



**Interstate Warehouse
Miscellaneous Site Improvements
Franklin, Indiana
Drainage Report**

Original Submittal – February 17, 2015

Kimley»»Horn

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1.0. Project Summary

Project Name: Interstate Warehouse Miscellaneous Improvements
Location: 700 Bartram Parkway, Franklin, Indiana
Type: Drainage Report
Reviewing Agency: City of Franklin Technical Review Committee
Detention Policy: Johnson County – Existing detention provided
Water Quality: Johnson County – Existing stormwater treatment provided
Storm Sewer Modeling: Rational Method

Design:

Water Quality: Existing forebay and wet detention ponds
Receiving Body: Site will outfall to existing detention basins located at the east and south sides of the site. Detention from the site outfalls to the southeast into an existing legal drain.

2.0. Introduction

Kimley-Horn and Associates, Inc. has been retained by Tippmann Group to prepare construction documents and provide civil engineering services for the proposed Interstate Warehouse Miscellaneous Site Improvements (Project) in Franklin, Indiana. The Project includes the development of 12 acres of an existing industrial property at the south end of 700 Bartram Parkway in Franklin, Indiana. The improvements include the addition of truck entrance and exit lanes and a building addition at the northeast corner of the existing warehouse facility. This Drainage Report focuses on the existing and proposed conditions onsite and provides supporting calculations for storm drain system sizing based on City requirements. The master drainage system was designed by The Schneider Corporation. Drainage calculations from the Interstate Warehousing Phases IV-VI by The Schneider Corporation approved on September 27, 2012 and also calculations from the Interstate Warehouse Facility Drainage Report by American Structurepoint dated July 3, 2012 were used to confirm storm sewer calculations.

3.0. Pre- and Post-development Conditions

Runoff from the proposed site will be detained by the existing dry detention ponds on the east and south sides of the site. The existing ponds were designed with the capacity and treatment volume for the proposed improvements.

The proposed improvements modify storm sewer basins for structures 2, 3, 4, 5 and 6 shown in the Existing and Proposed Drainage Conditions exhibits in Appendix C and Appendix D. The northern truck drive improvements add impervious surface to basins 2, 3 and 4 which are connected to the same storm sewer system that outlets east to the existing wet detention basin. This system was designed with an additional 8.57 cfs capacity during the 10-year storm event as shown in the Drainage Report by American Structurepoint dated July 3, 2012.

The improvements for the building addition at the northeast corner of the warehouse facility modify basins for two separate storm sewer systems. The systems were analyzed at the downstream structure past the disturbed area. The proposed and existing runoff was compared at structure 5 for the system that discharges to the north. Runoff for the system that discharges to the east was analyzed in the existing and proposed condition at structure 6. Only the disturbed area was accounted for in basin 5 to compare the increase or decrease in runoff from the proposed improvements.

The following table summarizes the release rates for the site.

Inlet Structure	Area (ac)	Rational C ^a			Inlet Time of Conc. (min)	Intensity (10y24h) (in/hr)	Qp (10yr24hr) (cfs)
		Pavement/Roof 0.90	Landscaping 0.30	Composite			
EX2	0.44	0.40	0.04	0.85	5.00	6.99	2.60
EX3	0.69	0.60	0.09	0.82	5.00	6.99	3.96
EX4	0.80	0.43	0.37	0.62	5.00	6.99	3.48
EX5	0.70	0.52	0.18	0.75	5.00	6.99	3.65
EX6	0.46	0.02	0.44	0.33	5.00	6.99	1.05
PRO2	0.49	0.45	0.04	0.85	5.00	6.99	2.91
PRO3	0.88	0.79	0.09	0.84	5.00	6.99	5.16
PRO4	0.89	0.52	0.37	0.65	5.00	6.99	4.05
PRO5	0.80	0.39	0.42	0.60	5.00	6.99	3.33
PRO6	0.36	0.15	0.23	0.57	5.00	6.99	1.43

Of the 8.57 cfs of extra capacity in the system for structures 2 through 4, only 2.08 cfs of capacity is needed to convey the added runoff from this project. The remaining 6.49 cfs of capacity can be used for future improvements if needed.

Runoff to structure 5 will decrease by 0.32 cfs due to a decrease in pavement.

Runoff to structure 6 will only increase by 0.38 cfs due to an increase in impervious roof area to the basin. The downstream 15" pipe at 0.46% has capacity for 4.38 cfs so the pipe can adequately convey the 10-year storm event of 1.43 cfs from basin 6.

The existing 42" pipe is currently large enough to convey the 100-year storm event from the 6.43 acre basin that makes its way toward the low point at structure 5. However, to provide an emergency overflow in the event the inlets are clogged, a new 24" storm sewer line has been proposed to convey water to the pond. This will provide an emergency overflow for the site without flooding the entire parking lot.

Refer to Appendix D for storm sewer design calculations.

Aerial Photograph

An aerial photograph of the Project Site has been included in Appendix A for reference.

FEMA

The Project Site is located on the Flood Insurance Rate Map number 39099C0219D and resides within Zone "X", indicating it lies outside of the 500-year flood limits. See Appendix B for the FEMA FIRMette.

