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INTRODUCTION

The purpose of this drainage study is to develop an overall Storm Water Master Plan (SWMP) for the Village of Bloomdale and to provide an engineer's opinion of the drainage recommendations and estimated costs associated with constructing a public storm sewer system in the village.

LOCATION

The Village of Bloomdale is located within Bloom Township in Wood County, Ohio, at latitude 41° 10 21" North, and longitude 083° 33' 15" West. (See Exhibit 1) Bloomdale is located along State Route 18 and being approximately 20 miles southeast of Bowling Green, approximately 12 miles northeast of Findlay, and approximately 9 miles west of Fostoria.

According to the United States Census Bureau, the Village encompasses a total area of 0.67 square miles. The topography of the Village is relatively flat (0% to 2% slopes) and the natural surface water drains radially from the intersection of Main Street and Mulbury Street to open ditches that drain in the northeastern direction toward Lake Erie. The difference in average ground elevation within the Village ranges from approximately 852 feet, the highest point, to approximately 842 feet, the lowest point, above sea level (NAVD88). (See Exhibit 1)

PRELIMINARY RESEARCH AND DATA COLLECTION

As part of the preliminary effort to understand the watershed characteristics of this community, research and data collection was performed to create a preliminary surface model and basemap of the study limits. Sources to create this model and basemap included the following:

- Bloomdale Quadrangle Topographic Map, issued by U.S. Geological Survey in 1960;
- Soil Survey of Wood County, Ohio, issues by United States Department of Agriculture Department, Natural Resources Conservation Service in 2000;
- Wood County Engineer's drainage maps and various ditch records;
- Wood County Recorder's Plat records;
- Wood County Auditor Parcel Map records;
- Federal Emergency Management Agency's Flood Insurance Rate Map Number 39173C0420D
    - Effective Date: September 2, 2011;
- U.S. Geological Survey "Ohio StreamStats" software to delineate federally-recognized watershed areas;
- Construction Plans: 1989 Bloomdale Sewage Works Improvements – Contract 1 and Contract 2;
- Global Positioning System (GPS) survey data collected at existing discharge structures and profile elevations along Village streets;

SOILS

According to the Soil Survey of Wood County, OH as published by The United States Department of Agriculture in 2000 (See Exhibit 1d), the natural soils within the Village of Bloomdale range in character with the following classifications:

- The northwest and southeast areas of the Village consist of natural soils known as Hoytville silty clay, or HvA. These soils are typically very deep, very poorly drained, originate on extensive flats, depressions, and drainageways on lake plains, and have a general grade slope of 0 to 1 percent. This soil occurs in nearly level to slightly depressed, broad areas throughout the county. Surface runoff for this type of soil is very slow and often forces surface water to pond.

- The northern areas of the Village consist of Alvada loam, or AgA, and generally have a 0 to 1 percent slope. These soils are typically very deep and very poorly drained that overlay flat, depressions and drainageways on lake plains.
- The northeastern areas of the Village consist of Shawtown loam, or SeB, with 2 to 6 percent slopes. These soils are typically very deep and moderately well drained, and are often found on knolls of beach ridges on lake plains.
- The western portion of the Village has a ridge of Cygnet loam, CvA, ranging from 0 to 2 percent slopes. These soils are typically very deep and moderately well drained. These soils are also common on beach ridges on lake plains.

RAINFALL INTENSITY

Rainfall intensity is the amount of rainfall occurring in a unit of time, normally given in inches per hour. All rainfall intensity data and calculations for this study were established from Rainfall Intensity-Duration-Frequency (IDF) curves that are based upon data obtained from United States Weather Service Technical Paper No.40 Rainfall Frequency Atlas of The United States. The Village of Bloomdale is located within "Zone A" of the Rainfall Intensity Zone Map for Ohio. (See Exhibit 1).

With each rainfall event, a Recurrence Interval (RI) exists which is defined as the average time period in which a flood of a given magnitude can be expected to be equaled or exceeded. An example would be a runoff event with a 25-year recurrence interval would be expected to occur, on average, once every 25 years. The Exceedence Probability (P) that a flood will exceed a specified magnitude in a year is defined by P=1/RI. In the 25-year recurrence interval example above, the 25-year runoff event would have a 4% (1/25 or 0.04) probability or chance of occurring in any given year.

Reviewing the data for this region, a 100-year storm event with a 30-minute duration would yield a rainfall intensity of 4.2 inches per hour. This type of storm would have a 1% probability of occurring in any given year. Likewise, a 2-year storm event with a 30-minute duration would yield approximately 2 inches per hour. This type of storm would have a 50% probability of occurring in any given year. It is important for the Village to understand this statistical information and to make a decision to size a storm sewer system that balances the needs of the community with the expected construction cost and maintenance of the system.

HISTORICAL WATERSHED AND PRIMARY DRAINAGE OUTLETS

The Village of Bloomdale is located entirely within the Portage River Watershed of the Lake Erie Basin, which outlets into Lake Erie at Port Clinton by means of the Portage River. The Wood County Engineer has maintained four primary open ditches within the natural drainage areas impacted by the Village of Bloomdale watershed: (See Exhibit 2)

1) *Bloomdale Joint County Ditch No.2224*
    a. Includes areas within Village of Bloomdale and Bloom Township (Wood County).
    b. Discharges into the South Branch of the Portage River.
2) *A. O. Rosendale Ditch No. 24-A*
    a. Includes area within Village of Bloomdale, Bloom Township (Wood County).
    b. Discharges into the South Branch of the Portage River.

3) *Bloomdale Joint County Ditch No.2277*
    a. Includes areas within the Village of Bloomdale, Bloom Township (Wood County) and Cass Township (Hancock County).
    b. Discharges into the South Branch of the Portage River.
4) *Bloomdale Joint County Ditch No.2225*
    a. Includes areas within Village of Bloomdale, Bloom Township (Wood County) and Cass Township (Hancock County)
    b. Discharges into Bull Creek which empties into Middle Branch of Portage River.

It is imperative for the Village to recognize and understand these four primary drainage areas within the immediate vicinity of Bloomdale. Prior to the design of a storm drainage system, it is essential to coordinate with regulatory agencies or others that have interests in drainage matters. Regulatory agency involvement may come from any level of government (federal, state, or local). The concerns of these agencies are generally related to potential impacts resulting from highway drainage, specifically focusing on stormwater quantity and quality issues.

Bloomdale Joint County Ditch No.2277 is an open ditch that serves as a drainage outlet for the south-southeastern areas of the Village. The northern and western areas of the Village do not have an open ditch immediately abutting the Village corporation limits and rely on existing conduits and/or surface flow to drain these respective areas. This area beyond the Village's corporation limits is beyond the scope of this project, but it is not the intent of this study to change the drainage pattern of the Village. Due to the dependent nature of the Village's drainage system, consideration must be made by the Village to coordinate efforts with The Ohio Environmental Protection Agency, The Ohio Department of Transportation, The Wood County Engineer, and depending upon the environmental site conditions of the proposed storm sewer improvements, The United States Army Corps of Engineers may need to be involved. This study assumes this investigation will occur during the preliminary engineering phase of this project, which is at a later date.

EXISTING CONDITIONS

As with most communities, the Village of Bloomdale experiences various problem conditions during storm events depending on the intensity, duration and frequency of the event. Some conditions are impacted by repair and maintenance issues, some by cleaning or obstruction issues, and some by inadequate sizing due to original design and/or growth related changes. Some conditions cause standing water, basement backups and temporary flooding. There is not typically a single condition, but more commonly a series of conditions, that creates the situation that is unacceptable to the community or property owner. Often the storm condition can be a contribution to a secondary problem like sanitary sewer flooding or other infiltration/inflow conditions. While there are many temporary and more permanent solutions to various problems, there is rarely a true permanent solution due to a cost effective sizing issue for various potential storm events.

The Village's existing storm sewer system consists of aging drainage pipes ranging is size from 4" to 15" in diameter, very few of which have any known material type or record date of installation. Many of these drainage pipes do not function properly due to inadequate size, full of debris, structurally damaged or crushed, or other unknown reasons. The location of existing drainage pipes are not accurately mapped and were not considered as part of this study. However, if sections existing drainage

meet the design requirements during the preliminary engineering phase, these conduits may be incorporated into the storm sewer system during construction if acceptable by the design engineer and Village.

During this study, Poggemeyer representatives made various site visits and pictures were taken to document and better understand the nature of the storm water runoff during both normal dry conditions and typical rainfall events. (See Exhibit 6) It was observed that a majority of the property owners within this community were negatively impacted by a moderate rainfall or storm event. It appeared that the outlets at the ditches became full of storm water during moderate intensity storm events. As the Village's existing storm sewer system capacity became full, the ability of the outlets to discharge the storm water diminished. Without an available storm water storage (detention/retention) system or storm water pump station, the community is forced to wait for the storm water within the receiving ditches to recede before any additional surface water can drain. This backup of storm water contributes to a flooding situation throughout the Village and it often takes several days before drainage can re-occur.

It should be noted that based upon the Federal Emergency Management Agency's Flood Insurance Rate Map Insurance Rate Map Number 39173C0420D, Effective Date: September 2, 2011 (See Exhibit 1), the Village of Bloomdale is located outside the 100-year and 500-year flood zone. Any references to flooding herein refers to storm water runoff only and not due to flooding of a federally-recognized body of water, such as a major lake or river *within* the immediate corporation limits of the Village.

Although the Village has plans of constructing storm sewer improvements in conjunction with upcoming roadway improvements, there are several known problem areas within the Village that experience drainage-related issues during different types of storm events. Some of these issues could be related to receiving ditch conditions. Ditch cleaning should be discussed with the Wood County Engineer for the level of cleaning/maintenance needed or allowable.

DESIGN CONSIDERATIONS

A drainage solution can be designed and constructed when the Village decides on the acceptable recurrence interval for each runoff event. The primary objective of performing the hydraulic calculations is to select the optimal pipe size and then calculate the hydraulic grade line for each frequency of storm event. Standard design frequencies for storm sewer systems are 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year intervals. However, since no two storms are ever the same, and site conditions are dynamic in nature, standard design frequency is a model and not absolute. A moderate NW Ohio rainfall event over thick ground vegetation in May is a much different situation than a similar storm event under frozen conditions in December. The optimal pipe size is based on the smallest diameter pipe in which the design discharge for the selected storm frequency will not exceed the Just Full Capacity (JFC) of the pipe. To reduce maintenance issues with pipe clogging, the minimum pipe size for this study is 12 inches in diameter. Just Full Capacity with a free water surface is considered to occur at 93.8% of the pipe diameter for circular conduits. Maximum flow and velocity is considered to occur at this depth as well. Storm sewer design calculations begin with the first upstream structure and proceed downstream to the outlet. The hydraulic grade line is typically calculated using a higher storm frequency than the one specified for Just Full Capacity. These calculations begin at the downstream end (outlet) and proceed upstream to the initial structure in the system.

