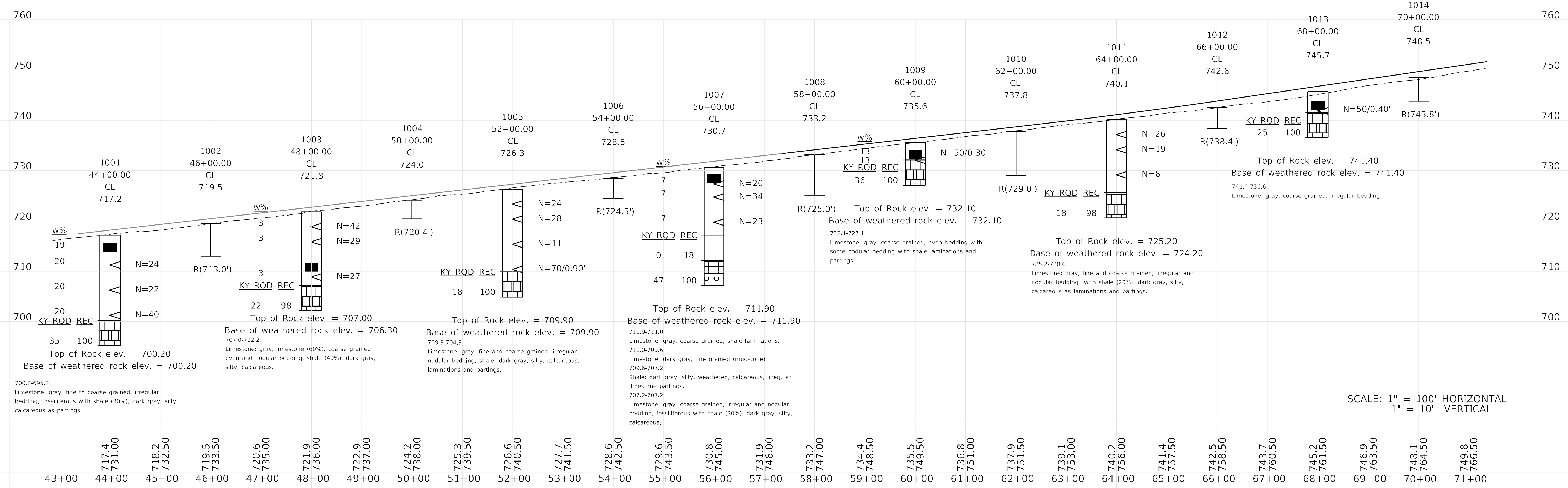
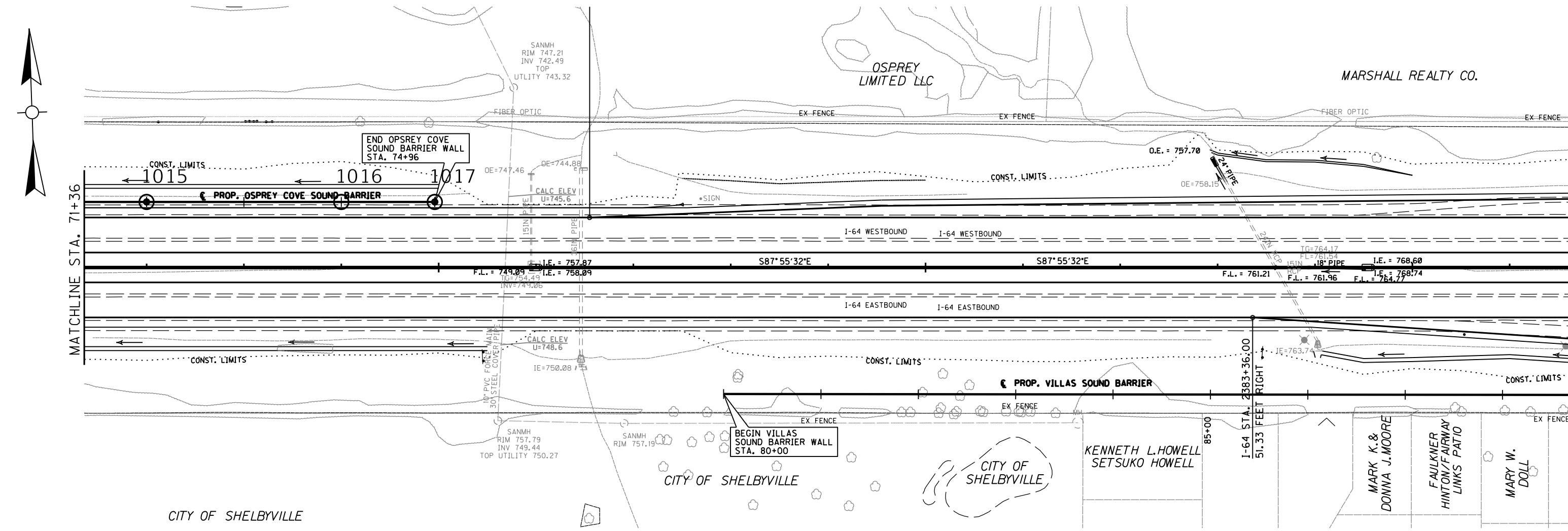