Soil Characteristics

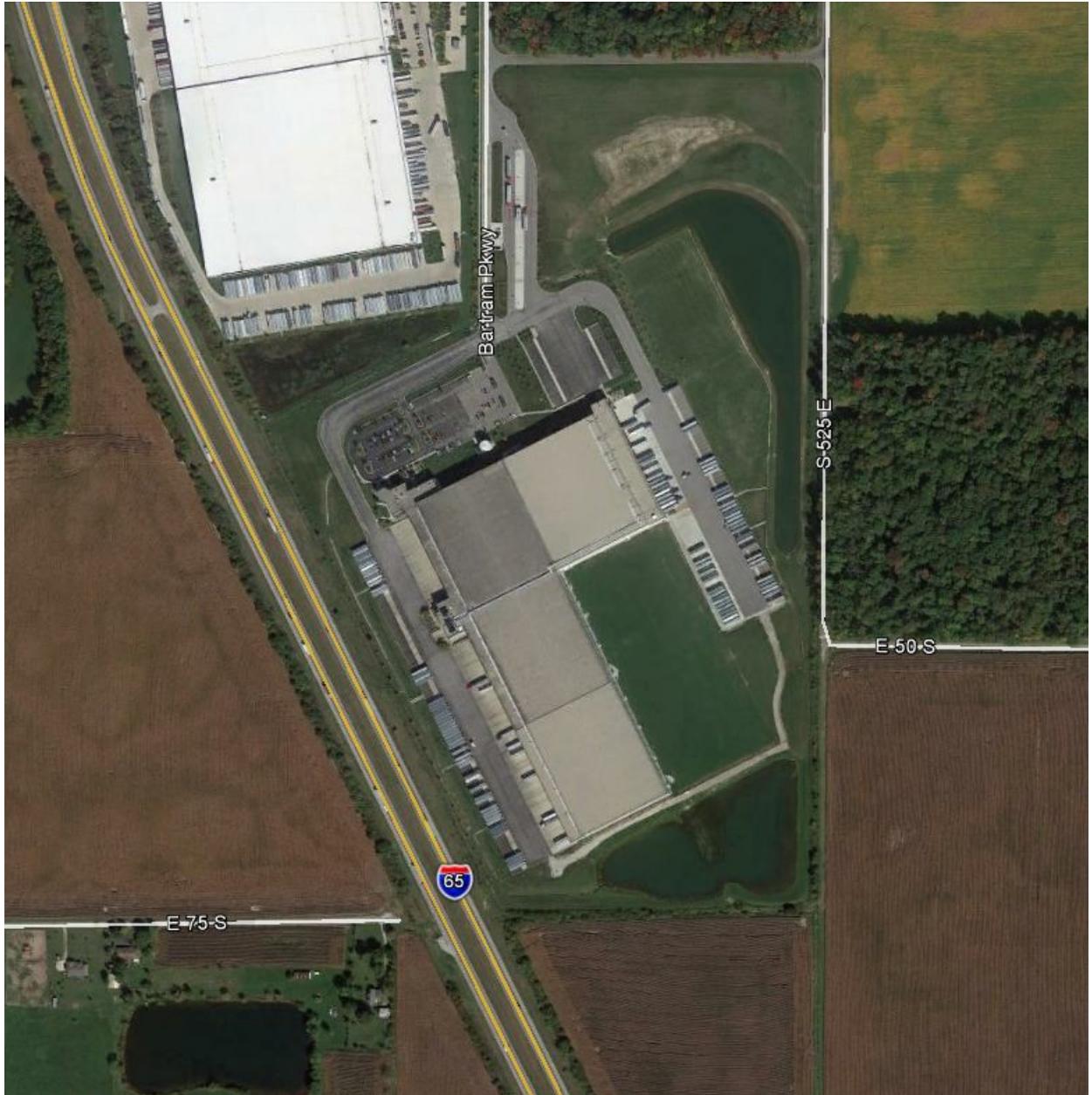
The Natural Resources Conservation Service (NRCS) Web Soil Survey of Johnson County, Indiana, indicates Brookston silty clay loam, Crosby silt loam and Crosby-Miami silt loam onsite. Refer to Appendix B for a soil map.

4.0. Proposed Storm Water Quality

The existing forebays and wet detention ponds were master planned with additional capacity to treat runoff from the proposed improvements. Refer the master drainage reports by The Schneider Corporation and by American Structurepoint for calculations.

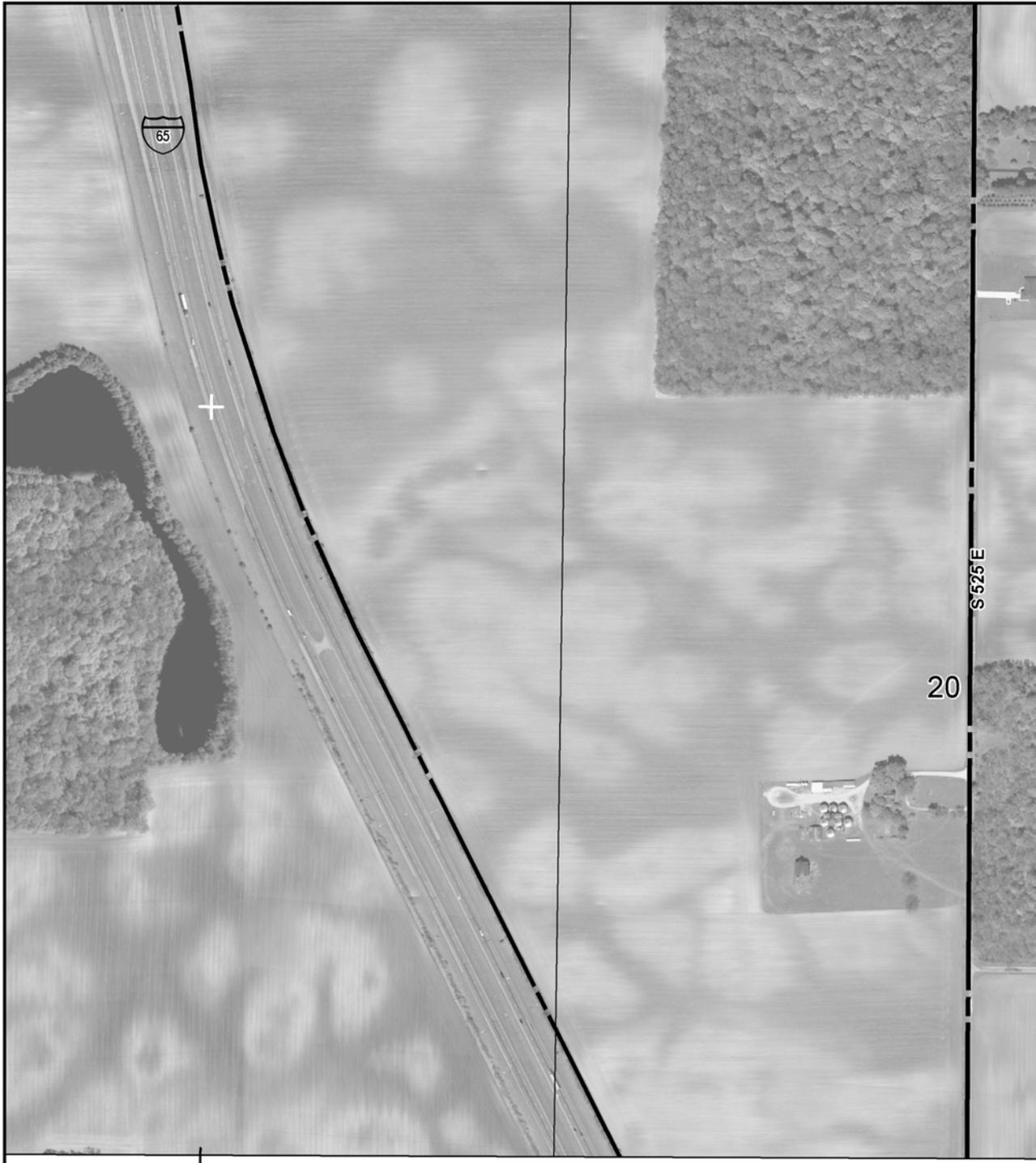
5.0 Appendices

Appendix A: Aerial Photography

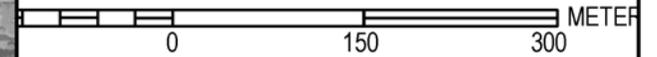
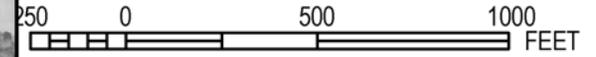


