May 30, 2018

Mr. Peter Quackenbush, Senior Environmental Engineer
MDEQ – Office of Waste Management and Radiological Protection
525 West Allegan Street
Lansing, MI 48933

Subject: **Addendum to the Proposed Permit Modification - Upgrades to MC VI-G Phase 2 Liner Design, Wayne Disposal, Inc., Belleville, Wayne County, Michigan**

Dear Mr. Quackenbush:

On behalf of Wayne Disposal, Inc. (WDI), CTI and Associates, Inc. (CTI) is submitting for your review and approval this addendum to the recently submitted (May 3, 2018) proposed upgrades to the design of Master Cell VI-G Phase 2 (MC VI-G Phase 2) liner. The purpose of this addendum is to revise the Standard Dimension Ratio (SDR) value of the HDPE leachate collection and riser pipes (perforated and solid wall) in MC VI-G Phase 2 from 7.3 to 11.

This proposed revision to the SDR value is due to the following:

1. Structural performance of HDPE pipes includes two possible failure mechanisms – vertical deflection and buckling. Although thicker wall pipes (lower SDR) perform better in resisting buckling, thinner wall pipes (higher SDR) are superior in tolerating vertical deflection. In other words, thicker is not always better and the selection of proper wall thickness needs to be optimized. Considering MC VI-G Phase 2 is to be constructed over existing waste, tolerance of vertical deflection is an important criterion.

2. The use of SDR 7.3 HDPE pipe is very uncommon. Most HDPE manufacturers do not regularly produce SDR 7.3 HDPE pipes and these pipes often must be special ordered or may not be available at all. SDR 11 HDPE pipes are the most commonly used pipes in landfill applications and are readily available.

Calculations demonstrating that SDR 11 HDPE pipes will perform satisfactorily as part of the MC VI-G Phase 2 leachate collection and removal system are included as **Attachment A-1**. As indicated in the pipe strength calculation, SDR 11 HDPE pipes will perform satisfactorily both in vertical deflection (2.3% strain ≤ the limiting 2.7% strain) and in buckling (FS-value of 2.9 ≥1.0).

Additionally, the following sheets in the submitted 2018 Permit Engineering Drawings have been revised to reflect the proposed SDR changes (denoted as Revision "E" in **Attachment A-2**):

- TITLE SHEET
- SHEET 13 – TOP OF PRIMARY LINER GRADING PLAN (2 OF 3)
- SHEET 22A – LINER SYSTEM DETAILS
- SHEET 23A (NEW SHEET) – LEACHATE COLLECTION SYSTEM DETAILS (FOR MC VI-G SUBCELL G2 AND G3)

If you have any questions regarding this addendum, please feel free to contact the undersigned at (248) 486-5100 or tsoong@cticompanies.com.

Sincerely,

CTI and Associates, Inc.



Te-Yang Soong, Ph.D., P.E.
Program Manager

Cc: US Ecology
MDEQ
EPA

List of Attachments –

Attachment A-1: Pipe Strength and Deflection Analysis

Attachment A-2: Revised 2018 Permit Engineering Drawings

Attachment A-1: Pipe Strength and Deflection Analysis

Project Name:	WDI MC-6G Phase 2 Design	Client:	U.S. Ecology
Project Number:	1188070010	Project Manager:	Te-Yang Soong, Ph.D., P.E.
Project Location:	Belleville, Michigan	QA Manager:	Te-Yang Soong, Ph.D., P.E.

Calculation Sheet Information

Calculation Medium: ☒ Electronic
☐ Hard-copy Number of pages (excluding cover sheet):

Title of Calculation:	Leachate Collection Pipe Strength and Deflection Analysis
Calculation Originator:	Mohammad Kabalan, P.E.
Calculation Contributors:	
Calculation Checker:	Te-Yang Soong, Ph.D., P.E.

Calculation Objective

1. Determine maximum deflection of proposed leachate collection pipe under final conditions (landfill built to permitted final grades) and compare to maximum allowable deflection
2. Calculate the factor of safety against wall buckling of the pipe

Assumptions/Open Items

1. Static load on pipe was determined from the layers above from 2018 revised permit drawing set.
2. Unit weight of waste is 101 pcf and is based on actual tonnage data from site.
3. The maximum waste thickness above the pipe is approximately 110 feet in subcell G2
4. The leachate collection pipe is an 8-inch, SDR 11 perforated HDPE pipe.
5. A long-term modulus of elasticity of 23,000 psi was used for the HDPE to account for degradation and potential creep effects.
6. A 4-foot thick final cover with a unit weight of 125 pcf was assumed over the top of waste grades

Design Criteria/Design Basis (with Reference to Source of Data)

1. The maximum vertical deflection was determined using the Modified Iowa State Method as presented in Moser (1990).
2. The maximum allowable deflection was determined from Qian et al. (2001).

Results/Conclusions

1. The maximum deflection under the maximum load (final conditions) is 2.3% which does not exceed the allowable deflection for SDR-11 pipe (2.7%)

References/Source Documents
1. WDI MC6G-Phase 2 landfill permit drawing set 2. Moser, A.P. (1990) "Buried Pipe Design", McGraw-Hill, New York. 3. Qian, X., Koerner, R.M., and Gray, D.H. (2001) "Geotechnical Aspects of Landfill Design and Construction", Prentice Hall, New Jersey

Revision Records

Checker comments provided on: ☐ Hard-copy ☒ Electronic File

No.	Revision Identifier (Number or Letter)	Version Type		Originator Initials	Date	Checker Initials	Date
		Draft	Final				
1	Rev. 0	☐	☒	MK	05/29/2018	TYS	5/30/2018
2		☐	☐				
3		☐	☐				
4		☐	☐				
		☐	☐				
		☐	☐				
		☐	☐				

Approval

☒ The Detail Check has been completed. Any significant issues not resolved between the Checker and Originator have been resolved by the Approver.



Originator Signature — 05/29/2018 Date



Checker Signature — 05/30/2018 Date



Approved Signature — 05/30/2018 Date

PIPE STRENGTH ANALYSIS

Item	Notation	Units	1		
			8"HDPE SDR		
			11		
			Perforated		
Vertical load					
Design vertical stress on pipe	*Hrefuse*	ft	110.0		
	$\sigma\zeta$	psf	11,610		
		psi	80.6		
Outside diameter of pipe	*OD*	in	8.625		
Inside Diameter of pipe	*ID*	in	6.963		
Pipe Wall Thickness *OD/SDR*	*tp*	in	0.784		
Unadjusted vertical load per unit length *W = g*H*OD*	*W*	lbs/in	695		
Dia. of perforations	*D*	in	0.25		
No. of Perforation per foot	*N*		**24**		
Modified Vertical stress *Wp = W*(12/(12-(D*N)))*	*Wp*	lbs/in	1391		
Vertical Deflection (Modified Iowa Method)					
Deflection Lag factor	*DL*		1.00		
Mean Pipe radius *r = (OD-tp)/2*	*r*	in	3.92		
Bedding Constant	*Kb*		0.08		
Soil Modulus of Elasticity	*Es*	psi	5101.7		
Modulus Soil Reaction *E' = 2Es*	*E'*	psi	10,203		
Pipe Modulus of elasticity	*Ep*	psi	23,000		
Moment of Inertia *I = (tp3/12)*	*I*	in3	0.0402		
Vertical Deflection *y = [(DLKbWp)/((EpI/r3)+(0.061Es)]*	*y*	in	0.1810		
Percentage Deflection *y/(2r) for both PVC and HDPE*	ε	%	**2.3%**		
Limiting Strain for HDPE pipe		%	2.7%		
Buckling Analysis (for HDPE pipes only)					
Critical Buckling Pressure $Pbc = 0.8*(2EsEP/SDR^3)^{0.5}$	P_{bc}	psi	475.07		
Required Factor of Safety	*FS*		*1.0*		
Provided F.S against wall buckling	*FS*		**2.9**		

FS = Pbc/[sz/(1-nd/12)]

Figure 1 - Pipe strength analysis worksheet

Attachment A-2: Revised 2018 Permit Engineering Drawings

WAYNE DISPOSAL, INC. SITE NO. 2
MASTER CELL VI-F&G

VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

NTH PROJECT NO. 13-060921-03

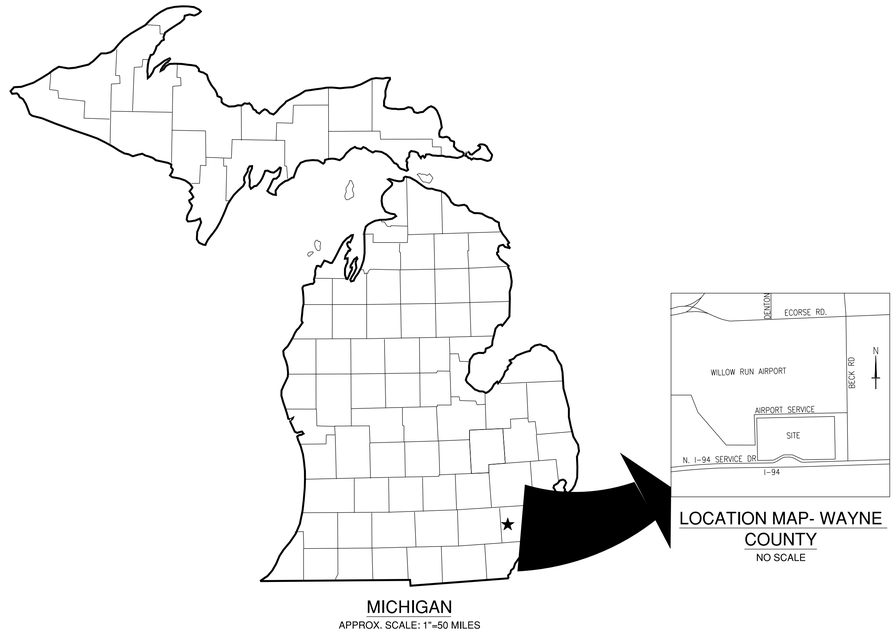
CTI PROJECT NO. 1188070010

FEBRUARY 2011
REVISED: SEPTEMBER 2011
REVISED: MAY 2018

OWNER:
Wayne Disposal, Inc.
49350 N. I-94 Service Drive
Belleville, Michigan 48111

ENGINEER:
NTH Consultants, LTD.
41780 Six Mile Road
Northville, Michigan 48168

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377



LOCATION MAP- WAYNE COUNTY
NO SCALE

MICHIGAN
APPROX. SCALE: 1"=50 MILES

SHEET INDEX

A B C	01	TITLE SHEET
	02	GENERAL SITE PLAN
	03	EXISTING UTILITY PLAN (1 OF 2)
	04	EXISTING UTILITY PLAN (2 OF 2)
A B C	05	CONSTRUCTION PHASING PLAN
A B	06	TOP OF SUBGRADE GRADING PLAN (1 OF 3)
A B	07	TOP OF SUBGRADE GRADING PLAN (2 OF 3)
A B	08	TOP OF SUBGRADE GRADING PLAN (3 OF 3)
A B C	09	TOP OF SECONDARY LINER GRADING PLAN (1 OF 3)
A B C	10	TOP OF SECONDARY LINER GRADING PLAN (2 OF 3)
A B	11	TOP OF SECONDARY LINER GRADING PLAN (3 OF 3)
A B C	12	TOP OF PRIMARY LINER GRADING PLAN (1 OF 3)
A B C E	13	TOP OF PRIMARY LINER GRADING PLAN (2 OF 3)
A B	14	TOP OF PRIMARY LINER GRADING PLAN (3 OF 3)
A	15	LEACHATE MANAGEMENT PLAN
C	16	FINAL COVER GRADING PLAN (1 OF 2)
A C	17	FINAL COVER GRADING PLAN (2 OF 2)
	18	STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (1 OF 2)
	19	STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (2 OF 2)
A B C	20	CROSS SECTIONS (1 OF 3)
C	20A	CROSS SECTIONS (2 OF 3)
C	21	CROSS SECTIONS (3 OF 3)
A B	22	LINER SYSTEM DETAILS
C D E	22A	LINER SYSTEM DETAILS
C D	22B	LINER SYSTEM DETAILS
B	23	LEACHATE COLLECTION SYSTEM DETAILS
E	23A	LEACHATE COLLECTION SYSTEM DETAILS (FOR MC VI-G SUBCELL G2 AND G3)
	24	FINAL COVER DETAILS
	25	STORM WATER MANAGEMENT SYSTEM DETAILS
	26	TRANSFER BOX DETAILS (1 OF 2)
	27	TRANSFER BOX DETAILS (2 OF 2)
	28-31	TOPOGRAPHICAL SURVEY BY MIDWESTERN CONSULTING LLC.
E	32	CONCEPTUAL GAS VENTING SYSTEM

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
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248.486.5100
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REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	6/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL
C	SUBCELLS G2 AND G3 REVISIONS	5/02/18	XZ
D	REV. BASED ON MDEQ'S COMMENTS	5/08/18	XZ
E	ADDENDUM 1	5/29/18	XZ

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: 13060921-03-CV
DESIGNED BY: XZ	INCEP DATE: 05/02/18
DRAWN BY: PAA	DRAWING SCALE: NONE
CHECKED BY: TYS	SUBMITTED DATE: 05/02/18

SHEET TITLE:
TITLE SHEET

SHEET REFERENCE NUMBER:
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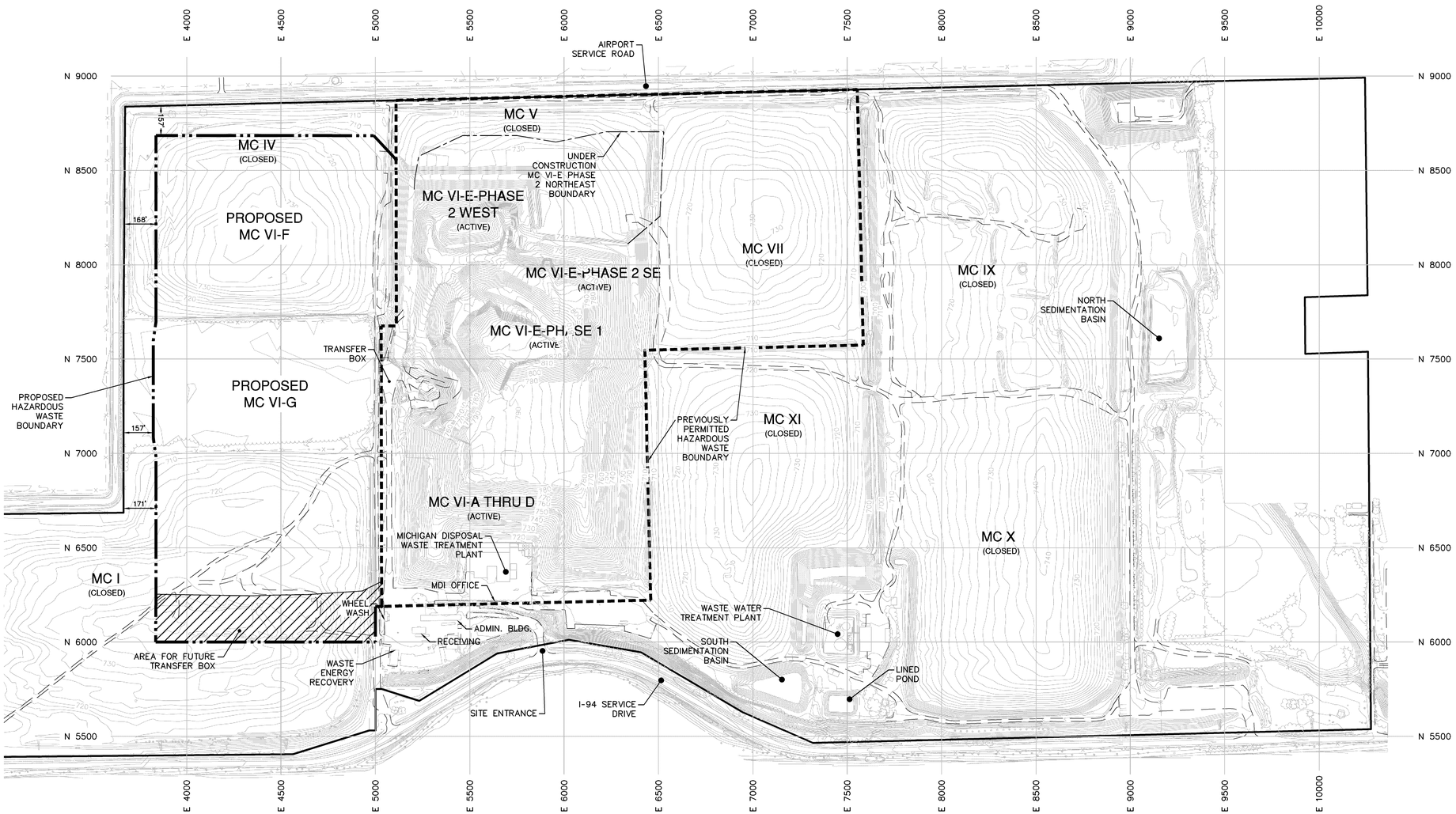

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

N

0 150' 300' 600'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PREVIOUSLY PERMITTED HAZARDOUS WASTE BOUNDARY
- EXISTING SITE ROAD
- PROPERTY BOUNDARY
- PROPOSED HAZARDOUS WASTE BOUNDARY

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

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Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: GENERAL SITE PLAN
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
GENERAL SITE PLAN

SHEET REFERENCE NUMBER:
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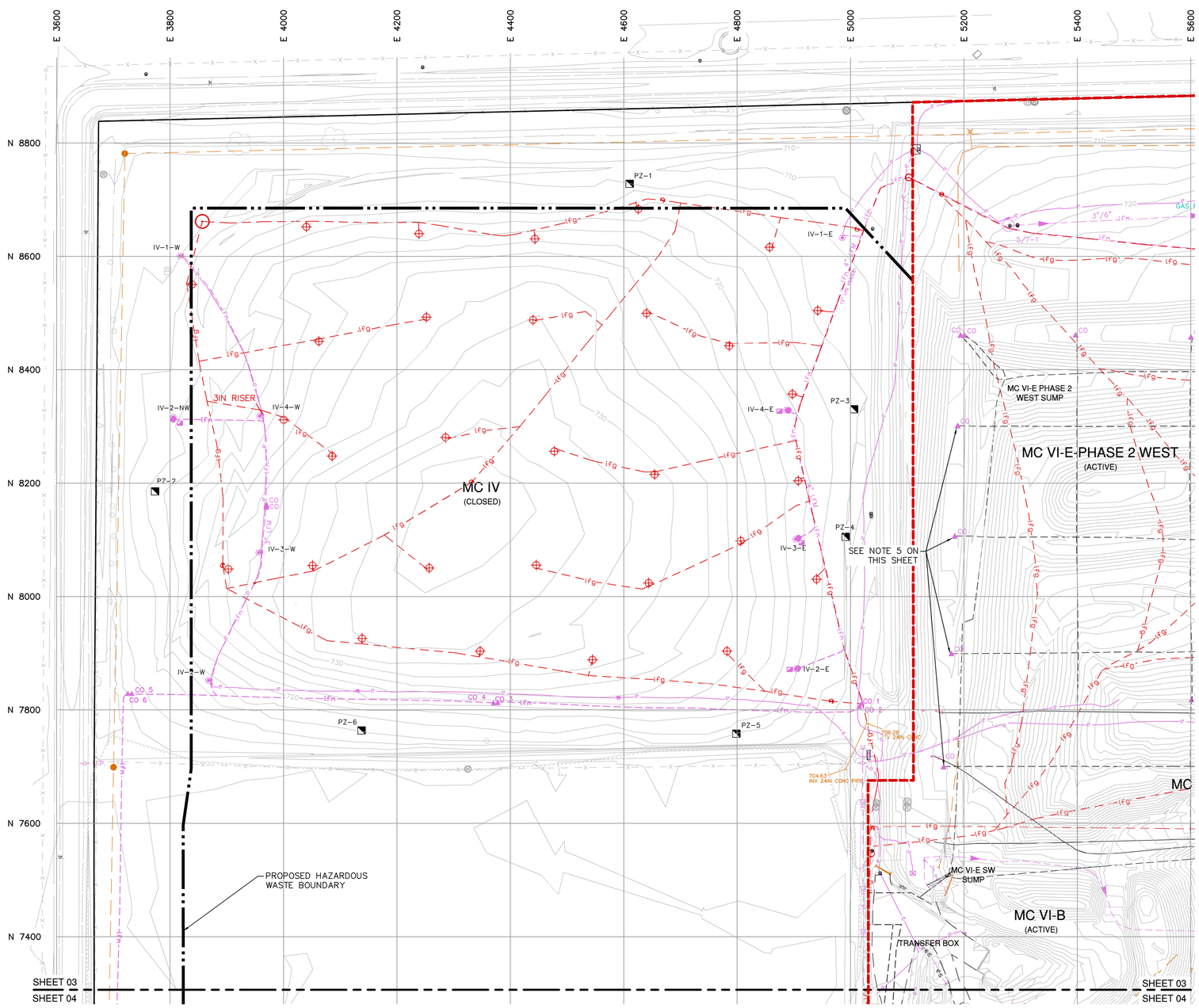

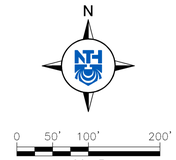

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- LEACHATE FORCEMAIN
- STORM WATER COLLECTION SYSTEM
- CULVERT
- LANDFILL GAS PIPE
- PERIMETER EDGE DRAIN
- BURIED ELECTRICAL LINE
- SURFACE ELECTRICAL LINE
- OVERHEAD ELECTRICAL LINE
- LEACHATE COLLECTION LINE
- PROPOSED HAZARDOUS WASTE BOUNDARY
- HAZARDOUS WASTE BOUNDARY
- CLEANOUT
- LANDFILL GAS WELL
- LANDFILL GAS HEADER VALVE
- LANDFILL GAS CONDENSATE TRAP
- GAS VENT
- PIEZOMETER
- LEACHATE EXTRACTION WELL
- LEACHATE RISER
- ELECTRICAL UTILITY BOX
- UTILITY POLE
- MONITORING WELL
- TREE
- VEGETATION
- FENCE
- AIR MONITOR STATION

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. THE UTILITY BASE MAP WAS PROVIDED BY MCLLC.
3. EXISTING UTILITIES (SUCH AS PIEZOMETERS, WELLS, GAS PIPING, LEACHATE FORCEMAIN, ELECTRICAL LINES, AND CLEANOUTS, ETC.) LOCATED INSIDE THE HAZARDOUS WASTE BOUNDARY ARE TO BE ABANDONED DURING CONSTRUCTION UNLESS MARKED TO REMAIN.
4. REFER TO CTI & ASSOCIATES DRAWING IN APPENDIX K OF THE BASIS OF DESIGN REPORT FOR MC I AND MC IV PROPOSED GAS MANAGEMENT SYSTEM.
5. IF CLEANOUTS ARE TO BE ABANDONED, CUT CLEANOUT FLUSH WITH SURFACE AND FUSION WELD HDPE END CAP TO END.

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Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: EXISTING UTILITY PLAN (2 OF 2)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
EXISTING UTILITY PLAN
(1 OF 2)

SHEET REFERENCE NUMBER:
03

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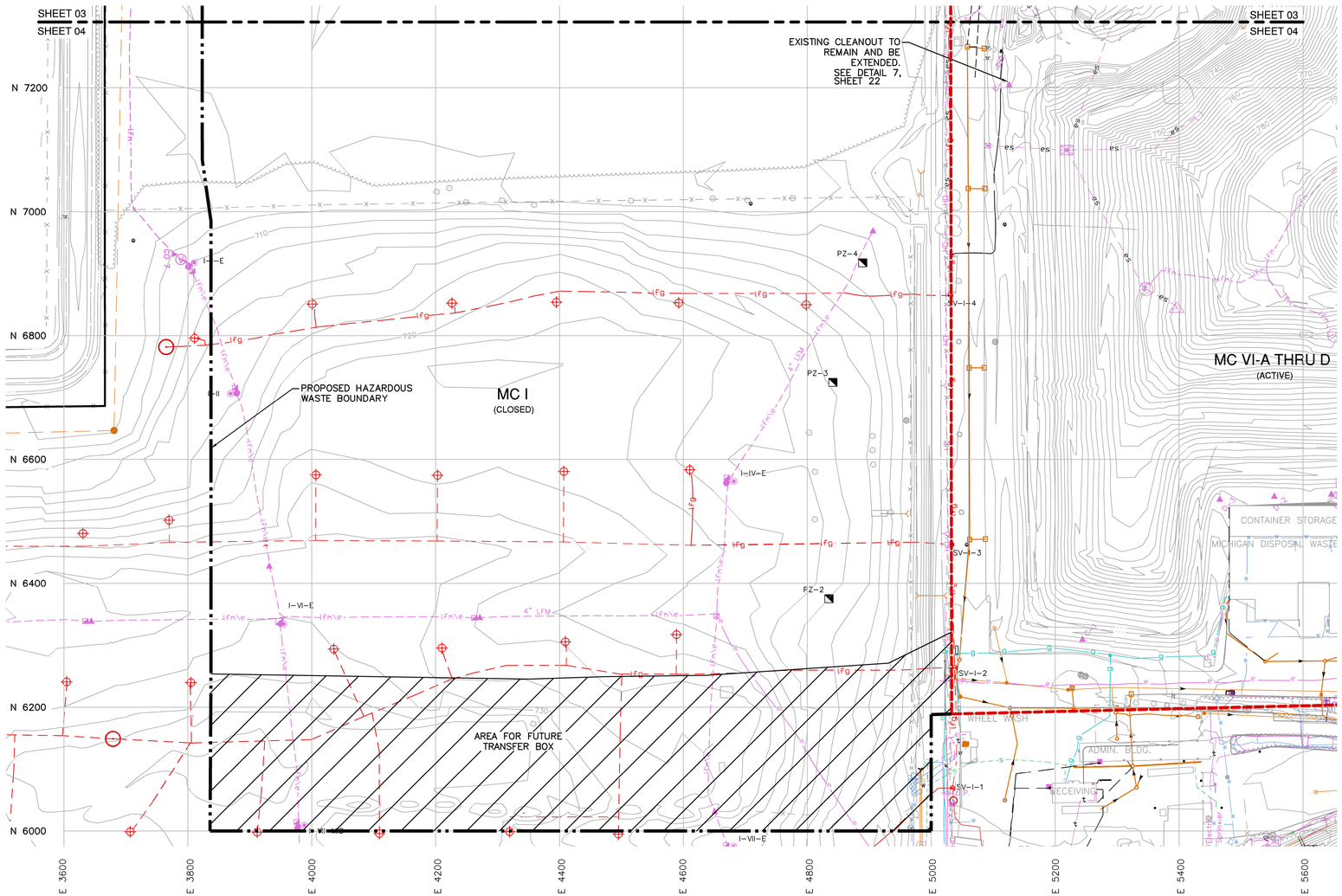

N

0 50' 100' 200'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- LEACHATE FORCEMAIN
- STORM WATER COLLECTION SYSTEM
- CULVERT
- LANDFILL GAS PIPE
- PERIMETER EDGE DRAIN
- BURIED ELECTRICAL LINE
- SURFACE ELECTRICAL LINE
- OVERHEAD ELECTRICAL LINE
- GAS LINE
- WATER LINE
- SANITARY SEWER LINE
- PROPOSED HAZARDOUS WASTE BOUNDARY
- HAZARDOUS WASTE BOUNDARY
- CLEANOUT
- LANDFILL GAS WELL
- LANDFILL GAS HEADER VALVE
- LANDFILL GAS CONDENSATE TRAP
- GAS VENT
- PIEZOMETER
- STORM STRUCTURE
- LEACHATE EXTRACTION WELL
- LEACHATE RISER
- ELECTRICAL UTILITY BOX
- VALVE VAULT
- UTILITY POLE
- MONITORING WELL
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- FENCE

NOTES:

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4. REFER TO CTI & ASSOCIATES DRAWING IN APPENDIX K OF THE BASIS OF DESIGN REPORT FOR MC I AND MC IV PROPOSED GAS MANAGEMENT SYSTEM.