The Hydraulic Grade Line (HGL) can be thought of as the calculated surface water elevation at any point within the storm sewer system during each frequency of storm runoff event. The recommended goal for the storm sewer system is to maintain the HGL below the existing ground surface except for major storm events. This approach is often unachievable at all locations within similar communities with poor surface drainage conditions due to pockets of low surface elevations throughout the drainage area. An example of this would be when a catch basin becomes temporarily full of water and the rim becomes submerged by several inches or feet of water during 2-year and/or 5-year storm events, but possibly does not become submerged during 25-year storm events. This submerged event may be acceptable to the Village if, for example, the catch basin is submerged for less than 30 minutes and if the catch basin is not located within a residential area. Likewise, if the village park is regularly flooded during 1-year storm events, and the baseball fields are regularly under water, it would not be recommended to design allowable ponding in areas of high importance or dense concentration of human activity. The Village will need to value this scenario and decide the acceptable level of surface water ponding, if any, to set the parameters and determine the design frequency for the SWMP.

Once the design frequency has been determined by the Village, the hydraulic grade line calculation is established by utilizing the rainfall intensity that is associated with the outfall of the storm sewer system. This rainfall intensity remains constant unless the HGL elevation falls below the calculated normal depth. In this case, the HGL will follow the normal depth until the next upstream junction or structure. At this location, an elevation is computed using the flowline of the incoming pipe plus the maximum of either the normal depth or the average of critical depth plus the diameter of the conduit (Dc + d)/2. If this elevation is greater than the previous HGL, the HGL will be re-positioned based upon a new calculated elevation. A new rainfall intensity is calculated that is associated with the time of concentration to this location. This new intensity is held constant back through the system unless the HGL falls below the normal depth, in which case the process is repeated throughout the storm sewer system.

Detail design of a storm sewer system should strive to maximize the recommendations outlined within The Ohio Department of Transportation's (ODOT) Location and Design Manual, Volume 2 (Section 1104: Storm Sewers) regarding Design Considerations:

Keep a storm sewer system as shallow as possible, consistent with the following controls:

A) Provide a minimum cover of 9 inches (9") from the top of a rigid pipe to the bottom of the pavement subbase; however, in no installation shall the distance from the top of the rigid pipe to the pavement surface be less than 15 inches. Provide a minimum cover of at least 18 inches for pipe not under pavement.

B) Provide a minimum cover of 12" from the top of flexible pipe to the bottom of the pavement subbase; however, in no installation shall the distance from the top of the flexible pipe to the pavement or ground surface be less than 24".

C) Provide a minimum cover of 4" from the top of extra strength pipe to the bottom of the pavement subbase; however, in no installation shall the distance from the top of the extra strength pipe to the pavement surface be less than 10 inches. Provide a minimum cover of at

least 4" if not under the pavement. Check with the Hydraulic section to determine the required extra strength.

D) Provide a sufficient depth to permit the use of precast inlets, catch basins and manholes. Refer to the Standard Construction Drawings for this information. In no installation shall the top of pipe be in the precast top section of the inlet, catch basin, or manhole...

E) Provide a sufficient depth to avoid interference with the existing utilities such as sanitary sewers, the grade of which cannot be changed.

F) Provide a sufficient depth to create a positive outlet for underdrains. It is desirable to maintain the underdrain outlet 12 inches above the flow line of the outlet structure with 6 inches as a minimum.

G) Provide sufficient slope to maintain a minimum velocity of 3 feet per second, for self-cleansing. The velocity is calculated using "just full" Manning's Equation.

H) Match the crown of a smaller upstream pipe in a longitudinal trunk sewer to the crown of the adjacent downstream pipe.

I) Minimum depth = finish grade – minimum cover - wall thickness.

It is important for the Village to understand the basic formulas and parameters for designing storm sewer systems. The Rational Formula ($Q = C \times I \times A$) is one of the most commonly used equations for the calculation of peak flows from small areas less than 200 acres.

Q = Flow (cubic feet per second)
C = Dimensionless runoff coefficient
I = Rainfall Intensity (inches per hour)
A = Drainage Area (acres)

The basic assumptions inherent in the Rational Formula are as follows:

- Peak flow occurs when the entire watershed is contributing to the flow.
- Rainfall intensity is the same over the entire drainage area.
- Rainfall intensity is uniform over the time duration equal to the time of concentration, Tc. The time of concentration is the time required for water to travel from the hydraulically most remote point of the basin to the point of interest.
- Frequency of the computed peak flow is the same as that of the rainfall intensity, i.e., the 10-year rainfall intensity is assumed to produce the 10-year peak flow.
- Coefficient of runoff is the same for all storms of all recurrence probabilities.

The runoff coefficient, C, is a function of the ground cover with respect to a host of hydrologic abstractions, such as evaporation, percolation, and infiltration. Precipitation or rainfall does not all runoff the ground surface and these loses need to be quantified. The runoff coefficient relates the estimated peak discharge to the theoretical maximum of 100% runoff. Typical values for C in this study were as follows:

Surface Type of Each Drainage Area *Runoff Coefficient (C)*

Residential – single family	0.30 to 0.40
Lawns (flat, 0% - 2%)	0.10 to 0.20
Asphalt Streets	0.70 to 0.95
Drives and Walks	0.75 to 0.85
Building Roofs	0.75 to 0.95

A weighted C value was established for drainage areas within this study which averages the amount of area for each surface with respect to its corresponding C value. Discharge flow can be calculated by multiplying the Weighted C value x Rainfall Intensity x Drainage Area.

As more impervious areas (examples include roof tops, pavement, etc.) are improved within a community, the more runoff generated and stormwater volume that is needed to be conveyed to a proper outlet. Systems that were designed for existing conditions many years ago are often undersized based on actual growth and current development. Thus, some communities construct localized detention/retention basins rather than constantly replacing and enlarging existing storm sewer systems.

Systems age and become less efficient due to settlement, sediment, minimal maintenance, debris and sometimes structural deterioration. Often localized construction activities can contribute to mud, concrete, stone or other debris plugging the system. Pipe and/or drainage structures can also become cracked, broken, deflected, crushed or settled. ODOT allows for a variety of material for storm sewer conduits, such as concrete, polyvinyl chloride (PVC), and Smooth Wall High-Density Polyethylene (HDPE). Detail design recommendations will assist the Village with selecting the specific conduit material to construct the storm sewer system during the Preliminary Engineering phase of the project.

The SWMP was completed within public road right-of-way, and does not necessarily address any private property owner's flooding or surface water ponding problems within the residential structures or within the front, side, or rear yards outside the public road right-of-way. The SWMP will provide an outlet for private property owners to discharge storm water into the public storm sewer system, with Village approval, at private property owner's expense.

It is also important to note that due to the impacts of the pipe cross-sectional area and friction, two 12-inch pipes only carry approximately 32% of the flow of a 24-inch pipe at the same grade, and 52% of the same velocity. Given available depth, always opt for the larger pipe; the cost increase is not linear and the larger pipe can be installed at a flatter grade.

For example, if the minimum flow criteria of 3 fps is to be attained throughout the Village, the slope of the pipe would need to be increased such that the physical pipe would not reach the needed drainage catchment areas without breaching the required depth of existing ground cover. Likewise, if the size of all storm sewer pipes were to flow "just full", the pipe diameter would need to increase and would breach the required depth of existing ground cover.

With the overall average existing grade within the Village having such flat slopes (0% to 2%) and the distance required to drain the most-remote hydraulic locations within each of the drainage areas being over 1500+ lineal feet of storm sewer conveyance, gravity storm sewer design requires careful consideration of all design parameters. Final design is a balance of competing needs and therefore is

often a compromise between pipe size, flow, slope of pipe, and cost to construct and maintain the storm sewer system.

Most public storm water systems are designed for storm events with 2-year, 5-year, or 10-year reoccurring intervals with some storage or detention/retention ponds designed for a 25-year storm event. This topic was discussed with the village during preliminary meetings throughout this study and it was established that all other storm events (25-year, 50-year, 100-year, etc.) would be economically impossible and/or impracticable to construct. Therefore, a SWMP was developed during this study to compare conditions of two types of storm events, and hereafter referred to as follows:

1) JFCF-2 / HGF-5 or 2-year Storm
   - Just Full Capacity Frequency of 2 years (JFCF-2) / Hydraulic Gradient Frequency of 5 years (HGF-5)

2) JFCF-5 / HGF-10 or 5-year Storm
   - Just Full Capacity Frequency of 5 years (JFCF-5) / Hydraulic Gradient Frequency of 10 years (HGF-10)

Hydraulic calculations were performed throughout the Village with these two types of storm events using Ohio Department of Transportation's CDSS Hydraulic Design software (Version: 1.0.0.3). (See Exhibit 3) The proposed storm sewer pipe size, properties and sizes of the drainage catchment areas, design rainfall intensity, slope of pipe, mean velocity, existing ground cover, and hydraulic grade line were calculated and reviewed to recommend the approximate storm sewer conduit to construct.

PROPOSED DRAINAGE AREAS

Five primary drainage areas were established to conform as much as possible to the existing drainage watersheds and assist in the development of a Storm Water Master Plan (SWMP, See Exhibit 4). Each area has independent outlets into existing open ditches. Each outlet was developed to drain the village with respect to the historical natural surface watershed. Each drainage area has unique challenges, although common to all is the lack of change in natural grade or elevation change from the most-hydraulically remote point in the drainage area to the appropriate outlet point.

Drainage Area One: (See Exhibit 4) Drainage Area One drains 27 acres of land throughout the village, discharging 28 cfs (JFCF-2/HGF-5) and 32 cfs (JFCF-5/HGF-10) during each statistical storm event. This area consists of the residential area north of Mulberry Street (State Route 18)/Vine Street between Beal Drive/Garfield Street Maple Street (extended north) at the Village Administration Office. The primary storm sewers will parallel along Garfield and North Main Street, discharging into an existing catch basin at the intersection of North Main Street and the north corporation limit of the village at an existing outflow elevation of 737.84'. This outlet currently drains north along the west right-of-way of North Main Street (Bloomdale Road) and appears to drain along an existing roadside swale north to an existing catch basin w/48" concrete culvert crossing under Stearns Road into an open ditch known as Bloomdale Joint County Ditch No. 2224. This discharge point would be the primary location for Drainage Area One, but is ¼ mile north of the current village corporation limit. Cost estimates include construction costs to extend the Drainage Area One north along the west right-of-way of Bloomdale Road into the catch basin south of Stearns Road.

