



PROFESSIONAL ENGINEERING ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS / LAND SURVEYORS / LAND PLANNERS
2430 Rochester Court, Suite 100, Troy, MI 48063-1872
(248) 689-9090 www.peainc.com fax (248) 689-1044

James P. Butler, PE
President
David E. Cole, PS
Vice President
Wendy E. Graham, PE
Vice President
John A. Harvey, PE
Vice President
David N. Hunter, PE
Vice President

March 3, 2008
PEA Job No. 2003-258

Paul Henderson
Hamlin Adams Properties LLC
24400 Jefferson Avenue
St. Clair Shores, MI 48080-1325
p_henderson1@sbcglobal.net

**RE: STORMWATER DETENTION
GATEWAY TOWNE CENTER
NEC HAMLIN AND ADAMS
ROCHESTER HILLS, MI**

Dear Mr. Henderson:

Per your request, we have analyzed three storm water detention scenarios for the proposed Gateway Towne Center development and provided preliminary cost estimates.

Option 1 – Open Storm water detention pond:

If the property was not contaminated, an above ground open detention basin would be the most cost effective option for this development. The above ground detention basin would store approximately 135,000 C.F. of stormwater storage to a maximum depth of 4 feet. Approximately 2.8 acres of space would be needed to construct this basin. Attached please find a cost estimate and conceptual sketch of this option.

Option 2 – Underground detention/infiltration via open bottom chambers:

If the property was not contaminated and additional development area was needed to make the development more cost effective, then an underground open bottom detention/infiltration system could have been considered. One trade name for a system of this variety is "StormTech". This system consists of pre-fabricated high density polyethylene storage chambers with an open graded coarse aggregate stone base.

Since this option is not viable, we have not completed a sketch but have provided a cost estimate based on experience installing this system on other projects.

Florida Office 2400 First Street, Suite 200, Fort Myers, FL 33901 • (239) 217-6059 • Fax (239) 217-6124
Howell Office 2900 E. Grand River Avenue, Howell, MI 48843 • (517) 546-8583 • Fax (517) 546-8973

• Municipal • Computer Imaging • Pavement Restoration / Management • Storm Water Management • Geotechnical • GIS • Site Development • Surveying • Landscape Architecture

Option 3 – Underground detention via pipe and/or vault system with small pond:

A preliminary underground detention system has been priced based on the following. A corrugated steel pipe (CSP) system is proposed for the detention in areas where there is not any contamination. In areas of contamination, the underground pipe is proposed to be rubber joint reinforced concrete pipe (RCP). A small open detention basin area is proposed at the northeast corner of the site due to hydraulic grade line and gravity outlet concerns. Attached please find a preliminary sketch of this option.

Option 4 – All underground detention via pipe and/or vault system:

A preliminary underground detention system has been priced based on the following. A corrugated steel pipe (CSP) system is proposed for the detention in areas where there is not any contamination. In areas of contamination, the underground pipe is proposed to be rubber jointed RCP. A smaller underground detention system with RCP is proposed at the northeast corner of the site where a pond is proposed in Option 3. Attached please find a preliminary sketch of this option.

Each of these cost estimates are based on 24 acres of drainage at a run-off coefficient, 'C', of 0.75, storing for the 10-year storm event. In addition, all three include pre-fabricated sedimentation removal devices. These cost estimates are preliminary in nature and should be verified by underground pipe supplier and contractor.

Please contact us if you have any questions.

Sincerely,

PROFESSIONAL ENGINEERING ASSOCIATES, Inc.



David N. Hunter, PE
Vice President

DNH/evs

Enclosure



PROFESSIONAL ENGINEERING ASSOCIATES, INC.

