



CITY OF WESTFIELD, IN
Board of Public Works Meeting Agenda_03_27_2019

Wednesday, March 27, 2019 at 01:00 PM

BOARD OR COMMISSION: Board of Public Works and Safety

MEETING DATE: Wednesday, March 27, 2019 at 01:00 PM

MEETING PLACE: Westfield Public Works- Large Conference Room

THE FOLLOWING AGENDA IS SUBJECT TO CHANGE AT THE DISCRETION OF THE BOARD OF PUBLIC WORKS AND SAFETY

AGENDA ITEMS

Meeting Minutes Consideration for Approval

Action Item #1:

Minutes - February 27, 2019

Documents: [February 27, 2019 Minutes](#)

Contracts/Agreements

Action Item #2:

Ditch Road - Phase 2 - Project Award

Documents: [Letter of Recommendation](#)

Action Item #3:

Monon Bridge Over SR 32 - United Consulting - Design - Supplement #6 for Lighting Design

Documents: [Supplemental Agreement #6 - Monon Trail Over SR 32](#)

Action Item #4:

151st Street Trail Connection - Contract Amendment #1

Documents: [Contract Amendment #1](#)

Action Item #5:

2019 Concrete Patching Project - Signing Authority

Documents: [Signing Authority - 2019 Concrete Patching Project](#)

Action Item #6:

181st Street Repair Project - Signing Authority

Documents: [Quote for 181st Street Repair Project](#)

Action Item #7:

Resolution Approving Wheeler Landing Economic Development Agreement

Documents: [Wheeler Landing Economic Development Agreement](#)

Action Item #8:

151st Street Culvert Replacement Inspection Contract

Documents: [151st Street Culvert Contract](#)

Action Item #9:

East Street Extension Environmental Supplemental Fee - Amendment 1

Documents: [East Street Extension Local Public Agency Agreement](#)

Action Item #10:

VS Engineering Master On-Call Service Agreement

Documents: [On Call Service Agreement](#)

Standards

Action Item #11:

2019 Construction Standards & Specifications Revisions

Documents: [2017 Construction Standards & Specs](#) | [2019 Construction Standards & Specs](#)

Consent Agenda

Conflict of Interest - Shaun Barnett

Documents: [Shaun Barnett](#)

March Bond Information

Documents: [Bond Info - March](#)

Department Reports

Fire

WFD - February Report

Documents: [WFD February Report](#)

WPD - February Report

Documents: [WPD - February Report](#)

Public Works

THE WESTFIELD BOARD OF PUBLIC WORKS AND SAFETY February 27, 2019

The Westfield Board of Public Works and Safety met on February 27, 2019 at the Westfield Public Works Conference Room. Present were, Randy Graham, Kate Snedeker, Kim Strang, Records Manager and Nikki Finelli, representing legal counsel.

Randy Graham called the meeting to order at 1:01 PM

AGENDA ITEMS:

Action Item #1: Meeting Minutes Consideration for Approval:

Randy Graham made the motion to approve the January 23, 2019 meeting minutes as presented. Kate Snedeker seconded. Vote: Yes-2; No-0. Motion carried.

PROPOSALS

Action Item #2: 32/31 Totem: Design/Engineering Proposal

Jeremy Lollar presented explaining this would allow for Signworks to provide a design concept and engineered drawings for the tower/gateway structures on 32/31. The proposed fee for the services is \$38,000.

Randy Graham made the motion to approve the proposal. Kate Snedeker seconded. Vote: Yes-2; No-0. Motion carried.

MEMORANDUM OF UNDERSTANDING

Action Item #3: City of Westfield & Wheeler Landing I, LLC

Jeremy Lollar presented, outlining the terms and details, including the requirements and responsibilities of the Developer and City included in the MOU.

Kate Snedeker made the motion to approve the MOU as presented. Randy Graham seconded. Vote: Yes-2; No-0. Motion carried.

CONTRACTS/AGREEMENTS

Action Item #4: Westgate-Park Impact Fee Credit Agreement

Jeremy Lollar presented stating the Developers (Pulte Homes, and CalAtlantic Homes) desires to construct a portion of the Midland Trace Trail through the Development. The Developers wish to receive park impact fee credits equal to the cost of constructing the trail.

Kate Snedeker made the motion to approve the Agreement. Randy Graham seconded. Vote: Yes-2; No-0. Motion carried.

Action Item #5: Grand Junction Plaza Design Modification & Update

Jeremy Lollar presented stating this is an agreement with Land Collective and would cover updated drawings, mechanical design, and review and update codes on the Grand Junction Park and Plaza area. (6.0 acres)

Kate Snedeker made the motion to approve the agreement. Randy Graham seconded.
Vote: Yes-2; No-0. Motion carried.

Action Item #6: WSP USA Inc. Agreement; Amendment No. 1

Jeremy Lollar presented stating this agreement would allow WSP to provide Right of Way Acquisition Services for the 161st Street/Springmill Road Roundabout Project.

Randy Graham made the motion to approve the agreement. Kate Snedeker seconded.
Vote: Yes-2; No-0. Motion carried.

Action Item #7: Joint Use Maintenance Agreement-SR 32 & Oak Ridge Road

Jeremy Lollar presented stating this agreement outlines maintenance responsibilities and cost associated with the installation and maintenance of the multi-use path connecting an existing sidewalk (in INDOT's right of way) at the SW corner of State Road 32 and Oak Ridge Road.

Kate Snedeker made the motion to approve the agreement. Randy Graham seconded.
Vote: Yes-2; No-0. Motion carried.

Action Item #8: Cardno Mitigation Monitoring Supplemental Agreement-Grand Junction Plaza

Jeremy Lollar presented stating IDNR notified the City that they were non-compliant on a previous mitigation agreement. This agreement would cover the additional work needed to be performed. Cost of the scope work needed would be \$43,000.

Randy Graham made the motion to approve the agreement. Kate Snedeker seconded.
Vote: Yes-2; No-0. Motion carried.

CONSENT AGENDA:

WPD-Approval to Hire Applicant with Conditional Offer of Employment

WPD-Approval to Promote an Officer to the Rank of Sergeant

WPD- K9 Transfer of Ownership Letter

February Bond Information

DEPARTMENT REPORTS:

Fire- Rob Gaylor

Police- Chief Rush

Public Works- Jeremy Lollar

With no further business Kate Snedeker made the motion to adjourn. Randy Graham seconded.
The meeting was adjourned at 1:50 PM

Deputy Clerk-Treasurer

Board of Public Works and Safety



**City of Westfield Fire Department
Board of Public Works & Safety Report
2019 February
Report**

Contact: Fire Chief

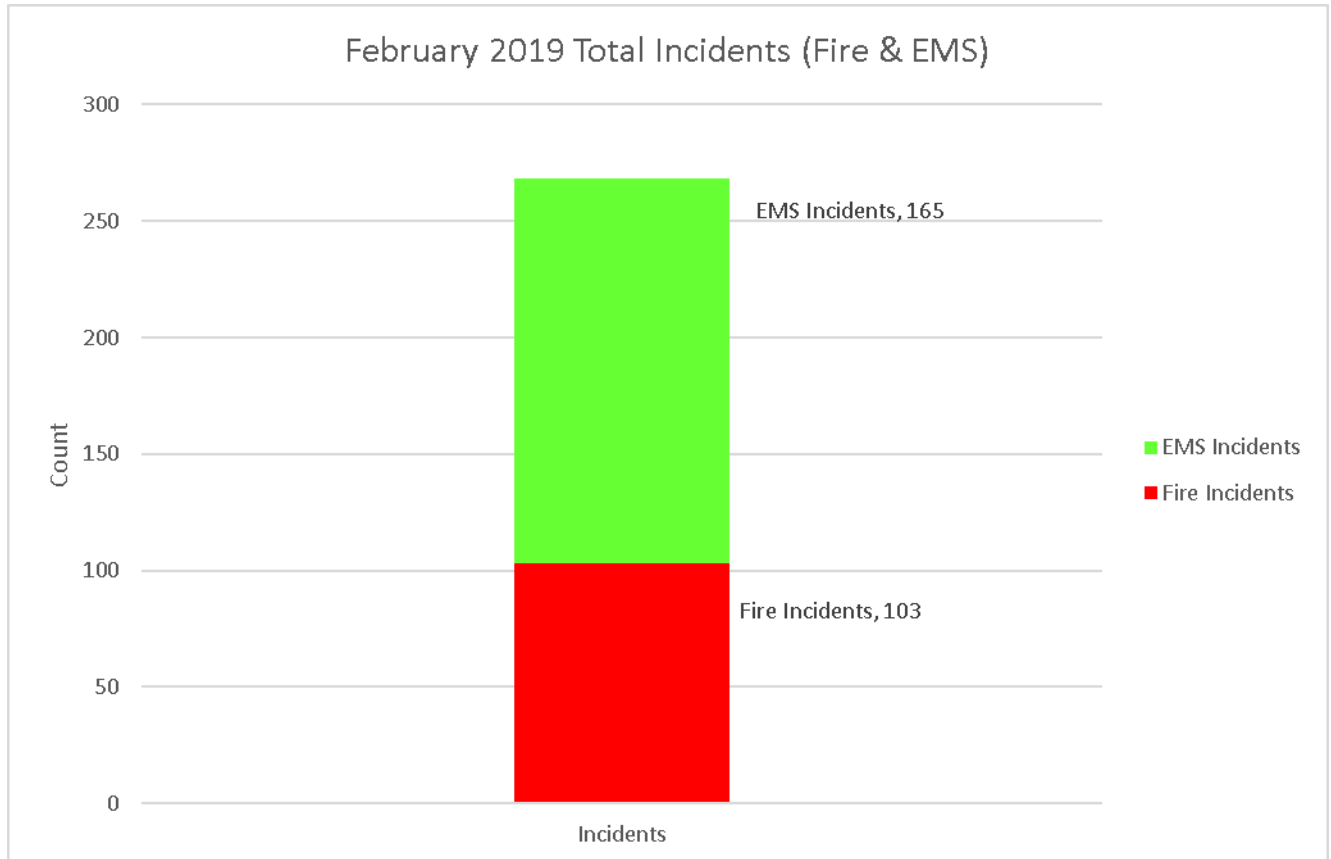
Marcus Reed

Or Nikki Hartman



Westfield Fire Department 2019 February Incident Statistics

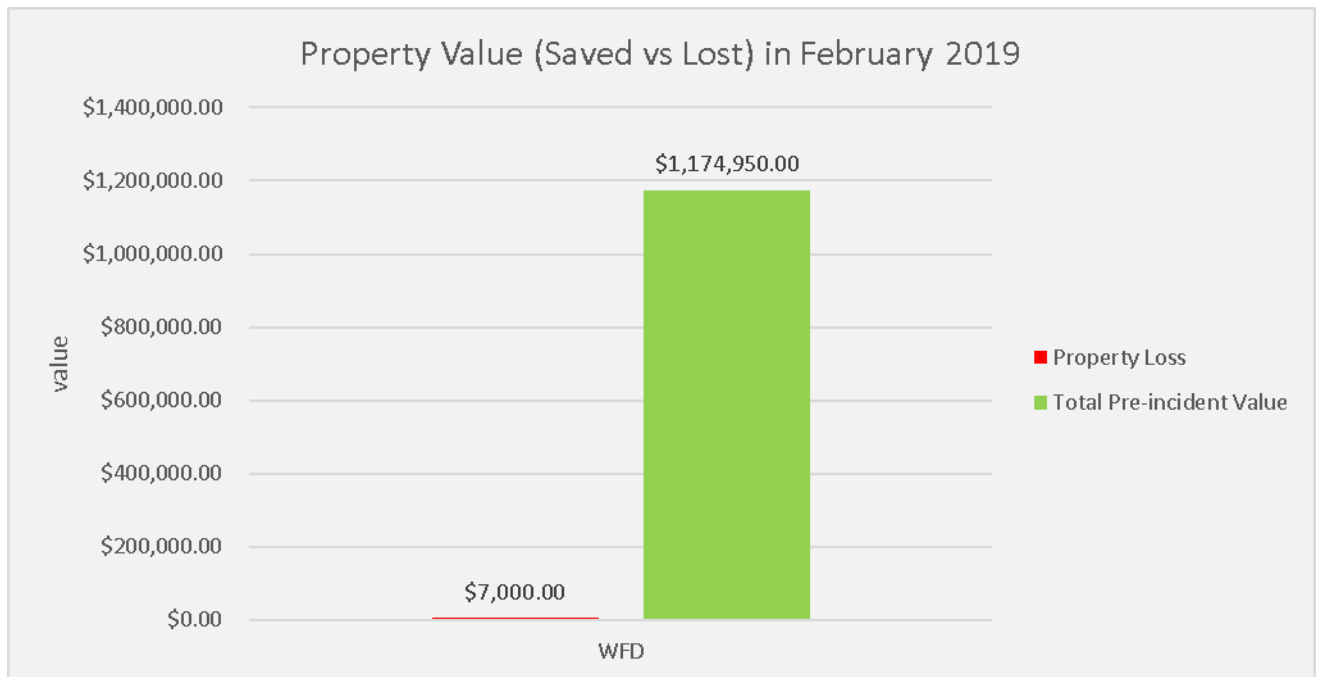
804-3304



Incident Type	Incident Count	% of total Incident
Fire Incidents	103	38%
EMS Incidents	165	62%
Total Incidents	268	



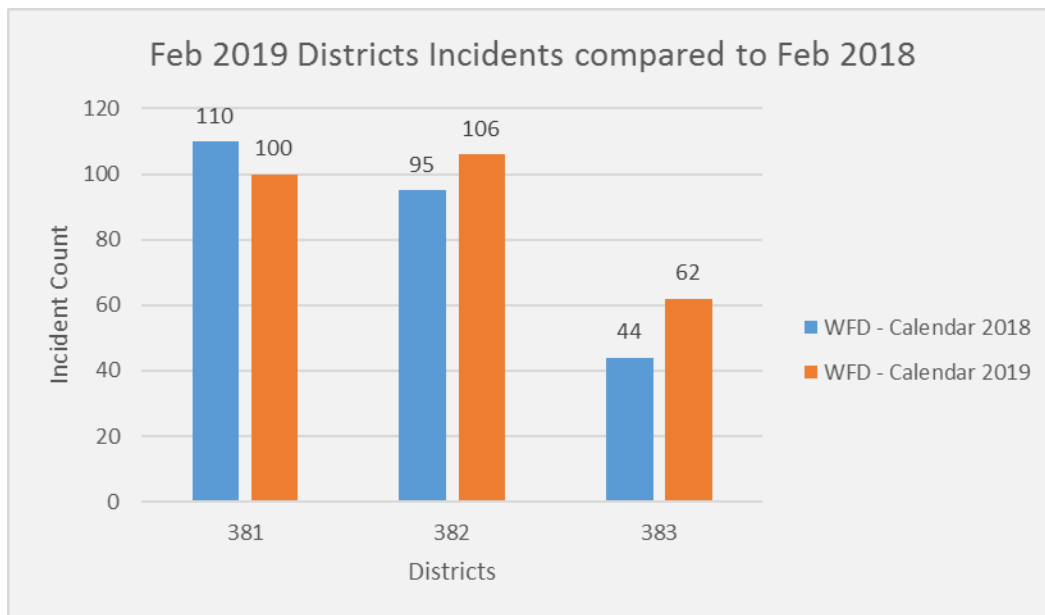
Westfield Fire Department 2019 February Incident Statistics



Property Loss	Total Pre-Incident Value	% of Property value saved
7000	1174950	99%



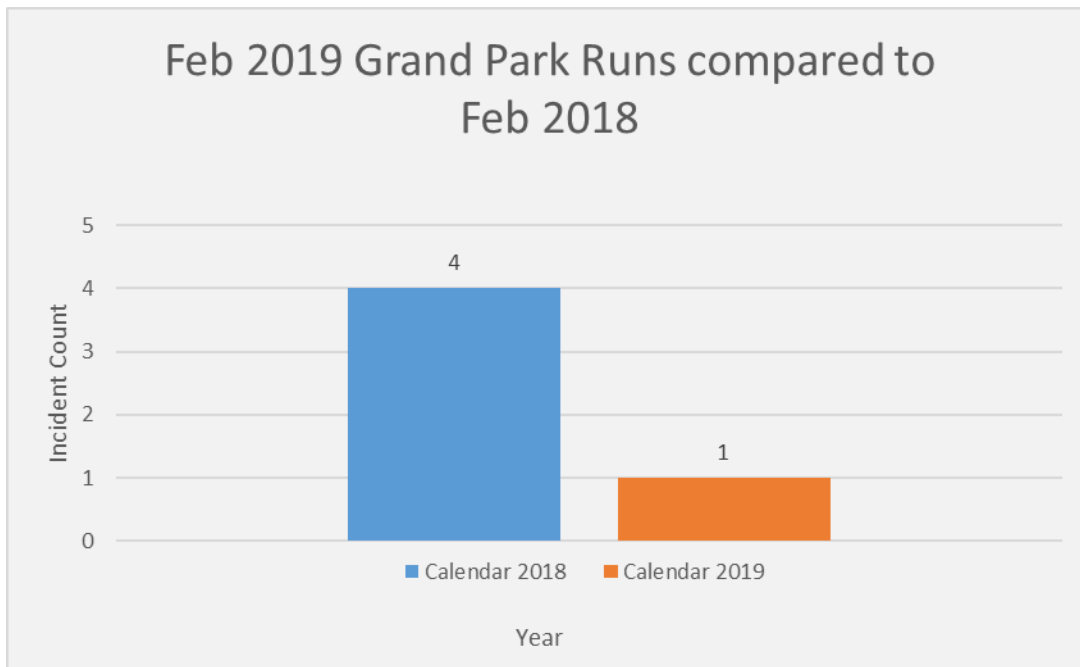
Westfield Fire Department 2019 February Incident Statistics



Districts	Feb-18	Feb-19	Increase/decrease	% increase/decrease
381	110	100	10	10%
382	95	106	-11	-10%
383	44	62	-18	-29%



Westfield Fire Department 2019 February Incident Statistics



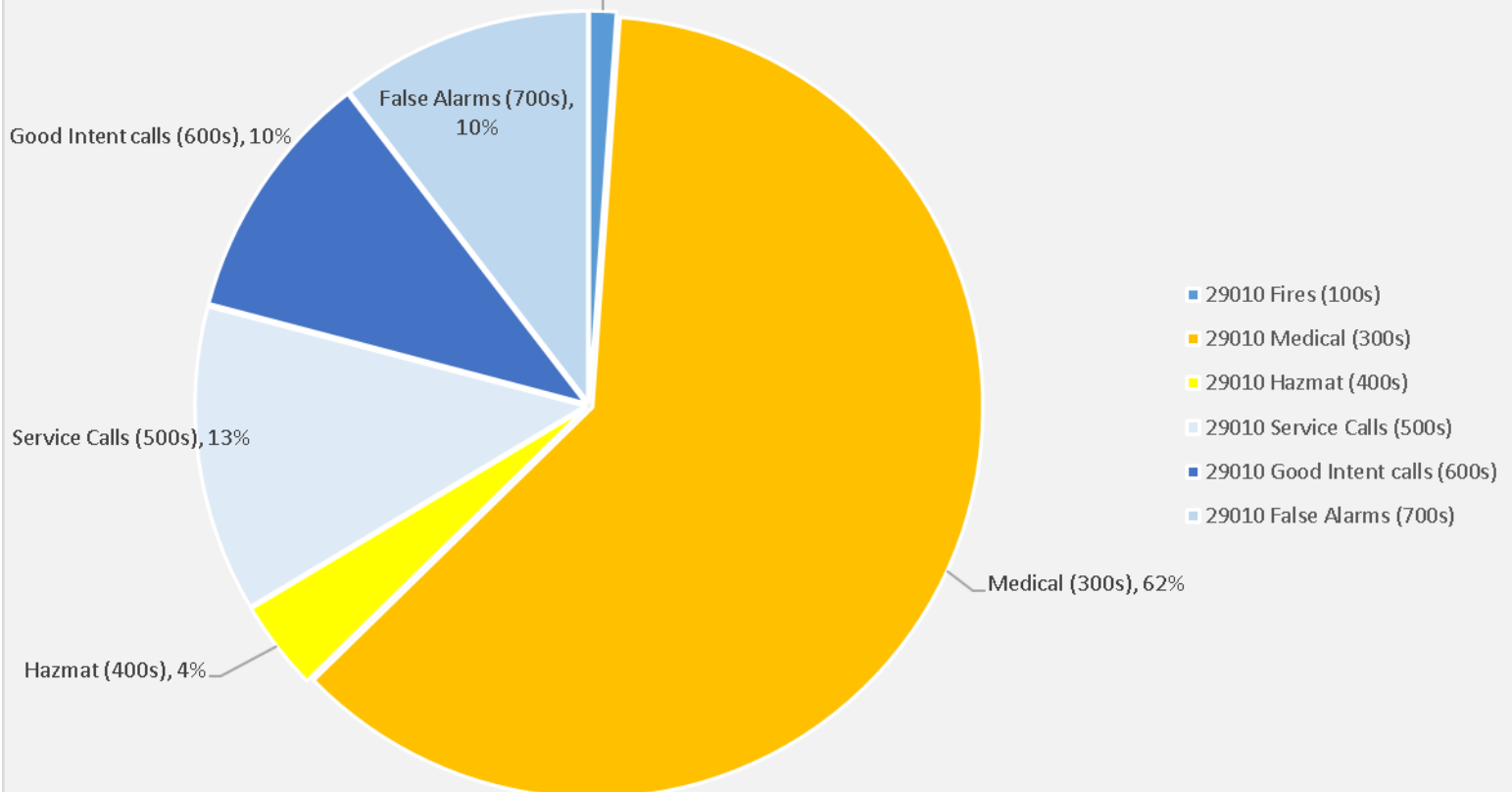
Jan 2019 Incident Calls	Jan 2018 Incident Calls	Increase/decrease	% increase/decrease
1	4	-3	-75%



Westfield Fire Department 2019 February Incident Statistics

February 2019 Fire Incidents by Category

Fires (100s), 1%





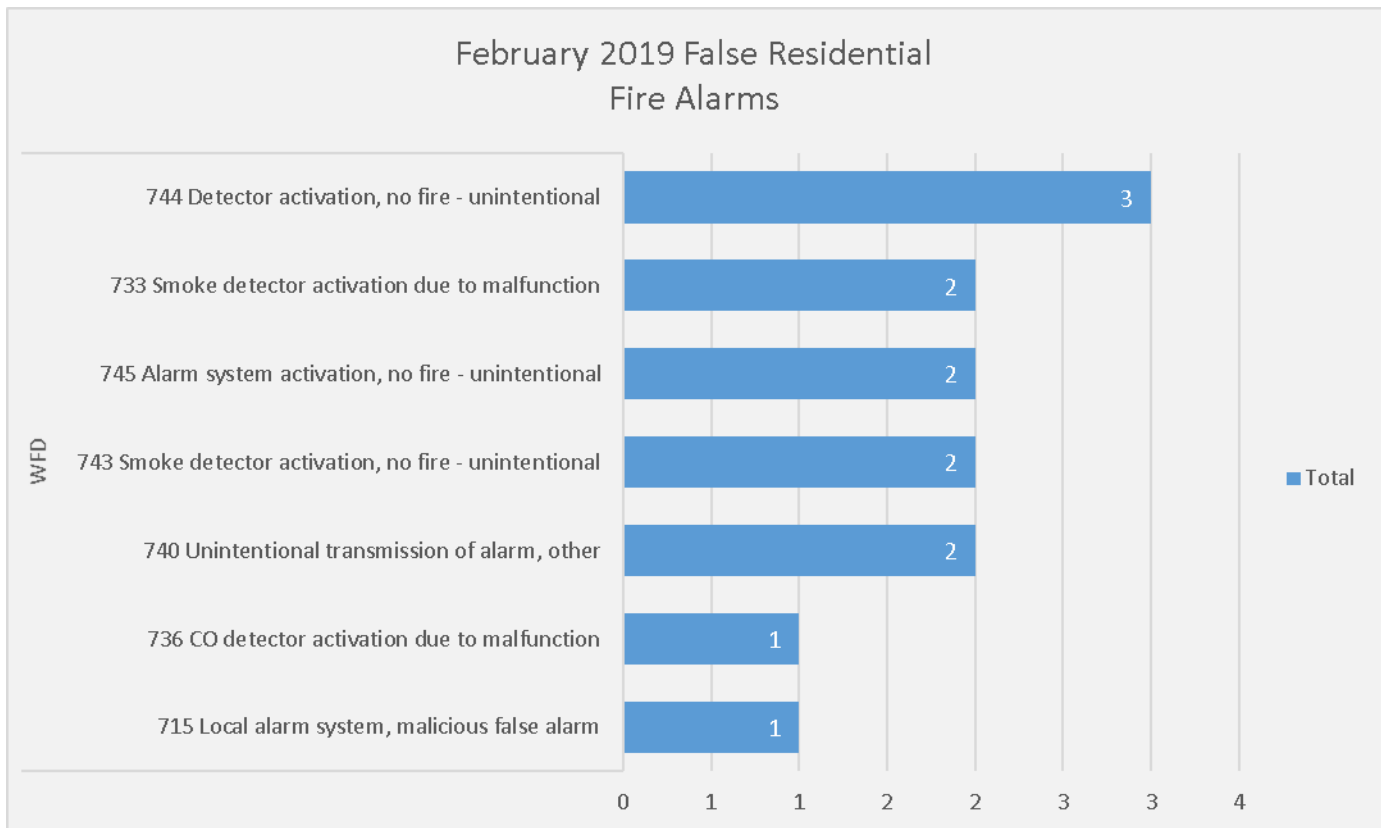
Westfield Fire Department 2019 February Incident Statistics

Call Type	Incident Count	% of total calls
Medical	165	61.57%
Good Intent	28	10.45%
Service Calls	34	12.69%
False Alarm	28	10.45%
Hazmat	10	3.73%
Fires	3	1.12%
Sever Weathers	0	0.00%
OverPressure	0	0.00%
Special Incidents	0	0.00%
Total	268	



Westfield Fire Department 2019 February Incident Statistics

False Residential Fire Alarm Calls

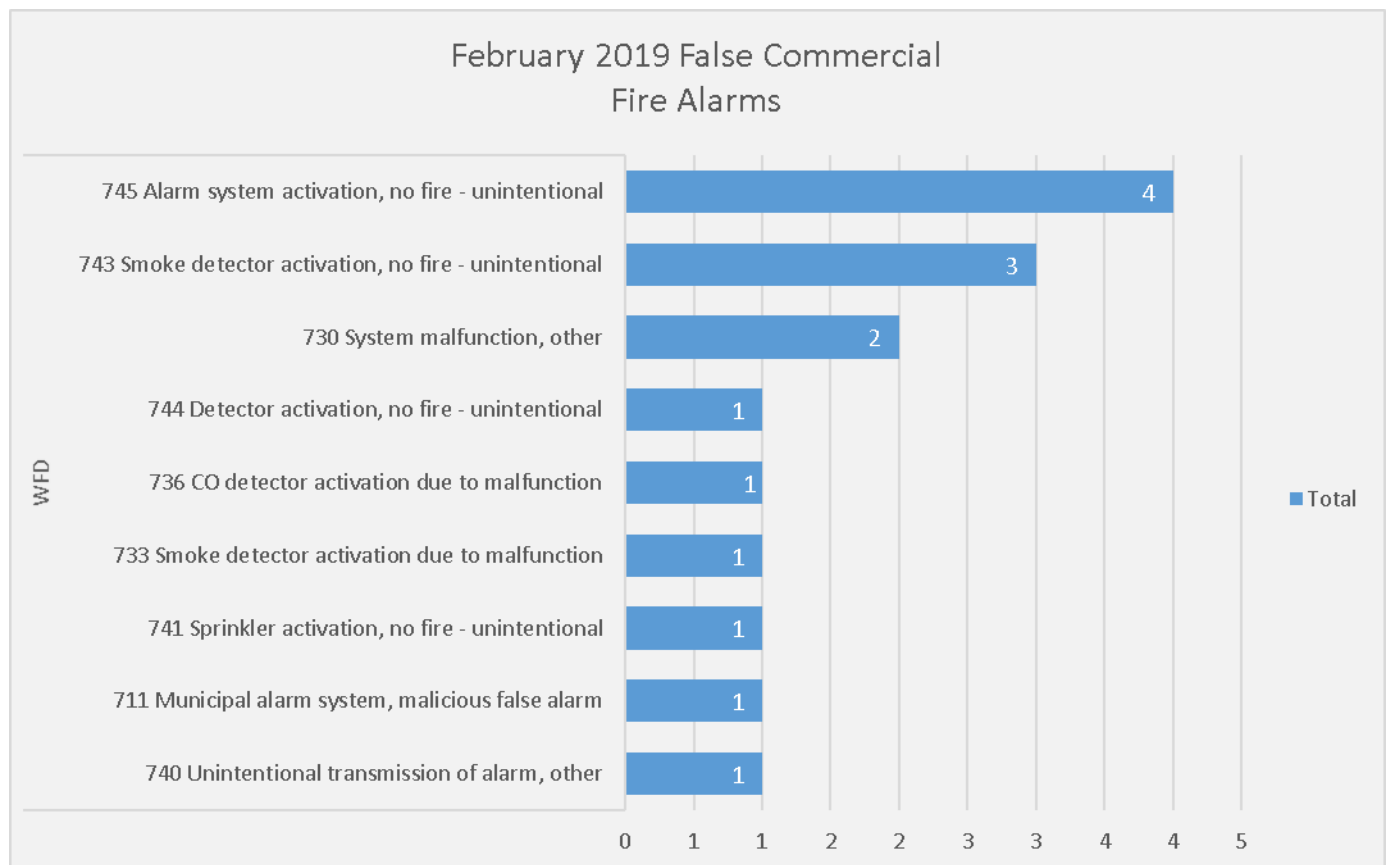


13 Residential Alarms



Westfield Fire Department 2019 February Incident Statistics

False Commercial Fire Alarm Calls

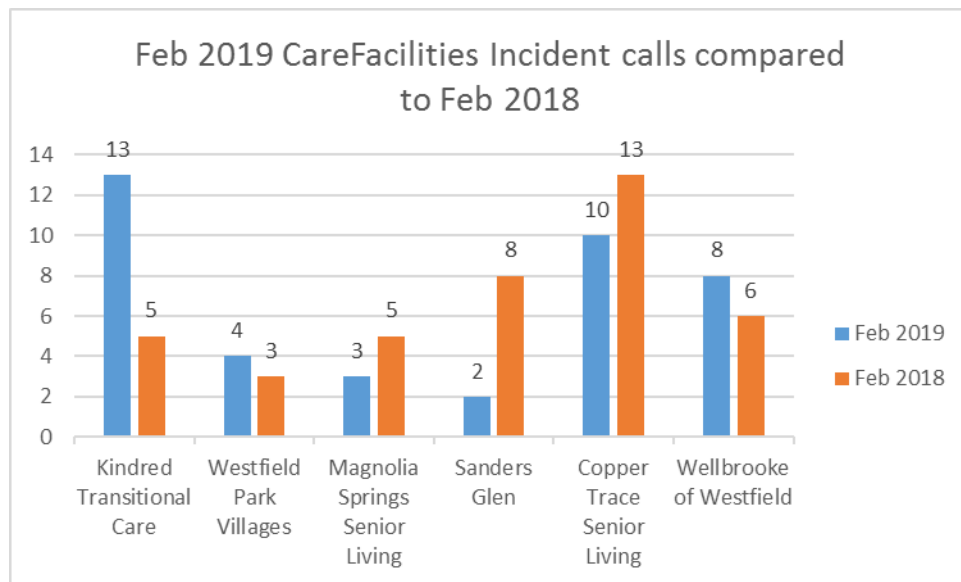


15 Commercial False Alarms



Westfield Fire Department 2019 February Incident Statistics

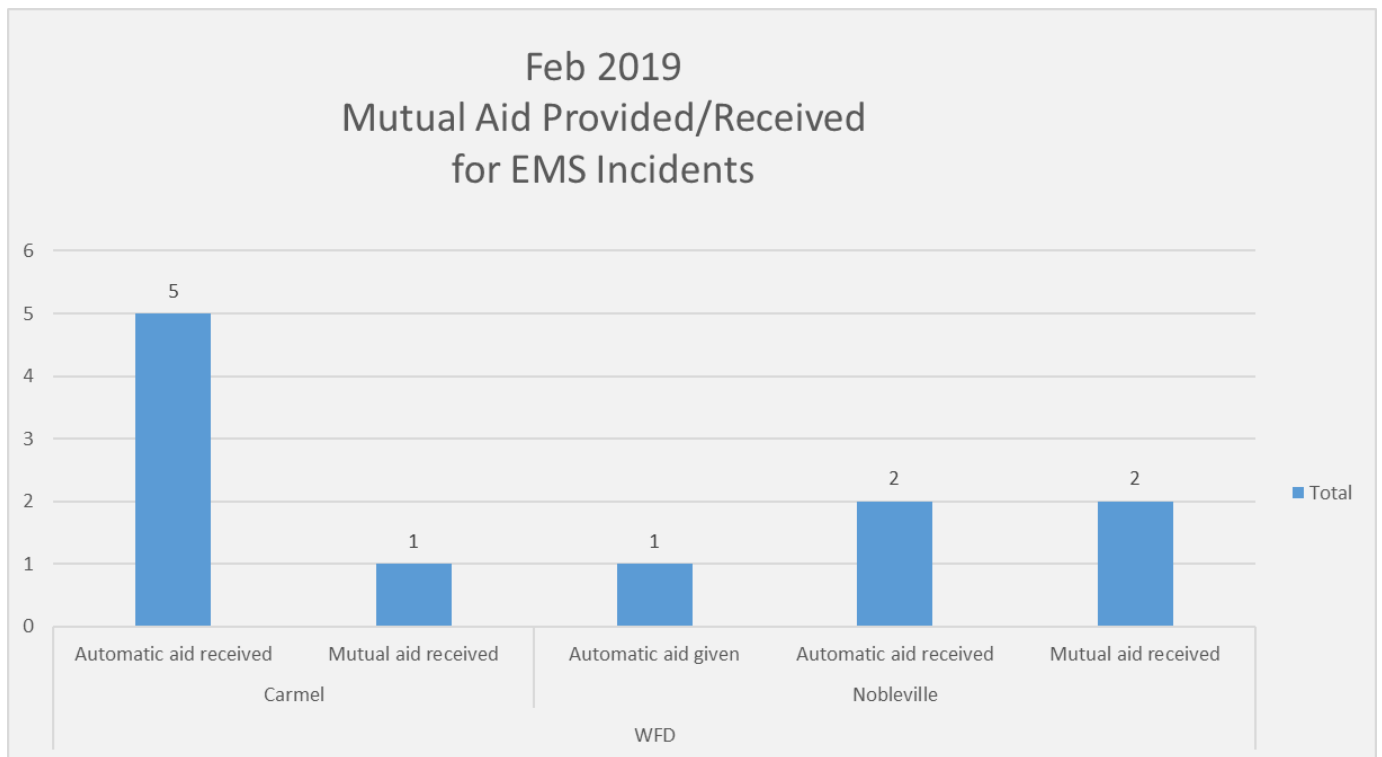
Care Facility





Westfield Fire Department 2019 February Incident Statistics

Mutual Aid data
EMS

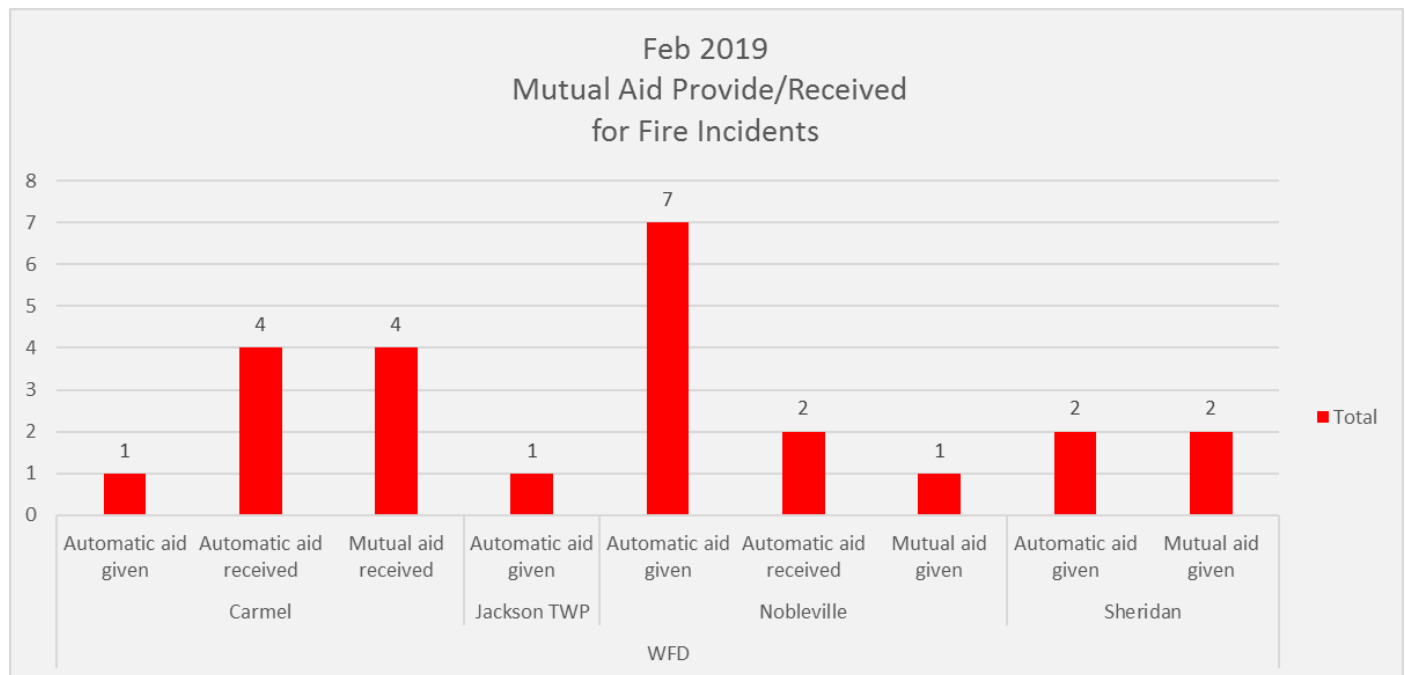


Total 10



Westfield Fire Department 2019 February Incident Statistics

Mutual Aid Data Fire Incidents



Total 23

Westfield Police Department
Monthly Performance Measures Report



Board of Public Works & Safety

February 2019

Table of Contents

	Page
1. Field Activity Performance Measures	
a) Events by Nature/Calls for Service	1
b) Calls by Day of Week	2
c) Calls by Hour of Day	3
d) Total Calls by Month Chart	4
e) UCR Offenses	5
f) Arrests & Traffic	6
g) Traffic Stops by Day of Week	7
h) Traffic Stops by Hour of Day	8
i) Traffic Stops by Monty Chart	9
2. Community Events	10
3. Training	11

Westfield Police Department

February 2019

Events by Nature

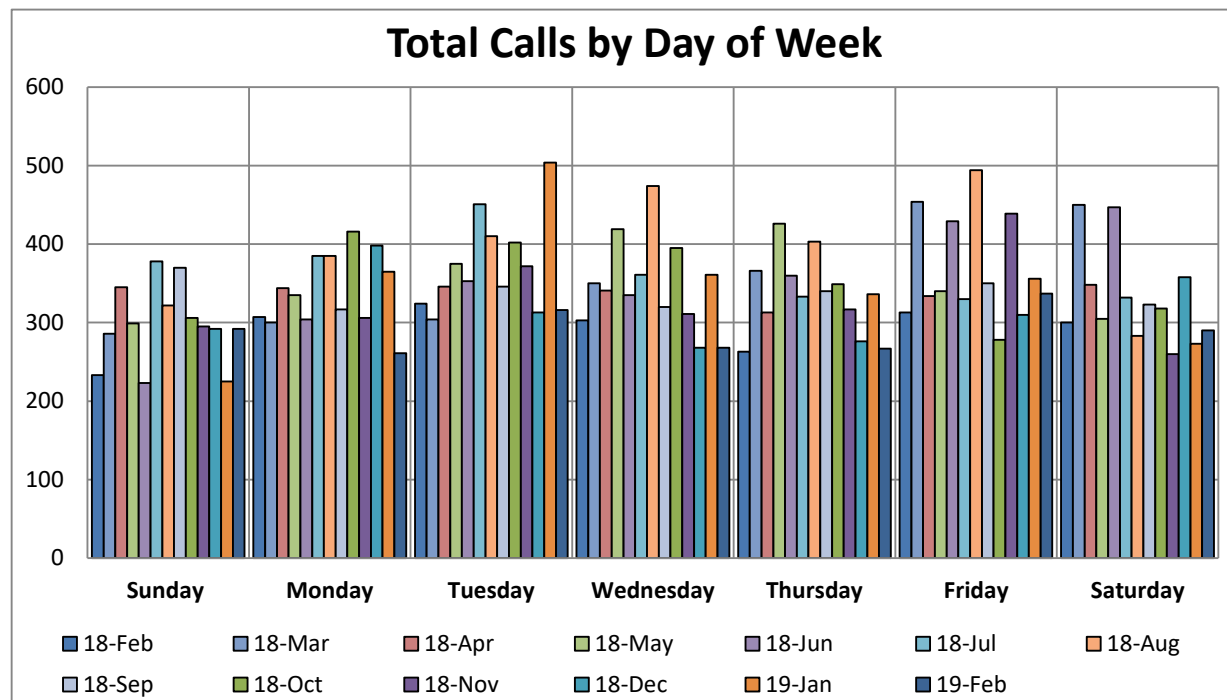
911 Hang Up	30
Abandoned Vehicle	8
Abandonment	0
Abuse / Neglect	4
Accident - Hit & Run	7
Accident - Other	0
Accident - Property Damage	58
Accident - Personal Injury	5
Accident - Sinking Vehicle	0
Accident - Unknown	6
Accelerator Stuck	0
Active Assailant	0
Alarm - Other	0
Alarm - Vehicle	0
Alarm - Burglar	149
Alarm - Hold Up	15
Animal Bite / Attack	1
Animal Complaint	24
Assist Fire	30
Assist Other Department	18
Assist Public	11
Battery	2
Bomb Device Found	0
Bomb Threat	0
Burglary	3
Carjacking	0
Case Follow Up	77
Child Seat Inspection	0
Civil Dispute	20
Criminal Mischief	7
Damage to Property	0
Death Investigation	0
Directed Patrol	0
Disturbance	20
Driving Complaint	45
Drug Complaint	6
Drug Lab	0
Escort	0
Fight	0
Firearms Shots Fired	1
Found / Lost Property	9
Found Person	0
Fraud Prescription	1
Fraud / Deception	21
Harassment	13
Intoxicated Person	3

Investigation	5
Juvenile Complaint	14
K9 Detail	2
Kidnapping	0
Lock Out	49
Loud Party	0
Mental Emotional - Violent	3
Mental Person	7
Miscellaneous	18
Missing Person	2
Missing Person - PLS	0
Nuisance	1
Ordinance Misc.	6
Parking Complaint	15
Physical Disturbance	11
Product Contamination	1
Reckless Activity	0
Road Rage	2
Robbery	0
Runaway	3
School Patrol	130
Security Check	6
Sex Offense	3
Shooting	0
Special Detail	0
Stabbing	1
Suicide	0
Suspicious Activity	88
Suspicious Package	2
Theft	24
Theft - From a Vehicle	7
Theft - of a Vehicle	3
Threat to Life	4
Threatening Suicide	7
Tow Release	1
Traffic Hazard	82
Transport	0
Trespassing	8
Traffic Stop	863
Unknown Call for Police	2
VIN Check	18
Wanted	2
Warrant Service	4
Weapons Complaint	1
Welfare Check	42
	2031

Westfield Police Department
February 2019

Total # of Calls by Day of Week

DAY	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
Sunday	233	286	345	299	223	378	322	370	306	295	292	225	292
Monday	307	300	344	335	304	385	385	317	416	306	398	365	261
Tuesday	324	304	346	375	353	451	410	346	402	372	313	504	316
Wednesday	303	350	341	419	335	361	474	320	395	311	268	361	268
Thursday	263	366	313	426	360	333	403	340	349	317	276	336	267
Friday	313	454	334	340	429	330	494	350	278	439	310	356	337
Saturday	300	450	348	305	447	332	283	323	318	260	358	273	290
TOTAL	2043	2510	2371	2499	2451	2570	2771	2366	2464	2300	2215	2420	2031

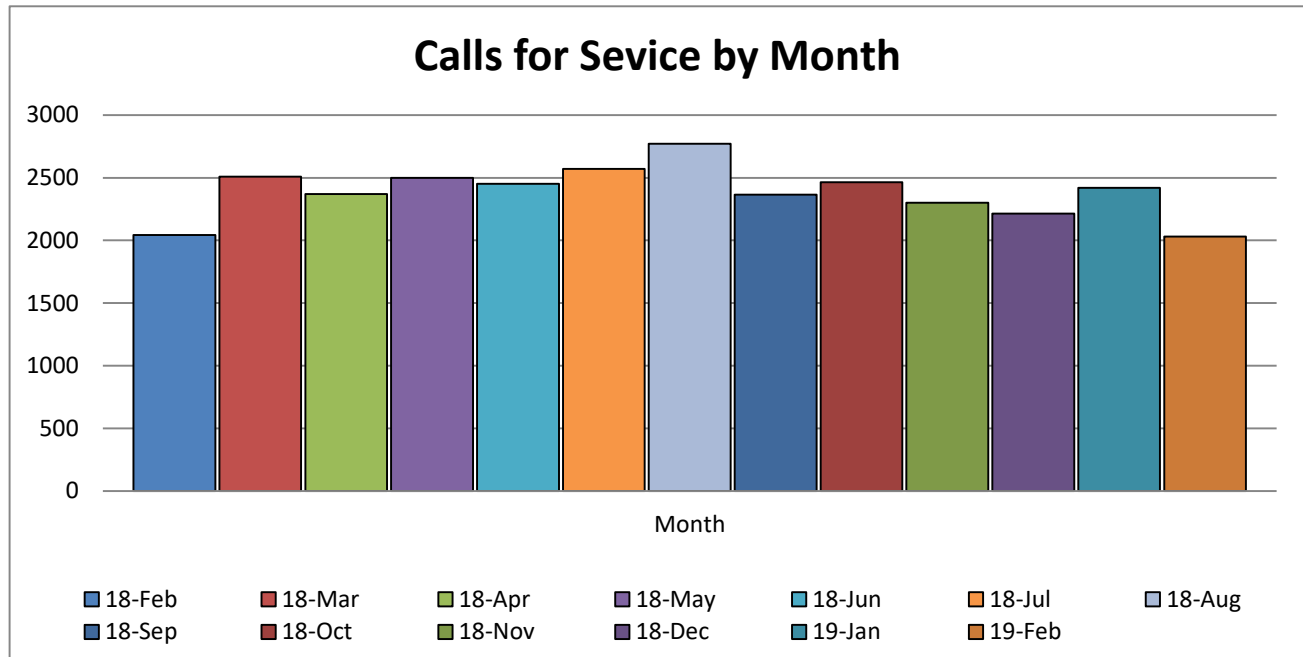


Westfield Police Department
February 2019

Total # of Calls by Hour of Day

HOURL	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
0	73	82	99	90	96	105	78	80	77	70	83	76	57
1	46	62	53	62	78	64	47	68	54	49	47	56	51
2	34	38	56	55	43	50	31	44	37	38	49	47	40
3	23	27	34	30	30	27	21	47	41	47	35	44	27
4	12	11	20	13	29	31	17	17	34	30	23	29	26
5	30	13	20	18	20	32	17	21	17	30	19	33	23
6	50	66	65	64	67	65	46	28	38	40	27	46	36
7	58	99	119	111	128	118	95	79	58	65	70	71	57
8	72	113	106	125	101	123	216	150	134	141	137	142	109
9	106	132	105	142	133	152	180	170	162	166	158	189	128
10	155	157	118	158	158	172	206	162	136	146	139	156	133
11	94	114	118	135	101	129	157	116	114	134	123	118	103
12	74	124	131	99	117	108	127	97	97	109	110	128	97
13	125	159	115	126	140	134	196	106	134	143	108	134	111
14	144	159	133	135	155	142	219	122	164	131	129	144	122
15	122	136	150	139	131	134	189	134	148	118	126	139	105
16	74	130	111	118	122	113	129	130	124	97	97	106	84
17	84	112	124	101	116	111	108	105	113	83	101	93	89
18	143	182	155	168	142	142	164	156	173	149	161	169	159
19	156	186	146	175	120	132	157	149	165	132	115	137	148
20	79	93	89	92	80	79	88	72	96	70	84	65	49
21	69	82	66	93	106	110	89	77	89	97	73	80	75
22	105	122	118	127	132	141	102	111	142	115	101	123	104
23	115	111	120	123	106	156	92	125	117	100	100	95	98
TOTAL	2043	2510	2371	2499	2451	2570	2771	2366	2464	2300	2215	2420	2031

Westfield Police Department
February 2019



Westfield Police Department
February 2019

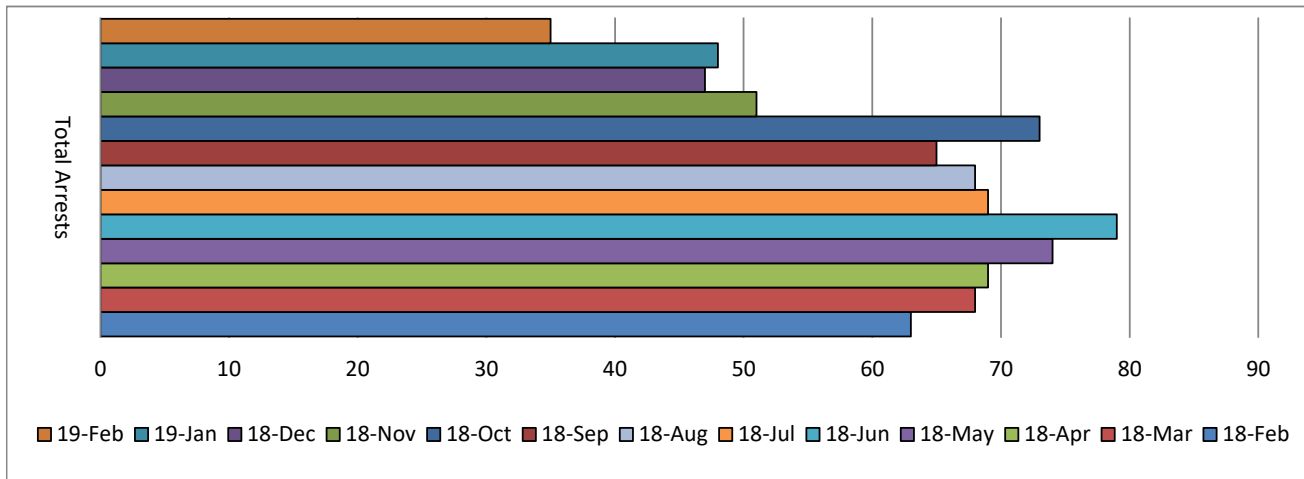
UCR OFFENSES

OFFENSE	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
Arson	1	0	0	0	0	0	0	0	0	0	0	0	0
Homicide	0	0	0	0	0	0	0	0	0	0	0	0	0
Rape	0	1	0	0	1	0	0	0	1	1	1	0	2
Robbery	1	0	0	0	0	1	0	0	0	0	0	0	0
Battery - Aggravated	1	2	0	0	0	0	0	0	0	0	0	1	0
Battery - Simple	21	11	16	24	11	10	16	11	8	11	11	12	12
Burglary	4	4	4	0	1	1	3	3	0	0	1	0	2
Theft	31	28	24	32	29	51	32	30	24	18	33	30	21
Motor Vehicle Theft	1	0	0	0	2	2	1	1	-1	0	3	0	0
TOTAL	60	46	44	56	44	65	52	45	32	30	49	43	37

Westfield Police Department

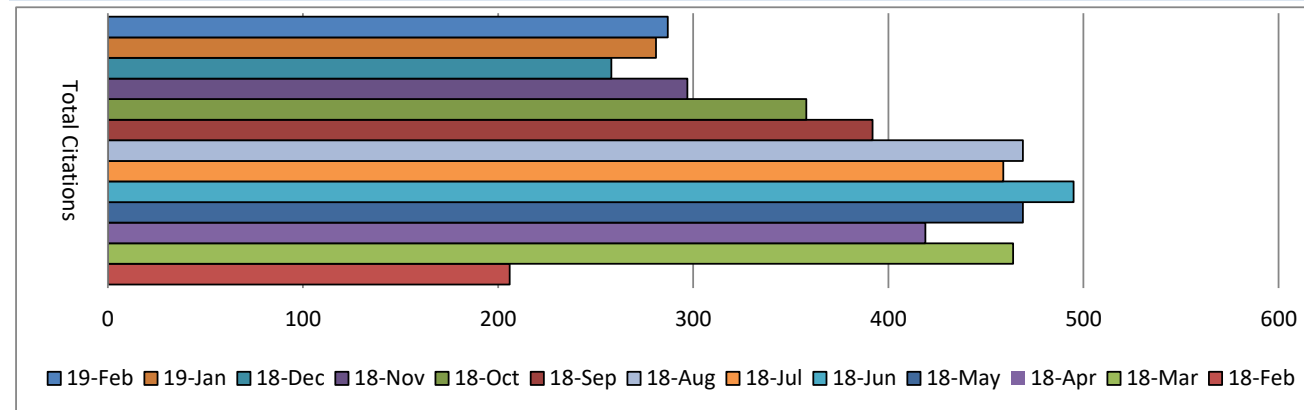
February 2019

Arrest Reports Taken	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
Alcohol/ Drug Related	17	8	19	16	26	24	14	22	28	12	18	17	17
Felony Charges	14	3	10	5	21	8	7	18	10	15	8	14	8
Misdemeanor Charges	69	80	92	78	114	113	109	90	89	52	63	55	50
Total Arrests	63	68	69	74	79	69	68	65	73	51	47	48	35



Traffic	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
Total Citations	206	464	419	469	495	459	469	392	358	297	258	281	287
Total Written Warning	1107	1307	1141	1105	1100	1158	1127	1043	1106	997	1008	1083	909
Total Traffic Accidents	46	55	60	80	47	71	66	53	76	60	66	68	41
Property Damage	41	46	53	73	40	67	57	43	66	51	52	54	37
Personal Injury	4	9	6	7	6	4	9	10	9	9	14	12	4
Fatality	1	0	1	0	1	0	0	0	1	0	0	2	0
Hit and Run*	3	1	6	2	6	6	6	3	11	8	6	5	2

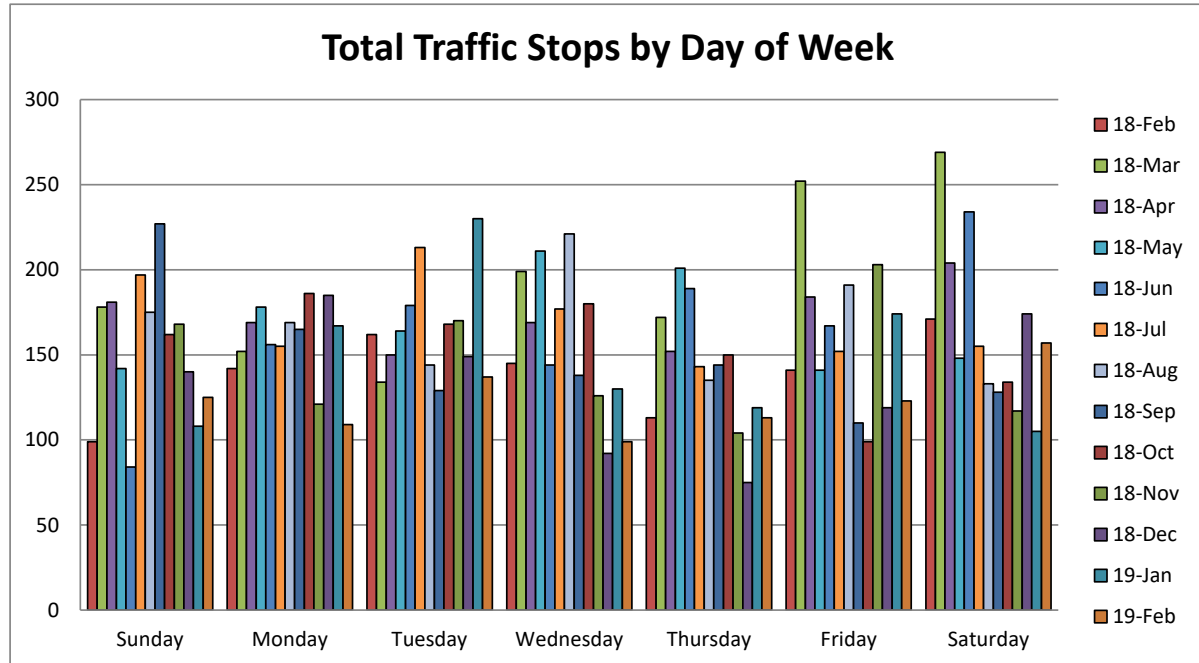
*numbers included in property damage, personal injury, and fatality accidents



Westfield Police Department
February 2019

Traffic Stops by Day of Week

Day:	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
Sunday	99	178	181	142	84	197	175	227	162	168	140	108	125
Monday	142	152	169	178	156	155	169	165	186	121	185	167	109
Tuesday	162	134	150	164	179	213	144	129	168	170	149	230	137
Wednesday	145	199	169	211	144	177	221	138	180	126	92	130	99
Thursday	113	172	152	201	189	143	135	144	150	104	75	119	113
Friday	141	252	184	141	167	152	191	110	99	203	119	174	123
Saturday	171	269	204	148	234	155	133	128	134	117	174	105	157
TOTAL	973	1356	1209	1185	1153	1192	1168	1041	1079	1009	934	1033	863

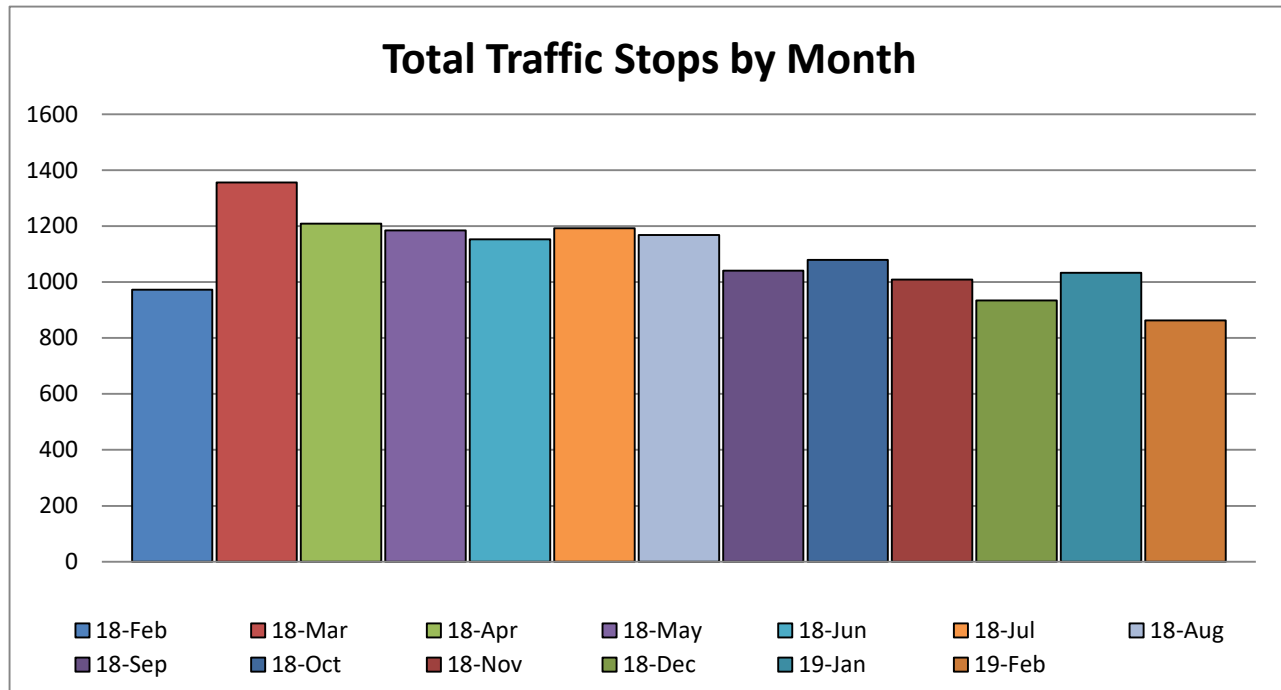


Westfield Police Department
February 2019

Traffic Stops by Hour of the Day

Hour:	18-Feb	18-Mar	18-Apr	18-May	18-Jun	18-Jul	18-Aug	18-Sep	18-Oct	18-Nov	18-Dec	19-Jan	19-Feb
0	44	59	69	59	63	62	41	49	54	41	42	46	37
1	31	44	36	36	41	35	22	39	28	23	24	29	25
2	23	31	44	35	28	27	10	28	18	19	27	20	16
3	13	12	25	14	15	10	6	27	19	22	17	18	10
4	7	4	7	4	8	12	4	8	20	5	9	10	8
5	13	7	7	7	10	18	4	5	4	11	4	12	8
6	31	42	53	42	44	46	21	10	15	17	11	26	15
7	22	58	86	77	98	67	53	39	20	29	24	22	23
8	25	62	49	57	51	64	97	77	72	63	59	67	43
9	52	67	47	76	74	87	86	87	75	88	76	81	54
10	62	94	71	80	82	104	78	83	60	59	65	70	50
11	34	57	41	51	28	52	68	47	40	53	39	36	26
12	23	43	43	29	32	31	42	25	20	23	30	45	29
13	53	78	62	49	61	41	64	34	40	48	43	51	34
14	69	94	55	60	78	64	106	36	60	52	43	49	40
15	41	73	60	51	62	47	84	65	57	43	38	40	33
16	24	48	37	35	64	50	46	38	28	26	34	35	28
17	13	20	31	18	38	29	23	19	20	23	21	24	13
18	77	109	88	94	58	54	72	59	85	72	91	91	99
19	97	124	74	94	51	51	86	67	93	73	63	85	80
20	32	39	34	28	14	24	18	19	35	26	30	14	24
21	31	35	22	29	30	40	24	26	44	55	18	32	30
22	73	85	80	79	61	73	57	79	86	73	59	77	69
23	83	71	88	81	62	104	56	75	86	65	67	53	69
TOTAL	973	1356	1209	1185	1153	1192	1168	1041	1079	1009	934	1033	863

Westfield Police Department
February 2019



Westfield Police Department

February 2019

Community Events

2/1/2019	Montessorit House Pre School - Police Department Tour / Talk - Days A
2/15/2019	Coffee With a COP
2/27/2019	Boy Scout Police Department Tour/Talk - Nights B

Westfield Police Department

February 2019

Training

2/4-7/19	Solo Response to Active Assailant - Departmental Training
2/7/2019	Monthly K9
2/11-15/19	IMPD Leadership Academy - Rebollar and Zosso
2/12/2019	Master Police Community Engagement Officer - Adams
2/18-21/19	Physical Tactics / Taser - Department Training
2/27/2019	DRE Instructor Updates - Sgt. Adams



15 March 2019

Mr. Johnathon Nail
City of Westfield
Department of Public Works
2706 E. 171st Street
Westfield, IN 46074

**RE: Contract Amendment 1
151st Street Trail Connection**

Dear Mr. Nail:

V3 Companies (V3) has prepared this **CONTRACT AMENDMENT 1** to the City of Westfield (CLIENT) related to completing the Civil Engineering and Natural Resource Consulting Services for the 151st Street Trail Connection (Project) located in Westfield, Indiana.

AMENDED SCOPE OF SERVICES: CONTRACT AMENDMENT 1

As part of the CLIENT's efforts to improve trail connectivity throughout the current trail system, CLIENT is proposing to connect the existing trail on the south side of 151st street between Oak Road and Bridlewood Drive. This segment includes a crossing of Cool Creek and a smaller drainage way to the east which is currently conveyed under 151st street through a concrete box culvert.

Because the project involves widening the existing bridge over Cool Creek, the Hamilton County Bridge Department is requesting that a Concise Scoping Report be prepared. The report describes the existing conditions of the bridge and provides recommendations for construction and maintenance of traffic. V3 will coordinated the preparation of the Concise Scoping Report.

COMPENSATION

PHASE	Description	Contract Fee	Contract Amendment 1	Fee Basis
VP01.1	Survey Services	\$21,400.00	-	Lump Sum
S01	Geotechnical Services	\$6,000.00	-	Lump Sum
W21	Natural Resource Services	\$12,000.00	-	Lump Sum
S04	Design Services	\$62,300.00	-	Lump Sum
S04	Design Services	-	\$5,000.00	Lump Sum
S06	Construction Services	\$8,000.00	-	Time and Materials (NTE)

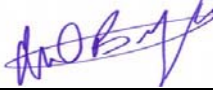
V3 appreciates the opportunity to be of continued service to the City of Westfield. If you have any questions or comments concerning the CONTRACT AMENDMENT 1, please contact me at your earliest convenience. If the terms are acceptable, please provide written authorization to proceed.

Best regards,
V3 Companies



James O. Rinehart IV, P.E.
Design Team Leader

AUTHORIZATION TO PROCEED

SIGNED: _____	SIGNED:  _____
PRINTED: _____	PRINTED: Neil B. Myers
DATE: _____	DATE: 15 March 2019
P.O.# (if required): _____	<u>PROJECT LEAD</u>
	SIGNED:  _____
	PRINTED: James O. Rinehart IV
	DATE: 15 March 2019

*****Please note: V3 Scope of Services CONTRACT AMENDMENT 1 is an extension of the Services Agreement between V3 and CLIENT and maintains in force all related terms and conditions associated with the agreement dated 13 July 2018.***



To: Westfield Board of Public Works & Safety

Date: March, 27, 2019

Re: Action Item-Signing Authority

The City of Westfield Public Works Department is requesting that the Board of Public Works and Safety consider granting Jeremy Lollar, Director of Public Works, signing authority for the 2019 Concrete Patching Project in a not to exceed amount of \$100,000.00. The quotes are due March 29, 2019.

Kate Snedeker

Randy Graham

Andy Cook

UNIFORM CONFLICT OF INTEREST DISCLOSURE STATEMENT

Indiana Code 35-44-1-3

A public servant who knowingly or intentionally has a pecuniary interest in or derives a profit from a contract or purchase connected with an action by the governmental entity served by the public servant commits conflict of interest, a Class D Felony. A public servant has a pecuniary interest in a contract or purchase if the contract or purchase will result or is intended to result in an ascertainable increase in the income or net worth of the public servant or a dependent of the public servant who is under the direct or indirect administrative control of the public servant; or receives a contract or purchase order that is reviewed, approved, or directly or indirectly administered by the public servant. "Dependent" means any of the following: the spouse of a public servant; a child, stepchild, or adoptee (as defined in I.C. 31-3-4-1) of a public servant who is unemancipated and less than eighteen (18) years of age; and any individual more than one-half (1/2) of whose support is provided during a year by the public servant.

The foregoing consists only of excerpts from I.C. 35-44-1-3. Care should be taken to review I.C. 35-44-1-3 in its entirety.

1. **Name and Address of Public Servant Submitting Statement:** Shaun Barnett
18847 Goldwater Road, Westfield, IN 46062
2. **Title or Position With Governmental Entity:** Firefighter/Paramedic
3. a. **Governmental Entity:** City of Westfield, Indiana
b. **County:** Hamilton County
4. **This statement is submitted (check one):**
 - a. ☐ as a "single transaction" disclosure statement, as to my financial interest in a specific contract or purchase connected with the governmental entity which I serve, proposed to be made by the governmental entity with or from a particular contractor or vendor; or
 - b. ☒ as an "annual" disclosure statement, as to my financial interest connected with any contracts or purchases of the governmental entity which I serve, which are made on an ongoing basis with or from particular contractors or vendors.
5. **Name(s) of Contractor(s) or Vendor(s):** UCan Save Lives, LLC (UCSL)
6. **Description(s) of Contract(s) or Purchase(s)** (Describe the kind of contract involved, and the effective date and term of the contract or purchase if reasonably determinable. Dates required if 4(a) is selected above. If "dependent" is involved, provide dependent's name and relationship):
Owns/Operates a educational institution that provides services that include first aid and CPR training. Other services include the sale and distrubition of products such as Automated External Defibrillators (AEDs) and accessories, first aid kits, and other medical emergency products.

7. **Description of My Financial Interest** (Describe in what manner the public servant or "dependent" expects to derive a profit or financial benefit from, or otherwise has a pecuniary interest in, the above contract(s) or purchase(s); if reasonably determinable, state the approximate dollar value of such profit or benefit.):

There is a potential of benefit in the manner of entering into business with City of Westfield with the purchase of educational offerings from UCSL in the form of First Aid and/or CPR classes, "mock code" classes, and others. Potential of entering into business with Westfield entities with the purchase of equipment, accessories, and materials that are sold by UCSL. City of Westfield has the potential of receiving reduced pricing for services/products purchased from UCSL in an effort to be competitive and retain business.

(Attach extra pages if additional space is needed)

8. **Approval of Appointing Officer or Body** (To be completed if the public servant was appointed by an elected public servant or the board of trustees of a state-supported college or university):

I (We) being the _____ of
(Title of Officer or Name of Governing Body)

_____ and having the power to appoint
(Name of Governmental Entity)

the above named public servant to the public position to which he or she holds, hereby approve the participation to the appointed disclosing public servant in the above described contract(s) or purchase(s) in which said public servant has a conflict of interest as defined in Indiana Code 35-44-1-3; however, this approval does not waive any objection to any conflict prohibited by statute, rule, or regulation and is not to be construed as a consent to any illegal act.

_____	_____
_____	_____
_____	_____
Elected Official	Office

9. **Effective Dates** (Conflict of interest statements must be submitted to the governmental entity prior to final action on the contract or purchase.):

March 16, 2019	To Be Determined
_____	_____
Date Submitted	Date of Action on Contract or Purchase

10. **Affirmation of Public Servant:** This disclosure was submitted to the governmental entity and accepted by the governmental entity in a public meeting to the governmental entity prior to final action on the contract or purchase. I affirm, under penalty of perjury, the truth and completeness of the statements made above, and that I am the above named public servant.

Signed: _____

(Signature of Public Servant)

Date: _____

03/16/19

Within 15 days after final action on the contract or purchase, copies of this statement must be filed with the State Board of Accounts, Indiana Government Center South, 302 West Washington Street, Room E418, Indianapolis, Indiana, 46204-2765 and the Clerk of the Circuit Court of the county in which the governmental entity executed the contract or purchase. A copy of this disclosure will be forwarded to the Indiana State Ethics Commission.



March 11, 2019

Jeremy Lollar
Director of Public Works
City of Westfield
2706 E. 171st Street
Westfield, IN 46074

RE: Ditch Road Phase 2 – Recommendation Letter – City of Westfield Board
of Public Works

Mr. Lollar

We have reviewed the construction bids for the above-referenced project as submitted on March 8, 2019 and found E&B Paving, Inc. to be the lowest responsive bidder for the Base Bid in the following amount:

Base Bid	\$1,065,590.00
----------	----------------

E&B Paving Inc. has completed similar work for projects in the past and it is believed that they are capable of completing the work as required. It is our recommendation that a Notice of Award be issued to E&B Paving Inc for the Base Bid.

We appreciate the opportunity to be involved in this important project on behalf of the City of Westfield Board or Public Works. If you have any comments or concerns, please contact the undersigned.

Very truly yours,

BUTLER, FAIRMAN and SEUFERT, INC.

Andrea Langille, PE
alangille@BFSEngr.com

c: Dustin Shoe- Project Manager
Johnathon Nail- City Engineer

Headquarters:

8450 Westfield Blvd., Suite 300
Indianapolis, IN 46240-5920
T 317.713.4615
F 317.713.4616
E bfs@BFSEngr.com
www.BFSEngr.com

Branch Locations:

Fort Wayne
Jeffersonville
Lafayette
Merrillville
Plainfield

Founded 1961



PROFESSIONAL SERVICES AGREEMENT



This PROFESSIONAL SERVICES AGREEMENT ("Agreement") is made by and between **City of Westfield Board of Public Works**, ("CLIENT") and **UNITED CONSULTING**, an Indiana corporation ("UNITED CONSULTING").

WITNESSETH



WHEREAS, UNITED CONSULTING desires to provide, and CLIENT desires for UNITED CONSULTING to provide, certain professional services to be performed with respect to **R-38413 Culvert Replacement Along 151st Street** ("Project"), subject to the terms and conditions set forth in this Agreement;

NOW, THEREFORE, in consideration of the promises, the mutual covenants and undertakings herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

Section I – Services by UNITED CONSULTING

The engineering services to be performed by UNITED CONSULTING are described in Appendix "A" attached hereto, and made a part hereof, and are referred to herein as the "Services".

Section II – Information and Services to be furnished by CLIENT

The information and services to be furnished by the CLIENT are as set out in Appendix "B", which is attached to this Agreement, and incorporated herein by reference.

Section III – Commencement of Services and Schedule

UNITED CONSULTING shall commence performance under this Agreement upon execution by the parties and shall provide the Services hereunder in accordance with the Schedule contained in Appendix "C", which is attached to this Agreement, and incorporated herein by reference.

Section IV - Compensation

For all Services rendered by UNITED CONSULTING under this Agreement, CLIENT agrees to pay UNITED CONSULTING on the basis of fees and charges established in Appendix "D", which is attached to this Agreement, and incorporated herein by reference.

Section V – Term and Termination

1. Term

This Agreement shall commence upon execution by the parties and shall continue until completion of the Services and deliverables as set forth in Appendix "C" or unless terminated as set forth below.

2. Termination

CLIENT reserves the right to terminate or suspend this Agreement upon five days advance written notice to UNITED CONSULTING. Upon termination of this Agreement, UNITED CONSULTING shall deliver all Work Product (as defined herein) to CLIENT. The dollar amount for any earned but unpaid Services performed by UNITED CONSULTING shall be based upon an estimate of the portions of the total Services completed by UNITED CONSULTING through the effective date of termination, which estimate shall be as made by CLIENT in the exercise of its honest and reasonable judgment for all Services to be paid for on a lump sum basis and shall be based upon an audit by CLIENT of those Services to be paid for on a cost basis or a cost plus fixed fee basis as described in Section IV hereof.

Section VI - General Provisions

1. Subcontracting

It is recognized that UNITED CONSULTING may engage subcontractors to perform a portion of the work under this Agreement. The engagement of subcontractors by UNITED CONSULTING shall not relieve UNITED CONSULTING of any responsibility for the fulfillment of this Agreement. No subcontractor shall subcontract any portion of its work under this Agreement.

UNITED CONSULTING will include a term requiring compliance with all applicable Code of Ethics and Conflict of Interest Policies of the CLIENT in any agreement with a subcontractor for the fulfillment of work under this Agreement.

2. Ownership of Documents

All reproducible materials prepared by UNITED CONSULTING or its subcontractors in connection with this Agreement, alone or in combination with others, on any and all media, in whole or in part, and all copies thereof, whether created before, during, or after the term of this Agreement (collectively, the "Work Product") will be the property of CLIENT.

UNITED CONSULTING shall be allowed to retain copies of all documents included in the Work Product, unless prohibited for reasons of security and as mutually agreed by both parties.

UNITED CONSULTING agrees that written agreements with any and all subcontractors used by UNITED CONSULTING to fulfill UNITED CONSULTING's obligations hereunder shall contain language substantially similar to that of this Subsection to assign to CLIENT all Work Product by such subcontractors, and to require cooperation with UNITED CONSULTING on the same terms and conditions as set forth herein.

The provisions of this Subsection shall survive the expiration, suspension, abandonment, termination, or completion of this Agreement.

3. Access to Records

Full access to the work during the progress of the Services shall be available to the CLIENT. UNITED CONSULTING and its subcontractors shall maintain all books, documents, papers, accounting records and other evidence pertaining to the cost incurred under this Agreement and shall make such materials available at its respective offices at all reasonable times during the period of this Agreement and for three (3) years from the date of final payment for Services is made by the CLIENT to UNITED CONSULTING.

4. Liability for Damages

UNITED CONSULTING assumes all risk of loss, damage or destruction to the work product, to all of its materials, tools, appliances and property of every description, and for injury to or deaths of its employees or agents arising out of or in connection with the performance of this Agreement, excluding that which occurs due to the acts or failure to act of any third party, and excluding that which is caused by the CLIENT.

5. General Liability Insurance

- a. Amounts and Coverage. UNITED CONSULTING shall procure and maintain at its expense insurance of the kind and in the amounts set forth in Appendix "E" by companies authorized to do such business in the State of Indiana covering all Services and related activities performed by UNITED CONSULTING.
- b. Evidence of Insurance. Before commencing its Services, UNITED CONSULTING shall furnish to CLIENT a certificate, or certificates, showing that it has complied with this Section VI.5.b, which certificate or certificates, shall also designate CLIENT as an additional named insured. The policies shall not be changed or canceled unless thirty (30) days prior written notice has been given to CLIENT.

6. Workmen's Compensation

UNITED CONSULTING shall be responsible for providing all necessary unemployment and Worker's Compensation Insurance for its employees. UNITED CONSULTING shall provide the CLIENT with a certificate of insurance indicating that it has complied with this requirement.

7. Changes in Work

- a. Prior Approval. UNITED CONSULTING shall not commence any additional services or change of scope until authorized by the CLIENT.
- b. Additional Services. Additional services may include, but not be limited to:
 - i. Services associated with significant changes in the scope, extent, or character of the portions of the Project required by, but not limited to, changes in scope, complexity or schedule and revisions required by changes in applicable laws and regulations or due to any other causes beyond UNITED CONSULTING's control.
 - ii. Preparing to serve or serving as a consultant or witness for CLIENT in any litigation or other dispute resolution process related to the Project that does not involve a claim against UNITED CONSULTING or a claim that is based on an alleged act of negligence or breach of contract by UNITED CONSULTING.
 - iii. Subject to other provisions of this Agreement, additional or extended services during the Project made necessary by (1) emergencies or Acts of God endangering the Project site, (2) an occurrence of a hazardous environmental condition, (3)

damages to CLIENT facilities caused by fire, flood or other cause, (4) acceleration or deceleration of the Project Schedule involving services beyond normal working hours, (5) significant delays, changes, or price increases occurring as a direct or indirect result of materials, equipment, or energy shortages, and (6) default or failure to perform by other consultants.

8. Non-Discrimination and Code of Ethics

UNITED CONSULTING and its subcontractors, if any, shall not discriminate against any employee or applicant for employment, to be employed in the performance of the Services under this Agreement, with respect to hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment, because of race, color, religion, sex, handicap, national original or ancestry. Breach of this covenant may be regarded as a material breach of the Agreement.

UNITED CONSULTING shall comply with all applicable Code of Ethics and Conflict of Interest Policies of the CLIENT.

9. Safety

- a. Responsibility. UNITED CONSULTING shall be directly responsible for the safety requirements and programs applicable to its own employees, its subcontractors and other parties with whom it has contracted to perform Services with respect to the Project.
- b. Compliance. UNITED CONSULTING's safety program shall comply with applicable federal, state and local statutes, rules, regulations and ordinances. UNITED CONSULTING shall report to CLIENT, in writing, any injury or accident at the Project site involving its employees, its subcontractors or other parties for which it is responsible, within forty-eight (48) hours or a shorter period of time if required by law.
- c. Notification. UNITED CONSULTING shall not be responsible for the safety requirements or programs applicable to any other person or entity involved with the Project other than UNITED CONSULTING and its subcontractors.

10. Independent Contractor

CLIENT and UNITED CONSULTING are acting in an individual capacity in the performance of this Agreement and will not act as agents, employees, partners, joint venturers or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever. Neither party will assume any liability for any injury (including death) to any persons, nor damage to any property, arising out of the acts or omissions of the agents, employees, or subcontractors of the other party. UNITED CONSULTING shall be responsible for providing all necessary unemployment and workers' compensation insurance for its employees.

11. Indemnification

UNITED CONSULTING agrees to indemnify the CLIENT for all claims and liability due to the negligent acts of UNITED CONSULTING or its subcontractors, agents or employees.

12. Notification

All written notices required by this Agreement shall be sent to the parties at the following addresses by Certified Mail, Return Receipt.

CLIENT:

*Mr. Jeremy Lollar
Director of Public Works
City of Westfield
2706 East 171st Street
Westfield, IN 46074*

UNITED CONSULTING:

*United Consulting
Dave Richter, President
8440 Allison Pointe Boulevard, Suite 200
Indianapolis, Indiana 46250*

13. Authority to Bind United Consulting

As used in this Agreement, UNITED CONSULTING refers to United Consulting Engineers, Inc. d/b/a UNITED CONSULTING. Further, the signatory for UNITED CONSULTING represents that he/she has been duly authorized to execute this Agreement on behalf of UNITED CONSULTING and has obtained all necessary or applicable approvals to make this Agreement fully binding upon UNITED CONSULTING when his/her signature is affixed hereto.

14. Successors and Assignees

This Agreement is binding upon and shall inure to the benefit of CLIENT and UNITED CONSULTING and their respective successors and permitted assigns. UNITED CONSULTING shall not assign this Agreement without the written consent of CLIENT.

15. Entire Agreement; Amendments

This Agreement and its Appendices, each of which is incorporated herein by reference and made a part of this Agreement, constitutes the entire Agreement of the parties with regard to the subject matter hereof and supersedes all prior discussions or agreements concerning any subject matter related hereto. This Agreement may only be amended, supplemented or modified by a written document executed in the same manner as this Agreement.

16. Governing Law

This Agreement shall be governed by and construed in accordance with the laws of the State of Indiana, without giving effect to principles respecting conflicts of laws. Subject to Section 19, any action pursuant to this Agreement shall be brought and tried in a court of competent jurisdiction in Marion County, Indiana, and each party hereby irrevocably consents to the personal and subject matter jurisdiction of any such court and waives any objection to such jurisdiction and venue.

17. Non-Waiver

It is agreed and acknowledged that no action or failure to act by CLIENT or UNITED CONSULTING as to a breach, act or omission of the other shall constitute a waiver of any right or duty afforded either of them under this Agreement, as to any subsequent breach, act or omission of the other nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereof, except as may be specifically agreed in writing. No right conferred on either party under

this Agreement shall be deemed waived and no breach of this Agreement excused unless such a waiver or excuse shall be in writing and signed by the party claimed to have waived such right.

18. Invalid Provisions

If any part of this Agreement is later found to be contrary to, prohibited by or invalid under applicable law, rules or regulations, that provision shall not apply and shall be omitted to the extent so contrary, prohibited or invalid, but the remainder of this Agreement shall not be invalidated and shall be given full force and effect insofar as possible.

19. Dispute Resolution

Any dispute arising out of this Agreement that cannot be resolved through informal discussions between the parties, shall be subject to this Section.

- a. The parties agree that the existence of a dispute notwithstanding, the parties shall continue without delay to carry out all of their respective responsibilities under this Agreement.
- b. Should any dispute arise with respect to this Agreement that cannot be resolved through informal discussions between the parties, a party shall serve written notice to the other party outlining the details of the dispute and demanding mediation. No later than twenty (20) days from the date of the notice demanding mediation, the parties shall confer to discuss the selection of the mediator and agree upon other mediation procedures.
- c. Submission of a dispute under this Agreement to a mediation procedure shall be a condition precedent to filing litigation. No litigation shall be initiated by either party unless the mediation has been completed (unsuccessfully) or a party has failed to participate in a mediation procedure.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.



UNITED CONSULTING

CLIENT

BY: 
Dave Richter, President

BY: _____

BY: 
Chris R. Pope, Vice President

BY: _____

DATE: MARCH 15, 2019

BY: _____

DATE: _____

ATTEST: _____

LIST OF APPENDICES

Appendices

- Appendix A** - Services by UNITED CONSULTING
- Appendix B** - Information and Services to be provided by CLIENT
- Appendix C** - Project Schedule
- Appendix D** - Compensation
- Appendix E** - Insurance

Services by UNITED CONSULTING

A. CONSTRUCTION INSPECTION

1. For the fulfillment of all services outlined in Section A and B below, UNITED CONSULTING will provide a Part-time Construction Manager I anticipating working 7 hours per week to provide the following services (for Site Manager entries and for concrete and misc. testing), to serve as the CLIENT'S Site Manager and Testing Specialist working principally through the CLIENT'S inspector or such other person in authority as designated by the CLIENT. A summary of the work to be performed by UNITED CONSULTING is outlined below:
 - a. Site Manager entries
 1. Daily Diary and Pay Quantity Entry. CLIENT will have a full-time inspector on-site that will provide UNITED CONSULTING with paper daily reports of work activities and pay items measured and calculated/sketches and UNITED CONSULTING will enter into Site Manager once a week.
 2. Material Record Entry. Enter material certifications and any concrete tests taken by UNITED CONSULTING into Site Manager.
 3. Concrete and LWD Testing. UNITED CONSULTING'S Construction Manager I will take required concrete and LWD tests to certify material records.
 - b. Project Closeout
 1. Assembly of Final Construction Record suitable to be turned into INDOT.
2. UNITED CONSULTING shall report to the CLIENT on matters concerning contract compliance and administration. UNITED CONSULTING shall coordinate Site Manager work entries related to the construction with the CLIENT.
3. UNITED CONSULTING will provide a Final Construction Record suitable to INDOT along with Material Record Certification to the CLIENT.

