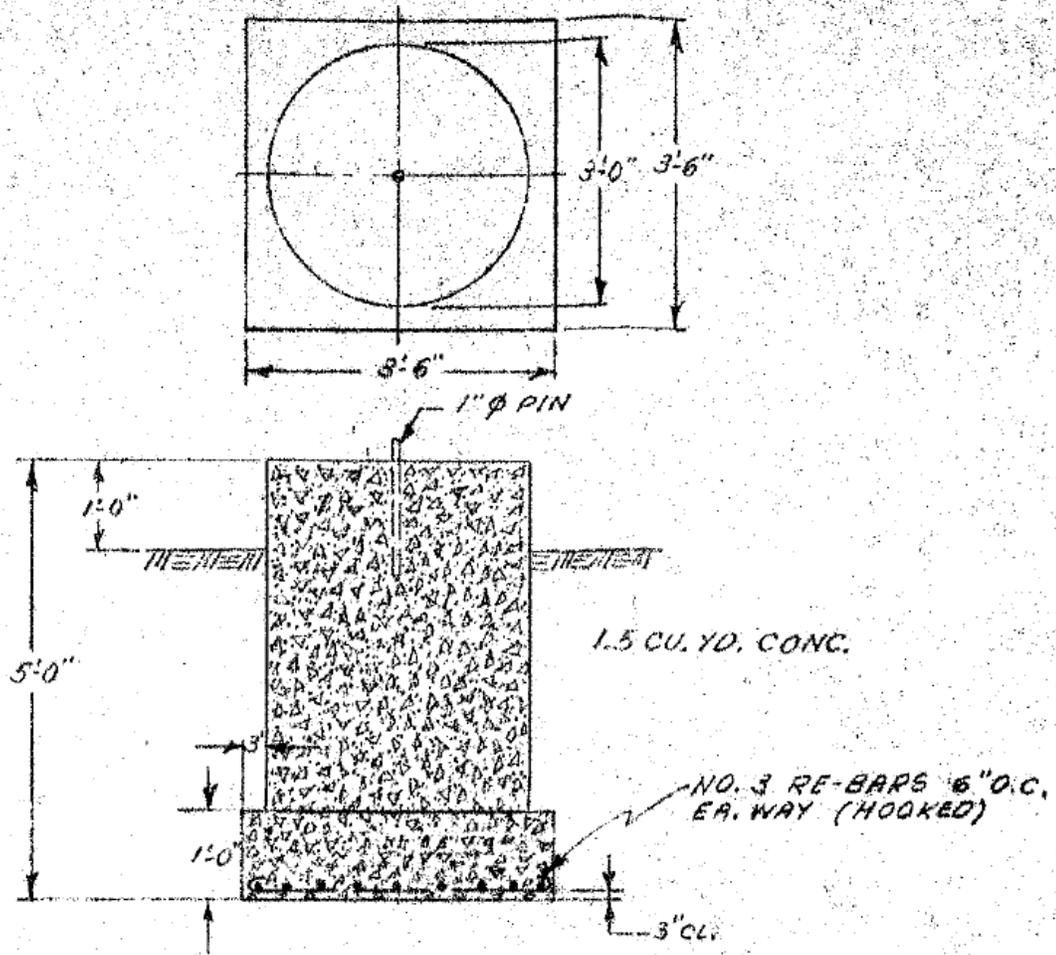


Existing Mack's Creek Tower Base Pier and Anchor Data

Typical Leg Profile showing location of Base Pier, Anchors A & B

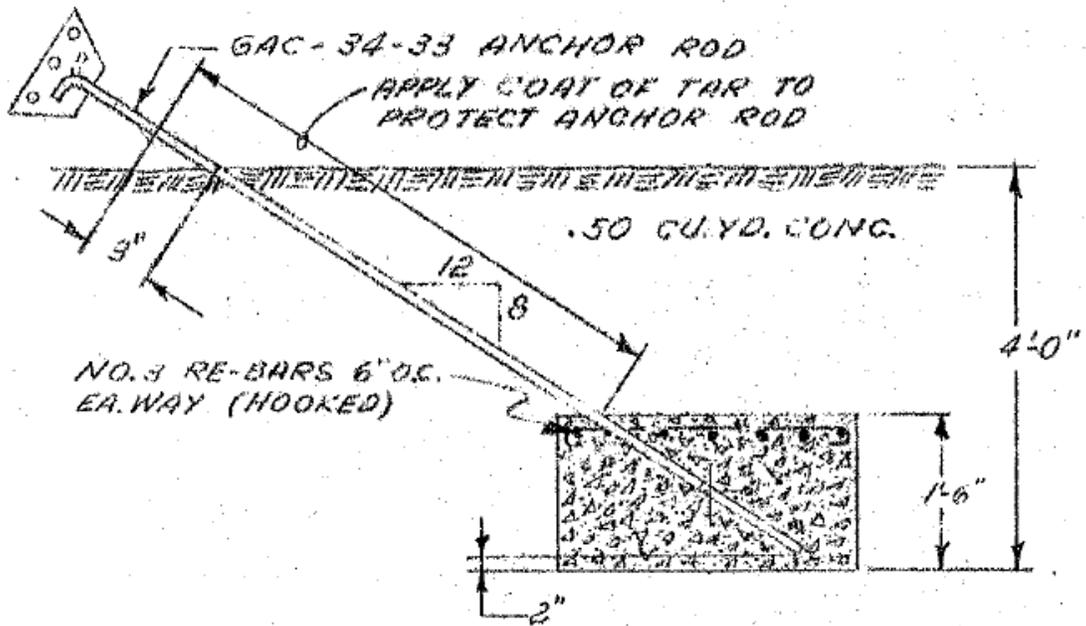
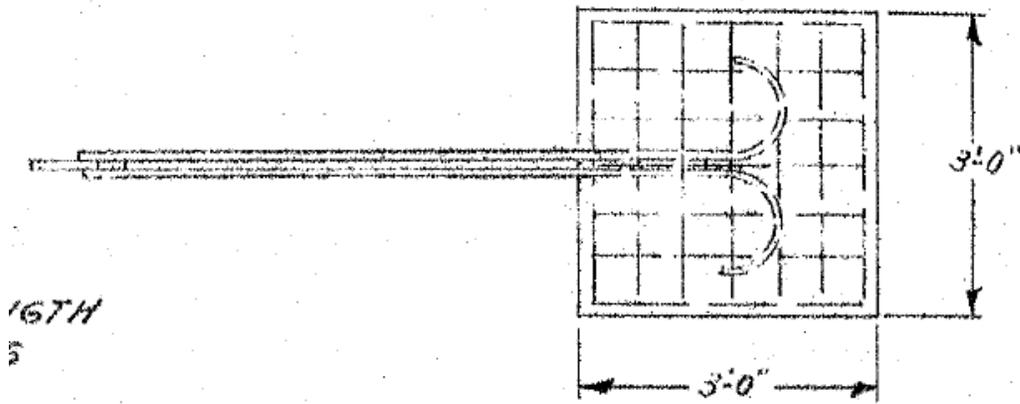