Drainage Area One ranges in pipe size from 12 inches in diameter to 36 inches in diameter, while maintaining a velocity rate ranging from 1.51 fps (feet per second) to 4.84 fps (JFCF-2/HGF-5) and 1.61 fps to 5.13 fps (JFCF-5/HGF-10). A majority of the storm sewers will maintain a velocity ranging from 2 fps to 4 fps. Both the JFCF-2/HGF-5 and JFCF-5/HGF-10 hydraulic grade line calculations identified several storm sewer structures being nearly full of water during each respective event, but did not identify any storm water exceeding the rim of the proposed storm sewer catch basins.

Drainage Area Two: (See Exhibit 4) Drainage Area Two drains 43 acres of land throughout the west-southwest quadrant of the village, discharging 43 cfs (JFCF-2/HGF-5) and 50 cfs (JFCF-5/HGF-10) during each statistical storm event. This area consists primarily of the residential area south of Mulberry Street (State Route 18) and north of Walnut Street between the west corporation limit of the village east to a natural, subtle ridge line running from Harrison Street southwest toward the end of West Walnut Street. A significant area of farmland drains into the village near Cherry Street and Cleveland Street and storm sewer must be larger in diameter to meet the capacity for this additional discharge. The storm sewers will collect within all of the north and south public streets and discharge into a primary storm sewer running west along the right-of-way of State Route 18 toward an existing catch basin with an elevation of 738.97' at the west corporation limit of the village.

While researching this project, we found a 1934 construction plan from The Ohio Department of Highways for the relocation of S.H. 224 (State Route 18) near the west corporation limit of the village. The construction of these proposed improvements created the current reverse curve (with super-elevation) of the roadway for State Route 18 as it enters from west to east into the current, residential area of Bloomdale. These 1934 plans identify an existing open ditch that drained portions of Drainage Area Two beginning at the west right-of-way of Rose Street and Simonds Street. This open ditch has since been covered, and the pipe (if any) size replacing this former open ditch is unknown. A 15" tile at .10% grade is identified as the new (1934) outlet leading toward the catch basin at the west corporation limits. An open ditch would have the capacity to carry significantly more storm water than a 15" drainage tile with similar grade. With no current open ditch to discharge the village's storm water, this 15" tile is currently undersized to adequately discharge minimal (JFCF-2/HGF-5) rainfall events for this drainage area. With new storm sewer improvements, we recommend a minimum 42" pipe in this area to minimize post-construction flooding.

Similar to Drainage Area One, Drainage Area Two needs to extend ½ mile west to discharge into Bloomdale Joint County Ditch No. 2225. Cost estimates include construction costs to extend the Drainage Area Two along the south right-of-way of State Route 18 into an open ditch.

Drainage Area Two ranges in pipe size from 12 inches in diameter to 48 inches in diameter, while maintaining a velocity rate ranging from 1.19 fps to 4.18 fps (JFCF-2/HGF-5) and 1.26 fps to 4.37 fps (JFCF-5/HGF-10). A majority of the storm sewers will maintain a velocity ranging from 1.5 fps to 2.7 fps, which is below the recommended 3 fps threshold for pipe cleansing. Both the JFCF-2/HGF-5 and JFCF-5/HGF-10 hydraulic grade line calculations identified several storm sewer structures being nearly full of water or up to 1 foot of ponding above the catch basins. The JFCF-5/HGF-10 hydraulic grade line calculations greatly reduced the number of submerged catch basins, and reduced the maximum depth of ponding to 0.5 feet at these catch basins. Additional detailed site topography and elevations should be studied in this area prior to constructing any storm sewers within Drainage Area Two.

Drainage Area Three: (See Exhibit 4) Drainage Area Three drains 36 acres of land throughout the village, discharging 38 cfs (JFCF-2/HGF-5) and 44 cfs (JFCF-5/HGF-10) during each statistical storm event. The outlet for this drainage area follows East Walnut Street extended east and discharges into Bloomdale Joint County Ditch No. 2277 with a 42" diameter culvert at elevation 737.00'. Easement(s) would be needed to be established with private owner(s) to secure the legal right-of-way for the storm sewer improvements. Typical easement strips are 20 feet to 30 feet in width, allowing enough land to construct and maintain the storm sewer. Open ditches may be an option at the east end of this area to reduce construction costs while discharging storm water and increasing storm water storage capacity.

This drainage area collects surface water ponding within the residential areas between Vine Street and Walnut Street. It also extends west along Walnut Street to Harrison Street and collects runoff west of Main Street between Mulberry Street and Walnut Street. There are many locations within this drainage area that have equal-potential surface elevations and/or are flat with small depressions that do not allow surface water to sheet flow or drain. Drainage Area 3 ranges in pipe size from 12 inches in diameter to 42 inches in diameter, while maintaining a velocity rate ranging from 1.51 fps to 5.10 fps (JFCF-2/HGF-5) and 1.61 fps to 5.54 fps (JFCF-5/HGF-10). The JFCF-2/HGF-5 hydraulic grade line calculations identify storm water ponding of 0.2 feet deep or within 2 feet of being full of water at several proposed catch basins. The JFCF-5/HGF-10 hydraulic grade line calculations did not identify any storm water exceeding the rim of the proposed storm sewer catch basins.

Drainage Area Four: (See Exhibit 4) Drainage Area Four drains a 14-acre strip of land along Railroad Street between Walnut Street and the CSX Railroad. The western limit of this area is Harrison Street and the discharge location is within Bloomdale Joint County Ditch No. 2277 at elevation 737.56'. Storm sewers were established along existing road right-of-way and within Village of Bloomdale park property extending Railroad Street east of South Maple Street. This area discharges 16 cfs (JFCF-2/HGF-5) and 19 cfs (JFCF-5/HGF-10) during each statistical storm event. Drainage easement(s) would be needed to be established with private owner(s) to secure the legal right-of-way for the storm sewer improvements.

This drainage area collects surface water ponding near the intersection of South Main Street and Railroad Street. An additional short run of pipe may need to be installed south of Railroad Street and north of the Railroad, but due to the significant slope at the South Main Street (State Route 18) and CSX railroad crossing, preliminary surface models indicate surface water would drain north along Main Street into a proposed catch basin south of Railroad Street.

Drainage Area 4 ranges in pipe size from 12 inches in diameter to 30 inches in diameter, while maintaining a velocity rate ranging from 0.76 fps to 4.20 fps (JFCF-2/HGF-5) and 0.82 fps to 4.47 fps (JFCF-5/HGF-10). To improve velocity, the storm sewers within the pair of catch basins immediately north of Railroad Street could be re-routed north to discharge into the catch basins at South Main Street and Walnut Street. This would impact the downstream pipe sizes for this Drainage Area 3, which is why these basins were included in Drainage Area 4. A majority of the Drainage Area 4 has a storm sewer velocity ranging from 2 fps to 4 fps. Both the JFCF-2/HGF-5 and JFCF-5/HGF-10 hydraulic grade line calculations did not identify any storm water exceeding the rim of the proposed storm sewer catch basins.

Drainage Area Five: (See Exhibit 4) Drainage Area Five drains approximately 17 acres of land south of the CSX Railroad, being primarily the area between South Garfield Street and Main Street. This area includes natural surface runoff areas within both residential and agricultural landuse. This drainage area discharges into the Bloomdale Joint County Ditch No. 2277 at elevation 738.37'. Storm sewers were established along existing road right-of-ways within Garfield Street, Center Street, Main Street, and public alleys. This drainage area offers the most flexibility with regards to design storm sewer location due to the location of the open ditch. Likewise, this drainage area appeared to be the least impacted by storm events, possibly due to properly functioning existing drainage structures and/or proximity of surface runoff to existing open ditch.

This area discharges 21 cfs (JFCF-2/HGF-5) and 25 cfs (JFCF-5/HGF-10) during each statistical storm event. Drainage easement(s) would not be needed to be established with private owner(s) to secure the legal right-of-way for the storm sewer improvements.

Drainage Area Five ranges in pipe size from 12 inches in diameter to 36 inches in diameter, while maintaining a velocity rate ranging from 1.51 fps to 4.48 fps (JFCF-2/HGF-5) and 1.53 fps to 4.82 fps (JFCF-5/HGF-10). A majority of the Drainage Area 4 has a storm sewer velocity ranging from 2.3 fps to 3.2 fps. Both the JFCF-2/HGF-5 and JFCF-5/HGF-10 hydraulic grade line calculations did not identify any storm water exceeding the rim of the proposed storm sewer catch basins.

OPINION OF PROBABLE COST SUMMARY

The Storm Water Master Plan includes a Conceptual Project Cost Estimate for each street within each drainage area. Quantities for drainage structures and pipes were itemized to offer solutions on a street by street project. Each Drainage Area was estimated for both JFCF-2/HGF-5 and JFCF-5/HGF-10 storm events to identify cost differences for each storm sewer system. A summary of these estimated construction costs are as follows:

	2-year Storm	5-year Storm
1. Drainage Area One	$ 1,020,000	$ 1,048,000
2. Drainage Area Two	$ 1,391,000	$ 1,419,000
3. Drainage Area Three	$ 1,056,000	$ 1,110,000
4. Drainage Area Four	$ 365,000	$ 394,000
5. Drainage Area Five	$ 306,000	$ 316,000
VILLAGE TOTALS	***$ 4,138,000***	***$ 4,287,000***

Please refer to Exhibit 5 for Detailed Conceptual Project Cost Estimates of each Drainage Area.

FINANCING

Public improvements may be financed in several ways, based upon one or a combination of methods available under Ohio laws. The method chosen will depend upon the nature of improvements, who will benefit from the improvements, and the ability of the Village to take on additional financial indebtedness. The various methods for financing capital improvements are discussed below:

1. Existing Revenue Stream - This is the financing of improvement projects from current revenues. Such revenues may come from general taxation, feeds, charges for services, special finds, or special assessments. Advantages of this method include the saving of interest costs on borrowed money and

providing for greater future budget flexibility. The major disadvantage is the need to have uncommitted cash available which often precludes the financing of extensive capital improvements in a small community.