APPENDIX B



Information and Services Provided by CLIENT

The CLIENT shall furnish the UNITED CONSULTING with the following:

1. The CLIENT shall designate an employee as Project Coordinator as a primary point of contact for this project administration.
2. The CLIENT shall provide a Project Inspector responsible for:
 - a. Daily reports
 - b. Documentation of Pay Quantities, including but not limited to; field sketches and location/justification of pay items.
 - c. Be thoroughly familiar with the Contract plans and specifications in order to monitor the work.
 - d. Reporting to the CLIENT any deviations observed by the CLIENT'S inspector.

Schedule

For purposes of contract control any work required to be submitted by the UNITED CONSULTING to the CLIENT for review and approval within the following approximate time periods:

A. CONSTRUCTION INSPECTION

1. UNITED CONSULTING shall provide part time Site Manager specialist for a construction time of **6** weeks.
2. UNITED CONSULTING shall provide a Final Construction Record within 45 days of Final Acceptance of the project by the CLIENT.

B. CONSTRUCTION SCHEDULE – The inspection budget was based on providing an RPR for 7 hours per week over the following project schedule:

1. INDOT Contract Letting Date: December 12, 2018
2. Start of construction on or after July 5, 2019
3. Final completion date of August 15, 2019

Compensation

A. Amount of Payment

1. UNITED CONSULTING shall receive as payment for the work performed under this Agreement the fee not to exceed **\$21,100.00** unless a modification of the Agreement is approved in writing by the CLIENT.
2. All work under this Agreement shall be paid to UNITED CONSULTING on the basis of actual hours of work performed by essential personnel working exclusively on this project at the billing rates as set forth in the Billing Rates by Classification Table on page 2 of this Appendix.

B. Method of Payment

1. UNITED CONSULTING may submit a maximum of one invoice voucher per calendar month for work covered under this Agreement. The invoice voucher shall be submitted to the CLIENT. The invoice voucher shall represent the value, to the CLIENT, of the partially completed work as of the date of the invoice voucher.
2. In the event of a substantial change in the scope, character or complexity of the work on the project, the maximum fee payable shall be adjusted in accordance with item 7, (changes in work) of the General Provisions, set out in this Agreement.

UNITED Consulting

2019 Billing Rates by Classification

CLASSIFICATION		HOURLY BILLING RATES
1	Department Manager	\$200.00
2	Field Operations Manager	\$133.00
3	Construction Manager I	\$114.00
	OT	\$130.00
4	Construction Manager II	\$93.00
	OT	\$106.00

NOTES:

- (1) *Billing Rate Includes Overhead and Profit Margin*
- (2) *Mileage shall be reimbursed at \$0.60 per mile*
Other direct costs such as Permit Fees, Recording Fees, Legal Fees,
- (3) *Advertising Fees, Hotel Cost, Etc. shall be reimbursed at their actual costs.*
- (4) *These rates shall be increased by 4% on January 1 of each year subsequent to 2019.*
- (5) *Work performed by Subconsultants shall be reimbursed at their actual cost.*

APPENDIX E

Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
10/25/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Walker & Associates 7364 E. Washington Street Indianapolis IN 46219		CONTACT NAME: Brenda Russell PHONE (A/C, No. Ext.): (317) 353-8000 FAX (A/C, No.): (317) 351-7149 E-MAIL ADDRESS: brenda@walkeragency.com	
INSURED United Consulting Engineers Inc. 8440 Allison Pointe Blvd., Ste 200 Indianapolis IN 46250		INSURER(S) AFFORDING COVERAGE INSURER A: Sentinel Insurance Company NAIC # 11000 INSURER B: Hartford Accident & Indemnity Ins. 22357 INSURER C: INSURER D: INSURER E: INSURER F:	

COVERAGES

CERTIFICATE NUMBER: CL18102517456

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY			84SBWUI8421	11/1/2018	11/1/2019	EACH OCCURRENCE \$ 1,000,000
	☐ CLAIMS-MADE ☒ OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000
							MED EXP (Any one person) \$ 10,000
							PERSONAL & ADV INJURY \$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE \$ 2,000,000
	☐ POLICY ☒ PROJECT ☒ LOC						PRODUCTS - COMP/OP AGG \$ 2,000,000
	OTHER:						\$
B	☒ AUTOMOBILE LIABILITY			84UEGVV8861	11/1/2018	11/1/2019	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
	☒ ANY AUTO						BODILY INJURY (Per person) \$
	☐ ALL OWNED AUTOS						BODILY INJURY (Per accident) \$
	☐ HIRED AUTOS						PROPERTY DAMAGE (Per accident) \$
A	☒ UMBRELLA LIAB			84SBWUI8421	11/1/2018	11/1/2019	EACH OCCURRENCE \$ 5,000,000
	☒ EXCESS LIAB						AGGREGATE \$ 5,000,000
	☐ DED						\$
	☐ RETENTION \$ 10,000						\$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY			84WEGCB8685	11/1/2018	11/1/2019	☒ PER STATUTE ☐ OTH-ER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y/N	N/A				E.L. EACH ACCIDENT \$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE \$ 1,000,000
							E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

CITY OF WESTFIELD
130 PENN STREET
WESTFIELD, IN 46074

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Rita Nale/RMN

© 1988-2014 ACORD CORPORATION. All rights reserved.

AMENDMENT No. 1

THIS AMENDMENT NO. 1 IS MADE AND ENTERED INTO THIS _____,
BY AND BETWEEN CITY OF WESTFIELD, INDIANA, ACTING BY AND THROUGH ITS PROPER
OFFICIALS, HEREINAFTER REFERRED TO AS THE "LOCAL PUBLIC AGENCY" or "LPA" AND
LOCHMUELLER GROUP, INC., HEREIN AFTER REFERRED TO AS THE "CONSULTANT".

WITNESSETH

WHEREAS, the LPA and LOCHMUELLER did on March 28, 2018 enter into an Agreement to
provide consulting services for the East Street Extension project, INDOT DES No: 1700728, and

WHEREAS, additional environmental documentation is required, and

WHEREAS, the LPA desires to have the CONSULTANT provide additional services, and

WHEREAS, the CONSULTANT has expressed a willingness to provide the additional services, and

WHEREAS, in order for LOCHMUELLER to provide the additional services, it is necessary to
amend the original agreement, and

NOW, THEREFORE, it is agreed by and between both parties that the original agreement be
amended as follows:

I. Section IV COMPENSATION on page one of the agreement is modified to read as follows:

Section IV COMPENSATION. The LPA shall pay the CONSULTANT for the Services performed under this Contract as set forth in Appendix "D" which is herein attached to and made an integral part of this Contract. The maximum amount payable under this Contract shall not exceed **\$111,100.00**.

II. Items 1.1.15 through 1.1.20 are added to Appendix "A" as follows:

- 1.1.15 Public Information Plan Development – Prepare a Public Involvement Plan (PIP) that details the avenues by which the public will be engaged in the environmental process and identifies key stakeholders to be consulted. Submit to INDOT Environmental Services for review and approval.
- 1.1.16 Public Information Meeting – Perform the following activities for one (1) Public Information Meeting.
 - 1.1.16.1 Legal Notice – Coordinate with the INDOT Public Involvement Office and provide the necessary project information for publication of the legal notice by INDOT.

- 1.1.16.2 Graphics/Displays – In consultation with the LPA and the design engineer, assist in the preparation of the graphics and displays needed for the public information meeting.
- 1.1.16.3 Presentation – Prepare and coordinate with the LPA and design engineer, project information to include in a presentation intended for the public information meeting.
- 1.1.16.4 Meeting Attendance/Facilitation – Attend and facilitate the public information meeting that is to be scheduled by INDOT.
- 1.1.16.5 Organization and Coordination of Comments – Following the public information meeting, organize the public comments for inclusion in the project file and the environmental document.
- 1.1.17 Agency Re-coordination – Prepare a re-coordination letter detailing the design changes and distribute to the relevant agencies. Complete additional archaeological investigations for the additional right-of-way areas.
- 1.1.18 Section 106 Effects Letter – Prepare an Effects Letter which clarifies the relationship between NorthPoint and the project, as well as the effect the development had on the selection of an alternative. Submit to INDOT for approval prior to distribution to the Section 106 consulting parties.
- 1.1.19 Section 106 – Consulting Parties Meeting – Organize, schedule and attend one (1) consulting party meeting and prepare meeting minutes documenting the activities and decisions made.
- 1.1.20 Section 106 – Update Effects Finding – Update the “No Adverse Effect” finding and supporting 800.11(e) documentation, submitted to INDOT CRO on October 24, 2018, to reflect the additional coordination to occur with consulting parties. Review and coordinate the Phase Ia Archaeological Reconnaissance addendum with INDOT CRO.

III. Items 2.3 through 2.9 are added to Appendix “A” as follows:

- 2.3 Section 106 Adverse Effect/Memorandum of Agreement
- 2.4 Archaeological Investigations beyond a Phase Ia Reconnaissance
- 2.5 Section 4(f) Evaluation De minimis, Programmatic, or Individual
- 2.6 Permitting – Rule 5, Section 401, Section 404, and Construction in a Floodway
- 2.7 Air quality Analysis
- 2.8 Phase II Limited Site Investigation
- 2.9 Modifications to the completed Noise Analysis

IV. Item 8.0 is added to Appendix “B” as follows:

- 8.0 Provide a venue to hold the Public Information Meeting and Public Hearing

V. The Draft CE-4 schedule of Appendix “C” is modified to read as follows:

Draft CE-4.....Submit to INDOT within 20 months of receiving a NTP

VI. Item 1.1 AMOUNT OF PAYMENT of Appendix "D" is modified to read as follows:

1.0 AMOUNT OF PAYMENT

1.1 The CONSULTANT shall receive compensation for such professional services under Appendix "A" of this Agreement on a lump sum basis in the amount of One Hundred Eleven One Hundred Dollars (\$111,100.00), unless a modification to this Agreement is made in writing by both parties.

Except as herein modified, changed and amended, all terms and conditions of the original Agreement dated March 28, 2018 shall continue in full force and effect.

This Amendment No. 1 increases the lump sum total of \$86,900.00 by \$24,200.00 to a new lump sum fee of \$111,100.00.

IN WITNESS WHEREOF, the parties have hereunto executed this Agreement effective the day and year first above written.

LOCHMUELLER GROUP, INC.

CITY OF WESTFIELD

 2/20/19

Carl D. Camacho, PE
Vice President/Regional Office Manager

Signature

(Print or type name and title)

Attest:


Chad Costa
Environmental Manager - Associate

Signature

(Print or type name and title)

Signature

(Print or type name and title)



February 20, 2019

Mr. John Nail, P.E.
Westfield City Engineer
2706 E. 171st Street
Westfield, Indiana 46074

Re: Des. No.: 1700728
East Street Extension
196th Street to State Road (SR) 38
Westfield, Hamilton County, Indiana
Loch Group No. 217-0058; Supplement #1 Scope and Fee Justification

Dear Mr. Nail:

Thank you for continuing to allow Lochmueller Group to provide valuable services to the City of Westfield. Per our prior discussions, this correspondence provides formal justification for supplemental work with respect to the environmental documentation being prepared for the above referenced project.

Proposed Action – The proposed project involves an extension to East Street between 196th Street and SR 38. The proposed road will consist of two lanes (one in each direction) that are separated by a raised or depressed median. A designated bike lane will be incorporated into the pavement section of each lane direction, and a multi-use path will be included along the west side of proposed East Street. Curb and gutter will border the outside section of each lane, while shoulders will be constructed along the inside section of each lane.

I. Scope of Work – The following defines the work activities included as part of this supplemental request.

1. **Public Information Plan Development** – At the initial kickoff meeting with representatives of INDOT and Federal Highway Administration (FHWA) environmental staff in April 2018, it was requested that a Public Involvement Plan (PIP) be prepared. Development of the PIP was not included in the February 27, 2018 Scope of Services furnished to Mr. Phil Sundling. As part of the supplemental task the CONSULTANT shall prepare the PIP, which will detail the avenues by which the public will be engaged in the environmental process and identify the key stakeholders to be consulted. The PIP will be submitted to INDOT Environmental Services for review and approval.
2. **Public Information Meeting** – At the initial kickoff meeting with representatives of INDOT and FHWA environmental staff in April 2018, it was advised that in addition to a public hearing a public information meeting also be held. Task 14 of the February 27, 2018 Scope of Services furnished to Mr. Phil Sundling provided for only one public hearing. The addition of one public information meeting deviates from this original scope of work. As part of the supplemental services the CONSULTANT shall complete the following activities:

- a. *Assist in Preparation of Legal Notice* – The CONSULTANT shall coordinate with the INDOT Public Involvement Office and provide the necessary project information for publication of the legal notice. INDOT will publish the legal notice.
 - b. *Prepare Graphics / Displays* – In consultation with the City and the designer, the CONSULTANT shall assist in the preparation of the graphics and displays needed for the public information meeting.
 - c. *Prepare Presentation* – The CONSULTANT shall prepare and coordinate with the City and designer project information to include in a presentation intended for the public information meeting.
 - d. *Meeting Attendance / Facilitation* – The CONSULTANT shall attend the public information meeting that is to be scheduled by INDOT. The Senior Project Manager and Biologist III shall attend the meeting and facilitate.
 - e. *Organization and Coordination of Comments* – Following the public information meeting, the CONSULTANT shall organize the public comments for inclusion in the project file and the environmental document.
 3. **Agency Re-coordination** – Due to the anticipated changes in the preliminary right-of-way detailed the designers illustration dated December 4, 2018, re-coordination is required with the relevant local, state and federal agencies. The CONSULTANT shall prepare this re-coordination letter detailing the design changes and distribute to the relevant agencies. In addition, this task includes the completion of additional archaeological investigations of the additional right-of-way areas (please refer to the delineated areas in red on Exhibit A). The supplemental archaeological services shall be provided by 106 Consulting, LLC as a direct cost to the project with oversight by the CONSULTANT.
 4. **Section 106-Effects Letter** – Following the submission of the draft “No Adverse Effect” documentation to INDOT Cultural Resources Office (CRO), correspondence dated November 9 and 18, 2018 was received indicating a Section 106 Effects Letter was needed to clarify the relationship between NorthPoint and the project, as well as the effect the development had on the selection of an alternative. Documentation addressing this request will be prepared by the CONSULTANT in the form of an Effects Letter. This correspondence will be submitted to INDOT for approval prior to distribution to the Section 106 consulting parties.
 5. **Section 106-Consulting Parties Meeting** – At the request of INDOT CRO, the CONSULTANT shall organize and schedule one consulting parties meeting. Following the consulting parties meeting, the CONSULTANT shall prepare furnish minutes documenting the activities and decisions made.
 6. **Section 106-Update Effects Finding** – As part of this supplemental task the CONSULTANT shall update the “No Adverse Effect” finding and supporting 800.11(e) documentation, which was submitted to INDOT CRO on October 24, 2018, to reflect the additional coordination to occur with consulting parties. This task also includes the review and coordination of the Phase Ia Archaeological Reconnaissance addendum with INDOT CRO. This addendum covers additional areas from recent modifications to the design limits.
- II. **Fee** – Using the above information, a supplemental fee request of **\$24,200** has been developed.
- III. **Schedule** – With the addition of these services it is anticipated the Draft CE-4 will be completed within 20 months of receiving a notice to proceed.

Mr. John Nail, P.E.
February 20, 2019

IV. Items Not Included – The following activities are not included as part of the prime agreement, or this supplemental agreement:

1. Section 106 Adverse Effect / Memorandum of Agreement
2. Archaeological Investigations beyond a Phase Ia Reconnaissance
3. Section 4(f) Evaluation – De Minimis, Programmatic, or Individual
4. Permitting - Rule 5, Section 401, Section 404, and Construction in a Floodway
5. Air Quality Analysis
6. Phase II Limited Site Investigation
7. Modifications to the completed Noise Analysis

Should you have any questions, please do not hesitate to contact me at 317.334.6807, or ccosta@lochgroup.com. Thank you again for being a valued client of ours.

Very truly yours,



Chad Costa
Environmental Manager
Lochmueller Group

LOCHMUELLER GROUP		Environmental Fee									
PROJECT:		East Street Extension (Supplement #1)				INDOT Des No.: 1700728					
Client Name:		City of Westfield				Lochmuellel Proj. No.: 217-0058					
DESCRIPTION	Year	Env. Services Manager	Environmental Biologist IV	Environmental Biologist III	Environmental Biologist I	Historian/Sec. 106 Specialist II	GIS/CAD Administrator	Admn Assistant	TOTAL		
									HOURS / TASK	SALARY COST / TASK	
Environmental											
Task 1: Public Information Plan Development	2018	6	0	18	0	0	0	0	24	\$3,475.34	
Task 2: Public Information Meeting	2018	14	0	30	0	0	0	2	46	\$6,828.66	
Task 3: Agency Re-coordination	2019	2	0	6	8	6	2	1	25	\$2,852.84	
Task 4: Section 106 - Effects Letter	2018	2	0	4	0	26	0	0	32	\$3,672.44	
Task 5: Section 106 - Consulting Parties Meeting	2019	4	0	8	0	10	0	0	22	\$2,975.10	
Task 6: Section 106 - Update Effects Finding	2019	2	0	0	0	10	0	0	12	\$1,543.00	
SUBTOTAL: Environmental		30	0	66	8	52	2	3	181	\$21,351.38	
2018 Hourly Rate	ECI	\$223.85	\$150.16	\$118.68	\$85.03	\$105.77	\$120.70	\$87.18			
2019 Hourly Rate	2.5%	\$229.45	\$153.91	\$121.65	\$87.16	\$108.41	\$123.72	\$88.86			
2020 Hourly Rate	2.5%	\$235.19	\$157.78	\$124.69	\$88.34	\$111.12	\$126.81	\$90.58			
2021 Hourly Rate	2.5%	\$241.07	\$161.70	\$127.81	\$91.57	\$113.90	\$129.98	\$92.34			
2022 Hourly Rate	2.5%	\$247.10	\$166.74	\$131.01	\$93.86	\$116.76	\$133.23	\$94.15			
2023 Hourly Rate	2.5%	\$253.28	\$169.88	\$134.29	\$95.21	\$119.67	\$136.66	\$96.00			
SUBTOTAL Labor Cost										\$21,351.38	
DIRECT EXPENSES - Lochgroup											
Direct Expenses Cost	Trips	Unit Cost	Units	Quantity							
Mileage	2	\$ 0.38	Miles	30						\$22.80	
Mileage (On-Site)	0	\$ 0.38	Miles	0						\$0.00	
Lodging	0	\$ 90.00	Night	0						\$0.00	
Per Diem	0	\$ 25.00	Day	0						\$0.00	
Mailing & Printing										\$50.00	
Public Notice (PI Meeting)										\$100.00	
Additional Archaeological (106 Consulting)										\$2,675.00	
SUBTOTAL Direct Non-Salary Cost										\$2,847.80	
TOTAL:										\$24,199.18	
USE AS FEE										\$24,200.00	

East Street (Des. No. 1700728)

Additional Archaeological Survey Areas (in red)

EXHIBIT A



3000 ft

E-33rd

38

202nd St E

U.S. Highway 31

Google Earth

© 2018 Google



106 Consulting LLC

Office (513) 620-6770

Cell (765) 212-0659

louisbubb@gmail.com

December 21, 2018

Lochmueller Group, Inc.

3502 Woodview Trace, Suite 150
Indianapolis, IN 46268
Attn: Mr. Gary Quigg

Mr. Quigg:

After reviewing the information provided in your December 17th e-mail – regarding additional survey areas for the proposed East Street Extension project (Des. 1700728) in Washington Township, Hamilton County – 106 Consulting LLC (106C) recommends the completion of an archaeological records check and a Phase Ia field reconnaissance. 106C could conduct the records check, the field reconnaissance and produce a report of findings for a total cost of \$2,675.

We could complete this work within sixty (60) days of your notice-to-proceed – weather permitting and assuming that all rights of property access have been obtained for the survey.

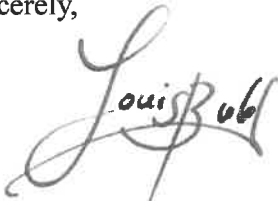
The proposed field reconnaissance would comply with the current Indiana Division of Historic Preservation and Archaeology (DHPA) guidelines. In general, fieldwork will consist of:

- pedestrian survey at 10 m (33 ft) intervals, where surface visibility is greater than 30 percent
- shovel test survey at 49 ft (15 m) intervals, where surface visibility is less than 30 percent
 - Shovel tests will be 35 cm (14 in) in diameter and up to 50 cm (20 in) deep
 - Shovel test fills will be screened
 - If artifacts are located, the shovel test interval will be reduced to 5 m (16 ft)
- soil cores to be excavated in regions mapped to contain alluvial soils

Following the fieldwork, a report compliant with established DHPA guidelines will be drafted. It will provide a general overview of the survey and preliminary National Register of Historic Places assessments for any cultural resources encountered inside the survey area.

If you have any questions or concerns, please feel free to contact me. Thank you for the opportunity to submit a bid for this project.

Sincerely,



Louis Bubb, MA
Principal Investigator
106 Consulting LLC



CONSTRUCTION STANDARDS AND SPECIFICATIONS

Public Works Department

Westfield, Indiana

March 2017

SECTION 00100 - INDEX

GENERAL SPECIFICATIONS

00100	Index
00200	Foreword
00300	General Requirements

DETAILED SPECIFICATIONS

<u>Section</u>	<u>Description</u>
02222	Standards for Utility Construction
02310	Directional Drilling
02500	Paving and Surfacing
02501	Standards of Roadway Geometric Design
02502	Standards of Roadway Construction
02505	Standards of Trails and Sidewalks
02750	Storm Sewer Televising
02800	Street Tree List

STORMWATER MANAGEMENT TECHNICAL STANDARDS MANUAL

03100	Policy and Procedures
03200	Hydrology
03300	Hydraulics and Hydraulic Structures
03400	Storm Sewer Pipes and Open Culvert Materials
03500	Installation of Stormwater Facilities
03600	Erosion and Sediment Control for Construction Sites
03700	Post-Construction Stormwater Quality Management
03800	Stormwater Management Technical Standard Details

SECTION 00200 – FOREWORD

The enclosed Construction Standards Details and Specifications are provided to outline the City of Westfield's (City) minimum criteria for construction of infrastructure and appurtenances within the jurisdiction of the City of Westfield.

All construction projects that are to become part of the City's system for operation and maintained by the City shall conform to the latest standards and details. Construction drawings and specifications must be stamped and signed by a registered professional engineer, licensed in the State of Indiana, shall be approved by the Westfield Public Works Department (WPWD), and be in accordance with these standards and specifications before construction begins. All construction plans must include a copy of these standards and specifications. A PDF version of this document can be obtained via the information below.

All construction plans and specifications shall be submitted to the WPWD for review and will be stamped by the WPWD once the plans and specifications are found to be in compliance with all City standards and specifications. One hard copy and a digital copy of the construction plans shall be submitted to the WPWD.

Any permits that need to be obtained outside of the control of the City shall so be done through the applicable utility or jurisdiction having authority. Any storm water storage or conveyance system must be submitted to the WPWD. For any storm water storage or conveyance system discharging to a drain regulated by the Hamilton County Surveyor must have plans submitted to that entity for approval as well as the WPWD.

Before any off-site (property not owned by the developer) utility construction can commence, all permanent and/or temporary easements shall be executed and conveyed to the City.

A preconstruction conference is required and a minimum of 48 hours notice shall be given prior to starting construction. **If right-of-way utility relocations are required, work plans must be submitted along with schedules for this work before the preconstruction conference will be scheduled.** Performance bonds, if obtained, and submittals for all infrastructure to be constructed shall be submitted to the WPWD and approved by the City before a preconstruction conference date can be set. A preconstruction conference can be scheduled by contacting the WPWD.

Construction observation shall be provided by the WPWD. Each and every time infrastructure construction is to commence, WPWD inspectors are to be notified 48 hours in advance. Inspection hours shall be invoiced on a monthly basis per [Ordinance 13-32](#). Any inspection performed outside of normal business hours, Monday through Friday 7:30am – 4:30pm, shall be billed out at a rate of 1.5x standard rates. It is the responsibility of the developer to ensure these invoices are paid.

WPWD reserves the right to stop all site work which is determined insufficient or not in accordance with the Standards and Specifications defined herein.

These standards were prepared with the intent of obtaining the highest quality of construction possible. As new materials become available and acceptable, the standards may be revised and updated.

Copies of the standards may be obtained from the City of Westfield website via <http://www.westfield.in.gov/> or the Westfield Public Works Department (contact information below):

Westfield Public Works Department
City Services Building
2706 East 171st Street
Westfield, Indiana 46074
Phone: 317-804-3100

SECTION 00300 - GENERAL REQUIREMENTS

1.1 DEFINITIONS

- A. Whenever used in these specifications the following terms have the meanings indicated which are applicable to both the singular and plural thereof:
1. City - The City of Westfield, represented by the City Council.
 2. Board of Public Works and Safety – Representatives appointed by the Mayor of Westfield that oversees the affairs of the Westfield Public Works Department and Public Safety Agencies.
 3. Westfield Public Works Department (WPWD) – An agency of the City which manages public infrastructure within its jurisdiction.
 4. Utility – The entity, municipal or otherwise, that provides services to the general public and has jurisdiction for expansion of services within the limits of the service area.
 5. Developer - Person or firm having control of the development site, and management of the project.
 6. Contractor - The person, firm or corporation with whom the Developer or City has entered into an agreement for construction of the project.
 7. Project - The total construction of which the work to be provided may be the whole or part.
 8. Work - The entire completed construction or the various separately identified parts thereof required to be furnished.
 9. The word “shall” is mandatory; the word “may” is permissive.

1.2 WORK TO BE PERFORMED

Work to be performed shall be in accordance with drawings and specifications included in this manual and/or approved by the City.

1.3 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction." All contractors performing work within the City's jurisdiction must meet with WPWD's Inspector as part of the required preconstruction conference prior to beginning work.

1.4 DISCOVERY OF HAZARDOUS MATERIAL

If, during the course of installing City infrastructure, the existence of hazardous material, including asbestos containing material, is observed in the work area, the Contractor shall immediately notify the Developer and the City in writing. For City and Developer projects, the Contractor shall not perform any work pertinent to the hazardous material prior to receipt of special instructions from the City of Westfield. Asbestos containing material includes transite pipe.

1.5 EASEMENTS

- A. For City projects, the City will obtain utility and/or drainage easements over and through certain private lands for construction.
- B. For Developer projects, the Developer will obtain utility and/or drainage easements over and through certain private lands for construction. The width or limits of such easements will be defined by the City, and all permanent and/or temporary easements shall be executed and conveyed to the City before any construction can commence. If the methods of construction employed by the Contractor are such as to require the use of land beyond the limits obtained, he shall make his own agreements with the property owners affected for the use of such additional land.
- C. If the methods of the construction employed by the Contractor are such as to require the use of land beyond the defined easement(s), he shall make his own agreement(s) with the property owners affected for the use of such additional land and shall provide a copy of the agreement(s) to the WPWD.
- D. In all such utility and/or drainage easements, the Contractor shall be required to carefully remove the property owner's fence, or other obstacles to the construction procedure, and it shall be the property owner's responsibility to reinstall their fence. The backfilling shall be to the grade of the existing ground level or to the grade as established by the property owner in the event the property owner permits the deposit of excess material upon such land.
- E. Any obstruction in the easement shall be removed by the homeowner before construction begins. If said obstruction is not removed prior to construction activities, the City/contractor will remove the obstruction and will not be responsible for damage and reinstallation to said obstruction.
- F. The cost of all such restoration of property with exception of the items listed above in section E shall be done by the Contractor.

1.6 OPERATIONS WITHIN RIGHT-OF-WAY

In public thoroughfares, all operations of the Contractor, including those of temporary nature, must be confined within the applicable right-of-way limits after having obtained approval of the City or other Local Governing Entity. If the methods of the construction employed by the Contractor are such as to require the use of land beyond the public thoroughfares, he shall make his own agreement(s) with the property owners affected for the use of such additional land and shall provide a copy of the agreement(s) to the WPWD.

1.7 PERMITS AND BONDS

A. PERMITS

The Developer will obtain and provide electronic copies of the approved permit(s) which relate to the completed facilities prior to construction. For City projects, the permits will be either obtained by the City or defined in the contract. Permits obtained by the Developer and/or the City include, but not limited to, permits from the following:

1. City of Westfield
2. Department of Natural Resources
3. Indiana Department of Environmental Management
4. U.S. Army Corps of Engineers
5. Indiana Department of Homeland Security Building & Fire Safety
6. Indiana Department of Transportation
7. Railroads
8. Hamilton County Surveyor's Office
9. Hamilton County Highway Department
10. Soil and Water Conservation District
11. Public and private utility approval(s) or permit(s)

It is the Developer's responsibility to ascertain what permits are required, including wetland delineation and mitigation.

B. BONDING

The Contractor may obtain the necessary bond(s) per [Indiana House Bill 1508](#), effective July 1, 2015 or letter of credit(s) for City projects and Developer shall obtain permits for Developer projects or otherwise approved by the Board of Public Works and Safety which relate to construction procedures as prescribed in the most current City of Westfield Unified Development Ordinance.

1. All necessary permits and/or bonds required in conjunction with construction activities within or under easements and/or public right of ways shall be required to be obtained prior to construction. The construction shall be performed by the Contractor in full accordance with any and all requirements of the State Highway

Commission, County Road Commission, WPWD, or other Local Governing Entity including those applying to barricades, watchmen, guarding, lighting, storage of supplies, equipment and excavated materials, method of backfilling, final grading, replacement of pavement or road surface, and all other conditions or requirements which may be stipulated by the State Highway Commission, County Road Commission, or WPWD, whether specifically shown on the drawings or mentioned in the specification.

2. For Developer projects, which include City infrastructure, the Developer per [Indiana House Bill 1508](#):
 - a. Shall provide a performance bond and/or letter of credit for 110% of the engineer's estimate or the contracted amount to perform the work for any improvements within Public Right-of-Way in addition to any erosion control improvements. This performance bond or letter of credit shall have no expiration date and must be received by the City prior to the preconstruction meeting, or
 - b. Shall, to the satisfaction and approval of WPWD complete the following:
 - (1) Completion and acceptance of all drainage infrastructure including storm sewers, sub-surface drains, manholes, and any other infrastructure associated with drainage within the project limits. This includes but not limited to pipe being installed, backfill, and collars poured; manholes installed, flowlines poured, interiors grouted, and castings properly installed. As part of the acceptance, as-builts (both digital and hard copy) but be submitted for review. Televising and cleaning will be analyzed on a case-by-case basis and MAY NOT be required to be completed prior to secondary plat being signed. This determination will be made by the Director.
 - (2) Completion and acceptance of all finish grading and permanent erosion control measures through all rear-yard swales, detention areas, and in any areas associated with the overall drainage of the site.
 - (3) Completion and acceptance of all silt fence around rear-yard swales, detention areas, and back of curbs throughout the entire section of development. Please note that once work plans are received from dry utility representatives, an onsite pre-con

meeting for utilities shall be coordinated by the developer with all contractors associated with the utilities as well as the City of Westfield representative. During this meeting, accommodations for the dry utility contractors shall be made regarding the gapping of the silt fencing. Once dry utilities are completed, gaps in silt fencing shall be completed within 48-hours.

- (4) Completion and acceptance of all asphalt roadways (up to binder at a minimum minimum), concrete curb and gutters, temporary cul-de-sacs, passing blisters, acceleration and deceleration lanes, and any other offsite right-of-way improvements throughout the entire section of development. Temporary pavement striping may be necessary due to weather limitations on permanent pavement markings. Please note that it is the responsibility of the developer to coordinate all utility relocations in a timely manner to ensure these improvements can be completed. The City will work diligently with the Developer to ensure the relocation work plans are properly engineered to hastily accommodate any Encroachment Permit that may be required. It is NOT the responsibility of the City to coordinate these relocations in a timely manner – the City recommends coordinating as early as possible. Please note that the City will NOT accept paying around power poles as a solution to poor utility coordination. Also, performance bonds will be required for all surface and other incomplete infrastructure.
- (5) Completion and acceptance of all regulatory and street name signage for traffic control and E-911 services.
- (6) Written confirmation from CEG that water is active throughout the entire section of development for fire protection services.
- (7) Completion and acceptance of all common area sidewalks, and trails.
- (8) Punchlist items for the above-mentioned tasks shall be completed within 30 business days from the day the punchlist is formulated.

3. Payment in Lieu of Bond:

- a.) The WPWD has the discretion for an entity obligated to provide performance bonds to the City to allow a payment in cash to the City in lieu of a performance bond.
 - b.) The cash in lieu of bond shall be equal to 5% of the contractor estimate for the cost of the appropriate portion(s) of a development requiring a performance bond.
 - c.) Payment in Lieu of Bond may be accepted for partial completion, at the discretion of the WPWD. Remaining costs to complete this work shall be determined by a professional engineer and agreed upon by WPWD.
4. Performance bonds will not be considered for release until all punch list items are complete, easements and/or public right of ways are recorded or platted, and as-built drawings are submitted to WPWD. A digital copy shall be provided. Performance bonds shall only be released by the Board of Public Works once the above items have been completed.
5. After all City infrastructure has been inspected, tested, approved, and required as-builts have been submitted and approved by the City/WPWD, the performance bond and/or letter of credit can be flipped to a 3 year maintenance bond posted with the City. The maintenance bond shall be in the amount of 10% of the actual construction cost. Maintenance bonds shall be released by the Board of Public Works at the end of the 3 years once all maintenance punch list items are complete which includes, but not limited to the following:
- a.) To verify that all enclosed drains and sewers are functioning properly, all storm sewer including sub-surface drains are to be cleaned and televised with visual recordings (via closed circuit television) of such tile drains and sewers shall be required before release of maintenance sureties. These visual recordings will be scheduled at least 90 days prior to the expiration date of the maintenance bond. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the WPWD and Utility or designee before maintenance sureties would be recommended to be released.

1.8 MAINTAINING TRAFFIC

- A. Developer is responsible for preparing maintenance of traffic plans for any construction activities that will interfere with public transportation. Traffic control devices used for maintenance of traffic shall comply with the latest version of the Indiana Manual on Uniform Traffic Control Devices. These maintenance of traffic plans must be included in the construction plans that are submitted to the City. The Contractor will provide maintenance of

traffic plans associated with City projects unless otherwise specified in the contract. If there are modifications to the maintenance of traffic plans, it must be reviewed by the City prior to implementation.

- B. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain permit(s) from the duly constituted public authority having jurisdiction, which may include the state, county, and city/town. The contractor will be responsible for notifying the local school corporation, all public safety agencies, government agencies, and any affected property owners at least 72 hours in advance. The Contractor shall provide the WPWD a detour route plan for review prior to the road closure at least 1 week in advance.
- C. The Contractor shall place advanced road closure signs posting the closure date at a minimum 72 hours in advance to closure. The Contractor shall place all proper detour signs and barricades prior to the actual street closing.
- D. During construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. Emergency vehicle access must be maintained at all times. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the latest version of the Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the City has the right to reject if determined to be in less than good condition.
- E. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such manner as to obstruct traffic or line of sight. Keep the traveled way of all street, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where necessary as determined by WPWD. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed, except when and where necessary as determined by WPWD, and then only upon due advance notice to the WPWD and Homeowner or Business owner, and for the shortest practicable period of time, consistent with efficient and expeditious

construction. The Contractor shall be liable for any damage to persons or property resulting from his work.

- F. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied if, in the opinion of the City, the restoration on streets where excavation has occurred has not progressed satisfactorily.

1.9 SIDEWALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, curb and gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary erosion and sediment control measures as required within this Standards Manual to permit the free passage of surface water along the curb and gutters. The Contractor shall immediately remove all material, exercising such precaution as may be directed by the City. All material excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

1.10 WARNING LIGHTS AND ARROW BOARDS

The Contractor shall place sufficient warning lights and arrow boards on or near the work and keep them illuminated during periods of construction and reduced visibility (from twilight in the evening until sunrise) and shall be held responsible for any damages that any party or the Developer may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

1.11 UTILITIES

- A. Temporary Removal: All existing City utility systems which conflict with the construction of the work herein which can be temporarily removed and replaced shall be accomplished at the expense of the Developer with approval from the WPWD, unless the City specifies the use of its own contractor at the Developer's expense.
- B. Permanent Relocation of Utilities: All public and private utilities located in the public right-of-way which permanently interfere with the proposed improvements will be relocated and paid for by the Developer. The Developer must coordinate and gain approvals from each specified utility prior to relocating their facility.
- C. No infrastructure shall be installed outside of normal working hours Monday through Friday (7:30 am to 4:30 pm) without the presence of the

WPWD Inspector. WPWD shall be notified no later than Noon on Thursday prior to work being scheduled for the following Saturday. If this condition is not met, no work shall commence on Saturday.

1.12 SUBMITTALS - CERTIFICATE OF COMPLIANCE

The Developer shall upon request of the City, submit to the WPWD a Certificate of Compliance from the manufacturer and/or supplier of each and every specified material or manufactured equipment item. The Certificate shall state that the material or the item of equipment to be furnished has been manufactured with materials in accordance with the applicable sections of all required codes, specifications, and standards as required by the specifications.

1.13 MANUFACTURER'S SERVICE TIME

- A. When equipment is to be furnished by the Developer or Contractor and maintained in the future by the WPWD, service by the manufacturer is required to be provided as part of the work and the cost shall be covered by the Developer for Developer projects and by the Contractor for City owned projects. A minimum of one (1) year warranty is required unless an extended specified warranty is offered or standard warranty for that equipment is longer than the minimum of one (1) year.
- B. The service provided shall be by a qualified representative to check the completed installation, place the equipment in operation, and instruct the City's operators in the operation and maintenance procedures.
- C. The services shall further demonstrate to the City's complete satisfaction that the equipment will satisfactorily perform the functions for which it has been installed.

1.14 DIGITAL AS-BUILTS/RECORD DRAWINGS

The Developer will be responsible for preparation and submittal of digital as-builts/record drawings in state plane coordinates as required by the requirements set forth in the City's Digital As-built requirements. Copies of the most recent requirements are available on the City's website at www.westfield.in.gov and also at the following location: <http://www.hamiltoncounty.in.gov/668/HagTag>

Additional information can also be received from the WPWD or the Informatics Department.

Developers shall hire a licensed professional engineer or land surveyor to provide all required As-Built information.

END OF SECTION 00300

SECTION 02222 – STANDARDS FOR UTILITY CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Specifications for the stripping of topsoil and vegetation, excavation, trenching, bedding, filling, backfilling, compaction, pavement restoration, and related work in connection with the installation of water mains, gravity sanitary sewers, storm sewers, force mains, and other City owned utilities are included in this Section.
- B. Definitions
 - 1. Excavation: Removal of earth and rock to form a trench for the installation of a water main, gravity sanitary sewer, storm sewer, force mains, and other City owned utilities.
 - 2. Earth: Unconsolidated material in the crust of the Earth derived by weathering and erosion. Earth includes:
 - a. Materials of both inorganic and organic origin;
 - b. Boulders less than 1/3 cubic yard in volume, gravel, sand, silt, and clay;
 - c. Materials which can be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.
 - 3. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes:
 - a. Limestone, sandstone, dolomite, granite, marble, and lava;
 - b. Boulders 1/3 cubic yard or more in volume;
 - c. Materials which cannot be excavated by equipment which is used to remove earth overburden without the use of explosives, rock rippers, rock hammers, or jack hammers;
 - d. Materials which cannot be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.
 - 4. Undercutting: Excavation of rock and unsuitable earth below the bottom of the pipe or conduit to be installed in the trench.

5. Subgrade: Undisturbed bottom of a trench.
6. Bedding: Material placed in trench to support pipe and conduit as specified for the utility.
7. Backfill and Fill: Material placed in trench from the top of bedding to finished grade, or to subbase of pavement as specified for the utility.
8. Topsoil: Earth containing sufficient organic materials to support the growth of grass as specified by current USDA standards and specifications.
9. Dry utility: Any utility including electric, gas, telephone, cable, fiber, and other utilities not associated with water, sanitary, or storm sewers.

1.2 SEPARATION REQUIREMENTS

- A. All new dry utilities shall maintain a minimum separation of 3.0 feet from all storm structures and pipe.
- B. Minimum horizontal separation between storm sewers, water and sanitary sewers shall be 10.0 feet and 8.0 feet to the structures.
- C. Utility pedestals shall not be placed on top of storm sewer lines.

1.3 SITE CONDITIONS

- A. Existing storm sewers, sanitary sewers, water mains, gas mains, electric ducts, fiber optic ducts, telephone ducts, steam mains, wells, septic systems, wetlands, sink holes, geothermal, regulated drains, and other under-ground structures, lines, and their house connections are to be shown on the plans according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities), is the responsibility of the Contractor. All site conditions shall be field verified by Engineer/Surveyor/Contractor.

1.1 MINIMUM STANDARDS FOR STORM SEWERS

- A. Refer to the City of Westfield Stormwater Management Technical Standards Manual, latest version, for additional details and specifications.

PART 2 - PRODUCTS

2.1 BEDDING

- A. Class I bedding shall be angular 6 to 12 mm (1/4 to 1/2 inch) graded stone and crushed stone.
- B. Class II bedding shall be coarse sands and gravels with maximum particle size of 20 mm (3/4 inch). Class II bedding includes variously graded sands and gravels containing small percentage of fines generally granular and non-cohesive, either wet or dry. Soil types GW (well-graded gravel), SW (well-graded sand), and SP (pea gravel and/or crushed stone mixed with sand) are included in this class.

2.2 BACKFILL

- A. General: Backfill for utilities shall be in accordance with Westfield Construction Standard Drawings (WCSD) 02222-001 and 002.
- B. Non-Structural Backfill: Excavated material shall be used when earth backfill is specified on the plans or where granular backfill or flowable fill is not specifically specified, provided that such material consists of loam, clay, or other materials which, are suitable for backfilling. Unsuitable backfill or frozen backfill material shall not be used. Suitable backfill shall be the following soils, classified by the Unified Soil Classification System, ASTM D2487.
- C. Structural Backfill: Granular backfill, when indicated on the plans or as directed by the Engineer, shall be used for backfilling providing it meets the following soils classified by the Unified Soils Classification System ASTM D2487 or the INDOTSS Section 211 - B Borrow and Structural Backfill. For trenches less than 6" in width (i.e. cutting in water line services), uncompacted No. 8 stone may be used.
- D. Unsuitable Materials: Materials which are unsuitable for backfill include stones greater than 8 inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, peat, and soils, classified by the Unified Soil Classification System, ASTM D2487. Frozen materials in excess of 6" in size shall be considered unsuitable and shall be removed during backfill operations.
- E. Cellular Concrete (Grout): Light weight cellular concrete may be used for filling of abandoned sewers as a grouting mixture for filling voids and as a substitute for backfill concrete in tunnels or casing pipes. The cellular concrete shall be produced by blending preformed foam with cement-sand grout slurry to produce a concrete having a fresh weight per cubic foot of not less than 75 pounds.

F. Flowable Fill

1. Flowable fill shall be removable and in accordance with INDOTSS Section 213 and as specified herein.
2. Design: Mix design shall be required to be submitted and approved by the WPWD or designated engineer. The Contractor shall be required to provide test data from a laboratory which shows that the proposed mix design is in accordance with the requirements listed in this specification.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES, STRUCTURES, AND PROPERTY

- A. All poles, fences, sewer, fiber optic, gas, water or other pipes, wires, conduits and manholes, wells, septic systems, wetlands, regulated drains, sink holes and other under-ground structures, railroad tracks, buildings, structures and property along the routes of water mains, force mains, and sewers shall be supported and protected from damage by the Contractor.
- B. Movable items such as mail boxes may be temporarily relocated during construction. Place movable items in their original location immediately after backfilling is completed, unless otherwise shown on the drawings. Movable items which are damaged during construction will be replaced with similar material at the Contractor's expense.
- C. The Contractor shall proceed with caution in the excavation and preparation of trenches so that the exact location of underground utilities and structures both known and unknown may be determined. Contractor shall call in utility locations to be marked prior to any construction activities. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged at the direction of the utility company's representative. Contractor shall immediately contact utility company when damage has occurred.
- D. **All abandoned water wells must be plugged by a licensed water well driller in accordance with 312.IAC 13.Rule 10. A copy of the state form for abandoned wells must be provided to our office. If well was abandoned prior to 1998 then no form is required. All abandoned water wells to be inspected by the Hamilton County Health Department.**

- E. Whenever, in the opinion of the WPWD, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose at the expense of the Developer/Contractor. If a City project, it will be at the cost of the Contractor.
- F. Wherever sewer, gas, water, or other pipes or conduits cross the trench, the Contractor shall support said pipes and conduits without damage to them. The manner of supporting such pipes, etc., shall be subject to the approval of the owner of the utility involved.
- G. When utility lines that have to be removed or relocated are encountered within the areas of operations, the Contractor shall notify the WPWD or the owner of that utility in ample time for the necessary measure to be taken to prevent interruption of the service.
- H. The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless they shall have first obtained the property owner's written consent thereto and shall have provided a copy of said written consent to the City.
- I. All excavated material shall be piled in a manner that will avoid obstructing sidewalks and driveways. Line of sight for vehicles and pedestrians shall not be obstructed. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Curb and gutters shall be kept clear and other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.
- J. All streets, alleys, pavements, parkways, and private property shall be thoroughly cleaned of all surplus materials, earth, and rubbish placed thereon by the Contractor. Any debris, rubbish, earth, or material shall not be stored within the roadway.

3.2 CLEARING

- A. Clear and remove logs, stumps, brush, vegetation, rubbish, and other perishable matter from the project site as required to perform work.
- B. Do not remove or damage trees that do not interfere with the work. Completely remove trees required to be removed, including stumps and roots. Properly treat damaged trees which can be saved.

- C. Debris from the tree removal, including trunk, branches, leaves, roots and stumps, shall not be buried or burned on the job site, but must be completely hauled away and disposed of at the Contractor's expense.
- D. Clear and remove trees, logs, stumps, brush, vegetation, rubbish, and other perishable matter from the existing and proposed right of way.

3.3 STRIPPING AND STOCKPILING OF TOPSOIL

- A. Strip topsoil and vegetation from the excavated areas. Clean topsoil may be stockpiled for reuse as the upper 6 inches of the areas to be seeded. Soil stockpiles must be seeded if undisturbed for a period of time greater than 14 days per Stormwater Manual.

3.4 PAVEMENT AND SIDEWALK REMOVAL

- A. Remove existing pavement and sidewalks from the excavated areas. Remove excavated asphaltic and concrete materials from the job site as these materials are excavated.
- B. The width of pavement removed along the normal trench for the installation of pipe and structures shall not be less than two (2) feet on either side of the trench. Remove all existing pavement when the excavation requires the removal of 75% or more of the total existing pavement width. If over 50% of one travel lane is disturbed, restoration must be extended to the centerline of the roadway.
- C. Remove trails completely when excavation is along the length of a trail and requires the removal of part of the trail. Remove sidewalks to existing joints in the sidewalks when excavation crosses sidewalks. If there are no joints in an existing sidewalk or trail, the width of the sidewalk or trail removed shall not exceed the width of the trench by more than 12 inches on each side of the trench.
- D. Use methods to remove pavement and sidewalks that will assure the breaking or cutting of pavement and sidewalks along straight lines. The face of the remaining pavement and walk surfaces shall be approximately vertical.
- E. All concrete sidewalk and asphalt trails removed must be replaced per WPWD Standards Sections 02500 and 02505 and meet the most current ADA/PROWAG Standards. All restoration work shall require inspection by WPWD.

- F. Any area within existing pavement and/or sidewalks and trails to 5' from outside of pavement edge or back of curb shall have Removable Flowable Backfill as the fill material for the excavated area.

3.5 EXCAVATING

- A. General: After stripping of topsoil and vegetation, perform excavations of every description regardless of material encountered within the grading limits of the project to lines and grades as indicated on the drawings or as otherwise specified.
 - 1. Materials removed below the depths indicated shall be replaced to the indicated excavation grade with satisfactory bedding materials placed and compacted. The Contractor will minimize over excavation.
- B. Dewatering: Keep excavations free from water until the storm sewers, structures, foundations, and appurtenances to be constructed in the excavations are completed and will safely withstand forces from water. Provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment.
 - 1. Operate dewatering equipment ahead of pipe laying and keep the water level below the pipe invert until the pipe is secured by backfill.
- C. Trenching: Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.
 - 1. Latest version of OSHA rules and regulations Part 1926 shall be followed and adhered to in addition to conditions below. OSHA standards shall take precedent if a conflict exists.
 - 2. Do not open more than 100 feet of trench in advance of the installed pipe. Excavate the trench within 6 inches of full depth for a distance of at least 30 feet in advance of the pipe laying, unless otherwise directed or permitted.
 - 3. Contractor shall be responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Excavate all slopes to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting, or where shoring

or trench box is to be used. Contractor is responsible for ensuring all excavation is safe and in compliance with OSHA regulations.

4. Sides, slopes, and faces of all excavations shall meet accepted OSHA requirements by scaling, benching, barricading, rock bolting, wire meshing or other equally effective means. Give special attention to slopes which may be adversely affected by weather or moisture content.
5. Flatten the trench sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.
6. Shoring, sheeting, trench box, or other means shall be used to support sides of trenches in hard or compact soil when the trench is more than 5 feet in depth and 8 feet or more in length. Sides of trenches shall include embankments adjacent to trenches. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. Provide a bench of 4 feet minimum at the toe of the sloped portion of the trench wall when the outside diameter of the pipe to be installed is greater than 6 feet.
7. Use diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Do not allow water to accumulate in an excavation. If possible, the grade should be away from the excavation.
8. Excavations shall be inspected by a competent Contractor's representative after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased, if necessary.
9. Do not store excavated or other material nearer than 4 feet from the edge of any excavation. Store and retain materials as to prevent materials from falling or sliding back into the excavation. Install substantial stop log or barricades when mobile equipment is utilized or allowed adjacent to excavations.
10. The width of trenches in earth for storm sewers, basin connections, house connections, and other drains up to and including 33 inches in internal diameter shall provide a clearance of not less than 8 inches or more than 10 inches on each side of the pipe. Trenches for pipe larger than 33 inches in internal diameter shall provide a

clearance of not less than 10 inches or more than 14 inches on each side of the pipe.

11. The maximum clear width of trenches in earth for manholes shall be the greatest external width of the structure plus the space necessary for the construction and removal of the forms and construction of masonry work.
12. The design of the storm sewer pipe and structures is predicated upon the width of trench specified in this Article. The Contractor shall be responsible for the provision and installation, at his own expense, of such remedial measures as may be directed by the WPWD, designee, or utility company representative; should the trench width limits specified in this Article be exceeded.
13. Test the air in excavations in locations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases are present. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, and basket stretcher, shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.
14. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.
15. Provide ladders where employees are required to be in trenches 4 feet deep or more. Ladders shall extend from the floor of the trench to at least 3 feet above the top of the excavation. Locate ladders to provide means of exit without more than 25 feet of lateral travel.
16. Provide adequate barriers and physically protect all remotely located excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon completion of exploration and similar operations.
17. All open excavations shall be permanently backfilled within 48-hours of the opening of the excavation. During this time, adequate protection, in accordance with OSHA requirements, shall be required. Snow Fencing, or equivalent; no caution tape will be permitted.

- D. Quicksand: Carry on the work with utmost vigor and proceed with the work expeditiously when running sand, quicksand, or other bad or treacherous ground is encountered. Install bedding to support the pipe as directed.
- E. Blasting: Removal of rock from the excavation may be facilitated by the use of controlled explosives with WPWD approval.
 - 1. Blasting supervision and Blasting Monitoring and Control Programs shall meet the requirements of this Section.
 - 2. Storage procedures for explosives shall be developed by the Contractor and submitted to the Engineer before explosives are brought to the job site.

3.6 SHEETING

- A. The Contractor shall be responsible for construction means, methods, techniques, and procedures, and for providing a safe place for the performance of the work by the Contractor, Subcontractors, suppliers and their employees, and for access use, work, or occupancy by all authorized persons.
- B. The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction."
- C. Adequate supporting systems, such as sheeting, shoring, piling, cribbing, and bracing shall be furnished and installed by the Contractor as required to protect existing buildings, utilities, and property from damage during the progress of the work.

3.7 STORAGE AND REMOVAL OF EXCAVATED MATERIAL

- A. Suitable excavated material required for filling and backfilling operations may be stockpiled in on-site locations, at the discretion of the WPWD or designee, until the material is ready to be placed.
- B. Remove unsuitable materials from the job site as unsuitable materials are excavated. Remove surplus suitable materials from the job site as trenches are backfilled.

3.8 TEMPORARY PLUGS

Prevent foreign material from entering pipe while it is being installed. Do not place debris, tools, clothing, or other material in the pipe. Close the open ends of

pipe by securing watertight plugs when pipe laying is not in progress. Remove any earth or other material that enters pipe, lateral pipe, or appurtenances through any open pipe end.

3.9 BACKFILLING WATER MAIN, SANITARY MAIN, FORCE MAIN, AND STORM SEWER TRENCHES

- A. Backfilling of water main, sanitary main, and force main trenches shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section. Backfilling of storm sewer trenches shall be in accordance with INDOTSS 715.
- B. Do not backfill trenches and excavations until all utilities have been inspected by the WPWD or designee and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings. Required hydrostatic tests may be applied to the line either before and/or after the trench is backfilled, subject to approval of the WPWD or designee.
- C. Bedding procedures for sanitary sewers and storm sewers shall be as specified in Manufacturer's recommendation, or WPWD specifications. The more stringent specification will apply. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.
- D. Material from the trench subgrade to the centerline of the pipe shall be Class II bedding. Place bedding by hand or approved mechanical methods in layers of 8 inches loose depth. Compact bedding by hand tamping or with a power operated hand vibrating compactor. Deposit bedding in the trench for its full width on each side of the pipe simultaneously.
- E. Compaction shall be in accordance with INDOTSS 211.
- F. Do not use the following materials for backfill:
 - 1. Unsuitable materials;
 - 2. Frozen materials;
 - 3. Materials which are too wet or too dry to be compacted to the densities specified in this Article;
 - 4. Flowable concrete fill shall not be in direct contact with ductile iron or other metallic pipe materials and/or fittings. Minimum separation of 12 inches shall be maintained.
- G. Where the edge of the trench is within 5 feet of the existing pavement or public right-of-way, it shall be backfilled with Structural Backfill in accordance with INDOTSS 211, unless otherwise approved in writing by

the WPWD Engineer. For all new construction, refer to WSD 02222-001 and 002 for backfill limits and requirements. A WPWD Inspector shall be notified 24-hours in advance of the backfilling of all utility crossings of new infrastructure. For all open cuts of existing pavement infrastructure, refer to WSD 02222-002. All restoration of open roadway cuts shall be fully restored within 48-hours of the open cut of the existing infrastructure.

- H. All sanitary and water crossings of existing public roadway infrastructure shall NOT be installed with an open cut trench. Trenchless installation shall be required per INDOTSS 716, unless otherwise approved in writing by the WPWD Engineer.

3.10 FLUSHING OF WATER MAINS

- A. All flushing of water mains for testing purposes, if chlorinated, shall be required to outlet directly to the nearest sanitary sewer structure. Any water chlorinated for testing purposes shall be dechlorinated prior to draining into storm sewer system.

3.11 LEAKAGE TESTING FOR WATER AND SANITARY

- A. All leakage testing for water and sanitary shall be completed and accepted prior to placement of any asphalt, unless otherwise approved in writing by the WPWD Engineer.

3.12 MAINTAINING TRAFFIC

- A. Developer is responsible for preparing maintenance of traffic plans for any construction activities that will interfere with public transportation. These maintenance of traffic plans must be included in the construction plans that are submitted to the City. The City will provide maintenance of traffic plans associated with City projects unless otherwise specified in the contract. If there are modifications to the maintenance of traffic plans, it must be reviewed by the City prior to implementation.
- B. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain permit(s) from the duly constituted public authority having jurisdiction, which may include the state, county, and city/town. The contractor will be responsible for notifying the local school corporation, all public safety agencies, government agencies, and any affected property owners. The Contractor shall provide the WPWD a detour route plan for review prior to the road closure at least 5 business days in advance of the On or After closure date. The Contractor shall place approved advanced road closure signs and detour route signs a minimum 72 hours in advance of the On or After closure date. The

Contractor shall notify the City a minimum of 48 hours in advance of the actual closing of the roadway.

- C. During the construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. Emergency vehicle access must be maintained at all times. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the latest version of the Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the City has the right to reject if determined to be in less than good condition.
- D. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such manner as to obstruct traffic. Keep the traveled way of all street, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where approved by the WPWD. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed, except when and where necessary, and then only upon due advance notice to the WPWD and Homeowner or Business owner, and for the shortest practicable period of time, consistent with efficient and expeditious construction. The Contractor shall be liable for any damage to persons or property resulting from his work.
- E. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied if, in the opinion of the City, the restoration on streets where excavation has occurred has not progressed satisfactorily.

3.13 SIDEWALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary erosion and sediment control measures as required within the Standards Manual to permit the free passage of surface water along the gutters. The Contractor shall immediately remove all material, exercising such precaution as may be directed by the City. All material

excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

3.14 WARNING LIGHTS

The Contractor shall place sufficient warning lights on or near the work and keep them illuminated during periods of reduced visibility (from twilight in the evening until sunrise) and will be held responsible for any damages that any party or the City may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

3.15 CLEANUP AND MAINTENANCE

- A. Cleanup the job site as backfilling is completed. Remove excess earth, rock, bedding, materials, and backfill materials. Remove unused piping materials, structure components, and appurtenances. Restore items moved, damaged, or destroyed during construction. Grade area to be restored. Leave backfill mounded over trenches which are not backfilled with Structural Backfill. Cleanup and restoration specified in this paragraph shall be completed within 1,000 feet of excavation.
- B. Restoration of grass, bushes, trees, and other plants shall be completed by Contractor to original or better condition.
- C. Maintain the job site until the work has been completed and accepted. Fill trenches which settle when settlement is visible. Restore items damaged by construction or improper restoration. Keep dust conditions to a minimum by the use of water.

PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

<u>FIGURE</u>	<u>DESCRIPTION</u>
02222-001	Utility Backfill Details
02222-002	Utility Backfill Limits
02222-003	Utility Pothole Details

END OF SECTION 02222

SECTION 02500 – PAVING AND SURFACING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: This section covers all work involved in the installation of new pavement and the repair and replacement of existing streets, roads, highways, drives, parking areas and other paved areas damaged or destroyed during construction.
- B. New street pavement shall be asphalt only. Any reference to concrete pavement shall apply to the repair and maintenance of existing concrete streets only.
- C. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference thereto. Except as specifically modified in this specification, paving and surfacing operations, materials and testing will comply with the most current revisions of applicable sections per the latest version of the Indiana Department of Transportation Standard Specifications.
- D. Definitions
 - 1. Abbreviations
 - a. INDOTSS - Indiana Department of Transportation's Standard Specifications.
 - b. AASHTO - American Association of State Highway & Transportation Officials.
 - c. ACI - American Concrete Institute.
 - d. ASTM - American Society for Testing & Materials.
 - e. NRMCA - National Ready Mix Concrete Association.
 - 2. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes limestone, sandstone, dolomite, granite, marble, and lava.
 - 3. Subgrade: The prepared and compacted soil immediately below the pavement or walk system and extending to such depth as will affect the structural design.
 - 4. Subbase: The layer of specified or selected material of designed thickness placed on a subgrade to support a base course and surface course.

5. Base Course: The layer of specified or selected material of designed thickness placed on a subbase to support a intermediate or surface course.
6. Intermediate Course: The layer of specified or selected material of designed thickness placed on a base course to support a surface course.
7. Surface Course: The layer of specified or selected material of designed thickness placed on a subbase or base course to support the traffic load.

1.2 QUALITY ASSURANCE

- A. The Developer/Contractor shall employ, at the request of the WPWD or designee, and pay for the services of an independent testing laboratory (unless otherwise noted) to perform specific services and necessary field density tests. The Developer/Contractor shall demonstrate to the WPWD or designee that proper compaction has been obtained and proper asphalt and concrete mix designs are in compliance with the specifications.
 1. Refer to INDOTSS 402.12 for Weather Limitations. Density testing will be required if temperatures conditions are not acceptable.
 2. HMA courses less than 110 lb/sq yd are to be placed when the ambient and surface temperatures are 60°F or above. HMA courses equal to or greater than 110 lb/sq yd but less than 220 220 lb/sq yd are to be placed when the ambient and surface temperatures are 45°F or above. HMA courses equal to or greater than 220 lb/sq yd and HMA curbing are to be placed when the ambient and surface temperatures are 32°F or above. Mixture shall not be placed on a frozen subgrade. However, HMA courses may be placed at lower temperatures, provided the density of the HMA course is in accordance with INDOTSS 402.16.
- B. Mixing Plant: Prior to placing any hot asphalt pavement or Portland cement concrete pavement, the Contractor shall provide the WPWD or designee the name and location of the bituminous mixing or concrete mixing plant and the type and composition of mixes the Contractor proposes to use in the work. Mix designs shall be submitted for review and approval a minimum of 5 business days before installation. Any unapproved mix placed by the Contractor shall be removed at no cost to the City of Westfield. There will be no exceptions.

- C. Paving and surfacing shall comply with the tolerances specified in Sections 401, 402, 501, and 502 of INDOTSS.
 - 1. Subgrade and subbase shall be within 1/2 inch of dimensions and elevations indicated on drawings.
 - 2. Bituminous base shall not vary longitudinally more than 1/4 inch from a 10-foot straightedge. Bituminous and concrete surfaces shall not vary more than 1/8 inch from a 10-foot straightedge.
 - 3. Finished surface shall be within 1/4 inch of dimensions and elevations indicated on drawings.
- D. Asphalt and concrete pavement shall be installed by a contractor whose prime business is asphalt or concrete paving.

1.3 JOB CONDITIONS

- A. Do not place paving and surfacing materials on a wet surface, pumping subbase or when weather conditions would prevent the proper construction of paving and surfacing.
- B. Do not place aggregates on frozen subgrade or subbase. Do not place aggregates when ambient air temperature in the shade is below 35°F. Refer to INDOTSS 301.04 for additional weather limitations.
- C. Bituminous materials are to be placed in accordance with INDOTSS Sections 401, 402, 405, and 406.
- D. Portland Cement Concrete Pavement is to be placed in accordance with INDOTSS Sections 501 and 502.
- E. When air temperatures are at or below 35 degrees F, an admixture is required to be added to the concrete to prevent freezing. Refer to INDOTSS 502.11 for weather limitations. Approval must be given prior to placement by the WPWD Inspector.
- F. Do not place paving and surfacing materials when natural light is not sufficient to properly observe work or operations. Light plants may be required for safety.

1.4 GRADE ADJUSTMENT OF EXISTING STRUCTURES

- A. When a grade adjustment of existing structures is required, the manhole frames, covers and gratings, and the gas and water valve boxes and covers,

shall be removed and reconstructed to grade as required with an approved device. Approved devices include, but not limited to:

1. Concrete riser ring
 2. Pro-Ring®
 3. Or Approved Equal
- B. Maximum amount of riser rings shall be only 12 inches or no more than 3 rings. Greater adjustment than 12 inches shall require a reconstruction of the structure, per INDOTSS 720.04.
- C. On resurfacing and new construction work, the manhole castings and valve boxes shall be adjusted to grade flush with pavement using “Mr. Manhole” or similar approved system after the surface course is installed.

1.5 CONTRACTOR'S ORGANIZATION

- A. The Contractor shall be a firm whose prime business is asphalt or concrete paving. The Contractor shall have a competent supervisor on the site during the progress of the work, acting for the Contractor in all matters concerning the work. He shall have the authority to receive directions and act upon them for the City through the WPWD or designee.
- B. The Contractor shall keep a set of Plans and Specifications available on the site and in good condition.

1.6 TRAFFIC CONTROL

- A. The Developer's Engineer shall plan construction operations so that existing local traffic access can be maintained. If a closure is required, refer to General Requirements, Section 00300.
- B. During the construction, the Contractor will also maintain appropriate use of barricades, lights, flagmen and other protective devices, whether specified for the project or required by the local governing authority. Traffic control devices used for maintenance of traffic shall comply with the latest version of the Indiana Manual on Uniform Traffic Control Devices.
- C. Temporary pavement markings shall be required after milling operations and before resurfacing if left exposed for over 24 hours. Contractor may be required to place cones or approved barricades after temporary markings are pulled and before asphalt is placed.
- D. Temporary pavement markings shall be required after paving operations until permanent markings can be placed, or for the purpose of temporarily

shifting traffic patterns. If permanent markings will not be placed until after the winter season, temporary markings shall be paint or thermoplastic by a qualified contractor.

- E. Asphalt Tapers at all butt joints shall be required if opened to live traffic. Millings are not acceptable.

PART 2 - PRODUCTS

2.1 AGGREGATE

- A. Fine aggregates shall consist of natural sand or manufactured sand produced by crushing rock, shells, air-cooled blast furnace slag, or wetbottom boiler slag.
 - 1. Fine aggregates used in Portland cement concrete and bituminous pavements shall be free from injurious amounts of organic impurities. When subjected to the colorimetric test for organic impurities and a color darker than the standard is produced, it shall be tested for effect of organic impurities on strength of mortar in accordance with AASHTO T 71. If the relative strength at 7 and 28 days, calculated in accordance with section 10 of T 71, is less than 95%, it shall be rejected.
- B. Coarse aggregates shall consist of clean, tough, durable fragments of crushed rock, crushed or uncrushed gravel or shells, or crushed and processed air-cooled blast furnace slag. These materials shall not contain more than 15% flat or elongated pieces and shall not contain particles with an adherent coating. Flat or elongated pieces will be described as pieces having a length in excess of four times its width.
- C. Aggregates shall comply with INDOTSS Section 904.

2.2 BITUMINOUS MATERIALS

- A. Petroleum asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347°F.
 - 1. Petroleum asphalt cement shall be PG Binder, grade PG 64-22.
 - 2. Petroleum asphalt emulsion shall be AE-60.
- B. Bituminous materials for prime coat shall consist of:
 - 1. Asphalt emulsion - AE-P.
 - 2. Asphalt emulsion – AE-PMP.
 - 3. Prime Coat shall conform to INDOTSS Section 405.

- C. Bituminous materials for tack coat shall consist of:
 - 1. Asphalt emulsion - AE-T, AE-PMT, SS-1h, AE-NT.
 - 2. Tack Coat shall conform to INDOTSS Section 406.
 - a. Type A Cert Required per INDOTSS 406.02.
- D. Bituminous materials for seal coat shall consist of:
 - 1. Asphalt emulsion - RS-2, AE-90, AE-90S, HFRS-2.
 - 2. Materials shall conform to INDOTSS Section 902.
- E. Cover aggregate shall be in accordance with INDOTSS 404.04.
- F. Joint Adhesive shall consist of:
 - 1. Materials shall conform to INDOTSS Section 906.
 - a. Type A Certification Required

2.3 HOT MIX ASPHALT (HMA)

- A. Hot mix asphalt (HMA) shall consist of an intimate mixture of coarse aggregate, fine aggregate (including mineral filler if required), and asphalt cement or emulsion combined in proportions specified in INDOTSS 401. Acceptance shall be in accordance with INDOTSS 402.
- B. When the use of one type or source of aggregate or binder is started, the use of that same type or source shall be continued for the entire lift being constructed, unless otherwise directed by the Engineer.
- C. The use of recycled materials, RAP, shall be permitted per current INDOT standards.
 - 1. No mixes will be approved with RAP exceeding 25.0%
- D. HMA mix design shall be submitted for review and approval a minimum of 5 business days prior to placement of any asphalt.
- E. Preparation of HMA mixtures shall comply with the requirements of INDOTSS Section 402.

2.4 PORTLAND CEMENT CONCRETE

- A. Cement shall be Portland cement and shall meet the requirements of ASTM C 150, ACI 301, and ACI 318. Cement shall be Type 1 for normal use, Type 1A where air entrainment is desired, or Type III or Type IIIA

where high early strength is desired and authorized by the Engineer. Blended hydraulic cements which meet the requirements of ASTM C 595 Type 1P Portland pozzolan cement may be used where a more watertight concrete is required. Fly ash may also be used as a partial cement replacement for Types 1 or 1A in accordance with INDOTSS 502.04. Fly Ash may only be used between April 1 and October 15. Cement shall meet requirements specified in INDOTSS Section 901.

- B. Regular fine and coarse aggregates shall meet the requirements of ASTM C 33. Aggregate shall be crushed limestone with a maximum size of 3/4 inch, except in mass concrete the maximum size may be 1 1/2 inches.
 - 1. Lightweight fine and coarse aggregates shall meet the requirements of ASTM C 330.
 - 2. Insulating fine and coarse aggregates shall meet the requirements of ASTM C 332.
- C. Water shall be potable, clean, and free from injurious amounts of oils, acids, alkalis, organic materials, or other substances that may be deleterious to concrete or steel. A maximum of 500 mg/L of chloride ion may be present in the water.
- D. Air entraining admixtures shall meet the requirements of ASTM C 260.
 - 1. Water reducing and retarding admixtures shall meet the requirements of ASTM C494, Type A or Type D; however, they shall contain no chlorides, be nontoxic after 30 days and compatible with the air entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's requirements. Furnish a compliance statement that the admixture used satisfies all requirements of this specification. Evidence that the admixture is included in the approved list of the INDOTSS Division of Materials and Tests, in accordance with INDOTSS Section 912, will satisfy the requirement for a compliance statement.
 - 2. Fly ash shall meet the chemical and physical requirements of ASTM C 618 for mineral admixture Class F, except loss on ignition shall not exceed 6%. Fly ash shall be sampled and tested in accordance with ASTM C 311 prior to use.

- E. Reinforcing steel shall meet the requirements of ASTM A 615, Grade 60.
 - 1. Welded wire fabric or wire mesh shall meet the requirements of ASTM A 185.
 - 2. Reinforcing steel and appurtenances shall follow INDOTSS Section 910.
- F. Preformed expansion joint filler shall meet the requirements of ASTM D1752, Type III.
 - 1. Hot-poured elastic joint filler shall meet the requirements of ASTM D1190.
 - 2. Waterproof expansion joint filler shall meet the requirements of ASTM D1850.
 - 3. Joint materials specified in INDOTSS Section 906 may be used, approved by the Engineer.
- G. Concrete pavement shall be wet cured by using burlap, waterproof blankets, or ponding; or by using a membrane compound. If the membrane method is used, the compound shall be Type 2, complying with AASHTO M148 for white pigmented compound. A pressure sprayer capable of applying a continuous uniform film to the pavement surfaces will be required.
 - 1. Dowel bars and assemblies shall conform to the requirements of INDOTSS Section 503.
- H. Concrete base shall meet the requirements of INDOTSS Section 305.
- I. Reinforced concrete pavement shall meet the requirements of INDOTSS Section 501.
- J. Reinforced concrete for sidewalks and steps shall meet the requirements of INDOTSS Section 604.
- K. Reinforced concrete for curbing shall meet the requirements of INDOTSS Section 605.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor is responsible to provide equipment, workmanship and materials required to achieve a finished product that meets these specifications.

- B. Compaction equipment shall be in accordance with INDOTSS.
- C. Prior to placing paving and surfacing materials, shape subgrade as required to produce finished pavement grades and cross-sections shown on drawings.
- D. Do not place paving and surfacing material before subgrade is reviewed via proof roll or other approved method and accepted by the WPWD or designee. Do not place paving and surfacing materials on a frozen or muddy subgrade in accordance with INDOTSS Sections 203, 207, 302 and 401, and 402.
- E. Compact subgrade to not less than 100% of its maximum density as determined in accordance with AASHTO T99 and INDOTSS 207.
- F. Provide adequate drainage at all times to prevent water from standing on subgrade, pavement or walks. Sufficient effort shall be made to ensure subgrade is well drained. Mechanical dewatering may not be required.

3.2 SUBGRADE

The subgrade material and testing shall comply with INDOTSS Section 207, before placement of subbase.

3.3 SUBBASE PREPARATION

Subbase shall meet the requirements of INDOTSS Section 302.

3.4 AGGREGATE BASE, SURFACE, OR SHOULDERS

- A. Aggregate base, surface, or shoulders shall consist of crushed rock or gravel. The aggregate type shall be suitable for the area in which the project is located. The aggregate thickness shall be as shown on the drawings and as specified herein.
- B. Aggregate shall be Compacted Aggregate, No. 53, Base in accordance with INDOTSS 301, unless otherwise specified or approved in writing by the WPWD.
- C. If the required thickness of the aggregate section exceeds 6 inches, the material shall be placed and compacted in separate lifts no less than 3 inches nor more than 6 inches of compacted depth.
- D. If spreading devices are used which will ensure proper depth and alignment, forms will not be required; otherwise forms shall be required.

Forms shall be of wood or steel, adequate in depth, straight, of uniform dimensions and equipped with positive means for holding the form ends rigidly together and in line. Segregation of material shall be avoided by any spreading method used. No payment will be made for aggregate placed beyond the dimensions shown on the drawings.

- E. Compact material in each lift after material is spread and shaped. Compact material to not less than 100% of maximum dry density as determined by AASHTO T99 in accordance with INDOTSS 301.06. Use construction procedures, including sufficient moisture adjustments and number of passes, to ensure specified density is attained.
- F. The Contractor shall employ an independent testing laboratory to perform field density tests to demonstrate proper compaction of aggregate surface pavement, if requested by the WPWD or designee.
- G. Unless otherwise shown on the drawings, the minimum section (excluding subgrade) of reinforced concrete shall be 6 inches of **Compacted Aggregate, No. 53**, Base and 6 inches of 4,000 psi reinforced Class “A” concrete.
- H. Unless otherwise shown on the drawings, for a street with a concrete base and an asphalt surface, the replacement section shall be a new concrete base, not less than 6 inches thick with HMA base to within 1-1/2 inch of the existing grade and then 1-1/2 inch of HMA surface.
- I. Unless otherwise shown on the drawings, chip and seal pavements shall have 8 inches of **Compacted Aggregate, No. 53**, Base and 1 inch processed bituminous coated aggregate pavement placed and rolled, in accordance with INDOTSS 404.
- J. Unless otherwise shown on the drawings, aggregate pavement shall be replaced with 12 inches of **Compacted Aggregate, No. 53** in accordance with INDOTSS 303.

3.5 HOT MIX ASPHALT (HMA)

- A. This work shall consist of constructing one or more courses of HMA base, intermediate, and wedge leveling or surface mixtures on a prepared foundation in accordance with these specifications and in reasonably close conformance with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer.
 - 1. If the required finished depth of any course is to exceed two to four times the top size of the aggregate used as shown by actual screen

analysis, the course shall be constructed in two or more lifts, as directed. Refer to INDOTSS 402 for density requirements.

Mix type shall be as indicated on the drawings, without exception, unless otherwise approved in writing by the WPWD Engineer.

- a. Job mix formulas shall be prepared and submitted for approval in accordance with INDOTSS Section 401. The job mix formula shall include standard bituminous mixture information including, but not limited to, aggregate gradation, binder content, maximum specific gravity, and air voids.
 2. Materials and construction requirements shall comply with the requirements of INDOTSS 401. Acceptance requirements shall be in accordance with INDOTSS 402.
 - B. Place and spread bituminous base mixture with a bituminous paver. In areas inaccessible to a paving machine, place and spread bituminous base mixture by other acceptable mechanical or hand methods.
 - C. Tack coat shall be placed on existing bituminous and/or concrete surfaces before a new lift of bituminous material is added. Apply tack coat uniformly at a minimum rate meeting INDOTSS (0.00025 Tons/SYS).
 1. Patch and clean existing surface. The surface shall be free of irregularities and provide a reasonably smooth and uniform surface to receive the tack coat. Remove and replace unstable corrugated areas with suitable patching materials.
 2. Tack coat shall be placed in accordance with INDOTSS 406.
 - D. Placement and compaction of HMA shall conform to INDOTSS 401.
 - E. Place intermediate or surface used for wedging or leveling, approaches and feathering by mechanical methods or acceptable hand methods for placing and spreading in accordance with INDOTSS 402.
- 3.6 SEAL COAT AND COVERING AGGREGATE (CHIP AND SEAL)
- A. Application shall be per INDOTSS 404.04.
 - B. Seal coat and covering aggregate shall be placed in accordance with INDOTSS Section 404.

3.7 PORTLAND CEMENT CONCRETE PAVEMENT

- A. Portland cement concrete pavement shall consist of a coarse aggregate base (if required) and a reinforced or unreinforced Portland cement concrete surface, as shown on the drawings.
 - 1. Use **Compacted Aggregate, No. 53**, Base in accordance with INDOTSS 302 for subbase, unless otherwise shown or specified.
 - 2. Pavement cross-section shall be as shown on drawings.
- B. Portland cement concrete pavement operations and materials shall comply with INDOTSS Section 502 unless otherwise specified by the WPWD.
 - 1. Alternate equipment to that specified in INDOTSS Section 502 shall be allowed provided that line, grade, surface, smoothness and other requirements of the specifications are met. The equipment used shall be subject to the approval of a Professional Engineer licensed in the State of Indiana.
 - 2. Expansion and contraction joints shall be installed as indicated on the drawings or as required by INDOTSS 503. Expansion joints shall be required whenever new concrete abuts fixed objects or existing concrete surfaces, whether or not shown on the drawings.
 - 3. Keyway construction, load transfer devices, tie bars and slab and ear reinforcement shall be installed as indicated on the drawings.
 - 4. Unless otherwise shown on the drawings, the final finish of concrete pavement shall be by brooming in accordance with INDOTSS Section 504, to form a transverse skid-resistant finish.
 - 5. The Contractor shall always have materials available to protect the surface of concrete against rain. These materials shall consist of burlap, curing paper or plastic sheeting.
 - 6. New concrete pavement shall be protected by the Contractor until opening to traffic is approved by a Professional Engineer licensed in the State of Indiana. It shall not be opened to traffic until the field-cured concrete has attained a flexural strength of 550 psi, or a compressive strength of 3,500 psi. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Before opening to traffic, the pavement shall be cleaned and permanent lane markings applied to the pavement.

3.8 TESTING FOR HOT MIX ASPHALT (HMA)

- A. At the discretion of the WPWD the Developer/Contractor shall employ and pay for the services of a competent independent testing laboratory to take cores at selected locations and perform described tests.
- B. Compaction requirements for HMA **intermediate** mixtures placed in accordance with INDOTSS Section 401 shall be controlled by in place density determined from cores cut from the compacted pavement in accordance with INDOTSS 402. Cores shall be taken at locations as directed by WPWD Inspector.
 - 1. In lieu of core testing, nuclear density testing is allowable if the surface lift is placed within 24-hours of the intermediate placement.
 - a. Nuclear gauge density testing shall be provided by a third-party testing agency and in accordance with ASTM D7113. Testing personnel shall remain onsite for the entire duration of the paving operation and tests shall be done at a maximum of 15 minutes apart. Reports shall be provided before surface placement can commence to ensure density levels are achieved. These reports can be temporarily handwritten until the final report is received in order to maintain paving schedules.
 - b. If the surface cannot be placed within 24-hours, core testing will be required. There will be no exceptions to this requirement. Weather limitations will not be considered an acceptable exception.
- C. The Contractor along with their independent testing lab representative shall obtain cores in the presence of the WPWD with a device that shall produce a uniform 6 inches in diameter pavement sample. Each HMA course shall be cored within one workday of placement. Damaged core(s) shall be discarded and replaced with a core from a nearby location as selected by the Engineer.
- D. The Contractor, in the presence of the WPWD, shall mark the core to define the course to be tested. If the defined area is less than 1.5 times the maximum particle size, the core will be discarded and a core from a new random location will be selected for testing as determined by the Engineer. Within **12-hours** of coring operations the Contractor shall clean, dry, refill and compact the core holes with **the same HMA mix or** suitable material approved by the Engineer.

- E. The Contractor's testing lab representative shall take immediate possession of the cores. If the cores are subsequently damaged, additional coring within the specific section(s) will be required at locations to be determined by the WPWD.
- F. Each core shall be tested within one week of coring operation to determine thickness, bulk specific gravity, aggregate gradation and binder content. Test results shall then be transmitted via email or USPS to both the Contractor and the WPWD for verification before each subsequent bituminous lift is placed.
1. Average thickness of the cores shall not vary from the plan thickness more than 0.5 inch for HMA base and intermediate course(s) and 0.25 inch for HMA surface course(s) for acceptance in accordance with INDOTSS Section 105.
 2. The bulk specific gravity shall be determined in accordance with AASHTO T166 or AASHTO T275. The in place density of a section for a mixture shall be expressed as:

$$\text{Density \%} = (\text{BSG}/\text{MSG}) * 100$$

where:

BSG = bulk specific gravity as determined from independent testing laboratory

MSG = maximum specific gravity as reported on job mix formula.

3. The calculated density of the cores shall not be less than 92% in accordance with INDOTSS 402. Test results which are outside stated limits shall be considered and adjudicated as a failed material in accordance with INDOTSS Section 105.
- G. The Contractor's independent testing laboratory representative shall determine the aggregate gradation and binder content of the core samples in accordance with ITM 571. Aggregate gradation shall be within tolerances set forth in INDOTSS 401 and binder content shall be within ± 0.5 percent from the job mix formula. Test results which are outside the stated limits shall be considered and adjudicated as a failed material in accordance with INDOTSS Section 105.
- H. A copy of all core test results shall be submitted to the Engineer for verification of specification compliance within one calendar week of core testing.

- I. The Contractor shall make the following tests at their cost and they shall be as specified in this Article and requested by the Engineer. Perform tests in accordance with the following ASTM Specifications:

<u>Test</u>	<u>ASTM Specification</u>
Slump	C143
Air Content	C173
Test Cylinders	C31 or C513
Core Samples	C42
Fly Ash	C311

1. Measure slump each time test beams or cylinders are to be made and at any other time requested by the WPWD. The slump shall be as specified in INDOTSS Section 501, or as otherwise specified herein, unless specifically accepted by the WPWD.
2. Measure air content each time test beams or cylinders are to be made and at any other time requested by the WPWD. The field test may be omitted if the air content is known prior to taking samples. The field test may not be omitted if fly ash is used in the mix.
3. Concrete paving mixes shall comply with guidelines and testing requirements of INDOTSS Section 501. However, in lieu of forming test beams as described in Section 501, the Contractor may substitute cylinder tests as follows:
 - a. Make test cylinders in sets of four. Field cure one cylinder and break at seven days. Laboratory cure the remaining three cylinders and break at 28 days. The Contractor shall be responsible for handling and transportation of cylinders.
 - b. If fly ash is used in the mix, a total set of seven cylinders shall be taken. The additional three cylinders shall be laboratory cured and broken at 56 days, if the 28-day strength does not meet specifications.
 - c. Make one set of test cylinders for each 100 cubic yards, or fraction of 100 cubic yards, of concrete placed; or at other times requested by the WPWD.
 - d. Unless otherwise specified, concrete shall have a 28-day compressive strength of 4,000 psi, as demonstrated by laboratory tests of cylinders.

- B. All HMA Surface lifts shall be nuclear gauge tested by an approved third-party testing agency in accordance with ASTM D7113. Testing personnel shall remain onsite for the entire duration of the paving operation and tests shall be done at a maximum of 15 minutes apart. Final Reports shall be provided within 72-hours of placement of the surface mix.

