WEST LAKES ADDITION - PHASE 4

TO THE TOWN OF MUNSTER,
LAKE COUNTY, INDIANA

LEGAL DESCRIPTION:
OUTLOT A, WEST LAKES ADDITION PHASE 2 BLOCK 1, TO THE TOWN OF MUNSTER, AS SHOWN IN PLAT BOOK 91, PAGE 64, IN THE OFFICE OF THE RECORDER, LAKE COUNTY INDIANA.

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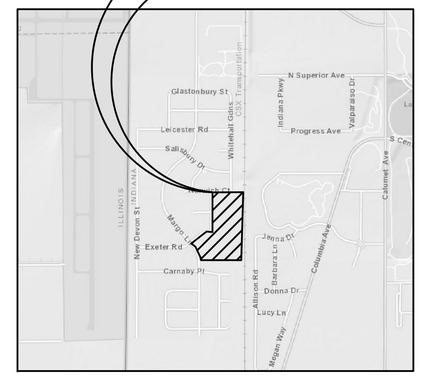
C-5.0 TO C-5.1	DETAILS & SPECIFICATIONS
1 OF 1	FINAL PLAT

SITE



VICINITY MAP

NORTH

NOT TO SCALE

NOTES:
1. TOTAL SITE AREA = 14.40± ACRES (627,076± S.F.)
2. THIS PROPERTY IS LOCATED IN FLOOD ZONE "X", AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, AS TAKEN FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR MUNSTER, LAKE COUNTY, INDIANA, MAP NUMBER 18089C0119E, EFFECTIVE DATE JANUARY 18, 2012.
3. BENCHMARKS:
   #1 – CATCH BASIN ON THE SOUTH SIDE OF THE CURB, NEAR THE INTERSECTION OF EXETER ROAD AND NORWICH DRIVE.
4. DEVELOPER:
   Blackhall Corporation
   2716 South Chicago Road
   Chicago Heights, Illinois 60411
5. EXISTING TOPOGRAPHY AND UTILITIES DATA ARE PROVIDED AND TAKEN FROM TORRENGA SURVEYING, LLC, JOB NO.: 2016-0412, DATED 06/21/2016
6. ALL VERTICAL DATUM IS BASED ON NAVD88.
7. HYDROLOGIC UNIT CODES: 07120003030030 – HART DITCH (PLUM CREEK)-DYER DITCH, 07120003040040 – THORNCREEK-NORTH CREEK
8. LOCATION:
   LATITUDE – 41°31'47.9" N
   LONGITUDE – 87°31'09.3" W
9. CURRENT ZONING: R-2 SINGLE FAMILY RESIDENTIAL

Indiana 811
Know what's below. Call before you dig.

"IT'S THE LAW"
CALL 2 WORKING DAYS BEFORE YOU DIG
811 or 1-800-382-5544
CALL TOLL FREE
PER INDIANA STATE LAW IC8-1-26, IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

County: LAKE

NW Qtr., Sec. 36, T. 36 N, R. 10 W.

Township: NORTH

DEVELOPER:
Blackhall Corporation
2716 South Chicago Road
Chicago Heights, Illinois 60411

ENGINEER:
Torrenga Engineering, Inc.
907 Ridge Road
Munster, Indiana 46321
(219) 836-8918

Date and Revisions:

NO.	DATE	DESCRIPTION	BY
1	07-18-2016	PRIMARY SUBMITTAL	DT/EN/EM

DRAWING SET PROGRESS:
- [x] ENGINEERING PLAN - FOR REVIEW / APPROVAL
- [ ] FINAL ENGINEERING - FOR CONSTRUCTION

CERTIFIED BY: GARY P. TORRENGA
P.E. # 18376
L.S. # S0514

GARY P. TORRENGA REGISTERED No. S0514 STATE OF INDIANA LAND SURVEYOR

GARY P. TORRENGA REGISTERED No. 18376 STATE OF INDIANA PROFESSIONAL ENGINEER

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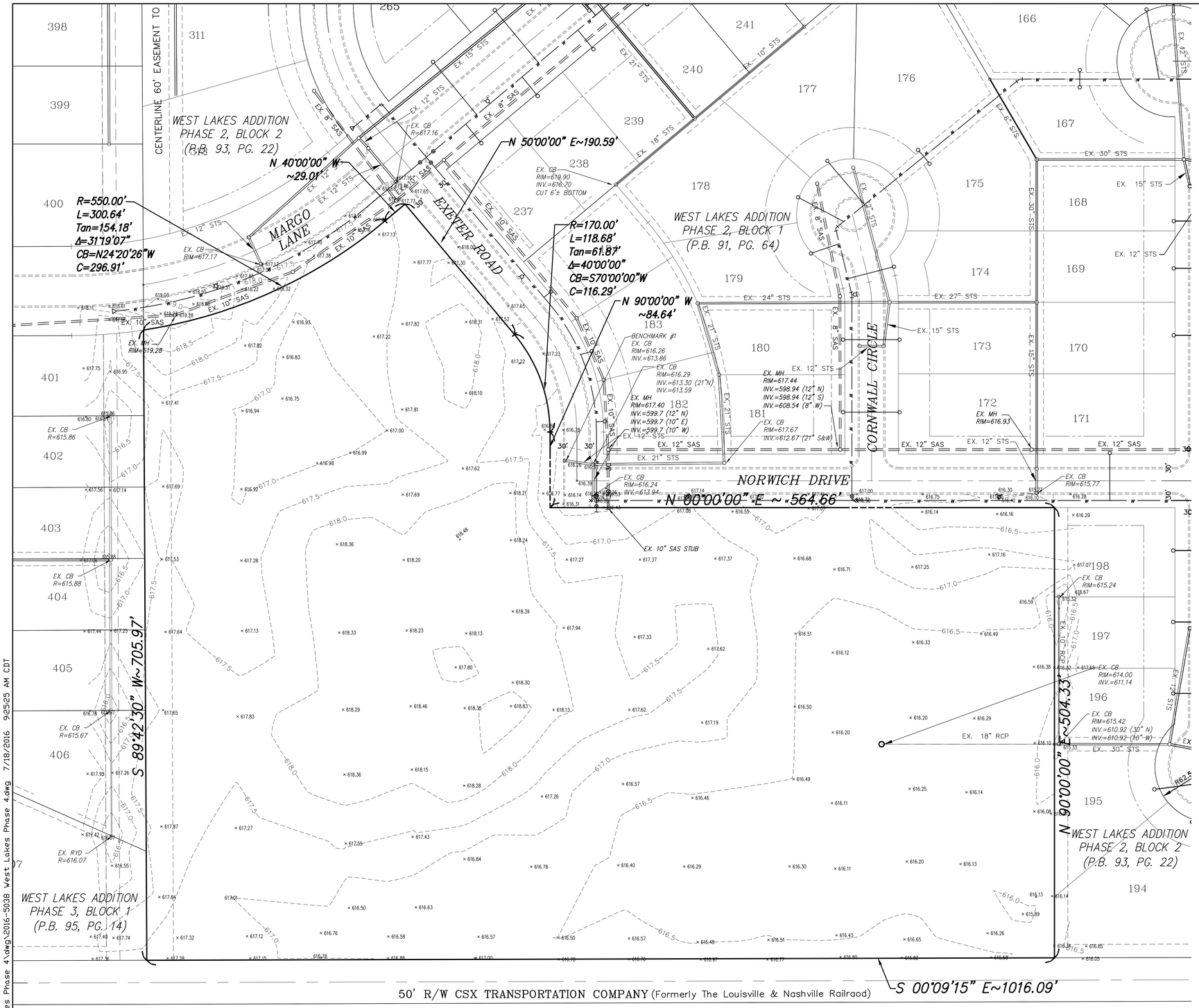
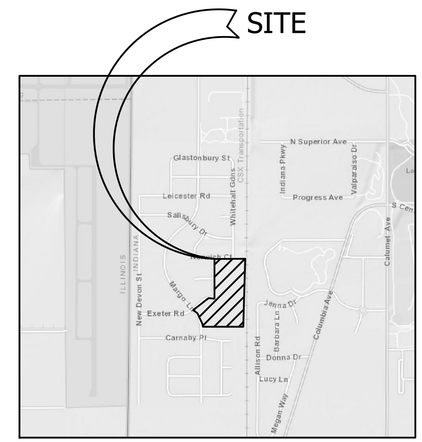


LEGAL DESCRIPTION:
OUTLOT A, WEST LAKES ADDITION PHASE 2 BLOCK 1, TO THE TOWN OF MUNSTER, AS SHOWN IN PLAT BOOK 91, PAGE 64, IN THE OFFICE OF THE RECORDER, LAKE COUNTY INDIANA.



