NEW BOSTON LANDFILL
BOWIE COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 576C

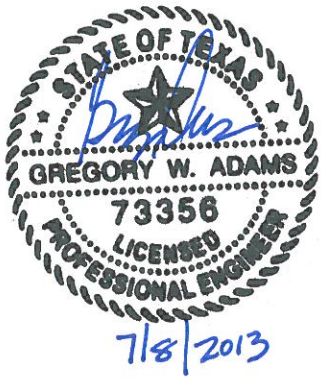
PERMIT AMENDMENT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN
ATTACHMENT H
CLOSURE PLAN

Prepared for

Waste Management of Texas, Inc.

July 2013



Prepared by

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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

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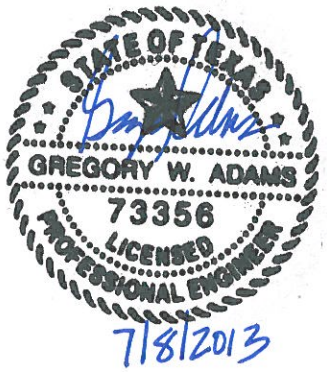


1 INTRODUCTION

30 TAC §330.63(h) and §330.457

This facility closure plan provides the information required by 30 TAC §330.63(h) and §330.457. The closure plan includes drawings that depict the final constructed contour plan of the entire landfill, surface water entering and exiting the landfill, and the location of the 100-year floodplain. The closure plan also includes the procedures to be taken for ongoing closure of the facility and following final acceptance of waste, and a closure schedule. Cross sections showing the final grades are provided in Attachment D2 – Cross Sections.

2 FINAL COVER SYSTEM

30 TAC §330.457

2.1 Final Cover System Design

2.1.1 West and North Disposal Areas

The final cover system in the West and North Disposal Areas will be a composite cover system consisting of an intermediate cover layer, an infiltration layer, a flexible membrane cover, a drainage layer, and an erosion layer. Final cover has been constructed over 18.1 acres of the West Disposal Area and details of the cover are documented in the Final Cover Evaluation Reports (FCERs). Approval dates are shown on Appendix H2, Drawing H2.2.

The final cover plans are included in Appendix H2, Drawings H2.2 and H2.3 and the final cover details are provided in Drawings H2.5 and H2.6. The components of the final cover system are listed from top to bottom in Table H-1.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

Table H-1
New Boston Landfill
Components of the West and North Disposal Areas Final Cover System

Cover System Component	Description	Minimum Thickness
West and North Disposal Areas Final Cover		
TOPSLOPE		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Cushion Layer	Geotextile	8 oz
Flexible Membrane Cover	Smooth LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1×10^{-5} cm/sec	18 inches
SIDESLOPE OPTION A		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Double-sided geocomposite	0.2 inches nominal
Flexible Membrane Cover	Textured LLDPE geomembrane	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1×10^{-5} cm/sec	18 inches
SIDESLOPE OPTION B		
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Drainage Layer	Geotextile over studded geomembrane	8 oz
Flexible Membrane Cover	Textured LLDPE geomembrane with studs on top	40 mil nominal
Infiltration Layer	Compacted soil with a coefficient of permeability less than or equal to 1×10^{-5} cm/sec	18 inches

2.1.2 South Disposal Area

The final cover system in the South Disposal Area will consist of an infiltration layer and an erosion control layer. The final cover plan is included in Appendix H2, Drawing H2.3 and the final cover details are provided in Drawing H2.6. The components of the final cover system are listed from top to bottom in Table H-2.

The final cover will be seeded or sodded immediately following the application of the final cover in order to minimize erosion. The vegetation will be native and introduced grasses. Temporary cold weather vegetation will be established if required. Irrigation will be employed as needed until vegetation is established. Erosion control measures such as silt fences and straw bales will be used to minimize erosion until the vegetation is established. Areas that experience erosion or do not readily vegetate will be repaired, reseeded or sodded until vegetation is established, or the soil will be replaced with soil that will support the grasses.

Table H-2
New Boston Landfill
Components of the South Disposal Area Final Cover System

Cover System Component	Description	Minimum Thickness
Erosion Layer	Soil that is capable of sustaining native plant growth	24 inches
Infiltration Layer	Compacted soil with a maximum coefficient of permeability less than or equal to 1×10^{-7} cm/sec	18 inches

2.2 Installation Methods and Procedures

The final cover system will be constructed, tested and documented in accordance with 30 TAC §330.457 and Attachment D8 – Final Cover Quality Control Plans (FCQCP).

3 CLOSURE PROCEDURES

30 TAC §330.457

3.1 Closure Sequence

Composite final cover has already been constructed over 18.1 acres of the West Disposal Area. The New Boston Landfill will continue to conduct ongoing closure of the landfill throughout the active life of the landfill. The procedure allows for successive closure of fill areas by placement of final cover, construction of drainage and erosion control features, and establishment of vegetative cover. This procedure will be followed until all sectors have been closed. All areas, regardless of the time of closure, will be closed in accordance with the applicable regulations and the closure plan, and a FCER will be submitted documenting closure activities.

3.2 Closure During Active Life

As described above, the final cover will be constructed as fill areas achieve the design grades. Should closure of the landfill become necessary at any time during the active life of the landfill, the following steps shall be taken:

- The final waste received will be placed and properly compacted.
- The Citizen's Convenience Center, Truck Wheel Wash, large item storage area and recyclable materials staging area will be closed and dismantled. All waste, waste residue and demolition materials from these facilities will be disposed in the landfill. The leachate storage facility will remain operational through the post closure period.
- Excavations will be filled with suitable material, and the site will be graded to promote runoff and prevent ponding.
- The top of the landfill will be regraded and reshaped as needed to provide the proper slope for positive drainage.
- The final cover system will be constructed consistent with the details included in Appendix H2.
- During the first growing season following application of final cover, the site will be vegetated with appropriate grasses to minimize erosion.
- A surface water management system will be constructed to minimize erosion.
- A closure certification will be prepared by a registered professional engineer and submitted to the TCEQ for approval.