\*\*LABORATORY TEST RESULTS PENDING\*\*

\*\*LABORATORY TEST RESULTS PENDING\*\*

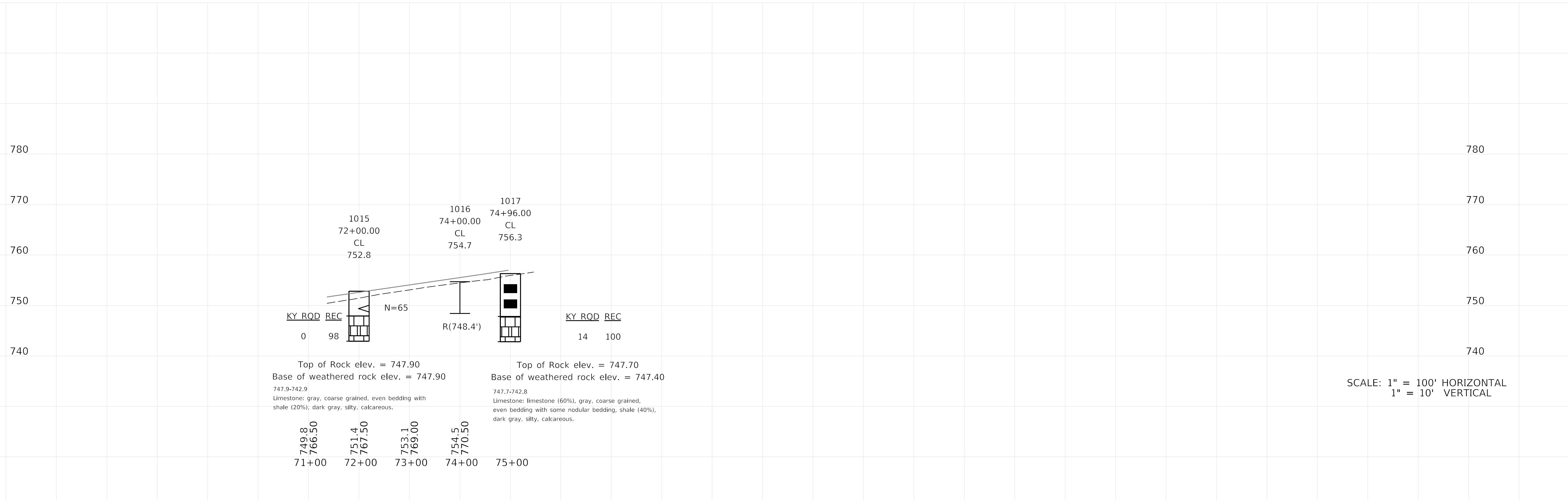


SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL



\*\*LABORATORY TEST RESULTS PENDING\*\*

\*\*LABORATORY TEST RESULTS PENDING\*\*



SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL



COMMONWEALTH OF KENTUCKY  
DEPARTMENT OF HIGHWAYS



REVISION	DATE

PREPARED BY  
Division of Structural Design  
Geotechnical Services Branch

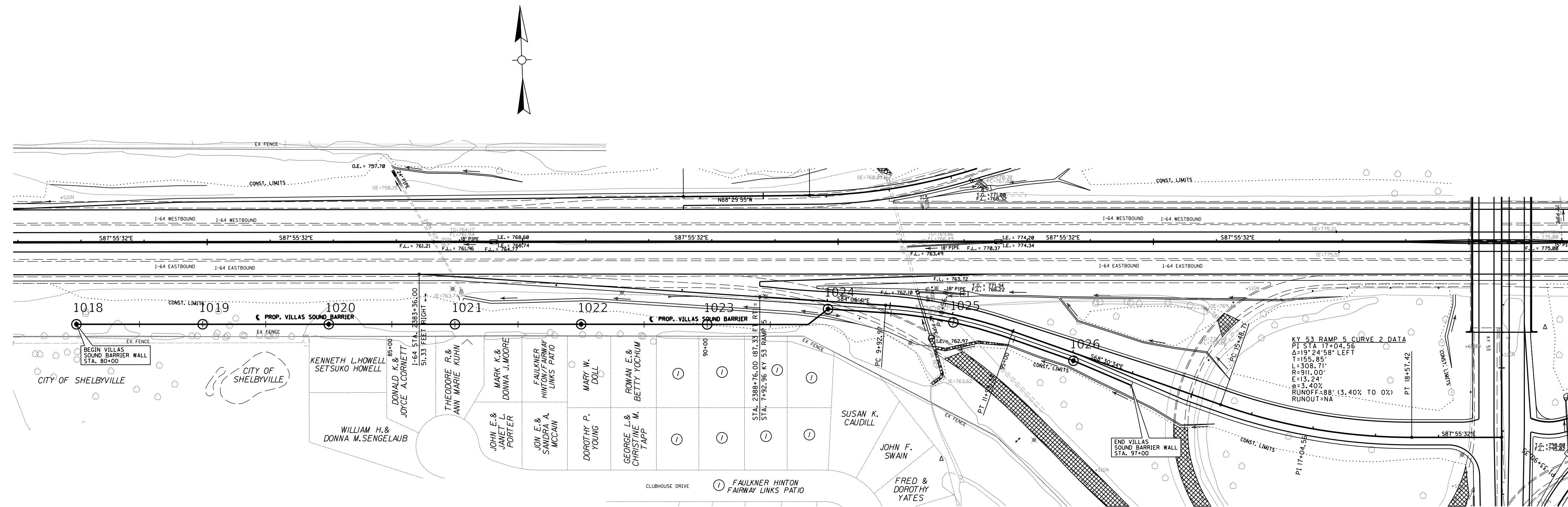
DATE:	CHECKED BY:
DESIGNED BY:	