VICINITY MAP

NOT TO SCALE

NORTH

NOTES:

1. TOTAL SITE AREA = 14.40± ACRES (627,076± S.F.)
2. THIS PROPERTY IS LOCATED IN FLOOD ZONE "X", AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD, AS TAKEN FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR MUNSTER, LAKE COUNTY, INDIANA, MAP NUMBER 18089C0119E, EFFECTIVE DATE JANUARY 18, 2012.
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   #1 – CATCH BASIN ON THE SOUTH SIDE OF THE CURB, NEAR THE INTERSECTION OF EXETER ROAD AND NORWICH DRIVE.
4. DEVELOPER:
   Blackhall Corporation
   2716 South Chicago Road
   Chicago Heights, Illinois 60411
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8. LOCATION:
   LATITUDE – 41°31'47.9" N
   LONGITUDE – 87°31'09.3" W
9. CURRENT ZONING: R–2 SINGLE FAMILY RESIDENTIAL

LEGEND

EXISTING

- SANITARY SEWER
- STORM SEWER
- DRAINAGE STRUCTURE
- WATER MAIN
- WATER MAIN STUB
- FIRE HYDRANT

GARY P. TORRENGA REGISTERED No. S0514 STATE OF INDIANA LAND SURVEYOR

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836–8918 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4 TO THE TOWN OF MUNSTER, INDIANA PRELIMINARY PLAN EXISTING TOPOGRAPHY & UTILITIES

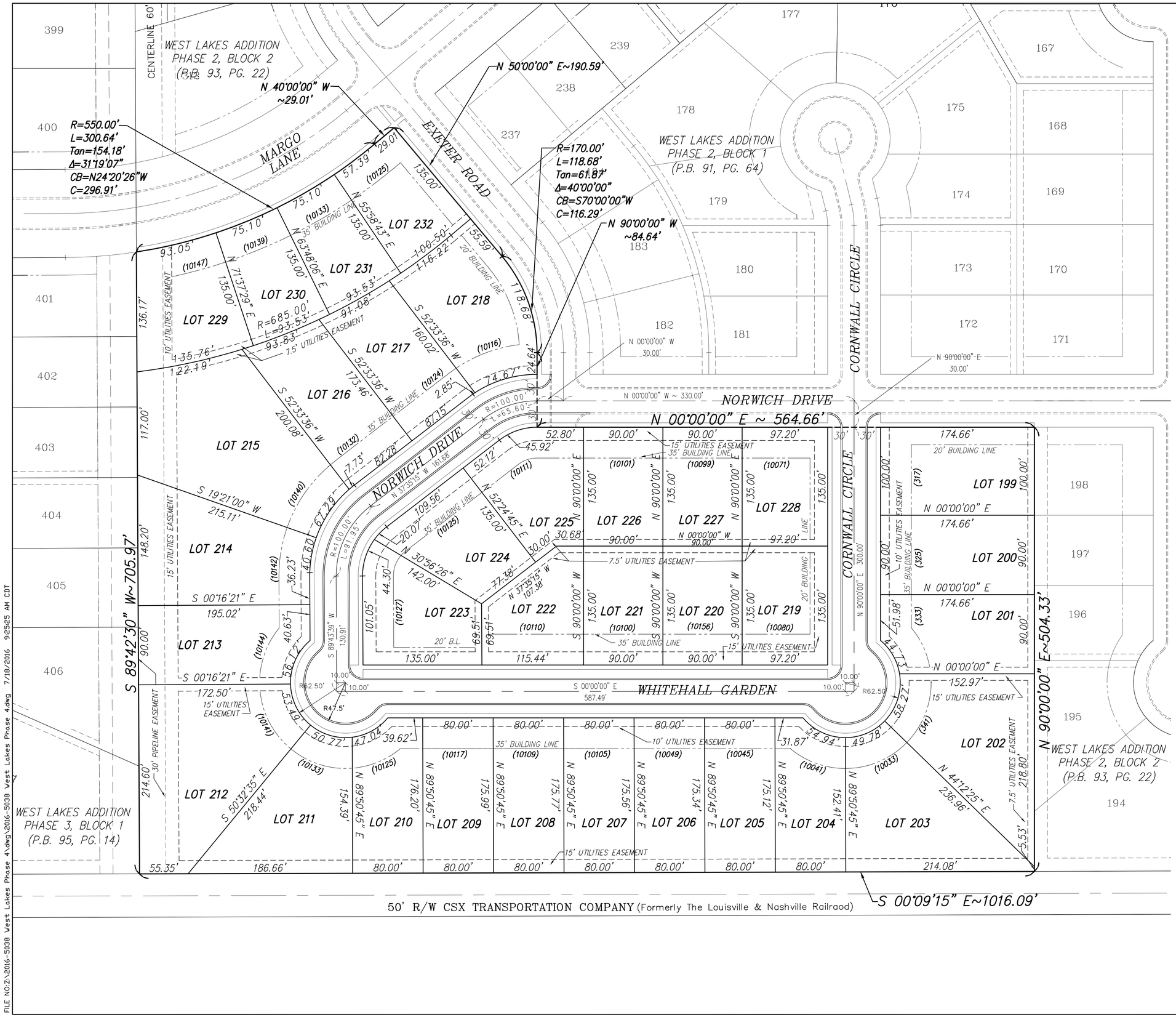
REVISIONS:
DATE: 07–18–2016

CLIENT:
Blackhall Corporation
2716 South Chicag Road
Chicago Heights, Illinois 60411

JOB NO: 2016–5038
SCALE: 1" = 50'

SHEET
C–1.0

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 West Lakes Phase 4.dwg 7/18/2016 9:25:25 AM CDT



NOTES:

1. CURRENT ZONING: R–2 SINGLE FAMILY RESIDENTIAL
2. LOTS IN R–2 DWELLING HOUSE DISTRICTS SHALL HAVE A MINIMUM FRONTAGE AND AVERAGE WIDTH OF 60 FEET, AND THE LOT AREA SHALL NOT BE LESS THAN 9,000 SQUARE FEET.
3. IN R–2 DWELLING HOUSE DISTRICTS, EACH BUILDING, STRUCTURE OR PREMISES SHALL HAVE YARDS AS FOLLOWS:

   (1) FRONT YARD. NO FRONT YARD SHALL BE LESS THAN 35 FEET.

   (2) REAR YARD. THE REAR YARD OF AN INTERIOR LOT SHALL NOT BE LESS THAN 20 FEET AND THE REAR YARD OF A CORNER LOT SHALL NOT BE LESS THAN 15 FEET.

   (3) SIDE YARD. THE TOTAL WIDTH OF THE TWO SIDE YARDS SHALL NOT BE LESS THAN 25 PERCENT OF THE LOT WIDTH AND PROVIDED THAT THE LEAST DIMENSION OF THE NARROWEST SIDE YARD SHALL NOT BE LESS THAN FIVE FEET.

LEGAL DESCRIPTION:
OUTLOT A, WEST LAKES ADDITION PHASE 2 BLOCK 1, TO THE TOWN OF MUNSTER, AS SHOWN IN PLAT BOOK 91, PAGE 64, IN THE OFFICE OF THE RECORDER, LAKE COUNTY INDIANA.

Lot	Lot Width at Building Line (ft)	Buildable Lot Width at Building Line (ft)	Area (Sq. ft)
199	100.00	75.00	17644.06
200	90.00	67.50	15719.44
201	90.00	67.50	15190.71
202	90.00	67.50	22428.16
203	82.05	61.54	22042.08
204	80.00	60.00	13247.21
205	80.00	60.00	14018.59
206	80.00	60.00	14035.81
207	80.00	60.00	14053.03
208	80.00	60.00	13548.60
209	80.00	60.00	14087.47
210	80.00	60.00	13525.15
211	88.23	66.17	19195.83
212	90.00	67.50	29416.15
213	90.00	67.50	16762.49
214	91.15	68.36	22233.96
215	90.00	67.50	31594.67
216	90.00	67.50	16698.65
217	90.00	67.50	14906.11
218	100.15	75.11	18723.51
219	97.20	72.90	13121.68
220	90.00	67.50	12150.00
221	90.00	67.50	12150.00
222	115.60	86.70	12830.95
223	104.70	78.52	14626.35
224	116.44	87.33	14009.73
225	121.88	60.00	14333.97
226	90.00	67.50	12150.00
227	90.00	67.50	12150.00
228	97.20	72.90	13121.68
229	104.62	78.46	15446.01
230	80.00	60.00	11382.15
231	80.00	60.00	11382.15
232	90.11	67.58	12615.18

GARY P. TORRENGA REGISTERED No. 18376 STATE OF INDIANA PROFESSIONAL ENGINEER

NORTH

GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836–8918 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4 TO THE TOWN OF MUNSTER, INDIANA PRELIMINARY PLAN LOT LAYOUT

