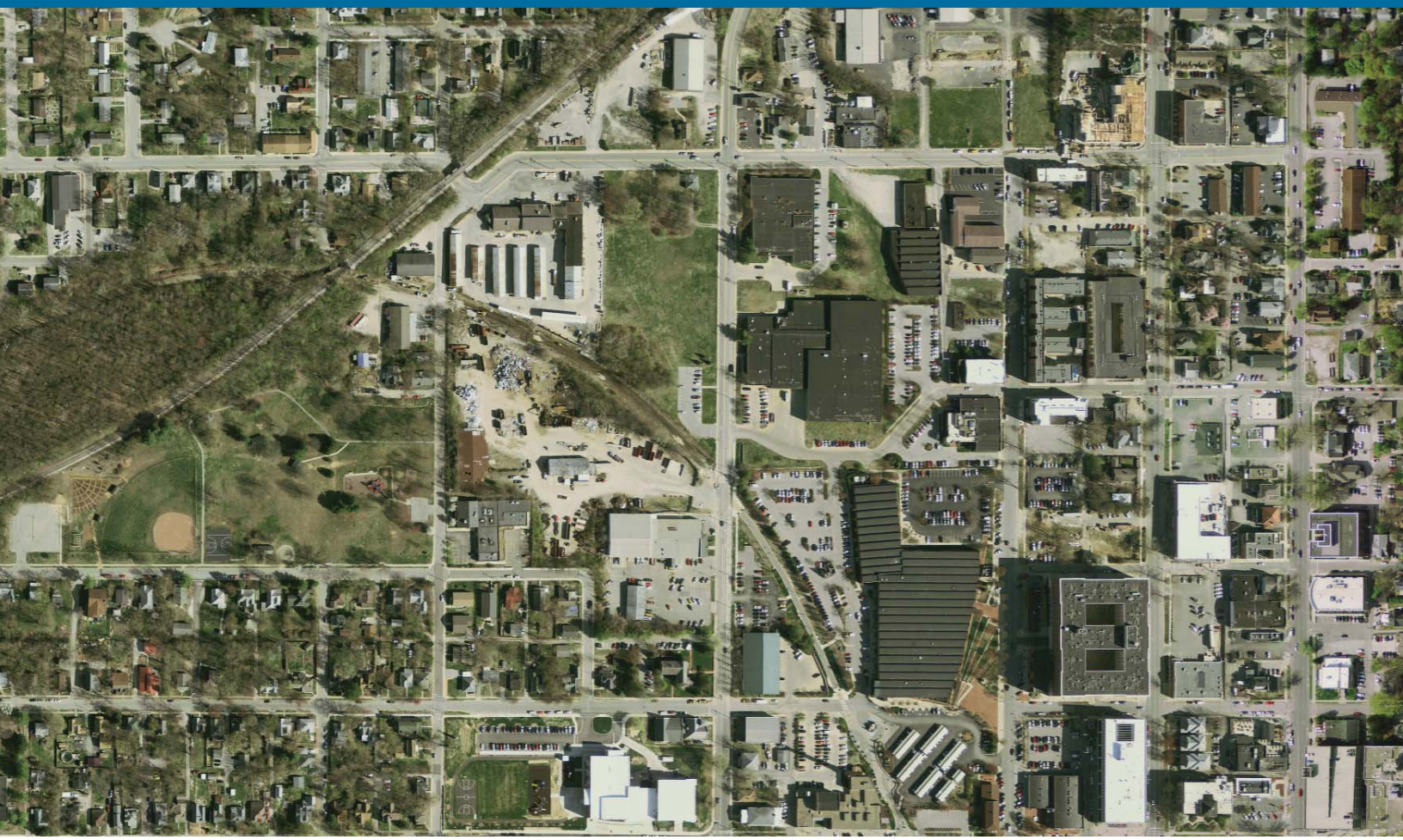


City of Bloomington

Utility Master Plan for Certified Technology Park
MEP Study Report

November 7, 2014
Prepared on behalf of the
Department of Economic & Sustainable Development

EAGLE RIDGE
CIVIL ENGINEERING SERVICES, LLC

Applied
Engineering Services

Table of Contents

Project Overview

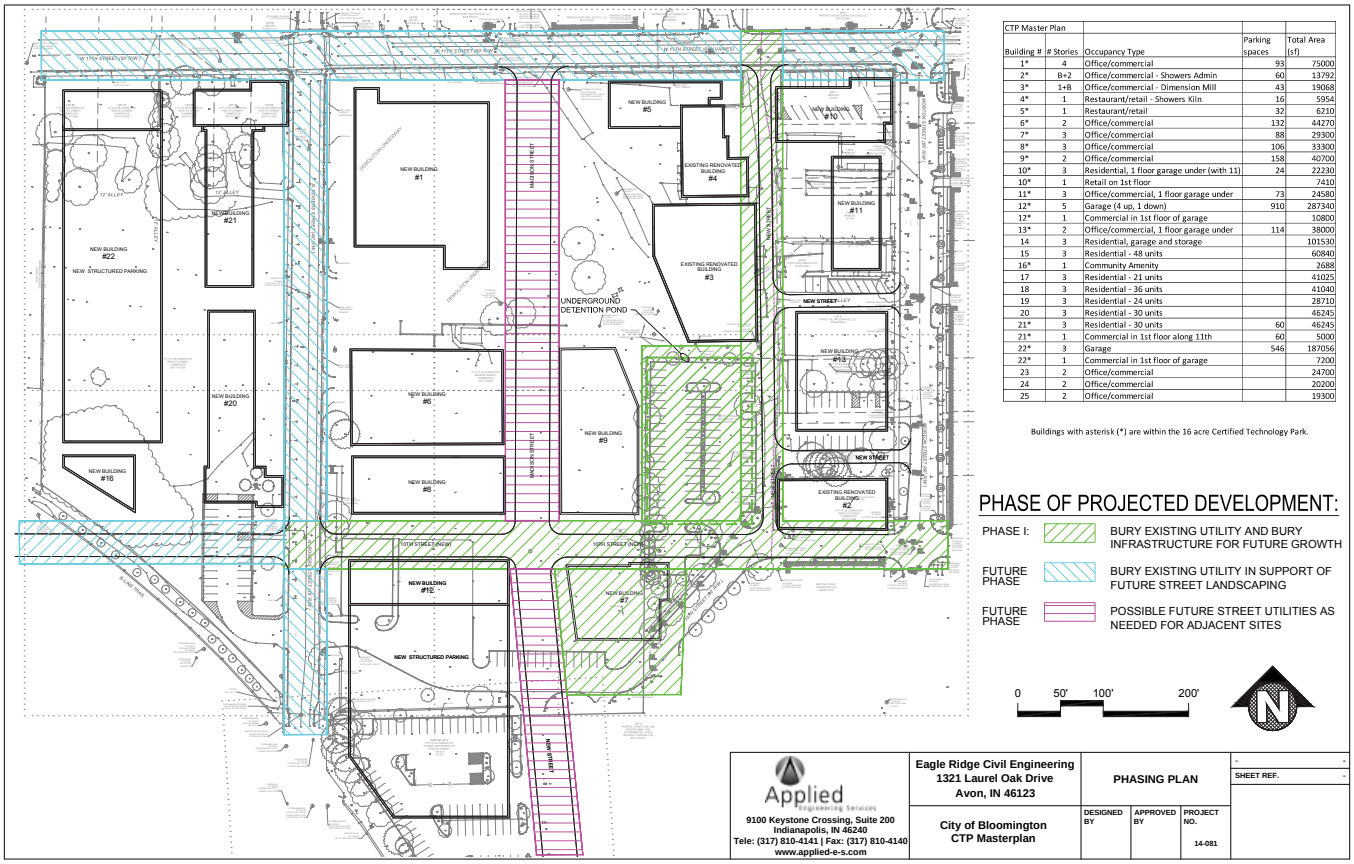
Applied Engineering Services, Inc. was retained by Eagle Ridge Civil Engineering Services to provide an engineering analysis of the utilities systems serving the City of Bloomington's Certified Technology Park (CTP). This analysis is in support of the City's redevelopment of a 65-acre area just north and west of downtown and, in particular, 16 acres designated as the core properties. A master plan and redevelopment strategy completed in July 2013 identified approximately one million square feet of newly-constructed office/commercial, restaurant, residential facilities, and multiple parking structures in the core properties.

The Utility Master Plan is limited to the Core Properties Area of 16 acres, and includes an analysis of existing facilities, estimates of current capacity, and a projection of capacity necessary to provide for the future build out of the Core Properties Area. The utility master plan includes sanitary sewer, domestic water, electric, gas, and public and private telecommunications utilities.

At the time this Utility Master Plan was prepared, the only plans for the future build-out of the CTP are conceptual in nature. The build-out is subject to change based on future development, and specific site plans have not yet been prepared or approved. For this reason, the Utility Master Plan does not include the specific utility service connections to individual building sites, nor how utilities are to be routed on the sites.

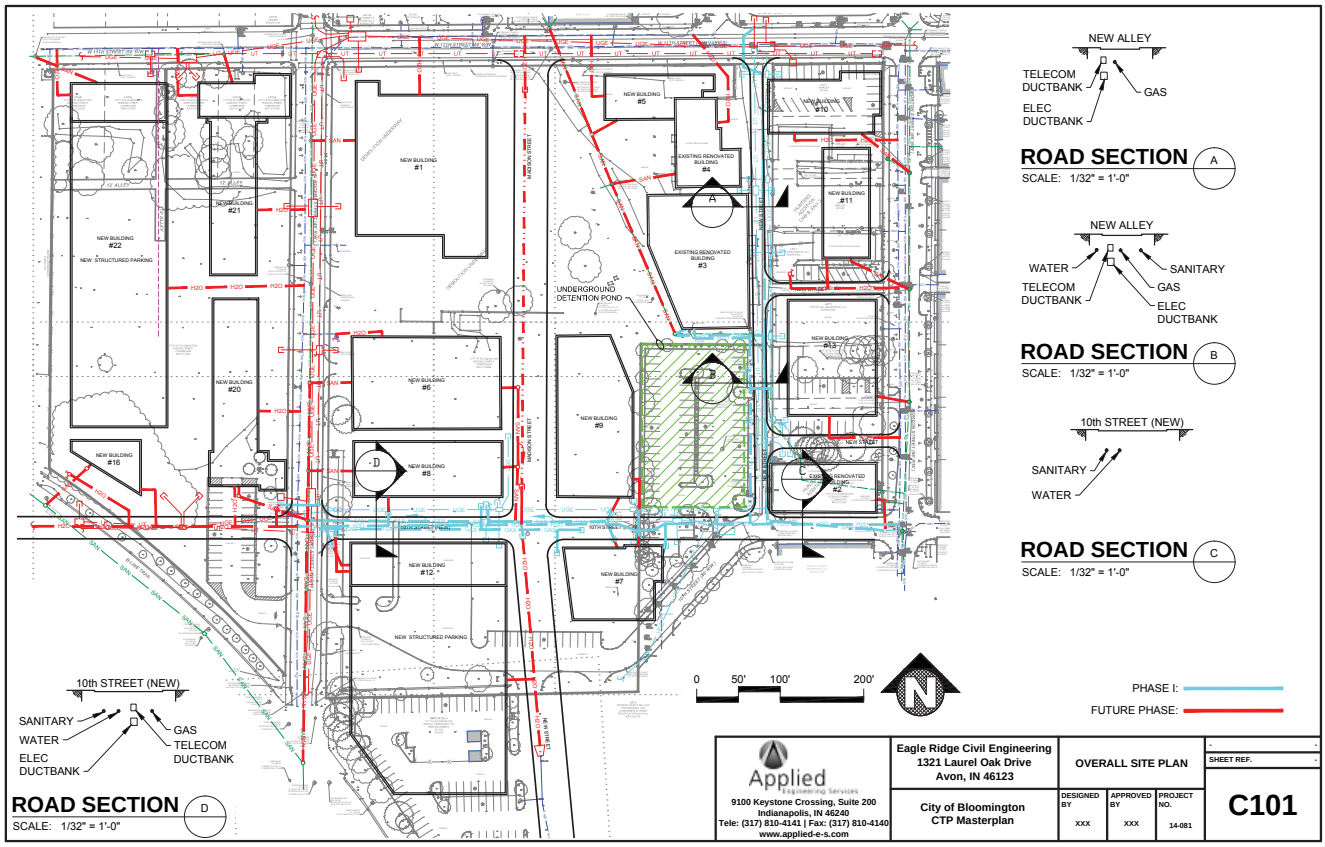
The Utilities Master Plan is intended to identify the utility infrastructure that will be needed within the area's primary roadway corridors in order to provide service to the sites within the CTP. Priority is given to the areas planned for earliest construction.

The City has directed that roadway corridors in the CTP are to feature fully buried utilities. This will impact electric and telecommunications facilities, nearly all of which feature at least some aerial cables in the CTP area. Existing poles are owned by either Duke Energy or AT&T, with other utilities using the same poles. This work will be phased with each roadway being converted in conjunction with larger scale roadway or streetscape construction work.



The implementation of this Utility Master Plan is expected to occur in phases, which are timed around major street construction or reconstruction projects. The City has determined that Phase 1 shall include the realignment and reconstruction of 10th Street from Rogers to Morton, and the reconstruction of the Alley west of Morton between 10th and 11th Streets. Future phases of the work shall include the likely streetscaping of both Rogers and 11th Streets, which will include significant roadway work combined with the burying of electric and telecommunications utilities.

Madison Street, which is shown here as another future phase, may occur before or after work on Rogers or 11th, and may not occur at all, depending on how the areas are developed. Because of this uncertainty, the Madison Street corridor is not being relied upon as an important utility connection between 10th and 11th, but instead would only hold those utilities needed to extend services to adjacent parcels where needed.



This exhibit represents a schematic of the needed utility infrastructure to support the full future build out of the CTP. As noted previously, 10th Street and the Alley west of Morton are expected to be in the first phase of work, and other utility work will be timed to occur with their respective street corridor improvements.

Generally speaking, the utility systems noted are to be implemented under one of two approaches, depending on their dependence on gravity flow to function.

For cabled systems (electric and telecommunications), and systems under pressure (domestic water and gas), these improvements can generally be implemented without much consideration for the order in which they occur. For these utilities, a high importance is placed upon the creation of loops by which service is linked at each end to the larger grid of their infrastructure. For these utilities, the reconstruction of 10th Street on a new alignment represents a unique opportunity to place the utilities along planned routes in a compatible layout with each other. However, the limited space between the existing buildings along 10th (just west of Morton) does not provide adequate space for all of these utilities. Since they are already present in the Alley west of Morton, and they provide service to sites alongside the alley, most of these systems are to continue being routed in the alley. The desired loop in each system is thus created starting at 10th and Rogers, extending east as far as the alley, then turning north in the alley to 11th Street. Exceptions to this approach are necessary, notably the water system which currently exists between the buildings and would continue to use that route rather than adding it to the already congested alley.

For gravity systems (sanitary sewer and storm sewer), the downstream segments must be constructed first. 10th Street, which is at the lowest elevation of these corridors, is thus critically important as a Phase 1 activity. If pumping is to be avoided, then the natural topography should guide the location of sanitary sewers and storm sewers. The site already exhibits this and existing piping routes, while notably undersized in the case of sanitary piping, do represent the best routes for these systems. The reconstructed 10th Street is to become the critical cross route which collects storm and sanitary flows from areas north of it, and directs those flows either to Rogers or Morton Streets, depending on the system and downstream capacity.

The roadway sections are provided to help clarify where utilities are expected to be present. These sections are simple schematics and do not include storm sewers which are to be a function of roadway design and the drainage master plan.

The individual utility systems are described in the following sections.

Sanitary Sewer System

Existing System

The City of Bloomington Utilities Department (CBU) owns and services the sanitary sewers in the CTP area. Streets in the City of Bloomington are laid out with numbered streets running east/west and named streets running north/south. The sanitary sewers are laid out in tree formation in the streets. In the CTP, the main sanitary trunk lines flow from north to south with branches running east and west to sewer main connections located at street intersections. The CTP core site topography lays on a hill with the highest elevation to the northwest and lowest elevation to the southeast. The north/south sanitary mains in Rogers Street and Morton Street follow the hilly topography and have sufficient slope that they should have adequate capacity for the new CTP development. That being said, the mains in the streets are not very deep. They average about 5.3 feet below the street. This will make it difficult to run sewers east/west down realigned 10th Street and from the CTP buildings not fronting the streets with sewer mains. Long east/west sewer piping runs may not be possible without extensive work on the mains or pumped lift stations.

11th Street

There is an 8” PVC sanitary sewer in 11th Street within the core area. It runs east to west and begins in a manhole located north of Lot #49 (City of Bloomington Redevelopment Commission). The survey does not indicate any connections to this sewer in the CTP area. It appears to have been installed for future development. Based on the survey data, the 8” PVC sewer in the CTP area appears to have a capacity of about 1,146 gpm. This sewer continues west on 11th Street and turns south down North Fairview Street. It serves commercial and residential properties along the way.

There is an 8” sanitary sewer that traverses 11th Street at the intersection of Rogers Street and 11th Street. The 8” sewer runs from north to south down Rogers Street. See Rogers Street for continuation.

East of Rogers Street, there is a manhole in 11th Street located south of Upland Brewery. It services the Upland Brewery and properties north of the Upland Brewery. The 4” sewer from this manhole cuts diagonally (northwest to southeast) through the CTP green space. See CTP Greenspace for continuation.

There is a sanitary manhole at the intersection of 11th Street and Morton Street. An 8” sanitary sewer main runs north south through the manhole in Morton Street. See Morton Street for continuation.

Rogers Street

There is an 8” sanitary sewer in Rogers Street that traverses 11th Street at the intersection of Rogers Street and 11th Street. The 8” sewer runs from north to south down Rogers Street. It serves properties south of the rail line and north of 11th Street along Rogers Street. The peak sewage flow from these properties is unknown. It is hoped that the CBU can provide flow information for these buildings

The 8” PVC sanitary sewer continues south down Rogers Street from 11th Street to the B-Line Trail. There are no buildings on the east side or west side of Rogers Street from 11th Street to the B-Line Trail. The demolished IU Publishing building and the demolished IU Food Storage buildings were served by the 8” PVC sanitary sewer from the east side prior to being demolished. The estimated capacity of the 8” section of sewer pipe south of the manhole located at the intersection of realigned 10th Street and Rogers Street is about 872 gpm.

CTP Green Space

East of the intersection of Rogers Street and 11th Street there is a manhole located south of Upland Brewery. Two 4” PVC sanitary sewers connect to it. One is from Upland Brewery and the other appears to service four buildings located north of 11th Street. The flow from these buildings is unknown. It is hoped that the CBU can provide flow information for these buildings.

A 4” PVC sanitary sewer exits the manhole and runs southeast through the CTP adjacent to and east of a 4’x 4’ storm sewer. The 4” is believed to service existing CTP building #3 (Showers Dimension Mill), and CTP building #4 (Showers Kiln) as it traverses the CTP green space. The 4” sewer line turns east south of the CTP building #3 (Showers Dimension Mill building) and continues into the Alley west of Morton Street. It then turns southeast and diagonally traverses the alley west of Morton Street. See Alley West of Morton Street description for continuation.

The CBU reported that the 4” line has overflowed in the past. They also reported that Upland has moved some of the process thought to cause the overflow problem to another facility. The estimated capacity for the upper 4” section of piping north of the CTP building #3 (Dimension Mill building) is about 165 gpm.

Alley (West of Morton Street)

A 4” clay or PVC (documents indicate both materials) sanitary sewer line enters and crosses the alley south of the CTP #3 building (Showers Dimension Mill building)

(this is a continuation of the CTP Greenspace sewer). The 4" sewer was inherited by the CBU when the City obtained the CTP property from IU. The 4" sewer runs southeast as it crosses the alley and leaves the alley near the south end of the Showers Garage. It continues southeast and passes under CTP Building #2 (Showers Administration Building) and is believed to connect directly to the 8" PVC sanitary sewer running down Morton Street. The 4" sewer drains Upland Brewery, the four buildings north and northwest of Upland Brewery, CTP building #3 (Showers Dimension Mill), CTP building #4 (Showers Kiln), Showers Garage, and CTP building #2 (Showers Administration building).