DETAILED BY:	

STA 71+36 TO 74+96  
OSPREY COVE SOUND BARRIER PROFILE

ROUTE  
I 64

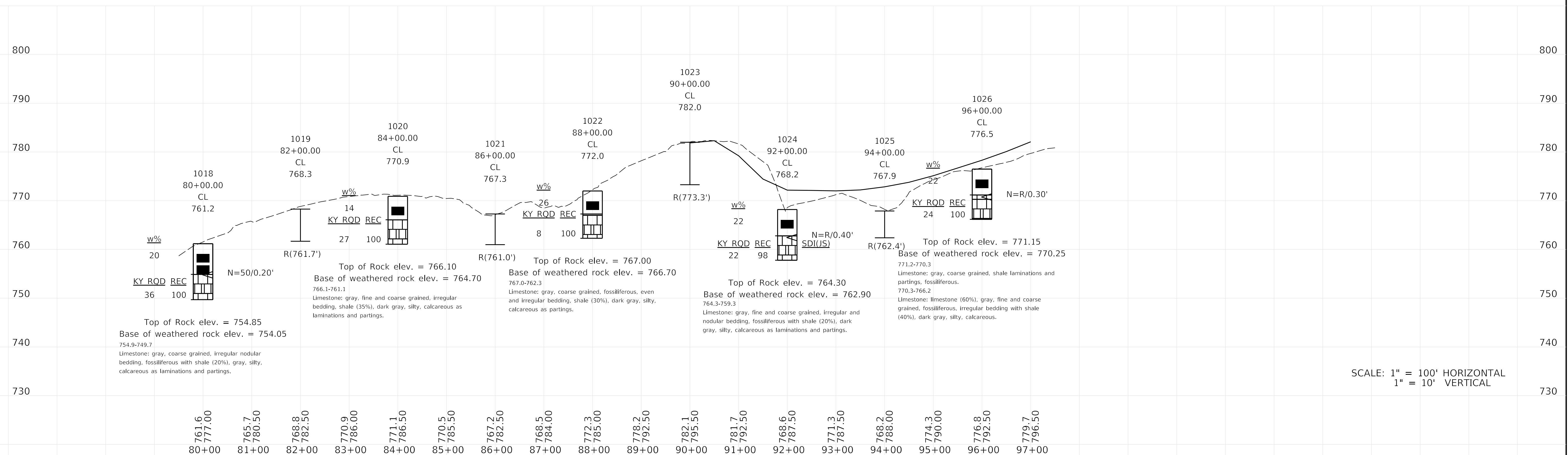
ITEM NO.  
05-0475.00  
SHEET NO.

COUNTY OF  
SHELBY  
DRAWING NUMBER  
S-069-2024



\*\*LABORATORY TEST RESULTS PENDING\*\*

\*\*LABORATORY TEST RESULTS PENDING\*\*



SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL



COMMONWEALTH OF KENTUCKY  
DEPARTMENT OF HIGHWAYS



REVISION	DATE

PREPARED BY  
Division of Structural Design  
Geotechnical Services Branch

DATE:  
DESIGNED BY:  
DETAILED BY:

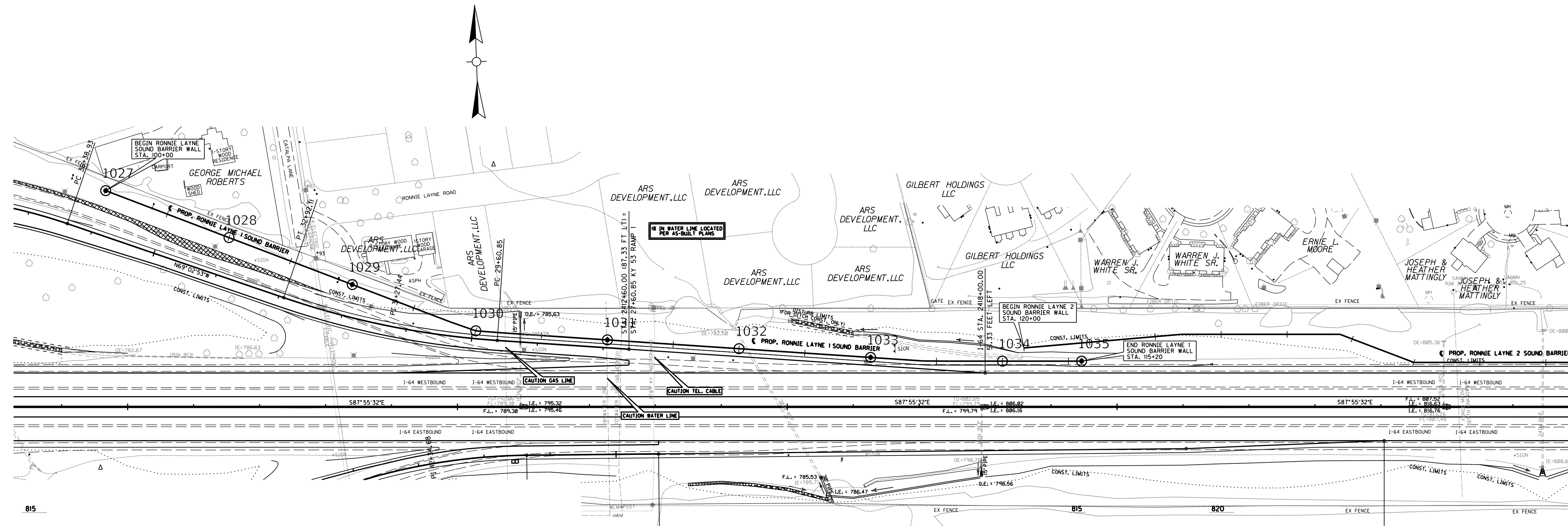
CHECKED BY:

STA 80+00 TO 97+00  
VILLAS SOUND BARRIER PROFILE

ROUTE  
I 64

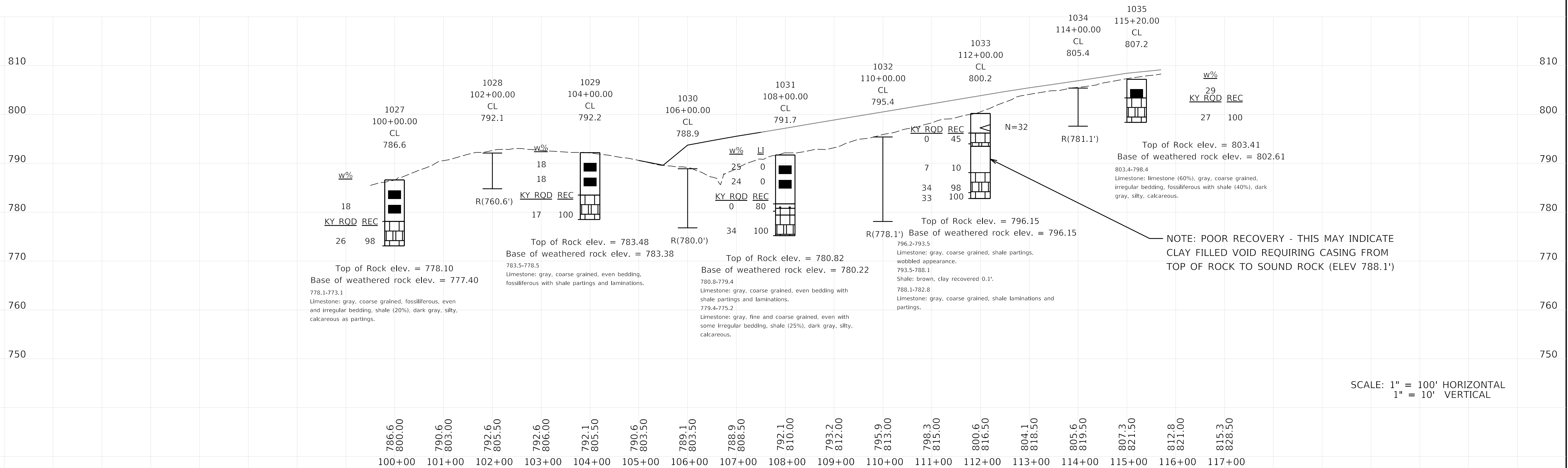
ITEM NO.  
05-0475.00  
SHEET NO.