- All proper notices and documentations will be filed with the appropriate agencies and governmental bodies.

3.2.1 Estimate of Largest Area Requiring Final Cover

The largest area requiring final cover at any time during the active life of the landfill will be the portions of the West Disposal Area that have not received final cover plus the first sector in the North Disposal Area. The largest area is approximately 45.4 acres. The largest area requiring closure for the purposes of determining final closure construction cost is addressed in Attachment J – Cost Estimates for Closure and Postclosure Care and is shown on Drawing J.1.

3.2.2 Estimate of Maximum Inventory of Waste On Site

The estimate of maximum inventory of waste and operational cover on site over the active life of the facility is approximately 16.8 million cubic yards, which is the total volume available through this permit application and existing waste currently in place.

4 CLOSURE SCHEDULE

30 TAC §330.457, §330.461

4.1 Final Cover Construction

During the active life of the landfill, final cover will be placed in phases as areas reach the design top of waste grades. Generally, the final cover will be placed in phases of 10 to 30 acres. Final cover placement over completed portions of the site will consist of the following steps:

- Survey controls will be implemented to control the filling of solid waste to the bottom level of the daily/intermediate cover layer elevation.
- The final cover system layers will be constructed. Testing of the various components of the final cover system will be performed in accordance with Attachment D8.
- A final cover certification report and an as-built survey will be prepared by an independent registered professional engineer and submitted to the TCEQ for approval.
- The TCEQ-approved final cover certification report will be maintained in the site operating record and the final cover log will be updated to reflect the area where final cover has been placed. The TCEQ region office will also be notified.

4.2 Final Closure Activities

Once the facility has received its final waste, the facility will be closed consistent with 30 TAC §330.457 and §333.461. The final closure activities will be accomplished as outlined below.

- No later than 90 days prior to initiation of final facility closure, a public notice of facility closure that contains the name, address, and physical location of the facility, the permit number, and the last date of intended receipt of waste will be placed in the newspaper of the largest circulation in the vicinity of the facility. Waste Management of Texas, Inc. (WMTX) will also make available an adequate number of copies of the approved final closure and postclosure plan for public access and review.
- No later than 90 days prior to initiation of final closure activities for a landfill unit, WMTX will provide written notification to the executive director of the TCEQ of the intent to close and place this notice in the operating record.
- Following notification of the executive director of the TCEQ of final facility closure, a minimum of one sign will be posted at the main entrance and all other frequently used points of access notifying all persons utilizing the facility of the

closure date or date on which further receipt of waste is prohibited. In addition, barriers or gates will be installed at all access points following the closure date to adequately prevent unauthorized dumping of solid waste at the closed facility.

- Final closure activities will commence within 30 days after known final receipt of wastes, except as provided in Section 4.3.

- Final cover installation will, in accordance with the approved closure plan, be completed within 180 days after the final receipt of waste.

- Final closure activities will be completed within 180 days of initiation of final closure activities, except as provided in Section 4.3. Following completion of final closure activities, a documented certification signed by an independent licensed professional engineer will be submitted by registered mail to the TCEQ for review and approval. This certification will verify that final closure has been completed in accordance with the closure plan and will include all applicable documentation necessary for certification of final closure. Once approved, this certification will be placed in the operating record.

- Within 10 days after completion of final closure activities of all landfill units at the facility, a certified copy of an Affidavit to the Public (see Appendix H.1, Figure H1.2) will be submitted by registered mail to the TCEQ in accordance with §330.19 and a copy placed in the operating record. In addition, a certified notation will be recorded on the deed to the facility or similar instruments that will in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and the use of the land is restricted according to the provisions specified in the Postclosure Care Plan. Within 10 days after completion of final closure activities of the facility, a certified copy of the modified deed will be submitted to the TCEQ and a copy placed in the operating record.

These steps in the closure process are depicted in Appendix H.1, Figure H1.1. Following receipt of the required final closure documents and an inspection report from the TCEQ region office verifying proper closure of the MSWLF facility, according to the approved closure plan, the executive director may acknowledge the termination of operation and closure of the facility and deem it properly closed. Postclosure care maintenance will begin immediately upon the date of final closure as approved by the TCEQ.

4.3 Provisions for Extending Closure Period

If the New Boston Landfill has remaining capacity in a landfill unit at the time of its closure, final closure activities will begin no later than one year after the most recent receipt of wastes. Any request for an extension beyond the one year deadline for the initiation of final closure will be submitted to the executive director for review and approval and will include all applicable documentation to demonstrate that the unit or site has the capacity to receive additional waste and that WMTX has taken and will continue to take all steps necessary to prevent threats to human health and the environment.

If necessary, a request for an extension of the completion of final closure activities will be submitted to the executive director for approval. This request will include all applicable documentation necessary to demonstrate that final closure will, of necessity, take longer than 180 days and all steps have been taken and will continue to be taken to prevent threats to human health and the environment.

5 CLOSURE COST ESTIMATE

30 TAC §330.503(a)

The estimated cost of hiring a third party to close the largest area of the landfill requiring final closure at any time during the active life of the unit is $4,218,379. The detailed cost estimate included in Attachment J.

The cost estimate shows the cost of hiring a third party to close the largest waste fill area that could potentially be open in the year to follow and those areas that have not received final cover at any time during the active life of the site when the extent and manner of site operations would make closure the most expensive.