2. Special Assessment - Special assessment financing is commonly used in the improvement of local streets and sidewalks, and in the installation of water mains, storm sewers and sewage collection facilities. The costs of these types of improvements are borne by those who are directly benefitted and not by the community at large. In some cases, where the project is of considerable benefit to a large portion of the community, it may be financed partly from general funds or other revenues. Assessments are made on an Equivalent Dwelling Unit (EDU) or front foot basis or on a combination of the two methods.

   This method of financing involves the use of general obligation bonds for which the full faith and credit of the municipality are pledged and means that in the event any assessments remain unpaid, the municipality will be required to pay interest on and redeem such bonds out of municipality funds.

3. State and Federal Aid - Financial assistance is available to communities in a variety of programs. The amount and type of assistance vary according to the program.

   As these programs are changing constantly, they will need to be reviewed at the time each project is contemplated. These programs cannot be planned as part of the financing but will contribute greatly whenever they can be applied.

4. Storm Water Utility Fund - This involves establishing a monthly storm water utility rate based on a fixed charge per residential EDU. The institutional, industrial and commercial establishments are all charged a prorated fixed charge based on multiple EDU's. All these charges are related to prorated impervious area as they relate to the average impervious area of residential property. Once this fund is established, these revenues can be a resource for storm sewer debt amortization projects much like other water and wastewater utility charges.

5. General Obligation Bonds - The most common method of financing local improvements is the issuance of general obligation bonds. These bonds may be issued by legislative authority without a vote of the electorate, or they may be issued after submitting the question to the electorate for approval. The full faith and credit of the municipality or county are pledged in the issuance of such bonds. In the case of un-voted issues, the tax levy required for interest and redemption at maturity must be made within the millage available inside the ten mill limitation. General obligation bonds are normally used to finance improvements which benefit the entire community.

6. Mortgage Revenue and Revenue Bonds - Mortgage revenue bonds are issued to finance mainly public utilities and impose no liability on the political entity. The bonds are secured only by a mortgage of the property and a pledge of the revenue of the utilities and are not subject to the limitation of the Uniform Bond Law. Revenue bonds are secured only by the pledge of the revenue, impose no liability on the political entity and are not subject to the limitations of the Uniform Bond Law. Revenue bonds require adequate assurance that ample revenue will be available for interest and redemption; otherwise, the interest rate may be too high or the bonds may not be readily salable.

The principal factors for consideration in determining both the amount of money the Village should borrow and the type of borrowing that should be employed are:

a. The nature of the project and its relation to the General Plan.
b. The availability of monies other than from borrowing, such as grant-in-aid and accumulated municipal funds.
c. The need for providing borrowed funds both for the project at hand and for other projects.
d. The debt limitations applicable to the Village, and
e. The different kinds of bonds that may be issued to finance the project and their sources of payment.

EXECUTIVE SUMMARY

The Village's existing storm sewer system consists of aging drainage pipes ranging is size from 4" to 15" in diameter, very few of which have any known material type or record date of installation. Many of these drainage pipes do not function probably due to one or more of the following conditions: inadequate size, full of debris, structurally damaged or crushed, or other unknown reasons. These existing drainage pipes provide the conduit for storm water to flow into the open ditches at the five (5) known, primary discharge or outlet locations.

During this study, observations were made on various occasions to witness the impact of the storm water runoff during rain events. It appears that the outlet ditches quickly fill with water and the drainage conduits from the open ditches to the residences are unable to discharge runoff in a timely manner. Problem areas were discussed and identified with Village officials, and the Village determined to focus the study on comparing both 2-Year and 5-Year storm events for the development of the Storm Water Master Plan (SWMP).

Extensive survey fieldwork of the existing conditions was reviewed to establish a general route for the proposed conduit and storm sewer structures to drain the Village. Five Drainage Areas were evaluated to drain the community under the both 2-Year and 5-Year storm events, under just-full capacity pipe conditions. Ohio Department of Transportation (ODOT) Design Considerations and standard design practices were used with respect to pipe size, depth of cover, slope, and Village priorities to develop the SWMP.

A detailed Conceptual Project Cost Estimate was provided to assist the Village in managing future project costs involved with improving each drainage area on a street-by-street basis. The cost estimates identified in this study were prepared based upon estimated linear pipe and storm sewer structures needed to construct the Storm Water Master Plan. Inflation was not considered as part of this cost estimate. It is assumed that most of the storm sewer improvements will be constructed within the public right-of-way with limited encroachment into the existing roadway surface to minimize roadway reconstruction cost. Each cost estimate identifies the approximate lineal footage of storm pipe, number of storm sewer structures, and engineering costs associated with each project. Final quantities and construction cost estimates will be re-calculated during the design phase of the project.

We recommend the Village review this study and develop a prioritized Project List. This prioritization should be based on local criteria but could consider the following:

First Priority

A. The project is needed to remedy a condition endangering public health, safety or welfare.
B. The project provides facilities necessary for a critically needed community program.

Second Priority

A. The project is one of the major drainage courses that serves other needed improvements.
B. The project is serving a maximum of people for the dollars spent.

Third Priority

The project is nonessential to the overall community development, but is used by the residents and is part of the Village street system.

When the Village is ready to proceed with a project, a detailed topographic survey and engineering review will need to be completed to identify pertinent site features and create an accurate surface model and planimetric basemap of existing improvements within the project area. Right-of-ways for existing public roads and alleys will need to be re-established, as well as the location of any utilities within the immediate vicinity of the design route. Preliminary engineering review will identify proposed improvements, and through project meetings and open dialogue with the Village, an acceptable route for the proposed storm sewer improvements will be established. Construction plans will be finalized and offered for public bid, and a contractor will be awarded to construct the project.

The Project List should be reviewed annually and projects should be reevaluated for its priority ranking as projects are completed and/or new projects are required and added to the list. Collaborative effort between the Village and it's citizenry to understand the necessary costs and involvement in maintaining a storm sewer is critical to the success of the SWMP. Having a proactive approach toward solving the Village's drainage problems will add value to the community for many years to come.

2-YEAR DESIGN STORM SUMMARY

Bloomdale Drainage Summary, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2 -Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	Summary				
	Drainage Area 1				
	N Main St				$522,000.00
	N Garfield St				$422,500.00
	Beal Dr				$75,200.00
				Drainage Area 1 Total	**$1,020,000**
	Drainage Area 2				
	Mulberry St				$696,300.00
	Cherry St				$70,600.00
	Rose St				$101,800.00
	N Cleveland St				$263,700.00
	N Lincoln St				$148,900.00
	Harrison St				$110,000.00
				Drainage Area 2 Total	**$1,391,000**
	Drainage Area 3				
	Walnut St				$253,000.00
	Cherry St				$126,000.00
	Mulberry St				$42,800.00
	Harrison St				$55,500.00
	N Garfield St				$160,600.00
	N Main St				$121,800.00
	N Maple St				$131,200.00
	Crop Line				$165,100.00
				Drainage Area 3 Total	**$1,056,000**
	Drainage Area 4				
	Railroad St				$239,100.00
	S Garfield St				$45,400.00
	S Main St				$43,400.00
	S Maple St				$37,200.00
				Drainage Area 4 Total	**$365,000**
	Drainage Area 5				
	S Garfield St				$108,400.00
	Center St				$112,500.00
	S Main St				$85,400.00
				Drainage Area 5 Total	**$306,000**
				Grand Total For Project	**$4,138,000**

ASSUMPTIONS:
- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

2-YEAR DESIGN STORM

Bloomdale Drainage Area 1, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2 -Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	N Main St				
611	12" CONDUIT, TYPE B	1128	FT	$55.00	$62,040.00
611	15" CONDUIT, TYPE B	33	FT	$65.00	$2,150.00
611	18" CONDUIT, TYPE B	352	FT	$68.00	$23,940.00
611	24" CONDUIT, TYPE B	661	FT	$80.00	$52,880.00
611	33" CONDUIT, TYPE B	1268	FT	$110.00	$139,480.00
611	CATCH BASIN, NO. 2-3	26	EACH	$1,605.00	$41,730.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$3,300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$3,300.00
624	MOBILIZATION	LUMP	SUM		$6,500.00
SPECIAL	RESTORATION	LUMP	SUM		$64,500.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$1,700.00
				construction subtotal	$401,500
				10% contingencies	$40,200
				construction total	**$441,700**
				other project costs (20%)	$80,300
		(survey, design, bidding, const admin, obsv, testing)			
				N Main St Sub Total	***$522,000***
	N Garfield St				
611	12" CONDUIT, TYPE B	923	FT	$55.00	$50,770.00
611	15" CONDUIT, TYPE C	68	FT	$50.00	$3,400.00
611	18" CONDUIT, TYPE B	123	FT	$68.00	$8,370.00
611	21" CONDUIT, TYPE B	312	FT	$75.00	$23,400.00
611	27" CONDUIT, TYPE B	1236	FT	$105.00	$129,780.00
611	CATCH BASIN, NO. 2-3	28	EACH	$1,605.00	$44,940.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$2,700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$2,700.00
624	MOBILIZATION	LUMP	SUM		$5,300.00
SPECIAL	RESTORATION	LUMP	SUM		$52,200.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$1,400.00
				construction subtotal	$325,000
				10% contingencies	$32,500
				construction total	**$357,500**
				other project costs (20%)	$65,000
		(survey, design, bidding, const admin, obsv, testing)			
				N Garfield St Sub Total	***$422,500***

	Beal Dr				
611	12" CONDUIT, TYPE B	185	FT	$55.00	$10,180.00
611	18" CONDUIT, TYPE B	364	FT	$68.00	$24,760.00
611	CATCH BASIN, NO. 2-3	7	EACH	$1,605.00	$11,240.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$500.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$500.00
624	MOBILIZATION	LUMP	SUM		$1,000.00
SPECIAL	RESTORATION	LUMP	SUM		$9,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$57,800
				10% contingencies	$5,800
				construction total	**$63,600**
				other project costs (20%)	$11,600
				(survey, design, bidding, const admin, obsv, testing)	
				Beal Dr Sub Total	**$75,200**
				Drainage Area 1 Total	**$1,020,000**

ASSUMPTIONS:

- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

2-YEAR DESIGN STORM

Bloomdale Drainage Area 2, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Mulberry St				
611	12" CONDUIT, TYPE B	587	FT	$55.00	$32,290.00
611	15" CONDUIT, TYPE B	88	FT	$65.00	$5,720.00
611	21" CONDUIT, TYPE B	318	FT	$75.00	$23,850.00
611	30" CONDUIT, TYPE B	336	FT	$110.00	$36,960.00
611	42" CONDUIT, TYPE B	798	FT	$120.00	$95,760.00
611	48" CONDUIT, TYPE B	1649	FT	$125.00	$206,130.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
611	CATCH BASIN, NO. 2-4	5	EACH	$2,000.00	$10,000.00
611	CATCH BASIN, NO. 2-5	6	EACH	$2,400.00	$14,400.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$4,200.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$4,200.00
624	MOBILIZATION	LUMP	SUM		$8,300.00
SPECIAL	RESTORATION	LUMP	SUM		$82,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$2,100.00
				construction subtotal	$535,600
				10% contingencies	$53,600
				construction total	**$589,200**
				other project costs (20%	$107,100
				(survey, design, bidding, const admin, obsv, testing)	
				Mulberry St Sub Total	**$696,300**
	Cherry St				
611	12" CONDUIT, TYPE B	556	FT	$55.00	$30,580.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$500.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$500.00
624	MOBILIZATION	LUMP	SUM		$900.00
SPECIAL	RESTORATION	LUMP	SUM		$8,700.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$54,300
				10% contingencies	$5,400
				construction total	**$59,700**
				other project costs (20%	$10,900
				(survey, design, bidding, const admin, obsv, testing)	
				Cherry St Sub Total	**$70,600**

	Rose St				
611	12" CONDUIT, TYPE B	420	FT	$55.00	$23,100.00
611	18" CONDUIT, TYPE B	47	FT	$68.00	$3,200.00
611	21" CONDUIT, TYPE B	119	FT	$75.00	$8,930.00
611	42" CONDUIT, TYPE B	29	FT	$120.00	$3,480.00
611	CATCH BASIN, NO. 2-3	13	EACH	$1,605.00	$20,870.00
611	CATCH BASIN, NO. 2-4	2	EACH	$2,000.00	$4,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$600.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$600.00
624	MOBILIZATION	LUMP	SUM		$1,200.00
SPECIAL	RESTORATION	LUMP	SUM		$12,000.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$78,300
				10% contingencies	$7,800
				construction total	**$86,100**
				other project costs (20%	$15,700
				(survey, design, bidding, const admin, obsv, testing)	
				Rose St Sub Total	***$101,800***
	N Cleveland St				
611	12" CONDUIT, TYPE B	570	FT	$55.00	$31,350.00
611	15" CONDUIT, TYPE B	166	FT	$65.00	$10,790.00
611	18" CONDUIT, TYPE B	465	FT	$68.00	$31,620.00
611	21" CONDUIT, TYPE B	191	FT	$75.00	$14,330.00
611	24" CONDUIT, TYPE B	235	FT	$80.00	$18,800.00
611	27" CONDUIT, TYPE B	94	FT	$105.00	$9,870.00
611	30" CONDUIT, TYPE B	37	FT	$110.00	$4,070.00
611	CATCH BASIN, NO. 2-3	25	EACH	$1,605.00	$40,130.00
611	CATCH BASIN, NO. 2-4	1	EACH	$2,000.00	$2,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,700.00
624	MOBILIZATION	LUMP	SUM		$3,300.00
SPECIAL	RESTORATION	LUMP	SUM		$32,200.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$900.00
				construction subtotal	$202,800
				10% contingencies	$20,300
				construction total	**$223,100**
				other project costs (20%	$40,600
				(survey, design, bidding, const admin, obsv, testing)	
				N Cleveland St Sub To	***$263,700***

	N Lincoln St				
611	12" CONDUIT, TYPE B	504	FT	$55.00	$27,720.00
611	15" CONDUIT, TYPE B	42	FT	$65.00	$2,730.00
611	18" CONDUIT, TYPE B	138	FT	$68.00	$9,390.00
611	21" CONDUIT, TYPE B	221	FT	$75.00	$16,580.00
611	CATCH BASIN, NO. 2-3	22	EACH	$1,605.00	$35,310.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,000.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,000.00
624	MOBILIZATION	LUMP	SUM		$1,900.00
SPECIAL	RESTORATION	LUMP	SUM		$18,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$500.00
				construction subtotal	$114,500
				10% contingencies	$11,500
				construction total	**$126,000**
				other project costs (20%	$22,900
				(survey, design, bidding, const admin, obsv, testing)	
				N Lincoln St Sub Total	***$148,900***
	Harrison St				
611	12" CONDUIT, TYPE B	581	FT	$55.00	$31,960.00
611	18" CONDUIT, TYPE B	173	FT	$68.00	$11,770.00
611	CATCH BASIN, NO. 2-3	15	EACH	$1,605.00	$24,080.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,400.00
SPECIAL	RESTORATION	LUMP	SUM		$13,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
				construction subtotal	$84,600
				10% contingencies	$8,500
				construction total	**$93,100**
				other project costs (20%	$16,900
				(survey, design, bidding, const admin, obsv, testing)	
				Harrison St Sub Total	***$110,000***
				Drainage Area 2 Total	***$1,391,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

2-YEAR DESIGN STORM

Bloomdale Drainage Area 3, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Walnut St				
611	12" CONDUIT, TYPE B	370	FT	$55.00	$20,350.00
611	18" CONDUIT, TYPE B	312	FT	$68.00	$21,220.00
611	24" CONDUIT, TYPE B	233	FT	$80.00	$18,640.00
611	27" CONDUIT, TYPE B	760	FT	$105.00	$79,800.00
611	CATCH BASIN, NO. 2-3	10	EACH	$1,605.00	$16,050.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,600.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,600.00
624	MOBILIZATION	LUMP	SUM		$3,200.00
SPECIAL	RESTORATION	LUMP	SUM		$31,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$800.00
				construction subtotal	$194,600
				10% contingencies	$19,500
				construction total	**$214,100**
				other project costs (20%)	$38,900
		(survey, design, bidding, const admin, obsv, testing)			
				Walnut St Sub Total	**$253,000**
	Cherry St				
611	12" CONDUIT, TYPE B	289	FT	$55.00	$15,900.00
611	15" CONDUIT, TYPE B	323	FT	$65.00	$21,000.00
611	24" CONDUIT, TYPE B	350	FT	$80.00	$28,000.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$800.00
624	MOBILIZATION	LUMP	SUM		$1,600.00
SPECIAL	RESTORATION	LUMP	SUM		$15,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
				construction subtotal	$96,900
				10% contingencies	$9,700
				construction total	**$106,600**
				other project costs (20%)	$19,400
		(survey, design, bidding, const admin, obsv, testing)			
				Cherry St Sub Total	**$126,000**

	Mulberry St				
611	12" CONDUIT, TYPE B	301	FT	$55.00	$16,560.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$32,900
			10% contingencies		$3,300
			construction total		**$36,200**
			other project costs (20%)		$6,600
			(survey, design, bidding, const admin, obsv, testing)		
			Mulberry St Sub Total		***$42,800***
	Harrison St				
611	12" CONDUIT, TYPE B	386	FT	$55.00	$21,230.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$400.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$400.00
624	MOBILIZATION	LUMP	SUM		$700.00
SPECIAL	RESTORATION	LUMP	SUM		$6,900.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$42,700
			10% contingencies		$4,300
			construction total		**$47,000**
			other project costs (20%)		$8,500
			(survey, design, bidding, const admin, obsv, testing)		
			Harrison St Sub Total		***$55,500***
	N Garfield St				
611	12" CONDUIT, TYPE B	732	FT	$55.00	$40,260.00
611	15" CONDUIT, TYPE B	73	FT	$65.00	$4,750.00
611	18" CONDUIT, TYPE B	342	FT	$68.00	$23,260.00
611	24" CONDUIT, TYPE B	24	FT	$80.00	$1,920.00
611	CATCH BASIN, NO. 2-3	18	EACH	$1,605.00	$28,890.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,000.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,000.00
624	MOBILIZATION	LUMP	SUM		$2,000.00
SPECIAL	RESTORATION	LUMP	SUM		$19,900.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$500.00
			construction subtotal		$123,500
			10% contingencies		$12,400
			construction total		**$135,900**
			other project costs (20%)		$24,700
			(survey, design, bidding, const admin, obsv, testing)		
			N Garfield St Sub Total		***$160,600***

	N Main St				
611	12" CONDUIT, TYPE B	661	FT	$55.00	$36,360.00
611	15" CONDUIT, TYPE B	30	FT	$68.00	$2,040.00
611	27" CONDUIT, TYPE B	42	FT	$105.00	$4,410.00
611	CATCH BASIN, NO. 3A	14	EACH	$2,300.00	$32,200.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$800.00
624	MOBILIZATION	LUMP	SUM		$1,600.00
SPECIAL	RESTORATION	LUMP	SUM		$15,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$93,700
			10% contingencies		$9,400
			construction total		**$103,100**
			other project costs (20%)		$18,700
			(survey, design, bidding, const admin, obsv, testing)		
			N Main St Sub Total		***$121,800***
	N Maple St				
611	12" CONDUIT, TYPE B	229	FT	$55.00	$12,600.00
611	12" CONDUIT, TYPE C	308	FT	$50.00	$15,400.00
611	15" CONDUIT, TYPE B	27	FT	$65.00	$1,760.00
611	18" CONDUIT, TYPE C	312	FT	$62.00	$19,350.00
611	24" CONDUIT, TYPE C	27	FT	$75.00	$2,030.00
611	27" CONDUIT, TYPE C	41	FT	$95.00	$3,900.00
611	CATCH BASIN, NO. 2-3	16	EACH	$1,605.00	$25,680.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$900.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$900.00
624	MOBILIZATION	LUMP	SUM		$1,700.00
SPECIAL	RESTORATION	LUMP	SUM		$16,200.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$500.00
			construction subtotal		$100,900
			10% contingencies		$10,100
			construction total		**$111,000**
			other project costs (20%)		$20,200
			(survey, design, bidding, const admin, obsv, testing)		
			N Maple St Sub Total		***$131,200***

