



FINAL REPORT

Roanoke County Public Services Building Planning Study

Roanoke County, VA

Prepared for:
Roanoke County, VA

T&L Project No.: 13530

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THOMPSON
& LITTON

TABLE OF CONTENTS

I.	EXECUTIVE SUMMARY.....	1
II.	INTRODUCTION	2
III.	EXISTING CONDITIONS	3
	A. Kessler Mill Site	3
	B. Roanoke County Fleet Services Center.....	6
	C. Shell Park.....	8
IV.	PROGRAM.....	9
V.	OPTIONS	11
	A. OPTION 1 – Renovate Existing Kessler Mill Road Facility/Mitigate Site Stormwater Issues.....	13
	B. OPTION 2 – Relocation at Kessler Mill Road Site	16
	C. OPTION 3 – Additions to Fleet Center, New Shell Park Facility, Stormwater Operations at Kessler Mill Road	17
	D. OPTION 4 - Additions to Fleet Center, New Shell Park Facility, Stormwater Operations and Solid Waste at Kessler Mill Road.....	20
	E. OPTION 5 – Relocation of all Current Kessler Mill Road Occupants to a New Facility in Roanoke County	22
	F. OPTION 6 – Additions to Fleet Center, Renovations to Russell Drive (Salem) Facility, Stormwater Operations at Kessler Mill Road	23
VI.	APPENDICES.....	25
	A. Building Program	
	B. Civil/Sitework ROM Cost Estimates Back-Up	
	C. Exhibits (Layouts)	
	D. Summary Spreadsheet	
	E. Photographs	

I. EXECUTIVE SUMMARY

Thompson & Litton (T&L) was commissioned by Roanoke County to study the county's existing Public Services Center (PSC) complex located at 1206 and 1216 Kessler Mill Road in Salem, Virginia. Age of the primary building on the site, organizational growth and frequent water infiltration into the building are the drivers behind the study.

A building program was developed via interviews with building/site occupants with anticipated growth over a 20-year period included. Six (6) options were ultimately identified and investigated with the results indicated in the table below. The first option – remaining in the building while portions of it are renovated in place – is not feasible, after investigation, due to extensive floodproofing issues, as the building is located in the 100-year flood plain. Option 3 incorporates the purchase of property adjacent to the Fleet Services Center that is currently for sale.

Option No.	Description	Building Cost (\$MM)	Civil/Site Costs (\$MM)	Total Cost (\$MM)
1	Current Kessler Mill Rd. occupants remain in current building; address storm water drainage issues; complete building renovation on an area-by-area basis, necessitating temporary relocation of groups within the building	Not feasible	Not Feasible	Not feasible
2	Build new building at Kessler Mill Road at a higher elevation for all current site occupants; upon relocation, demolish the existing Kessler Mill Road building	14.0	3.8	17.8
3	Additions at Fleet Services Center for DGS, Solid Waste, Comm./IT, Welding & Small Engine Shops; a new Stormwater Operations facility at Kessler Mill Road; a new Parks & Rec. facility at Shell Park	11.1	4.6	15.7
4	Same as Option 3, but DGS and Solid Waste join Stormwater Operations in a new facility at Kessler Mill Road	13.8	4.2	18.0
5	A new facility for all current Kessler Mill Road occupants at a to-be-determined Roanoke County location	16.2	3.5	19.7
6	Same as Option 3, except purchase property at 901 Russell Drive in Salem (existing building) and renovate it for Parks & Rec.	9.1	4.0	13.1

II. INTRODUCTION

On September 9, 2016, Thompson & Litton (T&L) was commissioned by Roanoke County (County) to conduct a study of the county's existing Public Services Center (PSC) complex located at 1206 and 1216 Kessler Mill Road in Salem, Virginia. Roanoke County, like many surrounding counties, has experienced significant growth in their public services departments and over time has located multiple departments within the Public Services Center complex, which has led to inadequate space for the continued growth and is ultimately causing significant hindrances in daily operations, logistics, functionality and tasks performed by the various departments. In addition to the impacts of the continued growth at the PSC complex, the 66-year old building is aging and showing signs of deterioration, which are exacerbated by continued stormwater infiltration experienced within the PSC building. The ongoing stormwater infiltration issue is directly attributable the proximity of the PSC complex to Mason Creek.

Recognizing these shortcomings, the County has decided to proceed with a Building Planning Study (Study) to assist in the decision making process of addressing the existing deficiencies of the PSC complex and, ultimately, the needs of the various County departments that rely on the PSC for day-to-day operations.