Base Pier Diagram



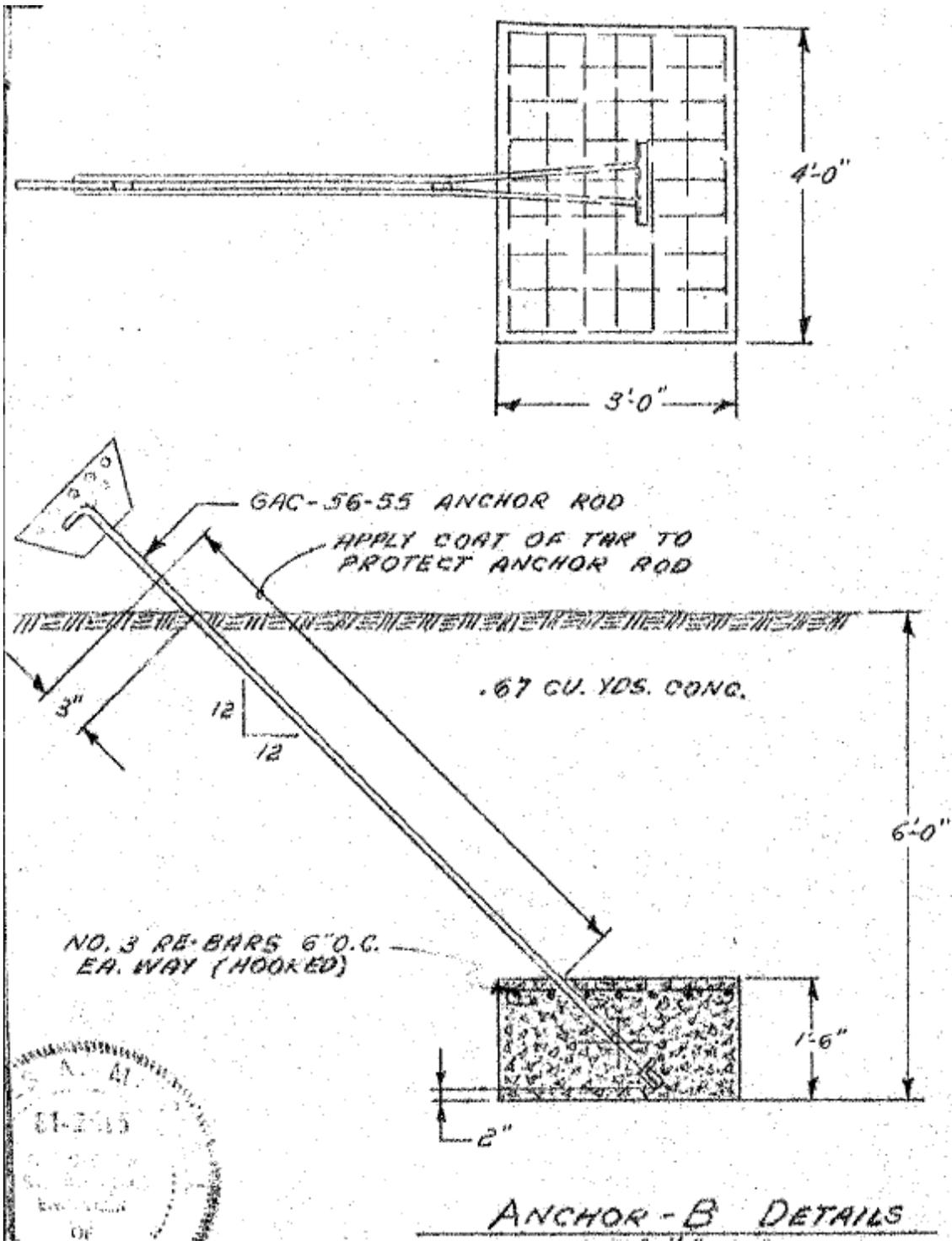
BASE PIER DATA
SCALE 1/2"=1'-0"

Anchor A Diagram



ANCHOR-A DETAILS

Anchor B Diagram



FTB 324

Medium Intensity Dual Xenon Lighting System with Eagle

Application

The FTB 324 is an FAA L865/L864 system that includes a white xenon flashing light for day, a red xenon flashing light for night and (3) LED markers to create an FAA tower type E1 or E2 for structures between 200' and 500' AGL..

