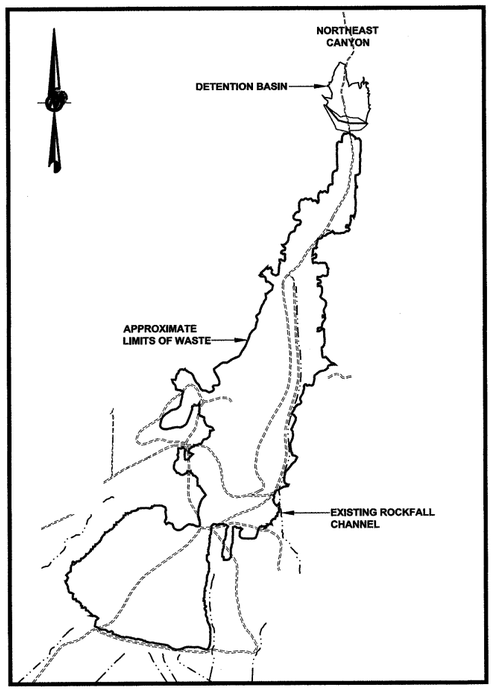
CORRECTIVE ACTION PLAN

SUNRISE MOUNTAIN LANDFILL
LAS VEGAS, NEVADA

PREPARED FOR

REPUBLIC
SERVICES, INC.



VICINITY MAP
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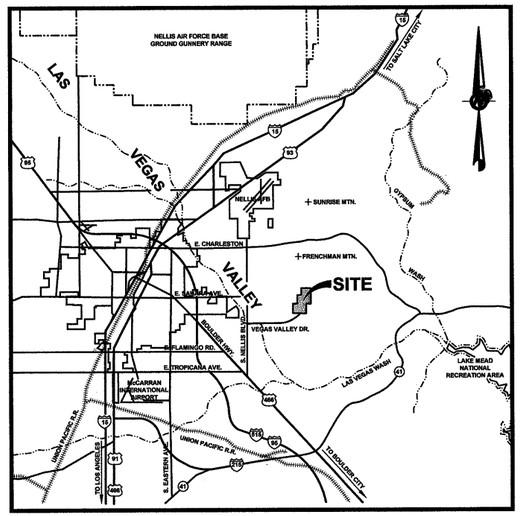
1"=1500' FEET



LOCATION MAP
4 0 4
1"=4 MILES

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Golder Associates
Atlanta, Georgia

PROFESSIONAL ENGINEER STATE OF NEVADA
RANDALL V. WALL
7/1/11
CIVIL
No. 13780
6/30/12

06/07/11

D-0

09397436 OTS D-00 TITLE-SHEET

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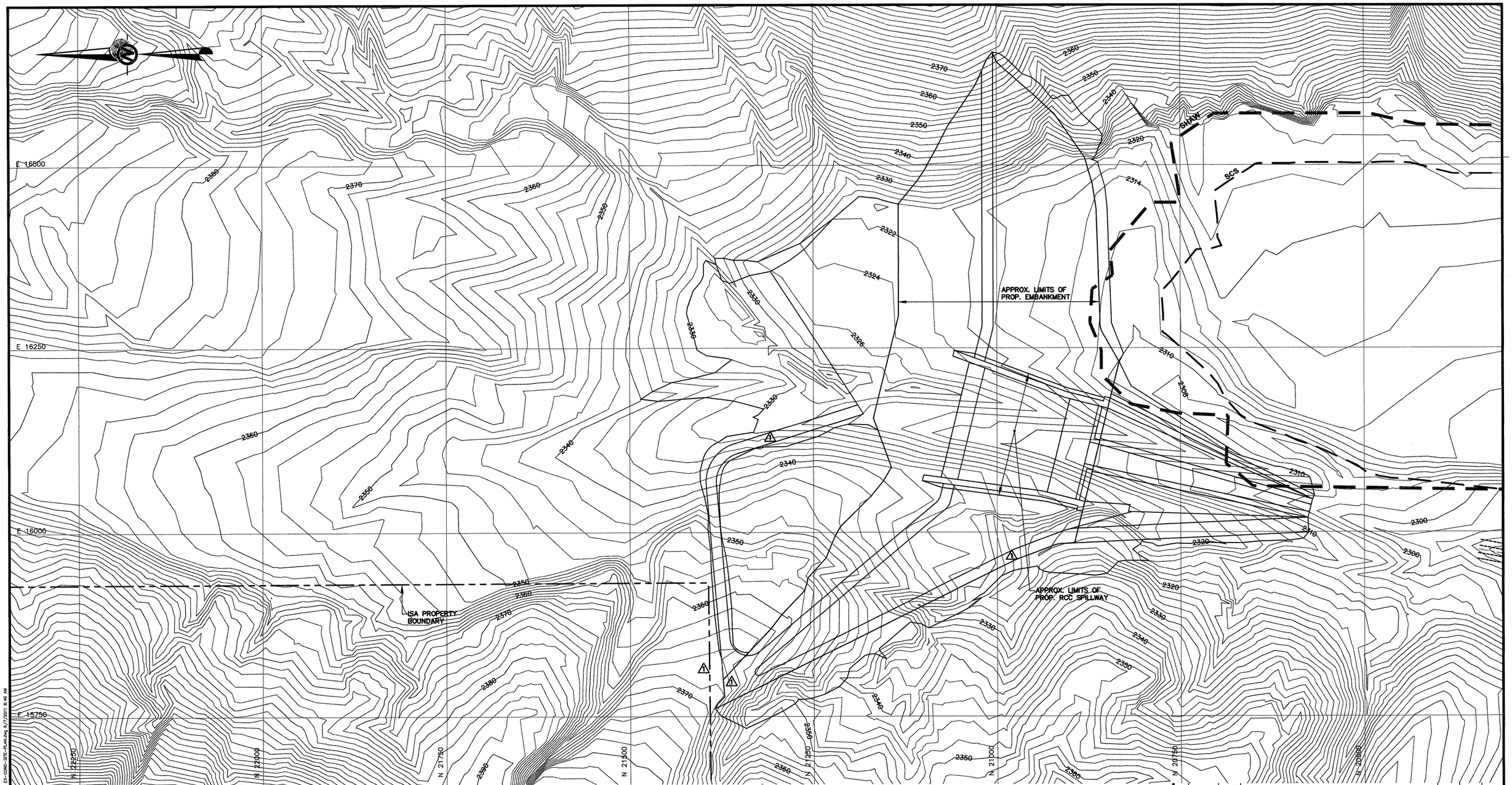

LEGEND

2320	EXISTING CONTOURS
	ISA PROPERTY BOUNDARY
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SHAW
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SCS

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

06/07/11

60 0 60 120
1"=60' FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	05/11		ADD ISA PROPERTY LINE, REV. EMBANK. FOOTPRINT	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EXISTING CONDITIONS

PROFESSIONAL ENGINEER - STATE OF NEVADA
RANDALL V. WALL
CIVIL
No. 13746
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093974361 OTS D-01A 01B EX-COND-SITE-PLAN
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-1A
CHECK	GWH	01/11	
REVIEW	–	–	

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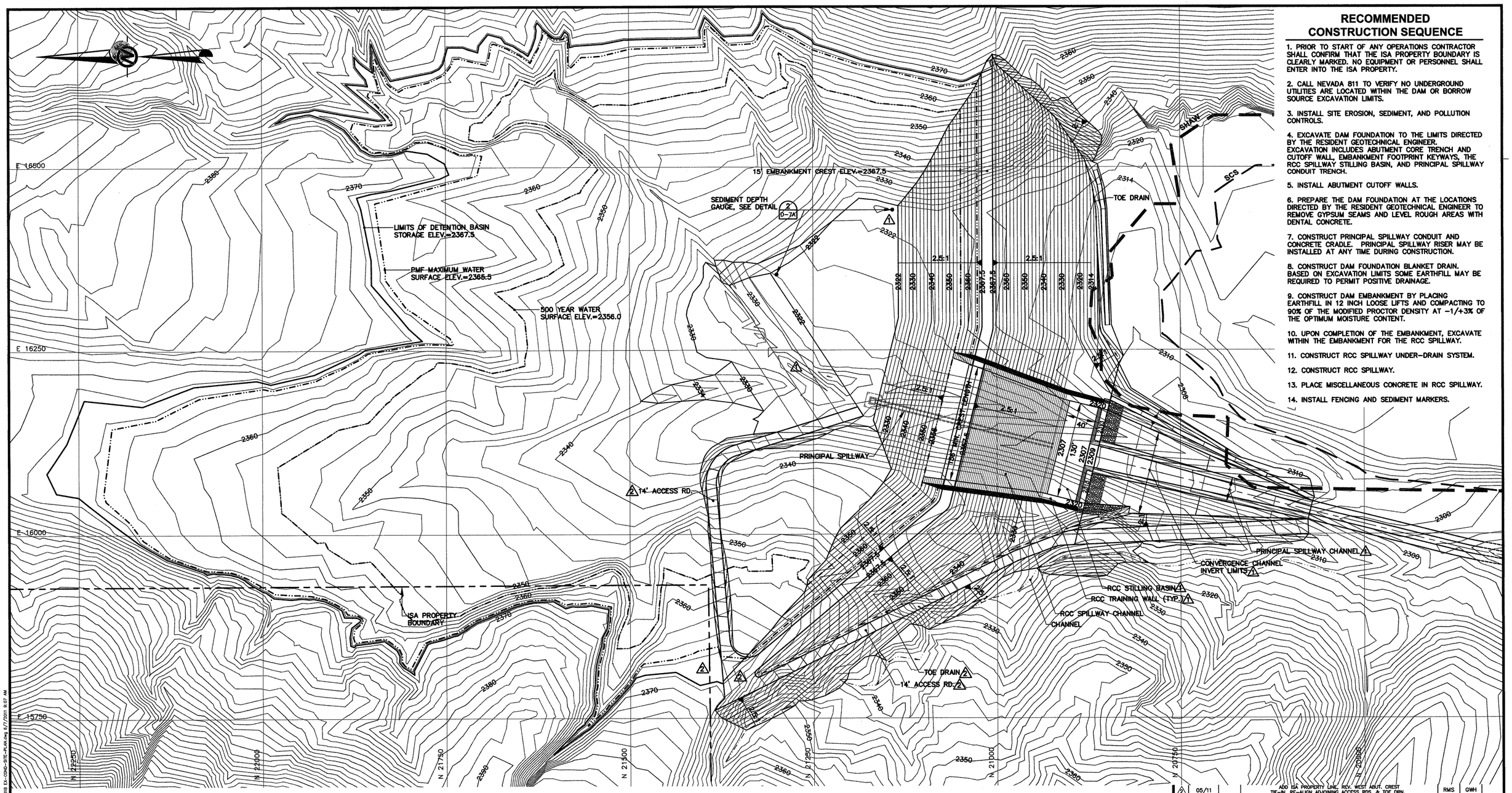

RECOMMENDED CONSTRUCTION SEQUENCE

1. PRIOR TO START OF ANY OPERATIONS CONTRACTOR SHALL CONFIRM THAT THE ISA PROPERTY BOUNDARY IS CLEARLY MARKED. NO EQUIPMENT OR PERSONNEL SHALL ENTER INTO THE ISA PROPERTY.
2. CALL NEVADA 811 TO VERIFY NO UNDERGROUND UTILITIES ARE LOCATED WITHIN THE DAM OR BORROW SOURCE EXCAVATION LIMITS.
3. INSTALL SITE EROSION, SEDIMENT, AND POLLUTION CONTROLS.
4. EXCAVATE DAM FOUNDATION TO THE LIMITS DIRECTED BY THE RESIDENT GEOTECHNICAL ENGINEER. EXCAVATION INCLUDES ABUTMENT CORE TRENCH AND CUTOFF WALL, EMBANKMENT FOOTPRINT KEYWAYS, THE RCC SPILLWAY STILLING BASIN, AND PRINCIPAL SPILLWAY CONDUIT TRENCH.
5. INSTALL ABUTMENT CUTOFF WALLS.
6. PREPARE THE DAM FOUNDATION AT THE LOCATIONS DIRECTED BY THE RESIDENT GEOTECHNICAL ENGINEER TO REMOVE GYPSUM SEAMS AND LEVEL ROUGH AREAS WITH DENTAL CONCRETE.
7. CONSTRUCT PRINCIPAL SPILLWAY CONDUIT AND CONCRETE CRADLE. PRINCIPAL SPILLWAY RISER MAY BE INSTALLED AT ANY TIME DURING CONSTRUCTION.
8. CONSTRUCT DAM FOUNDATION BLANKET DRAIN. BASED ON EXCAVATION LIMITS SOME EARTHFILL MAY BE REQUIRED TO PERMIT POSITIVE DRAINAGE.
9. CONSTRUCT DAM EMBANKMENT BY PLACING EARTHFILL IN 12 INCH LOOSE LIFTS AND COMPACTING TO 90% OF THE MODIFIED PROCTOR DENSITY AT -1/+3% OF THE OPTIMUM MOISTURE CONTENT.
10. UPON COMPLETION OF THE EMBANKMENT, EXCAVATE WITHIN THE EMBANKMENT FOR THE RCC SPILLWAY.
11. CONSTRUCT RCC SPILLWAY UNDER-DRAIN SYSTEM.
12. CONSTRUCT RCC SPILLWAY.
13. PLACE MISCELLANEOUS CONCRETE IN RCC SPILLWAY.
14. INSTALL FENCING AND SEDIMENT MARKERS.