NEW BOSTON LANDFILL

APPENDIX H1
FIGURES

H1.1 Final Closure Schedule
H1.2 Affidavit to the Public

Figure H1.1
Final Closure Schedule

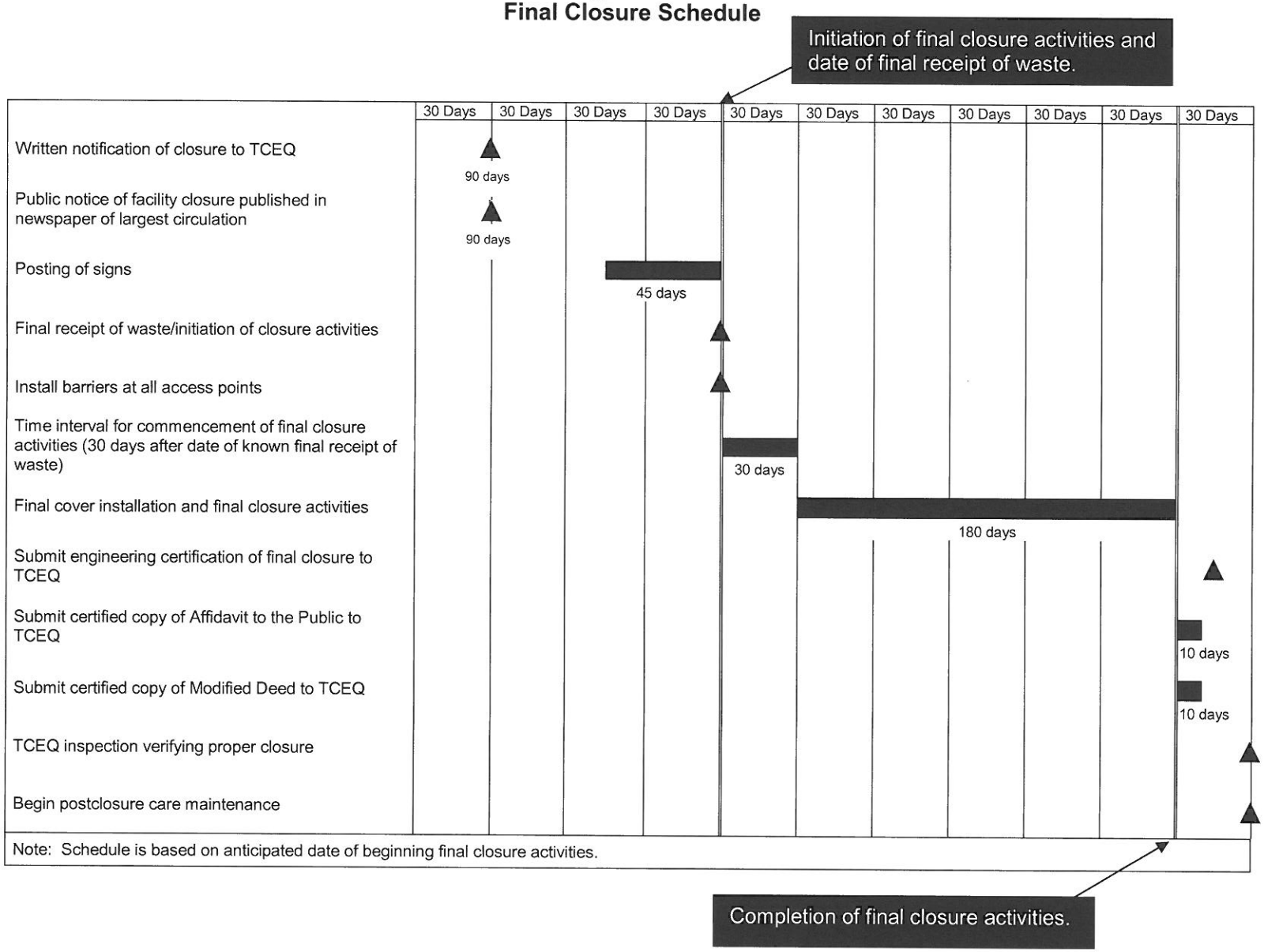


Figure H1.2
AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS

COUNTY OF _____

Before me, the undersigned authority, on this day personally appeared _____, who, after being by me duly sworn, upon oath states that he is the record owner of that certain tract or parcel of land lying and being situated in _____, Texas and being more particularly described as follows:

-insert legal description here-

NOTICE

The undersigned further states that from the year _____ to the year _____ there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described above.

Notice is hereby given that any future owner or user of the land described in the above legal description should consult with the Texas Commission on Environmental Quality prior to planning or initiating any activity involving disturbance of cover.

Further, the undersigned _____ was the operator of such solid waste disposal site.

WITNESS MY/OUR HAND(S) on this _____ day of _____, 20__.