Features/Benefits

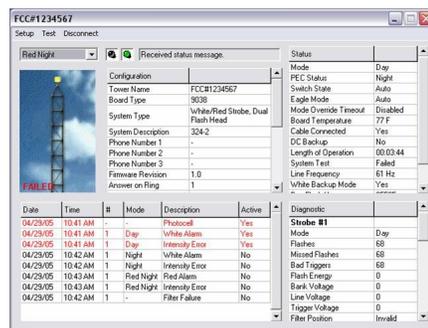
- ◆ ARM™ – Advanced Relay Monitoring – (8) dry contact data points
- ◆ Data available for compliance with QLI waiver
- ◆ Automatic fail safe to day mode and notification if system has not changed modes in 19 hours
- ◆ Fresnel optics minimizes light scatter
- ◆ (12) LED indicators to convey operating status
- ◆ (2) Year parts warranty on all Xenon system components including tubes
- ◆ (5) Year warranty on LED marker fixtures
- ◆ RS485 bus for plug and play install to Flash FTW Series Monitoring Systems
- ◆ L-810 LED marker kit design eliminates conduit
- ◆ Flash brand FREP power cable
- ◆ NEMA 4X outdoor rated stainless steel enclosure
- ◆ Accommodates 120-240 VAC 50/60 Hz
- ◆ 24/7/365 Monitoring & Call Center services
- ◆ Wireless synchronization available
- ◆ TIA-222 certified for all mounting hardware
- ◆ Listed on the FAA [Buy American Act](#) registry



Eagle 1.0 User Interface

The TechEagle interface via laptop provides on-site:

