

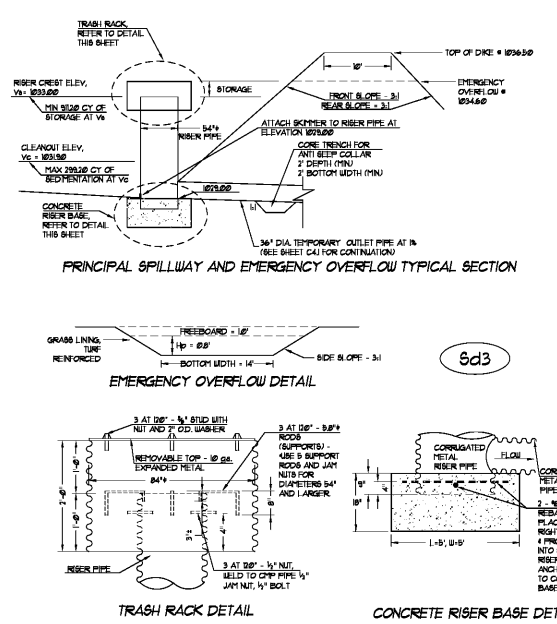
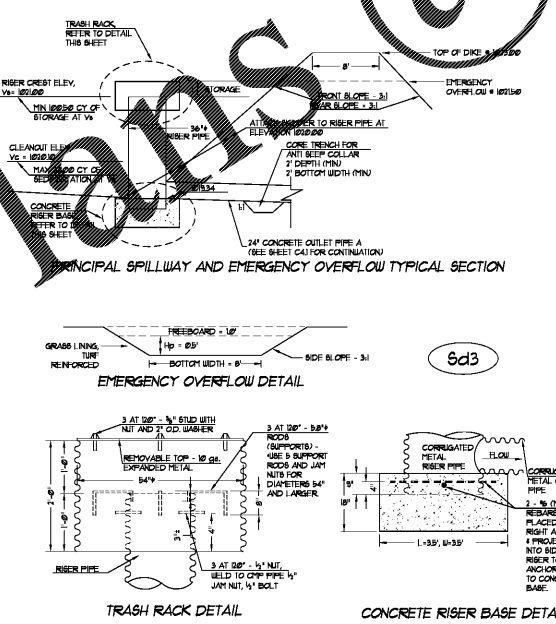
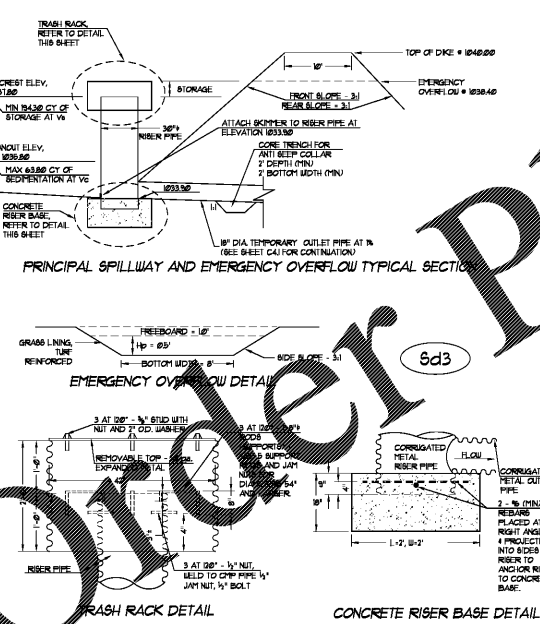
DATE	REVISION	NO.
11-1-18	ISSUE TO BID	

HARMONY LELAND PLAY
REPLACEMENT ELEMENTARY SCHOOL
6336 FACTORY SHOALS RD
MABLETON, GA 30058
FOR COBB COUNTY SCHOOL DISTRICT
CUBA PROJECT NO. 1404-1 JOSE FACILITY