Project Site

Appendix B: FEMA Firmette and Soils Map



MAP SCALE 1" = 500'



NFIP

PANEL 0232D

FIRM

FLOOD INSURANCE RATE MAP
 JOHNSON COUNTY,
 INDIANA
 AND INCORPORATED AREAS

PANEL 232 OF 352
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	180114	0232	D
JOHNSON COUNTY	180111	0232	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



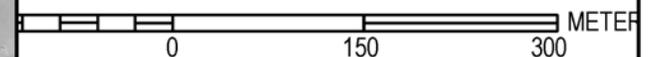
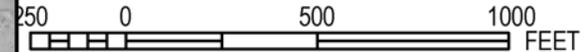
MAP NUMBER
 18081C0232D
EFFECTIVE DATE
 AUGUST 2, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 500'



NFIP

PANEL 0232D

FIRM
FLOOD INSURANCE RATE MAP
JOHNSON COUNTY,
INDIANA
AND INCORPORATED AREAS

PANEL 232 OF 352
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN, CITY OF	180114	0232	D
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18081C0232D
EFFECTIVE DATE
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Hydrologic Soil Group—Johnson County, Indiana



Map Scale: 1:3,720 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Johnson County, Indiana
 Survey Area Data: Version 22, Sep 16, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 17, 2011—Apr 9, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Johnson County, Indiana (IN081)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Br	Brookston silty clay loam, 0 to 2 percent slopes	B/D	13.5	40.2%
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	C/D	16.7	50.0%
CsB2	Crosby-Miami silt loams, 2 to 4 percent slopes, eroded	C/D	3.3	9.7%
Totals for Area of Interest			33.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

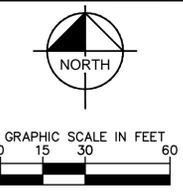
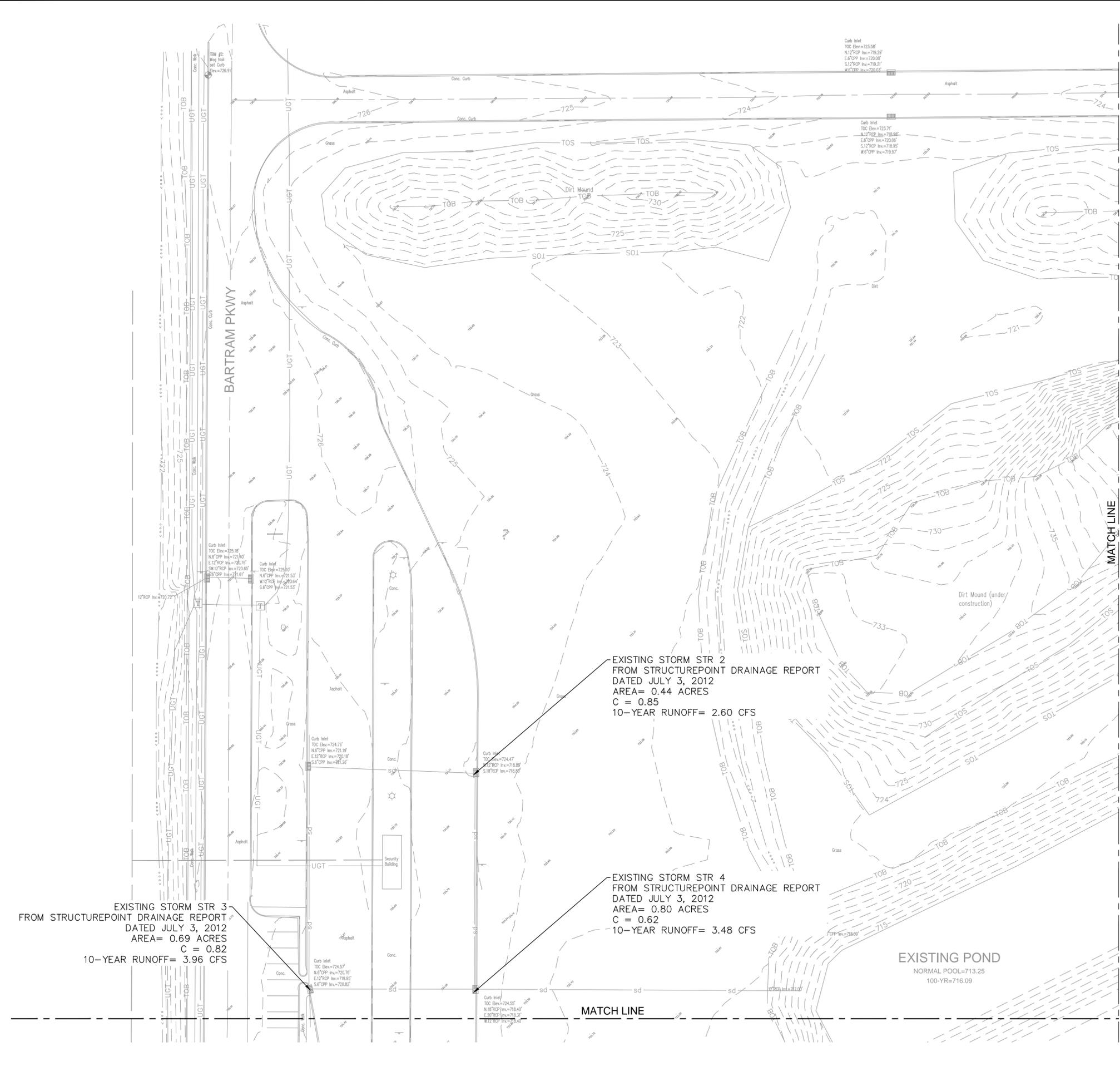
Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Appendix C: Existing Drainage Conditions Map