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Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: EXISTING UTILITY PLAN (2 OF 2)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
EXISTING UTILITY PLAN
(2 OF 2)

SHEET REFERENCE NUMBER:
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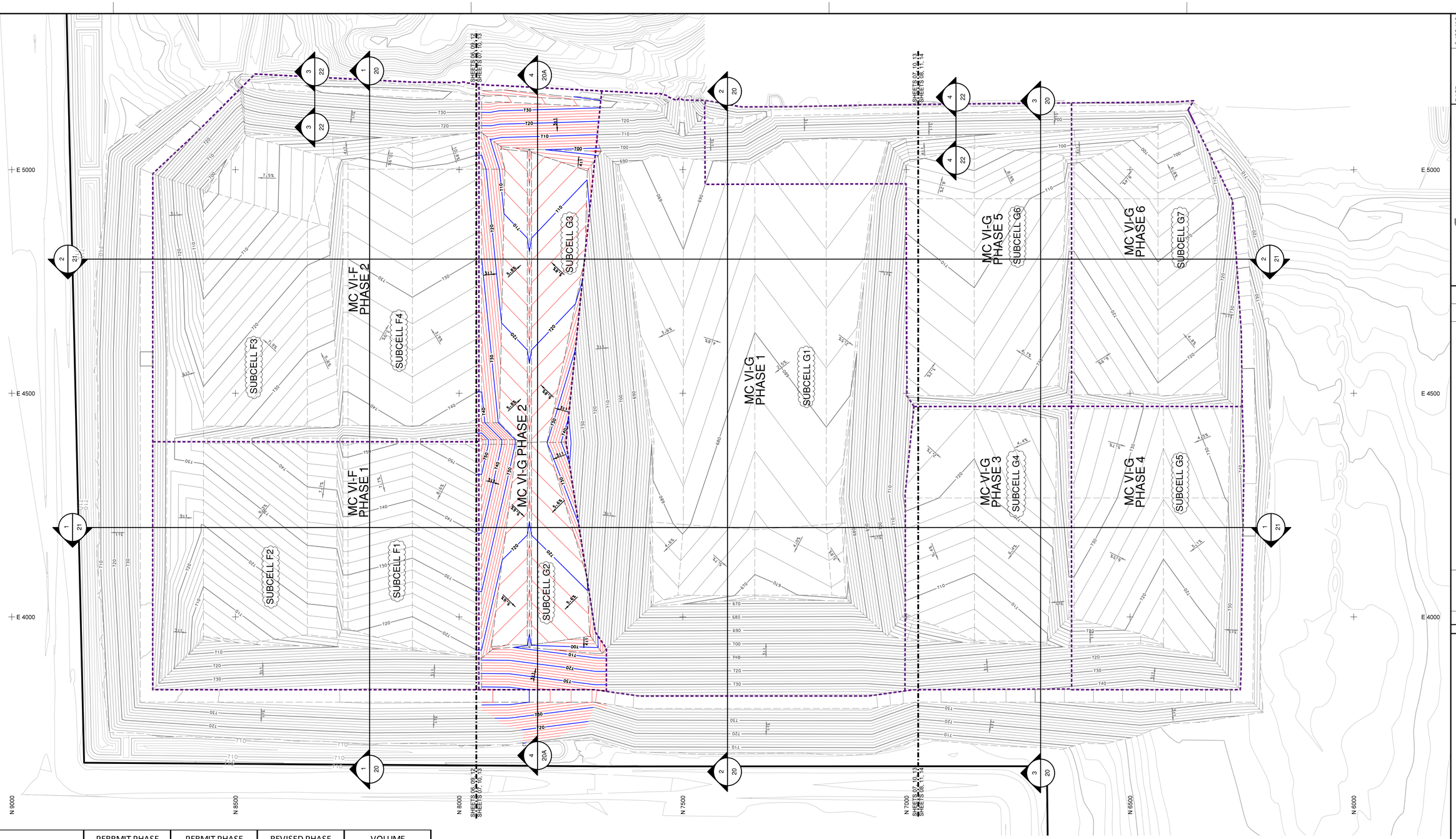

PHASE DESIGNATION	PERRMIT PHASE FOOTPRINT AREA (AC)	PERMIT PHASE INCREMENTAL VOLUME (C.Y.)	REVISED PHASE INCREMENTAL VOLUME (C.Y.)	VOLUME ADJUSTMENT (C.Y.)
MC VI-F PHASE 1	9.3	812,000	810,822	-1,178
MC VI-F PHASE 2	12.9	1,865,000	1,865,000	0
MC VI-G PHASE 1	19.9	2,370,000	2,354,444	-15,556
MC VI-G PHASE 2	7.2	773,000	769,538	23,778
MC VI-G PHASE 3	5.3	700,000	694,662	-5,338
MC VI-G PHASE 4	5.5	490,000	490,000	0
MC VI-G PHASE 5	7.4	3,600,000	3,598,173	-1,827
MC VI-G PHASE 6	5.5	1,120,000	1,120,000	0
TOTAL	**73.0**	**11,730,000**	**11,702,639**	**-121**

NOTES:

1. TOTAL VOLUME ADJUSTMENT IS THE NET VOLUME DETERMINED BASED ON:
   a. VOLUME GAIN BETWEEN THE PERMITED AND THE REDESIGNED TOP OF PRIMARY LINER GRADES
   b. VOLUME LOSS BETWEEN THE PERMITED AND THE REDESIGNED FINAL GRADES
2. TOTAL NET LOSS OF 121 CY WAS DETERMINED.

N

0 50' 100' 200'

SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK (SUBCELLS G2 AND G3)
- 710 — PROPOSED TOP OF PRIMARY LINER CONTOUR (SUBCELLS G2 AND G3 (2 FT INTERVAL)
- GRADE BREAK (SEPTEMBER 2011 PERMIT)
- 710 — PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011 (2 FT INTERVAL)
- PROPOSED PHASE BOUNDARY

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY –AIR–LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI–G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF PRIMARY LINER GRADES BY CTI, GRADES SHOWN SCREEN WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.
3. PHASING SHOWN HERE IS FOR WDI PLANNING PURPOSES ONLY AND MAY CHANGE BASED ON WDI NEEDS WITHOUT MDEQ APPROVAL.
4. THE TRANSFER BOX WILL BE MOVED TO VARIOUS LOCATIONS BASED ON CELL DEVELOPMENT AND FILLING OPERATIONS. SEE TRANSFER BOX DETAIL ON SHEETS 26 AND 27.
5. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI–G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI–G PHASES 3 TO 6. (2)

CTI and Associates, Inc.
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Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.ctiomplanies.com

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REV	DATE	REVISION DESCRIPTION	DRN
A	6/10/11	PHASING DESIGNATIONS	DRL
B	9/23/11	PER MDEQ COMMENTS	DRL
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

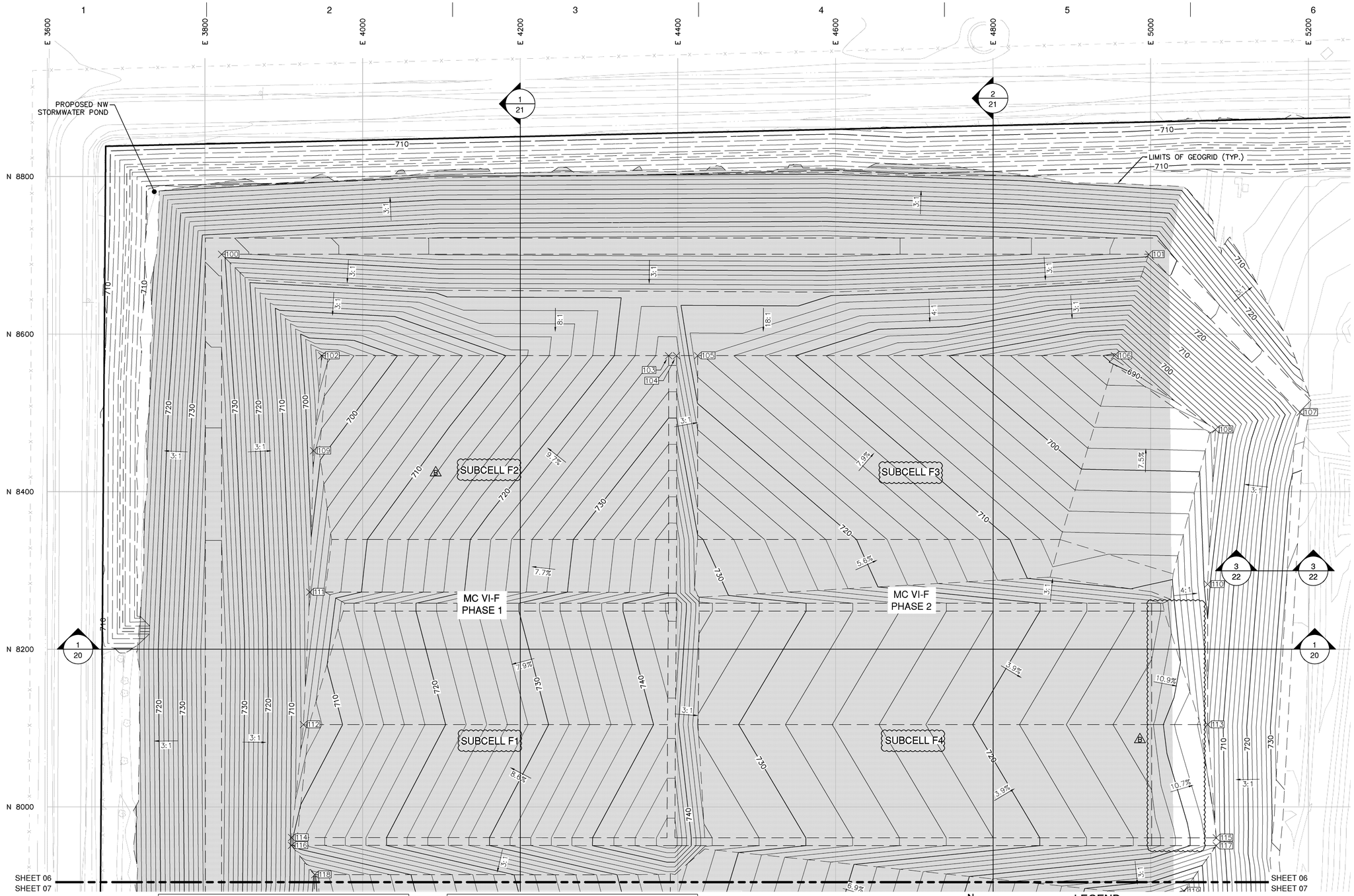
CONSTRUCTION PHASING PLAN

PROJECT NUMBER 118070010
SCALE 1" = 100'
DRAWING NO 05

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"

005 CONSTRUCTION PHASING PLAN.dgn 5/2/2018 12:01:17 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\005 CONSTRUCTION PHASING PLAN.dgn



SUBGRADE PERIMETER DIKE COORDINATES

Point No.	Northing	Easting	Elevation (ft)
100	8701.30	3821.03	731.39
101	8701.30	4997.59	731.01
102	8572.66	3948.14	691.65
103	8572.66	4388.34	725.25
104	8572.66	4398.34	725.25
105	8572.66	4425.01	716.36
106	8572.66	4954.00	689.27
107	8500.75	5189.52	725.83
108	8478.81	5082.20	694.48
109	8451.97	3937.75	697.50
110	8282.53	5072.20	698.88

SUBGRADE PERIMETER DIKE COORDINATES

Point No.	Northing	Easting	Elevation (ft)
111	8272.51	3932.99	701.60
112	8104.36	3924.94	704.97
113	8104.36	5072.27	703.43
114	7961.05	3909.78	709.54
115	7960.73	5083.24	706.44
116	7951.05	3909.68	709.54
117	7950.73	5083.24	706.44
118	7913.92	3939.16	700.65
119	7893.05	5042.32	691.59
120	7842.73	3938.19	697.92
121	7842.73	5038.07	689.67

N

0 30' 60' 120'
SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- PROPOSED DIKE COORDINATE POINT NO.
- PROPOSED SLOPE

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TOP OF SUBGRADE GRADING PLAN (3 OF 3)
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (1 OF 3)

SHEET REFERENCE NUMBER:
06

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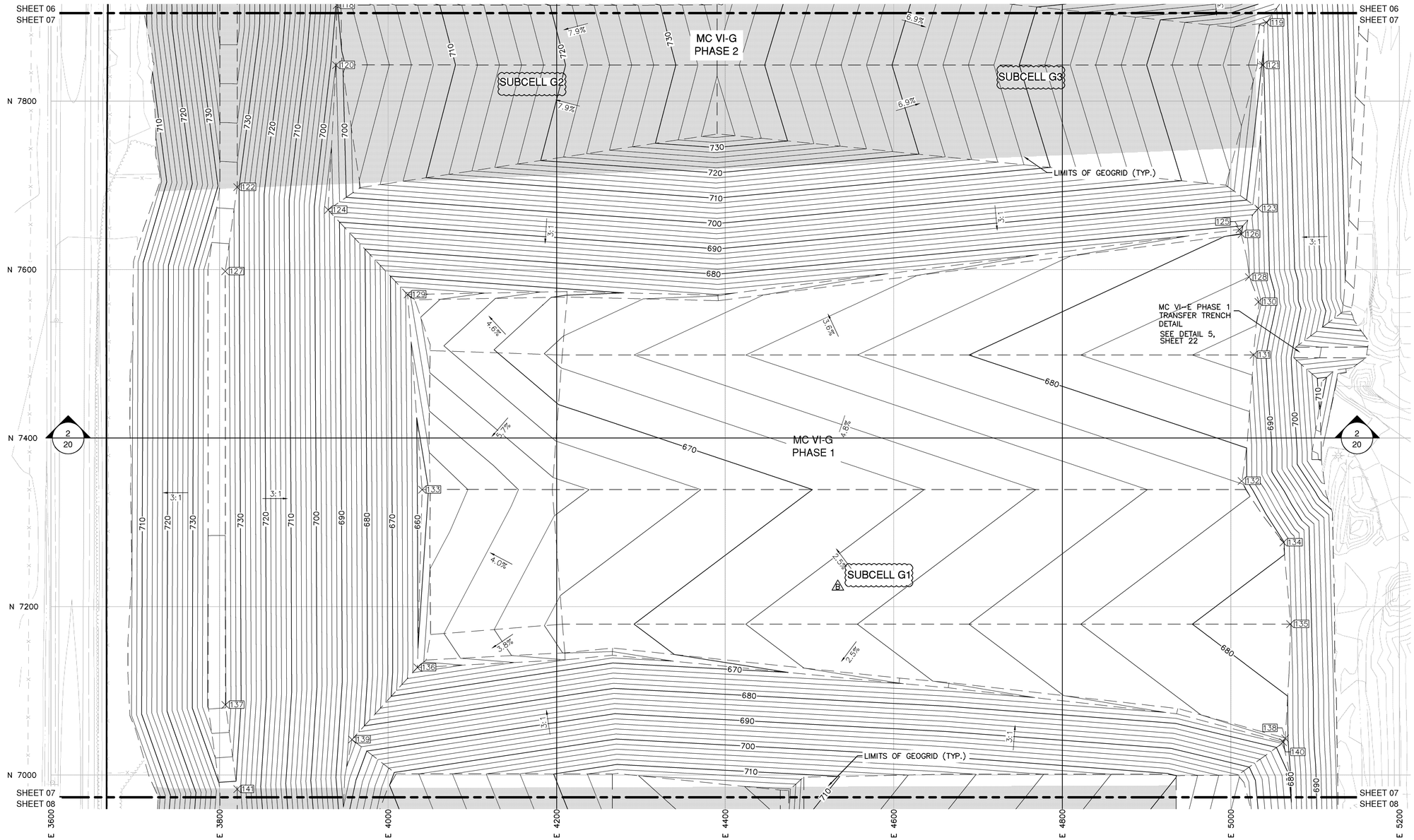

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
122	7697.89	3821.03	730.74
123	7672.54	5032.68	686.26
124	7670.81	3928.84	694.50
125	7647.66	5010.45	678.68
126	7641.99	5012.71	680.19
127	7597.89	3806.80	735.60
128	7591.06	5021.51	682.01
129	7570.41	4023.20	663.24
130	7561.67	5032.75	683.13
131	7498.71	5027.05	685.09
132	7349.00	5012.85	678.14

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
133	7338.74	4040.41	658.10
134	7276.06	5062.38	679.69
135	7179.18	5070.45	681.75
136	7127.70	4034.87	660.23
137	7083.24	3807.01	736.24
138	7043.49	5064.48	678.89
139	7042.16	3957.20	684.60
140	7039.03	5062.00	677.47
141	6983.25	3821.03	729.35
142	6687.01	3937.42	698.98
143	6636.63	3931.13	702.62

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- 100 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

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Infrastructure Engineering and Environmental Services

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Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TOP OF SUBGRADE GRADING PLAN (3 OF 3)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 9/23/11

SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (2 OF 3)

SHEET REFERENCE NUMBER:
07

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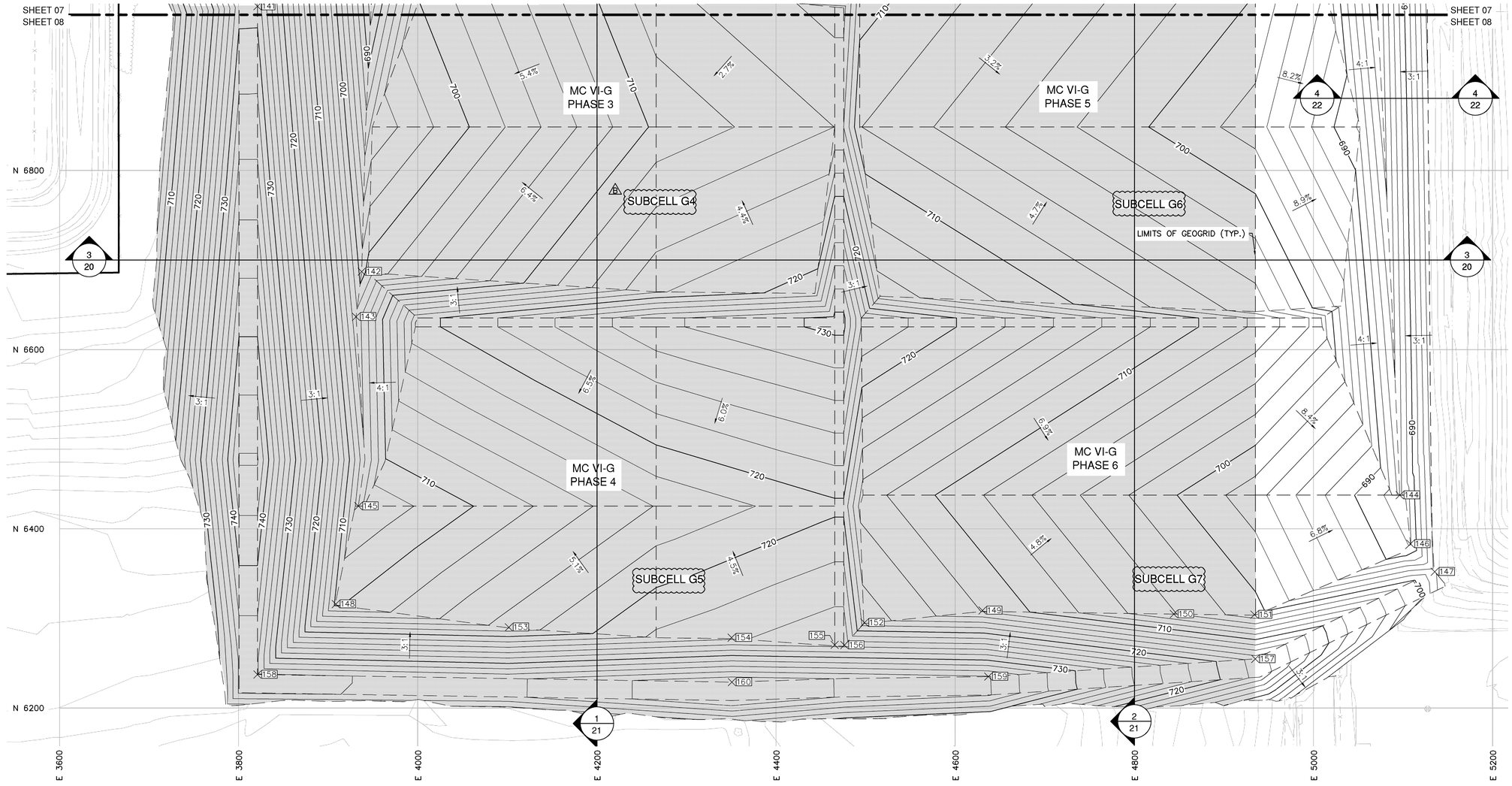

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
144	6437.61	5096.19	685.31
145	6425.37	3933.71	704.74
146	6383.17	5108.23	687.81
147	6352.10	5135.27	696.41
148	6316.02	3908.50	709.72
149	6308.86	4630.41	711.90
150	6304.89	4844.00	704.12
151	6304.21	4934.01	700.81
152	6295.30	4498.77	717.18
153	6290.14	4101.64	716.79
154	6278.55	4350.36	723.66

SUBGRADE PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
155	6270.50	4465.41	725.70
156	6270.26	4476.27	725.42
157	6254.80	4935.00	717.24
158	6237.41	3821.03	736.23
159	6235.06	4636.89	736.17
160	6228.94	4350.65	739.90

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF SUBGRADE CONTOUR (2 FT INTERVAL)
- AREA TO BE COVERED BY GEOGRID
- 100 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6. A

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

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Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TOP OF SUBGRADE GRADING PLAN (3 OF 3)
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
TOP OF SUBGRADE GRADING PLAN (3 OF 3)