ES&PC CALCULATIONS & DETAILS

Structural BMP: Sediment Basin 1				Structural BMP: Sediment Basin 2				Structural BMP: Sediment Basin 3							
Total area draining to basin: 2.8 acres				Total area draining to basin: 3.8 acres				Total area draining to basin: 3.8 acres							
Volume				Volume				Volume							
1. Minimum required storage volume	Vs =	87 cy/ac	2.90 acres =	194.30 cy	1. Minimum required storage volume	Vs =	87 cy/ac	1.50 acres =	100.50 cy	1. Minimum required storage volume	Vs =	87 cy/ac	13.00 acres =	911.20 cy	
2. Volume of basin at clean-out	Vc =	22 cy/ac	2.90 acres =	63.80 cy	2. Volume of basin at clean-out	Vc =	22 cy/ac	1.50 acres =	33.00 cy	2. Volume of basin at clean-out	Vc =	22 cy/ac	13.00 acres =	289.20 cy	
3. Minimum riser crest elevation (Vc)				1035.80 ft	3. Minimum riser crest elevation (Vc)				1023.00 ft	3. Minimum riser crest elevation (Vc)				1033.80 ft	
4. Clean-out elevation (Vc)				1035.80 ft	4. Clean-out elevation (Vc)				1023.00 ft	4. Clean-out elevation (Vc)				1033.80 ft	
5. Riser length = Minimum elevation of riser crest - Lowest elevation of pipe at riser				3.90 ft	5. Riser length = Minimum elevation of riser crest - Lowest elevation of pipe at riser				1.66 ft	5. Riser length = Minimum elevation of riser crest - Lowest elevation of pipe at riser				4.00 ft	
Stormwater Runoff				Stormwater Runoff				Stormwater Runoff							
6. 2 yr. 24-hour discharge (peak)	Q ₂ =	Taken from Hydrology Study		6.54 cfs	6. 2 yr. 24-hour discharge (peak)	Q ₂ =	Taken from Hydrology Study		5.19 cfs	6. 2 yr. 24-hour discharge (peak)	Q ₂ =	Taken from Hydrology Study		36.41 cfs	
7. 25 yr. 24-hour discharge (peak)	Q ₂₅ =	Taken from Hydrology Study		12.81 cfs	7. 25 yr. 24-hour discharge (peak)	Q ₂₅ =	Taken from Hydrology Study		10.25 cfs	7. 25 yr. 24-hour discharge (peak)	Q ₂₅ =	Taken from Hydrology Study		73.31 cfs	
Surface Area/Configuration Design				Surface Area/Configuration Design				Surface Area/Configuration Design							
8. Minimum basin surface area (S _{Area})	S _{Area} =	0.01 ac/cfs * Q ₂		2413.22 sf	8. Minimum basin surface area (S _{Area})	S _{Area} =	0.01 ac/cfs * Q ₂		2260.76 sf	8. Minimum basin surface area (S _{Area})	S _{Area} =	0.01 ac/cfs * Q ₂		15860.20 sf	
9. Available area at Vc elevation	EA _{Vc} =			3714.00 sf	9. Available area at Vc elevation	EA _{Vc} =			2516.00 sf	9. Available area at Vc elevation	EA _{Vc} =			17968.80 sf	
10. Required length to achieve 2:1 L:W ratio				38.00 ft	10. Required length to achieve 2:1 L:W ratio				20.00 ft	10. Required length to achieve 2:1 L:W ratio				80.00 ft	
11. Required length to achieve 2:1 L:W ratio				80.50 ft	11. Required length to achieve 2:1 L:W ratio				40.00 ft	11. Required length to achieve 2:1 L:W ratio				200.00 ft	
Principle Spillway (ps)				Principle Spillway (ps)				Principle Spillway (ps)							
12. Minimum principle spillway capacity	Q _{ps} =	Q ₂		6.54 cfs	12. Minimum principle spillway capacity	Q _{ps} =	Q ₂		5.19 cfs	12. Minimum principle spillway capacity	Q _{ps} =	Q ₂		36.41 cfs	
13. Total pipe length of Principle Spillway	L =	[A - (B+C)/2]Z _u + 2Z ₁ + T + E =		46.90 ft	13. Total pipe length of Principle Spillway	L =	[A - (B+C)/2]Z _u + 2Z ₁ + T + E =		66.00 ft	13. Total pipe length of Principle Spillway	L =	[A - (B+C)/2]Z _u + 2Z ₁ + T + E =		40.00 ft	
14. Diameter of principle spillway (D _{ps}) and flow through principle spillway (Q)				19.10	14. Diameter of principle spillway (D _{ps}) and flow through principle spillway (Q)				19.10	14. Diameter of principle spillway (D _{ps}) and flow through principle spillway (Q)				19.10	
15. Actual Flow through Principle Spillway	Q _{ps} =	Q ₂		6.54 cfs	15. Actual Flow through Principle Spillway	Q _{ps} =	Q ₂		5.19 cfs	15. Actual Flow through Principle Spillway	Q _{ps} =	Q ₂		36.41 cfs	