3.9 PROTECTION

- A. Maintain compacted aggregate subbase and surface true to line and grade and required density. Maintain surface until job is complete.
- B. Do not permit vehicular traffic of any kind on any bituminous course until the bituminous mixture has hardened sufficiently not to be distorted beyond specified tolerances. Remove any foreign material which is on the surface of any course before the course is rolled or any subsequent course is placed.
- C. Do not permit traffic on concrete pavement or sidewalks until concrete has developed sufficient strength not to be marked or damaged. Do not permit vehicular traffic on concrete for at least 14 days.
- D. Repair or replace damaged pavement and sidewalks to the satisfaction of the WPWD or designee.
- E. Any cracking in HMA, at the time of the 3-year Maintenance Bond review period, shall be appropriately crack-sealed in accordance with INDOTSS 408.
- F. Asphalt Tapers shall be installed at all butt joints and shall be constructed a maximum grade of 1:8 (12" long for 1-1/2" depth). These tapers shall be sufficiently compacted and maintained until no more than 2 hours before the permanent lift is installed. Millings shall not be used for these tapers.

3.10 CLEANUP

Clean up the job site following pavement and surfacing restoration. Remove all rubbish, excess materials, temporary structures, and equipment. Leave the work in a neat and presentable condition.

3.11 PAVEMENT MARKINGS

- A. Pavement markings are to be in accordance with all applicable standards of INDOTSS Section 808 and MUTCD, unless otherwise noted in WPWD Specifications, herein.
 - 1. All line markings shall be Paint, unless otherwise approved by WPWD.
 - a. Double-yellow spacing shall be 4" Line, 4" Gap, 4" Line
 - 2. All transverse markings and message markings shall be Thermoplastic, unless otherwise approved by WPWD.
- B. Parking lots are to be striped in accordance with INDOTSS Section 808. Spaces to be striped shall be 4 inch wide stripes.
- C. Contractor shall clean the new pavement surface to remove all dust, dirt, mud and debris prior to striping.
- D. Prior to placement of striping, a final walkthrough with the WPWD Inspector shall be conducted on site.

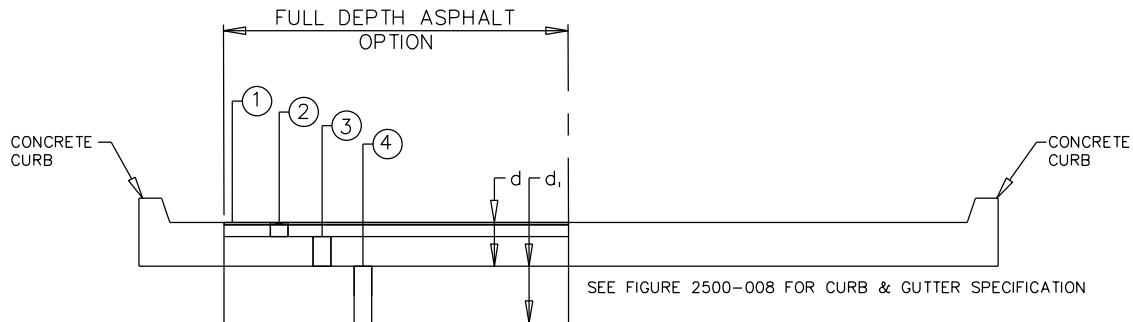
PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

<u>FIGURE</u>	<u>DESCRIPTION</u>
02500-001	Typical Pavement Section - Local
02500-002	Typical Pavement Section - Collector
02500-003	Typical Pavement Section - Arterial
02500-006	PCCP – Structure Jointing Details
02500-008	Curb Details
02500-009	Underdrain Details
02500-009a	Underdrain Details
02500-010	Sidewalk Details
02500-011	Sidewalk Curb Ramp Notes
02500-012	Cul-de-sac Details
02500-013	Temporary Cul-de-sac Details
02500-014	End of Roadway Details
02500-015a	Street Sign Material Details
02500-015b	Street Name Sign Details
02500-015c	Street Name Sign Details

02500-015d	Regulatory Sign Details
02500-017	Typical Driveway Section
02500-019	Pavement Patching Details
02500-020	Paving Details – New Residential Sections

END OF SECTION 02500



LOCAL STREETS

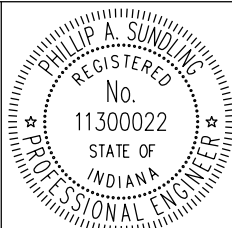
	ASPHALT 1 d=10.5" d ₁ =14" d+d ₁ =24.5"	ASPHALT 2 d=10.5" d ₁ =12" d+d ₁ =22.5"
1	1.5" SURFACE 9.5 mm	1.5" SURFACE 9.5 mm
2	3" INTERM. 19 mm	3" INTERM. 19 mm
3	6" COMP. AGGR. (SIZE No. 53)	6" COMP. AGGR. (SIZE No. 53)
4	SUBGRADE TRMT. * TYPE IB	SUBGRADE TRMT. TYPE IC

NOTE:

* CHEMICAL MODIFICATION SHALL BE IN ACCORDANCE WITH INDOTSS 215 AND 913.

TYPICAL PAVEMENT SECTION – LOCAL

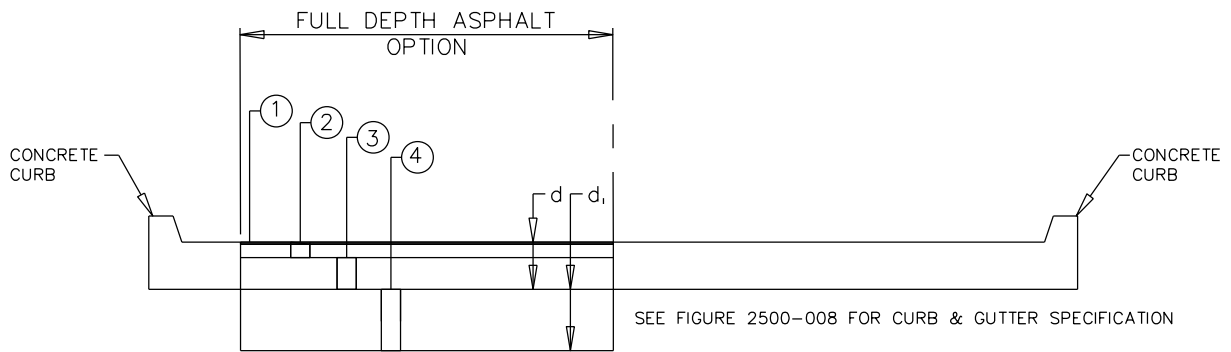
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DATE

FIGURE 2500-001



COLLECTOR STREETS

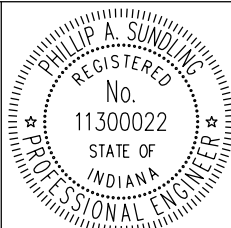
	ASPHALT 1 $d=7.5"$ $d_i=14"$ $d+d_i=21.5"$	ASPHALT 2 $d=12.5"$ $d_i=14"$ $d+d_i=26.5"$
1	1.5" SURFACE 9.5 mm	1.5" SURFACE 9.5 mm
2	2.5" INTERM. 19 mm	2.5" INTERM. 19 mm
3	3.5" BASE 19 mm	2.5" BINDER 19 mm
4	SUBGRADE TRMT. * TYPE IB OR IC	6" COMP. AGGR. (SIZE No. 53)
5		SUBGRADE TRMT. * TYPE IB OR IC

NOTE:

- * CHEMICAL MODIFICATION SHALL BE IN ACCORDANCE WITH INDOTSS 215 AND 913.

TYPICAL PAVEMENT SECTION – COLLECTOR

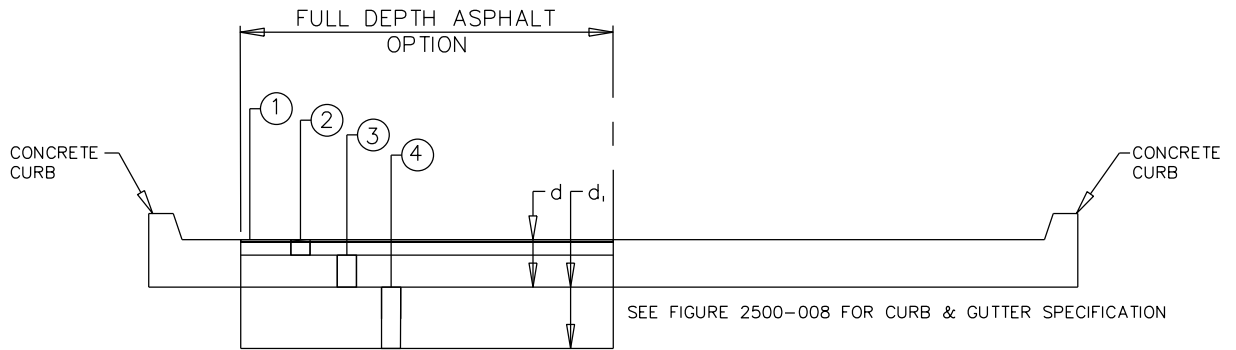
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FIGURE 2500-002



INDUSTRIAL AND ARTERIAL

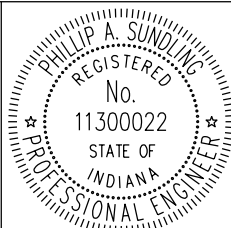
	ASPHALT 1 d=10" d _i =14" d+d _i =24"	ASPHALT 2 d=15" d _i =14" d+d _i =29"
1	1.5" SURFACE 9.5 mm	1.5" SURFACE 9.5 mm
2	2.5" INTERM. 19 mm	2.5" INTERM. 19 mm
3	2.5" BASE 19 mm	5.0" BASE 25 mm
4	3.5" BASE 19 mm	6" COMP. AGGR. (SIZE No. 53)
5	SUBGRADE TRMT. * TYPE IB OR IC	SUBGRADE TRMT. * TYPE IB OR IC

NOTE:

- * CHEMICAL MODIFICATION SHALL BE IN ACCORDANCE WITH INDOTSS 215 AND 913.

TYPICAL PAVEMENT SECTION – ARTERIAL

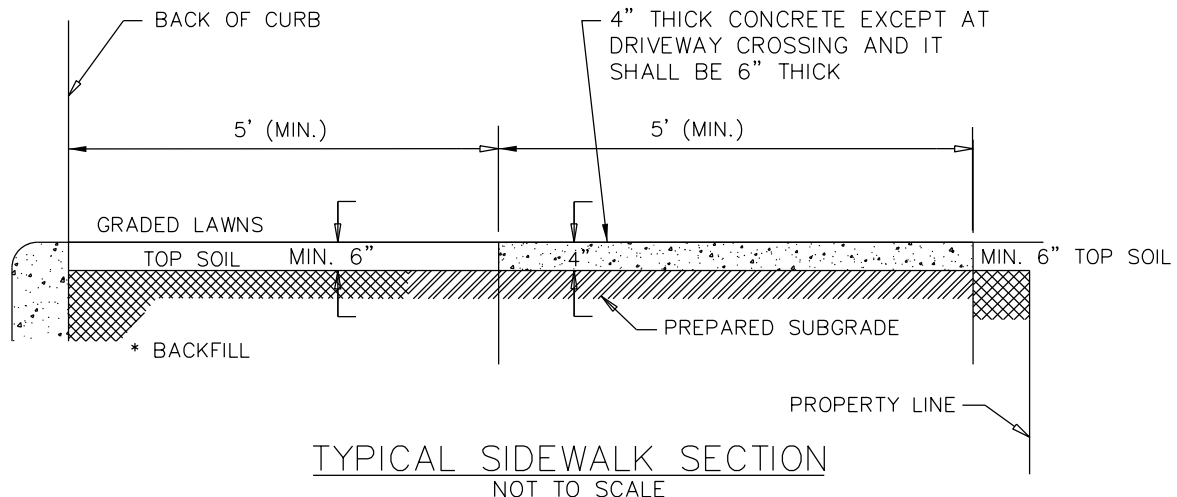
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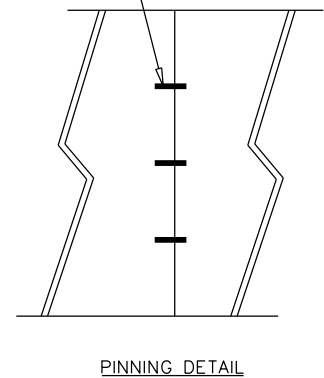
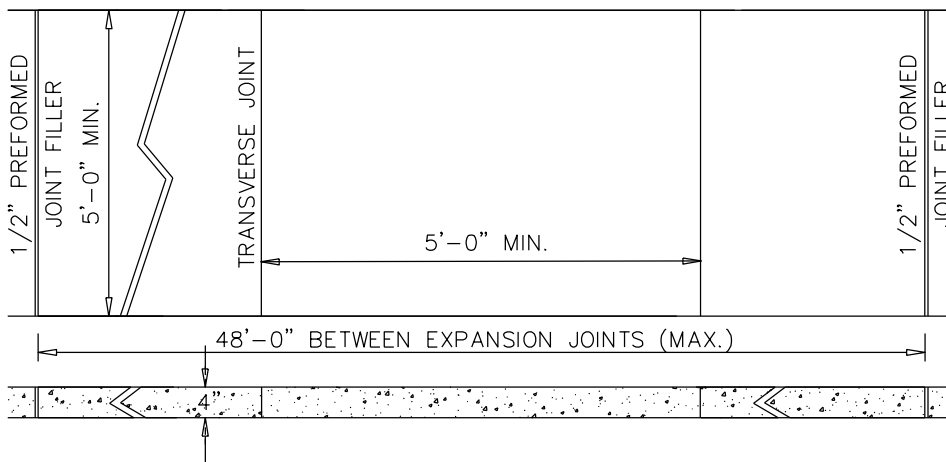
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FIGURE 2500-003



* THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LIFTS NOT TO EXCEED 6" IN DEPTH.

3: #4 BAR, SMOOTH, EPOXY COATED EVENLY SPACED, 12" MIN. FROM EDGE

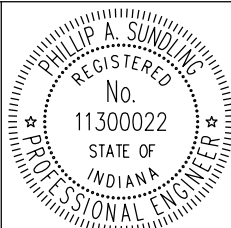


NOTES:

SUBGRADE UNDER ALL CURBS, SIDEWALKS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH INDOTSS 604. SIDEWALK SHALL BE PINNED AT DRIVEWAYS IN ACCORDANCE WITH WSS 2505.

SIDEWALK DETAILS

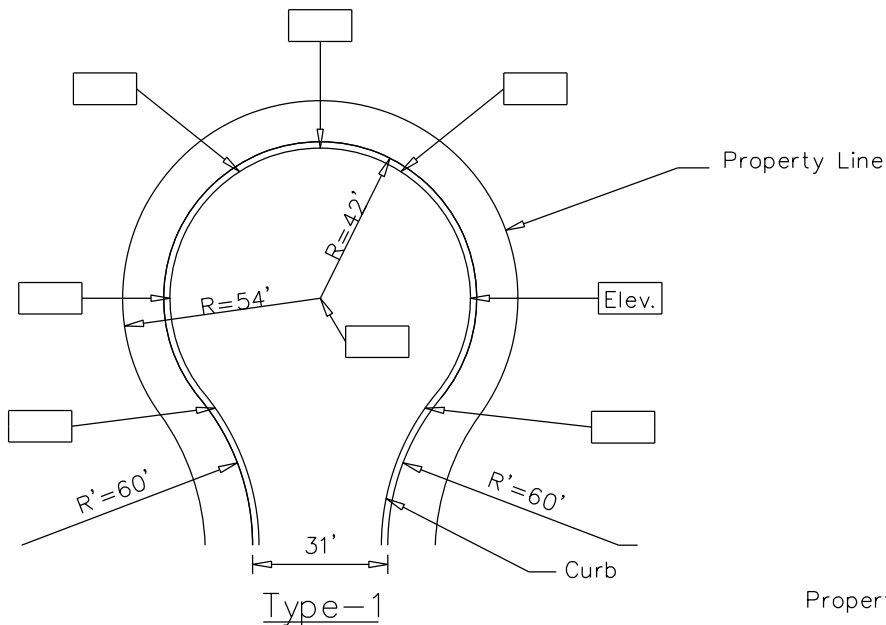
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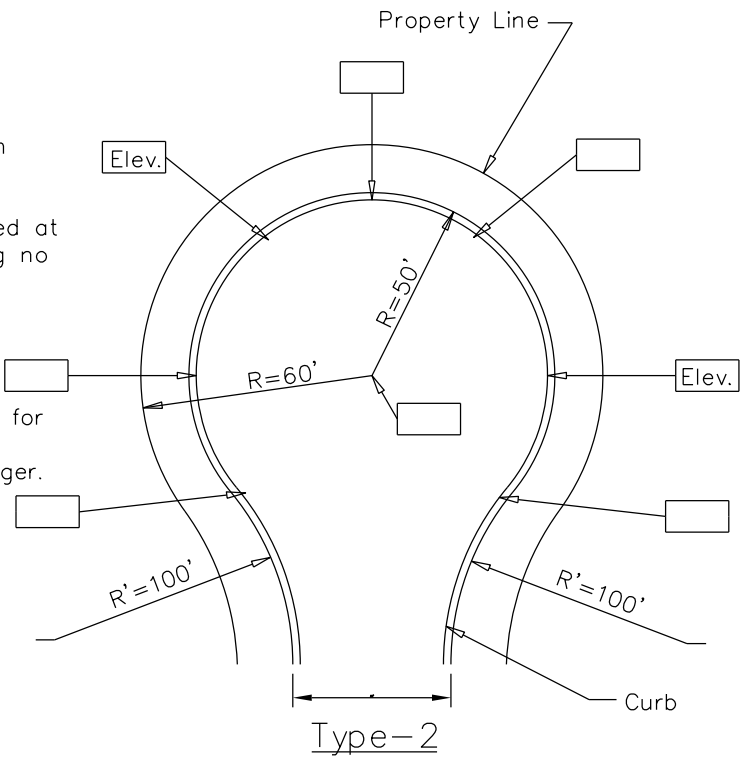
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DATE

FIGURE 2500-010



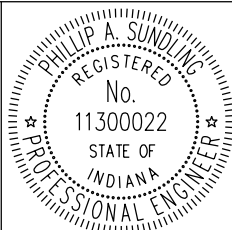
GENERAL NOTES:

1. Type-1 shall be used only in Local subdivisions; all other use Type-2.
2. Warning signs shall be posted at entrance to street, indicating no outlet.
3. Detail shall be identified by street name.
4. Elevations provided shall be proposed flow line of gutter.
5. One detail shall be provided for each cul-de-sac.
6. Scale shall be 1"=40' or larger.
7. Cul-de-sac length shall be a maximum of 600 feet, see section 02501 of the standard specification



CUL-DE-SAC DETAILS

CITY OF WESTFIELD, INDIANA



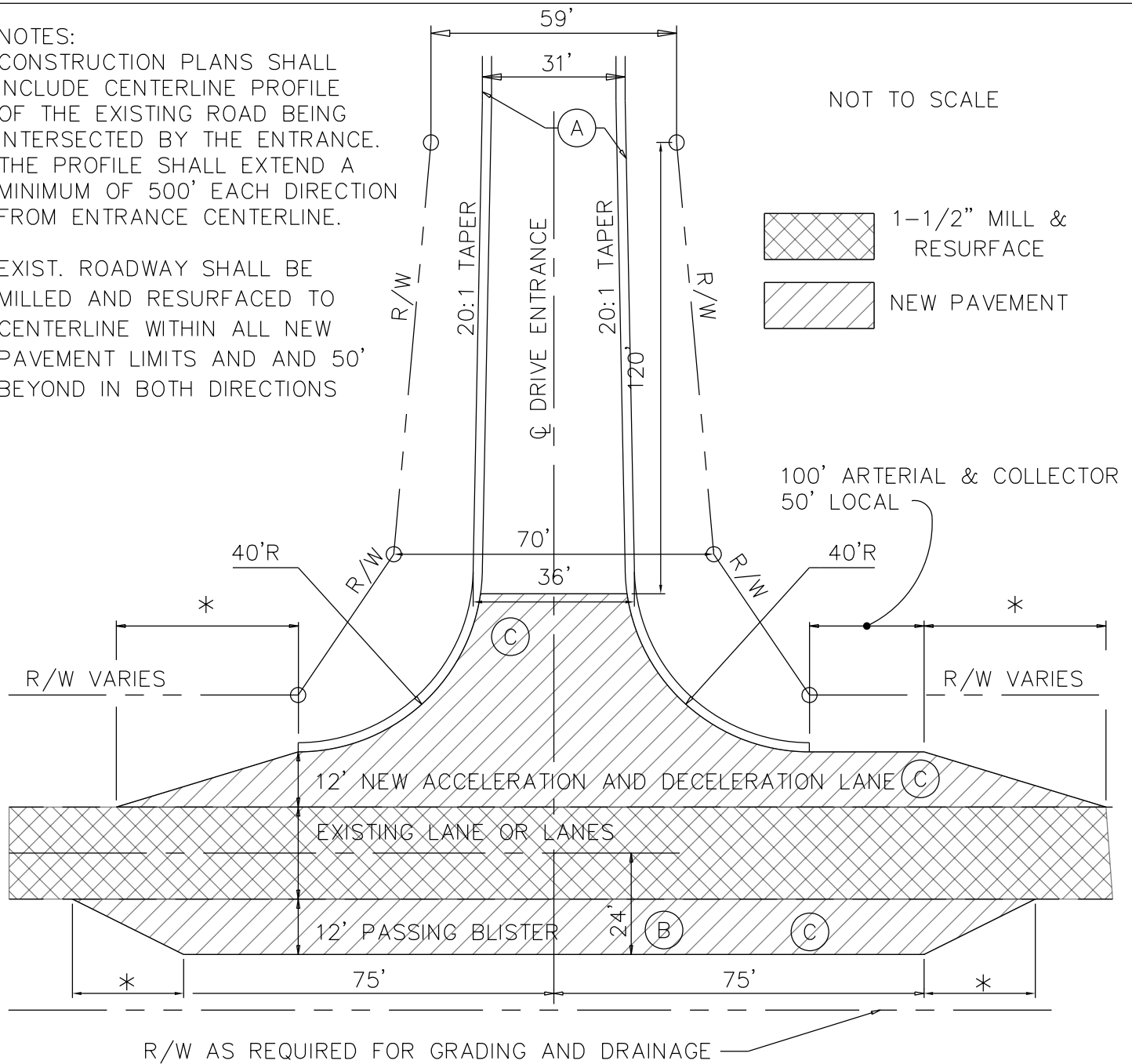
Phillip A. Sundling

2/26/16
DATE

FIGURE 2500-012

NOTES:
CONSTRUCTION PLANS SHALL
INCLUDE CENTERLINE PROFILE
OF THE EXISTING ROAD BEING
INTERSECTED BY THE ENTRANCE.
THE PROFILE SHALL EXTEND A
MINIMUM OF 500' EACH DIRECTION
FROM ENTRANCE CENTERLINE.

EXIST. ROADWAY SHALL BE
MILLED AND RESURFACED TO
CENTERLINE WITHIN ALL NEW
PAVEMENT LIMITS AND AND 50'
BEYOND IN BOTH DIRECTIONS



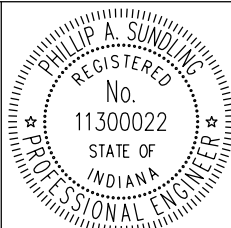
(A) 2' CURB & GUTTER

(B) PASSING BLISTER WHEN REQUIRED

(C) LANE WIDENING SHALL MATCH EXIST. PAVEMENT SURFACE TYPE

* 150' ARTERIAL
100' COLLECTOR
75' LOCAL

MIN. SUBDIVISION AND COMMERCIAL ENTRANCE
CITY OF WESTFIELD, INDIANA



Philip A. Sunding

2/10/17
DATE

FIGURE 2501-013

SECTION 02502 - STANDARDS OF ROADWAY CONSTRUCTION

PART 1 - GENERAL

1.1 Road construction shall conform to the following requirements and standards:

A. Streets, General

1. Streets and alleys shall be graded, surfaced, and improved to the dimensions required by the cross-sections and the work shall be performed in the manner prescribed in Section 02500 and the Indiana Department of Transportation Standard Specifications (INDOTSS).
2. Prior to placing the street and alley surfaces, adequate subsurface drainage (underdrains) for the street shall be provided by the Subdivider. Underdrain pipe shall conform to Section 02500.
3. Bituminous asphalt paving mixes shall comply with specifications contained in Section 02500.
4. Before any bond covering a street installation is released, the Westfield Public Works Department (WPWD) or duly authorized representative may request that core borings of the street be provided, at the Subdivider's expense, for thickness and/or compaction determination.
5. Prior to the acceptance of asphalt streets, the Subdivider shall employ and pay for the services of an independent testing laboratory to take cores at selected locations and perform Marshall stability, flow and density test, and percent of compaction determination on completed asphalt work if so directed by the WPWD or duly authorized representative.
6. Asphalt surface layer shall be placed immediately after the binder layer is installed.
7. All traffic control devices shall comply with guidelines and requirements of the current edition of the Indiana Manual on Uniform Traffic Control Devices.
8. No manhole castings or utility valve castings shall be permitted within pavement, curb or sidewalk limits. Design considerations shall be made to ensure that the castings are located outside of these areas.

B. Streets, Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
 - a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection. Refer to WSD 02500-013.
 - b. In order to construct adequate passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan. A minimum of 500 feet full width right-of-way centered on the entrance or street intersection shall be obtained. The developer is responsible for the purchase of the right-of-way, at fair market value. The City will offer assistance in obtaining right-of-way if the initial purchase offer is unsuccessful. A written offer to the property owner is required.
 - c. The existing two (2)-lane roadway(s) that front the property shall require a full pavement width 1-1/2" mill and resurface. The required resurfaced area shall extend a minimum of 10' beyond the acceleration and deceleration lanes and passing blister, whichever is greater.
2. Additional improvements may be required depending on field conditions and as determined by the WPWD or designee.

C. Subgrade for Street Pavements

1. Preparation
 - a. After all earth work is substantially complete and all drains installed, the subgrade shall be brought to the lines and grades shown on the plans.
 - b. Subgrade Treatment, Type IB or Type IC is required for all pavement subgrades. Refer to INDOTSS 207.04 for additional details.
 - (1) If Subgrade Treatment, Type IB is the chosen method, refer to INDOTSS 215.03 for testing and design requirements. Cement may be required in lieu of lime.

- (2) No equipment, including pickup trucks or cars, shall run over the treated areas for a minimum of 72-hour curing period.
 - (a) If this curing period is not fully met, Geogrid shall be required over the entire subgrade area throughout the treated section, unless otherwise approved by the WPWD Engineer. It is the developer's/contractor's responsibility to properly barricade off these treated areas to ensure the 72-hour curing period is upheld.
 - (b) Per INDOTSS 215.05, no chemical modifications will be allowed unless the soil has a minimum temperature of 45 degrees, measured 4 inches below the surface, and the ambient air temperature shall be rising.
- c. Unless otherwise provided, the upper six (6) inches of all subgrade shall be uniformly compacted to at least 95 percent standard density as determined by the provisions of AASHTO, T99, "Compaction and Density of Soils". During subgrade preparation and after its completion, adequate drainage shall be provided at all times to prevent water from standing on the subgrade. Subgrades shall be so constructed that it will have uniform density throughout. After compaction and final grading, the subgrade shall be finished with a three-wheel roller weighting not less than ten (10) tons. For areas not accessible to the roller, the required compaction shall be obtained by using mechanical tampers.
- d. All soft yielding or otherwise unsuitable material which will not compact properly shall be removed. All rock encountered shall either be removed or broken off to conform to required cross sections. Any holes or depressions resulting from the removal of such unsuitable material shall be filled with approved material and compacted to conform to the surrounding subgrade surface. No placement of pavement shall be permitted on uninspected or unapproved subgrade and, at no time, when the subgrade is frozen or muddy. No hauling shall be done nor equipment moved over the subgrade when its condition is such that undue distortion results. If these conditions are present, the subgrade shall be protected with adequate

plank runways, mats, or other satisfactory means if hauling is to be done thereon.

(1) The contractor may elect to install Geogrid in accordance with INDOTSS 214 to improve subgrade conditions on undercut areas. Materials shall be Tensar TX160 or approved equal.

- e. The subgrade shall be prepared sufficiently in advance to facilitate proper inspection of final elevations and compactions by the WPWD or duly authorized representative.
- f. Refer to Section 02222 for all Utility Construction requirements.

D. Pavement Section - Typical pavement sections shall conform to the requirements in Section 02500. The use of alternative cross sections shall be approved by the WPWD Engineer.

E. Underdrains

- 1. Underdrain material shall be 6-inch perforated double wall smooth bore subsurface drain pipe. It shall be cleaned and televised prior to acceptance.

F. Curbs and Gutters

- 1. Developers shall provide curbs and gutters on each side of the street in proposed development. Uncurbed roadways will not be permitted. Alley construction may be an exception to this requirement.
- 2. Curbs and gutters shall be in accordance with WSD 02500-008. As an alternate, curb sections which comply with INDOTSS will be permitted upon approval of the WPWD Engineer.
- 3. All curb and gutter sections placed on Primary Arterials, Secondary Arterials, or Collectors shall be of the barrier type. Roll-type curb and gutter sections will be permitted for Local Roads and Streets.

4. The construction of curbs, combination curb and gutter, and integral curb and gutter shall be in accordance with these specifications and as shown on the plans and shall be in reasonably close conformance with the lines and grades shown on the plans or as directed by a Professional Engineer licensed in the State of Indiana.
5. Excavation for curbs shall be made to the required depth and the subgrade or base upon which the curb is constructed shall be compacted to a firm, even surface to not less than 95% of maximum dry density as determined in accordance with AASHTO T99.
6. Concrete for curbs shall be Class A (6-bag).
 - a. Concrete testing shall be in accordance with INDOT Frequency Manual and INDOTSS 501 for air content, slump and yield. Westfield reserves the right to require the developer to provide additional third-party testing if WPWD Inspectors determine issues with the mix. WPWD Inspection personnel reserve the right to reject failed materials determined through this third-party testing as well as their own testing.
 - b. Maximum time between loading of concrete trucks and placement of materials is 90-minutes unless calcium is included in the mix which lowers this limit to 30-minutes in accordance with INDOTSS 501.14. WPWD Inspector reserves the right to reject materials if outside of these limits or if the time stamp is not included on the concrete ticket.
7. The curbs shall be constructed by the use of wood or metal forms, or a curb slip form machine. Forms, if used, shall be straight, free from warped or bent sections, and shall extend for the entire depth of the curb and shall be securely held in place so that no deviation from alignment and grade will occur during placement of concrete. The concrete shall be consolidated by vibration or other acceptable methods. The top of the curb shall be floated smooth and the top outer corner rounded to a 1/4 inch radius.
8. The face, top, and gutter of curbs shall not have deviations or irregularities of more than 1/4 inch when checked with a 10 foot straightedge.

9. Construction joints shall be placed at 10 foot intervals, unless otherwise shown or directed by a Professional Engineer licensed in the State of Indiana. The joint shall be uniform, of 1/8 to 1/4 inch in width, and to a depth of approximately 2-1/2 inches. The joint may be formed using concrete tools, saw cut or formed by approved removable strips providing a straight joint at right angles to the length of curb. If tooled joints are performed, additional saw cutting shall be required to a depth of 2-1/2 inches minimum. Construction joints shall be formed around all abutting structures such as inlets. Expansion material shall be required.
10. Curing materials shall be applied to exposed surfaces and sides of newly placed concrete within 30 minutes after the finishing operations have been completed in accordance with INDOTSS 504.04.
 - a. Only Liquid Membrane-Forming, Visible curing compounds shall be used. Clear materials shall not be permitted.
11. If cracking occurs outside of the crack-control joints, curb shall be removed from crack-control joint to crack-control joint unless otherwise approved by WPWD Inspector.
12. If existing curb is to be removed and replaced with new curb or new curb extended from existing curb, the existing curb shall be removed to the nearest joint. If HMA is placed against the curb, prior to curb removal, sawcutting the full depth of the curb face shall be required to prevent additional damage to the existing HMA. Reinforced pinning shall be required as follows:
 - a. Minimum epoxy coated rebar size: #4 Smooth
 - b. Number of bars: 2
 - c. Minimum depth of embedment: 3"
 - (1) This embedment shall be 2-part epoxied on the existing curb side if doweled in
13. During the placement of new concrete curb, utility marking shall be embossed into the top of the curb. The marking shall be a 2" high letter stamping tool and be a "D" for a subsurface drain. The stamp shall be placed into the concrete before the concrete sets up. The letters shall be located perpendicular to the utility feature that is being marked. Any stamp that is missed during installation of curb must be sandblasted in to the curb. The letters shall be located perpendicular from the utility feature that is being marked.

G. Sidewalks and Trails

1. Sidewalks shall be at least six (6) inches thick at drives and at least four (4) inches thick at all other locations within the subdivision. All Common Area sidewalk formwork shall be inspected prior to placement of any concrete. Any Common Area sidewalk placed without inspection may be removed at the discretion of the Inspection Supervisor.
2. Perimeter and Multi-use trails shall be at least eight (8) feet wide adjacent to Primary Arterials, Secondary Arterials, and Collectors and in commercial, industrial or multi-family developments and residential subdivision perimeters. Maximum grade shall not exceed 5% unless approved by the WPWD Engineer. Refer to WSD 02505-001 and 002 for additional details.
3. Sidewalks shall be at least five (5) feet wide at all other locations. Sidewalks shall be concrete in accordance with Section 02500 and 604 INDOTSS. Expansion joints shall be located every 48 feet and control joints every six (6) feet. All sidewalks shall be placed on properly prepared and compacted subgrades in accordance with this section.
4. Curb ramps, sidewalks, and multi-use trails shall comply with the most current INDOT and ADA/PROWAG requirements. Ramps shall not be permitted in driveways.
5. When sidewalks or trails cross major street intersections within or adjacent to a subdivision, necessary traffic control devices such as painted crosswalks and signs shall be installed at the subdivider's expense at the discretion of the Westfield City Council or the WPWD or designee.
6. If not located within public rights-of-way, easements in favor of the City of Westfield of at least ten (10) feet in width shall be provided for sidewalks, pedestrian trails, or bicycle trails.
7. Sidewalks shall consist of a **Compacted Aggregate No. 53**, Base to a depth of 3 inches and 4 inches of Concrete. Concrete sidewalk through driveways shall be 6 inches thick. Concrete shall be Class "A", 4,000 psi.
8. Compact subbase to not less than 95% of maximum dry density, as determined in accordance with AASHTO T99.

9. Proportion, mix, and place concrete as specified in INDOTSS Sections 604 and 702. Walks shall have a broom surface finish. Edge all outside edges of walk and all joints with a 1/4 inch radius edging tool.
 10. Unless otherwise shown on the drawings, walks shall be divided into sections not more than five feet in length by dummy joints formed by a jointing tool with a 1/4 inch radius.
 11. Sidewalks and handicap ramps shall conform to the most recent updated ADA/PROWAG standards. All handicap ramps shall be properly identified on the as-built drawings submitted to the WPWD.
 12. Form construction joints around all abutting structures and appurtenances such as existing manholes, utility poles, hatches, and hydrants, contractor shall install 1/2 inch thick pre-molded expansion joint filler in construction joints. Expansion joint material shall extend for the full depth of the sidewalk.
 13. If existing sidewalk is to be removed and replaced with new sidewalk or new sidewalk extended from existing sidewalk, the existing sidewalk shall be removed to the nearest joint of suitable quality or as directed by the WPWD. Reinforced pinning may be required described in this section.
- H. Easements - Whenever possible, easements for poles or underground conduits for electrical power, or communication lines shall be provided along rear lot lines.
- I. Landscaping
1. Any landscaping to be installed within the Right-of-Way shall be reviewed prior to installation.
 - a. Onsite Pre-Con shall take place prior to any installation to ensure the species defined in the plans coordinate and match what is being installed. Tags shall remain on all trees to assist in the identification by WPWD Inspector. Any installed landscaping without approval by WPWD Inspector shall be removed at Contractor's expense.
 - b. Developer shall submit for approval the Landscaping plans to Duke Energy if placed within proximity of Duke overhead facilities.

- J. Plans - Construction plans for improvements to be installed shall be furnished in accordance with the specifications of the WPWD and/or, when appropriate, to the Hamilton County Highway Department, CEG, and other necessary Agencies. Such plans must receive all appropriate approvals before improvements are installed. Upon completion of streets and alleys improvements, as-built plans in State Plane coordinates shall be filed with the WPWD after the WPWD Inspector's punchlist has been completed and, when appropriate, to the proper governing body of Hamilton County. All construction plans shall include the following:
1. Horizontal geometry of each proposed street, with centerline and curb radii shown.
 2. The profile of each proposed street, with grades indicated, and lengths of vertical curves.
 3. The cross-section of each proposed street, showing the width of pavement, the location and width of sidewalks, and the location and size of utility mains.
- K. Inspection - Prior to starting any construction, arrangements shall be made for inspection of work to ensure compliance with plans and specifications approved by the WPWD or, when appropriate, the Hamilton County Highway Department, CEG, and other necessary Agencies.
- L. All construction must be approved by the WPWD and notice of construction must be given to the WPWD, or duly authorized representative, 48 hours prior to beginning work. All approved Utility plans shall be submitted to WPDW in advance of the 48 hour notice.
- M. Allowable Modifications - Where unusual or exceptional factors or conditions exist, the WPWD may allow minor modifications of any provision of this Section. When such modifications are allowed, a detailed written statement of the reasons for such modifications shall be attached to all copies of construction plans.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

PART 4 – FIGURES

Not Applicable

END OF SECTION 02502

SECTION 02505 - STANDARDS OF TRAILS AND SIDEWALKS

PART 1 - GENERAL

- 1.1 Trail and sidewalk construction shall conform to the following requirements and standards:

A. Definitions:

1. Designated Trailhead – A designated point of access that may contain a parking area, information kiosks, restrooms, water fountains, and may be reached by vehicular or pedestrian access.
2. Perimeter Trail – A route designed, designated, or constructed within or outside street right of way for recreational use or to provide an alternative to vehicular routes within a transportation system. These trails will parallel streets designated in the current Thoroughfare Plan and provide connection to the multi-use trail system.
3. Multi-Use Trail – A facility that is physically separated from motorized vehicular traffic with an open space or barrier and either within the highway right of way or within an independent right of way. These trails are part of the Westfield Parks & Recreation Department system and are called out in the Alternative Transportation section of the current Thoroughfare Plan. A multi-use trail can be used by pedestrians, skaters, wheelchair users, joggers, bicyclists or other non-motorized users.
4. Sidewalk – The portion of a local street right of way designed for preferential or exclusive use by pedestrians.

B. Design Manuals

1. The design of Perimeter Trails, Multi-Use Trails, and Sidewalks shall follow the manuals below:
 - a. American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, 2012 (*AASHTO Bike Guide*) or most current edition.
 - b. Indiana Manual for Uniform Traffic Control Devices (MUTCD), 2016 or most current edition.
 - c. National Association of City Transportation Officials, *Urban Bikeway Design Guide*, 2012 (*NACTO Bike Guide*) or most current edition.
 - d. Americans With Disabilities Act and Architectural Barriers Act, *Accessibility Guidelines – 2010 Standards* (Signed March 2012 by DOJ) or most current edition.

- e. Proposed Guidelines for Pedestrian Facilities in the Public-Right-of-Way, *36 CFR Part 1190*.

C. Perimeter Trails, Multi-Use Trails, and Sidewalks:

1. Perimeter Trails shall be constructed to a minimum width of eight (8) feet. The trail shall be constructed of asphalt. The maximum design speed for these perimeter trails is 20 mph. These trails shall be constructed per Figure 02505-001.
 - a. All subgrade shall be in accordance with INDOTSS 207.
 - b. All aggregate base shall be in accordance with INDOTSS 302.
 - c. All HMA shall be in accordance with INDOTSS 402.
2. Multi-use trails shall be constructed to a minimum width of twelve (12) feet with a two (2) foot stone shoulder. The minimum design speed for these multi-use trails is 20 mph. These trails shall be constructed per Figure 02505-002.
 - a. All subgrade shall be in accordance with INDOTSS 207.
 - b. All aggregate base shall be in accordance with INDOTSS 302.
 - c. All HMA shall be in accordance with INDOTSS 402.
3. All sidewalks shall be placed on properly prepared and compacted subgrades per INDOTSS 604. These sidewalks shall be constructed per Figure 02505-010 and 02505-017.
 - a. All sidewalks shall be constructed with a minimum of 3" of compacted aggregate. Options include sand, pea gravel, No. 8 stone, and No. 53 Aggregate. Compaction shall be accomplished with a minimum of two passes with a plate compactor.
 - b. Concrete depth shall be 4" minimum. If 2"x4" forms are used, they shall be elevated to ensure 4" depth is achieved.
 - c. Sidewalks through residential driveways shall be 6" minimum.
 - d. Sidewalks through commercial driveways shall be 9" minimum.
 - e. Pinning required at the driveway/sidewalk interfaces.
 - (1) 3 #4 smooth bars, evenly spaced, 3" minimum embedment and cast-in-place, minimum 2" from the top surface.
 - f. Pinning required at lot lines tie-in.
 - (1) 3 #4 smooth bars, evenly spaced, 3" minimum embedment, minimum 2" from the top surface.
 - (2) Doweling acceptable with two-part expoy, approved by WPWD Inspector.
4. Trails, sidewalks, and curb ramps shall comply with the most current INDOT and ADA/PROWAG requirements.

5. All perimeter trails or multi-use trails shall be placed on properly prepared and compacted subgrades. Materials shall be furnished and installed in accordance with Section 02500 and INDOTSS. All perimeter trails or multi-use trails shall be proof roll tested with a WPWD Inspector or representative present during testing. All proof roll testing requires at least a 48 hour notification prior to testing to the WPWD.
 6. Where perimeter trails and multi-use trails intersect streets designated in the current Thoroughfare Plan, the streets must have signage and traffic control devices that meet current MUTCD standards and shall be installed at the developer's expense. When required, coordination and permitting with INDOT is also at the expense of the developer.
 7. The perimeter trails, multi-use trails, & sidewalks shall intersect the road at a 90 degree angle, where possible, but may not be less than 45 degrees.
 8. Clear intersection sight lines shall be provided for both the motorist and the trail user. See Figure 02505-003 for additional details.
 9. If not located within public rights-of-way, an easement of at least ten (10) feet in width shall be provided for sidewalks and perimeter trails.
- D. Allowable Modifications - Where unusual or exceptional factors or conditions exist, the City of Westfield may allow minor modifications of any provision of this Section. When such modifications are allowed, a detailed written statement of the reasons for such modifications shall be attached to all copies of construction plans.
- E. Drainage:
1. All trails must have a 2% cross slope. A smooth surface is essential to prevent water ponding or ice formation.
 2. Where a multi-use trail is constructed on the side of a hill, a swale or other storm water collection system of approved dimensions must be placed on the uphill side to collect the hillside drainage. Such swale must be designed so that an undue obstacle cannot interfere with trail use. Where necessary, a catch basin with drains shall be provided to carry the collected water under the trail. Drainage grates must be located outside the trail. All drainage-structure grates must be designed for all wheeled traffic.
 3. The minimum diameter of a culvert which conveys flow under a multi-use trail shall be 12 inches. Each culvert shall be designed to pass a minimum 2-year flood event.

F. Waterway Crossings:

1. Permitting - A structure crossing a waterway is required to obtain all federal, state, county, and local permits and approvals.
2. Allowable bridge decking products include:
 - a. Structural concrete slab for multi-use trails
 - b. City of Westfield approved treated wood products or concrete for perimeter trails.
 - c. Alternatives must be sent to the Westfield Parks & Recreation Department for evaluation. These alternatives must also be accompanied by a data sheet, provided by the manufacturer, stating that the product is designed for the proposed use.
3. All bridges on multi-use trails shall be designed to structurally support 10,000 pounds.
4. All bridge designs must be reviewed by a professionally licensed structural engineer selected by the City of Westfield, at the expense of the Developer.

G. Railings:

1. Trail Railing
 - a. Design of railings is based on specifications located in Figures 02505-04 and 02505-05.
 - b. All trail railings shall be 54 inches in height.
 - c. Design loading shall be $W=50$ pounds per linear foot transversely and vertically, acting simultaneously on each rail.
 - d. Any opening in railing elements shall not allow a 6-inch diameter sphere to pass through.

H. Bollards or gates shall be used on a case by case basis. Location of bollards or gates must be approved by the Westfield Parks & Recreation Department.

I. Multi-Use Trail Signage:

1. Trail identification and informational signage and sign specifications are called out in the Westfield Parks & Recreation Trail Standards.

J. Multi-use trail access points must be approved by the Westfield Parks & Recreation Department, as outlined in Policy PK 06-11, per Ordinance 11-22.

K. Curb Ramps:

1. All curb ramps shall be in accordance with INDOTSS 604.
2. Detectable Warning Elements (truncated domes) shall be:
 - a. Cast-in-place
 - b. Material: Vitrified Polymer Composite (plastic)
 - c. Products:
 - i. <http://www.adatale.com/castinplace.php>
 - ii. <http://www.armor-tile.com/cast-in-place.html>
 - iii. Approved Equal
 - d. Meets or exceeds HS20 loading requirements
 - e. Color: Brick Red or approved equal
 - f. Cut to conform to angles – gaps shall not exceed 1/8"
 - g. Plates shall be placed directly along the back of the 6" curb per INDOT Std. Dwg. No. E 604-SWCR-03
3. All curb ramps shall include detectable warning grooving
4. Depth of concrete at curb shall be in accordance with INDOT Std. Dwg. No. E 604-SWCR-02

L. Driveways:

1. All residential driveways shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-01 for Class I Drives
 - a. In lieu of the radii, 1:1 tapers are acceptable
 - b. Absolutely no ADA ramps shall be constructed within the limits of the driveway. 2' minimum separation between driveway and curb ramp.
 - c. Profiles shall in accordance with INDOT Std. Dwg. No. E 610-DRIV-08. 6" concrete on 6" of No. 53 stone.
2. All commercial driveways shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-03 for Class III Drives
 - a. Corner/radii construction shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-16
 - b. Profiles shall in accordance with INDOT Std. Dwg. No. E 610-DRIV-08.

PART 2 – PRODUCTS

Not applicable

PART 3 – EXECUTION

Not applicable

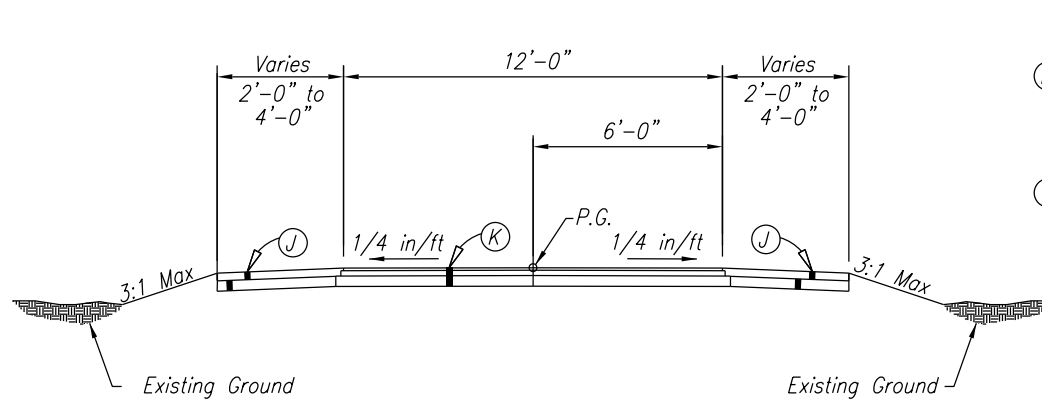
PART 4 - FIGURES

FIGURE

DESCRIPTION

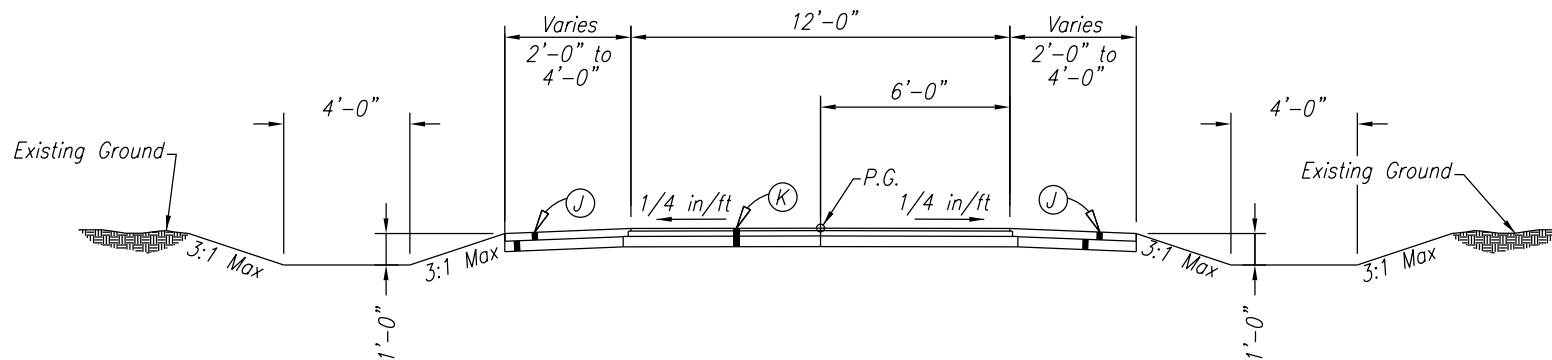
02505-001	Typical Cross Section – Perimeter Trail
02505-002	Typical Cross Section – Multi-Use Trail
02505-003	Typical Cross Section – Line of Sight Triangle
02505-004	Typical Cross Section – Wood Railing Details
02505-005	Typical Cross Section – Wood Railing Details

END OF SECTION 02505



TYPICAL TRAIL FILL SECTION
SCALE = NONE

- LEGEND**
- (K) 165#/SYS HMA, TYPE A, SURFACE, 9.5MM
275#/SYS HMA, TYPE A, INTERMEDIATE, 19.0MM
6" COMPACTED AGG., NO. 53, BASE
 - (J) 10" COMPACTED AGG., NO. 53



TYPICAL TRAIL CUT SECTION
SCALE = NONE

TYPICAL CROSS SECTION – PERIMETER TRAIL



[Signature]
DATE 2/26/16

CITY OF WESTFIELD
INDIANA

CITY OF WESTFIELD

Stormwater Management Technical Standards Manual

March 2017

TABLE OF CONTENTS

<u>Chapter</u>	<u>Title</u>
03100	POLICY AND PROCEDURES
03200	HYDROLOGY
03300	HYDRAULICS AND HYDRAULIC STRUCTURES
03400	STORM SEWERS AND CULVERTS
03500	INSTALLATION OF STORMWATER FACILITIES
03600	EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES
03700	POST-CONSTRUCTION STORMWATER QUALITY MANAGEMENT

CHAPTER 03100 POLICY AND PROCEDURES

SECTION 03101 INTRODUCTION

03101.01
Section
Purpose

This manual provides technical standards for proper stormwater management and stormwater quality practices for those engineers, builders, contractors, land planners, and property owners contemplating some form of land alteration or improvement within land areas under the City of Westfield Municipal MS4 Stormwater Jurisdiction. This Stormwater Technical Standards Manual is intended to establish the policies relating to stormwater management, stormwater quality practices, and flood control, submittal requirements and procedures for issuance of a stormwater permit, and procedures for inspection, testing and final acceptance of stormwater facilities.

The contents of the Manual are the result of a joint effort by Hamilton County, the City of Carmel, the Town of Fishers, the City of Noblesville, and the City of Westfield. The regulations have been established to accomplish the following objectives:

- Provide for consistent, high quality project design and evaluation by consolidating current departmental standards and “policies” within a single document.
- Establish minimum requirements and standards for stormwater management plan submittals and project reviews.
- Facilitate more consistent review of stormwater permit applications and land alteration plans by the stormwater permit staff.
- Establish a standard for the proper and consistent installation of stormwater facilities, with a high level of workmanship, according to the approved stormwater management plan.
- Minimize the impacts of new development and redevelopment projects on existing stormwater management facilities.

This Manual was developed with the assumption that the user will possess a basic understanding of civil engineering design, construction, stormwater quality practices, or land alteration, depending upon the users particular area of expertise. Readers of the Manual which are not qualified by education and experience in the field of construction, engineering, stormwater quality practices, or land alteration should consult with a more qualified person or persons possessing professional expertise in one or more of these fields prior to application of the requirements set forth herein.

03101.02
Provisions

This Manual, together with all future revisions, shall be referred to as “**The City of Westfield Stormwater Management Technical Standards Manual**”. The City of Westfield has been granted authority to “protect the safety, health, and general welfare of the citizens” of the City of Westfield by requiring compliance with standards and practices, which result in proper stormwater drainage and sediment control in the accomplishment of land alterations or other improvements.

03101.03
Applicability

The provisions of this Manual shall apply to the following areas within Hamilton County:

1. **All territory of the County that is not located within a municipality;**
2. **All territory of a municipality located within the County that has adopted a policy or resolution that the territory of the municipality or a portion of the territory of a municipality be included within the applicability area of this Manual;**

3. All areas within a municipality which lie within the drainage shed of a regulated drain.

This Manual applies to all land altering projects as stated and defined in the City of Westfield Ordinance Number 05-30 (An Ordinance to Establish Overlay Zone Districts and Regulations for Storm Water Management). Any land alteration, within the jurisdiction of this Manual, must be accomplished in conformity with the stormwater requirements set forth herein. "Land Alteration" shall generally refer to any on-site or off-site action taken relative to land which either:

1. Changes the contour; or
2. Increases the runoff rate or volume; or
3. Changes the elevation; or
4. Decreases the rate at which water is absorbed; or
5. Changes the drainage pattern; or
6. Creates or changes a stormwater facility; or
7. Involves construction, enlargement, location or relocation of any building on a permanent foundation; or
8. Increases the delivery of point and/or non-point source pollution to streams; or
9. Relocates, encloses, or alters a stream or open channel stormwater conveyance; or
10. Creates an impoundment.

This Manual should be used in conjunction with the applicable City of Westfield stormwater management ordinances. Additional requirements related to land alteration may be found in the existing codes and ordinances of the City of Westfield. Exceptions to the provisions of this Manual are provided in the applicable City of Westfield stormwater management ordinances.

When the project site that is located within the drainage shed of a Hamilton County Regulated Drain falls within the corporate limits of a municipality, adherence to the requirements of both entities is required. In case there is a conflict between the requirements of the municipality and those of the County, the most restrictive requirements shall apply.

03101.04
Stormwater
Manual
Organization

This Manual is organized to present the technical and engineering procedures and criteria needed to comply with the land areas under the City of Westfield government jurisdiction stormwater regulations. Copies of the City of Westfield's pertinent stormwater management ordinances are presented in the Appendices of this Chapter. In addition, the general design policy and procedures are presented.

Each chapter of this Manual contains an initial section that presents all of the policies and procedures that must be satisfied for approval. These policies and procedures shall be considered as design criteria that are unique for approval within the jurisdiction of this Manual.

The site designer is encouraged to review the LID discussion in Chapter 03700 prior to the site design to take advantage of runoff reduction recognitions provided towards water quantity calculations discussed in earlier chapters if LID practices are utilized as part of the site design.

03101.05
Updating

The process of updating this Manual shall be adopted as policy by the City of Westfield. This Manual shall be periodically updated and revised, as necessary, to reflect current engineering practices and information applicable to land areas under the City of Westfield government jurisdiction. Users of this Manual are encouraged to obtain any and all updates and supplements to this Manual each time a land alteration project is considered. The ultimate responsibility for checking for and obtaining updated material shall be the responsibility of the user.

The most current standards shall be required for approval of a land alteration. The incorporation of outdated standards in the design, implementation, and construction of a land alteration shall be cause for the City of Westfield to reject the proposed land alteration.

SECTION 03102 PERMIT REQUIREMENTS AND PROCEDURES

03102.01
Introduction

The project site owner shall submit an application for a stormwater management permit to the City of Westfield. The application will include a Draft Notice of Intent letter (NOI) that would also act as permit application form if the project site is one (1) acre or more to be disturbed, construction plan sheets, stormwater drainage technical report, operations and maintenance manual, a stormwater pollution prevention plan, and any other necessary support information. Specific information to be included in the application can be found in Section 03102.03 below. One (1) copy of each required application material must be submitted to the Westfield Public Works Department (WPWD). The original Rule 5 NOI should also include the original proof of publication and a \$100 check made out to IDEM. Additionally, a digital copy of the construction plans is required in a format accepted by the WPWD. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana.

After the WPWD receipt of the application, the applicant will be notified as to whether their application was complete or insufficient. The applicant will be asked for additional information if the application is insufficient. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana. The information provided will be reviewed in detail by WPWD and/or its plan review consultant(s). Once all comments have been received and review completed, the WPWD will either approve the project or request modifications.

For the WPWD, copies of the final, approved construction plans, stormwater drainage technical report, operations and maintenance manual, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification and proof of publication. The number of required copies varies from case to case and should be determined by contacting the WPWD. A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate perimeter control measures have been implemented on the site and the location of any existing tiles has been properly marked.

Once construction starts, the project owner shall monitor construction activities with a maintenance log and inspect all stormwater pollution prevention measures in compliance with the City of Westfield's applicable ordinances and the terms and conditions of the approved permit. Upon completion of construction activities, as-built plans in state plan coordinates on CD must be submitted to the WPWD. A Notice of Termination (NOT) shall be sent to the WPWD once the construction site has been stabilized and all temporary erosion and sediment control measures have been removed. The WPWD, or a representative, shall inspect the construction site to verify the requirements for a NOT have been met in accordance with the Rule 5 (327 IAC 15-5). Once the applicant receives a "verified" copy of the NOT, they must forward a copy to IDEM. Permits issued under this scenario will expire 5 years from the date of issuance. If construction is not completed

within 5 years, the NOI must be resubmitted at least 90 days prior to expiration. A flow chart of the major steps in the stormwater plan review/permit process is provided as Exhibit 03102-1.

Specific projects or activities may be exempt from all or part of the informational requirements listed below. Exemptions are detailed in the applicable ordinances and “Applicability and Exemptions” Sections of Chapters 03200 through 03700. If a project or activity is exempt from any or all requirements of the ordinances or this Manual, an application should be filed listing the exemption criteria met, in lieu of the information requirements listed below. The level of detailed information requested below is not required from individual lots, disturbing less than 1 acre of land, developed within a larger permitted project site. Review and acceptance of such lots is covered under Section 03102.07 of this Chapter.

In order to gain an understanding of the stormwater management requirements for a specific project, a developer or his/her engineer may submit conceptual drainage plans and calculations to the WPWD and request an informal meeting to discuss the proposed project. The direction provided by the WPWD as a result of such a review is based on preliminary data and shall not be construed as an approval or binding on either party.

03102.02
Draft Notice of
Intent

The NOI is a standard form developed by the Indiana Department of Environmental Management which requires general project information. As part of the WPWD Stormwater Management Permit application package, the NOI form should be completed in full based on data and information available at the time of application.

Accompanied by proof of publication in a newspaper of general circulation in the affected area that notified the public that a construction activity is to commence must include the following language:

“(Company name, address) is submitting an NOI letter to notify **the** City of Westfield and the Indiana Department of Environmental Management of our intent to comply with the requirements of **the applicable** City of Westfield **stormwater management ordinances**, as well as the requirements of 327 IAC 15-5 and 327 IAC 15-13, to discharge stormwater from construction activities for the following project: (name of the construction project, address of the location of the construction project, and Parcel Identification Number). Run-off from the project site will discharge to (stream(s) receiving the discharge(s)).”

03102.03
Construction
Plans

Construction plan sheets not to exceed 24” by 36” in size) with a scale of 1 inch = 20 feet, 30 feet, 40 feet, 50 feet or 60 feet, and an accompanying narrative report shall describe and depict the existing and proposed conditions. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. Construction plans need to include the following detailed items:

- i. Title sheet which includes location map, vicinity map, operating authority, design company name, developer name, and index of plan sheets.
- ii. A copy of a legal boundary survey for the site, performed in accordance with Rule 12 of Title 865 of the Indiana Administrative Code or any applicable and subsequently adopted rule or regulation for the subdivision limits, including all drainage easements and wetlands.



- iii. A reduced plat or project site map showing the parcel identification numbers, lot numbers, lot boundaries, easements, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.
- iv. An existing project site layout that must include the following information:
 - a. A topographic map of the land to be developed superimposed on a County GIS ortho-aerial map at a scale of 1"=100". The exhibit should provide the contour information and include all roads and buildings within a minimum 500' radius beyond the project boundaries. The contour intervals for the land to be developed shall be one (1) foot when slopes are less than or equal to two percent (<2%) and shall be two (2) feet when slopes exceed two percent (>2%). All elevations shall be given in North American Vertical Datum of 1988 (NAVD). The horizontal datum of topographic map shall be based on Indiana State Plane Coordinates, NAD83. The map will contain a notation indicating the noted datum information. The names of adjoining property owners must be labeled on the map.
 - b. Location, name, and normal water level of all wetlands, lakes, ponds, and water courses on or adjacent to the project site.
 - c. Location of all existing structures on the project site.
 - d. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
 - e. Identification and delineation of vegetative cover such as grass, weeds, brush, and trees on the project site.
 - f. Location of storm, sanitary, combined sewer, and septic tank systems and outfalls.
 - g. Land use of all adjacent properties.
 - h. Identification and delineation of sensitive areas.
 - i. The location of regulated drains, farm drains, inlets and outfalls. Prior to construction plan design beginning, all existing regulated drains on the site are to be located, exposed, and invert shots taken to ensure the system is installed deep enough to provide drainage to the upstream watershed. This is also applicable if the site outlets into a regulated drain and no as-built drawings on the drain exist.
 - j. Location of all existing cornerstones within the proposed development and a plan to protect and preserve them.
 - k. Location of all known wells (including abandoned wells).
 - l. Location of known potential contaminant facilities.
- v. A grading and drainage plan, including the following information:
 - a. All information from the existing site layout items listed above.
 - b. Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, finished floor elevations, and common areas with elevations for those improvements.
 - c. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
 - d. Delineation of all proposed land disturbing activities, including off-site activities that will provide services to the project site.
 - e. Information regarding any off-site borrow, stockpile, or disposal areas that are associated with a project site, and under the control of the project site owner.
 - f. Proposed topographic information at one-foot contour interval.
 - g. Location, size, and dimensions of all existing streams to be maintained, and new drainage systems such as culverts, bridges, storm sewers, conveyance

- channels, and 100-year overflow paths/ponding areas shown as hatched areas, along with all associated easements.
- h. Pipes and associated structures data, including sizes, lengths, and material
 - i. Location, size, and dimensions of features such as permanent retention or detention facilities, including natural or constructed wetlands, used for the purpose of stormwater management. Include existing retention or detention facilities that will be maintained, enlarged, or otherwise altered and new ponds or basins to be built.
 - j. Emergency flood routing path(s) and their invert elevations from detention facilities to the receiving system.
 - k. One or more typical cross sections of all existing and proposed channels or other open drainage facilities carried to a point above the 100-year high water and showing the elevation of the existing land and the proposed changes, together with the high water elevations expected from the 100-year storm under the controlled conditions called for by The City of Westfield's applicable stormwater management ordinance(s), and the relationship of structures, streets, and other facilities.
 - l. A drainage summary, which summarizes the basic conditions of the drainage design, including site acreage, off-site/upstream acreage, allowable release rates, post-developed 10-year, and 100-year flows leaving the site, volume of detention required, volume of detention provided, and any release rate restrictions.
 - m. Arrows designating the direction of stormwater runoff.
 - n. Spot elevations appropriate to define elevations.
- vi. Utility plan sheet(s) showing the location of all existing and proposed utility lines for the project, including all available information related to the utilities, such as pipe size and material, and invert elevations. Include plan and profiles of all sanitary and storm infrastructure along with a separate sheet for the water plan.
- vii. Storm sewer plan/profile sheet(s) at a scale of 5 vertical and 50 horizontal showing the elevation, size, length, location of all proposed storm sewers. Existing and proposed ground grades, storm sewer structure elevations, and all existing and proposed utility crossings also must be included. The actual correct datum (not an assumed one) must be used for the profile sheets and all pipe inverts, top of casting elevations, casting types, structure numbers, and pipe slopes clearly labeled.
- viii. A plat on the same sheet size used for recording, including the following information:
- a. Legal description.
 - b. Cross reference to Rule 12.
 - c. Regulated drain statement and table.
- ix. Proposed subdivision landscape plans
- x. A copy of the subdivision covenants
- xi. Any other information required by the WPWD in order to thoroughly evaluate the submitted material.

A written stormwater drainage technical report must contain a discussion of the steps taken in the design of the stormwater drainage system. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. The technical report needs to include the following detailed items:

- i. A summary report, including the following information:
 - a. Description of the nature and purpose of the project.
 - b. The significant drainage problems associated with the project.
 - c. The analysis procedure used to evaluate these problems and to propose solutions.
 - d. Any assumptions or special conditions associated with the use of these procedures, especially the hydrologic or hydraulic methods.
 - e. The proposed design of the drainage control system.
 - f. The results of the analysis of the proposed drainage control system showing that it does solve the project's drainage problems and that it meets the requirements of the ordinance and these standards. This must include a table summarizing, for each eventual site outlet, the pre-developed acreage tributary to each eventual site outlet, the unit discharge allowable release rate used, the resulting allowable release rate in cfs for the post-developed 10-year and 100-year events, pre-developed 2-year flow rates in cfs as well as pre- and post-developed flow rates for 10- and 100-year events. The worksheet provided as Table 03102-1 should be filled and submitted as part of the report. Any hydrologic or hydraulic calculations or modeling results must be adequately cited and described in the summary description. If hydrologic or hydraulic models are used, the input and output files for all necessary runs must be included in the appendices. A map showing any drainage area subdivisions used in the analysis must accompany the report.
 - g. Soil properties, characteristics, limitations, and hazards associated with the project site and the measures that will be integrated into the project to overcome or minimize adverse soil conditions.
 - h. A narrative and photographic record of the condition of the downstream receiving system.
 - i. Identification of any other State or Federal water quality permits that are required for construction activities associated with the owner's project site.
 - j. Proof of Errors and Omissions Insurance for the registered professional engineer or licensed surveyor showing a minimum amount of \$1,000,000 in coverage.
- ii. A Hydrologic/Hydraulic Analysis, consistent with the methodologies and calculation included in Chapters 03200 and 03300 of this Manual, and including the following information:
 - a. A hydraulic report detailing existing and proposed drainage patterns on the subject site. The report should include a description of present land use and proposed land use. Any off-site drainage entering the site or any downstream restrictions should be addressed as well. This report should be comprehensive and detail all of the steps the engineer took during the design process.
 - b. All hydrologic and hydraulic computations should be included in the submittal. These calculations should include, but are not limited to the following: runoff curve numbers and runoff coefficients, runoff calculations, stage-discharge relationships, times-of-concentration and storage volumes.

- c. Copies of all computer runs. These computer runs should include both the input and the outputs. Electronic copies of the computer runs with input files must also be included.
- d. A set of exhibits should be included showing the drainage sub-areas and a schematic detailing of how the computer models were set up.
- e. A conclusion which summarizes the hydraulic design and details how this design satisfies the City of Westfield's applicable stormwater management ordinance(s) and these Standards.

03102.05
Stormwater
Pollution
Prevention Plan
for Construction
Sites

A stormwater pollution prevention plan associated with construction activities must be designed to, at least, meet the requirements of the City of Westfield's applicable stormwater management ordinance(s) and must include the following:

- i. Location, dimensions, detailed specifications, and construction details of all temporary and permanent stormwater quality measures.
- ii. Soil map of the predominant soil types, as determined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey, or as determined by a soil scientist. Hydrologic classification for soils should be shown when hydrologic methods requiring soils information are used. A soil legend must be included with the soil map.
- iii. 14-Digit Watershed Hydrologic Unit Code. Longitude and latitude location.
- iv. An estimate of the peak discharge, based on the ten (10) year storm 24-hour event, of the project site for post-construction conditions.
- v. Locations where stormwater may be directly discharged into groundwater, such as abandoned wells or sinkholes. Please note if none exists.
- vi. Locations of specific points where stormwater discharge will leave the project site.
- vii. Name of all receiving waters. If the discharge is to a separate MS4, identify the name of the municipal owner and the ultimate receiving water.
- viii. Temporary stabilization plans and sequence of implementation.
- ix. Permanent stabilization plans and sequence of implementation.
- x. Temporary and permanent stabilization plans shall include the following:
 - a. Specifications and application rates for soil amendments and seed mixtures.
 - b. The type and application rate for anchored mulch.
- xi. General construction sequence of how the project site will be built, including phases of construction.
- xii. Construction sequence describing the relationship between implementation of stormwater quality measures and stages of construction activities.
- xiii. Location of all soil stockpiles and borrow areas.
- xiv. A typical erosion and sediment control plan for individual lot development.
- xv. Self-monitoring program including plan and procedures.
- xvi. A description of potential pollutant sources associated with the construction activities, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- xvii. Material handling and storage associated with construction activity shall meet the spill prevention and spill response requirements in 327 IAC 2-6.1.
- xviii. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

03102.06
Post-Construction
Stormwater
Pollution
Prevention Plan

The post-construction stormwater pollution prevention plan must include the following information:

- i. A description of potential pollutant sources from the proposed land use, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- ii. Location, dimensions, detailed specifications, and construction details of all post-construction stormwater quality measures.
- iii. A description of measures that will be installed to control pollutants in stormwater discharges that will occur after construction activities have been completed.
- iv. A sequence describing when each post-construction stormwater quality measure will be installed.
- v. Stormwater quality measures that will remove or minimize pollutants from stormwater run-off.
- vi. Stormwater quality measures that will be implemented to prevent or minimize adverse impacts to stream and riparian habitat.
- vii. An operation and maintenance manual for all post-construction stormwater quality measures to facilitate their proper long term function. This operation and maintenance manual shall be in a separate cover and shall be made available to future parties who will assume responsibility for the operation and maintenance of the post-construction stormwater quality measures. The manual shall include the following:
 - a. Contact information for the BMP owner (i.e. name, address, business phone number, cell phone number, pager number, e-mail address, etc.).
 - b. A statement that the BMP owner is responsible for all costs associated with maintaining the BMP.
 - c. A right-of-entry statement allowing the WPWD personnel to inspect and maintain the BMP.
 - d. Specific actions to be taken regarding routine maintenance, remedial maintenance of structural components, and sediment removal. Sediment removal procedures should be explained in both narrative and graphical forms. A tabular schedule should be provided listing all maintenance activities and dates for performing these required maintenance activities.
 - e. Site drawings showing the location of the BMP and access easement, cross sections of BMP features (i.e. pond, forebay(s), structural components, etc.), and the point of discharge for stormwater treated by the BMP.
- viii. Any other information necessary for the review the project if LID Approach is being utilized as discussed in Chapter 03700 of these Standards Manual.

03102.07
Review of
Individual Lots
Within a
Permitted Project

For individual lots disturbing less than 1 acre, developed within a larger permitted project, a formal review and issuance of an Erosion and Sediment Control Inspection Permit Request for Residential Lots and Outlots will be required before a building permit can be issued. All stormwater management measures necessary to comply with the City of Westfield's applicable stormwater management ordinance(s) must be implemented in accordance with permitted plan for the larger project.

The following information must be submitted to the WPWD, for review and acceptance, by the individual lot operator, whether owning the property or acting as the agent of the property owner, as part of a request for review and issuance of an Erosion Control Inspection Permit Request that must be obtained prior to the issuance of a building permit.

- A. The individual lot operator must complete an Erosion Control Inspection Permit Request and pay the applicable fee.
- B. A certified site layout for the subject lot and all adjacent lots showing building pad location, dimensions, and elevations, and the drainage patterns and swales.

- C. Erosion and sediment control plan that, at a minimum, includes the following measures:
 - i. Installation and maintenance of a stable construction site access.
 - ii. Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
 - iii. Minimization of sediment discharge and tracking from the lot.
 - iv. Clean-up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
 - v. Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
 - vi. Self-monitoring program including plan and procedures.
- D. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

The individual lot owner is responsible for installation and maintenance of all erosion and sediment control measures until the site is stabilized.

Additionally, the Permittee is responsible for ensuring that a BMP's measures remain in place during the construction process and that the installation and continuous maintenance of all lot erosion and sediment controls, on and/or adjacent to their lots, as well as curb inlets along the street frontage are monitored.

A temporary construction entrance provides a place for parking vehicles off of the street and a spot where material can be off loaded. This requirement is to provide a stable surface for parking vehicles where mud and other debris will not to be tracked onto the street. Proper maintenance of the area is required until such time as a permanent driveway is installed.

Failure to keep streets clear of mud, sediment, and debris will result in an enforcement action by the WPWD under the authority of the City of Westfield's Stormwater Management Ordinance (05-30). The Permittee will be responsible for incurring all costs associated with cleaning the streets.

03102.08
Changes to Plans

Any changes or deviations in the detailed plans and specifications after approval of the applicable stormwater management permit shall be filed with, and accepted by, the WPWD prior to the land development involving the change. Copies of the changes, if accepted, shall be attached to the original plans and specifications.

03102.09
Fee Structure

A. Fee Amount

As a condition of the submittal and the review of development plans by the WPWD, the applicant shall agree to pay the WPWD the applicable fee, as set by the City of Westfield, with respect to the review of all drainage submittals, preliminary plans, final plans, construction plans and accompanying information and data, as well as any applicable pre-paid inspection fees.

B. Time of Payment

Before the WPWD's approval of plans, the WPWD will furnish a written statement to the applicant specifying the total amount due to the WPWD in connection with the review of the applicant's submittals, plans and accompanying information and data, including the amount required to be paid by applicant for review and pre-paid inspection fees.

As a condition of acceptance of final drainage plans by the WPWD, applicant shall pay to the WPWD the sum set forth in said statement. WPWD may issue such a billing statement before the project advances to the final acceptance stage, and such payment is due by applicant upon receipt of said billing statement regardless of whether the project is advanced to the final acceptance stage.

WPWD shall have the right to not accept the drainage improvements or to not accept the advancement of any project for which the applicable fees have not been paid.

C. Method of Payment

Fees shall be paid by one of the following methods:

- Certified Check
- Cashier's Check
- Money Order
- Such other methods as may be agreed in writing by the WPWD

All checks shall be made payable to the City of Westfield.

D. Waiver of Payment

Fees may be waived for certain projects at the discretion of the City of Westfield.

03102.10
N/A

This section intentionally left blank.

03102.11
Permit Terms
and Conditions

In granting a stormwater management permit, WPWD may impose such terms and conditions as are reasonably necessary to meet the purposes of this Ordinance. The project site owner shall insure compliance with such terms and conditions. Non-compliance with the terms and conditions of permits will be subject to enforcement as described in the applicable ordinances.

The project site owner shall inform all general contractors, construction management firms, grading or excavating contractors, utility contractors, and the contractors that have primary oversight on individual building lots of the terms and conditions of the stormwater management permit and the schedule for proposed implementation.

It is the intent of the WPWD to direct the community's physical growth away from sensitive areas and towards areas that can support it without compromising water quality. In the event that a project site is determined to impact or discharge to a Sensitive Area or is located in an Impact Drainage Area, WPWD may require more stringent stormwater quantity and quality measures than detailed in the applicable ordinances or in the latest edition of the Indiana Stormwater Quality Manual.

A. Determination of Sensitive Areas

Sensitive Areas include highly erodible soils, wetlands, threatened or endangered species habitat, outstanding waters, impaired waters, recreational waters, and surface drinking water sources. A listing of highly erodible soils, outstanding water, impaired water, recreation water, and surface drinking water sources can be found in the City of Westfield Storm Water Quality Management Plan (SWQMP) - Part B and its updates. Any discharge from a stormwater practice that is a Class V injection well shall meet the Indiana groundwater quality standards. It is the responsibility of the Developer/Engineer to check if a wetland is present on the project site. If wetlands are suspected on a site, wetland delineation shall be completed in accordance with the methodology established by the U.S. Army Corps of Engineers (COE) and the wetland addressed in accordance to the

requirements of the law. If the presence of threatened or endangered species habitat is suspected on a site, the site must be evaluated and inspected by a professional experienced in such and the results reported to the WPWD. Special terms and conditions for development determined to impact or discharge to any Sensitive Area shall be included in the stormwater management permit.

B. Determination of Impact Drainage Areas

The following areas shall be designated as Impact Drainage Areas, unless good reason for not including them is presented to the WPWD.

- i. A floodway or floodplain as designated by the most updated City of Westfield Code dealing with floodplain regulation.
- ii. Land within 75 feet of each bank of any ditch within the Hamilton County Regulated Drainage System.
- iii. Land within 75 feet of the centerline of any drain tile or enclosed conduit within the Hamilton County Regulated Drainage System.

WPWD is authorized, but is not required, to classify certain additional geographical areas as Impact Drainage Areas. In determining Impact Drainage Areas, WPWD shall consider such factors as land use, topography, soil type, capacity of existing drains, and distance from adequate drainage facility. Land that does not have an adequate outlet, taking into consideration the capacity and depth of the outlet, may be designated as an Impact Drainage Area by the WPWD. Special terms and conditions for development within any Impact Drainage Area shall be included in the stormwater management permit.

SECTION 03103 CONSTRUCTION INSPECTIONS AND APPROVAL

**03103.01
Introduction**

After the approval of the stormwater management permit, WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit. The installed storm sewer shall not be accepted by the WPWD until all requirements for inspection and testing described in this Manual are completed. Inspection of the stormwater drainage system and associated land grading and erosion control measures shall be completed by the WPWD as set forth herein to ensure conformance with the approved site construction plan and supporting documents. Any portion of the stormwater facility not passing the tests prescribed herein shall be repaired or replaced to the extent required by the WPWD, and retested.

**03103.02
General
Requirements**

The Contractor and/or Owner shall provide written notice to the WPWD of planned commencement of construction forty-eight (48) hours prior to such commencement. Copies of the final, approved construction plans, stormwater drainage technical report, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification. The number of required copies varies from case to case and should be determined by contacting the WPWD.

A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate erosion control measures have been implemented on the site and the location of any existing tiles has been properly marked.

A stop-work-order shall be issued by the WPWD for all projects that are proceeding without such notification, pre-construction meeting, or deviation from any of the specifications described herein without approval. WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit.

03103.03
Testing

Once constructed, all storm sewer pipes and manholes shall be water tight. All storm and subsurface drains shall be cleaned and televised after ALL underground utilities are installed with a copy on a CD or thumb drive delivered to the WPWD Inspector. The Contractor shall repair to the satisfaction of the WPWD all visible points of possible bedding and/or backfill infiltration into the system. The method of repair shall be per the approval of the WPWD. When necessary, the Contractor shall remove and reconstruct as much of the work as is necessary to obtain a system that passes the minimum tests prescribed herein.

A. Mandrel Test for Plastic Pipes

No sooner than thirty (30) days after installation, all storm water pipe constructed of PVC or HDPE larger than 6 inches in diameter shall be mandrel tested. A representative of the WPWD shall be present on-site during all mandrel tests. WPWD shall be given written notification of the proposed testing times and locations at least 48 hours prior to the intended time for beginning of the tests. Arrangements for the cost and supply of all equipment necessary to perform mandrel tests shall be the responsibility of the Contractor and Owner.

Mandrel tests shall be conducted under the supervision of the WPWD.

A seven and one-half (7-1/2) percent "GO/NO-GO" Mandrel Deflection Test shall be performed on all PVC and HDPE gravity storm sewer pipe. HDPE and PVC gravity storm sewer pipe shall not be permitted for any other use than sub-surface drains unless a special circumstance requires its use as determined and approved by the WPWD.

These pipes shall be mandrel led with a rigid device sized to pass seven and one-half (7-1/2) percent or less deflection (OR deformation) of the base inside diameter of the pipe. The mandrel test shall be conducted no earlier than thirty (30) days after reaching final trench backfill grade.

The mandrel (GO/NO-GO) device shall be cylindrical in shape and constructed with nine (9) or ten (10) evenly spaced arms or prongs. Variations of mandrel diameter dimensions due to pipe wall thickness tolerances or ovality (from heat, shipping, poor production, etc.) shall not be deducted from the diameter dimension of the mandrel but shall be counted as par of the 7-1/2% or lesser deflection allowance. Each pipe material/type required to be Mandrel tested shall be tested with a mandrel approved by the WPWD and meeting the requirements of this chapter. The mandrel diameter dimension shall carry a minimum tolerance of 0.01 inches.

The mandrel shall be hand pulled through all sewer lines and any section of sewer not passing the mandrel shall be uncovered, replaced or repaired, and retested.

The contact length (L) shall be measured between points of contact on the mandrel arm.

The Contractor shall provide proving rings to check the mandrel. Drawings of mandrels with complete dimensions shall be furnished by the Contractor to the WPWD upon request for each diameter and specification of pipe.

B. CMP and RCP Inspections

All reinforced concrete and corrugated metal storm sewer pipes that are 42 inch in diameter or larger shall be inspected through a walk through (visual survey) inspection with the contractor, developer, and a representative from the WPWD.

All reinforced concrete and corrugated metal storm sewer pipes are required to be inspected through closed circuit television viewing (CCTV) at the developer's or contractor's expense by the WPWD's representative as described herein. In those instances where CCTV is a required part of the stormwater permits approval, this televised viewing shall be completed in conformance with these minimum guidelines. The inspection between manholes shall be conducted as follows:

1. A camera equipped with remote control devices to adjust the light intensity and one thousand (1,000) lineal feet of cable shall be provided. The camera shall be able to transmit a continuous image to the television monitor as it is being pulled through the pipe. The image shall be clear enough to enable the WPWD to easily evaluate the interior condition of the pipe. The camera should have a digital display for lineal footage and project number and an audio voice-over shall be made during the inspection identifying any problems. Reference WPWD Standards Section 02750.
2. All pipe, including sub-surface drains, shall be thoroughly cleaned before the camera is installed and televising is commenced. Cleaning of the pipe shall be the responsibility of the owner.
3. The CD – Digital format, as directed by the WPWD, of the entire storm sewer line and reproduction map indicating the pipe segment numbers of all the pipe that has been televised shall be submitted to the department for review and placement in their permanent file. The pipe should be flooded with clear water just prior to video recording to show any bellies or sags in the pipe.

These inspections shall be required in order to identify, as examples, excessive sedimentation, joint failures, excessive deflections (CMP), damaged coatings or paving (CMP), structural defects, misalignments, sags, or other system defects which have the potential of affecting the hydraulic performance, durability, or structural integrity of the line segment. Reference should be made to Chapter 03400 of this manual for guidance on criteria sufficient to warrant rejection of the installed storm sewer system.

Excessive deflection of CMPs shall be considered to exist under the following conditions: variations from a straight centerline; elliptical shape in a pipe intended to be round; dents or bends in the metal. Metallic or bituminous coatings that have been scratched, scraped, bruised, or otherwise broken shall be considered acceptable criteria for rejection of the installed system.

Any pipe and/or joint found to be defective as a result of the televised viewing shall be required to be repaired or replaced to the satisfaction and approval of the WPWD. A re-televising of that portion of the storm sewer line identified as needing repair or replacement shall be required.

C. Manhole and Box Inlet Inspection

Each manhole and/or box inlet structure within all storm sewer line segments shall be visually inspected by a representative of the WPWD prior to backfill to ensure seams are sealed, pipes have concrete collars, and structure is watertight. A secondary inspection by a representative of the WPWD shall be required to check for excessive leakage, backfill infiltration, or improper workmanship and materials. Doghouse structures shall be permitted with approval from the WPWD. Manholes or box inlet structures which fail to

meet minimum construction standards shall be repaired or, if necessary, replaced, and reinspected.

03103.04
Release of
Performance
Sureties

Notice of the scheduled date for completion of construction shall be provided to the WPWD at least seventy-two (72) hours prior to its planned completion. The Contractor or Owner will schedule the final inspection, the storm drain and site grading performance sureties will be released after submittal and approval by the WPWD of the following information (Reference Section 01001):

1. All punch list items are completed and verified by the WPWD.
2. As-built or record drawings prepared under the supervision of and certified by a Professional Engineer or Land Surveyor registered in the State of Indiana, as described in Section 03103.05 of this Manual.
2. For subdivided and platted or developments larger than two (2) acres, a copy of the maintenance bond, as required in Section 03104-01 of this Manual, in a form approved by the City of Westfield.
3. A "Certificate of Completion and Compliance" certifying that the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permit as approved by the WPWD.

That portion of the performance surety associated with the storm sewer system, detention facilities, and Post-Construction BMPs may be released by the WPWD prior to the release of performance surety associated with early permanent site stabilization or the installation of required erosion and sediment control measures for individual lots within a permitted subdivision. The performance surety associated with erosion and sediment control measures may only be released upon the final acceptance of the project and the issuance of the "verified" NOT in accordance with the requirements of Rule 5 (327 IAC 15-5), i.e., upon stabilization of the entire construction site and the removal of temporary erosion and sediment control measures, which may be achieved before or after the construction of all individual lots within a subdivision.