Morton Street

There is a sanitary manhole at the intersection of 11th Street and Morton Street. The manhole has three 8" PVC sanitary sewer lines entering from the northwest, northeast, and east. There is one 8" sanitary leaving the manhole to the south down Morton Street. The 8" northwest sanitary line appears to service the Morton North development and possibly the properties along West Georgia Avenue. The 8" northeast sanitary line appears to service properties and tenants along the east side of Morton Street north of 11th Street. The 8" east sanitary line appears to service Station 11 development. The sewage flow from the existing buildings into the manhole is unknown. It is hoped that the CBU can provide flow information for these buildings

The 8" PVC sewer runs south down Morton Street past 10th Street. It has 5 manholes that are located approximately 150 feet apart (at intersections with streets and alleys). It appears to have one 8" branch located in the alley north of the 630 block of Morton Street that flows west from the block east of Morton Street. The 8" sanitary line collects sewage from the buildings on both sides of Morton Street. The peak flow for the sewer main and branches are unknown. It is hoped that the CBU can provide flow information for these sewers. The estimated capacity of the 8" sewer north of the intersection of Morton Street and 10th Street is 1,300 gpm.

10th Street

There is a sanitary manhole at the intersection of 10th Street and Morton Street. The manhole has two 8" PVC sanitary sewer lines entering from the north and east. There is one 8" sanitary leaving the manhole to the south down Morton Street. The 8" PVC line from the east collects sewage from the buildings on 10th Street between Morton Street and North College Avenue. Flow for the 10th Street branch is unknown. It is hoped that the CBU can provide flow information for these buildings. The slope of the 8" sanitary pipe south of this manhole was not included in the site survey so we cannot comment on the capacity of this sewer.

Existing Sanitary Sewer Issues

In our meeting with the CBU, we were informed that the 4" PVC and clay sanitary line from Upland Brewery that traverse the CTP green space has had backup and overflow problems. The drain line is needed to provide service to the Upland Brewery, properties north of 11th Street in the area, and CTP buildings #3, #4, and #5. The CBU recommended upsizing the line to a minimum of 8" PVC to help alleviate the backup and overflow problems. Adjacent to this sewer (west) is a 4'x4' storm sewer that cuts through the CTP green space and will have a storm water retention structure near the realigned 10th Street and alley west of Morton Street. The 4' x 4' storm drain may be replaced with a smaller diameter storm drain in the future. Until then, gravity drainage from CTP spaces crossing the 4'x4' storm sewer will not be practical and will limit drainage options from the CTP buildings.

We believe that upsizing and rerouting the Upland Brewery sewer line to 8" makes sense. It replaces the existing 4" clay sanitary pipe with more reliable greater capacity 8" PVC pipe. Rerouting the sanitary pipe to the alley west of Morton will get the sewer main out from under the Showers Administration building. For the near term, the 4" sanitary sewer serving the Showers Garage and the Showers Administration buildings will continue to be served by the southeastern portion of the existing 4" PVC/clay sanitary sewer east of the Alley west of Morton Street. Future upgrades to these buildings will remove the 4" PVC/clay line and provide new PVC sanitary sewers to Morton Street.

Proposed - General

Sanitary sewage for the CTP will be extensions, modifications, and upsizing of existing CBU sewage piping. The 8" PVC main in Morton Street will be the primary sewer for the CTP properties east of the 4'x4' (may be downsized) storm sewer traversing the CTP green space and the 8" main in Rogers Street will be the primary sanitary sewer for CTP properties west of the 4' x 4' storm sewer. It is recommended that a new 8" PVC sanitary sewer be installed to replace the 4" sanitary sewer that traverses the CTP green space and serves the Upland Brewery. This sewer will parallel the 4'x 4' storm sewer and turn east south of the Showers Dimension Mill building, then turn south down the alley west of Morton Street, turn east on realigned 10th Street, and connect to a manhole at the intersection of 10th Street and Morton Street. A new 8"/10" sanitary sewer will be installed in realigned 10th Street to serve future CTP construction. A section of 8" PVC sanitary sewer from the manhole at the intersection of Rogers Street and the B-Line Trail to the intersection of Rogers Street and realigned 10th Street will be upsized to 10" PVC.

Phase I

The work for Phase I will consist of the sewer work associated with realigned 10th Street from Morton Street to Rogers Street, 8” sewer work in the alley west of Morton Street, and a section of 8” sewer pipe south of the Dimensions Mill building in the CTP green space.

A new 8” PVC sanitary sewer will replace the southeastern portion of the CTP Greenspace 4” sanitary sewer south of the Dimensions Mill building. It will include a new manhole at the southwest corner of the Dimensions Mill building. The 8” sanitary line will run east to the alley west of Morton Street, turn south down the alley, and then turn east on realigned 10th St to a manhole located at the intersection of Morton Street and 10th Street. The critical sloped section of piping will be the west to east run down 10th Street. This section of 8” piping will have a capacity of about 390 gpm. The connected CTP buildings will have an estimated peak flow of 94 gpm.

Morton Street has five manholes in the stretch of 8” PVC sewer pipe from 11th Street to 10th Street. The flattest section of 8” PVC sewer pipe as determined from the survey is the section north of the Morton Street and 10th Street manhole. This section of pipe has a flow capacity of approximately 1,498 gpm. The CTP buildings that drain to Morton Street from north to south are CTP buildings #10, #11, #13, and #2. These buildings have a combined estimated peak flow of 193 gpm. No information is available on the next manhole south of Morton and 10th Street, as the survey did not include this manhole.

A new sanitary drain will be installed in realigned 10th Street to drain CTP buildings #7, #9, #6, #8, and #12. The buildings have a combine flow of 448 gpm. The drain will be approximately 355 feet long and will tie into the manhole in the intersection of realigned 10th Street and Rogers Street. The first 250 feet down 10th Street will be 10” PVC There will be a capped 4” PVC branch line with cleanout at the street curb for CTP building #12. There will be a manhole at the end of the 10” (future intersection of 10th and Madison Streets) with one 8” PVC sanitary drain from the east for CTP building #7 and #9, and one future 8” PVC drain from the north for CTP buildings #6 and #8. The 8” PCV north branch will be extended to 10th St’s curb and be capped. A cleanout will be provided for location in the future. The east 8” PVC sewer will continue down 10th Street for 100 feet and end with a manhole. There will be a 6” north sewer branch from the manhole for CTP building #9 and a south 4” PVC sewer branch for CTP building #7. Both branch lines will extend to the street curb and will terminate with a cleanout and capped sewer pipe. Each leg of the 8” PVC sewers will have a capacity of about 390 gpm. The 10” PVC will have a capacity of about 592 gpm. The total new connected future load will be about 448 gpm.

Future Phases

Work in future phases will follow the development of the CTP. As new buildings are built or existing buildings are rebuilt their sanitary sewers will be installed or upgraded for the proposed building capacity. It is anticipated that new building sewers will be required for all of the buildings in the CTP for the final build out. The CTP building sewers will connect to the closest CBU street sewer available. CTP buildings #10, #11, #13, and #2 currently drain to the 8” PVC sewer in Morton Street. This will continue in the future, but it is probable that the individual building sewer will need to be upsized. CTP buildings #21 (business) and #22 (business developments) will connect to the existing 8” PVC sewer in 11th Street. CTP buildings #1, #20, #21 (residential) and possibly #6 and #8, will connect to the 8” PVC sewer in Rogers Street. It is likely that a section of the 8” in Rogers Street from the manhole at the intersection of realigned 10th Street to the manhole south of the B-Line Trail will need to be upsized to 10” PVC for the final build-out. CTP building #16 will connect to the 10” PVC sanitary line south of the B-line Trail. The 4” sanitary drain from Upland brewery through the CTP Green space should be up sized to 8” PVC.

Cost Opinions

We have assumed that the sewer cost opinions include sewer piping, excavation and backfill, pipe bedding, new manholes, and demolition of existing piping where required. Piping is piping buried in the street, taps and branch tees with future branch piping extending to the street curb. Costs are based on Mean's 2014 Plumbing Data and CBU's construction specifications manual.

Phase I

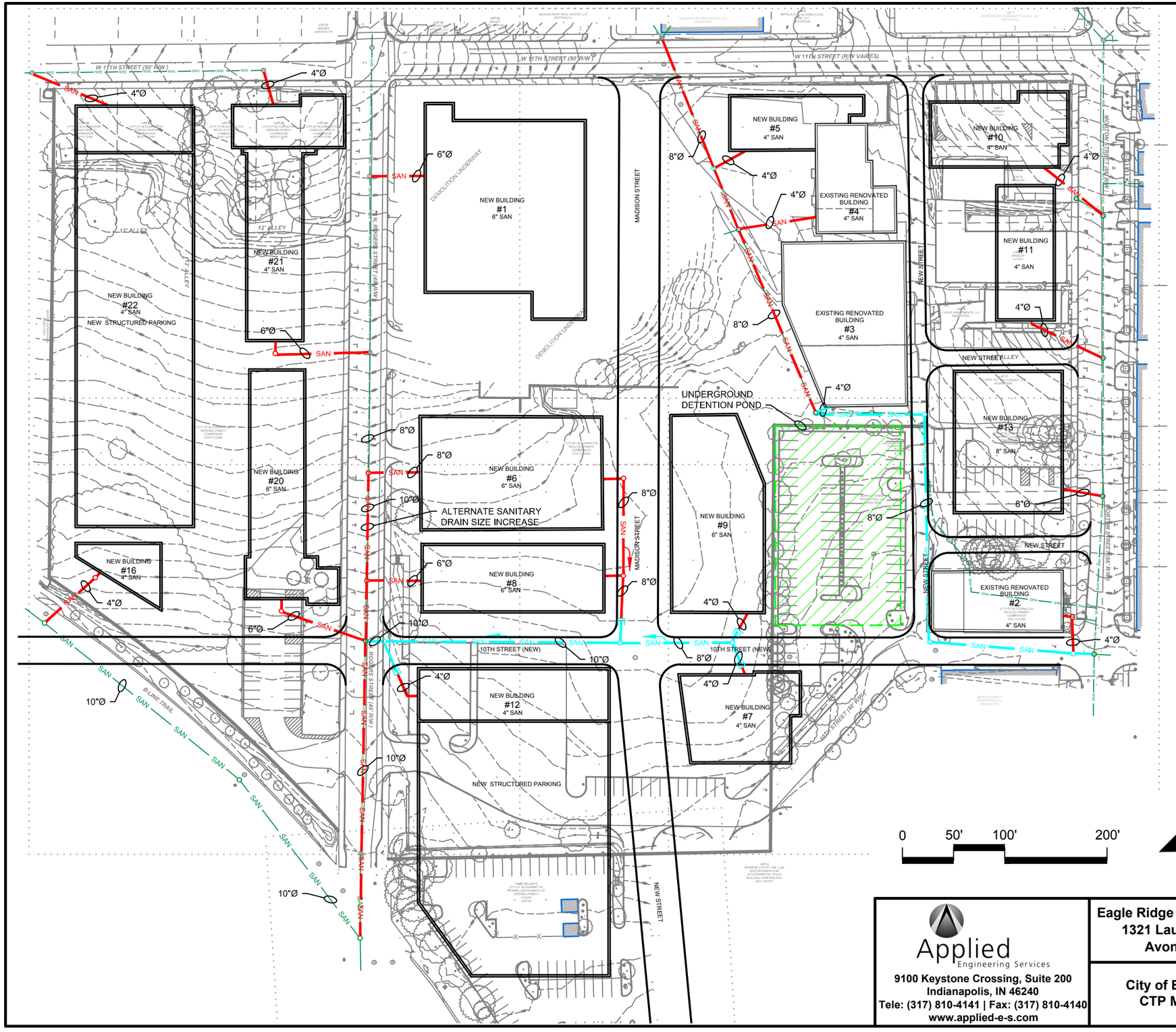
Phase I work includes realigned 10th Street and the Alley west of Morton Street.

Description	Cost
10th St East 8" Sewer to Morton	$25,010
10th St West 8"/10" Sewer to Rogers	$49,192
Greensapce/Alley West of 10th St 8" Sewer	$82,935
Demo CTP Greenspace/Alley	$10,753
TOTAL PHASE I	**$167,889**

Future Phases

Future phase work includes taps and extensions for new / renovated buildings.

Description	Cost
11th St Taps / Sewer Extensions	$12,886
Morton St Taps / Sewer Extensions	$27,795
Rogers St Taps / Sewer Extensions	$46,808
Madison to 10th St Taps / Sewer Extensions	$43,689
Building #16 Taps / Sewer Extensions	$ 6,443
CTP Greenspace Taps / Sewer Extensions	$77,278
TOTAL FUTURE PHASES	**$214,897**



CTP Master Plan - High Range Sanitary Peak Gallons per Day Based on 4X Average domestic water

Building #	Bldg Footprint Area	Occupancy Type	Gross area (sf)	4X Office Ave. GPD @ 20 gal/day/p	Peak Design Sanitary GPD (2)	Peak Design Sanitary GPM	Average Design Sanitary GPM (3)
1	88000	50% Office + 50% Business - Old IU Printing	75,000	30,000	60,000	126.04	31.51
2	6862	50% Office + 50% Business - Showers Admin	13,792	5,517	11,034	23.18	5.79
3	19068	50% Office + 50% Business - Dimension Mill	19,068	7,627	15,254	32.04	8.01
4	5954	50% Restaurant + 50% Mercantile - Showeres Kiln	5,954	0	15,818	17.68	4.42
5	6210	25% Restaurant + 25% Mercantile + 25% office above + 25% Business above	12,420	2,484	43,470	44.16	11.04
6	22135	25% Office + 25% Business + 2 floors residential (34 units; 17 per floor)	88,540	17,708	103,416	171.42	42.86
7	9767	50% Office + 50% Business	29,300	11,720	23,440	49.24	12.31
8	11100	37.5% Office + 37.5% Business + 25% (1 floor residential (20 units))	44,400	13,320	66,640	96.23	24.06
9	20350	33% Office + 33% Business + 33% (1 floor residential (16 units))	61,050	16,117	64,234	113.29	28.32
10	7410	Residential, 1 floor garage under (with 11)	22,230	0	22,000	40.29	10.07
10	7410	Mercantile on 1st floor	7,410	0	20,501	22.57	5.64
11	8193	1 floor Office (25%), 1 floor Business (25%), 1 floor garage under (25%), 1 floor residential (22 units-25%)	32,772	6,554	57,109	76.53	19.13
12	57468	Garage (4 up, 1 down)	287,340	0	0	0.00	0.00
12	10800	Business in 1st floor of garage	10,800	0	8,640	18.15	4.54
13	19000	25% Office + 25% Business, 50% 1 floor garage under	38,000	7,600	15,200	53.31	13.33
14	50765	33% Residential + 33% garage + 33% storage	101,530	0	124,092	200.40	50.10
15	20280	Residential - 48 units (12 units per floor)	81,120	0	96,000	157.93	39.48
16	2688	Community Amenity	2,688	0	25,088	20.45	5.11
17	13675	Residential - 28 units (7 unit per floor)	54,700	0	56,000	100.43	25.11
18	13680	Residential - 48 units (12 units per floor)	54,720	0	96,000	128.23	32.06
19	9570	Residential - 32 units (8 units per floor)	38,280	0	66,000	88.90	22.22
20	15415	Residential - 40 units (10 units per floor)	61,660	0	80,000	124.92	31.23
21	15415	Residential - 30 units (10 units per floor)	46,245	0	60,000	93.69	23.42
21	5000	Business in 1st floor along 11th	5,000	0	4,000	8.40	2.10
22	62352	Garage	187,056	0	0	0.00	0.00
22	7200	Business in 1st floor of garage	7,200	0	5,760	12.10	3.03
23	12350	25% Office + 25% Business + 2 floors residential (24 units; 12 per floor)	49,400	9,880	67,760	102.63	25.66
24	10100	25% Office + 25% Business + 2 floors residential (16 units: 8 per floor)	40,400	8,080	48,160	78.89	19.72
25	9650	25% Office + 25% Business + 2 floors residential (15 units: 7.5 per floor)	38,600	7,720	45,440	74.98	18.75
Total	**547,867**		**1,516,675**	**144,328**	**1,301,056**	903.51	
				100.23	**903.51**		

Area	Area Acres	Greenspace Description
26	1.83	Central Green North
27	1.23	Central Green South
28	0.49	Greenspace/ Gardens South of Warehouse A
29	1.54	Fountains
30	0.46	Rogers Street Greenspace/ Gardens
31	0.83	Children's Park

1 400 sqft per ton. Drain at 15% of total CHW gpm flow
2 Excludes cooling tower drain
3 Includes cooling tower drain

Applied Engineering Services
9100 Keystone Crossing, Suite 200
Indianapolis, IN 46240
Tele: (317) 810-4141 | Fax: (317) 810-4140
www.applied-e-s.com

Eagle Ridge Civil Engineering
1321 Laurel Oak Drive
Avon, IN 46123

City of Bloomington
CTP Masterplan

SANITARY SITE PLAN

DESIGNED BY	APPROVED BY	PROJECT NO.
DAG	DS	14-081

SHEET REF. -

M101

Domestic Water System

Existing System

The City of Bloomington Utilities Department (CBU) owns and services the domestic water in the CTP area. Streets in the City of Bloomington are laid out with numbered streets running east/west and named streets running north/south. The water lines are laid out as treed grids in the streets. In the CTP, the main water trunk lines feed north/south and the looped grid branches interconnect at street intersections and run north, south, east, or west. Morton Street has an 18" water main that is one of the primary water arteries in the area. It is relatively new and has been cross-tied to the older water infrastructure when it was installed. As new property developments are made the older water infrastructure is being replaced with new water piping. The close proximity of the CTP to the 18" main in Morton St should provide adequate water capacity for the CTP core.

11th Street

There are two water lines in 11th Street within the core area. There is a 6" water line at 11th Street and North Jackson that runs east/west. It feeds a fire hydrant south of the intersection in the Bender Lumber lot adjacent to lot 46. The survey also indicates this 6" water service feeds two meters on the south side of 11th Street of unknown size at lots 47 (vacant lot) and 49 (vacant lot), and a water meter to the north of 11th Street at lot 57 (Bender). A 4" branch tees off the 6" main to the south and runs in the alley between lots 47 and 48. The 4" branch appears to be for future development as the space currently is a vacant lot. This line will be removed to facilitate future development of the area.

At the intersection of 11th Street and Rogers Street, an 8" main tees into the 11th Street 6" main from the south. The 8" branch tee runs south down Rogers Street. The 6" 11th Street main reduces to 4" on the other side of the 8" branch tee and continues east down 11th Street. In this stretch, the 4" water main feeds two fire hydrants on the south side of 11th St and one fire hydrant on the north side of 11th Street. It also feeds lots 56 (Eleventh & Rogers, LLC), Lot 55 (Baugh), Lot ?? (Middlecourt Real Estate, LLC), and Lot 6 (Waterstone Bloomington Land, LLC) on the north side of 11th Street. At the intersection of 11th Street and Morton Street, the 6" main turns south and proceeds down Morton Street.

A 12" water main was recently added to11th Street as part of the Morton North development. The 12" water main tees into the Rogers Street 8" water main at the intersection of 11th Street and Rogers St. The 12" water line forty-five's north and turns east down 11th Street and then north up N. Ashlynn Park Drive where it then turns west on W. 12th Street and tees into the 18" water main at the intersection of W. 12th Street and Morton Street.

Rogers Street

There is an 8" water line running north/south down Rogers Street between 11th Street and the B-line Trail. The water line feeds two fire hydrants on the west side of Rogers Street and an 8" branch with fire hydrant on the west side of Rogers Street. The 8" branch used to serve the CTP core buildings that were obtained from Indiana University. The 8" branch looped the demolished IU Publications and IU Food Storage buildings and connected to a 12" water line branch from 10th Street. The 8" water tap and fire hydrant at Rogers Street are all that are left after demolition of the IU Food Storage and Publications Buildings. It is assumed that the piping was capped prior to being removed. The exact location of the capped pipes may be available from the demolition contractor.