LEGEND

- 2320 — EXISTING CONTOURS
- ISA PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF WASTE PROVIDED BY SHAW
- APPROXIMATE LIMITS OF WASTE PROVIDED BY SCS
- 2320 — PROPOSED CONTOURS

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

DETENTION BASIN STAGE STORAGE / DISCHARGE

ELEVATION (FT.-MSL)	P.S. DISCHARGE (CFS)	A.S. DISCHARGE (CFS)	TOTAL DISCHARGE (CFS)	STORAGE VOLUME (AC.-FT.)
2322	0.0	0.0	0.0	0.00
2324	0.4	0.0	0.4	0.11
2326	1.6	0.0	1.6	0.75
2328	4.4	0.0	4.4	2.46
2330	7.1	0.0	7.1	5.28
2332	10.1	0.0	10.1	9.05
2334	12.8	0.0	12.8	13.70
2336	16.2	0.0	16.2	19.20
2338	20.0	0.0	20.0	25.62
2340	24.0	0.0	24.0	33.00
2342	28.4	0.0	28.4	41.44
2344	242.1	0.0	242.1	51.08
2346	283.8	0.0	283.8	62.11

ELEVATION (FT.-MSL)	P.S. DISCHARGE (CFS)	A.S. DISCHARGE (CFS)	TOTAL DISCHARGE (CFS)	STORAGE VOLUME (AC.-FT.)
2348	296.4	0.0	296.4	74.74
2350	308.5	0.0	308.5	89.14
2352	320.2	0.0	320.2	105.26
2354	331.4	0.0	331.4	122.99
2356	342.3	0.0	342.3	142.72
2357.5	350.2	0.0	350.2	158.76
2358	352.8	157.0	509.8	164.36
2360	363.0	1619.8	1982.8	188.18
2362	373.0	3911.6	4284.6	214.08
2364	382.7	6790.6	7173.3	242.59
2366	392.1	10154.7	10546.8	273.42
2367.5	399.1	12958.0	13357.1	298.33

06/07/11

60 0 60 120
1"=60' FEET

RANDALL V. WALL
CIVIL
No. 13746
STATE OF NEVADA
PROFESSIONAL ENGINEER
6/30/12

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		ADD ISA PROPERTY LINE, REV. WEST ABUT. CREST TIE-IN, RE-ALIGN ADJOINING ACCESS RDS. & TOE DRN.	RMS	GWH	
1	02/11		ADD SED. GAUGE, REV. BASIN GRADES, RCC FOOTPRINT & CONVERGENCE/PRINCIPAL SPILL. LAYOUT	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
DETENTION STRUCTURE SITE PLAN

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436
DESIGN	GWH	01/11
CADD	RMS	01/11
CHECK	GWH	01/11
REVIEW	–	–

FILE No. 093974361 OTS D-01A 01B EX-COND-SITE-PLAN
SCALE AS SHOWN REV. –

D-1B

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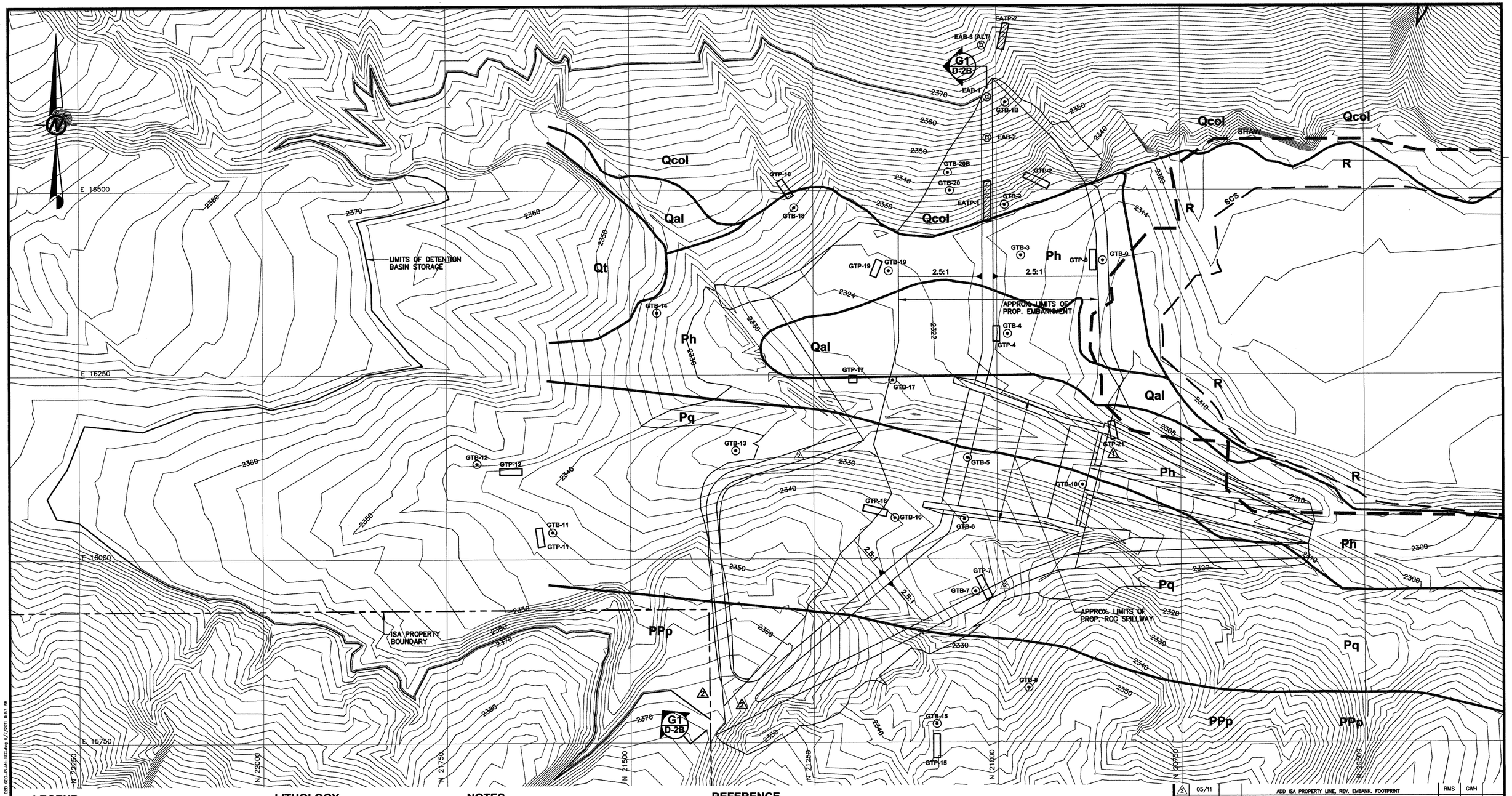

LEGEND

2320	EXISTING CONTOURS
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SHAW
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SCS
	APPROXIMATE LITHOLOGIC BOUNDARY
GTB-1	EXISTING GOLDER BOREHOLE
GTP-1	EXISTING GOLDER TEST PIT
EAB-3	EXISTING GOLDER BOREHOLE
EATP-1	EXISTING GOLDER TEST TRENCH

LITHOLOGY

PPp	PAKOON FORMATION
Pq	QUEANTOWEAP FORMATION
Ph	HERMIT FORMATION
R	REFUSE
Qal	ALLUVIUM DEPOSITS
Qcol	COLLUVIUM DEPOSITS

NOTES

1. BORINGS AND TEST PITS COMPLETED NOVEMBER 2010 AND JANUARY 2011.

2. BORINGS AND TEST PIT LOCATIONS ARE APPROXIMATE.

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC.
FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC.
FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

2. GEOLOGY INFORMATION SUMMARIZED FROM EXPONENT (2003).

06/07/11

60 0 60 120
1"=60' FEET

PROFESSIONAL ENGINEER
RANDALL V. WALL
CIVIL
No. 13746
STATE OF NEVADA
6/30/12

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		ADD ISA PROPERTY LINE, REV. EMBANK. FOOTPRINT	RMS	GWH	
1	02/11		REV. GPT-21	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
GEOLOGIC INVESTIGATION PLAN

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974360 OTS D-02A 028 GEO-PLAN-SEC	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-2A	
CHECK	GWH	01/11		
REVIEW	–	–		

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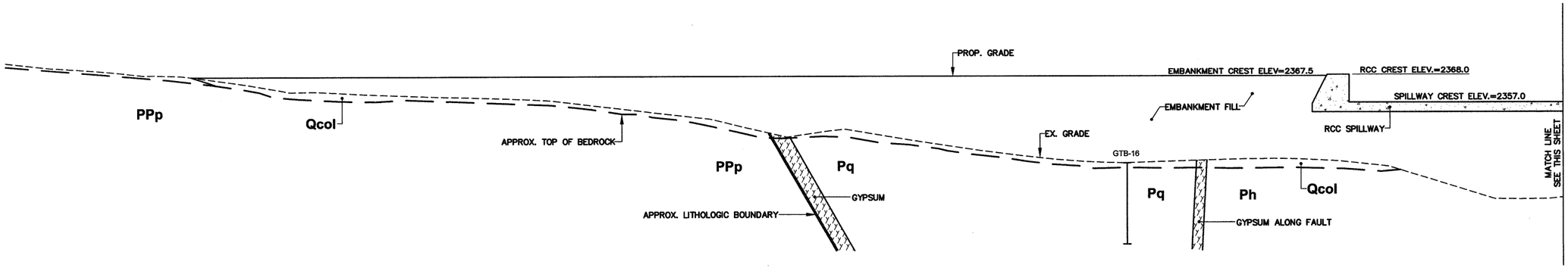
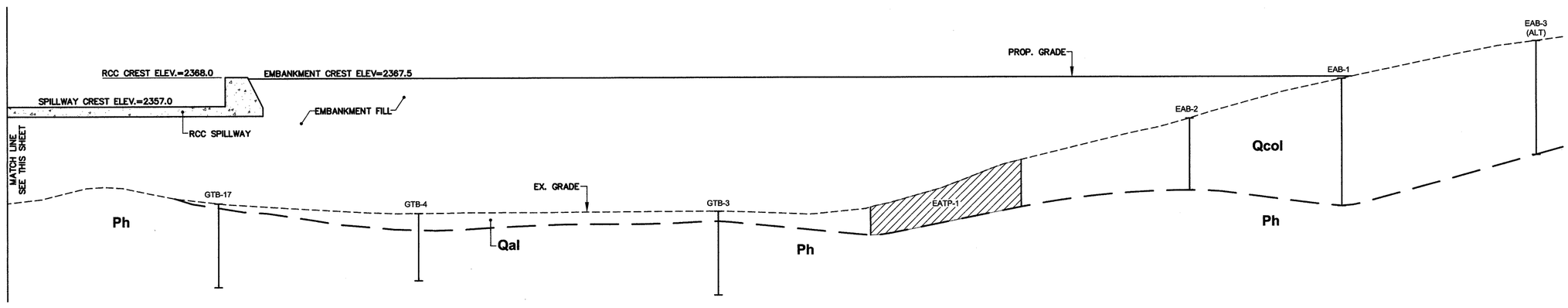


WEST ABUTMENT



EAST ABUTMENT

G1 / D-2B GEOLOGIC INVESTIGATION SECTION @ EMBANKMENT CREST

20 0 20
1"=20' FEET
NO VERTICAL EXAGGERATION

NOTES

1. SUBSURFACE CONDITIONS FROM GEOLOGIC INVESTIGATION CARRIED OUT AT THE SITE IN NOVEMBER 2010 AND JANUARY 2011.

2. THE STRATIFICATION LINES SHOWN ON THE GRAPHIC REPRESENTATION OF THE TEST BORINGS REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL OR ROCK TYPES. THE TRANSITION BETWEEN MATERIALS IS APPROXIMATE AND MAY BE FAR MORE OR LESS GRADUAL THAN SHOWN.

3. THE LOGS OF BOREHOLES SHOW GROUND CONDITIONS ENCOUNTERED AT THE BOREHOLE LOCATIONS. GEOLOGIC CONDITIONS MAY VARY BETWEEN BOREHOLES.

4. THE GEOLOGIC PROFILE AS DEPICTED ILLUSTRATES INTERPRETATION OF THE CONDITIONS AT THE SITE BASED ON THE CONDITIONS AT THE BORING LOCATION, PUBLISHED GEOLOGIC INFORMATION AND JUDGMENT USING ACCEPTED GEOLOGIC, ENGINEERING AND HYDROGEOLOGIC PRINCIPLES. CONDITIONS BETWEEN THE BORING LOCATION MAY VARY SUBSTANTIALLY FROM THOSE SHOWN ON THIS PROFILE.

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

LITHOLOGY

PPp	PAKOON FORMATION
Pq	QUEANTOWEAP FORMATION
Ph	HERMIT FORMATION
Qal	ALLUVIUM DEPOSITS
Qcol	COLLUVIUM DEPOSITS

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
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REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
GEOLOGIC INVESTIGATION SECTION

PROFESSIONAL ENGINEER STATE OF NEVADA RANDALL V. WALL CIVIL No. 13746
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No.	093-97436 OTS D-02A 02B GEO-PLAN-SEC
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-2B	
CHECK	GWH	01/11		
REVIEW	–	–		

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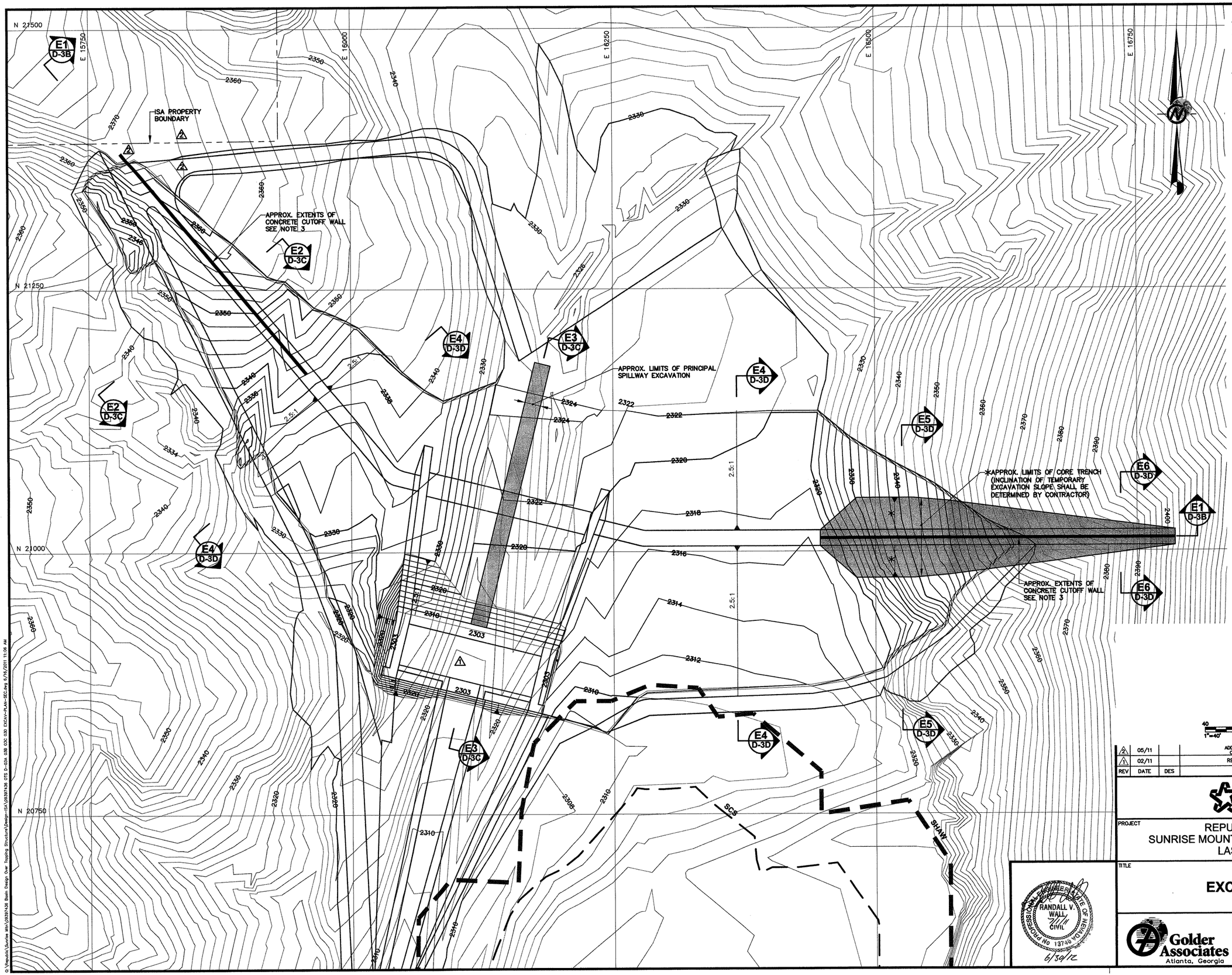

LEGEND

2320	EXISTING CONTOURS
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SHAW
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SCS
	APPROXIMATE FOOTPRINT OF EMBANKMENT & RCC SPILLWAY
2320	PROPOSED EXCAVATION CONTOURS SEE NOTE 4

NOTES

1. PRIOR TO START OF ANY OPERATIONS CONTRACTOR SHALL CONFIRM THAT THE ISA PROPERTY BOUNDARY IS CLEARLY MARKED. NO EQUIPMENT OR PERSONNEL SHALL ENTER INTO THE ISA PROPERTY.