The major objectives completed by T&L for this study included the following:

- A space needs assessment for the PSC complex's occupants including programming requirements for the following functional organizations:
 - General Services
 - Stormwater Operations
 - Solid Waste
 - Parks, Recreation, and Tourism
 - Communications/IT
 - Welding and Small Engine Repair Shops
 - Procurement Warehouse (Surplus Storage)
- Assessment of existing conditions at the PSC complex on Kessler Mill Road, and
- Development of actionable location options for the various functions and organizations currently located at the PSC complex.

III. EXISTING CONDITIONS – ROANOKE COUNTY-OWNED PROPERTIES

A. Kessler Mill Site



Figure 1. Aerial View of Existing Roanoke County PSC Complex (GoogleEarth™)

The Public Services Center complex is situated along Kessler Mill Road in Roanoke County, Virginia. The site is approximately 13.3 acres and is bounded to the east by Kessler Mill Road. Kessler Mill Road is adjacent to and parallels Mason Creek. The site is bounded to the south by Interstate I-81 and to the north and west by private properties (refer to *Figure 1*). Existing conditions at the site include poor traffic circulation, frequent flooding, low storage capacity and degrading stormwater management facilities. The site is situated within the Federal Emergency

Management Agency (FEMA) designated 100-year flood plain. On-site runoff is directed to two (2) 24-inch culverts that pass under Kessler Mill Road and convey runoff from the site to Mason Creek. During large storm events, Mason Creek rises to the invert elevations of the two (2) culverts, resulting in backwater effects throughout the stormwater infrastructure servicing the Kessler Mill Road site. The backwater issues result in flooding at the site that often restricts access to the site. During some flooding occurrences, the loading dock on the northeastern portion of the building has been submerged. Existing drop inlets and storm drain piping are inadequate to handle runoff from the two-year storm event. Significant erosion at the site has resulted in multiple stormdrain pipes that are partially clogged due to the deposition of sediment.



Figure 2. Rill in Southwest Portion of Existing PSC Complex

During walkthroughs of the site, T&L personnel identified significant erosion along the western portions of the property. Rills and gullies have developed due to inadequate channel linings and stormwater control measures. The Solid Waste vehicles parking lot, located on the southwest portion of the site, consists of loose gravel. Rills have formed along the southern portion of the site (refer to *Figure 2*) where stormwater flows through the loose gravel parking lot to an existing culvert. Considerable erosion has clogged the culvert entrance and rerouted flow around the inlet protection towards the asphalt parking lot. Sediment is also being deposited along the grass channels due to sediment laden runoff discharging from the material storage areas located on the

western portions of the site. The material storage area has a silt fence and two (2) sediment ponds to capture sediment from the material storage area; however, based on observations made by T&L personnel, those measures may be undersized for the contributing drainage area. Steep banks located to the west of the asphalt drive that connect the lower building pad to the upper material storage area are lined with riprap to reduce the potential for erosion. Riprap protection has been installed on all culvert inlets on the site.



Figure 3. Storage Area on Southwest Portion of Existing PSC Site

Roof drains from the primary building are discharged to the surface along the eastern portion of the site, which is subsequently captured by the existing bio-swell running parallel to the length of the building. Roof drains along the western and southern portions of the primary building are connected to drop inlets or discharged directly to the parking lot. A slotted corrugated metal pipe (CMP) drainage pipe and concrete channel are installed along the western side of the building to divert runoff from the western parking lot and the roof drains around the building. The concrete channel and slotted CMP pipe are sloped south-to-north.

There are two (2) storage areas on the western portion of the property. The southwestern storage area contains one (1) pole barn (refer to *Figure 4*), one (1) Vehicle Wash Station and one (1) Fueling Station. This area also includes a gravel parking area for the Solid Waste trucks and an area for construction materials, equipment and attachments. Outdoor lighting is currently installed at the Vehicle Wash Station facility and at the Fueling Station. Poor stormwater management facilities near the northwest storage area have resulted in rills forming near the pole barn. Improper installation of curb stops for the Solid Waste truck parking stalls have resulted in damage to the wooden posts which secure electrical outlets for the Solid Waste trucks.



Figure 4. Pole Barn

The northwestern storage site contains construction material for the Community Development Stormwater Operations and Solid Waste organizations. A large portion of the site remains unutilized while the remaining areas are not being properly stabilized and/or erosion control measures have been improperly sized. The site contains two (2) light poles that are installed north of the pole barn.