REVISIONS:
DATE: 07–18–2016

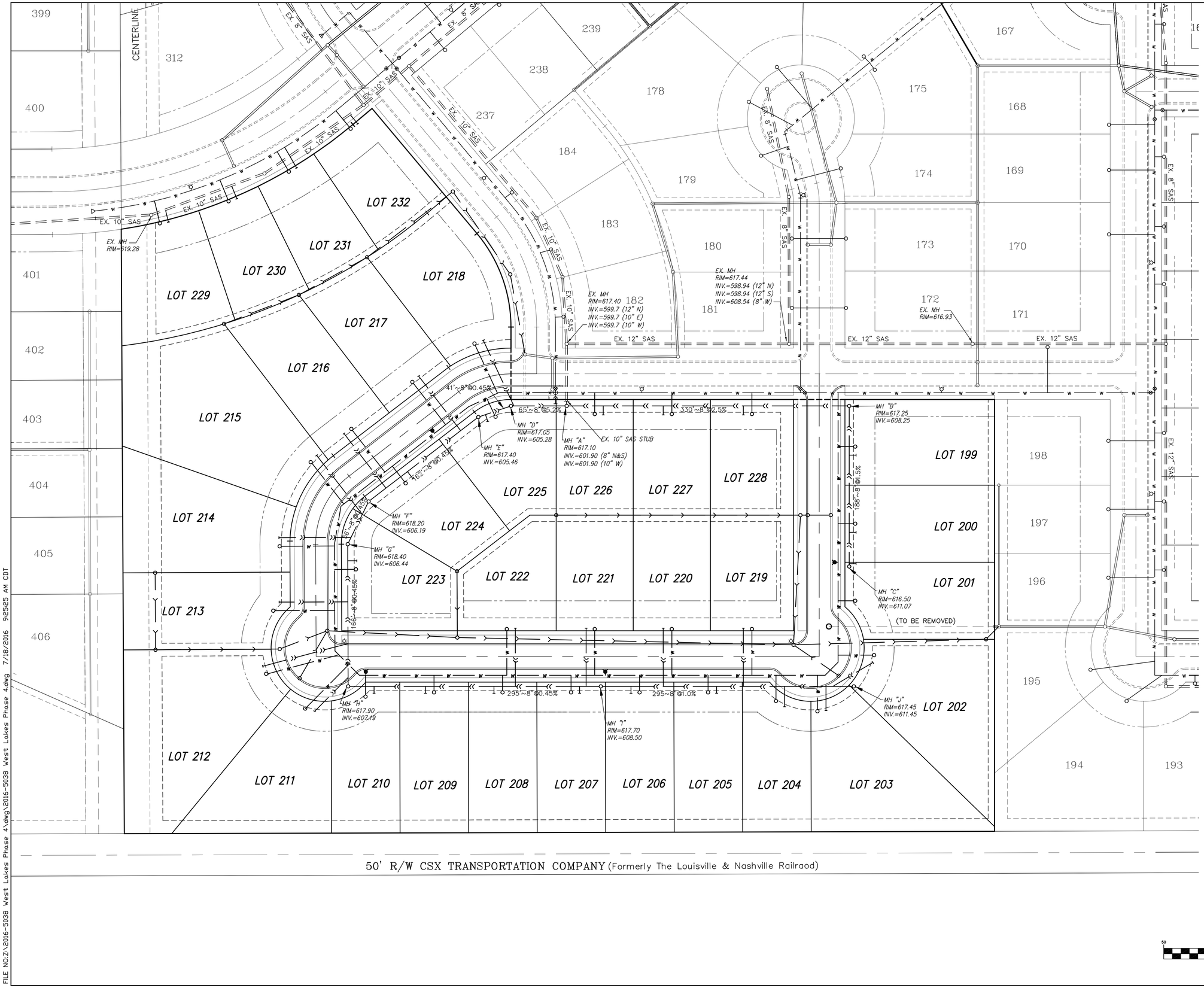
CLIENT: Blackhall Corporation 2716 S. Chicago Road South Chicago Heights, IL 60411

JOB NO: 2016–5038

SCALE: 1" = 50'

SHEET C–2.0

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 West Lakes Phase 4.dwg 7/18/2016 9:25:25 AM CDT



LEGEND

EXISTING

- SANITARY SEWER
- STORM SEWER
- DRAINAGE STRUCTURE
- WATER MAIN
- WATER MAIN STUB
- FIRE HYDRANT

PROPOSED

- STORM SEWER
- DRAINAGE STRUCTURE
- SANITARY SEWER
- SANITARY SEWER STUB
- SANITARY STRUCTURE
- WATER MAIN
- WATER MAIN STUB
- FIRE HYDRANT
- LIGHT POLE

GARY P. TORRENGA
REGISTERED
No. 18376
STATE OF INDIANA
PROFESSIONAL ENGINEER

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4
TO THE TOWN OF MUNSTER, INDIANA
PRELIMINARY PLAN
SANITARY SEWERS & WATER MAIN PLAN

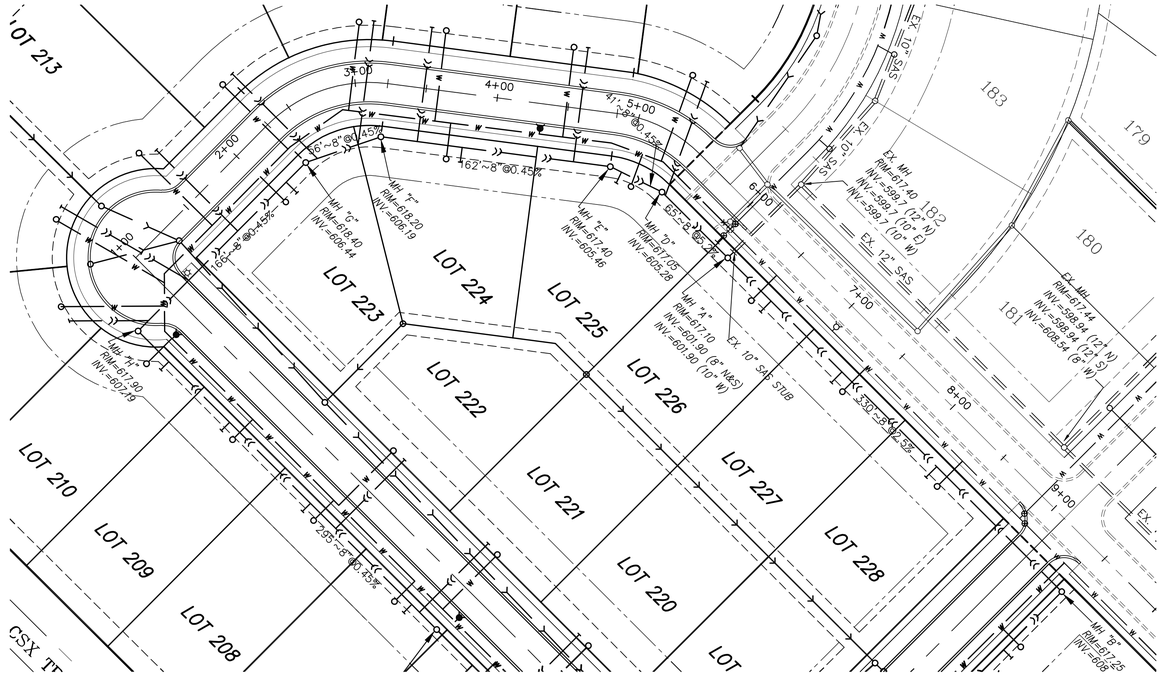
REVISIONS:
DATE: 07-18-2016

CLIENT:
Blackhall Corporation
2716 South Chicago Road
Chicago Heights, Illinois 60411

JOB NO: 2016-5038
SCALE: 1" = 50'

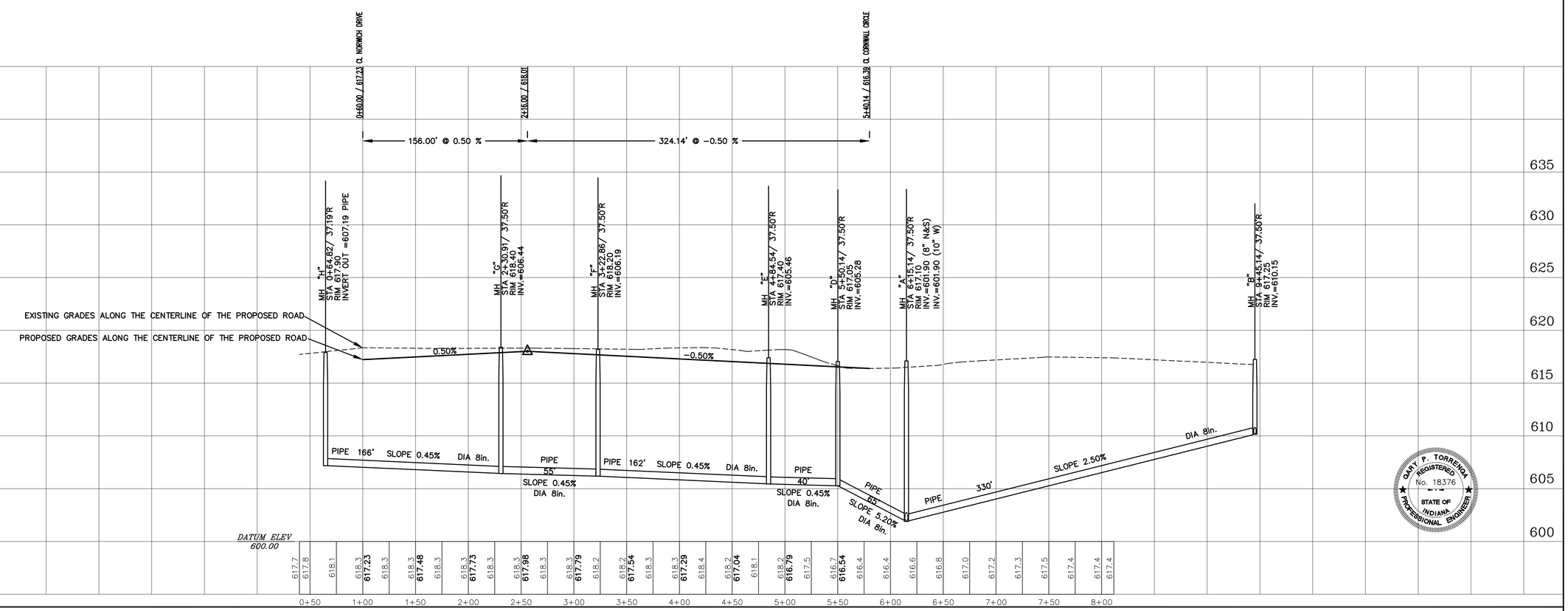
SHEET
C-3.0

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 West Lakes Phase 4.dwg 7/18/2016 9:25:25 AM CDT