2. EXCAVATION OPERATIONS SHALL BE CONDUCTED IN A SAFE MANNER IN ACCORDANCE WITH FEDERAL AND STATE OSHA REGULATIONS.

3. THE ABUTMENT CUTOFF WALLS CAN BE REPLACED BY AN EXCAVATED KEYWAY THAT IS THE SAME PROPOSED DEPTH AND HAS A WIDTH EQUAL TO THE EMBANKMENT CREST ELEVATION. SEE DETAIL 1, SHEET D-3C.

4. RESIDENT GEOTECHNICAL ENGINEER. ALL LOOSE, SOFT, COMPRESSIBLE SOILS SHOULD BE REMOVED FROM BENEATH THE FOOTPRINT OF THE EMBANKMENT.

5. EXCAVATION CONTOURS SHOWN ON THIS PLAN ARE FOR QUANTITY ESTIMATION PURPOSES. ACTUAL EXCAVATION LIMITS WILL BE AS DIRECTED BY THE RESIDENT GEOTECHNICAL ENGINEER.

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

06/07/11

40 0 40 80
1"=40' FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		ADD ISA PROPERTY LINE, REV. WEST ABUT. CUTOFF WALL & EMBANK. FOOTPRINT	RMS	GWH	
1	02/11		REV. BASIN & RCC EXCAV. GRADES	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EXCAVATION PLAN

PROFESSIONAL ENGINEER STATE OF NEVADA
RANDALL V. WALL
CIVIL
No 13746
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093974361 OTS D-03A 03B 03C 03D EXCAV-PLAN-SEC
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-3A
CHECK	GWH	01/11	
REVIEW	–	–	

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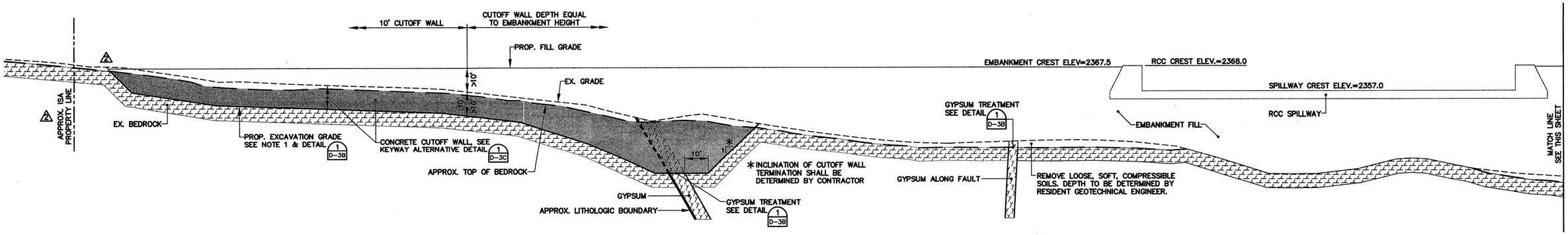
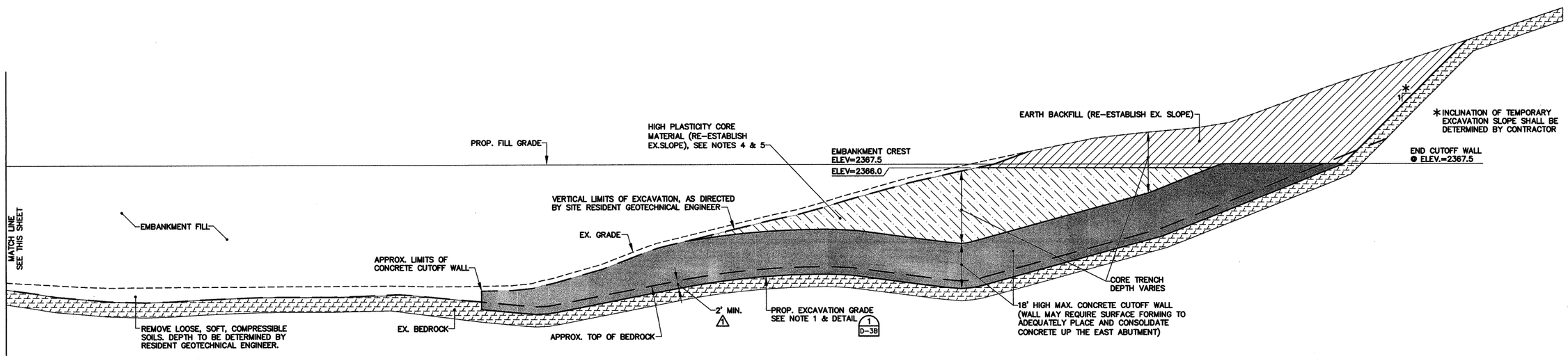


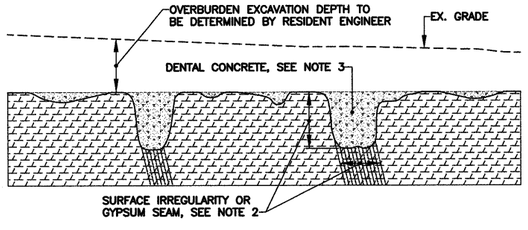
WEST ABUTMENT



EAST ABUTMENT

E1 / D-3B EXCAVATION SECTION @ EMBANKMENT CREST

20 0 20
1"=20' FEET
NO VERTICAL EXAGGERATION



1 / D-3B TYPICAL FOUNDATION EXCAVATION DETAIL

NOTES

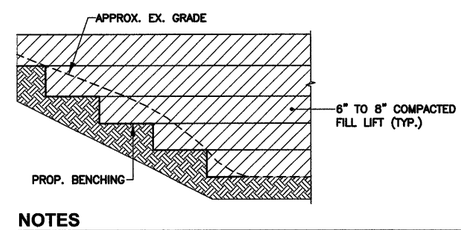
1. BEDROCK ELEVATION IS APPROXIMATE. ADDITIONAL EXCAVATION AND FOUNDATION TREATMENT MAY BE REQUIRED AS DIRECTED BY RESIDENT GEOTECHNICAL ENGINEER.

2. ALL LOOSE ROCK, SOFT ZONES, GYPSUM AND ORGANIC MATERIAL ARE TO BE REMOVED. ROCK SURFACE IS TO BE JETTED AND CLEANED. SOFT SEAMS OR GYPSUM ARE TO BE CLEANED TO A DEPTH AT LEAST TWICE THE SEAM'S WIDTH. GYPSUM AREA TREATMENT TO EXTEND UNDER THE ENTIRE FOOTPRINT OF THE EMBANKMENT.

3. DENTAL CONCRETE IS TO BE PLACED IN ALL IRREGULARITIES SO THAT THE FIRST SOIL OR RCC LIFT CAN BE PLACED IN INTIMATE CONTACT WITH THE FOUNDATION SURFACE. BEDDING MORTAR TO BE PLACED ON ROCK AND DENTAL CONCRETE SURFACE BEFORE RCC.

4. HIGH PLASTICITY CORE MATERIAL SHALL HAVE A PLASTIC INDEX >10 AND 50% PASSING THE #200 SIEVE. CORE MATERIAL SHALL BE PLACED AT 3% TO 6% WET OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY.

5. NEW EARTHFILL SHALL BE BENCHED IN WITH EXISTING FILL/SOILS PER DETAIL 2, SHEET D-3B.



NOTES

1. THIS DETAIL SHALL BE USED TO MIX EXISTING SOILS WITH NEW FILL AT THE INTERFACE. BENCHES SHALL BE EXCAVATED AT THE TIME OF PLACEMENT OF THE EARTHFILL LIFT USING EARTHFILL PLACEMENT EQUIPMENT.

2. BENCHES TO BE CUT WITH MAXIMUM VERTICAL INCREMENTS OF 1 FOOT AND MINIMUM HORIZONTAL DISTANCE OF 2 FEET.

3. THE PREPARED SUBGRADE TO BE APPROVED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO FILL PLACEMENT.

2 / D-3B BENCHING & FILL DETAIL

NTS

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		SEC. E1: WEST ABUT.; ADD ISA PROPERTY LINE, REV. CUTOFF WALL	RMS	GWH	
1	02/11		REV. CUTOFF WALL EXCAV. DEPTH	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EXCAVATION SECTIONS SHEET 1 OF 3

RANDALL V. WALL
CIVIL
No. 13749
STATE OF NEVADA
PROFESSIONAL ENGINEER
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093974361 OTS D-03A 032 03C 03D	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-3B	
CHECK	GWH	01/11		
REVIEW	–	–		

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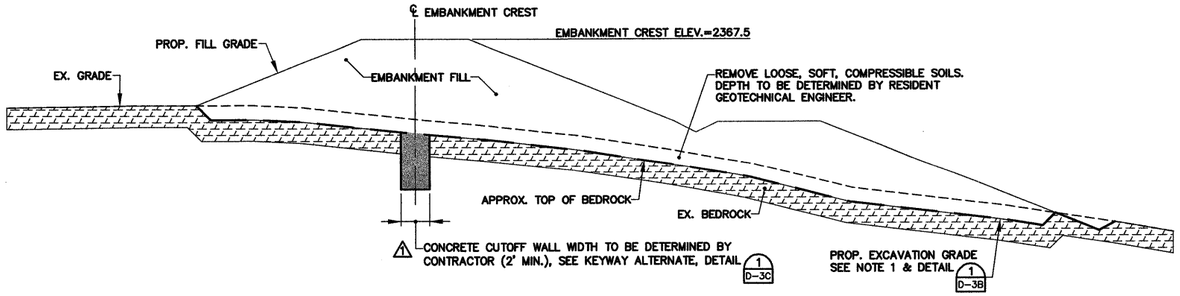
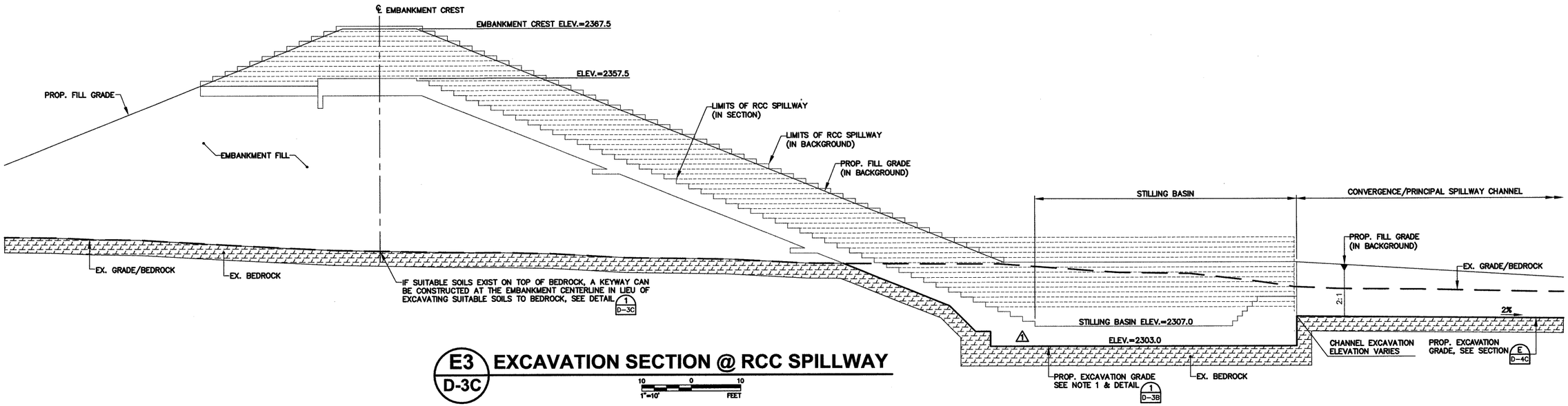


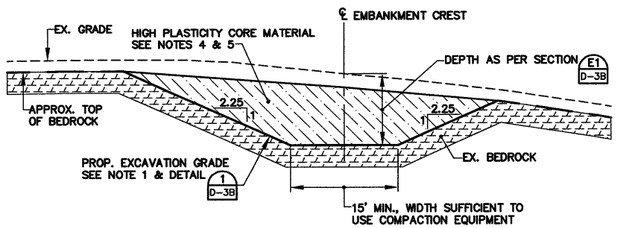
E2 / D-3C EXCAVATION SECTION @ WEST ABUTMENT

10 0 10
1"=10' FEET



E3 / D-3C EXCAVATION SECTION @ RCC SPILLWAY

10 0 10
1"=10' FEET



1 / D-3C ALTERNATE KEYWAY IN LIEU OF CUTOFF WALL ON ABUTMENTS

10 0 10
1"=10' FEET

NOTES

1. BEDROCK ELEVATION IS APPROXIMATE. ADDITIONAL EXCAVATION MAY BE REQUIRED AS DIRECTED BY RESIDENT GEOTECHNICAL ENGINEER.

2. ALL LOOSE ROCK, SOFT ZONES, GYPSUM AND ORGANIC MATERIAL ARE TO BE REMOVED. ROCK SURFACE IS TO BE JETTED AND CLEANED. SOFT SEAMS OR GYPSUM ARE TO BE CLEANED TO A DEPTH AT LEAST TWICE THE SEAM'S WIDTH.

3. DENTAL CONCRETE IS TO BE PLACED IN ALL IRREGULARITIES SO THAT THE FIRST SOIL OR RCC LIFT CAN BE PLACED IN INTIMATE CONTACT WITH THE FOUNDATION SURFACE. BEDDING MORTAR TO BE PLACED ON ROCK AND DENTAL CONCRETE SURFACE BEFORE RCC.