COUNTY OF  
SHELBY  
DRAWING NUMBER  
S-070-2024



\*\*LABORATORY TEST RESULTS PENDING\*\*

\*\*LABORATORY TEST RESULTS PENDING\*\*



COMMONWEALTH OF KENTUCKY  
DEPARTMENT OF HIGHWAYS



REVISION	DATE

PREPARED BY  
Division of Structural Design  
Geotechnical Services Branch

DATE:	
DESIGNED BY:	
DETAILED BY:	

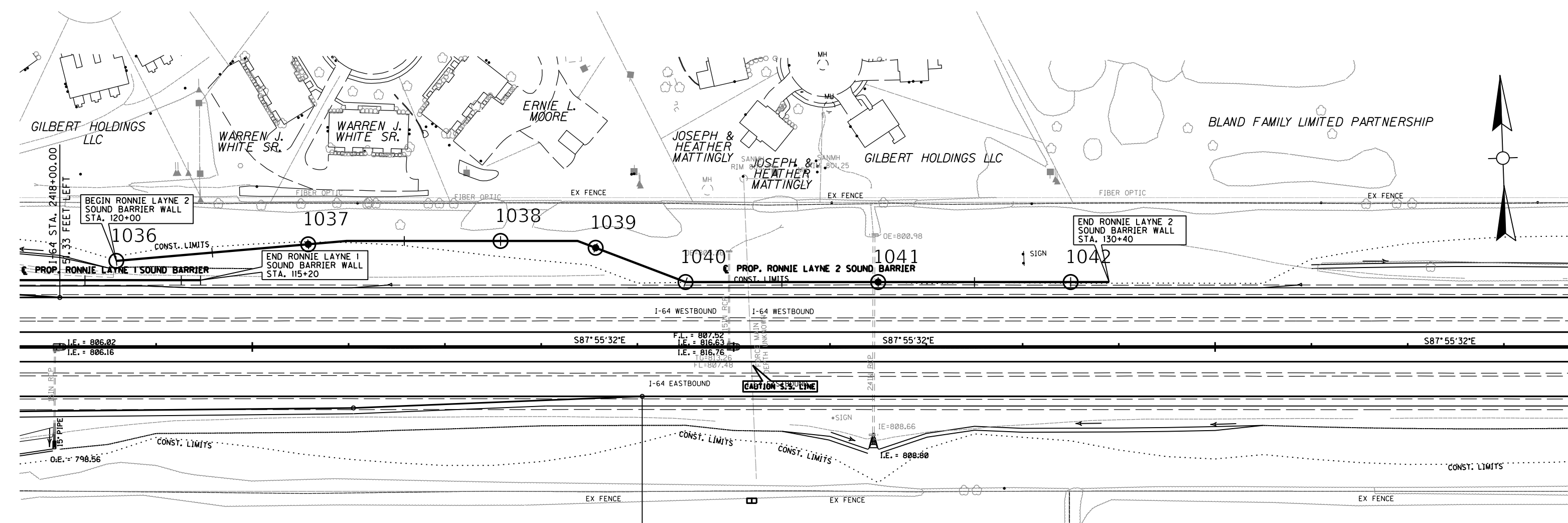
CHECKED BY:	
-------------	--

STA 100+00 TO 115+20  
RONNIE LAYNE 1 SOUND BARRIER PROFILE

ROUTE  
I 64

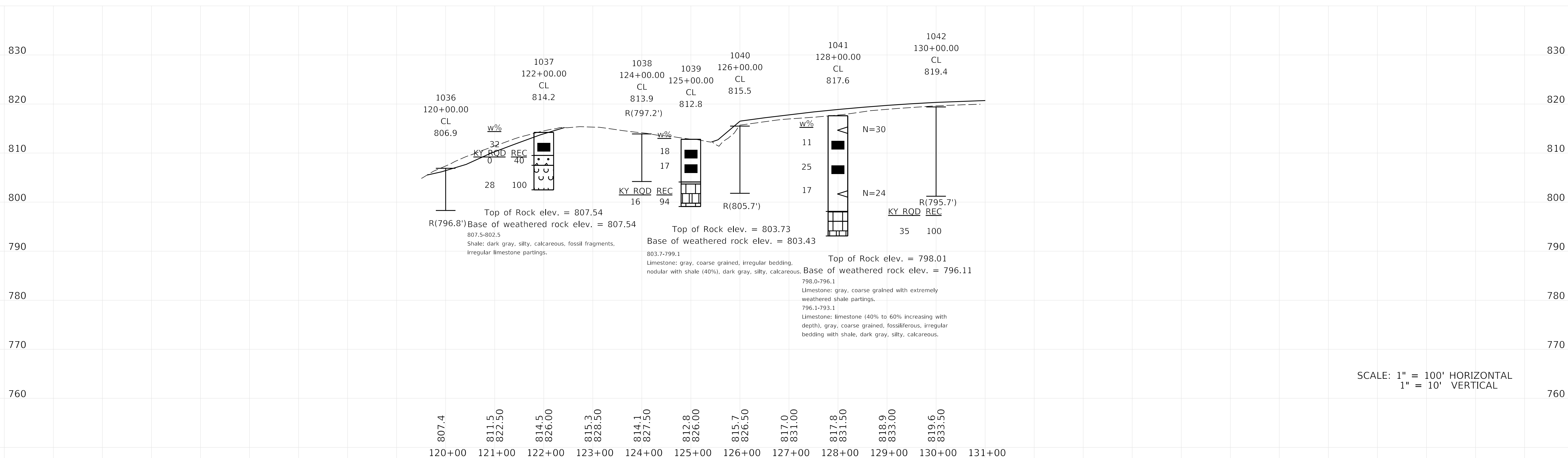
ITEM NO.  
05-0475.00  
SHEET NO.

COUNTY OF  
SHELBY  
DRAWING NUMBER  
S-071-2024



\*\*LABORATORY TEST RESULTS PENDING\*\*

\*\*LABORATORY TEST RESULTS PENDING\*\*



SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL



COMMONWEALTH OF KENTUCKY  
DEPARTMENT OF HIGHWAYS



REVISION	DATE

PREPARED BY  
Division of Structural Design  