Alley (West of Morton Street)

The Alley west of Morton Street does not appear to have domestic water piping. The alley will be reconstructed and crammed full of utilities. A new 12" water main will be routed adjacent to and west of the alley to continue water service for the Showers Dimensions Mill, Showers Garage, and Showers Kiln buildings as part of Phase I. The 12" main should be kept out of the alley due to other utilities that will be in the alley.

Morton Street

There is an 18" cold water main that runs north/south along Morton Street between 12th Street and 10th Street. There is also a 4" cold water pipe that is an extension of the 4" cold water main on 11th Street that runs south down Morton Street. (This is an older service line that the CBU would like to abandon and tie all users into the 18" cold water line). The 4" line is cross tied to the 18" line at the intersection of 11th Street and Morton Street. In the same area a 12" branch main tees east off the 18" main and runs east down 11th Street.

The 18" cold water main feeds unidentified buildings on the south east corner of Morton and 11th Street, two new building developments east of Morton, Lot 5 (Chapel Hill Wilderness, LLC), Showers Garage, and Showers Administration building in the CTP area. A 12" tee branches west off the 18" water main at the intersection of Morton and 10th Street and runs west down 10th St.

The 4" Morton St water line (continuation of 11th Street water main) feeds Lot 3 (Winkler) and Lot 4 (Fuchs Investment, LLC) west of Morton Street in the CTP area. The 4" water main continues south down Morton Street beyond the study area.

10th Street

A 12” tee branches west off the 18” Morton Street water main and runs west down 10th Street. The 12” main continues straight at the Alley and into the CTP core property. The 12” line splits north and south within the CTP area. The south branch wraps around the former IU Food Storage building as a fire protection and water service loop. It continues south across to 10th Street and ends. The north branch connects to the 8” water line from Rogers Street and branches to feed the former IU Publishing Building and existing Showers Dimensions Mill building (CTP Building #3). It has a 6” south branch that crosses 10th Street and ends. The 8” main serving the IU food storage and IU Publishing buildings was demolished with the buildings. The mains were capped as part of the demolition. The exact location may be available from the demolition contractor.

Existing Domestic Water Issues

The CBU would like to abandon the 4” water main in Morton Street and connect the existing and new services to the 18” water main. The CBU would like to use this project to further facilitate the 4” Morton and 11th Street main abandonment.

The Showers Dimensions Mill building domestic water and fire protection water are fed from the old 12” IU private water main from 10th Street and the 8” private water main from Rogers Street. Care should be exercised in demolishing these mains to ensure that the water and fire service to the Dimensions Building remains in service and operational. If the buildings are abandoned and water service is not needed, the 12” water main extension from 10th Street to the Dimensions Mill may be delayed for Future Work.

Proposed - General

Domestic water for the CTP will be extensions, modifications, and cross ties of existing CBU domestic water piping. The 18” main in Morton Street will be the primary water feed for the CTP. 12” branch loops down realigned 10th Street and 11th Street will cross tie to the 8” main in Rogers Street. Future stubs and service valves for the possible Madison Street extension should be provided.

Domestic and Fire Protection water requirements for CTP were estimated based on CTP Master Plan Building descriptions, areas and locations provided by the Bloomington Redevelopment Commission, IAC 327 Public Water Requirement Standards, and Indiana Fire Code Fire-Flow Requirements for Buildings. Drawing M102 provides a graphical representation of the proposed water mains for the CTP for the Phase I and Future Phase work.

Phase I

Phase I work will encompass work associated with the realignment of 10th Street and work in and around the Alley west of Morton Street. In this phase the 12” water main from Morton Street in 10th Street will be removed, realigned, and extended to the new intersection of 10th Street and Rogers Street. The 12” water pipe will have a 12” north branch west of the Alley that provides water for the existing Showers Dimension Mill building (CTP building #3), a 6” fire hydrant, and future 12” connection for CTP future building #13. The 12” water main in 10th Street will continue west and have two additional 8” braches to the north for CTP buildings #9 and #8, a 12” cross with curb valves and boxes for future extension north and south on possible Madison Street, and two 8” and one 12” branches south for CTP buildings #7 and #12. The 12” main will tie into the existing 8” water in Rogers Street with a tee.

Future Phases

Future work will follow development of the CTP. As existing buildings are demolished to make way for increased density new buildings, the water service to the buildings for fire protection and domestic use will need to be upgraded. New service capacity will be provided by the existing water mains with modifications as indicated on drawing M102. When 10th Street is extended to the B-line Trail the 12” water main will be extended to provide water service. The 10th Street main may again be extended to N. Fairview when 10th Street is extended. Fire hydrants will be located on the streets per CBU guidelines. Additional fire hydrants and loops for the developments will be provided by the developers as required for the building size and construction type.

Cost Opinions

We have assumed that the domestic water cost opinions include Class 350 ductile iron piping, excavation and backfill, pipe bedding, branch isolation valves at the main and street curb, and demolition of existing piping where required. Piping is buried in the street, taps, and branch tees for future branch piping extend to the street curb. Costs are based on Mean's 2014 Plumbing Data, and CBU's construction specifications manual.

Phase I

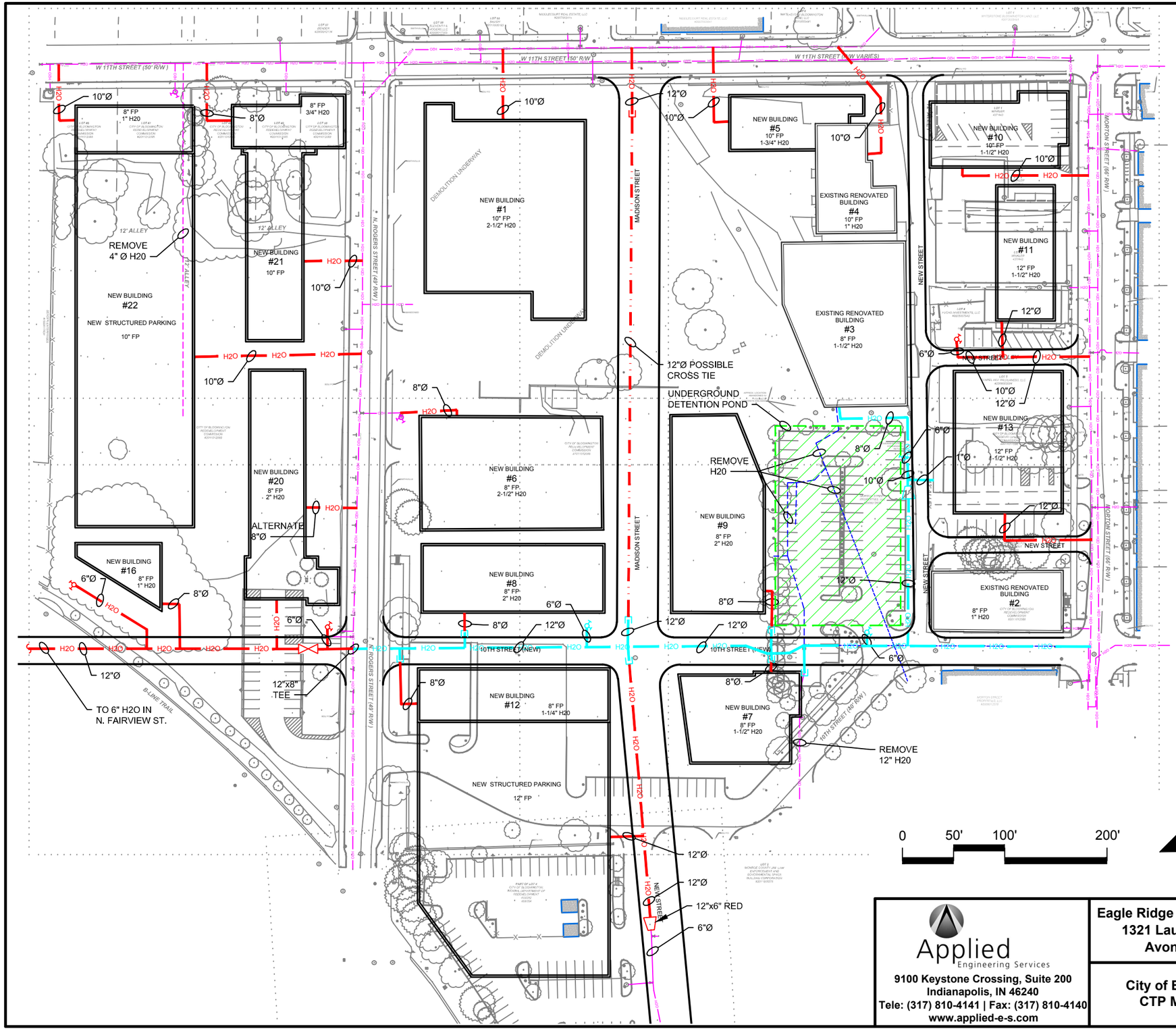
Phase I work includes realigned 10th Street and the Alley west of Morton Street.

Description	Cost
10th St 12" H2O Realignment	$282,828
CTP Green Space H2O Demo	$39,175
Alley West of 10th St 12" Main	$86,822
TOTAL PHASE I	**$408,825**

Future Phases

Future phase work includes taps and extensions for new / renovated buildings.

Description	Cost
11th St Taps/H2O Extensions	$72,387
Morton St Taps/H2O Extensions	$49,569
Rogers St Taps/H2OExtensions	$53,827
10th St Taps/H2O Extensions to B-Line Trail	$69,922
Madison St South of 10th St Taps/Extensions	$61,749
Dewatering Pumps	$ 2,480
TOTAL FUTURE PHASES	**$307,455**



CTP Master Plan - High Range Peak Domestic Water Demand Gallons per Day with Irrigation						
Building #	Bldg Footprint Area	Occupancy Type	Peak Design Water GPD	Domestic Water Peak Design GPM	Bldg NFPA 13 Water GPM	Total Building GPM
1	88000	50% Office + 50% Business - Old IU Printing	63,918	78.22	1,450	1,528
2	6862	50% Office + 50% Business - Showers Admin	11,365	20.34	850	870
3	19068	50% Office + 50% Business - Dimension Mill	15,712	45.32	850	895
4	5954	50% Restaurant + 50% Mercantile - Showeres Kiln	11,815	18.95	1,180	1,199
5	6210	25% Restaurant + 25% Mercantile + 25% office above + 25% Business above	31,193	32.87	1,780	1,813
6	22135	25% Office + 25% Business + 2 floors residential (34 units; 17 per floor)	93,322	104.75	1,060	1,165
7	9767	50% Office + 50% Business	24,143	34.39	850	884
8	11100	37.5% Office + 37.5% Business + 25% (1 floor residential (20 units))	56,036	58.94	1,060	1,119
9	20350	33% Office + 33% Business + 33% (1 floor residential (16 units))	59,927	78.34	1,060	1,138
10	7410	Residential, 1 floor garage under (with 11)	17,351	25.42	1,360	1,385
10	7410	Mercantile on 1st floor	15,214	23.94	1,040	1,064
11	8193	1 floor Office (25%), 1 floor Business (25%), 1 floor garage under (25%), 1 floor residential (22 units-25%)	43,657	45.10	2,210	2,255
12	57468	Garage (4 up, 1 down)	0	0.00	2,080	2,080
12	10800	Business in 1st floor of garage	8,899	25.67	890	916
13	19000	25% Office + 25% Business, 50% 1 floor garage under	15,656	45.16	2,000	2,045
14	50765	33% Residential + 33% garage + 33% storage	99,466	130.14	2,150	2,280
15	20280	Residential - 48 units (12 units per floor)	86,283	96.51	1,840	1,937
16	2688	Community Amenity	16,551	16.34	640	656
17	13675	Residential - 28 units (7 unit per floor)	52,723	61.29	920	981
18	13680	Residential - 48 units (12 units per floor)	77,729	78.66	920	999
19	9570	Residential - 32 units (8 units per floor)	52,403	53.66	920	974
20	15415	Residential - 40 units (10 units per floor)	69,978	76.41	920	996
21	15415	Residential - 30 units (10 units per floor)	52,483	64.26	1,380	1,444
21	5000	Business in 1st floor along 11th	4,120	11.88	640	652
22	62352	Garage	0	0.00	1,400	1,400
22	7200	Business in 1st floor of garage	5,933	17.11	640	657
23	12350	25% Office + 25% Business + 2 floors residential (24 units; 12 per floor)	58,356	62.81	1,310	1,373
24	10100	25% Office + 25% Business + 2 floors residential (16 units: 8 per floor)	43,190	48.22	1,310	1,358
25	9650	25% Office + 25% Business + 2 floors residential (15 units: 7.5 per floor)	40,906	45.82	1,310	1,356
				0.00		
Total	**547,867**		**1,128,328**	1400.50		
				783.56		
Area	**Area Acres**	**Greenspace Description**				
26	1.83	Central Green North				
27	1.23	Central Green South				
28	0.49	Greenspace/ Gardens South of Warehouse A				
29	1.54	Fountains				
30	0.46	Rogers Street Greenspace/ Gardens				
31	0.83	Children's Park				

1 Water demand for vegitative roofs is included in building water demand calculations and pipe sizing. Assumes water for ground plants does not exceed roof irrigation

2 Green Space irrigation assumes water demand separate from buildings water supply. 25% of green space acerage is not green.

EXISTING TO BE REMOVED:

EXISTING: H2O H2O

PHASE I: H2O H2O

FUTURE PHASE: H2O H2O

Applied Engineering Services
9100 Keystone Crossing, Suite 200
Indianapolis, IN 46240
Tele: (317) 810-4141 | Fax: (317) 810-4140
www.applied-e-s.com

Eagle Ridge Civil Engineering
1321 Laurel Oak Drive
Avon, IN 46123

City of Bloomington
CTP Masterplan

DOMESTIC WATER & FIRE PROTECTION SITE PLAN

DESIGNED BY	APPROVED BY	PROJECT NO.
DAG	DS	14-081

SHEET REF.

M102

Natural Gas System

Existing System

Rogers Street

There is an existing 4", medium-pressure main installed along the east side of the street that extends from the intersection of Rogers Street and 11th Street to north of 10th Street. The main is constructed of steel pipe and was installed in 1969, according to the Vectren map. The steel piping is reported to be in good condition and is expected to have several more years of life. The current available pressure is 45 PSIG and the capacity is sufficient to handle the anticipate gas loads.

Alley (West of Morton Street)

There is an existing 2", medium-pressure main installed primarily along the east side of the alley between 11th Street and 10th Street. The existing line does offset slightly from NW to SE as it runs through the intersection of 11th Street and the alley. The line is constructed of polyethylene (PE) plastic and was installed in 1980, according to the Vectren map. The plastic piping is in very good condition and has an far into the foreseeable future. The current available pressure is 45 PSIG and the capacity is sufficient to handle the anticipate gas loads.

11th Street

There is an existing 3", medium-pressure main that runs west to east generally along the north side of 11th Street. This main is fed from near the intersection of North Fairview and the alley just north of 11th Street. It terminates near the intersection of Morton Street and 11th Street. This main feeds the mains in Rogers Street and the alley west of Morton Street. This main is steel. The date of installation is between 1965 and 1969. The steel piping is reported to be in good condition and is expected to have several more years of life. The current available pressure is 45 PSIG and the capacity is sufficient to handle the anticipate gas loads.

Proposed - General

The existing gas mains are in good condition and have the capacity to serve the developing CTP area. As indicated below, these mains will need to be extended or replaced to provide gas service to some future building locations and/or coordinate the gas service with other utilities in the utility corridors being developed. Specific recommendations are presented below.

Alley (West of Morton Street)

Replace of the existing to allow it to be coordinated with the new utilities in this corridor and assure compliance with Vectren standards. The new main will be a 4" line. It will extend from 11th Street to a point just north of the existing structure (Building #2) on the northwest corner of the 10th Street and Morton. Extending the service further south is not desirable due to the extensive amount of work at the alley with 10th Street.

10th Street

Due to the expected develop on both sides of 10th Street and the finished nature of that street, we recommend extending the existing 4-inch gas line in Rogers Street down to and through the intersection of Rogers and 10th Streets. A new, valved 4-inch line extending from Rogers Street to a point east of the new street shown on the site plan between 10th and 11th streets. 2-inch stubbed lines will be provided and extended to allow access to future buildings such as Building #7 and #9 without cutting up 10th Street.

Phase I

The work to extend the existing service in Rogers Street, the alley West of Morton Street, and 10th Street would be included in Phase 1 due to the impact on the development of 10th Street.

Future Phases

We recommend replacing the existing lines in 11th Street and Rogers Street with any future development of the these streets due to the existing materials and age.

Cost Opinions

We have assumed that the natural gas cost opinion includes gas piping, excavation and backf ll, pipe bedding and demolition of the existing piping in the Alley west of Morton Street between 11th and 10th streets. Piping is buried in the street or def ned easements, taps and branch lines as provided for are extended to the street curb. Costs are based on Mean's 2014 Plumbing Data.

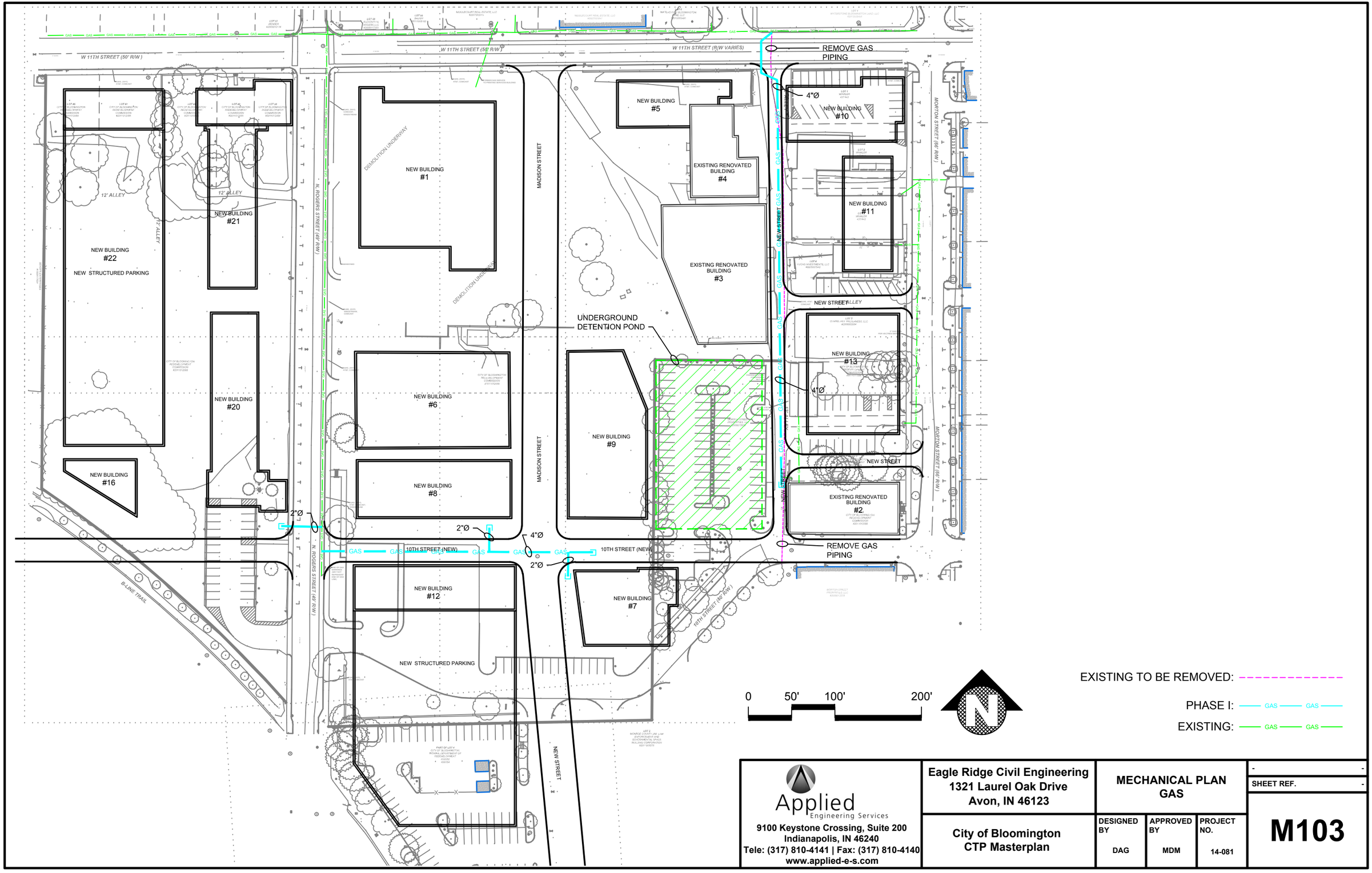
Phase I

Phase I work includes a tap in Rogers Street, extending the existing main in Rogers Street under 10th Street with taps, and the replacement of the existing main in the Alley west of Morton Street.