4. HIGH PLASTICITY CORE MATERIAL SHALL HAVE A PLASTIC INDEX >10 AND 50% PASSING THE #200 SIEVE. CORE MATERIAL SHALL BE PLACED AT 3% TO 6% WET OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY.

5. NEW EARTHFILL SHALL BE BENCHED IN WITH EXISTING FILL/SOILS PER DETAIL 2, SHEET D-3B.

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		REV. PROP. FILL GRADE SEC. E2	RMS	GWH	
1	02/11		REV. CUTOFF WALL DEPTH & RCC EXCAV. GRADES	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EXCAVATION SECTIONS SHEET 2 OF 3

RANDALL V. WALL CIVIL No. 13745 STATE OF NEVADA
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974436 OTB D-03A 038 03C 030 EXCAV-PLAN-SEC	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-3C	
CHECK	GWH	01/11		
REVIEW	–	–		

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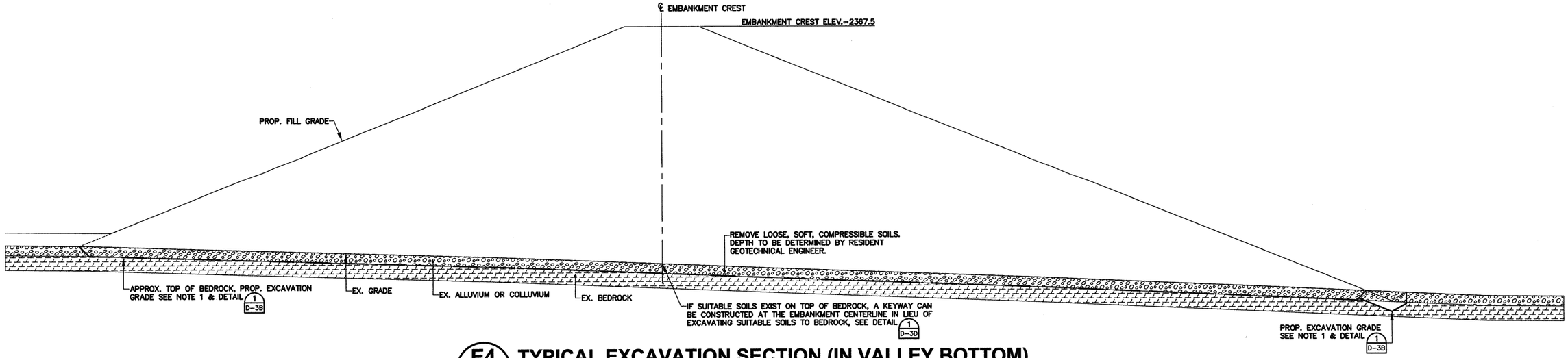
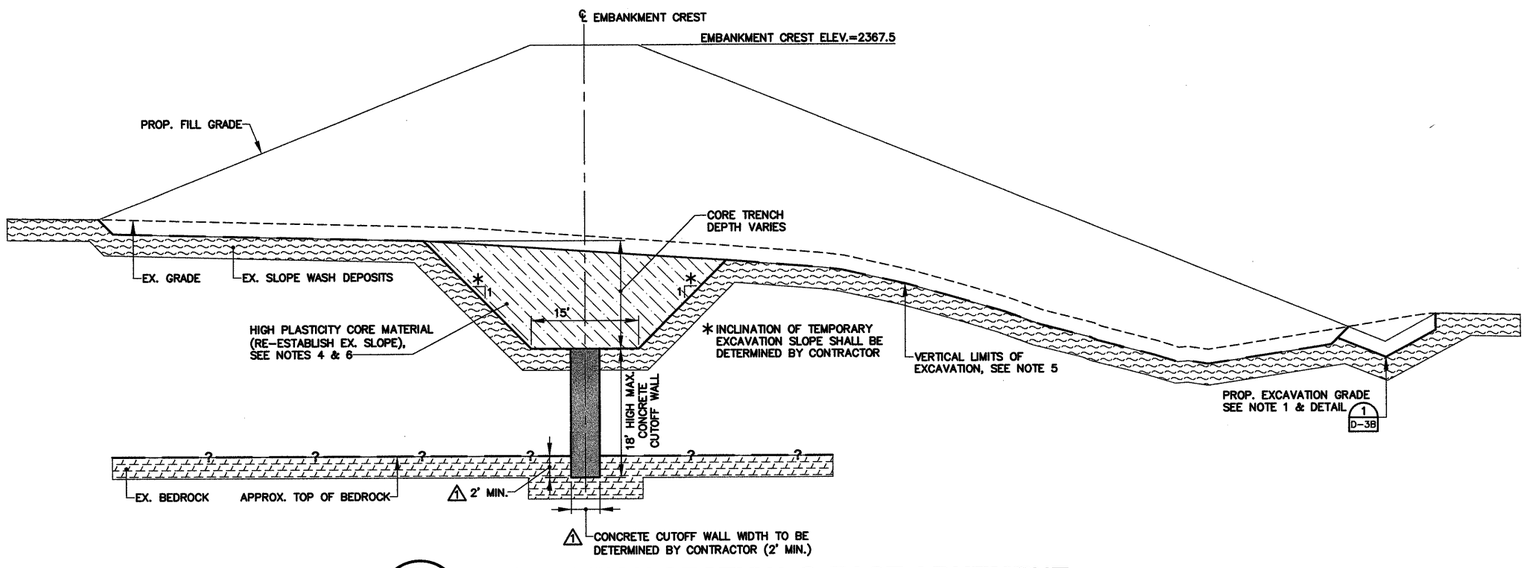


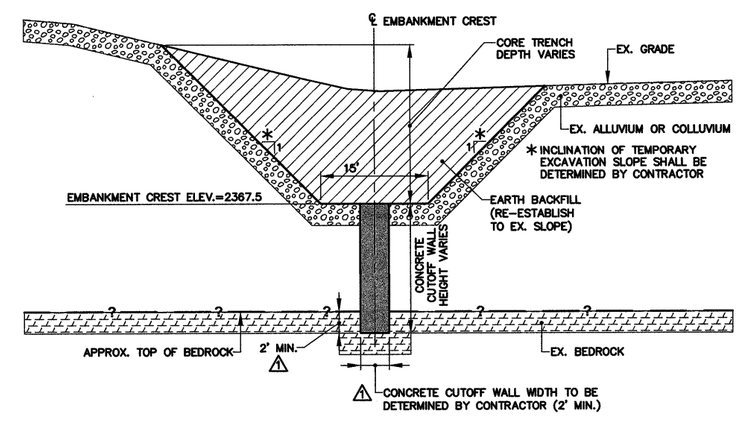
E4 / D-3D TYPICAL EXCAVATION SECTION (IN VALLEY BOTTOM)

10 0 10
1"=10' FEET



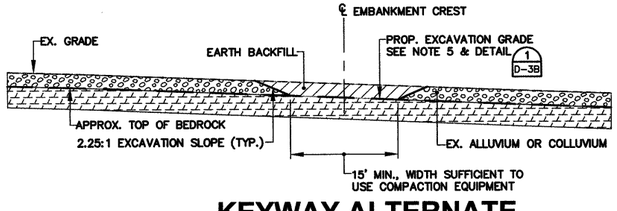
E5 / D-3D EXCAVATION SECTION @ EAST ABUTMENT

10 0 10
1"=10' FEET



E6 / D-3D EXCAVATION SECTION @ UPPER EAST ABUTMENT

10 0 10
1"=10' FEET



1 / D-3D KEYWAY ALTERNATE IN VALLEY BOTTOM

10 0 10
1"=10' FEET

NOTES

1. BEDROCK ELEVATION IS APPROXIMATE. ADDITIONAL EXCAVATION MAY BE REQUIRED AS DIRECTED BY RESIDENT GEOTECHNICAL ENGINEER.
2. ALL LOOSE ROCK, SOFT ZONES, GYPSUM AND ORGANIC MATERIAL ARE TO BE REMOVED. ROCK SURFACE IS TO BE JETTED AND CLEANED. SOFT SEAMS OR GYPSUM ARE TO BE CLEANED TO A DEPTH AT LEAST TWICE THE SEAM'S WIDTH.
3. DENTAL CONCRETE IS TO BE PLACED IN ALL IRREGULARITIES SO THAT THE FIRST SOIL OR RCC LIFT CAN BE PLACED IN INTIMATE CONTACT WITH THE FOUNDATION SURFACE. BEDDING MORTAR TO BE PLACED ON ROCK AND DENTAL CONCRETE SURFACE BEFORE RCC.
4. HIGH PLASTICITY CORE MATERIAL SHALL HAVE A PLASTIC INDEX >10 AND 50% PASSING THE #200 SIEVE. CORE MATERIAL SHALL BE PLACED AT 3% TO 6% WET OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY.
5. EXCAVATE TO BEDROCK IN CENTER OF FOUNDATION. REMOVE ALL LOOSE MATERIAL AND CLEAN ROCK SURFACE WITH AIR OR WATER JETTING. PLACE DENTAL CONCRETE AS REQUIRED.
6. NEW EARTHFILL SHALL BE BENCHED IN WITH EXISTING FILL/SOILS PER DETAIL 2, SHEET D-3B.

06/07/11

PROFESSIONAL ENGINEER — STATE OF NEVADA — RANDALL V. WALL — 7/11/11 — CIVIL — PROJECT No. 13746 — 07/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		REV. CUTOFF WALL EXCAV. DEPTH & WIDTH	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EXCAVATION SECTIONS SHEET 3 OF 3

Golder Associates — Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974361 OTS D-03A 03B 03C 03D EXCAV-PLAN-SEC
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-3D
CHECK	GWH	01/11	
REVIEW	–	–	

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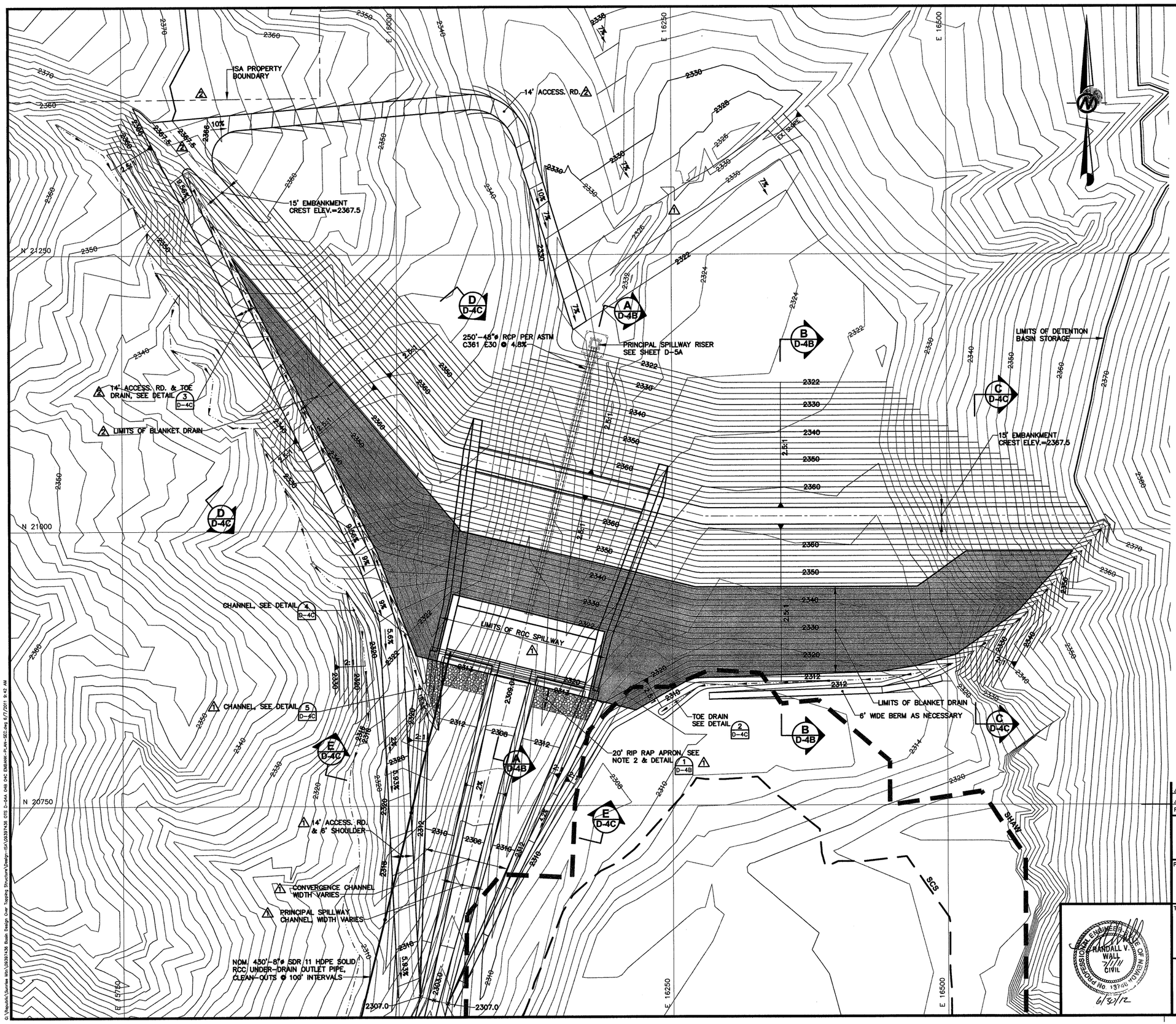


LEGEND

2320	EXISTING CONTOURS
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SHAW
	APPROXIMATE LIMITS OF WASTE PROVIDED BY SCS
2320	PROPOSED CONTOURS

NOTE

1. CONSTRUCT ENTIRE EMBANKMENT WITHOUT RCC SPILLWAY TO PRELOAD EMBANKMENT AND INDUCE SETTLEMENT. EXCAVATE RCC SPILLWAY ALIGNMENT AFTER COMPLETION OF EMBANKMENT.
2. RIP RAP APRON, DOWNSTREAM OF THE STILLING BASIN, IS NOT REQUIRED IN AREAS WHERE COMPETENT BEDROCK IS LOCATED.
3. FOR RCC SPILLWAY AND UNDER-DRAIN LAYOUT SEE SHEET D-6A.

REFERENCE

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.

N.E. CANYON UPDATED: FLIGHT DATE: 05/22/02.

LANDFILL TOPOGRAPHY UPDATED BY KENNY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

06/07/11

40 0 40 80
1"=40' FEET

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
2	05/11		ADD ISA PROPERTY LINE, REV. WEST ABUT. CREST TIE-IN, RE-ALIGN ADJOINING ACCESS RDS., TOE DRN. & BLANKET DRN.	RMS	GWH	
1	02/11		REV. BASIN GRADES, STILL. BASIN, UP & DN STREAM TRAIN. WALLS & CONVERGENCE/PRINCIPAL SPILL LAYOUT	RMS	GWH	

REPUBLIC SERVICES, INC.

