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September 28, 2023

Project B2308731

Mr. Daniel Robertson  
Robertson Metal Recycling, LLC  
195 28th Ave East Dickinson  
Dickinson, ND 58601

Re: Foundation Recommendations  
Proposed New Equipment  
195 28th Ave East Dickinson  
Dickinson, North Dakota

Dear Mr. Robertson:

This letter documents our evaluations and recommendations for the design of the new equipment at your facility.

## Background

We understand that new equipment will be installed at your facility that includes a heavy shredder supported on a mat foundation, separation equipment mounted on pad foundations or drilled shafts, low retaining walls, fences, and gates. The material will not be protected from freezing temperatures. CW Structural Engineers is designing the foundations for the equipment that will be provided by the Hustler Conveyor Company. We understand that the mat foundation will be about 5 feet thick and embedded at a depth of 5 feet below grade for protection against frost heave.

American Engineering and Testing drilled 5 borings at the site at the locations shown on the attached Site Plan. The boring logs depicting laboratory testing results are attached.

## Evaluations

We summarized the subsurface conditions on the attached Fence Diagram. The site is characterized by decomposed bedrock consisting of sandstone, claystone, and siltstone from just below the ground surface. These materials are suitable for supporting the equipment on a mat foundation or shallow foundations. Where desired, drilled shafts may be used that are proportioned for end bearing and skin resistance.

## Recommendations

We recommend that the size of the mat foundation be proportioned using a maximum gross allowable bearing stress of 2,000 psf. We estimated that total settlements will range between 1 and 2 inches based on the stress distribution provided for the mat foundation, with a differential settlement across the structure of about 1 inch. We believe these values are acceptable for the long-term performance of this industrial equipment, but should be confirmed with the manufacturer. We recommend using a modulus of subgrade reaction of 25 pci to design reinforcing steel for resistance to shear and bending moments. Spread footings for columns and walls may be proportioned using 2,500 psf maximum net allowable bearing pressure. We estimated settlement will be less than 1 inch. Foundations should bear at least 5 feet below exterior grade for protection against frost heave.

Retaining walls may be proportioned using active earth pressure if the walls are not restrained from rotation. We recommend using an equivalent fluid weight of 57 pcf for walls that have drainage provisions such as drain board or a layer of drainage stone. Use a friction value of 0.3 to resist sliding.

For the fence pole and other drilled shafts, use no passive pressure in the frost zone of 6 feet. Below 6 feet, use 425 pcf ultimate passive pressure, and 36 pcf ultimate active pressure. Drilled shafts will have an allowable end bearing resistance of 6,000 psf, and allowable skin friction of 1,500 psf below 6 feet. Drilled shafts formed with cardboard tube will not experience uplift due to adfreeze, but the concrete in contact with soil will be susceptible. We recommend using a minimum drilled shaft length of 12 feet for rough drilled shafts and considering the uplift will be resisted by the lower skin resistance.

We understand that you will be using simplified procedures to evaluate drilled shafts and mat foundation vibrations. We would be pleased to provide additional evaluations including lateral deflection analysis of the drilled shafts based on anticipated loading, and dynamic shear modulus and damping recommendations.

## Remarks

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

If you have any questions about this Letter, please contact Wes Dickhut at 701.934.1618.

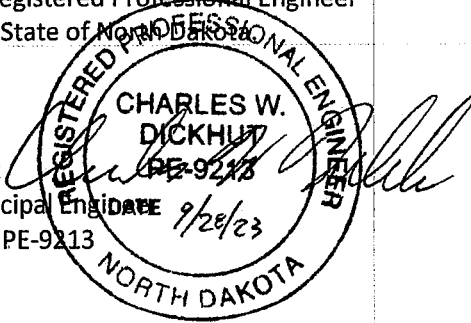
Sincerely,

BRAUN INTERTEC CORPORATION

### Professional Certification:

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.

Charles (Wes) Dickhut  
Technical Leader, Principal Engineer  
Registration Number: PE-9213  
September 28, 2022



A handwritten signature in cursive script that reads "Justin Goossen".