- ◆ Alarm Notification
- ◆ Diagnostics
- ◆ Programming



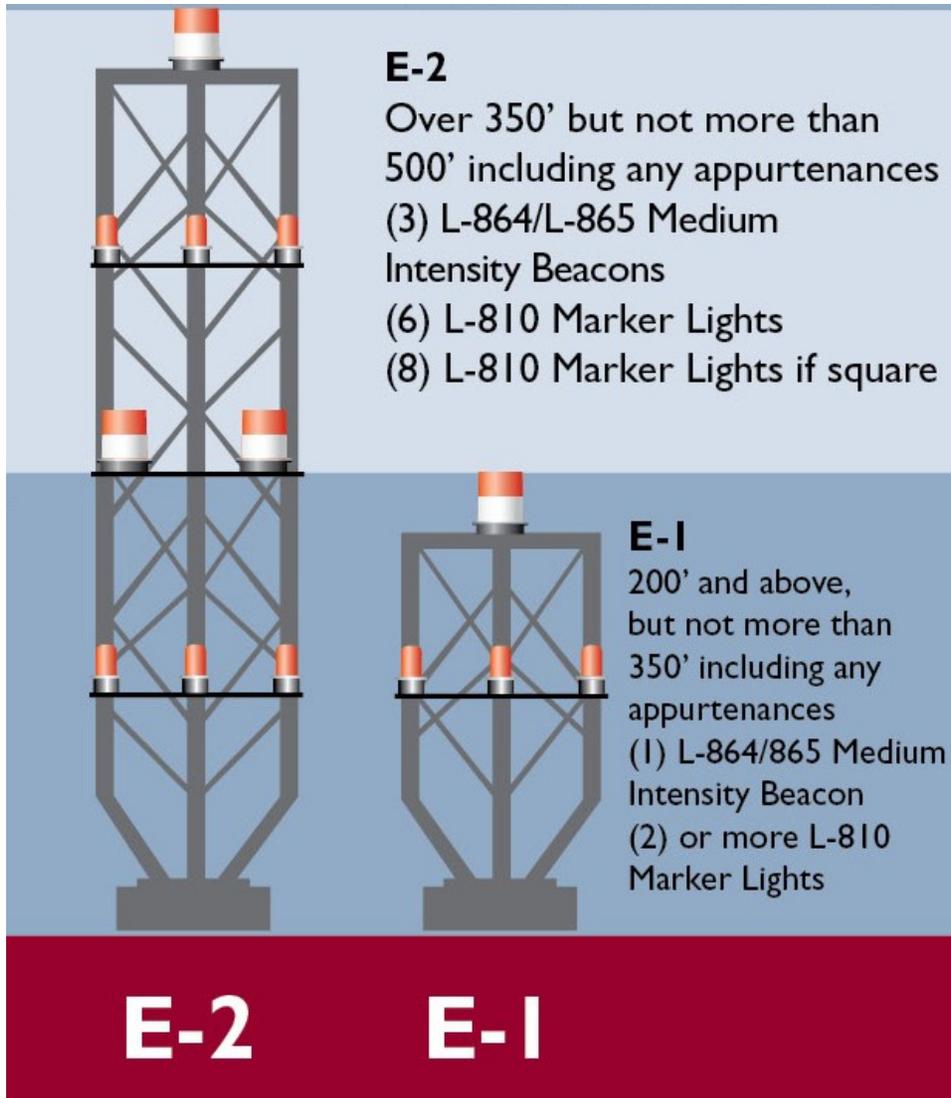
Power Consumption

- ◆ 130w—White Day
- ◆ 145w—Red Night
- ◆ 55w—White Night Backup
- ◆ 6.8w—Per LED Marker

FTB 324

Medium Intensity Dual Xenon Lighting System with Eagle

Diagram from FAA Advisory Circular AC 70/7460-1K Change 2, A1-18. The FAA determination of no hazard for these towers are: Chapters 2, 4, 8



These guidelines are for reference only. Please contact Flash for specific questions regarding obstruction marking.



MEMORANDUM

Missouri Department of Transportation Construction - Materials Central Laboratory

TO: Dave Silvester-cd/ao

CC/ATT: Kevin Eggemeyer-cd/ts

FROM: Easaw Thomas *ET*
Senior Geotechnical Specialist

DATE: August 1, 2012

SUBJECT: Materials
Geotechnical Section
Foundation Investigation for
Radio Tower
Job No. R35G-1962
Route 54, Camden County

Attached are boring logs for proposed Radio Tower in Camden County on Route 54.

The values in the following table may be used for drilled shaft design at this site.

Tower	Elevation, ft. From - To	Unit Wt., pcf	Nominal Side Resistance, ksf	Resistance Factor	Nominal Tip Resistance, ksf	Resistance Factor	Undrained Shear Strength, S _u , ksf	Strain, ε ₅₀	Lateral Subgrade Modulus, k _t , pci
1	1074 – 1060	120	1.2	0.52	21.3*	0.30	2.5	0.005	550
	1060 – 1045	140	14.0	0.44	50.0	0.26	--	--	--

- The use of permanent casing is not anticipated
- * Nominal Tip Resistance value based on assumed drilled shaft depth to width ratio of 2.0.

cs