NORTH

SCALE:
1"=50' HORIZONTAL
1"=5' VERTICAL



GARY P. TORRENGA
REGISTERED
No. 18376
STATE OF INDIANA
PROFESSIONAL ENGINEER

NORWICH DRIVE STREET PROFILE

DATE: 07-18-2016
REVISED:

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321

JOB NO.: 2016-5038
SHEET C-3.1

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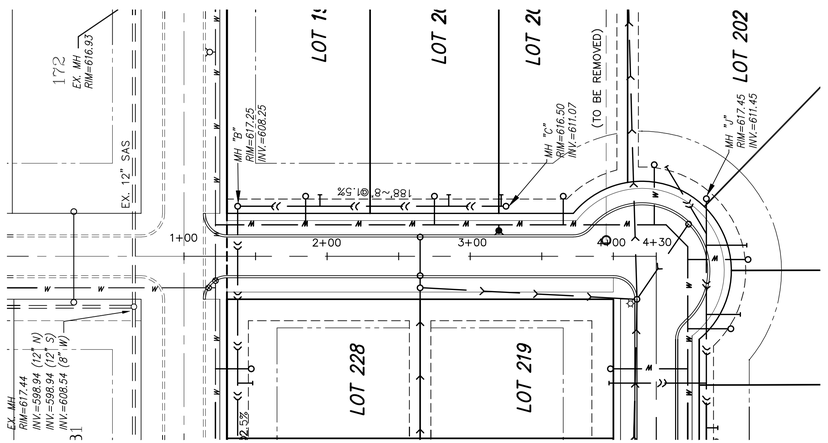
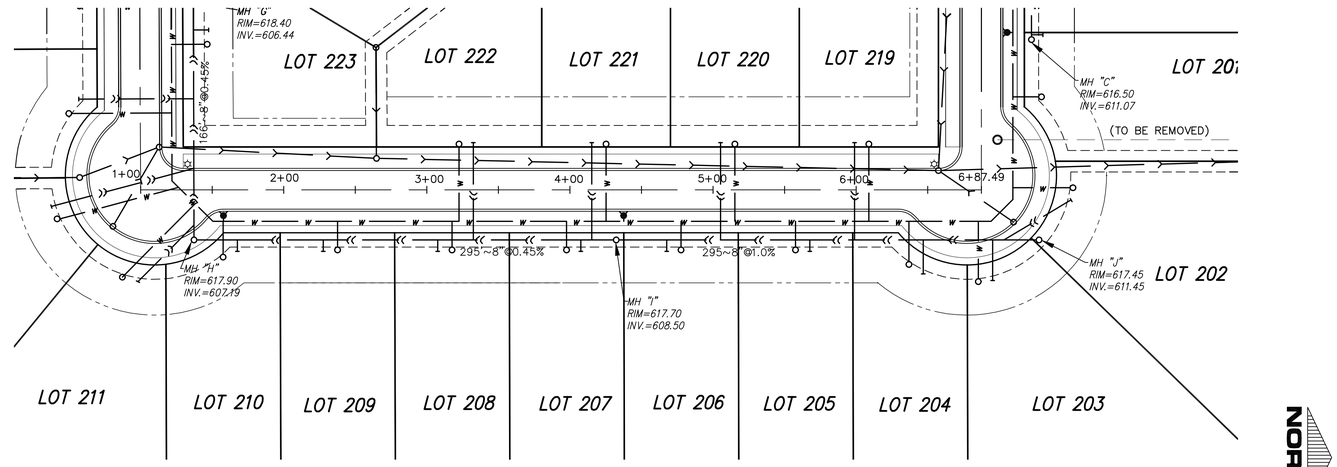


SCALE:
1"=50' HORIZONTAL
1"=5' VERTICAL



SCALE:
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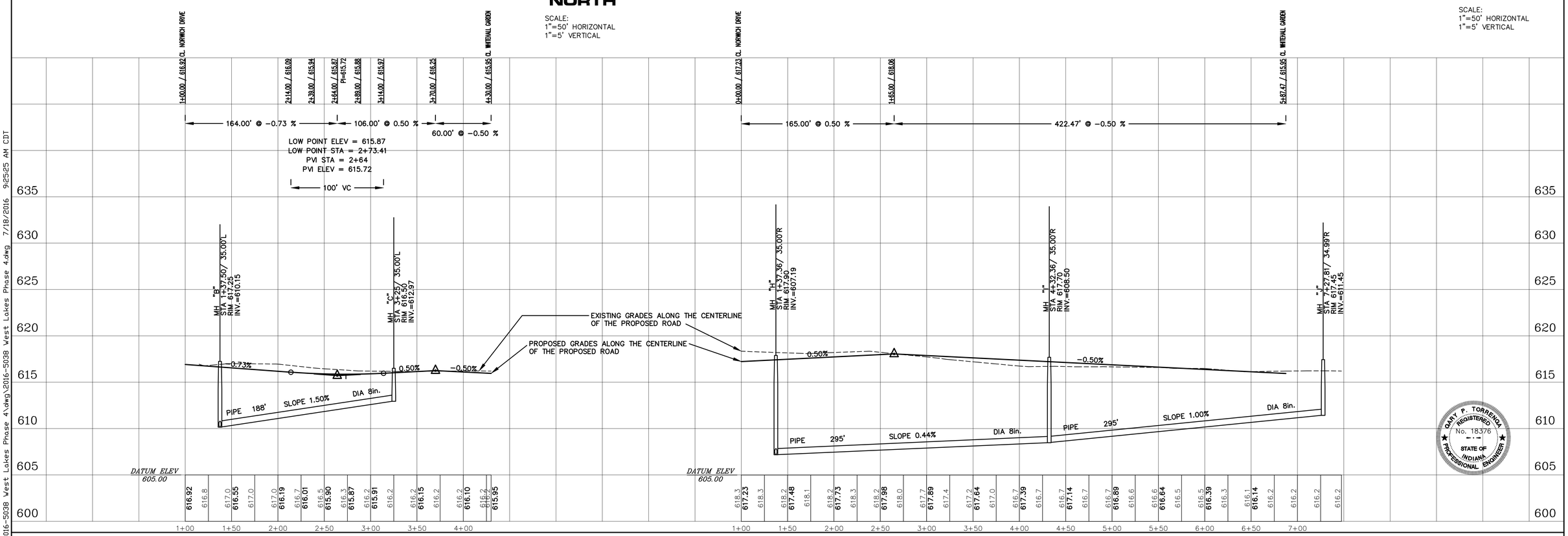
1"=5' VERTICAL



CORNWALL CIRCLE & WHITEHALL GARDEN STREET PROFILE

DATE: 07-18-2016
REVISED:

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321

JOB NO.: 2016-5038
SHEET C-3.2

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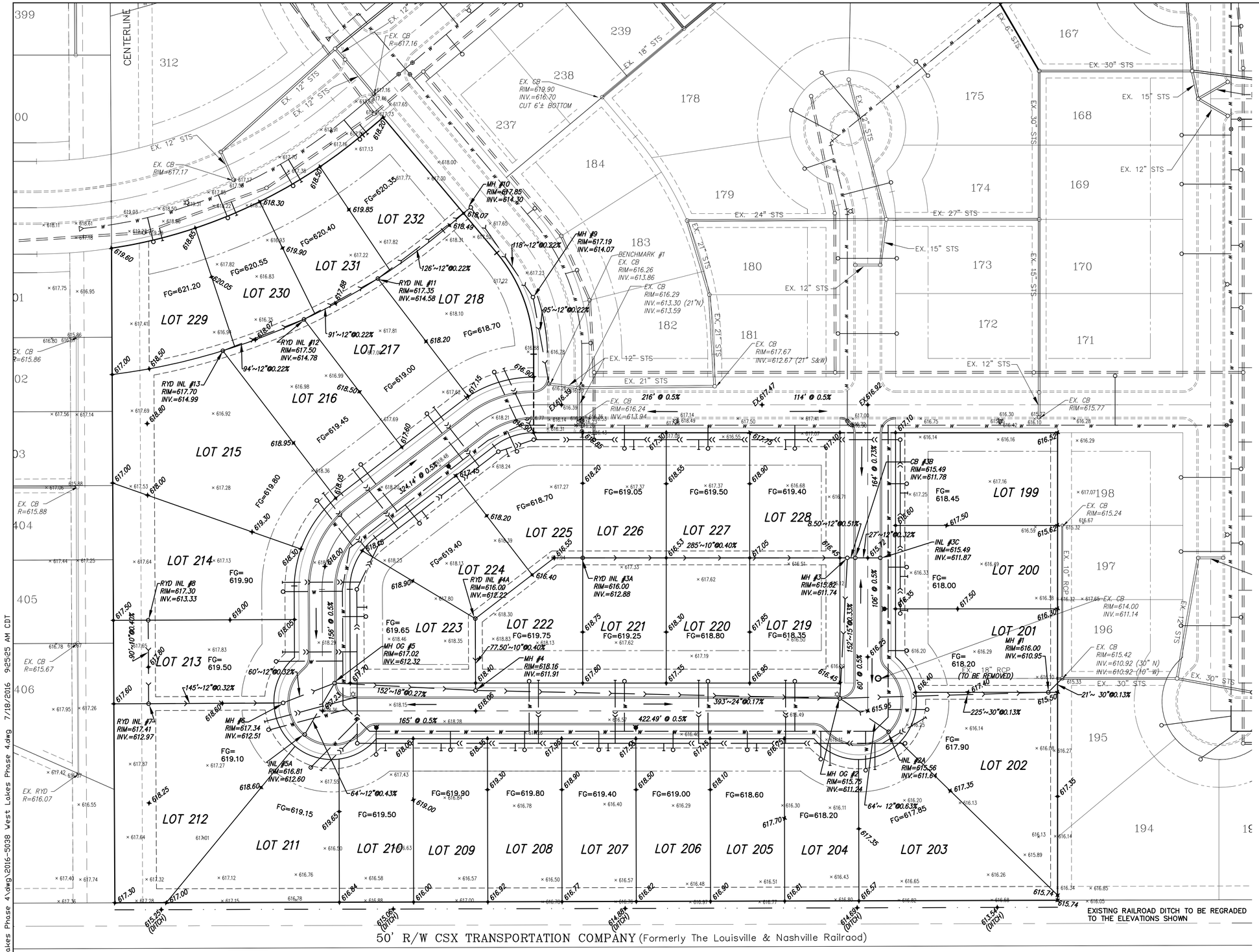