Justin Goossen, EI  
Staff Engineer

### Attachments:

Site Plan  
Boring Logs  
Fence Diagram

c: Kody Scharosch, PE/CW Structural Engineers



# SUBSURFACE BORING LOG

AET JOB NO: <b>P-0025397</b>	LOG OF BORING NO. <b>B-5 (p. 1 of 1)</b>
PROJECT: <b>Robertson Metal Recycling Proposed Equipment Foundation; Dickinson, ND</b>	
SURFACE ELEVATION: <b>2429.0</b>	LATITUDE: <b>46.876639</b>
	LONGITUDE: <b>-102.741278</b>

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS							
							WC	DEN	LL	PL	%-#200			
1	FILL, silty sand, brown, moist	FILL												
2	CLAYEY SAND, tan, medium dense to dense, moist (SC)	SENTINEL BUTTE FORMATION	18	M	SS									
3			16	M	SS									
4	FAT CLAY, with lenses and laminations of silt, grey, stiff to very stiff, moist (CH)  -Layer of lignite at 17.5'		13	M	SS		27		66	31				
5			11	M	SS									
6			22	M	SS									
7			25	M	SS									
8			28	M	SS		21							
9			38	M	SS									
10			51	M	SS									
11			28	M	SS									
12			27	M	SS		27							
13			30	M	SS									
14	29	M	SS											
15	LIGNITE, black, very dense, moist													
16	FAT CLAY, grey, very stiff to hard, moist (CH)		28	M	SS									
17			27	M	SS		27							
18			30	M	SS									
19			29	M	SS									
20			27	M	SS									
21			30	M	SS									
22			29	M	SS									
23	END OF BORING													

DEPTH: <b>0-50'</b>	DRILLING METHOD: <b>3.25" HSA</b>	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		<b>8/23/23</b>		<b>51.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>None</b>	
BORING COMPLETED: <b>8/23/23</b>									
DR: <b>ES</b> LG: <b>BB</b> Rig: <b>106</b>									

AET CORP W-LAT-LONG P-0025397 BORING LOGS.GPJ AET+OPT+WELL.GDT 9/7/23



# SUBSURFACE BORING LOG

AET JOB NO: <b>P-0025397</b>	LOG OF BORING NO. <b>B-4 (p. 1 of 1)</b>
PROJECT: <b>Robertson Metal Recycling Proposed Equipment Foundation; Dickinson, ND</b>	
SURFACE ELEVATION: <b>2430.0</b>	LATITUDE: <b>46.876778</b>
	LONGITUDE: <b>-102.741667</b>

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS							
							WC	DEN	LL	PL	%-#200			
1	FILL, silty sand, brown, moist	FILL												
2	CLAYEY SAND, brown, medium dense, moist (SC)	SENTINEL BUTTE FORMATION	24	M	SS									
3														
4														
5														
6														
7	LEAN CLAY with SAND, tan, very stiff, moist (CL)													
8														
9	FAT CLAY, with lenses and laminations of lignite, grey, stiff, moist (CH)													
10														
11	LEAN CLAY, with lenses and laminations of lignite, stiff to very stiff, moist (CL)													
12														
13														
14														
15														
16														
17														
18														
19														
20														
21	FAT CLAY with SILT, with laminations of lignite, grey, hard, moist (CH)													
22														
23														
24														
25														
26	LEAN CLAY with SILT, grey, hard, moist (CL)													
27														
28														
29														
30														
31	FAT CLAY, with lenses and laminations of lignite, grey, hard, moist (CH)													
32														
33	LEAN CLAY, with lenses and laminations of lignite, grey, hard, moist (CL)													
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46	FAT CLAY, with lenses and laminations of lignite, grey, hard, moist (CH)													
47														
48														
49														
50														
51														
END OF BORING														

DEPTH: <b>0-50'</b>	DRILLING METHOD: <b>3.25" HSA</b>	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE: <b>8/24/23</b>	TIME:	SAMPLED DEPTH: <b>51.5</b>	CASING DEPTH: <b>NA</b>	CAVE-IN DEPTH: <b>NA</b>	DRILLING FLUID LEVEL: <b>NA</b>	WATER LEVEL: <b>None</b>	
BORING COMPLETED: <b>8/24/23</b>									
DR: <b>ES</b> LG: <b>BB</b> Rig: <b>106</b>									