j:\sublec\leasaw\cd\rte 54 camden radio tower ltr.doc
Attachments

**Missouri Department of Transportation
Construction and Materials**

BORING NO. H-12-12
Page 1 of 2

Job No.: R35G-1962
 Design: _____
 Bent: _____
 Station: North Tower
 Offset: _____
 Elevation: 1079.7
 Requested Station: _____
 Requested Offset: _____
 Requested Elevation: _____
 Drill No.: G-7888

County: Camden
 Skew: _____
 Logged By: Easaw Thomas
 Northing: 780053.2
 Easting: 1526937.9
 Requested Northing: _____
 Requested Easting: _____
 Location Note: _____

Route: 54
 Location: _____
 Operator: Michael Donahoe
 Date of Work: 06/11/12-06/12/12
 Depth to Water: 21.1
 Depth Hole Open: 24.6
 Time Change: 24 hours
 Equipment: Failing 1500 Split-Spoon Sampler, NX
 Hammer Efficiency: 80%
 Drilling Method: Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N ₆₀)	Shear Strength Data	Field Tests	Index Tests
0		0-1.1' Brown, LEAN CLAY, medium stiff, moist							
1.1		1.1-18.2' Reddish brown, FAT CLAY scattered gravel, very stiff, moist, and cobbles							
5			1075	X	53	11-9-7 (21)		PP = 3.50 tsf	MC = 15.5%
10			1070	X	53	28-9-6 (20)		PP = 3.75 tsf	
15			1065	X	80	4-4-4 (11)		PP = 3.00 tsf	MC = 43.3% LL = 79 PL = 36
18.2		18.2-41' Dolomite, light gray, thin bedded, medium hard, moderately weathered, medium grained, cherty, intermittent reddish brown fat clay layers.	1060	X	67	4-19-14 (44)		PP = 2.50 tsf	
20				X	120	2-38/0.1'		PP = 0.25 tsf	
25			1055						
30			1050						
35		33.8-41' Rock bit due to heavy cherty dolomite.	1045						