Figure 5. View of Primary Building from Kessler Mill Road

The primary building on the site (refer to *Figure 5*) is approximately 70,000 SF in size. The original 43,000 SF one-story construction features exterior masonry bearing walls with interior steel columns and framing for the roof construction. A 1970s vintage pre-engineered metal building was added to the north end of the building sometime after original construction. The entire complex was used as a furniture manufacturing facility prior to Roanoke County's purchase of the site in the early 1980s. Roanoke County has used the complex for offices, shops, interior storage, exterior equipment and material storage for the following functions/organizations:

- General Services
- Parks, Recreation, and Tourism
- Community Development Storm Water Operations
- Communications Operations
- Welding and Small Engine Repair
- Procurement's Surplus Property Warehouse

The building does not meet current requirements for energy conservation with inadequate insulation and single-pane steel framed windows. There have been several roof leak issues reported in various locations throughout the building and, most recently, new interior renovations were adversely affected by flooding from the western side of the building.



Figure 6. Back Side of Primary Building at Existing PSC Site

B. Roanoke County Fleet Services Center

The Roanoke County Fleet Services Center (refer to *Figure 7*) is located in the Hollins District of Roanoke County (5263 Hollins Road). The site is approximately nine (9) acres, and the lone building on the site was constructed in 2010 with the intention of future expansion. The site is bound to the west by Route 601 (Hollins Road) and to the east by the Norfolk & Southern Railroad. Private property bounds the site to the north while Carlos Road bounds the site to the south. The stormwater management systems, including water quality best management practices, have been well maintained and currently show no signs of erosion. Parking and drive aisles are uniformly smooth while the curb and gutter system is in good condition. The property is heavily vegetated on the east side of the Fleet Services Center where the main drainage channel flows north-to-south. The site is moderately sloped to the west where the property is bound by Hollins Road. Existing outdoor lighting is installed along the perimeter of the parking lots and is in good condition.



Figure 7. Roanoke County Fleet Services Center

Utilities identified on the site include natural gas, electric, water and sewer. The on-site stormwater management facility includes bio-cells, grass swells, a detention basin and an underground detention system. The bio-cells are composed of four (4) cells that are used as water quality controls for the site. The bio-cells are approximately 1,200 SF each and located on the southern edge of the site. Grass swells are located along the perimeter of the parking lot. The grass swells divert runoff to the underground detention system located on the west side of the existing building. The underground detention system is comprised of five (5) 60-inch ASP storage barrels set at 6'-6" on center. The underground detention system discharges stormwater through a 10-inch high density polyethylene (HDPE) pipe to the aforementioned bio-cells. The majority of the runoff from the Fleet Services Center's impervious surfaces is collected in the underground detention system and diverted to the bio-cells.

Parking is situated within close proximity of the building. The site has 83 existing parking stalls located on the east and west sides of the building. There are 10 designated truck parking stalls located near the southern portion of the site near the maintenance shop. The site also includes an 8,000 SF secure storage area, located on the northeast portion of the site that contains approximately 20 vehicle parking stalls.

The 23,000 SF Fleet Services Center was constructed in 2008 and houses the County's Vehicle Maintenance Center with associated offices, staff lockers, meeting rooms, parts storage areas and various support spaces. Though not specifically identified as being designed for future expansion, the masonry bearing wall construction and immediately adjacent available area would lend itself to the construction of small additions at both the north and south ends of the facility.

C. Shell Park

The Shell Park site (refer to *Figure 8*) is situated on approximately twelve (12) acres and is owned by the Roanoke County Board of Supervisors. The existing site contains three (3) baseball/ softball fields, three (3) tennis courts and one (1) storage shed. The site is bounded to the north and east by Route 1723 (Commonwealth Drive), to the west by residential housing and to the south by Penn Forest Elementary School. The northeast portion of the site is owned by the Western Virginia Water Authority.

Utilities identified on the site include electrical, water, sewer and stormwater. The eastern portion of the site has been identified as being within the FEMA designated 100-year flood plain. A walking trail is located along the border of Shell Park which loops south towards Penn Forest Elementary School. Zoning for the site is identified by Roanoke County as R-1. The adjacent properties to Shell Park are zoned by Roanoke County as I-2 to the north, C-1 to the south, R-1 to the west and I-2 to the east.