This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



SYMBOL LEGEND			
SEA GROUP MONUMENT SET	SSR	FIRE MAIN	GAS LINE MARKER
DOT "X" SET OR FOUND	LARGE SIGN	FIRE HYDRANT	GAS VALVE
BRASS PILE / COVER HEAD	UTILITY POLE	WATER METER	GAS METER
SURVEY MARKER FOUND	LIGHT POLE	WATER VALVE	TELEPHONE MARKER
PC OR WAC HALL FOUND	GROUND LIGHT	WATER WELL	TELEPHONE UTILITY
SECTION CORNER (AS NOTED)	ELECTRIC METER	REF-FIRE INLET	TELEPHONE LINE MARKER
BENCHMARK (AS NOTED)	ELECTRIC UTILITY	CURB INLET	SANITARY SINKER MARKER
RIGHT OF WAY MARKER	DECIDUOUS TREE	SEWER INLET	SANITARY SINKER MARKER
TRAFFIC SIGNAL POLE	EVERGREEN TREE	MANHOLE	STORM SINKER MARKER
AIR CONDITIONER	MAL BOX	AIR / VACUUM EQUIPMENT	CABLE UTILITY

FRANKLIN TAC SUBMITTAL	02/17/15	BA5
0		
No.		
REVISIONS		
DATE		
BY		

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 WWW.KIMLEY-HORN.COM



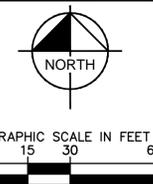
KHA PROJECT	166325200
DATE	02/17/2015
SCALE	AS SHOWN
DESIGNED BY	BAS
DRAWN BY	JT
CHECKED BY	KH

EXISTING DRAINAGE CONDITIONS

INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS
 700 BARTRAM PARKWAY, FRANKLIN, IN
 TIPPAMANN CONSTRUCTION GROUP
 9009 COLDWATER ROAD, FT. WAYNE, IN 46825



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SYMBOL LEGEND			
SEA GROUP MONUMENT SET	SOIL	FIRE MAIN	GAS LINE MARKER
DIT "Y" SET or FOUND	LARGE SOIL	FIRE HYDRANT	GAS VALVE
BRASS PLUG / COPPER WELD	UTILITY POLE	WATER METER	GAS METER
SURVEY MARKER FOUND	LIGHT POLE	WATER VALVE	TELEPHONE MANHOLE
PK or MAG NAIL FOUND	GROUND LIGHT	WATER WELL	TELEPHONE UTILITY
SECTION CORNER (NO NAILS)	ELECTRIC METER	RES-HUB INLET	TELEPHONE LINE MARKER
BOUNDARY (AS NOTED)	ELECTRIC UTILITY	CURB INLET	SANITARY SINKER MANHOLE
RIGHT OF WAY MARKER	DECIDUOUS TREE	DRAINAGE INLET	SANITARY SINKER MARKER
TRAFFIC SIGNAL POLE	EVERGREEN TREE	MANHOLE	STORM SEWER MARKER
AIR CONDITIONER	MAIL BOX	AIR / WINDOW EQUIPMENT	CABLE UTILITY

NO.	REVISIONS	DATE	BY
0			

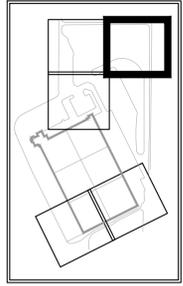
Kimley»Horn
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KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
166325200	02/17/2015	AS SHOWN	BAS	JT	KH

EXISTING DRAINAGE CONDITIONS

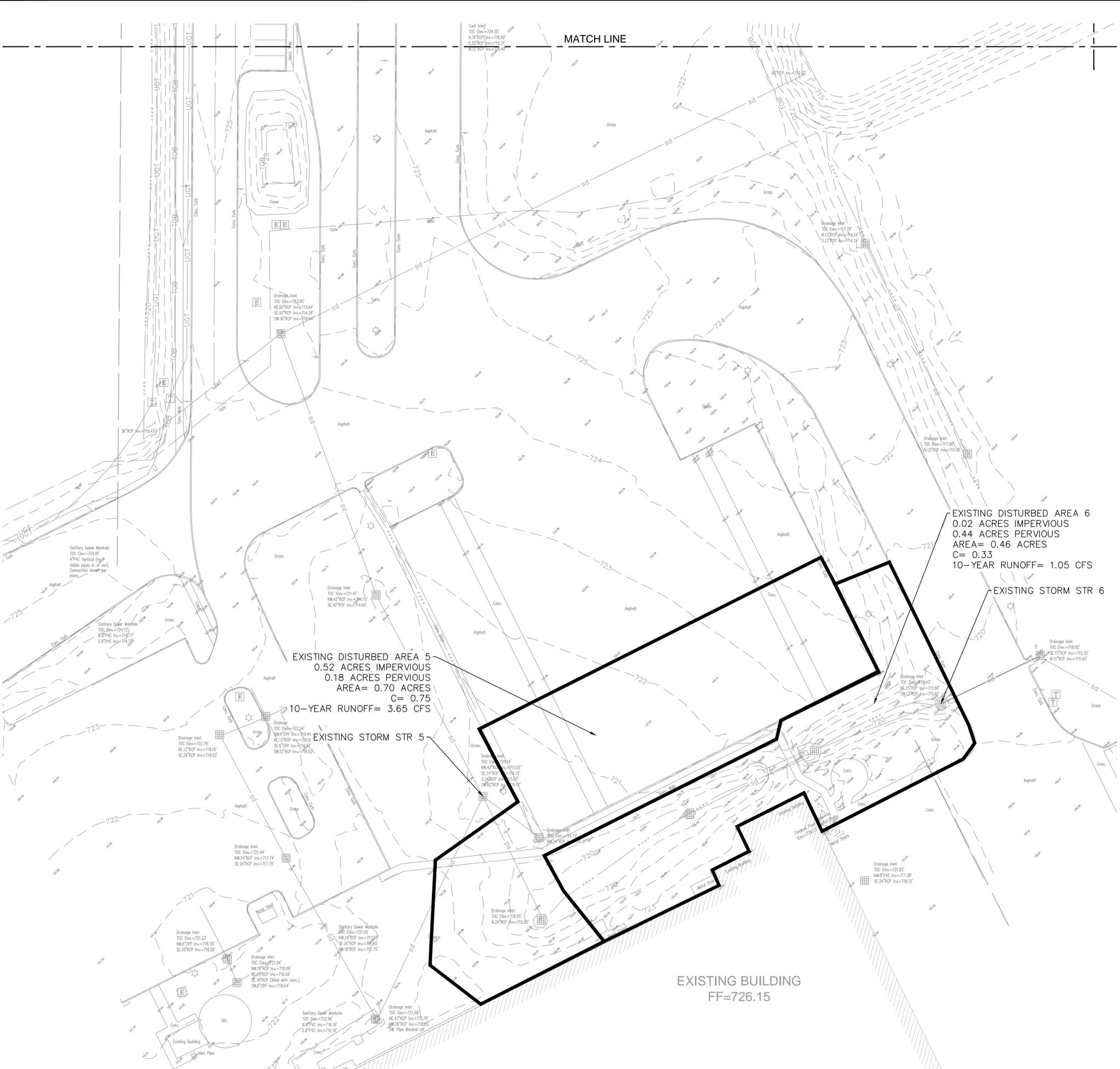
INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS
 700 BARTRAM PARKWAY, FRANKLIN, IN
 TIPPAMANN CONSTRUCTION GROUP
 9009 COLDWATER ROAD, FT. WAYNE, IN 46825