LETTER BOREHOLE - MODOT_07-29-11.GDT - 8/2/12 13:21 - J:\SG\GINT\PROJECT FILES\R35G-1962.GPJ

$N_{60} = (Em/60)N_m$ N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
 (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 Coordinate Zone: Missouri Central Coordinate Proj. Factor: _____
 Coordinate Datum: NAD 83 (CONUS) Coordinate Units: U.S. Survey Feet

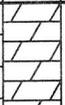
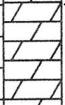
* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

**Missouri Department of Transportation
Construction and Materials**

Job No.: R35G-1962
 Design: _____
 Bent: _____
 Station: North Tower
 Offset: _____
 Elevation: 1079.7
 Requested Station: _____
 Requested Offset: _____
 Requested Elevation: _____
 Drill No.: G-7888

County: Camden
 Skew: _____
 Logged By: Easaw Thomas
 Northing: 780053.2
 Easting: 1526937.9
 Requested Northing: _____
 Requested Easting: _____
 Equipment: Failing 1500 Split-Spoon Sampler, NX
 Location Note: _____
 Hammer Efficiency: 80%

Route: 54
 Location: _____
 Operator: Michael Donahoe
 Date of Work: 06/11/12-06/12/12
 Depth to Water: 21.1
 Depth Hole Open: 24.6
 Time Change: 24 hours
 Drilling Method: Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N ₆₀)	Shear Strength Data	Field Tests	Index Tests
40		18.2-41' Dolomite, light gray, thin bedded, medium hard, moderately weathered, medium grained, cherty, intermittent reddish brown fat clay layers. (continued)	1040						
45		41-51' Dolomite, light gray, thin bedded, medium hard, slightly weathered, medium grained, scattered cherty layers	1035		100 (0)				
50			1030		82 (8)		Qu Test Results UCS = 729.22 ksf MC = 0% γ _{moist} = 162 pcf		
		Bottom of borehole at 51.0 feet.							

LETTER BOREHOLE - MODDOT_07-29-11.GDT - 8/2/12 13:21 - J:\SIG\INT\PROJECT FILES\R35G-1962.GPJ

N₆₀ = (Em/60)N_m N₆₀ - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; N_m - Observed N-value
 (1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 Coordinate Zone: Missouri Central Coordinate Proj. Factor: _____
 Coordinate Datum: NAD 83 (CONUS) Coordinate Units: U.S. Survey Feet

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Missouri Department of Transportation
Construction and Materials

BORING NO. H-12-13
Page 1 of 2

Job No.: R35G-1962
Design: _____
Bent: _____
Station: East Tower
Offset: _____
Elevation: 1078.4
Requested Station: _____
Requested Offset: _____
Requested Elevation: _____
Drill No.: G-7888

County: Camden Route: 54
Skew: _____ Location: _____
Logged By: Easaw Thomas Operator: Michael Donahoe
Northing: 780038.7 Date of Work: 06/13/12-06/13/12
Easting: 1526979.7 Depth to Water: _____
Requested Northing: _____ Depth Hole Open: _____
Requested Easting: _____ Time Change: _____
Equipment: Failing 1500 Split-Spoon Sampler, NX
Location Note: _____
Hammer Efficiency: 80% Drilling Method: Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N ₆₀)	Shear Strength Data	Field Tests	Index Tests
0									
0-1'		Brown, LEAN CLAY, medium stiff, moist							
1-17.8'		Reddish brown, FAT CLAY scattered and cobbles, stiff to very stiff, moist	1075						
5				X	47	8-12-16 (37)		PP = 1.00 tsf	
10			1070						
				X	67	4-5-7 (16)		PP = 3.50 tsf	MC = 34.5% LL = 88 PL = 27
15			1065						
				X	150	38/0.3'			
20		17.8-34.6' Dolomite, light gray, thin bedded, medium hard, slightly weathered, medium grained, cherty, intermittent reddish brown fat clay layers	1060						
				X	53	7-11-7 (24)			
25			1055						
				X	80	11-29-14 (57)			
30			1050						
				X	120	38/0.4'			
35			1045						