Description	Cost
Rogers Street	$6,719
10th Street	$18,318
Alley	$24,168
Alley Demolition	$12,441
TOTAL PHASE I	**$61,646**

Future Phases

There are no future phases anticipated for the natural gas service to the CTP. All new connects are expected to be taps and service piping to new buildings as they are developed on the site. The cost of this work is expected to be part of the development for each new structure requiring gas service.



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City of Bloomington
CTP Masterplan

MECHANICAL PLAN
GAS

DESIGNED BY	APPROVED BY	PROJECT NO.
DAG	MDM	14-081

-

SHEET REF. -

M103

Electrical Power Distribution System

Existing System

The City of Bloomington is very interested in making energy innovation and sustainability a key component of its CTP development. Conversations have been ongoing with Duke Energy, the electricity provider in this area. Duke is viewed as a critical partner in this goal, because any alternative energy generation strategy will impact and be impacted by, its interface with the greater power grid.

Such ideas as a central heating and cooling facility, geothermal, waste to gas to power generation, and the partial independence of the CTP to function under its own generation capacity in case of problems in the larger power grid have been discussed. At the time of this report, these discussions are still only in early stages. The City continues to explore these issues and it is hoped they be resolved as Phase 1 roadway improvements are designed and built. To contininue forward progress in the CTP's overall redevelopment, a direction has been set to guide the preparation of this master plan.

After consideration and some discussion with the City, it is deemed most likely that alternate power generation will be implemented on a “by site” scale wherein a developer may incorporate a source such as solar panels to partially support their needs. As such, each site developer will need to address how its site will connect to and interact with the electric grid in the CTP. The activities on a particular site are important but do not have a dramatic effect on the electric infrastructure that is needed in the roadway corridors.

This assumption does not exclude the City from establishing a future central source. We recognize that regardless of the source of power, the power must be delivered via cables, and the underlying infrastructure is needed regardless of the source. The needs for conduits, cables, vaults, transformers and other equipment can thus be planned for the roadway corridors based on the needs of a traditional electric grid, regardless of the originating source of that power. This approach allows this electric master plan to move forward while preserving the City’s flexibility to pursue alternative power generating strategies whether on a large (central) source strategy or on a site by site basis.

Electrical distribution in the City of Bloomington is provided by Duke Energy. Duke’s primary distribution voltage routing through the CTP area is 12,470 volts (15kV). Transformers are used to step down the distribution voltage to service voltage levels of 480 volt and 240 volt. The routing of electrical distribution in the CTP area is primarily pole structures with overhead conductors. The overhead distribution is routed along Rogers Street, 11th Street, and the alley, west of Morton Street, between 11th Street and 10th Street. There is some underground distribution along and south of 10th Street.

Pole-mounted transformers provide service power to most of the existing buildings in the CTP area north of 10th Street to 11th Street and Morton Street to west of Rogers Street. Pad-mounted transformers are used to provide service power to most of the existing buildings in the CTP area south of 10th Street between Morton Street and Rogers Street.

Proposed - General

To open the visual aspect of the CTP, the City of Bloomington will be working with Duke Energy and developers to relocate existing overhead 15kV distribution to new underground distribution and service voltage laterals to new and existing customers. The City is requiring all utilities to update and bury their distribution infrastructure as part of the CTP area’s street upgrades and development.

The development within the CTP area is being identified as Phase I and Future. Phase I focuses on the existing alley west of Morton Street between 10th Street and 11th Street, and the realigned 10th Street between Morton Street and Rogers Street. Future phases are the balance of the CTP area development.

The cost opinion captures the typical construction costs associated with implementation of the master plan. Determining responsibility for the cost of construction is a negotiated discussion between the City of Bloomington, Duke Energy and the developer.

Phase I

The vision for the alley west of Morton Street is a new underground distribution and service voltage to existing and new customers. Duke Energy will remove the 15kV overhead distribution between 10th Street and 11th Street. A new underground duct bank planned with two (2) 4” and one (1) 6” conduits shall be installed and coordinated with other utilities planned to share the alley underground space.

Pole mounted transformers will be replaced by pad-mounted transformers. The new pad-mounted transformer locations will require secondary service voltage conductor work to connect electrical service to the new/existing customers’ buildings.

Existing underground duct banks along and south of existing 10th Street will remain. They will be modified to connect to the new 10th Street underground distribution. A new underground duct bank planned with two (2) 4" and two (2) 6" conduits shall be installed and coordinated with other utilities planned to share the realigned 10th Street underground space. The duct bank would route from the intersection of 10th Street and the Alley west to Rogers Street. Transition from the 10th Street duct bank to Rogers Street will be an exposed riser at an existing overhead distribution pole.

In Phase 1, the new alley duct bank will transition from duct bank to exposed riser at an existing overhead distribution pole on 11th Street. The alley transition at 10th Street will be through a new manhole and connect to the existing underground duct bank routed along and south of 10th Street. The transition area near the alley and 10th Street is critical and must be well coordinated. This is a natural grade elevation low point and will be shared space with other utilities, including a large underground storm drain.

Shallow manholes will be placed in the non-road space to facilitate service laterals to new and existing building services. To minimize future excavation of the new alley and realigned 10th Street, several shallow manholes are planned with service laterals stubbed into space planned for future development. The service lateral is a duct bank with two (2) 4" conduits.

With limited space in the alley and 10th Street, there will be sections where the telecom ductbank will be stacked on top of the electric ductbank to accommodate spacing for all utilities.

Future Phases

The key future item is a new duct bank along 11th Street and Rogers Street through the CTP area. The new duct bank and manholes would replace the existing overhead pole distribution. The underground duct bank would be nine (9) 6" conduits. The duct bank would include traditional manholes. Shallow manholes may be used when the duct bank can be routed away from traffic lanes. The shallow manholes are only for use in non-traffic areas.

The 15kV underground distribution will require pad mounted switchgear. The switchgear's physical size is 7' square by 5' tall. The purpose of the switchgear is to allow the main circuit feed to branch in different directions and tap off to feed transformers.

No electrical distribution is planned for the new Madison Street. All proposed CTP buildings can connect to service from the alley, new 10th Street, or service laterals from 11th Street and Rogers Street.

Cost Opinions

Phase I

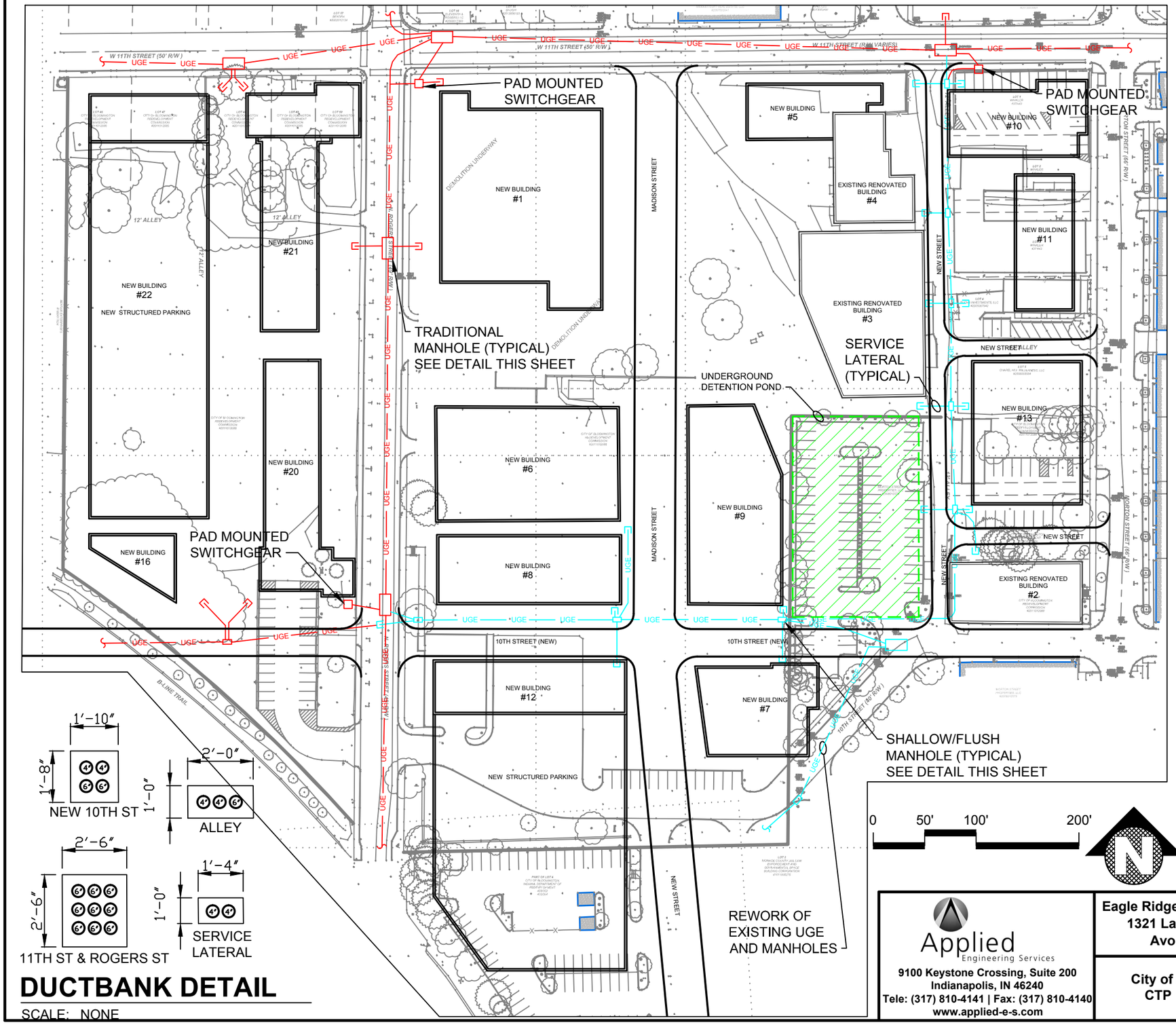
Phase I work excludes excavation of 10th Street since the entire street will be excavated for the realignment and it is anticipated that the 10 Street realignment effort will pay for the excavation and backfill work. The construction phasing to maintain customer service requires the new underground distribution be installed before the existing overhead distribution may be removed. This construction sequencing will require more construction dollars to implement. We have also assumed that the new electrical service to existing customer buildings will be part of the underground utility duct bank installation. Service transformer and secondary connection to new CTP buildings will be by the developers from the service lateral to the new building.

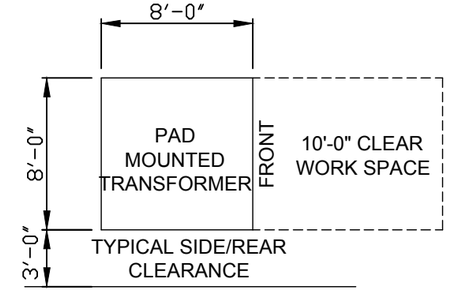
Phase I construction cost opinion is $268,101.

Future Phases

Future phase work is dependent upon when the buildings are constructed. Some of the work may never be built or programming for the buildings may change and dictate different utility sizes. Our assumption for the future work is that all of the work in the CTP will be completed at the same time and as indicated in this study. The future phase work includes excavation and backfill work since the streets already exist. It is probable that some savings can be realized by grouping the excavation and backfilling for all the utilities under a general contractor to take advantage of the multiple utility services required for the future phases. We have also assumed that the electrical power distribution only includes the duct bank and manholes in the street, service laterals, and pad-mounted switchgear. Extension of the service from the stubbed service lateral to the CTP buildings, service transformer and secondary service connection will be by the developers.

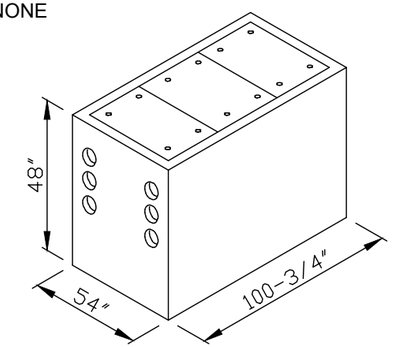
Future phases construction cost opinion is $630,413.





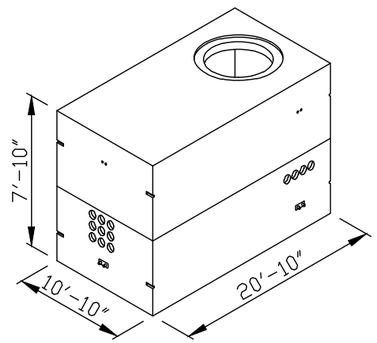
PAD MOUNTED TRANSFORMER

SCALE: NONE



SHALLOW/FLUSH MANHOLE DETAIL

SCALE: NONE



TRADITIONAL MANHOLE DETAIL

SCALE: NONE

DUCTBANK DETAIL

SCALE: NONE

PHASE I: UGE UGE

FUTURE PHASE: UGE UGE

Applied Engineering Services
9100 Keystone Crossing, Suite 200
Indianapolis, IN 46240
Tele: (317) 810-4141 | Fax: (317) 810-4140
www.applied-e-s.com

Eagle Ridge Civil Engineering
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City of Bloomington
CTP Masterplan

ELECTRICAL POWER SITE PLAN

DESIGNED BY	APPROVED BY	PROJECT NO.
DAG	BCW	14-081

SHEET REF.

E101

Telecommunications System

Existing telecommunications utilities located in the CTP area of downtown Bloomington are currently comprised of six telecommunications vendors – AT&T, Comcast, Smithville, ZAYO, Windstream, and Bloomington Digital Underground (BDU). AT&T, Comcast, and Smithville all offer bundled packages of phone, data, and video services. ZAYO, Windstream, and BDU offer data services only. Vendors have copper and fiber optical cabling in the CTP area with a mix of aerial and underground cable infrastructure.

The telecommunications industry is ever-changing with new vendors offering voice and data services. It will be important to include spare ductbank infrastructure capacity for new vendors that may begin servicing the City of Bloomington as the CTP develops.

Existing System

Rogers Street

Routed along the east side of Rogers Street from 9th Street to 11th Street on aerial poles:

- ZAYO has (1) 12 strand fiber optic cable
- Comcast has (2) coaxial cables
- Windstream has (1) fiber optic cable

Routed on the east side of Rogers Street from 9th Street to 11th Street in underground ducts:

- Smithville has (3) buried 1.25” ducts with a 24 and 72 strand fiber optic cable in one duct and two vacant ducts

Routed along the west side of Rogers Street from 9th Street to 11th Street in underground ducts

- BDU has buried (6) 1.25” ducts with (1) 96 strand fiber optic cable

11th Street

Routed along the south side of 11th Street between Rogers Street and Morton Street on aerial poles:

- ZAYO has (3) fiber optic cables (12, 48, & 96 strand). Near Morton Street several of ZAYO’s cables transition to the north side of 11th street and are buried
- Comcast has (2) coaxial cables, (1) 12 strand fiberoptic cable
- AT&T has multiple copper and fiber optic cables

Routed along the south side of 11th Street between Rogers Street and Morton Street in underground ducts:

- BDU has buried (6) 1.25” ducts with (1) 96 strand fiber optic cable

Routed along the north side of 11th street between Rogers Street and Morton Street in underground ducts:

- Smithville has (3) buried 1.25” ducts with a 24 strand fiber optic cable in one duct and two vacant ducts

Alley (West of Morton Street)

Routed in an alley just west of Morton Street from 11th to 10th Street on aerial poles:

- AT&T has both copper and fiber optic cables in this alley; AT&T transitions to buried cables near 10th Street and the cables remain buried along the north side of 10th Street as they are routed toward the Showers building
- Comcast has (2) coaxial cables and (1) 12 strand fiber optic cable that are routed on poles from 11th to 10th Street; Comcast transitions to buried cables near 10th Street and the cables remain buried along the north side of 10th Street as they are routed toward the Showers building

10th Street

Routed along the south side of 10th Street from Rogers Street to the Showers building:

- BDU has a buried (1) 1.25” duct with (1) fiber optic cable

Proposed - General

Future telecommunication infrastructure in the CTP will all be underground. Based on the existing needs of telecommunications companies with existing aerial and underground cabling in the existing CTP area, it has been determined that a concrete ductbank with (9) 4" ducts will be required in the utility corridors.

For telecommunications utilities, the corridors of 11th and Rogers Streets are already well served and able to serve bordering buildings. For the interior areas of the developing CTP, the general strategy is to provide a telecom pathway that uses the alley and portions of 10th Street west of the alley to serve the interior and new sites within the CTP.

The City of Bloomington will bear the cost of installing the primary telecom manholes, (9) 4" ducts, and the lateral duct extensions to either side of the streets in Phase I and future phases. The responsibility of costs, associated with the installation of cabling into the underground ductbank infrastructure, by each Telecommunication utility companies, may or may not be a reimbursable and will be negotiated with the telecommunication utility companies. Items that will be included in this work include all of the cable installation, innerducts, handholes, and underground conduit from the lateral conduits to the new future buildings. The City of Bloomington will own and manage the ductbank infrastructure, manholes, and lateral conduits to the streets edge. Telecom companies will install and own their handholes and conduit infrastructure to new buildings from the lateral conduit system. Telecommunication companies will coordinate with the City of Bloomington to gain access to the ductbank and manhole system to install cabling infrastructure.

Phase I

Phase I utility corridors will consist of the existing alley just west of Morton Street from 10th Street to 11th Street, and 10th Street from Morton Street to Rogers Street. The (9) 4" ducts will provide enough infrastructure for existing telecommunications providers and several spare ducts for new telecom providers.

A manhole should be located at the south edge of the 11th Street and alley intersection, which will allow Phase I and future phase ductbank infrastructures to connect. An additional manhole should be located at the east edge of the 10th Street and Rogers Street intersection, which will allow Phase I and future phase ductbank infrastructures to connect. Additional manholes will be placed in strategic locations in the alley and 10th Street to provide access for lateral ducts to new buildings along the main ductbank routes.

Lateral conduits from each manhole will consist of (4) 4" ducts that will be routed from the manholes to the area just outside of the streets so future connections to the telecommunications infrastructure will not disrupt the streets or alleyway. The lateral ducts will be capped and available for future use by telecommunications companies.

The project to transition telecommunications services from aerial to underground in the alley and 10th street will require split phased construction to allow the telecom utilities to abandon their current aerial facilities. The main telecom ductbank infrastructure must be installed and accessible so the telecommunications companies can transition their aerial cabling into the new underground infrastructure. After the underground cabling is installed and reconnected to existing customers then any aerial poles can be abandon and removed.

With limited space in the alley and 10th Street, there will be sections of the telecom ductbank that will be stacked on top of the electric ductbank to accommodate all utilities.

Phase I Cost Opinion

The investment the City of Bloomington will make to install the telecommunications ductbank infrastructure, which includes manhole structures, (9) duct ductbanks, and (4) duct laterals is itemized below.

Alley west of Morton from 10th to 11th Street	$186,500 (3 manholes, ductbank infrastructure)
10th Street from Alley to Rogers Street	$186,500 (3 manholes, ductbank infrastructure)

Future Phases

Future phases will require the installation of a concrete ductbank with (9) 4" ducts in Rogers Street from 10th Street to 11th Street and in 11th Street from Rogers Street to Morton Street. The nine ducts will provide enough infrastructure for existing telecommunications providers and provide several spare ducts for new telecom providers. Manholes will be placed in strategic locations in Rogers Street and 11th Street to provide access for lateral ducts to new buildings along the main ductbank routes.