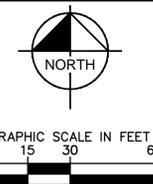
KEY MAP



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MATCH LINE

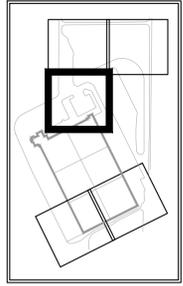


SYMBOL LEGEND			
SEA GROUP MONUMENT SET	SOIL	FIRE MAIN	GAS LINE MARKER
OUT "Y" SET or FOUND	LARGE SOIL	FIRE HYDRANT	GAS VALVE
BRASS PLUG / COPPER WELD	UTILITY POLE	WATER METER	GAS METER
SURVEY MARKER FOUND	LIGHT POLE	WATER VALVE	TELEPHONE MANHOLE
PK or MAG NAIL FOUND	GROUND LIGHT	WATER WELL	TELEPHONE UTILITY
SECTION CORNER (NO NAILS)	ELECTRIC METER	RES-HIGH INLET	TELEPHONE LINE MARKER
BOUNDARY (AS NOTED)	ELECTRIC UTILITY	CURB INLET	SANITARY SINK MANHOLE
RIGHT OF WAY MARKER	DECIDUOUS TREE	DRAINAGE INLET	SANITARY SINK MARKER
TRAFFIC SIGNAL POLE	EVERGREEN TREE	MANHOLE	STORM SEWER MANHOLE
AIR CONDITIONER	MAIL BOX	AIR / WINDOW EQUIPMENT	CABLE UTILITY

EXISTING DISTURBED AREA 6
 0.02 ACRES IMPERVIOUS
 0.44 ACRES PERVIOUS
 AREA= 0.46 ACRES
 C= 0.33
 10-YEAR RUNOFF= 1.05 CFS

EXISTING DISTURBED AREA 5
 0.52 ACRES IMPERVIOUS
 0.18 ACRES PERVIOUS
 AREA= 0.70 ACRES
 C= 0.75
 10-YEAR RUNOFF= 3.65 CFS

EXISTING BUILDING
 FF=726.15

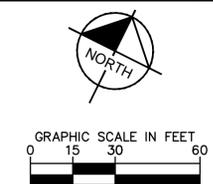


KEY MAP



<p>FRANKLIN TAC SUBMITTAL</p> <p>02/17/15 BAS</p>	<p>02/17/2015</p> <p>AS SHOWN</p> <p>DESIGNED BY: BAS</p> <p>DRAWN BY: JT</p> <p>CHECKED BY: KH</p>	<p>Kimley»Horn</p> <p>600 EAST 96TH STREET, SUITE 460 INDIANAPOLIS, INDIANA 46240 PHONE: 317-218-9580 WWW.KIMLEY-HORN.COM</p>	<p>BRYAN A. SHEW REGISTERED No. PE11474 PRELIMINARY STATE OF INDIANA PROFESSIONAL ENGINEER</p>	<p>PRELIMINARY NOT FOR CONSTRUCTION</p>	<p>EXISTING DRAINAGE CONDITIONS</p>	<p>INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS 700 BARTRAM PARKWAY, FRANKLIN, IN</p> <p>TIPPMANN CONSTRUCTION GROUP 9009 COLDWATER ROAD, FT. WAYNE, IN 46825</p>	<p>SHEET NUMBER EX.3</p>	<p>REVISIONS</p> <p>No. DATE BY</p>
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SYMBOL LEGEND			
SEA GROUP MONUMENT SET	IRON	FIRE MAIN	GAS LINE MARKER
OUT "Y" SET OF FOUND	LARGE SIGN	FIRE HYDRANT	GAS VALVE
BRASS PLUG / COPPER WELD	UTILITY POLE	WATER METER	GAS METER
SURVEY MARKER FOUND	LIGHT POLE	WATER VALVE	TELEPHONE MANHOLE
PK or MAG NAIL FOUND	GROUND LIGHT	WATER WELL	TELEPHONE UTILITY
SECTION CORNER (60 WYED)	ELECTRIC METER	RES-HUB INLET	TELEPHONE LINE MARKER
ROADMARK (60 WYED)	ELECTRIC UTILITY	CURB INLET	SANITARY SINK MARKER
RIGHT OF WAY MARKER	DECIDUOUS TREE	DRAINAGE INLET	SANITARY SINK MARKER
TRAFFIC SIGNAL POLE	EVERGREEN TREE	MANHOLE	STORM SEWER MARKER
AIR CONDITIONER	MAIL BOX	AIR / WINDOW EQUIPMENT	CABLE UTILITY

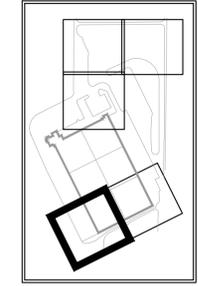
NO.	REVISIONS	DATE	BY
0			

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 PHONE: 317-218-9500
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PRELIMINARY NOT FOR CONSTRUCTION	
KHA PROJECT 166325200	DATE 02/17/2015
SCALE AS SHOWN	DESIGNED BY BAS
DRAWN BY JT	CHECKED BY KH