AET CORP W-LAT-LONG P-0025397 BORING LOGS.GPJ AET+CPT+WELL.GDT 9/7/23



# SUBSURFACE BORING LOG

AET JOB NO: <b>P-0025397</b>	LOG OF BORING NO. <b>B-3 (p. 1 of 1)</b>
PROJECT: <b>Robertson Metal Recycling Proposed Equipment Foundation; Dickinson, ND</b>	
SURFACE ELEVATION: <b>2432.0</b>	LATITUDE: <b>46.876920</b>
	LONGITUDE: <b>-102.741680</b>

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS							
							WC	DEN	LL	PL	%-#200			
1	FILL, silty sand, brown, moist	FILL												
2														
3	SAND with SILT, tan, medium dense, moist (SP-SM)	SENTINEL BUTTE FORMATION	23	M	SS									
4														
5	SILTY SAND, brown, medium dense, moist (SM)			26	M	SS								
6														
7	LEAN CLAY, brown, very stiff, moist (CL)			24	M	SS		30						
8														
9														
10	FAT CLAY, grey, very stiff, moist (CH)		20	M	SS									
11														
12														
13														
14														
15	FAT CLAY, with lenses and laminations of silt with sand, grey, very stiff, moist (CH)		30	M	SS		21		55	35				
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32	LIGNITE, black, very dense, moist		60	M	SS									
33														
34														
35														
36														
37	FAT CLAY with SILT, trace lignite, grey, hard, moist (CH)		33	M	SS									
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
END OF BORING														

AET CORP W-LAT-LONG P-0025397 BORING LOGS.GPJ AET+CPT+WELL.GDT 9/7/23

DEPTH: <b>0-50'</b>	DRILLING METHOD: <b>3.25" HSA</b>	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		<b>8/23/23</b>		<b>51.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>None</b>	
BORING COMPLETED: <b>8/23/23</b>									
DR: <b>ES</b> LG: <b>BB</b> Rig: <b>106</b>									



# SUBSURFACE BORING LOG

AET JOB NO: <b>P-0025397</b>	LOG OF BORING NO. <b>B-2 (p. 1 of 1)</b>
PROJECT: <b>Robertson Metal Recycling Proposed Equipment Foundation; Dickinson, ND</b>	
SURFACE ELEVATION: <b>2431.0</b>	LATITUDE: <b>46.877111</b>
	LONGITUDE: <b>-102.742000</b>

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS							
							WC	DEN	LL	PL	%-#200			
1	FILL, silty sand, brown, moist	FILL												
2	SILTY SAND, tan to brown, medium dense to dense, moist (SM)	SENTINEL BUTTE FORMATION	24	M	SS		19							
3														
4														
5					31	M	SS							
6														
7														
8					29	M	SS							
9														
10			LEAN CLAY, brown, very stiff, moist (CL)											
11	FAT CLAY, with trace lignite, grey, very stiff, moist (CH)		22	M	SS		30							
12														
13														
14					21	M	SS							
15														
16					30	M	SS							
17	LEAN CLAY, brown to grey, hard, moist (CL)													
18	FAT CLAY, with lenses and laminations of lignite, grey, very stiff, moist (CH)													
19														
20					31	M	SS							
21														
22														
23														
24														
25														
26					30	M	SS		20					
27														
28														
29														
30					35	M	SS							
31														
32														
33														
34														
35														
36			26	M	SS		28		65	34				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46			26	M	SS									
47														
48														
49														
50														
51			28	M	SS									
END OF BORING														

DEPTH: <b>0-50'</b>	DRILLING METHOD: <b>3.25" HSA</b>	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		<b>8/23/23</b>		<b>51.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>None</b>	
BORING COMPLETED: <b>8/23/23</b>									
DR: <b>ES</b> LG: <b>BB</b> Rig: <b>106</b>									