LEGEND

EXISTING

- SANITARY SEWER
- STORM SEWER
- DRAINAGE STRUCTURE
- WATER MAIN
- WATER MAIN STUB
- FIRE HYDRANT

PROPOSED

- 000.00 GRADE
- STORM SEWER
- DRAINAGE STRUCTURE
- SANITARY SEWER
- SANITARY STRUCTURE
- WATER MAIN
- WATER MAIN STUB
- FIRE HYDRANT
- LIGHT POLE
- FG=000.00 FINISHED GRADE
- STORM WATER FLOW ROUTE
- RAILROAD DITCH

DARYL P. TORRENGA REGISTERED No. 18376 STATE OF INDIANA PROFESSIONAL ENGINEER

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4
TO THE TOWN OF MUNSTER, INDIANA
PRELIMINARY PLAN
STORM SEWERS & GRADING PLAN

REVISIONS:
DATE: 07-18-2016

CLIENT:
Blackhall Corporation
2716 South Chicag Road
Chicago Heights, Illinois 60411

JOB NO: 2016-5038
SCALE: 1" = 50'

SHEET
C-4.0

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 West Lakes Phase 4.dwg 7/18/2016 9:25:25 AM CDT

GENERAL SPECIFICATIONS FOR SANITARY SEWER

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, Lake County, and the State of Indiana.

2. All sanitary sewer pipe, branches and fittings shall conform to one of the following: (a) Extra strength vitrified clay pipe (ASTM C-700) with push on rubber gasket joints (ASTM C-425). (b) Poly-vinyl chloride (PVC), SDR 26 (ASTM D-3034), with push-on rubber gasket joints (ASTM C-3212). Six inch service pipes shall be in accordance with the infrastructure improvement codes of the Town of Munster.

3. All sanitary sewer manholes shall be standard 48" diameter precast concrete units (ASTM C-478) conforming with the Standard Detail sheet of these plans.

4. The sanitary manhole base shall be precast with a minimum of 2 foot section, trough, ect.

5. Sanitary manholes shall be provided with a watertight gasketed cover

6. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade.

7. All sanitary sewer manholes with rim elevations below Flood Protection Elevation shall be provided with water tight locking lids.

8. Each lot in this subdivision shall be provided with a 6" PVC (SDR 35) sanitary sewer service tap extended from the main sewer to the street right of way line (or easement line) and located as near as possible to the center of each lot.

9. The competed sanitary sewer system shall be air tested for infiltration and shall have a maximum infiltration of 100 GPD/inch/diameter/mile of sewer pipe. The completed sanitary sewer system shall be air pressure tested for infiltration/exfiltration with 4 lbs. of pressure for 4 minutes. The testing shall conform to the procedure described in ASTM C-838-86 for clay pipe, ASTM C 924 for concrete pipe, ASTM F-1417 for poly-vinyl chloride pipe, and for other materials test procedures approved by the regulatory agency. The Contractor shall be responsible for supplying all testing materials and appurtenances. The Town of Munster shall be notified when the system (or portion thereof) is ready for testing.

10. Deflection tests shall be performed on all flexible pipe materials placed. The contractor shall be responsible for supplying testing materials and appurtenances. The tests shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5 %. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95% of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices. The Town of Munster shall be notified when the system (or portion thereof) is ready for testing.

11. Care should be taken in parkway areas to assure compaction acceptable for the future stability of driveways and sidewalks. While special backfill material is not required, it shall be the responsibility of the Contractor to protect against substantial future settlement of backfilled areas. The contractor shall provide special backfill material across driveways and sidewalks in the event that a sewer or main is installed underneath.

12. All sewers shall be laid at least 10 feet (3.0m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. All sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (46 cm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe.

13. The Contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" Plans and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of the final acceptance.

14. Air pressure test shall be performed on all completed Sanitary Manholes in accordance with ASTM C 1244-93, Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test. The tests shall be conducted prior to backfill to demonstrate the integrity of the installed materials. The manhole shall pass if the test time meets or exceeds the required minimum test times as specified in ASTM C 1244-93 for the vacuum reading to drop from 10 inches of mercury to 9 inches of mercury. If the manhole fails the initial test, necessary repairs shall be made, and the test shall be repeated. The contractor shall be responsible for supplying all testing materials and appurtenances. The Town of Schererville shall be notified when the manholes (or portion thereof) are ready for testing.

15. No sanitary sewer manhole shall be within eight (8) feet of a water main as measured from the outside edge of the sanitary sewer manhole to the outside edge of the water main.

GENERAL SPECIFICATIONS FOR WATER MAINS

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, and the State of Indiana.

2. All water main pipe shall be Ductile Iron Pipe (AWWA C151 C-52) with bell and spigot push-on rubber gasket joints (AWWA CIII). All water main pipe shall be installed with a minimum cover of 5.0 feet from top of curb to top of pipe. All fire hydrants, tees, bends and fittings shall be suitably harnessed or thrust blocked with concrete.

3. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade.

4. All water valves 12" or larger shall be placed in vaults.

5. On 12" water main bends, restrained joints shall be used, megalug or equal. At 90º bends, the water main shall be additionaly restrained at 1 joint in each direction.

6. All fire hydrants shall be WB-67 Waterous Pacer hydrant with 5¼" valve openings and shall be backfilled with 3/4" stone for drainage purposes.

7. All water mains shall be laid at least 10 feet (3.0m) horizontally from any existing or proposed sewer. The distance shall be measured from outside of pipe to outside of pipe. All sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (46 cm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe.

8. Care should be taken in parkway areas to assure compaction acceptable for the future stability of driveways and sidewalks. While special backfill material is not required, it shall be the responsibility of the Contractor to protect against substantial future settlement of backfilled areas. The Contractor shall provide special backfill material across driveways and sidewalks in the event that a water main is installed underneath.

9. Each lot in this subdivision shall be provided with a 1" diameter copper water service tap extended from the water main to the street right of way line (or easement line) and ending with an approved Buffalo Box. Water main service lines shall be installed with a minimum cover of 5.0 feet from the top of the curb to the top of the service line.

10. The Buffalo Boxes shall be arch pattern box style and shall be located in parkways, if possible. No Buffalo Boxes shall be located in concrete areas, and they shall have AWWA approved shut offs and corporation valves.

11. All water main pipe shall be disinfected by the use of liquid chlorine. The Contractor shall notify the town of Munster when the water main system (or portion thereof) is ready for testing.

12. The Contractor is responsible for water quality tests done by a State Certified Laboratory. The Town of Munster Water Department staff shall be notified and be present while tests are being performed. The approved water system shall be turned on by the Water Department Staff, only after the water quality reports have been approved.

13. The newly installed water main (or portions thereof) shall be subjected to a pressure and leakage test, using hydrostatic testing. Test pressure shall not be less than 1.5 times the working pressure or exceed pipe design pressure. Pressure shall not vary by more than ± 5 PSI for a minimum of a 2 hour duration test. The exposed pipe and joints shall be examined carefully during the test and any damaged or defective pipe or joints shall be replaced, and the test shall be repeated. The allowable leakage shall not exceed 11.65 gpd/mi/in of nominal pipe diameter at a pressure of 150 PSI.
All visible leaks are to be repaired regardless of the amount of leakage. The contractor shall be responsible for supplying all testing materials and appurtenances. The Town of Munster shall be notified when the water main (or portion thereof) is ready for testing.

14. The contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" Plans and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of the final acceptance.

15. No water main shall be within eight (8) feet of a sanitary sewer manhole, a storm sewer manhole, or a drainage grate support structure as measured from the outside edge of the water main to the outside edge of the sanitary sewer manhole, storm sewer manhole, or drainage grate support structure.

GENERAL SPECIFICATIONS FOR STORM SEWERS

1. All work shall be performed in accordance with the Codes, Ordinances and Standards of the Town of Munster, Lake County, Indiana.

2. Each Lot in this Subdivision shall be provided with a 4" diameter storm sewer service tap extended from the main sewer to the street right of way line (or utility easement line) and located as nearly as possible to the center of each lot.