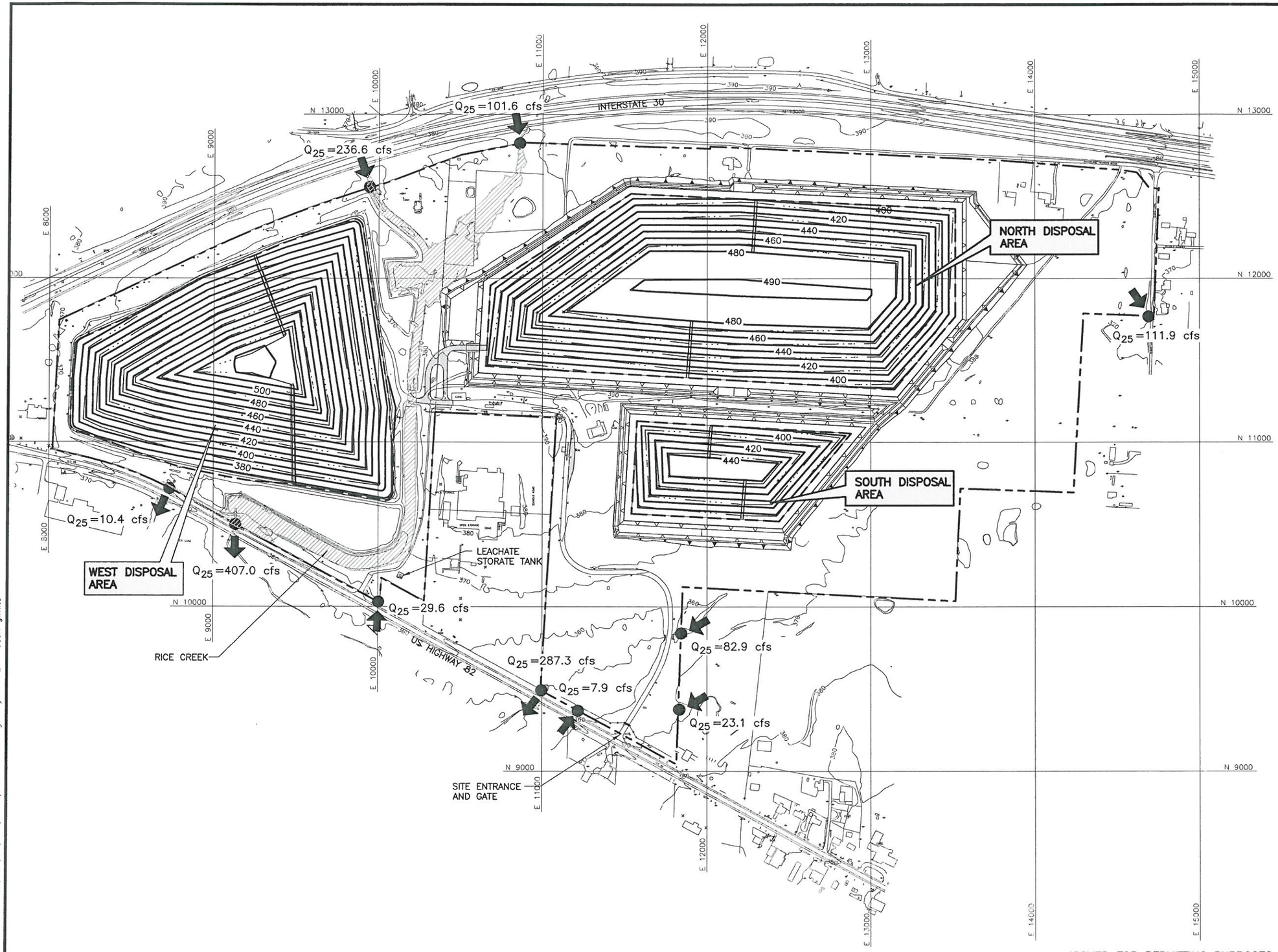
_____
Owner

_____
Operator

SWORN TO AND SUBSCRIBED before me on this _____ day of _____, 20__.

NEW BOSTON LANDFILL

APPENDIX H2
FINAL COVER SYSTEM PLANS AND DETAILS



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LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 380 EXISTING 10' CONTOURS
- N 11000 SITE GRID
- 100– YEAR FLOODPLAIN

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL PHOTOGRAPHY FLOWN MARCH 5, 2012.
2. PERMIT BOUNDARY, PROPERTY LINES AND EASEMENTS PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. REFER TO DRAWINGS H2.2, H2.3 AND H2.4 FOR FINAL COVER PLANS.

STATE OF TEXAS
GREGORY W. ADAMS
73356
REGISTERED PROFESSIONAL ENGINEER
7/8/2013

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

LANDFILL COMPLETION PLAN

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
817–563–1144

TBPE FIRM NO. F–256 | TBPG FIRM NO. 50222

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DWN.	MJW	SCALE : GRAPHIC	H2.1
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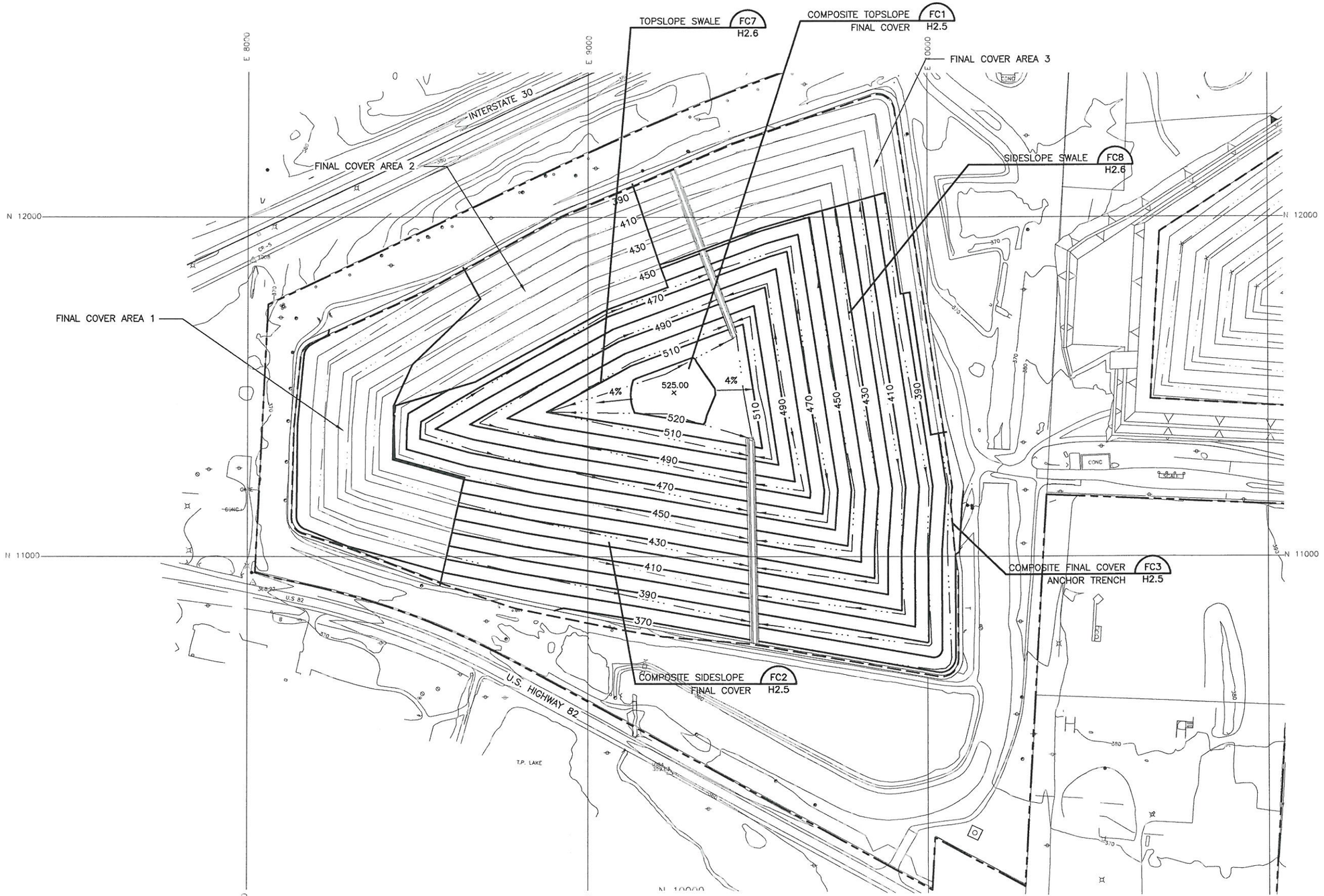