Lateral conduits from each manhole will consist of (4) 4" ducts that will be routed from the manholes to the area just outside of the streets so future connections to the telecommunications infrastructure will not disrupt the streets. The lateral ducts will be capped and available for future use by telecommunications vendors. Existing underground infrastructure that various telecommunications companies already maintain in

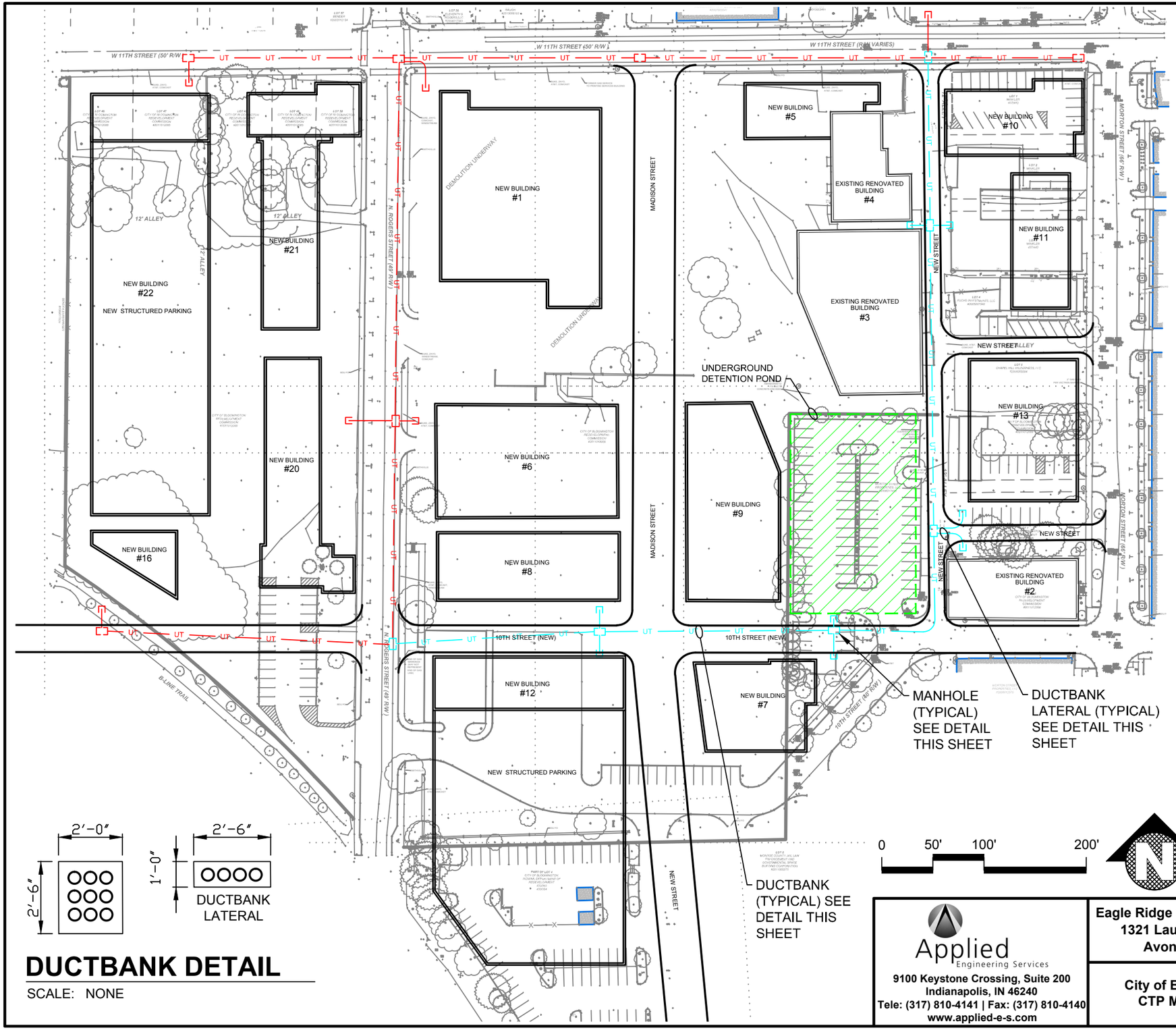
the CTP will need to be evaluated to determine if they can remain or be relocated into the new ductbank infrastructure.

The project to transition telecommunications services from aerial to underground in Rogers and 11th street will require split phased construction to allow the telecom utilities to abandon their current aerial facilities. The main telecom ductbank infrastructure must be installed and accessible so the telecommunications companies can transition their aerial cabling into the new underground infrastructure. After the underground cabling is installed and reconnected to existing customers then any aerial poles can be abandon and removed.

Future Phases Cost Opinion

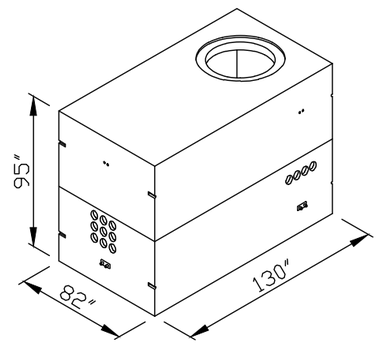
The investment the City of Bloomington will make to install the telecommunications ductbank infrastructure, which includes manhole structures, (9) duct ductbanks, and (4) duct laterals is itemized below.

Rogers Street from 10th Street to 11th Street	$159,000 (2 manholes, ductbank infrastructure)
10th Street from Rogers Street to Morton Street	$87,000 (1 manhole, ductbank infrastructure)
11th Street from Rogers Street to Morton Street	$275,500 (3 manholes, ductbank infrastructure)



CTP Master Plan				
Building #	# Stories	Occupancy Type	Parking spaces	Total Area (sf)
1*	4	Office/commercial	93	75000
2*	B+2	Office/commercial - Showers Admin	60	13792
3*	1+B	Office/commercial - Dimension Mill	43	19068
4*	1	Restaurant/retail - Showers Kiln	16	5954
5*	1	Restaurant/retail	32	6210
6*	2	Office/commercial	132	44270
7*	3	Office/commercial	88	29300
8*	3	Office/commercial	106	33300
9*	2	Office/commercial	158	40700
10*	3	Residential, 1 floor garage under (with 11)	24	22230
10*	1	Retail on 1st floor		7410
11*	3	Office/commercial, 1 floor garage under	73	24580
12*	5	Garage (4 up, 1 down)	910	287340
12*	1	Commercial in 1st floor of garage		10800
13*	2	Office/commercial, 1 floor garage under	114	38000
14	3	Residential, garage and storage		101530
15	3	Residential - 48 units		60840
16*	1	Community Amenity		2688
17	3	Residential - 21 units		41025
18	3	Residential - 36 units		41040
19	3	Residential - 24 units		28710
20	3	Residential - 30 units		46245
21*	3	Residential - 30 units	60	46245
21*	1	Commercial in 1st floor along 11th	60	5000
22*	3	Garage	546	187056
22*	1	Commercial in 1st floor of garage		7200
23	2	Office/commercial		24700
24	2	Office/commercial		20200
25	2	Office/commercial		19300

Buildings with asterisk (*) are within the 16 acre Certified Technology Park.



MANHOLE DETAIL

SCALE: NONE

PHASE I: UT UT

FUTURE PHASE: UT UT

DUCTBANK DETAIL

SCALE: NONE

Applied Engineering Services
9100 Keystone Crossing, Suite 200
Indianapolis, IN 46240
Tele: (317) 810-4141 | Fax: (317) 810-4140
www.applied-e-s.com

Eagle Ridge Civil Engineering
1321 Laurel Oak Drive
Avon, IN 46123

City of Bloomington
CTP Masterplan

TELECOMMUNICATIONS PLAN

DESIGNED BY	APPROVED BY	PROJECT NO.
DAG	MWL	14-081

SHEET REF. -

T101

Appendix

Estimated Sanitary Sewer Sizes

Sanitary Sewer Cost Opinion

Estimated Domestic and Fire Protection Water Demand

Domestic Water & Fire Protection Cost Opinion

Estimated Natural Gas Requirements

Natural Gas Cost Opinion

Electrical Occupancy and Square Footage Calculations

Electrical Cost Opinion

Telecommunications Cost Opinion

TABLE -1

ESTIMATED SANITARY SEWER SIZES

CTP Master Plan - High Range Sanitary Peak Gallons per Day Based on 4X Average domestic water																				
Building #	**Bldg Footprint Area**	**Ref Height (ft)**	**# Stories**	**Occupancy Type**	**Assumed Building Construction Type**	**Gross area (sf)**	**Gross SF per Floor**	**4X Office Ave. GPD @ 20 gal/day/p**	**4X Mercantile Ave. GPD @ 20 gal/day/p + .1/sqft**	**4X Business Ave. GPD @ 20 gal/day/p**	**4X Restaurant Ave. GPD at 35 gal/day/p**	**4X Residential Ave. GPD @ 500 gal/day/residence**	**4X Parking @ 0 gal/day**	**4X Warehouse @ 0 gal/day**	**Cooling Tower Water GPM (1)**	**Peak Design Sanitary GPD (2)**	**Peak Design Sanitary GPM**	**Average Design Sanitary GPM (3)**	**Bldg NFPA 13 Water GPM**	**Total Building GPM**	**Sanitary Service Pipe Size w/o FP**
1	88000	60	4	50% Office + 50% Business - Old IU Printing	IIIB	75,000	18,750	30,000	0	30,000	0				84	60,000	126	31.51	1,450	1,576	6
2	6862	40	B+2	50% Office + 50% Business - Showers Admin	IIIB	13,792	6,896	5,517	0	5,517	0				16	11,034	23	5.79	850	873	4
3	19068	30	1+B	50% Office + 50% Business - Dimension Mill	IIIB	19,068	19,068	7,627		7,627	0				21	15,254	32	8.01	850	882	4
4	5954	30	1	50% Restaurant + 50% Mercantile - Showers Kiln	IIIB	5,954	5,954	0	11,233	0	4,585				7	15,818	18	4.42	1,180	1,198	4
5	6210	30	2	25% Restaurant + 25% Mercantile + 25% office above + 25% Business above	IIIB	12,420	6,210	2,484	9,522	2,484	28,980				14	43,470	44	11.04	1,780	1,824	4
6	22135	60	4	25% Office + 25% Business + 2 floors residential (34 units; 17 per floor)	IIIB	88,540	22,135	17,708	0	17,708	0	68,000			100	103,416	171	42.86	1,060	1,231	6
7	9767	40	3	50% Office + 50% Business	IIIB	29,300	9,767	11,720	0	11,720	0				33	23,440	49	12.31	850	899	4
8	11100	60	4	37.5% Office + 37.5% Business + 25% (1 floor residential (20 units))	IIIB	44,400	11,100	13,320	0	13,320	0	40,000			50	66,640	96	24.06	1,060	1,156	6
9	20350	40	3	33% Office + 33% Business + 33% (1 floor residential (16 units))	IIIB	61,050	20,350	16,117	0	16,117	0	32,000			69	64,234	113	28.32	1,060	1,173	6
10	7410	40	3	Residential, 1 floor garage under (with 11)	IIIB	22,230	7,410	0	0	0	0	22,000			25	22,000	40	10.07	1,360	1,400	4
10	7410	13	1	Mercantile on 1st floor	IIA	7,410	7,410	0	20,501	0	0				8	20,501	23	5.64	1,040	1,063	4
11	8193	65	4	1 floor Office (25%), 1 floor Business (25%), 1 floor garage under (25%), 1 floor residential (22 units-	IIIB	32,772	8,193	6,554	0	6,554	0	44,000			37	57,109	77	19.13	2,210	2,287	4
12	57468	38	5	Garage (4 up, 1 down)	IA	287,340	57,468	0	0	0	0				0	0	0	0.00	2,080	2,080	0
12	10800	15	1	Business in 1st floor of garage	IIIB	10,800	10,800	0	0	8,640	0				12	8,640	18	4.54	890	908	4
13	19000	30	2	25% Office + 25% Business, 50% 1 floor garage under	IIIB	38,000	19,000	7,600	0	7,600	0				43	15,200	53	13.33	2,000	2,053	4
14	50765	35	3	33% Residential + 33% garage + 33% storage	IIIB	101,530	33,843	0	0	0	0	124,092			114	124,092	200	50.10	2,150	2,350	8
15	20280	60	4	Residential - 48 units (12 units per floor)	VA	81,120	20,280	0	0	0	0	96,000			91	96,000	158	39.48	1,840	1,998	6
16	2688	20	1	Community Amenity	IIIB	2,688	2,688	0	0	0	25,088				3	25,088	20	5.11	640	660	4
17	13675	60	4	Residential - 28 units (7 unit per floor)	IIIB	54,700	13,675	0	0	0	0	56,000			62	56,000	100	25.11	920	1,020	6
18	13680	60	4	Residential - 48 units (12 units per floor)	IIIB	54,720	13,680	0	0	0	0	96,000			62	96,000	128	32.06	920	1,048	6
19	9570	60	4	Residential - 32 units (8 units per floor)	IIIB	38,280	9,570	0	0	0	0	66,000			43	66,000	89	22.22	920	1,009	4
20	15415	60	4	Residential - 40 units (10 units per floor)	IIIB	61,660	15,415	0	0	0	0	80,000			69	80,000	125	31.23	920	1,045	6
21	15415	40	3	Residential - 30 units (10 units per floor)	IIIB	46,245	15,415	0	0	0	0	60,000			52	60,000	94	23.42	1,380	1,474	6
21	5000	13	1	Business in 1st floor along 11th	IIIB	5,000	5,000	0	0	4,000	0				6	4,000	8	2.10	640	648	4
22	62352	42	3	Garage	IA	187,056	62,352	0	0	0	0				0	0	0	0.00	1,400	1,400	0
22	7200	13	1	Business in 1st floor of garage	IIIB	7,200	7,200	0	0	5,760	0				8	5,760	12	3.03	640	652	4
23	12350	60	4	25% Office + 25% Business + 2 floors residential (24 units; 12 per floor)	IIIB	49,400	12,350	9,880	0	9,880	0	48,000			56	67,760	103	25.66	1,310	1,413	4
24	10100	60	4	25% Office + 25% Business + 2 floors residential (16 units: 8 per floor)	IIIB	40,400	10,100	8,080	0	8,080	0	32,000			45	48,160	79	19.72	1,310	1,389	4
25	9650	60	4	25% Office + 25% Business + 2 floors residential (15 units: 7.5 per floor)	IIIB	38,600	9,650	7,720	0	7,720	0	30,000			43	45,440	75	18.75	1,310	1,385	4
Total	**547,867**					**1,516,675**	**Peak Gal/day**	**144,328**	**41,256**	**162,728**	**58,653**	**894,092**	**0**	**0**	**1,173**	**1,301,056**	**904**			
							Peak GPM	**100**	**29**	**113**	**41**	**621**	**0**	**0**	**1**	**904**				

1 400 sqft per ton. Drain at 15% of total CHW gpm flow
2 Excludes cooling tower drain
3 Includes cooling tower drain

Applied Engineering Services

CONSTRUCTION COST OPINION

PHASE 1 **SANITARY SEWER** **Description**	**Qty**	**Equipment** **Unit**	**Unit Cost**	**Total Cost**	**Material** **Unit**	**Unit Cost**	**Total Cost**	**Labor** **Unit**	**Unit Cost**	**Multiplier**	**Total Cost**	**Total of Totals**	**OH&P %**	**OH&P**	**TOTAL w/ OH&P**
10th Street 8" Sewer to Morton St															
8" PVC SDR 35	200.00	LF			LF	7.66	$1,532	LF	$3.22	1	$644	$2,176	25%	$544	$2,720
EXCAVATION & BACKFILL 8' D & 2' W 1:1	200.00	LF	$11.35	$2,270	LF			LF	$29.50	1	$5,900	$8,170	25%	$2,043	$10,213
BEDDING 2' D & 2' W	200.00	LF			LF	8.20	$1,640	LF	$4.40	1	$880	$2,520	25%	$630	$3,150
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
48" MANHOLE, 6' D	1.00	EA			EA	3,150.00	$3,150	EA	$3,000.00	1	$3,000	$6,150	25%	$1,538	$7,688
10th Street 8" Sewer to Morton St TOTAL				**$2,635.00**			**$6,322.00**				**$10,964.00**	**$19,921.00**		**$5,088.85**	**$25,009.85**
CTP Green space / ALLEY															
8" PVC SDR 35	*325.00*	LF			LF	7.66	$2,490	LF	$3.22	1	$1,047	$3,536	25%	$884	$4,420
EXCAVATION & BACKFILL 8' D & 2' W 1:1	325.00	LF	$11.35	$3,689	LF			LF	$29.50	1	$9,588	$13,276	25%	$3,319	$16,595
BEDDING 2' D & 2' W	325.00	LF			LF	8.20	$2,665	LF	$4.40	1	$1,430	$4,095	25%	$1,024	$5,119
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
48" MANHOLE, 6' D	2.00	EA			EA	3,150.00	$6,300	EA	$3,000.00	1	$6,000	$12,300	25%	$3,075	$15,375
CTP BUILDING #3 - 4" TAP	1.00	EA	$454	$454	EA	1,781.40	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
CTP Green space / ALLEY TOTAL				**$4,508**			**$13,236**				**$21,387**	**$39,131**		**$10,057**	**$49,192**
10th Street Sewer to Rogers St															
8" PVC SDR 35	105.00	LF			LF	7.66	$804	LF	$3.22	1	$338	$1,142	25%	$286	$1,428
EXCAVATION & BACKFILL 8' D & 2' W 1:1	105.00	LF	$11.35	$1,192	LF			LF	$29.50	1	$3,098	$4,289	25%	$1,072	$5,362
BEDDING 2' D & 2' W	105.00	LF			LF	8.20	$861	LF	$4.40	1	$462	$1,323	25%	$331	$1,654
48" MANHOLE, 6' D	2.00	EA			EA	3,150.00	$6,300	EA	$3,000.00	1	$6,000	$12,300	25%	$3,075	$15,375
CTP BUILDING #9 - 6" TAP	1.00	EA	$454	$454	EA	2,104.10	$2,104	EA	$3,116.50	1	$3,117	$5,675	29%	$1,646	$7,322
CTP BUILDING #7- 4" TAP	1.00	EA	$454	$454	EA	1,781.40	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
10" PVC SDR 35	250.00	LF	$0.42	$105	LF	11.40	$2,850	LF	$3.58	1	$895	$3,850	25%	$963	$4,813
EXCAVATION & BACKFILL 8' D & 2' W 1:1	250.00	LF	$11.35	$2,838	LF			LF	$29.50	1	$7,375	$10,213	25%	$2,553	$12,766
BEDDING 2' D & 2' W	250.00	LF			LF	8.20	$2,050	LF	$4.40	1	$1,100	$3,150	25%	$788	$3,938
48" MANHOLE, 6' D	1.00	EA			EA	3,150.00	$3,150	EA	$3,000.00	1	$3,000	$6,150	25%	$1,538	$7,688
MADISON ST 8" TAP	1.00	EA	$454	$454	EA	2,868.90	$2,869	EA	$3,307.30	**1**	$3,307	$6,630	28%	$1,837	$8,466
CTP BUILDING #12 - 4" TAP	1.00	EA	$454	$454	EA	1,781.40	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
10th Street Sewer to Rogers St TOTAL				**$6,315**			**$24,551**				**$34,798**	**$65,664**		**$17,262**	**$82,935**
Demo CTP Green space / ALLEY															
4" PVC SDR 35	150.00	LF			LF			LF	$3.22	1	$483	$483	25%	$121	$604
EXCAVATION & BACKFILL 8' D & 2' W 1:1	150.00	LF	$11.35	$1,703	LF			LF	$29.50	1	$4,425	$6,128	25%	$1,532	$7,659
48" MANHOLE, 6' D	2.00	EA			EA			EA	$500.00	1	$1,000	$1,000	25%	$250	$1,250
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
Demo CTP Green space / ALLEY TOTAL				**$2,068**							**$6,448**	**$8,516**		**$2,237**	**$10,753**
SHEET TOTAL				**$15,526**			**$44,109**				**$73,597**	**$133,232**		**$34,645**	**$167,889**