AET CORP W-LAT-LONG P-0025397 BORING LOGS.GPJ AET+OPT+WELL.GDT 9/7/23



# SUBSURFACE BORING LOG

AET JOB NO: <b>P-0025397</b>	LOG OF BORING NO. <b>B-1 (p. 1 of 1)</b>
PROJECT: <b>Robertson Metal Recycling Proposed Equipment Foundation; Dickinson, ND</b>	
SURFACE ELEVATION: <b>2433.0</b>	LATITUDE: <b>46.876813</b>
	LONGITUDE: <b>-102.742760</b>

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS								
							WC	DEN	LL	PL	%-#200				
1	FILL, clayey sand, with a little gravel, brown, moist	FILL													
2															
3	SILTY SAND, with lenses and laminations of clay, brown, medium dense to dense, moist (SM)	SENTINEL BUTTE FORMATION	28	M	SS										
4															
5															
6					41	M	SS		13						
7															
8					42	M	SS								
9															
10					35	M	SS								
11															
12					44	M	SS		11						25
13															
14			35	M	SS										
15															
16															
17															
18															
19															
20	SANDY LEAN CLAY, with lenses and layers of wet lignite, brown, soft to firm, wet (CL)		3	W	SS										
21															
22															
23															
24															
25															
26			5	W	SS		63								
27															
28															
29															
30	LEAN CLAY with SILT, with lenses and laminations of lignite, brown, very stiff, moist (CL)		19	M	SS										
31															
32															
33															
34															
35															
36	LIGNITE, black, medium dense, wet		29	W	SS										
37															
38															
39															
40	FAT CLAY, grey, very stiff to hard, moist (CH)		28	M	SS										
41															
42															
43															
44															
45															
46					28	M	SS								
47															
48															
49															
50															
51			32	M	SS										
	END OF BORING														

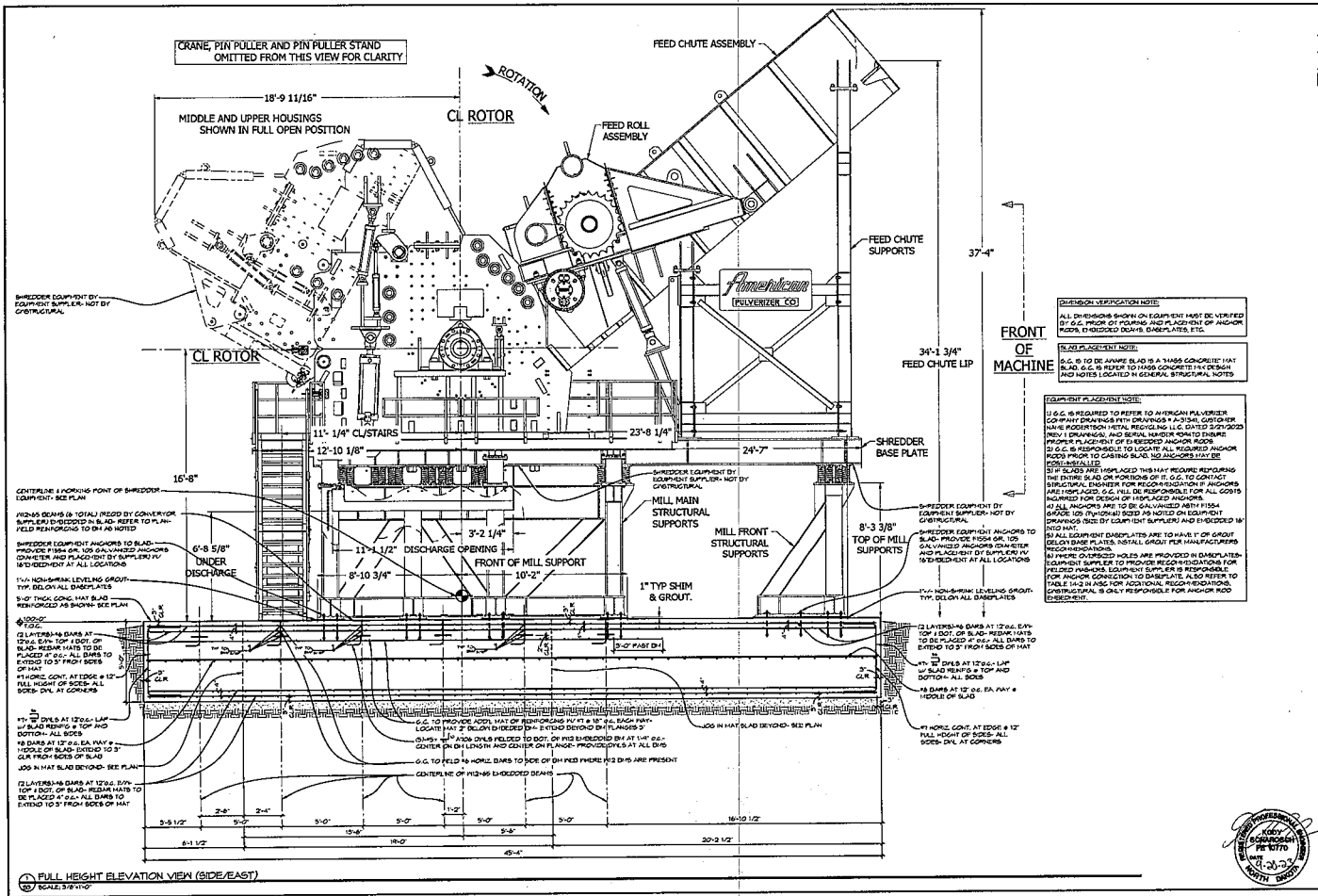
DEPTH: <b>0-50'</b>	DRILLING METHOD: <b>3.25" HSA</b>	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		<b>8/22/23</b>		<b>51.5</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>20.0</b>	
BORING COMPLETED: <b>8/22/23</b>									
DR: <b>ES</b> LG: <b>BB</b> Rig: <b>106</b>									