**EXISTING DRAINAGE
CONDITIONS**



KEY MAP



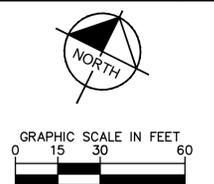
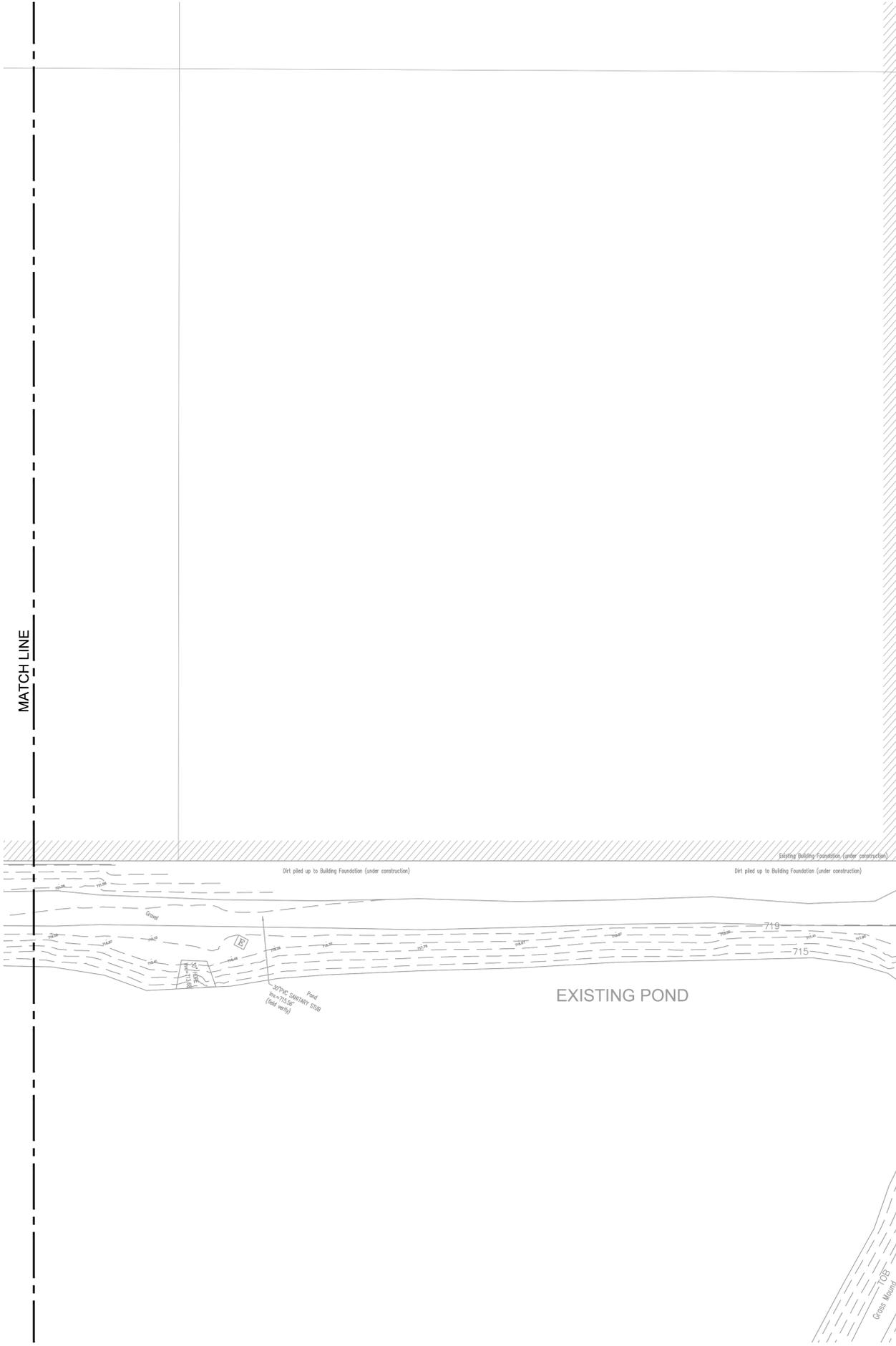
**INTERSTATE WAREHOUSING
MISC. SITE IMPROVEMENTS**
 700 BARTRAM PARKWAY, FRANKLIN, IN
 TIPPAMANN CONSTRUCTION GROUP
 9009 COLDWATER ROAD, FT. WAYNE, IN 46825

SHEET NUMBER
EX.4

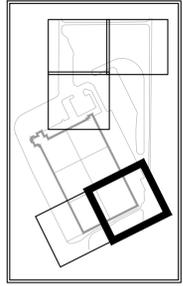
FRANKLIN TAC SUBMITTAL 02/17/15 BAS

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SYMBOL LEGEND			
SEA GROUP MONUMENT SET	IRON	FIRE MAIN	GAS LINE MARKER
OUT "Y" SET or FOUND	LARGE SIGN	FIRE HYDRANT	GAS VALVE
BRASS PLUG / COPPER WELD	UTILITY POLE	WATER METER	GAS METER
SURVEY MARKER FOUND	LIGHT POLE	WATER VALVE	TELEPHONE MANHOLE
PK or MAG NAIL FOUND	GROUND LIGHT	WATER WELL	TELEPHONE UTILITY
SECTION CORNER (NO NAILS)	ELECTRIC METER	RES-HIC INLET	TELEPHONE LINE MARKER
BOUNDARY (NO METES)	ELECTRIC UTILITY	CURB INLET	SANITARY SINKER MARKER
RIGHT OF WAY MARKER	DECIDUOUS TREE	DRAINAGE INLET	SANITARY SINKER MARKER
TRAFFIC SIGNAL POLE	EVERGREEN TREE	MANHOLE	STORM SEWER MARKER
AIR CONDITIONER	MAIL BOX	AIR / WINDOW EQUIPMENT	CABLE UTILITY



FRANKLIN TAC SUBMITTAL 02/17/15 BAS

02/17/15 BAS

600 EAST 96TH STREET, SUITE 460
 INDIANAPOLIS, INDIANA 46240
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PRELIMINARY
 NOT FOR CONSTRUCTION

KHA PROJECT
166325200

DATE
02/17/2015

SCALE AS SHOWN

DESIGNED BY BAS

DRAWN BY JT

CHECKED BY KH

**EXISTING DRAINAGE
 CONDITIONS**

INTERSTATE WAREHOUSING
 MISC. SITE IMPROVEMENTS
 700 BARTRAM PARKWAY, FRANKLIN, IN

TIPPMANN CONSTRUCTION GROUP
 9009 COLDWATER ROAD, FT. WAYNE, IN 46825

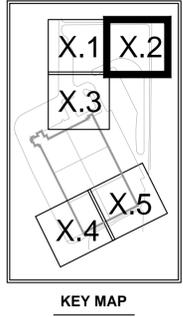
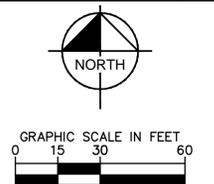
SHEET NUMBER
EX.5