SHEET REFERENCE NUMBER:
08

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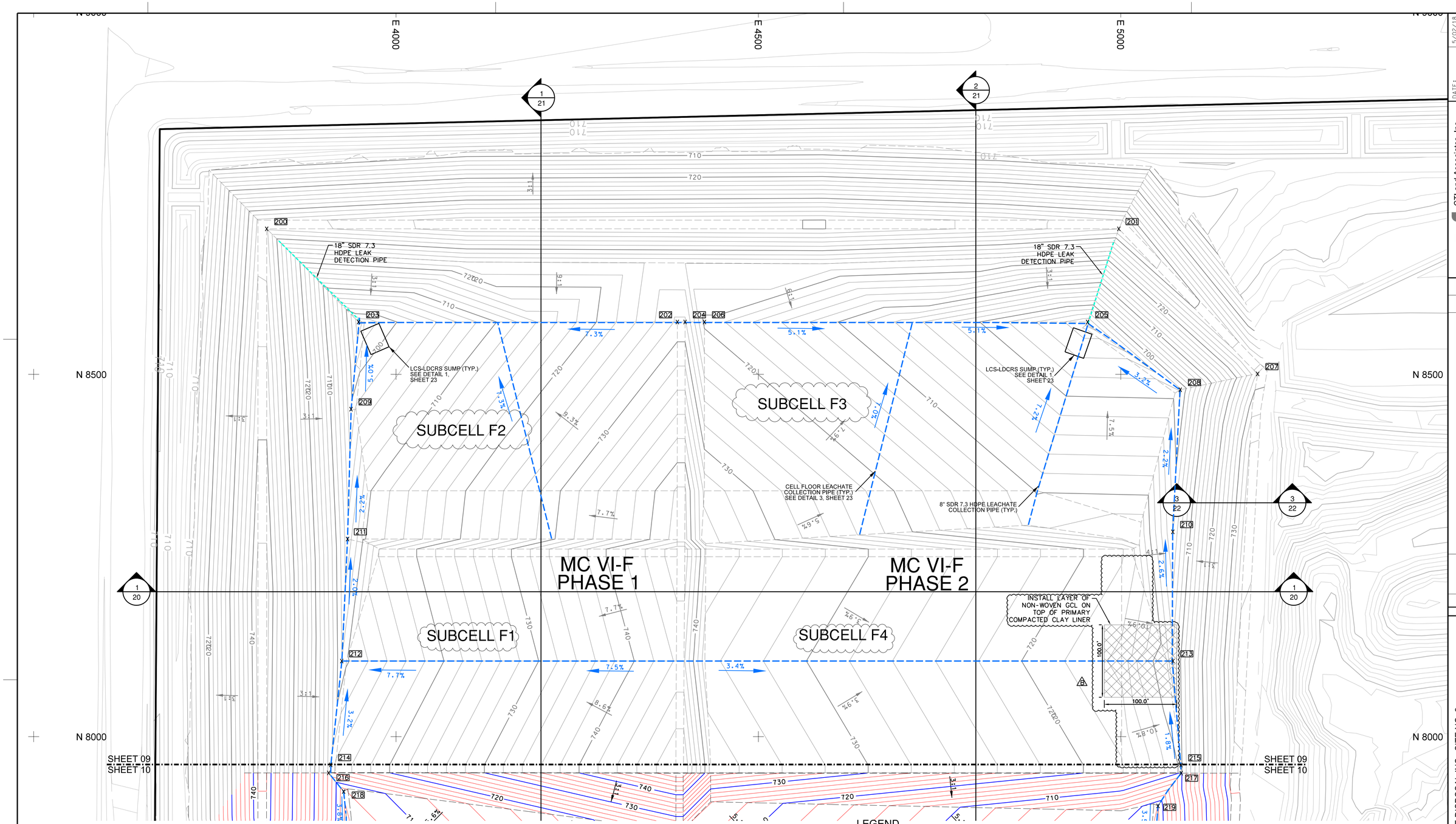

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
200	8700.81	3821.52	734.39
201	8700.81	4997.38	734.01
202	8572.25	4388.15	728.36
203	8572.25	3948.23	694.77
204	8572.25	4398.83	728.36
205	8572.25	4954.23	692.38
206	8572.25	4425.54	719.46
207	8500.61	5188.97	728.83
208	8478.75	5082.08	697.60
209	8451.96	3937.88	700.62

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
210	8282.62	5071.88	702.00
211	8272.67	3933.11	704.72
212	8104.36	3925.07	708.09
213	8104.36	5072.15	706.55
214	7961.11	3909.91	712.66
215	7960.76	5083.12	709.56
216	7949.91	3907.03	713.51
217	7949.59	5083.4	709.66
218	7924.24	3927.69	706.53
219	7904.34	5051.4	697.89

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK (SUBCELLS G2 AND G3)
- 710 — PROPOSED TOP OF SECONDARY LINER CONTOUR (SUBCELLS G2 AND G3 (2 FT INTERVAL)
- GRADE BREAK (SEPTEMBER 2011 PERMIT)
- 710 — PERMITTED TOP OF SECONDARY LINER GRADES BY NTH, DATED SEPTEMBER 2011 (2 FT INTERVAL)
- 300 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED SOLID LEAK DETECTION RISER PIPE
- PROPOSED SECONDARY COLLECTION SUMP

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY –AIR–LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI–G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF SECONDARY LINER GRADES BY CTI, GRADES SHOWN SCREEN WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF SECONDARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REVISIONS			
REV	DATE	DESCRIPTION	APP
A	6/10/11	PHASING DESIGNATIONS	DRL
B	9/23/11	PER MDEQ COMMENTS	DRL
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

TOP OF SECONDARY LINER GRADING PLAN (1 OF 3)

PROJECT NUMBER: 118070010
SCALE: 1" = 60'
DRAWING NO: 09

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"

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SHEET 09
SHEET 10

SHEET 09
SHEET 10

MC VI-G PHASE 2

SUBCELL G2

SUBCELL G3

HIGHPOINT

MC VI-G
PHASE 1

SUBCELL G1

MC VI-E PHASE 1 SAMPLING PIPE
SEE DETAIL 9 ON SHEET 22

MC VI-E PHASE 1 TRANSFER
TRENCH DETAIL
SEE DETAIL 5,
SHEET 22

5 EXTRA LAYERS OF
GEONET, 10 FEET WIDE AT
4.8% SLOPE ALONG TOE

LCS-LDCRS SUMP (TYP.)
SEE DETAIL 1,
SHEET 23

N 7500

N 7000

SHEET 10
SHEET 11

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
214	7961.11	3909.91	712.66
215	7960.76	5083.12	709.56
216	7949.91	3907.03	713.51
217	7949.59	5083.4	709.66
218	7924.24	3927.69	706.53
219	7904.34	5051.4	697.89
220	7842.87	3931.37	703.56
221	7842.87	5045.71	695.6
222	7697.85	3821.52	733.74
223	7682.97	5041.27	692.31
224	7670.78	3929.03	697.65
225	7647.54	5010.47	681.80
226	7641.99	5012.71	683.24
227	7597.85	3807.29	738.60

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
228	7591.06	5021.51	685.01
229	7570.29	4023.33	666.36
230	7561.67	5032.75	686.20
231	7498. 71	5027.05	688.09
232	7349.00	5012.85	681.14
233	7338.74	4040.54	661.22
234	7275.80	5061.92	682.69
235	7179.18	5070.45	684.75
236	7127.83	4034.99	663.35
237	7083.28	3807.50	739.24
238	7043.49	5064.48	681.99
239	7042.34	3957.36	687.71
240	7039.01	5061.89	680.59
241	6983.28	3821.52	732.35

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK (SUBCELLS G2 AND G3)
- 710 — PROPOSED TOP OF SECONDARY LINER CONTOUR (SUBCELLS G2 AND G3 (2 FT INTERVAL)
- GRADE BREAK (SEPTEMBER 2011 PERMIT)
- 710 — PERMITTED TOP OF SECONDARY LINER GRADES BY NTH, DATED SEPTEMBER 2011 (2 FT INTERVAL)
- 300 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED LEAK DETECTION RISER/ SECONDARY SAMPLING PIPE
- PROPOSED 5 EXTRA LAYERS OF GEONET, 11.5' WIDE, BENEATH GEOCOMPOSITE WITH FLOW DIRECTION
- PROPOSED SECONDARY COLLECTION

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY -AIR-LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI-G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF SECONDARY LINER GRADES BY CTI, GRADES SHOWN SCREENED WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF SECONDARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.

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REVISIONS			
REV.	DATE	REVISION DESCRIPTION	
A	6/10/11	PHASING DESIGNATIONS	DRL
B	9/23/11	PER MDEQ COMMENTS	DRL
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA

DATE:	5/02/18	
DESIGNED BY:	XZ	
DRAWN BY:	PAA	XZ
CHECKED BY:	TYS	APP
APPROVED BY:	XZ	

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

TOP OF SECONDARY LINER GRADING PLAN (2 OF 3)

PROJECT NUMBER
118070010

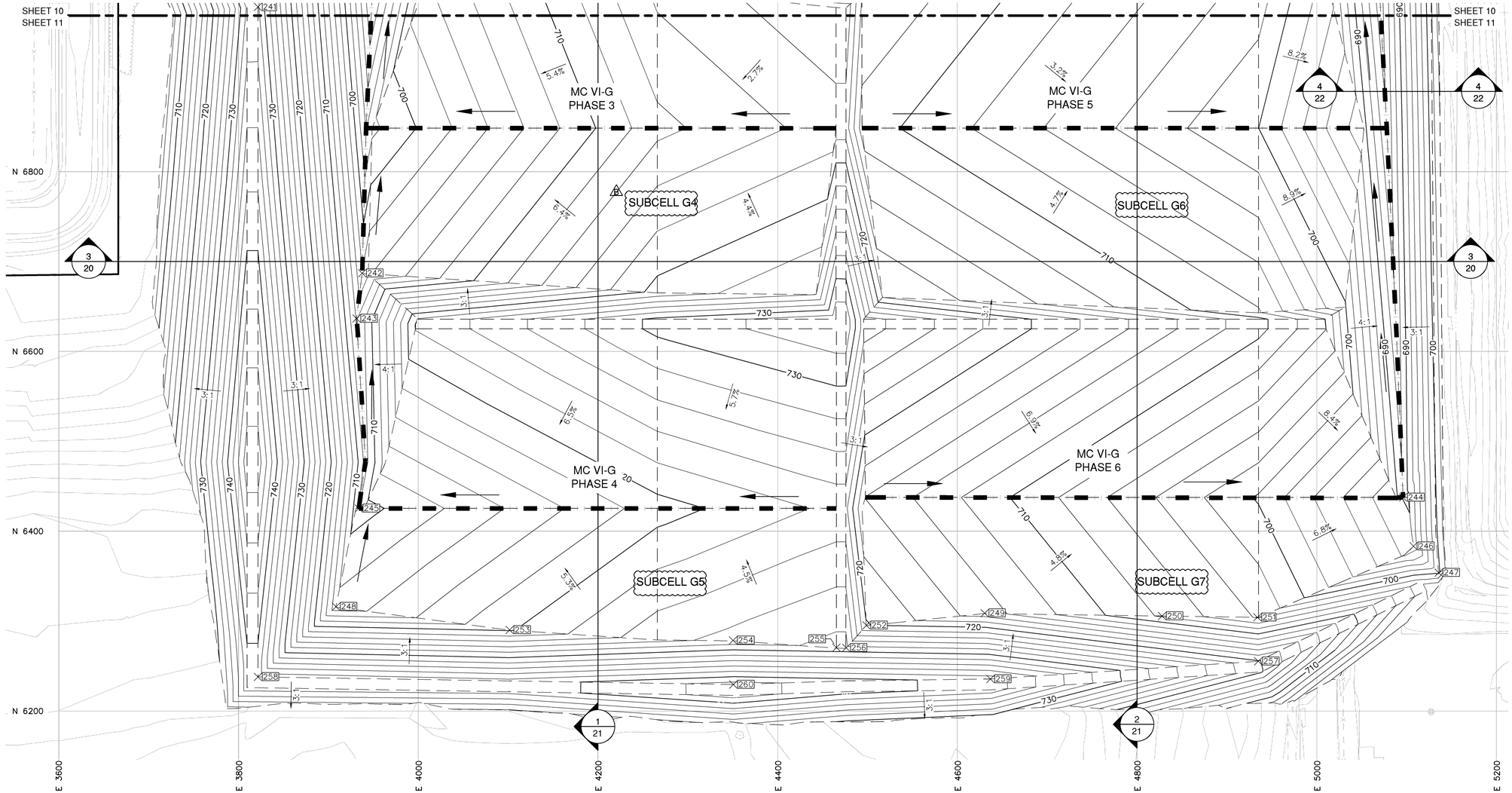
SCALE
1" = 60'

DRAWING NO
10

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" x 36"

009 - 010 TSL PLAN.dgn 5/2/2018 2:41:13 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\009 - 010 TSL PLAN.dgn



SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
244	6437.59	5096.06	688.43
245	6425.35	3933.83	707.86
246	6383.34	5107.71	690.84
247	6353.82	5135.70	699.60
248	6316.02	3908.50	712.72
249	6308.86	4630.41	714.90
250	6305.63	4827.81	707.70
251	6304.21	4934.01	703.81
252	6295.30	4498.77	720.18
253	6290.14	4101.64	719.79
254	6278.55	4350.36	726.66

SECONDARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
255	6270.50	4465.41	728.70
256	6270.26	4476.27	728.59
257	6255.28	4934.88	720.24
258	6237.90	3821.52	739.23
259	6235.55	4636.87	739.17
260	6229.43	4350.65	742.90

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF SECONDARY CONTOUR (2 FT INTERVAL)
- 200 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED 2 EXTRA LAYERS OF GEONET, 7.5' WIDE BENEATH GEOCOMPOSITE WITH FLOW DIRECTION

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6. 2

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

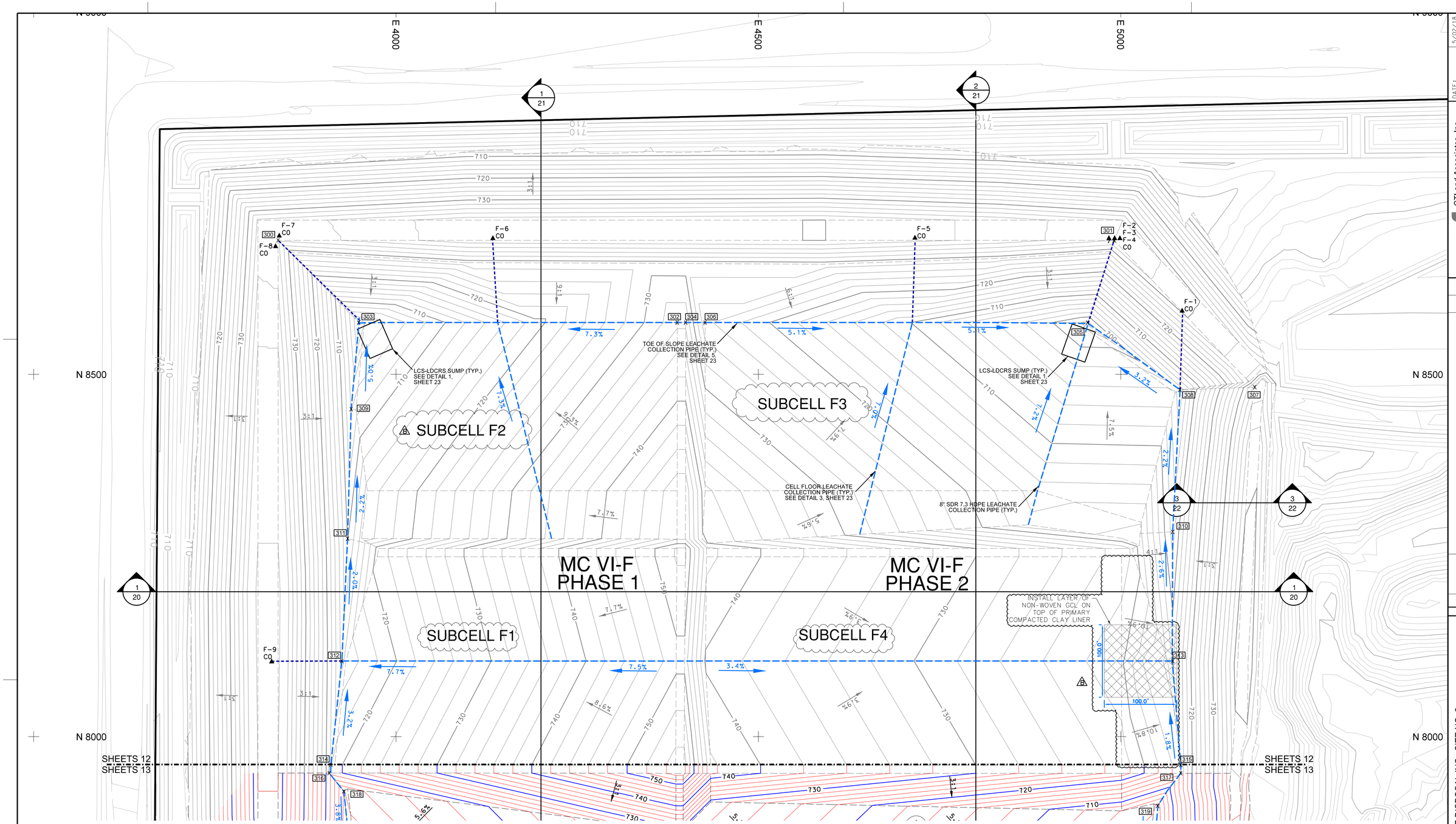
PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TOP OF SECONDARY LINER GRADING PLAN (3 OF 3)
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
TOP OF SECONDARY LINER GRADING PLAN (3 OF 3)

SHEET REFERENCE NUMBER:
11

J:\13\1306921\Production Sets\Civil\SF-G Permit Drawings\TOP OF SECONDARY LINER GRADING PLAN (3 OF 3).dwg Plotted: 9/21/2011 3:52 PM by Dlutz



PRIMARY PERIMETER DIKE COORDINATES

Point No.	Northing	Easting	Elevation (ft)
300	8685.01	3837.32	734.39
301	8685.01	4990.85	734.01
302	8571.54	4388.00	733.49
303	8571.54	3948.60	699.97
304	8571.54	4399.64	733.49
305	8571.54	4954.14	697.53
306	8571.54	4426.45	724.56
307	8482.21	5185.03	734.79
308	8478.59	5081.75	702.80
309	8451.95	3938.08	705.82

PRIMARY PERIMETER DIKE COORDINATES

Point No.	Northing	Easting	Elevation (ft)
310	8282.69	5071.67	707.20
311	8273.20	3933.29	709.92
312	8104.36	3925.25	713.29
313	8104.36	5071.95	711.75
314	7961.21	3910.06	717.86
315	7960.81	5082.91	714.76
316	7949.75	3907.7	718.61
317	7949.43	5082.91	714.76
318	7924.5	3928.02	711.75
319	7904.56	5051.05	703.11

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK (SUBCELLS G2 AND G3)
- 710 — PROPOSED TOP OF PRIMARY LINER CONTOUR (SUBCELLS G2 AND G3 (2 FT INTERVAL)
- GRADE BREAK (SEPTEMBER 2011 PERMIT)
- 710 — PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011 (2 FT INTERVAL)
- 300 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- F-1 CO — PROPOSED LEACHATE CLEANOUT PIPE
- PROPOSED PRIMARY COLLECTION SUMP

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY -AIR-LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI-G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF PRIMARY LINER GRADES BY CTI, GRADES SHOWN SCREENED WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.

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DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

REVISIONS			
REV	DATE	DESCRIPTION	
A	6/10/11	PHASING DESIGNATIONS	DRL
B	9/23/11	PER MDEQ COMMENTS	DRL
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA
			XZ
			DRN. APP.

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

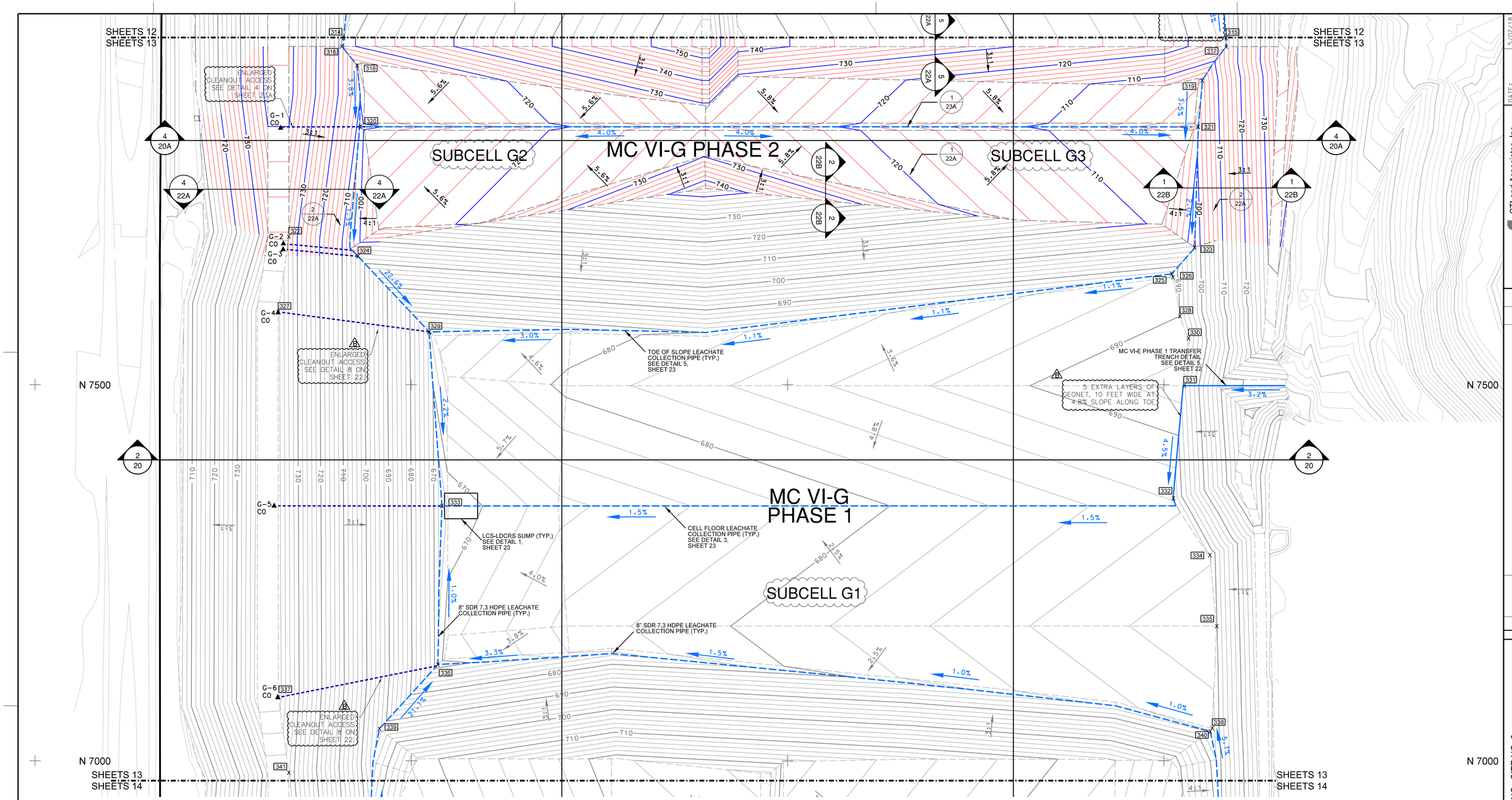
TOP OF PRIMARY LINER GRADING PLAN (1 OF 3)

PROJECT NUMBER 118070010
SCALE 1" = 60'
DRAWING NO 12

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FULL$

DRAWING SIZE: 24" X 36"

012 - 014 TPL PLAN.dgn 5/2/2018 12:26:15 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\012 - 014 TPL PLAN.dgn



PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
314	7961.21	3910.06	717.86
315	7960.81	5082.91	714.76
316	7949.75	3907.7	718.61
317	7949.43	5082.91	714.76
318	7924.5	3928.02	711.75
319	7904.56	5051.05	703.11
320	7842.87	3931.97	708.82
321	7842.87	5045.77	700.84
322	7696.73	3837.32	733.74
323	7682.58	5040.91	697.5
324	7670.57	3929.29	702.88
325	7647.35	5010.49	687.00
326	7642.85	5012.25	688.18
327	7596.74	3823.09	738.60

PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
328	7591.06	5021.51	690.24
329	7570.10	4023.55	671.56
330	7561.67	5032.75	691.59
331	7498.71	5027.05	693.52
332	7349.00	5012.85	686.42
333	7338.74	4040.74	666.42
334	7273.49	5061.28	687.73
335	7179.18	5070.45	689.94
336	7128.04	4035.19	668.55
337	7084.38	3823.30	739.24
338	7043.49	5064.48	687.10
339	7042.63	3957.62	692.90
340	7038.96	5061.69	685.79
341	6984.38	3837.32	732.35

N

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK (SUBCELLS G2 AND G3)
- 710 — PROPOSED TOP OF PRIMARY LINER CONTOUR (SUBCELLS G2 AND G3 (2 FT INTERVAL)
- GRADE BREAK (SEPTEMBER 2011 PERMIT)
- 710 — PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011 (2 FT INTERVAL)
- 300 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- F-1 CO — PROPOSED LEACHATE CLEANOUT PIPE
- PROPOSED PRIMARY COLLECTION SUMP
- PROPOSED 5 EXTRA LAYERS OF GEONET WITH TRANSMISSIVITY BENEATH GEOCOMPOSITE WITH FLOW DIRECTION

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY ~AIR-LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI-G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF PRIMARY LINER GRADES BY CTI, GRADES SHOWN SCREENED WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.