03103.05
As-built or
Record Drawings

As part of the final acceptance process, record drawings of the stormwater facilities must be submitted to the WPWD, as set forth herein, for the following types of developments:

- All platted subdivisions
- Industrial and commercial sites five acres and larger

After completion of construction of the project and before final project acceptance of the stormwater management plan (the issuance of a "verified" NOT), a professionally prepared and certified record drawings ('as-built' set of plans) by a Professional Engineer or licensed Land Surveyor registered in the State of Indiana shall be submitted to the WPWD for review. These as-built plans/record drawings must be prepared and certified by the Engineer of Record, i.e., the company/engineer who originally prepared the construction plans. Additionally, a digital copy of the record drawings ('as-built' plans) as well as finalized digital versions of all analyses, models, manuals, and reports that are consistent with the as-built conditions is required in a format accepted by the WPWD. These plans shall include all pertinent data relevant to the completed storm drainage system and stormwater management facilities, and shall include:

1. Pipe size and pipe material
2. Invert elevations, top of casting elevations, swale flow lines, lot elevations, etc
3. Top rim elevations

4. Pipe structure lengths
5. BMP types, dimensions, and boundaries/easements
6. “As-planned” plans for BMPs, as applicable
7. Data and calculations showing detention basin storage volume
8. Data and calculations showing BMP treatment capacity
9. Certified statement on plans stating the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permits as approved by the WPWD.

In addition, any requirements established by the City of Westfield Digital Submission Standards shall also be met.

03103.06
Enforcement
of Standards

Failure to comply with those minimum guidelines set forth by the manual may result in Enforcement Action per the Storm Water Management Ordinance as well as a Stop-Work order.

SECTION 03104 POST-CONSTRUCTION MAINTENANCE REQUIREMENTS

03104.01
Maintenance
Surety

Stormwater quantity and quality management facilities shall be maintained in good condition, in accordance with the Operation and Maintenance procedures and schedules listed in the latest editions of the Indiana Stormwater Quality Manual or requirements contained in this Manual, and the terms and conditions of the approved stormwater permit, and shall not be subsequently altered, revised, or replaced except in accordance with the approved stormwater permit, or in accordance with approved amendments or revisions in the permit. Following construction completion and before the release of maintenance sureties described below, the maintenance of stormwater quantity or quality facilities may become the long-term responsibility of the owner of the facility.

A table listing the name and location of every post-construction stormwater quality BMPs shall also be included on the recorded plat. A sample table is provided as Table 03104-1.

The property owner, developer, or contractor shall be required to file a three-year maintenance bond or other acceptable guarantee with the City of Westfield, prior to the release of Performance Sureties. Specifically, the said assurance is intended to guarantee that the following be properly maintained after the construction under the provisions of the City of Westfield’s applicable stormwater management ordinance(s) and this Technical Standards:

- Post-Construction Erosion and sediment controls
- Storm sewer system
- Sub-Surface Drains (SSD)
- Detention facilities
- Post-Construction BMPs

The maintenance surety shall further be conditioned upon owner, developer, or contractor satisfactorily completing, within the three-year period following the completion of construction, such corrective actions as the WPWD may determine are reasonably necessary to remedy any damages to upstream or downstream channels or storm sewers resulting from the as-built development of the project.

Bonds or letter of credit are to be made out to the City of Westfield. Said financial maintenance guarantee shall be conditioned upon the following:

1. A sum shall be fixed and approved by the WPWD equal to ten percent (10%) of the actual construction cost of all stormwater management improvements and installations provided in the construction drawings and accompanying data to specifications cited herein. Said costs shall be for the installation and ongoing monitoring and post-construction maintenance of storm drainage infrastructure, detention/retention facilities, and stormwater quality BMPs, as regulated under the City of Westfield's applicable stormwater management ordinance(s) and this Technical Standards. Assurances shall be for a minimum of \$5,000. Reference Section 01001.
2. Each public facility improvement or installation provided in the final plat or accompanying data shall be bonded individually and shall not have the maintenance guarantee provided in combination with any of the other public facility improvements and installations.
3. The maintenance surety shall be issued in the name of the owner, developer, contractor or other responsible party as determined by the WPWD.

03104.02
Post-
Construction
Inspection

The City of Westfield and WPWD has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater quantity and quality facilities. The inspections will follow the Operation and Maintenance procedures included in this Manual and/or permit application for each specific BMP. The inspection will cover physical conditions, available water quantity and quality storage capacity and the operational condition of key facility elements. Noted deficiencies and recommended corrective action will be included in an inspection report. If deficiencies are found during the inspection, the owner of the facility will be notified by the WPWD's Office and will be required to take all necessary measures to correct such deficiencies. If the owner fails to correct the deficiencies within the allowed time period, as specified in the notification letter, the WPWD will undertake the work and collect from the owner using lien rights if necessary.

03104.03
Release of
Maintenance
Sureties

The maintenance surety posted by the developer, owner, or the contractor shall run and be in force for a period of three (3) years from the date of release of the performance surety.

To verify that all enclosed drains are functioning properly, all storm sewer including sub-surface drains are to be cleaned and televised with visual recordings (via closed circuit television) of such tile drains shall be required before release of maintenance sureties. These visual recordings will be scheduled at least 90 days prior to the expiration date of the maintenance bond. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the WPWD before maintenance sureties would be recommended to be released.

SECTION 03105 OTHER REQUIREMENTS

03105.01
Floodplain
Management

Floodplain management shall be in accordance with the City of Westfield's adopted floodplain regulations. In addition to these regulations, the following floodplain policy is adopted by the City of Westfield.

The intent of Floodplain management is to protect against loss of property, protect human life, and maintain natural beneficial functions of floodplains in helping mitigate flooding and providing habitat and water quality benefits. Therefore, filling of the land in the floodplain of a regulated drain or any natural stream or watercourse, that has a defined channel and a contributing drainage area of 25 acres or more, located within the land under the jurisdiction of the City of Westfield government is prohibited. The use of the floodplain area for detention/retention ponds or lakes is also prohibited. Floodplain boundaries are to be determined by using the 100-year Base Flood Elevation (BFE) as shown on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA), or the best available/calculated data if FIRM does not show the BFE and the Hamilton County 1-foot topographic data available on the Hamilton County GIS webpage.

- A. If, during the process of using the BFE and the 1-foot topographic data, it is determined that the FIRM is incorrect, then a Letter of Map Revision (LOMR) to correct the FIRM is to be filed with FEMA. No filling of the floodplain, either the floodplain shown on the FIRM or the floodplain determined by the Floodplain Study, whichever is more conservative, will be allowed until an approved copy of the LOMR is provided to the City of Westfield.
- B. If a FIRM does not establish a 100-year BFE for a regulated drain, natural stream, or natural watercourse, the 100-year BFE shall be established through a site specific Floodplain Study performed by a Professional Engineer registered in the State of Indiana.
 - 1. If the drainage area for the Floodplain Study reach is greater than 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to IDNR – Division of Water for approval and to the WPWD for review and comment. A copy of the final study, approved by IDNR-Division of Water, must be submitted to the WPWD as part of the project requiring the study to be completed. Upon acceptance of the Floodplain Study by IDNR – Division of Water, a Letter of Map Revision (LOMR) is to be filed with FEMA to incorporate the new Floodplain Study into the new FIRM panels.
 - 2. If the drainage area for the Floodplain Study reach is less than 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to the WPWD for review and approval. The methodology for determining the BFE shall be in accordance to Chapters 03200 and 03300 of these Standards. WPWD will have the option to send the Floodplain Study to a consulting engineering firm for review and comment, should the accuracy of the Floodplain Study be in question. The cost of the consulting engineering firm's time will be the responsibility of the owner of the project and will need to be approved in a written agreement prior to any review of the Floodplain Study by the consulting engineer.
- C. The requirements of this section do not apply to the following:
 - 1. Agricultural uses such as crop production, pastures, orchards, tree farms, planting nurseries, vineyards, and general farming.
 - 2. Forestry, wildlife areas and nature preserves.
 - 3. County, City, or Township Parks.
 - 4. Public Streets, bridges, and roadways, as long as the crossing structure are properly sized to convey the natural stream or watercourse and not raise the 100-year BFE.

5. Regional Detention Basins approved by the WPWD. (By definition, a regional pond is a pond that detains all tributary on-site and off-site flows upstream of its outlet.)

D. Regulated Drain Watershed Considerations

If the project site is within a Hamilton County Regulated Drain Watershed, the applicant will also need to abide by the Hamilton County Surveyor's Office applicable floodplain management requirements, whether the site is located in an incorporated area or not.

03105.02
Grading and
Building Pad
Elevations

Maximum yard slopes are 3:1 where soil has been disturbed during construction processes. Finished floor elevation or the lowest building entry elevation must be no less than 6 inches above finished grade around the building. Also, the building's lowest entry elevation that is adjacent to and facing a road shall be a minimum of 15 inches above the road elevation.

All buildings shall have a minimum flood protection grade shown on the secondary plat. Minimum Flood Protection Grade of all structures fronting a pond or open ditch shall be no less than 2 feet above any adjacent 100-year local or regional flood elevations, whichever is greater, for all windows, doors, attached garage entrances, unsealed pipe entrances, window well rim elevations, and any other structure member where floodwaters can enter a building.

For all structures located in the Special Flood Hazards Area (SFHA) as shown on the FEMA maps, the lowest floor elevations of all residential, commercial, or industrial buildings shall be such that Lowest Floor elevation, including basement, shall be at the flood protection grade and therefore have 2 feet of freeboard above the 100-year flood elevation.

The Lowest Adjacent Grade for residential, commercial, or industrial buildings outside a FEMA or IDNR designated floodplain shall have 2 feet of freeboard above any applicable local or regional flooding sources' 100-year flood elevation under proposed conditions, whichever is greater. Lowest Adjacent Grade is the elevation of the lowest grade adjacent to a structure, where the soil meets the foundation around the outside of the structure (including structural members such as basement walkout, attached garage door entrance, patios, decks, porches, support posts or piers, and rim of the window well).

For areas outside a FEMA or IDNR designated floodplain, the Lowest Adjacent Grade (including walkout basement floor elevation) for all residential, commercial, or industrial buildings adjacent to ponds shall be set a minimum of 2 feet above the 100-year pond elevation or 2 feet above the emergency overflow weir elevation, whichever is higher. In addition to the Lowest Adjacent Grade requirements, any basement floor must be at least a foot above the permanent water level (normal pool elevation).

Special considerations, based on detailed geotechnical analysis, should be made prior to considering placement of any basement below the 100-year flood elevation of an adjacent flooding source or pond.

The LAG requirements for buildings adjacent to overflow path/ponding areas are discussed in Section 03303.07 of this Manual. In case there are more than one flooding sources applicable to a building site, the highest calculated LAG for the building shall govern the placement of the building on that site.

03105.03
Policy on
Dams and
Levees

Dams and levees have the potential for significant, sometimes catastrophic consequences should they fail. In order to minimize the potential for loss of life and public safety, decrease the potential for increased flood damage and disaster costs, and safeguard the downstream property rights, the following shall be required by the HCSO for any proposed new or improvements to any existing

dam or levee. These requirements are in addition to what is normally required for other development subject to this Ordinance and/or that required by State or Federal agencies.

- A. Design of dams shall follow the requirements of the latest edition of IDNR-Division of Water "General Guidelines for New Dams and Improvements to Existing Dams in Indiana" as well as principles provided in the latest edition of "Indiana Dam Safety Inspection Manual".
- B. Design of levee/floodwalls shall follow the FEMA requirements and guidelines provided in 44 CFR Section 65.10 and USACE Engineer Manual 1110-2-193, Design and Construction of Levees.
- C. An Emergency Action Plan (EAP), including a detailed dam breach inundation map, shall be developed in accordance with the template provided in the latest edition of "Indiana Dam Safety Inspection Manual" and submitted to the HCSO. The detailed dam breach inundation map referenced in this paragraph shall be developed for both "Sunny Day Breach" Scenario (breach during normal loading conditions) and for maximum loading condition with breach assumed to occur as the spillway system is passing the Spillway Design Flood associated with the dam ("SDF + Breach" Scenario).
- D. Unless the "Sunny Day Breach Inundation Area" is entirely contained within the applicant's property and/ or contained within the existing 1% annual chance (100-year) floodplain, a copy of recorded flood/inundation easement or a recorded written consent for every property within the potential "Sunny Day Breach Inundation Area" shall be submitted to the HCSO. In addition, all the affected property owners whose properties are located within the "SDF + Breach Inundation Area" must be notified of a hearing relevant to the proposed added risk. Notification of the time and place of the hearing shall be made in person or by certified mail at least five (5) to ten (10) days prior to the hearing. Proof of notice to each landowner shall be filed by affidavit with the HCSO prior to the hearing.
- E. A copy of a Management and Maintenance Plan for the proposed dam or levee developed in accordance with the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO.
- F. Following the permitting and construction of the dam or levee, a copy of a formal periodic inspection report prepared in accordance with the recommendations contained in the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO along with evidence that the identified maintenance deficiencies have been corrected. The inspection report has to be submitted as it gets completed in accordance with the inspection frequency recommended in the latest edition of "Indiana Dam Safety Inspection Manual".

SITE OUTLET #	ITEM	PRE-DEVELOPMENT					POST-DEVELOPMENT				
		D.A. (ac)	Depress. Storage? (yes/no)	2- Yr.	10- Yr.	100- Yr.	D.A. (ac)	Depress. Storage? (yes/no)	2- Yr.	10- Yr.	100- Yr.
1	Default Unit Discharge Allowable Release Rate (cfs/acre)									0.1	0.3
	Basin-Specific Unit Discharge Allowable Release Rate, if any (cfs/acre)										
	Unit Discharge Allowable Release Rate Based on D/S Restrictions, if any (cfs/acre)										
	Adopted Unit Discharge Allowable Release Rate (cfs/acre)										
	Contributing Area of Development Site (ac) and Allowable Release Rate (cfs)										
	Total Contributing DA (ac) and Modeling Results (cfs)							no			

Table 03102-1: Allowable Release rate Determination and Modeling Results

Structure Number	BMP Name	BMP Description	BMP Location

Table 03104-1: Listing of Post-Construction Stormwater Quality BMPs Proposed to be Accepted as Part of Hamilton County Regulated Drainage System

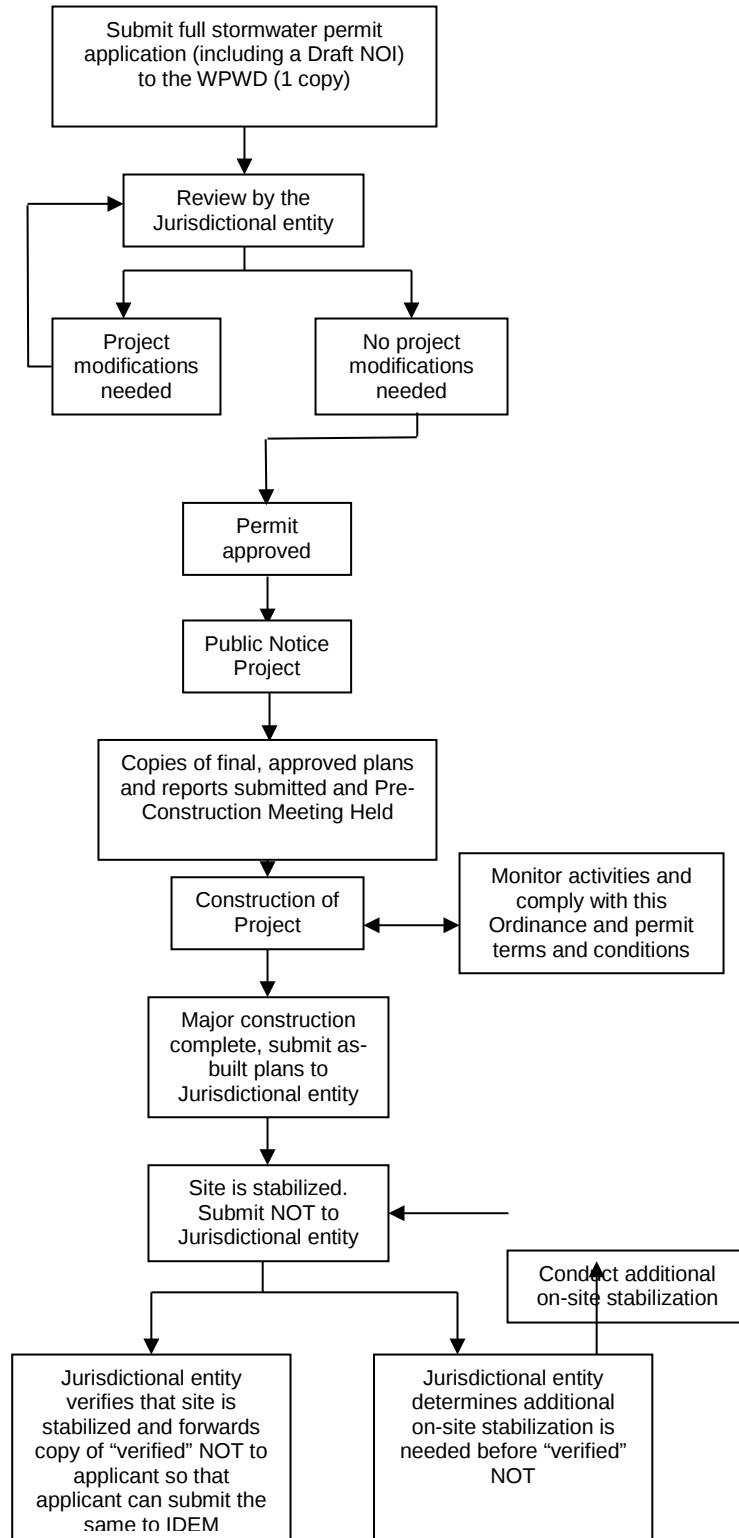


Exhibit 03102-1: Flow Chart of the Stormwater Plan Review/Permit Process

CHAPTER 03400 STORM SEWERS AND CULVERTS

SECTION 03401 GENERAL

03401.01 Introduction

This section covers all work necessary for the construction of the storm sewer piping systems and related items complete, including catch basins and inlet drains, manholes, junction chambers, diversion chambers, outfall structures, and miscellaneous structures.

This specification covers the following types of materials for storm sewers, culverts, underdrains, inlet drains, conduits, and miscellaneous applications:

1. Reinforced Concrete Pipe and Fittings
2. Polyvinyl Chloride Pipe (PVC)
3. Corrugated Metal Pipe
4. Structural Plate Arches
5. Aluminum or Aluminized Steel Pipe and Structural Plate
6. Multi-Plate Pipe and Pipe Arches
7. PVC Composite Pipe
8. Corrugated Polyethylene Pipe- SSD (Perforated and Non-Perforated)
9. High-Performance Polypropylene Pipe (HP)

All lots shall have access to a subsurface or storm drain or open ditch.

Storm sewer systems shall have a maximum of four hundred (400) feet between structures.

This specification requires project plans and construction specifications to be submitted to and approved by all appropriate regulatory agencies prior to beginning any work.

Before construction and before fabrication, the Contractor shall submit to the Westfield Public Works Department (WPWD) for approval calculations on the thickness or strength class and drawings showing pipe lengths, joints, and other construction and installation details.

Pipe Marking

Each length of pipe shall bear the name or trademark of the manufacturer, the location of the plant, and the date of manufacture. Each length shall likewise be marked to designate the class or strength of the pipe. The marking shall be made on the exterior or interior of the pipe barrel near the bell or groove end and shall be plainly visible.

03401.02 Minimum Size for Storm Sewers

The minimum diameter of all storm sewers shall be 12 inches. When the minimum 12 inch diameter pipe will not limit the rate of release to the required amount, the rate of release for detention storage shall be controlled by an orifice plate or other device, subject to acceptance of the WPWD.

Manholes, Inlets, and Other Structures

Storm sewer manholes and inlets shall be constructed of precast reinforced concrete. Material and construction shall conform to the latest edition of the Indiana Department of Transportation (INDOT) Standard Specifications, Sections 702 and 720.

Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall comply with the following:

1. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C150, ACI 301, and ACI 318. Concrete for precast manhole sections shall be 3000 psi concrete. Monolithic manholes shall use 4000 psi concrete. Ready-mix concrete shall conform to ASTM C94, Alternate 2. Maximum size of aggregate shall be 3/4 inch. Slump shall be between 2 and 5 inches.
2. Forms for chamber and structures shall be plywood or other approved material. Steel forms shall be used for the inside face of monolithic concrete manholes. Doghouse structures shall be permitted with approval from the WPWD.
3. Reinforcing steel shall conform to ASTM A615, Grade 60 deformed bars, or ASTM A616 Grade 60 deformed bars.
4. Mortar Materials:
 1. Sand - ASTM Designation C144, passing a No. 8 sieve.
 2. Cement - ASTM Designation C150, Type 1.
 3. Water - shall be potable.

The manufacturer shall provide openings for sewers entering and leaving the manhole. Any additional openings needed to be made in the field shall be made by drilling holes at least 1/2 inch in diameter with a maximum spacing of 3 inches.

Cored or pre-formed holes for pipe installation at manholes shall not occur at barrel section joints. A minimum 3" between edge of hole and joint shall be provided.

Manhole steps shall be made from a steel reinforcing rod encapsulated in a copolymer polypropylene resin. The manhole steps shall equal or exceed OSHA requirements.

Any other special manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall be constructed as detailed on the drawings.

Manhole bases shall be set on a minimum of six (6) inches of # 8 aggregate.

Concrete ends sections shall have a minimum of a twenty-four (24) inch precast toe plate bolted to the end section per Standard Detail (ST-30). Corrugated end sections with toe plates shall require WPWD approval.

Catch Basins

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

Catch Basins, for sediment control, locations to be determined by a Professional Engineer, and approved by the WPWD. Catch Basins shall be located within easily accessible dedicated

easements or right of way of sufficient size to facilitate the required maintenance of these structures

Catch basins and curb inlet structures which are two (2) feet by two (2) feet in size shall not have a depth deeper than four (4) feet from the invert of the lowest pipe to the lowest part of the rim elevation of the casting. All beehive castings on a two (2) foot by two (2) foot box shall have a square riser with a round hole. All structures which do not meet these criteria shall be a manhole type, which is forty-eight (48) inches in diameter.

Castings

Cast iron or ductile iron frames and gratings for catch basins and drain inlets shall be as shown on the drawings. Bearing surfaces shall be clean and shall provide uniform contact. Castings shall be tough, close-grained gray iron, sound, smooth, clean, free from blisters, blow holes, shrinkage, cold shuts, and all defects and shall conform to ASTM A48 Class No. 30-B.

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

The following castings types are required:

1. Manholes – Neenah R 1772 A or equivalent
2. Beehive Inlets – Neenah R 4342 or equivalent
3. “Roll Curb” Inlets – Neenah 3501 – TR or TL or equivalent
4. “Chair Back” Curb Inlet – Neenah 3287 – 10V or equivalent
5. Other types shall require approval of the WPWD.

1. All equivalents shall be approved by WPWD

Curb inlet castings which possess open backs or have grate bars parallel to traffic flow (are not “bicycle” safe) will not be accepted by the WPWD.

Storm sewer casting manhole covers, beehive inlets, curb inlets or other approved casting shall have the following phrases cast in recessed letters two (2) inches in height:

- 1. “City of Westfield Storm”**
2. “Drains to River” or “Drains To Waterway”
3. “Dump No Waste”
4. Other phrases shall require approval of the WPWD.

All casting frames shall have a horizontal bearing surface around the entire perimeter of the frame in order to support the cover or grate.

Bench Walls

Bench walls shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flows through the structure. The bench wall shall form a defined channel, to a minimum height of the spring line of the pipe.

Bench walls shall be formed using full depth Class "A" concrete. Solid concrete block, stone or sand shall not be permitted as a base or filler for the construction of the bench wall.

Reinforced Concrete Pipe and Fittings

Reinforced concrete pipe and fittings shall conform to ASTM C76, latest revision, for circular pipe and ASTM C507 for elliptical pipe.

Reinforced concrete pipe and fittings for normal conditions shall be reinforced in accordance with ASTM C76, Class III, IV or V, Wall B (minimum). Acceptance shall be on the basis of Subsection 4.1.1 of ASTM C76.

Circumferential reinforcing in circular pipe shall be required. Only with approval from the WPWD will elliptical reinforcing or combination of elliptical and circumferential reinforcing or part circular reinforcing shall be permitted, in circular pipe.



Concrete pipe shall be steam cured and shall not be shipped from point of manufacture for at least five days after having been cast.

Joints shall conform to the requirements of ASTM C443. Gaskets shall be of an oil resistant type having a maximum swell of 90% when tested in accordance with ASTM D471. Lubricant for jointing shall be approved by gasket manufacturer.

All rubber gaskets shall be similar to and equal to "Press-Seal" or "Tylox" conforming to ASTM Designation C443, latest revision. The gasket shall be attached to the spigot of the pipe and shall be the sole element depended upon to make the joint flexible and practically watertight.

Butyl mastic joint sealant in rope or trowel applied form specifically made for permanently sealing joints in tongue and groove concrete sewer pipe. The material shall adhere tightly to the pipe surface and form a tight, flexible joint. The material shall have been in use for at least five years. Test results and material specifications shall be submitted to the WPWD and shall be approved prior to use on the project.

Polyvinyl Chloride Pipe and Fittings

Polyvinyl chloride (PVC) pipe and fittings shall comply with ASTM D3034.

Corrugated Metal Pipe and Pipe Arches

The following specifications shall govern the manufacture of the corrugated steel pipe and pipe arches.

1. Specifications for Zinc Coated (galvanized) Steel Sheets (ASTM A444).
2. Manufacture of Corrugated Steel Culverts and Underdrains (AASHTO M-36).
3. Structural Plate for Pipe, Pipe Arches, and Arches (AASHTO M-167).
4. Bituminous Coated Corrugated Steel Pipe and Arches (AASHTO M-190).
5. Sheet Material (ASTM A525).

Bituminous Coated Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end. After the ends

are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating.

Bituminous Coated and Paved Invert Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end.

After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch. In addition, bituminous material shall be applied to form a smooth pavement in the bottom 25% of pipe and in the bottom 40% of pipe arch as required by AASHTO M-190 for Type C coating.

Smooth Lined Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end. Each pipe shall have two lifting lugs welded to the outside of the pipe.

After the ends have been rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating. The pipe shall be centrifugally lined on the inside with bituminous material to form a smooth surface which fills the corrugations to a minimum thickness of 1/8 inch above the crests of the corrugations. The bituminous lining material shall meet the requirements of AASHTO M-190.

Bituminous Coated Pipe Couplings

Coupling bands shall be the same base metal and spelter coating as the pipe. Bands shall be 0.064 inch thick and 10-1/2 inches wide. Bands shall be bituminous coated and shall have two corrugations 7-5/8 inches center to center. Bands 12 inch diameter through 30 inch diameter shall be one-piece and 36 inch diameter through 96 inch diameter shall be two-piece. Band laps 12 inch diameter through 48 inch diameter shall be joined by one galvanized bar, bolt, and strap connector. Band laps 54 inch diameter through 96 inch diameter shall be joined by two galvanized bar, bolt, and strap connectors.

Aluminum Alloy Structural Plate

Aluminum alloy plates and fasteners intended for use in the construction of structural plate pipe and pipe arch for storm sewers shall meet the applicable requirements of AASHTO M-219. The plate shall be fabricated from aluminum alloy 5052 H141. The chemical composition of the plates shall conform to ASTM B209 alloy 5052.

The corrugations shall have a pitch of 9 inches plus or minus 3/8 inch and depth of 2-1/2 inches plus or minus 1/8 inch. The inside crown radius of the corrugations shall be not less than 2 inches.

The structural plate pipe or arches shall be assembled in accordance with the manufacturer's erection instructions and in accordance with the drawings.

Aluminized Steel Pipe and Arches

Aluminized coated corrugated steel pipe and pipe arch intended for use in the construction of storm sewers shall meet the applicable requirements of AASHTO M-36. Sheet material shall meet the latest revision of ASTM A525 and AASHTO M-274. The coils from which the pipe is produced shall be coated with 1.0 ounce per square foot of commercially pure aluminum.

Pipe shall be furnished circular or as a pipe-arch shape as required and shall be fabricated with helical corrugations and a continuous welded seam extending from end to end of each length of pipe.

Each end of each pipe with the welded seam shall have two annular corrugations reformed to permit joining with hugger bands.

Coupling bands shall be hugger bands.

Multi-plate Pipe and Pipe Arches

Multi-plate pipe and pipe arch structures shall be in accordance with AASHTO M-167. They shall be made with steel sections with corrugations 6 inches wide by 2 inches deep running at right angles to the section.

Bolts and nuts shall be special heat-treated galvanized 3/4 inch diameter bolts in accordance with ASTM specifications.

Multi-plate pipes and pipe arches shall be designed in accordance with the manufacturer's design criteria and in accordance with the drawings.

Detailed instructions regarding erection shall be furnished by the manufacturer.

PVC Composite Pipe and Fittings

ABS or PVC composite pipe and fittings shall conform to ASTM D2680, Latest Revision.

Corrugated Polyethylene Pipe and Fittings

Corrugated polyethylene pipe shall comply with the requirements for materials, test methods, dimensions, and marking in accordance with AASHTO M-252 for pipe diameters 6" - 10".

The resin material shall meet ASTM D3350 cell classification 335400C.

The pipe lengths shall be connected using a gasketed, bell and spigot joint. This joint shall consist of a factory installed, gasketed double bell polyethylene coupling, a factory welded bell or integral bell. The spigot end of the pipe shall be furnished with a factory installed elastomeric profile "O-ring" rubber gasket that meets ASTM F477.

The pipe shall be shipped with a removable wrap to protect the gasket. Provide lubrication to the joint prior to pushing together. At least two (2) corrugations of the spigot end must insert into the bell end.

All HDPE pipe shall be certified through the Plastic Pipe Institute (PPI) Third Party Certification Program. All HDPE pipe delivered and installed shall bear the Third Party Administered PPI Seal.

High-Performance Polypropylene Pipe (HP)

This specification describes 12- through 60-inch (300 to 1500 mm) ADS HP Storm pipe for use in gravity-flow storm drainage applications.

12- through 60-inch (300 to 1500 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2881 and AASHTO M330. Manning's "n" value for use in design shall be 0.012. Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of F2881. 12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings shall conform to ASTM F2881 and AASHTO M330. Bell & spigot connections shall utilize a spun-on, welded or integral bell and spigots with gaskets meeting ASTM F477. Bell & spigot fittings joint shall meet the watertight joint performance requirements of ASTM D3212. Corrugated couplings shall be split collar, engaging at least 2 full corrugations.

To assure water-tightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameters, the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04 at http://www.ads-pipe.com/pdf/en/2.04_Min_Max_Cover_Heights_for_HP_Storm_December_2016.pdf.

For additional backfill details, refer to WSD 2222-001 through 004.

Mandrel testing for 100% of the installed pipe will be required unless otherwise approved by WPWD Inspector.

Subsurface Drain Tiles

Double wall, smooth bore perforated, corrugated polyethylene tile, manufactured under specification ASTM F667, shall be required for all subsurface drain tile installed in swales. Double wall, smooth bore perforated, corrugated polyethylene drain tile shall be required for curb sub-grade drainage. All ends shall be capped with HDPE fitting. No duct tape shall be permitted.

Polyethylene tile shall possess male and female pipe ends, which allow the construction of overlapping, gasket pipe joints, in conformance with the requirements of ASTM D3212. The gasket material shall conform to all requirements of ASTM F477. As an alternative, pipe joints utilizing external couplings bands will be accepted provided the minimum AASHTO requirements for satisfying soil tightness are also achieved.

Storm sewer pipe shall be of the size shown on the drawings and shall meet all requirements of these specifications. Subsurface drains in swales shall have clean-outs installed every 300 feet, changes in direction, high points, and dead ends.

CHAPTER 03600 EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES

SECTION 03601 GENERAL

03601.01 Purpose and Background

The requirements contained in this Chapter are intended to prevent stormwater pollution resulting from soil erosion and sedimentation or from mishandling of solid and hazardous waste. Practices and measures included herein should assure that no foreign substance, (e.g. sediment, construction debris, chemicals) be transported from a site and allowed to enter any drainageway, whether intentionally or accidentally, by machinery, wind, rain, runoff, or other means.

The major pollutant of concern during construction is sediment. Natural erosion processes are accelerated at a project site by the construction process for a number of reasons; including the loss of surface vegetation and compaction damage to the soil structure itself, resulting in reduced infiltration and increased surface runoff. Clearing and grading operations also expose subsoils which are often poorly suited to re-establish vegetation, leading to longer term erosion problems.

Problems associated with construction site erosion include: transport of pollutants attached to displaced sediment; increased turbidity (reduced light) in receiving waters; and recreational use impairment. The deposited sediment may pose direct toxicity to wildlife, or smother existing spawning areas and habitat. This siltation also reduces the flow capacity of waterways, resulting in increased flood hazards to the public.

Other pollutants of concern during the construction process are hazardous wastes or hydrocarbons associated with the construction equipment or processes. Examples include concrete washouts, paints, solvents, and hydrocarbons from refueling operations. Poor control and handling of toxic construction materials pose an acute (short-term) and/or chronic (long-term) risk of death to aquatic life, wildlife, and the general public.

03601.02 Abbreviations and Definitions

The following abbreviations and definitions apply throughout this chapter:

Abbreviations

COE:	United States Army Corps of Engineers
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IDEM:	Indiana Department of Environmental Management
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IDNR:	Indiana Department of Natural Resources
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INDOT:	Indiana Department of Transportation
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MS4:	Municipal separate storm sewer system
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NRCS:	USDA-Natural Resources Conservation Service
SWCD:	Soil and Water Conservation District
USDA:	United States Department of Agriculture
<u>Definitions</u>	
Construction Activity:	Land-disturbing activities associated with the construction of infrastructure and structures. This term does not include routine ditch maintenance or minor landscaping projects.
Construction Plan:	A representation of a project site and all activities associated with the project. The plan includes the location of the project site, buildings and other infrastructure, grading activities, schedules for implementation and other pertinent information related to the project site. A stormwater pollution prevention plan is a part of the construction plan.
Construction Site Access:	A stabilized stone surface at all points of ingress or egress to a project site, for the purpose of capturing and detaining sediment carried by tires of vehicles or other equipment entering or exiting the project site.
Contractor or Subcontractor:	An individual or company hired by the project site or individual lot owner, their agent, or the individual lot operator to perform services on the project site.
Developer:	Any person financially responsible for construction activity; or an owner of property who sells or leases, or offers for sale or lease, any lots in a subdivision.
Erosion:	The detachment and movement of soil, sediment, or rock fragments by water, wind, ice, or gravity.
Erosion and Sediment Control Measure:	A practice or a combination of practices, to control erosion and resulting sedimentation.
Erosion and Sediment Control System:	The use of appropriate erosion and sediment control measures to minimize sedimentation by first reducing or eliminating erosion at the source and then as necessary, trapping sediment to prevent it from being discharged from or within a project site.

Final Stabilization:	The establishment of permanent vegetative cover or the application of a permanent non-erosive material to areas where all land disturbing activities have been completed and no additional land disturbing activities are planned under the current permit.
Grading:	The cutting and filling of the land surface to a desired slope or elevation.
Impervious Surface:	Surfaces, such as pavement and rooftops, which prevent the infiltration of storm water into the soil.
Individual Building Lot:	A single parcel of land within a multi-parcel development.
Individual Lot Operator:	A contractor or subcontractor working on an individual lot.
Individual Lot Owner:	A person who has financial control of construction activities for an individual lot.
Land-disturbing Activity:	Any manmade change of the land surface, including removing vegetative cover that exposes the underlying soil, excavating, filling, transporting, and grading.
Measurable Storm Event:	A precipitation event that results in a total measured precipitation accumulation equal to, or greater than, one-half (0.5) inch of rainfall.
MS4 Area:	A land area comprising one (1) or more places that receives coverage under one (1) NPDES storm water permit regulated by 327 IAC 15-13 or 327 IAC 5-4-6(a)(3) and 327 IAC 5-4-6(a)(4).
MS4 Operator:	The person responsible for development, implementation, or enforcement of the minimum control measures for a designated MS4 area regulated under 327 IAC 15-13.
Peak Discharge:	The maximum rate of flow during a storm, usually in reference to a specific design storm event.
Permanent Stabilization:	The establishment, at a uniform density of seventy percent (70%) across the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.
Phasing of	Sequential development of smaller portions of a large project site,

Construction:	stabilizing each portion before beginning land disturbance on subsequent portions, to minimize exposure of disturbed land to erosion.
Project Site:	The entire area on which construction activity is to be performed.
Project Site Owner:	The person required to comply with the terms of this chapter, including either a developer or a person who has financial and operational control of construction activities, and project plans and specifications, including the ability to make modifications to those plans and specifications.
Sediment:	Solid material (both mineral and organic) that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface.
Sedimentation:	The settling and accumulation of unconsolidated sediment carried by storm water run-off.
Soil:	The unconsolidated mineral and organic material on the surface of the earth that serves as the natural medium for the growth of plants.
Stormwater Pollution Prevention Plan (SWPPP):	A plan developed to minimize the impact of storm water pollutants resulting from construction activities.
Stormwater Quality Measure:	A practice or a combination of practices, to control or minimize pollutants associated with storm water run-off.
Strip Development:	A multi-lot project where building lots front on an existing road.
Subdivision:	Any land that is divided or proposed to be divided into lots, whether contiguous or subject to zoning requirements, for the purpose of sale or lease as part of a larger common plan of development or sale.
Temporary Stabilization:	The covering of soil to ensure its resistance to erosion, sliding, or other movement. The term includes vegetative cover, anchored mulch, or other non-erosive material applied at a uniform density of seventy percent (70%) across the disturbed area.
Tracking:	The deposition of soil that is transported from one (1) location to another by tires, tracks of vehicles, or other equipment.

Trained Individual:	An individual who is trained and experienced in the principles of stormwater quality, including erosion and sediment control as may be demonstrated by state registration, professional certification (such as CESSWI, CPESC, and/or CISEC certification), or other documented and applicable experience or coursework as deemed sufficient by the City of Westfield that enable the individual to make judgments regarding stormwater control or treatment and monitoring.
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SECTION 03602 BASIC POLICIES AND PROCEDURES

03602.01 Applicability and Exemptions

The Westfield Public Works Department (WPWD) will require a Stormwater Pollution Prevention Plan (SWPPP), which includes erosion and sediment control measures and materials handling procedures, to be submitted as part of the construction plans and specifications. Any project located within the City of Westfield which falls under the jurisdictional authority of the City of Westfield and includes clearing, grading, excavation, and other land disturbing activities resulting in the disturbance of 1 acre or more of total land area is subject to the requirements of this Chapter. This includes both new development and re-development. This chapter also applies to disturbances of less than one 1 acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land, within the area under the jurisdictional authority of the City of Westfield. Section 03602.03 of this Chapter provides guidelines for calculating land disturbance. Projects meeting the coverage requirements of 327 IAC 15-5 (Rule 5) shall also be in compliance with 327 IAC 15-5. It is the responsibility of the Developer/Project Engineer to ascertain any wetland delineations.

The requirements under this Chapter do not apply to the following activities:

1. agricultural land disturbing activities; or
2. forest harvesting activities.

The requirements under this Chapter do not apply to the following activities, provided other applicable State permits contain provisions requiring immediate implementation of soil erosion control measures:

1. Landfills that have been issued a certification of closure under 329 IAC 10.
2. Coal mining activities permitted under IC 14-34.
3. Municipal solid waste landfills that are accepting waste pursuant to a permit issued by the Indiana Department of Environmental Management under 329 IAC 10 that contains equivalent stormwater requirements, including the expansion of landfill boundaries and construction of new cells either within or outside the original solid waste permit boundary.

For an individual lot where land disturbance is expected to be one (1) acre or more, the individual lot owner must complete their own notice of intent letter, apply for a stormwater permit from the WPWD, and ensure that a sufficient construction and stormwater pollution prevention plan is completed and submitted in accordance with Chapter 03100; regardless of whether the individual lot is part of a larger permitted project site.

An individual lot with land disturbance less than one (1) acre, located within a larger permitted project site, is considered part of the larger permitted project site, and the

individual lot operator must comply with the terms and conditions of the stormwater permit approved for the larger project site. The stormwater permit application for the larger project site must include typical detailed erosion and sediment control measures for individual lots. Additionally, the individual lot operator or holder of an Improvement Location Permit Application is required to apply for an Erosion Control Inspection Permit Request per the Erosion & Sediment Control Inspection Ordinance for Individual Lots and Outlots. In addition, these individual lots are required to submit applications prior to receiving a building permit. Details of the permitting process are contained in Chapter 03100.

It will be the responsibility of the project site owner to complete a stormwater permit application and ensure that a sufficient construction plan is completed and submitted to the WPWD in accordance with Chapter 03100 of this Standard. It will be the responsibility of the project site owner to ensure compliance with the City of Westfield's applicable ordinances and standards during the construction activity and implementation of the construction plan, and to notify the WPWD with a sufficient notice of termination letter upon completion of the project and stabilization of the site. However, all persons engaging in construction and land disturbing activities on a permitted project site must comply with the requirements of this Chapter and the City of Westfield's applicable ordinances.

03602.02
Policy on
Stormwater Pollution
Prevention

Effective stormwater pollution prevention on construction sites is dependent on a combination of preventing movement of soil from its original position (erosion control), intercepting displaced soil prior to entering a waterbody (sediment control), and proper on-site materials handling. The developer must submit to the WPWD a SWPPP with detailed erosion and sediment control plans as well as a narrative describing materials handling and storage, and construction sequencing. The following principles apply to all land-disturbing activities and should be considered in the preparation of a Stormwater Pollution Prevention Plan within the City of Westfield.

1. Minimize the potential for soil erosion by designing a development that fits the topography and soils of the site. Deep cuts and fills in areas with steep slopes should be avoided wherever possible, and natural contours should be followed as closely as possible.
2. Existing natural vegetation should be retained and protected wherever possible. Areas immediately adjacent (within 35 feet of top of bank) to watercourses and lakes also should be left undisturbed wherever possible. Unvegetated or vegetated areas with less than 70% cover that are scheduled or likely to be left inactive for 15 days or more must be temporarily or permanently stabilized with measures appropriate for the season to reduce erosion potential. Alternative measures to site stabilization may be acceptable if the project site owner or their representative can demonstrate they have implemented and maintained erosion and sediment control measures adequate to prevent sediment discharge from the inactive area.
3. All activities on a site should be conducted in a logical sequence so that the smallest practical area of land will be exposed for the shortest practical period of time during development.
4. The length and steepness of designed slopes should be minimized to reduce erosion potential. Drainage channels and swales must be designed and adequately protected so that their final gradients and resultant velocities

will not cause erosion in the receiving channel or at the outlet. Methods for determining acceptable velocities are included in these Standards.

5. Sediment-laden water which otherwise would flow from the project site shall be treated by erosion and sediment control measures appropriate to minimize sedimentation. A stable construction site access shall be provided at all points of construction traffic ingress and egress to the project site.
6. Appropriate measures shall be implemented to prevent wastes or unused building materials, including, garbage, debris, packaging material, fuels and petroleum products, hazardous materials or wastes, cleaning wastes, wastewater, concrete truck washout, and other substances from being carried from a project site by runoff or wind. Identification of areas where concrete truck washout is permissible must be clearly posted at appropriate areas of the site. Wastes and unused building materials shall be managed and disposed of in accordance with all applicable State statutes and regulations. Proper storage and handling of materials such as fuels or hazardous wastes, and spill prevention and cleanup measures (including having spill response equipment on-site) shall be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality.
7. Public or private roadways shall be kept cleared of accumulated sediment that is a result of runoff or tracking. Bulk clearing of accumulated sediment shall not include flushing the area with water. Cleared sediment shall be redistributed or disposed of in a manner that is in accordance with all applicable statutes and regulations.
8. Collected runoff leaving a project site must be either discharged directly into a well-defined, stable receiving channel, or diffused and released to adjacent property without causing an erosion or pollutant problem to the adjacent property owner.
9. Natural features, including wetlands, shall be protected from pollutants associated with stormwater runoff.

03602.03
Calculating
Total Area of
Land

In calculating the total area of land disturbance, for the purposes of determining applicability of this Chapter to the project, the following guidelines should be used:

1. Off-site construction activities that provide services (for example, road extensions, sewer, water, and other utilities) to a land disturbing project site, must be considered as a part of the total land disturbance calculation for the project site, when the activity is under the control of the project site owner.
2. Strip developments will be considered as one (1) project site and must comply with this Chapter unless the total combined disturbance on all individual lots is less than one (1) acre and is not part of a larger common plan of development or sale.
3. To determine if multi-lot project sites are regulated by the City of Westfield, the area of land disturbance shall be calculated by adding the total area of land disturbance for improvements, such as, roads, utilities, or common areas, and the expected total disturbance on each individual lot, as determined by the following:

- a. For a single-family residential project site where the lots are one-half (0.5) acre or more, one-half (0.5) acre of land disturbance must be used as the expected lot disturbance.
- b. For a single-family residential project site where the lots are less than one half (0.5) acre in size, the total lot must be calculated as being disturbed.
- c. To calculate lot disturbance on all other types of projects sites, such as industrial and commercial projects project sites, a minimum of one (1) acre of land disturbance must be used as the expected lot disturbance, unless the lots are less than one (1) acre in size, in which case the total lot must be calculated as being disturbed.

03602.04
Common Erosion
and Sediment
Control Practices

All erosion control and stormwater pollution prevention measures required to comply with the City of Westfield's Ordinance shall meet the design criteria, standards, and specifications similar to or the same as those outlined in the latest editions of the "Indiana Drainage Handbook" and "Indiana Handbook for Erosion Control in Developing Areas", both published by the Indiana Department of Natural Resources, or other comparable and reputable references. Table 03602-1 lists some of the more common and effective practices for preventing stormwater pollution from construction sites. Details of each practice can be found in the Indiana Drainage Handbook, the Indiana Handbook for Erosion Control in Developing Areas, or in Appendix 03602-1. These practices should be used to protect **every** potential pollution pathway to stormwater conveyances.

03602.05
Individual Lot
Controls

From the time construction on an individual lot begins, until the individual lot is stabilized, the builder must take steps to:

- protect adjacent properties from sedimentation
- prevent mud/sediment from depositing on the street
- protect drainageways from erosion and sedimentation
- prevent sediment laden water from entering storm sewer inlets

A generic erosion control plan for individual lots is provided as Exhibit 03602-1. A typical plan should include **perimeter silt fence**, stabilized construction entrance, curb inlet protection, drop inlet protection, stockpile containment, stabilized drainage swales, downspout extensions, temporary seeding and mulching, and permanent vegetation. Every relevant measure shall be installed at each individual lot site.

Construction sequence on individual lots should be as follows:

1. Clearly delineate areas of trees, shrubs, and vegetation that are to be undisturbed. To prevent root damage, the areas delineated for tree protection should be at least the same diameter as the crown.
2. **Install perimeter silt fence at construction limits. Position the fence to intercept runoff prior to entering drainage swales.**
3. Avoid disturbing drainage swales if vegetation is established. If drainage swales are bare, install erosion control blankets or sod to immediately stabilize.
4. Install drop inlet protection for all inlets on the property.



5. Install curb inlet protection, on both sides of the road, for all inlets along the property frontage and along the frontage of adjacent lots, or install temporary catch basin inserts in each inlet and frequently clean.
6. Install gravel construction entrance that extends from the street to the building pad.
7. Perform primary grading operations.
8. Contain erosion from any soil stockpiles created on-site with silt fence around the base.
9. Establish temporary seeding and straw mulch on disturbed areas.
10. Construct the home and install utilities.
11. Install downspout extenders once the roof and gutters have been constructed. Extenders should outlet to a stabilized area.
12. Re-seed any areas disturbed by construction and utilities installation with temporary seed mix within 3 days of completion of disturbance.
13. Grade the site to final elevations. Add topsoil as needed to minimize erosion of underlying soil and to quickly establish grass.
14. Install permanent seeding or sod.

All erosion and sediment control measures must be properly maintained throughout construction. Temporary and permanent seeding should be watered as needed until established. For further information on individual lot erosion and sediment control, please see the "Individual Lot Erosion and Sediment Control Plan and Certification" form in Exhibit 03602-1 or the IDNR, Division of Soil Conservation's pamphlet titled "Erosion and Sediment Control for Individual Building Sites".

03602.06
Inspection,
Maintenance,
Record Keeping,
and Reporting

Following approval of the Rule 5 Notice of Intent by IDEM and commencement of construction activities, the WPWD has the authority to conduct inspections of the site to ensure full compliance with the provisions of this Chapter, the most current edition of the Indiana Stormwater Quality Manual, and the terms and conditions of the approved permit.

A self-monitoring program must be implemented and logged by the project site owner to ensure the Stormwater Pollution Prevention Plan is working effectively. A trained individual, acceptable by the WPWD, shall perform a written evaluation of the project site by the end of the next business day following each measurable storm event of 0.5 inches or more. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Weekly inspections by the trained individual shall continue until the entire site has been stabilized and a "verified" copy of the Notice of Termination has been issued. The trained individual should look at the maintenance of existing stormwater pollution prevention measures, including erosion and sediment control measures, drainage structures, and construction materials storage/containment facilities, to ensure they are functioning properly. The trained individual should also identify additional measures, beyond those originally identified in the stormwater pollution prevention plan, necessary to remain in compliance with all applicable statutes and regulations. A standard form to record the self-monitoring/inspection results is provided as Exhibit 03602-2.

The resulting maintenance evaluation reports must include the name of the individual performing the evaluation, the date of the evaluation, problems identified at the project site, and details of maintenance, additional measures, and corrective actions recommended and completed.

The Stormwater Pollution Prevention Plan shall serve as a guideline for stormwater quality, but should not be interpreted to be the only basis for implementation of stormwater quality measures for a project site. The project site owner is responsible for implementing, in accordance with this Chapter, all measures necessary to adequately prevent polluted stormwater runoff. Recommendations by the trained individual for modified stormwater quality measures should be implemented.

Although self-monitoring reports do not need to be submitted to the WPWD, the WPWD has the right to request complete records of maintenance and monitoring activities involving stormwater pollution prevention measures. All evaluation reports for the project site must be made available to the WPWD, in an organized fashion, within forty-eight (48) hours upon request.

TABLE 03602-1: Common Stormwater Pollution Control Practices for Construction Sites

Practice No.	BMP Description	Applicability	Fact Sheet
1	Site Assessment	All sites	2
2	Construction Sequencing	All sites	CN-101
3	Tree Preservation and Protection	Nearly all sites	1
4	Temporary Gravel Construction Entrance Pad	All sites	1
5	Wheel Wash	All sites	CN-102
6	Silt Fence	All sites	1
7	Surface Roughening	Sites with slopes that are to be stabilized with vegetation	1
8	Temporary Seeding	Areas of bare soil where additional work is not scheduled to be performed for a minimum of 15 days	1
9	Mulching	Temporary surface stabilization	1
10	Erosion Control Blanket (Surface)	Temporary surface stabilization, anchor for mulch	1
11	Temporary Diversion	Up-slope and down-slope sides of construction site, above disturbed slopes within construction site	1
12	Rock Check Dam	2 acres maximum contributing to drainage area	1
13	Temporary Slope Drain	Sites with cut or fill slopes	1
14	Straw Bale Dam	Small drainage areas	1
15	Drop Basket Inlet Protection	1 acre maximum contributing drainage area	1
16	Basket Curb Inlet Protection	1 acre maximum contributing drainage area	1
17	Sandbag Curb Inlet Protection	1 acre maximum contributing Drainage area	1
18	Temporary Sediment Trap	5 acre maximum contributing Drainage area	1
19	Temporary Sediment Basin	30 acre maximum contributing Drainage area	1
20	Dewatering Structure	Sites requiring dewatering	CN-103
21	Dust Control	All sites	1
22	Spill Prevention and Control	All sites	CN-104
23	Solid Waste Management	All sites	CN-105
24	Hazardous Waste Management	All sites	CN-106

Fact sheet Location:

1. Indiana Handbook for Erosion Control in Developing Areas, 1992 or later
2. Indiana Drainage Handbook, 1999 or later

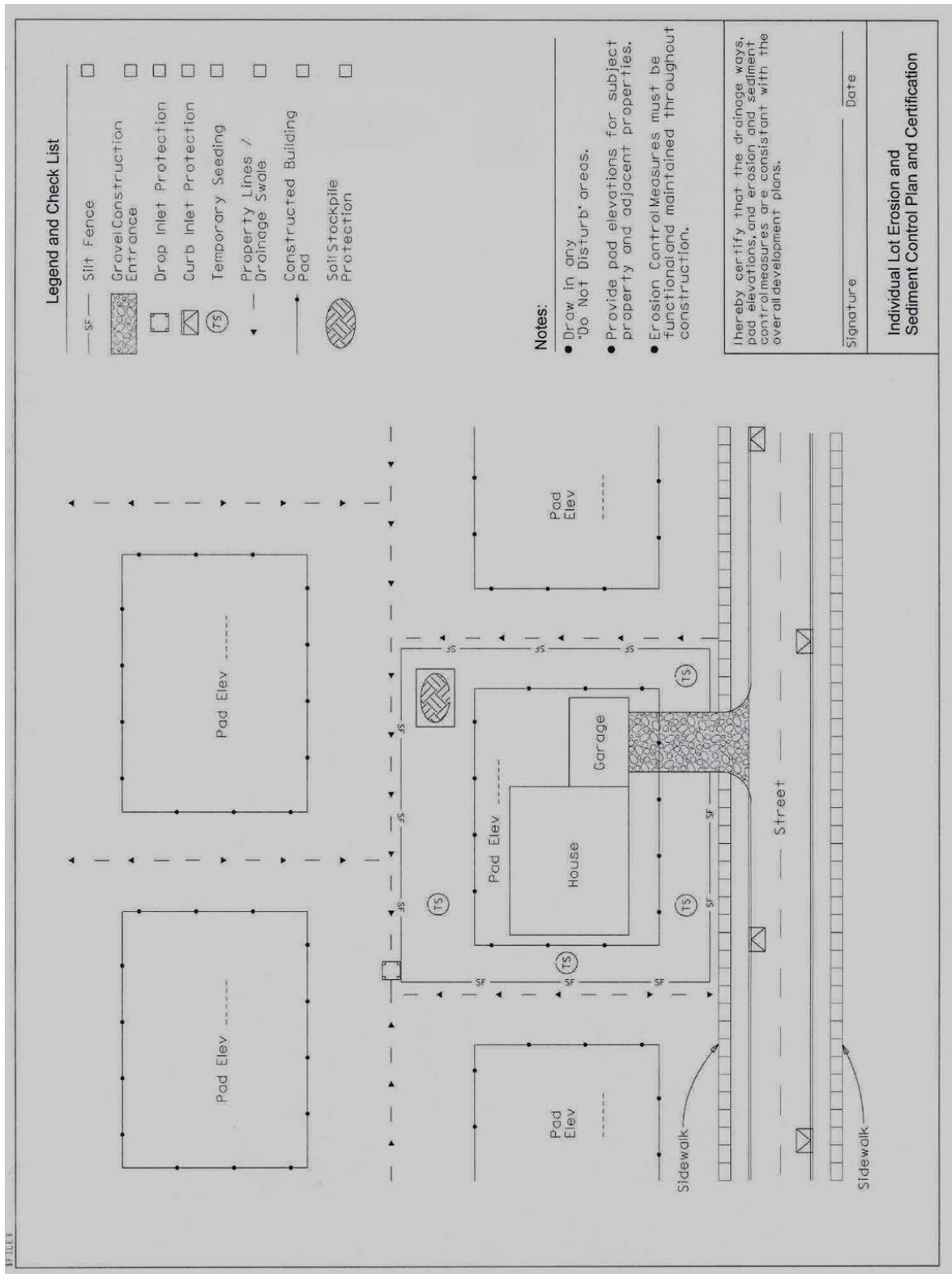


Exhibit 03602-1: Individual Lot Typical Erosion & Sediment Control Plan and Certification

Exhibit 03602-2: Construction Site Inspection And Maintenance Log

Date: _____
 Project: _____
 Inspected by: _____

Type of Inspection: ☐ Scheduled Weekly ☐ Rain Event

CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG

(To be Completed by Property Owner or Agent)

All stormwater pollution prevention BMPs shall be inspected and maintained as needed to ensure continued performance of their intended function during construction and shall continue until the entire site has been stabilized and a Notice of Termination has been issued. An inspection of the project site must be completed by the end of the next business day following each measurable storm event. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Maintenance and repair shall be conducted in accordance with the accepted site plans. This log shall be kept as a permanent record and must be made available to the WPWD in an organized fashion, within forty-eight (48) hours upon request.

YES	NO	N/A		
			1	Is the site information posted at the entrance?
			2	Are all necessary permits attained and special provisions being implemented?
			3	Is a construction entrance installed and functioning properly?
			4	Are construction staging & parking areas restricted to areas designated on the plans?
			5	Are public and private streets clean of sediment, debris and mud?
			6	Are appropriate practices installed where stormwater leaves the site?
			7	Are all discharge points (outfalls) free of erosion or sediment transport?
			8	Has all silt fence been installed properly and being maintained? (entrenched - upright - fabric not torn - terminated to higher ground - properly joined at ends)
			9	Are sediment basins & traps installed according to plan & pipe or rock spillways functional?
			10	Are other sediment control barriers in place and functioning properly?
			11	Is the earthwork for erosion control practices properly graded, seeded and/or mulched?
			12	Are diversion swales and/or waterbars installed to plan & protected?
			13	Do perimeter practices have adequate capacity & do they need to be cleaned out?
			14	Is inlet protection installed properly on all functioning inlets & being maintained?
			15	Is catch basin insert protection installed where required & being maintained?
			16	Have swales and ditches been stabilized or protected?
			17	Are stormwater outlets adequately stabilized?
			18	Has temporary stabilization of disturbed ground been addressed? (dormant for 15 days?)
			19	Is permanent stabilization of disturbed ground progressing on all completed areas?
			20	Has hard or soft armoring been installed where natural vegetation will erode?
			21	Do water pumping operations have a protected outlet and discharge clear water?
			22	Are all dewatering structures functioning properly?
			23	Is a designated equipment washout area established, clearly marked and being utilized?
			24	Is solid waste properly contained & a stable access provided to the storage & pickup area?
			25	Are fuel tanks and other hazardous materials safely stored and protected?
			26	Is spill response equipment on-site and easily accessible?
			27	Are temporary soil stockpiles in approved areas & properly protected?

Date: _____

Inspected by: _____

If you answered "no" to any of the above questions, describe any corrective action which must be taken to remedy the problem and when the corrective actions are to be completed.

[illegible]

APPENDIX 03602-1

CONSTRUCTION BMP FACT SHEETS

BMP CN – 101

CONSTRUCTION SEQUENCING

DESCRIPTION

The construction sequence schedule is an orderly listing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures planned for the project. This type of schedule guides the contractor on work to be done before other work is started so that serious erosion and sedimentation problems can be avoided. Sequencing a construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

ADVANTAGES

1. Following a specified work schedule that coordinates the timing of land-disturbing activities and the installation of control measures is perhaps the most cost-effective way of controlling erosion during construction. The removal of surface ground cover leaves a site vulnerable to accelerated erosion. Construction procedures that limit land clearing, provide timely installation of erosion and sedimentation controls, and restore protective cover quickly can significantly reduce the erosion potential of a site.

DESIGN CRITERIA

1. Avoid rainy periods.
2. Schedule projects to disturb only small portions of the site at any one time. Complete grading as soon as possible. Immediately stabilize the disturbed portion before grading the next portion. Practice staged seeding in order to vegetate cut and fill slopes as the work progresses.

REFERENCE

City of Tacoma, Surface Water Management Manual, 2003 or later

BMP CN – 102 WHEEL WASH

DESCRIPTION

When a stabilized construction entrance is not preventing sediment from being tracked onto pavement, a wheel wash may be installed. Wheel washing is generally an effective BMP when installed with careful attention to topography. For example, a wheel wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run unimpeded into the street. Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large 10-foot x 10-foot sump can be very effective.

ADVANTAGES

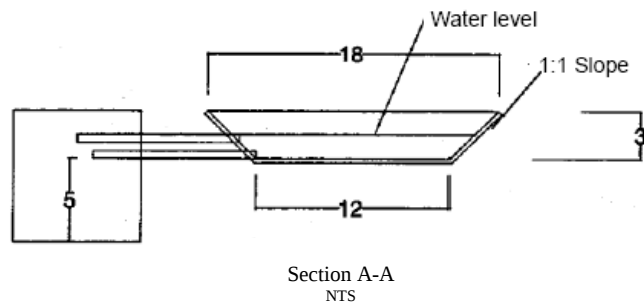
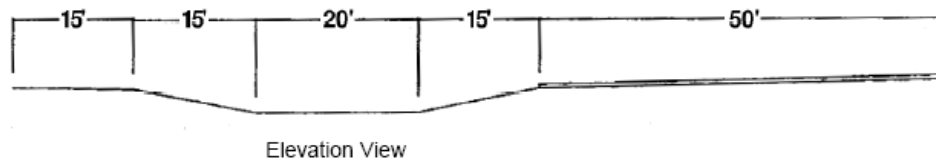
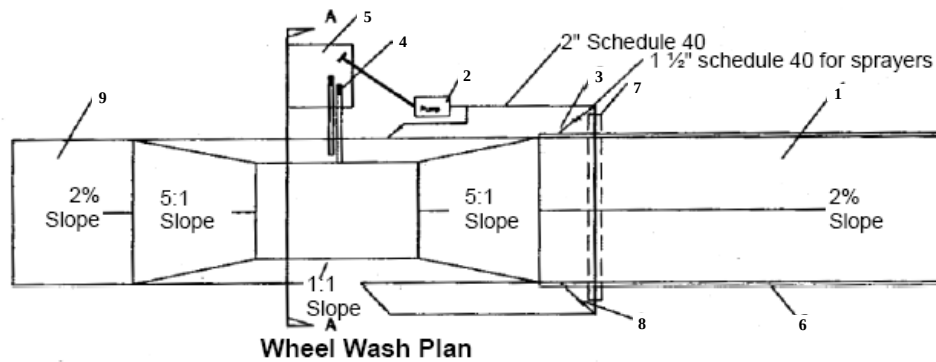
1. Wheel washes reduce the amount of sediment transported onto paved roads by motor vehicles.

DESIGN CRITERIA

1. Suggested details are shown in Figure CN-102-A. The City of Westfield may allow other designs.
2. A minimum of 6 inches of asphalt treated base (ATB) over crushed base material or 8 inches over a good subgrade is recommended to pave the wheel wash.
3. Use a low clearance truck to test the wheel wash before paving. Either a belly dump or lowboy will work well to test clearance.
4. Keep the water level from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck tongues with water.
5. Midpoint spray nozzles are only needed in extremely muddy conditions.
6. Wheel wash systems should be designed with a small grade change, 6 to 12 inches for a 10-foot-wide pond, to allow sediment to flow to the low side of pond to help prevent re-suspension of sediment.
7. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling.
8. Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the wheel wash water at a rate of 0.25 - 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time.
9. If PAM is already being used for dust or erosion control and is being applied by a water truck, the same truck can be used to change the wash water.
10. The wheel wash should start out the day with fresh water. The wash water should be changed a minimum of once per day.
11. On large earthwork jobs where more than 10-20 trucks per hour are expected, the wash water will need to be changed more often.
12. Wheel wash or tire bath wastewater shall be discharged to a separate on-site treatment system, such as closed-loop recirculation or land application, or to the sanitary sewer with proper local sewer utility approval.

REFERENCE

City of Tacoma, Surface Water Management Manual, 2003 or later



Notes:

1. Asphalt construction entrance 6 in. asphalt treated base (ATB).
2. 3-inch trash pump with floats on the suction hose.
3. Midpoint spray nozzles, if needed.
4. 6-inch sewer pipe with butterfly valves. Bottom one is a drain. Locate top pipe's invert 1 foot above bottom of wheel wash.
5. 8 foot x 8 foot sump with 5 feet of catch. Build so can be cleaned with trackhoe.
6. Asphalt curb on the low road side to direct water back to pond.
7. 6-inch sleeve under road.
8. Ball valves.
9. 15 foot. ATB apron to protect ground from splashing water.

Figure CN-102-A

BMP CN – 103

DEWATERING STRUCTURE

DESCRIPTION

Water which is pumped from a construction site usually contains a large amount of sediment. A dewatering structure is designed to remove the sediment before water is released off-site.

This practice includes several types of dewatering structures which have different applications dependent upon site conditions and types of operation. Other innovative techniques for accomplishing the same purpose are encouraged, but only after specific plans and details are submitted to and approved by the WPWD.

DESIGN CRITERIA

1. A dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure.
2. Material from any required excavation shall be stored in an area and protected in a manner that will prevent sediments from eroding and moving off-site.
3. An excavated basin (applicable to “Straw Bale/Silt Fence Pit”) may be lined with filter fabric to help reduce scour and to prevent the inclusion of soil from within the structure.
4. Design criteria more specific to each particular dewatering device can be found in Figures CN-103-A through CN-103-C.
5. A dewatering structure may not be needed if there is a well-stabilized, vegetated area onsite to which water may be discharged. The area must be stabilized so that it can filter sediment and at the same time withstand the velocity of the discharged water without eroding. A minimum filtering length of 75 feet must be available in order for such a method to be feasible.
6. The filtering devices must be inspected frequently and repaired or replaced once the sediment build-up prevents the structure from functioning as designed.
7. The accumulated sediment which is removed from a dewatering device must be spread on-site and stabilized or disposed of at an approved disposal site as per approved plan.

Portable Sediment Tank (see Figure CN103-A)

- The structure may be constructed with steel drums, sturdy wood or other material suitable for handling the pressure exerted by the volume of water.
- Sediment tanks will have a minimum depth of 2 ft.
- The sediment tank shall be located for easy clean-out and disposal of the trapped sediment and to minimize the interference with construction activities.
- The following formula shall be used to determine the storage volume of the sediment tank:
$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$
- Once the water level nears the top of the tank, the pump must be shut off while the tank drains and additional capacity is made available.
- The tank shall be designed to allow for emergency flow over top of the tank. Clean-out of the tank is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.

Filter Box (see Figure CN-103-B)

- The box selected should be made of steel, sturdy wood or other materials suitable to handle the pressure requirements imposed by the volume of water. Normally readily available 55 gallon drums welded top to bottom will suffice in most cases.
- Bottom of the box shall be made porous by drilling holes (or some other method).
- Coarse aggregate shall be placed over the holes at a minimum depth of 12 inches, metal “hardware” cloth may need to be placed between the aggregate and the holes if holes are drilled larger than the majority of the stone.
- As a result of the fast rate of flow of sediment-laden water through the aggregate, the effluent must be directed over a well-vegetated strip of at least 50 feet after leaving the base of the filter box.
- The box shall be sized as follows:

$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$

- Once the water level nears the top of the box, the pump must be shut off while the box drains and additional capacity is made available.
- The box shall be designed/constructed to allow for emergency flow over the top of this box.
- Clean-out of the box is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.
- If the stone filter does become clogged with sediment so that it no longer adequately performs its function, the stones must be pulled away from the inlet, cleaned and replaced.
- Using a filter box only allows for minimal settling time for sediment particles; therefore, it should only be used when site conditions restrict the use of the other methods.

Straw Bale/Silt Fence Pit (see Figure CN-103-C)

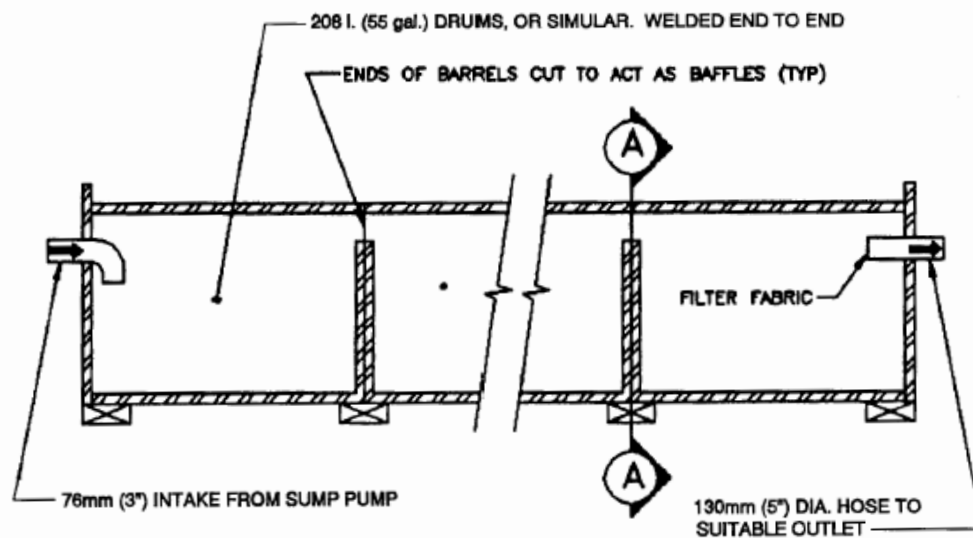
- Measure shall consist of straw bales, silt fence, a stone outlet (a combination of riprap and aggregate) and a wet storage pit oriented as shown in Figure CN-103-C.
- The structure must have a capacity which is dictated by the following formula:

$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$

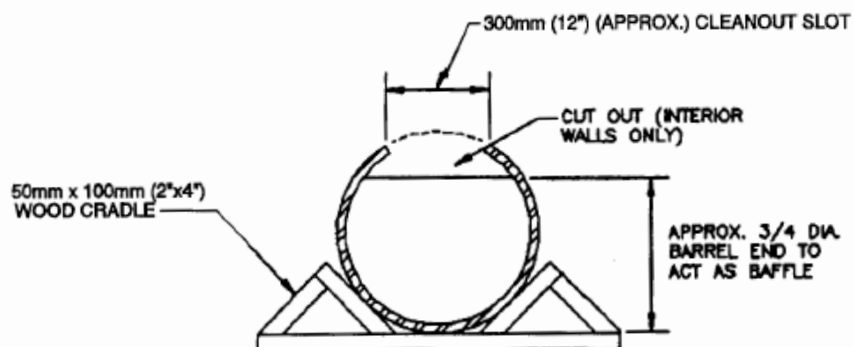
- In calculating the capacity, one should include the volume available from the floor of the excavation to the crest of the stone weir.
- In any case, the excavated area should be a minimum of 3 feet below the base of the perimeter measures (straw bales or silt fence).
- The perimeter measures must be installed as per the guidelines found in fact sheets associated with STRAW BALE BARRIER and SILT FENCE BMPs.
- Once the water level nears the crest of the stone weir (emergency overflow), the pump must be shut off while the structure drains down to the elevation of the wet storage.
- The wet storage pit may be dewatered only after a minimum of 6 hours of sediment settling time. This effluent should be pumped across a well vegetated area or through a silt fence prior to entering a watercourse.
- Once the wet storage area becomes filled to one-half of the, excavated depth, accumulated sediment shall be removed and properly disposed of.
- Once the device has been removed, ground contours will be returned to original condition.

REFERENCE

United States Army Corps of Engineers, Handbook for the Preparation of Storm Water Pollution Prevention Plans for Construction Activities, 1997 or later

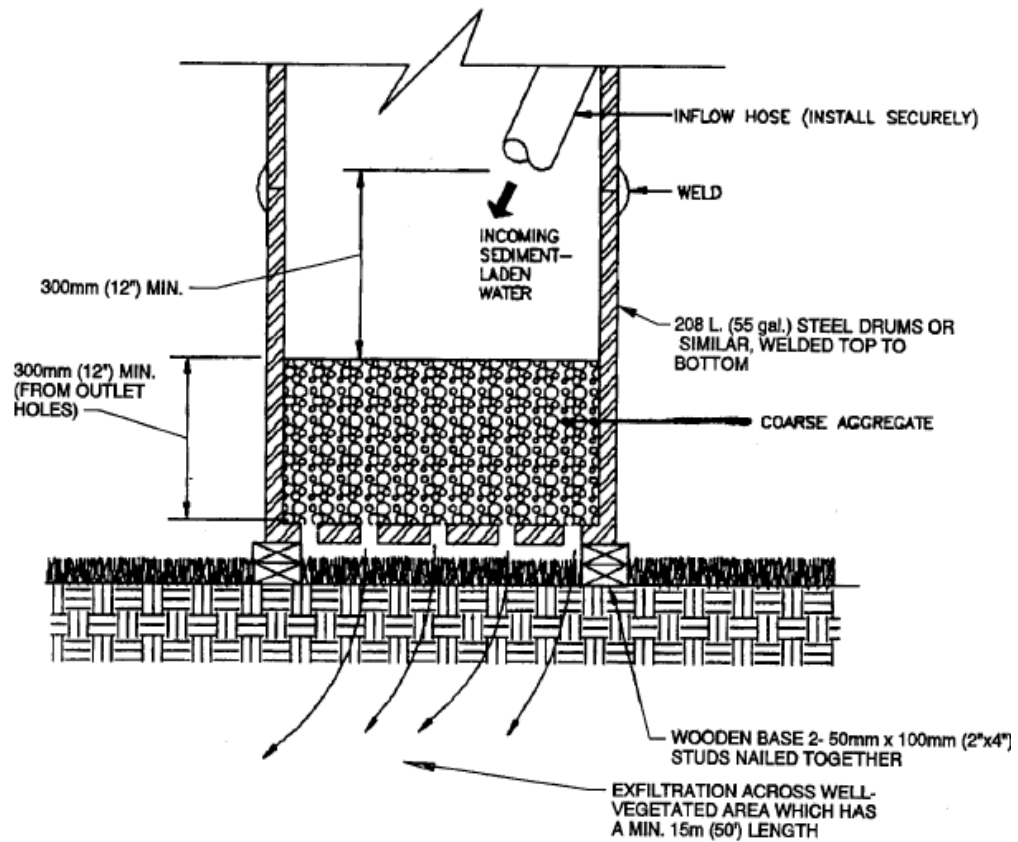


ELEVATION



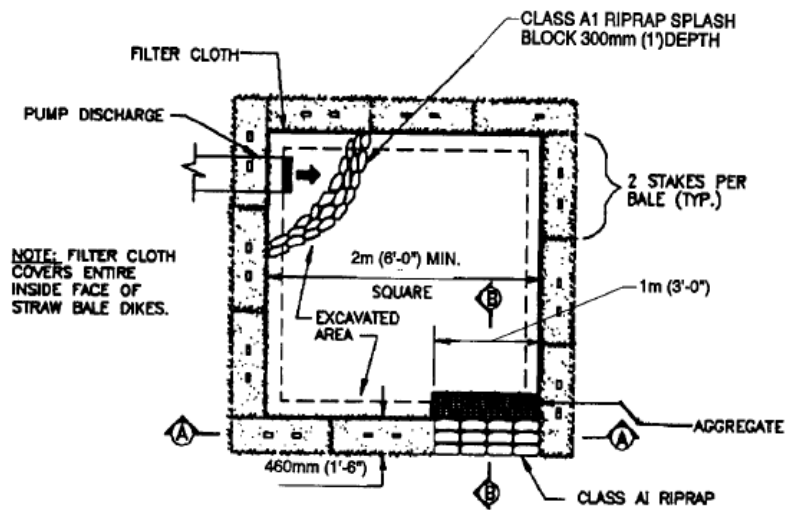
CROSS-SECTION A-A

Figure CN-103-A
Portable Sediment Tank

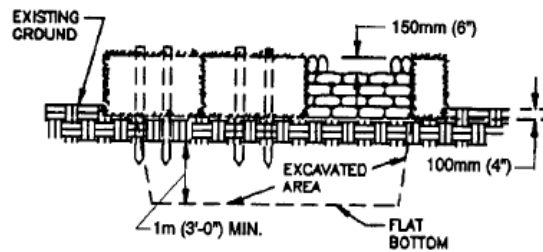


ELEVATION VIEW

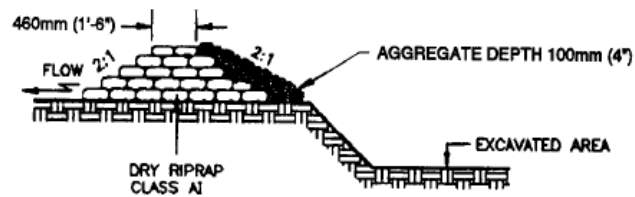
Figure CN-103-B
Filter Box



PLAN VIEW



CROSS-SECTION A-A



CROSS-SECTION B-B

Figure CN-103-C
Straw Bale/Silt Fence Pit

BMP CN – 104

SPILL PREVENTION AND CONTROL

DESCRIPTION

These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders
- Dust Palliatives
- Solvents
- Herbicides
- Paper
- Plastic
- Growth inhibitors
- Fertilizers
- Concrete washout
- Deicing/anti-icing chemicals
- Fuels
- Lubricants
- Solid wastes
- Other petroleum distillates

To the extent that the work can be accomplished safely, spills of oil, petroleum products, sanitary and septic wastes, and substances listed under 40 Code of Federal Regulations (CFR) parts 110, 117, and 302 shall be contained and cleaned up immediately.

LIMITATIONS

1. The contractor/owner shall maintain a list of qualified contractors, Vac-trucks, tank pumpers and other equipment or businesses qualified to do clean-up operations.
2. Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site and in sufficient quantities in advance of their arrival at the site.
3. All employees need to be educated on the proper application of the absorbent materials and there purpose.
4. All maintenance and equipment operators must be aware and trained for prevention of spills. A continuing education program should be required for new employees.
5. All materials used in the course of cleanup should be disposed of in a manor approved by the Indiana Department of Environmental Management.
6. Using water to flush spilled material will not be permitted unless authorized by The City of Westfield. Tarps can be used to cover spills during rain events.

DESIGN CRITERIA

1. To the extent that it doesn't compromise cleanup activities, spills shall be covered and protected from stormwater runoff during rainfall.
2. Spills shall not be buried or washed with water.
3. Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of in conformance with BMP CN-106: Hazardous Waste Management.

4. Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with BMP CN-106: Hazardous Waste Management.
5. Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.
6. Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
7. Waste storage areas shall be kept clean, well-organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.
8. Verify weekly that spill control and clean up materials are located near material storage, unloading, and use areas.
9. Update spill prevention and control plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals used or stored onsite.

Cleanup and Storage Procedures for Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- The practice commonly followed for a minor spill is:
 - o Contain the spread of the spill.
 - o Recover spilled materials.
 - o Clean the contaminated area and/or properly dispose of contaminated materials.

Cleanup and Storage Procedures for Semi-Significant Spills

- Approximately ten gallons or less of pollutant with no contamination of ground or surface waters. Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Clean up spills immediately:
- Notify the project foreman immediately. The foreman shall notify the City of Westfield Emergency Management Agency's Hazardous Materials Response Team.
- Contain spread of the spill.
- If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Cleanup and Storage Procedures for Significant/Hazardous Spills

- More than ten gallons, there is the potential for death, injury or illness to humans or animals or has the potential for surface or groundwater pollution. For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
- Notification shall first be made by telephone and followed up with a written report.
- The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up the spill until the appropriate and qualified personnel have arrived at the job site.
- As soon as possible but within 2 hours of discovery, contact the Department of Environmental Management, Office of Emergency Response 1-888-233-7745. The following information should be noted for future reports to IDEM or the National Response Center.
 - o Name, address and phone number of person making the spill report
 - o The location of the spill
 - o Identification of the spilled substance
 - o Approximate quantity of the substance that has been spilled or may be further spilled
 - o The duration and source of the spill
 - o Name and location of the damaged waters
 - o Name of spill response organization
 - o What measures were taken in the spill response
 - o Other information that may be significant

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

BMP CN – 105

SOLID WASTE MANAGEMENT

DESCRIPTION

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes.

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

1. Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
2. Landscaping wastes, including vegetative material, plant containers, and packaging materials.
3. Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

LIMITATIONS

1. Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season.

DESIGN CRITERIA

1. Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and properly serviced.
2. Littering on the project site shall be prohibited.
3. To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
4. Trash receptacles with lids shall be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
5. Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
6. Full dumpsters shall be removed from the project site and the contents shall be disposed of, off-site, in an appropriate manner.
7. Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
8. Construction debris and waste shall be removed from the site weekly.
9. Stormwater run-off shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
10. Solid waste storage areas shall be located at least 50 ft from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.

11. Except during fair weather, construction and landscaping waste not stored in watertight dumpsters shall be securely covered from wind and rain by covering the waste with tarps, plastic sheeting, or equivalent.
12. Dumpster washout on the project site is not allowed.
13. Notify trash hauling contractors that only watertight dumpsters are acceptable for use on-site.
14. Plan for additional containers during the demolition phase of construction.
15. Plan for more frequent pickup during the demolition phase of construction.
16. Construction waste shall be stored in a designated area. Access to the designated area shall either be well vegetated ground, a concrete or asphalt road or drive, or a gravel construction entrance, to avoid mud tracking by trash hauling contractors.
17. Segregate potentially hazardous waste from non-hazardous construction site waste.
18. Keep the site clean of litter debris.
19. Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
20. For disposal of hazardous waste, see BMP CN-106: Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
21. Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.
22. Prohibit littering by employees, subcontractors, and visitors.
23. Wherever possible, minimize production of solid waste materials.

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

BMP CN – 106

HAZARDOUS WASTE MANAGEMENT

DESCRIPTION

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain systems or to watercourses.

This best management practice (BMP) applies to all construction projects.

Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products,
- Asphalt Products,
- Concrete Curing Compounds,
- Pesticides,
- Acids,
- Paints,
- Stains,
- Solvents,
- Wood Preservatives,
- Roofing Tar, or
- Any materials deemed a hazardous waste in 40 CFR Parts 110, 117, 261, or 302.

DESIGN CRITERIA

Storage Procedures

1. Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by 49 CFR Parts 172, 173, 178, and 179.
2. All hazardous waste shall be stored, transported, and disposed as required in 49 CFR 261-263.
3. Waste containers shall be stored in temporary containment facilities that shall comply with the following requirements:
 - Temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.
 - Temporary containment facility shall be impervious to the materials stored there for a minimum contact time of 72 hours.
 - Temporary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks accumulated rainwater and spills shall be placed into drums after each rainfall. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids shall be sent to an approved disposal site.
 - Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.
 - Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.

- Throughout the rainy season, temporary containment facilities shall be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs. A storage facility having a solid cover and sides is preferred to a temporary tarp. Storage facilities shall be equipped with adequate ventilation.
4. Drums shall not be overfilled and wastes shall not be mixed.
 5. Unless watertight, containers of dry waste shall be stored on pallets.
 6. Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludge that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.
 7. Ensure that adequate hazardous waste storage volume is available.
 8. Ensure that hazardous waste collection containers are conveniently located.
 9. Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
 10. Minimize production or generation of hazardous materials and hazardous waste on the job site.
 11. Use containment berms in fueling and maintenance areas and where the potential for spills is high.
 12. Segregate potentially hazardous waste from non-hazardous construction site debris.
 13. Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
 14. Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
 15. Place hazardous waste containers in secondary containment.
 16. Do not allow potentially hazardous waste materials to accumulate on the ground.
 17. Do not mix wastes.

Disposal Procedures

1. Waste shall be removed from the site within 90 days of being generated.
2. Waste shall be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
3. A certified laboratory shall sample waste and classify it to determine the appropriate disposal facility.
4. Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.
5. Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
6. Recycle any useful material such as used oil or water-based paint when practical.

Maintenance and Inspection

1. A foreman and/or construction supervisor shall monitor on-site hazardous waste storage and disposal procedures.
2. Waste storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.

3. Storage areas shall be inspected in conformance with the provisions in the contract documents.
4. Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
5. Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.
6. The National Response Center, at (800) 424-8802, shall be notified of spills of Federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.
7. Copy of the hazardous waste manifests shall be provided to the owner.