CIVIL ENGINEERS / LAND SURVEYORS

2430 Rochester Ct., Suite 100, Troy, MI 48083-1872

Telephone (248) 689-9090

Facsimile (248) 689-1044

COST OPINION

PROJECT DESCRIPTION	<u>HAMLIN/ADAMS DETENTION OPTIONS</u>	JOB NO.	<u>2003-258</u>
PREPARED BY	<u>RLS</u>	REVIEWED BY	<u>DNH</u>
		DATE	<u>03/03/08</u>

SUMMARY

SITE IMPROVEMENTS

OPTION 1 - DETENTION - OPEN BASIN	\$390,000.00
OPTION 2 - DETENTION - STORMTECH CHAMBERS	\$660,000.00
OPTION 3 - DETENTION - UNDERGROUND +NE POND	\$1,262,500.00
OPTION 4 - DETENTION - UNDERGROUND	\$1,403,100.00

NOTE: The engineer has no control over the cost of labor, materials, equipment or services furnished by others, or over the contractors method of determining prices, or over competitive bidding or market conditions. His opinions of probable project costs and construction costs provided for herein are to be made on the basis of his experience and qualifications and represent his best judgement as an experienced and qualified engineer familiar with the construction industry. But, the engineer cannot and does not guarantee that proposals bids or actual project or construction costs will not vary from opinions of probable costs prepared by him.

Note: This Cost Estimate does not include the following: Proposed Landscaping, Proposed Lighting, Electric/Phone/Cable TV OH Wire Removal, Remedial Earthwork costs, Permits, New Electrical Service, Transformer Pads, Electrical Relocations, and Pylon or Monument Signage.

PROFESSIONAL ENGINEERING ASSOCIATES, INC.
 2430 ROCHESTER COURT, SUITE 100
 TROY, MICHIGAN 48083-1872
 (248) 689-9090

COST OPINION

PROJECT NAME: HAMLIN/ADAMS DETENTION OPTIONS JOB NO. 2003-258

OPTION 1 - DETENTION - OPEN BASIN

PLAN QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
135,000	C.Y.	CUT AND FILL (ONSITE USEAGE)	\$2.00	\$270,000.00
3	EA.	SEDIMENTATION UNITS	\$40,000.00	\$120,000.00
TOTAL DETENTION - OPEN BASIN				\$390,000.00

OPTION 2 - DETENTION - STORMTECH CHAMBERS

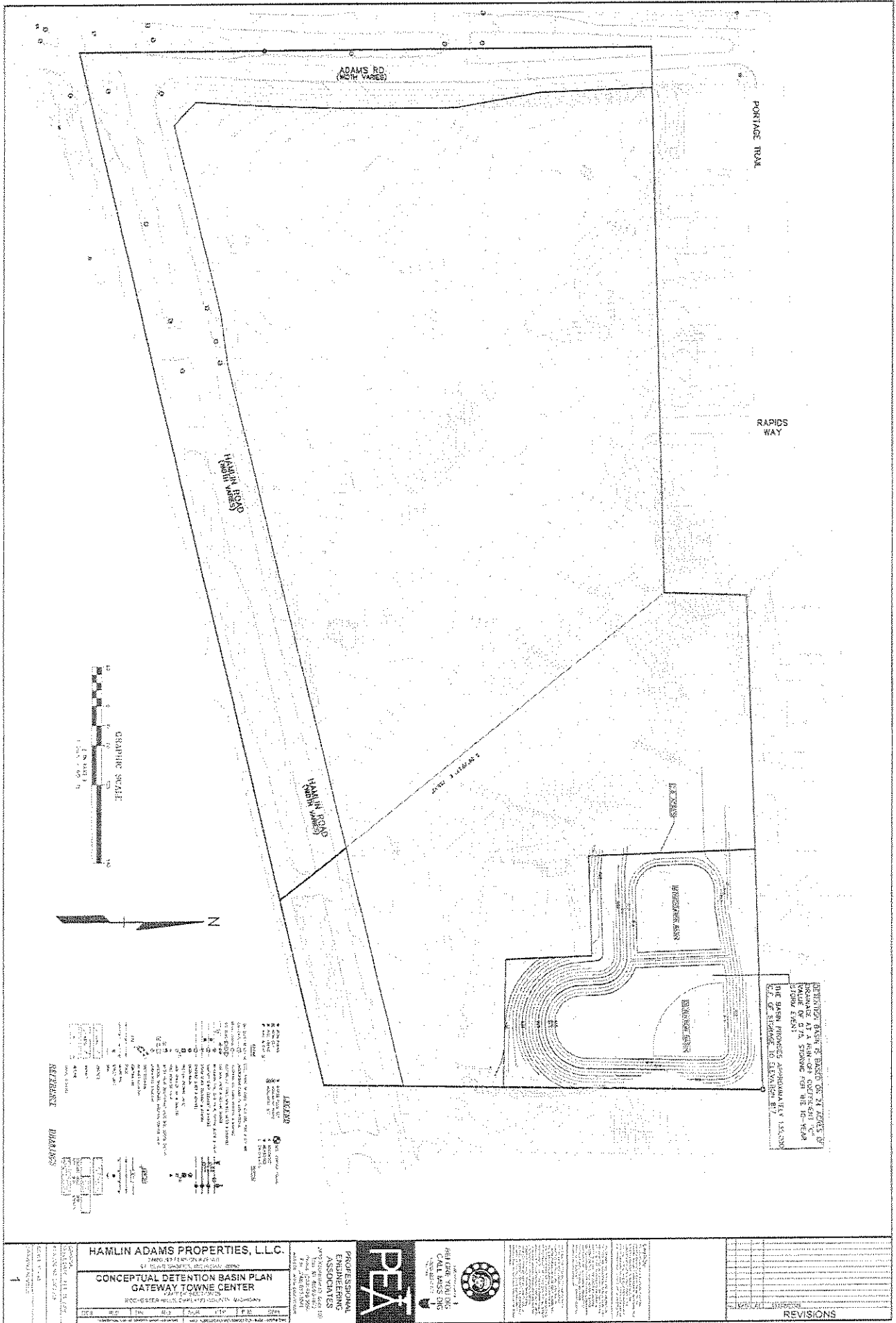
PLAN QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
135,000	C.Y.	STORMTECH CHAMBERS	\$4.00	\$540,000.00
3	EA.	SEDIMENTATION UNITS	\$40,000.00	\$120,000.00
TOTAL DETENTION - STORMTECH CHAMBERS				\$660,000.00