REV	DATE	REVISION DESCRIPTION	DRN	APP
A	6/10/11	PHASING DESIGNATIONS	PAA	XZ
B	9/23/11	PER MDEQ COMMENTS	PAA	XZ
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	DRL	
D	5/29/18	ADDENDUM 1	DRL	
E				

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

TOP OF PRIMARY LINER GRADING PLAN (2 OF 3)

PROJECT NUMBER
118070010
SCALE
1" = 60'
DRAWING NO
13

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILEL$

DRAWING SIZE: 24" X 36"

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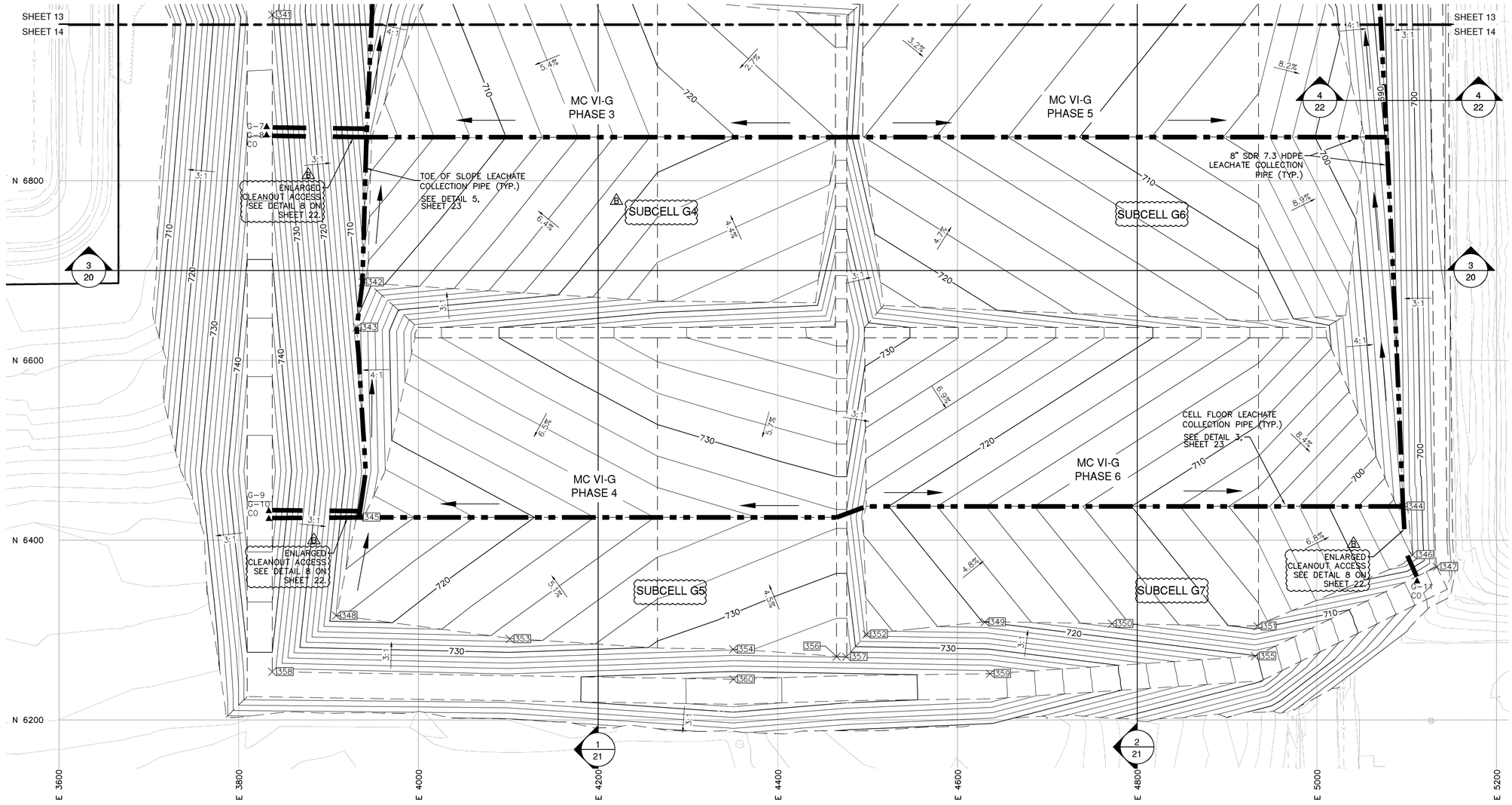

PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
344	6437.60	5095.87	693.63
345	6425.32	3934.02	713.06
346	6383.71	5106.68	695.89
347	6370.28	5133.49	704.60
348	6316.02	3908.50	717.88
349	6308.86	4630.41	720.03
350	6307.07	4772.00	714.72
351	6304.21	4934.01	709.18
352	6295.30	4498.77	725.35
353	6290.14	4101.68	724.99
354	6278.55	4350.36	731.79

PRIMARY PERIMETER DIKE COORDINATES			
Point No.	Northing	Easting	Elevation (ft)
355	6270.86	4931.07	720.24
356	6270.50	4465.41	733.79
357	6270.26	4476.27	733.80
358	6253.54	3837.32	739.23
359	6251.34	4636.24	739.17
360	6245.23	4350.52	742.90

0 30' 60' 120'
SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — PROPOSED TOP OF PRIMARY PRIMARY CONTOUR (2 FT INTERVAL)
- 300 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- G-8 CO — PROPOSED LEACHATE CLEANOUT PIPE

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. A MINIMUM OF 5 YEARS PRIOR TO CONSTRUCTING MC VI-G PHASES 3 TO 6, WDI SHALL INVESTIGATE THE DIKE LOCATIONS AND NEED FOR DEWATERING FOR THE EXISTING MC I TO CONFIRM THE ASSUMPTIONS USED IN THE DESIGN. WDI SHALL INFORM THE MDEQ OF THE RESULTS OF THIS INVESTIGATION AND REVISE THE DESIGN, IF NECESSARY. THE REVISED DESIGN SHALL BE APPROVED BY THE MDEQ PRIOR TO CONSTRUCTION OF MC VI-G PHASES 3 TO 6.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TOP OF PRIMARY LINER GRADING PLAN (3 OF 3)
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
TOP OF PRIMARY LINER GRADING PLAN (3 OF 3)

SHEET REFERENCE NUMBER:
14

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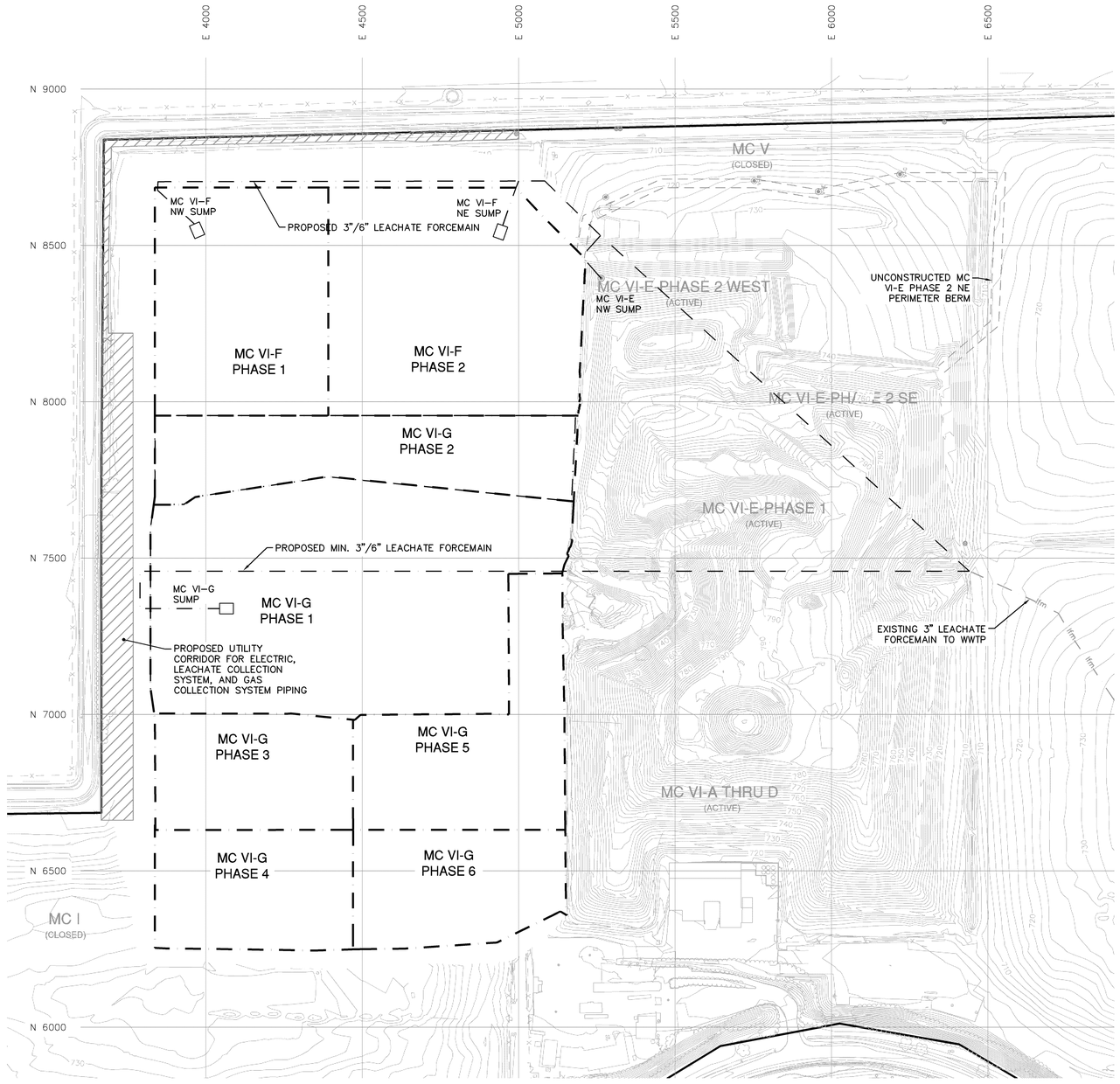

N

0 100' 200' 400'

SCALE

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- EXISTING 3" LEACHATE FORCEMAIN
- PROPERTY BOUNDARY
- PROPOSED PHASE BOUNDARY
- PROPOSED 3"/6" DUAL CONTAINED LEACHATE FORCEMAIN
- PROPOSED UTILITY CORRIDOR

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

NTH Consultants, Ltd.

Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL

PROJECT NAME:

MASTER CELL VI F&G

PROJECT LOCATION:

WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: UTILITY MODIFICATION PLAN
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:

LEACHATE MANAGEMENT PLAN

SHEET REFERENCE NUMBER:

15

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EXTEND CLEANOUT SOUTH ALONG TOP OF CELL DIKE AND DAYLIGHT AT SOUTH PERIMETER DIKE

SHEET 17
SHEET 16

MC VI-F
NE SUMP

PROPOSED NW STORMWATER POND

MC VI-F
NW SUMP

MC VI-G
SUMP

FINAL COVER PENETRATION DETAIL (TYP.)
SEE DETAIL 5,
SHEET 24

N 9000 N 8500 N 8000 N 7500 N 7000 N 6500 N 6000

E 5000 E 4500 E 4000

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED LIMIT OF REGRADING AREA BY CTI
- 710 — PROPOSED TOP OF FINAL COVER CONTOUR BY CTI (5 FT INTERVAL)
- PROPOSED GRADE BREAK
- 710 — PERMITTED TOP OF FINAL COVER CONTOUR BY NTH, DATED SEPTEMBER 2011 (5 FT INTERVAL)
- 710 — PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- 3:1 PROPOSED SLOPE
- PROPOSED PASSIVE GAS VENT/TRENCH
- F-1 CO PROPOSED LEACHATE COLLECTION SYSTEM CLEANOUTS
- PROPOSED SUMP LOCATION AND COVER PENETRATION
- PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY 5.0 X 10^{-4} M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY $\geq 7.0 \times 10^{-5}$ M^2/S)

N

0 50' 100' 200'
SCALE

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY -AIR-LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN COLOR REPRESENT REDESIGN FINAL GRADES BY CTI, GRADES SHOWN SCREENED WITHIN LANDFILL FOOTPRINT REPRESENT 2013 PERMITTED FINAL GRADES BY NTH, DATED 2013.
3. INSTALL GAS MANAGEMENT SYSTEM IN ACCORDANCE WITH THE APPROVED CLOSURE PLAN.

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.ctiomplanies.com

DATE: 5/02/18
DESIGNED BY: NZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REV	DATE	REVISION DESCRIPTION	DRN	APP
C	5/02/18	SUBCELLS G2 AND G3 REVISED	PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

FINAL COVER GRADING PLAN (1 OF 2)

PROJECT NUMBER 118070010
SCALE 1" = 100'
DRAWING NO 16

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"

016-017 FINAL GRADE PLAN.dgn 5/2/2018 12:29:08 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\016-017 FINAL GRADE PLAN.dgn

MC VI-E
NE SUMP

MC VI-E
SE SUMP

PROTECT MC V MANHOLE WITH 3' RETAINING WALL/ CONCRETE MH SECTION (TYP.)

PROPOSED NW STORMWATER POND

MC VI-E
NW SUMP

EXTEND CLEANOUT NORTH ALONG TOP OF CELL DIKE AND DAYLIGHT AT NORTH PERIMETER DIKE

PREVIOUSLY PERMITTED FINAL COVER AREA

PROPOSED FINAL COVER AREA

FINAL COVER PENETRATION DETAIL (TYP.) SEE DETAIL 5, SHEET 24

SEE NOTE 4 ON THIS SHEET (TYP.)

MC VI-F

MC VI-AN
SUMP RISER

MC VI-AS
SUMP RISER

MC VI-AN LEAK
DETECTION RISER

MC VI-AS LEAK
DETECTION RISER

MC VI-B
SUMP RISER

MC VI-B
LEAK
DETECTION
RISER

MC VI-D
SUMP RISER

LEACHATE SUMP RISER PIPING DETAIL (TYP.) SEE DETAIL 6, SHEET 24

MC VI-D LEAK
DETECTION RISER

MC VI-C LEAK
DETECTION RISER

MC VI-C SUMP RISER
(SEE NOTE 3)

CLEANOUT EXTENSION
SEE DETAIL 7,
SHEET 22

SEE NOTE 4 ON
THIS SHEET
(TYP.)

PREVIOUSLY PERMITTED
FINAL COVER AREA

PROPOSED FINAL
COVER AREA

EXTEND CLEANOUT SOUTH ALONG TOP OF CELL DIKE AND DAYLIGHT AT SOUTH PERIMETER DIKE

SHEET 17
SHEET 16

SHEET 17
SHEET 16

LEGEND

710	EXISTING CONTOUR (2 FT INTERVAL)
	PROPERTY BOUNDARY
	PROPOSED GRADE BREAK
710	PERMITTED TOP OF FINAL COVER CONTOUR BY NTH, DATED SEPTEMBER 2011 (5 FT INTERVAL)
710	PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
3:1	PROPOSED SLOPE
	PROPOSED PASSIVE GAS VENT/TRENCH
F-1 CO	PROPOSED LEACHATE COLLECTION SYSTEM CLEANOUTS
	PROPOSED SUMP LOCATION AND COVER PENETRATION
	PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY 5.0 X 10^{-4} M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY $\geq 7.0 \times 10^{-5}$ M^2/S)
	EXISTING/PREVIOUSLY PERMITTED LEACHATE SUMP AND COVER PENETRATION
E-1 CO	EXISTING/PREVIOUSLY PERMITTED LEACHATE COLLECTION SYSTEM CLEANOUTS
	EXISTING LEAK DETECTION, COLLECTION, AND REMOVAL SYSTEM RISERS
	EXISTING APPROXIMATE LOCATION OF COVER DRAIN OUTLETS

N
0 50' 100' 200'
SCALE

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY –AIR–LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN COLOR REPRESENT REDESIGN FINAL GRADES BY CTI. GRADES SHOWN SCREENED WITHIN LANDFILL FOOTPRINT REPRESENT 2013 PERMITTED FINAL GRADES BY NTH, DATED 2013.
3. INSTALL GAS MANAGEMENT SYSTEM IN ACCORDANCE WITH THE APPROVED CLOSURE PLAN.
4. CLEANOUTS IN MC VI–AN, AS, B, C, AND D ARE TO BE ABANDONED, EXCEPT B1, C1, D1 THROUGH D3, D14, D17, D18 AND AS1.
5. BEFORE PLACING WASTE AROUND MC VI–C SUMP RISER, A MONITORING PROGRAM SHOULD BE IMPLEMENTED TO MONITOR ITS FUNCTIONALITY.
6. PRIOR TO PLACING WASTE AROUND CLEANOUTS E–22 THROUGH E–26 AND CLEANOUTS G–13 THROUGH G–19, THE CLEANOUTS SHOULD BE EVALUATED TO DETERMINE IF THE LEACHATE COLLECTION LINE CAN BE CLEANED BY A SINGLE ACCESS POINT. IF NOT, THE CLEANOUT SHOULD TO BE EXTENDED IN ACCORDANCE WITH DETAIL 7 ON SHEET 22 OR ALONG INTERIOR DIKE TO PERIMETER DIKE.

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www.ctiompanies.com

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REVISIONS

REV	DATE	REVISION DESCRIPTION	DRN	APP
C	5/02/18	SUBCELLS C2 AND C3	PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

FINAL COVER GRADING PLAN (2 OF 2)

PROJECT NUMBER
118070010

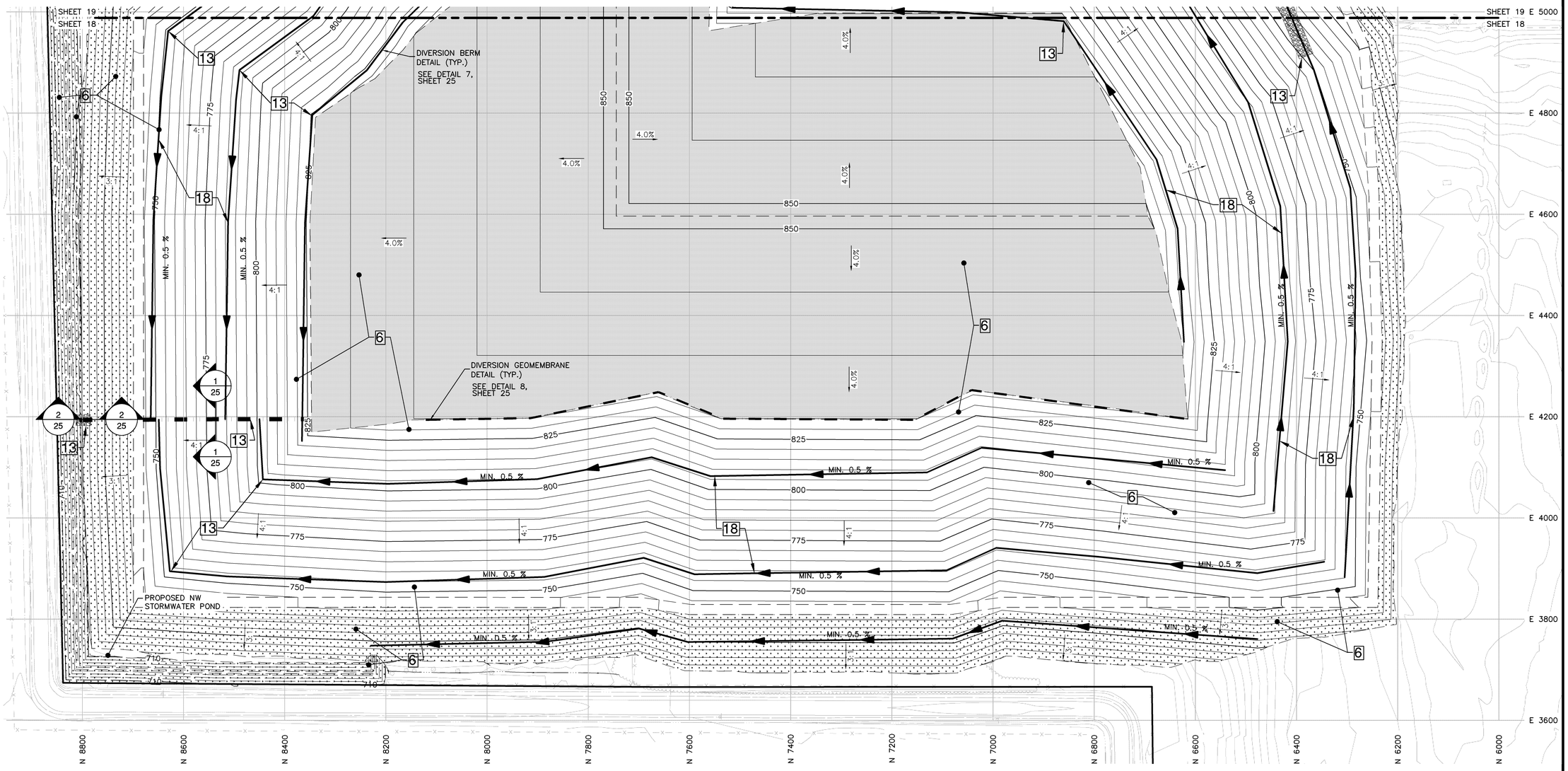
SCALE
1" = 100'

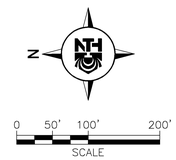
DRAWING NO
17

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
PLOTTED BY: $USER$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"

016-017 FINAL GRADE PLAN.dgn 5/2/2018 12:30:48 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\016-017 FINAL GRADE PLAN.dgn





LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
- PROPOSED NW STORMWATER POND CONTOUR (2 FT INTERVAL)
- PROPOSED SLOPE
- PROPOSED DIVERSION GEOMEMBRANE
- PROPOSED DIVERSION BERM
- PROPOSED DOWNSLOPE SPILLWAY
- PROPOSED OUTLET SWALE
- PROPOSED RIP-RAP
- PROPOSED PERMANENT SEEDING-AT TIME OF DIKE CONSTRUCTION
- PROPOSED GEOCOMPOSITE WITH TRANSMISSIVITY $\geq 5.0 \times 10^{-4}$ M^2/S (REMAINING COVER GEOCOMPOSITE TRANSMISSIVITY $\geq 7.0 \times 10^{-5}$ M^2/S)

SOIL EROSION AND SEDIMENTATION CONTROL LEGEND

- 6 — SEEDING WITH MULCH AND/OR MATTING
- 13 — RIPRAP, RUBBLE, GABIONS
- 18 — DIVERSION BERM

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY AIR-LAND SURVEY AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. SILT FENCE PLACED AT TIME OF CONSTRUCTION AND MAINTAINED UNTIL VEGETATION ON OUTSIDE SLOPE OF DIKE IS ESTABLISHED. SEE STORM WATER MANAGEMENT SYSTEM DETAILS SHEET FOR DETAIL.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: STORMWATER MANAGEMENT AN SEDIMENTATION PLAN (2 OF 2)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (1 OF 2)

SHEET REFERENCE NUMBER:
18

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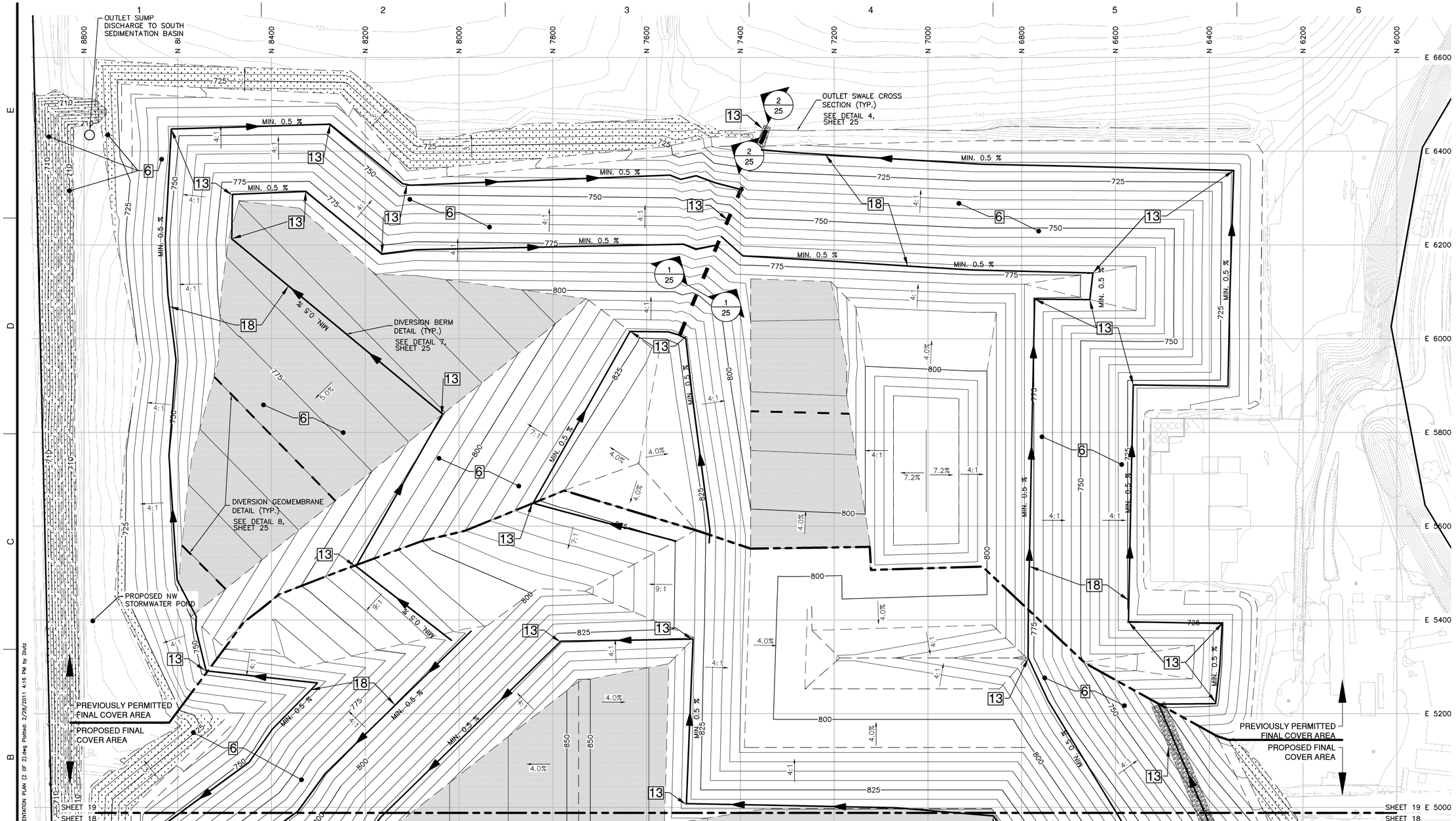

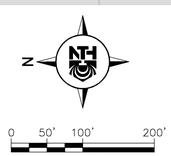

LEGEND

- EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- PROPOSED TOP OF FINAL COVER CONTOUR (5 FT INTERVAL)
- PROPOSED NORTH POND CONTOUR (2 FT INTERVAL)
- PROPOSED SLOPE
- PROPOSED DIVERSION GEOMEMBRANE
- PROPOSED DIVERSION BERM
- PROPOSED DOWNSLOPE SPILLWAY
- PROPOSED OUTLET SWALE
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SOIL EROSION AND SEDIMENTATION CONTROL LEGEND

- 6 — SEEDING WITH MULCH AND/OR MATTING
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2. SILT FENCE PLACED AT TIME OF CONSTRUCTION AND MAINTAINED UNTIL VEGETATION ON OUTSIDE SLOPE OF DIKE IS ESTABLISHED. SEE STORM WATER MANAGEMENT SYSTEM DETAILS SHEET FOR DETAIL.