Client: City of Bloomington | **Location: Bloomington, Indiana** | **By: 09-26-14**

Project: CTP | **Project No.: 14-081** | **Date: Dan Shurina** | **Sheet 1 of 1**

Notes: Based on Means 2014

Applied Engineering Services

CONSTRUCTION COST OPINION

FUTURE PHASES **SANITARY SEWER** **Description**	**Qty**	**Equipment**			**Material**			**Labor**				**Total of**	**OH&P**	**OH&P**	**TOTAL w/ OH&P**
		Unit	**Unit Cost**	**Total Cost**	**Unit**	**Unit Cost**	**Total Cost**	**Unit**	**Unit Cost**	**Multiplier**	**Total Cost**	**Totals**	**%**		
11th ST- #22, #21															
CTP BUILDING #22 -4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
CTP BUILDING #21 -4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
													25%		
11th ST- #22, #21 TOTAL				**$908**			**$3,563**				**$5,567**	**$10,037**		**$2,841**	**$12,886**
Morton St - #10, #11, #13, #2															
CTP BUILDING #10 -4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
CTP BUILDING #11 -4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
CTP BUILDING #13 -8" TAP	1.00	EA	$454	$454	EA	$2,868.90	$2,869	EA	$3,307.30	**1**	$3,307	$6,630	28%	$1,837	$8,466
CTP BUILDING #2 -4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
Morton St - #10, #11, #13, #2 TOTAL				**$1,816**			**$8,213**				**$11,657**	**$21,686**		**$6,097**	**$27,795**
CTP Green space - #5, #4															
8" PVC SDR 35	*400.00*	LF			LF	*$7.66*	$3,064	LF	$3.22	1	$1,288	$4,352	25%	$1,088	$5,440
EXCAVATION & BACKFILL 8' D & 2' W 1:1	400.00	LF	$11.35	$4,540	LF			LF	$29.50	1	$11,800	$16,340	25%	$4,085	$20,425
BEDDING 2' D & 2' W	400.00	LF			LF	$8.20	$3,280	LF	$4.40	1	$1,760	$5,040	25%	$1,260	$6,300
48" MANHOLE, 6' D	3.00	EA			EA	$3,150.00	$9,450	EA	$3,000.00	1	$9,000	$18,450	25%	$4,613	$23,063
CTPBUILDING #5-4" TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
CTP BUILDING #4- 4"TAP	1.00	EA	$454	$454	EA	$1,781	$1,781	EA	$2,783.30	1	$2,783	$5,019	28%	$1,420	$6,443
DEMO 4" PIPE	400.00	LF	$11.35	$4,540	LF			LF	$4.50	1	$1,800	$6,340	25%	$1,585	$7,925
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
CTP Green space - #5, #4 TOTAL				**$10,353**			**$19,357**				**$31,755**	**$61,464**		**$15,806**	**$77,278**
Madison St to 10th St, #6, #8															
8" PVC SDR 35	170.00	LF			LF	$7.66	$1,302	LF	$3.22	1	$547	$1,850	25%	$462	$2,312
EXCAVATION & BACKFILL 8' D & 2' W 1:1	170.00	LF	$11.35	$1,930	LF			LF	$29.50	1	$5,015	$6,945	25%	$1,736	$8,681
BEDDING 2' D & 2' W	170.00	LF			LF	$8.20	$1,394	LF	$4.40	1	$748	$2,142	25%	$536	$2,678
48" MANHOLE, 6' D	2.00	EA			EA	$3,150.00	$6,300	EA	$3,000.00	1	$6,000	$12,300	25%	$3,075	$15,375
CTP BUILDING #6 -6" TAP	1.00	EA	$454	$454	EA	$2,104.10	$2,104	EA	$3,116.50	1	$3,117	$5,675	29%	$1,646	$7,322
CTP BUILDING #5 - 6"TAP	1.00	EA	$454	$454	EA	$2,104.10	$2,104	EA	$3,116.50	1	$3,117	$5,675	29%	$1,646	$7,322
Madison St to 10th St, #6, #8 TOTAL				**$2,838**			**$13,204**				**$18,543**	**$34,585**		**$9,100**	**$43,689**
Rogers St; 10th St to B-Line Trail															
10" PVC SDR 35	*270.00*	LF	$0.42	$113	LF	$11.40	$3,078	LF	$3.58	1	$967	$4,158	25%	$1,040	$5,198
EXCAVATION & BACKFILL 8' D & 2' W 1:1	270.00	LF	$11.35	$3,065	LF			LF	$29.50	1	$7,965	$11,030	25%	$2,757	$13,787
BEDDING 2' D & 2' W	270.00	LF			LF	$8.20	$2,214	LF	$4.40	1	$1,188	$3,402	25%	$851	$4,253
48" MANHOLE, 7' D	1.00	EA			EA	$3,150.00	$3,150	EA	$3,000.00	1	$3,000	$6,150	25%	$1,538	$7,688
CTP BUILDING #1- 6" TAP	1.00	EA	$454	$454	EA	$2,104.10	$2,104	EA	$3,116.50	1	$3,117	$5,675	29%	$1,646	$7,322
CTP BUILDING #20- 6" TAP	1.00	EA	$454	$454	EA	$2,104.10	$2,104	EA	$3,116.50	1	$3,117	$5,675	29%	$1,646	$7,322
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
Rogers St; 10th St to B-Line Trail TOTAL				**$4,451**			**$12,650**				**$19,893**	**$36,994**		**$9,811**	**$46,808**
CTP BUILDING #16 - 4" TAP	1.00	EA	$454	**$454**	EA	$1,781	**$1,781**	EA	$2,783.30	1	**$2,783**	**$5,019**	28%	**$1,420**	**$6,443**
SHEET TOTAL				**$20,819**			**$58,769**				**$90,198**	**$169,786**		**$45,076**	**$214,897**

Client: City of Bloomington	**Location: Bloomington, Indiana**	**By: 09-26-14**	
Project: CTP	**Project No.: 14-081**	**Date: Dan Shurina**	**Sheet 1 of 1**
Notes:	Based on Means 2014		

Applied Engineering Services

CONSTRUCTION COST OPINION

SANITARY SEWER Description - TAPS ALL PHASES	Qty	Equipment			Material			Labor				Total of	OH&P	OH&P	TOTAL w/
		Unit	Unit Cost	Total Cost	Unit	Unit Cost	Total Cost	Unit	Unit Cost	Multiplier	Total Cost	Totals	%		OH&P
10" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
10" PVC SDR 35	40.00	LF	$0.42	16.80	LF	11.40	456	LF	3.58	1	143	616	25%	154	770
10" CLEANOUT	1.00	EA			EA	$320.00	$320.00	EA	$129.00	1	$129.00	$449.00	25%	$112.25	$561.25
10" MEGA LUG S	10.00	EA			EA	$131.00	$1,310.00	EA	$85.00	1	$850.00	*$2,160.00*	27%	$583.20	$2,743.20
#10 TRACER WIRE	100.00	LF			LF	$0.25	$24.50	LF	$0.43	1	$42.50	$67.00	35%	$23.45	$90.45
10" 45 ELBOW	1.00	EA			EA	$290.00	$290.00	EA	$152.00	1	$152.00	*$442.00*	25%	$110.50	$552.50
10" CAP	1.00				EA	$182.00	$182.00	EA	$39.00	1	$39.00	*$221.00*	18%	$39.78	$260.78
10" WYE	1.00				EA	$830.00	$830.00	EA	$226.00	1	$226.00	*$1,056.00*	19%	$200.64	$1,256.64
10" TAPPING TEE	1.00	EA	$63.00	$63.00	EA	$556.67	$556.67	EA	$490.00	1	$490.00	*$1,109.67*	30%	$332.90	$1,442.57
10" TAP TOTAL		**LOT**		**$533.80**			**$4,297.17**				**$3,427.70**	**$8,258.67**	**25%**	**$2,091.22**	**$10,349.89**
8" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
8" PVC SDR 35	40.00	LF			LF	7.66	306	LF	3.22	1	129	435	25%	109	544
8" CLEANOUT	2.00	EA			EA	$132.00	$264.00	EA	$117.00	1	$234.00	$498.00	30%	$149.40	$647.40
8" MEGA LUG S	10.00	EA			EA	$64.00	$640.00	EA	$67.00	1	$670.00	*$1,310.00*	32%	$419.20	$1,729.20
#10 TRACER WIRE	100.00	LF			LF	$0.25	$24.50	LF	$0.43	1	$42.50	$67.00	35%	$23.45	$90.45
8" 45 ELBOW	1.00	EA			EA	$224.00	$224.00	EA	$139.00	1	$139.00	$363.00	25%	$90.75	$453.75
8" CAP	1.00				EA	$182.00	$182.00	EA	$39.00	1	$39.00	*$221.00*	18%	$39.78	$260.78
8" WYE	1.00				EA	$385.00	$385.00	EA	$208.00	1	$208.00	$593.00	25%	$148.25	$741.25
8" TAPPING TEE	1.00	EA			EA	$515.00	$515.00	EA	$490.00	1	$490.00	$1,005.00	32%	$321.60	$1,326.60
8" TAP TOTAL		**LOT**		**$454.00**			**$2,868.90**				**$3,307.30**	**$6,630.20**	**28%**	**$1,835.73**	**$8,465.93**
6" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
6" PVC SDR 35	40.00	LF			LF	3.29	132	LF	2.80	1	112	244	31%	74	318
6" CLEANOUT	2.00	EA			EA	$63.00	$126.00	EA	$104.00	1	$208.00	$334.00	35%	$116.90	$450.90
6" MEGA LUGS	10.00	EA			EA	$64.00	$640.00	EA	$67.00	1	$670.00	*$1,310.00*	32%	$419.20	$1,729.20
#10 TRACER WIRE	100.00	LF			LF	$0.25	$24.50	LF	$0.43	1	$42.50	$67.00	35%	$23.45	$90.45
6" 45 ELBOW	1.00	EA			EA	$111.00	$111.00	EA	$82.00	1	$82.00	$193.00	28%	$53.08	$246.08
6" CAP	1.00				EA	$108.00	$108.00	EA	$32.00	1	$32.00	$140.00	20%	$28.00	$168.00
6" WYE	1.00				EA	$165.00	$165.00	EA	$124.00	1	$124.00	$289.00	28%	$80.92	$369.92
6" TAPPING TEE	1.00	EA			EA	$470.00	$470.00	EA	$490.00	1	$490.00	$960.00	33%	$316.80	$1,276.80
6" TAP TOTAL		**LOT**		**$454.00**			**$2,104.10**				**$3,116.50**	**$5,674.60**	**29%**	**$1,647.14**	**$7,321.74**
4" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
4" PVC SDR 35	40.00	LF			LF	1.46	58	LF	2.62	1	105	163	25%	41	204
4" CLEANOUT	2.00	EA			EA	$74.00	$148.00	EA	$59.00	1	$118.00	$266.00	29%	$77.14	$343.14
4" MEGA LUG S	10.00	EA			EA	$64.00	$640.00	EA	$67.00	1	$670.00	*$1,310.00*	32%	$419.20	$1,729.20
#10 TRACER WIRE	100.00	LF			LF	$0.25	$24.50	LF	$0.43	1	$42.50	$67.00	35%	$23.45	$90.45
4" 45 ELBOW	1.00	EA			EA	$31.50	$31.50	EA	$50.00	1	$50.00	$81.50	36%	$29.34	$110.84
4" CAP	1.00				EA	$30.00	$30.00	EA	$25.00	1	$25.00	$55.00	30%	$16.50	$71.50
4"WYE	1.00				EA	$91.00	$91.00	EA	$92.00	1	$92.00	$183.00	31%	$56.73	$239.73
4" TAPPING TEE	1.00	EA			EA	$430.00	$430.00	EA	$325.00	1	$325.00	$755.00	30%	$226.50	$981.50
4" TAP TOTAL		**LOT**		**$454.00**			**$1,781.40**				**$2,783.30**	**$5,018.70**	**28%**	**$1,424.16**	**$6,442.86**

Client: City of Bloomington | **Location: Bloomington, Indiana** | **By: 09-26-14**

Project: CTP | **Project No.: 14-081** | **Date: Dan Shurina** | **Sheet 1 of 1**

Notes: Based on Means 2014

valves include valve box

TABLE -2

ESTIMATED DOMESTIC AND FIRE PROTECTION WATER DEMAND

CTP Master Plan - High Range Peak Domestic Water Demand Gallons per Day with Irrigation																					
Building #	**Bldg Footprint Area**	**Ref Height (ft)**	**# Stories**	**Occupancy Type**	**Assumed Building Construction Type**	**Gross area (sf)**	**Gross SF per Floor**	**2.5 X Office Ave GPD @ 20 gal/day/p**	**2.5 X Mercantile Ave GPD @ 20 gal/day/p + .1/sqft**	**2.5 X Business Ave GPD @ 20 gal/day/p**	**2.5 X Restaurant Ave GPD at 35 gal/day/p**	**2.5 X Residential Ave GPD @ 500 gal/day/residence**	**2.5 X Parking @ 0 gal/day**	**2.5 X Warehouse @ 0 gal/day**	**Cooling Tower Water GPD**	**Vegetative Roof Gal/Day (1)**	**Peak Design Water GPD**	**Peak Design Water GPM**	**Bldg NFPA 13 Water GPM**	**Total Building GPM**	**Water Service Pipe Size w/o Fire Protection (1)**	**Water Service Pipe Size w/ Fire Protection (1)**
1	88000	60	4	50% Office + 50% Business - Old IU Printing	IIIB	75,000	18,750	18,750	0	18,750	0				24,300	2,118	63,918	78.22	1,450	1,528	2.5	10
2	6862	40	B+2	50% Office + 50% Business - Showers Admin	IIIB	13,792	6,896	3,448	0	3,448	0				4,469	779	11,365	20.34	850	870	1	8
3	19068	30	1+B	50% Office + 50% Business - Dimension Mill	IIIB	19,068	19,068	4,767		4,767	0				6,178	2,154	15,712	45.32	850	895	1.5	8
4	5954	30	1	50% Restaurant + 50% Mercantile - Showers Kiln	IIIB	5,954	5,954	0	7,021	0	2,865				1,929	673	11,815	18.95	1,180	1,199	1	10
5	6210	30	2	25% Restaurant + 25% Mercantile + 25% office above + 25% Business above	IIIB	12,420	6,210	1,553	5,951	1,553	18,113				4,024	702	31,193	32.87	1,780	1,813	1.25	10
6	22135	60	4	25% Office + 25% Business + 2 floors residential (34 units; 17 per floor)	IIIB	88,540	22,135	11,068	0	11,068	0	42,500			28,687	2,501	93,322	104.75	1,060	1,165	2.5	8
7	9767	40	3	50% Office + 50% Business	IIIB	29,300	9,767	7,325	0	7,325	0				9,493	1,103	24,143	34.39	850	884	1.5	8
8	11100	60	4	37.5% Office + 37.5% Business + 25% (1 floor residential (20 units))	IIIB	44,400	11,100	8,325	0	8,325	0	25,000			14,386	1,254	56,036	58.94	1,060	1,119	2	8
9	20350	40	3	33% Office + 33% Business + 33% (1 floor residential (16 units))	IIIB	61,050	20,350	10,073	0	10,073	0	20,000			19,780	2,299	59,927	78.34	1,060	1,138	2	8
10	7410	40	3	Residential, 1 floor garage under (with 11)	IIIB	22,230	7,410	0	0	0	0	13,750			3,601	837	17,351	25.42	1,360	1,385	1.25	10
10	7410	13	1	Mercantile on 1st floor	IIA	7,410	7,410	0	12,813	0	0				2,401	837	15,214	23.94	1,040	1,064	1.25	8
11	8193	65	4	1 floor Office (25%), 1 floor Business (25%), 1 floor garage under (25%), 1 floor residential (22 units-25%)	IIIB	32,772	8,193	4,097	0	4,097	0	27,500			7,964	926	43,657	45.10	2,210	2,255	1.5	12
12	57468	38	5	Garage (4 up, 1 down)	IA	287,340	57,468	0	0	0	0				0	0	0	0.00	2,080	2,080	0	12
12	10800	15	1	Business in 1st floor of garage	IIIB	10,800	10,800	0	0	5,400	0				3,499	1,220	8,899	25.67	890	916	1.25	8
13	19000	30	2	25% Office + 25% Business, 50% 1 floor garage under	IIIB	38,000	19,000	4,750	0	4,750	0				6,156	2,146	15,656	45.16	2,000	2,045	1.5	12
14	50765	35	3	33% Residential + 33% garage + 33% storage	IIIB	101,530	33,843	0	0	0	0	77,558			21,909	3,823	99,466	130.14	2,150	2,280	3	12
15	20280	60	4	Residential - 48 units (12 units per floor)	VA	81,120	20,280	0	0	0	0	60,000			26,283	2,291	86,283	96.51	1,840	1,937	2.5	10
16	2688	20	1	Community Amenity	IIIB	2,688	2,688	0	0	0	15,680				871	304	16,551	16.34	640	656	1	8
17	13675	60	4	Residential - 28 units (7 unit per floor)	IIIB	54,700	13,675	0	0	0	0	35,000			17,723	1,545	52,723	61.29	920	981	2	8
18	13680	60	4	Residential - 48 units (12 units per floor)	IIIB	54,720	13,680	0	0	0	0	60,000			17,729	1,545	77,729	78.66	920	999	2	8
19	9570	60	4	Residential - 32 units (8 units per floor)	IIIB	38,280	9,570	0	0	0	0	40,000			12,403	1,081	52,403	53.66	920	974	2	8
20	15415	60	4	Residential - 40 units (10 units per floor)	IIIB	61,660	15,415	0	0	0	0	50,000			19,978	1,741	69,978	76.41	920	996	2	8
21	15415	40	3	Residential - 30 units (10 units per floor)	IIIB	46,245	15,415	0	0	0	0	37,500			14,983	1,741	52,483	64.26	1,380	1,444	2	10
21	5000	13	1	Business in 1st floor along 11th	IIIB	5,000	5,000	0	0	2,500	0				1,620	565	4,120	11.88	640	652	0.75	8
22	62352	42	3	Garage	IA	187,056	62,352	0	0	0	0				0	0	0	0.00	1,400	1,400	0	10
22	7200	13	1	Business in 1st floor of garage	IIIB	7,200	7,200	0	0	3,600	0				2,333	813	5,933	17.11	640	657	1	8
23	12350	60	4	25% Office + 25% Business + 2 floors residential (24 units; 12 per floor)	IIIB	49,400	12,350	6,175	0	6,175	0	30,000			16,006	1,395	58,356	62.81	1,310	1,373	2	10
24	10100	60	4	25% Office + 25% Business + 2 floors residential (16 units: 8 per floor)	IIIB	40,400	10,100	5,050	0	5,050	0	20,000			13,090	1,141	43,190	48.22	1,310	1,358	1.5	10
25	9650	60	4	25% Office + 25% Business + 2 floors residential (15 units: 7.5 per floor)	IIIB	38,600	9,650	4,825	0	4,825	0	18,750			12,506	1,090	40,906	45.82	1,310	1,356	1.5	10
Total	**547,867**					**1,516,675**	**Peak Gal/day**	**90,205**	**25,785**	**101,705**	**36,658**	**557,558**	**0**	**0**	**314,299**	**38,626**	**1,166,953**					
							Peak GPM	**62.64**	**17.91**	**70.63**	**25.46**	**387.19**	**0.00**	**0.00**	**218.26**	**643.76**	**810.38**	**1454.15**				

Area	**Area Acres**	**Greenspace Description**	**Gal/Day (2)**	**GPM**	**Pipe Size in.**
26	1.83	Central Green North	8,443	141	3
27	1.23	Central Green South	5,675	95	2.5
28	0.49	Greenspace/ Gardens South of Warehouse A	2,261	38	1.5
29	1.54	Fountains	7,105	118	2.5
30	0.46	Rogers Street Greenspace/ Gardens	2,122	35	1.5
31	0.83	Children's Park	3,829	64	2
		Total Green Space Irrigation	**29,434**	**491**	

1 Water demand for vegetative roofs is included in building water demand calculations and pipe sizing. Assumes water for ground plants does not exceed roof irrigation. Assumes one hour per day for irrigation water.
2 Green Space irrigation assumes water demand separate from buildings water supply. Assumes 25% of green space acreage is not green.