Geotechnical Services Branch

DATE:	CHECKED BY:
DESIGNED BY:	
DETAILED BY:	

STA 120+00 TO 130+40  
RONNIE LAYNE 2 SOUND BARRIER PROFILE

ROUTE  
I 64

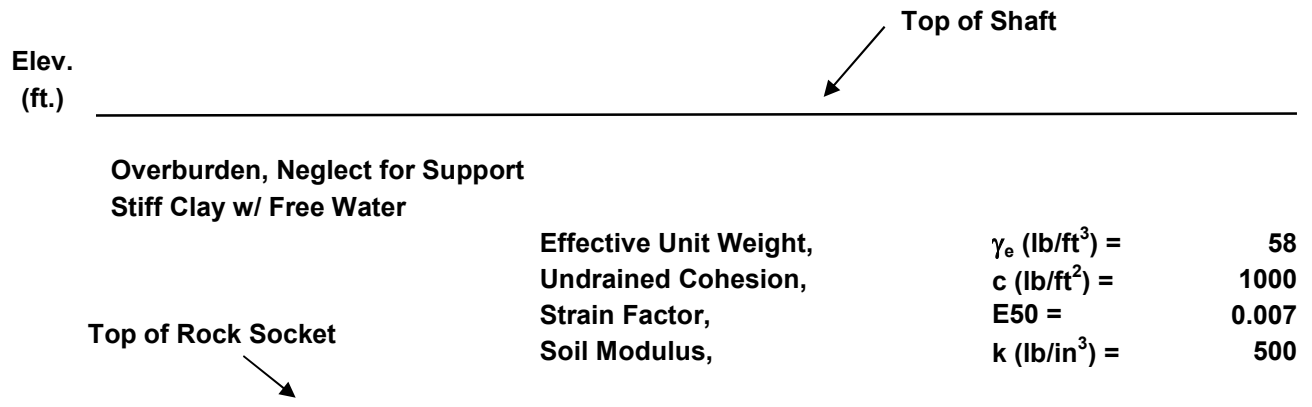
ITEM NO.  
05-0475.00  
SHEET NO.

COUNTY OF  
SHELBY  
DRAWING NUMBER  
S-071-2024

# IDEALIZED SOIL AND BEDROCK PROFILE

Shelby County, I 64 Item #05-0475.00  
Sound Barrier Walls

JCW 11/8/2024



Strata	Parameters for Lateral Load Analyses			
Limestone	Strong Rock (Vuggy Limestone)			
$\gamma_t$ (lb/ft <sup>3</sup> ) =	150	Effective Unit Weight,	$\gamma_e$ (lb/in <sup>3</sup> ) =	0.087
$q_u$ (psi) =	5000			
$q_{eb}$ (ksf) =	60	Uniaxial Compressive Strength,	$q_u$ (psi) =	5000
$f_s$ (ksf) =	32.7			
(Side friction limited by Concrete Strength to $f_s = 32.7$ ksf)				

---

Shaft Tip

\* Elevations vary and are provided in the report body.