OPTION 3 - DETENTION - UNDERGROUND +NE POND

PLAN QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
1,600	L.F.	60" STORM SEWER , RCP CL-IV	\$350.00	\$560,000.00
1,350	EA.	120" CULVERT (16 GA. CMP)	\$400.00	\$540,000.00
17,000	C.Y.	CUT AND FILL (ONSITE USEAGE)	\$2.50	\$42,500.00
3	EA.	SEDIMENTATION UNITS	\$40,000.00	\$120,000.00
TOTAL DETENTION - UNDERGROUND + NE POND				\$1,262,500.00

OPTION 4 - DETENTION - UNDERGROUND

PLAN QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
1,600	L.F.	60" STORM SEWER , RCP CL-IV	\$350.00	\$560,000.00
1,350	EA.	120" CULVERT (16 GA. CMP)	\$400.00	\$540,000.00
1,350	L.F.	48" STORM SEWER , RCP CL-IV	\$106.00	\$143,100.00
4	EA.	SEDIMENTATION UNITS	\$40,000.00	\$160,000.00
TOTAL DETENTION - UNDERGROUND				\$1,403,100.00



HAMLIN ADAMS PROPERTIES, L.L.C.
 2400 43rd Street, Suite 200
 Gateway Towne Center
 Rochester Hills, Michigan 48309

CONCEPTUAL DETENTION BASIN PLAN
 GATEWAY TOWNE CENTER
 ROCHESTER HILLS, MICHIGAN

DATE: 01/14/10
 SCALE: AS SHOWN
 DRAWN BY: [Name]
 CHECKED BY: [Name]