0 150 300
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- 250 EXISTING 10' CONTOUR
- N 11000 SITE GRID
- 440 PROPOSED CONTOUR
- EXISTING SWALE
- PROPOSED SWALE
- LETDOWN CHUTE

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL SURVEY DATED MARCH 5, 2012.
2. PERMIT BOUNDARY PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. PROPOSED CONTOURS DEPICT TOP OF FINAL COVER GRADES.

STATE OF TEXAS
GREGORY W. ADAMS
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REGISTERED PROFESSIONAL ENGINEER
7/8/2013

FINAL COVER PLAN
WEST DISPOSAL AREA

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

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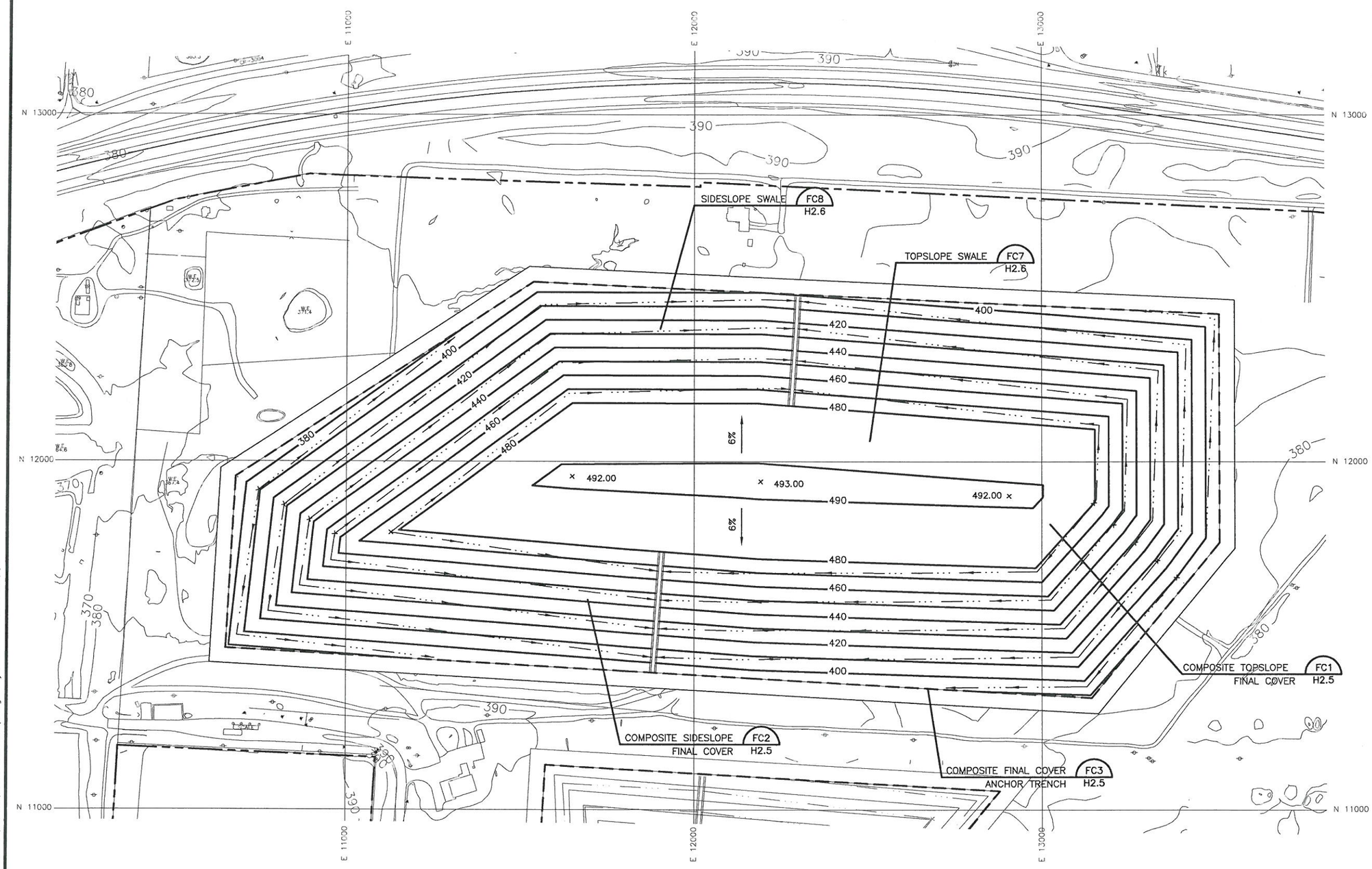

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SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 250 EXISTING 10' CONTOUR
- N 11000 SITE GRID
- 420 PROPOSED CONTOUR
- SWALE
- LETDOWN CHUTE

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL SURVEY DATED MARCH 5, 2012.
2. PERMIT BOUNDARY PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. PROPOSED CONTOURS DEPICT TOP OF FINAL COVER GRADES.