**ADDITIONAL DATA FOR GEOTECHNICAL CALCULATIONS ONLY:**

min. $f'_c$ (psi) =	3500
$p_a$ (psi) =	14.7

# Load and Resistance Factor Design (LRFD)

## DRILLED SHAFT AXIAL RESISTANCE TABLE

Shelby County, I 64 Item #05-0475.00  
Sound Barrier Walls

Rock Socket Diameter = 2.5 feet

Rock Socket Diameter = 30 inches

JCW 11/8/2024

Rock Socket Length (ft.)	Nominal Unit Side Shear $q_{ss}$ (ksf)	Nominal Unit End Bearing $q_{eb}$ (ksf)	Nominal Side Resistance $R_{sr}$ (kips)	Nominal End Bearing Resistance $R_{eb}$ (kips)	Factored Side Resistance $\phi R_{sr}$ (kips)	Factored End Bearing Resistance $\phi R_{eb}$ (kips)	Total Factored Axial Resistance $\phi R_t$ (kips)	Total Factored Uplift Resistance $\phi R_{tu}$ (kips)	
0.0									
1.0	32.7	60	257	295	128	147	276	103	
2.0	32.7	60	513	295	257	147	404	205	
3.0	32.7	60	770	295	385	147	532	308	
4.0	32.7	60	1027	295	513	147	661	411	
>>> 5.0	32.7	60	1284	295	642	147	789	513	
6.0	32.7	60	1540	295	770	147	917	616	
7.0	32.7	60	1797	295	899	147	1046	719	
8.0	32.7	60	2054	295	1027	147	1174	822	
9.0	32.7	60	2311	295	1155	147	1303	924	
10.0	32.7	60	2567	295	1284	147	1431	1027	
11.0	32.7	60	2824	295	1412	147	1559	1130	
12.0	32.7	60	3081	295	1540	147	1688	1232	
13.0	32.7	60	3337	295	1669	147	1816	1335	
14.0	32.7	60	3594	295	1797	147	1944	1438	
15.0	32.7	60	3851	295	1925	147	2073	1540	
16.0	32.7	60	4108	295	2054	147	2201	1643	
17.0	32.7	60	4364	295	2182	147	2329	1746	
18.0	32.7	60	4621	295	2311	147	2458	1848	
19.0	32.7	60	4878	295	2439	147	2586	1951	
20.0	32.7	60	5135	295	2567	147	2715	2054	
AASHTO Table 10.5.5.2.4-1					Resistance Factor, $\phi$	0.50	0.50		0.40
>>> = Min. Socket Length							D (ft.) =	2.5	

# Load and Resistance Factor Design (LRFD)

## DRILLED SHAFT AXIAL RESISTANCE TABLE

Shelby County, I 64 Item #05-0475.00  
Sound Barrier Walls

Rock Socket Diameter = 3.0 feet

Rock Socket Diameter = 36 inches

JCW 11/8/2024

Rock Socket Length (ft.)	Nominal Unit Side Shear $q_{ss}$ (ksf)	Nominal Unit End Bearing $q_{eb}$ (ksf)	Nominal Side Resistance $R_{sr}$ (kips)	Nominal End Bearing Resistance $R_{eb}$ (kips)	Factored Side Resistance $\phi R_{sr}$ (kips)	Factored End Bearing Resistance $\phi R_{eb}$ (kips)	Total Factored Axial Resistance $\phi R_t$ (kips)	Total Factored Uplift Resistance $\phi R_{tu}$ (kips)
0.0								
1.0	32.7	60	308	424	154	212	366	123
2.0	32.7	60	616	424	308	212	520	246
3.0	32.7	60	924	424	462	212	674	370
4.0	32.7	60	1232	424	616	212	828	493
5.0	32.7	60	1540	424	770	212	982	616
>>>	6.0	60	1848	424	924	212	1136	739
7.0	32.7	60	2157	424	1078	212	1290	863
8.0	32.7	60	2465	424	1232	212	1444	986
9.0	32.7	60	2773	424	1386	212	1598	1109
10.0	32.7	60	3081	424	1540	212	1752	1232
11.0	32.7	60	3389	424	1694	212	1906	1356
12.0	32.7	60	3697	424	1848	212	2060	1479
13.0	32.7	60	4005	424	2002	212	2215	1602
14.0	32.7	60	4313	424	2157	212	2369	1725
15.0	32.7	60	4621	424	2311	212	2523	1848
16.0	32.7	60	4929	424	2465	212	2677	1972
17.0	32.7	60	5237	424	2619	212	2831	2095
18.0	32.7	60	5545	424	2773	212	2985	2218
19.0	32.7	60	5853	424	2927	212	3139	2341
20.0	32.7	60	6161	424	3081	212	3293	2465
AASHTO Table 10.5.5.2.4-1					Resistance Factor, $\phi$	0.50	0.50	0.40
>>> = Min. Socket Length							D (ft.) =	3.0