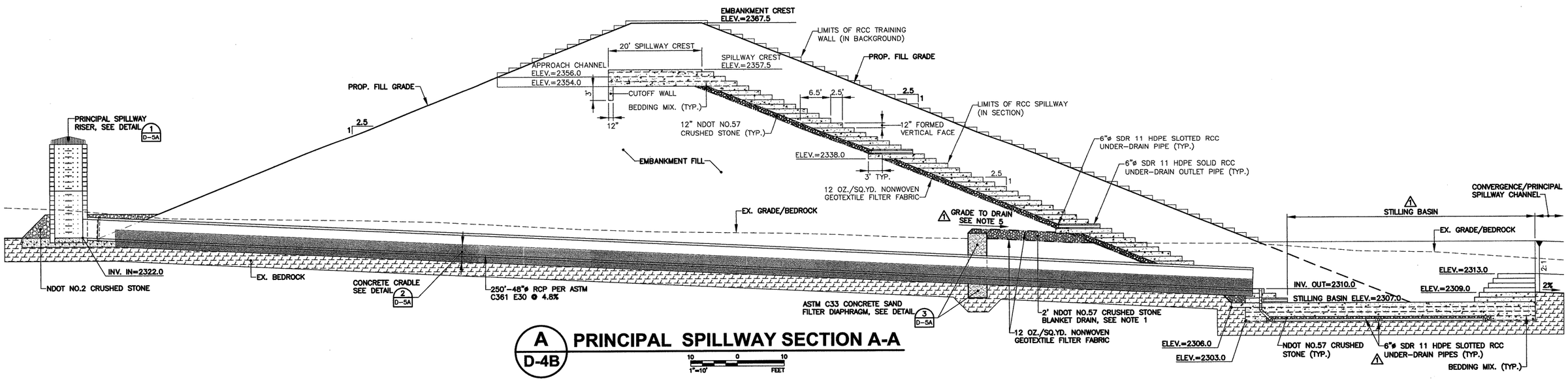
PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EMBANKMENT PLAN

Golder Associates
Atlanta, Georgia

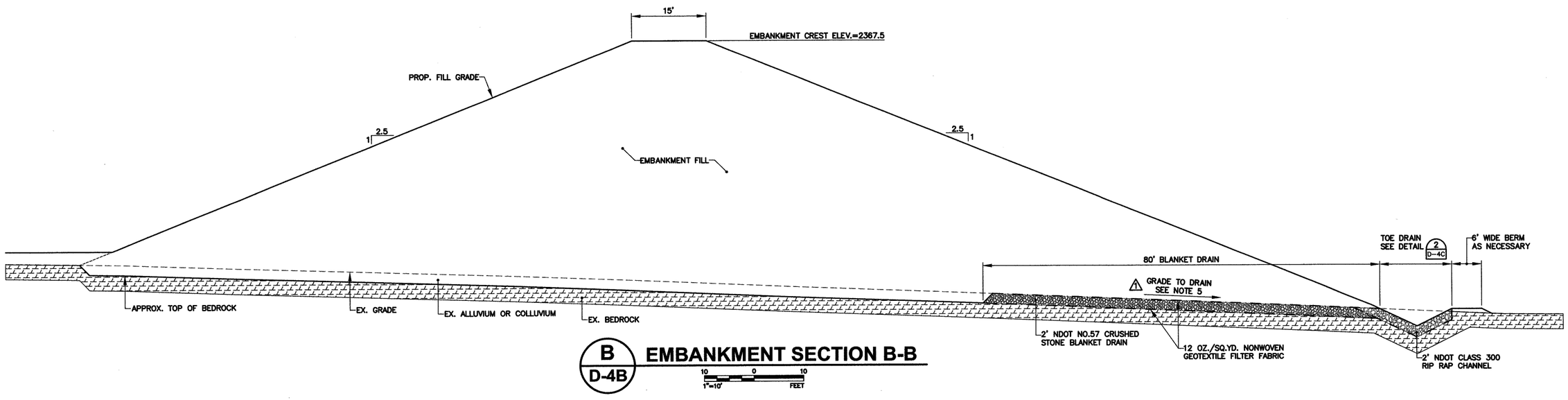
PROJECT No.		093-97436	FILE No. 093974361 OTS D-04A 04B 04C EMBANK-PLAN-SEC
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-4A
CHECK	GWH	01/11	
REVIEW	–	–	

PROFESSIONAL ENGINEER STATE OF NEVADA RANDALL V. WALL CIVIL No. 13746
6/30/12



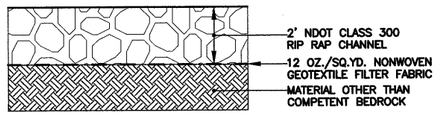
A / D-4B PRINCIPAL SPILLWAY SECTION A-A

1"=10' (10 0 10 FEET)



B / D-4B EMBANKMENT SECTION B-B

1"=10' (10 0 10 FEET)



1 / D-4B RIP RAP APRON DETAIL

NTS

NOTES

1. BEDROCK ELEVATION IS APPROXIMATE. ADDITIONAL EXCAVATION AND FOUNDATION TREATMENT MAY BE REQUIRED AS DIRECTED BY RESIDENT ENGINEER, SEE DETAIL 1, SHEET D-4C.

2. ALL LOOSE ROCK, SOFT ZONES, GYPSUM AND ORGANIC MATERIAL ARE TO BE REMOVED. ROCK SURFACE IS TO BE JETTED AND CLEANED. SOFT SEAMS OR GYPSUM ARE TO BE CLEANED TO A DEPTH AT LEAST TWICE THE SEAM'S WIDTH. GYPSUM AREA TREATMENT TO EXTEND UNDER THE ENTIRE FOOTPRINT OF THE EMBANKMENT.

3. DENTAL CONCRETE IS TO BE PLACED IN ALL IRREGULARITIES SO THAT THE FIRST SOIL OR RCC LIFT CAN BE PLACED IN INTIMATE CONTACT WITH THE FOUNDATION SURFACE. BEDDING MORTAR TO BE PLACED ON ROCK AND DENTAL CONCRETE SURFACE BEFORE RCC.

4. REFER TO DRAWINGS D-3B, D-3C AND D-3D FOR EMBANKMENT FOUNDATION INFORMATION.

5. BLANKET DRAIN SHALL BE INSTALLED TO ASSURE POSITIVE DRAINAGE TO TOE DRAIN. CONTRACTOR SHALL LOCALLY FILL OR LOCALLY OVER EXCAVATE (AS NECESSARY) TO PREVENT PONDING WITHIN THE BLANKET DRAIN.

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		ADD DET. 1, & NOTE 5, REV. STILL. BASIN, ON STREAM TRAIN. WALLS & BASIN UNDER-DRN.	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EMBANKMENT SECTIONS
SHEET 1 OF 2

PROFESSIONAL ENGINEER RANDALL V. WALL CIVIL No. 13746 STATE OF NEVADA 6/8/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No.	093974361 CTS D-04A D4B D4C EMBANK-PLAN-SEC	
DESIGN	GWH	01/11	SCALE	AS SHOWN	REV. –
CADD	RMS	01/11	D-4B		
CHECK	GWH	01/11			
REVIEW	–	–			

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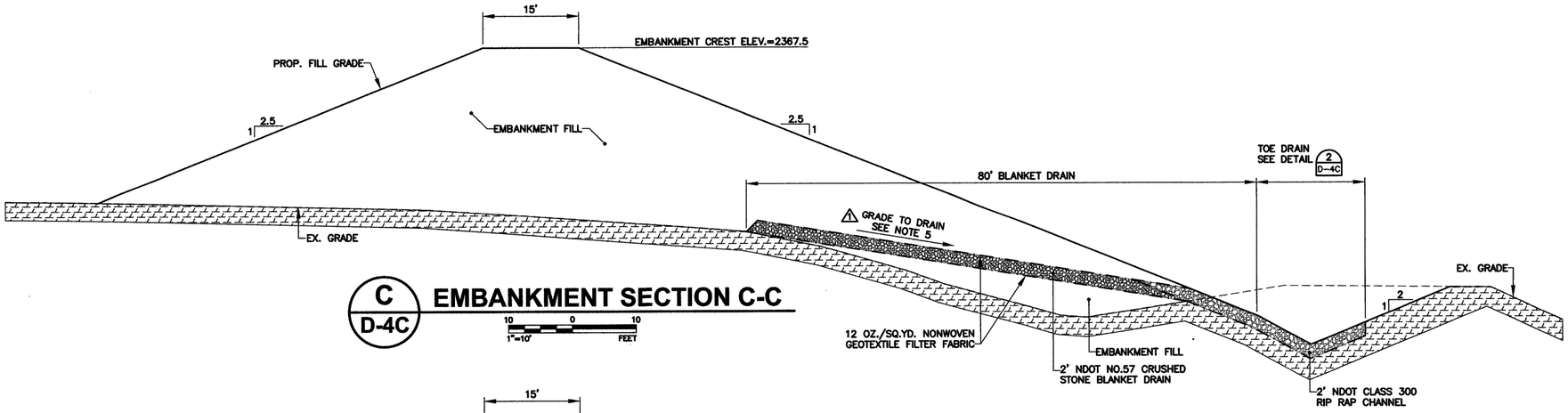
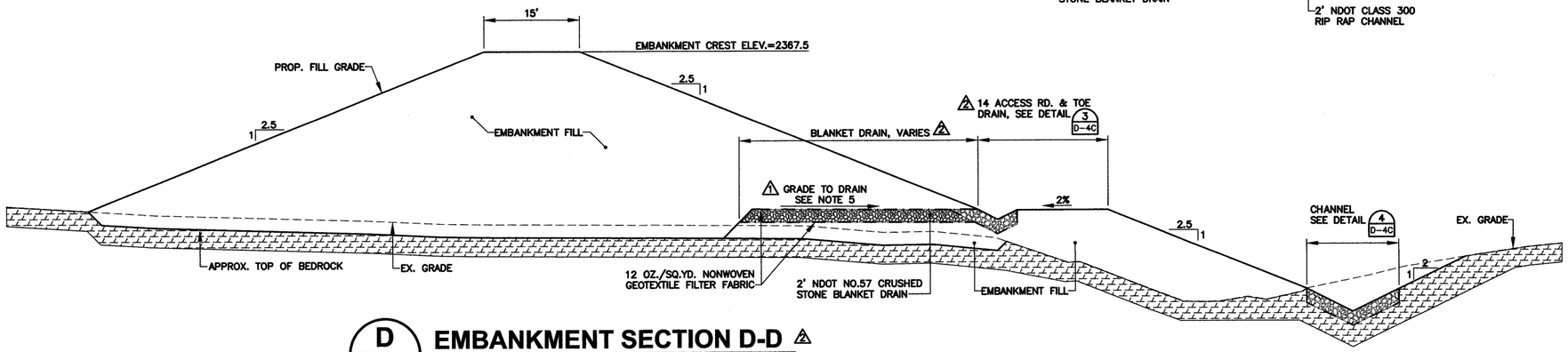


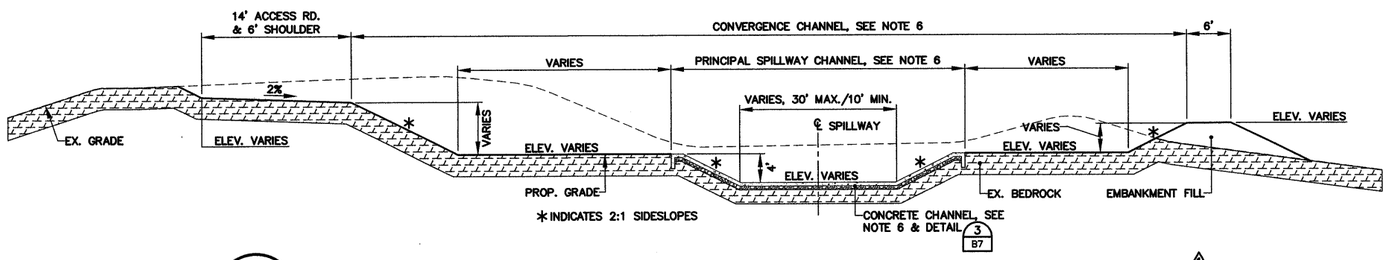
C / D-4C EMBANKMENT SECTION C-C

10 0 10
1"=10' FEET



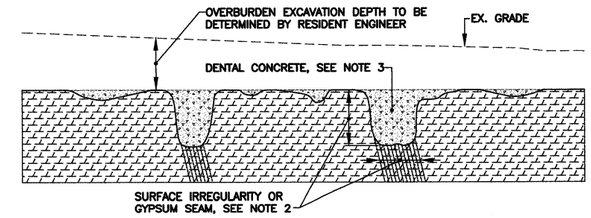
D / D-4C EMBANKMENT SECTION D-D

10 0 10
1"=10' FEET



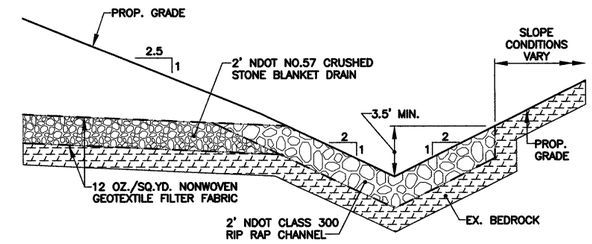
E / D-4C CONVERGENCE / PRINCIPAL SPILLWAY CHANNEL SECTION E-E

10 0 10
1"=10' FEET



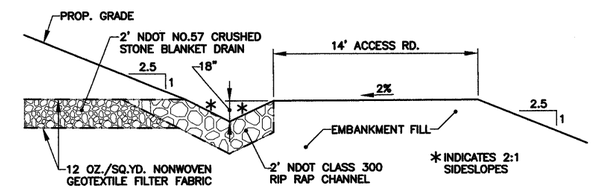
1 / D-4C FOUNDATION EXCAVATION DETAIL

5 0 5
1"=5' FEET



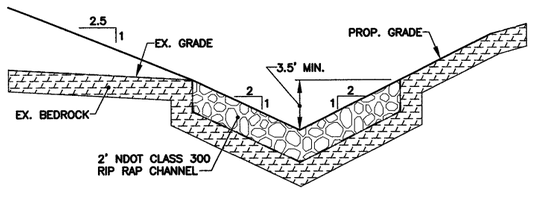
2 / D-4C BLANKET & TOE DRAIN DETAIL

5 0 5
1"=5' FEET



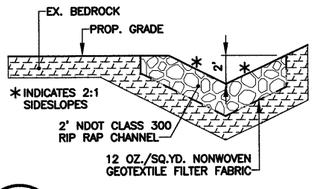
3 / D-4C ACCESS RD. & TOE DRAIN DETAIL

5 0 5
1"=5' FEET



4 / D-4C CHANNEL DETAIL

5 0 5
1"=5' FEET



5 / D-4C CHANNEL DETAIL

5 0 5
1"=5' FEET

NOTES

1. BEDROCK ELEVATION IS APPROXIMATE. ADDITIONAL EXCAVATION AND FOUNDATION TREATMENT MAY BE REQUIRED AS DIRECTED BY RESIDENT ENGINEER, SEE DETAIL 1, SHEET D-4C.