AET CORP WLAT-LONG P-0025397 BORING LOGS.GPJ AET+OPT+WELL.GDT 9/7/23









**DISPOSITION VERIFICATION NOTE:**  
 ALL DIMENSIONS SHOWN ON EQUIPMENT MUST BE VERIFIED BY G.C. PRIOR TO POURING AND PLACEMENT OF ANCHOR RODS, ENCASED BEAMS, SLAB PLATES, ETC.

**SLAB PLACEMENT NOTE:**  
 G.C. IS TO ANNEAL SLAB IN A THICK CONCRETE MAT IN G.C. AS REFER TO 1000 CONCRETE MIX DESIGN AND NOTES LOCATED IN GENERAL STRUCTURAL NOTES

**EQUIPMENT PLACEMENT NOTE:**  
 U.G.C. IS REQUIRED TO REFER TO AMERICAN PULVERIZER COMPANY DRAWING WITH DIMENSIONS P-23-DIA. CUSTOMER NAME POSITION METAL RECYCLING LLC, DATED 02/01/2003 FOR PROPER PLACEMENT OF FEEDER ANCHOR RODS. U.G.C. IS RESPONSIBLE TO LOCATE ALL REQUIRED ANCHOR RODS PRIOR TO CASTING SLAB. NO ANCHORS MAY BE SOBBERSLIT.

IF R SLABS ARE REPLACED THIS MAT REQUIRE REPAIRING THE ENTIRE SLAB OR PORTIONS OF IT. G.C. TO CONTACT STRUCTURAL ENGINEER FOR RECONSTRUCTION IF ANCHORS, LAPS OR JOINTS ARE TO BE GALVANIZED AFTER FRESH CONCRETE IS PLACED. U.G.C. SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED FOR DESIGN OF REINFORCED ANCHORS.

IF ALL ANCHORS ARE TO BE GALVANIZED AFTER FRESH CONCRETE IS PLACED, U.G.C. SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED FOR DESIGN OF REINFORCED ANCHORS.