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

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Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: STORMWATER MANAGEMENT AN SEDIMENTATION PLAN (2 OF 2)
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
STORMWATER MANAGEMENT AND SEDIMENTATION PLAN (2 OF 2)

SHEET REFERENCE NUMBER:
19

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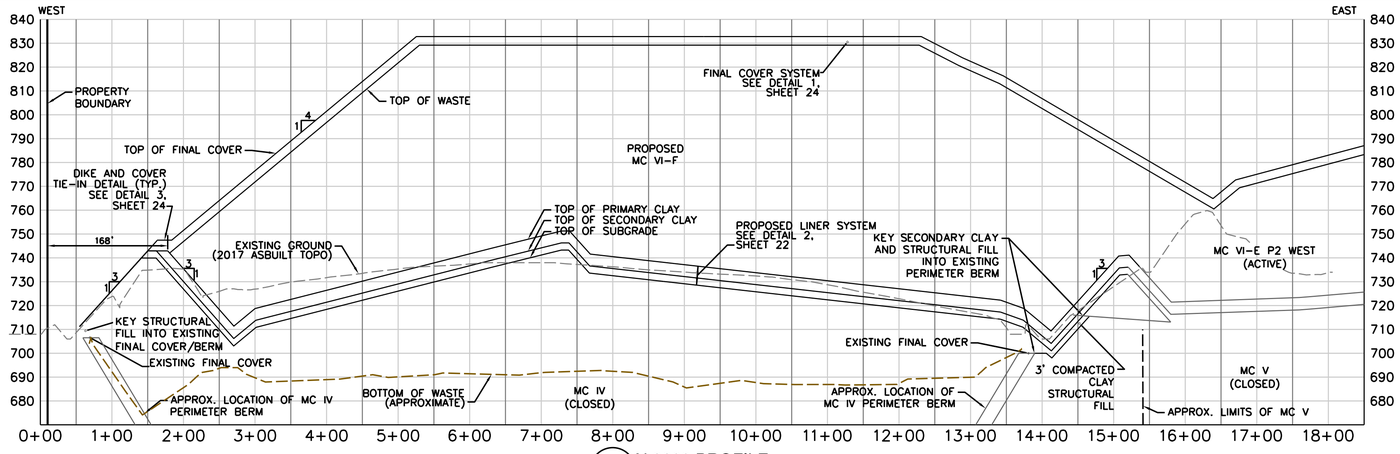

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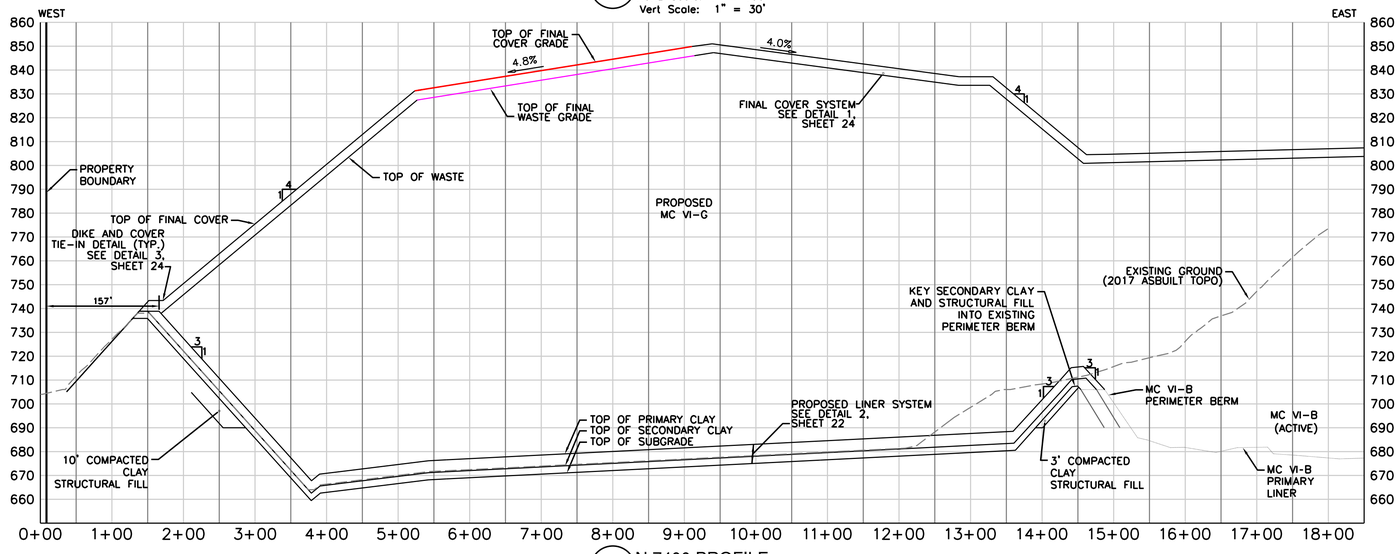

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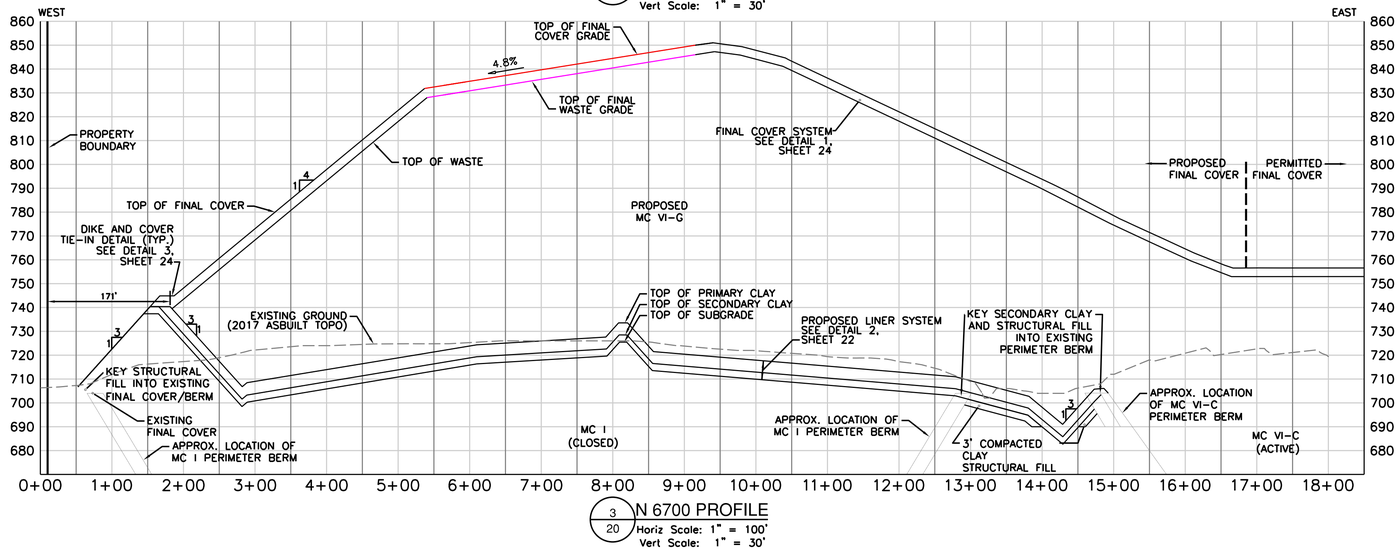

3/20 N 6700 PROFILE
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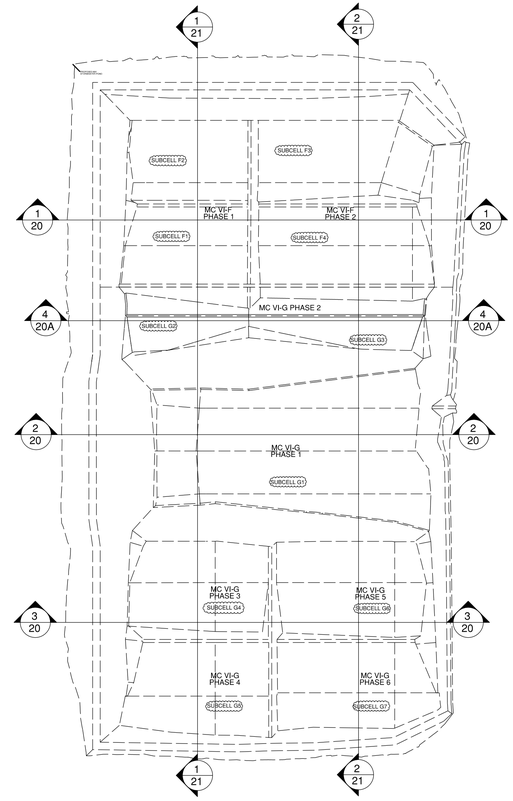

OVERVIEW OF CROSS SECTIONS

N

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DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

REVISIONS

REV.	DATE	REVISION DESCRIPTION
C	5/02/18	SUBCELLS G2 AND G3

DRN PAA XZ
APP'D

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

CROSS SECTIONS (1 OF 3)

PROJECT NUMBER
118070010
SCALE
1" = 100'
DRAWING NO.
20

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DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"
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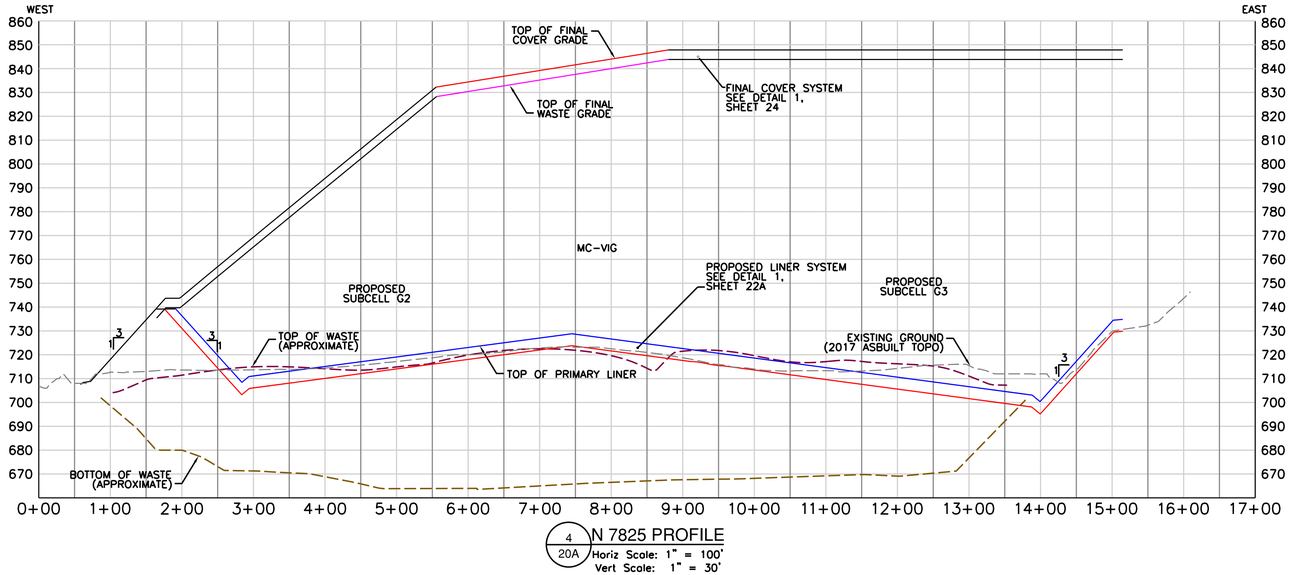

4 / 20A N 7825 PROFILE

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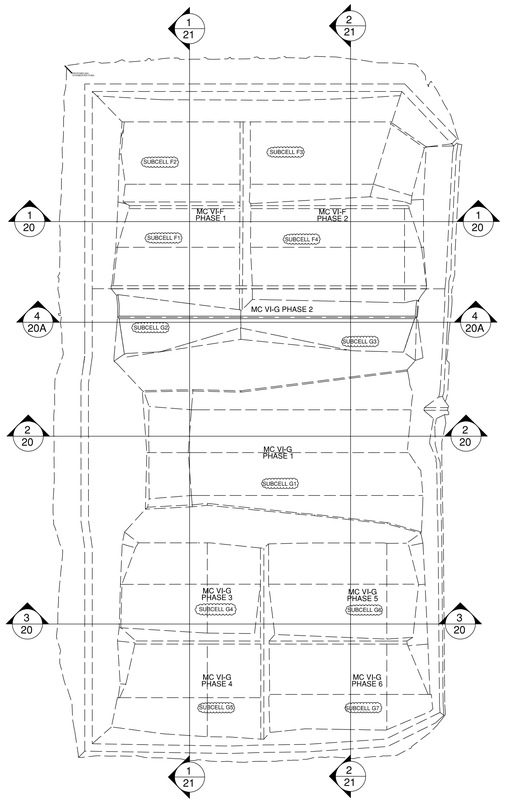

OVERVIEW OF CROSS SECTIONS

N

REV	DATE	REVISION DESCRIPTION
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS

PAA XZ
DRN. APP

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

CROSS SECTIONS (2 OF 3)

PROJECT NUMBER
118070010

SCALE
1" = 100'

DRAWING NO
20A

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DATE PLOTTED: $DATE$
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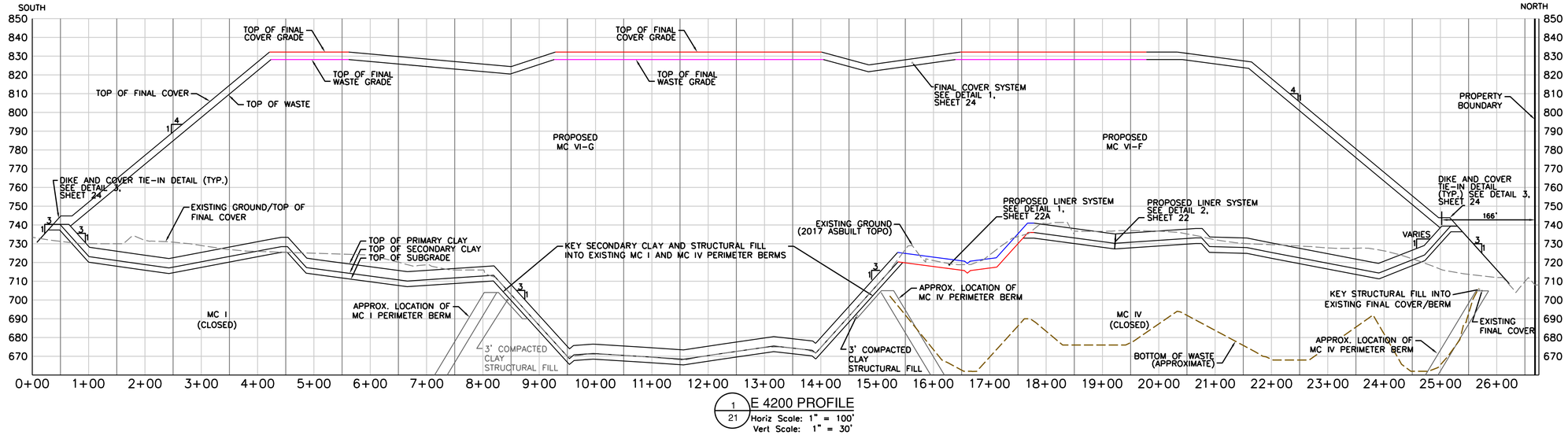

1/21 E 4200 PROFILE
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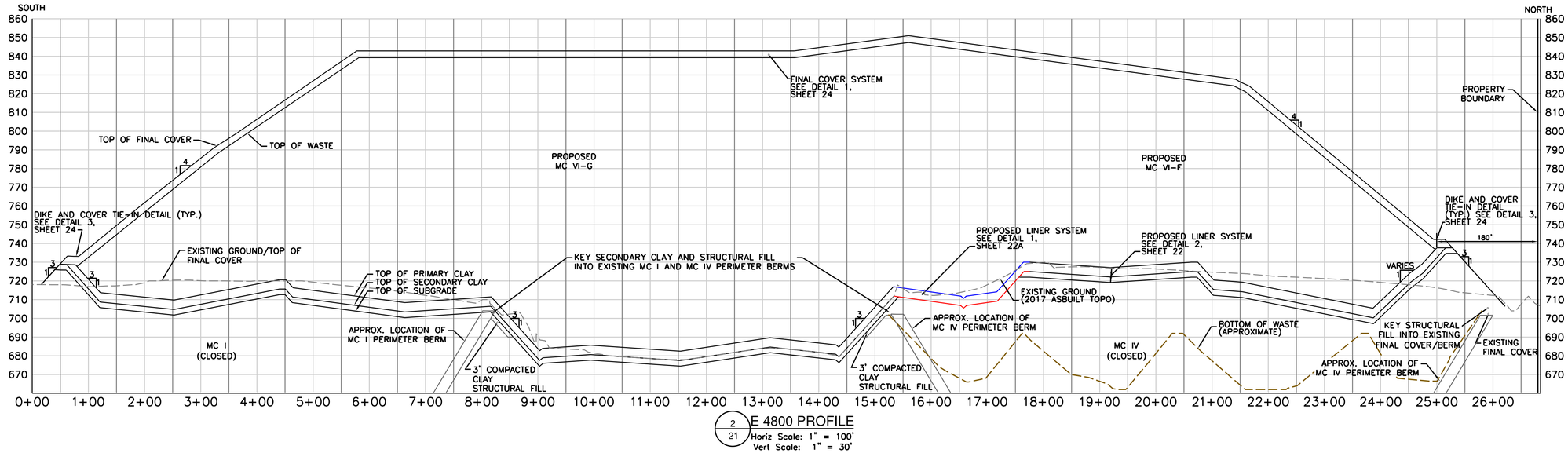

2/21 E 4800 PROFILE
Horiz Scale: 1" = 100'
Vert Scale: 1" = 30'

NOTE:

THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY -AIR-LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REV	DATE	DESCRIPTION	BY	APP
A	6/10/11	PHASING DESIGNATIONS	DRL	
B	9/23/11	PER MDEQ COMMENTS	DRL	
C	5/02/18	SUBCELLS C2 AND C3 REVISIONS	PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

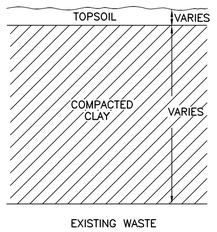
CROSS SECTIONS (3 OF 3)

PROJECT NUMBER: 118070010
SCALE: 1" = 100'
DRAWING NO.: 21

TIME PLOTTED: $TIME$
DATE PLOTTED: $DWGD$
FILENAME: $FILEN$

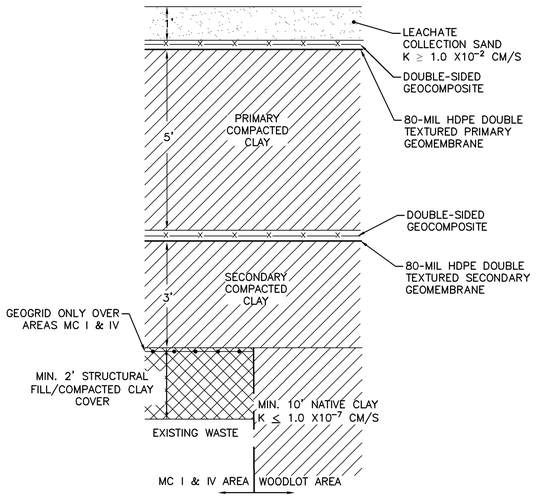
DRAWING SIZE: 24" X 36"

02A-021 CROSS-SECTIONS.dgn 5/2/2018 1:12:09 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\02A-021 CROSS-SECTIONS.dgn

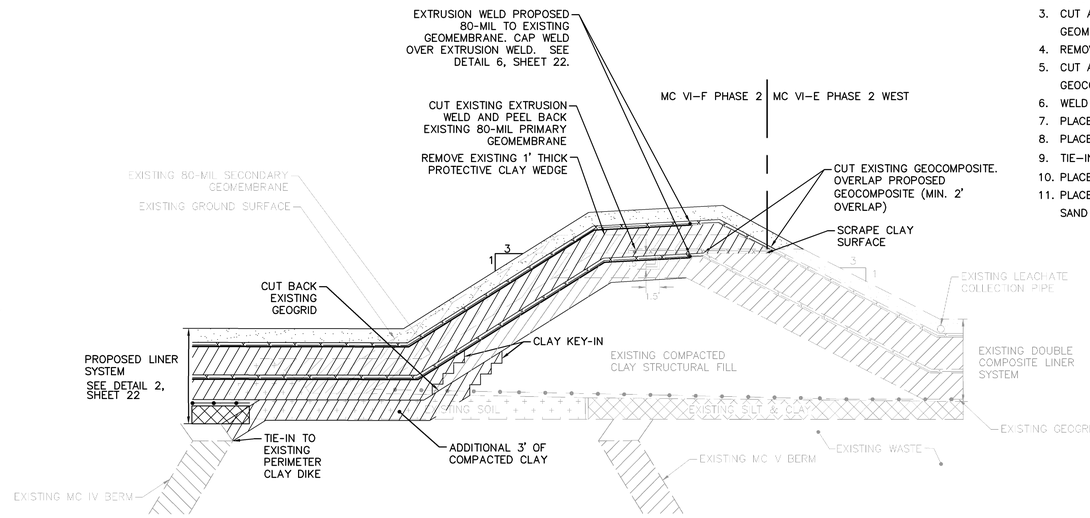


MC I & IV COVER

1/22 EXISTING COVER DETAIL
NOT TO SCALE



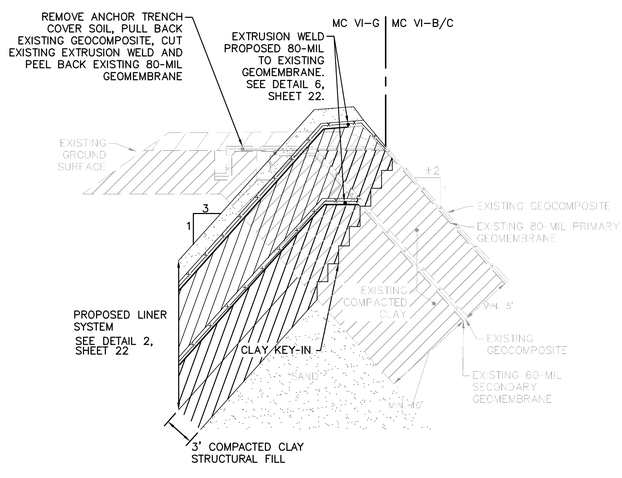
2/22 PROPOSED LINER SYSTEM
NOT TO SCALE



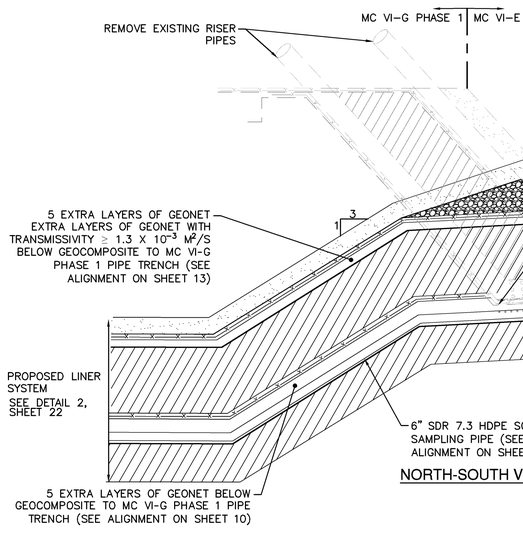
3/22 MC VI-F PHASE 2 & MC VI-E PHASE 2 WEST TIE-IN DETAIL
NOT TO SCALE

SEQUENCE OF CONSTRUCTION

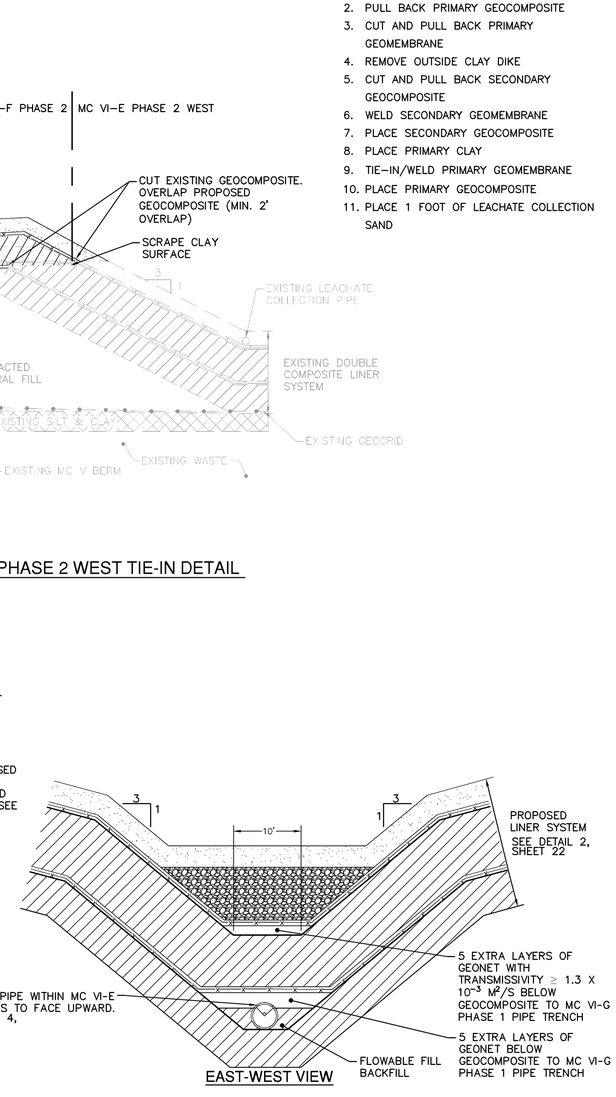
1. REMOVE CLAY WEDGE
2. PULL BACK PRIMARY GEOCOMPOSITE
3. CUT AND PULL BACK PRIMARY GEOMEMBRANE
4. REMOVE OUTSIDE CLAY DIKE
5. CUT AND PULL BACK SECONDARY GEOCOMPOSITE
6. WELD SECONDARY GEOMEMBRANE
7. PLACE SECONDARY GEOCOMPOSITE
8. PLACE PRIMARY CLAY
9. TIE-IN/WELD PRIMARY GEOMEMBRANE
10. PLACE PRIMARY GEOCOMPOSITE
11. PLACE 1 FOOT OF LEACHATE COLLECTION SAND