3. All storm sewer pipe, branches and fittings shall conform to either of the following: (A) Poly-vinyl chloride SDR 35 or SDR 26 (ASTM D-3034) with push on rubber gasket joints (ASTM C-3212) for pipe 15" in diameter or under or: (B) High Density Polyethylene corrugated pipe with an integrally formed smooth interior (ASTM D-1248) for pipe 18" or over or: (C) Reinforced concrete pipe (ASTM C-76) with bell and spigot or tongue and groove push-on mastic joints. Class V reinforced concrete pipe shall be used for lines 15" diameter or under and Class III shall be used for lines 18" and over.

4.Gasketed joints shall be used on all storm sewers.

5. Storm sewers 18" to 27" with less than 3' cover shall be Class IV pipe.

6. All storm sewer manholes shall be standard precast concrete units (ASTM C-478) conforming with the standard details sheet of these plans.

7. All improvements installed across paved or future paved areas shall be backfilled with sand or graded stone aggregate to the subgrade line.

8.Dumped Rip-Rap will be provided at all end sections, to produce a surface of approximate regularity. The finished surface shall not vary by more than 9 inches and the depth of Rip-Rap shall not be less than 12 inches nor more than 24 inches.

9. All sewers shall be laid at least 10 feet (3.0m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. All sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (46 cm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be designed and constructed equal to water pipe.

10. The Contractor is responsible for the preparation of "As Built" construction drawings showing actual sizes and lengths of pipe installed (i.e. from manhole to manhole or tee to valve, etc.), location of service taps and any structures added or omitted in comparison with these engineering plans. The Contractor shall supply the Developer (through the Project Engineer) with one set of reproducible original "As-Built" and shall supply the Town of Munster with 2 copies thereof prior to and as a condition of final acceptance.

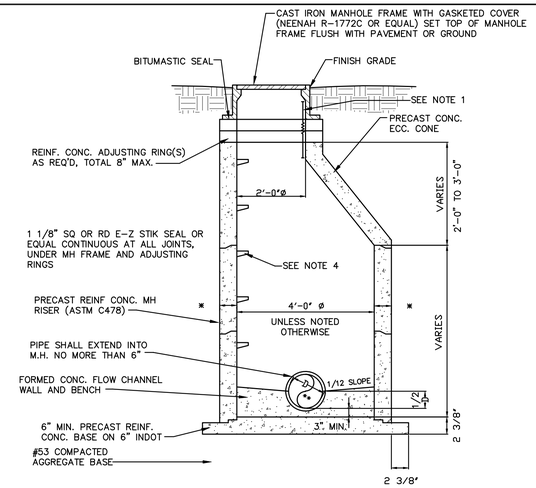
11. No storm sewer manhole, catch basin and inlet shall be within eight (8) feet of a water main as measured from the outside edge of the storm sewer manhole, catch basin and inlet to the outside edge of the water main.

CURB NOTE:
1. Concrete Curb and Gutter shall be constructed in accordance with the state specifications except as herin modified.

a) Expansion joints shall be 3/4" in thickness, using premolded joint filler material and two 3/4" diameter smooth round dowel bars 30" long fully greased, placed in pairs at the ends of all radii, at roadway intersections, at the junction of new and existing curb, at all cold joints, at a minimum 40' interval between said radii locations.

b) Said dowel shall be placed so that half their length is in either side of the joint. On the same end of each bar, there shall be placed a plastic, premolded expansion tip, which will allow lateral and expansion movement. The dowel bars shall be placed such that they shall be encased in concrete, a minimum of 3" in any direction.

INFRASTRUCTURE NOTE:
1. All infrastructures being constructed shall be in accordance with the Town of Munster Proposed Infrastructure Specifications. Any difference Munster's Specification and these engineering drawings shall be brought to the attention of the Engineer immediatelty for review.



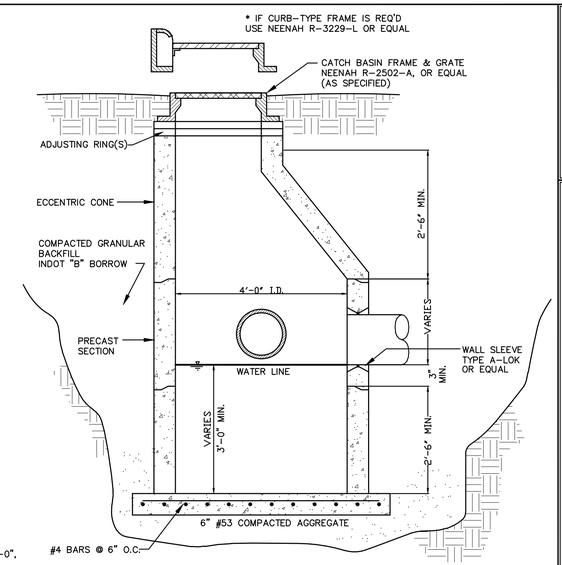
* MANHOLE WALL THICKNESS TABLE

MH I.D.	WALL THICKNESS
48"	5"
60"	6"
72"	7"

NOTES:
1. INTERNAL MH FRAME-CHIMNEY SEAL AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS OR EQUAL REQ'D FOR ALL MANHOLES IN PAVED AREAS ONLY.
2. WHERE DEPTH FROM TOP OF CASTING TO INVERT IS LESS THAN 5'-0", USE FLAT TOP MANHOLE TYPE "C" IN LIEU OF ECCENTRIC CONE
3. WATERTIGHT SEAL IS REQ'D BETWEEN PRECAST RISER AND SEWER PIPE, TYPE A-LOK OR EQUAL.
4. COPOLYMER/STEEL MH STEPS AS MANUFACTURED BY M.A. INDUSTRIES, INC., OR EQUAL, AT 16" O.C.
** FOR PIPE SIZES RANGING FROM 8" TO 30" IN DIAMETER.

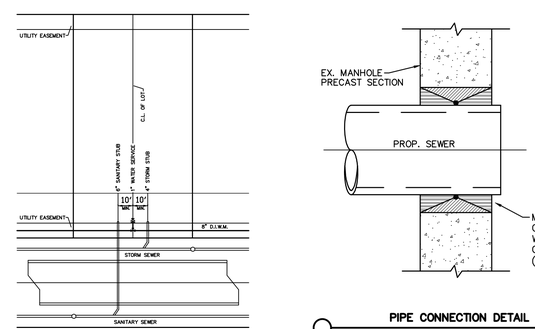
SANITARY TYPE "A" MANHOLE

NOT TO SCALE



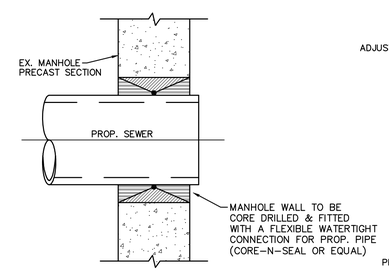
TYPE "A" CATCH BASIN

NOT TO SCALE



TYPICAL UTILITY SERVICE DETAIL

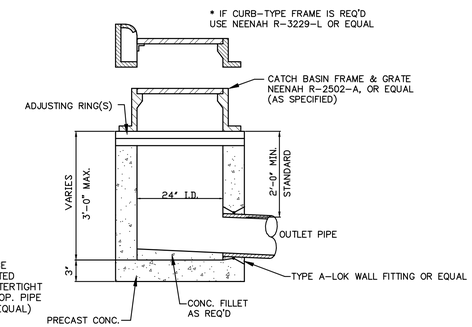
NOT TO SCALE



PIPE CONNECTION DETAIL

TO EXISTING MANHOLE

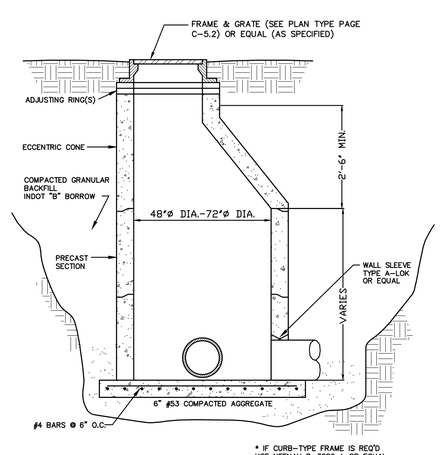
NOT TO SCALE



NOTES:
1. ALL CATCH BASINS SHALL BE CONSTRUCTED WITH PRECAST REINFORCED CONCRETE RISERS 5" THICK.