Applied Engineering Services

CONSTRUCTION COST OPINION

Domestic Water Description - PHASE 1	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material Unit	Material Unit Cost	Material Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	TOTAL w/ OH&P
10th Street Realignment															
EXCAVATION & BACKFILL 8' D & 2' W 1:1	1110.00	LF	$11.35	$12,598.50	LF			LF	$29.50	1	$32,745	$45,344	25%	$11,336	$56,679
BEDDING 2' D & 2' W	1110.00	LF			LF	$8.20	$9,102.00	LF	$4.40	1	$4,884	$13,986	25%	$3,497	$17,483
													37%		
12" DIP CLASS 350 CEMENT LINED	790.00	LF	$4.57	$3,610.30	LF	$42.50	$33,575.00	LF	$17.40	1	$13,746	$50,931	25%	$12,733	$63,664
12" GATE VALVE	8.00	EA	$61.00	$488.00	EA	$1,475.00	$11,800.00	EA	$160.00	1	$1,280	$13,568	16%	$2,171	$15,739
12" MEGA LUG S	20.00	EA			EA	$131.00	$2,620.00	EA	$85.00	1	*$1,700*	*$4,320*	25%	$1,080	$5,400
12" 45 ELBOW	4.00	EA	$45.50	$182.00	EA	$1,175.00	$4,700.00	EA	$174.00	1	$696	$5,578	25%	$1,395	$6,973
12" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
12" X12" X 8" TEE	2.00	EA	$68.50	$137.00	EA	$2,025.00	$4,050.00	EA	$261.00	1	*$522*	*$4,709*	15%	$706	$5,415
12" X 12" x 6" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
12" X12" X 8" X8" CROSS	2.00	EA	$7.80	$15.60	EA	$3,675.00	$7,350.00	EA	$65.50	1	*$131*	*$7,497*	25%	$1,874	$9,371
12" X 10" X 12" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
10" X 8" X 6" TEE	*1.00*	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
10" DIP CLASS 350 CEMENT LINED	40.00	LF	$4.21	$168.40	LF	$35.00	$1,400.00	LF	$16.05	1	*$642*	*$2,210*	25%	$553	$2,763
10" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$1,125.00	$2,250.00	EA	$160.00	1	$320	$2,692	16%	$431	$3,123
10" MEGA LUG S	10.00	EA			EA	$131.00	$1,310.00	EA	$85.00	1	*$850*	*$2,160*	27%	$583	$2,743
10" 45 ELBOW	2.00	EA			EA			EA		1					
10" TEE	*1.00*	EA	$63.00	$63.00	EA	$1,550.00	$1,550.00	EA	$241.00	1	*$241*	*$1,854*	15%	$278	$2,132
8" DIP CLASS 350 CEMENT LINED	100.00	LF	$3.61	$361.00	LF	$24.50	$2,450.00	LF	$13.75	1	*$1,375*	*$4,186*	25%	$1,047	$5,233
8" GATE VALVE	8.00	EA	$61.00	$488.00	EA	$920.00	$7,360.00	EA	$160.00	1	$1,280	$9,128	20%	$1,826	$10,954
8" MEGA LUG S	20.00	EA			EA	$64.00	$1,280.00	EA	$67.00	1	*$1,340*	*$2,620*	32%	$838	$3,458
8" 45 ELBOW	20.00	EA			EA	$520.00	$10,400.00	EA	$134.00	1	*$2,680*	$13,080	25%	$3,270	$16,350
8" TEE	1.00	EA			EA	$1,075.00	$1,075.00	EA	$201.00	1	*$201*	$1,276	16%	$204	$1,480
6" DIP CLASS 350 CEMENT LINED	80.00	LF	$3.01	$240.80	LF	$17.75	$1,420.00	LF	$11.45	1	*$916*	$2,577	25%	$644	$3,221
6" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$520.00	$1,040.00	EA	$160.00	1	*$320*	$1,482	20%	$296	$1,778
6" MEGA LUG S	12.00	EA			EA	$43.50	$522.00	EA	$56.00	1	$672	$1,194	34%	$406	$1,600
6" 45 ELBOW		EA			EA	$365.00		EA	$112.00	1			25%		
6" TEE		EA			EA	$670.00		EA	$168.00	1			18%		
6" GATE VALE W PIV	2.00	EA	$61.00	$122.00	EA	$1,525.00	$3,050.00	EA	$160.00	1	$320	$3,492	15%	$524	$4,016
12" BLIND FLANGE	3.00	EA	$4.40	$13.20	EA	$495.00	$1,485.00	EA	$104.00	1	$312	$1,810	17%	$304	$2,114
8" BLIND FLANGE	4.00	EA	$3.11	$12.44	EA	$148.00	$592.00	EA	$73.50	1	$294	$898	23%	$209	$1,108
6" BLIND FLANGE	1.00	EA	$2.30	$2.30	EA	$95.50	$95.50	EA	$54.50	1	$55	$152	25%	$38	$190
HDPE WRAP FOR 12" PIPE	790.00	LF			LF	$0.40	$316.00	LF	$4.10	1	$3,239	$3,555	25%	$889	$4,444
HDPE WRAP FOR 10" PIPE		LF			LF	$0.40		LF	$4.10	1			25%		
HDPE WRAP FOR 8" PIPE	100.00	LF			LF	$0.40	$40.00	LF	$4.10	1	$410	$450	25%	$113	$563
HDPE WRAP FOR 6" PIPE	80.00	LF			LF	$0.40	$32.00	LF	$4.10	1	$328	$360	25%	$90	$450
DEWATERING PUMP 6" CENTRIFUGAL	2.00	EA	$365.00	$730.00	EA			EA	$540.00	1	$1,080	$1,810	37%	$670	$2,480
DEMO 12" & 8" 10TH ST PIPING															
EXCAVATION & BACKFILL 8' D & 2' W 1:1	300.00	LF	$11.35	$3,405.00	LF			LF	$29.50	1	$8,850	$12,255	25%	$3,064	$15,319
DEMO PIPE	300.00	LF						LF	$15.35	1	$4,605	$4,605	25%	$1,151	$5,756
SHEET TOTAL				**$23,156**			**$118,965**				**$87,078**	**$229,198**		**$53,631**	**$282,828**

Client: City of Bloomington | **Location: Bloomington, Indiana** | **By: 11-4-2014**

Project: CTP | **Project No.: 14-081** | **Date: Dan Shurina** | **Sheet 1 of 2**

Notes: Based on Means 2014

valves include valve box

Applied Engineering Services

CONSTRUCTION COST OPINION

Domestic Water Description - PHASE 1	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material Unit	Material Unit Cost	Material Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	TOTAL w/ OH&P
Alley West of Morton															
EXCAVATION & BACKFILL 8' D & 2' W 1:1	415.00	LF	$11.35	$4,710.25	LF			LF	$29.50	1	$12,243	$16,953	25%	$4,238	$21,191
BEDDING 2' D & 2' W	415.00	LF			LF	$8.20	$3,403.00	LF	$4.40	1	$1,826	$5,229	25%	$1,307	$6,536
													37%		
12" DIP CLASS 350 CEMENT LINED	140.00	LF	$4.57	$639.80	LF	$42.50	$5,950.00	LF	$17.40	1	$2,436	$9,026	25%	$2,256	$11,282
12" GATE VALVE	1.00	EA	$61.00	$61.00	EA	$1,475.00	$1,475.00	EA	$160.00	1	$160	$1,696	16%	$271	$1,967
12" MEGA LUG S	10.00	EA			EA	$131.00	$1,310.00	EA	$85.00	1	*$850*	*$2,160*	25%	$540	$2,700
12" 45 ELBOW	2.00	EA	$45.50	$91.00	EA	$1,175.00	$2,350.00	EA	$174.00	1	$348	$2,789	25%	$697	$3,486
12" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
12" X12" X 8" TEE		EA	$68.50		EA	$2,025.00		EA	$261.00	1			15%		
12" X 12" x 6" TEE		EA	$68.50		EA	$2,025.00		EA	$261.00	1			15%		
12" X12" X 8" X8" CROSS		EA	$7.80		EA	$3,675.00		EA	$65.50	1			25%		
12" X 10" X 12" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
10" X 8" X 6" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	*$261*	*$2,355*	15%	$353	$2,708
10" DIP CLASS 350 CEMENT LINED	70.00	LF	$4.21	$294.70	LF	$35.00	$2,450.00	LF	$16.05	1	*$1,124*	*$3,868*	25%	$967	$4,835
10" GATE VALVE		EA	$61.00		EA	$1,125.00		EA	$160.00	1			16%		
10" MEGA LUG S	5.00	EA			EA	$131.00	$655.00	EA	$85.00	1	*$425*	*$1,080*	27%	$292	$1,372
10" 45 ELBOW	2.00	EA			EA			EA		1					
10" TEE		EA	$63.00		EA	$1,550.00		EA	$241.00	1			15%		
8" DIP CLASS 350 CEMENT LINED	120.00	LF	$3.61	$433.20	LF	$24.50	$2,940.00	LF	$13.75	1	*$1,650*	*$5,023*	25%	$1,256	$6,279
8" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$920.00	$1,840.00	EA	$160.00	1	$320	$2,282	20%	$456	$2,738
8" MEGA LUG S	16.00	EA			EA	$64.00	$1,024.00	EA	$67.00	1	*$1,072*	*$2,096*	32%	$671	$2,767
8" 45 ELBOW	4.00	EA			EA	$520.00	$2,080.00	EA	$134.00	1	*$536*	$2,616	25%	$654	$3,270
8" TEE		EA			EA	$1,075.00		EA	$201.00	1			16%		
6" DIP CLASS 350 CEMENT LINED	100.00	LF	$3.01	$301.00	LF	$17.75	$1,775.00	LF	$11.45	1	*$1,145*	$3,221	25%	$805	$4,026
6" GATE VALVE	1.00	EA	$61.00	$61.00	EA	$520.00	$520.00	EA	$160.00	1	*$160*	$741	20%	$148	$889
6" MEGA LUG S	7.00	EA			EA	$43.50	$304.50	EA	$56.00	1	$392	$697	34%	$237	$933
6" 45 ELBOW		EA			EA	$365.00		EA	$112.00	1			25%		
6" TEE		EA			EA	$670.00		EA	$168.00	1			18%		
6" GATE VALVE W PIV	1.00	EA	$61.00	$61.00	EA	$1,525.00	$1,525.00	EA	$160.00	1	$160	$1,746	15%	$262	$2,008
HDPE WRAP FOR 12" PIPE	140.00	LF			LF	$0.40	$56.00	LF	$4.10	1	$574	$630	25%	$158	$788
HDPE WRAP FOR 10" PIPE	70.00	LF			LF	$0.40	$28.00	LF	$4.10	1	$287	$315	25%	$79	$394
HDPE WRAP FOR 8" PIPE	120.00	LF			LF	$0.40	$48.00	LF	$4.10	1	$492	$540	25%	$135	$675
HDPE WRAP FOR 6" PIPE	100.00	LF			LF	$0.40	$40.00	LF	$4.10	1	$410	$450	25%	$113	$563
TOTAL ALLEY				**$6,980.45**			**$35,848.50**				**$27,392.00**	**$70,220.95**		**$16,601.50**	**$86,822.45**
DEMO 12" & 8" GREEN SPACE PIPING															
DEWATERING PUMP 6" CENTRIFUGAL	1.00	EA	$365.00	$365.00	EA			EA	$540.00	1	$540	$905	37%	$335	$1,240
EXCAVATION & BACKFILL 8' D & 2' W 1:1	540.00	LF	$11.35	$6,129.00	LF			LF	$29.50	1	$15,930	$22,059	25%	$5,515	$27,574
DEMO PIPE	540.00	LF						LF	$15.35	1	$8,289	$8,289	25%	$2,072	$10,361
TOTAL DEMO				**$6,494.00**							**$24,759.00**	**$31,253.00**		**$7,921.85**	**$39,174.85**
SHEET TOTAL				**$13,474**			**$35,849**				**$52,151**	**$101,474**		**$24,523**	**$125,997**

Client: City of Bloomington	**Location: Bloomington, Indiana**	**By: 11-4-2014**	
Project: CTP	**Project No.: 14-081**	**Date: Dan Shurina**	**Sheet 2 of 2**

Notes: Based on Means 2014

valves include valve box

Applied Engineering Services

CONSTRUCTION COST OPINION

Domestic Water Description - FUTURE PHASES	Qty	Equipment			Material			Labor				Total of	OH&P	OH&P	TOTAL w/
		Unit	Unit Cost	Total Cost	Unit	Unit Cost	Total Cost	Unit	Unit Cost	Multiplier	Total Cost	Totals	%		OH&P
11th St															
CTP BUILDING #22 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #21 8" TAP	1.00	LOT	$720.40	$720.40		$5,399.00	$5,399.00		$3,395.00	1	$3,395	$9,514		$2,241	$11,756
CTP BUILDING #1 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #5 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #4 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
															$72,387
MORTON ST															
CTP BUILDING #10 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #11 12" TAP	1.00	LOT	$872.00	$872.00		$9,504.00	$9,504.00		$3,821.00	1	$3,821	$14,197		$3,009	$17,206
CTP BUILDING #13 12" TAP	1.00	LOT	$872.00	$872.00		$9,504.00	$9,504.00		$3,821.00	1	$3,821	$14,197		$3,009	$17,206
															$49,569
ROGERS ST															
CTP BUILDING #21 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #22 10" TAP	1.00	LOT	$852.40	$852.40		$7,954.00	$7,954.00		$3,742.00	1	$3,742	$12,548	21%	$2,609	$15,158
CTP BUILDING #6 8" TAP	1.00	LOT	$720.40	$720.40		$5,399.00	$5,399.00		$3,395.00	1	$3,395	$9,514		$2,241	$11,756
CTP BUILDING #20 8" TAP	1.00	LOT	$720.40	$720.40		$5,399.00	$5,399.00		$3,395.00	1	$3,395	$9,514		$2,241	$11,756
															$53,827
10th St EXTENSION TO B-LINE TRAIL															
CTP BUILDING #20 8" TAP	1.00	LOT	$720.40	$720.40		$5,399.00	$5,399.00		$3,395.00	1	$3,395	$9,514		$2,241	$11,756
CTP BUILDING #16 8" TAP	1.00	LOT	$720.40	$720.40		$5,399.00	$5,399.00		$3,395.00	1	$3,395	$9,514		$2,241	$11,756
6" FIRE HYDRANT	1.00	LOT	$807.40	$807.40		$6,854.00	$6,854.00		$3,573.00	1	$3,573	$11,234		$2,424	$13,659
EXCAV & BACKFILL 8' D & 2' W 1:1	180.00	LF	$11.35	$2,043.00	LF			LF	$29.50	1	$5,310	$7,353	25%	$1,838	$9,191
BEDDING 2' D & 2' W	180.00	LF			LF	$8.20	$1,476.00	LF	$4.40	1	$792	$2,268	25%	$567	$2,835
12" DIP CLASS 350 CEMENT LINED	180.00	LF	$4.57	$822.60	LF	$42.50	$7,650.00	LF	$17.40	1	$3,132	$11,605	25%	$2,901	$14,506
12" GATE VALVE	1.00	EA	$61.00	$61.00		$1,475.00	$1,475.00		$160.00	1	$160	$1,696	16%	$271	$1,967
12" MEGA LUG S	12.00	EA				$131.00	$1,572.00		$85.00	1	$1,020	*$2,592*	25%	$648	$3,240
HDPE WRAP FOR 12" PIPE	180.00	LF				$0.40	$72.00		$4.10	1	$738	$810	25%	$203	$1,013
12" BLIND FLANGE	1.00	EA													
															$69,922
MADISON ST SOUTH OF 10TH ST															
CTP BUILDING #12 12" TAP	1.00	LOT	$872.00	$872.00		$9,504.00	$9,504.00		$3,821.00	1	$3,821	$14,197		$3,009	$17,206
12" DIP CLASS 350 CEMENT LINED	250.00	LF	$4.57	$1,142.50	LF	$42.50	$10,625.00	LF	$17.40	1	$4,350	$16,118	25%	$4,029	$20,147
12" GATE VALVE	1.00	EA	$61.00	$61.00		$1,475.00	$1,475.00		$160.00	1	$160	$1,696	16%	$271	$1,967
12" MEGA LUG S	16.00	EA				$131.00	$2,096.00		$85.00	1	$1,360	*$3,456*	25%	$864	$4,320
HDPE WRAP FOR 12" PIPE	250.00	LF				$0.40	$100.00		$4.10	1	$1,025	$1,125	25%	$281	$1,406
12" X 6" REDUCER	1.00	EA													
EXCAV & BACKFILL 8' D & 2' W 1:1	250.00	LF	$11.35	$2,837.50	LF			LF	$29.50	1	$7,375	$10,213	25%	$2,553	$12,766
BEDDING 2' D & 2' W	250.00	LF			LF	$8.20	$2,050.00	LF	$4.40	1	$1,100	$3,150	25%	$788	$3,938
															$61,749
DEWATERING PUMP 6" CENTRIFUGAL	2.00	EA	$365.00	$730.00	EA			EA	$540.00	1	$1,080	$1,810	37%	$670	**$2,480**
				$19,960			**$146,630**				**$84,727**	**$251,317**		**$56,138**	**$307,455**

Client: City of Bloomington	**Location: Bloomington, Indiana**	**By: 11-4-2014**	
Project: CTP	**Project No.: 14-081**	**Date: Dan Shurina**	**Sheet 1 of 1**
Notes:	Based on Means 2014		
valves include valve box			