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

CITY OF WESTFIELD

Stormwater Management Technical Standards Manual

SECTION 03800

CITY OF WESTFIELD

STORMWATER MANAGEMENT TECHNICAL STANDARD

DETAILS

LIST OF FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>
EC-01	Temporary Ditch Inlet Protection
EC-02	Erosion Control Mat – Slope Detail
EC-03	Erosion Control Mat – Staple Guide
EC-04	Silt Fence Detail
EC-05	Concrete Washout Detail
EC-06	Inlet Protection
EC-07	Rock Check Dam – Riprap
EC-08	Gabion Anchor Detail
EC-09	Typical Aquabarrier Detail
EC-10	Temporary Construction Drive
EC-11	Dewatering Detail and Size Chart
EC-12	Silt Saver Square Inlet Protection Detail
EC-14	Silt Saver Inlet Protection Model #S-200
EC-15	Silt Saver Inlet Protection Model #R-100
ST-03	Straight Headwall
ST-04	Straight Headwall with Flap Gate
ST-05	Isometric @ Headwall Type “I”
ST-06	Isometric @ Headwall Type “II”
ST-07	Manhole Solid Lid Casting Detail
ST-08	Chair Back Curb Inlet Casting
ST-09	Rolled Curb Inlet Casting
ST-10	Beehive Inlet Casting
ST-16	Structure Data Table
ST-23	Lake Cross Sections: Option 1
ST-24	Lake Cross Sections: Option 2
ST-25	Lake Cross Sections: Option 3
ST-26	Lake Outlet Detail For Lake Cross-Section Option 1
ST-27	Lake Outlet Detail For Lake Cross-Section Option 2
ST-28	Lake Outlet Detail For Lake Cross-Section Option 3
ST-29	Debris Guard
ST-30	Anchor For Concrete End Sections
ST-31	Bank Armorment at Outlet Pipe In Open Channels
ST-32	Corner Protection
ST-33	Pond Outfall Structure
ST-34	Isometric @ Weir Outlet
ST-36	Typical Subsurface Drain (SSD) Lateral to Ind. Lots in Rear Yard Swale
ST-37	Subsurface Drain (SSD) Riser Detail
ST-38	Riser Locations
ST-39	Subsurface Drain (SSD) Detail When Within Dripline of Existing Trees
ST-40	Subsurface Drain (SSD) Detail No Swale
ST-41	Tile Clearing Through Woods
ST-42	Slotted Riser Inlet Details
ST-43	Typical Swale Detail
ST-44	Drain Outlet Detail #1
ST-45	Drain Outlet Detail #2



CONSTRUCTION STANDARDS AND SPECIFICATIONS

Public Works Department

Westfield, Indiana

March 2019

SECTION 00100 - INDEX

GENERAL SPECIFICATIONS

00100	Index
00200	Foreword
00300	General Requirements

DETAILED SPECIFICATIONS

<u>Section</u>	<u>Description</u>
02222	Standards for Utility Construction
02310	Directional Drilling
02400	Standards of Residential Lighting
02500	Paving and Surfacing
02501	Standards of Roadway Geometric Design
02502	Standards of Roadway Construction
02505	Standards of Trails and Sidewalks
02750	Storm Sewer Televising
02800	Street Tree List

STORMWATER MANAGEMENT TECHNICAL STANDARDS MANUAL

03100	Policy and Procedures
03200	Hydrology
03300	Hydraulics and Hydraulic Structures
03400	Storm Sewer Pipes and Open Culvert Materials
03500	Installation of Stormwater Facilities
03600	Erosion and Sediment Control for Construction Sites
03700	Post-Construction Stormwater Quality Management
03800	Stormwater Management Technical Standard Details

SECTION 00200 – FOREWORD

The enclosed Construction Standards Details and Specifications are provided to outline the City of Westfield's (City) minimum criteria for construction of infrastructure and appurtenances within the jurisdiction of the City of Westfield.

All construction projects, whether public or private, and whether constructed on public or private property, that are to become part of the City's system for operation and maintained by the City shall conform to the latest standards and details. Construction drawings and specifications must be stamped and signed by a registered professional engineer, licensed in the State of Indiana, shall be approved by the Westfield Public Works Department (WPWD), and be in accordance with these standards and specifications before construction begins. All construction plans must include a copy of these standards and specifications. A PDF version of this document can be obtained via the information below.

All construction plans and specifications shall be submitted to the WPWD for review and will be stamped by the WPWD once the plans and specifications are found to be in compliance with all City standards and specifications. One hard copy and a digital copy of the construction plans shall be submitted to the WPWD.

Any permits that need to be obtained outside of the control of the City shall so be done through the applicable utility or jurisdiction having authority. Any storm water storage or conveyance system must be submitted to the WPWD. For any storm water storage or conveyance system discharging to a drain regulated by the Hamilton County Surveyor must have plans submitted to that entity for approval as well as the WPWD.

Before any off-site (property not owned by the developer) utility construction can commence, all permanent and/or temporary easements shall be executed and conveyed to the City.

A preconstruction conference is required and a minimum of 48-hour notice shall be given prior to starting construction. If right-of-way utility relocations are required, work plans must be submitted along with schedules for this work before the preconstruction conference will be scheduled. Performance bonds, if obtained, and submittals for all infrastructure to be constructed shall be submitted to the WPWD and approved by the City before a preconstruction conference date can be set. A preconstruction conference can be scheduled by contacting the WPWD.

Construction observation shall be provided by the WPWD. Each and every time infrastructure construction is to commence, WPWD inspectors are to be notified 48 hours in advance. Inspection hours shall be invoiced on a monthly basis per [Ordinance 18-03](#). Any inspection performed outside of normal business hours, Monday through Friday 7:30am – 4:30pm, shall be billed out at a rate of 1.5x standard rates. It is the responsibility of the developer to ensure these invoices are paid.

WPWD reserves the right to stop all site work which is determined insufficient or not in accordance with the Standards and Specifications defined herein.

These standards were prepared with the intent of obtaining the highest quality of construction possible. As new materials become available and acceptable, the standards may be revised and updated.

Copies of the standards may be obtained from the City of Westfield website via <http://www.westfield.in.gov/> or the Westfield Public Works Department (contact information below):

Westfield Public Works Department
City Services Building
2706 East 171st Street
Westfield, Indiana 46074
Phone: 317-804-3100

SECTION 00300 - GENERAL REQUIREMENTS

1.1 DEFINITIONS

- A. Whenever used in these specifications the following terms have the meanings indicated which are applicable to both the singular and plural thereof:
1. City - The City of Westfield, represented by the City Council.
 2. Board of Public Works and Safety – Representatives appointed by the Mayor of Westfield that oversees the affairs of the Westfield Public Works Department and Public Safety Agencies.
 3. Westfield Public Works Department (WPWD) – An agency of the City which manages public infrastructure within its jurisdiction.
 4. Utility – The entity, municipal or otherwise, that provides services to the general public and has jurisdiction for expansion of services within the limits of the service area.
 5. Developer - Person or firm having control of the development site, and management of the project.
 6. Contractor - The person, firm or corporation with whom the Developer or City has entered into an agreement for construction of the project.
 7. Project - The total construction of which the work to be provided may be the whole or part.
 8. Work - The entire completed construction or the various separately identified parts thereof required to be furnished.
 9. The word “shall” is mandatory; the word “may” is permissive.

1.2 WORK TO BE PERFORMED

Work to be performed shall be in accordance with drawings and specifications included in this manual and/or approved by the City.

1.3 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction." All contractors performing work within the City's jurisdiction must meet with WPWD's Inspector as part of the required preconstruction conference prior to beginning work.

1.4 DISCOVERY OF HAZARDOUS MATERIAL

If, during the course of installing City infrastructure, the existence of hazardous material, including asbestos containing material, is observed in the work area, the Contractor shall immediately notify the Developer and the City in writing. For City and Developer projects, the Contractor shall not perform any work pertinent to the hazardous material prior to receipt of special instructions from the City of Westfield. Asbestos containing material includes transite pipe.

1.5 EASEMENTS

- A. For City projects, the City will obtain utility and/or drainage easements over and through certain private lands for construction.
- B. For Developer projects, the Developer will obtain utility and/or drainage easements over and through certain private lands for construction. The width or limits of such easements will be defined by the City, and all permanent and/or temporary easements shall be executed and conveyed to the City before any construction can commence. If the methods of construction employed by the Contractor are such as to require the use of land beyond the limits obtained, he shall make his own agreements with the property owners affected for the use of such additional land.
- C. If the methods of the construction employed by the Contractor are such as to require the use of land beyond the defined easement(s), he shall make his own agreement(s) with the property owners affected for the use of such additional land and shall provide a copy of the agreement(s) to the WPWD.
- D. In all such utility and/or drainage easements, the Contractor shall be required to carefully remove the property owner's fence, or other obstacles to the construction procedure, and it shall be the property owner's responsibility to reinstall their fence. The backfilling shall be to the grade of the existing ground level or to the grade as established by the property owner in the event the property owner permits the deposit of excess material upon such land.
- E. Any obstruction in the easement shall be removed by the homeowner before construction begins. If said obstruction is not removed prior to construction activities, the City/contractor will remove the obstruction and will not be responsible for damage and reinstallation to said obstruction.
- F. The cost of all such restoration of property with exception of the items listed above in section E shall be done by the Contractor.

1.6 OPERATIONS WITHIN RIGHT-OF-WAY

In public thoroughfares, all operations of the Contractor, including those of temporary nature, must be confined within the applicable right-of-way limits after having obtained approval of the City or other Local Governing Entity. If the methods of the construction employed by the Contractor are such as to require the use of land beyond the public thoroughfares, he shall make his own agreement(s) with the property owners affected for the use of such additional land and shall provide a copy of the agreement(s) to the WPWD.

1.7 PERMITS AND BONDS

A. PERMITS

The Developer will obtain and provide electronic copies of the approved permit(s) which relate to the completed facilities prior to construction. For City projects, the permits will be either obtained by the City or defined in the contract. Permits obtained by the Developer and/or the City include, but not limited to, permits from the following:

1. City of Westfield
2. Department of Natural Resources
3. Indiana Department of Environmental Management
4. U.S. Army Corps of Engineers
5. Indiana Department of Homeland Security Building & Fire Safety
6. Indiana Department of Transportation
7. Railroads
8. Hamilton County Surveyor's Office
9. Hamilton County Highway Department
10. Soil and Water Conservation District
11. Public and private utility approval(s) or permit(s)

It is the Developer's responsibility to ascertain what permits are required, including wetland delineation and mitigation.

B. BONDING

The Contractor may obtain the necessary bond(s) per [Indiana House Bill 1508](#), effective July 1, 2015 or letter of credit(s) for City projects and Developer shall obtain permits for Developer projects or otherwise approved by the Board of Public Works and Safety which relate to construction procedures as prescribed in the most current City of Westfield Unified Development Ordinance.

1. All necessary permits and/or bonds required in conjunction with construction activities within or under easements and/or public right of ways shall be required to be obtained prior to construction. The construction shall be performed by the Contractor in full accordance with any and all requirements of the State Highway

Commission, County Road Commission, WPWD, or other Local Governing Entity including those applying to barricades, watchmen, guarding, lighting, storage of supplies, equipment and excavated materials, method of backfilling, final grading, replacement of pavement or road surface, and all other conditions or requirements which may be stipulated by the State Highway Commission, County Road Commission, or WPWD, whether specifically shown on the drawings or mentioned in the specification.

2. For Developer projects, which include City infrastructure, the Developer per [Indiana House Bill 1508](#):
 - a. Shall provide a performance bond and/or letter of credit for 110% of the engineer's estimate or the contracted amount to perform the work for any improvements within Public Right-of-Way in addition to any erosion control improvements. This performance bond or letter of credit shall have no expiration date and must be received by the City prior to the preconstruction meeting, or
 - b. Shall, to the satisfaction and approval of WPWD complete the following:
 - (1) Completion and acceptance of all drainage infrastructure including storm sewers, sub-surface drains, manholes, and any other infrastructure associated with drainage within the project limits. This includes but not limited to pipe being installed, backfill, and collars poured; manholes installed, flowlines poured, interiors grouted, and castings properly installed. As part of the acceptance, as-builts (both digital and hard copy) but be submitted for review. Televising and cleaning will be analyzed on a case-by-case basis and MAY NOT be required to be completed prior to secondary plat being signed. This determination will be made by the Director.
 - (2) Completion and acceptance of all finish grading and permanent erosion control measures through all rear-yard swales, detention areas, and in any areas associated with the overall drainage of the site.
 - (3) Completion and acceptance of all silt fence around rear-yard swales, detention areas, and back of curbs throughout the entire section of development. Please note that once work plans are received from dry utility representatives, an onsite pre-con

meeting for utilities shall be coordinated by the developer with all contractors associated with the utilities as well as the City of Westfield representative. During this meeting, accommodations for the dry utility contractors shall be made regarding the gapping of the silt fencing. Once dry utilities are completed, gaps in silt fencing shall be completed within 48-hours.

- (4) Completion and acceptance of all asphalt roadways (up to binder at a minimum minimum), concrete curb and gutters, temporary cul-de-sacs, passing blisters, acceleration and deceleration lanes, and any other offsite right-of-way improvements throughout the entire section of development. Temporary pavement striping may be necessary due to weather limitations on permanent pavement markings. Please note that it is the responsibility of the developer to coordinate all utility relocations in a timely manner to ensure these improvements can be completed. The City will work diligently with the Developer to ensure the relocation work plans are properly engineered to hastily accommodate any Encroachment Permit that may be required. It is NOT the responsibility of the City to coordinate these relocations in a timely manner – the City recommends coordinating as early as possible. Please note that the City will NOT accept paving around power poles as a solution to poor utility coordination. Also, performance bonds will be required for all surface and other incomplete infrastructure.
- (5) Completion and acceptance of all regulatory and street name signage for traffic control and E-911 services.
- (6) Written confirmation from CEG that water is active throughout the entire section of development for fire protection services.
- (7) Completion and acceptance of all common area sidewalks, and trails.
- (8) Punchlist items for the above-mentioned tasks shall be completed within 30 business days from the day the punchlist is formulated.

3. Payment in Lieu of Bond:

- a.) The WPWD has the discretion for an entity obligated to provide performance bonds to the City to allow a payment in cash to the City in lieu of a performance bond.
 - b.) The cash in lieu of bond shall be equal to 5% of the contractor estimate for the cost of the appropriate portion(s) of a development requiring a performance bond.
 - c.) Payment in Lieu of Bond may be accepted for partial completion, at the discretion of the WPWD. Remaining costs to complete this work shall be determined by a professional engineer and agreed upon by WPWD.
4. Performance bonds will not be considered for release until all punch list items are complete, easements and/or public right of ways are recorded or platted, and as-built drawings are submitted to WPWD. A digital copy shall be provided. Performance bonds shall only be released by the Board of Public Works once the above items have been completed.
5. After all City infrastructure has been inspected, tested, approved, and required as-builts have been submitted and approved by the City/WPWD, the performance bond and/or letter of credit can be flipped to a 3 year maintenance bond posted with the City. The maintenance bond shall be in the amount of 10% of the actual construction cost. Maintenance bonds shall be released by the Board of Public Works at the end of the 3 years once all maintenance punch list items are complete which includes, but not limited to the following:
- a.) To verify that all enclosed drains and sewers are functioning properly, all storm sewer including sub-surface drains are to be cleaned and televised with visual recordings (via closed circuit television) of such tile drains and sewers shall be required before release of maintenance sureties. These visual recordings will be scheduled at least 90 days prior to the expiration date of the maintenance bond. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the WPWD and Utility or designee before maintenance sureties would be recommended to be released.
6. The Developer will be responsible for snow plowing activities for all new streets within their construction limits until the City accepts the maintenance bond with three exceptions:
- a.) The streets are private and not maintained by the City;
 - b.) The Developer and/or HOA decide to have their public streets privately snow plowed by a contractor at their expense;
 - c.) The maintenance bond is accepted after the October Board of Public Works and Safety meeting.

1. If this is the case, the Developer will be responsible for snow plowing activities through the first winter of the maintenance bond. The City will snow plow the streets within the right of way starting in the second winter covered under the maintenance bond term.

1.8 MAINTAINING TRAFFIC

- A. Developer is responsible for preparing maintenance of traffic plans for any construction activities that will interfere with public transportation. Traffic control devices used for maintenance of traffic shall comply with the latest version of the Indiana Manual on Uniform Traffic Control Devices. These maintenance of traffic plans must be included in the construction plans that are submitted to the City. The Contractor will provide maintenance of traffic plans associated with City projects unless otherwise specified in the contract. If there are modifications to the maintenance of traffic plans, it must be reviewed by the City prior to implementation.
- B. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain permit(s) from the duly constituted public authority having jurisdiction, which may include the state, county, and city/town. The contractor will be responsible for notifying the local school corporation, all public safety agencies, government agencies, and any affected property owners at least 72 hours in advance. The Contractor shall provide the WPWD a detour route plan for review prior to the road closure at least 1 week in advance.
- C. The Contractor shall place advanced road closure signs posting the closure date at a minimum 72 hours in advance to closure. The Contractor shall place all proper detour signs and barricades prior to the actual street closing.
- D. During construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. Emergency vehicle access must be maintained at all times. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the latest version of the Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the City has the right to reject if determined to be in less than good condition.
- E. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such manner as to obstruct traffic or line of sight. Keep

the traveled way of all street, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where necessary as determined by WPWD. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed, except when and where necessary as determined by WPWD, and then only upon due advance notice to the WPWD and Homeowner or Business owner, and for the shortest practicable period of time, consistent with efficient and expeditious construction. The Contractor shall be liable for any damage to persons or property resulting from his work.

- F. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied if, in the opinion of the City, the restoration on streets where excavation has occurred has not progressed satisfactorily.

1.9 SIDEWALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, curb and gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary erosion and sediment control measures as required within this Standards Manual to permit the free passage of surface water along the curb and gutters. The Contractor shall immediately remove all material, exercising such precaution as may be directed by the City. All material excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

1.10 WARNING LIGHTS AND ARROW BOARDS

The Contractor shall place sufficient warning lights and arrow boards on or near the work and keep them illuminated during periods of construction and reduced visibility (from twilight in the evening until sunrise) and shall be held responsible for any damages that any party or the Developer may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

1.11 UTILITIES

- A. Temporary Removal: All existing City utility systems which conflict with the construction of the work herein which can be temporarily removed and replaced shall be accomplished at the expense of the Developer with approval from the WPWD, unless the City specifies the use of its own contractor at the Developer's expense.
- B. Permanent Relocation of Utilities: All public and private utilities located in the public right-of-way which permanently interfere with the proposed improvements will be relocated and paid for by the Developer. The Developer must coordinate and gain approvals from each specified utility prior to relocating their facility.
- C. No infrastructure shall be installed outside of normal working hours Monday through Friday (7:30 am to 4:30 pm) without the presence of the WPWD Inspector. WPWD shall be notified no later than Noon on Thursday prior to work being scheduled for the following Saturday. If this condition is not met, no work shall commence on Saturday.

1.12 SUBMITTALS - CERTIFICATE OF COMPLIANCE

The Developer shall upon request of the City, submit to the WPWD a Certificate of Compliance from the manufacturer and/or supplier of each and every specified material or manufactured equipment item. The Certificate shall state that the material or the item of equipment to be furnished has been manufactured with materials in accordance with the applicable sections of all required codes, specifications, and standards as required by the specifications.

1.13 MANUFACTURER'S SERVICE TIME

- A. When equipment is to be furnished by the Developer or Contractor and maintained in the future by the WPWD, service by the manufacturer is required to be provided as part of the work and the cost shall be covered by the Developer for Developer projects and by the Contractor for City owned projects. A minimum of one (1) year warranty is required unless an extended specified warranty is offered or standard warranty for that equipment is longer than the minimum of one (1) year.
- B. The service provided shall be by a qualified representative to check the completed installation, place the equipment in operation, and instruct the City's operators in the operation and maintenance procedures.
- C. The services shall further demonstrate to the City's complete satisfaction that the equipment will satisfactorily perform the functions for which it has been installed.

1.14 DIGITAL AS-BUILTS/RECORD DRAWINGS

The Developer will be responsible for preparation and submittal of digital as-builts/record drawings in state plane coordinates as required by the requirements set forth in the City's Digital As-built requirements. Copies of the most recent requirements are available on the City's website at www.westfield.in.gov and also at the following location: <http://www.hamiltoncounty.in.gov/668/HagTag>

Additional information can also be received from the WPWD or the Informatics Department.

Developers shall hire a licensed professional engineer or land surveyor to provide all required As-Built information.

END OF SECTION 00300

SECTION 02222 – STANDARDS FOR UTILITY CONSTRUCTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Specifications for the stripping of topsoil and vegetation, excavation, trenching, bedding, filling, backfilling, compaction, pavement restoration, and related work in connection with the installation of water mains, gravity sanitary sewers, storm sewers, force mains, and other City owned utilities are included in this Section.
- B. Definitions
 - 1. Excavation: Removal of earth and rock to form a trench for the installation of a water main, gravity sanitary sewer, storm sewer, force mains, and other City owned utilities.
 - 2. Earth: Unconsolidated material in the crust of the Earth derived by weathering and erosion. Earth includes:
 - a. Materials of both inorganic and organic origin;
 - b. Boulders less than 1/3 cubic yard in volume, gravel, sand, silt, and clay;
 - c. Materials which can be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.
 - 3. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes:
 - a. Limestone, sandstone, dolomite, granite, marble, and lava;
 - b. Boulders 1/3 cubic yard or more in volume;
 - c. Materials which cannot be excavated by equipment which is used to remove earth overburden without the use of explosives, rock rippers, rock hammers, or jack hammers;
 - d. Materials which cannot be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.
 - 4. Undercutting: Excavation of rock and unsuitable earth below the bottom of the pipe or conduit to be installed in the trench.

5. Subgrade: Undisturbed bottom of a trench.
6. Bedding: Material placed in trench to support pipe and conduit as specified for the utility.
7. Backfill and Fill: Material placed in trench from the top of bedding to finished grade, or to subbase of pavement as specified for the utility.
8. Topsoil: Earth containing sufficient organic materials to support the growth of grass as specified by current USDA standards and specifications.
9. Dry utility: Any utility including electric, gas, telephone, cable, fiber, and other utilities not associated with water, sanitary, or storm sewers.

1.2 SEPARATION REQUIREMENTS

- A. All new dry utilities shall maintain a minimum separation of 3.0 feet from all storm structures and pipe.
- B. Minimum horizontal separation between storm sewers, water and sanitary sewers shall be 10.0 feet and 8.0 feet to the structures.
- C. Utility pedestals shall not be placed on top of storm sewer lines.

1.3 SITE CONDITIONS

- A. Existing storm sewers, sanitary sewers, water mains, gas mains, electric ducts, fiber optic ducts, telephone ducts, steam mains, wells, septic systems, wetlands, sink holes, geothermal, regulated drains, and other under-ground structures, lines, and their house connections are to be shown on the plans according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities), is the responsibility of the Contractor. All site conditions shall be field verified by Engineer/Surveyor/Contractor.

1.1 MINIMUM STANDARDS FOR STORM SEWERS

- A. Refer to the City of Westfield Stormwater Management Technical Standards Manual, latest version, for additional details and specifications.

PART 2 - PRODUCTS

2.1 BEDDING

- A. Class I bedding shall be angular 6 to 12 mm (1/4 to 1/2 inch) graded stone and crushed stone.
- B. Class II bedding shall be coarse sands and gravels with maximum particle size of 20 mm (3/4 inch). Class II bedding includes variously graded sands and gravels containing small percentage of fines generally granular and non-cohesive, either wet or dry. Soil types GW (well-graded gravel), SW (well-graded sand), and SP (pea gravel and/or crushed stone mixed with sand) are included in this class.

2.2 BACKFILL

- A. General: Backfill for utilities shall be in accordance with Westfield Construction Standard Drawings (WCSD) 02222-001 and 002.
- B. Non-Structural Backfill: Excavated material shall be used when earth backfill is specified on the plans or where granular backfill or flowable fill is not specifically specified, provided that such material consists of loam, clay, or other materials which, are suitable for backfilling. Unsuitable backfill or frozen backfill material shall not be used. Suitable backfill shall be the following soils, classified by the Unified Soil Classification System, ASTM D2487.
- C. Structural Backfill: Granular backfill, when indicated on the plans or as directed by the Engineer, shall be used for backfilling providing it meets the following soils classified by the Unified Soils Classification System ASTM D2487 or the INDOTSS Section 211 - B Borrow and Structural Backfill. For trenches less than 6" in width (i.e. cutting in water line services), uncompacted No. 8 stone may be used.
- D. Unsuitable Materials: Materials which are unsuitable for backfill include stones greater than 8 inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, peat, and soils, classified by the Unified Soil Classification System, ASTM D2487. Frozen materials in excess of 6" in size shall be considered unsuitable and shall be removed during backfill operations.
- E. Cellular Concrete (Grout): Light weight cellular concrete may be used for filling of abandoned sewers as a grouting mixture for filling voids and as a substitute for backfill concrete in tunnels or casing pipes. The cellular concrete shall be produced by blending preformed foam with cement-sand grout slurry to produce a concrete having a fresh weight per cubic foot of not less than 75 pounds.

F. Flowable Fill

1. Flowable fill shall be removable and in accordance with INDOTSS Section 213 and as specified herein.
2. Design: Mix design shall be required to be submitted and approved by the WPWD or designated engineer. The Contractor shall be required to provide test data from a laboratory which shows that the proposed mix design is in accordance with the requirements listed in this specification.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES, STRUCTURES, AND PROPERTY

- A. All poles, fences, sewer, fiber optic, gas, water or other pipes, wires, conduits and manholes, wells, septic systems, wetlands, regulated drains, sink holes and other under-ground structures, railroad tracks, buildings, structures and property along the routes of water mains, force mains, and sewers shall be supported and protected from damage by the Contractor.
- B. Movable items such as mail boxes may be temporarily relocated during construction. Place movable items in their original location immediately after backfilling is completed, unless otherwise shown on the drawings. Movable items which are damaged during construction will be replaced with similar material at the Contractor's expense.
- C. The Contractor shall proceed with caution in the excavation and preparation of trenches so that the exact location of underground utilities and structures both known and unknown may be determined. Contractor shall call in utility locations to be marked prior to any construction activities. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged at the direction of the utility company's representative. Contractor shall immediately contact utility company when damage has occurred.
- D. **All abandoned water wells must be plugged by a licensed water well driller in accordance with 312.IAC 13.Rule 10. A copy of the state form for abandoned wells must be provided to our office. If well was abandoned prior to 1998 then no form is required. All abandoned water wells to be inspected by the Hamilton County Health Department.**

- E. Whenever, in the opinion of the WPWD, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose at the expense of the Developer/Contractor. If a City project, it will be at the cost of the Contractor.
- F. Wherever sewer, gas, water, or other pipes or conduits cross the trench, the Contractor shall support said pipes and conduits without damage to them. The manner of supporting such pipes, etc., shall be subject to the approval of the owner of the utility involved.
- G. When utility lines that have to be removed or relocated are encountered within the areas of operations, the Contractor shall notify the WPWD or the owner of that utility in ample time for the necessary measure to be taken to prevent interruption of the service.
- H. The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless they shall have first obtained the property owner's written consent thereto and shall have provided a copy of said written consent to the City.
- I. All excavated material shall be piled in a manner that will avoid obstructing sidewalks and driveways. Line of sight for vehicles and pedestrians shall not be obstructed. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Curb and gutters shall be kept clear and other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.
- J. All streets, alleys, pavements, parkways, and private property shall be thoroughly cleaned of all surplus materials, earth, and rubbish placed thereon by the Contractor. Any debris, rubbish, earth, or material shall not be stored within the roadway.

3.2 CLEARING

- A. Clear and remove logs, stumps, brush, vegetation, rubbish, and other perishable matter from the project site as required to perform work.
- B. Do not remove or damage trees that do not interfere with the work. Completely remove trees required to be removed, including stumps and roots. Properly treat damaged trees which can be saved.

- C. Debris from the tree removal, including trunk, branches, leaves, roots and stumps, shall not be buried or burned on the job site, but must be completely hauled away and disposed of at the Contractor's expense.
- D. Clear and remove trees, logs, stumps, brush, vegetation, rubbish, and other perishable matter from the existing and proposed right of way.

3.3 STRIPPING AND STOCKPILING OF TOPSOIL

- A. Strip topsoil and vegetation from the excavated areas. Clean topsoil may be stockpiled for reuse as the upper 6 inches of the areas to be seeded. Soil stockpiles must be seeded if undisturbed for a period of time greater than 14 days per Stormwater Manual.

3.4 PAVEMENT AND SIDEWALK REMOVAL

- A. Remove existing pavement and sidewalks from the excavated areas. Remove excavated asphaltic and concrete materials from the job site as these materials are excavated.
- B. The width of pavement removed along the normal trench for the installation of pipe and structures shall not be less than two (2) feet on either side of the trench. Remove all existing pavement when the excavation requires the removal of 75% or more of the total existing pavement width. If over 50% of one travel lane is disturbed, restoration must be extended to the centerline of the roadway.
- C. Remove trails completely when excavation is along the length of a trail and requires the removal of part of the trail. Remove sidewalks to existing joints in the sidewalks when excavation crosses sidewalks. If there are no joints in an existing sidewalk or trail, the width of the sidewalk or trail removed shall not exceed the width of the trench by more than 12 inches on each side of the trench.
- D. Use methods to remove pavement and sidewalks that will assure the breaking or cutting of pavement and sidewalks along straight lines. The face of the remaining pavement and walk surfaces shall be approximately vertical.
- E. All concrete sidewalk and asphalt trails removed must be replaced per WPWD Standards Sections 02500 and 02505 and meet the most current ADA/PROWAG Standards. All restoration work shall require inspection by WPWD.

- F. Any area within existing pavement and/or sidewalks and trails to 5' from outside of pavement edge or back of curb shall have Removable Flowable Backfill as the fill material for the excavated area.

3.5 EXCAVATING

- A. General: After stripping of topsoil and vegetation, perform excavations of every description regardless of material encountered within the grading limits of the project to lines and grades as indicated on the drawings or as otherwise specified.
 - 1. Materials removed below the depths indicated shall be replaced to the indicated excavation grade with satisfactory bedding materials placed and compacted. The Contractor will minimize over excavation.
- B. Dewatering: Keep excavations free from water until the storm sewers, structures, foundations, and appurtenances to be constructed in the excavations are completed and will safely withstand forces from water. Provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment.
 - 1. Operate dewatering equipment ahead of pipe laying and keep the water level below the pipe invert until the pipe is secured by backfill.
- C. Trenching: Trees, boulders, and other surface encumbrances, located so as to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.
 - 1. Latest version of OSHA rules and regulations Part 1926 shall be followed and adhered to in addition to conditions below. OSHA standards shall take precedent if a conflict exists.
 - 2. Do not open more than 100 feet of trench in advance of the installed pipe. Excavate the trench within 6 inches of full depth for a distance of at least 30 feet in advance of the pipe laying, unless otherwise directed or permitted.
 - 3. Contractor shall be responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Excavate all slopes to at least the angle of repose except for areas where solid rock allows for line drilling or presplitting, or where shoring

or trench box is to be used. Contractor is responsible for ensuring all excavation is safe and in compliance with OSHA regulations.

4. Sides, slopes, and faces of all excavations shall meet accepted OSHA requirements by scaling, benching, barricading, rock bolting, wire meshing or other equally effective means. Give special attention to slopes which may be adversely affected by weather or moisture content.
5. Flatten the trench sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.
6. Shoring, sheeting, trench box, or other means shall be used to support sides of trenches in hard or compact soil when the trench is more than 5 feet in depth and 8 feet or more in length. Sides of trenches shall include embankments adjacent to trenches. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. Provide a bench of 4 feet minimum at the toe of the sloped portion of the trench wall when the outside diameter of the pipe to be installed is greater than 6 feet.
7. Use diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Do not allow water to accumulate in an excavation. If possible, the grade should be away from the excavation.
8. Excavations shall be inspected by a competent Contractor's representative after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased, if necessary.
9. Do not store excavated or other material nearer than 4 feet from the edge of any excavation. Store and retain materials as to prevent materials from falling or sliding back into the excavation. Install substantial stop log or barricades when mobile equipment is utilized or allowed adjacent to excavations.
10. The width of trenches in earth for storm sewers, basin connections, house connections, and other drains up to and including 33 inches in internal diameter shall provide a clearance of not less than 8 inches or more than 10 inches on each side of the pipe. Trenches for pipe larger than 33 inches in internal diameter shall provide a

clearance of not less than 10 inches or more than 14 inches on each side of the pipe.

11. The maximum clear width of trenches in earth for manholes shall be the greatest external width of the structure plus the space necessary for the construction and removal of the forms and construction of masonry work.
12. The design of the storm sewer pipe and structures is predicated upon the width of trench specified in this Article. The Contractor shall be responsible for the provision and installation, at his own expense, of such remedial measures as may be directed by the WPWD, designee, or utility company representative; should the trench width limits specified in this Article be exceeded.
13. Test the air in excavations in locations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases are present. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, and basket stretcher, shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.
14. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.
15. Provide ladders where employees are required to be in trenches 4 feet deep or more. Ladders shall extend from the floor of the trench to at least 3 feet above the top of the excavation. Locate ladders to provide means of exit without more than 25 feet of lateral travel.
16. Provide adequate barriers and physically protect all remotely located excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon completion of exploration and similar operations.
17. All open excavations shall be permanently backfilled within 48-hours of the opening of the excavation. During this time, adequate protection, in accordance with OSHA requirements, shall be required. Snow Fencing, or equivalent; no caution tape will be permitted.

- D. Quicksand: Carry on the work with utmost vigor and proceed with the work expeditiously when running sand, quicksand, or other bad or treacherous ground is encountered. Install bedding to support the pipe as directed.
- E. Blasting: Removal of rock from the excavation may be facilitated by the use of controlled explosives with WPWD approval.
 - 1. Blasting supervision and Blasting Monitoring and Control Programs shall meet the requirements of this Section.
 - 2. Storage procedures for explosives shall be developed by the Contractor and submitted to the Engineer before explosives are brought to the job site.

3.6 SHEETING

- A. The Contractor shall be responsible for construction means, methods, techniques, and procedures, and for providing a safe place for the performance of the work by the Contractor, Subcontractors, suppliers and their employees, and for access use, work, or occupancy by all authorized persons.
- B. The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction."
- C. Adequate supporting systems, such as sheeting, shoring, piling, cribbing, and bracing shall be furnished and installed by the Contractor as required to protect existing buildings, utilities, and property from damage during the progress of the work.

3.7 STORAGE AND REMOVAL OF EXCAVATED MATERIAL

- A. Suitable excavated material required for filling and backfilling operations may be stockpiled in on-site locations, at the discretion of the WPWD or designee, until the material is ready to be placed.
- B. Remove unsuitable materials from the job site as unsuitable materials are excavated. Remove surplus suitable materials from the job site as trenches are backfilled.

3.8 TEMPORARY PLUGS

Prevent foreign material from entering pipe while it is being installed. Do not place debris, tools, clothing, or other material in the pipe. Close the open ends of

pipe by securing watertight plugs when pipe laying is not in progress. Remove any earth or other material that enters pipe, lateral pipe, or appurtenances through any open pipe end.

3.9 BACKFILLING WATER MAIN, SANITARY MAIN, FORCE MAIN, AND STORM SEWER TRENCHES

- A. Backfilling of water main, sanitary main, and force main trenches shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section. Backfilling of storm sewer trenches shall be in accordance with INDOTSS 715.
- B. Do not backfill trenches and excavations until all utilities have been inspected by the WPWD or designee and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings. Required hydrostatic tests may be applied to the line either before and/or after the trench is backfilled, subject to approval of the WPWD or designee.
- C. Bedding procedures for sanitary sewers and storm sewers shall be as specified in Manufacturer's recommendation, or WPWD specifications. The more stringent specification will apply. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.
- D. Material from the trench subgrade to the centerline of the pipe shall be Class II bedding. Place bedding by hand or approved mechanical methods in layers of 8 inches loose depth. Compact bedding by hand tamping or with a power operated hand vibrating compactor. Deposit bedding in the trench for its full width on each side of the pipe simultaneously.
- E. Compaction shall be in accordance with INDOTSS 211.
- F. Do not use the following materials for backfill:
 - 1. Unsuitable materials;
 - 2. Frozen materials;
 - 3. Materials which are too wet or too dry to be compacted to the densities specified in this Article;
 - 4. Flowable concrete fill shall not be in direct contact with ductile iron or other metallic pipe materials and/or fittings. Minimum separation of 12 inches shall be maintained.
- G. Where the edge of the trench is within 5 feet of the existing pavement or public right-of-way, it shall be backfilled with Structural Backfill in accordance with INDOTSS 211, unless otherwise approved in writing by

the WPWD Engineer. For all new construction, refer to WSD 02222-001 and 002 for backfill limits and requirements. A WPWD Inspector shall be notified 24-hours in advance of the backfilling of all utility crossings of new infrastructure. For all open cuts of existing pavement infrastructure, refer to WSD 02222-002. All restoration of open roadway cuts shall be fully restored within 48-hours of the open cut of the existing infrastructure.

- H. All sanitary and water crossings of existing public roadway infrastructure shall NOT be installed with an open cut trench. Trenchless installation shall be required per INDOTSS 716, unless otherwise approved in writing by the WPWD Engineer.

3.10 FLUSHING OF WATER MAINS

- A. All flushing of water mains for testing purposes, if chlorinated, shall be required to outlet directly to the nearest sanitary sewer structure. Any water chlorinated for testing purposes shall be dechlorinated prior to draining into storm sewer system.

3.11 LEAKAGE TESTING FOR WATER AND SANITARY

- A. All leakage testing for water and sanitary shall be completed and accepted prior to placement of any asphalt, unless otherwise approved in writing by the WPWD Engineer.

3.12 MAINTAINING TRAFFIC

- A. Developer is responsible for preparing maintenance of traffic plans for any construction activities that will interfere with public transportation. These maintenance of traffic plans must be included in the construction plans that are submitted to the City. The City will provide maintenance of traffic plans associated with City projects unless otherwise specified in the contract. If there are modifications to the maintenance of traffic plans, it must be reviewed by the City prior to implementation.
- B. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain permit(s) from the duly constituted public authority having jurisdiction, which may include the state, county, and city/town. The contractor will be responsible for notifying the local school corporation, all public safety agencies, government agencies, and any affected property owners. The Contractor shall provide the WPWD a detour route plan for review prior to the road closure at least 5 business days in advance of the On or After closure date. The Contractor shall place approved advanced road closure signs and detour route signs a minimum 72 hours in advance of the On or After closure date. The

Contractor shall notify the City a minimum of 48 hours in advance of the actual closing of the roadway.

- C. During the construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. Emergency vehicle access must be maintained at all times. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with the latest version of the Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition and the City has the right to reject if determined to be in less than good condition.
- D. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such manner as to obstruct traffic. Keep the traveled way of all street, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where approved by the WPWD. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such manner as not to constitute an undue traffic hazard. Private driveways shall not be closed, except when and where necessary, and then only upon due advance notice to the WPWD and Homeowner or Business owner, and for the shortest practicable period of time, consistent with efficient and expeditious construction. The Contractor shall be liable for any damage to persons or property resulting from his work.
- E. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied if, in the opinion of the City, the restoration on streets where excavation has occurred has not progressed satisfactorily.

3.13 SIDEWALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary erosion and sediment control measures as required within the Standards Manual to permit the free passage of surface water along the gutters. The Contractor shall immediately remove all material, exercising such precaution as may be directed by the City. All material

excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

3.14 WARNING LIGHTS

The Contractor shall place sufficient warning lights on or near the work and keep them illuminated during periods of reduced visibility (from twilight in the evening until sunrise) and will be held responsible for any damages that any party or the City may sustain in consequences of neglecting the necessary precaution in prosecuting this work.

3.15 CLEANUP AND MAINTENANCE

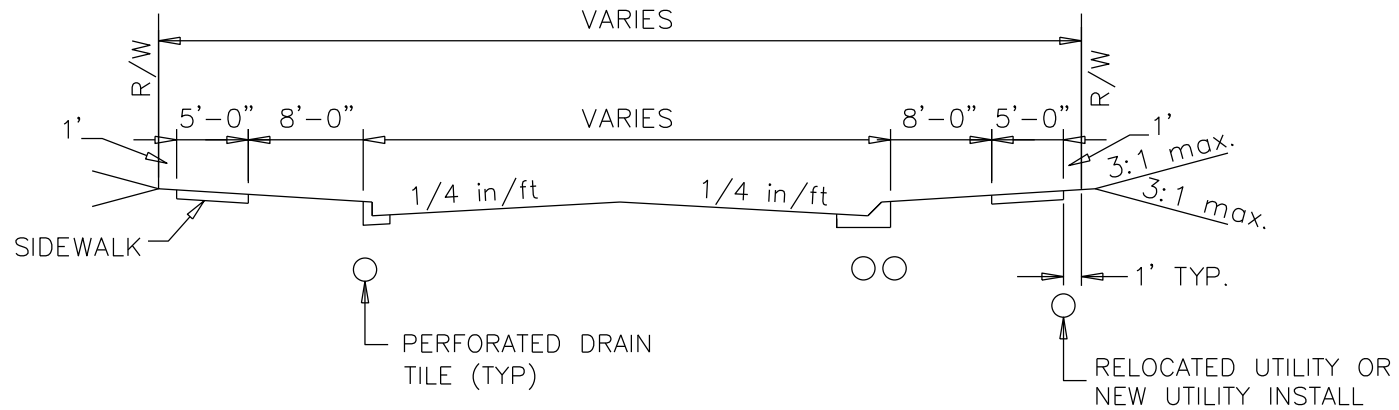
- A. Cleanup the job site as backfilling is completed. Remove excess earth, rock, bedding, materials, and backfill materials. Remove unused piping materials, structure components, and appurtenances. Restore items moved, damaged, or destroyed during construction. Grade area to be restored. Leave backfill mounded over trenches which are not backfilled with Structural Backfill. Cleanup and restoration specified in this paragraph shall be completed within 1,000 feet of excavation.
- B. Restoration of grass, bushes, trees, and other plants shall be completed by Contractor to original or better condition.
- C. Maintain the job site until the work has been completed and accepted. Fill trenches which settle when settlement is visible. Restore items damaged by construction or improper restoration. Keep dust conditions to a minimum by the use of water.

PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

<u>FIGURE</u>	<u>DESCRIPTION</u>
02222-001	Utility Backfill Details
02222-002	Utility Backfill Limits
02222-003	Utility Pothole Details
02222-004	Utility Relocation and Installation Detail

END OF SECTION 02222



- NOTES:
1. Utilities shall generally be located approximately 1' inside the R/W line unless a conflict exists that prevents the utility from being installed at that location.
 2. All new dry utilities shall maintain a minimum separation of 3.0 feet from all storm structures and pipe.
 3. Utility pedestals shall not be placed on top of storm sewer lines.
 4. Utility installation shall follow Section 02222 of the City of Westfield Construction Standards and Specifications.

UTILITY RELOCATION & INSTALLATION DETAIL



Johnathon Nail

3/20/19
DATE

CITY OF WESTFIELD
INDIANA

FIGURE 2222-004

SECTION 02502 - STANDARDS OF RESIDENTIAL LIGHTING

PART 1 - GENERAL

1.1 Lighting of residential neighborhoods shall conform to the following requirements and standards:

A. Pole Locations

1. Poles shall be placed at all roadway intersections, mid-block pedestrian crossings, end of cul-de-sacs, and all trail crossings.
2. Poles shall be placed a minimum of 8' from back of curb unless breakaway hardware is used.
3. Poles shall be located every 200' on alternating sides of the street.

B. Pole Details

1. Poles shall be a minimum of 12' in height.
2. Poles shall be a maximum of 24' in height.
3. Poles shall be black in color unless otherwise approved by WPWD.
4. Finish must be powder coated.

C. Luminaire Details

1. All luminaires shall be LED.
2. Minimum Wattage = 50W.
3. Maximum Wattage = 150W.
4. Distribution shall be either type II, type III, or type IV.
5. If lighting distribution shows illumination within 30' of any residence, light shall be shielded to protect lighting pollution from the home.

D. Timing

1. Lights shall be activated from dusk until dawn.

PART 2 - PRODUCTS

A. Duke Energy

1. Optional Fixtures

- a. Acorn LED
- b. Deluxe Acorn LED
- c. Open Deluxe Acord LED
- d. Mini Bell LED
- e. Traditional LED
- f. Open Traditional LED
- g. Sanibel LED

B. Other

1. Fixtures shall be submitted to WPWD for review

PART 3 - EXECUTION

Not Applicable

PART 4 – FIGURES

Not Applicable

END OF SECTION 02400

SECTION 02500 – PAVING AND SURFACING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: This section covers all work involved in the installation of new pavement and the repair and replacement of existing streets, roads, highways, drives, parking areas and other paved areas damaged or destroyed during construction.
- B. New street pavement shall be asphalt only. Any reference to concrete pavement shall apply to the repair and maintenance of existing concrete streets only.
- C. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference thereto. Except as specifically modified in this specification, paving and surfacing operations, materials and testing will comply with the most current revisions of applicable sections per the latest version of the Indiana Department of Transportation Standard Specifications.
- D. Definitions
 - 1. Abbreviations
 - a. INDOTSS - Indiana Department of Transportation's Standard Specifications.
 - b. AASHTO - American Association of State Highway & Transportation Officials.
 - c. ACI - American Concrete Institute.
 - d. ASTM - American Society for Testing & Materials.
 - e. NRMCA - National Ready Mix Concrete Association.
 - 2. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes limestone, sandstone, dolomite, granite, marble, and lava.
 - 3. Subgrade: The prepared and compacted soil immediately below the pavement or walk system and extending to such depth as will affect the structural design.
 - 4. Subbase: The layer of specified or selected material of designed thickness placed on a subgrade to support a base course and surface course.

5. Base Course: The layer of specified or selected material of designed thickness placed on a subbase to support a intermediate or surface course.
6. Intermediate Course: The layer of specified or selected material of designed thickness placed on a base course to support a surface course.
7. Surface Course: The layer of specified or selected material of designed thickness placed on a subbase or base course to support the traffic load.

1.2 QUALITY ASSURANCE

- A. The Developer/Contractor shall employ, at the request of the WPWD or designee, and pay for the services of an independent testing laboratory (unless otherwise noted) to perform specific services and necessary field density tests. The Developer/Contractor shall demonstrate to the WPWD or designee that proper compaction has been obtained and proper asphalt and concrete mix designs are in compliance with the specifications.
 1. Refer to INDOTSS 402.12 for Weather Limitations. Density testing will be required if temperatures conditions are not acceptable.
 2. HMA courses less than 110 lb/sq yd are to be placed when the ambient and surface temperatures are 60°F or above. HMA courses equal to or greater than 110 lb/sq yd but less than 220 220 lb/sq yd are to be placed when the ambient and surface temperatures are 45°F or above. HMA courses equal to or greater than 220 lb/sq yd and HMA curbing are to be placed when the ambient and surface temperatures are 32°F or above. Mixture shall not be placed on a frozen subgrade. However, HMA courses may be placed at lower temperatures, provided the density of the HMA course is in accordance with INDOTSS 402.16.
- B. Mixing Plant: Prior to placing any hot asphalt pavement or Portland cement concrete pavement, the Contractor shall provide the WPWD or designee the name and location of the bituminous mixing or concrete mixing plant and the type and composition of mixes the Contractor proposes to use in the work. Mix designs shall be submitted for review and approval a minimum of 5 business days before installation. Any unapproved mix placed by the Contractor shall be removed at no cost to the City of Westfield. There will be no exceptions.

- C. Paving and surfacing shall comply with the tolerances specified in Sections 401, 402, 501, and 502 of INDOTSS.
 - 1. Subgrade and subbase shall be within 1/2 inch of dimensions and elevations indicated on drawings.
 - 2. Bituminous base shall not vary longitudinally more than 1/4 inch from a 10-foot straightedge. Bituminous and concrete surfaces shall not vary more than 1/8 inch from a 10-foot straightedge.
 - 3. Finished surface shall be within 1/4 inch of dimensions and elevations indicated on drawings.
- D. Asphalt and concrete pavement shall be installed by a contractor whose prime business is asphalt or concrete paving.

1.3 JOB CONDITIONS

- A. Do not place paving and surfacing materials on a wet surface, pumping subbase or when weather conditions would prevent the proper construction of paving and surfacing.
- B. Do not place aggregates on frozen subgrade or subbase. Do not place aggregates when ambient air temperature in the shade is below 35°F. Refer to INDOTSS 301.04 for additional weather limitations.
- C. Bituminous materials are to be placed in accordance with INDOTSS Sections 401, 402, 405, and 406.
- D. Portland Cement Concrete Pavement is to be placed in accordance with INDOTSS Sections 501 and 502.
- E. When air temperatures are at or below 35 degrees F, an admixture is required to be added to the concrete to prevent freezing. Refer to INDOTSS 502.11 for weather limitations in addition to the Cold Weather Concrete Guidelines listed below. Approval of Cold Weather Concrete must be given by the WPWD Inspector prior to placement.
 - 1. Cold Weather Concrete Guidelines:
 - a. No concrete shall be poured if overnight temperatures are forecasted to be less than 20°F
 - b. Contractor may use proprietary admixtures such as FreezeGuard, Arctic Guard 20° Plus, or approved equal provided the following:
 - (1) Subgrade and forms must be free of frozen material and frost prior to concrete placement

- (2) No extra water may be added to the mix
- (3) Contractor must be ready to place concrete upon arrival of the concrete truck
- (4) During and after finishing the concrete, the surface must be protected from added surface water and precipitation
- (5) Slump may not exceed 6" as tested by ASTM C 143
- (6) Curing compound shall be stored above 40°F and must be applied immediately after concrete finishing

c. Failure to follow these guidelines will result in an automatic failure determination by the WPWD Inspector

- F. Do not place paving and surfacing materials when natural light is not sufficient to properly observe work or operations. Light plants may be required for safety.

1.4 GRADE ADJUSTMENT OF EXISTING STRUCTURES

- A. When a grade adjustment of existing structures is required, the manhole frames, covers and gratings, and the gas and water valve boxes and covers, shall be removed and reconstructed to grade as required with an approved device. Approved devices include, but not limited to:
 - 1. Concrete riser ring
 - 2. Pro-Ring®
 - 3. Or Approved Equal
- B. Maximum amount of riser rings shall be only 12 inches or no more than 3 rings. Greater adjustment than 12 inches shall require a reconstruction of the structure, per INDOTSS 720.04.
- C. On resurfacing and new construction work, the manhole castings and valve boxes shall be adjusted to grade flush with pavement using "Mr. Manhole" or similar approved system after the surface course is installed.

1.5 CONTRACTOR'S ORGANIZATION

- A. The Contractor shall be a firm whose prime business is asphalt or concrete paving. The Contractor shall have a competent supervisor on the site during the progress of the work, acting for the Contractor in all matters concerning the work. He shall have the authority to receive directions and act upon them for the City through the WPWD or designee.
- B. The Contractor shall keep a set of Plans and Specifications available on the site and in good condition.

1.6 TRAFFIC CONTROL

- A. The Developer's Engineer shall plan construction operations so that existing local traffic access can be maintained. If a closure is required, refer to General Requirements, Section 00300.
- B. During the construction, the Contractor will also maintain appropriate use of barricades, lights, flagmen and other protective devices, whether specified for the project or required by the local governing authority. Traffic control devices used for maintenance of traffic shall comply with the latest version of the Indiana Manual on Uniform Traffic Control Devices.
- C. Temporary pavement markings shall be required after milling operations and before resurfacing if left exposed for over 24 hours. Contractor may be required to place cones or approved barricades after temporary markings are pulled and before asphalt is placed.
- D. Temporary pavement markings shall be required after paving operations until permanent markings can be placed, or for the purpose of temporarily shifting traffic patterns. If permanent markings will not be placed until after the winter season, temporary markings shall be paint or thermoplastic by a qualified contractor.
- E. Asphalt Tapers at all butt joints shall be required if opened to live traffic. Millings are not acceptable.

PART 2 - PRODUCTS

2.1 AGGREGATE

- A. Fine aggregates shall consist of natural sand or manufactured sand produced by crushing rock, shells, air-cooled blast furnace slag, or wetbottom boiler slag.
 - 1. Fine aggregates used in Portland cement concrete and bituminous pavements shall be free from injurious amounts of organic impurities. When subjected to the colorimetric test for organic impurities and a color darker than the standard is produced, it shall be tested for effect of organic impurities on strength of mortar in accordance with AASHTO T 71. If the relative strength at 7 and 28 days, calculated in accordance with section 10 of T 71, is less than 95%, it shall be rejected.

- B. Coarse aggregates shall consist of clean, tough, durable fragments of crushed rock, crushed or uncrushed gravel or shells, or crushed and processed air-cooled blast furnace slag. These materials shall not contain more than 15% flat or elongated pieces and shall not contain particles with an adherent coating. Flat or elongated pieces will be described as pieces having a length in excess of four times its width.
- C. Aggregates shall comply with INDOTSS Section 904.

2.2 BITUMINOUS MATERIALS

- A. Petroleum asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347°F.
 - 1. Petroleum asphalt cement shall be PG Binder, grade PG 64-22.
 - 2. Petroleum asphalt emulsion shall be AE-60.
- B. Bituminous materials for prime coat shall consist of:
 - 1. Asphalt emulsion - AE-P.
 - 2. Asphalt emulsion – AE-PMP.
 - 3. Prime Coat shall conform to INDOTSS Section 405.
- C. Bituminous materials for tack coat shall consist of:
 - 1. Asphalt emulsion - AE-T, AE-PMT, SS-1h, AE-NT.
 - 2. Tack Coat shall conform to INDOTSS Section 406.
 - a. Type A Cert Required per INDOTSS 406.02.
- D. Bituminous materials for seal coat shall consist of:
 - 1. Asphalt emulsion - RS-2, AE-90, AE-90S, HFRS-2.
 - 2. Materials shall conform to INDOTSS Section 902.
- E. Cover aggregate shall be in accordance with INDOTSS 404.04.
- F. Joint Adhesive shall consist of:
 - 1. Materials shall conform to INDOTSS Section 906.
 - a. Type A Certification Required

2.3 HOT MIX ASPHALT (HMA)

- A. Hot mix asphalt (HMA) shall consist of an intimate mixture of coarse aggregate, fine aggregate (including mineral filler if required), and asphalt

cement or emulsion combined in proportions specified in INDOTSS 401. Acceptance shall be in accordance with INDOTSS 402.

- B. When the use of one type or source of aggregate or binder is started, the use of that same type or source shall be continued for the entire lift being constructed, unless otherwise directed by the Engineer.
- C. The use of recycled materials, RAP, shall be permitted per current INDOT standards.
 - 1. No mixes will be approved with RAP exceeding 25.0%
- D. HMA mix design shall be submitted for review and approval a minimum of 5 business days prior to placement of any asphalt.
- E. Preparation of HMA mixtures shall comply with the requirements of INDOTSS Section 402.

2.4 PORTLAND CEMENT CONCRETE

- A. Cement shall be Portland cement and shall meet the requirements of ASTM C 150, ACI 301, and ACI 318. Cement shall be Type 1 for normal use, Type 1A where air entrainment is desired, or Type III or Type IIIA where high early strength is desired and authorized by the Engineer. Blended hydraulic cements which meet the requirements of ASTM C 595 Type 1P Portland pozzolan cement may be used where a more watertight concrete is required. Fly ash may also be used as a partial cement replacement for Types 1 or 1A in accordance with INDOTSS 502.04. Fly Ash may only be used between April 1 and October 15. Cement shall meet requirements specified in INDOTSS Section 901.
- B. Regular fine and coarse aggregates shall meet the requirements of ASTM C 33. Aggregate shall be crushed limestone with a maximum size of 3/4 inch, except in mass concrete the maximum size may be 1 1/2 inches.
 - 1. Lightweight fine and coarse aggregates shall meet the requirements of ASTM C 330.
 - 2. Insulating fine and coarse aggregates shall meet the requirements of ASTM C 332.
- C. Water shall be potable, clean, and free from injurious amounts of oils, acids, alkalis, organic materials, or other substances that may be deleterious to concrete or steel. A maximum of 500 mg/L of chloride ion may be present in the water.
- D. Air entraining admixtures shall meet the requirements of ASTM C 260.

1. Water reducing and retarding admixtures shall meet the requirements of ASTM C494, Type A or Type D; however, they shall contain no chlorides, be nontoxic after 30 days and compatible with the air entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's requirements. Furnish a compliance statement that the admixture used satisfies all requirements of this specification. Evidence that the admixture is included in the approved list of the INDOTSS Division of Materials and Tests, in accordance with INDOTSS Section 912, will satisfy the requirement for a compliance statement.
 2. Fly ash shall meet the chemical and physical requirements of ASTM C 618 for mineral admixture Class F, except loss on ignition shall not exceed 6%. Fly ash shall be sampled and tested in accordance with ASTM C 311 prior to use.
- E. Reinforcing steel shall meet the requirements of ASTM A 615, Grade 60.
1. Welded wire fabric or wire mesh shall meet the requirements of ASTM A 185.
 2. Reinforcing steel and appurtenances shall follow INDOTSS Section 910.
- F. Preformed expansion joint filler shall meet the requirements of ASTM D1752, Type III.
1. Hot-poured elastic joint filler shall meet the requirements of ASTM D1190.
 2. Waterproof expansion joint filler shall meet the requirements of ASTM D1850.
 3. Joint materials specified in INDOTSS Section 906 may be used, approved by the Engineer.
- G. Concrete pavement shall be wet cured by using burlap, waterproof blankets, or ponding; or by using a membrane compound. If the membrane method is used, the compound shall be Type 2, complying with AASHTO M148 for white pigmented compound. A pressure sprayer capable of applying a continuous uniform film to the pavement surfaces will be required.
1. Dowel bars and assemblies shall conform to the requirements of INDOTSS Section 503.
- H. Concrete base shall meet the requirements of INDOTSS Section 305.

- I. Reinforced concrete pavement shall meet the requirements of INDOTSS Section 501.
- J. Reinforced concrete for sidewalks and steps shall meet the requirements of INDOTSS Section 604.
- K. Reinforced concrete for curbing shall meet the requirements of INDOTSS Section 605.
- L. All concrete curbs, sidewalks, curb ramps, and driveways within City of Westfield Right-of-Way shall be cured with a penetrating curing compound such as Protectosil CHEM-TRETE 40 VOC or an approved equal. The penetrating curing compound shall be applied immediately after final finishing operations and any surface water has disappeared. Curing compound shall be stored, mixed and applied in accordance with manufacturer's specifications.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor is responsible to provide equipment, workmanship and materials required to achieve a finished product that meets these specifications.
- B. Compaction equipment shall be in accordance with INDOTSS.
- C. Prior to placing paving and surfacing materials, shape subgrade as required to produce finished pavement grades and cross-sections shown on drawings.
- D. Do not place paving and surfacing material before subgrade is reviewed via proof roll or other approved method and accepted by the WPWD or designee. Do not place paving and surfacing materials on a frozen or muddy subgrade in accordance with INDOTSS Sections 203, 207, 302 and 401, and 402.
- E. Compact subgrade to not less than 100% of its maximum density as determined in accordance with AASHTO T99 and INDOTSS 207.
- F. Provide adequate drainage at all times to prevent water from standing on subgrade, pavement or walks. Sufficient effort shall be made to ensure subgrade is well drained. Mechanical dewatering may not be required.

3.2 SUBGRADE

The subgrade material and testing shall comply with INDOTSS Section 207, before placement of subbase.

3.3 SUBBASE PREPARATION

Subbase shall meet the requirements of INDOTSS Section 302.

3.4 AGGREGATE BASE, SURFACE, OR SHOULDERS

- A. Aggregate base, surface, or shoulders shall consist of crushed rock or gravel. The aggregate type shall be suitable for the area in which the project is located. The aggregate thickness shall be as shown on the drawings and as specified herein.
- B. Aggregate shall be Compacted Aggregate, No. 53, Base in accordance with INDOTSS 301, unless otherwise specified or approved in writing by the WPWD.
- C. If the required thickness of the aggregate section exceeds 6 inches, the material shall be placed and compacted in separate lifts no less than 3 inches nor more than 6 inches of compacted depth.
- D. If spreading devices are used which will ensure proper depth and alignment, forms will not be required; otherwise forms shall be required. Forms shall be of wood or steel, adequate in depth, straight, of uniform dimensions and equipped with positive means for holding the form ends rigidly together and in line. Segregation of material shall be avoided by any spreading method used. No payment will be made for aggregate placed beyond the dimensions shown on the drawings.
- E. Compact material in each lift after material is spread and shaped. Compact material to not less than 100% of maximum dry density as determined by AASHTO T99 in accordance with INDOTSS 301.06. Use construction procedures, including sufficient moisture adjustments and number of passes, to ensure specified density is attained.
- F. The Contractor shall employ an independent testing laboratory to perform field density tests to demonstrate proper compaction of aggregate surface pavement, if requested by the WPWD or designee.
- G. Unless otherwise shown on the drawings, the minimum section (excluding subgrade) of reinforced concrete shall be 6 inches of INDOT Compacted Aggregate, No. 53, Base and 6 inches of 4,000 psi reinforced Class "A"

concrete.

- H. Unless otherwise shown on the drawings, for a street with a concrete base and an asphalt surface, the replacement section shall be a new concrete base, not less than 6 inches thick with HMA base to within 1-1/2 inch of the existing grade and then 1-1/2 inch of HMA surface.
- I. Unless otherwise shown on the drawings, chip and seal pavements shall have 8 inches of INDOT Compacted Aggregate, No. 53, Base and 1 inch processed bituminous coated aggregate pavement placed and rolled, in accordance with INDOTSS 404.
- J. Unless otherwise shown on the drawings, aggregate pavement shall be replaced with 12 inches of INDOT Compacted Aggregate, No. 53 in accordance with INDOTSS 303.

3.5 HOT MIX ASPHALT (HMA)

- A. This work shall consist of constructing one or more courses of HMA base, intermediate, and wedge leveling or surface mixtures on a prepared foundation in accordance with these specifications and in reasonably close conformance with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer.
 - 1. If the required finished depth of any course is to exceed two to four times the top size of the aggregate used as shown by actual screen analysis, the course shall be constructed in two or more lifts, as directed. Refer to INDOTSS 402 for density requirements.

Mix type shall be as indicated on the drawings, without exception, unless otherwise approved in writing by the WPWD Engineer.

- a. Job mix formulas shall be prepared and submitted for approval in accordance with INDOTSS Section 401. The job mix formula shall include standard bituminous mixture information including, but not limited to, aggregate gradation, binder content, maximum specific gravity, and air voids.
 - 2. Materials and construction requirements shall comply with the requirements of INDOTSS 401. Acceptance requirements shall be in accordance with INDOTSS 402.
- B. Place and spread bituminous base mixture with a bituminous paver. In areas inaccessible to a paving machine, place and spread bituminous base mixture by other acceptable mechanical or hand methods.

- C. Tack coat shall be placed on existing bituminous and/or concrete surfaces before a new lift of bituminous material is added. Apply tack coat uniformly at a minimum rate meeting INDOTSS (0.00025 Tons/SYS).
 - 1. Patch and clean existing surface. The surface shall be free of irregularities and provide a reasonably smooth and uniform surface to receive the tack coat. Remove and replace unstable corrugated areas with suitable patching materials.
 - 2. Tack coat shall be placed in accordance with INDOTSS 406.
 - D. Placement and compaction of HMA shall conform to INDOTSS 401.
 - E. Place intermediate or surface used for wedging or leveling, approaches and feathering by mechanical methods or acceptable hand methods for placing and spreading in accordance with INDOTSS 402.
- 3.6 SEAL COAT AND COVERING AGGREGATE (CHIP AND SEAL)
- A. Application shall be per INDOTSS 404.04.
 - B. Seal coat and covering aggregate shall be placed in accordance with INDOTSS Section 404.
- 3.7 PORTLAND CEMENT CONCRETE PAVEMENT
- A. Portland cement concrete pavement shall consist of a coarse aggregate base (if required) and a reinforced or unreinforced Portland cement concrete surface, as shown on the drawings.
 - 1. Use INDOT Compacted Aggregate, No. 53, Base in accordance with INDOTSS 302 for subbase, unless otherwise shown or specified.
 - 2. Pavement cross-section shall be as shown on drawings.
 - B. Portland cement concrete pavement operations and materials shall comply with INDOTSS Section 502 unless otherwise specified by the WPWD.
 - 1. Alternate equipment to that specified in INDOTSS Section 502 shall be allowed provided that line, grade, surface, smoothness and other requirements of the specifications are met. The equipment used shall be subject to the approval of a Professional Engineer licensed in the State of Indiana.
 - 2. Expansion and contraction joints shall be installed as indicated on the drawings or as required by INDOTSS 503. Expansion joints

shall be required whenever new concrete abuts fixed objects or existing concrete surfaces, whether or not shown on the drawings.

3. Keyway construction, load transfer devices, tie bars and slab and ear reinforcement shall be installed as indicated on the drawings.
4. Unless otherwise shown on the drawings, the final finish of concrete pavement shall be by brooming in accordance with INDOTSS Section 504, to form a transverse skid-resistant finish.
5. The Contractor shall always have materials available to protect the surface of concrete against rain. These materials shall consist of burlap, curing paper or plastic sheeting.
6. New concrete pavement shall be protected by the Contractor until opening to traffic is approved by a Professional Engineer licensed in the State of Indiana. It shall not be opened to traffic until the field-cured concrete has attained a flexural strength of 550 psi, or a compressive strength of 3,500 psi. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Before opening to traffic, the pavement shall be cleaned and permanent lane markings applied to the pavement.

3.8 TESTING FOR HOT MIX ASPHALT (HMA)

- A. At the discretion of the WPWD the Developer/Contractor shall employ and pay for the services of a competent independent testing laboratory to take cores at selected locations and perform described tests.
- B. Compaction requirements for HMA intermediate mixtures placed in accordance with INDOTSS Section 401 shall be controlled by in place density determined from cores cut from the compacted pavement in accordance with INDOTSS 402. Cores shall be taken at locations as directed by WPWD Inspector.
 1. In lieu of core testing, nuclear density testing is allowable if the surface lift is placed within 24-hours of the intermediate placement.
 - a. Nuclear gauge density testing shall be provided by a third-party testing agency and in accordance with ASTM D7113. Testing personnel shall remain onsite for the entire duration of the paving operation and tests shall be done at a maximum of 15 minutes apart. Reports shall be provided

before surface placement can commence to ensure density levels are achieved. These reports can be temporarily handwritten until the final report is received in order to maintain paving schedules.

- b. If the surface cannot be placed within 24-hours, core testing will be required. There will be no exceptions to this requirement. Weather limitations will not be considered an acceptable exception.
- C. The Contractor along with their independent testing lab representative shall obtain cores in the presence of the WPWD with a device that shall produce a uniform 6 inches in diameter pavement sample. Each HMA course shall be cored within one workday of placement. Damaged core(s) shall be discarded and replaced with a core from a nearby location as selected by the Engineer.
- D. The Contractor, in the presence of the WPWD, shall mark the core to define the course to be tested. If the defined area is less than 1.5 times the maximum particle size, the core will be discarded and a core from a new random location will be selected for testing as determined by the Engineer. Within 12-hours of coring operations the Contractor shall clean, dry, refill and compact the core holes with the same HMA mix or suitable material approved by the Engineer.
- E. The Contractor's testing lab representative shall take immediate possession of the cores. If the cores are subsequently damaged, additional coring within the specific section(s) will be required at locations to be determined by the WPWD.
- F. Each core shall be tested within one week of coring operation to determine thickness, bulk specific gravity, aggregate gradation and binder content. Test results shall then be transmitted via email or USPS to both the Contractor and the WPWD for verification before each subsequent bituminous lift is placed.
 - 1. Average thickness of the cores shall not vary from the plan thickness more than 0.5 inch for HMA base and intermediate course(s) and 0.25 inch for HMA surface course(s) for acceptance in accordance with INDOTSS Section 105.
 - 2. The bulk specific gravity shall be determined in accordance with AASHTO T166 or AASHTO T275. The in place density of a section for a mixture shall be expressed as:

$$\text{Density \%} = (\text{BSG/MSG}) * 100$$

where:

BSG = bulk specific gravity as determined from
independent testing laboratory

MSG = maximum specific gravity as reported on job mix
formula.

3. The calculated density of the cores shall not be less than 92% in accordance with INDOTSS 402. Test results which are outside stated limits shall be considered and adjudicated as a failed material in accordance with INDOTSS Section 105.
- G. The Contractor's independent testing laboratory representative shall determine the aggregate gradation and binder content of the core samples in accordance with ITM 571. Aggregate gradation shall be within tolerances set forth in INDOTSS 401 and binder content shall be within ± 0.5 percent from the job mix formula. Test results which are outside the stated limits shall be considered and adjudicated as a failed material in accordance with INDOTSS Section 105.
- H. A copy of all core test results shall be submitted to the Engineer for verification of specification compliance within one calendar week of core testing.
- I. The Contractor shall make the following tests at their cost and they shall be as specified in this Article and requested by the Engineer. Perform tests in accordance with the following ASTM Specifications:

<u>Test</u>	<u>ASTM Specification</u>
Slump	C143
Air Content	C173
Test Cylinders	C31 or C513
Core Samples	C42
Fly Ash	C311

1. Measure slump each time test beams or cylinders are to be made and at any other time requested by the WPWD. The slump shall be as specified in INDOTSS Section 501, or as otherwise specified herein, unless specifically accepted by the WPWD.
2. Measure air content each time test beams or cylinders are to be made and at any other time requested by the WPWD. The field test may be omitted if the air content is known prior to taking samples. The field test may not be omitted if fly ash is used in the mix.

3. Concrete paving mixes shall comply with guidelines and testing requirements of INDOTSS Section 501. However, in lieu of forming test beams as described in Section 501, the Contractor may substitute cylinder tests as follows:
 - a. Make test cylinders in sets of four. Field cure one cylinder and break at seven days. Laboratory cure the remaining three cylinders and break at 28 days. The Contractor shall be responsible for handling and transportation of cylinders.
 - b. If fly ash is used in the mix, a total set of seven cylinders shall be taken. The additional three cylinders shall be laboratory cured and broken at 56 days, if the 28-day strength does not meet specifications.
 - c. Make one set of test cylinders for each 100 cubic yards, or fraction of 100 cubic yards, of concrete placed; or at other times requested by the WPWD.
 - d. Unless otherwise specified, concrete shall have a 28-day compressive strength of 4,000 psi, as demonstrated by laboratory tests of cylinders.
- B. All HMA Surface lifts shall be nuclear gauge tested by an approved third-party testing agency in accordance with ASTM D7113. Testing personnel shall remain onsite for the entire duration of the paving operation and tests shall be done at a maximum of 15 minutes apart. Final Reports shall be provided within 72-hours of placement of the surface mix.

3.9 PROTECTION

- A. Maintain compacted aggregate subbase and surface true to line and grade and required density. Maintain surface until job is complete.
- B. Do not permit vehicular traffic of any kind on any bituminous course until the bituminous mixture has hardened sufficiently not to be distorted beyond specified tolerances. Remove any foreign material which is on the surface of any course before the course is rolled or any subsequent course is placed.
- C. Do not permit traffic on concrete pavement or sidewalks until concrete has developed sufficient strength not to be marked or damaged. Do not permit vehicular traffic on concrete for at least 14 days.
- D. Repair or replace damaged pavement and sidewalks to the satisfaction of the WPWD or designee.

- E. Any cracking in HMA, at the time of the 3-year Maintenance Bond review period, shall be appropriately crack-sealed in accordance with INDOTSS 408.
- F. Asphalt Tapers shall be installed at all butt joints and shall be constructed a maximum grade of 1:8 (12" long for 1-1/2" depth). These tapers shall be sufficiently compacted and maintained until no more than 2 hours before the permanent lift is installed. Millings shall not be used for these tapers.

3.10 CLEANUP

Clean up the job site following pavement and surfacing restoration. Remove all rubbish, excess materials, temporary structures, and equipment. Leave the work in a neat and presentable condition.

3.11 PAVEMENT MARKINGS

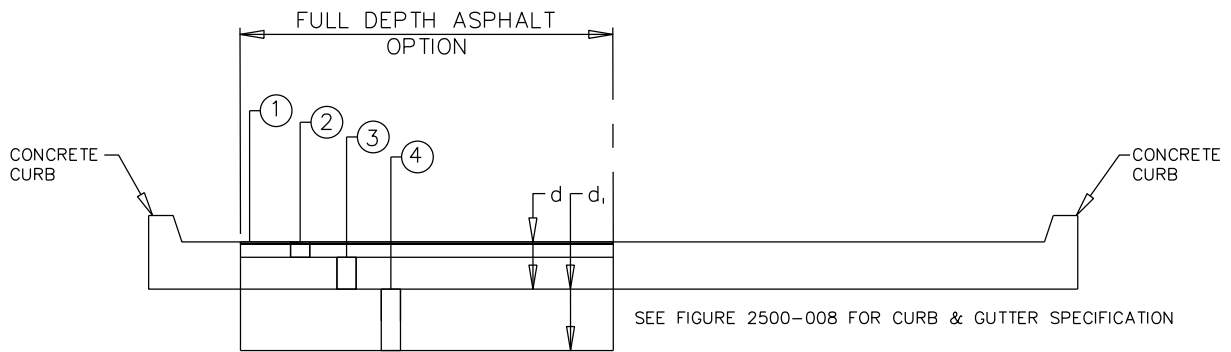
- A. Pavement markings are to be in accordance with all applicable standards of INDOTSS Section 808 and MUTCD, unless otherwise noted in WPWD Specifications, herein.
 - 1. All long line markings shall be 4 inches in width and Thermoplastic material, unless otherwise approved by WPWD.
 - a. Yellow center line spacing shall be 4 inch Line, 4 inch Gap, 4 inch Line.
 - b. White edge lines shall be offset 4 inches from the edge of pavement.
 - 2. All transverse markings and message markings shall be Thermoplastic material, unless otherwise approved by WPWD.
- B. Parking lots are to be striped in accordance with INDOTSS Section 808. Spaces to be striped shall be 4 inch wide stripes.
- C. Contractor shall clean the new pavement surface to remove all dust, dirt, mud and debris prior to striping.
- D. Prior to placement of striping, a final walkthrough with the WPWD Inspector shall be conducted on site.

PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

<u>FIGURE</u>	<u>DESCRIPTION</u>
02500-002	Typical Pavement Section – Collector
02500-003	Typical Pavement Section - Arterial
02500-006	PCCP – Structure Jointing Details
02500-008	Curb Details
02500-009	Underdrain Details
02500-009a	Underdrain Details
02500-010	Sidewalk Details
02500-011	Sidewalk Curb Ramp Notes
02500-012	Cul-de-sac Details
02500-013	Temporary Cul-de-sac Details
02500-014	End of Roadway Details
02500-015a	Street Sign Material Details
02500-015b	Street Name Sign Details
02500-015c	Street Name Sign Details
02500-015d	Regulatory Sign Details
02500-015e	Roundabout Sign Details
02500-017	Typical Driveway Section
02500-019	Pavement Patching Details
02500-020	Paving Details – New Residential Sections
02500-021	Subdivision Entrance Striping Details

END OF SECTION 02500



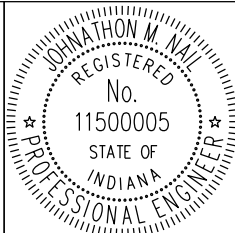
LOCAL AND COLLECTOR STREETS

	ASPHALT 1 d=12.5" d _i =14" d+d _i =26.5"	ASPHALT 2 d=12.5" d _i =12" d+d _i =24.5"
1	1.5" SURFACE 9.5 mm	1.5" SURFACE 9.5 mm
2	2.5" INTERM. 19 mm	2.5" INTERM. 19 mm
3	2.5" BINDER 19 mm	2.5" BINDER 19 mm
4	6" COMP. AGGR. (INDOT SIZE No. 53)	6" COMP. AGGR. (INDOT SIZE No. 53)
5	SUBGRADE TRMT. TYPE IB	SUBGRADE TRMT. TYPE IC

NOTE:

- * CHEMICAL MODIFICATION SHALL BE IN ACCORDANCE WITH INDOTSS 215 AND 913.

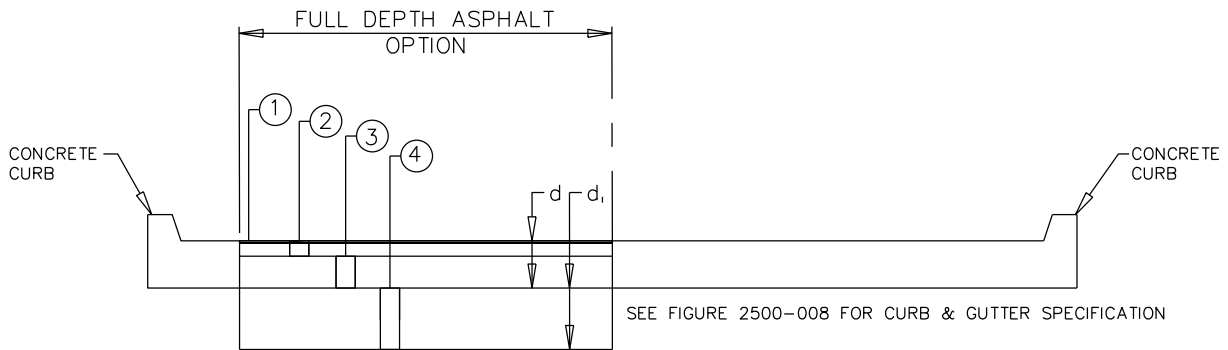
TYPICAL PAVEMENT SECTION – LOCAL/COLLECTOR CITY OF WESTFIELD, INDIANA



Johnathon Nail

3/20/19
DATE

FIGURE 2500-002



INDUSTRIAL AND ARTERIAL

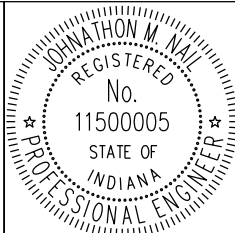
	ASPHALT 1 d=10" d ₁ =14" d+d ₁ =24"	ASPHALT 2 d=15" d ₁ =14" d+d ₁ =29"
1	1.5" SURFACE 9.5 mm	1.5" SURFACE 9.5 mm
2	2.5" INTERM. 19 mm	2.5" INTERM. 19 mm
3	2.5" BASE 19 mm	5.0" BASE 25 mm
4	3.5" BASE 19 mm	6" COMP. AGGR. (INDOT SIZE No. 53)
5	SUBGRADE TRMT. * TYPE IB OR IC	SUBGRADE TRMT. * TYPE IB OR IC

NOTE:

- * CHEMICAL MODIFICATION SHALL BE IN ACCORDANCE WITH INDOTSS 215 AND 913.

TYPICAL PAVEMENT SECTION – ARTERIAL

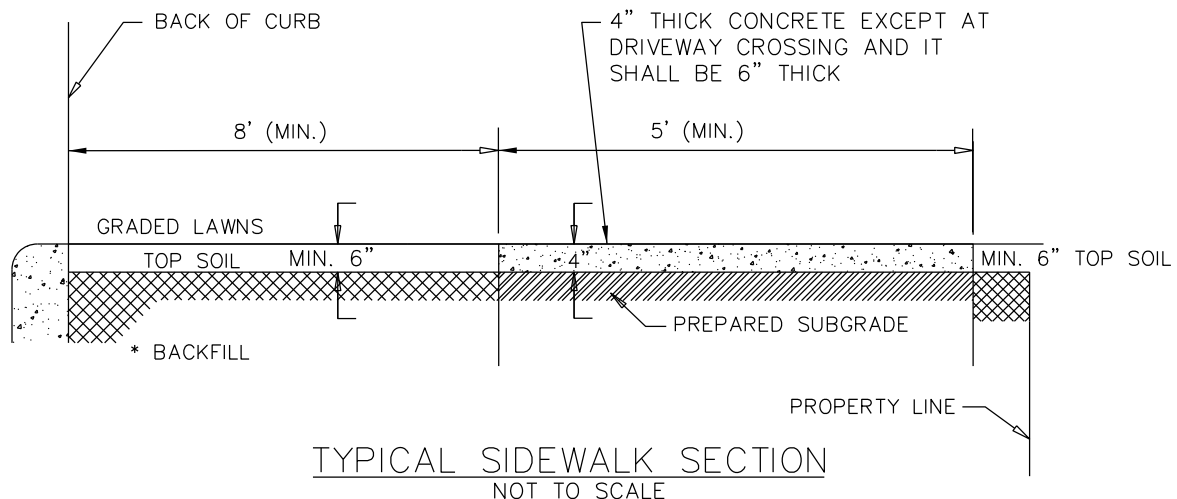
CITY OF WESTFIELD, INDIANA



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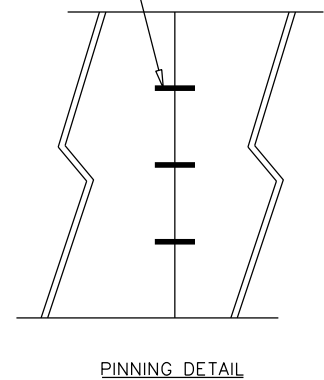
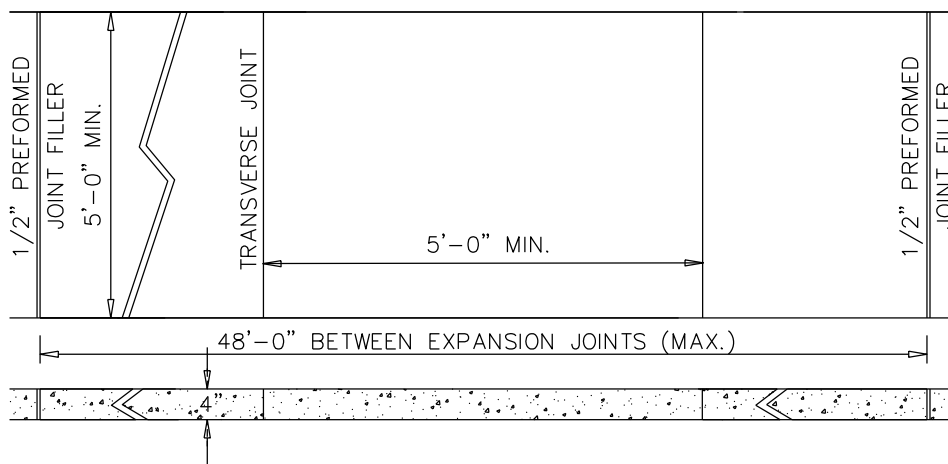
3/20/19
DATE

FIGURE 2500-003



* THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LIFTS NOT TO EXCEED 6" IN DEPTH.

3: #4 BAR, SMOOTH, EPOXY COATED EVENLY SPACED, 12" MIN. FROM EDGE



NOTES:

SUBGRADE UNDER ALL SIDEWALKS, CURBS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH INDOTSS 604, 605, AND 610, RESPECTIVELY. SIDEWALK SHALL BE PINNED AT DRIVEWAYS IN ACCORDANCE WITH WSS 2505.