STANDARD INLET

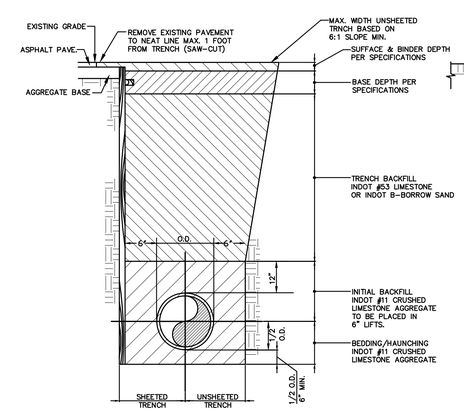
NOT TO SCALE



* IF CURB-TYPE FRAME IS REQ'D USE NEENAH R-3229-L OR EQUAL

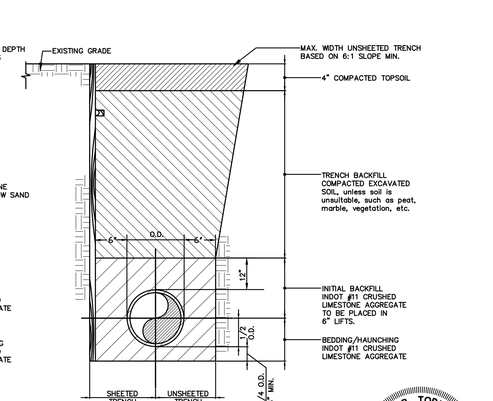
STORM MANHOLE

NOT TO SCALE



PIPE BEDDING DETAIL
FOR TRENCH IN PAVED AREAS

NOT TO SCALE



PIPE BEDDING DETAIL
FOR TRENCH IN GRASS AREAS

NOT TO SCALE

QARY P. TORRENGA
REGISTERED
No. 18376
STATE OF INDIANA
PROFESSIONAL ENGINEER

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8818 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4
TO THE TOWN OF MUNSTER, INDIANA
PRELIMINARY PLAN
STANDARD DETAILS & SPECIFICATIONS

REVISIONS:
DATE: 07-18-2016

CLIENT:
Blackhall Corporation
2716 South Chicago Road
Chicago Heights, Illinois 60411

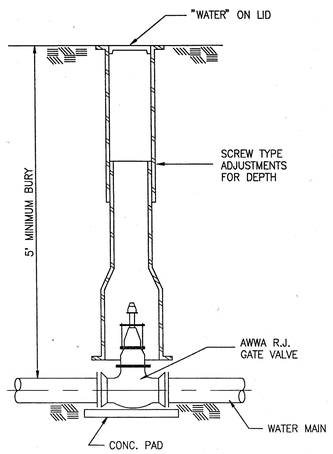
JOB NO: 2016-5038

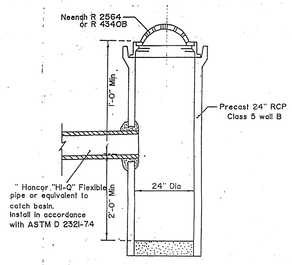
SCALE: NTS

SHEET
C-5.0

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 Details.dwg 7/19/2016 9:26:23 AM CDT

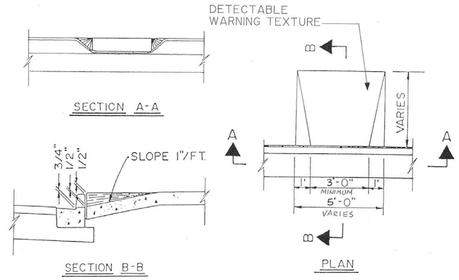
MAIN LINE WATER VALVE 10" or smaller



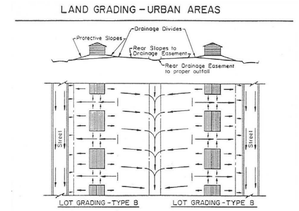


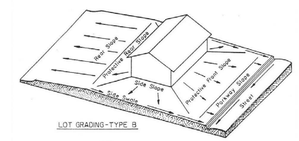
SPECIAL PIPE CATCH BASIN
for drainage swale & rear yard drains

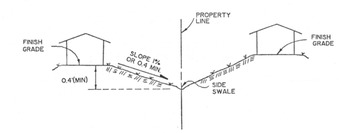
NOTE: Min. 2' compaction limit around all precast concrete structures.
All grout shall be non-shrinking, Portland Cement grout as approved by the Engineer.



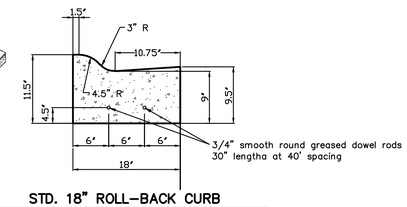
STANDARD WHEELCHAIR RAMP DETAIL
NOT TO SCALE





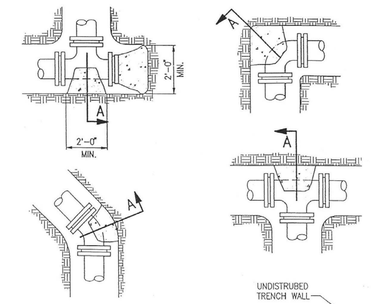


TYPICAL SIDE YARD GRADING DETAIL
(UNLESS SPECIFIED OTHERWISE ON PLANS)

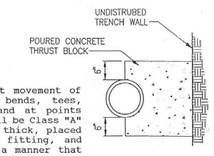


STD. 18" ROLL-BACK CURB
NOT TO SCALE

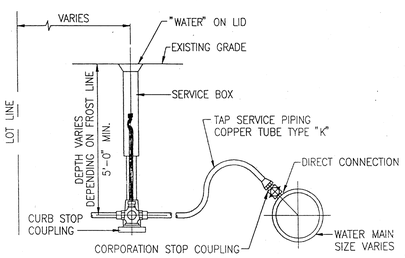
THRUST BLOCK INSTALLATIONS



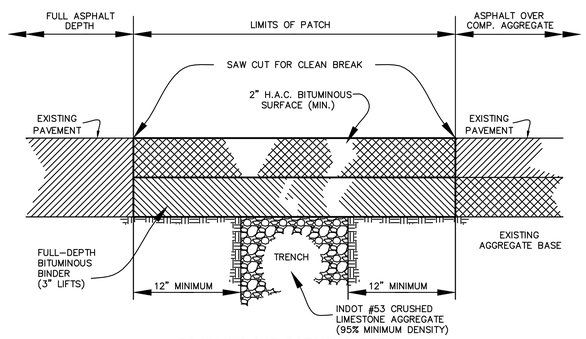
Thrust blocking to prevent movement of lines under pressure at bends, tees, caps, valves, hydrants, and at points specified by Engineer, shall be Class "A" concrete a minimum of 12" thick, placed between solid ground and fitting, and will be anchored in such a manner that pipe and fitting will be accessible for repairs. Thrust block shall be placed at bends of 11 1/4 degree.



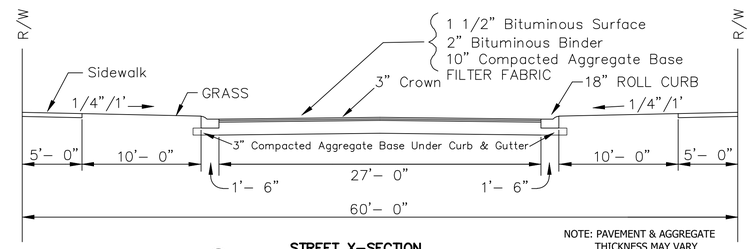
SECTION A



TYPICAL TAP SERVICE PIPING
(COPPER)



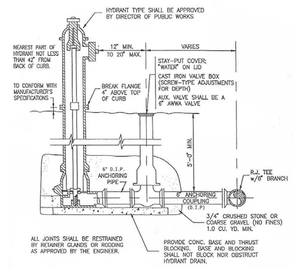
ROADWAY CUT PATCHING DETAIL
NOT TO SCALE

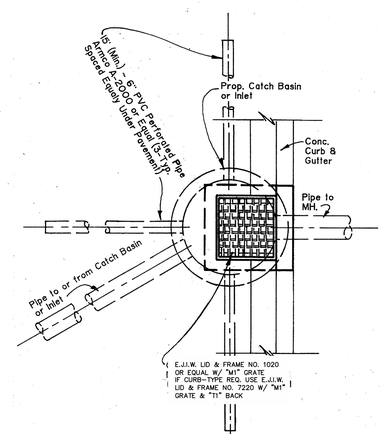


STREET X-SECTION
NOT TO SCALE

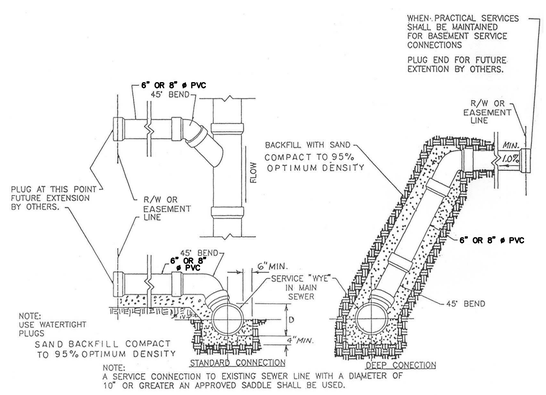
NOTE: PAVEMENT & AGGREGATE THICKNESS MAY VARY DEPENDING ON CBR SOIL TESTING RESULTS.

FIRE HYDRANT ASSEMBLY





STANDARD PLAN
(CATCH BASIN OR INLET)



NOTE:
A SERVICE CONNECTION TO EXISTING SEWER LINE WITH A DIAMETER OF 10" OR GREATER AN APPROVED SADDLE SHALL BE USED.