4/22 MC VI-G AND MC VI-B OR C TIE-IN DETAIL
NOT TO SCALE



NORTH-SOUTH VIEW



EAST-WEST VIEW

5/22 MC VI-E PHASE 1 TRANSFER TRENCH DETAIL
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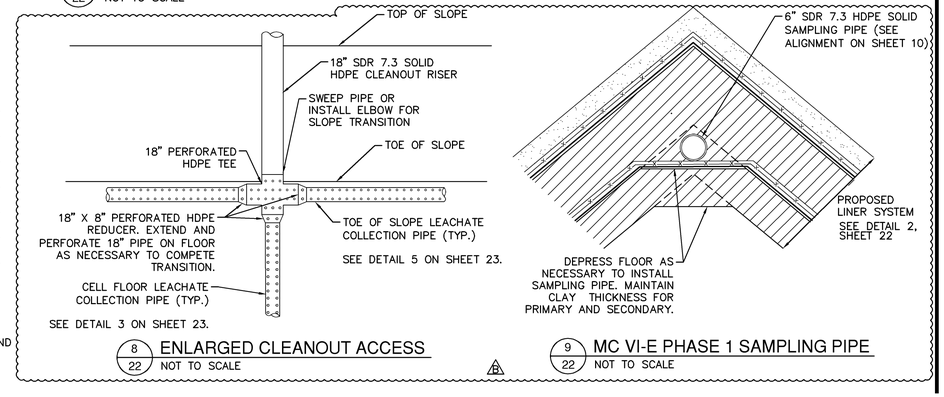
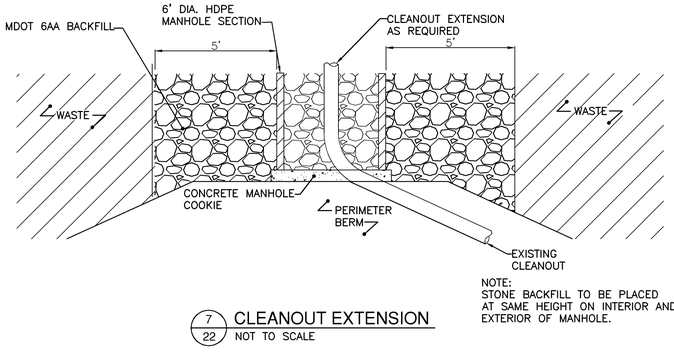


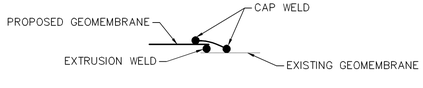
8/22 ENLARGED CLEANOUT ACCESS
NOT TO SCALE

9/22 MC VI-E PHASE 1 SAMPLING PIPE
NOT TO SCALE



NOTE:
STONE BACKFILL TO BE PLACED AT SAME HEIGHT ON INTERIOR AND EXTERIOR OF MANHOLE.

7/22 CLEANOUT EXTENSION
NOT TO SCALE



NOTE: DETAIL APPLIES AT LOCATIONS WHERE PROPOSED GEOMEMBRANE TIES INTO EXISTING GEOMEMBRANE

6/22 GEOMEMBRANE WELDING DETAIL
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
A	PHASING DESIGNATIONS	8/10/11	DRL
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: LINER SYSTEM DETAILS
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
LINER SYSTEM DETAILS

SHEET REFERENCE NUMBER:
22

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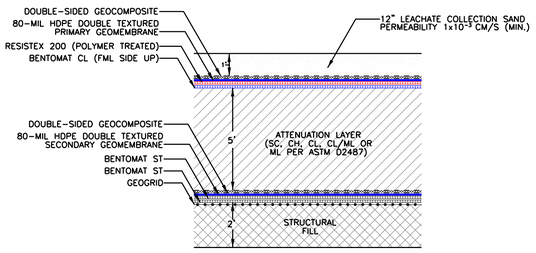

PROPOSED FLOOR LINER SYSTEM 1

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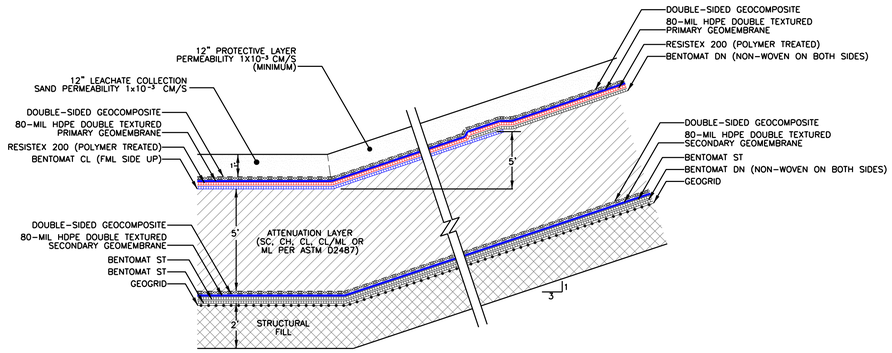
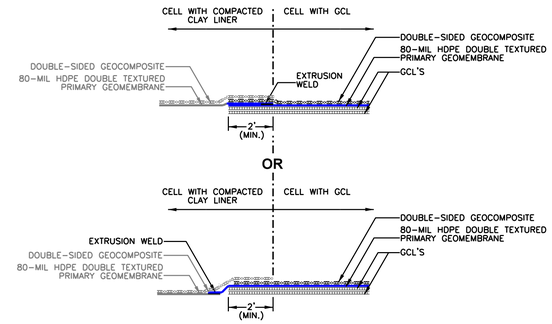


PROPOSED SIDESLOPE LINER SYSTEM 2

NOT TO SCALE



LINER TIE-IN DETAIL 3

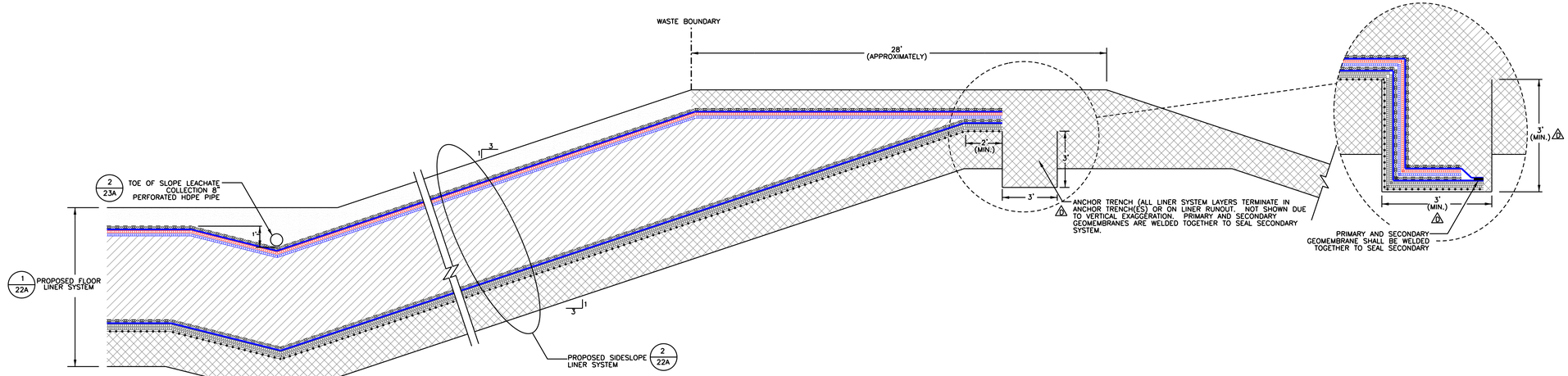
NOT TO SCALE

NOTES:

NEW AND EXISTING GEOCOMPOSITE LAYERS SHALL BE CONNECTED AS:

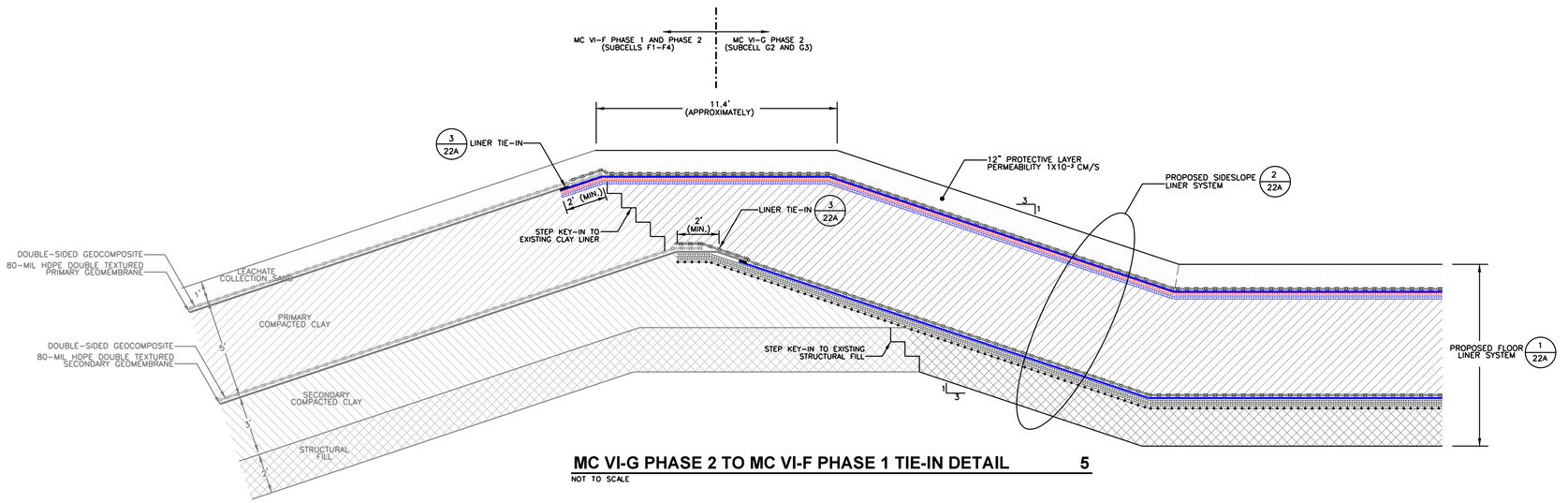
⚠A. GEONET CORES SHALL BE JOINED BY PLASTIC FASTENERS.

B. TOP GEOTEXTILE SHALL BE SEWED TOGETHER.



WEST PERIMETER DIKE 4

NOT TO SCALE



MC VI-G PHASE 2 TO MC VI-F PHASE 1 TIE-IN DETAIL 5

NOT TO SCALE

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
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DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

REV	DATE	REVISION DESCRIPTION	DRN	APP
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA	XZ
D	5/08/18	REVISION BASED ON MDEQ'S COMMENTS	PAA	XZ
E	5/29/18	ADDENDUM 1	PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

LINER SYSTEM DETAILS (FOR MC VI-G PHASE 2 SUBCELL G2 AND G3)

PROJECT NUMBER 118070010

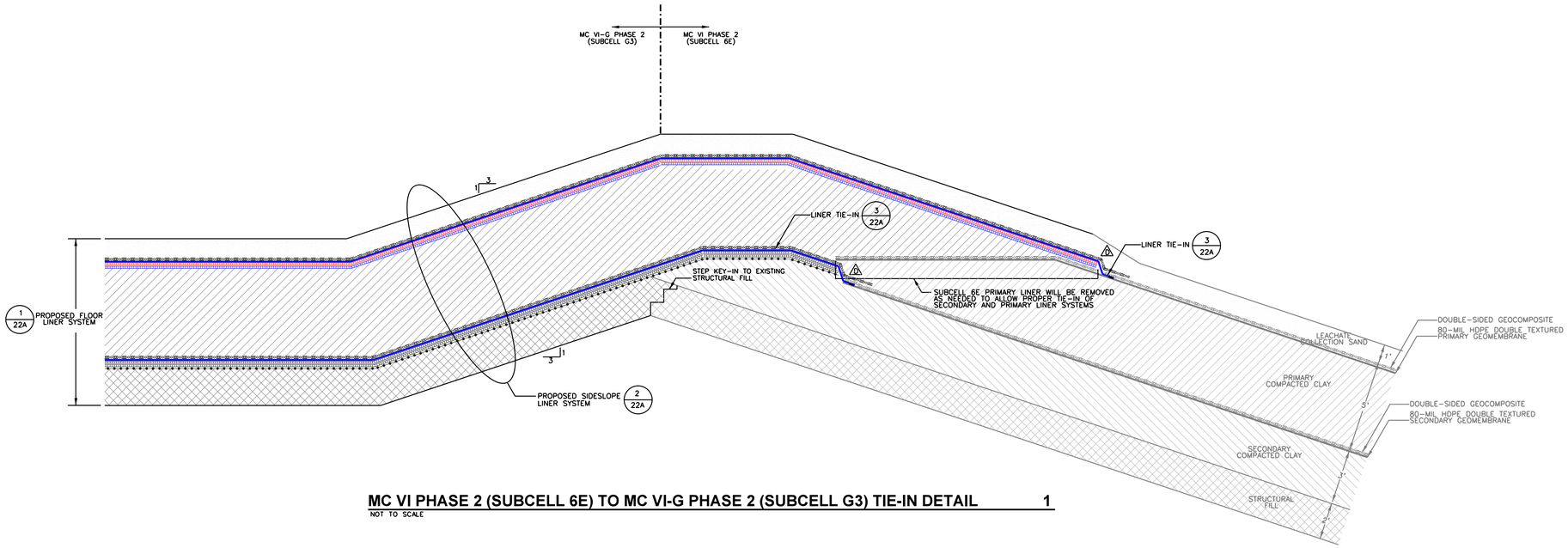
SCALE NTS

DRAWING NO. 22A

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

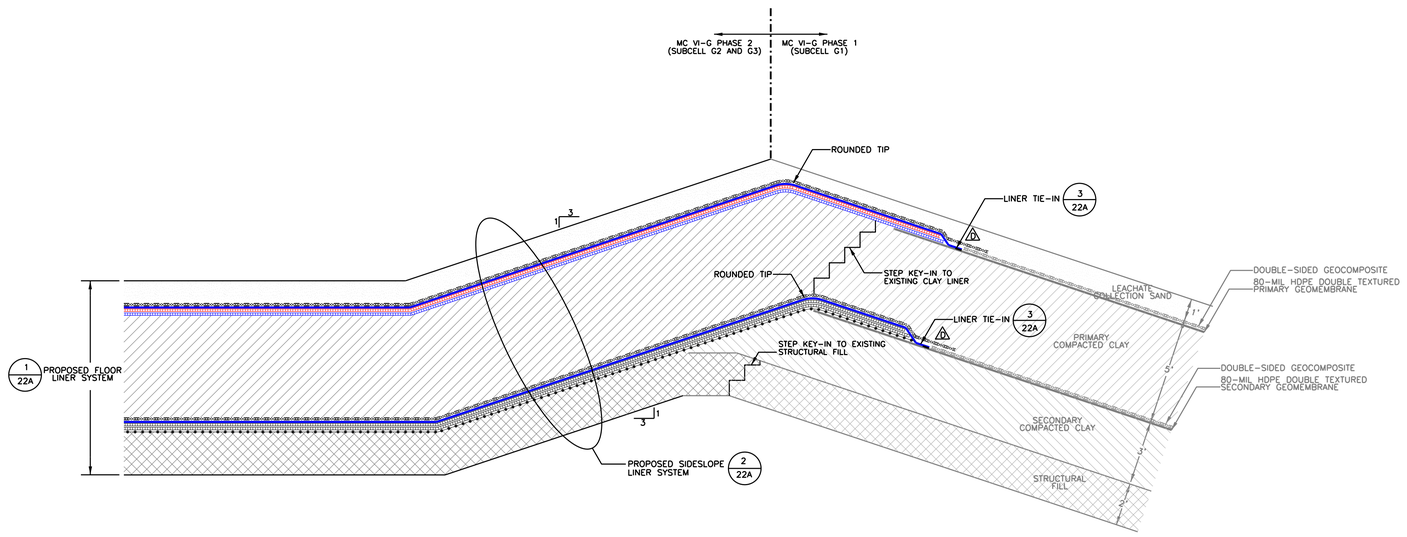
DRAWING SIZE: 24" x 36"

022A LINER SYSTEM DETAILS 042518.dgn 5/29/2018 11:02:26 AM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\022A LINER SYSTEM DETAILS 042518.dgn



MC VI PHASE 2 (SUBCELL 6E) TO MC VI-G PHASE 2 (SUBCELL G3) TIE-IN DETAIL 1

NOT TO SCALE



MC VI-G PHASE 1 AND MC VI-G PHASE 2 TIE-IN DETAIL 2

NOT TO SCALE

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DATE:	5/02/18
DESIGNED BY:	XZ
DRAWN BY:	PAA
CHECKED BY:	TYS
APPROVED BY:	XZ

REV	DATE	REVISION DESCRIPTION
D	5/08/18	REVISION BASED ON MDEQ'S COMMENTS
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS

DRN.	APP.
PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

LINER SYSTEM DETAILS (FOR MC VI-G PHASE 2 SUBCELL G2 AND G3)

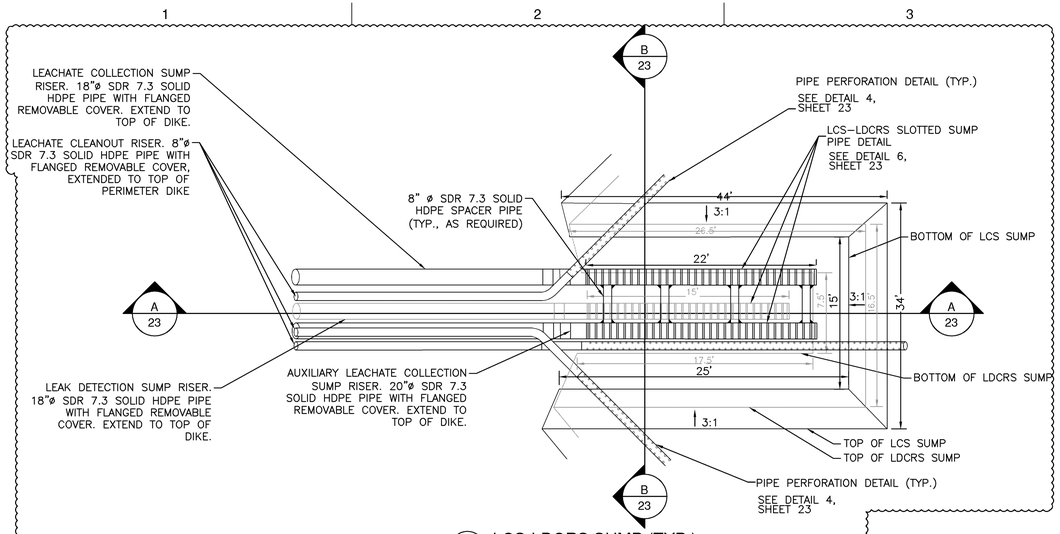
PROJECT NUMBER
118070010

SCALE
NTS

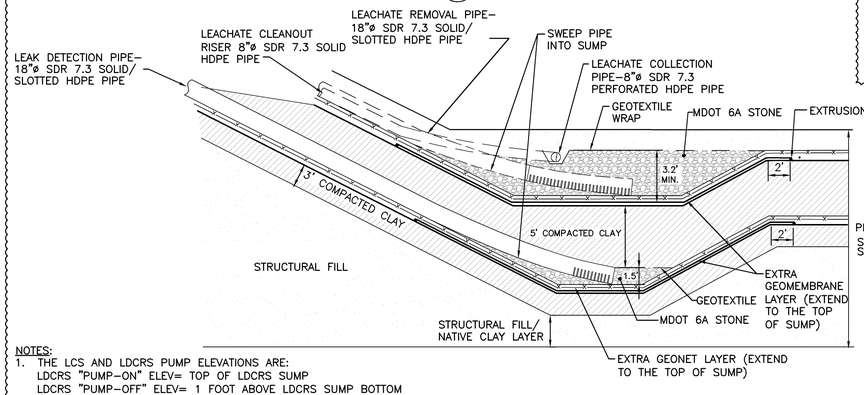
DRAWING NO
22B

TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" x 36"

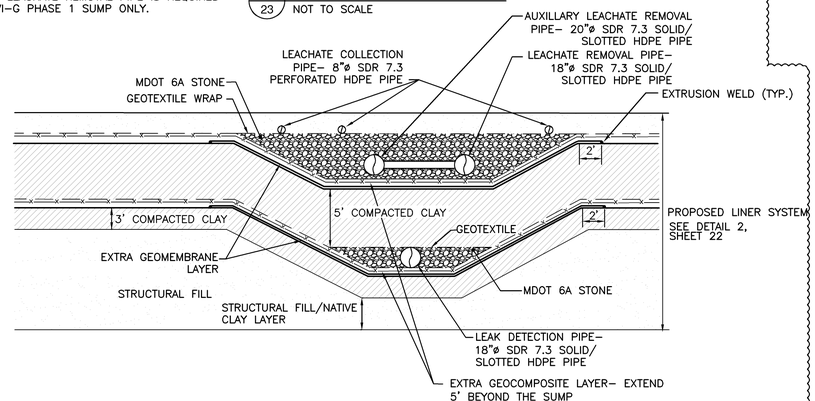


1 / 23 LCS-LDCRS SUMP (TYP.)
NOT TO SCALE

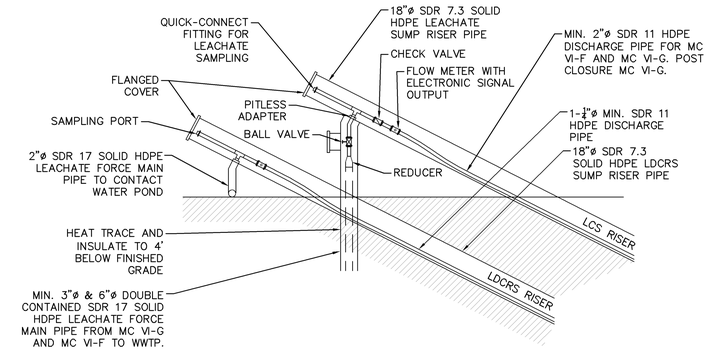


NOTES:
1. THE LCS AND LDCRS PUMP ELEVATIONS ARE:
   LDCRS "PUMP–ON" ELEV= TOP OF LDCRS SUMP
   LDCRS "PUMP–OFF" ELEV= 1 FOOT ABOVE LDCRS SUMP BOTTOM
   LCS "PUMP–ON" ELEV= AT LCS PIPE INVERT
   LCS "PUMP–OFF ELEV= 1 FOOT ABOVE LCS SUMP BOTTOM
2. OTHER "PUMP–ON"/"PUMP–OFF" CONTROLS MAY BE USED PROVIDED LESS THAN 1 FOOT OF LEACHATE HEAD ON THE LINER IS MAINTAINED.
3. THE AUXILLARY LEACHATE REMOVAL PIPE IS REQUIRED FOR THE MC VI–G PHASE 1 SUMP ONLY.