SIDEWALK DETAILS

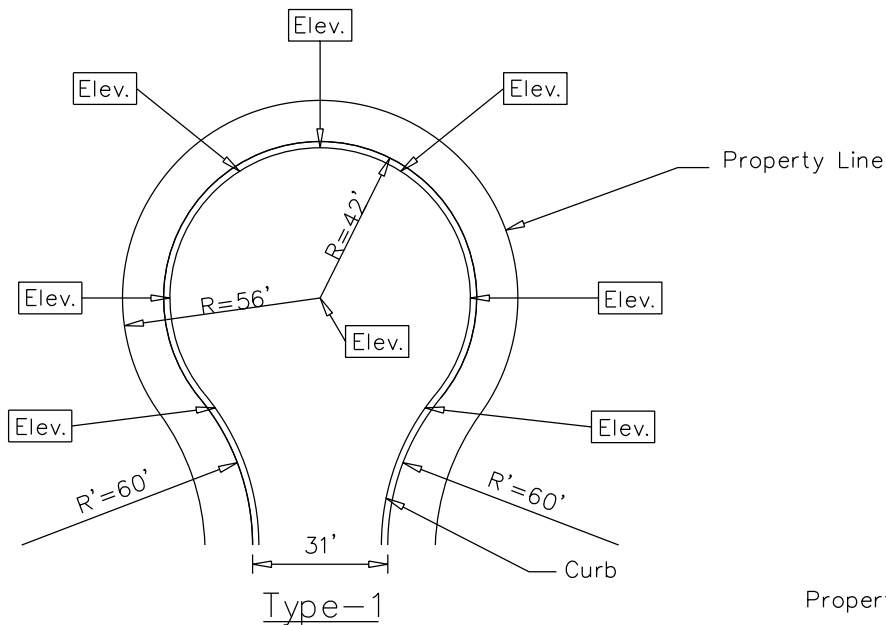


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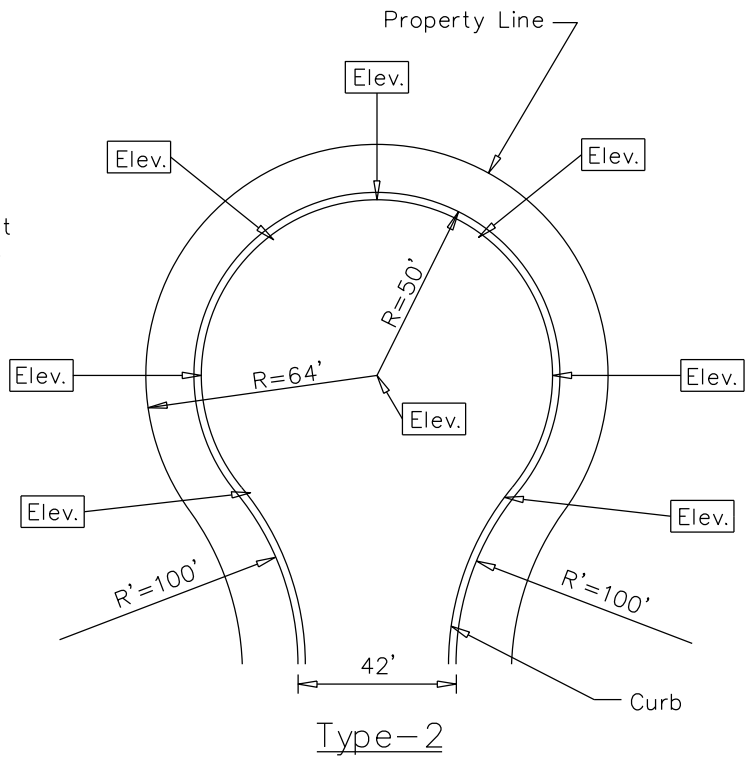
3/20/19
DATE

FIGURE 2500-010



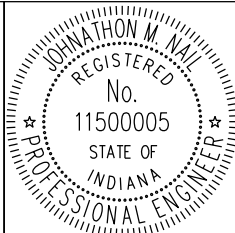
GENERAL NOTES:

1. Type-1 shall be used only in Local subdivisions; all other use Type-2.
2. Warning signs shall be posted at entrance to street, indicating no outlet.
3. Detail shall be identified by street name.
4. Elevations provided shall be proposed flow line of gutter.
5. One detail shall be provided for each cul-de-sac.
6. Scale shall be 1"=40' or larger.
7. Cul-de-sac length shall be a maximum of 600 feet, see section 02501 of the standard specification



CUL-DE-SAC DETAILS

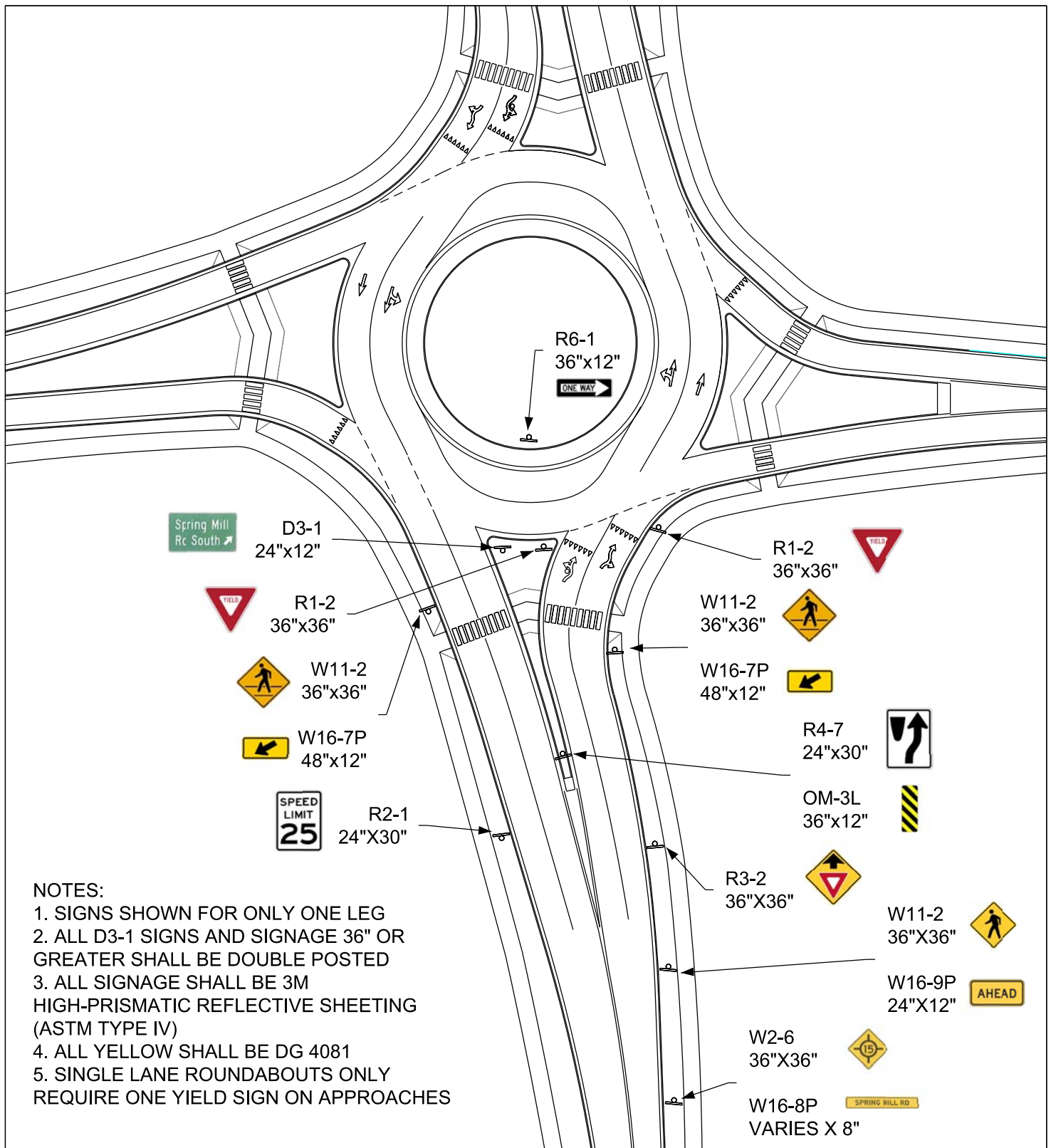
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3/20/19
DATE

FIGURE 2500-012

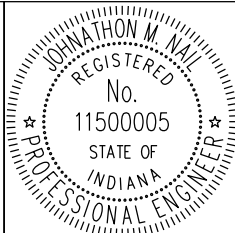


NOTES:

1. SIGNS SHOWN FOR ONLY ONE LEG
2. ALL D3-1 SIGNS AND SIGNAGE 36" OR GREATER SHALL BE DOUBLE POSTED
3. ALL SIGNAGE SHALL BE 3M HIGH-PRISMATIC REFLECTIVE SHEETING (ASTM TYPE IV)
4. ALL YELLOW SHALL BE DG 4081
5. SINGLE LANE ROUNDABOUTS ONLY REQUIRE ONE YIELD SIGN ON APPROACHES

ROUNDABOUT SIGNAGE

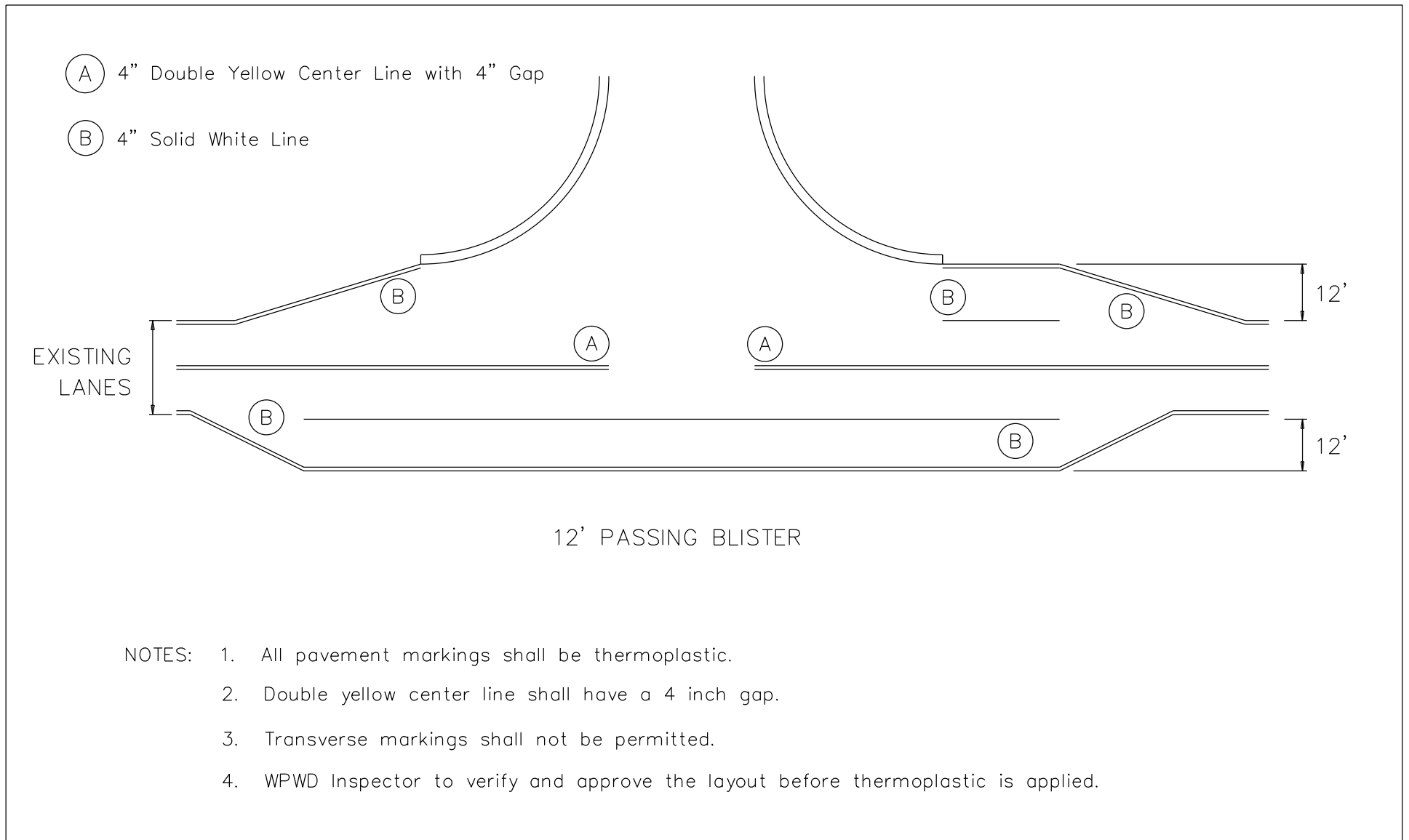
CITY OF WESTFIELD, INDIANA



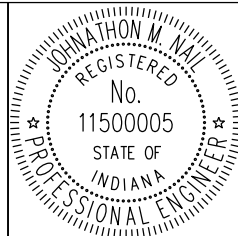
Johnathon Nail

3/20/19
DATE

FIGURE 2500-015e



SUBDIVISION ENTRANCE STRIPING DETAILS



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3/20/19
DATE

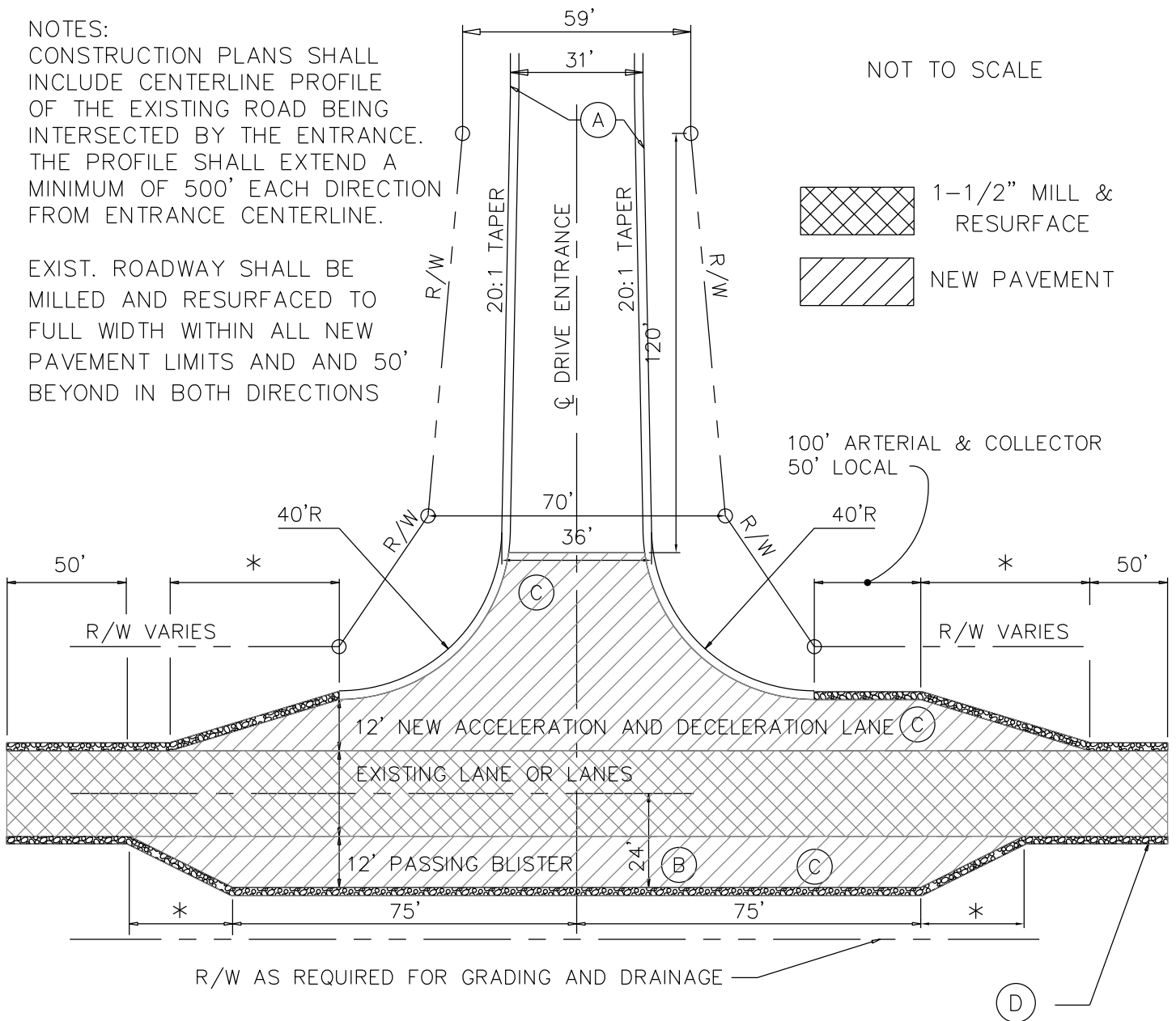
CITY OF WESTFIELD
INDIANA

FIGURE 2500-021

NOTES:

CONSTRUCTION PLANS SHALL INCLUDE CENTERLINE PROFILE OF THE EXISTING ROAD BEING INTERSECTED BY THE ENTRANCE. THE PROFILE SHALL EXTEND A MINIMUM OF 500' EACH DIRECTION FROM ENTRANCE CENTERLINE.

EXIST. ROADWAY SHALL BE MILLED AND RESURFACED TO FULL WIDTH WITHIN ALL NEW PAVEMENT LIMITS AND 50' BEYOND IN BOTH DIRECTIONS



(A) 2' CURB & GUTTER

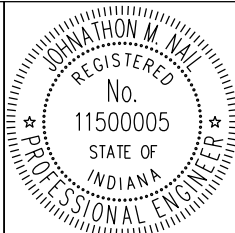
(B) PASSING BLISTER WHEN REQUIRED

(C) LANE WIDENING SHALL MATCH EXIST. PAVEMENT SURFACE TYPE

(D) 2' STONE SHOULDER

* 150' ARTERIAL
100' COLLECTOR
75' LOCAL

MIN. SUBDIVISION AND COMMERCIAL ENTRANCE
CITY OF WESTFIELD, INDIANA



Johnathon Nail

3/20/19
DATE

FIGURE 2501-013

SECTION 02502 - STANDARDS OF ROADWAY CONSTRUCTION

PART 1 - GENERAL

1.1 Road construction shall conform to the following requirements and standards:

A. Streets, General

1. Streets and alleys shall be graded, surfaced, and improved to the dimensions required by the cross-sections and the work shall be performed in the manner prescribed in Section 02500 and the Indiana Department of Transportation Standard Specifications (INDOTSS).
2. Prior to placing the street and alley surfaces, adequate subsurface drainage (underdrains) for the street shall be provided by the Subdivider. Underdrain pipe shall conform to Section 02500.
3. Bituminous asphalt paving mixes shall comply with specifications contained in Section 02500.
4. Before any bond covering a street installation is released, the Westfield Public Works Department (WPWD) or duly authorized representative may request that core borings of the street be provided, at the Subdivider's expense, for thickness and/or compaction determination.
5. Prior to the acceptance of asphalt streets, the Subdivider shall employ and pay for the services of an independent testing laboratory to take cores at selected locations and perform Marshall stability, flow and density test, and percent of compaction determination on completed asphalt work if so directed by the WPWD or duly authorized representative.
6. Asphalt surface layer shall be placed immediately after the binder layer is installed.
7. All traffic control devices shall comply with guidelines and requirements of the current edition of the Indiana Manual on Uniform Traffic Control Devices.
8. No manhole castings or utility valve castings shall be permitted within pavement, curb or sidewalk limits. Design considerations shall be made to ensure that the castings are located outside of these areas.

B. Streets, Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
 - a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection. Refer to WSD 02500-013.
 - b. In order to construct adequate passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan. A minimum of 500 feet full width right-of-way centered on the entrance or street intersection shall be obtained. The developer is responsible for the purchase of the right-of-way, at fair market value. The City will offer assistance in obtaining right-of-way if the initial purchase offer is unsuccessful. A written offer to the property owner is required.
 - c. The existing two (2)-lane roadway(s) that front the property shall require a full pavement width 1-1/2" mill and resurface. The required resurfaced area shall extend a minimum of 50' beyond the acceleration and deceleration lanes and passing blister, whichever is greater.
2. Additional improvements may be required depending on field conditions and as determined by the WPWD or designee.

C. Subgrade for Street Pavements

1. Preparation
 - a. After all earth work is substantially complete and all drains installed, the subgrade shall be brought to the lines and grades shown on the plans.
 - b. Subgrade Treatment, Type IB or Type IC is required for all pavement subgrades. Refer to INDOTSS 207.04 for additional details.
 - (1) If Subgrade Treatment, Type IB is the chosen method, refer to INDOTSS 215.03 for testing and design requirements. Cement may be required in lieu of lime.

- (2) No equipment, including pickup trucks or cars, shall run over the treated areas for a minimum of 72-hour curing period.
 - (a) If this curing period is not fully met, Geogrid shall be required over the entire subgrade area throughout the treated section, unless otherwise approved by the WPWD Engineer. It is the developer's/contractor's responsibility to properly barricade off these treated areas to ensure the 72-hour curing period is upheld.
 - (b) Per INDOTSS 215.05, no chemical modifications will be allowed unless the soil has a minimum temperature of 45 degrees, measured 4 inches below the surface, and the ambient air temperature shall be rising.
- c. Unless otherwise provided, the upper six (6) inches of all subgrade shall be uniformly compacted to at least 95 percent standard density as determined by the provisions of AASHTO, T99, "Compaction and Density of Soils". During subgrade preparation and after its completion, adequate drainage shall be provided at all times to prevent water from standing on the subgrade. Subgrades shall be so constructed that it will have uniform density throughout. After compaction and final grading, the subgrade shall be finished with a three-wheel roller weighting not less than ten (10) tons. For areas not accessible to the roller, the required compaction shall be obtained by using mechanical tampers.
- d. All soft yielding or otherwise unsuitable material which will not compact properly shall be removed. All rock encountered shall either be removed or broken off to conform to required cross sections. Any holes or depressions resulting from the removal of such unsuitable material shall be filled with approved material and compacted to conform to the surrounding subgrade surface. No placement of pavement shall be permitted on uninspected or unapproved subgrade and, at no time, when the subgrade is frozen or muddy. No hauling shall be done nor equipment moved over the subgrade when its condition is such that undue distortion results. If these conditions are present, the subgrade shall be protected with adequate

plank runways, mats, or other satisfactory means if hauling is to be done thereon.

- (1) The contractor may elect to install Geogrid in accordance with INDOTSS 214 to improve subgrade conditions on undercut areas. Materials shall be Tensar TX160 or approved equal.

- e. The subgrade shall be prepared sufficiently in advance to facilitate proper inspection of final elevations and compactions by the WPWD or duly authorized representative.
- f. Refer to Section 02222 for all Utility Construction requirements.

D. Pavement Section - Typical pavement sections shall conform to the requirements in Section 02500. The use of alternative cross sections shall be approved by the WPWD Engineer.

E. Underdrains

1. Underdrain material shall be 6-inch perforated double wall smooth bore subsurface drain pipe. It shall be cleaned and televised prior to acceptance.

F. Curbs and Gutters

1. Developers shall provide curbs and gutters on each side of the street in proposed development. Uncurbed roadways will not be permitted. Alley construction may be an exception to this requirement.
2. Curbs and gutters shall be in accordance with WSD 02500-008. As an alternate, curb sections which comply with INDOTSS will be permitted upon approval of the WPWD Engineer.
3. All curb and gutter sections placed on Primary Arterials, Secondary Arterials, or Collectors shall be of the barrier type. Roll-type curb and gutter sections will be permitted for Local Roads and Streets.
4. The construction of curbs, combination curb and gutter, and integral curb and gutter shall be in accordance with these specifications and as shown on the plans and shall be in reasonably close conformance with the lines and grades shown on the plans or

as directed by a Professional Engineer licensed in the State of Indiana.

5. Excavation for curbs shall be made to the required depth and the subgrade or base upon which the curb is constructed shall be compacted to a firm, even surface to not less than 95% of maximum dry density as determined in accordance with AASHTO T99.
6. Concrete for curbs shall be Class A (6-bag).
 - a. Concrete testing shall be in accordance with INDOT Frequency Manual and INDOTSS 501 for air content, slump and yield. Westfield reserves the right to require the developer to provide additional third-party testing if WPWD Inspectors determine issues with the mix. WPWD Inspection personnel reserve the right to reject failed materials determined through this third-party testing as well as their own testing.
 - b. Maximum time between loading of concrete trucks and placement of materials is 90-minutes unless calcium is included in the mix which lowers this limit to 30-minutes in accordance with INDOTSS 501.14. WPWD Inspector reserves the right to reject materials if outside of these limits or if the time stamp is not included on the concrete ticket.
7. The curbs shall be constructed by the use of wood or metal forms, or a curb slip form machine. Forms, if used, shall be straight, free from warped or bent sections, and shall extend for the entire depth of the curb and shall be securely held in place so that no deviation from alignment and grade will occur during placement of concrete. The concrete shall be consolidated by vibration or other acceptable methods. The top of the curb shall be floated smooth and the top outer corner rounded to a 1/4 inch radius.
8. The face, top, and gutter of curbs shall not have deviations or irregularities of more than 1/4 inch when checked with a 10 foot straightedge.
9. Construction joints shall be placed at 10 foot intervals, unless otherwise shown or directed by a Professional Engineer licensed in the State of Indiana. The joint shall be uniform, of 1/8 to 1/4 inch in width, and to a depth of approximately 2-1/2 inches. The joint shall be formed using concrete tools and then saw cut. When

tooled joints are performed, the additional saw cutting shall be a depth of 2-1/2 inches minimum. Construction joints shall be formed around all abutting structures such as inlets. Expansion material shall be required.

10. Curing materials shall be applied to exposed surfaces and sides of newly placed concrete within 30 minutes after the finishing operations have been completed in accordance with INDOTSS 504.04.
 - a. Only Liquid Membrane-Forming, Visible curing compounds shall be used. Clear materials shall not be permitted. Compound shall be Dayton Superior White Wax Cure J9A, Kaufman Thinfilm White Pigmented, WR Meadows Sealtight 1600 White, or approved equal.
11. If cracking occurs outside of the crack-control joints, curb shall be removed from crack-control joint to crack-control joint unless otherwise approved by WPWD Inspector.
12. If existing curb is to be removed and replaced with new curb or new curb extended from existing curb, the existing curb shall be removed to the nearest joint. If HMA is placed against the curb, prior to curb removal, sawcutting the full depth of the curb face shall be required to prevent additional damage to the existing HMA. Reinforced pinning shall be required as follows:
 - a. Minimum epoxy coated rebar size: #4 Smooth
 - b. Number of bars: 2
 - c. Minimum depth of embedment: 3"
 - (1) This embedment shall be 2-part epoxied on the existing curb side if doveled in
13. During the placement of new concrete curb, utility marking shall be embossed into the top of the curb. The marking shall be a 2" high letter stamping tool and be a "D" for a subsurface drain. The stamp shall be placed into the concrete before the concrete sets up. The letters shall be located perpendicular to the utility feature that is being marked. Any stamp that is missed during installation of curb must be sandblasted in to the curb. The letters shall be located perpendicular from the utility feature that is being marked.

G. Sidewalks and Trails

1. Sidewalks shall be at least six (6) inches thick at drives and at least four (4) inches thick at all other locations within the subdivision.

All Common Area sidewalk formwork shall be inspected prior to placement of any concrete. Any Common Area sidewalk placed without inspection may be removed at the discretion of the Inspection Supervisor.

2. Perimeter and Multi-use trails shall be at least eight (8) feet wide adjacent to Primary Arterials, Secondary Arterials, and Collectors and in commercial, industrial or multi-family developments and residential subdivision perimeters. Maximum grade shall not exceed 5% unless approved by the WPWD Engineer. Refer to WSD 02505-001 and 002 for additional details.
3. Sidewalks shall be at least five (5) feet wide at all other locations. Sidewalks shall be concrete in accordance with Section 02500 and 604 INDOTSS. Expansion joints shall be located every 48 feet and control joints every six (6) feet. All sidewalks shall be placed on properly prepared and compacted subgrades in accordance with this section.
4. Curb ramps, sidewalks, and multi-use trails shall comply with the most current INDOT and ADA/PROWAG requirements. Ramps shall not be permitted in driveways.
5. When sidewalks or trails cross major street intersections within or adjacent to a subdivision, necessary traffic control devices such as painted crosswalks and signs shall be installed at the subdivider's expense at the discretion of the Westfield City Council or the WPWD or designee.
6. If not located within public rights-of-way, easements in favor of the City of Westfield of at least ten (10) feet in width shall be provided for sidewalks, pedestrian trails, or bicycle trails.
7. Sidewalks shall consist of a **INDOT** Compacted Aggregate No. 53, Base to a depth of 3 inches and 4 inches of Concrete. Concrete sidewalk through driveways shall be 6 inches thick. Concrete shall be Class "A", 4,000 psi.
8. Compact subbase to not less than 95% of maximum dry density, as determined in accordance with AASHTO T99.
9. Proportion, mix, and place concrete as specified in INDOTSS Sections 604 and 702. Walks shall have a broom surface finish. Edge all outside edges of walk and all joints with a 1/4 inch radius edging tool.

10. Unless otherwise shown on the drawings, walks shall be divided into sections not more than five feet in length by dummy joints formed by a jointing tool with a 1/4 inch radius.
 11. Sidewalks and handicap ramps shall conform to the most recent updated ADA/PROWAG standards. All handicap ramps shall be properly identified on the as-built drawings submitted to the WPWD.
 12. Form construction joints around all abutting structures and appurtenances such as existing manholes, utility poles, hatches, and hydrants, contractor shall install 1/2 inch thick pre-molded expansion joint filler in construction joints. Expansion joint material shall extend for the full depth of the sidewalk.
 13. If existing sidewalk is to be removed and replaced with new sidewalk or new sidewalk extended from existing sidewalk, the existing sidewalk shall be removed to the nearest joint of suitable quality or as directed by the WPWD. Reinforced pinning may be required described in this section.
- H. Easements - Whenever possible, easements for poles or underground conduits for electrical power, or communication lines shall be provided along rear lot lines.
- I. Landscaping
1. Any landscaping to be installed within the Right-of-Way shall be reviewed prior to installation.
 - a. Onsite Pre-Con shall take place prior to any installation to ensure the species defined in the plans coordinate and match what is being installed. Tags shall remain on all trees to assist in the identification by WPWD Inspector. Any installed landscaping without approval by WPWD Inspector shall be removed at Contractor's expense.
 - b. Developer shall submit for approval the Landscaping plans to Duke Energy if placed within proximity of Duke overhead facilities.
- J. Plans - Construction plans for improvements to be installed shall be furnished in accordance with the specifications of the WPWD and/or, when appropriate, to the Hamilton County Highway Department, CEG, and other necessary Agencies. Such plans must receive all appropriate approvals before improvements are installed. Upon completion of streets

and alleys improvements, as-built plans in State Plane coordinates shall be filed with the WPWD after the WPWD Inspector's punchlist has been completed and, when appropriate, to the proper governing body of Hamilton County. All construction plans shall include the following:

1. Horizontal geometry of each proposed street, with centerline and curb radii shown.
 2. The profile of each proposed street, with grades indicated, and lengths of vertical curves.
 3. The cross-section of each proposed street, showing the width of pavement, the location and width of sidewalks, and the location and size of utility mains.
- K. Inspection - Prior to starting any construction, arrangements shall be made for inspection of work to ensure compliance with plans and specifications approved by the WPWD or, when appropriate, the Hamilton County Highway Department, CEG, and other necessary Agencies.
- L. All construction must be approved by the WPWD and notice of construction must be given to the WPWD, or duly authorized representative, 48 hours prior to beginning work. All approved Utility plans shall be submitted to WPDW in advance of the 48 hour notice.
- M. Allowable Modifications - Where unusual or exceptional factors or conditions exist, the WPWD may allow minor modifications of any provision of this Section. When such modifications are allowed, a detailed written statement of the reasons for such modifications shall be attached to all copies of construction plans.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

PART 4 – FIGURES

Not Applicable

END OF SECTION 02502

SECTION 02505 - STANDARDS OF TRAILS AND SIDEWALKS

PART 1 - GENERAL

- 1.1 Trail and sidewalk construction shall conform to the following requirements and standards:

A. Definitions:

1. Designated Trailhead – A designated point of access that may contain a parking area, information kiosks, restrooms, water fountains, and may be reached by vehicular or pedestrian access.
2. Perimeter Trail – A route designed, designated, or constructed within or outside street right of way for recreational use or to provide an alternative to vehicular routes within a transportation system. These trails will parallel streets designated in the current Thoroughfare Plan and provide connection to the multi-use trail system.
3. Multi-Use Trail – A facility that is physically separated from motorized vehicular traffic with an open space or barrier and either within the highway right of way or within an independent right of way. These trails are part of the Westfield Parks & Recreation Department system and are called out in the Alternative Transportation section of the current Thoroughfare Plan. A multi-use trail can be used by pedestrians, skaters, wheelchair users, joggers, bicyclists or other non-motorized users.
4. Sidewalk – The portion of a local street right of way designed for preferential or exclusive use by pedestrians.

B. Design Manuals

1. The design of Perimeter Trails, Multi-Use Trails, and Sidewalks shall follow the manuals below:
 - a. American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, 2012 (*AASHTO Bike Guide*) or most current edition.
 - b. Indiana Manual for Uniform Traffic Control Devices (MUTCD), 2016 or most current edition.
 - c. National Association of City Transportation Officials, *Urban Bikeway Design Guide*, 2012 (*NACTO Bike Guide*) or most current edition.
 - d. Americans With Disabilities Act and Architectural Barriers Act, *Accessibility Guidelines – 2010 Standards (Signed March 2012 by DOJ)* or most current edition.

- e. Proposed Guidelines for Pedestrian Facilities in the Public-Right-of-Way, *36 CFR Part 1190*.

C. Perimeter Trails, Multi-Use Trails, and Sidewalks:

1. Perimeter Trails shall be constructed to a minimum width of eight (8) feet. The trail shall be constructed of asphalt. The maximum design speed for these perimeter trails is 20 mph. These trails shall be constructed per Figure 02505-001.
 - a. All subgrade shall be in accordance with INDOTSS 207.
 - b. All aggregate base shall be in accordance with INDOTSS 302.
 - c. All HMA shall be in accordance with INDOTSS 402.
2. Multi-use trails shall be constructed to a minimum width of twelve (12) feet with a two (2) foot stone shoulder. The minimum design speed for these multi-use trails is 20 mph. These trails shall be constructed per Figure 02505-002.
 - a. All subgrade shall be in accordance with INDOTSS 207.
 - b. All aggregate base shall be in accordance with INDOTSS 302.
 - c. All HMA shall be in accordance with INDOTSS 402.
3. All sidewalks shall be placed on properly prepared and compacted subgrades per INDOTSS 604. These sidewalks shall be constructed per Figure 02505-010 and 02505-017.
 - a. All sidewalks shall be constructed with a minimum of 3" of compacted aggregate. Options include sand, pea gravel, No. 8 stone, and No. 53 Aggregate. Compaction shall be accomplished with a minimum of two passes with a plate compactor.
 - b. Concrete depth shall be 4" minimum. If 2"x4" forms are used, they shall be elevated to ensure 4" depth is achieved.
 - c. Sidewalks through residential driveways shall be 6" minimum.
 - d. Sidewalks through commercial driveways shall be 9" minimum.
 - e. Pinning required at the driveway/sidewalk interfaces.
 - (1) 3 #4 smooth bars, evenly spaced, 3" minimum embedment and cast-in-place, minimum 2" from the top surface.
 - f. Pinning required at lot lines tie-in.
 - (1) 3 #4 smooth bars, evenly spaced, 3" minimum embedment, minimum 2" from the top surface.
 - (2) Doweling acceptable with two-part epoxy, approved by WPWD Inspector.
4. Trails, sidewalks, and curb ramps shall comply with the most current INDOT and ADA/PROWAG requirements.

5. All perimeter trails or multi-use trails shall be placed on properly prepared and compacted subgrades. Materials shall be furnished and installed in accordance with Section 02500 and INDOTSS. All perimeter trails or multi-use trails shall be proof roll tested with a WPWD Inspector or representative present during testing. All proof roll testing requires at least a 48 hour notification prior to testing to the WPWD.
 6. Where perimeter trails and multi-use trails intersect streets designated in the current Thoroughfare Plan, the streets must have signage and traffic control devices that meet current MUTCD standards and shall be installed at the developer's expense. When required, coordination and permitting with INDOT is also at the expense of the developer.
 7. The perimeter trails, multi-use trails, & sidewalks shall intersect the road at a 90 degree angle, where possible, but may not be less than 45 degrees.
 8. Clear intersection sight lines shall be provided for both the motorist and the trail user. See Figure 02505-003 for additional details.
 9. If not located within public rights-of-way, an easement of at least ten (10) feet in width shall be provided for sidewalks and perimeter trails.
- D. Allowable Modifications - Where unusual or exceptional factors or conditions exist, the City of Westfield may allow minor modifications of any provision of this Section. When such modifications are allowed, a detailed written statement of the reasons for such modifications shall be attached to all copies of construction plans.
- E. Drainage:
1. All trails must have a 2% cross slope. A smooth surface is essential to prevent water ponding or ice formation.
 2. Where a multi-use trail is constructed on the side of a hill, a swale or other storm water collection system of approved dimensions must be placed on the uphill side to collect the hillside drainage. Such swale must be designed so that an undue obstacle cannot interfere with trail use. Where necessary, a catch basin with drains shall be provided to carry the collected water under the trail. Drainage grates must be located outside the trail. All drainage-structure grates must be designed for all wheeled traffic.
 3. The minimum diameter of a culvert which conveys flow under a multi-use trail shall be 12 inches. Each culvert shall be designed to pass a minimum 2-year flood event.

F. Waterway Crossings:

1. Permitting - A structure crossing a waterway is required to obtain all federal, state, county, and local permits and approvals.
2. Allowable bridge decking products include:
 - a. Structural concrete slab for multi-use trails
 - b. City of Westfield approved treated wood products or concrete for perimeter trails.
 - c. Alternatives must be sent to the Westfield Parks & Recreation Department for evaluation. These alternatives must also be accompanied by a data sheet, provided by the manufacturer, stating that the product is designed for the proposed use.
3. All bridges on multi-use trails shall be designed to structurally support 10,000 pounds.
4. All bridge designs must be reviewed by a professionally licensed structural engineer selected by the City of Westfield, at the expense of the Developer.

G. Railings:

1. Trail Railing
 - a. Design of railings is based on specifications located in Figures 02505-04 and 02505-05.
 - b. All trail railings shall be 54 inches in height.
 - c. Design loading shall be $W=50$ pounds per linear foot transversely and vertically, acting simultaneously on each rail.
 - d. Any opening in railing elements shall not allow a 6-inch diameter sphere to pass through.

H. Bollards or gates shall be used on a case by case basis. Location of bollards or gates must be approved by the Westfield Parks & Recreation Department.

I. Multi-Use Trail Signage:

1. Trail identification and informational signage and sign specifications are called out in the Westfield Parks & Recreation Trail Standards.

J. Multi-use trail access points must be approved by the Westfield Parks & Recreation Department, as outlined in Policy PK 06-11, per Ordinance 11-22.

K. Curb Ramps:

1. All curb ramps shall be in accordance with INDOTSS 604.
2. Detectable Warning Elements (truncated domes) shall be:
 - a. Cast-in-place
 - b. Material: Vitrified Polymer Composite (plastic)
 - c. Products:
 - i. <http://www.adatile.com/castinplace.php>
 - ii. <http://www.armor-tile.com/cast-in-place.html>
 - iii. Approved Equal
 - d. Meets or exceeds HS20 loading requirements
 - e. Color: Brick Red or approved equal
 - f. Cut to conform to angles – gaps shall not exceed 1/8"
 - g. Plates shall be placed directly along the back of the 6" curb per INDOT Std. Dwg. No. E 604-SWCR-03
3. All curb ramps shall include detectable warning grooving
4. Depth of concrete at curb shall be in accordance with INDOT Std. Dwg. No. E 604-SWCR-02
5. The engineering plans shall include the applicable INDOT detail for each type of curb ramp present on the project (E 604-SWCR-01 through E 604-SWCR-14).
 - a. If a unique curb ramp configuration is present, the plans shall contain a separate detail for each unique curb ramp with proposed spot grades at all corners. Unique curb ramps shall be labeled on the plan set to identify corresponding details.

L. Driveways:

1. All residential driveways shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-01 for Class I Drives
 - a. In lieu of the radii, 1:1 tapers are acceptable
 - b. Absolutely no ADA ramps shall be constructed within the limits of the driveway. 2' minimum separation between driveway and curb ramp.
 - c. Profiles shall in accordance with INDOT Std. Dwg. No. E 610-DRIV-08. 6" concrete on 6" of No. 53 stone.
2. All commercial driveways shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-03 for Class III Drives
 - a. Corner/radii construction shall be in accordance with INDOT Std. Dwg. No. E 610-DRIV-16
 - b. Profiles shall in accordance with INDOT Std. Dwg. No. E 610-DRIV-08.

PART 2 – PRODUCTS

Not applicable

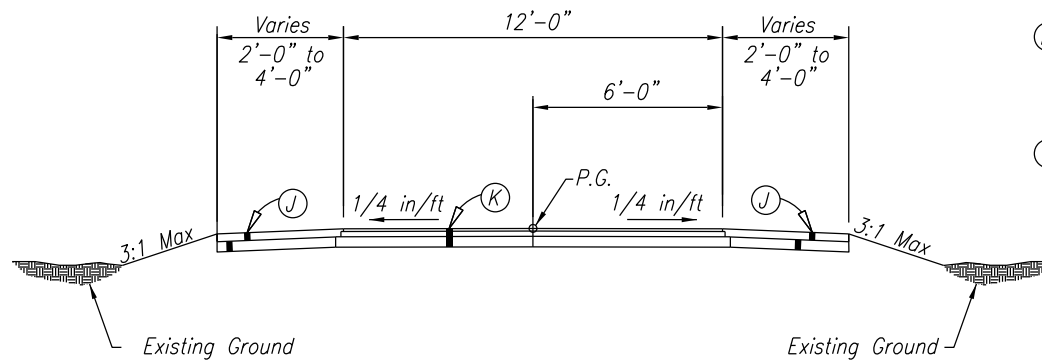
PART 3 – EXECUTION

Not applicable

PART 4 - FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>
02505-001	Typical Cross Section – Perimeter Trail
02505-002	Typical Cross Section – Multi-Use Trail
02505-003	Typical Cross Section – Line of Sight Triangle
02505-004	Typical Cross Section – Wood Railing Details
02505-005	Typical Cross Section – Wood Railing Details

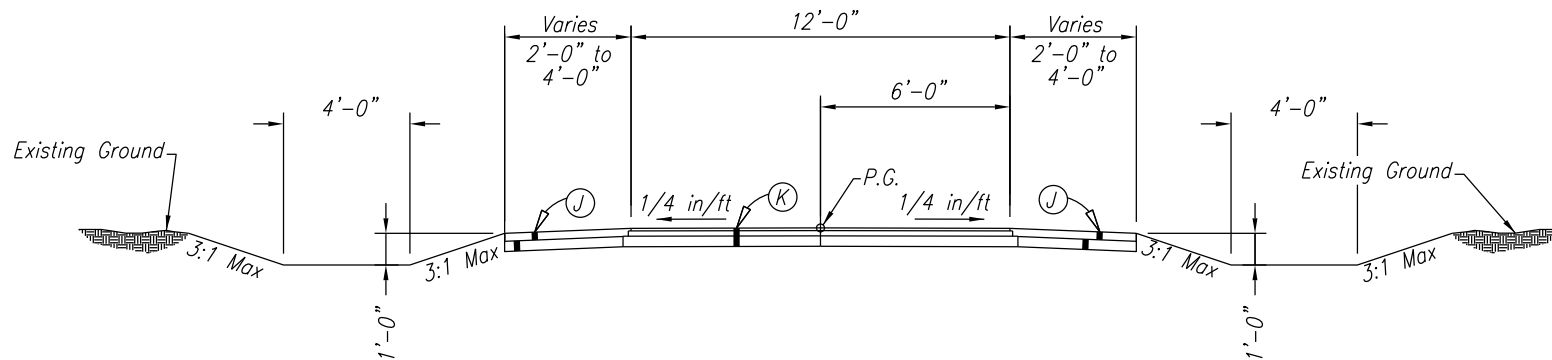
END OF SECTION 02505



TYPICAL TRAIL FILL SECTION
SCALE = NONE

LEGEND

- (K) 165#/SYS HMA, TYPE A, SURFACE, 9.5MM
275#/SYS HMA, TYPE A, INTERMEDIATE, 19.0MM
6" COMPACTED AGG., NO. 53, BASE
- (J) 10" COMPACTED AGG., NO. 53



TYPICAL TRAIL CUT SECTION
SCALE = NONE

TYPICAL CROSS SECTION – MULTI-USE TRAIL



Johnathon Nail

3/20/19
DATE

CITY OF WESTFIELD
INDIANA

CITY OF WESTFIELD

Stormwater Management Technical Standards Manual

March 2019

TABLE OF CONTENTS

<u>Chapter</u>	<u>Title</u>
03100	POLICY AND PROCEDURES
03200	HYDROLOGY
03300	HYDRAULICS AND HYDRAULIC STRUCTURES
03400	STORM SEWERS AND CULVERTS
03500	INSTALLATION OF STORMWATER FACILITIES
03600	EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES
03700	POST-CONSTRUCTION STORMWATER QUALITY MANAGEMENT

CHAPTER 03100 POLICY AND PROCEDURES

SECTION 03101 INTRODUCTION

03101.01
Section
Purpose

This manual provides technical standards for proper stormwater management and stormwater quality practices for those engineers, builders, contractors, land planners, and property owners contemplating some form of land alteration or improvement within land areas under the City of Westfield Municipal MS4 Stormwater Jurisdiction. This Stormwater Technical Standards Manual is intended to establish the policies relating to stormwater management, stormwater quality practices, and flood control, submittal requirements and procedures for issuance of a stormwater permit, and procedures for inspection, testing and final acceptance of stormwater facilities.

The contents of the Manual are the result of a joint effort by Hamilton County, the City of Carmel, the Town of Fishers, the City of Noblesville, and the City of Westfield. The regulations have been established to accomplish the following objectives:

- Provide for consistent, high quality project design and evaluation by consolidating current departmental standards and “policies” within a single document.
- Establish minimum requirements and standards for stormwater management plan submittals and project reviews.
- Facilitate more consistent review of stormwater permit applications and land alteration plans by the stormwater permit staff.
- Establish a standard for the proper and consistent installation of stormwater facilities, with a high level of workmanship, according to the approved stormwater management plan.
- Minimize the impacts of new development and redevelopment projects on existing stormwater management facilities.

This Manual was developed with the assumption that the user will possess a basic understanding of civil engineering design, construction, stormwater quality practices, or land alteration, depending upon the users particular area of expertise. Readers of the Manual which are not qualified by education and experience in the field of construction, engineering, stormwater quality practices, or land alteration should consult with a more qualified person or persons possessing professional expertise in one or more of these fields prior to application of the requirements set forth herein.

03101.02
Provisions

This Manual, together with all future revisions, shall be referred to as “**The City of Westfield Stormwater Management Technical Standards Manual**”. The City of Westfield has been granted authority to “protect the safety, health, and general welfare of the citizens” of the City of Westfield by requiring compliance with standards and practices, which result in proper stormwater drainage and sediment control in the accomplishment of land alterations or other improvements.

03101.03
Applicability

The provisions of this Manual shall apply to the following areas within Hamilton County:

1. **All territory of the County that is not located within a municipality;**
2. **All territory of a municipality located within the County that has adopted a policy or resolution that the territory of the municipality or a portion of the territory of a municipality be included within the applicability area of this Manual;**

3. All areas within a municipality which lie within the drainage shed of a regulated drain.

This Manual applies to all land altering projects as stated and defined in the City of Westfield Ordinance Number 05-30 (An Ordinance to Establish Overlay Zone Districts and Regulations for Storm Water Management). Any land alteration, within the jurisdiction of this Manual, must be accomplished in conformity with the stormwater requirements set forth herein. "Land Alteration" shall generally refer to any on-site or off-site action taken relative to land which either:

1. Changes the contour; or
2. Increases the runoff rate or volume; or
3. Changes the elevation; or
4. Decreases the rate at which water is absorbed; or
5. Changes the drainage pattern; or
6. Creates or changes a stormwater facility; or
7. Involves construction, enlargement, location or relocation of any building on a permanent foundation; or
8. Increases the delivery of point and/or non-point source pollution to streams; or
9. Relocates, encloses, or alters a stream or open channel stormwater conveyance; or
10. Creates an impoundment.

This Manual should be used in conjunction with the applicable City of Westfield stormwater management ordinances. Additional requirements related to land alteration may be found in the existing codes and ordinances of the City of Westfield. Exceptions to the provisions of this Manual are provided in the applicable City of Westfield stormwater management ordinances.

When the project site that is located within the drainage shed of a Hamilton County Regulated Drain falls within the corporate limits of a municipality, adherence to the requirements of both entities is required. In case there is a conflict between the requirements of the municipality and those of the County, the most restrictive requirements shall apply.

03101.04
Stormwater
Manual
Organization

This Manual is organized to present the technical and engineering procedures and criteria needed to comply with the land areas under the City of Westfield government jurisdiction stormwater regulations. Copies of the City of Westfield's pertinent stormwater management ordinances are presented in the Appendices of this Chapter. In addition, the general design policy and procedures are presented.

Each chapter of this Manual contains an initial section that presents all of the policies and procedures that must be satisfied for approval. These policies and procedures shall be considered as design criteria that are unique for approval within the jurisdiction of this Manual.

The site designer is encouraged to review the LID discussion in Chapter 03700 prior to the site design to take advantage of runoff reduction recognitions provided towards water quantity calculations discussed in earlier chapters if LID practices are utilized as part of the site design.

03101.05
Updating

The process of updating this Manual shall be adopted as policy by the City of Westfield. This Manual shall be periodically updated and revised, as necessary, to reflect current engineering practices and information applicable to land areas under the City of Westfield government jurisdiction. Users of this Manual are encouraged to obtain any and all updates and supplements to this Manual each time a land alteration project is considered. The ultimate responsibility for checking for and obtaining updated material shall be the responsibility of the user.

The most current standards shall be required for approval of a land alteration. The incorporation of outdated standards in the design, implementation, and construction of a land alteration shall be cause for the City of Westfield to reject the proposed land alteration.

SECTION 03102 PERMIT REQUIREMENTS AND PROCEDURES

03102.01
Introduction

The project site owner shall submit an application for a stormwater management permit to the City of Westfield. The application will include a Draft Notice of Intent letter (NOI) that would also act as permit application form if the project site is one (1) acre or more to be disturbed, construction plan sheets, stormwater drainage technical report, operations and maintenance manual, a stormwater pollution prevention plan, and any other necessary support information. Specific information to be included in the application can be found in Section 03102.03 below. One (1) copy of each required application material must be submitted to the Westfield Public Works Department (WPWD). The original Rule 5 NOI should also include the original proof of publication and a \$100 check made out to IDEM. Additionally, a digital copy of the construction plans is required in a format accepted by the WPWD. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana.

After the WPWD receipt of the application, the applicant will be notified as to whether their application was complete or insufficient. The applicant will be asked for additional information if the application is insufficient. All plans, reports, calculations, and narratives shall be signed and sealed by a professional engineer or a licensed land surveyor, registered in the State of Indiana. The information provided will be reviewed in detail by WPWD and/or its plan review consultant(s). Once all comments have been received and review completed, the WPWD will either approve the project or request modifications.

For the WPWD, copies of the final, approved construction plans, stormwater drainage technical report, operations and maintenance manual, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification and proof of publication. The number of required copies varies from case to case and should be determined by contacting the WPWD. A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate perimeter control measures have been implemented on the site and the location of any existing tiles has been properly marked.

Once construction starts, the project owner shall monitor construction activities with a maintenance log and inspect all stormwater pollution prevention measures in compliance with the City of Westfield's applicable ordinances and the terms and conditions of the approved permit. Upon completion of construction activities, as-built plans in state plan coordinates on CD must be submitted to the WPWD. A Notice of Termination (NOT) shall be sent to the WPWD once the construction site has been stabilized and all temporary erosion and sediment control measures have been removed. The WPWD, or a representative, shall inspect the construction site to verify the requirements for a NOT have been met in accordance with the Rule 5 (327 IAC 15-5). Once the applicant receives a "verified" copy of the NOT, they must forward a copy to IDEM. Permits issued under this scenario will expire 5 years from the date of issuance. If construction is not completed

within 5 years, the NOI must be resubmitted at least 90 days prior to expiration. A flow chart of the major steps in the stormwater plan review/permit process is provided as Exhibit 03102-1.

Specific projects or activities may be exempt from all or part of the informational requirements listed below. Exemptions are detailed in the applicable ordinances and “Applicability and Exemptions” Sections of Chapters 03200 through 03700. If a project or activity is exempt from any or all requirements of the ordinances or this Manual, an application should be filed listing the exemption criteria met, in lieu of the information requirements listed below. The level of detailed information requested below is not required from individual lots, disturbing less than 1 acre of land, developed within a larger permitted project site. Review and acceptance of such lots is covered under Section 03102.07 of this Chapter.

In order to gain an understanding of the stormwater management requirements for a specific project, a developer or his/her engineer may submit conceptual drainage plans and calculations to the WPWD and request an informal meeting to discuss the proposed project. The direction provided by the WPWD as a result of such a review is based on preliminary data and shall not be construed as an approval or binding on either party.

03102.02
Draft Notice of
Intent

The NOI is a standard form developed by the Indiana Department of Environmental Management which requires general project information. As part of the WPWD Stormwater Management Permit application package, the NOI form should be completed in full based on data and information available at the time of application.

Accompanied by proof of publication in a newspaper of general circulation in the affected area that notified the public that a construction activity is to commence must include the following language:

“(Company name, address) is submitting an NOI letter to notify **the** City of Westfield and the Indiana Department of Environmental Management of our intent to comply with the requirements of **the applicable** City of Westfield **stormwater management ordinances**, as well as the requirements of 327 IAC 15-5 and 327 IAC 15-13, to discharge stormwater from construction activities for the following project: (name of the construction project, address of the location of the construction project, and Parcel Identification Number). Run-off from the project site will discharge to (stream(s) receiving the discharge(s)).”

03102.03
Construction
Plans

Construction plan sheets not to exceed 24” by 36” in size) with a scale of 1 inch = 20 feet, 30 feet, 40 feet, 50 feet or 60 feet, and an accompanying narrative report shall describe and depict the existing and proposed conditions. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. Construction plans need to include the following detailed items:

- i. Title sheet which includes location map, vicinity map, operating authority, design company name, developer name, and index of plan sheets.
- ii. A copy of a legal boundary survey for the site, performed in accordance with Rule 12 of Title 865 of the Indiana Administrative Code or any applicable and subsequently adopted rule or regulation for the subdivision limits, including all drainage easements and wetlands.

- iii. A reduced plat or project site map showing the parcel identification numbers, lot numbers, lot boundaries, easements, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.
- iv. An existing project site layout that must include the following information:
 - a. A topographic map of the land to be developed superimposed on a County GIS ortho-aerial map at a scale of 1"=100'. The exhibit should provide the contour information and include all roads and buildings within a minimum 500' radius beyond the project boundaries. The contour intervals for the land to be developed shall be one (1) foot when slopes are less than or equal to two percent (<2%) and shall be two (2) feet when slopes exceed two percent (>2%). All elevations shall be given in North American Vertical Datum of 1988 (NAVD). The horizontal datum of topographic map shall be based on Indiana State Plane Coordinates, NAD83. The map will contain a notation indicating the noted datum information. The names of adjoining property owners must be labeled on the map.
 - b. Location, name, and normal water level of all wetlands, lakes, ponds, and water courses on or adjacent to the project site.
 - c. Location of all existing structures on the project site.
 - d. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
 - e. Identification and delineation of vegetative cover such as grass, weeds, brush, and trees on the project site.
 - f. Location of storm, sanitary, combined sewer, and septic tank systems and outfalls.
 - g. Land use of all adjacent properties.
 - h. Identification and delineation of sensitive areas.
 - i. The location of regulated drains, farm drains, inlets and outfalls. Prior to construction plan design beginning, all existing regulated drains on the site are to be located, exposed, and invert shots taken to ensure the system is installed deep enough to provide drainage to the upstream watershed. This is also applicable if the site outlets into a regulated drain and no as-built drawings on the drain exist.
 - j. Location of all existing cornerstones within the proposed development and a plan to protect and preserve them.
 - k. Location of all known wells (including abandoned wells).
 - l. Location of known potential contaminant facilities.
- v. A grading and drainage plan, including the following information:
 - a. All information from the existing site layout items listed above.
 - b. Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, finished floor elevations, and common areas with elevations for those improvements.
 - c. One hundred (100) year floodplains, floodway fringes, and floodways. Please note if none exists.
 - d. Delineation of all proposed land disturbing activities, including off-site activities that will provide services to the project site.
 - e. Information regarding any off-site borrow, stockpile, or disposal areas that are associated with a project site, and under the control of the project site owner.
 - f. Proposed topographic information at one-foot contour interval.
 - g. Location, size, and dimensions of all existing streams to be maintained, and new drainage systems such as culverts, bridges, storm sewers, conveyance

channels, and 100-year overflow paths/ponding areas shown as hatched areas, along with all associated easements.

- h. Pipes and associated structures data, including sizes, lengths, and material
 - i. Location, size, and dimensions of features such as permanent retention or detention facilities, including natural or constructed wetlands, used for the purpose of stormwater management. Include existing retention or detention facilities that will be maintained, enlarged, or otherwise altered and new ponds or basins to be built.
 - j. Emergency flood routing path(s) and their invert elevations from detention facilities to the receiving system.
 - k. One or more typical cross sections of all existing and proposed channels or other open drainage facilities carried to a point above the 100-year high water and showing the elevation of the existing land and the proposed changes, together with the high water elevations expected from the 100-year storm under the controlled conditions called for by The City of Westfield's applicable stormwater management ordinance(s), and the relationship of structures, streets, and other facilities.
 - l. A drainage summary, which summarizes the basic conditions of the drainage design, including site acreage, off-site/upstream acreage, allowable release rates, post-developed 10-year, and 100-year flows leaving the site, volume of detention required, volume of detention provided, and any release rate restrictions.
 - m. Arrows designating the direction of stormwater runoff.
 - n. Spot elevations appropriate to define elevations.
- vi. Utility plan sheet(s) showing the location of all existing and proposed utility lines for the project, including all available information related to the utilities, such as pipe size and material, and invert elevations. Include plan and profiles of all sanitary and storm infrastructure along with a separate sheet for the water plan.
- vii. Storm sewer plan/profile sheet(s) at a scale of 5 vertical and 50 horizontal showing the elevation, size, length, location of all proposed storm sewers. Existing and proposed ground grades, storm sewer structure elevations, and all existing and proposed utility crossings also must be included. The actual correct datum (not an assumed one) must be used for the profile sheets and all pipe inverts, top of casting elevations, casting types, structure numbers, and pipe slopes clearly labeled.
- a. Details for all specialty structures, BMP's, underground detention systems, and non-standard drainage structures shall be included in the plan set.
- viii. A plat on the same sheet size used for recording, including the following information:
- a. Legal description.
 - b. Cross reference to Rule 12.
 - c. Regulated drain statement and table.
- ix. Proposed subdivision landscape plans
- x. A copy of the subdivision covenants
- xi. Any other information required by the WPWD in order to thoroughly evaluate the submitted material.

A written stormwater drainage technical report must contain a discussion of the steps taken in the design of the stormwater drainage system. Note that in order to gain an understanding of and to evaluate the relationship between the proposed improvements for a specific project section/phase and the proposed improvements for an overall multi-section (phased) project, the detailed information requested herein for the first section/phase being permitted must be accompanied by an overall project plan that includes the location, dimensions, and supporting analyses of all detention/retention facilities, primary conveyance facilities, and outlet conditions. The technical report needs to include the following detailed items:

- i. A summary report, including the following information:
 - a. Description of the nature and purpose of the project.
 - b. The significant drainage problems associated with the project.
 - c. The analysis procedure used to evaluate these problems and to propose solutions.
 - d. Any assumptions or special conditions associated with the use of these procedures, especially the hydrologic or hydraulic methods.
 - e. The proposed design of the drainage control system.
 - f. The results of the analysis of the proposed drainage control system showing that it does solve the project's drainage problems and that it meets the requirements of the ordinance and these standards. This must include a table summarizing, for each eventual site outlet, the pre-developed acreage tributary to each eventual site outlet, the unit discharge allowable release rate used, the resulting allowable release rate in cfs for the post-developed 10-year and 100-year events, pre-developed 2-year flow rates in cfs as well as pre- and post-developed flow rates for 10- and 100-year events. The worksheet provided as Table 03102-1 should be filled and submitted as part of the report. Any hydrologic or hydraulic calculations or modeling results must be adequately cited and described in the summary description. If hydrologic or hydraulic models are used, the input and output files for all necessary runs must be included in the appendices. A map showing any drainage area subdivisions used in the analysis must accompany the report.
 - g. Soil properties, characteristics, limitations, and hazards associated with the project site and the measures that will be integrated into the project to overcome or minimize adverse soil conditions.
 - h. A narrative and photographic record of the condition of the downstream receiving system.
 - i. Identification of any other State or Federal water quality permits that are required for construction activities associated with the owner's project site.
 - j. Proof of Errors and Omissions Insurance for the registered professional engineer or licensed surveyor showing a minimum amount of \$1,000,000 in coverage.
- ii. A Hydrologic/Hydraulic Analysis, consistent with the methodologies and calculation included in Chapters 03200 and 03300 of this Manual, and including the following information:
 - a. A hydraulic report detailing existing and proposed drainage patterns on the subject site. The report should include a description of present land use and proposed land use. Any off-site drainage entering the site or any downstream restrictions should be addressed as well. This report should be comprehensive and detail all of the steps the engineer took during the design process.
 - b. All hydrologic and hydraulic computations should be included in the submittal. These calculations should include, but are not limited to the

following: runoff curve numbers and runoff coefficients, runoff calculations, stage-discharge relationships, times-of-concentration and storage volumes.

- c. Copies of all computer runs. These computer runs should include both the input and the outputs. Electronic copies of the computer runs with input files must also be included.
- d. A set of exhibits should be included showing the drainage sub-areas and a schematic detailing of how the computer models were set up.
- e. A conclusion which summarizes the hydraulic design and details how this design satisfies the City of Westfield's applicable stormwater management ordinance(s) and these Standards.

03102.05
Stormwater
Pollution
Prevention Plan
for Construction
Sites

A stormwater pollution prevention plan associated with construction activities must be designed to, at least, meet the requirements of the City of Westfield's applicable stormwater management ordinance(s) and must include the following:

- i. Location, dimensions, detailed specifications, and construction details of all temporary and permanent stormwater quality measures.
- ii. Soil map of the predominant soil types, as determined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Survey, or as determined by a soil scientist. Hydrologic classification for soils should be shown when hydrologic methods requiring soils information are used. A soil legend must be included with the soil map.
- iii. 14-Digit Watershed Hydrologic Unit Code. Longitude and latitude location.
- iv. An estimate of the peak discharge, based on the ten (10) year storm 24-hour event, of the project site for post-construction conditions.
- v. Locations where stormwater may be directly discharged into groundwater, such as abandoned wells or sinkholes. Please note if none exists.
- vi. Locations of specific points where stormwater discharge will leave the project site.
- vii. Name of all receiving waters. If the discharge is to a separate MS4, identify the name of the municipal owner and the ultimate receiving water.
- viii. Temporary stabilization plans and sequence of implementation.
- ix. Permanent stabilization plans and sequence of implementation.
- x. Temporary and permanent stabilization plans shall include the following:
 - a. Specifications and application rates for soil amendments and seed mixtures.
 - b. The type and application rate for anchored mulch.
- xi. General construction sequence of how the project site will be built, including phases of construction.
- xii. Construction sequence describing the relationship between implementation of stormwater quality measures and stages of construction activities.
- xiii. Location of all soil stockpiles and borrow areas.
- xiv. A typical erosion and sediment control plan for individual lot development.
- xv. Self-monitoring program including plan and procedures.
- xvi. A description of potential pollutant sources associated with the construction activities, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- xvii. Material handling and storage associated with construction activity shall meet the spill prevention and spill response requirements in 327 IAC 2-6.1.
- xviii. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

03102.06
Post-Construction
Stormwater
Pollution
Prevention Plan

The post-construction stormwater pollution prevention plan must include the following information:

- i. A description of potential pollutant sources from the proposed land use, which may reasonably be expected to add a significant amount of pollutants to stormwater discharges.
- ii. Location, dimensions, detailed specifications, and construction details of all post-construction stormwater quality measures.
- iii. A description of measures that will be installed to control pollutants in stormwater discharges that will occur after construction activities have been completed.
- iv. A sequence describing when each post-construction stormwater quality measure will be installed.
- v. Stormwater quality measures that will remove or minimize pollutants from stormwater run-off.
- vi. Stormwater quality measures that will be implemented to prevent or minimize adverse impacts to stream and riparian habitat.
- vii. An operation and maintenance manual for all post-construction stormwater quality measures to facilitate their proper long term function. This operation and maintenance manual shall be in a separate cover and shall be made available to future parties who will assume responsibility for the operation and maintenance of the post-construction stormwater quality measures. The manual shall include the following:
 - a. Contact information for the BMP owner (i.e. name, address, business phone number, cell phone number, pager number, e-mail address, etc.).
 - b. A statement that the BMP owner is responsible for all costs associated with maintaining the BMP.
 - c. A right-of-entry statement allowing the WPWD personnel to inspect and maintain the BMP.
 - d. Specific actions to be taken regarding routine maintenance, remedial maintenance of structural components, and sediment removal. Sediment removal procedures should be explained in both narrative and graphical forms. A tabular schedule should be provided listing all maintenance activities and dates for performing these required maintenance activities.
 - e. Site drawings showing the location of the BMP and access easement, cross sections of BMP features (i.e. pond, forebay(s), structural components, etc.), and the point of discharge for stormwater treated by the BMP.
- viii. Any other information necessary for the review the project if LID Approach is being utilized as discussed in Chapter 03700 of these Standards Manual.

03102.07
Review of
Individual Lots
Within a
Permitted Project

For individual lots disturbing less than 1 acre, developed within a larger permitted project, a formal review and issuance of an Erosion and Sediment Control Inspection Permit Request for Residential Lots and Outlots will be required before a building permit can be issued. All stormwater management measures necessary to comply with the City of Westfield's applicable stormwater management ordinance(s) must be implemented in accordance with permitted plan for the larger project.

The following information must be submitted to the WPWD, for review and acceptance, by the individual lot operator, whether owning the property or acting as the agent of the property owner, as part of a request for review and issuance of an Erosion Control Inspection Permit Request that must be obtained prior to the issuance of a building permit.

- A. The individual lot operator must complete an Erosion Control Inspection Permit Request and pay the applicable fee.

- B. A certified site layout for the subject lot and all adjacent lots showing building pad location, dimensions, and elevations, and the drainage patterns and swales.
- C. Erosion and sediment control plan that, at a minimum, includes the following measures:
 - i. Installation and maintenance of a stable construction site access.
 - ii. Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
 - iii. Minimization of sediment discharge and tracking from the lot.
 - iv. Clean-up of sediment that is either tracked or washed onto roads. Bulk clearing of sediment shall not include flushing the area with water. Cleared sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
 - v. Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
 - vi. Self-monitoring program including plan and procedures.
- D. Name, address, telephone number, and list of qualifications of the trained individual in charge of the mandatory stormwater pollution prevention self-monitoring program for the project site.

The individual lot owner is responsible for installation and maintenance of all erosion and sediment control measures until the site is stabilized.

Additionally, the Permittee is responsible for ensuring that a BMP's measures remain in place during the construction process and that the installation and continuous maintenance of all lot erosion and sediment controls, on and/or adjacent to their lots, as well as curb inlets along the street frontage are monitored.

A temporary construction entrance provides a place for parking vehicles off of the street and a spot where material can be off loaded. This requirement is to provide a stable surface for parking vehicles where mud and other debris will not to be tracked onto the street. Proper maintenance of the area is required until such time as a permanent driveway is installed.

Failure to keep streets clear of mud, sediment, and debris will result in an enforcement action by the WPWD under the authority of the City of Westfield's Stormwater Management Ordinance (05-30). The Permittee will be responsible for incurring all costs associated with cleaning the streets.

03102.08
Changes to Plans

Any changes or deviations in the detailed plans and specifications after approval of the applicable stormwater management permit shall be filed with, and accepted by, the WPWD prior to the land development involving the change. Copies of the changes, if accepted, shall be attached to the original plans and specifications.

03102.09
Fee Structure

A. Fee Amount

As a condition of the submittal and the review of development plans by the WPWD, the applicant shall agree to pay the WPWD the applicable fee, as set by the City of Westfield, with respect to the review of all drainage submittals, preliminary plans, final plans, construction plans and accompanying information and data, as well as any applicable pre-paid inspection fees.

B. Time of Payment

Before the WPWD's approval of plans, the WPWD will furnish a written statement to the applicant specifying the total amount due to the WPWD in connection with the review of

the applicant's submittals, plans and accompanying information and data, including the amount required to be paid by applicant for review and pre-paid inspection fees.

As a condition of acceptance of final drainage plans by the WPWD, applicant shall pay to the WPWD the sum set forth in said statement. WPWD may issue such a billing statement before the project advances to the final acceptance stage, and such payment is due by applicant upon receipt of said billing statement regardless of whether the project is advanced to the final acceptance stage.

WPWD shall have the right to not accept the drainage improvements or to not accept the advancement of any project for which the applicable fees have not been paid.

C. Method of Payment

Fees shall be paid by one of the following methods:

- Certified Check
- Cashier's Check
- Money Order
- Such other methods as may be agreed in writing by the WPWD

All checks shall be made payable to the City of Westfield.

D. Waiver of Payment

Fees may be waived for certain projects at the discretion of the City of Westfield.

03102.10
N/A

This section intentionally left blank.

03102.11
Permit Terms
and Conditions

In granting a stormwater management permit, WPWD may impose such terms and conditions as are reasonably necessary to meet the purposes of this Ordinance. The project site owner shall insure compliance with such terms and conditions. Non-compliance with the terms and conditions of permits will be subject to enforcement as described in the applicable ordinances.

The project site owner shall inform all general contractors, construction management firms, grading or excavating contractors, utility contractors, and the contractors that have primary oversight on individual building lots of the terms and conditions of the stormwater management permit and the schedule for proposed implementation.

It is the intent of the WPWD to direct the community's physical growth away from sensitive areas and towards areas that can support it without compromising water quality. In the event that a project site is determined to impact or discharge to a Sensitive Area or is located in an Impact Drainage Area, WPWD may require more stringent stormwater quantity and quality measures than detailed in the applicable ordinances or in the latest edition of the Indiana Stormwater Quality Manual.

A. Determination of Sensitive Areas

Sensitive Areas include highly erodible soils, wetlands, threatened or endangered species habitat, outstanding waters, impaired waters, recreational waters, and surface drinking water sources. A listing of highly erodible soils, outstanding water, impaired water, recreation water, and surface drinking water sources can be found in the City of Westfield Storm Water Quality Management Plan (SWQMP) - Part B and its updates. Any discharge from a stormwater practice that is a Class V injection well shall meet the Indiana groundwater quality standards. It is the responsibility of the Developer/Engineer to check

if a wetland is present on the project site. If wetlands are suspected on a site, wetland delineation shall be completed in accordance with the methodology established by the U.S. Army Corps of Engineers (COE) and the wetland addressed in accordance to the requirements of the law. If the presence of threatened or endangered species habitat is suspected on a site, the site must be evaluated and inspected by a professional experienced in such and the results reported to the WPWD. Special terms and conditions for development determined to impact or discharge to any Sensitive Area shall be included in the stormwater management permit.

B. Determination of Impact Drainage Areas

The following areas shall be designated as Impact Drainage Areas, unless good reason for not including them is presented to the WPWD.

- i. A floodway or floodplain as designated by the most updated City of Westfield Code dealing with floodplain regulation.
- ii. Land within 75 feet of each bank of any ditch within the Hamilton County Regulated Drainage System.
- iii. Land within 75 feet of the centerline of any drain tile or enclosed conduit within the Hamilton County Regulated Drainage System.

WPWD is authorized, but is not required, to classify certain additional geographical areas as Impact Drainage Areas. In determining Impact Drainage Areas, WPWD shall consider such factors as land use, topography, soil type, capacity of existing drains, and distance from adequate drainage facility. Land that does not have an adequate outlet, taking into consideration the capacity and depth of the outlet, may be designated as an Impact Drainage Area by the WPWD. Special terms and conditions for development within any Impact Drainage Area shall be included in the stormwater management permit.

SECTION 03103 CONSTRUCTION INSPECTIONS AND APPROVAL

**03103.01
Introduction**

After the approval of the stormwater management permit, WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit. The installed storm sewer shall not be accepted by the WPWD until all requirements for inspection and testing described in this Manual are completed. Inspection of the stormwater drainage system and associated land grading and erosion control measures shall be completed by the WPWD as set forth herein to ensure conformance with the approved site construction plan and supporting documents. Any portion of the stormwater facility not passing the tests prescribed herein shall be repaired or replaced to the extent required by the WPWD, and retested.

**03103.02
General
Requirements**

The Contractor and/or Owner shall provide written notice to the WPWD of planned commencement of construction forty-eight (48) hours prior to such commencement. Copies of the final, approved construction plans, stormwater drainage technical report, stormwater pollution prevention plan for construction sites, and post-construction stormwater pollution prevention plan shall also accompany the above-noted written notification. The number of required copies varies from case to case and should be determined by contacting the WPWD.

A pre-construction meeting is required to be held with the participation of the WPWD and other entities involved prior to any grading activity to ensure that appropriate erosion control measures have been implemented on the site and the location of any existing tiles has been properly marked.

A stop-work-order shall be issued by the WPWD for all projects that are proceeding without such notification, pre-construction meeting, or deviation from any of the specifications described herein without approval. WPWD has the authority to conduct inspections of the work being done to ensure full compliance with the provisions of the applicable ordinances and this Manual, and the terms and conditions of the approved permit.

03103.03
Testing

Once constructed, all storm sewer pipes and manholes shall be water tight. All storm and subsurface drains shall be cleaned and televised after ALL underground utilities are installed with a copy on a thumb drive or via digital file transmittal delivered to the WPWD Inspector. The Contractor shall repair to the satisfaction of the WPWD all visible points of possible bedding and/or backfill infiltration into the system. The method of repair shall be per the approval of the WPWD. When necessary, the Contractor shall remove and reconstruct as much of the work as is necessary to obtain a system that passes the minimum tests prescribed herein.

A. Mandrel Test for Plastic Pipes

No sooner than thirty (30) days after installation, all storm water pipe constructed of PVC or HDPE larger than 6 inches in diameter shall be mandrel tested. A representative of the WPWD shall be present on-site during all mandrel tests. WPWD shall be given written notification of the proposed testing times and locations at least 48 hours prior to the intended time for beginning of the tests. Arrangements for the cost and supply of all equipment necessary to perform mandrel tests shall be the responsibility of the Contractor and Owner.

Mandrel tests shall be conducted under the supervision of the WPWD.

A seven and one-half (7-1/2) percent "GO/NO-GO" Mandrel Deflection Test shall be performed on all PVC and HDPE gravity storm sewer pipe. HDPE and PVC gravity storm sewer pipe shall not be permitted for any other use than sub-surface drains unless a special circumstance requires its use as determined and approved by the WPWD.

These pipes shall be mandrel led with a rigid device sized to pass seven and one-half (7-1/2) percent or less deflection (OR deformation) of the base inside diameter of the pipe. The mandrel test shall be conducted no earlier than thirty (30) days after reaching final trench backfill grade.

The mandrel (GO/NO-GO) device shall be cylindrical in shape and constructed with nine (9) or ten (10) evenly spaced arms or prongs. Variations of mandrel diameter dimensions due to pipe wall thickness tolerances or ovality (from heat, shipping, poor production, etc.) shall not be deducted from the diameter dimension of the mandrel but shall be counted as par of the 7-1/2% or lesser deflection allowance. Each pipe material/type required to be Mandrel tested shall be tested with a mandrel approved by the WPWD and meeting the requirements of this chapter. The mandrel diameter dimension shall carry a minimum tolerance of 0.01 inches.

The mandrel shall be hand pulled through all sewer lines and any section of sewer not passing the mandrel shall be uncovered, replaced or repaired, and retested.

The contact length (L) shall be measured between points of contact on the mandrel arm.

The Contractor shall provide proving rings to check the mandrel. Drawings of mandrels with complete dimensions shall be furnished by the Contractor to the WPWD upon request for each diameter and specification of pipe.

B. CMP and RCP Inspections

All reinforced concrete and corrugated metal storm sewer pipes that are 42 inch in diameter or larger shall be inspected through a walk through (visual survey) inspection with the contractor, developer, and a representative from the WPWD.

All reinforced concrete and corrugated metal storm sewer pipes are required to be inspected through closed circuit television viewing (CCTV) at the developer's or contractor's expense by the WPWD's representative as described herein. In those instances where CCTV is a required part of the stormwater permits approval, this televised viewing shall be completed in conformance with these minimum guidelines. The inspection between manholes shall be conducted as follows:

1. A camera equipped with remote control devices to adjust the light intensity and one thousand (1,000) lineal feet of cable shall be provided. The camera shall be able to transmit a continuous image to the television monitor as it is being pulled through the pipe. The image shall be clear enough to enable the WPWD to easily evaluate the interior condition of the pipe. The camera should have a digital display for lineal footage and project number and an audio voice-over shall be made during the inspection identifying any problems. Reference WPWD Standards Section 02750.
2. All pipe, including sub-surface drains, shall be thoroughly cleaned before the camera is installed and televising is commenced. Cleaning of the pipe shall be the responsibility of the owner.
3. The CD – Digital format, as directed by the WPWD, of the entire storm sewer line and reproduction map indicating the pipe segment numbers of all the pipe that has been televised shall be submitted to the department for review and placement in their permanent file. The pipe should be flooded with clear water just prior to video recording to show any bellies or sags in the pipe.

These inspections shall be required in order to identify, as examples, excessive sedimentation, joint failures, excessive deflections (CMP), damaged coatings or paving (CMP), structural defects, misalignments, sags, or other system defects which have the potential of affecting the hydraulic performance, durability, or structural integrity of the line segment. Reference should be made to Chapter 03400 of this manual for guidance on criteria sufficient to warrant rejection of the installed storm sewer system.

Excessive deflection of CMPs shall be considered to exist under the following conditions: variations from a straight centerline; elliptical shape in a pipe intended to be round; dents or bends in the metal. Metallic or bituminous coatings that have been scratched, scraped, bruised, or otherwise broken shall be considered acceptable criteria for rejection of the installed system.

Any pipe and/or joint found to be defective as a result of the televised viewing shall be required to be repaired or replaced to the satisfaction and approval of the WPWD. A re-televising of that portion of the storm sewer line identified as needing repair or replacement shall be required.

C. Manhole and Box Inlet Inspection

Each manhole and/or box inlet structure within all storm sewer line segments shall be visually inspected by a representative of the WPWD prior to backfill to ensure seams are sealed, pipes have concrete collars, and structure is watertight. A secondary inspection by a representative of the WPWD shall be required to check for excessive leakage, backfill infiltration, or improper workmanship and materials. Doghouse structures shall be permitted with approval from the WPWD. Manholes or box inlet structures which fail to meet minimum construction standards shall be repaired or, if necessary, replaced, and reinspected.

03103.04
Release of
Performance
Sureties

Notice of the scheduled date for completion of construction shall be provided to the WPWD at least seventy-two (72) hours prior to its planned completion. The Contractor or Owner will schedule the final inspection, the storm drain and site grading performance sureties will be released after submittal and approval by the WPWD of the following information (Reference Section 01001):

1. All punch list items are completed and verified by the WPWD.
2. As-built or record drawings prepared under the supervision of and certified by a Professional Engineer or Land Surveyor registered in the State of Indiana, as described in Section 03103.05 of this Manual.
2. For subdivided and platted or developments larger than two (2) acres, a copy of the maintenance bond, as required in Section 03104-01 of this Manual, in a form approved by the City of Westfield.
3. A “Certificate of Completion and Compliance” certifying that the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permit as approved by the WPWD.

That portion of the performance surety associated with the storm sewer system, detention facilities, and Post-Construction BMPs may be released by the WPWD prior to the release of performance surety associated with early permanent site stabilization or the installation of required erosion and sediment control measures for individual lots within a permitted subdivision. The performance surety associated with erosion and sediment control measures may only be released upon the final acceptance of the project and the issuance of the “verified” NOT in accordance with the requirements of Rule 5 (327 IAC 15-5), i.e., upon stabilization of the entire construction site and the removal of temporary erosion and sediment control measures, which may be achieved before or after the construction of all individual lots within a subdivision.

03103.05
As-built or
Record Drawings

As part of the final acceptance process, record drawings of the stormwater facilities must be submitted to the WPWD, as set forth herein, for the following types of developments:

- All platted subdivisions
- Industrial and commercial sites five acres and larger

After completion of construction of the project and before final project acceptance of the stormwater management plan (the issuance of a “verified” NOT), a professionally prepared and certified record drawings (‘as-built’ set of plans) by a Professional Engineer or licensed Land Surveyor registered in the State of Indiana shall be submitted to the WPWD for review. These as-built plans/record drawings must be prepared and certified by the Engineer of Record, i.e., the company/engineer who originally prepared the construction plans. Additionally, a digital copy of the record drawings (‘as-built’ plans) as well as finalized digital versions of all analyses, models, manuals, and reports that are consistent with the as-built conditions is required in a format accepted by the WPWD. These plans shall include all pertinent data relevant to the completed storm drainage system and stormwater management facilities, and shall include:

1. Pipe size and pipe material
2. Invert elevations, top of casting elevations, swale flow lines, lot elevations, etc
3. Top rim elevations
4. Pipe structure lengths
5. BMP types, dimensions, and boundaries/easements
6. “As-planned” plans for BMPs, as applicable
7. Data and calculations showing detention basin storage volume
8. Data and calculations showing BMP treatment capacity
9. Certified statement on plans stating the completed storm drainage system and stormwater management facilities substantially comply with construction plans and the stormwater management permits as approved by the WPWD.

In addition, any requirements established by the City of Westfield Digital Submission Standards shall also be met.

03103.06
Enforcement
of Standards

Failure to comply with those minimum guidelines set forth by the manual may result in Enforcement Action per the Storm Water Management Ordinance as well as a Stop-Work order.

SECTION 03104 POST-CONSTRUCTION MAINTENANCE REQUIREMENTS

03104.01
Maintenance
Surety

Stormwater quantity and quality management facilities shall be maintained in good condition, in accordance with the Operation and Maintenance procedures and schedules listed in the latest editions of the Indiana Stormwater Quality Manual or requirements contained in this Manual, and the terms and conditions of the approved stormwater permit, and shall not be subsequently altered, revised, or replaced except in accordance with the approved stormwater permit, or in accordance with approved amendments or revisions in the permit. Following construction completion and before the release of maintenance sureties described below, the maintenance of stormwater quantity or quality facilities may become the long-term responsibility of the owner of the facility.

A table listing the name and location of every post-construction stormwater quality BMPs shall also be included on the recorded plat. A sample table is provided as Table 03104-1.

The property owner, developer, or contractor shall be required to file a three-year maintenance bond or other acceptable guarantee with the City of Westfield, prior to the release of Performance Sureties. Specifically, the said assurance is intended to guarantee that the following be properly maintained after the construction under the provisions of the City of Westfield’s applicable stormwater management ordinance(s) and this Technical Standards:

- Post-Construction Erosion and sediment controls
- Storm sewer system
- Sub-Surface Drains (SSD)
- Detention facilities
- Post-Construction BMPs

The maintenance surety shall further be conditioned upon owner, developer, or contractor satisfactorily completing, within the three-year period following the completion of construction, such corrective actions as the WPWD may determine are reasonably necessary to remedy any damages to upstream or downstream channels or storm sewers resulting from the as-built development of the project.

Bonds or letter of credit are to be made out to the City of Westfield. Said financial maintenance guarantee shall be conditioned upon the following:

1. A sum shall be fixed and approved by the WPWD equal to ten percent (10%) of the actual construction cost of all stormwater management improvements and installations provided in the construction drawings and accompanying data to specifications cited herein. Said costs shall be for the installation and ongoing monitoring and post-construction maintenance of storm drainage infrastructure, detention/retention facilities, and stormwater quality BMPs, as regulated under the City of Westfield's applicable stormwater management ordinance(s) and this Technical Standards. Assurances shall be for a minimum of \$5,000. Reference Section 01001.
2. Each public facility improvement or installation provided in the final plat or accompanying data shall be bonded individually and shall not have the maintenance guarantee provided in combination with any of the other public facility improvements and installations.
3. The maintenance surety shall be issued in the name of the owner, developer, contractor or other responsible party as determined by the WPWD.

03104.02
Post-
Construction
Inspection

The City of Westfield and WPWD has the authority to perform long-term, post-construction inspection of all public or privately owned stormwater quantity and quality facilities. The inspections will follow the Operation and Maintenance procedures included in this Manual and/or permit application for each specific BMP. The inspection will cover physical conditions, available water quantity and quality storage capacity and the operational condition of key facility elements. Noted deficiencies and recommended corrective action will be included in an inspection report. If deficiencies are found during the inspection, the owner of the facility will be notified by the WPWD's Office and will be required to take all necessary measures to correct such deficiencies. If the owner fails to correct the deficiencies within the allowed time period, as specified in the notification letter, the WPWD will undertake the work and collect from the owner using lien rights if necessary.

03104.03
Release of
Maintenance
Sureties

The maintenance surety posted by the developer, owner, or the contractor shall run and be in force for a period of three (3) years from the date of release of the performance surety.

To verify that all enclosed drains are functioning properly, all storm sewer including sub-surface drains are to be cleaned and televised with visual recordings (via closed circuit television) of such tile drains shall be required before release of maintenance sureties. These visual recordings will be scheduled at least 90 days prior to the expiration date of the maintenance bond. Reports summarizing the results of the noted visual recordings shall be reviewed and accepted by the WPWD before maintenance sureties would be recommended to be released.

SECTION 03105 OTHER REQUIREMENTS

03105.01 Floodplain Management

Floodplain management shall be in accordance with the City of Westfield's adopted floodplain regulations. In addition to these regulations, the following floodplain policy is adopted by the City of Westfield.