2. ALL LOOSE ROCK, SOFT ZONES, GYPSUM AND ORGANIC MATERIAL ARE TO BE REMOVED. ROCK SURFACE IS TO BE JETTED AND CLEANED. SOFT SEAMS OR GYPSUM ARE TO BE CLEANED TO A DEPTH AT LEAST TWICE THE SEAM'S WIDTH. GYPSUM AREA TREATMENT TO EXTEND UNDER THE ENTIRE FOOTPRINT OF THE EMBANKMENT.

3. DENTAL CONCRETE IS TO BE PLACED IN ALL IRREGULARITIES SO THAT THE FIRST SOIL OR RCC LIFT CAN BE PLACED IN INTIMATE CONTACT WITH THE FOUNDATION SURFACE. BEDDING MORTAR TO BE PLACED ON ROCK AND DENTAL CONCRETE SURFACE BEFORE RCC.

4. REFER TO DRAWINGS D-3B, D-3C AND D-3D FOR EMBANKMENT FOUNDATION INFORMATION.

△1 5. BLANKET DRAIN SHALL BE INSTALLED TO ASSURE POSITIVE DRAINAGE TO TOE DRAIN. CONTRACTOR SHALL LOCALLY FILL OR LOCALLY OVER EXCAVATE (AS NECESSARY) TO PREVENT PONDING WITHIN THE BLANKET DRAIN.

△1 6. RCC MAY BE USED IN PLACE OF REINFORCED CONCRETE FOR CONSTRUCTION OF THE CONVERGENCE AND PRINCIPAL SPILLWAY CHANNEL.

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
△2	05/11		REV. SEC. D, ACCESS RD., TOE DRN. & BLANKET DRN. ELEV.	RMS	GWH	
△1	02/11		ADD. DET. 5, SEC. E-E, & NOTES 5 & 6	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
EMBANKMENT SECTIONS
SHEET 2 OF 2

RANDALL V. WALL
CIVIL
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974361 OTS D-04A D4B D4C EMBANK-PLAN-SEC	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-4C	
CHECK	GWH	01/11		
REVIEW	–	–		

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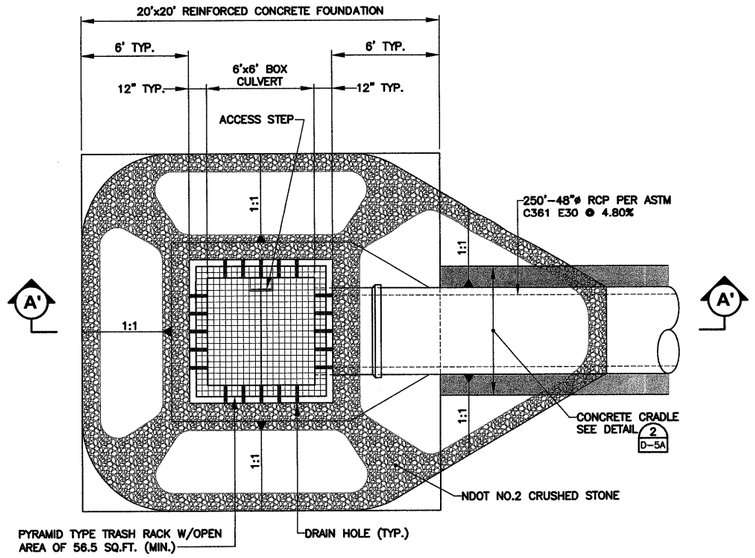
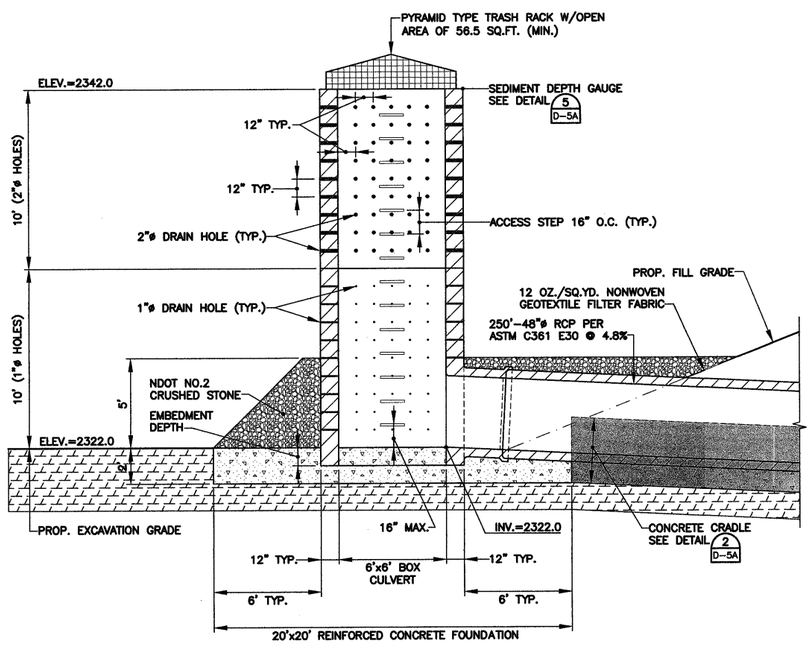


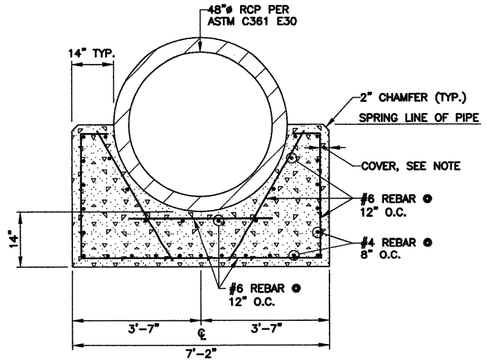
PLAN



SECTION A'-A'

1 D-5A PRINCIPAL SPILLWAY STRUCTURE

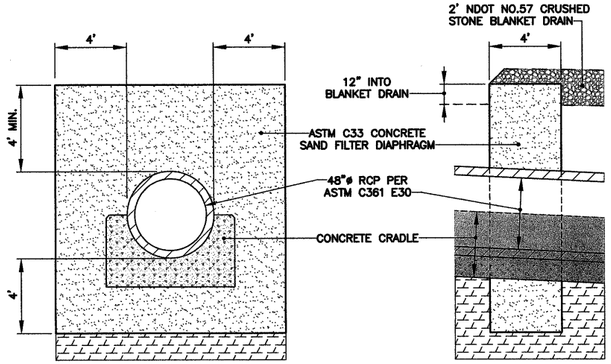
1"=4' 4 0 4 FEET



NOTE: REBAR SHALL HAVE 2 INCHES OF CONCRETE COVER WHEN FORMED AND 3 INCHES OF CONCRETE COVER WHEN CONSTRUCTED AGAINST SOIL OR ROCK.

2 D-5A CONCRETE PIPE CRADLE DETAIL

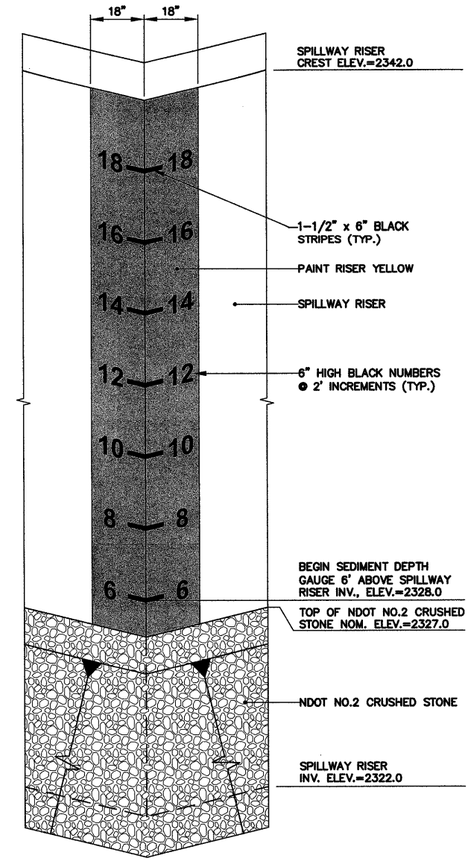
1"=2' 2 0 2 FEET



ELEVATION SECTION

3 D-5A FILTER DIAPHRAGM DETAIL

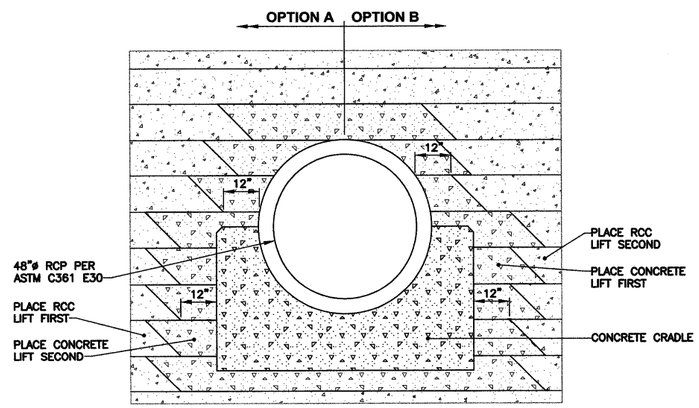
1"=4' 4 0 4 FEET



SOUTHWEST CORNER ISOMETRIC

5 D-5A PRINCIPAL SPILLWAY STRUCTURE SEDIMENT DEPTH GAUGE

1"=2' 2 0 2 FEET



NOTE: GE-RCC IS AN ACCEPTABLE SUBSTITUTE FOR NON-REINFORCED CONCRETE AROUND THE RCP AND CRADLE.

4 D-5A RCC/CONCRETE PLACEMENT AROUND CONCRETE PIPE & CRADLE

1"=2' 2 0 2 FEET

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
PRINCIPAL SPILLWAY STRUCTURE DETAILS

PROFESSIONAL ENGINEER STATE OF INDIANA RANDALL V. WALL CIVIL No. 13746 6/29/12

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974.36 OTS D-05A PRINC-SPILL-DET	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-5A	
CHECK	GWH	01/11		
REVIEW	–	–		

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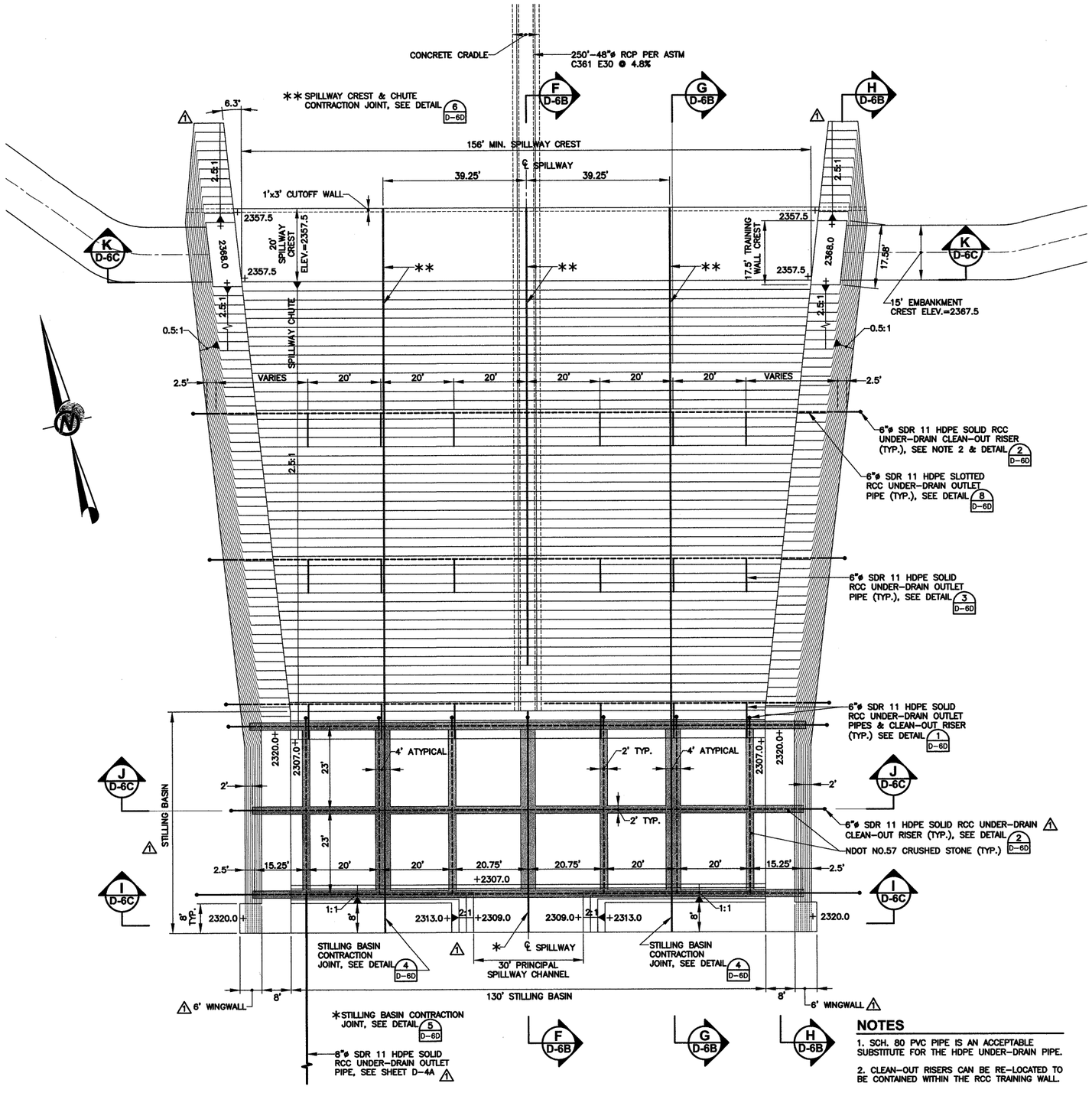

NOTES

1. SCH. 80 PVC PIPE IS AN ACCEPTABLE SUBSTITUTE FOR THE HDPE UNDER-DRAIN PIPE.
2. CLEAN-OUT RISERS CAN BE RE-LOCATED TO BE CONTAINED WITHIN THE RCC TRAINING WALL.