STATE OF TEXAS
GREGORY W. ADAMS
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7/8/2013

FINAL COVER PLAN
NORTH DISPOSAL AREA

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
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DRAWING H2.3

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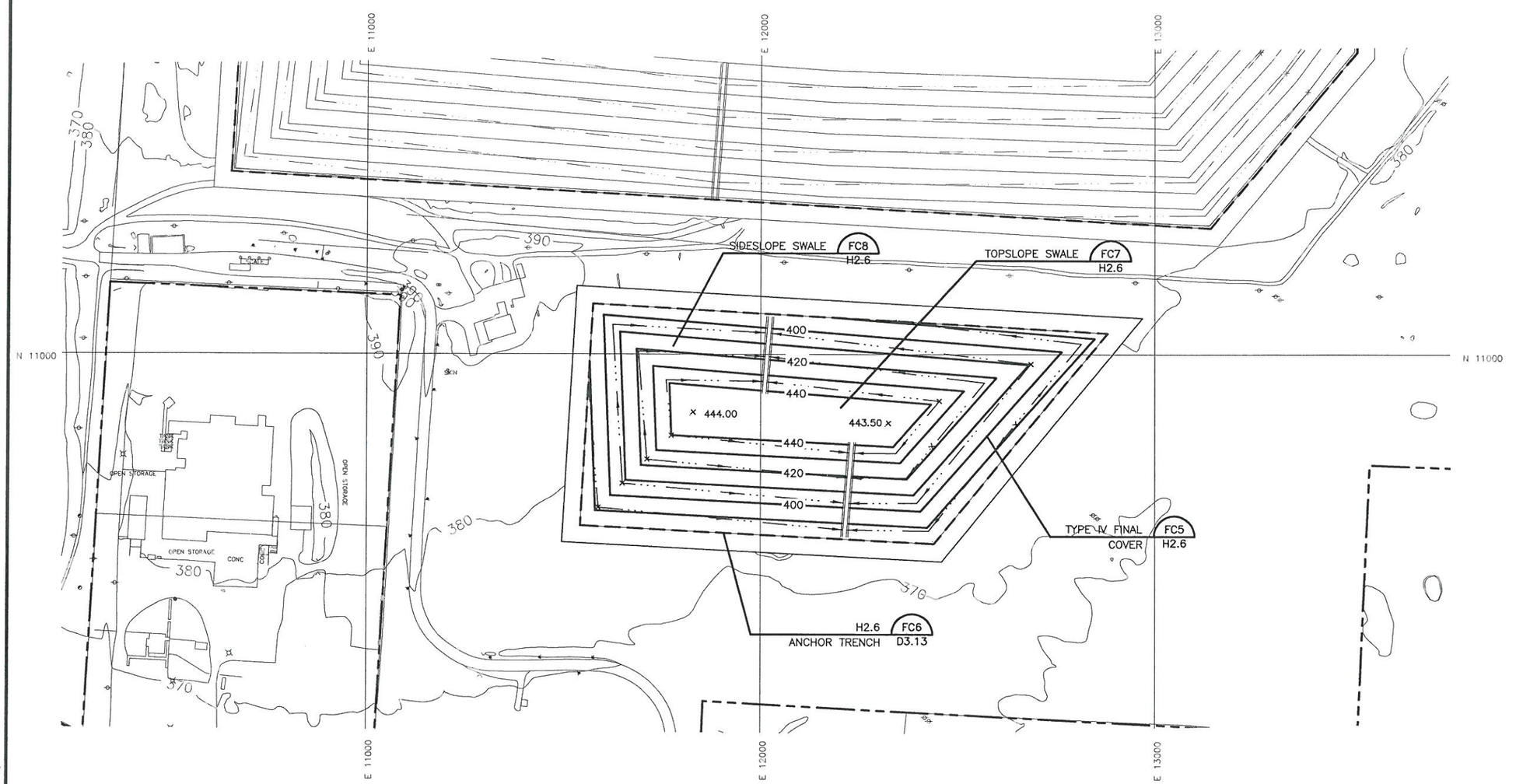

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SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- 250 EXISTING 10' CONTOUR
- N 11000 SITE GRID
- 420 PROPOSED CONTOUR
- SWALE
- LETDOWN CHUTE

NOTES:

1. EXISTING CONTOURS COMPILED BY AIR SURVEY FROM AERIAL SURVEY DATED MARCH 5, 2012.
2. PERMIT BOUNDARY PROVIDED BY MTG ENGINEERS AND SURVEYORS, INC.
3. PROPOSED CONTOURS DEPICT TOP OF FINAL COVER GRADES.

STATE OF TEXAS
GREGORY W. ADAMS
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7/8/2013

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FINAL COVER PLAN
SOUTH DISPOSAL AREA

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

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MANSFIELD • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