LEGEND

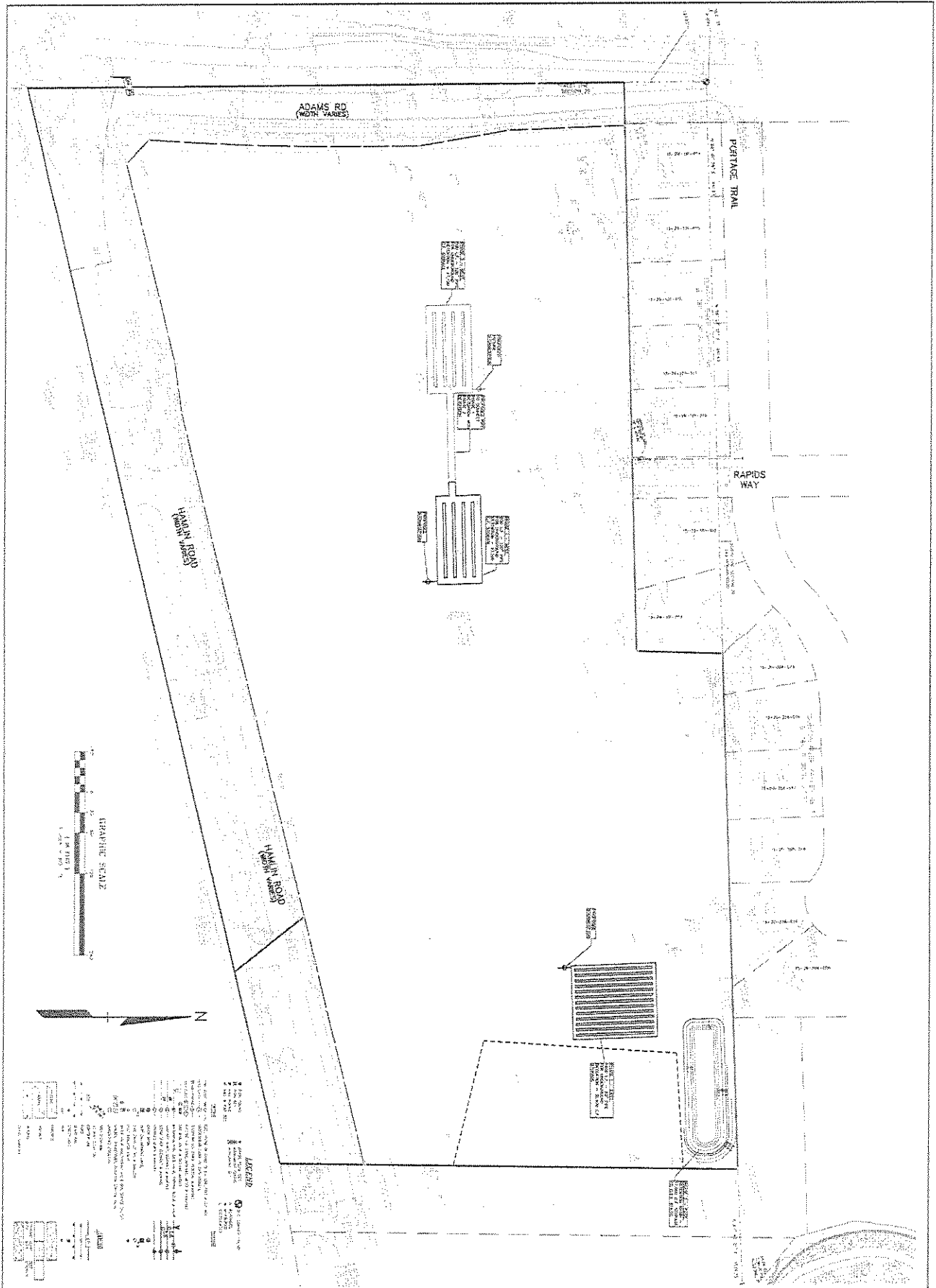
- 1. EXISTING CHANNEL
- 2. EXISTING CHANNEL CENTERLINE
- 3. EXISTING CHANNEL BANK
- 4. EXISTING CHANNEL BANK TOE
- 5. EXISTING CHANNEL BANK TOP
- 6. EXISTING CHANNEL BANK BOTTOM
- 7. EXISTING CHANNEL BANK WIDTH
- 8. EXISTING CHANNEL BANK HEIGHT
- 9. EXISTING CHANNEL BANK AREA
- 10. EXISTING CHANNEL BANK PERIMETER
- 11. EXISTING CHANNEL BANK VOLUME
- 12. EXISTING CHANNEL BANK WEIGHT
- 13. EXISTING CHANNEL BANK MOMENT
- 14. EXISTING CHANNEL BANK CENTER OF GRAVITY
- 15. EXISTING CHANNEL BANK SURFACE AREA
- 16. EXISTING CHANNEL BANK PERIMETER AREA
- 17. EXISTING CHANNEL BANK VOLUME AREA
- 18. EXISTING CHANNEL BANK WEIGHT AREA
- 19. EXISTING CHANNEL BANK MOMENT AREA
- 20. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA
- 21. EXISTING CHANNEL BANK SURFACE AREA AREA
- 22. EXISTING CHANNEL BANK PERIMETER AREA AREA
- 23. EXISTING CHANNEL BANK VOLUME AREA AREA
- 24. EXISTING CHANNEL BANK WEIGHT AREA AREA
- 25. EXISTING CHANNEL BANK MOMENT AREA AREA
- 26. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA
- 27. EXISTING CHANNEL BANK SURFACE AREA AREA AREA
- 28. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA
- 29. EXISTING CHANNEL BANK VOLUME AREA AREA AREA
- 30. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA
- 31. EXISTING CHANNEL BANK MOMENT AREA AREA AREA
- 32. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA
- 33. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA
- 34. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA
- 35. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA
- 36. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA
- 37. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA
- 38. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA
- 39. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA
- 40. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA
- 41. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA
- 42. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA
- 43. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA
- 44. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA
- 45. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA
- 46. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA
- 47. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA
- 48. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA
- 49. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA
- 50. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA
- 51. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA
- 52. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA
- 53. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA
- 54. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA
- 55. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA
- 56. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA
- 57. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA
- 58. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA
- 59. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA
- 60. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA
- 61. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA
- 62. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA
- 63. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 64. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 65. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 66. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 67. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 68. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 69. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 70. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 71. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 72. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 73. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 74. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 75. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 76. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 77. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 78. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 79. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 80. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 81. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 82. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 83. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 84. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 85. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 86. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 87. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 88. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 89. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 90. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 91. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 92. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 93. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 94. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 95. EXISTING CHANNEL BANK VOLUME AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 96. EXISTING CHANNEL BANK WEIGHT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 97. EXISTING CHANNEL BANK MOMENT AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 98. EXISTING CHANNEL BANK CENTER OF GRAVITY AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 99. EXISTING CHANNEL BANK SURFACE AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA
- 100. EXISTING CHANNEL BANK PERIMETER AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA AREA