SHREDDER EQUIPMENT ANCHORS TO SLAB SHALL BE 1/2\"/>

FULL HEIGHT ELEVATION VIEW (SIDE/EAST)  
 SCALE: 3/8\"/>

**CW STRUCTURAL ENGINEERS**

1000 E. CALIFORNIA HWY 1  
 SUITE 1000  
 WEST COAST PLAZA  
 WEST COAST PLAZA  
 WEST COAST PLAZA

**ROBERTSON METAL RECYCLING  
 195 28TH AVE. E  
 CAR SHREDDER MAT SLAB**

FULL HEIGHT ELEVATION (SIDE/EAST)

**S 1.1**

OF 4



GENERAL STRUCTURAL NOTES

GENERAL DESIGN AND CONSTRUCTION

(1) All work shall conform with the 2021 International Building Code (IBC 2021).

(2) **Design Loads:**

Project Location Division: MD

Wind Loads: Per ASCE 7, Exposure Category II,  $V = 110$

Basic wind speed (Basic Wind Speed) = 112 mph (Wind Category II)

Snow Loads: Per ASCE 7, Load Case for partial additional snow (P1)

Ground Snow Load,  $P_g = 25$  psf (P1)

Ground Snow Load,  $P_g = 25$  psf (P1)

Seismic Loads per ASCE 7 (Division MD)

Site class: D (Hardrock),  $S_a = 0.20$ ,  $S_v = 0.25$ ,  $I = 1.0$

Seismic Design Category: A

Shredder Equipment Loadings: CIVIL/STRUCTURAL designed the site to accommodate loads as indicated by American Recycler Recycling Company drawings with drawings A-235A1, customer name: Robertson Metal Recycling, LLC, Serial Number: 10000000000000000000, and serial number 0000, refer to referenced drawings for all equipment loads and design of site.

Specific notes and details shall prevail over general structural notes.

(3) The contract structural drawings and specifications represent the finished structure. Unless otherwise indicated, they do not include the means or methods of construction. The contractor is solely responsible for the production of the structure during all phases of demolition, construction and installation. Provide all measures necessary to protect the structure, contents or other persons by means of shoring, bracing and job site safety measures.

(4) Where an in-place existing temporary bracing and shoring system is used and erection is the responsibility of the contractor.

(5) No area of the structure shall be loaded with construction material or equipment that exceeds that design loading indicated.

(6) Verify location of 30-minute and 2-hour fire-rated walls, doors, etc. are for general information only and shall be verified with the mechanical and electrical contractor before commencing work.

(7) Verify all mechanical and electrical equipment weight and locations with mechanical and electrical contractors and compare with that shown on drawings. If weights and locations differ from that shown, contact the structural engineer to provide for support.

(8) Note doors, stairs, etc. through structural framing and foundations that are not shown on the drawings are not accessible.

(9) Structural engineer shall provide a call-in plan where draft the passes through foundation on foundation walls.

(10) Structural engineers shall on the plan does not provide for construction inspection.

(11) The cost for additional structural engineering services requested by contractor requests for option or due to error on the part of the contractor shall be the contractor's responsibility.

(12) Shoring, bracing or shoring to systems, substructures, etc. shall be designed, analyzed, coordinated, and supported by the general contractor prior to submitting to the structural engineer. Manufacturer's specifications shall be reviewed and stamped by a Licensed Professional Engineer in the state the project is being built prior to submission.

(13) Verify all dimensions and conditions of existing construction to be as shown on the drawings. Advise the structural engineer of variances prior to commencing with construction.

FOUNDATIONS

(1) All concrete foundation designs are based upon the geotechnical report recommendations by Brian Hines, dated December 28, 2021. If project geotechnical report recommendations included in the geotechnical report that apply to the foundation design shall be as per the project specifications.