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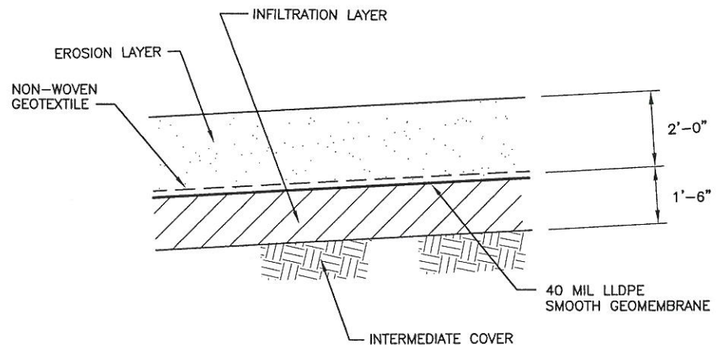
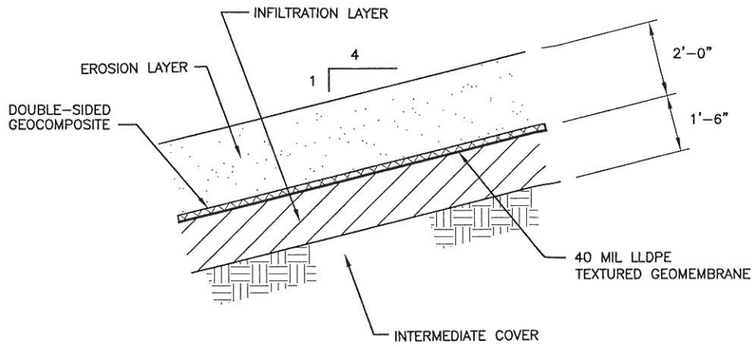
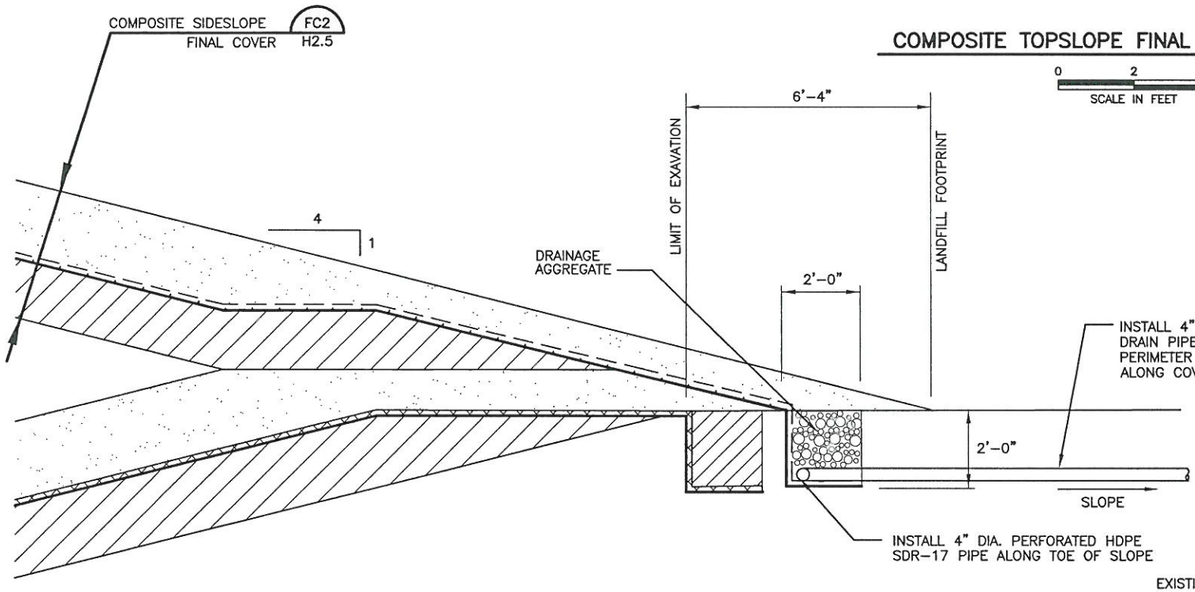




OPTION A



COMPOSITE TOPSLOPE FINAL COVER FC1 H2.5

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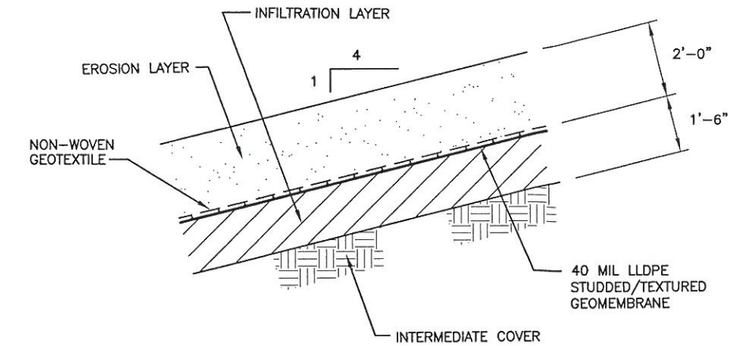

OPTION B

COMPOSITE SIDESLOPE FINAL COVER FC2 H2.5

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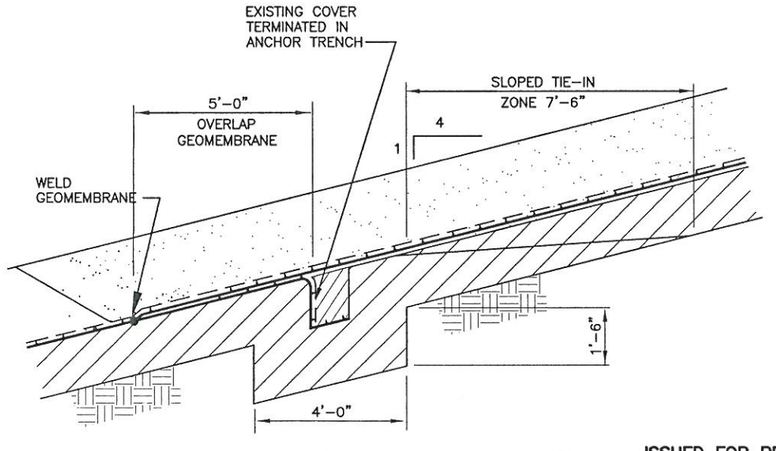
SCALE IN FEET

COMPOSITE FINAL COVER ANCHOR TRENCH FC3 H2.5

0 2 4
SCALE IN FEET



COMPOSITE EXISTING SIDESLOPE FINAL COVER TIE-IN FC4 H2.5

0 2 4
SCALE IN FEET

NOTE:

1. REFER TO ATTACHMENT D8 FOR COVER INSTALLATION AND MATERIAL REQUIREMENTS.

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GREGORY W. ADAMS
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7/8/2013

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FINAL COVER DETAILS

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
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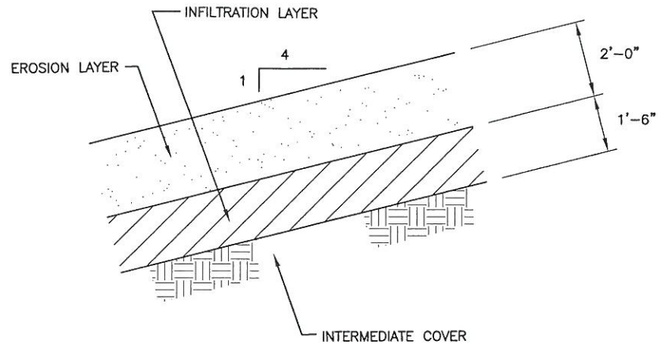