SERVICE CONNECTION DETAILS
NOT TO SCALE

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8818 website: www.torrenga.com

WEST LAKES ADDITION - PHASE 4
TO THE TOWN OF MUNSTER, INDIANA
PRELIMINARY PLAN
STANDARD DETAILS & SPECIFICATIONS

REVISIONS:
DATE: 07-18-2016

CLIENT:
Blackhall Corporation
2716 South Chicag Road
Chicago Heights, Illinois 60411

JOB NO: 2016-5038
SCALE: NTS

GARY P. TORRENGA REGISTERED No. 18376 STATE OF INDIANA PROFESSIONAL ENGINEER

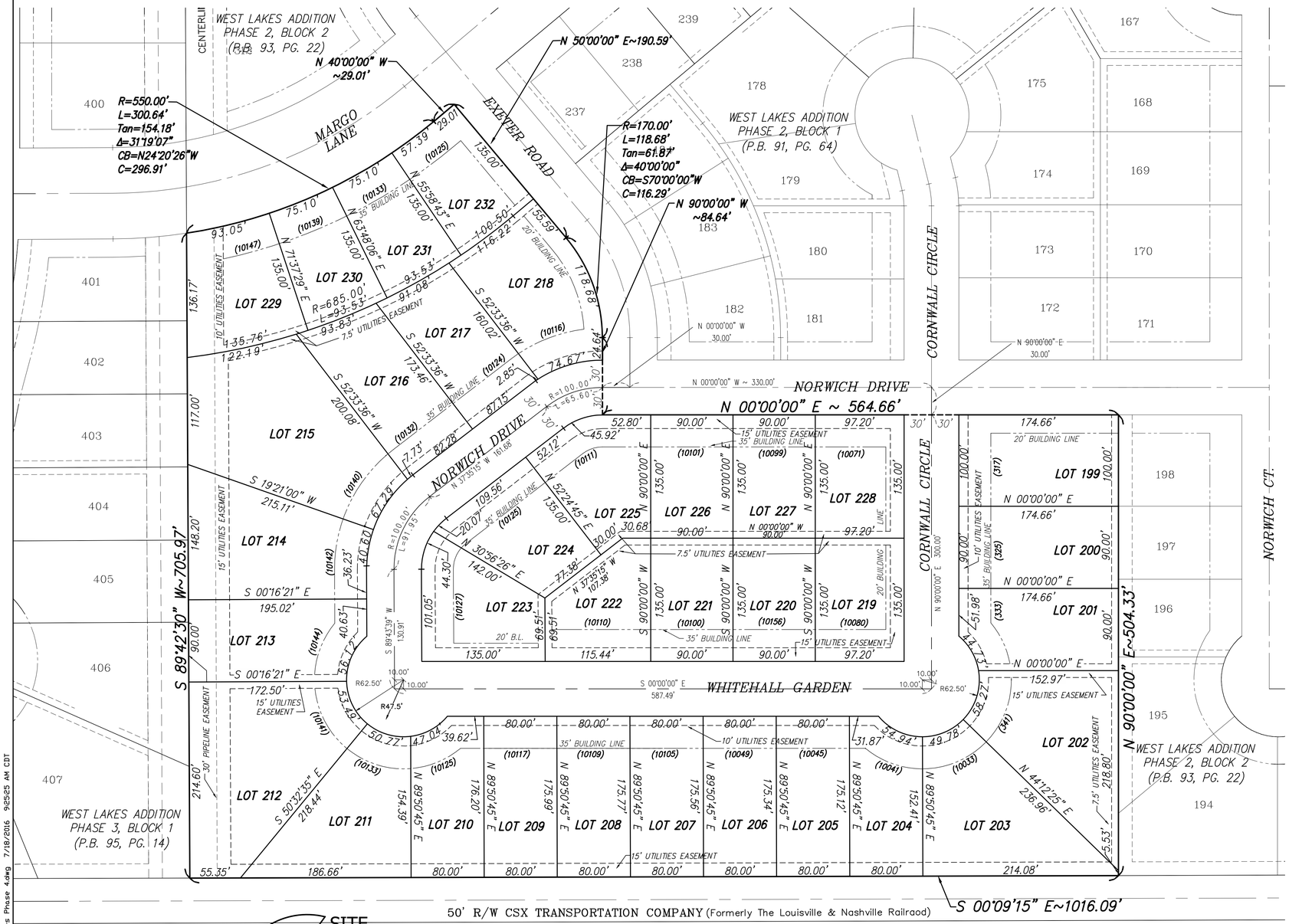
SHEET
C-5.1

FILE NO: Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 Details.dwg 7/18/2016 9:26:23 AM CDT

WEST LAKES ADDITION - PHASE 4

TO THE TOWN OF MUNSTER, LAKE COUNTY, INDIANA

LEGAL DESCRIPTION: OUTLOT A, WEST LAKES ADDITION PHASE 2 BLOCK 1, TO THE TOWN OF MUNSTER, AS SHOWN IN PLAT BOOK 91, PAGE 64, IN THE OFFICE OF THE RECORDER, LAKE COUNTY INDIANA.



STATE OF INDIANA)
) §
COUNTY OF _____)

It, the undersigned, _____, Trust, owner of the real estate shown and described hereon, does hereby certify that it has laid off, platted and subdivided, and does hereby lay off, plat and subdivide said real estate in accordance with the plat hereon. This subdivision shall be known and designated as WEST LAKES ADDITION - PHASE 4, to the Town of Munster, Lake County, Indiana.

Dated this _____ day of _____, 20_____.

_____

_____
By:
Title:

_____
By:
Title:

STATE OF INDIANA)
) §
COUNTY OF _____)

Before me, the undersigned Notary Public, in and for the County and State aforesaid, personally appeared _____ and _____, on behalf of the _____, personally known to me to be the same persons who signed the certificate hereon, who acknowledged that they signed and delivered the said instrument as their free and voluntary acts for the uses and purposes herein set forth.

Witness my hand and Notarial Seal this _____ day of _____, 20_____.

My Commission Expires: _____ _____

County of Residence: _____ Notary Public

STATE OF INDIANA)
) §
COUNTY OF LAKE)

Submitted to, approved and accepted by the Plan Commission of the Town of Munster, Lake County, Indiana, this _____ day of _____, 20_____.

PLAN COMMISSION OF THE TOWN OF MUNSTER, LAKE COUNTY, INDIANA.

_____ ATTEST:_____
Chairman: Executive Secretary:

STATE OF INDIANA)
) §
COUNTY OF LAKE)

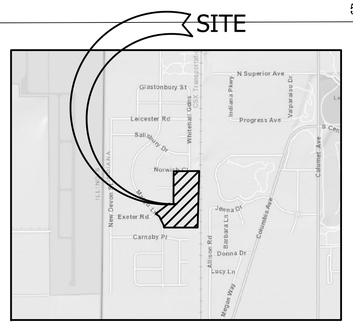
I, Gary P. Torrenga, hereby certify that I am a Registered Professional Land Surveyor licensed under the Laws of the State of Indiana; that I have prepared this document in accordance with a survey of the land performed by John Stuart Allen, L.S. # 20000205 and subdivided same as shown on the plat hereon drawn; that this plat correctly represents said survey and that all dimensions, linear and angular are correctly shown, and that all monuments or markers shown thereon actually exist, and that their locations, size, type and description are accurately shown.

Witness my hand and Seal this _____ day of _____, 20_____.

TORRENGA ENGINEERING, INC.

_____
Gary P. Torrenga - Registered L.S. #S0514

GARY P. TORRENGA REGISTERED No. S0514 STATE OF INDIANA LAND SURVEYOR



VICINITY MAP

NOT TO SCALE

NORTH

FLOOD STATEMENT:
As per the National Flood Insurance Rate Map, Community-Panel Number 18089C0119E, Effective Date January 18, 2012, shown site appears to be in Zone "X-Shaded", areas of 0.2 % annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

UTILITY EASEMENTS:
An easement is hereby granted to the Town of Munster, Indiana, SBC, AT&T, Northern Indiana Public Service Company and other companies identified by the Munster Town Board as supplying public service needs severally and their respective successors and assigns to install, lay, erect, construct, renew, operate, repair, replace and maintain sewers, water mains, gas mains, conduits, cables, poles and wires, underground with all necessary braces, guys, anchors and other appliances, in, upon, along and over the strip or strips of land designated by dotted lines on the plat and marked " easements for public utilities" for the purpose of serving the public in general with sewer, water, gas, electric, telephone and television service, including aerial right as to streets where necessary with aerial service wires to adjacent lots, together with the right to enter upon the said easements for public utilities at all times for any and all of the purposes aforesaid and to trim and keep trimmed any trees, shrubs, or saplings that interfere with any such utility equipment. Any fences, trees, black toppings, vegetation improvements or other potential obstacles to the use of easements shown upon the subdivision plat shall be placed at the risk of the property owner and may be subject to removal in the event of any interference with the use of said easements or drainage of other lots. Changes of yard elevations in easements from those established upon the subdivision plat or noted on plats submitted and approved when building permits are issued that adversely impact drainage of adjoining lots shall be subject to regrading at the owner's expense. All designated utility easements are also hereby dedicated as drainage easements.

NORTH

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

TORRENGA ENGINEERING, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
907 RIDGE ROAD, MUNSTER, INDIANA 46321
Tel. No.: (219) 836-8918 website: www.torrenga.com

WEST LAKES ADDITION – PHASE 4
TO THE TOWN OF MUNSTER
LAKE COUNTY, INDIANA
FINAL PLAT

REVISIONS:
DATE: 07-18-2016

CLIENT:
Blackhall Corporation
2716 S. Chicago Road
South Chicago Heights, IL 60411

JOB NO: 2016-5038
SCALE: 1" = 60'

SHEET
1 OF 1

FILE NO:Z:\2016-5038 West Lakes Phase 4\dwg\2016-5038 West Lakes Phase 4.dwg 7/18/2016 9:25:25 AM CDT