	Crop Line				
611	12" CONDUIT, TYPE C	23	FT	$55.00	$1,270.00
611	18" CONDUIT, TYPE C	367	FT	$62.00	$22,760.00
611	27" CONDUIT, TYPE C	322	FT	$95.00	$30,590.00
612	36" CONDUIT, TYPE C	311	FT	$115.00	$35,770.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
611	CATCH BASIN, NO. 2-4	1	EACH	$2,000.00	$2,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,100.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,100.00
624	MOBILIZATION	LUMP	SUM		$2,100.00
SPECIAL	RESTORATION	LUMP	SUM		$20,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$600.00
				construction subtotal	$127,000
				10% contingencies	$12,700
				construction total	**$139,700**
				other project costs (20%)	$25,400
				(survey, design, bidding, const admin, obsv, testing)	
				Crop Line Sub Total	***$165,100***
				Drainage Area 3 Total	***$1,056,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

2-YEAR DESIGN STORM

Bloomdale Drainage Area 4, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Railroad St				
611	12" CONDUIT, TYPE B	823	FT	$55.00	$45,270.00
611	21" CONDUIT, TYPE B	318	FT	$75.00	$23,850.00
611	24" CONDUIT, TYPE B	236	FT	$80.00	$18,880.00
611	27" CONDUIT, TYPE B	368	FT	$105.00	$38,640.00
611	CATCH BASIN, NO. 2-3	13	EACH	$1,605.00	$20,870.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,500.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,500.00
624	MOBILIZATION	LUMP	SUM		$3,000.00
SPECIAL	RESTORATION	LUMP	SUM		$29,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$800.00
				construction subtotal	$183,900
				10% contingencies	$18,400
				construction total	**$202,300**
				other project costs (20%)	$36,800
		(survey, design, bidding, const admin, obsv, testing)			
				Railroad St Sub Total	**$239,100**
	S Garfield St				
611	12" CONDUIT, TYPE B	210	FT	$55.00	$11,550.00
611	15" CONDUIT, TYPE B	15	FT	$65.00	$980.00
611	21" CONDUIT, TYPE B	34	FT	$75.00	$2,550.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
				construction subtotal	$34,900
				10% contingencies	$3,500
				construction total	**$38,400**
				other project costs (20%)	$7,000
		(survey, design, bidding, const admin, obsv, testing)			
				S Garfield St Sub Total	**$45,400**

	S Main St				
611	12" CONDUIT, TYPE B	252	FT	$55.00	$13,860.00
611	24" CONDUIT, TYPE B	39	FT	$80.00	$3,120.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$33,400
			10% contingencies		$3,300
			construction total		**$36,700**
			other project costs (20%)		$6,700
		(survey, design, bidding, const admin, obsv, testing)			
			S Main St Sub Total		**$43,400**
	S Maple St				
611	12" CONDUIT, TYPE B	237	FT	$55.00	$13,040.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$500.00
SPECIAL	RESTORATION	LUMP	SUM		$4,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$28,600
			10% contingencies		$2,900
			construction total		**$31,500**
			other project costs (20%)		$5,700
		(survey, design, bidding, const admin, obsv, testing)			
			S Maple St Sub Total		**$37,200**
			Drainage Area 4 Total		**$365,000**

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

2-YEAR DESIGN STORM

Bloomdale Drainage Area 5, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2 -Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	S Garfield St				
611	12" CONDUIT, TYPE B	445	FT	$55.00	$24,480.00
611	18" CONDUIT, TYPE B	362	FT	$68.00	$24,620.00
611	CATCH BASIN, NO. 2-3	11	EACH	$1,605.00	$17,660.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,400.00
SPECIAL	RESTORATION	LUMP	SUM		$13,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$83,400
			10% contingencies		$8,300
			construction total		**$91,700**
			other project costs (20%)		$16,700
		(survey, design, bidding, const admin, obsv, testing)			
			S Garfield St Sub Total		**$108,400**
	Center St				
611	12" CONDUIT, TYPE B	103	FT	$55.00	$5,670.00
611	15" CONDUIT, TYPE B	172	FT	$65.00	$11,180.00
611	18" CONDUIT, TYPE B	122	FT	$68.00	$8,300.00
611	24" CONDUIT, TYPE B	179	FT	$80.00	$14,320.00
611	30" CONDUIT, TYPE B	141	FT	$110.00	$15,510.00
611	CATCH BASIN, NO. 2-3	9	EACH	$1,605.00	$14,450.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,400.00
SPECIAL	RESTORATION	LUMP	SUM		$13,900.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$86,500
			10% contingencies		$8,700
			construction total		**$95,200**
			other project costs (20%)		$17,300
		(survey, design, bidding, const admin, obsv, testing)			
			Center St Sub Total		**$112,500**

	S Main St				
611	12" CONDUIT, TYPE B	458	FT	$55.00	$25,190.00
611	30" CONDUIT, TYPE B	117	FT	$110.00	$12,870.00
611	CATCH BASIN, NO. 2-3	9	EACH	$1,605.00	$14,450.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$600.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$600.00
624	MOBILIZATION	LUMP	SUM		$1,100.00
SPECIAL	RESTORATION	LUMP	SUM		$10,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$65,700
				10% contingencies	$6,600
				construction total	**$72,300**
				other project costs (20%)	$13,100
				(survey, design, bidding, const admin, obsv, testing)	
				S Main St Sub Total	**$85,400**
				Drainage Area 5 Total	**$306,000**

ASSUMPTIONS:

- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

5-YEAR DESIGN STORM

Bloomdale Drainage Area 1, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	N Main St				
611	12" CONDUIT, TYPE B	1128	FT	$55.00	$62,040.00
611	15" CONDUIT, TYPE B	33	FT	$65.00	$2,150.00
611	18" CONDUIT, TYPE B	352	FT	$68.00	$23,940.00
611	24" CONDUIT, TYPE B	661	FT	$80.00	$52,880.00
611	36" CONDUIT, TYPE B	1268	FT	$115.00	$145,820.00
611	CATCH BASIN, NO. 2-3	20	EACH	$1,605.00	$32,100.00
611	CATCH BASIN, NO. 2-4	6	EACH	$2,000.00	$12,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$3,200.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$3,200.00
624	MOBILIZATION	LUMP	SUM		$6,400.00
SPECIAL	RESTORATION	LUMP	SUM		$63,800.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$1,600.00
			construction subtotal		$409,100
			10% contingencies		$40,900
			construction total		**$450,000**
			other project costs (20%)		$81,800
		(survey, design, bidding, const admin, obsv, testing)			
			N Main St Sub Total		**$531,800**
	N Garfield St				
611	12" CONDUIT, TYPE B	682	FT	$55.00	$37,510.00
611	15" CONDUIT, TYPE B	251	FT	$65.00	$16,320.00
611	18" CONDUIT, TYPE B	68	FT	$68.00	$4,630.00
611	21" CONDUIT, TYPE B	435	FT	$75.00	$32,630.00
611	30" CONDUIT, TYPE B	1236	FT	$110.00	$135,960.00
611	CATCH BASIN, NO. 2-3	28	EACH	$1,605.00	$44,940.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$2,800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$2,800.00
624	MOBILIZATION	LUMP	SUM		$5,500.00
SPECIAL	RESTORATION	LUMP	SUM		$54,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$1,400.00
			construction subtotal		$338,900
			10% contingencies		$33,900
			construction total		**$372,800**
			other project costs (20%)		$67,800
		(survey, design, bidding, const admin, obsv, testing)			
			N Garfield St Sub Total		**$440,600**

	Beal Dr				
611	12" CONDUIT, TYPE B	225	FT	$55.00	$12,380.00
611	18" CONDUIT, TYPE B	88	FT	$68.00	$5,990.00
611	21" CONDUIT, TYPE B	276	FT	$62.00	$17,120.00
611	CATCH BASIN, NO. 2-3	7	EACH	$1,605.00	$11,240.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$500.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$500.00
624	MOBILIZATION	LUMP	SUM		$1,000.00
SPECIAL	RESTORATION	LUMP	SUM		$9,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$58,400
				10% contingencies	$5,800
				construction total	**$64,200**
				other project costs (20%)	$11,700
				(survey, design, bidding, const admin, obsv, testing)	
				Beal Dr Sub Total	***$75,900***
				Drainage Area 1 Total	***$1,048,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

5-YEAR DESIGN STORM

Bloomdale Drainage Area 2, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5 -Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Mulberry St				
611	12" CONDUIT, TYPE B	587	FT	$55.00	$32,290.00
611	15" CONDUIT, TYPE B	88	FT	$65.00	$5,720.00
611	21" CONDUIT, TYPE B	155	FT	$75.00	$11,630.00
611	24" CONDUIT, TYPE B	163	FT	$80.00	$13,040.00
611	33" CONDUIT, TYPE B	336	FT	$110.00	$36,960.00
611	48" CONDUIT, TYPE B	1379	FT	$125.00	$172,380.00
611	54" CONDUIT, TYPE B	1068	FT	$135.00	$144,180.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
611	CATCH BASIN, NO. 2-4	5	EACH	$2,000.00	$10,000.00
611	CATCH BASIN, NO. 2-5	10	EACH	$2,400.00	$24,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$4,300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$4,300.00
624	MOBILIZATION	LUMP	SUM		$8,600.00
SPECIAL	RESTORATION	LUMP	SUM		$85,200.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$2,200.00
			construction subtotal		$564,400
			10% contingencies		$56,400
			construction total		**$620,800**
			other project costs (20%)		$112,900
		(survey, design, bidding, const admin, obsv, testing)			
			Mulberry St Sub Total		**$733,700**
	Cherry St				
611	12" CONDUIT, TYPE B	556	FT	$55.00	$30,580.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$500.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$500.00
624	MOBILIZATION	LUMP	SUM		$900.00
SPECIAL	RESTORATION	LUMP	SUM		$8,700.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
			construction subtotal		$54,300
			10% contingencies		$5,400
			construction total		**$59,700**
			other project costs (20%)		$10,900
		(survey, design, bidding, const admin, obsv, testing)			
			Cherry St Sub Total		**$70,600**