Applied Engineering Services

CONSTRUCTION COST OPINION

Domestic Water Description - TAPS ALL PHASES	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material Unit	Material Unit Cost	Material Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	TOTAL w/ OH&P
12" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
12" DIP CLASS 350 CEMENT LINED	40.00	LF	$4.57	$182.80	LF	$42.50	$1,700.00	LF	$17.40	1	$696.00	$2,578.80	25%	$644.70	$3,223.50
12" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$1,475.00	$2,950.00	EA	$160.00	1	$320.00	$3,392.00	16%	$542.72	$3,934.72
12" MEGA LUG S	10.00	EA			EA	$131.00	$1,310.00	EA	$85.00	1	$850.00	*$2,160.00*	25%	$540.00	$2,700.00
HDPE WRAP FOR 12" PIPE	40.00	LF			LF	$0.40	$16.00	LF	$4.10	1	$164.00	$180.00	25%	$45.00	$225.00
12" 45 ELBOW	1.00	EA	$45.50	$45.50	EA	$1,175.00	$1,175.00	EA	$174.00	1	$174.00	$1,394.50	25%	$348.63	$1,743.13
12" TEE	1.00	EA	$68.50	$68.50	EA	$2,025.00	$2,025.00	EA	$261.00	1	$261.00	*$2,354.50*	15%	$353.18	$2,707.68
12" TAP TOTAL	**1.00**	**Lot**		**$872.80**			**$9,504.00**				**$3,821.00**	**$14,197.80**	**21%**	**$3,008.72**	**$17,206.52**
10" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
10" DIP CLASS 350 CEMENT LINED	40.00	LF	$4.21	$168.40	LF	$35.00	$1,400.00	LF	$16.05	1	$642.00	*$2,210.40*	25%	$552.60	$2,763.00
10" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$1,125.00	$2,250.00	EA	$160.00	1	$320.00	$2,692.00	16%	$430.72	$3,122.72
10" MEGA LUG S	10.00	EA			EA	$131.00	$1,310.00	EA	$85.00	1	$850.00	*$2,160.00*	27%	$583.20	$2,743.20
HDPE WRAP FOR 10" PIPE	40.00	LF			LF	$0.40	$16.00	LF	$4.10	1	$164.00	$180.00	25%	$45.00	$225.00
10" 45 ELBOW	1.00	EA	$45.00	$45.00	EA	$1,100.00	$1,100.00	EA	$169.00	1	$169.00	*$1,314.00*	14%	$185.27	$1,499.27
10" TEE	1.00	EA	$63.00	$63.00	EA	$1,550.00	$1,550.00	EA	$241.00	1	$241.00	*$1,854.00*	15%	$278.10	$2,132.10
10" TAP TOTAL		**LOT**		**$852.40**			**$7,954.00**				**$3,742.00**	**$12,548.40**	**21%**	**$2,609.39**	**$15,157.79**
8" TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
8" DIP CLASS 350 CEMENT LINED	40.00	LF	$3.61	$144.40	LF	$24.50	$980.00	LF	$13.75	1	$550.00	*$1,674.40*	25%	$418.60	$2,093.00
8" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$920.00	$1,840.00	EA	$160.00	1	$320.00	$2,282.00	20%	$456.40	$2,738.40
8" MEGA LUG S	10.00	EA			EA	$64.00	$640.00	EA	$67.00	1	$670.00	*$1,310.00*	32%	$419.20	$1,729.20
HDPE WRAP FOR 8" PIPE	40.00	LF			LF	$0.40	$16.00	LF	$4.10	1	$164.00	$180.00	25%	$45.00	$225.00
8" 45 ELBOW	1.00	EA			EA	$520.00	$520.00	EA	$134.00	1	$134.00	$654.00	25%	$163.50	$817.50
8" TEE	1.00	EA			EA	$1,075.00	$1,075.00	EA	$201.00	1	$201.00	$1,276.00	16%	$204.16	$1,480.16
8" TAP TOTAL		**LOT**		**$720.40**			**$5,399.00**				**$3,395.00**	**$9,514.40**	**24%**	**$2,241.36**	**$11,755.76**
6" HYDRANT TAP															
EXCAV & BACKFILL 8' D & 2' W 1:1	40.00	LF	$11.35	$454.00	LF			LF	$29.50	1	$1,180.00	$1,634.00	25%	$408.50	$2,042.50
BEDDING 2' D & 2' W	40.00	LF			LF	$8.20	$328.00	LF	$4.40	1	$176.00	$504.00	25%	$126.00	$630.00
6" DIP CLASS 350 CEMENT LINED	40.00	LF	$3.01	$120.40	LF	$17.75	$710.00	LF	$11.45	1	$458.00	$1,288.40	25%	$322.10	$1,610.50
6" GATE VALVE	2.00	EA	$61.00	$122.00	EA	$520.00	$1,040.00	EA	$160.00	1	$320.00	$1,482.00	20%	$296.40	$1,778.40
6" MEGA LUG S	10.00	EA			EA	$43.50	$435.00	EA	$56.00	1	$560.00	$995.00	34%	$338.30	$1,333.30
HDPE WRAP FOR 6" PIPE	40.00	LF			LF	$0.40	$16.00	LF	$4.10	1	$164.00	$180.00	25%	$45.00	$225.00
6" 45 ELBOW	1.00	EA			EA	$365.00	$365.00	EA	$112.00	1	$112.00	$477.00	25%	$119.25	$596.25
6" TEE	1.00	EA			EA	$670.00	$670.00	EA	$168.00	1	$168.00	$838.00	18%	$150.84	$988.84
6" GATE VALE W PIV	1.00	EA	$61.00	$61.00	EA	$1,525.00	$1,525.00	EA	$160.00	1	$160.00	$1,746.00	15%	$261.90	$2,007.90
6" HYDRANT	1.00	EA	$23.50	$23.50	EA	$2,175.00	$2,175.00	EA	$197.00	1	$197.00	$2,395.50	15%	$359.33	$2,754.83
6" HYDRANT TAP TOTAL	**1.00**	**LOT**		**$780.90**			**$7,264.00**				**$3,495.00**	**$11,539.90**	**21%**	**$2,427.62**	**$13,967.52**

Client: City of Bloomington | **Location: Bloomington, Indiana** | **By: 11-7-2014**

Project: CTP | **Project No.: 14-081** | **Date: Dan Shurina** | **Sheet 1 of 1**

Notes: Based on Means 2014

valves include valve box

CTP Master Plan - Estimated Natural Gas Requirements						
						9/4/14
Building #	#Stories	Occupancy Type	Total Area (sf)	Estimated Heating Load (Btuh/SF	Estimated Heating Load Btuh/unit	Estimated Gas Demand CFH
1*	4	Office/commericial	75000	30	2250000	2250
2*	B+2	Office/commericial	13792	25	344800	345
3*	B+1	Office/commericial	19068	25	476700	477
4*	1	Restaurant/Retail	5954	50	297700	298
5*	1	Restaurant/Retail	6210	50	310500	311
6*	2	Office/commericial	44270	30	1328100	1328
7*	3	Office/commericial	29300	30	879000	879
8*	3	Office/commericial	33300	30	999000	999
9*	2	Office/commericial	40700	30	1221000	1221
10*	3	Residential, 1 floor garage under	22230		100,000	1543
10*	1	Retail on 1st Floor	7410	35	259350	259
11*	3	Office/Commercial, 1 floor garage under	24580	30	737400	737
12*	5	Garage (4 up, 1 down)	287340	0	0	
12*	1	Commercial in 1st floor of garage	10800	30	324000	324
13*	2	Office/commericial,1st floor garage under	38000	30	1140000	1140
14	3	Residential, garage and storage	10530		100,000	731
15	3	Residential - 48 Units	60840		100,000	4800
16*	1	Community anenity	2688			
17	3	Residential - 21 Units	41025		100,000	2100
18	3	Residential - 36 Units	41040		100,000	3600
19	3	Resedential - 24 Units	28710		100,000	2400
20	3	Residential - 30 Units	46245		100,000	3000
21*	3	Residential - 30 Units	46245		100,000	3000
21*	1	Commercial in fist floor along 11th	5000	30	150000	150
22*	3	Garage	187056	0		
22*	1	Commercial in 1st floor of garage	7200	30	216000	216
23	2	Office/Commercial	24700	30	741000	741
24	2	Office/Commercial	20200	30	606000	606
25	2	Office/Commercial	19300	30	579000	579

Office	30	Btuh/sf
Office + Bsmt	25	Btuh/sf
Restaurant (1)	55	Btuh/sf
Residential (2)	100,000	Btuh/unit
Retail	35	Btuh/sf

(1) includes heating, water heating and cooking

(2) includes heating and water heating

Applied Engineering Services

CONSTRUCTION COST OPINION

Natural Gas Description - PHASE 1	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material Unit	Material Unit Cost	Material Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	TOTAL w/ OH&P
ROGER STREET															
2" 60 PSI, SDR 11	50.00	LF			LF	$42.50	$2,125.00	LF	$17.40	1	$870	$2,995	25%	$749	$3,744
4" X 2" TEE	1.00	EA			EA	$1,050.00	$1,050.00	EA	$170.00	1	$170	$1,220	25%	$305	$1,525
2" VALVE, BOX	1.00	EA			EA	$182.00	$182.00	EA	$42.00	1	$42	$224	25%	$56	$280
2" CAP	1.00	EA			EA	$12.00	$12.00	LF	$20.00	1	$20	$32	25%	$8	$40
EXCAVATING & BACKFILL, TRENCH TO 3	50.00	LF	$5.00	$250.00				LF	$6.50	1	$406	$656	25%	$164	$820
BEDDING	50.00	LF			LF	$2.40	$120.00	LF	$2.05	1	$128	$248	25%	$62	$310
															$6,719
1OTH STREET															
4" 60 PSI, SDR 11	300.00				LF	$12.15	$3,645.00	LF	$5.20		$1,560	$5,205	25%	$1,301	$6,506
2" 60 PSI, SDR 11	100.00				LF	$2.85	$285.00	LF	$2.93		$293	$578	25%		$578
4 X 4 TEE, FLANGED	1.00				EA	$395.00	$395.00	EA	$104.00	1	$104	$499	25%	$125	$624
4" FLANGES	1.00				LF	$285.00	$285.00		$104.00	1	$104	$389	25%	$97	$486
4" VALVE, BOX	1.00				EA	$500.00	$500.00	EA	$300.00	1	$300	$800	25%	$200	$1,000
2" CAP	2.00				EA	$12.00	$24.00	EA	$20.00		$40	$64	25%	$16	$80
EXCAVATING & BACKFILL, TRENCH TO 3	400.00	LF	$5.00	$2,000.00				LF	$6.50	1	$3,250	$5,250	25%	$1,313	$6,563
BEDDING	*400.00*				LF	$2.40	$960.00	LF	$2.05	1	*$1,025*	$1,985	25%	$496	$2,481
															$18,318
ALLEY WEST OF MORTON															
4" 60 PSI, SDR 11	500.00				LF	$12.15	$6,075.00	LF	$5.20		$2,600	$8,675	25%	$2,169	$10,844
4" FLANGES	2.00				LF	$285.00	$570.00		$104.00	1	$208	$778	25%	$195	$973
4" VALVE, BOX	1.00				EA	$500.00	$500.00	EA	$300.00	1	$300	$800	25%	$200	$1,000
4" CAP	1.00				EA	$17.50	$17.50	EA	$20.00		$20	$38	25%	$9	$47
EXCAVATING & BACKFILL, TRENCH TO 3	500.00	LF	$5.00	$2,500.00				LF	$6.50	1	$4,063	$6,563	25%	$1,641	$8,203
BEDDING	*500.00*				LF	$2.40	$1,200.00	LF	$2.05	1	$1,281	$2,481	25%	$620	$3,102
															$24,168
TOTAL				**$4,750.00**			**$17,945.50**				**$16,784.13**	**$39,479.63**		**$9,725.41**	**$49,205.03**
DEMO PIPE IN ALLEY															
EXCAVATION & BACKFILL	80.00	LF	$5.00	$400.00				LF	$6.50	1	$650	$1,050	25%	$263	$1,313
DEMO PIPE	580.00	LF						LF	$15.35	1	$8,903	$8,903	25%	$2,226	$11,129
TOTAL DEMO				**$400.00**							**$9,553.00**	**$9,953.00**		**$2,488.25**	**$12,441.25**
SHEET TOTAL				**$5,150**			**$17,946**				**$26,337**	**$49,433**		**$12,214**	**$61,646**

Client: City of Bloomington	**Location: Bloomington, Indiana**	**By: 11-5-2014**	
Project: CTP	**Project No.: 14-081**	**Date: Mike McKiernan**	**Sheet 1 of 1**
Notes:	Based on Means 2014		
valves include valve box			

ELECTRICAL OCCUPANCY AND SQUARE FOOTAGE CALCULATIONS

CTP Master Plan - Occupancy and square footage calculations at final build-out										
							Typical Design	Total Designed	Projected Utility	Projected Utility
Phase I Building #	Bldg Footprint Area	Ref Height (ft)	# Stories	Occupancy Type	Notes	Gross ft^2	Watt/SQFT	Load (MW)	Diversity Factor	Load (MW)
2	6862	40	B+2	Office/commercial	Showers Admin	13792	3	0.04	*50.00%*	*0.02*
3	19068	30	1+B	Office/commercial	Dimension Mill	19068	3	0.06	*50.00%*	*0.03*
4	5954	30	1	Restaurant/retail	Showers Kiln	5954	3	0.02	*50.00%*	*0.01*
5	6210	30	1	Restaurant/retail		6210	3	0.02	*50.00%*	*0.01*
7	9767	40	3	Office/commercial		29300	4	0.12	*50.00%*	*0.06*
8	11100	40	3	Office/commercial		33300	4	0.13	*50.00%*	*0.07*
9	20350	30	2	Office/commercial		40700	3	0.12	*50.00%*	*0.06*
10	7410	40	3	Residential, 1 floor garage under		22230	3	0.07	*50.00%*	*0.03*
10	7410	13	1	Retail on 1st floor		7410	3	0.02	*50.00%*	*0.01*
11	8193	50	3	Office/commercial, 1 floor garage under		24580	3	0.07	*50.00%*	*0.04*
12	57468	38	5	Garage (4 up, 1 down)		287340	0.5	0.14	*50.00%*	*0.07*
12	10800	15	1	Commercial in 1st floor of garage		10800	3	0.03	*50.00%*	*0.02*
13	19000	30	2	Office/commercial, 1 floor garage under		38000	3	0.11	*50.00%*	*0.06*
Total	**189,592**					**538,684**	**39**	**0.96**		**0.48**

CTP Master Plan - Occupancy and square footage calculations at final build-out										
							Typical Design	Total Designed	Projected Utility	Projected Utility
Future Phase Building #	Bldg Footprint Area	Ref Height (ft)	# Stories	Occupancy Type	Notes	Gross ft^2	Watt/SQFT	Load (MW)	Diversity Factor	Load (MW)
1	88000	47	4	Office/commercial	former IU Printing site	75000	3	0.23	*50.00%*	*0.11*
6	22135	30	2	Office/commercial		44270	4	0.18	*50.00%*	*0.09*
16	2688	20	1	Community Amenity		2688	3	0.01	*50.00%*	*0.00*
20	15415	40	3	Residential - 30 units		46245	3	0.14	*50.00%*	*0.07*
21	15415	40	3	Residential - 30 units		46245	3	0.14	*50.00%*	*0.07*
21	5000	13	1	Commercial in 1st floor along 11th		5000	3	0.02	*50.00%*	*0.01*
22	62352	42	3	Garage		187056	0.5	0.09	*50.00%*	*0.05*
22	7200	13	1	Commercial in 1st floor of garage		7200	3	0.02	*50.00%*	*0.01*
Total	**218,205**					**413,704**	**23**	**0.82**		**0.41**

Applied Engineering Services

CONSTRUCTION COST OPINION - ELECTRICAL

Description	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material Unit	Material Unit Cost	Material Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	Sub Total	Total w/ OH&P
Phase 1 - Alley between new 10th Street and 11th Street; new 10th Street between Alley and Rogers St; Rework old 10th St.																
15kV Shallow Box 4' x 8' x 4'	6	EA	$375.00	2,250.00	EA	5,925.00	$35,550	EA	$1,125.00	1.00	$6,750.00	44,550.00	20.00	8,910.00		$53,460.00
15kV Manhole 6' x 10' x 7'	1	EA	$385.00	385.00	EA	7,325.00	$7,325	EA	$1,200.00	1.00	$1,200.00	8,910.00	10.00	891.00		$9,801.00
Duct Bank PVC 2@4", 2@6"	1400				LF	12.85	$17,990	LF	$17.05	1.00	$23,870.00	41,860.00	20.00	8,372.00		$50,232.00
Duct Bank Latteral PVC 2@4"	500				LF	3.03	$1,515	LF	$5.35	1.00	$2,675.00	4,190.00	20.00	838.00		$5,028.00
Reinforcement Steel for Duct Bank	1				Ton	1,000.00	$1,000	Ton	$725.00	3.00	$2,175.00	3,175.00	20.00	635.00		$3,810.00
Poured-In-Place Concrete	140	CY	$1.16	162.40	CY	198.00	$27,720	CY	$176.00	1.00	$24,640.00	52,522.40	20.00	10,504.48		$63,026.88
Excavation for Duct Bank	400	CY	$8.30	3,320.00				CY	$8.70	2.00	$6,960.00	10,280.00	20.00	2,056.00		$12,336.00
ER Rock Removal ($275 CY)	60	CY	$80.00	4,800.00				CY	$200.00	1.00	$12,000.00	16,800.00	20.00	3,360.00		$20,160.00
Backfill	275	CY	$0.60	165.00	CY	15.00	$4,125	CY	$45.64	1.00	$12,551.00	16,841.00	20.00	3,368.20		$20,209.20
Transportation	56	EA	$400.00	22,400.00				EA	$30.00	1.00	$1,680.00	24,080.00	20.00	4,816.00		$28,896.00
Grounding Rod 10' x 3/4Dia CU clad	7				EA	39.00	$273	EA	$97.00	1.00	$679.00	952.00	20.00	190.40		$1,142.40
															$268,101.48	
Phase 2 - Rogers St; 11th Street; New 10th Street West of Rogers Street																
15kV Shallow Box 4' x 8' x 4'	1	EA	$375.00	375.00	EA	5,925.00	$5,925	EA	$1,125.00	1.00	$1,125.00	7,425.00	20.00	1,485.00		$8,910.00
15kV Manhole 6' x 10' x 7'	5	EA	$385.00	1,925.00	EA	7,325.00	$36,625	EA	$1,200.00	1.00	$6,000.00	44,550.00	10.00	4,455.00		$49,005.00
Duct Bank PVC 9@6"	2000				LF	29.05	$58,100	LF	$43.05	1.00	$86,100.00	144,200.00	20.00	28,840.00		$173,040.00
Duct Bank PVC 2@4", 2@6"	400				LF	12.85	$5,140	LF	$17.05	1.00	$6,820.00	11,960.00	20.00	2,392.00		$14,352.00
Duct Bank Latteral PVC 2@4"	450				LF	3.03	$1,364	LF	$5.35	1.00	$2,407.50	3,771.00	20.00	754.20		$4,525.20
Reinforcement Steel for Duct Bank	2				Ton	1,000.00	$2,000	Ton	$725.00	3.00	$4,350.00	6,350.00	20.00	1,270.00		$7,620.00
Poured-In-Place Concrete	520	CY	$1.16	603.20	CY	198.00	$102,960	CY	$176.00	1.00	$91,520.00	195,083.20	20.00	39,016.64		$234,099.84
Excavation for Duct Bank	800	CY	$8.30	6,640.00				CY	$8.70	2.00	$13,920.00	20,560.00	20.00	4,112.00		$24,672.00
ER Rock Removal ($275 CY)	60	CY	$80.00	4,800.00				CY	$200.00	1.00	$12,000.00	16,800.00	20.00	3,360.00		$20,160.00
Backfill	550	CY	$0.60	330.00	CY	15.00	$8,250	CY	$45.64	1.00	$25,102.00	33,682.00	20.00	6,736.40		$40,418.40
Transportation	102	EA	$400.00	40,800.00				EA	$30.00	1.00	$3,060.00	43,860.00	20.00	8,772.00		$52,632.00
Grounding Rod 10' x 3/4Dia CU clad	6				EA	39.00	$234	EA	$97.00	1.00	$582.00	816.00	20.00	163.20		$979.20
															$630,413.64	
Subtotal				$88,955.60			$316,095.50				$348,166.50	$699,757.60		$145,297.52		$898,515.12

Client: City of Bloomington — **Location: Bloomington, Indiana** — **By:** B. Wertz

Project: CTP — **Project No.: 14-081** — **Date:** 11/4/2014 — **Sheet 1 of 1**

Notes: Based on RS Means Electrical Cost Data

Applied Engineering Services

TELECOM CONSTRUCTION COST OPINION

Description	Qty	Equipment Unit	Equipment Unit Cost	Equipment Total Cost	Material & Equipment Unit	Material & Equipment Unit Cost	Material & Equipment Total Cost	Labor Unit	Labor Unit Cost	Labor Multiplier	Labor Total Cost	Total of Totals	OH&P %	OH&P	TOTAL EACH w/ OH&P
Phase 1															
9 C Ductbank @ 4" PVC	1100	LF				60.50	66,550		105.00		115,500	182,050	25%	45,513	227,563
4 C Ductbank @ 4" PVC	*175*	*LF*				*32.00*	*5,600*		*49.00*		*8,575*	*14,175*	25%	3,544	17,719
6'x10'x7' Deep Precast Concrete Manhole	6	Ea.				7,450.00	44,700		1,250.00		7,500	52,200	25%	13,050	65,250
Future Phases															
9 C Ductbank @ 4" PVC	1700	LF				60.50	102,850		105.00		178,500	281,350	25%	70,338	351,688
4 C Ductbank @ 4" PVC	*175*	*LF*				*32.00*	*5,600*		*49.00*		*8,575*	*14,175*	25%	3,544	17,719
6'x10'x7' Deep Precast Concrete Manhole	6	Ea.				7,450.00	44,700		1,250.00		7,500	52,200	25%	13,050	65,250
Subtotal															745,188
Contingency (20%)															149,038
TOTAL															894,225

Client: City of Bloomington | **Location: Bloomington, Indiana** | **By: 10-03-14**

Project: CTP | **Project No.: 14-081** | **Date: Mark Lehman** | **Sheet 1 of 1**

Notes: Based on Means