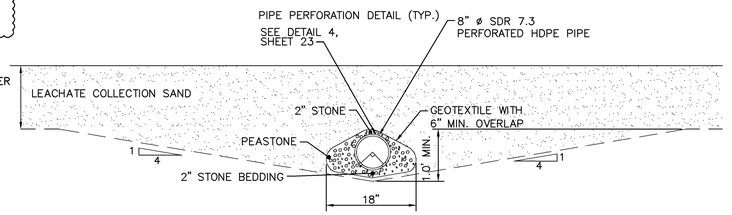
A / 23 SUMP CROSS-SECTION A
NOT TO SCALE



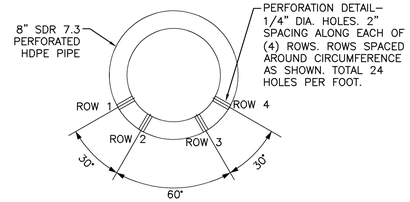
B / 23 SUMP CROSS-SECTION B
NOT TO SCALE



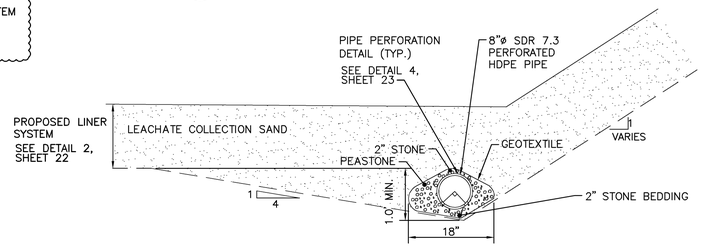
2 / 23 LCS AND LDCRS RISER DETAIL
NOT TO SCALE



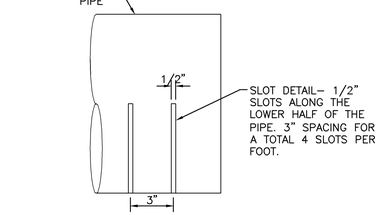
3 / 23 CELL FLOOR LEACHATE COLLECTION PIPE (TYP.)
NOT TO SCALE



4 / 23 PIPE PERFORATION DETAIL (TYP.)
NOT TO SCALE



5 / 23 TOE OF SLOPE LEACHATE COLLECTION PIPE (TYP.)
NOT TO SCALE



6 / 23 LCS-LDCRS SLOTTED SUMP PIPE DETAIL
NOT TO SCALE

Geosynthetic Materials

Material	Location	Description	Product	Additional Requirements
80-mil Geomembrane	Primary and secondary liners	80-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
40-mil Geomembrane	Final cover	40-mil HDPE, textured both sides	GSE HD textured, or equivalent	Interface friction requirements in CQA Plan
Geosynthetic Clay Liner	Final cover	Sodium bentonite encapsulated between two geotextiles that are needle punched or stitch bonded together	CETCO Bentomat ST, or equivalent	Internal shear strength requiremnts in CQA Plan
Geocomposite	LCS and LDCRS	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Cover Geocomposite	Final cover	200-mil HDPE, bonded top and bottom to geotextile meeting requirements below	GSE FABRINET, or equivalent	Transmissivity and interface friction requirements in CQA Plan
Geonet	LCS and LDCRS sumps, and LDCRS collectors	200-mil HDPE	GSE HYPERNET, or equivalent	Transmissivity requirements in CQA Plan
Geotextile	All geocomposites, gravel/geotextile envelopes for LCS, and final cover perimeter drain	Nominal 8 oz/yd2, needle-punched, nonwoven polypropylene	Amoco 4508, Synthetic Industries Geotex 801, or equivalent	AASHTO M288-96 requirements for Drainage Geotextile (Class 2)
Geogrid	Above Subgrade	Biaxial Polymeric Grid	Huesker Fortrac 80-80, or equivalent	None

LCS denotes leachate collection system
LDCRS denotes leak detection, collection, and removal system

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Northville, MI	248.553.6300
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Lansing, MI	517.484.6900
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Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY
B	PER MDEQ COMMENTS	9/23/11	DRL

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: LEACHATE COLLECTION SYSTEM DETAILS
DESIGNED BY: JHL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 9/23/11

SHEET TITLE:
LEACHATE COLLECTION SYSTEM DETAILS

SHEET REFERENCE NUMBER:
23

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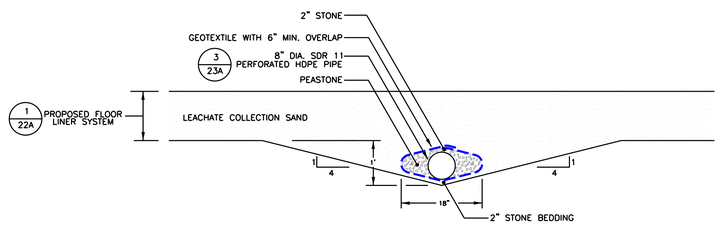
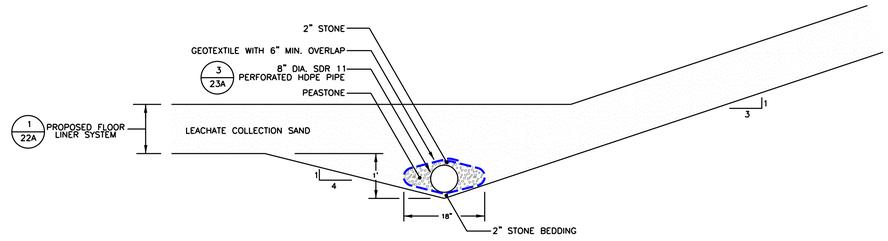


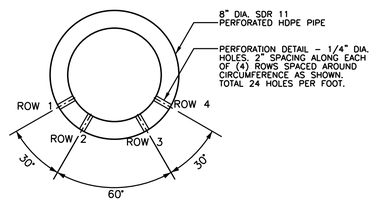
CELL FLOOR LEACHATE COLLECTION PIPE (TYP.) 1

NOT TO SCALE



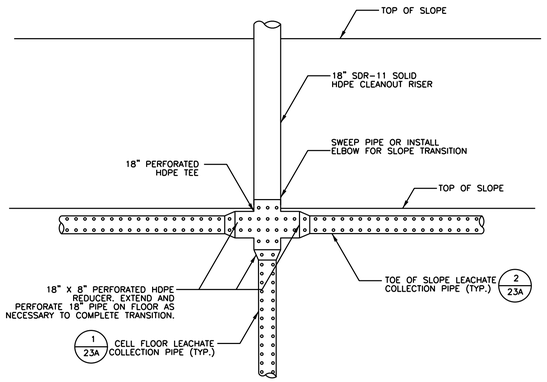
TOE OF SLOPE LEACHATE COLLECTION PIPE (TYP.) 2

NOT TO SCALE



PIPE PERFORATION DETAIL 3

NOT TO SCALE



ENLARGED CLEANOUT ACCESS 4

NOT TO SCALE

DATE: 5/02/18
DESIGNED BY: XZ
DRAWN BY: PAA
CHECKED BY: TYS
APPROVED BY: XZ

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REV	DATE	DRN	APP
E	5/29/18		
D	5/08/18		

ADDENDUM 1
REVISION BASED ON MDEQ'S COMMENTS

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

LEACHATE COLLECTION PIPE DETAILS (FOR MC VI-G PHASE 2 SUBCELL G2 AND G3)

PROJECT NUMBER
118070010

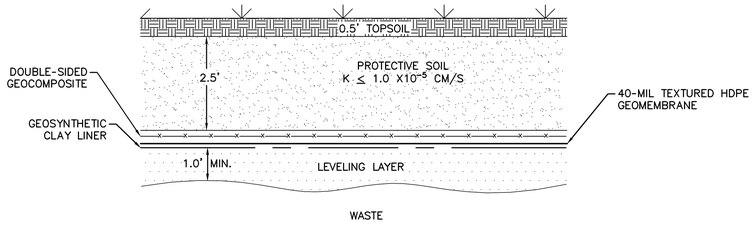
SCALE
NTS

DRAWING NO.
23A

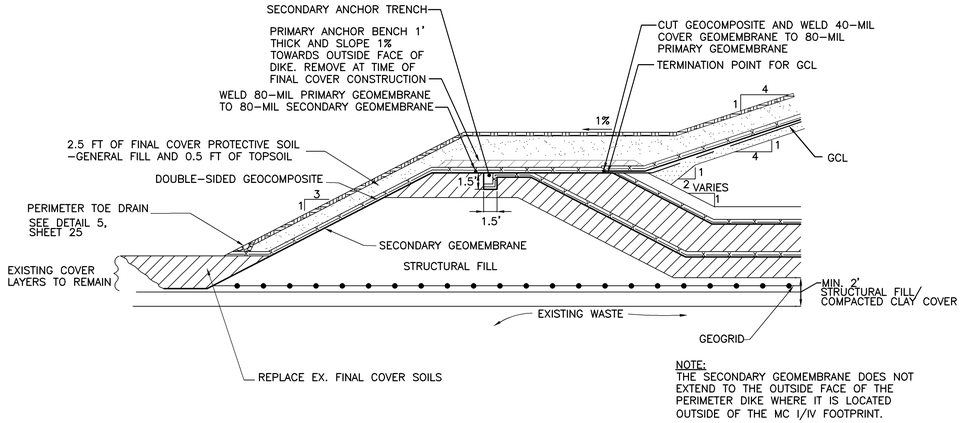
TIME PLOTTED: $TIME$
DATE PLOTTED: $DATE$
FILENAME: $FILE$

DRAWING SIZE: 24" X 36"

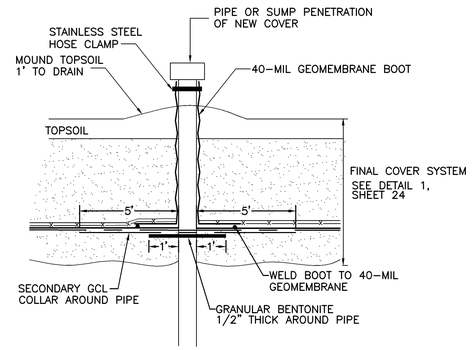
023A LEACHATE COLLECTION SYSTEM DETAILS 052818.dgn 5/30/2018 12:35:44 PM C:\Users\pab\Documents\EIL 2014 PROJECTS\CTI\WAYNE LF CELLS CONST PLANS\023A LEACHATE COLLECTION SYSTEM DETAILS 052818.dgn



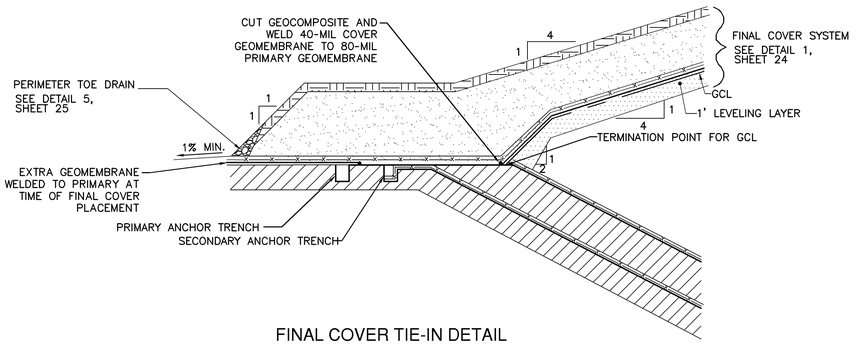
1/24 FINAL COVER SYSTEM
NOT TO SCALE



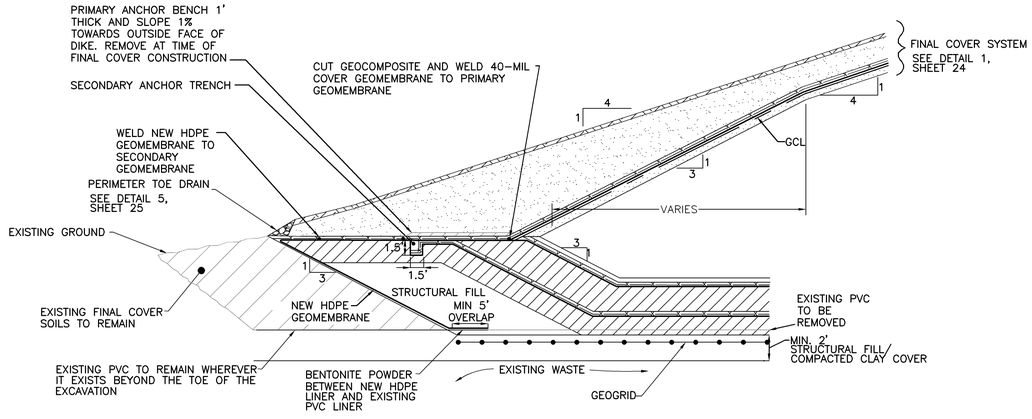
3/24 DIKE AND COVER TIE-IN DETAIL (TYP.)
MC VI-F, G & EAST SIDE OF VI-E
NOT TO SCALE



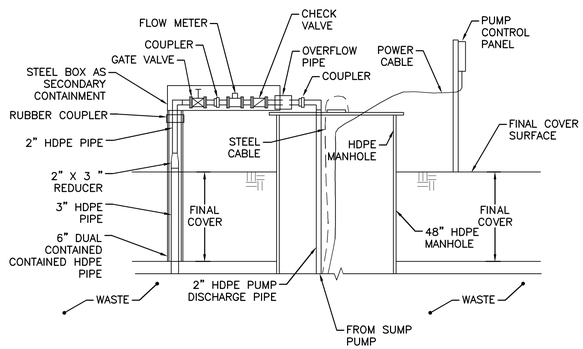
5/24 FINAL COVER PENETRATION DETAIL (TYP.)
NOT TO SCALE



2/24 FINAL COVER TIE-IN DETAIL
MC VI-AN, AS, C & D
NOT TO SCALE



4/24 DIKE AND COVER TIE-IN DETAIL
NORTH SIDE OF MC VI-E
NOT TO SCALE



6/24 LEACHATE SUMP RISER PIPING DETAIL
(VI-A, B, C, & D RISERS)
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: FINAL COVER DETAILS
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
FINAL COVER DETAILS

SHEET REFERENCE NUMBER:
24

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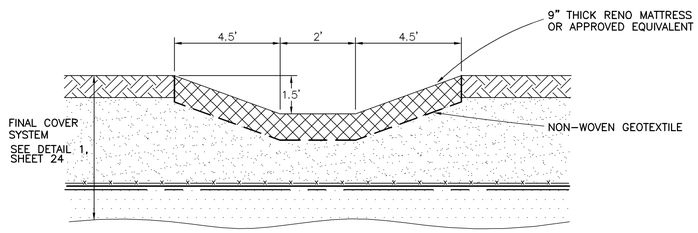
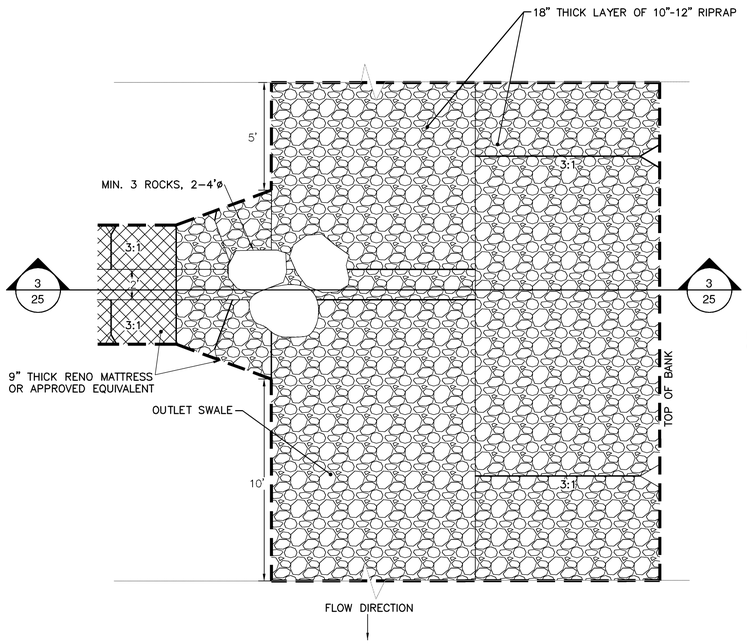
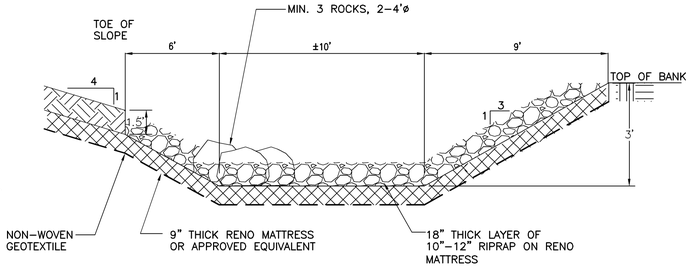


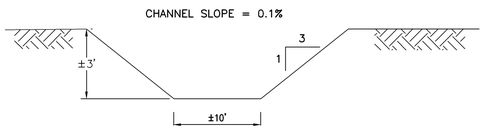
1/25 SPILLWAY CROSS-SECTION
NOT TO SCALE



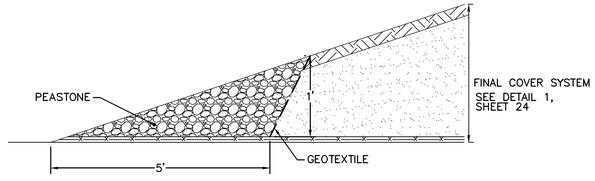
2/25 TOE OF SPILLWAY DOWNSLOPE CHANNEL
NOT TO SCALE



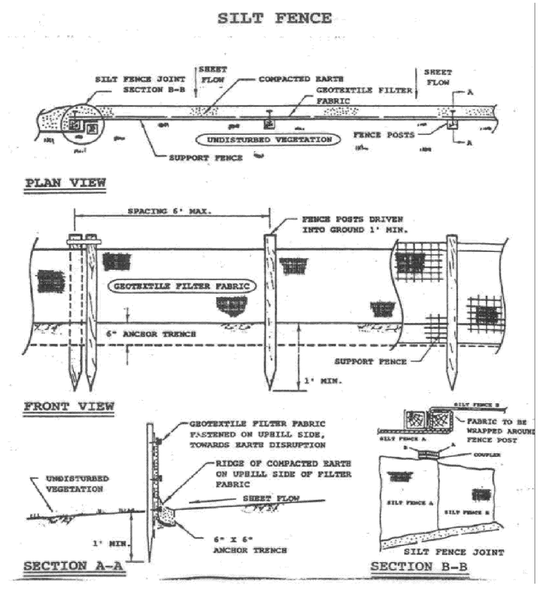
3/25 TOE OF SPILLWAY PROFILE
NOT TO SCALE



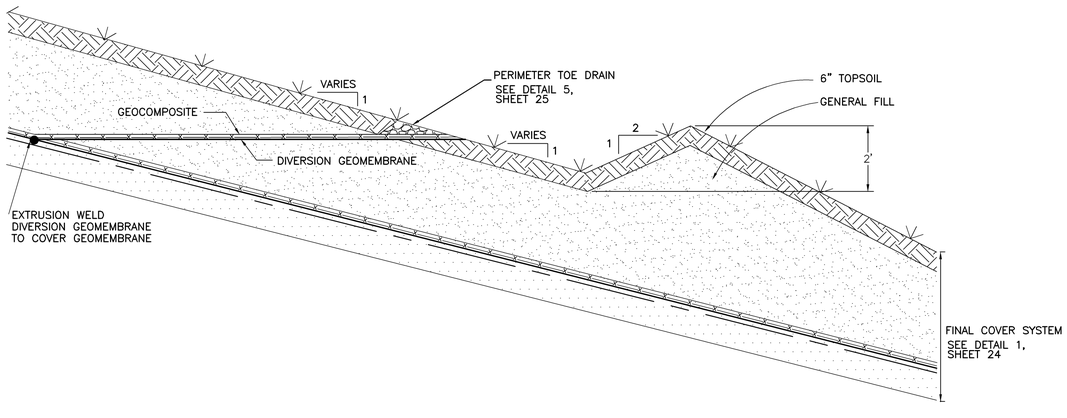
4/25 OUTLET SWALE CROSS SECTION (TYP.)
NOT TO SCALE



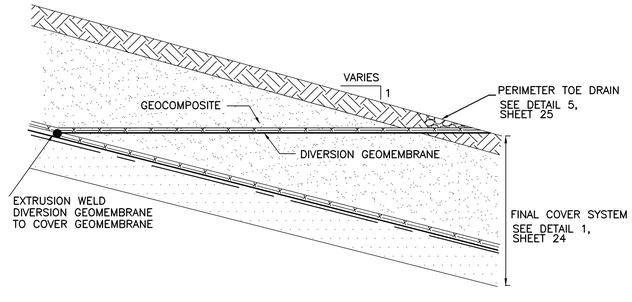
5/25 PERIMETER TOE DRAIN
NOT TO SCALE



6/25 SILT FENCE DETAIL (TYP.)
NOT TO SCALE



7/25 DIVERSION BERM DETAIL (TYP.)
NOT TO SCALE



8/25 DIVERSION GEOMEMBRANE DETAIL (TYP.)
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.:	CAD FILE NAME:
13-060921-03	STORM WATER MANAGEMENT SYSTEM DETAILS
DESIGNED BY: DRL	INCEP DATE: 11/12/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
STORM WATER MANAGEMENT SYSTEM DETAILS

SHEET REFERENCE NUMBER:
25

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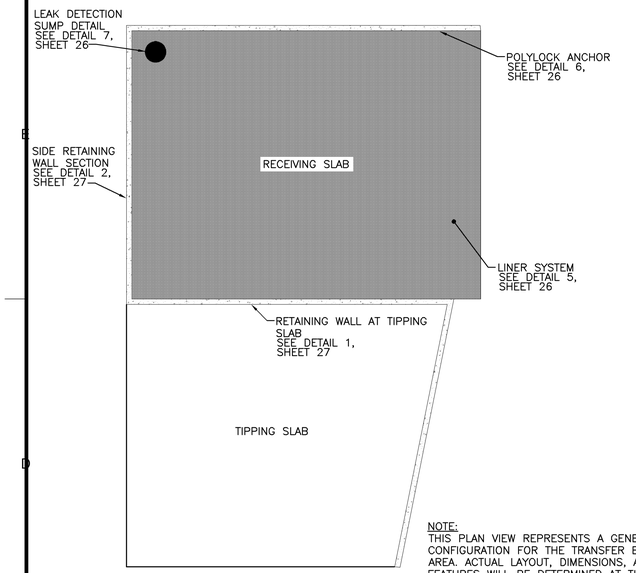
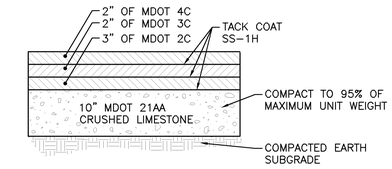
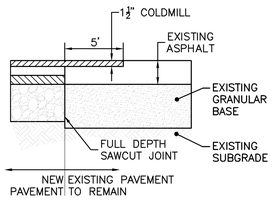


NOTE:
THIS PLAN VIEW REPRESENTS A GENERAL CONFIGURATION FOR THE TRANSFER BOX AREA. ACTUAL LAYOUT, DIMENSIONS, AND FEATURES WILL BE DETERMINED AT TIME OF TRANSFER BOX LOCACTION/RELOCATION.

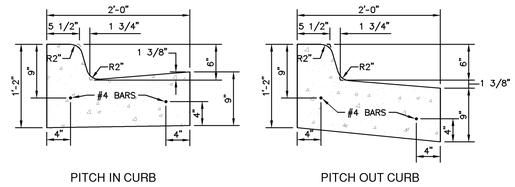
1/26 TRANSFER BOX PLAN VIEW
NOT TO SCALE



2/26 TYPICAL PAVEMENT DETAIL
NOT TO SCALE

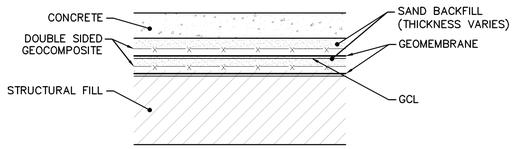


3/26 BUTT JOINT
NOT TO SCALE

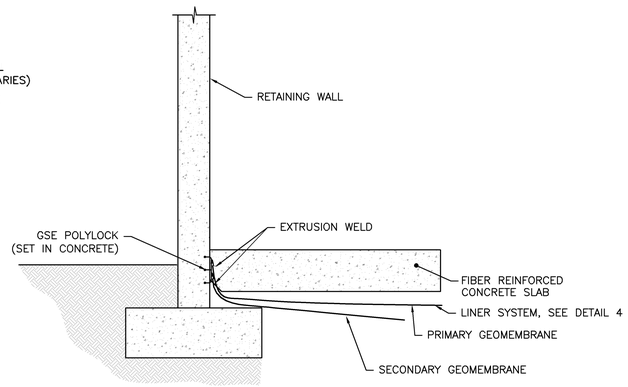


NOTE:
BASE AND SUBBASE AGGREGATES TO EXTEND MINIMUM 1'-0" BEHIND BACK OF CURB.