	Rose St				
611	12" CONDUIT, TYPE B	420	FT	$55.00	$23,100.00
611	18" CONDUIT, TYPE B	47	FT	$68.00	$3,200.00
611	24" CONDUIT, TYPE B	119	FT	$80.00	$9,520.00
611	48" CONDUIT, TYPE B	29	FT	$125.00	$3,630.00
611	CATCH BASIN, NO. 2-3	13	EACH	$1,605.00	$20,870.00
611	CATCH BASIN, NO. 2-5	2	EACH	$2,400.00	$4,800.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,300.00
SPECIAL	RESTORATION	LUMP	SUM		$12,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		*$80,300*
			10% contingencies		*$8,000*
			construction total		***$88,300***
			other project costs (20%)		*$16,100*
		(survey, design, bidding, const admin, obsv, testing)			
			Rose St Sub Total		***$104,400***
	N Cleveland St				
611	12" CONDUIT, TYPE B	236	FT	$55.00	$12,980.00
611	15" CONDUIT, TYPE B	254	FT	$65.00	$16,510.00
611	18" CONDUIT, TYPE B	316	FT	$68.00	$21,490.00
611	21" CONDUIT, TYPE B	340	FT	$75.00	$25,500.00
611	24" CONDUIT, TYPE B	165	FT	$80.00	$13,200.00
611	27" CONDUIT, TYPE B	164	FT	$105.00	$17,220.00
611	33" CONDUIT, TYPE B	37	FT	$110.00	$4,070.00
611	CATCH BASIN, NO. 2-3	25	EACH	$1,605.00	$40,130.00
611	CATCH BASIN, NO. 2-5	1	EACH	$2,400.00	$2,400.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,600.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,600.00
624	MOBILIZATION	LUMP	SUM		$3,100.00
SPECIAL	RESTORATION	LUMP	SUM		$30,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$800.00
			construction subtotal		*$190,900*
			10% contingencies		*$19,100*
			construction total		***$210,000***
			other project costs (20%)		*$38,200*
		(survey, design, bidding, const admin, obsv, testing)			
			N Cleveland St Sub Total		***$248,200***

	N Lincoln St				
611	12" CONDUIT, TYPE B	504	FT	$55.00	$27,720.00
611	18" CONDUIT, TYPE B	180	FT	$68.00	$12,240.00
611	21" CONDUIT, TYPE B	116	FT	$75.00	$8,700.00
611	24" CONDUIT, TYPE B	105	FT	$80.00	$8,400.00
611	CATCH BASIN, NO. 2-3	22	EACH	$1,605.00	$35,310.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,000.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,000.00
624	MOBILIZATION	LUMP	SUM		$1,900.00
SPECIAL	RESTORATION	LUMP	SUM		$18,500.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$500.00
			construction subtotal		$115,300
			10% contingencies		$11,500
			construction total		**$126,800**
			other project costs (20%)		$23,100
		(survey, design, bidding, const admin, obsv, testing)			
			N Lincoln St Sub Total		***$149,900***
	Harrison St				
611	12" CONDUIT, TYPE B	581	FT	$55.00	$31,960.00
611	21" CONDUIT, TYPE B	173	FT	$75.00	$12,980.00
611	CATCH BASIN, NO. 2-3	15	EACH	$1,605.00	$24,080.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,400.00
SPECIAL	RESTORATION	LUMP	SUM		$13,900.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$86,100
			10% contingencies		$8,600
			construction total		**$94,700**
			other project costs (20%)		$17,200
		(survey, design, bidding, const admin, obsv, testing)			
			Harrison St Sub Total		***$111,900***
			Drainage Area 2 Total		***$1,419,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

5-YEAR DESIGN STORM

Bloomdale Drainage Area 3, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Walnut St				
611	12" CONDUIT, TYPE B	370	FT	$55.00	$20,350.00
611	21" CONDUIT, TYPE B	312	FT	$75.00	$23,400.00
611	27" CONDUIT, TYPE B	326	FT	$105.00	$34,230.00
611	30" CONDUIT, TYPE B	667	FT	$110.00	$73,370.00
611	CATCH BASIN, NO. 2-3	10	EACH	$1,605.00	$16,050.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,700.00
624	MOBILIZATION	LUMP	SUM		$3,400.00
SPECIAL	RESTORATION	LUMP	SUM		$33,500.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$900.00
			construction subtotal		$208,600
			10% contingencies		$20,900
			construction total		**$229,500**
			other project costs (20%)		$41,700
		(survey, design, bidding, const admin, obsv, testing)			
			Walnut St Sub Total		**$271,200**
	Cherry St				
611	12" CONDUIT, TYPE B	289	FT	$55.00	$15,900.00
611	15" CONDUIT, TYPE B	160	FT	$65.00	$10,400.00
611	18" CONDUIT, TYPE B	163	FT	$68.00	$11,090.00
611	27" CONDUIT, TYPE B	350	FT	$80.00	$28,000.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$800.00
624	MOBILIZATION	LUMP	SUM		$1,600.00
SPECIAL	RESTORATION	LUMP	SUM		$15,700.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$97,500
			10% contingencies		$9,800
			construction total		**$107,300**
			other project costs (20%)		$19,500
		(survey, design, bidding, const admin, obsv, testing)			
			Cherry St Sub Total		**$126,800**

	Mulberry St				
611	12" CONDUIT, TYPE B	301	FT	$55.00	$16,560.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$32,900
			10% contingencies		$3,300
			construction total		**$36,200**
			other project costs (20%)		$6,600
			(survey, design, bidding, const admin, obsv, testing)		
			Mulberry St Sub Total		***$42,800***
	Harrison St				
611	12" CONDUIT, TYPE B	289	FT	$55.00	$15,900.00
611	15" CONDUIT, TYPE B	97	FT	$65.00	$6,310.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$400.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$400.00
624	MOBILIZATION	LUMP	SUM		$800.00
SPECIAL	RESTORATION	LUMP	SUM		$7,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$44,000
			10% contingencies		$4,400
			construction total		**$48,400**
			other project costs (20%)		$8,800
			(survey, design, bidding, const admin, obsv, testing)		
			Harrison St Sub Total		***$57,200***
	N Garfield St				
611	12" CONDUIT, TYPE B	732	FT	$55.00	$40,260.00
611	15" CONDUIT, TYPE C	73	FT	$50.00	$3,650.00
611	18" CONDUIT, TYPE B	24	FT	$68.00	$1,640.00
611	21" CONDUIT, TYPE B	318	FT	$75.00	$23,850.00
611	27" CONDUIT, TYPE B	24	FT	$80.00	$1,920.00
611	CATCH BASIN, NO. 2-3	18	EACH	$1,605.00	$28,890.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,100.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,100.00
624	MOBILIZATION	LUMP	SUM		$2,100.00
SPECIAL	RESTORATION	LUMP	SUM		$20,100.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$600.00
			construction subtotal		$125,200
			10% contingencies		$12,500
			construction total		**$137,700**
			other project costs (20%)		$25,000
			(survey, design, bidding, const admin, obsv, testing)		
			N Garfield St Sub Total		***$162,700***

	N Main St				
611	12" CONDUIT, TYPE B	556	FT	$55.00	$30,580.00
611	15" CONDUIT, TYPE B	135	FT	$68.00	$9,180.00
611	27" CONDUIT, TYPE B	42	FT	$105.00	$4,410.00
611	CATCH BASIN, NO. 3A	14	EACH	$2,300.00	$32,200.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$800.00
624	MOBILIZATION	LUMP	SUM		$1,600.00
SPECIAL	RESTORATION	LUMP	SUM		$15,300.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$95,300
			10% contingencies		$9,500
			construction total		**$104,800**
			other project costs (20%)		$19,100
			(survey, design, bidding, const admin, obsv, testing)		
			N Main St Sub Total		***$123,900***
	N Maple St				
611	12" CONDUIT, TYPE B	401	FT	$55.00	$22,060.00
611	15" CONDUIT, TYPE B	160	FT	$65.00	$10,400.00
611	18" CONDUIT, TYPE B	185	FT	$68.00	$12,580.00
611	21" CONDUIT, TYPE B	154	FT	$75.00	$11,550.00
611	27" CONDUIT, TYPE C	27	FT	$105.00	$2,840.00
611	30" CONDUIT, TYPE B	41	FT	$110.00	$4,510.00
611	CATCH BASIN, NO. 2-3	16	EACH	$1,605.00	$25,680.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$900.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$900.00
624	MOBILIZATION	LUMP	SUM		$1,800.00
SPECIAL	RESTORATION	LUMP	SUM		$18,000.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$500.00
			construction subtotal		$111,700
			10% contingencies		$11,200
			construction total		**$122,900**
			other project costs (20%)		$22,300
			(survey, design, bidding, const admin, obsv, testing)		
			N Maple St Sub Total		***$145,200***

	Crop Line				
611	12" CONDUIT, TYPE C	23	FT	$55.00	$1,270.00
611	18" CONDUIT, TYPE C	176	FT	$68.00	$11,970.00
611	21" CONDUIT, TYPE C	191	FT	$75.00	$14,330.00
611	30" CONDUIT, TYPE C	322	FT	$110.00	$35,420.00
611	42" CONDUIT, TYPE C	311	FT	$120.00	$37,320.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
611	CATCH BASIN, NO. 2-4	1	EACH	$2,000.00	$2,000.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,100.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,100.00
624	MOBILIZATION	LUMP	SUM		$2,200.00
SPECIAL	RESTORATION	LUMP	SUM		$22,000.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$600.00
				construction subtotal	$138,900
				10% contingencies	$13,900
				construction total	**$152,800**
				other project costs (20%)	$27,800
				(survey, design, bidding, const admin, obsv, testing)	
				Crop Line Sub Total	**$180,600**
				Drainage Area 3 Total	**$1,110,000**

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

5-YEAR DESIGN STORM

Bloomdale Drainage Area 4, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	Railroad St				
611	12" CONDUIT, TYPE B	654	FT	$55.00	$35,970.00
611	15" CONDUIT, TYPE B	169	FT	$65.00	$10,990.00
611	21" CONDUIT, TYPE B	151	FT	$75.00	$11,330.00
611	24" CONDUIT, TYPE B	228	FT	$80.00	$18,240.00
611	27" CONDUIT, TYPE B	258	FT	$105.00	$27,090.00
611	30" CONDUIT, TYPE B	368	FT	$110.00	$40,480.00
611	CATCH BASIN, NO. 2-3	13	EACH	$1,605.00	$20,870.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,700.00
624	MOBILIZATION	LUMP	SUM		$3,300.00
SPECIAL	RESTORATION	LUMP	SUM		$33,000.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$900.00
				construction subtotal	$205,600
				10% contingencies	$20,600
				construction total	**$226,200**
				other project costs (20%)	$41,100
				(survey, design, bidding, const admin, obsv, testing)	
				Railroad St Sub Total	***$267,300***
	S Garfield St				
611	12" CONDUIT, TYPE B	210	FT	$55.00	$11,550.00
611	15" CONDUIT, TYPE B	15	FT	$65.00	$980.00
611	21" CONDUIT, TYPE B	34	FT	$75.00	$2,550.00
611	CATCH BASIN, NO. 2-3	8	EACH	$1,605.00	$12,840.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
				construction subtotal	$34,900
				10% contingencies	$3,500
				construction total	**$38,400**
				other project costs (20%)	$7,000
				(survey, design, bidding, const admin, obsv, testing)	
				S Garfield St Sub Total	***$45,400***