1 / D-6A RCC SPILLWAY & UNDER-DRAIN LAYOUT

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		REV. STILL. BASIN, UP & DN STREAM TRAIN. WALLS & BASIN UNDER-DRN.	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
RCC SPILLWAY & UNDER-DRAIN LAYOUT

PROFESSIONAL ENGINEER STATE OF NEVADA RANDALL V. WALL 7/11/11 CIVIL No. 13706 6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093974361 OTS D-06A 06B 06C 06D RCC-SPILL-ALL	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-6A	
CHECK	GWH	01/11		
REVIEW	–	–		

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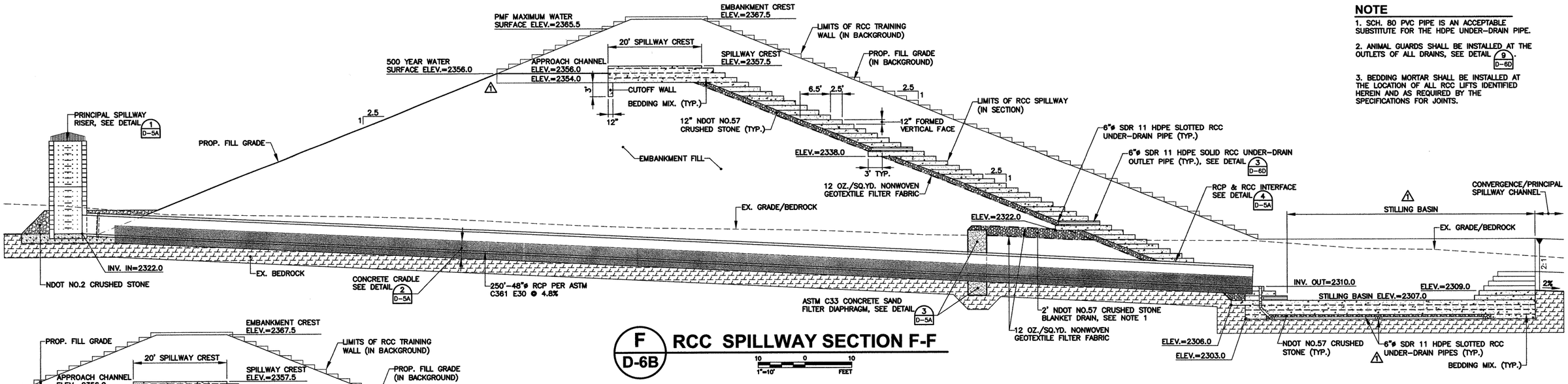
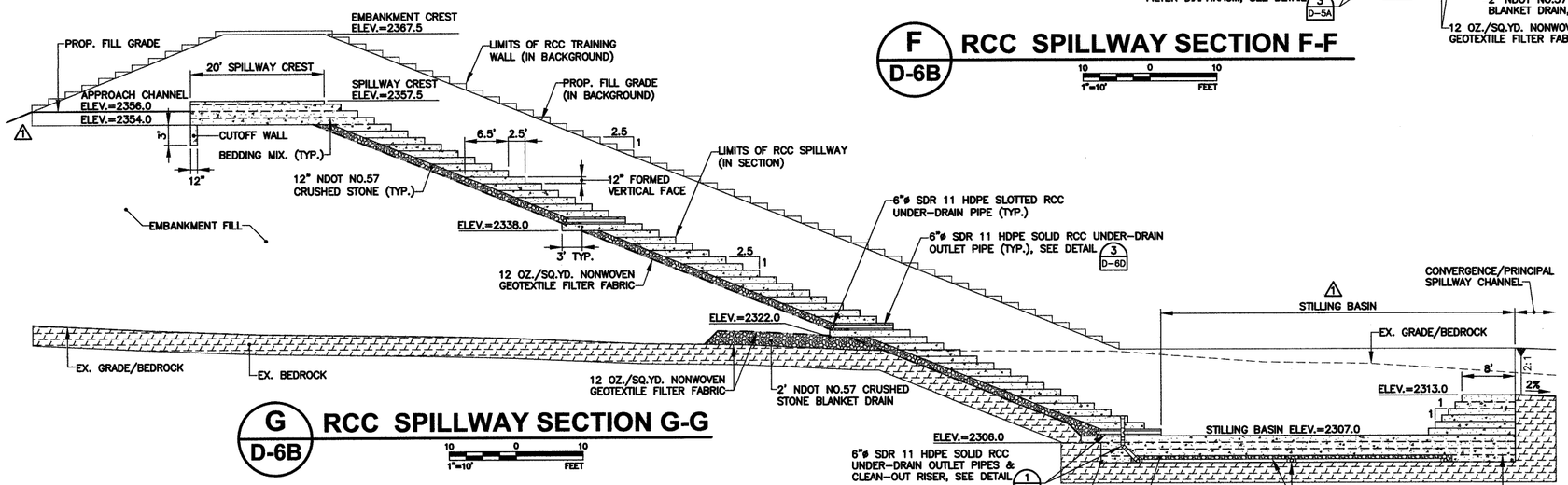
NOTE

1. SCH. 80 PVC PIPE IS AN ACCEPTABLE SUBSTITUTE FOR THE HDPE UNDER-DRAIN PIPE.
2. ANIMAL GUARDS SHALL BE INSTALLED AT THE OUTLETS OF ALL DRAINS, SEE DETAIL 9/D-6D.
3. BEDDING MORTAR SHALL BE INSTALLED AT THE LOCATION OF ALL RCC LIFTS IDENTIFIED HEREIN AND AS REQUIRED BY THE SPECIFICATIONS FOR JOINTS.



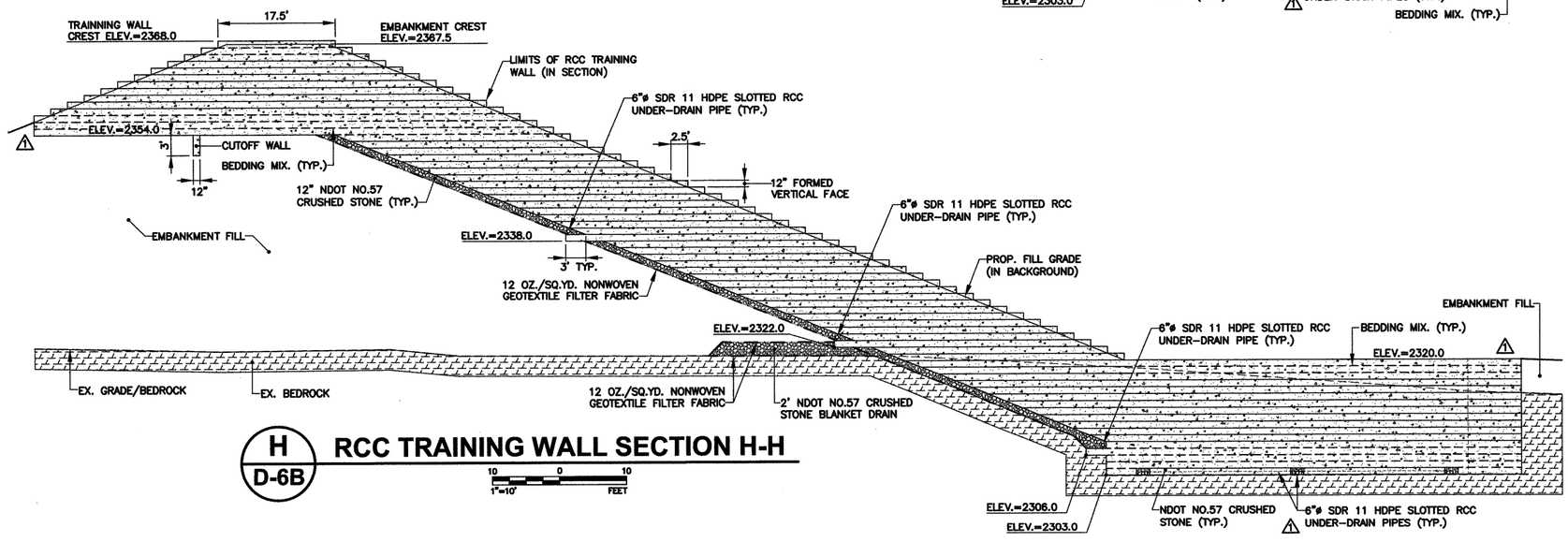
F / D-6B RCC SPILLWAY SECTION F-F

1"=10' 10 0 10 FEET



G / D-6B RCC SPILLWAY SECTION G-G

1"=10' 10 0 10 FEET



H / D-6B RCC TRAINING WALL SECTION H-H

1"=10' 10 0 10 FEET

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		REV. STILL. BASIN, UP & DN STREAM TRAIN. WALLS & BASIN UNDER-DRN.	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
RCC SPILLWAY & UNDER-DRAIN SECTIONS SHEET 1 OF 2

PROFESSIONAL ENGINEER RANDALL G. WALL No. 13746 CIVIL STATE OF NEVADA 6/30/12

Golder Associates Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093-97436 OTS D-06A 06B 06C 06D RCC-SPILL-ALL	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-6B	
CHECK	GWH	01/11		
REVIEW	–	–		

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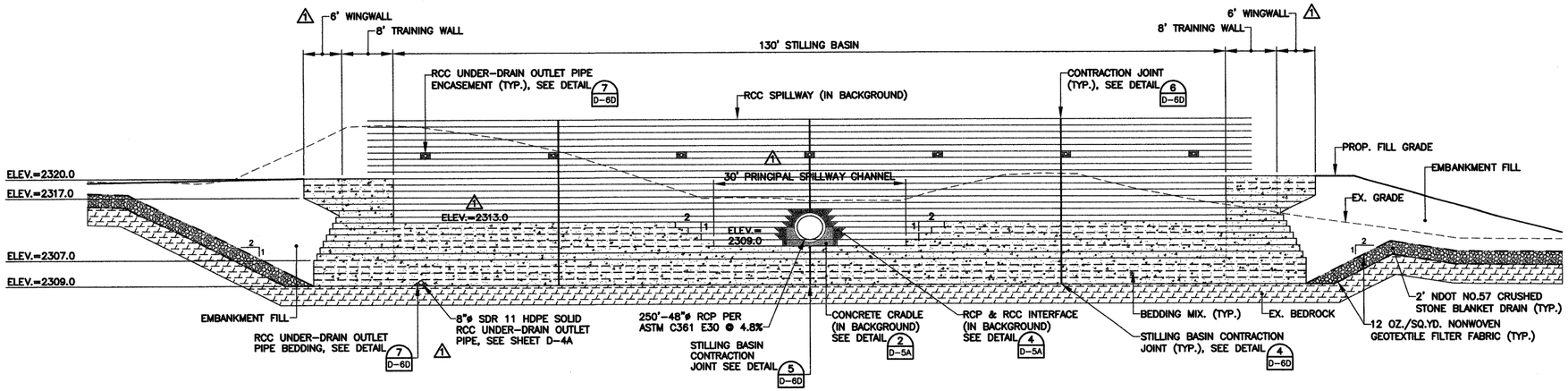
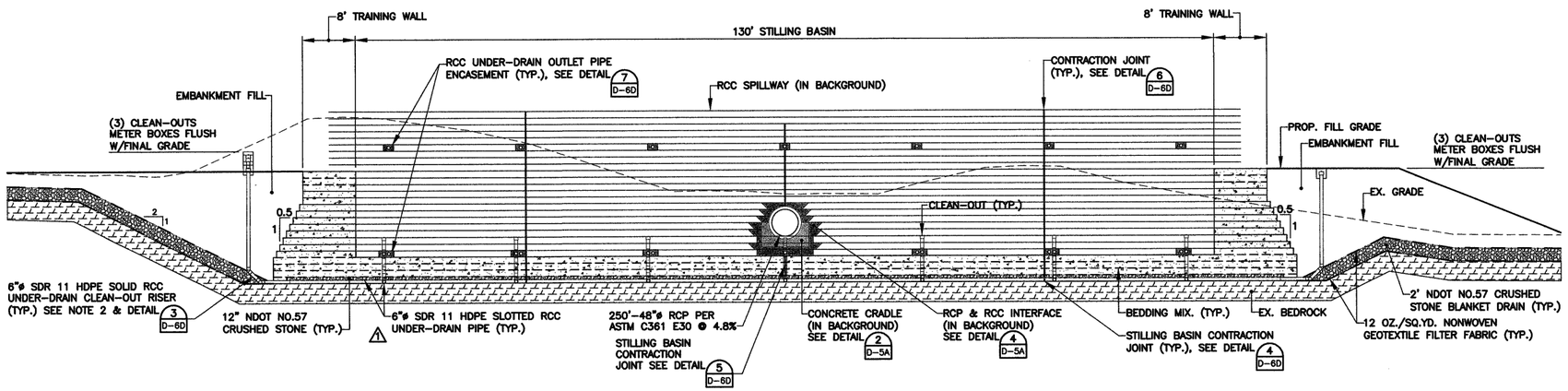


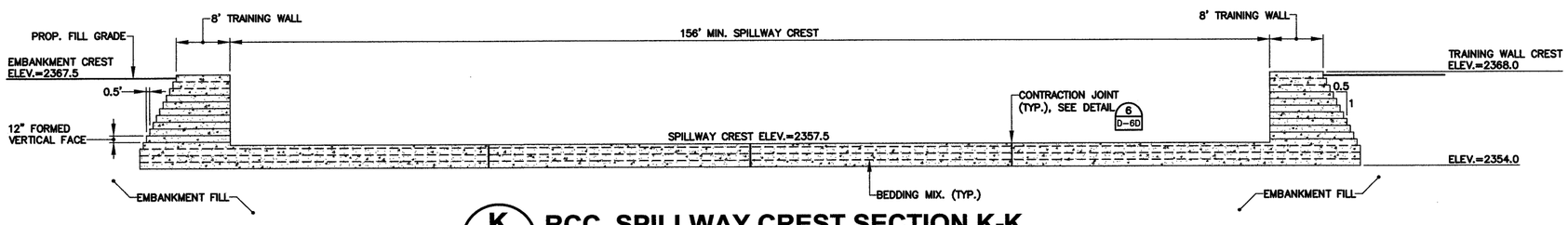
I / D-6C RCC SPILLWAY STILLING BASIN SECTION I-I