16. Riser Diameter	D _r =	27.00 in			16. Riser Diameter	D _r =	36.00 in			16. Riser Diameter	D _r =	36.00 in			
17. Trash Rack Diameter	D _t =	42.00 in			17. Trash Rack Diameter	D _t =	54.00 in			17. Trash Rack Diameter	D _t =	54.00 in			
18. Freeboard above Riser Crest Elevation (from Table 6-29.2) for D _r & Q _{ps}	h =	8.00 ft			18. Freeboard above Riser Crest Elevation (from Table 6-29.2) for D _r & Q _{ps}	h =	8.00 ft			18. Freeboard above Riser Crest Elevation (from Table 6-29.2) for D _r & Q _{ps}	h =	8.00 ft			
Concrete Riser Base Design				Concrete Riser Base Design				Concrete Riser Base Design							
19. Volume of concrete per vertical foot of riser needed (Table 6-22.3)	V _c =	1.54 cft/ft		3.90 ft =	6.02 cft	19. Volume of concrete per vertical foot of riser needed (Table 6-22.3)	V _c =	2.75 cft/ft		1.66 ft =	4.56 cft	19. Volume of concrete per vertical foot of riser needed (Table 6-22.3)	V _c =	6.18 cft/ft	
20. Total volume of concrete needed				6.02 cft	20. Total volume of concrete needed				4.56 cft	20. Total volume of concrete needed				24.71 cft	
21. Assume base thickness, B	B =	3.00 ft			21. Assume base thickness, B	B =	3.00 ft			21. Assume base thickness, B	B =	3.00 ft			
22. Required surface area	A =	4.02 sf			22. Required surface area	A =	3.00 sf			22. Required surface area	A =	16.47 sf			
23. Riser base length (l) and width (w), assume square base	l = w =	2.00 ft			23. Riser base length (l) and width (w), assume square base	l = w =	1.74 ft			23. Riser base length (l) and width (w), assume square base	l = w =	4.06 ft			
Anti-Seep Collar Design				Anti-Seep Collar Design				Anti-Seep Collar Design							
24. Anti-seep Collar required?	Setback height of dam < 15' and Corrugated D _{cc} > 12"	YES	24-inch Projection		24. Anti-seep Collar required?	Setback height of dam < 15' and Corrugated D _{cc} > 12"	YES	24-inch Projection		24. Anti-seep Collar required?	Setback height of dam < 15' and Corrugated D _{cc} > 12"	YES	24-inch Projection		
25. Anti-seep Collar size (if required)					25. Anti-seep Collar size (if required)					25. Anti-seep Collar size (if required)					
Emergency Spillway				Emergency Spillway				Emergency Spillway							
26. Minimum capacity of emergency spillway	Q _{es} =	Q ₂₅		12.81 cfs	26. Minimum capacity of emergency spillway	Q _{es} =	Q ₂₅		10.25 cfs	26. Minimum capacity of emergency spillway	Q _{es} =	Q ₂₅		73.31 cfs	
27. Stage (H ₁), bottom width (b), velocity (v) and minimum exit slope (S) (Table 6-22.4)				3.9%	27. Stage (H ₁), bottom width (b), velocity (v) and minimum exit slope (S) (Table 6-22.4)				3.0%	27. Stage (H ₁), bottom width (b), velocity (v) and minimum exit slope (S) (Table 6-22.4)				3.8%	
28. Actual entrance slope	S _e =	4%			28. Actual entrance slope	S _e =	4%			28. Actual entrance slope	S _e =	4%			
29. Actual exit slope	S _x =	4%			29. Actual exit slope	S _x =	4%			29. Actual exit slope	S _x =	4%			
Emergency Spillway Channel Lining (Ch)	GRASS				Emergency Spillway Channel Lining (Ch)	GRASS				Emergency Spillway Channel Lining (Ch)	GRASS				
Design Elevations				Design Elevations				Design Elevations							
30. Riser Crest Elevation				1037.80 ft	30. Riser Crest Elevation				1021.00 ft	30. Riser Crest Elevation				1033.00 ft	
31. Minimum Emergency Spillway Crest Elevation				1038.40 ft	31. Minimum Emergency Spillway Crest Elevation				1021.50 ft	31. Minimum Emergency Spillway Crest Elevation				1034.60 ft	
32. Design High Water Elevation				1038.90 ft	32. Design High Water Elevation				1022.00 ft	32. Design High Water Elevation				1035.40 ft	
33. Elevation of Top of Dam				1039.90 ft	33. Elevation of Top of Dam				1023.00 ft	33. Elevation of Top of Dam				1036.40 ft	