	S Main St				
611	12" CONDUIT, TYPE B	252	FT	$55.00	$13,860.00
611	24" CONDUIT, TYPE B	39	FT	$80.00	$3,120.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$300.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$300.00
624	MOBILIZATION	LUMP	SUM		$600.00
SPECIAL	RESTORATION	LUMP	SUM		$5,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$200.00
			construction subtotal		$33,400
			10% contingencies		$3,300
			construction total		**$36,700**
			other project costs (20%) (survey, design, bidding, const admin, obsv, testing)		$6,700
			S Main St Sub Total		***$43,400***
	S Maple St				
611	12" CONDUIT, TYPE B	1813	FT	$55.00	$99,720.00
611	15" CONDUIT, TYPE B	56	FT	$65.00	$3,640.00
611	CATCH BASIN, NO. 2-3	6	EACH	$1,605.00	$9,630.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$1,200.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$1,200.00
624	MOBILIZATION	LUMP	SUM		$2,300.00
SPECIAL	RESTORATION	LUMP	SUM		$22,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$600.00
			construction subtotal		$140,900
			10% contingencies		$14,100
			construction total		**$155,000**
			other project costs (20%) (survey, design, bidding, const admin, obsv, testing)		$28,200
			S Maple St Sub Total		***$183,200***
			Drainage Area 4 Total		***$539,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

5-YEAR DESIGN STORM

Bloomdale Drainage Area 5, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	DRAINAGE				
	S Garfield St				
611	12" CONDUIT, TYPE B	445	FT	$55.00	$24,480.00
611	18" CONDUIT, TYPE B	362	FT	$68.00	$24,620.00
611	CATCH BASIN, NO. 2-3	11	EACH	$1,605.00	$17,660.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$700.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$700.00
624	MOBILIZATION	LUMP	SUM		$1,400.00
SPECIAL	RESTORATION	LUMP	SUM		$13,400.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$83,400
			10% contingencies		$8,300
			construction total		**$91,700**
			other project costs (20%)		$16,700
		(survey, design, bidding, const admin, obsv, testing)			
			S Garfield St Sub Total		**$108,400**
	Center St				
611	12" CONDUIT, TYPE B	103	FT	$55.00	$5,670.00
611	15" CONDUIT, TYPE B	172	FT	$65.00	$11,180.00
611	21" CONDUIT, TYPE B	122	FT	$75.00	$9,150.00
611	27" CONDUIT, TYPE B	179	FT	$105.00	$18,800.00
611	30" CONDUIT, TYPE B	141	FT	$110.00	$15,510.00
611	CATCH BASIN, NO. 2-3	9	EACH	$1,605.00	$14,450.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$800.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$800.00
624	MOBILIZATION	LUMP	SUM		$1,500.00
SPECIAL	RESTORATION	LUMP	SUM		$15,000.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$400.00
			construction subtotal		$93,300
			10% contingencies		$9,300
			construction total		**$102,600**
			other project costs (20%)		$18,700
		(survey, design, bidding, const admin, obsv, testing)			
			Center St Sub Total		**$121,300**

	S Main St				
611	12" CONDUIT, TYPE B	458	FT	$55.00	$25,190.00
611	30" CONDUIT, TYPE B	38	FT	$110.00	$4,180.00
611	36" CONDUIT, TYPE B	79	FT	$115.00	$9,090.00
611	CATCH BASIN, NO. 2-3	9	EACH	$1,605.00	$14,450.00
614	MAINTENANCE OF TRAFFIC	LUMP	SUM		$600.00
623	CONSTRUCTION LAYOUT STAKES	LUMP	SUM		$600.00
624	MOBILIZATION	LUMP	SUM		$1,100.00
SPECIAL	RESTORATION	LUMP	SUM		$10,600.00
SPECIAL	PRECONSTRUCTION VIDEO	LUMP	SUM		$300.00
				construction subtotal	$66,100
				10% contingencies	$6,600
				construction total	**$72,700**
				other project costs (20%)	$13,200
				(survey, design, bidding, const admin, obsv, testing)	
				S Main St Sub Total	***$85,900***
				Drainage Area 5 Total	***$316,000***

ASSUMPTIONS:

- *DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION*
- *MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS*

5-YEAR DESIGN STORM SUMMARY

Bloomdale Drainage Summary, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	Summary				
	Drainage Area 1				
	N Main St				$531,800.00
	N Garfield St				$440,600.00
	Beal Dr				$75,900.00
				Drainage Area 1 Total	**$1,048,000**
	Drainage Area 2				
	Mulberry St				$733,700.00
	Cherry St				$70,600.00
	Rose St				$104,400.00
	N Cleveland St				$248,200.00
	N Lincoln St				$149,900.00
	Harrison St				$111,900.00
				Drainage Area 2 Total	**$1,419,000**
	Drainage Area 3				
	Walnut St				$271,200.00
	Cherry St				$126,800.00
	Mulberry St				$42,800.00
	Harrison St				$57,200.00
	N Garfield St				$162,700.00
	N Main St				$123,900.00
	N Maple St				$145,200.00
	Crop Line				$180,600.00
				Drainage Area 3 Total	**$1,110,000**
	Drainage Area 4				
	Railroad St				$267,300.00
	S Garfield St				$45,400.00
	S Main St				$43,400.00
	S Maple St				$183,200.00
				Drainage Area 4 Total	**$539,000**
	Drainage Area 5				
	S Garfield St				$108,400.00
	Center St				$121,300.00
	S Main St				$85,900.00
				Drainage Area 5 Total	**$316,000**
				Grand Total For Project	**$4,432,000**

ASSUMPTIONS:
- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

2-YEAR DESIGN STORM SUMMARY

Bloomdale Drainage Summary, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
2 -Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	Summary				
	Drainage Area 1				
	N Main St				$522,000.00
	N Garfield St				$422,500.00
	Beal Dr				$75,200.00
				Drainage Area 1 Total	**$1,020,000**
	Drainage Area 2				
	Mulberry St				$696,300.00
	Cherry St				$70,600.00
	Rose St				$101,800.00
	N Cleveland St				$263,700.00
	N Lincoln St				$148,900.00
	Harrison St				$110,000.00
				Drainage Area 2 Total	**$1,391,000**
	Drainage Area 3				
	Walnut St				$253,000.00
	Cherry St				$126,000.00
	Mulberry St				$42,800.00
	Harrison St				$55,500.00
	N Garfield St				$160,600.00
	N Main St				$121,800.00
	N Maple St				$131,200.00
	Crop Line				$165,100.00
				Drainage Area 3 Total	**$1,056,000**
	Drainage Area 4				
	Railroad St				$239,100.00
	S Garfield St				$45,400.00
	S Main St				$43,400.00
	S Maple St				$37,200.00
				Drainage Area 4 Total	**$365,000**
	Drainage Area 5				
	S Garfield St				$108,400.00
	Center St				$112,500.00
	S Main St				$85,400.00
				Drainage Area 5 Total	**$306,000**
				Grand Total For Project	**$4,138,000**

ASSUMPTIONS:
- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

5-YEAR DESIGN STORM SUMMARY

Bloomdale Drainage Summary, Phase 1
Conceptual Project Cost Estimate
Village of Bloomdale, Ohio
5-Year Storm

Poggemeyer Design Group, Inc.
architects+engineers+planners
Calc. by: RPD April 2014
Chkd by: JLT / RRH

Drainage Structures and pipes throughout the Village of Bloomdale

item	description	quantity	unit	unit price	total price
	Summary				
	Drainage Area 1				
	N Main St				$531,800.00
	N Garfield St				$440,600.00
	Beal Dr				$75,900.00
				Drainage Area 1 Total	**$1,048,000**
	Drainage Area 2				
	Mulberry St				$733,700.00
	Cherry St				$70,600.00
	Rose St				$104,400.00
	N Cleveland St				$248,200.00
	N Lincoln St				$149,900.00
	Harrison St				$111,900.00
				Drainage Area 2 Total	**$1,419,000**
	Drainage Area 3				
	Walnut St				$271,200.00
	Cherry St				$126,800.00
	Mulberry St				$42,800.00
	Harrison St				$57,200.00
	N Garfield St				$162,700.00
	N Main St				$123,900.00
	N Maple St				$145,200.00
	Crop Line				$180,600.00
				Drainage Area 3 Total	**$1,110,000**
	Drainage Area 4				
	Railroad St				$267,300.00
	S Garfield St				$45,400.00
	S Main St				$43,400.00
	S Maple St				$183,200.00
				Drainage Area 4 Total	**$539,000**
	Drainage Area 5				
	S Garfield St				$108,400.00
	Center St				$121,300.00
	S Main St				$85,900.00
				Drainage Area 5 Total	**$316,000**
				Grand Total For Project	**$4,432,000**

ASSUMPTIONS:
- DOES NOT INCLUDE ALLOWANCE FOR FUTURE INFLATION
- MAJORITY OF PROPOSED STORM SEWER CONDUIT TO BE LOCATED OUTSIDE OF EXISTING ROADWAY SURFACE TO AVOID SIGNIFICANT ROADWAY RECONSTRUCTION COSTS

BLOOMDALE STORM SEWER

Approach

August 14, 2018

I. Identified problems
   a. Street flooding – flash flood areas
   b. Basement flooding – areas
   c. Poor drainage – days to recede

II. Solution
   a. Prioritize providing benefit and relief to as many areas as possible with limited improvement.

III. Proposed Project
   a. Relieves localized problem areas for normal storms (2 yr) for some noted problem areas.
   b. Takes flow away from Western discharge to free up capacity in that system.
   c. Removes the most remote areas of the Western discharge with are more problematic.
   d. Eastern main area improvements with indirect benefit Western discharge improvements

IV.
   a. Phase II could be areas of North discharge with more basement back-up issues or area of West where streets don't drain.
   b. Areas North may require pumping to solve the issues due to the depth which needs to be verified.

V.
   a. All mainline discharges should be cleaned and televised to verify actual function verses replacement.
   b. It would not be prudent to construct new storm sewers where existing sewers are not functioning properly due to debris, roots, defective pipe joints and failed pipe.