REVISIONS

DATE BY

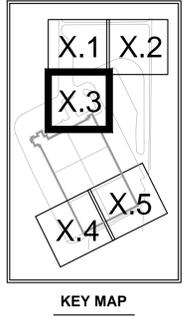
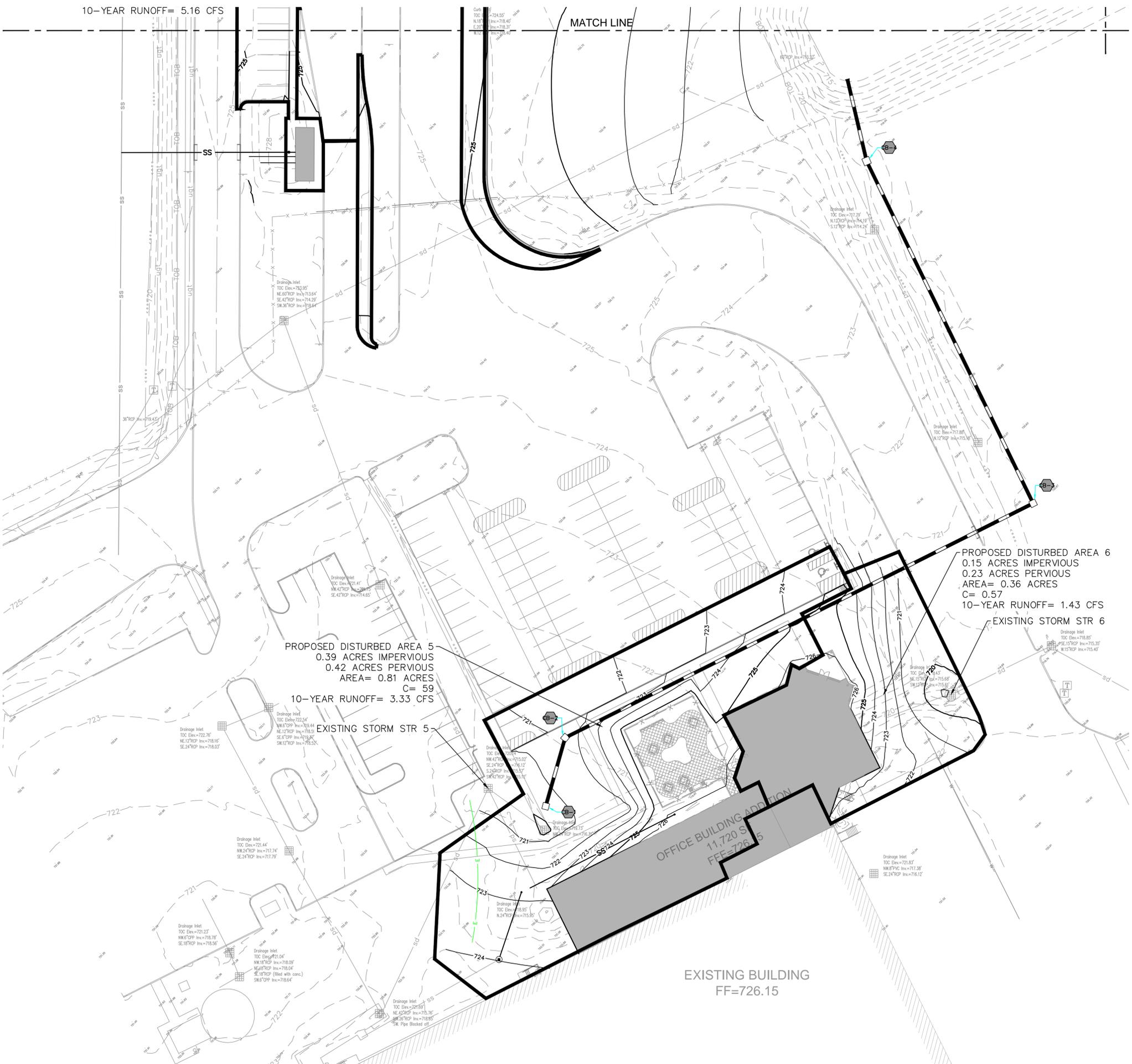
Appendix D: Proposed Drainage Conditions Map

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



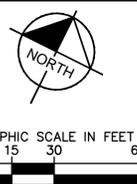
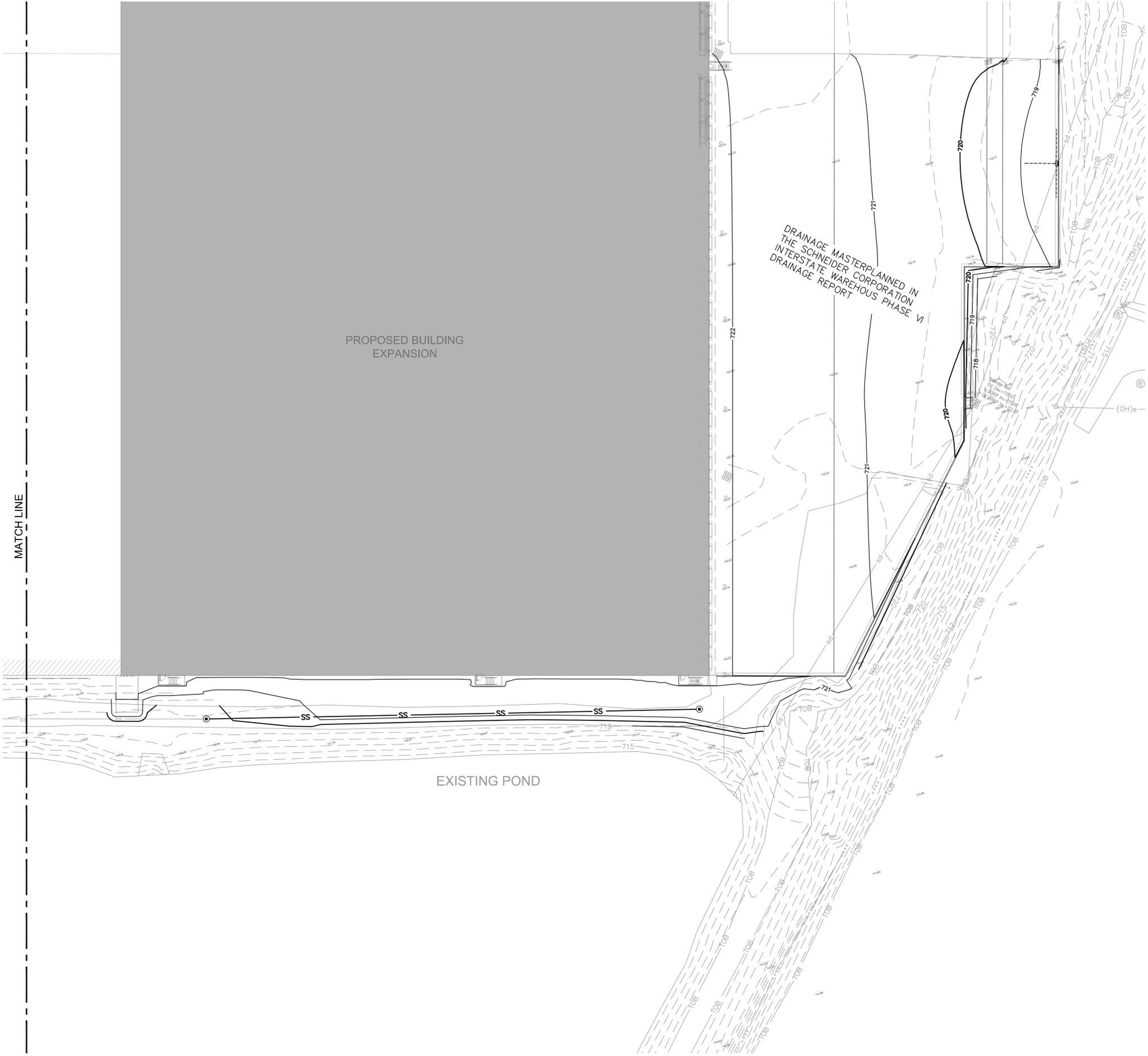
KHA PROJECT 166325200	DATE 02/17/2015	SCALE AS SHOWN	DESIGNED BY BAS	DRAWN BY JT	CHECKED BY KH	<p>PRELIMINARY</p> <p>NOT FOR CONSTRUCTION</p>		<p>Kimley»Horn</p> <p>600 EAST 96TH STREET, SUITE 460 INDIANAPOLIS, INDIANA 46240 PHONE: 317-218-9580 WWW.KIMLEY-HORN.COM</p>	02/17/15 BAS
									FRANKLIN TAC SUBMITTAL
<p>INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS 700 BARTRAM PARKWAY, FRANKLIN, IN</p>								<p>PROJ. NO. 2015</p>	
<p>EXISTING POND NORMAL POOL-713.25 100-YR=716.09</p>								<p>REVISIONS</p>	
<p>KEY MAP</p>								<p>DATE</p>	
<p>INDIANA 811 WWW.INDIANA811.ORG Know what's below. Call before you dig.</p>								<p>BY</p>	