The intent of Floodplain management is to protect against loss of property, protect human life, and maintain natural beneficial functions of floodplains in helping mitigate flooding and providing habitat and water quality benefits. Therefore, filling of the land in the floodplain of a regulated drain or any natural stream or watercourse, that has a defined channel and a contributing drainage area of 25 acres or more, located within the land under the jurisdiction of the City of Westfield government is prohibited. The use of the floodplain area for detention/retention ponds or lakes is also prohibited. Floodplain boundaries are to be determined by using the 100-year Base Flood Elevation (BFE) as shown on the Flood Insurance Rate Maps (FIRM) of the Federal Emergency Management Agency (FEMA), or the best available/calculated data if FIRM does not show the BFE and the Hamilton County 1-foot topographic data available on the Hamilton County GIS webpage.

- A. If, during the process of using the BFE and the 1-foot topographic data, it is determined that the FIRM is incorrect, then a Letter of Map Revision (LOMR) to correct the FIRM is to be filed with FEMA. No filling of the floodplain, either the floodplain shown on the FIRM or the floodplain determined by the Floodplain Study, whichever is more conservative, will be allowed until an approved copy of the LOMR is provided to the City of Westfield.
- B. If a FIRM does not establish a 100-year BFE for a regulated drain, natural stream, or natural watercourse, the 100-year BFE shall be established through a site specific Floodplain Study performed by a Professional Engineer registered in the State of Indiana.
 - 1. If the drainage area for the Floodplain Study reach is greater than 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to IDNR – Division of Water for approval and to the WPWD for review and comment. A copy of the final study, approved by IDNR-Division of Water, must be submitted to the WPWD as part of the project requiring the study to be completed. Upon acceptance of the Floodplain Study by IDNR – Division of Water, a Letter of Map Revision (LOMR) is to be filed with FEMA to incorporate the new Floodplain Study into the new FIRM panels.
 - 2. If the drainage area for the Floodplain Study reach is less than 1 square mile at the farthest downstream point of the study reach, then the Floodplain Study must be submitted to the WPWD for review and approval. The methodology for determining the BFE shall be in accordance to Chapters 03200 and 03300 of these Standards. WPWD will have the option to send the Floodplain Study to a consulting engineering firm for review and comment, should the accuracy of the Floodplain Study be in question. The cost of the consulting engineering firm's time will be the responsibility of the owner of the project and will need to be approved in a written agreement prior to any review of the Floodplain Study by the consulting engineer.
- C. The requirements of this section do not apply to the following:
 - 1. Agricultural uses such as crop production, pastures, orchards, tree farms, planting nurseries, vineyards, and general farming.
 - 2. Forestry, wildlife areas and nature preserves.
 - 3. County, City, or Township Parks.

4. Public Streets, bridges, and roadways, as long as the crossing structure are properly sized to convey the natural stream or watercourse and not raise the 100-year BFE.
5. Regional Detention Basins approved by the WPWD. (By definition, a regional pond is a pond that detains all tributary on-site and off-site flows upstream of its outlet.)

D. Regulated Drain Watershed Considerations

If the project site is within a Hamilton County Regulated Drain Watershed, the applicant will also need to abide by the Hamilton County Surveyor's Office applicable floodplain management requirements, whether the site is located in an incorporated area or not.

03105.02
Grading and
Building Pad
Elevations

Maximum yard slopes are 3:1 where soil has been disturbed during construction processes. Finished floor elevation or the lowest building entry elevation must be no less than 6 inches above finished grade around the building. Also, the building's lowest entry elevation that is adjacent to and facing a road shall be a minimum of 15 inches above the road elevation.

All buildings shall have a minimum flood protection grade shown on the secondary plat. Minimum Flood Protection Grade of all structures fronting a pond or open ditch shall be no less than 2 feet above any adjacent 100-year local or regional flood elevations, whichever is greater, for all windows, doors, attached garage entrances, unsealed pipe entrances, window well rim elevations, and any other structure member where floodwaters can enter a building.

For all structures located in the Special Flood Hazards Area (SFHA) as shown on the FEMA maps, the lowest floor elevations of all residential, commercial, or industrial buildings shall be such that Lowest Floor elevation, including basement, shall be at the flood protection grade and therefore have 2 feet of freeboard above the 100-year flood elevation.

The Lowest Adjacent Grade for residential, commercial, or industrial buildings outside a FEMA or IDNR designated floodplain shall have 2 feet of freeboard above any applicable local or regional flooding sources' 100-year flood elevation under proposed conditions, whichever is greater. Lowest Adjacent Grade is the elevation of the lowest grade adjacent to a structure, where the soil meets the foundation around the outside of the structure (including structural members such as basement walkout, attached garage door entrance, patios, decks, porches, support posts or piers, and rim of the window well).

For areas outside a FEMA or IDNR designated floodplain, the Lowest Adjacent Grade (including walkout basement floor elevation) for all residential, commercial, or industrial buildings adjacent to ponds shall be set a minimum of 2 feet above the 100-year pond elevation or 2 feet above the emergency overflow weir elevation, whichever is higher. In addition to the Lowest Adjacent Grade requirements, any basement floor must be at least a foot above the permanent water level (normal pool elevation).

Special considerations, based on detailed geotechnical analysis, should be made prior to considering placement of any basement below the 100-year flood elevation of an adjacent flooding source or pond.

The LAG requirements for buildings adjacent to overflow path/ponding areas are discussed in Section 03303.07 of this Manual. In case there are more than one flooding sources applicable to a building site, the highest calculated LAG for the building shall govern the placement of the building on that site.

Dams and levees have the potential for significant, sometimes catastrophic consequences should they fail. In order to minimize the potential for loss of life and public safety, decrease the potential for increased flood damage and disaster costs, and safeguard the downstream property rights, the following shall be required by the HCSO for any proposed new or improvements to any existing dam or levee. These requirements are in addition to what is normally required for other development subject to this Ordinance and/or that required by State or Federal agencies.

- A. Design of dams shall follow the requirements of the latest edition of IDNR-Division of Water "General Guidelines for New Dams and Improvements to Existing Dams in Indiana" as well as principles provided in the latest edition of "Indiana Dam Safety Inspection Manual".
- B. Design of levee/floodwalls shall follow the FEMA requirements and guidelines provided in 44 CFR Section 65.10 and USACE Engineer Manual 1110-2-193, Design and Construction of Levees.
- C. An Emergency Action Plan (EAP), including a detailed dam breach inundation map, shall be developed in accordance with the template provided in the latest edition of "Indiana Dam Safety Inspection Manual" and submitted to the HCSO. The detailed dam breach inundation map referenced in this paragraph shall be developed for both "Sunny Day Breach" Scenario (breach during normal loading conditions) and for maximum loading condition with breach assumed to occur as the spillway system is passing the Spillway Design Flood associated with the dam ("SDF + Breach" Scenario).
- D. Unless the "Sunny Day Breach Inundation Area" is entirely contained within the applicant's property and/ or contained within the existing 1% annual chance (100-year) floodplain, a copy of recorded flood/inundation easement or a recorded written consent for every property within the potential "Sunny Day Breach Inundation Area" shall be submitted to the HCSO. In addition, all the affected property owners whose properties are located within the "SDF + Breach Inundation Area" must be notified of a hearing relevant to the proposed added risk. Notification of the time and place of the hearing shall be made in person or by certified mail at least five (5) to ten (10) days prior to the hearing. Proof of notice to each landowner shall be filed by affidavit with the HCSO prior to the hearing.
- E. A copy of a Management and Maintenance Plan for the proposed dam or levee developed in accordance with the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO.
- F. Following the permitting and construction of the dam or levee, a copy of a formal periodic inspection report prepared in accordance with the recommendations contained in the latest edition of "Indiana Dam Safety Inspection Manual" shall be submitted to the HCSO along with evidence that the identified maintenance deficiencies have been corrected. The inspection report has to be submitted as it gets completed in accordance with the inspection frequency recommended in the latest edition of "Indiana Dam Safety Inspection Manual".

SITE OUTLET #	ITEM	PRE-DEVELOPMENT					POST-DEVELOPMENT				
		D.A. (ac)	Depress. Storage? (yes/no)	2- Yr.	10- Yr.	100- Yr.	D.A. (ac)	Depress. Storage? (yes/no)	2- Yr.	10- Yr.	100- Yr.
1	Default Unit Discharge Allowable Release Rate (cfs/acre)									0.1	0.3
	Basin-Specific Unit Discharge Allowable Release Rate, if any (cfs/acre)										
	Unit Discharge Allowable Release Rate Based on D/S Restrictions, if any (cfs/acre)										
	Adopted Unit Discharge Allowable Release Rate (cfs/acre)										
	Contributing Area of Development Site (ac) and Allowable Release Rate (cfs)										
	Total Contributing DA (ac) and Modeling Results (cfs)							no			

Table 03102-1: Allowable Release rate Determination and Modeling Results

Structure Number	BMP Name	BMP Description	BMP Location

Table 03104-1: Listing of Post-Construction Stormwater Quality BMPs Proposed to be Accepted as Part of Hamilton County Regulated Drainage System

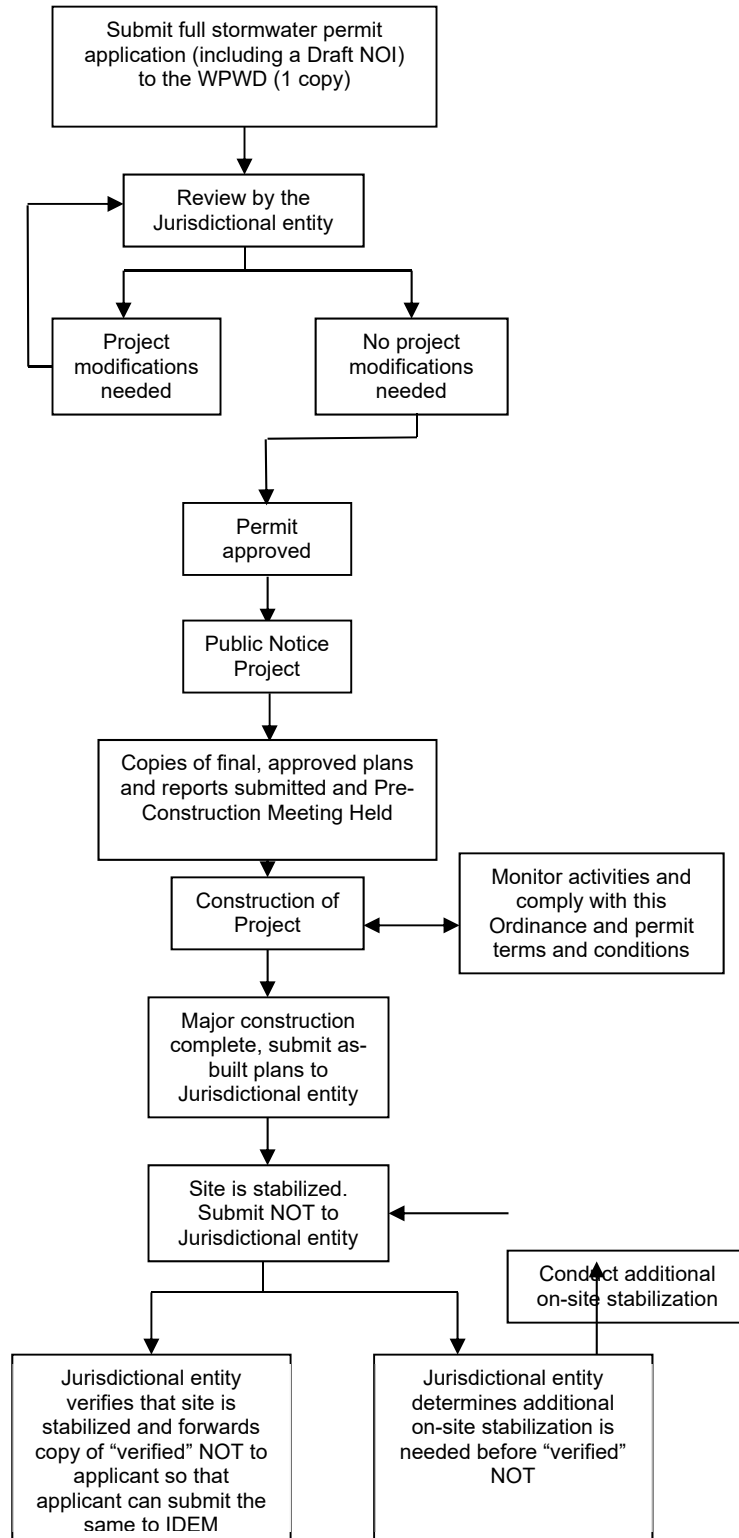


Exhibit 03102-1: Flow Chart of the Stormwater Plan Review/Permit Process

CHAPTER 03400 STORM SEWERS AND CULVERTS

SECTION 03401 GENERAL

03401.01 Introduction

This section covers all work necessary for the construction of the storm sewer piping systems and related items complete, including catch basins and inlet drains, manholes, junction chambers, diversion chambers, outfall structures, and miscellaneous structures.

This specification covers the following types of materials for storm sewers, culverts, underdrains, inlet drains, conduits, and miscellaneous applications:

1. Reinforced Concrete Pipe and Fittings
2. Polyvinyl Chloride Pipe (PVC)
3. Corrugated Metal Pipe
4. Structural Plate Arches
5. Aluminum or Aluminized Steel Pipe and Structural Plate
6. Multi-Plate Pipe and Pipe Arches
7. PVC Composite Pipe
8. Corrugated Polyethylene Pipe- SSD (Perforated and Non-Perforated)
9. High-Performance Polypropylene Pipe (HP)

All lots shall have access to a subsurface or storm drain or open ditch.

Storm sewer systems shall have a maximum of four hundred (400) feet between structures.

This specification requires project plans and construction specifications to be submitted to and approved by all appropriate regulatory agencies prior to beginning any work.

Before construction and before fabrication, the Contractor shall submit to the Westfield Public Works Department (WPWD) for approval calculations on the thickness or strength class and drawings showing pipe lengths, joints, and other construction and installation details.

Pipe Marking

Each length of pipe shall bear the name or trademark of the manufacturer, the location of the plant, and the date of manufacture. Each length shall likewise be marked to designate the class or strength of the pipe. The marking shall be made on the exterior or interior of the pipe barrel near the bell or groove end and shall be plainly visible.

03401.02 Minimum Size for Storm Sewers

The minimum diameter of all storm sewers shall be 12 inches. When the minimum 12 inch diameter pipe will not limit the rate of release to the required amount, the rate of release for detention storage shall be controlled by an orifice plate or other device, subject to acceptance of the WPWD.

Manholes, Inlets, and Other Structures

Storm sewer manholes and inlets shall be constructed of precast reinforced concrete. Material and construction shall conform to the latest edition of the Indiana Department of Transportation (INDOT) Standard Specifications, Sections 702 and 720.

Materials for manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall comply with the following:

1. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C150, ACI 301, and ACI 318. Concrete for precast manhole sections shall be 3000 psi concrete. Monolithic manholes shall use 4000 psi concrete. Ready-mix concrete shall conform to ASTM C94, Alternate 2. Maximum size of aggregate shall be 3/4 inch. Slump shall be between 2 and 5 inches.
2. Forms for chamber and structures shall be plywood or other approved material. Steel forms shall be used for the inside face of monolithic concrete manholes. Doghouse structures shall be permitted with approval from the WPWD.
3. Reinforcing steel shall conform to ASTM A615, Grade 60 deformed bars, or ASTM A616 Grade 60 deformed bars.
4. Mortar Materials:
 1. Sand - ASTM Designation C144, passing a No. 8 sieve.
 2. Cement - ASTM Designation C150, Type 1.
 3. Water - shall be potable.

The manufacturer shall provide openings for sewers entering and leaving the manhole. Any additional openings needed to be made in the field shall be made by drilling holes at least 1/2 inch in diameter with a maximum spacing of 3 inches.

Cored or pre-formed holes for pipe installation at manholes shall not occur at barrel section joints. A minimum 3" between edge of hole and joint shall be provided.

Manhole steps shall be made from a steel reinforcing rod encapsulated in a copolymer polypropylene resin. The manhole steps shall equal or exceed OSHA requirements.

Any other special manholes, junction chambers, diversion chambers, and miscellaneous concrete structures shall be constructed as detailed on the drawings.

Manhole bases shall be set on a minimum of six (6) inches of # 8 aggregate.

Concrete ends sections shall have a minimum of a twenty-four (24) inch precast toe plate bolted to the end section per Standard Detail (ST-30). Corrugated end sections with toe plates shall require WPWD approval.

Catch Basins

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

Catch Basins, for sediment control, locations to be determined by a Professional Engineer, and approved by the WPWD. Catch Basins shall be located within easily accessible dedicated

easements or right of way of sufficient size to facilitate the required maintenance of these structures

Catch basins and curb inlet structures which are two (2) feet by two (2) feet in size shall not have a depth deeper than four (4) feet from the invert of the lowest pipe to the lowest part of the rim elevation of the casting. All beehive castings on a two (2) foot by two (2) foot box shall have a square riser with a round hole. All structures which do not meet these criteria shall be a manhole type, which is forty-eight (48) inches in diameter.

Castings

Cast iron or ductile iron frames and gratings for catch basins and drain inlets shall be as shown on the drawings. Bearing surfaces shall be clean and shall provide uniform contact. Castings shall be tough, close-grained gray iron, sound, smooth, clean, free from blisters, blow holes, shrinkage, cold shuts, and all defects and shall conform to ASTM A48 Class No. 30-B.

During construction, precautionary measures such as adequate screening of grates shall be maintained to deter earth and other materials from entering the drains.

The following castings types are required:

1. Manholes – Neenah R 1772 A or equivalent
2. Beehive Inlets – Neenah R 4342 or equivalent
3. “Roll Curb” Inlets – Neenah 3501 – TR or TL or equivalent
4. “Chair Back” Curb Inlet – Neenah 3287 – 10V or equivalent
5. Other types shall require approval of the WPWD.

1. All equivalents shall be approved by WPWD

Curb inlet castings which possess open backs or have grate bars parallel to traffic flow (are not “bicycle” safe) will not be accepted by the WPWD.

Storm sewer casting manhole covers, beehive inlets, curb inlets or other approved casting shall have the following phrases cast in recessed letters two (2) inches in height:

1. “City of Westfield Storm”
2. “Drains to River” or “Drains To Waterway”
3. “Dump No Waste”
4. Other phrases shall require approval of the WPWD.

All casting frames shall have a horizontal bearing surface around the entire perimeter of the frame in order to support the cover or grate.

Bench Walls

Bench walls shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of flows through the structure. The bench wall shall form a defined channel, to a minimum height of the spring line of the pipe.

Bench walls shall be formed using full depth Class "A" concrete. Solid concrete block, stone or sand shall not be permitted as a base or filler for the construction of the bench wall.

Reinforced Concrete Pipe and Fittings

Reinforced concrete pipe and fittings shall conform to ASTM C76, latest revision, for circular pipe and ASTM C507 for elliptical pipe.

Reinforced concrete pipe and fittings for normal conditions shall be reinforced in accordance with ASTM C76, Class III, IV or V, Wall B (minimum). Acceptance shall be on the basis of Subsection 4.1.1 of ASTM C76.

Circumferential reinforcing in circular pipe shall be required. Only with approval from the WPWD will elliptical reinforcing or combination of elliptical and circumferential reinforcing or part circular reinforcing shall be permitted, in circular pipe.

Concrete pipe shall be steam cured and shall not be shipped from point of manufacture for at least five days after having been cast. Concrete pipe and structures shall be stamped with date of manufacturing or be accompanied by a ticket stamped with the date of manufacturing.

Joints shall conform to the requirements of ASTM C443. Gaskets shall be of an oil resistant type having a maximum swell of 90% when tested in accordance with ASTM D471. Lubricant for jointing shall be approved by gasket manufacturer.

All rubber gaskets shall be similar to and equal to "Press-Seal" or "Tylox" conforming to ASTM Designation C443, latest revision. The gasket shall be attached to the spigot of the pipe and shall be the sole element depended upon to make the joint flexible and practically watertight.

Butyl mastic joint sealant in rope or trowel applied form specifically made for permanently sealing joints in tongue and groove concrete sewer pipe. The material shall adhere tightly to the pipe surface and form a tight, flexible joint. The material shall have been in use for at least five years. Test results and material specifications shall be submitted to the WPWD and shall be approved prior to use on the project.

Polyvinyl Chloride Pipe and Fittings

Polyvinyl chloride (PVC) pipe and fittings shall comply with ASTM D3034.

Corrugated Metal Pipe and Pipe Arches

The following specifications shall govern the manufacture of the corrugated steel pipe and pipe arches.

1. Specifications for Zinc Coated (galvanized) Steel Sheets (ASTM A444).
2. Manufacture of Corrugated Steel Culverts and Underdrains (AASHTO M-36).
3. Structural Plate for Pipe, Pipe Arches, and Arches (AASHTO M-167).
4. Bituminous Coated Corrugated Steel Pipe and Arches (AASHTO M-190).
5. Sheet Material (ASTM A525).

Bituminous Coated Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end. After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating.

Bituminous Coated and Paved Invert Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end.

After the ends are rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch. In addition, bituminous material shall be applied to form a smooth pavement in the bottom 25% of pipe and in the bottom 40% of pipe arch as required by AASHTO M-190 for Type C coating.

Smooth Lined Welded Seam Helically Corrugated Steel Pipe

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Corrugations shall be 2-2/3 inch pitch by 1/2 inch depth. Each pipe shall have two annular corrugations rolled in each end. Each pipe shall have two lifting lugs welded to the outside of the pipe.

After the ends have been rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inch as required by AASHTO M-190 for Type A coating. The pipe shall be centrifugally lined on the inside with bituminous material to form a smooth surface which fills the corrugations to a minimum thickness of 1/8 inch above the crests of the corrugations. The bituminous lining material shall meet the requirements of AASHTO M-190.

Bituminous Coated Pipe Couplings

Coupling bands shall be the same base metal and spelter coating as the pipe. Bands shall be 0.064 inch thick and 10-1/2 inches wide. Bands shall be bituminous coated and shall have two corrugations 7-5/8 inches center to center. Bands 12 inch diameter through 30 inch diameter shall be one-piece and 36 inch diameter through 96 inch diameter shall be two-piece. Band laps 12 inch diameter through 48 inch diameter shall be joined by one galvanized bar, bolt, and strap connector. Band laps 54 inch diameter through 96 inch diameter shall be joined by two galvanized bar, bolt, and strap connectors.

Aluminum Alloy Structural Plate

Aluminum alloy plates and fasteners intended for use in the construction of structural plate pipe and pipe arch for storm sewers shall meet the applicable requirements of AASHTO M-219. The plate shall be fabricated from aluminum alloy 5052 H141. The chemical composition of the plates shall conform to ASTM B209 alloy 5052.

The corrugations shall have a pitch of 9 inches plus or minus 3/8 inch and depth of 2-1/2 inches plus or minus 1/8 inch. The inside crown radius of the corrugations shall be not less than 2 inches.

The structural plate pipe or arches shall be assembled in accordance with the manufacturer's erection instructions and in accordance with the drawings.

Aluminized Steel Pipe and Arches

Aluminized coated corrugated steel pipe and pipe arch intended for use in the construction of storm sewers shall meet the applicable requirements of AASHTO M-36. Sheet material shall meet the latest revision of ASTM A525 and AASHTO M-274. The coils from which the pipe is produced shall be coated with 1.0 ounce per square foot of commercially pure aluminum.

Pipe shall be furnished circular or as a pipe-arch shape as required and shall be fabricated with helical corrugations and a continuous welded seam extending from end to end of each length of pipe.

Each end of each pipe with the welded seam shall have two annular corrugations reformed to permit joining with hugger bands.

Coupling bands shall be hugger bands.

Multi-plate Pipe and Pipe Arches

Multi-plate pipe and pipe arch structures shall be in accordance with AASHTO M-167. They shall be made with steel sections with corrugations 6 inches wide by 2 inches deep running at right angles to the section.

Bolts and nuts shall be special heat-treated galvanized 3/4 inch diameter bolts in accordance with ASTM specifications.

Multi-plate pipes and pipe arches shall be designed in accordance with the manufacturer's design criteria and in accordance with the drawings.

Detailed instructions regarding erection shall be furnished by the manufacturer.

PVC Composite Pipe and Fittings

ABS or PVC composite pipe and fittings shall conform to ASTM D2680, Latest Revision.

Corrugated Polyethylene Pipe and Fittings

Corrugated polyethylene pipe shall comply with the requirements for materials, test methods, dimensions, and marking in accordance with AASHTO M-252 for pipe diameters 6" - 10".

The resin material shall meet ASTM D3350 cell classification 335400C.

The pipe lengths shall be connected using a gasketed, bell and spigot joint. This joint shall consist of a factory installed, double gasketed bell polyethylene coupling, a factory welded bell or integral bell. The spigot end of the pipe shall be furnished with a factory installed elastomeric profile "O-ring" rubber gasket that meets ASTM F477.

The pipe shall be shipped with a removable wrap to protect the gasket. Provide lubrication to the joint prior to pushing together. At least two (2) corrugations of the spigot end must insert into the bell end.

All HDPE pipe shall be certified through the Plastic Pipe Institute (PPI) Third Party Certification Program. All HDPE pipe delivered and installed shall bear the Third Party Administered PPI Seal.

High-Performance Polypropylene Pipe (HP)

This specification describes 12- through 60-inch (300 to 1500 mm) ADS HP Storm pipe for use in gravity-flow storm drainage applications.

12- through 60-inch (300 to 1500 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2881 and AASHTO M330. Manning's "n" value for use in design shall be 0.012. Pipe shall be joined with a double gasketed integral bell & spigot joint meeting the requirements of F2881. 12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the

requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly. 12- through 60-inch (300 to 1500 mm) diameters shall have an exterior bell wrap installed by the manufacturer.

Fittings shall conform to ASTM F2881 and AASHTO M330. **Elongated bell** & spigot connections shall utilize a spun-on, welded or integral bell and spigots with **two** gaskets meeting ASTM F477. Bell & spigot fittings joint shall meet the watertight joint performance requirements of ASTM D3212. Corrugated couplings shall be split collar, engaging at least 2 full corrugations.

To assure water-tightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.

Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot. (0.3 m) and for 60-inch (1500 mm) diameters, the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04 at http://www.ads-pipe.com/pdf/en/2.04_Min_Max_Cover_Heights_for_HP_Storm_December_2016.pdf.

For additional backfill details, refer to WSD 2222-001 through 004.

Mandrel testing for 100% of the installed pipe will be required unless otherwise approved by WPWD Inspector.

Subsurface Drain Tiles

Double wall, smooth bore perforated, corrugated polyethylene tile, manufactured under specification ASTM F667, shall be required for all subsurface drain tile installed in swales. Double wall, smooth bore perforated, corrugated polyethylene drain tile shall be required for curb sub-grade drainage. All ends shall be capped with HDPE fitting. No duct tape shall be permitted.

Polyethylene tile shall possess male and female pipe ends, which allow the construction of overlapping, gasket pipe joints, in conformance with the requirements of ASTM D3212. The gasket material shall conform to all requirements of ASTM F477. As an alternative, pipe joints utilizing external couplings bands will be accepted provided the minimum AASHTO requirements for satisfying soil tightness are also achieved.

Storm sewer pipe shall be of the size shown on the drawings and shall meet all requirements of these specifications. Subsurface drains in swales shall have clean-outs installed every 300 feet, changes in direction, high points, and dead ends.

CHAPTER 03600 EROSION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES

SECTION 03601 GENERAL

03601.01 Purpose and Background

The requirements contained in this Chapter are intended to prevent stormwater pollution resulting from soil erosion and sedimentation or from mishandling of solid and hazardous waste. Practices and measures included herein should assure that no foreign substance, (e.g. sediment, construction debris, chemicals) be transported from a site and allowed to enter any drainageway, whether intentionally or accidentally, by machinery, wind, rain, runoff, or other means.

The major pollutant of concern during construction is sediment. Natural erosion processes are accelerated at a project site by the construction process for a number of reasons; including the loss of surface vegetation and compaction damage to the soil structure itself, resulting in reduced infiltration and increased surface runoff. Clearing and grading operations also expose subsoils which are often poorly suited to re-establish vegetation, leading to longer term erosion problems.

Problems associated with construction site erosion include: transport of pollutants attached to displaced sediment; increased turbidity (reduced light) in receiving waters; and recreational use impairment. The deposited sediment may pose direct toxicity to wildlife, or smother existing spawning areas and habitat. This siltation also reduces the flow capacity of waterways, resulting in increased flood hazards to the public.

Other pollutants of concern during the construction process are hazardous wastes or hydrocarbons associated with the construction equipment or processes. Examples include concrete washouts, paints, solvents, and hydrocarbons from refueling operations. Poor control and handling of toxic construction materials pose an acute (short-term) and/or chronic (long-term) risk of death to aquatic life, wildlife, and the general public.

03601.02 Abbreviations and Definitions

The following abbreviations and definitions apply throughout this chapter:

Abbreviations

COE:	United States Army Corps of Engineers
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IDEM:	Indiana Department of Environmental Management
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IDNR:	Indiana Department of Natural Resources
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INDOT:	Indiana Department of Transportation
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MS4:	Municipal separate storm sewer system
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NRCS:	USDA-Natural Resources Conservation Service
SWCD:	Soil and Water Conservation District
USDA:	United States Department of Agriculture
<u>Definitions</u>	
Construction Activity:	Land-disturbing activities associated with the construction of infrastructure and structures. This term does not include routine ditch maintenance or minor landscaping projects.
Construction Plan:	A representation of a project site and all activities associated with the project. The plan includes the location of the project site, buildings and other infrastructure, grading activities, schedules for implementation and other pertinent information related to the project site. A stormwater pollution prevention plan is a part of the construction plan.
Construction Site Access:	A stabilized stone surface at all points of ingress or egress to a project site, for the purpose of capturing and detaining sediment carried by tires of vehicles or other equipment entering or exiting the project site.
Contractor or Subcontractor:	An individual or company hired by the project site or individual lot owner, their agent, or the individual lot operator to perform services on the project site.
Developer:	Any person financially responsible for construction activity; or an owner of property who sells or leases, or offers for sale or lease, any lots in a subdivision.
Erosion:	The detachment and movement of soil, sediment, or rock fragments by water, wind, ice, or gravity.
Erosion and Sediment Control Measure:	A practice or a combination of practices, to control erosion and resulting sedimentation.
Erosion and Sediment Control System:	The use of appropriate erosion and sediment control measures to minimize sedimentation by first reducing or eliminating erosion at the source and then as necessary, trapping sediment to prevent it from being discharged from or within a project site.

Final Stabilization:	The establishment of permanent vegetative cover or the application of a permanent non-erosive material to areas where all land disturbing activities have been completed and no additional land disturbing activities are planned under the current permit.
Grading:	The cutting and filling of the land surface to a desired slope or elevation.
Impervious Surface:	Surfaces, such as pavement and rooftops, which prevent the infiltration of storm water into the soil.
Individual Building Lot:	A single parcel of land within a multi-parcel development.
Individual Lot Operator:	A contractor or subcontractor working on an individual lot.
Individual Lot Owner:	A person who has financial control of construction activities for an individual lot.
Land-disturbing Activity:	Any manmade change of the land surface, including removing vegetative cover that exposes the underlying soil, excavating, filling, transporting, and grading.
Measurable Storm Event:	A precipitation event that results in a total measured precipitation accumulation equal to, or greater than, one-half (0.5) inch of rainfall.
MS4 Area:	A land area comprising one (1) or more places that receives coverage under one (1) NPDES storm water permit regulated by 327 IAC 15-13 or 327 IAC 5-4-6(a)(3) and 327 IAC 5-4-6(a)(4).
MS4 Operator:	The person responsible for development, implementation, or enforcement of the minimum control measures for a designated MS4 area regulated under 327 IAC 15-13.
Peak Discharge:	The maximum rate of flow during a storm, usually in reference to a specific design storm event.
Permanent Stabilization:	The establishment, at a uniform density of seventy percent (70%) across the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.
Phasing of	Sequential development of smaller portions of a large project site,

Construction:	stabilizing each portion before beginning land disturbance on subsequent portions, to minimize exposure of disturbed land to erosion.
Project Site:	The entire area on which construction activity is to be performed.
Project Site Owner:	The person required to comply with the terms of this chapter, including either a developer or a person who has financial and operational control of construction activities, and project plans and specifications, including the ability to make modifications to those plans and specifications.
Sediment:	Solid material (both mineral and organic) that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface.
Sedimentation:	The settling and accumulation of unconsolidated sediment carried by storm water run-off.
Soil:	The unconsolidated mineral and organic material on the surface of the earth that serves as the natural medium for the growth of plants.
Stormwater Pollution Prevention Plan (SWPPP):	A plan developed to minimize the impact of storm water pollutants resulting from construction activities.
Stormwater Quality Measure:	A practice or a combination of practices, to control or minimize pollutants associated with storm water run-off.
Strip Development:	A multi-lot project where building lots front on an existing road.
Subdivision:	Any land that is divided or proposed to be divided into lots, whether contiguous or subject to zoning requirements, for the purpose of sale or lease as part of a larger common plan of development or sale.
Temporary Stabilization:	The covering of soil to ensure its resistance to erosion, sliding, or other movement. The term includes vegetative cover, anchored mulch, or other non-erosive material applied at a uniform density of seventy percent (70%) across the disturbed area.
Tracking:	The deposition of soil that is transported from one (1) location to another by tires, tracks of vehicles, or other equipment.

Trained Individual:	An individual who is trained and experienced in the principles of stormwater quality, including erosion and sediment control as may be demonstrated by state registration, professional certification (such as CESSWI, CPESC, and/or CISEC certification), or other documented and applicable experience or coursework as deemed sufficient by the City of Westfield that enable the individual to make judgments regarding stormwater control or treatment and monitoring.
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SECTION 03602 BASIC POLICIES AND PROCEDURES

03602.01 Applicability and Exemptions

The Westfield Public Works Department (WPWD) will require a Stormwater Pollution Prevention Plan (SWPPP), which includes erosion and sediment control measures and materials handling procedures, to be submitted as part of the construction plans and specifications. Any project located within the City of Westfield which falls under the jurisdictional authority of the City of Westfield and includes clearing, grading, excavation, and other land disturbing activities resulting in the disturbance of 1 acre or more of total land area is subject to the requirements of this Chapter. This includes both new development and re-development. This chapter also applies to disturbances of less than one 1 acre of land that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) or more acres of land, within the area under the jurisdictional authority of the City of Westfield. Section 03602.03 of this Chapter provides guidelines for calculating land disturbance. Projects meeting the coverage requirements of 327 IAC 15-5 (Rule 5) shall also be in compliance with 327 IAC 15-5. It is the responsibility of the Developer/Project Engineer to ascertain any wetland delineations.

The requirements under this Chapter do not apply to the following activities:

1. agricultural land disturbing activities; or
2. forest harvesting activities.

The requirements under this Chapter do not apply to the following activities, provided other applicable State permits contain provisions requiring immediate implementation of soil erosion control measures:

1. Landfills that have been issued a certification of closure under 329 IAC 10.
2. Coal mining activities permitted under IC 14-34.
3. Municipal solid waste landfills that are accepting waste pursuant to a permit issued by the Indiana Department of Environmental Management under 329 IAC 10 that contains equivalent stormwater requirements, including the expansion of landfill boundaries and construction of new cells either within or outside the original solid waste permit boundary.

For an individual lot where land disturbance is expected to be one (1) acre or more, the individual lot owner must complete their own notice of intent letter, apply for a stormwater permit from the WPWD, and ensure that a sufficient construction and stormwater pollution prevention plan is completed and submitted in accordance with Chapter 03100; regardless of whether the individual lot is part of a larger permitted project site.

An individual lot with land disturbance less than one (1) acre, located within a larger permitted project site, is considered part of the larger permitted project site, and the individual lot operator must comply with the terms and conditions of the stormwater permit

approved for the larger project site. The stormwater permit application for the larger project site must include typical detailed erosion and sediment control measures for individual lots. Additionally, the individual lot operator or holder of an Improvement Location Permit Application is required to apply for an Erosion Control Inspection Permit Request per the Erosion & Sediment Control Inspection Ordinance for Individual Lots and Outlots. In addition, these individual lots are required to submit applications prior to receiving a building permit. Details of the permitting process are contained in Chapter 03100.

It will be the responsibility of the project site owner to complete a stormwater permit application and ensure that a sufficient construction plan is completed and submitted to the WPWD in accordance with Chapter 03100 of this Standard. It will be the responsibility of the project site owner to ensure compliance with the City of Westfield's applicable ordinances and standards during the construction activity and implementation of the construction plan, and to notify the WPWD with a sufficient notice of termination letter upon completion of the project and stabilization of the site. However, all persons engaging in construction and land disturbing activities on a permitted project site must comply with the requirements of this Chapter and the City of Westfield's applicable ordinances.

03602.02
Policy on
Stormwater Pollution
Prevention

Effective stormwater pollution prevention on construction sites is dependent on a combination of preventing movement of soil from its original position (erosion control), intercepting displaced soil prior to entering a waterbody (sediment control), and proper on-site materials handling. The developer must submit to the WPWD a SWPPP with detailed erosion and sediment control plans as well as a narrative describing materials handling and storage, and construction sequencing. The following principles apply to all land-disturbing activities and should be considered in the preparation of a Stormwater Pollution Prevention Plan within the City of Westfield.

1. Minimize the potential for soil erosion by designing a development that fits the topography and soils of the site. Deep cuts and fills in areas with steep slopes should be avoided wherever possible, and natural contours should be followed as closely as possible.
2. Existing natural vegetation should be retained and protected wherever possible. Areas immediately adjacent (within 35 feet of top of bank) to watercourses and lakes also should be left undisturbed wherever possible. Unvegetated or vegetated areas with less than 70% cover that are scheduled or likely to be left inactive for 15 days or more must be temporarily or permanently stabilized with measures appropriate for the season to reduce erosion potential. Alternative measures to site stabilization may be acceptable if the project site owner or their representative can demonstrate they have implemented and maintained erosion and sediment control measures adequate to prevent sediment discharge from the inactive area.
3. All activities on a site should be conducted in a logical sequence so that the smallest practical area of land will be exposed for the shortest practical period of time during development.
4. The length and steepness of designed slopes should be minimized to reduce erosion potential. Drainage channels and swales must be designed and adequately protected so that their final gradients and resultant velocities will not cause erosion in the receiving channel or at the outlet. Methods for determining acceptable velocities are included in these Standards.

5. Sediment-laden water which otherwise would flow from the project site shall be treated by erosion and sediment control measures appropriate to minimize sedimentation. A stable construction site access shall be provided at all points of construction traffic ingress and egress to the project site.
6. Appropriate measures shall be implemented to prevent wastes or unused building materials, including, garbage, debris, packaging material, fuels and petroleum products, hazardous materials or wastes, cleaning wastes, wastewater, concrete truck washout, and other substances from being carried from a project site by runoff or wind. Identification of areas where concrete truck washout is permissible must be clearly posted at appropriate areas of the site. Wastes and unused building materials shall be managed and disposed of in accordance with all applicable State statutes and regulations. Proper storage and handling of materials such as fuels or hazardous wastes, and spill prevention and cleanup measures (including having spill response equipment on-site) shall be implemented to minimize the potential for pollutants to contaminate surface or ground water or degrade soil quality.
7. Public or private roadways shall be kept cleared of accumulated sediment that is a result of runoff or tracking. Bulk clearing of accumulated sediment shall not include flushing the area with water. Cleared sediment shall be redistributed or disposed of in a manner that is in accordance with all applicable statutes and regulations.
8. Collected runoff leaving a project site must be either discharged directly into a well-defined, stable receiving channel, or diffused and released to adjacent property without causing an erosion or pollutant problem to the adjacent property owner.
9. Natural features, including wetlands, shall be protected from pollutants associated with stormwater runoff.

03602.03
Calculating
Total Area of
Land

In calculating the total area of land disturbance, for the purposes of determining applicability of this Chapter to the project, the following guidelines should be used:

1. Off-site construction activities that provide services (for example, road extensions, sewer, water, and other utilities) to a land disturbing project site, must be considered as a part of the total land disturbance calculation for the project site, when the activity is under the control of the project site owner.
2. Strip developments will be considered as one (1) project site and must comply with this Chapter unless the total combined disturbance on all individual lots is less than one (1) acre and is not part of a larger common plan of development or sale.
3. To determine if multi-lot project sites are regulated by the City of Westfield, the area of land disturbance shall be calculated by adding the total area of land disturbance for improvements, such as, roads, utilities, or common areas, and the expected total disturbance on each individual lot, as determined by the following:
 - a. For a single-family residential project site where the lots are one-half (0.5) acre or more, one-half (0.5) acre of land disturbance must be used as the expected lot disturbance.

- b. For a single-family residential project site where the lots are less than one half (0.5) acre in size, the total lot must be calculated as being disturbed.
- c. To calculate lot disturbance on all other types of projects sites, such as industrial and commercial projects project sites, a minimum of one (1) acre of land disturbance must be used as the expected lot disturbance, unless the lots are less than one (1) acre in size, in which case the total lot must be calculated as being disturbed.

03602.04
Common Erosion
and Sediment
Control Practices

All erosion control and stormwater pollution prevention measures required to comply with the City of Westfield's Ordinance shall meet the design criteria, standards, and specifications similar to or the same as those outlined in the latest editions of the "Indiana Drainage Handbook" and "Indiana Handbook for Erosion Control in Developing Areas", both published by the Indiana Department of Natural Resources, or other comparable and reputable references. Table 03602-1 lists some of the more common and effective practices for preventing stormwater pollution from construction sites. Details of each practice can be found in the Indiana Drainage Handbook, the Indiana Handbook for Erosion Control in Developing Areas, or in Appendix 03602-1. These practices should be used to protect **every** potential pollution pathway to stormwater conveyances.

03602.05
Individual Lot
Controls

From the time construction on an individual lot begins, until the individual lot is stabilized, the builder must take steps to:

- protect adjacent properties from sedimentation
- prevent mud/sediment from depositing on the street
- protect drainageways from erosion and sedimentation
- prevent sediment laden water from entering storm sewer inlets

A generic erosion control plan for individual lots is provided as Exhibit 03602-1. A typical plan should include perimeter silt fence **or rolled filtration device filled with kiln dried wood fiber material**, stabilized construction entrance, curb inlet protection, drop inlet protection, stockpile containment, stabilized drainage swales, downspout extensions, temporary seeding and mulching, and permanent vegetation. Every relevant measure shall be installed at each individual lot site.

Construction sequence on individual lots should be as follows:

1. Clearly delineate areas of trees, shrubs, and vegetation that are to be undisturbed. To prevent root damage, the areas delineated for tree protection should be at least the same diameter as the crown.
2. Install perimeter silt fence **or rolled filtration device filled with kiln dried wood fiber material** at construction limits. Position the fence to intercept runoff prior to entering drainage swales.
3. Avoid disturbing drainage swales if vegetation is established. If drainage swales are bare, install erosion control blankets or sod to immediately stabilize.
4. Install drop inlet protection for all inlets on the property.
5. Install curb inlet protection, on both sides of the road, for all inlets along the property frontage and along the frontage of adjacent lots, or install temporary catch basin inserts in each inlet and frequently clean.

6. Install gravel construction entrance that extends from the street to the building pad.
7. Perform primary grading operations.
8. Contain erosion from any soil stockpiles created on-site with silt fence or rolled filtration device filled with kiln dried wood fiber material around the base.
9. Establish temporary seeding and straw mulch on disturbed areas.
10. Construct the home and install utilities.
11. Install downspout extenders once the roof and gutters have been constructed. Extenders should outlet to a stabilized area.
12. Re-seed any areas disturbed by construction and utilities installation with temporary seed mix within 3 days of completion of disturbance.
13. Grade the site to final elevations. Add topsoil as needed to minimize erosion of underlying soil and to quickly establish grass.
14. Install permanent seeding or sod.

All erosion and sediment control measures must be properly maintained throughout construction. Temporary and permanent seeding should be watered as needed until established. For further information on individual lot erosion and sediment control, please see the "Individual Lot Erosion and Sediment Control Plan and Certification" form in Exhibit 03602-1 or the IDNR, Division of Soil Conservation's pamphlet titled "Erosion and Sediment Control for Individual Building Sites".

03602.06
Inspection,
Maintenance,
Record Keeping,
and Reporting

Following approval of the Rule 5 Notice of Intent by IDEM and commencement of construction activities, the WPWD has the authority to conduct inspections of the site to ensure full compliance with the provisions of this Chapter, the most current edition of the Indiana Stormwater Quality Manual, and the terms and conditions of the approved permit.

A self-monitoring program must be implemented and logged by the project site owner to ensure the Stormwater Pollution Prevention Plan is working effectively. A trained individual, acceptable by the WPWD, shall perform a written evaluation of the project site by the end of the next business day following each measurable storm event of 0.5 inches or more. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Weekly inspections by the trained individual shall continue until the entire site has been stabilized and a "verified" copy of the Notice of Termination has been issued. The trained individual should look at the maintenance of existing stormwater pollution prevention measures, including erosion and sediment control measures, drainage structures, and construction materials storage/containment facilities, to ensure they are functioning properly. The trained individual should also identify additional measures, beyond those originally identified in the stormwater pollution prevention plan, necessary to remain in compliance with all applicable statutes and regulations. A standard form to record the self-monitoring/inspection results is provided as Exhibit 03602-2.

The resulting maintenance evaluation reports must include the name of the individual performing the evaluation, the date of the evaluation, problems identified at the project site, and details of maintenance, additional measures, and corrective actions recommended and completed.

The Stormwater Pollution Prevention Plan shall serve as a guideline for stormwater quality, but should not be interpreted to be the only basis for implementation of stormwater quality measures for a project site. The project site owner is responsible for implementing, in accordance with this Chapter, all measures necessary to adequately prevent polluted stormwater runoff. Recommendations by the trained individual for modified stormwater quality measures should be implemented.

Although self-monitoring reports do not need to be submitted to the WPWD, the WPWD has the right to request complete records of maintenance and monitoring activities involving stormwater pollution prevention measures. All evaluation reports for the project site must be made available to the WPWD, in an organized fashion, within forty-eight (48) hours upon request.

TABLE 03602-1: Common Stormwater Pollution Control Practices for Construction Sites

Practice No.	BMP Description	Applicability	Fact Sheet
1	Site Assessment	All sites	2
2	Construction Sequencing	All sites	CN-101
3	Tree Preservation and Protection	Nearly all sites	1
4	Temporary Gravel Construction Entrance Pad	All sites	1
5	Wheel Wash	All sites	CN-102
6	Silt Fence	All sites	1
7	Surface Roughening	Sites with slopes that are to be stabilized with vegetation	1
8	Temporary Seeding	Areas of bare soil where additional work is not scheduled to be performed for a minimum of 15 days	1
9	Mulching	Temporary surface stabilization	1
10	Erosion Control Blanket (Surface)	Temporary surface stabilization, anchor for mulch	1
11	Temporary Diversion	Up-slope and down-slope sides of construction site, above disturbed slopes within construction site	1
12	Rock Check Dam	2 acres maximum contributing to drainage area	1
13	Temporary Slope Drain	Sites with cut or fill slopes	1
14	Straw Bale Dam	Small drainage areas	1
15	Drop Basket Inlet Protection	1 acre maximum contributing drainage area	1
16	Basket Curb Inlet Protection	1 acre maximum contributing drainage area	1
17	Sandbag Curb Inlet Protection	1 acre maximum contributing Drainage area	1
18	Temporary Sediment Trap	5 acre maximum contributing Drainage area	1
19	Temporary Sediment Basin	30 acre maximum contributing Drainage area	1
20	Dewatering Structure	Sites requiring dewatering	CN-103
21	Dust Control	All sites	1
22	Spill Prevention and Control	All sites	CN-104
23	Solid Waste Management	All sites	CN-105
24	Hazardous Waste Management	All sites	CN-106

Fact sheet Location:

1. Indiana Handbook for Erosion Control in Developing Areas, 1992 or later
2. Indiana Drainage Handbook, 1999 or later

Legend and Check List

	Silt Fence	☐
	Gravel Construction Entrance	☐
	Drop Inlet Protection	☐
	Curb Inlet Protection	☐
	Temporary Seeding	☐
	Property Lines / Drainage Swale	☐
	Constructed Building Pad	☐
	Soil Stockpile Protection	☐

Notes:

- Draw in any "Do Not Disturb" areas.
- Provide pad elevations for subject property and adjacent properties.
- Erosion Control Measures must be functional and maintained throughout construction.

I hereby certify that the drainage ways, pad elevations, and erosion and sediment control measures are consistent with the overall development plans.

Signature _____

Date _____

Individual Lot Erosion and Sediment Control Plan and Certification

Exhibit 03602-1: Individual Lot Typical Erosion & Sediment Control Plan and Certification

Exhibit 03602-2: Construction Site Inspection And Maintenance Log

Date: _____
 Project: _____
 Inspected by: _____

Type of Inspection: ☐ Scheduled Weekly ☐ Rain Event

CONSTRUCTION SITE INSPECTION AND MAINTENANCE LOG

(To be Completed by Property Owner or Agent)

All stormwater pollution prevention BMPs shall be inspected and maintained as needed to ensure continued performance of their intended function during construction and shall continue until the entire site has been stabilized and a Notice of Termination has been issued. An inspection of the project site must be completed by the end of the next business day following each measurable storm event. If there are no measurable storm events within a given week, the site should be monitored at least once in that week. Maintenance and repair shall be conducted in accordance with the accepted site plans. This log shall be kept as a permanent record and must be made available to the WPWD in an organized fashion, within forty-eight (48) hours upon request.

YES	NO	N/A		
			1	Is the site information posted at the entrance?
			2	Are all necessary permits attained and special provisions being implemented?
			3	Is a construction entrance installed and functioning properly?
			4	Are construction staging & parking areas restricted to areas designated on the plans?
			5	Are public and private streets clean of sediment, debris and mud?
			6	Are appropriate practices installed where stormwater leaves the site?
			7	Are all discharge points (outfalls) free of erosion or sediment transport?
			8	Has all silt fence been installed properly and being maintained? (entrenched - upright - fabric not torn - terminated to higher ground - properly joined at ends)
			9	Are sediment basins & traps installed according to plan & pipe or rock spillways functional?
			10	Are other sediment control barriers in place and functioning properly?
			11	Is the earthwork for erosion control practices properly graded, seeded and/or mulched?
			12	Are diversion swales and/or waterbars installed to plan & protected?
			13	Do perimeter practices have adequate capacity & do they need to be cleaned out?
			14	Is inlet protection installed properly on all functioning inlets & being maintained?
			15	Is catch basin insert protection installed where required & being maintained?
			16	Have swales and ditches been stabilized or protected?
			17	Are stormwater outlets adequately stabilized?
			18	Has temporary stabilization of disturbed ground been addressed? (dormant for 15 days?)
			19	Is permanent stabilization of disturbed ground progressing on all completed areas?
			20	Has hard or soft armoring been installed where natural vegetation will erode?
			21	Do water pumping operations have a protected outlet and discharge clear water?
			22	Are all dewatering structures functioning properly?
			23	Is a designated equipment washout area established, clearly marked and being utilized?
			24	Is solid waste properly contained & a stable access provided to the storage & pickup area?
			25	Are fuel tanks and other hazardous materials safely stored and protected?
			26	Is spill response equipment on-site and easily accessible?
			27	Are temporary soil stockpiles in approved areas & properly protected?

Date: _____

Inspected by: _____

[illegible]

APPENDIX 03602-1

CONSTRUCTION BMP FACT SHEETS

BMP CN – 101

CONSTRUCTION SEQUENCING

DESCRIPTION

The construction sequence schedule is an orderly listing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures planned for the project. This type of schedule guides the contractor on work to be done before other work is started so that serious erosion and sedimentation problems can be avoided. Sequencing a construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

ADVANTAGES

1. Following a specified work schedule that coordinates the timing of land-disturbing activities and the installation of control measures is perhaps the most cost-effective way of controlling erosion during construction. The removal of surface ground cover leaves a site vulnerable to accelerated erosion. Construction procedures that limit land clearing, provide timely installation of erosion and sedimentation controls, and restore protective cover quickly can significantly reduce the erosion potential of a site.

DESIGN CRITERIA

1. Avoid rainy periods.
2. Schedule projects to disturb only small portions of the site at any one time. Complete grading as soon as possible. Immediately stabilize the disturbed portion before grading the next portion. Practice staged seeding in order to vegetate cut and fill slopes as the work progresses.

REFERENCE

City of Tacoma, Surface Water Management Manual, 2003 or later

BMP CN – 102 WHEEL WASH

DESCRIPTION

When a stabilized construction entrance is not preventing sediment from being tracked onto pavement, a wheel wash may be installed. Wheel washing is generally an effective BMP when installed with careful attention to topography. For example, a wheel wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run unimpeded into the street. Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large 10-foot x 10-foot sump can be very effective.

ADVANTAGES

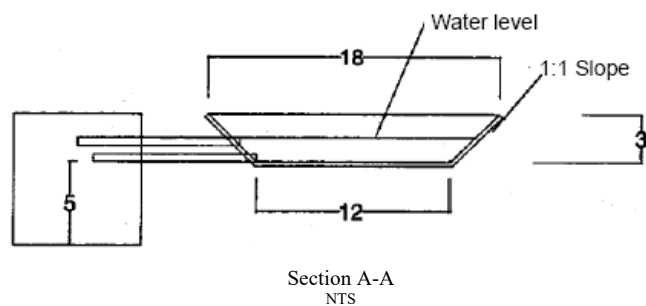
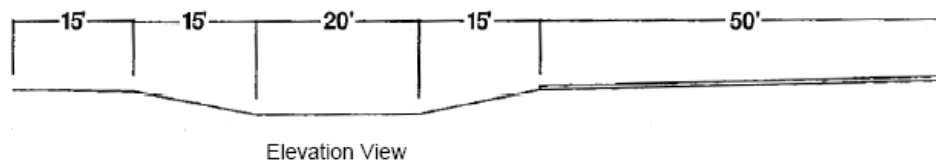
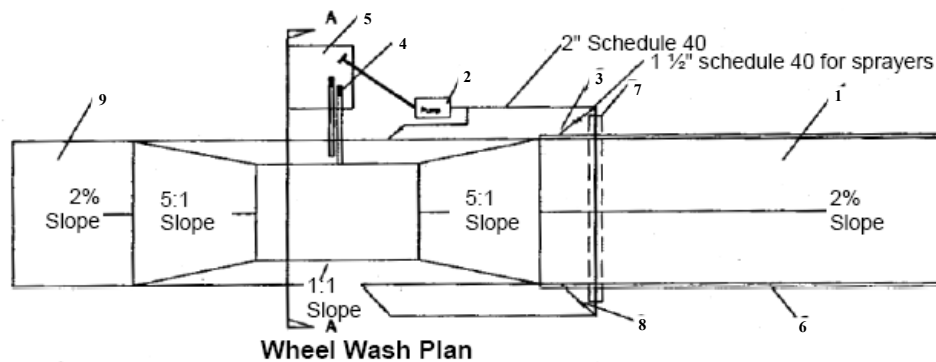
1. Wheel washes reduce the amount of sediment transported onto paved roads by motor vehicles.

DESIGN CRITERIA

1. Suggested details are shown in Figure CN-102-A. The City of Westfield may allow other designs.
2. A minimum of 6 inches of asphalt treated base (ATB) over crushed base material or 8 inches over a good subgrade is recommended to pave the wheel wash.
3. Use a low clearance truck to test the wheel wash before paving. Either a belly dump or lowboy will work well to test clearance.
4. Keep the water level from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck tongues with water.
5. Midpoint spray nozzles are only needed in extremely muddy conditions.
6. Wheel wash systems should be designed with a small grade change, 6 to 12 inches for a 10-foot-wide pond, to allow sediment to flow to the low side of pond to help prevent re-suspension of sediment.
7. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling.
8. Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the wheel wash water at a rate of 0.25 - 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time.
9. If PAM is already being used for dust or erosion control and is being applied by a water truck, the same truck can be used to change the wash water.
10. The wheel wash should start out the day with fresh water. The wash water should be changed a minimum of once per day.
11. On large earthwork jobs where more than 10-20 trucks per hour are expected, the wash water will need to be changed more often.
12. Wheel wash or tire bath wastewater shall be discharged to a separate on-site treatment system, such as closed-loop recirculation or land application, or to the sanitary sewer with proper local sewer utility approval.

REFERENCE

City of Tacoma, Surface Water Management Manual, 2003 or later



Notes:

1. Asphalt construction entrance 6 in. asphalt treated base (ATB).
2. 3-inch trash pump with floats on the suction hose.
3. Midpoint spray nozzles, if needed.
4. 6-inch sewer pipe with butterfly valves. Bottom one is a drain. Locate top pipe's invert 1 foot above bottom of wheel wash.
5. 8 foot x 8 foot sump with 5 feet of catch. Build so can be cleaned with trackhoe.
6. Asphalt curb on the low road side to direct water back to pond.
7. 6-inch sleeve under road.
8. Ball valves.
9. 15 foot. ATB apron to protect ground from splashing water.

Figure CN-102-A

BMP CN – 103

DEWATERING STRUCTURE

DESCRIPTION

Water which is pumped from a construction site usually contains a large amount of sediment. A dewatering structure is designed to remove the sediment before water is released off-site.

This practice includes several types of dewatering structures which have different applications dependent upon site conditions and types of operation. Other innovative techniques for accomplishing the same purpose are encouraged, but only after specific plans and details are submitted to and approved by the WPWD.

DESIGN CRITERIA

1. A dewatering structure must be sized (and operated) to allow pumped water to flow through the filtering device without overtopping the structure.
2. Material from any required excavation shall be stored in an area and protected in a manner that will prevent sediments from eroding and moving off-site.
3. An excavated basin (applicable to “Straw Bale/Silt Fence Pit”) may be lined with filter fabric to help reduce scour and to prevent the inclusion of soil from within the structure.
4. Design criteria more specific to each particular dewatering device can be found in Figures CN-103-A through CN-103-C.
5. A dewatering structure may not be needed if there is a well-stabilized, vegetated area onsite to which water may be discharged. The area must be stabilized so that it can filter sediment and at the same time withstand the velocity of the discharged water without eroding. A minimum filtering length of 75 feet must be available in order for such a method to be feasible.
6. The filtering devices must be inspected frequently and repaired or replaced once the sediment build-up prevents the structure from functioning as designed.
7. The accumulated sediment which is removed from a dewatering device must be spread on-site and stabilized or disposed of at an approved disposal site as per approved plan.

Portable Sediment Tank (see Figure CN103-A)

- The structure may be constructed with steel drums, sturdy wood or other material suitable for handling the pressure exerted by the volume of water.
- Sediment tanks will have a minimum depth of 2 ft.
- The sediment tank shall be located for easy clean-out and disposal of the trapped sediment and to minimize the interference with construction activities.
- The following formula shall be used to determine the storage volume of the sediment tank:
$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$
- Once the water level nears the top of the tank, the pump must be shut off while the tank drains and additional capacity is made available.
- The tank shall be designed to allow for emergency flow over top of the tank. Clean-out of the tank is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.

Filter Box (see Figure CN-103-B)

- The box selected should be made of steel, sturdy wood or other materials suitable to handle the pressure requirements imposed by the volume of water. Normally readily available 55 gallon drums welded top to bottom will suffice in most cases.
- Bottom of the box shall be made porous by drilling holes (or some other method).
- Coarse aggregate shall be placed over the holes at a minimum depth of 12 inches, metal “hardware” cloth may need to be placed between the aggregate and the holes if holes are drilled larger than the majority of the stone.
- As a result of the fast rate of flow of sediment-laden water through the aggregate, the effluent must be directed over a well-vegetated strip of at least 50 feet after leaving the base of the filter box.
- The box shall be sized as follows:

$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$

- Once the water level nears the top of the box, the pump must be shut off while the box drains and additional capacity is made available.
- The box shall be designed/constructed to allow for emergency flow over the top of this box.
- Clean-out of the box is required once one-third of the original capacity is depleted due to sediment accumulation. The tank shall be clearly marked showing the clean-out point.
- If the stone filter does become clogged with sediment so that it no longer adequately performs its function, the stones must be pulled away from the inlet, cleaned and replaced.
- Using a filter box only allows for minimal settling time for sediment particles; therefore, it should only be used when site conditions restrict the use of the other methods.

Straw Bale/Silt Fence Pit (see Figure CN-103-C)

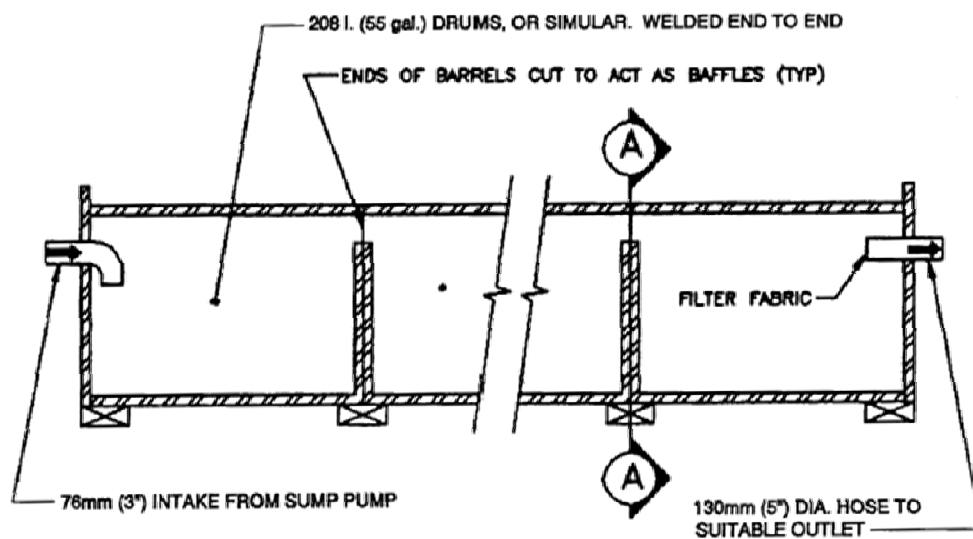
- Measure shall consist of straw bales, silt fence, a stone outlet (a combination of riprap and aggregate) and a wet storage pit oriented as shown in Figure CN-103-C.
- The structure must have a capacity which is dictated by the following formula:

$$\text{Pump discharge (gallons/min.)} \times 16 = \text{cubic feet of storage required}$$

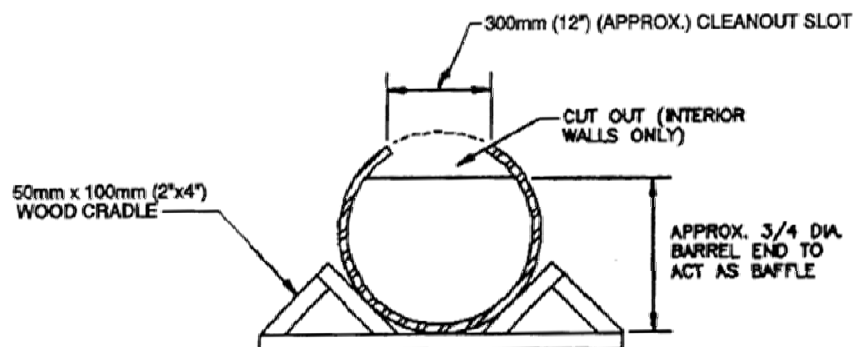
- In calculating the capacity, one should include the volume available from the floor of the excavation to the crest of the stone weir.
- In any case, the excavated area should be a minimum of 3 feet below the base of the perimeter measures (straw bales or silt fence).
- The perimeter measures must be installed as per the guidelines found in fact sheets associated with STRAW BALE BARRIER and SILT FENCE BMPs.
- Once the water level nears the crest of the stone weir (emergency overflow), the pump must be shut off while the structure drains down to the elevation of the wet storage.
- The wet storage pit may be dewatered only after a minimum of 6 hours of sediment settling time. This effluent should be pumped across a well vegetated area or through a silt fence prior to entering a watercourse.
- Once the wet storage area becomes filled to one-half of the, excavated depth, accumulated sediment shall be removed and properly disposed of.
- Once the device has been removed, ground contours will be returned to original condition.

REFERENCE

United States Army Corps of Engineers, Handbook for the Preparation of Storm Water Pollution Prevention Plans for Construction Activities, 1997 or later



ELEVATION



CROSS-SECTION A-A

Figure CN-103-A
Portable Sediment Tank

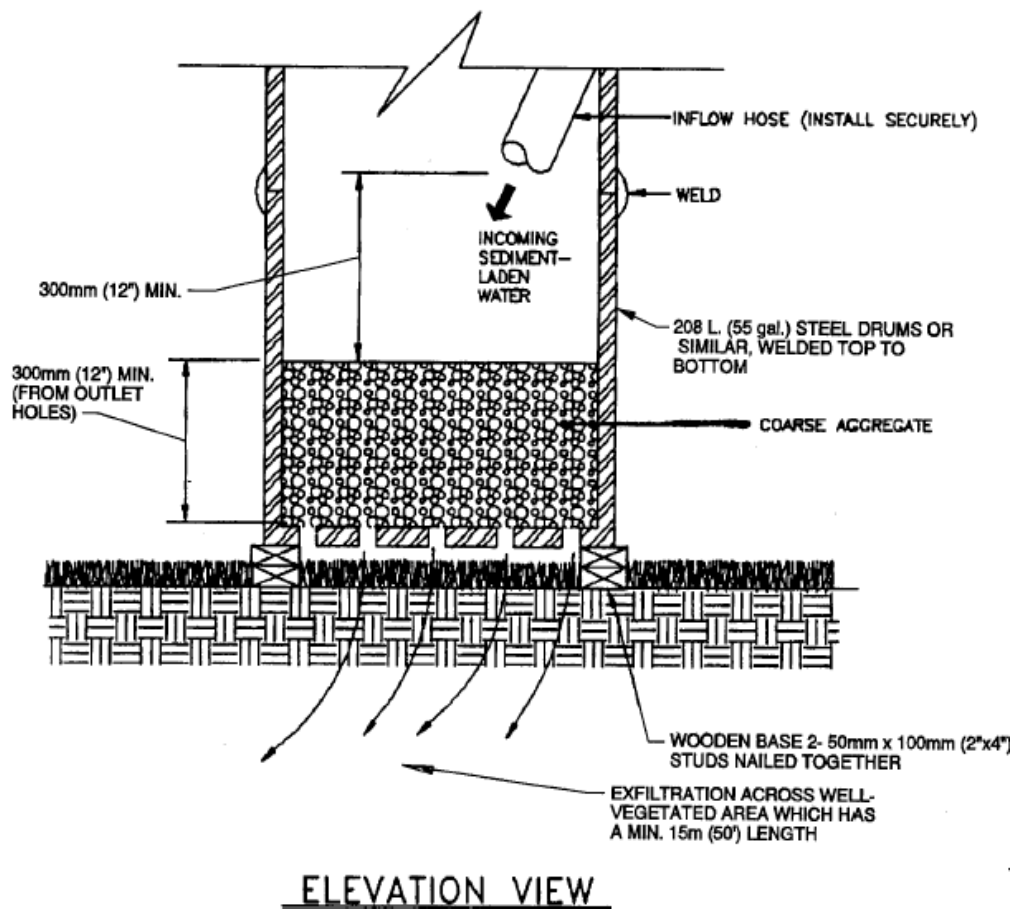
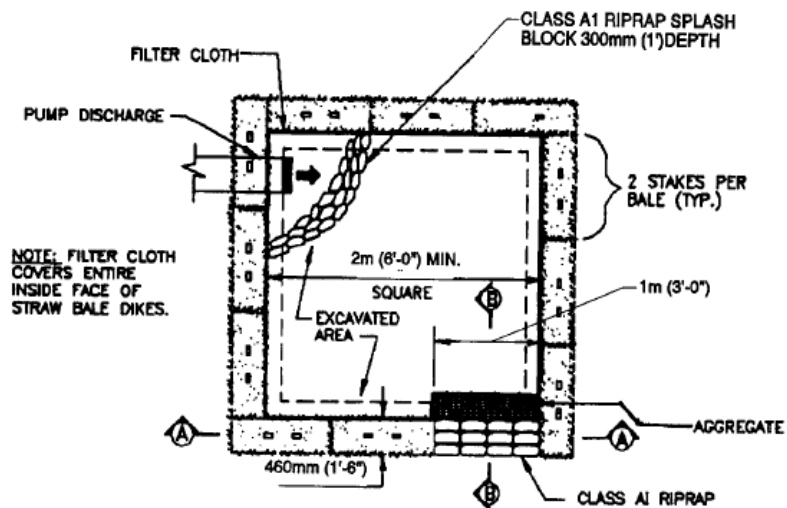
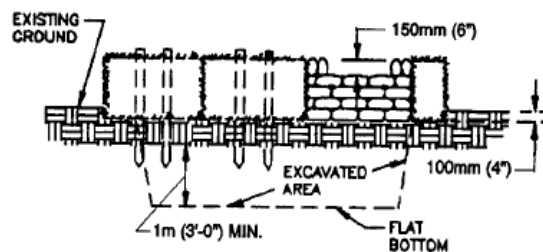


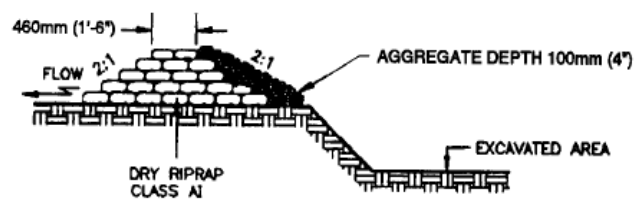
Figure CN-103-B
Filter Box



PLAN VIEW



CROSS-SECTION A-A



CROSS-SECTION B-B

Figure CN-103-C
Straw Bale/Silt Fence Pit

BMP CN – 104

SPILL PREVENTION AND CONTROL

DESCRIPTION

These procedures and practices are implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders
- Dust Palliatives
- Solvents
- Herbicides
- Paper
- Plastic
- Growth inhibitors
- Fertilizers
- Concrete washout
- Deicing/anti-icing chemicals
- Fuels
- Lubricants
- Solid wastes
- Other petroleum distillates

To the extent that the work can be accomplished safely, spills of oil, petroleum products, sanitary and septic wastes, and substances listed under 40 Code of Federal Regulations (CFR) parts 110, 117, and 302 shall be contained and cleaned up immediately.

LIMITATIONS

1. The contractor/owner shall maintain a list of qualified contractors, Vac-trucks, tank pumpers and other equipment or businesses qualified to do clean-up operations.
2. Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site and in sufficient quantities in advance of their arrival at the site.
3. All employees need to be educated on the proper application of the absorbent materials and their purpose.
4. All maintenance and equipment operators must be aware and trained for prevention of spills. A continuing education program should be required for new employees.
5. All materials used in the course of cleanup should be disposed of in a manner approved by the Indiana Department of Environmental Management.
6. Using water to flush spilled material will not be permitted unless authorized by The City of Westfield. Tarps can be used to cover spills during rain events.

DESIGN CRITERIA

1. To the extent that it doesn't compromise cleanup activities, spills shall be covered and protected from stormwater runoff during rainfall.
2. Spills shall not be buried or washed with water.
3. Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of in conformance with BMP CN-106: Hazardous Waste Management.

4. Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with BMP CN-106: Hazardous Waste Management.
5. Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.
6. Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
7. Waste storage areas shall be kept clean, well-organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.
8. Verify weekly that spill control and clean up materials are located near material storage, unloading, and use areas.
9. Update spill prevention and control plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals used or stored onsite.

Cleanup and Storage Procedures for Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc., which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Remove the absorbent materials promptly and dispose of properly.
- The practice commonly followed for a minor spill is:
 - o Contain the spread of the spill.
 - o Recover spilled materials.
 - o Clean the contaminated area and/or properly dispose of contaminated materials.

Cleanup and Storage Procedures for Semi-Significant Spills

- Approximately ten gallons or less of pollutant with no contamination of ground or surface waters. Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
- Clean up spills immediately:
- Notify the project foreman immediately. The foreman shall notify the City of Westfield Emergency Management Agency's Hazardous Materials Response Team.
- Contain spread of the spill.
- If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
- If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
- If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Cleanup and Storage Procedures for Significant/Hazardous Spills

- More than ten gallons, there is the potential for death, injury or illness to humans or animals or has the potential for surface or groundwater pollution. For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.

- For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
- Notification shall first be made by telephone and followed up with a written report.
- The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up the spill until the appropriate and qualified personnel have arrived at the job site.
- As soon as possible but within 2 hours of discovery, contact the Department of Environmental Management, Office of Emergency Response 1-888-233-7745. The following information should be noted for future reports to IDEM or the National Response Center.
 - Name, address and phone number of person making the spill report
 - The location of the spill
 - Identification of the spilled substance
 - Approximate quantity of the substance that has been spilled or may be further spilled
 - The duration and source of the spill
 - Name and location of the damaged waters
 - Name of spill response organization
 - What measures were taken in the spill response
 - Other information that may be significant

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

BMP CN – 105

SOLID WASTE MANAGEMENT

DESCRIPTION

Solid waste management procedures and practices are designed to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, or removal of construction site wastes.

Solid waste management procedures and practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

1. Construction wastes including brick, mortar, timber, steel and metal scraps, sawdust, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
2. Landscaping wastes, including vegetative material, plant containers, and packaging materials.
3. Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

LIMITATIONS

1. Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season.

DESIGN CRITERIA

1. Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project and properly serviced.
2. Littering on the project site shall be prohibited.
3. To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
4. Trash receptacles with lids shall be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
5. Construction debris and litter from work areas within the construction limits of the project site shall be collected and placed in watertight dumpsters at least weekly regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
6. Full dumpsters shall be removed from the project site and the contents shall be disposed of, off-site, in an appropriate manner.
7. Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
8. Construction debris and waste shall be removed from the site weekly.
9. Stormwater run-off shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
10. Solid waste storage areas shall be located at least 50 ft from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.

11. Except during fair weather, construction and landscaping waste not stored in watertight dumpsters shall be securely covered from wind and rain by covering the waste with tarps, plastic sheeting, or equivalent.
12. Dumpster washout on the project site is not allowed.
13. Notify trash hauling contractors that only watertight dumpsters are acceptable for use on-site.
14. Plan for additional containers during the demolition phase of construction.
15. Plan for more frequent pickup during the demolition phase of construction.
16. Construction waste shall be stored in a designated area. Access to the designated area shall either be well vegetated ground, a concrete or asphalt road or drive, or a gravel construction entrance, to avoid mud tracking by trash hauling contractors.
17. Segregate potentially hazardous waste from non-hazardous construction site waste.
18. Keep the site clean of litter debris.
19. Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
20. For disposal of hazardous waste, see BMP CN-106: Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
21. Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.
22. Prohibit littering by employees, subcontractors, and visitors.
23. Wherever possible, minimize production of solid waste materials.

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

BMP CN – 106

HAZARDOUS WASTE MANAGEMENT

DESCRIPTION

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain systems or to watercourses.

This best management practice (BMP) applies to all construction projects.

Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products,
- Asphalt Products,
- Concrete Curing Compounds,
- Pesticides,
- Acids,
- Paints,
- Stains,
- Solvents,
- Wood Preservatives,
- Roofing Tar, or
- Any materials deemed a hazardous waste in 40 CFR Parts 110, 117, 261, or 302.

DESIGN CRITERIA

Storage Procedures

1. Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by 49 CFR Parts 172, 173, 178, and 179.
2. All hazardous waste shall be stored, transported, and disposed as required in 49 CFR 261-263.
3. Waste containers shall be stored in temporary containment facilities that shall comply with the following requirements:
 - Temporary containment facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.
 - Temporary containment facility shall be impervious to the materials stored there for a minimum contact time of 72 hours.
 - Temporary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks accumulated rainwater and spills shall be placed into drums after each rainfall. These liquids shall be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids shall be sent to an approved disposal site.
 - Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.
 - Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.

- Throughout the rainy season, temporary containment facilities shall be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs. A storage facility having a solid cover and sides is preferred to a temporary tarp. Storage facilities shall be equipped with adequate ventilation.
4. Drums shall not be overfilled and wastes shall not be mixed.
 5. Unless watertight, containers of dry waste shall be stored on pallets.
 6. Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludge that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.
 7. Ensure that adequate hazardous waste storage volume is available.
 8. Ensure that hazardous waste collection containers are conveniently located.
 9. Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
 10. Minimize production or generation of hazardous materials and hazardous waste on the job site.
 11. Use containment berms in fueling and maintenance areas and where the potential for spills is high.
 12. Segregate potentially hazardous waste from non-hazardous construction site debris.
 13. Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.
 14. Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
 15. Place hazardous waste containers in secondary containment.
 16. Do not allow potentially hazardous waste materials to accumulate on the ground.
 17. Do not mix wastes.

Disposal Procedures

1. Waste shall be removed from the site within 90 days of being generated.
2. Waste shall be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
3. A certified laboratory shall sample waste and classify it to determine the appropriate disposal facility.
4. Make sure that toxic liquid wastes (e.g., used oils, solvents, and paints) and chemicals (e.g., acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.
5. Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
6. Recycle any useful material such as used oil or water-based paint when practical.

Maintenance and Inspection

1. A foreman and/or construction supervisor shall monitor on-site hazardous waste storage and disposal procedures.
2. Waste storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.

3. Storage areas shall be inspected in conformance with the provisions in the contract documents.
4. Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
5. Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.
6. The National Response Center, at (800) 424-8802, shall be notified of spills of Federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.
7. Copy of the hazardous waste manifests shall be provided to the owner.

REFERENCE

California Department of Transportation, Construction Site BMP Manual, 2000 or later

CITY OF WESTFIELD

Stormwater Management Technical Standards Manual

SECTION 03800

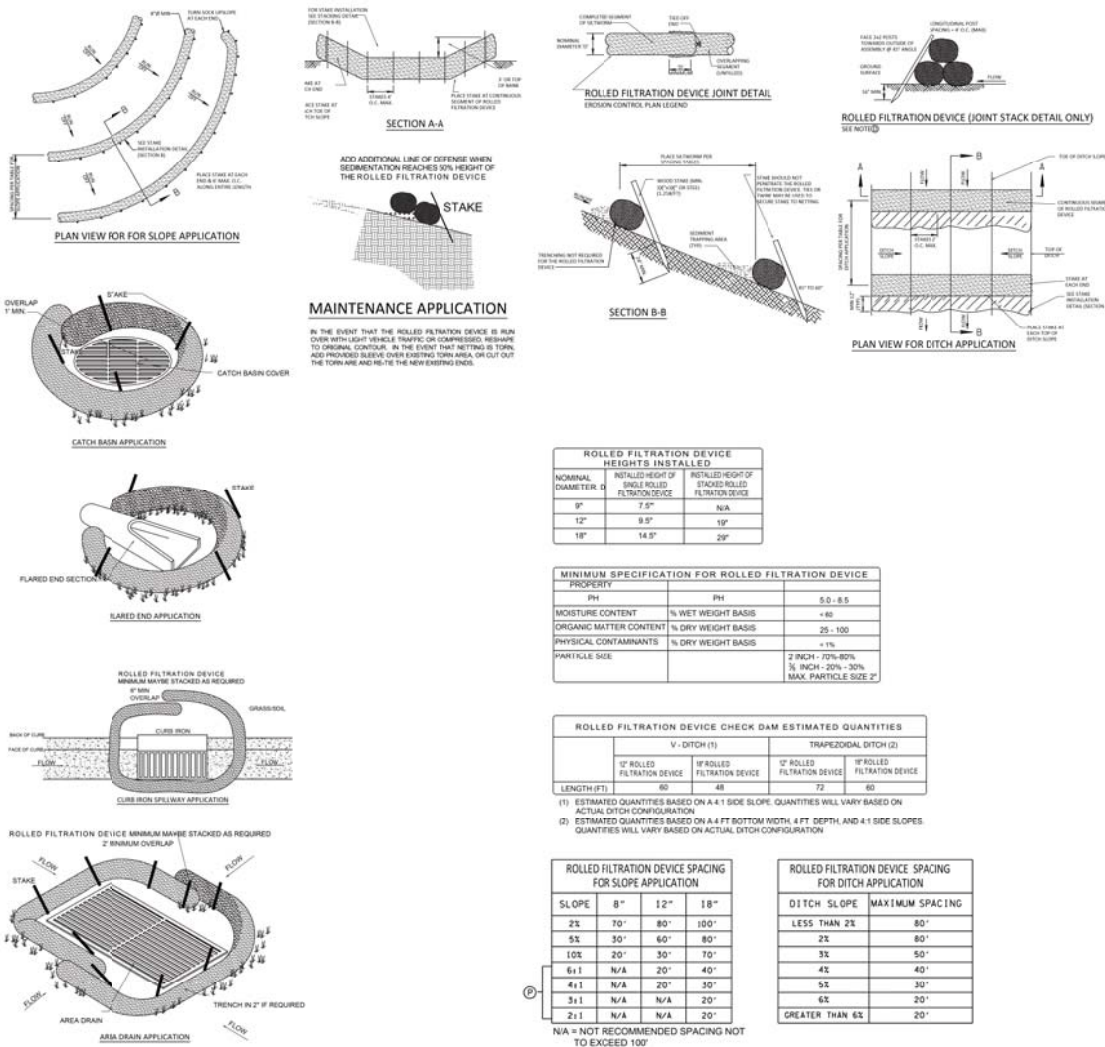
CITY OF WESTFIELD

STORMWATER MANAGEMENT TECHNICAL STANDARD

DETAILS

LIST OF FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>
EC-01	Temporary Ditch Inlet Protection
EC-02	Erosion Control Mat – Slope Detail
EC-03	Erosion Control Mat – Staple Guide
EC-04	Silt Fence Detail
EC-05	Concrete Washout Detail
EC-06	Inlet Protection
EC-07	Rock Check Dam – Riprap
EC-08	Gabion Anchor Detail
EC-09	Typical AquabARRIER Detail
EC-10	Temporary Construction Drive
EC-11	Dewatering Detail and Size Chart
EC-12	Silt Saver Square Inlet Protection Detail
EC-14	Silt Saver Inlet Protection Model #S-200
EC-15	Silt Saver Inlet Protection Model #R-100
EC-16	Rolled Filtration Device Detail
ST-03	Straight Headwall
ST-04	Straight Headwall with Flap Gate
ST-05	Isometric @ Headwall Type “I”
ST-06	Isometric @ Headwall Type “II”
ST-07	Manhole Solid Lid Casting Detail
ST-08	Chair Back Curb Inlet Casting
ST-09	Rolled Curb Inlet Casting
ST-10	Beehive Inlet Casting
ST-16	Structure Data Table
ST-23	Lake Cross Sections: Option 1
ST-24	Lake Cross Sections: Option 2
ST-25	Lake Cross Sections: Option 3
ST-26	Lake Outlet Detail For Lake Cross-Section Option 1
ST-27	Lake Outlet Detail For Lake Cross-Section Option 2
ST-28	Lake Outlet Detail For Lake Cross-Section Option 3
ST-29	Debris Guard
ST-30	Anchor For Concrete End Sections
ST-31	Bank Armoring at Outlet Pipe In Open Channels
ST-32	Corner Protection
ST-33	Pond Outfall Structure
ST-34	Isometric @ Weir Outlet
ST-36	Typical Subsurface Drain (SSD) Lateral to Ind. Lots in Rear Yard Swale
ST-37	Subsurface Drain (SSD) Riser Detail
ST-38	Riser Locations
ST-39	Subsurface Drain (SSD) Detail When Within Dripline of Existing Trees
ST-40	Subsurface Drain (SSD) Detail No Swale
ST-41	Tile Clearing Through Woods
ST-42	Slotted Riser Inlet Details
ST-43	Typical Swale Detail
ST-44	Drain Outlet Detail #1
ST-45	Drain Outlet Detail #2



ROLLED FILTRATION DEVICE

SECTION 1

REQUEST FOR QUOTE

CITY OF WESTFIELD, INDIANA

181st Street Repair Project

To: Westfield Public Works
2706 E. 171st Street
Westfield, Indiana 46074

The Public Works Department of the City of Westfield, Indiana, is requesting a quote for the attached proposal for the 181st Street Repair Project.

The project generally includes common excavation, PCCP, HMA milling, HMA resurfacing, maintenance of traffic, and thermoplastic striping on 181st Street approximately 600 feet east of Wheeler Road. The work will be performed under a full road closure during Westfield Washington Schools' spring break. The roadway will be opened to traffic 72 hours after the concrete pour.

The project will be awarded to the lowest and most responsible Contractor by the Owner. The project will be located within Westfield corporate limits.

The undersigned proposes to furnish all work for the construction of the 181st Street Repair Project, including all labor, materials, supplies, equipment and all appurtenances necessary to complete the work as per the drawings and the specifications for the following unit prices, to wit:

Schedule – Work shall be performed between March 29th and April 7th, 2019. The undersigned agrees to be substantially complete with the work by April 7th, 2019.