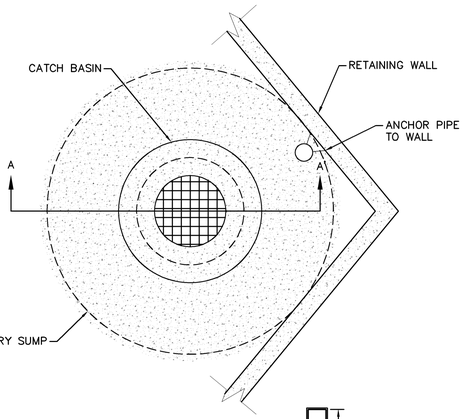
4/26 F4 CURB DETAIL
NOT TO SCALE



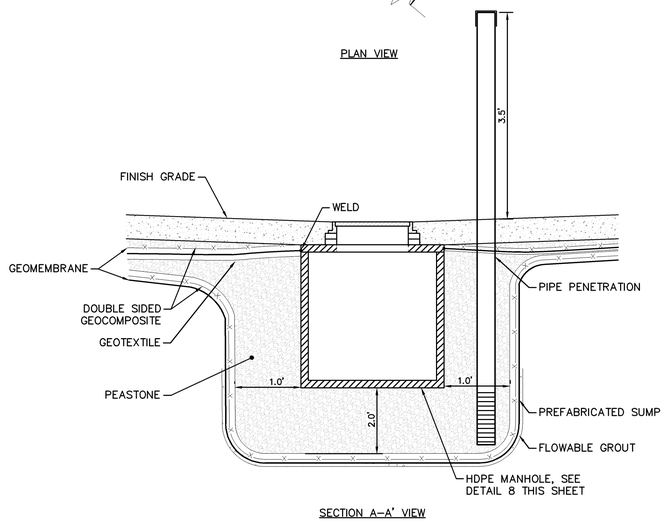
5/26 LINER SYSTEM
NOT TO SCALE



6/26 POLYLOCK ANCHOR
NOT TO SCALE

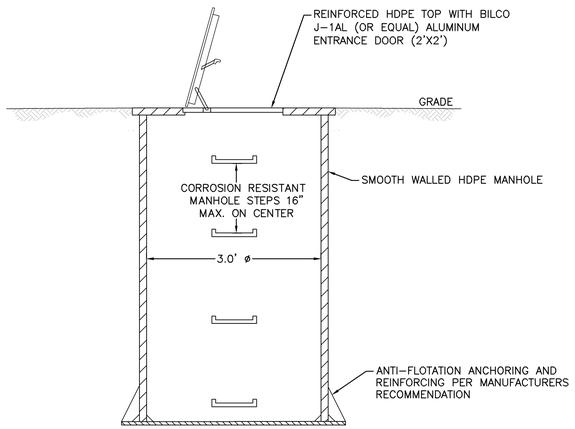


PLAN VIEW



SECTION A–A' VIEW

7/26 LEAK DETECTION SUMP DETAIL
NOT TO SCALE



8/26 HDPE CATCH BASIN
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TRANSFER BOX DETAILS
DESIGNED BY: KRO	INCEP DATE: 11/12/08
DRAWN BY: KRO	DRAWING SCALE: NONE
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
TRANSFER BOX DETAILS (1 OF 2)

SHEET REFERENCE NUMBER:
26

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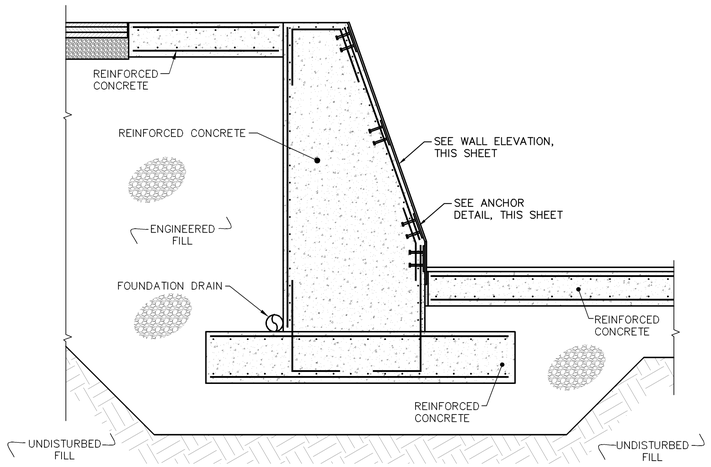
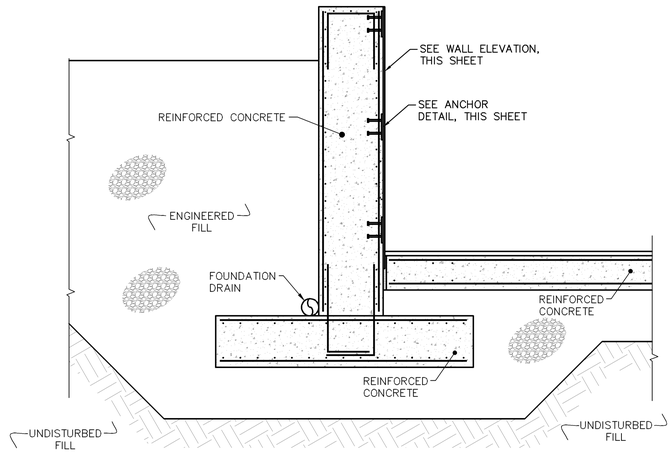
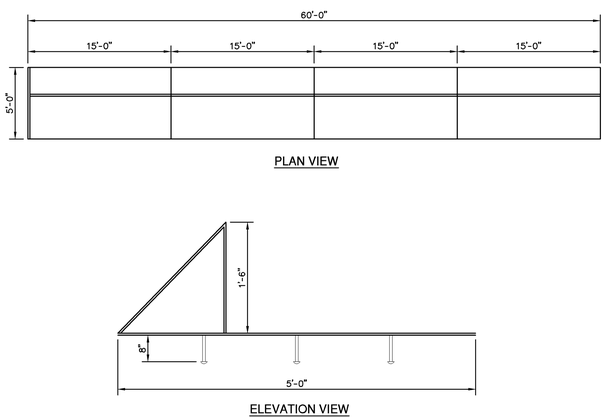


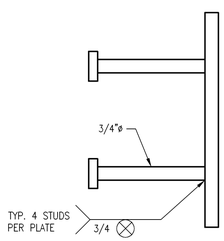
1/27 RETAINING WALL AT TIPPING SLAB
NOT TO SCALE



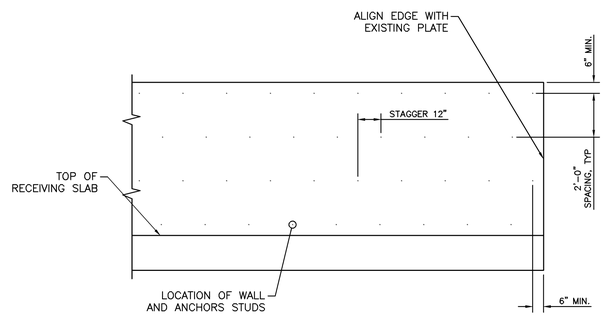
2/27 SIDE RETAINING WALL SECTION
NOT TO SCALE



3/27 TRUCK STOP SECTION
NOT TO SCALE



4/27 ANCHOR DETAIL
NOT TO SCALE



5/27 WALL ELEVATION
NOT TO SCALE

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

REVISIONS

REV	DESCRIPTION	DATE	BY

PROJECT NAME:
MASTER CELL VI F&G

PROJECT LOCATION:
WAYNE DISPOSAL, INC.
SITE NO. 2
BELLEVILLE, MICHIGAN

NTH PROJECT NO.: 13-060921-03	CAD FILE NAME: TRANSFER BOX DETAILS
DESIGNED BY: KRO	INCEP DATE: 11/12/08
DRAWN BY: KRO	DRAWING SCALE: NONE
CHECKED BY: RBM	SUBMITTED DATE: 2/28/11

SHEET TITLE:
TRANSFER BOX DETAILS (2 OF 2)

SHEET REFERENCE NUMBER:
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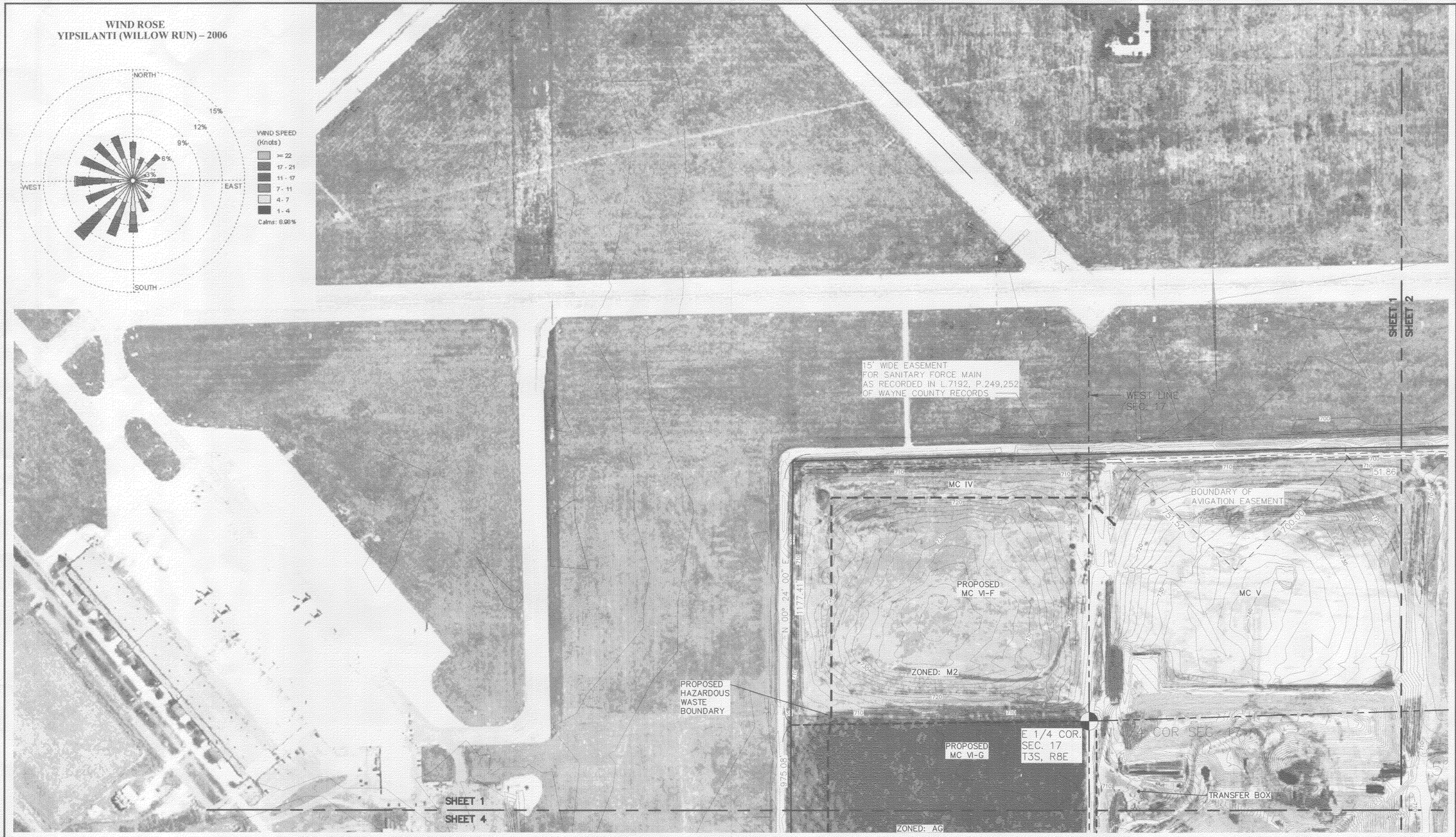

ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M-2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

838	EXIST. CONTOUR
	℄ OF DITCH OR EDGE OF WATER
	EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 600

NOTES

1. TOPOGRAPHIC INFORMATION OUTSIDE OF PROPERTY WAS OBTAINED FROM WAYNE COUNTY GIS.
2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

NTH SHEET 28 OF 31

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599

CLIENT
ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.

SITE NO. 2
MASTER CELL VI – F & G
AREA PLAN

1

DATE: 8/13/09
SHEET 1 OF 4
CADD:
ENG:
PM:
TECH: M.V.V.
SURVEY: 07174sv01
FB#:

JOB No. 07174
REVISIONS:
REV. DATE

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ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
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LEGEND

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SCALE: 1" = 200'

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NTH SHEET 29 OF 31

CLIENT
ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax: 734.995.0599

WAYNE DISPOSAL, INC.

SITE NO. 2
MASTER CELL VI - F & G
AREA PLAN

2

DATE: 8/13/09
SHEET 2 OF 4
CADD:
ENG:
PM:
TECH: M.V.V.
SURVEY\07174ex01
PBP

JOB No. 07174
REVISIONS:
REV. DATE

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ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M2	GENERAL INDUSTRIAL
AP	AIRPORT
M1	LIGHT INDUSTRIAL

LEGEND

838 — EXIST. CONTOUR
℄ OF DITCH OR EDGE OF WATER
EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 600

NOTES

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NTH SHEET 30 OF 31

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
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Phone: 734.995.0200
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ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.
SITE NO. 2
MASTER CELL VI - F & G
AREA PLAN

3

DATE: 8/13/09
SHEET 3 OF 4
CADD:
ENG:
PM: M.V.V.
SURVEY:\07174sv01

JOB No. 07174
REVISIONS:
REV. DATE

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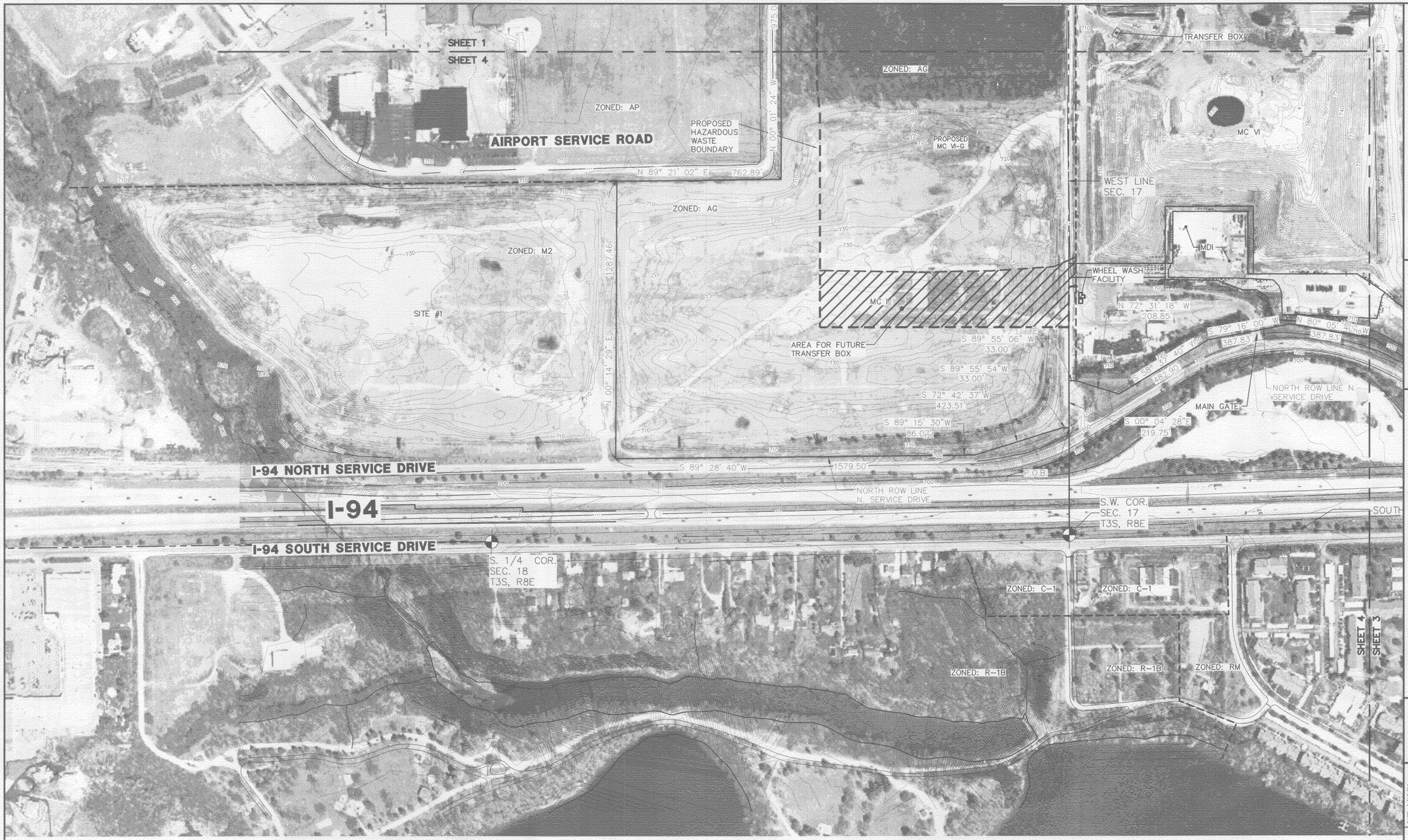

ZONING DISTRICTS

AG	AGRICULTURAL AND ESTATES
R-1B	SINGLE FAMILY REDIDENTIAL
RM	MULTIPLE FAMILY RESIDENTIAL
C-1	GENERAL BUSINESS
M-2	GENERAL INDUSTRIAL
AP	AIRPORT
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LEGEND

838	EXIST. CONTOUR
	℄ OF DITCH OR EDGE OF WATER
	EXIST. ZONING BOUNDARY

SCALE: 1" = 200'

0 200 400 600

NOTES

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2. 100 YEAR FLOOD PLAIN IS UNMAPPED, COMMUNITY ID: 260546, VAN BUREN TOWNSHIP.
3. ZONING BOUNDARIES ARE DERIVED FROM VAN BUREN CHARTER: ZONING MAP, 1/24/2007. IN MANY CASES COINCIDE WITH PROPERTY BOUNDARY AND ARE DIFFICULT TO SEE ON DRAWING.

NTH SHEET 31 OF 31

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
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Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599

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ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE
WAYNE, MI 48184

WAYNE DISPOSAL, INC.

SITE NO. 2
MASTER CELL VI - F & G
AREA PLAN

4

DATE: 8/13/09
SHEET 4 OF 4
CADD:
ENG:
PM:
TECH: M.V.V.
SURVEY: 07174av01
FB#:

JOB No. 07174
REVISIONS:
REV. DATE

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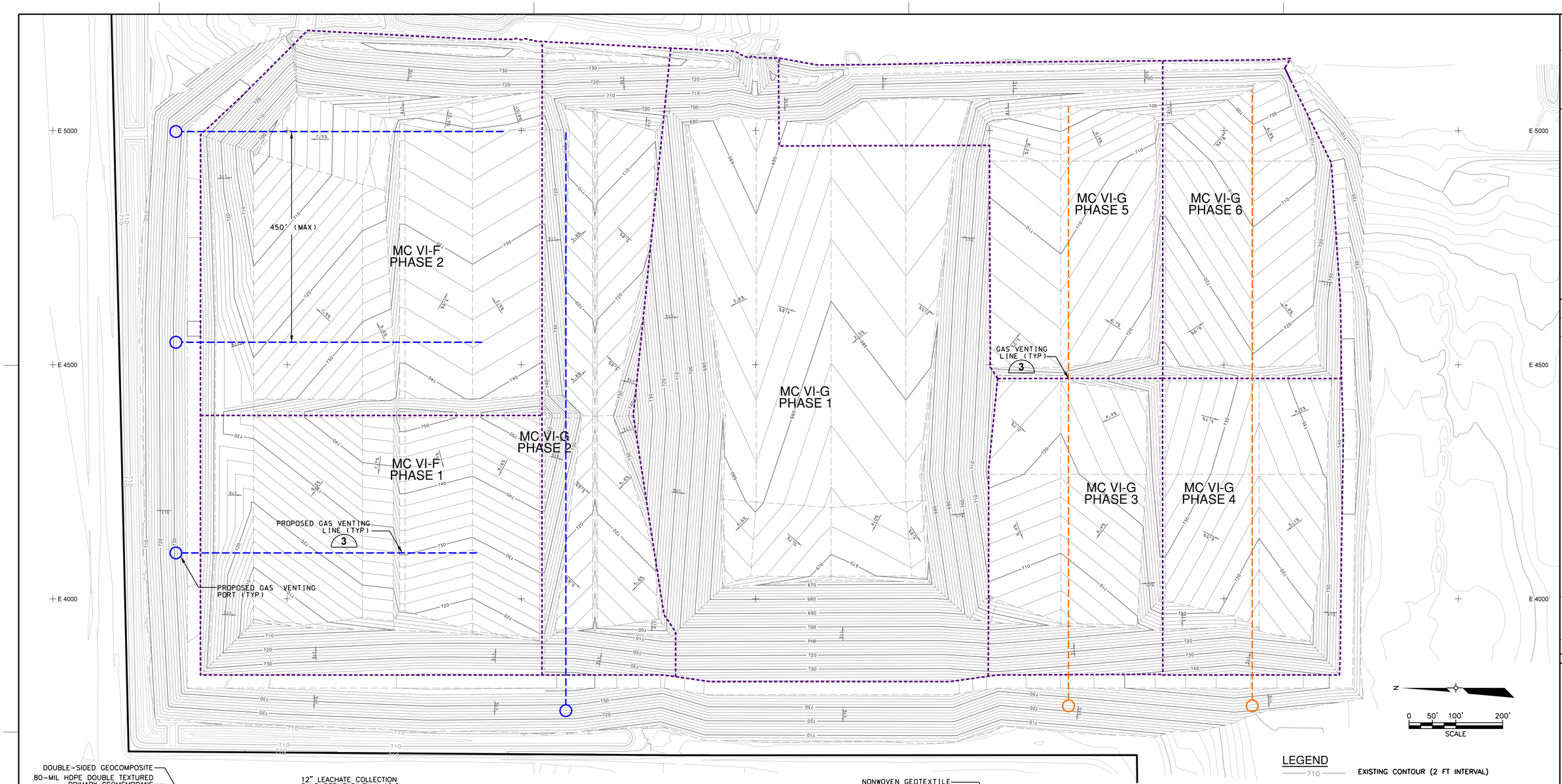
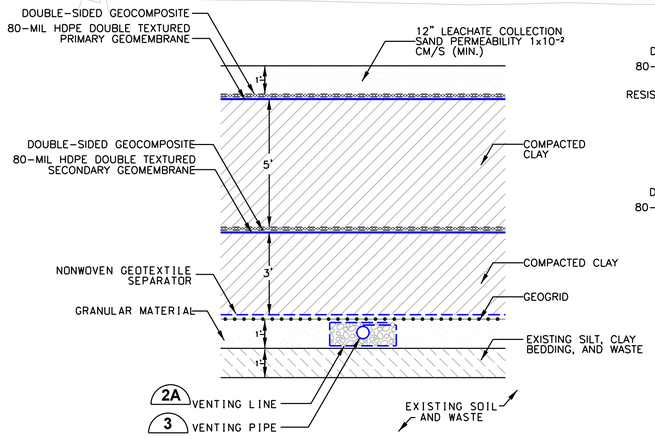
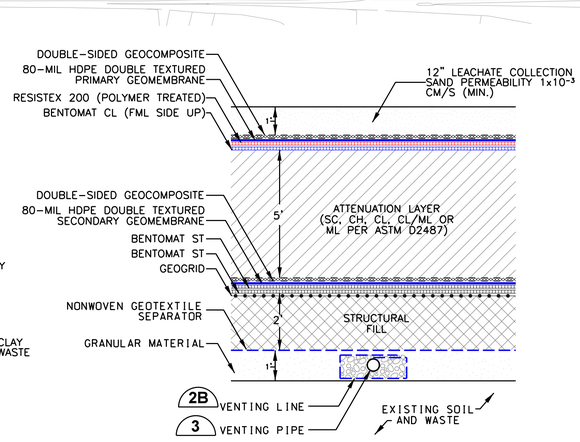




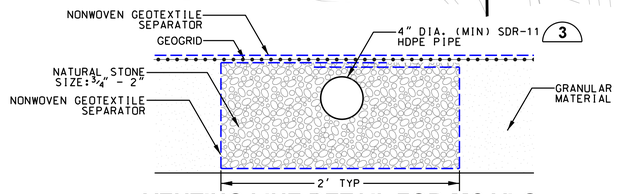
PROPOSED VENTING SYSTEM FOR MC VI-G AND MC VI-F PHASES 3-6 — 1A

NOT TO SCALE



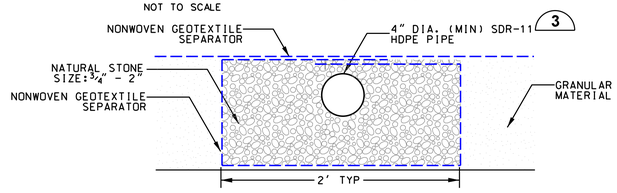
PROPOSED VENTING SYSTEM FOR MC VI-G PHASE 2 — 1B

NOT TO SCALE



VENTING LINE DETAIL FOR MC VI-G AND MC VI-F PHASES 3-6 — 2A

NOT TO SCALE



VENTING LINE DETAIL FOR MC VI-G PHASE 2 — 2B

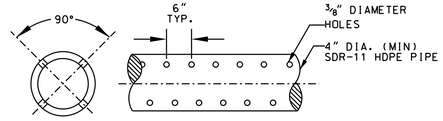
NOT TO SCALE

LEGEND

- 710 — EXISTING CONTOUR (2 FT INTERVAL)
- PROPERTY BOUNDARY
- PROPOSED GRADE BREAK
- 710 — TOP OF PRIMARY LINER CONTOUR
- PROPOSED GAS VENT LINE
- GAS VENT LINE (PERMITTED 2011)
- PROPOSED PHASE BOUNDARY

NOTE:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN 2001 BY —AIR—LAND AND PROVIDED BY WDI, A SURVEY BY MCLLC IN OCTOBER 2007, AND A GROUND SURVEY BY WDI IN OCTOBER 2008.
2. GRADES DEPICTED IN MC VI—G PHASE 2 SUBCELLS G2 AND G3 REPRESENT REDESIGN TOP OF PRIMARY LINER GRADES BY CTI, GRADES SHOWN SCREEN WITHIN LANDFILL FOOTPRINT REPRESENT PERMITTED TOP OF PRIMARY LINER GRADES BY NTH, DATED SEPTEMBER 2011.



VENTING PIPE DETAIL — 3

NOT TO SCALE

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.ctiomplanies.com

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DATE:	5/02/18
DESIGNED BY:	XZ
DRAWN BY:	PAA
CHECKED BY:	TFS
APPROVED BY:	XZ

REV	DATE	REVISION DESCRIPTION	DRN	APP
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA	XZ
E	5/29/18	ADDENDUM 1	PAA	XZ

WAYNE DISPOSAL INC., SITE NO. 2
BELLEVILLE, MICHIGAN

CONCEPTUAL GAS VENTING SYSTEM

PROJECT NUMBER 11807O010
SCALE 1" = 100'
DRAWING NO 32

TIME PLOTTED: $TIME$
USER PLOTTED: $USER$
FILENAME: $FILE$

DRAWING SIZE: 24" x 36"