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Kimley»Horn 600 EAST 96TH STREET, SUITE 460 INDIANAPOLIS, INDIANA 46240 PHONE: 317-278-9580 WWW.KIMLEY-HORN.COM	PRELIMINARY NOT FOR CONSTRUCTION	BRYAN A. SHEW REGISTERED No. PE1147 STATE OF INDIANA PROFESSIONAL ENGINEER	KHA PROJECT 168325200	DATE 02/17/2015	SCALE AS SHOWN	DESIGNED BY BAS	DRAWN BY JT	CHECKED BY KH	SHEET NUMBER PRO.3	INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS 700 BARTRAM PARKWAY, FRANKLIN, IN TIPPAMANN CONSTRUCTION GROUP 9009 COLDWATER ROAD, FT. WAYNE, IN 46825	PROPOSED DRAINAGE CONDITION	FRANKLIN TAC SUBMITTAL 02/17/15 BAS	REVISIONS No. DATE BY
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This document, together with the concepts and designs presented herein, is an instrument of service, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

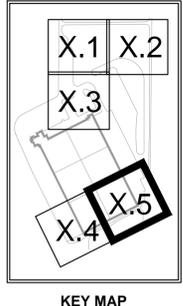


- ### GRADING NOTES
1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
 2. ALL PAVEMENT SPOT GRADE ELEVATIONS AND RIM ELEVATIONS WITHIN OR ALONG CURB AND GUTTER REFER TO EDGE OF PAVEMENT ELEVATIONS UNLESS OTHERWISE NOTED.
 3. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
 4. NO EARTHEN SLOPE SHALL BE GREATER THAN 3:1, UNLESS OTHERWISE NOTED.
 5. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
 6. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES UNLESS OTHERWISE NOTED.
 7. WHEN NATURAL FLOW OF DRAINAGE IS AWAY FROM CURB, CONTRACTOR TO INSTALL REVERSE GUTTER PITCH.
 8. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.

GRADING LEGEND

— 620 —	PROPOSED CONTOUR
— RIDGE —	RIDGE LINE
— — —	LIMITS OF GRADING
X.XXX	SLOPE AND FLOW DIRECTION
ME	MATCH EXISTING GRADE
FF	FINISHED FLOOR ELEVATION
R	RIM ELEVATION
FL	FLOWLINE
HP	HIGH POINT

FLOOD NOTE:
THE SITE IS NOT LOCATED WITHIN AN AREA IMPACTED BY THE 100-YEAR FLOOD PER FIRM MAP PANEL FM18059C0109E, DATED MARCH 17, 2014.



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<p>BRYAN A. SHEW REGISTERED No. PE14170 PRELIMINARY STATE OF INDIANA PROFESSIONAL ENGINEER</p> <p>PRELIMINARY NOT FOR CONSTRUCTION</p>	
<p>KHA PROJECT: 168325200 DATE: 02/17/2015 SCALE: AS SHOWN DESIGNED BY: BAS DRAWN BY: JT CHECKED BY: KH</p>	
<p>PROPOSED DRAINAGE CONDITION</p>	
<p>INTERSTATE WAREHOUSING MISC. SITE IMPROVEMENTS 700 BARTRAM PARKWAY, FRANKLIN, IN TIPPMANN CONSTRUCTION GROUP 9009 COLDWATER ROAD, FT. WAYNE, IN 46825</p>	
<p>SHEET NUMBER PRO.5</p>	

Appendix E: Storm Sewer Design Calculations



Client:	Tippmann Group	Date:	02/16/15
Project:	IWI Miscellaneous Site Improvements	Prepared By:	JT
KHA #:	1683252000	Checked By:	

Title:	Sub-Watershed Characteristics	Sheet	1
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Project Specific Sub-Watersheds:

Inlet Strc	Area (ac)	Rational C ^a			Inlet Time of Conc. (min)	Intensity (10y24h) (in/hr)	Qp (10yr24hr) (cfs)
		Pavement/Roof	Landscaping	Composite			
		0.90	0.30				
EX2	0.44	0.40	0.04	0.85	5.00	6.99	2.60
EX3	0.69	0.60	0.09	0.82	5.00	6.99	3.96
EX4	0.80	0.43	0.37	0.62	5.00	6.99	3.48
EX5	0.70	0.52	0.18	0.75	5.00	6.99	3.65
EX6	0.46	0.02	0.44	0.33	5.00	6.99	1.05
PRO2	0.49	0.45	0.04	0.85	5.00	6.99	2.91
PRO3	0.88	0.79	0.09	0.84	5.00	6.99	5.16
PRO4	0.89	0.52	0.37	0.65	5.00	6.99	4.05
PRO5	0.80	0.39	0.42	0.60	5.00	6.99	3.33
PRO6	0.36	0.15	0.23	0.57	5.00	6.99	1.43