LETTER BOREHOLE - MODOT_07-29-11.GDT - 8/2/12 13:21 - J:\SGGINT\PROJECT FILES\R35G-1962.GPJ

N₆₀ = (Em/60)Nm N₆₀ - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual

Coordinate System: U.S. State Plane 1983 Coordinate Zone: Missouri Central Coordinate Proj. Factor: _____
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Missouri Department of Transportation
Construction and Materials

Job No.: R35G-1962
 Design: _____
 Bent: _____
 Station: East Tower
 Offset: _____
 Elevation: 1078.4
 Requested Station: _____
 Requested Offset: _____
 Requested Elevation: _____
 Drill No.: G-7888

County: Camden Route: 54
 Skew: _____ Location: _____
 Logged By: Easaw Thomas Operator: Michael Donahoe
 Northing: 780038.7 Date of Work: 06/13/12-06/13/12
 Easting: 1526979.7 Depth to Water: _____
 Requested Northing: _____ Depth Hole Open: _____
 Requested Easting: _____ Time Change: _____
 Equipment: Failing 1500 Split-Spoon Sampler, NX
 Location Note: _____
 Hammer Efficiency: 80% Drilling Method: Mud Rotary

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N ₆₀)	Shear Strength Data	Field Tests	Index Tests
35		34.6-44.2' Dolomite, light gray, thin bedded, medium hard, slightly weathered, medium grained, scattered cherty layers (continued)	1040		94 (8)		Qu Test Results UCS = 1053.8 ksf MC = 0% γ _{moist} = 162.7 pcf		
40			1035		100 (12)				
		Bottom of borehole at 44.2 feet.							

LETTER BOREHOLE - MODOT_07-29-11.GDT - 8/2/12 13:21 - J:\SG\GINT\PROJECT FILES\R35G-1962.GPJ

$N_{60} = (E_m/60)N_m$ N_{60} - Corrected N value for standard 60% SPT efficiency; E_m - Measured hammer efficiency in percent; N_m - Observed N-value
 (1) = Assumed, (2) = Actual

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Missouri Department of Transportation
 1617 Mo. Blvd.
 Jefferson City, Mo. 65109

KEY TO SYMBOLS

CLIENT _____ PROJECT NAME Towers
 PROJECT NUMBER R35G-1962 PROJECT LOCATION _____

LITHOLOGIC SYMBOLS (Unified Soil Classification System)

-  CH: USCS High Plasticity Clay
-  CL: USCS Low Plasticity Clay
-  DOLOMITE: Dolomite

SAMPLER SYMBOLS

-  Rock Core Barrel
-  Split-Spoon Sampler

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

- | | |
|--------------------------------------|--|
| LL - LIQUID LIMIT (%) | TV - TORVANE |
| PI - PLASTIC INDEX (%) | PID - PHOTOIONIZATION DETECTOR |
| W - MOISTURE CONTENT (%) | UC - UNCONFINED COMPRESSION |
| DD - DRY DENSITY (PCF) | ppm - PARTS PER MILLION |
| NP - NON PLASTIC | |
| -200 - PERCENT PASSING NO. 200 SIEVE |  Water Level at Time
Drilling, or as Shown |
| PP - POCKET PENETROMETER (TSF) |  Water Level After 24
Hours, or as Shown |

KEY TO SYMBOLS - MISSOURI.DOT.GDT - 8/2/12 12:52 - J:\SG\INT\PROJECT FILES\R35G-1962.GPJ

**R356-1962, Camden County
North Tower**

Bore Hole No: H-12-12

Depth: 18.8' - 51.0'



R35G-1962- Camden County

East Tower

Bore Hole No: H-12-13

Depth: 34.9' - 44.2



Radio Tower, Route 54, Camden County



MoDOT Mack's Creek Tower Site



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