Quotes due Tuesday, March 19, 2019 by 1:00 P.M. Quotes can be emailed dshoe@westfield.in.gov

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ITEMIZED PROPOSAL

ID	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	AMOUNT
1	MOBILIZATION AND DEMOBILIZATION	LS	1	\$ 9,500.00	\$ 9,500.00
2	EXCAVATION, COMMON	CYS	119	\$ 60.00	\$ 7,140.00
3	COMPACTED AGGERGATE, NO. 53, BASE	TON	89	\$ 40.00	\$ 3,560.00
4	MILLING, ASPHALT, 2 IN	SYS	160	\$ 29.00	\$ 4,640.00
5	HMA, TYPE B, 64, SURFACE, 9.5 mm	TON	18	\$ 260.00	\$ 4,680.00
6	ASPHALT FOR TACK COAT	TON	0.04	\$ 12,000.00	\$ 480.00
7	PCCP, 10 IN (7 BAG, A/E, W/SUPER PLASTICIZER)	SYS	267	\$ 90.00	\$ 24,030.00
8	D-1 CONTRACTION JOINT, KEYWAY	LFT	100	\$ 8.00	\$ 800.00
9	D-1 CONTRACTION JOINT, DOWEL BAR ASSEMBLIES	LFT	200	\$ 15.00	\$ 3,000.00
10	MAINTAINING TRAFFIC	LS	1	\$ 8,000.00	\$ 8,000.00
11	LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN	LFT	120	\$ 10.50	\$ 1,260.00
12	LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN	LFT	120	\$ 10.50	\$ 1,260.00
Total					\$ 68,350.00

Quote Amount in words for 181st Street Repair Project:

Sixty-Eight Thousand Three Hundred Fifty Dollars and 00 /100

This price is the sum of the quoted unit prices multiplied by the quantity for each item as shown on the above Itemized Proposal.

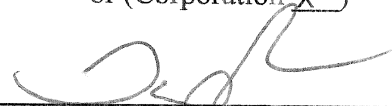
It is hereby agreed that this proposal shall remain in full force and effect and may not be withdrawn for a period of 60 days from the date of receiving proposals by the City of Westfield, Indiana.

Respectfully submitted,

CC&T Construction Co., Inc

Contractor

(Individual___) (Partnership___)
or (Corporation X)

By 

Tony Page

Title President

Dated:

Address 5051 Prospect Street Indianapolis, IN 46203

March 19, 2019

NOTE: The legal status of the Bidder, whether as an individual, partnership, or corporation, must be indicated above, and all pertinent information as required by the Specifications must be furnished.

SECTION 2: SPECIAL PROVISIONS

2.1 SCHEDULE

The anticipated schedule for this project is as follows:

Quotes Due	March 19, 2019
Contract Notice to Proceed	March 21, 2019
Preconstruction Meeting	Within 4 Days of NTP
Substantial Completion	April 7, 2019
Project Completion	April 19, 2019

Contractor shall include any and all necessary overtime as required to complete the schedule as indicated above. All days referenced in the Special Provisions are in calendar days.

2.2 UNIT PRICES

Payments will be made to the Contractor for the actual quantities of work performed or materials furnished in accordance with the drawings and specifications. The scheduled quantities of work to be performed and materials to be furnished may each be increased or decreased by 25% without in any way invalidating the unit price bid. The unit price bid shall be valid for all minor quantity adjustments directed to be made or as otherwise provided for in the Supplementary Conditions.

2.3 REFERENCE SPECIFICATIONS

Measurement and payment of "Pay Items" shall comply with referenced sections of the 2018 Indiana Department of Transportation Standards Specifications (INDOTSS) and the City of Westfield Construction Standards and Specifications (WCSS), including current revisions thereto and as modified herein these special provisions.

2.4 FINAL MEASUREMENTS

- A. The quantities of material complete in place and accepted will be paid for at the contract unit price. The quantities shall be determined by delivery tickets properly marked with the date, time, product, and weight. The City may require samples from the materials delivered or cores from the material in place to be analyzed by an independent testing laboratory to ensure conformance with the specifications. Costs for such tests shall be paid for by the Contractor.
- B. The method of measuring the work for payment under the various items shall be as indicated below. In any event, the unit or lump sum price for the respective items shall include the installation complete in all details and ready for use.

2.5 PAY ITEMS

- A. The unit and lump sum prices stated in the Contract to be paid for the respective pay items shall be payment in full for the completion of all work specified and described to be included in the respective items, complete and ready for use and operation, including testing, as shown on the drawings and as specified. Payment will be made under each item only for such work as is not specifically included under other items.

2.6 STAGING EQUIPMENT

Contractor shall obtain approval from the Owner as to the location of his staging area if said staging area is within the City's right-of-way.

2.7 PCCP, 10 IN

PCCP, 10 IN shall be measured and paid for by the square yard of material completed in place and in accordance with INDOTSS Sections 502 and 504. Material shall contain a seven bag, air entrained mix with a super plasticizer. The mix design shall be approved by the Engineer prior to placement. The final product will be opened to traffic 72 hours after the initial installation. Concrete curing blankets will be required to be installed in accordance with INDOTSS 504. The cost of finishing, furnishing, and placing any and all curing materials shall be included in the cost of the PCCP.

2.8 CONSTRUCTION ENGINEERING

The cost of surveying, potholing, construction engineering, and any incidentals associated with this work shall be included in the cost of other items.

2.9 D-1 CONTRACTION JOINTS, KEYWAY

D-1 Contraction Joints, Keyway shall be paid for at the contract unit price per linear foot, complete in place and in accordance with INDOTSS Section 503. The keyway joint will be the longitudinal joint along 181st Street. The cost of labor, material, equipment, and all necessary incidentals shall be included in the cost of D-1 Contraction Joints, Keyway.

2.10 D-1 CONTRACTION JOINTS, DOWEL BAR ASSEMBLIES

D-1 Contraction Joints, Dowel Bar Assemblies shall be paid for at the contract unit price per linear foot, complete in place and in accordance with INDOTSS Section 503. The dowel bar assemblies shall be sized and constructed appropriately for 10-inch PCCP. The assemblies shall be epoxy coated and placed per INDOTSS Section 503. The cost of labor, material, equipment, and all necessary incidentals shall be included in the cost of D-1 Contraction Joints, Dowel Bar Assemblies.

2.11 MAINTAINING TRAFFIC

Maintenance of vehicular and pedestrian traffic shall be paid for on a lump sum basis for work completed in accordance with INDOTSS Section 801 or otherwise modified herein. Construction signs, detour signs, barricades, cones, drums, pedestrian fence, flagging, and all other materials, labor, and equipment necessary to adequately maintain traffic shall not be paid for separately but shall be included in the lump sum price bid for Maintaining Traffic.

181st Street may be fully closed between Wheeler Road and Sun Park Drive during construction. The detour route shall be approved by the Engineer and properly signed during the closure. 181st Street shall be opened to traffic 72 hours after the concrete installation. One lane of travel shall be maintained thereafter during construction activities with a minimum of two flaggers. No additional payment will be made for coordination with the road closure.

2.12 PAVEMENT MARKINGS

Pavement traffic markings shall be measured and paid for by the linear foot or per each for items installed and completed in accordance with INDOTSS Section 808. Pavement traffic marking installations shall comply with the Manual on Uniform Traffic Control Devices and shall be placed as shown on the plans or as otherwise directed by Engineer. White 4 inch thermoplastic lines shall include installation of all proposed edge lines and lane lines. Yellow 4 inch thermoplastic lines shall include installation of all centerlines with a **4-inch** gap between double yellow centerline. Additional markings may be added by the Engineer, as determined during construction.

2.13 PROJECT SUBMITTALS

- A. This section is intended to assist the Contractor in providing all required documentation as defined and required within the Contract Documents. Contractor is responsible to thoroughly review and understand all Contract Documents to ensure that all submittal requirements are met as specified.
- B. Pre-Construction
 - 1. Insurance Certificate
 - 2. Concrete Mix Designs
 - 3. HMA Design Mix Formulas
 - 4. Detour Route
- C. Daily Reports – Contractor shall provide daily reports indicating manpower onsite, work completed and any issues encountered. Reports are due to the City Project Manager by 10AM the next business day after work was performed. Failure to provide these reports may result in Contractor's pay application being held until these are properly submitted.

D. Payment Applications

1. All applications shall include the Westfield Standard Invoice Cover Sheet, AIA G703, Partial/Final Lien Waivers and Progress Summary. The AIA G702/CMA is also required for any project requiring architect or engineering signoff.
2. The Contractor is strongly encouraged to submit its first payment application for review and approval of its schedule of values as early as possible so as to minimize delay of the initial payment.
3. Payments are not released by the City until final approval is made at the monthly City Council meetings. These are typically the 2nd Tuesday of the Month. Consult the City's Website for exact dates of these meetings.
4. To ensure payment in time for a City Council meeting, pencil and final copies are due three (3) weeks and two (2) weeks prior to the City Council meeting respectively. Additional time should be allowed for holidays. Applications not submitted or applications rejected and not cured within this timeframe are not likely to be approved at the scheduled City Council meeting.

E. Final Payment

1. Complete demobilization of Contractor
2. Verification by City that the Punchlist is complete
3. As-builts submitted and approved
4. Any remaining Contractor daily reports
5. Operations and Maintenance manuals, as applicable
6. Verification of all extra work and claims are resolved
7. Final lien waivers from subcontractors and suppliers over \$250,000
8. Final payment application (Cover, G702/703, lien waivers, summary)
9. Landfill receipts for hazardous waste as applicable
10. Soils test reports as applicable

F. Contractor shall provide (1) electronic copy and (1) hard copy of all submittals unless stated otherwise within the Contract Documents or City Standards.

G. Direct all submittals to:

Dustin Shoe, Senior Project Manager
City of Westfield
Department of Public Works
2706 E 171st St
Westfield, IN 46074
dshoe@westfield.in.gov
(317) 450-6765

END OF SECTION 2

181st Street Repair



Green - 100' x 24' - 10" PCCP on 6" Compacted Aggregate No. 53

Yellow - 30' x 24' - 2" Mill and Resurface



March 27, 2019

Consent Agenda Item:

Performance Bond Acceptance

The Westfield Public Works Department is recommending that the Board of Public Works and Safety accept the following Performance Bonds for the requested developments:

- CCD Serenade, Bond #1164901, \$1,021,441.30, Streets/Curbs
- CCD Serenade, Bond #1164902, \$1,217,833.10, Storm
- CCD Serenade, Bond #1164903, \$103,182.75, Sidewalks
- CCD Serenade, Bond #1164904, \$156,730.20, Trail
- CCD Serenade, Bond #1164905, \$110,426.95, Erosion Control
- CCD Serenade, Bond #1164906, \$140,907.25, ROW Improvements
- Pulte Homes of Indiana, Westchester, Section 1, Rider to Bond #30061983, ROW, Changing Amount of Bond from \$424,620.64 to \$459,435.64
- D.R. Horton of Indiana, d/b/a Westport Homes, Sheffield Park, Section 2, Bond #30065311, \$82,082.00, Erosion Control
- CalAtlantic Homes of Indiana, Coventry, Section 3, Bond #30066514, \$90,700.00, Erosion Control

Performance Bond Release

The Westfield Public Works Department is recommending that the Board of Public Works and Safety consider the following Performance Bonds for release by the requested developer:

- Custard Kings, Inc., Culver's Westfield, Bond #9827961, \$289,685.00, Streets/Curbs, Storm Sewer, Sidewalk, Trail, & Erosion Control

Maintenance Bond Acceptance

The Westfield Public Works Department is recommending that the Board of Public Works and Safety accept the following Maintenance Bonds for the requested developments:

- Custard Kings, Inc., Culvers-Westfield, Bond #9827961-M, \$25,220.00, Streets/Curbs, Storm Sewer, Sidewalks & Trail
- Platinum Properties Management Company, LLC, Maple Knoll, Section 8, Bond #2982022, \$3,081.80, Erosion Control
- Platinum Properties Management Company, LLC, Maple Knoll, Section 9, Bond #2982023, \$2,797.40, Erosion Control
- Platinum Properties Management Company, LLC, Maple Village (Sonoma), Section 10, Bond #2982024, \$2,631.70, Erosion Control
- Platinum Properties Management Company, LLC, Spring Orchard, Section 4, Bond #2982025, \$3,526.80, Erosion Control
- Platinum Properties Management Company, LLC, Spring Orchard, Section 5, Bond #2982026, \$4,160.00, Erosion Control
- Platinum Properties Management Company, LLC, Springmill Park, Sections 1 & 2, Bond #2982027, \$11,633.00, Erosion Control

Maintenance Bond Release

The Westfield Public Works Department is recommending that the Board of Public Works and Safety consider the following Maintenance Bonds for release by the requested developer:

- Platinum Properties Management Company, LLC, Maple Knoll, Section 8, Bond #SU14900, \$3,081.80, Erosion Control
- Platinum Properties Management Company, LLC, Maple Knoll, Section 9, Bond #SU14901, \$2,797.40, Erosion Control
- Platinum Properties Management Company, LLC, Maple Village (Sonoma), Section 10, Bond #SU14902, \$2,631.70, Erosion Control
- Platinum Properties Management Company, LLC, Spring Orchard, Section 4, Bond #SU14896, \$3,526.80, Erosion Control
- Platinum Properties Management Company, LLC, Spring Orchard, Section 5, Bond #SU14961, \$4,160.00, Erosion Control
- Platinum Properties Management Company, LLC, Springmill Park, Sections 1 & 2, Bond #SU14895, \$11,633.00, Erosion Control

Cash In Lieu

- Davis Building Group, Setters Manor, Cash in Lieu & Developer Agreement, Erosion Control, \$1,075.35

Letters of Credit Acceptance

The Westfield Public Works Department is recommending that the Board of Public Works and Safety consider accepting the following Letters of Credit by the requested developer:

- Woodbury Ridge Two, LLC, Woodbury Ridge, Phase 2, LOC #171200/12103, \$259,738.00, Streets, Curbs, Storm Sewer, Trail & ROW Improvements
- Woodbury Ridge Two, LLC, Woodbury Ridge, Phase 2, LOC #171210/12102, \$9,020.00, Erosion Control

AGREEMENT FOR ENGINEERING SERVICES

This Agreement is entered into as of this ____ day of April, 2019, (hereinafter referred to as the "effective date of the Agreement"), by and between VS Engineering, Inc. hereinafter called the CONSULTANT located at 4275 N. High School Rd, Indianapolis, Indiana, 46254 and City of Westfield Board of Public Works, hereinafter called "Client," located 2706 East 171st Street, Westfield, IN 46074

WITNESSETH

WHEREAS, the Client is authorized to make and enter into all contracts or agreements which it determines are necessary or incidental to the performance of its duties and to the execution of the purposes of and the powers granted by the State of Indiana;

WHEREAS, in accordance with its procurement procedures, the Client has determined that it desires to hire THE CONSULTANT to perform as needed On-Call Consulting Services, as set forth herein; and

WHEREAS, THE CONSULTANT desires to assist the Client as provided herein;

NOW, THEREFORE, in consideration of the premises, the mutual covenants and agreements herein set forth, and the undertakings of each party to the other, the Client and THE CONSULTANT, acting as aforesaid and each binding itself, its successors and assigns, do mutually covenant, promise and agree as follows:

I. SCOPE OF SERVICES

THE CONSULTANT shall, in a professional manner, perform the services set forth in Exhibit A, attached to this Agreement.

II. COMPENSATION

A. THE CONSULTANT shall be compensated as set forth in Exhibit B for services rendered under this Agreement.

B. THE CONSULTANT shall promptly bill Client for all professional fees and expenses incurred on a monthly basis, and Client shall make payment in full to THE CONSULTANT within 30 days of the date of each invoice.

C. If the Client does not make payment in full to THE CONSULTANT within 90 days of the date of an invoice, THE CONSULTANT may suspend services upon 7 days written notice on the basis of non-performance on the part of the Client. When all payments due have been made, THE CONSULTANT will continue its services.

III. PERIOD OF PERFORMANCE

THE CONSULTANT agrees to commence performance of services hereunder upon receipt of a written "Notice to Proceed." Client recognizes that THE CONSULTANT's work and the completion thereof may be conditioned upon Client's review of THE CONSULTANT's work and/or the timely performance and completion of certain activities by Client. THE CONSULTANT shall not be held liable for delays in

performance of services hereunder that arise from causes beyond THE CONSULTANT's reasonable control and without its fault or negligence.

IV. CLIENT RESPONSIBILITY

- A. Client shall identify and coordinate all services to be performed hereunder.
- B. Client will verify that THE CONSULTANT has a complete understanding of the scope of services to be performed hereunder. Client shall provide THE CONSULTANT, in a timely fashion, all information reasonably required for the performance of the services by THE CONSULTANT to be performed hereunder.
- C. Client shall upon execution of the Agreement, designate **Johnathon Nail, City Engineer** as coordinator of the project described herein and of the professional services to be performed under this Agreement.
- D. Client shall provide THE CONSULTANT with reasonable access to the premises necessary for the performance of the services required under this Agreement.

V. INDEPENDENT CONTRACTOR

It is understood and agreed that THE CONSULTANT shall provide services under this Agreement as an independent contractor and that during the performance of services under this Agreement, THE CONSULTANT's employees shall not be considered employees of the Client.

VI. TERMINATION

It is hereby agreed that if either party should fail materially to fulfill its obligations under this Agreement, the other party may notify the breaching party of the intent to terminate the contract, in whole or in part, if the breach is not cured as provided in this Article. Such notice to the breaching party shall be given, in the manner required in Article XI of this Agreement, thirty (30) days prior to the effective date of the intended termination and shall identify the breach to be cured. The breaching party shall have thirty (30) days from receipt of the notice to cure the breach identified in the notice. The failure to cure the breach within thirty (30) days shall entitle the nonbreaching party to terminate the Agreement at the end of thirty (30) days. THE CONSULTANT shall use reasonable efforts to minimize fees and expenses upon giving or receiving notice of any intended termination. Client shall pay THE CONSULTANT all fees and expenses accrued for services rendered up to the effective date of any termination.

VII. INSURANCE

THE CONSULTANT shall maintain at THE CONSULTANT's own expense (1) Comprehensive General Liability Insurance, (2) Professional Liability Insurance for negligent acts, errors and omissions and (3) Worker's Compensation Insurance which insurance shall provide coverage for liabilities or claims for damages resulting from services performed or undertaken by THE CONSULTANT hereunder. Certificates of Insurance shall be furnished to Client upon request of Client.

VIII. CHANGES

Changes or amendments to this Agreement may be made only in writing signed by a duly authorized representative of each of the parties. Changes in scope of the project dictated by the Client and changing conditions of law or schedule delays or other events beyond THE CONSULTANT's reasonable control will require contract price and/or date of performance revisions to reflect such changes or delays.

IX. ASSIGNMENT AND DELEGATION

Neither party shall assign or delegate this Agreement or any right, duties or obligations hereunder to any person and/or entity without prior express written approval to the other.

X. TRADEMARK AND TRADE NAME

Notwithstanding any other provision of this Agreement, neither party shall have the right to use the trademark or trade name of the other without prior written approval of the other.

XI. NOTICES

All notices shall be in writing and be deemed to be given or made when delivered by hand or by regular U.S. mail as follows:

- A. Notices to THE CONSULTANT shall be addressed to: Sanjay B. Patel, P.E., President, 4275 N. High School Rd, Indianapolis, Indiana, 46254.
- B. Notices to the Client shall be addressed to: Johnathon Nail, City Engineer, 2728 East 171st Street, Westfield, IN 46074

XII. GENERAL PROVISIONS

- A. Entire Agreement: This Agreement constitutes the entire agreement between the parties with respect to its subject matter and any prior agreements, understandings, or other matters, whether oral or written, are hereby merged into and made a part hereof, and are of no further force or effect. This agreement may be amended, changed, or supplemented only by written agreement executed by both of the parties hereto.
- B. Conflict: In the event of any conflict, ambiguity or inconsistency between this Agreement and any other document which may be annexed hereto, the terms of this Agreement shall govern.
- C. Waiver: No waiver shall be deemed to have been made by any of the parties unless expressed in writing and signed by the waiving party. The failure of any party to insist in any one or more instances upon strict performance of any of the terms or provisions of this agreement, or to exercise any option of election herein contained, shall not be construed as a waiver or relinquishment for the future of such terms, provisions, option or election, but the same shall continue and remain in full force and effect, and no waiver by any party of any one or more of its rights or remedies under this Agreement shall be deemed to be waiver of any prior or subsequent rights or remedy hereunder or at law. All

remedies afforded in this Agreement shall be taken and construed as cumulative; that is, in addition to every other remedy available at law or in equity.

- D. Severability: If any term or provision of this Agreement or the application thereof to any person or circumstances shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, or the applications of such term or provisions of this Agreement shall be valid and enforced to the fullest extent permitted by law.
- E. Captions: Captions and paragraph headings are inserted only as a matter of convenience and in no way define, limit, or describe the scope or intent of this Agreement.
- F. Governing Law: This Agreement shall be governed by and construed in accordance with the laws of the State of Indiana.

XIII. ENGAGING IN ACTIVITIES WITH IRAN

By signing this Agreement, THE CONSULTANT certifies that it is not engaged in investment activities in the country of Iran as forth in I.C.5-22-16.5.

XIV. NON-DISCRIMINATION

THE CONSULTANT agrees:

- A. That in the hiring of employees for the performance of work under this Agreement or any subagreement hereunder, no consultant, or subconsultant, nor any person acting on behalf of such consultant, or subconsultant, shall, by reason of race, religion, color, sex, national origin or ancestry, discriminate against any citizen of the State of Indiana who is qualified and available to perform the work to which the employment relates;
- B. That no consultant, subconsultant, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Agreement on account of race, religion, color, sex, national origin or ancestry;
- C. That the Client may deduct from the amount payable to THE CONSULTANT a penalty of Five Dollars (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of the Agreement;
- D. If there is a second or any subsequent violation of the terms or conditions of this section, then this Agreement may be cancelled or terminated by the Client and all money due or to become due hereunder will be forfeited.

XV. EMPLOYMENT ELIGIBILITY VERIFICATION

THE CONSULTANT affirms it does not knowingly employ unauthorized aliens. THE CONSULTANT shall enroll in and verify the work eligibility status of all its newly hired employees through the E-Verify program as defined in I.C. 22-5-1.7-3. THE CONSULTANT is not required to participate should the E-Verify program cease to exist. THE CONSULTANT shall not knowingly employ or contract with any unauthorized

alien. THE CONSULTANT shall not retain an employee or contract with a person whom THE CONSULTANT learns is an unauthorized alien. THE CONSULTANT shall require all of its subconsultants, who perform work under this Agreement to certify to THE CONSULTANT that the subconsultant does not knowingly employ or contract with unauthorized aliens and that the subconsultant has enrolled and is participating in the E-Verify program. However, the subconsultant is not required to participate if the subconsultant is self-employed and does not employ any employees. THE CONSULTANT agrees to maintain this certification requirement throughout the duration of the term of its contract with a subconsultant.

IN WITNESS WHEREOF, the parties by their duly authorized representatives have caused this agreement to be executed as of the date first written above.

**CITY OF WESTFIELD
BOARD OF PUBLIC WORKS**

VS ENGINEERING, INC.

J. Andrew Cook, BPW&S Member

(Date)

Kate Snedeker, BPW&S Member

(Date)

Randy Graham, BPW&S Member

(Date)

By: _____
Sanjay B. Patel, P.E., President

(Date)

By: _____
Andrew L. Bender, P.E., Vice President

EXHIBIT A

CONSULTANT is pleased to present this proposal to CLIENT for On-Call Consulting Services.

SCOPE OF SERVICES DESCRIPTION

CONSULTANT will provide as needed consulting services of qualified engineers, surveyors, scientists and support personnel as necessary to complete services as requested by CLIENT.

CONSULTANT will provide as needed engineering studies, surveys, designs, and contract documents for projects as requested by CLIENT.

CONSULTANT shall have specific scope of services approved by CLIENT before commencement of any work.

EXHIBIT B

CONSULTANT shall provide fee estimates for each specific scope of services requested by CLIENT. Fees for services shall be provided as Lump Sum or Time & Materials based upon the following rate schedule. Hourly rates shall adjust annually. Total compensation for On-Call Consulting Services shall not exceed \$28,000.00 without written authorization.

2019 HOURLY BILLING RATES

CLASSIFICATION	BILLING RATE
Project Manager II	\$187.74
Project Manager I	\$145.44
Engineer III	\$108.46
Engineer II	\$97.51
Engineer I	\$76.80
Project Scientist II	\$108.34
Project Surveyor II	\$131.23
Project Surveyor I	\$84.74
Survey Party Chief	\$89.59
Survey Technician II	\$67.58
Survey Technician I	\$53.58
Right-of-Way Tech II	\$86.12
Right-of-Way Tech I	\$61.25
Project Supervisor II	\$93.07
Project Supervisor II - O.T.	\$109.82
Project Supervisor I	\$90.28
Project Supervisor I - O.T.	\$106.53
Project Inspector II	\$80.56
Project Inspector II - O.T.	\$95.06
Project Inspector I	\$75.98
Project Inspector I - O.T.	\$89.65
CADD Technician II	\$78.46
CADD Technician I	\$72.93

This SUPPLEMENTAL AGREEMENT ("Agreement") is made by and between **City of Westfield**, ("CLIENT") and **UNITED CONSULTING**, an Indiana corporation ("UNITED CONSULTING").

WITNESSETH



WHEREAS, UNITED CONSULTING did, on February 11, 2014 enter into an Agreement with the CLIENT for Engineering Services and Documents in relation to the following described project:

The Monon Trail over SR 32 and Tournament Trail Drive

This supplement is required to revise the following services to the original scope of work:

The proposed bridge will now include Lighting—of the Pedestrian Path, the Landings, the accent for the Bridge, and for the Monon Signs attached to the bridge structure. Post Bid Services related to the lighting have also been revised.

WHEREAS, in order to provide for completion of the work it is necessary to amend and supplement the Engineering Agreement.

NOW, THEREFORE, it is agreed by and between the parties as follows:

I. Appendix "A" is amended to read as follows:

H. Post Bid Design

5. UNITED CONSULTING shall review and approve shop drawings submitted by the contractor for the pre-fabricated pedestrian truss as related to revisions required by the addition of lighting.
6. UNITED CONSULTING shall review of lighting shop drawings for each of the four application points; Pedestrian Path, Landings, Bridge Accent, and Monon Sign Lighting.

I. Lighting Design

1. General

- a. Attend up to four lighting design coordination meetings with the City of Westfield to determine the desired luminaire and fixture to be utilized at each of the four application points; Pedestrian Path, Landings, Bridge Accent, and Monon Sign Lighting.
- b. Coordination with local lighting suppliers for the determination of luminaire options. Up to three luminaire options will be provided for each application as defined above.
- c. Review of existing plan details and specifications for Monon bridge construction. (Des. No. 1401709)
- d. Coordination of applicable lighting service points with utilities.
- e. A single submission will be made to the City in the form of a Construction Change Order. The submission will include design computations, lighting plan sheets, design tables, miscellaneous detail sheets as required, construction cost estimate, lighting quantities, and applicable specifications.

2. Landing Lighting

- a. Design of pedestrian lighting utilizing a single, pole mounted luminaire at the path landings both south of SR 32 and north of SR 32.
- b. Lighting design of the landing areas will be in accordance with the requirements of the Indiana Design Manual (IDM), AASHTO Roadway Lighting Design Guide, and the National Electrical Code (NEC).
- c. Photometric calculations will be completed to ensure the average maintained illumination and uniformity ratios shown in IDM Figure 51-7V and 502-4E are met. Voltage Drop Calculations will be completed to ensure values are below 10% per IDM Figure 502-4D.

3. Pedestrian Path Lighting

- a. Design of pedestrian pathway lighting utilizing a single luminaire type from the landing south of SR 32 to the landing north of SR 32 over an approximate length of 1,500 feet.

- b. Lighting design of the pedestrian pathway will be in accordance with the requirements of the Indiana Design Manual (IDM), AASHTO Roadway Lighting Design Guide, and the National Electrical Code (NEC).
- c. Photometric calculations will be completed to ensure the average maintained illumination and uniformity ratios shown in IDM Figure 51-7V and 502-4E are met. Voltage Drop Calculations will be completed to ensure values are below 10% per IDM Figure 502-4D.

4. Bridge Accent Lighting

- a. Design of the bridge truss accent lighting utilizing a single luminaire type over an approximate length of 850 feet.
- b. Lighting design of the bridge will be in accordance with the requirements of the National Electrical Code (NEC). Due to the aesthetic nature of the design, adherence to IDM or AASHTO requirements are not anticipated to be required.
- c. Photometric calculations will be completed to determine a preliminary luminaire spacing on the bridge truss.
- d. Voltage Drop Calculations will be completed to ensure values are below 10% per IDM Figure 502-4D.
- e. Coordination of lighting system software education between the City of Westfield and the local supplier.

5. MONON Sign Lighting

- a. Design of sign illumination lighting for the "MONON" sign to be constructed with the pedestrian bridge.
- b. Lighting design of the bridge will be in accordance with the requirements of the National Electrical Code (NEC). Due to the aesthetic nature of the design, adherence to IDM or AASHTO requirements are not anticipated to be required.
- c. Voltage Drop Calculations will be completed to ensure values are below 10% per IDM Figure 502-4D.

II. Appendix "B" is amended to read as follows:

10. Proprietary Materials Request for Lighting to INDOT (if requested).
11. Lighting of Plazas or other architectural features, not described in Appendix A.
12. Sign Design (by others).

III. Appendix "C" is amended to read as follows:

I. Lighting Design

1. Final Landing, Pedestrian Path, Bridge Accent, and MONON Sign lighting Design and Plans shall be completed within 63 calendar days after notice-to-proceed from the CLIENT.

IV. Appendix "D" is amended to read as follows:

1. The total fee not to exceed in Section D.A.1. shall be changed from \$496,225.00 to \$517,903.65 representing an increase of \$21,678.65.
2. UNITED CONSULTING shall be paid for the work performed under this Contract on a lump sum basis in accordance with the following schedule:

	Original +Supp. Fees	Supplemental No. 6 Fee	Revised Fee
A.2.b.i Archaeological Investigation	\$ 6,100.00	-\$ 100.00	\$ 6,000.00
A.2.b.v Public Information Meeting	\$ 4,300.00	-\$ 4,300.00	\$ 0.00
A.2.b.vi Public Hearing	\$ 3,700.00	-\$ 1,750.00	\$ 1,950.00
A.2.f.ii Legal Descriptions, Plat & Plans	\$ 12,500.00	-\$ 2,500.00	\$ 10,000.00
A.2.f.iii Staking	\$ 2,000.00	-\$ 2,000.00	\$ 0.00
A.2.g.i Asbestos Investigation	\$ 5,300.00	-\$ 150.00	\$ 5,150.00
A.2.g.ii R/W Management	\$ 7,000.00	-\$ 1,181.35	\$ 5,818.65
A.2.g.iii APA's	\$ 1,000.00	-\$ 315.00	\$ 685.00
A.2.g.iv Appraisals	\$ 9,200.00	-\$ 3,600.00	\$ 5,600.00
A.2.g.v Appraisal Reviews	\$ 4,100.00	-\$ 1,400.00	\$ 2,700.00
A.2.g.vi Negotiating/Buying	\$ 8,125.00	-\$ 1,625.00	\$ 6,500.00
A.2.g.vii Relocation Fee	\$ 12,600.00	-\$11,100.00	\$ 1,500.00
A.2.h. Post Bid Services	\$ 10,000.00	\$ 3,200.00	\$ 13,200.00
A.2.i. Lighting Design	\$ 0.00	\$ 48,500.00	\$ 48,500.00

II. Except as herein modified, changed and supplemented, all terms of the original engineering agreement dated February 11, 2014, Supplement No. 1 dated November 18, 2015, Supplement No. 2 dated March 7, 2016, Supplement No. 3 dated June 13, 2016, Supplement No. 4 dated May 9, 2017, and Supplement No. 5 dated March 26, 2018 shall continue in full force and effect.

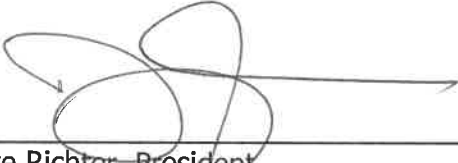
***IN WITNESS WHEREOF, the parties hereto have executed this
Supplemental Agreement No. 6***



UNITED CONSULTING

CLIENT

BY:

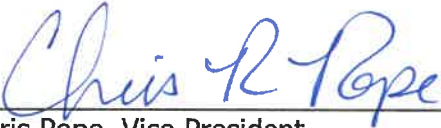


Dave Richter, President

BY:

Jeremy Lollar, Director of Public Works

BY:



Chris Pope, Vice President

BY:

DATE:

Feb 22, 2019

BY:

DATE:

ATTEST:

RESOLUTION NO. 19-104

RESOLUTION OF THE
BOARD OF PUBLIC WORKS AND SAFETY OF THE CITY OF WESTFIELD, INDIANA
APPROVING THE EXECUTION OF AN ECONOMIC DEVELOPMENT AGREEMENT
REGARDING CERTAIN PUBLIC IMPROVEMENTS IN THE PROPOSED
WHEELER LANDING ECONOMIC DEVELOPMENT AREA

WHEREAS, the Westfield Redevelopment Commission (“Commission”), as the governing body of the City of Westfield Department of Redevelopment (“Department”), pursuant to Indiana Code 36-7-14, as amended (“Act”), has thoroughly studied that area in the City of Westfield, Indiana (“City”) to be known as the “Wheeler Landing Economic Development Area” as described on Attachment I (“Economic Development Area”);

WHEREAS, the Commission has approved a proposed Economic Development Agreement to be entered into among the City, the Commission and Wheeler Landing I, LLC (“Wheeler”), a copy of which is attached hereto and incorporated herein as Attachment II (the “Economic Development Agreement”); and

WHEREAS, it is necessary for the Board of Public Works and Safety of the City of Westfield, Indiana (the “Board”) on behalf of the City to approve, execute and deliver the Economic Development Agreement.

NOW, THEREFORE, BE IT RESOLVED BY BOARD OF PUBLIC WORKS AND SAFETY OF THE CITY OF WESTFIELD, INDIANA, AS FOLLOWS:

1. The Economic Development Agreement in the form attached to this resolution as Attachment II is approved.
2. Any member of the Board is hereby authorized to execute and deliver the Economic Development Agreement on behalf of the Board and the City.
3. This resolution shall take effect immediately upon its adoption by the Board.

Dated this 27th day of March, 2019.

BOARD OF PUBLIC WORKS AND SAFETY
OF THE CITY OF WESTFIELD, INDIANA

J. Andrew Cook

Randy Graham

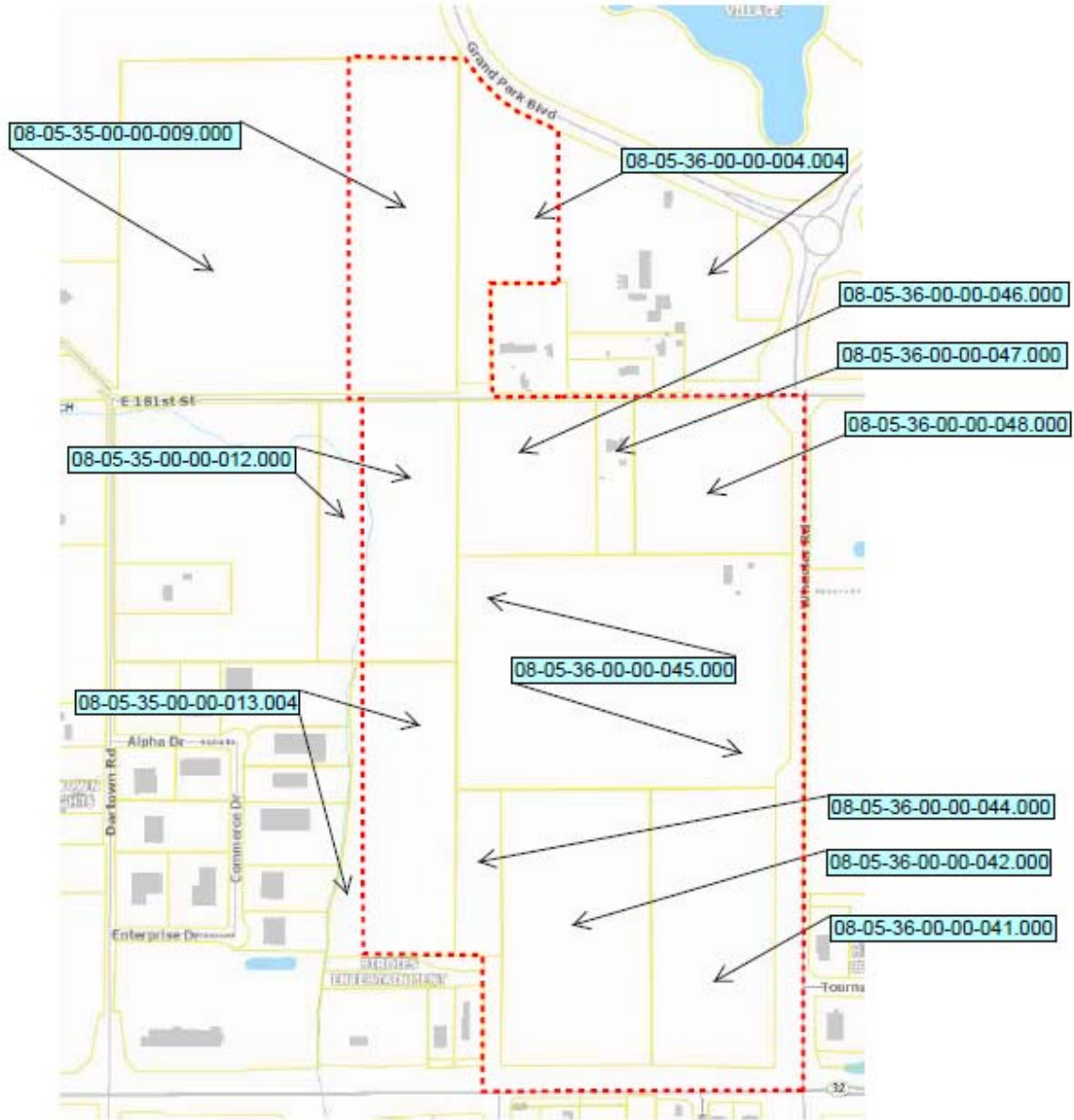
Kate Snedecker

ATTEST:

Cindy Gossard, Clerk-Treasurer

ATTACHMENT I

WHEELER LANDING ECONOMIC DEVELOPMENT AREA



<u>Parcel Number</u>	<u>Owner</u>
08-05-35-00-00-009.000	Wheeler Farms LLC
08-05-35-00-00-012.000	Wheeler Farms LLC
08-05-35-00-00-013.004	Wheeler Farms LLC
08-05-36-00-00-004.004	D & W Farms, Inc.
08-05-36-00-00-041.000	Wheeler Farms LLC
08-05-36-00-00-042.000	Wheeler Farms LLC
08-05-36-00-00-044.000	Wheeler Farms LLC
08-05-36-00-00-045.000	Wheeler Farms LLC
08-05-36-00-00-046.000	Wheeler Farms LLC
08-05-36-00-00-047.000	Maddox, Michael F & Michelle
08-05-36-00-00-048.000	Wheeler Farms LLC

ATTACHMENT II

ECONOMIC DEVELOPMENT AGREEMENT

THIS ECONOMIC DEVELOPMENT AGREEMENT (“AGREEMENT”), dated as of _____, 2019, is entered into by and among the CITY OF WESTFIELD, INDIANA (the “City”), the WESTFIELD REDEVELOPMENT COMMISSION (the “RDC”), and WHEELER LANDING I, LLC, an Indiana limited liability company, or an affiliate or related entity thereof (the “Developer”), organized and existing under the laws of the State of Indiana (collectively, the City, RDC and Developer shall be referred to as “Parties”).

RECITALS

1. This Agreement is being entered into by the City, the RDC and the Developer in furtherance of that certain Memorandum of Understanding dated January 29, 2019 (the “MOU”).

2. The Developer has proposed to develop all or a portion of the real estate described on Exhibit A attached hereto (the “Project Site”) which is located in the City of Westfield, Indiana (the “City”) through the construction and development of the commercial, retail and residential project more particularly described in Exhibit B attached hereto (the “Project”);

3. The City desires to induce the development of the Project by participating in the provision of, and/or obtaining various regulatory approvals of, certain infrastructure necessary to support the Project and substantially benefiting the City consisting of road improvements and other local public improvements located primarily within the boundaries of the Project Site, including but not limited to the:

- (i) design and construction of the extension of Oak Ridge Road to be renamed Grand Park Boulevard (“Renamed Grand Park Boulevard”) to State Road 32 consistent with the design and configuration in Exhibit D, including the “T” intersection for the east/west road south of 186th Street connecting the existing Wheeler Road roundabout to Renamed Grand Park Boulevard;
- (ii) design and construction of the extension of Tournament Trail from Renamed Grand Park Boulevard to Wheeler Road;
- (iii) design and construction of a yet to be named east/west road connecting Wheeler Road to Renamed Grand Park Boulevard, such road being to the north of Tournament Trail and to the south of 181st;
- (iv) the cost of improvements to the existing signal and turn lanes at Wheeler Road and State Road 32;
- (v) the cost of the traffic signal at Wheeler Road and Tournament Trail;
- (vi) design, obtaining the regulatory approvals, and construction of storm water infrastructure to serve the Project, local public improvements, and certain future needs of the City, including a regional storm water retention/detention pond, ((i) through (vi) are collectively, the “Public Improvements”).

NOW, THEREFORE, in consideration of the promises and mutual obligations and covenants of the parties hereto contained in this Agreement, and for other good and valuable

consideration, the receipt and sufficiency of which are hereby acknowledged, the Developer and the City agree as follows:

ARTICLE I

Definitions

“Affiliate” means an entity which directly or indirectly controls, is controlled by or is under common control with, the Developer. For purposes of this definition, “control” (including the terms “controls,” “controlled by” and “under common control with”) means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of an entity, whether through the ownership of voting securities, by contract, or other.

“Allocation Area” means the Wheeler Landing Allocation Area, in which a portion of the Project will be situated.

“City Event of Default” is defined in Section 6.3 of this Agreement.

“City Papers” means all the written agreements, applications, certificates, documents, forms, instruments, statements or other papers, made, completed or provided by a City Party in connection with the (i) Project or any portion thereof, or (ii) the Note or any transaction in connection therewith.

“City Parties” means (a) (i) the City of Westfield, Indiana, the City of Westfield Economic Development Commission, and the Westfield Redevelopment Commission, and (ii) the municipal adviser or advisers to any City Party; (b) their respective legal counsel; and (c) their successors and assigns.

“Developer” means Wheeler Landing I, LLC, an Indiana limited liability company, or its affiliates, and their successors and assigns.

“Developer Event of Default” is defined in Section 6.2 of this Agreement.

“Developer Financing” means the private financing obtained by the Developer to pay the Improvement Costs.

“Developer Parties” means, with respect to the Project or any portion thereof or the provision of the Note payments and lawfully available funds of the District to the Developer:

- (a) the Developer;
- (b) the Affiliates; and
- (c) its successors and assigns.

“District” means the Redevelopment District of the City.

“EDC Statute” means, collectively, IC 36-7-11.9 and 12.

“Facilities” means that portion of the Project deemed funded with Note Proceeds and/or lawfully available funds of the District.

“Fiscal Year” means the period commencing January 1 and ending December 31.

“Force Majeure” is defined in Section 7.18 of the Agreement.

“Improvement Costs” means construction costs, design fees, professional fees (including engineer fees, attorney fees, construction management fees (which may be paid to an Affiliate of Developer) and financial advisory fees), capitalized interest, financing fees (such as origination fees, commitment fees, title fees), and other expenses normal and commensurate with a project of this type.

“Net TIF Revenues” means the TIF Revenues available after payment of the RDC Direct Costs as limited and defined herein utilizing TIF Revenues.

“Note” means the taxable economic development tax increment revenue note of the City, to be issued to the Developer by the City in the face amount of not to exceed Seven Million Two Hundred Seventy-Two Thousand Seven Hundred Sixty-Five and No/100 Dollars (\$7,272,765.00).

“Note Final Payment Date” means the date upon which the Note has been paid in full.

“Note Proceeds” means the proceeds of the Note deemed allocated to Improvement Costs.

“Note Term” means the number of years the Note is scheduled to remain outstanding until final maturity, which shall not be more than twenty-five (25) years from the date of issuance of the Note.

“Note Year” means each year during the term of the Note beginning on February 21 and ending on the subsequent February 20.

“Owners” means, collectively, the Developer and Wheeler Farms, LLC or its successors or assignees.

“Project” is defined in the attached Exhibit B.

“Project Site” is defined in Exhibit A.

“RDC Direct Costs” means the ongoing expenses the RDC incurs which are directly related to the Project.

“RECITALS” means the provisions numbered 1 through 3 on the first page of this Agreement.

“RIF” means all of the road impact fees generated from the Wheeler Landing Allocation Area.

“RIF Credit” or “RIF Credits” means the credits set forth in the secondary round impact fee agreements as contemplated by Section 4.2(b) of the Agreement.

“Termination Date” means the conclusion of the Note Term or termination of this Agreement.

“TIF Revenues” means tax increment revenues derived from the Allocation Area.

“Wheeler Landing Allocation Area” is that area represented in Exhibit C to this Agreement. For the avoidance of doubt, if portion of a parcel is within the Wheeler Landing Allocation Area only that portion of the parcel lying within the area marked on Exhibit C shall be considered within the Wheeler Landing Allocation Area for purposes of this Agreement.

ARTICLE II

Terms of and Conditions Precedent to Funding of Project

- 2.1 **Note.** As provided in this Agreement, and subject to this Section 2.1 to the formal approvals of the City Parties, and satisfaction of the conditions precedent set forth in Section 2.2, the City will use its best efforts to issue the Note to the Developer to pay for or reimburse Improvement Costs. The Developer shall obtain the Developer Financing. This Agreement is contingent upon the Developer obtaining Developer Financing at terms and conditions deemed acceptable to the Developer and the City, such acceptance shall not be unreasonably withheld, delayed or conditioned. The maturity of the Developer Financing shall not be later than 25 years from the dated date of the Note. The City shall, pursuant to the EDC Statute, use its best efforts to issue the Note as consideration for the Improvement Costs which Note shall (1) mature not later than 25 years after the dated date of the Note, (2) be in an initial principal amount not to exceed \$7,272,765.00 except as provided for below, (3) bear a commercially reasonable per annum interest rate, maturity and amortization which shall mirror the terms of the Developer Financing, (4) be prepayable at any time in whole or in part without penalty, (5) first have any RIF paid (or if the City and the Developer agree, credited) against the outstanding principal balance of the Note at the time any such RIF become available and, after the application of such RIF, available Net TIF Revenues (as hereinafter defined) shall be paid to reduce the outstanding balance on the Note. The Note will be initially issued in a maximum principal amount equal to \$7,272,765.00. After completion of the construction of the Public Improvements, the principal amount of the Note shall be amended to be equal to the actual Improvement Costs including capitalized interest allowable pursuant to the EDC Statute on the actual Improvement Costs but in no event shall the principal amount of the Note exceed \$7,272,765.00. All of the RIF and Net TIF Revenues available on any date on which a payment is due on the Note shall be applied to payment of the Note for so long as the Note remains outstanding. The Developer shall provide the City with all documentation that the City deems to be necessary to determine the actual Improvement Costs. Such documentation shall be provided to the City on a monthly basis as the construction proceeds.

The TIF Revenues will be allocated for so long as the Note remains outstanding (1) first to payment or reimbursement of the RDC Direct Costs and (2) second any Net

TIF Revenues shall be applied to payment of the Note until the Note has been paid in full. The RDC shall provide to the Developer all documentation the Developer deems reasonably necessary to confirm the actual RDC Direct Cost.

2.2 **Conditions Precedent to Issuance of Note.** The City shall not be obligated to issue the Note to the Developer until the following have occurred:

- (a) the requirements of Section 2.1 have been satisfied;
- (b) the Allocation Area has been established;
- (c) the Note has been authorized by appropriate actions of the City Parties;
- (d) the Net TIF and RIF have been pledged to payment of the Note; and
- (e) the Developer has entered into the Developer Financing on terms reasonably satisfactory to the City Parties and has provided copies of the documentation of such to the City Parties.

2.3 **Term of Agreement.** This Agreement shall be effective on the date set forth in the first paragraph of this Agreement. This Agreement will terminate on the Termination Date. In addition, this Agreement may be earlier terminated under Article VI of this Agreement.

ARTICLE III **Conditions Precedent to Developer Obligations**

3.1 **Conditions Precedent to Obligations of Developer.** The obligation of the Developer to perform its covenants and agreements under this Agreement shall be subject to the satisfaction of the conditions precedent specified in this Section 3.1:

- (a) The Project Site is currently located in the “Grand Junction Consolidated Economic Development Area” as defined by the RDC Resolution 2-2009 as amended to the date hereof. The City and the RDC each agree to use their respective best efforts to take the necessary steps to remove a portion of the Project Site from the Grand Junction Consolidated Economic Development Area and create the Wheeler Landing Allocation Area which shall be a separate allocation area consisting solely of that portion of the Project Site particularly described in Exhibit C.
- (b) The representations and warranties of the City contained in Article IV of this Agreement continue to be true, complete and accurate in all material respects; and
- (c) The City and the RDC have each carried out in all material respects their respective obligations under this Agreement and each are in compliance in all material respects with the covenants specified in Article V of this Agreement, to

the extent such obligations and covenants are required to have been carried out or are applicable at the time the Developer obligation to perform has arisen.

- (d) The City and the RDC shall have obtained the necessary approvals to commit and pledge the Net TIF Revenues and RIF to payment of the Note.

ARTICLE IV **Representations and Warranties of Parties**

- 4.1 **Representations, Warranties of Developer.** The Developer represents and warrants, as of the date hereof, that:

- (a) **Authority.** The Developer has the requisite power, right and legal authority to execute, deliver and perform its obligations under this Agreement and has taken all action necessary to authorize the execution, delivery, performance and observance of its obligations under this Agreement. This Agreement, when executed and delivered by duly authorized representatives of each party hereto, will constitute the legal, valid and binding obligation of the Developer, enforceable against the Developer in accordance with its terms, except as may be limited by bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general principles of equity.
- (b) **Capacity, Capability.** The Developer has the requisite capacity and capability to administer, complete and retain the Project.
- (c) **Estimated Improvement Cost Documentation.** The Developer will provide the City with all documentation as it becomes available that the City deems to be necessary to determine the estimated Improvement Costs.

- 4.2 **Representations, Warranties of City and RDC.** The City and the RDC, as applicable, each represents and warrants, as of the date hereof, that:

- (a) The City will construct items (iv) and (v) of the Public Improvements, provided, however, upon completion of such items (iv) and (v), the Developer will reimburse the City for the actual cost of items (iv) and (v) above from the Developer Financing, but in no event will that reimbursement exceed \$855,000.00. The City will coordinate plans and specifications and timing of construction of items (iv) and (v) of the Public Improvements with the Developer's undertaking of items (i), (ii), (iii) and (vi) of the Public Improvements.
- (b) Except as stated below, all of RIF will be paid to Developer to reduce the principal balance of the Note or credited against the outstanding principal balance of the Note until the Note has been paid in full.

With each detailed development plan, the Parties agree to enter into secondary road impact fee credit agreements in exchange for the Project accommodating the

City's plans for pedestrian and vehicular connectivity consistent with the City's Unified Development Ordinance and Thoroughfare Plan, as amended. Developer shall provide to the City a list of the proposed improvements (such as, by way of example: parks, plazas, other recreational facilities, pedestrian trail, bicycle infrastructure, and roads (which may include public ways). The City shall agree that all such improvement that comply with those improvements contemplated by City Ordinance 12-13 shall be subject to the RIF Credit ("RIF Improvements"). Developer shall provide an itemized account (the "RIF Expense Itemization") of expenses to support the total cost for the construction of the Improvements including such supporting backup information as the City and the RDC may, in their sole discretion, request that shall be subject to the approval by the City or the RDC in their reasonable discretion. Within thirty (30) days of the latest to occur of (i) the completion of the RIF Improvements, (ii) receipt by the City and the RDC of the RIF Expense Itemization satisfactory to them in their sole discretion; and (iii) dedication of all right-of-way to be included in the Public Improvements, the City shall issue a RIF Credit to Developer in the amount of the actual costs of the RIF Improvements. All of the other RIF and park impact fees generated from the Wheeler Landing Allocation Area will be used to reimburse the Developer for the payment of the Improvement Costs until the Developer Financing has been paid in full.

- (c) **Authority.** Subject to Section 7.19 of this Agreement, the City and the RDC each represents and warrants, as of the date hereof, that (i) it has the requisite power, right and legal authority to execute, deliver and perform its obligations under this Agreement and has taken all action necessary to authorize the execution, delivery, performance and observance of its obligations under this Agreement, and (ii) this Agreement, when executed and delivered by duly authorized representatives of each party hereto, will constitute the legal, valid and binding obligation of the City and the RDC, enforceable against the City and the RDC in accordance with its terms, except as may be limited by bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general principles of equity.
- (d) **No Default or Conflict.** The execution and delivery of this Agreement and the effectuation of the transactions contemplated hereby, will not conflict with or constitute a material breach of or default under any applicable law or administrative regulation of the City or the RDC, or any applicable judgment or decree, or any indenture, loan agreement, note, resolution, certificate, agreement or other instrument to which the City or the RDC is a party or is otherwise subject.
- (e) **Absence of Litigation.** No litigation, inquiry or investigation of any kind in or by any judicial or administrative court or agency is pending or, to the City's knowledge, threatened against the City or the other City Parties with respect to (a) the organization and existence of the City or the other City Parties, (b) the authority of the City or the other City Parties to execute or deliver this Agreement or to perform their respective obligations hereunder, including effectuating the

transactions contemplated hereby, (c) the validity or enforceability of this Agreement or the transactions contemplated thereby, or (d) any authorization or proceedings related to the execution and delivery of this Agreement or the transactions contemplated hereby.

- (f) **Authorizations and Proceedings.** Subject to Section 7.19 of this Agreement, the actions, authorizations and proceedings referenced in this Agreement necessary to make this Agreement, when executed and delivered by the City and the RDC, the legal, valid and binding obligation of the City and the RDC, are in full force and effect and no such authorizations or proceedings have been repealed, revoked, rescinded or amended and all are in full force and effect.
- (g) **Compliance with Open Meeting Laws.** To the extent required by the laws of the State of Indiana, all actions of the City and the RDC with respect to the actions, authorizations and proceedings referenced in Section 4.2(d) or Section 7.19 and elsewhere herein occurred or will occur at meetings held after notice given in accordance with such laws, which were open to the public and at which quorums were present and acting throughout.

ARTICLE V

Covenants of Parties

5.1 **Covenants of Developer.** The Developer covenants and agrees, as follows:

- (a) **Rights of Way.** Upon completion of roads identified in items (i), (ii) and (iii) of the Public Improvements to the standards of City, the Owners will dedicate at no cost to the City, and the City will accept all of the right of way owned by Owners necessary for the items (i), (ii), and (iii) of the Public Improvements. The Developer and City acknowledge the City will need to obtain additional right of way from parties other than the Owners at the City's sole cost and expense for the construction of item (i) of the Public Improvements prior to commencement of the construction of item (i) of the Public Improvements.
- (b) **Construction and Cost of Public Improvements.** Developer will construct items (i), (ii), (iii) and (vi) of the Public Improvements. The Developer will pay the Improvement Costs. The initial principal amount of the Note, including capitalized interest allowable pursuant to the EDC Statute, if any, and costs of issuance of the Note, shall not exceed \$7,272,765.00 without the prior written consent of the Parties which consent shall not be unreasonably withheld, delayed or conditioned. The parties anticipate the only circumstances that may cause the Improvement Costs exclusive of capitalized interest allowable pursuant to the EDC Statute, estimated on the date of this Agreement to be \$6,157,745.00 exclusive of the Capitalized Interest component, to increase to be (i) adding additional improvements agreed upon by both parties, (ii) substandard soils existing within the construction area for the roads that in an aggregated total exceed one hundred linear feet of roadway or four feet in depth for any

distance,(iii) an increase in the interest rate for the Developer Financing (as hereinafter defined) to greater than six percent (6%) or (iv) an incident of Force Majeure.

- (c) **Public Improvement Scope, Timing and Cost.** The Developer shall establish the scope, timing, and budget/construction costs of the Public Improvements with the consultation of the City or the designated representative of the City. The Public Improvements will be constructed in accordance with the design standards of the City.
- (d) **Compliance with Laws.** The Developer shall comply in all material respects with (and shall cooperate with the City and the RDC to enable the City and the RDC to comply in all material respects with) statutes, regulations and rules applicable to the Project, including the Federal Civil Rights Act of 1964 and, if applicable, the Drug-Free Workplace Act of 1988.
- (e) **Application of Funds.** The Developer will apply Note Proceeds and lawfully available funds of the City to pay for or reimburse Improvement Costs or cause them to be so used, as provided in the Financing Agreement. Prior to the issuance of the Note, the Developer will provide to the City a list of the specific Improvement Costs that the Developer proposes to pay for or reimburse with the Note Proceeds, which must be approved by the City, such approval not to be unreasonably withheld or delayed. The Developer will use its best efforts to allocate the Note Proceeds to the payment or reimbursement of Improvement Costs.
- (f) **Records, Reporting.** Through the Note Final Payment Date, the Developer shall keep and maintain in its offices, complete and accurate records and supporting documents relating to the application of Note Proceeds and the receipt of debt service payments on the Note.
- (g) **Inspection of Records.** The City's mayor, deputy mayor, director of public works, engineer, financial consultant, construction consultant, legal counsel or any other mutually agreed upon duly authorized representative of the City shall, during regular business hours of the Developer, have access to and the right to examine the records and supporting documents required to be kept and maintained under this Agreement. Such access and right will terminate on the Note Final Payment Date. Prior to such termination, the Developer will cooperate reasonably with the City in connection with any such examination, including, to the extent possible and permissible, posting the information on a secure website. Any examination will be at the expense of the City.
- (h) **Inspection of Project.** Any duly authorized representative of the City shall have access to and the right to inspect the Project. Prior to such termination, the Developer will cooperate reasonably with the City in connection with any such inspection.

- (i) **Nondiscrimination.** Prior to the Termination Date, the Developer and its officers, agents and employees will not discriminate against any employee or applicant for employment to be employed in the performance of this Agreement, with respect to her or his hire, tenure, terms, conditions or privileges of employment, because of her or his race, sex, sexual orientation, gender identity, religion, color, national origin, ancestry, age, disability or United States military service veteran status. Breach of this subsection (i) shall be regarded as a material breach of this Agreement.

5.2 **Covenants of City.**

- (a) The City covenants and agrees to use its best efforts (i) to take or cause to be taken and (ii) to cause the other City Parties to use their best efforts to take or cause to be taken (and shall cooperate with the Developer to enable the Developer to take or cause to be taken) all actions necessary or desirable under statutes, regulations and rules applicable to the Project, and to execute and deliver or cause to be executed and delivered (and shall cooperate with the Developer to enable the Developer to execute and deliver or cause to be executed and delivered) such City Papers and other papers as may be necessary or desirable under such statutes, regulations and rules to assist and permit the Developer to develop the Project, and receive the benefit of payments on the Note.
- (b) The City covenants and agrees that:
 - (i) the Developer and the Developer Parties will not be liable for or with respect to the issuance or payment of the Note (other than payment of taxes levied on their property in the Allocation Area, subject to their rights as taxpayers and otherwise under Indiana law); and
 - (ii) neither the Project nor the Public Improvements nor any portion of the Project or the Public Improvements will be pledged, directly or indirectly, to secure the Note or any obligations relating to the Note.
- (c) The City covenants to use its best efforts during the Note Term to capture sufficient incremental assessed value in the Allocation Area to generate Net TIF Revenues sufficient to make all required payments on the Note.
- (d) So long as the Note remains outstanding, the City and the RDC each agree that it will not pledge TIF Revenues or RIF to additional obligations of the City or the RDC.

ARTICLE VI **Events of Default; Remedies**

- 6.1 **Developer Events of Default.** Each of the following shall constitute a “Developer Event of Default” by the Developer:

- (a) The material inaccuracy of any representation or warranty made by the Developer to the City, when made or deemed to be made, under this Agreement.
- (b) The Developer's material failure to fulfill any covenant of the Developer in this Agreement, and such failure shall remain unremedied for a period of thirty (30) days after the City gives written notice of the failure to the Developer; *provided, however*, if the Developer can show that the failure stated in the notice cannot be corrected within the applicable period (but can be corrected within such longer period), and the Developer initiates corrective action within said period, and diligently, continually, and in good faith works to effect a cure as soon as possible, the time period shall be reasonably extended for a period not to exceed one hundred twenty (120) days or such longer period agreed upon by the Parties.

6.2 **City Events of Default.** Each of the following shall constitute a "City Event of Default" by the City:

- (a) The material inaccuracy of any representation or warranty made by the City to the Developer, when made or deemed to be made, under this Agreement.
- (b) Subject to Section 7.19 of this Agreement, the City's material failure to fulfill any covenant of the City in this Agreement, and such failure shall remain unremedied for a period of thirty (30) days after the Developer gives written notice of the failure to the City; *provided, however*, if the City can show that the failure stated in the notice cannot be corrected within the applicable period (but can be corrected within such longer period), and the City initiates corrective action within said period, and diligently, continually, and in good faith works to effect a cure as soon as possible, the time period shall be reasonably extended for a period not to exceed one hundred twenty (120) days or such longer period agreed upon by the Parties.

6.3 **RDC Events of Default.** Each of the following shall constitute a "RDC Event of Default" by the RDC:

- (a) The material inaccuracy of any representation or warranty made by the RDC to the Developer, when made or deemed to be made, under this Agreement.
- (b) Subject to Section 7.19 of this Agreement, the RDC's material failure to fulfill any covenant of the RDC in this Agreement, and such failure shall remain unremedied for a period of thirty (30) days after the Developer gives written notice of the failure to the RDC; *provided, however*, if the RDC can show that the failure stated in the notice cannot be corrected within the applicable period (but can be corrected within such longer period), and the RDC initiates corrective action within said period, and diligently, continually, and in good faith works to effect a cure as soon as possible, the time period shall be reasonably extended for

a period not to exceed one hundred twenty (120) days or such longer period agreed to by the Parties.

- 6.4 **City and RDC Remedies, Termination.** Upon the occurrence and continuation of a Developer Event of Default, subject to the Developer's rights (under this Agreement or in law or in equity or otherwise) to dispute, contest or appeal any claim by the City and/or the RDC that a Developer Event of Default has occurred or is occurring, the City and/or the RDC may upon prompt written notice to the Developer, suspend or terminate the City's and the RDC's obligation, if any, to fund further payments on the Note; provided, however, under no circumstances shall the City and/or the RDC be able to discontinue payments to Developer as provided herein to the extent the Developer has expended sums to create Public Improvements acceptable to applicable City standards that are in place as of the time of an Event of Default. Payment for such Public Improvements as defined herein shall remain a continuing obligation from TIF and RIF revenues until paid in full. In addition, the City and/or the RDC may institute any action, suit or other proceeding in law or in equity or otherwise, which the City and/or the RDC deems necessary or appropriate for the protection of their respective interests.
- 6.5 **Developer Remedies, Termination.** Upon the occurrence and continuation of a City or an RDC Event of Default, the Developer may, subject to the City's or the RDC's rights (under this Agreement or in law or in equity or otherwise) to dispute, contest or appeal any claim by the Developer that a City Event of Default and/or an RDC Event of Default has occurred or is occurring, institute any action, suit or other proceeding in law or in equity or otherwise, which the Developer deems necessary or appropriate for the protection of its interests.

ARTICLE VII **Miscellaneous**

- 7.1 **Expenses Incurred Upon Developer or City Event of Default or RDC Event of Default.** Upon the occurrence of either a Developer Event of Default or a City Event of Default or RDC Event of Default resulting in the commencement of litigation or other administrative proceeding for dispute resolution, the party prevailing in any such litigation or proceeding shall be entitled to reimbursement by the other party (the non-prevailing party) for all reasonable and properly documented out of pocket expenses and costs of collection and enforcement, including reasonable attorneys' fees, incurred by the prevailing party as a result of one or more Events of Default by the non-prevailing party.
- 7.2 **Assignment.** The rights and obligations contained in this Agreement may be assigned by the Developer to a related or Affiliated entity with the express prior written consent of each of the RDC and the City. Developer expressly acknowledges that this Agreement touches and concerns the Project and that this Agreement is intended to be and shall be, except as provided otherwise herein, binding upon and enforceable against the Developer, its respective successors and assigns and all persons claiming under or through the Developer collectively or individually.

- 7.3 **Amendments.** No modification or amendment of any provision of this Agreement shall be effective unless made in writing and duly executed by the City or the RDC and the Developer.
- 7.4 **Disclaimer of Relationship.** Nothing contained in this Agreement, nor any act of the City or the RDC or of the Developer, or of any other person, shall be deemed or construed by any person to create any relationship of third party beneficiary, employer and employee, principal and agent, limited or general partners or joint ventures. The Developer is and will remain an “independent contractor” with respect to performance under this Agreement. The Developer is responsible for and shall pay all amounts and benefits owing to or for the account of its employees, if any, including unemployment compensation, FICA, retirement, life and medical insurance and worker’s compensation insurance.
- 7.5 **Survival of Covenants, Etc.** All representations, warranties, covenants and agreements made by the City, the RDC and the Developer in this Agreement, and all certificates delivered by the City, the RDC and the Developer shall survive the execution of this Agreement and the completion of the Public Improvements. No other person is entitled to rely upon any such representations, warranties, covenants, agreements or certificates.
- 7.6 **Notices.** Any and all notices or other communications required or permitted under this Agreement shall be in writing and shall be sufficiently given when delivered in person to, or sent by certified mail, postage prepaid, addressed as follows (provided that if mailed, any applicable time period will commence upon receipt by the addressee; and provided further that if the addressee refuses delivery, the notice will be deemed to have been given three days after the mailing of such notice or other communication):

To the City: City of Westfield, Indiana
Westfield City Hall
130 Penn Street
Westfield, Indiana 46074
Attn: Mayor

With a copy to: Krieg DeVault LLP
12800 North Meridian Street, Suite 300
Carmel, Indiana 46032
Attn: Brian J. Zaiger

To the Developer: Wheeler Landing I, LLC
Church Church Hittle + Antrim
2 North 9th Street
Noblesville, Indiana 46060
Attn: Eric M. Douthitt

or to such other address or person as shall be designated from time to time by notice as contemplated by this Section 7.6.

- 7.7 **Governing Law.** Except to the extent preempted by federal law, the laws of the State of Indiana shall govern all aspects of this Agreement, including execution, interpretation, performance and enforcement. All exhibits attached hereto are incorporated by reference.
- 7.8 **Dispute Resolution.** Any lawsuit arising out of or relating to this Agreement must be brought in Hamilton County, Indiana Circuit or Superior Courts. The City, the RDC and the Developer consent to the jurisdiction of such court and irrevocably waive any objections they may have to such jurisdiction or venue.
- 7.9 **No Waiver.** Neither failure nor delay on the part of the City or the RDC or the Developer in exercising any right under this Agreement shall operate as a waiver of such right, nor shall any single or partial exercise of any such right preclude any further exercise thereof or the exercise of any other right. No waiver of any provision of this Agreement or consent to any departure by the Developer or the RDC or the City therefrom shall be effective unless the same shall be in writing, signed on behalf of the City or the RDC or the Developer by a duly authorized officer thereof, and the same shall be effective only in the specific instance for which it is given. No notice to or demand on the City or the RDC or the Developer shall entitle the City or the RDC or the Developer to any other or further notices or demands in similar or other circumstances, or constitute a waiver of any of the City's or the RDC's or the Developer's right to take other or further action in any circumstances without notice or demand.
- 7.10 **Counterparts.** This Agreement may be executed in several counterparts, each of which shall be deemed an original for all purposes and each of which shall constitute one and the same.
- 7.11 **Binding of Successors, Assigns.** Subject to the further provisions of this Agreement, the terms and provisions of this Agreement shall be binding upon and inure to the benefit of the City, the RDC and the Developer and their respective successors and assigns.
- 7.12 **Further Assurances.** Subject to the further provisions of this Agreement, the Developer, the RDC and the City shall, at such party's expense, upon request of the other such party, duly execute and deliver, or cause to be executed and delivered, such further instruments and perform or cause to be performed such further acts as may be reasonably necessary or proper in the reasonable opinion of the City or the RDC or the Developer to carry out the provisions and purposes of this Agreement including, but not limited to, reasonable administrative amendment of this Agreement to satisfy the underwriting requirements of the Developer's Lender but only so long as such administrative amendments do not violate any provision of this Agreement particularly Section 2.1.
- 7.13 **Severability.** The invalidity, illegality, or unenforceability of any one or more of the terms and conditions of this Agreement shall not affect the validity, legality, or enforceability of the remaining terms and conditions hereof. All Exhibits to this Agreement are attached hereto and incorporated herein by reference. Time is of the

essence in this Agreement. If any provision of this Agreement or application to any party or circumstances shall be determined by any court of competent jurisdiction to be invalid and unenforceable to any extent, then the remainder of this Agreement or the application of such provision to such person or circumstances, other than those as to which it is so determined invalid or unenforceable, shall not be affected thereby, and each provision hereof shall be valid and shall be enforced to the fullest extent permitted by law; provided that, in lieu of such invalid or unenforceable provision, there will be added to this Agreement a provision as similar to the invalid or unenforceable provision as is possible to reflect the intent of the parties and still be valid and enforceable. The captions in this Agreement are inserted only as a matter of convenience and for reference and in no way define, limit, or describe the scope of this Agreement or the scope or content of any of its provisions. Nothing contained in this Agreement shall be construed to create a partnership or joint venture between the Developer and the City or their successors in interest. Unless otherwise specified, in computing any period of time described herein, the day of the act or event after which the designated period of time begins to run is not to be included and the last day of the period so computed is to be included, unless such last day is a Saturday, Sunday or legal holiday for national banks in the location where the Project Site is located, in which event the period shall run until the end of the next day which is neither a Saturday, Sunday, or legal holiday.

- 7.14 **Headings.** The headings of the articles, sections and paragraphs used in this Agreement are for convenience only and shall not be read or construed to affect the meaning or construction of any provision.
- 7.15 **Entire Agreement.** Except as otherwise expressly provided herein, this Agreement constitutes the entire agreement by and between the City, the RDC and the Developer and supersedes all prior agreements, written or verbal, between the City, the RDC and the Developer. No statements, promises or agreements whatsoever, in writing or verbally, in conflict with the terms of this Agreement have been made by the City, the RDC or the Developer that in any way modify, vary, alter, enlarge or invalidate any of the provisions and obligations of this Agreement. The parties do contemplate entering into additional development agreements that are intended to amend and or supplement the scope and purpose of this agreement.
- 7.16 **No Third Party Beneficiaries.** There are no third party beneficiaries of this Agreement.
- 7.17 **Indemnification.**
- (a) **Developer Indemnification.** The Developer will pay, and protect, indemnify and save the City Parties (including members, directors, officials, officers, agents, attorneys and employees thereof) harmless from and against, all liabilities, losses, damages, costs, expenses (including attorneys' fees and expenses of the City Parties), causes of actions, suits, claims, demands and judgments of any nature arising from or relating to:

- (i) Violation by the Developer of any agreement or condition of this Agreement;
 - (ii) Violation of any contract, agreement or restriction by the Developer relating to the Project, the Public Improvements or any part thereof, in connection with the implementation of or effectuation of this Agreement;
 - (iii) Violation of any law, ordinance or regulation by the Developer arising out of the ownership, occupancy or use of the Project, or a part thereof;
 - (iv) Any act, failure to act, or misrepresentation by the Developer, or any of the Developer's agents, contractors, servants, employees or licensees related to this Agreement; and
 - (v) The provision of any information or certification furnished by the Developer in connection with the issuance of the Note or this Agreement.
- (b) **City Indemnification.** To the extent permitted by law, the City will pay, and protect, indemnify and save the Developer (including members, directors, officials, officers, agents, attorneys and employees thereof) harmless from and against, all liabilities, losses, damages, costs, expenses (including attorneys' fees and expenses of the Developer), causes of actions, suits, claims, demands and judgments of any nature arising from or relating to:
- (i) Violation by the City or other City Party of any agreement or condition of this Agreement;
 - (ii) Violation of any contract, agreement or restriction by the City or other City Party relating to the Project, or any part thereof, in connection with the implementation of or effectuation of this Agreement;
 - (iii) Any act, failure to act, or misrepresentation by the City or other City Party, or any of the City's or other City Party's agents, contractors, servants, employees or licensees related to this Agreement;
 - (iv) The provision of any information or certification furnished by the City or other City Party in connection with the issuance of the Note or this Agreement; and
 - (v) The defense of any claim related to the action brought by the City Parties to obtain additional right of way from parties other than the Owners for the construction of item (i) of the Public Improvements.

7.18 **Force Majeure.** Notwithstanding anything to the contrary set forth herein, each party shall be excused for any failure or delay in performing any of its obligations under this Agreement, if such failure or delay is caused by an event of Force Majeure. "Force

Majeure” means any act of God; any accident (including equipment failure, HVAC failure or electricity outage for extended periods of time, destruction or damage to equipment not caused by the party relying upon such circumstance or event); any explosion; any fire, flood, ice, earthquake, lightning, tornado, hurricane or other severe weather condition or calamity; any civil disturbance, labor dispute or labor or material shortage; any sabotage or act (or specific, imminent threatened act) of terrorism; any act of a public enemy, uprising, insurrection, civil unrest, war or rebellion; any action or restraint by court order or public or governmental authority or lawfully established civilian authorities; a material adverse change in the national financial economic situation in the United States; the establishment of a general banking moratorium by Federal, State or Indiana authorities; a major financial crisis or material disruption in commercial banking or securities markets; or any other circumstance or event beyond the reasonable control of the party relying upon such circumstance or event. Each party shall diligently make efforts to perform any obligations delayed under this Section 7.18, immediately upon the event of Force Majeure no longer preventing such obligation from being performed, then: (a) the party asserting Force Majeure shall deliver written notice to the other party; (b) such observation, performance, or satisfaction shall be excused for the period of days that such observation, performance, or satisfaction is delayed or prevented; and (c) the deadlines for observation, performance, and satisfaction, as applicable, shall be extended for the same period.

- 7.19 **Future Actions.** Notwithstanding any other provisions of this Agreement, the parties acknowledge and understand that (i) certain City Parties, including the Common Council of the City, the City Economic Development Commission and the RDC, must take future actions to implement and maintain the City’s and/or the RDC’s obligations under this Agreement, and (ii) the representations of and performance of the covenants and agreements of the City and the RDC are subject to and contingent upon compliance with and completion of applicable statutory and administrative procedures, including, without limitation, any applicable public notice and public hearing requirements, official actions by governing bodies, and any remonstrance and appeal rights. The City covenants that it will use its best and commercially reasonable efforts to do all things lawfully within its power to take such future actions and to comply with all applicable statutory and administrative procedures at such times and in such manner as to effectuate and implement the provisions and intent of this Agreement to the fullest extent possible in accordance with the time frames set forth herein. The parties agree, subject to further proceedings required by law, to take such actions, including the execution and delivery of such documents, instruments, petitions and certifications, as may be necessary or appropriate, from time to time, to carry out the terms, provisions and intent of this Agreement and to aid and assist each other in carrying out said terms, provisions and intent.

- 7.20 **Interpretation.** Unless the context requires otherwise, (i) the singular includes the plural and vice versa, (ii) RECITALS and **EXHIBITS** form a part of this Agreement, (iii) any reference in this Agreement to any particular Article, Section, subsection, RECITAL or **EXHIBIT** shall be deemed to refer to an Article, Section or RECITAL of, or **EXHIBIT** to, this Agreement, (iv) the word “including” or any variation thereof means “including, without limitation” and shall not be construed to limit any general statement that it

follows to the specific or similar items or matters immediately following it, and (v) where a term is defined, another part of speech or grammatical form of that term shall have a corresponding meaning.

ARTICLE VIII

Tax Exempt Uses, Property Assessed Valuation Appeals and Payments

- 8.1 Developer covenants and warrants it will pay all property tax bills for the Project owned by Developer, its affiliates and its subsidiaries before tax bills are delinquent.
- 8.2 Developer covenants and warrants that it will not appeal or otherwise challenge the reasonable assessed valuation of the Project owned by the Developer, its affiliates and its subsidiaries such that it would cause the Project to generate insufficient TIF Revenues.
- 8.3 As referenced in the Wheeler Landing PUD (City Ordinance No. 18-04), the standards of the City's Unified Development Ordinance, Article 5.4 Economic Development District Overlay applies to the Project Site, subject to the following tax exempt use exceptions: one YMCA (a nonprofit health, fitness and exercise center use) and one Westfield Washington School Corporation facility (a public school district use) or (ii) one YMCA individually, shall be permitted within the Project Site on no more than eleven (11) acres in Areas I and III of the Wheeler Landing PUD.

Effective Date. Notwithstanding anything herein to the contrary, this Agreement shall not be effective until all parties hereto have executed this Agreement.

* * *

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed on or as of the day and year first above written.

“DEVELOPER”

WHEELER LANDING I, LLC,
an Indiana limited liability company

By: _____

Printed: _____

Title: _____

STATE OF INDIANA)
) SS:
COUNTY OF _____)

Before me, a Notary Public in and for the State of Indiana, personally appeared _____, the _____ of Wheeler Landing I, LLC, who, being first duly sworn, acknowledged the execution of the foregoing Agreement for and on behalf of said limited liability company.

Witness my hand and Notarial Seal this _____ day of _____, 2019.

My Commission Expires:

My County of Residence:

NOTARY PUBLIC

Printed

“RDC”

**WESTFIELD REDEVELOPMENT
COMMISSION**

By: _____
Joseph Plankis, President

STATE OF INDIANA)
)SS:
COUNTY OF HAMILTON)

Before me, a Notary Public in and for the State of Indiana, personally appeared Joseph Plankis, the President of the Westfield Redevelopment Commission, who, being first duly sworn, acknowledged the execution of the foregoing Agreement for and on behalf of the Westfield Redevelopment Commission.

Witness my hand and Notarial Seal this _____ day of _____, 2019.

My Commission Expires:

My County of Residence:

NOTARY PUBLIC

Printed

“CITY”

CITY OF WESTFIELD, INDIANA
BY ITS BOARD OF PUBLIC WORKS
AND SAFETY

By: _____

Printed: _____

Title: _____

STATE OF INDIANA)
) SS:
COUNTY OF HAMILTON)

Before me, a Notary Public in and for the State of Indiana, personally appeared _____, the duly authorized officer of the Board of Public Works and Safety of the City of Westfield, Indiana, who, being first duly sworn, acknowledged the execution of the foregoing Agreement for and on behalf of the City of Westfield, Indiana.

Witness my hand and Notarial Seal this _____ day of _____, 2019.

My Commission Expires:

My County of Residence:

NOTARY PUBLIC

Printed

This instrument prepared by James T. Crawford, Jr., Krieg DeVault LLP, 12800 North Meridian Street, Suite 300, Carmel, Indiana, 46032.

I affirm, under penalties for perjury, that I have taken reasonable care to redact each social security number in this document, unless required by law. *James T. Crawford, Jr.*

EXHIBIT B

Description of Project

WHEELER LANDING – NARRATIVE STATEMENT

Area I

Area I was created to focus on the district's adjacency to the Monon Trail. As a result development within this area is focused on the pedestrian. Buildings and improvements within Area I must address the Monon trail if adjacent and provide adequate pedestrian and bicycle infrastructure. Automobiles will be accommodated but not at the expense of the pedestrian. A mix of uses is encouraged to create a viable environment for retail amenities to thrive. Dense housing options, office space, retail and service uses are encouraged.

Area II

Area II is located north of and adjacent to SR 32, west of and adjacent to Wheeler Road, South of and adjacent to the future extension of Tournament Trail and east of and adjacent to Oak Ridge Road. Area II will reflect adjacent development patterns, creating out-lots for individual users and/or multiple in-line users. Area II is subject to the SR32 Overlay.

Area III

Area III represents the continuation of the mixed use environment established in Area I with further integration of the automobile and the visitors who will undoubtedly be arriving by car. Area III enhances typical shopping centers with pedestrian interconnectivity and the potential for a mix of uses existing in close proximity to one another. A plaza or other community gathering area shall be integrated into the site design and would provide the primary opportunity for the pedestrian experience to transition from Area I to Area III. Dense housing options, office space, retail and services are encouraged.

EXHIBIT C
Wheeler Landing Allocation Area
(Outlined in dotted red line)

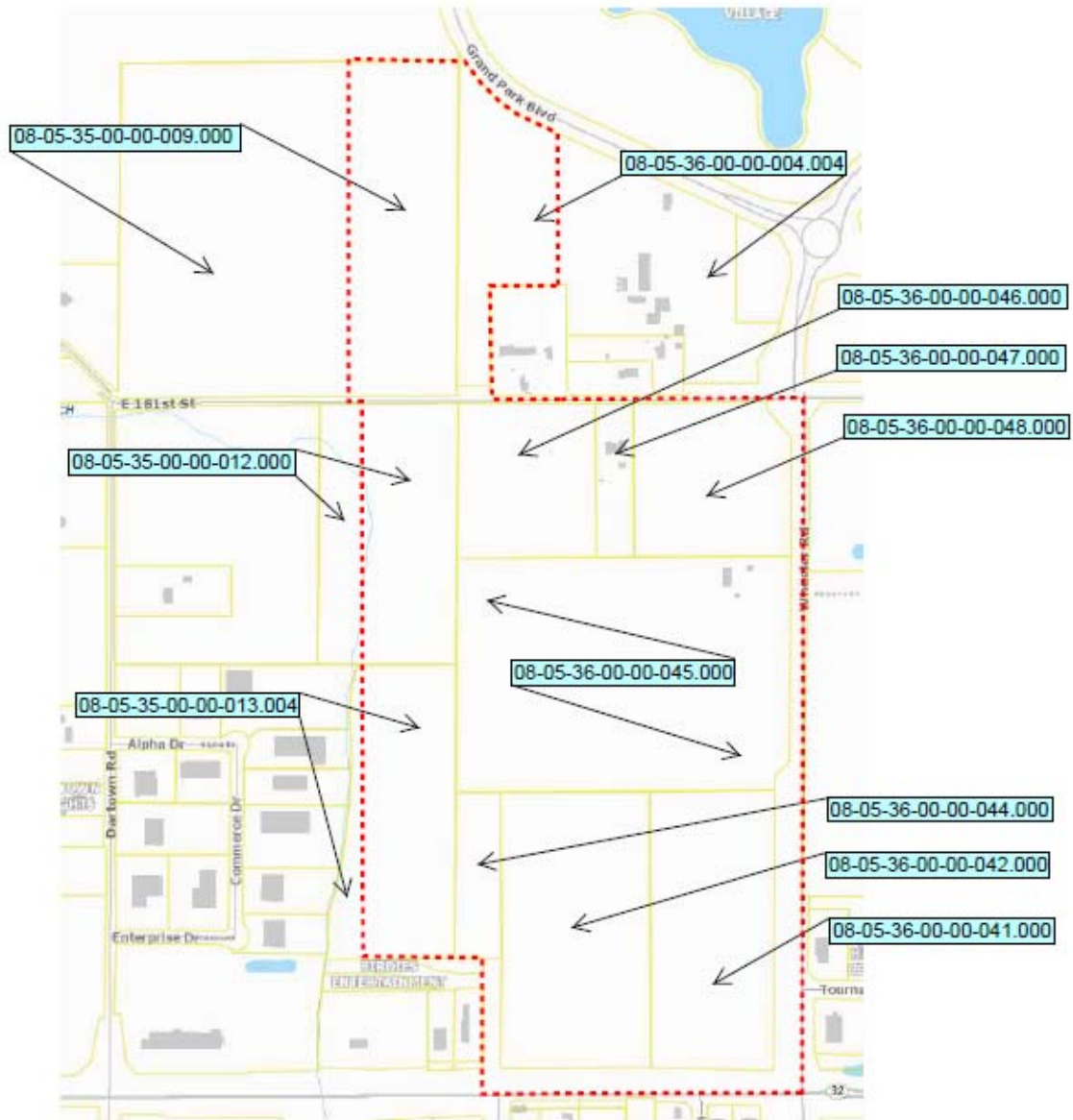


EXHIBIT D

Public Improvements Description/Location of Public Improvements