# Load and Resistance Factor Design (LRFD)

## DRILLED SHAFT AXIAL RESISTANCE TABLE

Shelby County, I 64 Item #05-0475.00  
Sound Barrier Walls

Rock Socket Diameter = 3.5 feet

Rock Socket Diameter = 42 inches

JCW 11/8/2024

Rock Socket Length (ft.)	Nominal Unit Side Shear $q_{ss}$ (ksf)	Nominal Unit End Bearing $q_{eb}$ (ksf)	Nominal Side Resistance $R_{sr}$ (kips)	Nominal End Bearing Resistance $R_{eb}$ (kips)	Factored Side Resistance $\phi R_{sr}$ (kips)	Factored End Bearing Resistance $\phi R_{eb}$ (kips)	Total Factored Axial Resistance $\phi R_t$ (kips)	Total Factored Uplift Resistance $\phi R_{tu}$ (kips)
0.0								
1.0	32.7	60	359	577	180	289	468	144
2.0	32.7	60	719	577	359	289	648	288
3.0	32.7	60	1078	577	539	289	828	431
4.0	32.7	60	1438	577	719	289	1007	575
5.0	32.7	60	1797	577	899	289	1187	719
6.0	32.7	60	2157	577	1078	289	1367	863
>>>	32.7	60	2516	577	1258	289	1547	1006
8.0	32.7	60	2875	577	1438	289	1726	1150
9.0	32.7	60	3235	577	1617	289	1906	1294
10.0	32.7	60	3594	577	1797	289	2086	1438
11.0	32.7	60	3954	577	1977	289	2265	1581
12.0	32.7	60	4313	577	2157	289	2445	1725
13.0	32.7	60	4672	577	2336	289	2625	1869
14.0	32.7	60	5032	577	2516	289	2805	2013
15.0	32.7	60	5391	577	2696	289	2984	2157
16.0	32.7	60	5751	577	2875	289	3164	2300
17.0	32.7	60	6110	577	3055	289	3344	2444
18.0	32.7	60	6470	577	3235	289	3523	2588
19.0	32.7	60	6829	577	3414	289	3703	2732
20.0	32.7	60	7188	577	3594	289	3883	2875
AASHTO Table 10.5.5.2.4-1					Resistance Factor, $\phi$			
					0.50	0.50		0.40
>>> = Min. Socket Length							D (ft.) =	3.5

# Load and Resistance Factor Design (LRFD)

## DRILLED SHAFT AXIAL RESISTANCE TABLE

Shelby County, I 64 Item #05-0475.00  
Sound Barrier Walls

Rock Socket Diameter = 4.0 feet

Rock Socket Diameter = 48 inches

JCW 11/8/2024

Rock Socket Length (ft.)	Nominal Unit Side Shear $q_{ss}$ (ksf)	Nominal Unit End Bearing $q_{eb}$ (ksf)	Nominal Side Resistance $R_{sr}$ (kips)	Nominal End Bearing Resistance $R_{eb}$ (kips)	Factored Side Resistance $\phi R_{sr}$ (kips)	Factored End Bearing Resistance $\phi R_{eb}$ (kips)	Total Factored Axial Resistance $\phi R_t$ (kips)	Total Factored Uplift Resistance $\phi R_{tu}$ (kips)	
0.0									
1.0	32.7	60	411	754	205	377	582	164	
2.0	32.7	60	822	754	411	377	788	329	
3.0	32.7	60	1232	754	616	377	993	493	
4.0	32.7	60	1643	754	822	377	1199	657	
5.0	32.7	60	2054	754	1027	377	1404	822	
6.0	32.7	60	2465	754	1232	377	1609	986	
7.0	32.7	60	2875	754	1438	377	1815	1150	
>>>	32.7	60	3286	754	1643	377	2020	1314	
9.0	32.7	60	3697	754	1848	377	2225	1479	
10.0	32.7	60	4108	754	2054	377	2431	1643	
11.0	32.7	60	4518	754	2259	377	2636	1807	
12.0	32.7	60	4929	754	2465	377	2842	1972	
13.0	32.7	60	5340	754	2670	377	3047	2136	
14.0	32.7	60	5751	754	2875	377	3252	2300	
15.0	32.7	60	6161	754	3081	377	3458	2465	
16.0	32.7	60	6572	754	3286	377	3663	2629	
17.0	32.7	60	6983	754	3491	377	3868	2793	
18.0	32.7	60	7394	754	3697	377	4074	2958	
19.0	32.7	60	7805	754	3902	377	4279	3122	
20.0	32.7	60	8215	754	4108	377	4485	3286	
AASHTO Table 10.5.5.2.4-1					Resistance Factor, $\phi$				0.40
							D (ft.) =	4.0	
>>> = Min. Socket Length									