10 0 10
1"=10' FEET



J / D-6C RCC SPILLWAY STILLING BASIN SECTION J-J

10 0 10
1"=10' FEET



K / D-6C RCC SPILLWAY CREST SECTION K-K

10 0 10
1"=10' FEET

NOTES

1. SCH. 80 PVC PIPE IS AN ACCEPTABLE SUBSTITUTE FOR THE HDPE UNDER-DRAIN PIPE.
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3. ANIMAL GUARDS SHALL BE INSTALLED AT THE OUTLETS OF ALL DRAINS, SEE DETAIL 9 D-6D.
4. BEDDING MORTAR SHALL BE INSTALLED AT THE LOCATION OF ALL RCC LIFTS IDENTIFIED HEREIN AND AS REQUIRED BY THE SPECIFICATIONS FOR JOINTS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		REV. STILL. BASIN, DN STREAM TRAIN. WALLS & BASIN UNDER-DRN.	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE
RCC SPILLWAY & UNDER-DRAIN SECTIONS SHEET 2 OF 2

06/07/11

PROFESSIONAL ENGINEER STATE OF NEVADA
RANDALL V. WALL
CIVIL
13746
6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 093974361 OTS D-06A 06B 06C 06D RCC-SPILL-ALL
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-6C
CHECK	GWH	01/11	
REVIEW	–	–	

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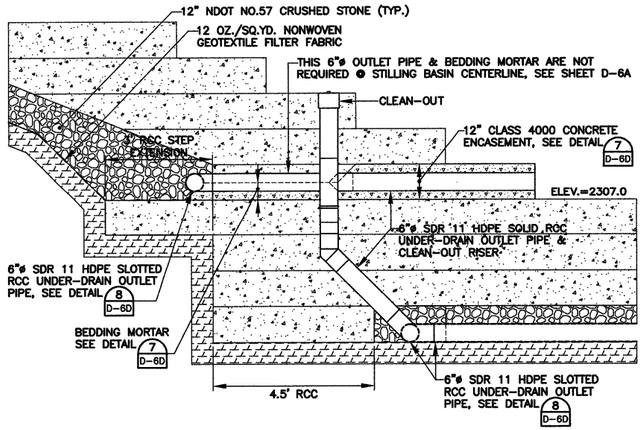
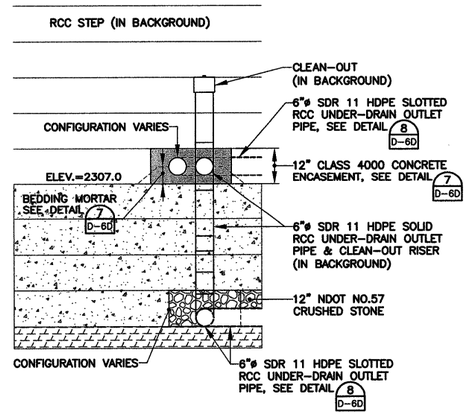


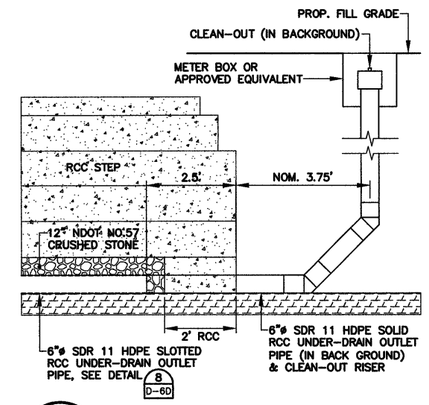
LONGITUDINAL SECTION



LATERAL SECTION/ELEVATION

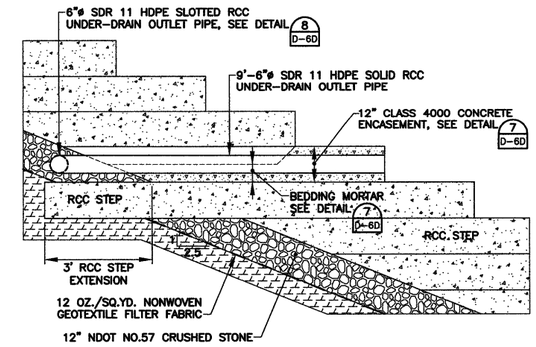
1 D-6D UNDER-DRAIN DETAIL △1

2 0 2 1"=2' FEET



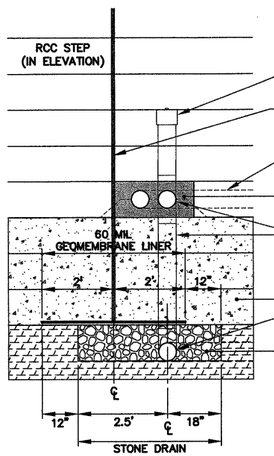
2 D-6D UNDER-DRAIN DETAIL

2 0 2 1"=2' FEET



3 D-6D UNDER-DRAIN DETAIL

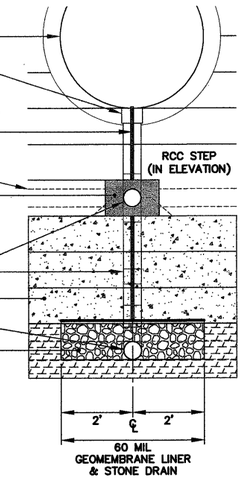
2 0 2 1"=2' FEET



4 D-6D STILLING BASIN CONTRACTION JOINT △1

LEFT & RIGHT OF CENTERLINE

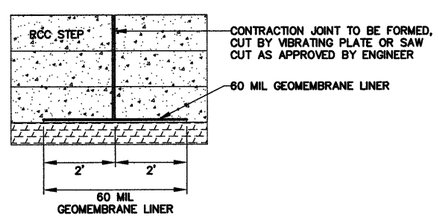
2 0 2 1"=2' FEET



5 D-6D STILLING BASIN CONTRACTION JOINT △1

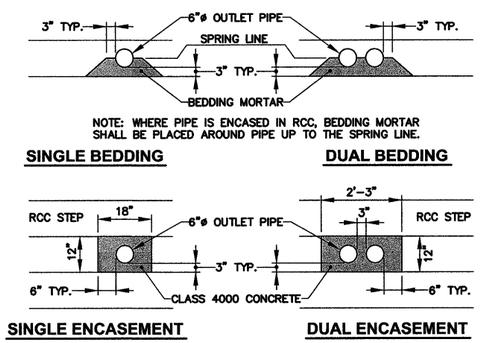
SPILLWAY CENTERLINE

2 0 2 1"=2' FEET



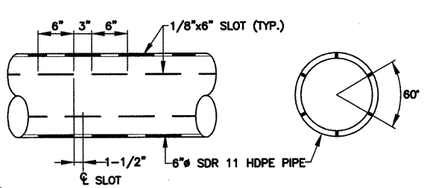
6 D-6D CONTRACTION JOINT IN SPILLWAY CREST, CHUTE & ENDSILL

2 0 2 1"=2' FEET



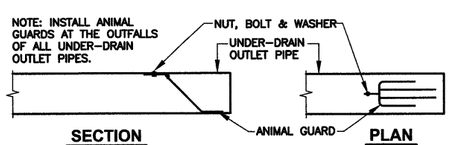
7 D-6D UNDER-DRAIN OUTLET PIPE ENCASEMENT & BEDDING DETAIL (ELEVATION)

2 0 2 1"=2' FEET



8 D-6D HDPE SLOTTED PIPE DETAIL

NTS



9 D-6D ANIMAL GUARD

NTS

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
△1	02/11		REV. STILL. BASIN, UP & DN STREAM TRAIN. WALLS & BASIN UNDER-DRN.	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT

REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE

RCC SPILLWAY & UNDER-DRAIN DETAILS

Golder Associates
Atlanta, Georgia

PROJECT No.		093-97436	FILE No. 0093436 OTS D-06A 06B 06C 06D RCC-SPILL-ALL
DESIGN	GWH	01/11	SCALE AS SHOWN REV. –
CADD	RMS	01/11	D-6D
CHECK	GWH	01/11	
REVIEW	–	–	

STATE OF NEVADA PROFESSIONAL ENGINEER RANDALL V. WALL CIVIL No. 13736 6/30/12

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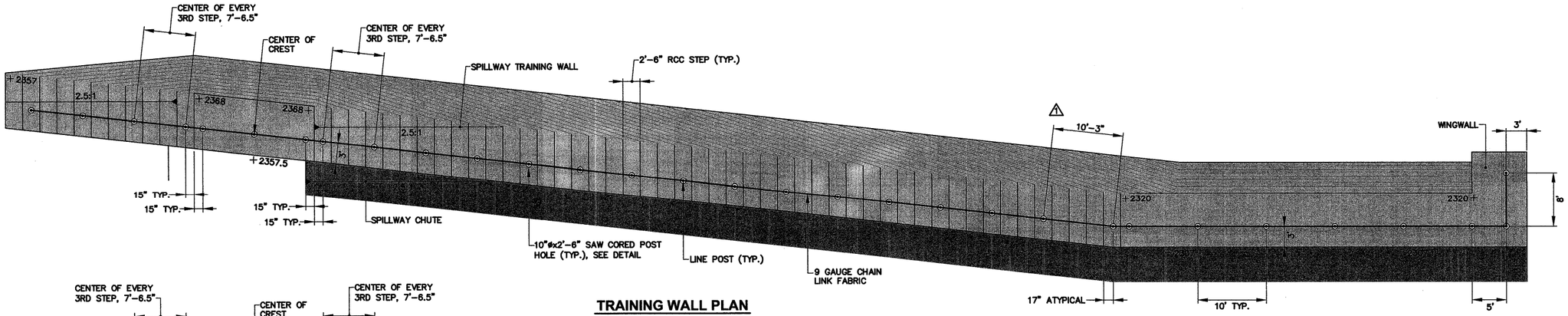
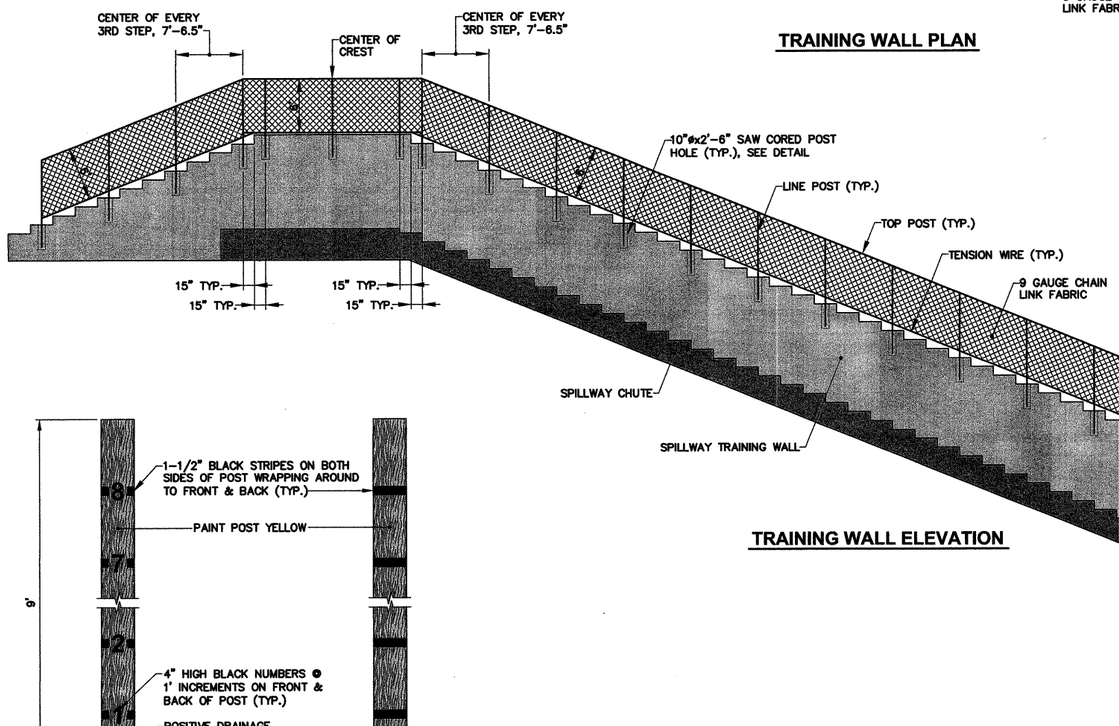
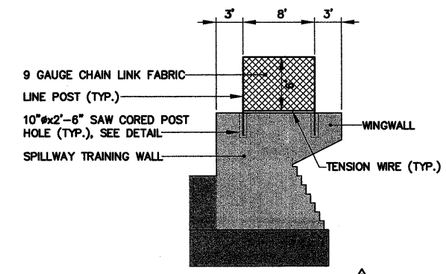


TRAINING WALL PLAN

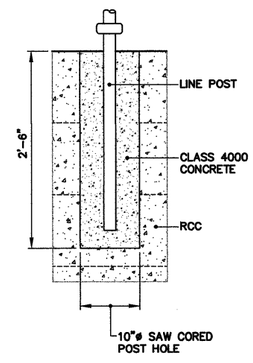
WINGWALL PLAN



TRAINING WALL ELEVATION

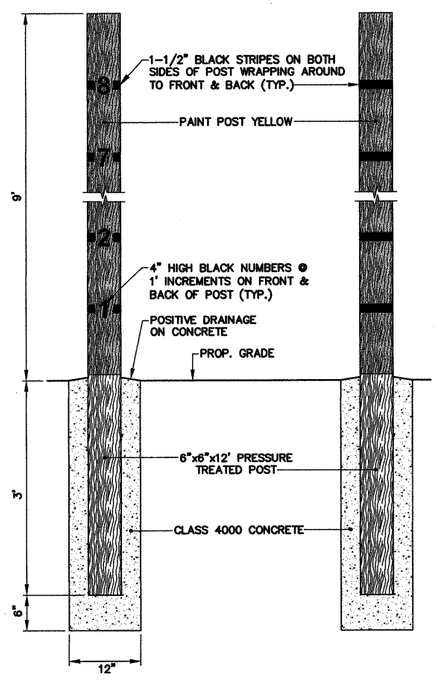


WINGWALL ELEVATION



POST HOLE DETAIL

NTS



SEDIMENT DEPTH GAUGE DETAIL

2 / D-7A

NTS

TRAINING WALL FENCE DETAILS

1 / D-7A

1"=8' 8 0 8 FEET

NOTE

REFER TO NDOT SPECIFICATION R-6.3.2.1 FOR MINIMUM CHAIN LINK FENCE REQUIREMENTS.

06/07/11

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
1	02/11		REV. FENCE LAYOUT	RMS	GWH	

REPUBLIC SERVICES, INC.

PROJECT

REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL DETENTION DAM
LAS VEGAS, NEVADA

TITLE

TRAINING WALL FENCE DETAIL

PROFESSIONAL ENGINEER — RANDALL V. WALL — CIVIL — No. 13746 — STATE OF IDAHO — 6/30/12

Golder Associates
Atlanta, Georgia

PROJECT No.	093-97436		FILE No. 093-97436 OTS D-07A FENCE-DET	
DESIGN	GWH	01/11	SCALE AS SHOWN	REV. –
CADD	RMS	01/11	D-7A	
CHECK	GWH	01/11		
REVIEW	–	–		

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