PEA
 PROFESSIONAL ENGINEERS
 2400 43rd Street, Suite 200
 Gateway Towne Center
 Rochester Hills, Michigan 48309
 (248) 860-1111
 www.pea-engineers.com

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITTING	01/14/10

DATE: 01/14/10
 SCALE: AS SHOWN
 DRAWN BY: [Name]
 CHECKED BY: [Name]



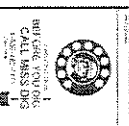
HAMLIN ADAMS PROPERTIES, L.L.C.
 16400 28515 RICHMOND BLVD.
 SUITE 100, HAMLIN, MICHIGAN 48424

**CONCEPTUAL UTILITY PLAN
 GATEWAY TOWNE CENTER**
 400 WEST HAMLIN RD AND 200 EAST 10TH AVE
 HAMLIN, MICHIGAN 48424

DATE: 08/15/2018
 TIME: 10:00 AM
 SCALE: 1" = 50'

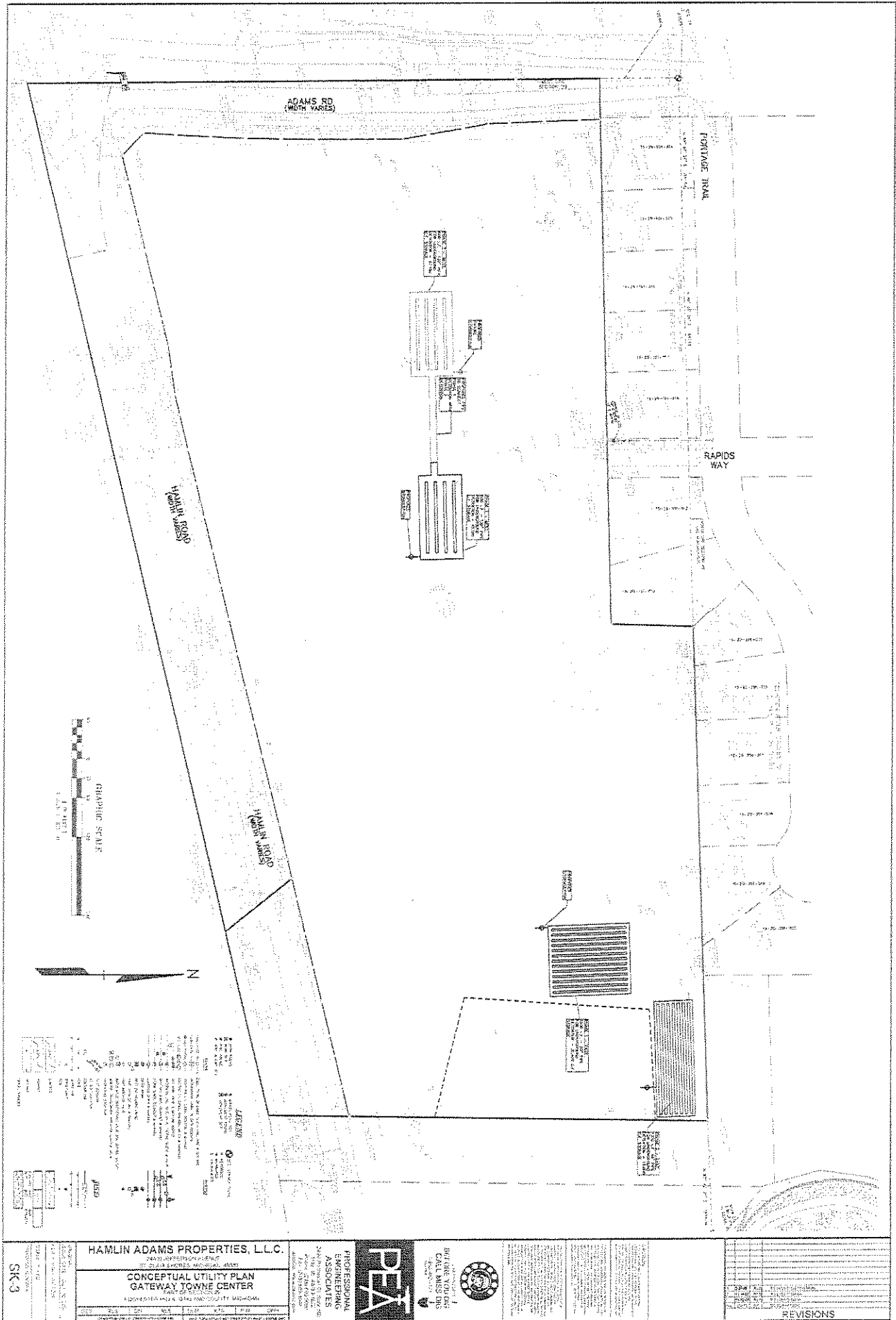
PROJECT NO: 18-001
 SHEET NO: SK-3

PEFA
 PROFESSIONAL ENGINEERS
 10000 HAMLIN RD
 HAMLIN, MI 48424
 TEL: 588-1111
 FAX: 588-1111
 WWW.PEFA.COM



REVISIONS

NO.	DATE	DESCRIPTION
1	08/15/2018	ISSUED FOR PERMIT



HAMLIN ADAMS PROPERTIES, L.L.C.
 4000 14TH AVE SW
 IOWA CITY, IA 52242-3414
CONCEPTUAL UTILITY PLAN
GATEWAY TOWNE CENTER
 ADDRESS: 14TH AVE SW AND 26TH ST IOWA CITY, IA 52242

PREPARED BY: []
 DATE: 01/14/14
 PROJECT NO.: []
 SHEET NO.: []

PEA
 PROFESSIONAL
 ENGINEERING
 ASSOCIATES,
 INC.
 401 EAST UNIVERSITY AVE.
 IOWA CITY, IA 52242
 PIA 010200000001


THIS PLAN IS THE PROPERTY OF PEA PROFESSIONAL ENGINEERING ASSOCIATES, INC. AND IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE EXPRESS WRITTEN PERMISSION OF PEA PROFESSIONAL ENGINEERING ASSOCIATES, INC.

NO.	DATE	DESCRIPTION

REVISIONS

SK-3
 01/14/14
 14TH AVE SW AND 26TH ST IOWA CITY, IA 52242