(2) Geotechnical Report Design Values: All foundation conditions shall be approved based on the geotechnical engineer's verification of the soil conditions present and the recommended geotechnical design values (both as noted below) in the geotechnical report and approved in writing by a licensed geotechnical engineer prior to finalizing steel and casting concrete. All geotechnical design values used are as follows:

Minimum Soil Bearing Capacity

1. Use: 2000 psf

2. Spread Footing/Culvert = 2500 psf

3. Use: 3000 psf

4. Use: 4000 psf

5. Use: 5000 psf

6. Use: 6000 psf

7. Use: 7000 psf

8. Use: 8000 psf

9. Use: 9000 psf

10. Use: 10000 psf

11. Use: 11000 psf

12. Use: 12000 psf

13. Use: 13000 psf

14. Use: 14000 psf

15. Use: 15000 psf

16. Use: 16000 psf

17. Use: 17000 psf

18. Use: 18000 psf

19. Use: 19000 psf

20. Use: 20000 psf

21. Use: 21000 psf

22. Use: 22000 psf

23. Use: 23000 psf

24. Use: 24000 psf

25. Use: 25000 psf

26. Use: 26000 psf

27. Use: 27000 psf

28. Use: 28000 psf

29. Use: 29000 psf

30. Use: 30000 psf

31. Use: 31000 psf

32. Use: 32000 psf

33. Use: 33000 psf

34. Use: 34000 psf

35. Use: 35000 psf

36. Use: 36000 psf

37. Use: 37000 psf

38. Use: 38000 psf

39. Use: 39000 psf

40. Use: 40000 psf

41. Use: 41000 psf

42. Use: 42000 psf

43. Use: 43000 psf

44. Use: 44000 psf

45. Use: 45000 psf

46. Use: 46000 psf

47. Use: 47000 psf

48. Use: 48000 psf

49. Use: 49000 psf

50. Use: 50000 psf

51. Use: 51000 psf

52. Use: 52000 psf

53. Use: 53000 psf

54. Use: 54000 psf

55. Use: 55000 psf

56. Use: 56000 psf

57. Use: 57000 psf

58. Use: 58000 psf

59. Use: 59000 psf

60. Use: 60000 psf

61. Use: 61000 psf

62. Use: 62000 psf

63. Use: 63000 psf

64. Use: 64000 psf

65. Use: 65000 psf

66. Use: 66000 psf

67. Use: 67000 psf

68. Use: 68000 psf

69. Use: 69000 psf

70. Use: 70000 psf

71. Use: 71000 psf

72. Use: 72000 psf

73. Use: 73000 psf

74. Use: 74000 psf

75. Use: 75000 psf

76. Use: 76000 psf

77. Use: 77000 psf

78. Use: 78000 psf

79. Use: 79000 psf

80. Use: 80000 psf

81. Use: 81000 psf

82. Use: 82000 psf

83. Use: 83000 psf

84. Use: 84000 psf

85. Use: 85000 psf

86. Use: 86000 psf

87. Use: 87000 psf

88. Use: 88000 psf

89. Use: 89000 psf

90. Use: 90000 psf

(3) Clear footing excavations of snow, water, mud, loose soil and debris prior to casting footing concrete.

(4) Footings may not be earth formed.

(5) All footings are centered under the piers, columns or walls they support, except as noted otherwise.

(6) Footing excavations shall be to proper line and level to insure minimum concrete cover of footing reinforcement for footing depth.

(7) Decks shall be compacted by mechanical means.

(8) General contractor is required to temporarily brace all walls as required prior to and during the placing of footings and wall component support for the top and base of the walls are completely constructed.

(9) Protect all foundations from the action of water and freezing.

(10) See mechanical, electrical and architectural drawings for all openings and inserts. No work on the structural drawings, no openings and inserts shall be placed prior to casting concrete.

(11) Non-reinforced concrete shall be to a minimum of 28-day compressive strength of 3000 psi. 28-day min.  $f_{c'} = 3000$  psi.

(12) The maximum 28-day compressive strength of concrete shall not exceed 4000 psi.

(13) All concrete shall be placed at the bottom of the pier excavation with a hose or tremie. Do NOT allow concrete to fall to bottom of pier excavation.

(14) All critical piers are to be centered under the column they support, except as noted otherwise.

(15) Concrete shall be placed at the bottom of the pier excavation with a hose or tremie. Do NOT allow concrete to fall to bottom of pier excavation.

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