TYPE IV FINAL COVER FC5 H2.6

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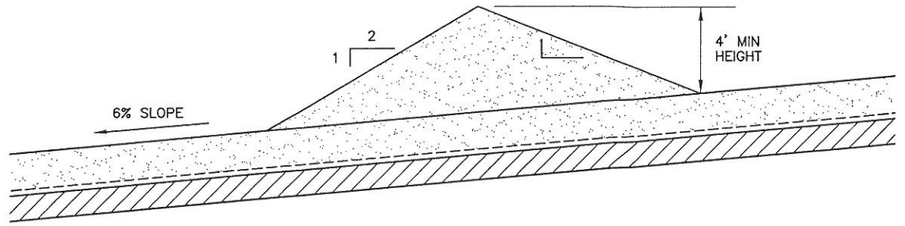

TOPSLOPE SWALE FC7 H2.6

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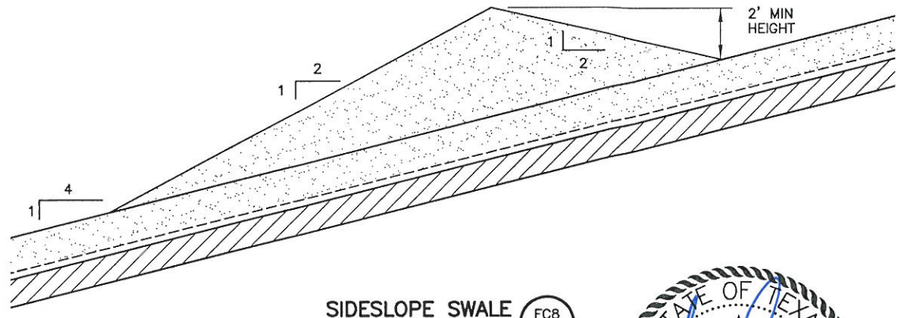
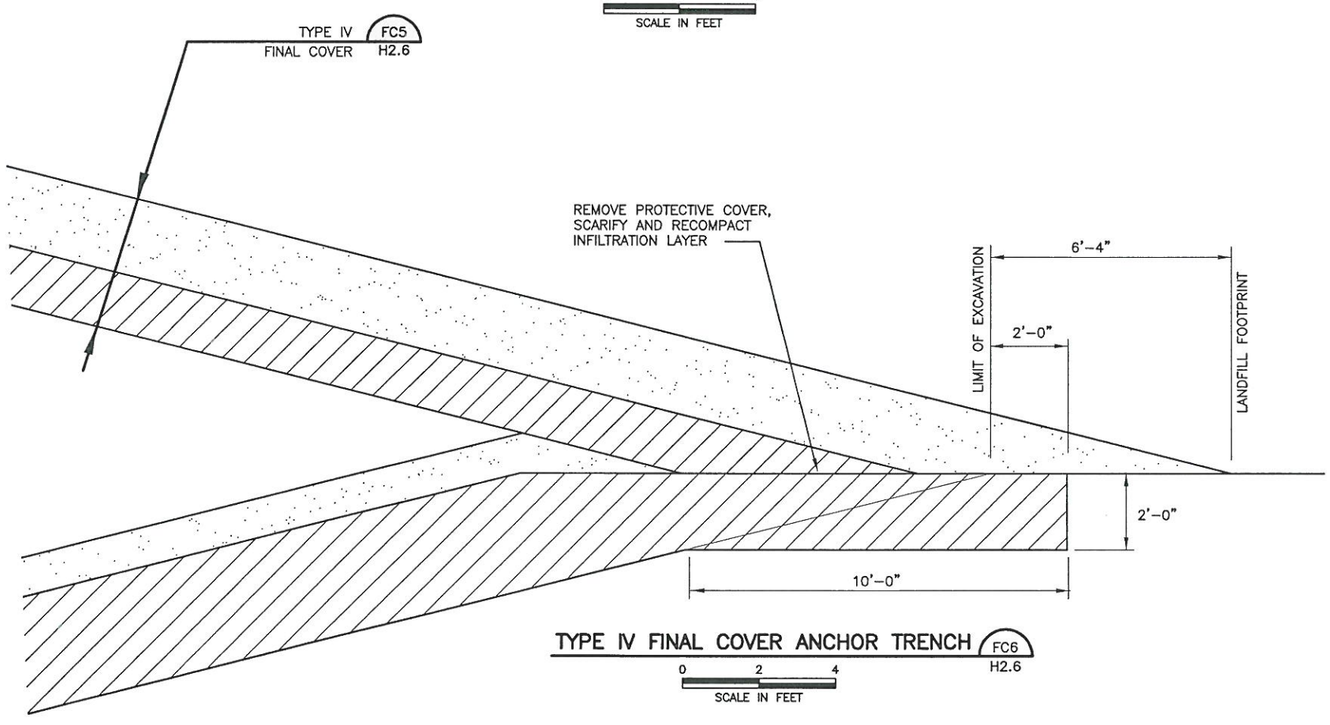


SIDESLOPE SWALE FC8 H2.6

0 4 8
SCALE IN FEET



TYPE IV FINAL COVER ANCHOR TRENCH FC6 H2.6

0 2 4
SCALE IN FEET

STATE OF TEXAS
GREGORY W. ADAMS
73356
REGISTERED
PROFESSIONAL ENGINEER
7/8/2013

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

FINAL COVER DETAILS

WASTE MANAGEMENT OF TEXAS, INC.
NEW BOSTON LANDFILL
PERMIT AMENDMENT APPLICATION

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD • WICHITA FALLS
817–563–1144

TBPE FIRM NO. F–256 | TBPG FIRM NO. 50222

DSN. GWA	DATE : 6/13	DRAWING	H2.6
DWN. MJW	SCALE : GRAPHIC		
CHK. GWA	DWG : D3.12–Covdets.dwg		

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