Structural BMP: Retention (ps)					
Structure No. 1A Drainage Area: 0.75 acres					
Storage Calculations:					
1. Required stormwater storage	V _s =	87 cy/ac	13.00 acres =	911.20 cy	
2. Volume of basin at clean-out	V _c =	22 cy/ac	13.00 acres =	289.20 cy	
3. Minimum riser crest elevation (Vc)				1033.80 ft	
4. Clean-out elevation (Vc)				1033.80 ft	
5. Riser length = Minimum elevation of riser crest - Lowest elevation of pipe at riser				4.00 ft	
Stormwater Runoff					
6. 2 yr. 24-hour discharge (peak)	Q ₂ =	Taken from Hydrology Study		36.41 cfs	
7. 25 yr. 24-hour discharge (peak)	Q ₂₅ =	Taken from Hydrology Study		73.31 cfs	
Surface Area/Configuration Design					
8. Minimum basin surface area (S _{Area})	S _{Area} =	0.01 ac/cfs * Q ₂		15860.20 sf	
9. Available area at Vc elevation	EA _{Vc} =			17968.80 sf	
10. Required length to achieve 2:1 L:W ratio				80.00 ft	
11. Required length to achieve 2:1 L:W ratio				200.00 ft	
Principle Spillway (ps)					
12. Minimum principle spillway capacity	Q _{ps} =	Q ₂		36.41 cfs	
13. Total pipe length of Principle Spillway	L =	[A - (B+C)/2]Z _u + 2Z ₁ + T + E =		40.00 ft	
14. Diameter of principle spillway (D _{ps}) and flow through principle spillway (Q)				19.10	
15. Actual Flow through Principle Spillway	Q _{ps} =	Q ₂		36.41 cfs	
16. Riser Diameter	D _r =	36.00 in			
17. Trash Rack Diameter	D _t =	54.00 in			
18. Freeboard above Riser Crest Elevation (from Table 6-29.2) for D _r & Q _{ps}	h =	8.00 ft			
Concrete Riser Base Design					
19. Volume of concrete per vertical foot of riser needed (Table 6-22.3)	V _c =	1.54 cft/ft		4.00 ft =	6.18 cft
20. Total volume of concrete needed				6.18 cft	
21. Assume base thickness, B	B =	3.00 ft			
22. Required surface area	A =	4.02 sf			
23. Riser base length (l) and width (w), assume square base	l = w =	2.00 ft			
Anti-Seep Collar Design					
24. Anti-seep Collar required?	Setback height of dam < 15' and Corrugated D _{cc} > 12"	YES	24-inch Projection		
25. Anti-seep Collar size (if required)					
Emergency Spillway					
26. Minimum capacity of emergency spillway	Q _{es} =	Q ₂₅		73.31 cfs	
27. Stage (H ₁), bottom width (b), velocity (v) and minimum exit slope (S) (Table 6-22.4)				3.8%	
28. Actual entrance slope	S _e =	4%			
29. Actual exit slope	S _x =	4%			
Emergency Spillway Channel Lining (Ch)	GRASS				
Design Elevations					
30. Riser Crest Elevation				1034.60 ft	
31. Minimum Emergency Spillway Crest Elevation				1035.40 ft	
32. Design High Water Elevation				1036.40 ft	
33. Elevation of Top of Dam				1036.50 ft	

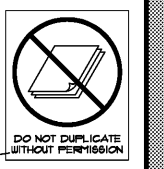


1 TEMPORARY SEDIMENT BASIN "SD3-#1"
NOT TO SCALE

2 TEMPORARY SEDIMENT BASIN "SD3-#2"
NOT TO SCALE

3 TEMPORARY SEDIMENT BASIN "SD3-#3"
NOT TO SCALE

PRIMARY PERMITTEE/
24 HR CONTACT
COBB COUNTY SCHOOL DISTRICT
448 GLOVER ST
MARIETTA, GA 30066
CONTACT: MR. TROY MORRIS
PHONE: 770-439-5864



C4.6

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