Figure 8. Aerial View of Shell Park

IV. PROGRAM

Each of the organizations that are currently housed in the existing Kessler Mill Road complex were interviewed to determine space (square footage) requirements, as well as parking and on-site exterior storage requirements, with future organizational growth over a 20-year horizon included. A 20 percent (20%) multiplier was added to the programmed spaces (e.g., offices, conference rooms, break areas, etc.) to account for building circulation (corridors) and toilets, mechanical and electrical spaces, etc. The results of the programming efforts are located in Appendix A and are summarized below.

Table 1. Program Square Footage Requirements

Organization	Assignable Space (SF)	Building Space Requirement (SF) ¹
General Services	7,980	9,975
Parks, Rec. & Tourism	17,680	22,100
Storm Water	5,200	6,500
Communications/IT	8,638	11,517
Welding & Small Engine Repair Shops	2,860	3,011
Shared Services (Fitness, Training Room, Break, etc.)	1,500	1,875
Surplus Storage	9,400	11,750
TOTAL	53,258	66,728

¹ -80 percent efficiency factor applied to assignable space for unassignable (corridors, walls, utilities, toilets, etc.)

Table 2. Parking Requirements

Organization	Staff Parking Spaces Req'd.	Visitor Parking Spaces Req'd.	Organizational Vehicle Parking Spaces Req'd.
General Services and Solid Waste	50	10	30
Parks, Rec. & Tourism	50	10	6
Storm Water	12	0	0
Communications/IT	24	0	24
Welding & Small Engine Repair Shops	2-4	0	0
TOTAL	138-140	20	60

Table 3. Support Spaces Requirements

Organization	Facility	Physical Space Req'd. (SF)
General Services and Solid Waste	Pole Barn	1,000
	Tire Trailer	
	Payloaders (2)	
	Cans (500)	Yard Area
Parks, Rec. & Tourism	Pole Barn	7,000
	Ag. Products/Supply Storage	2,000
	Turf & Landscape Shop	2,000
	Projects & Heavy Equip. Shop	2,000
	District Shops (2)	2 @ 2,000 each
Storm Water	Trucks and Trailers (6)	Yard Area
	Pole Barn	3,120
Communications/IT	Enclosed Trailer Storage	400
	Tower Pad	144

V. OPTIONS

During the course of the organizational interviews and subsequent meetings, multiple alternatives were identified and discussed with Roanoke County departmental managers and the Roanoke County Assistant Administrator. After those discussions, five (5) options were selected for further investigation and evaluation, which are described as follows:

- Option 1
 - All functions and organizations remain at the Kessler Mill Road site in a completely renovated building.
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.
 - Mitigate the existing stormwater and flooding issues at the Kessler Mill Road site to the maximum practical extent.
- Option 2
 - Build a new building housing all of the current functions and organizations at the Kessler Mill Road site, west of the existing building and outside the floodplain.
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.
 - Demolish the existing Kessler Mill Road facilities (buildings) after relocation.
 - Mitigate the existing stormwater and flooding issues at the Kessler Mill Road site to the maximum practical extent.
- Option 3
 - Construct new additions to the Fleet Services Center to house General Services, including the Solid Waste Department, the Welding Shop, Small Engine Repair Shop and Communications/IT.
 - Purchase and utilize the adjacent property to the north of the Fleet Services Center.
 - Construct a new Fueling Station and Vehicle Wash Station at the Fleet Services Center site.
 - Construct a new facility on the western portion of the Kessler Mill Road site to house Community Development Storm Water Operations.
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.
 - Construct a Parks and Recreation pole barn and exterior storage yard at Starkey Park.
 - Construct a new facility at Shell Park to house Parks, Recreation, and Tourism's offices and shops.
 - Demolish the current Kessler Mill Road facilities (buildings) after relocation.

- Option 4
 - Construct new additions to the Fleet Services Center to house the Welding Shop, Small Engine Repair Shop and Communications/IT.
 - Construct a new facility at the Kessler Mill Road site to house General Services, including the Solid Waste Department, and Community Development Storm Water Operations.
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.
 - Construct a Parks and Recreation pole barn and exterior storage yard at Starkey Park.
 - Construct a new facility at Shell Park to house Parks, Recreation, and Tourism's offices and shops.
 - Demolish the current Kessler Mill Road facilities (buildings) after relocation.
- Option 5
 - Construct a new complex on a site to be determined within Roanoke County to house all of the current Kessler Mill Road functions and organizations.
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.
- Option 6
 - Construct new additions to the Fleet Services Center to house General Services, including the Solid Waste Department, the Welding Shop, Small Engine Repair Shop and Communications/IT.
 - Construct a new Fueling Station and Vehicle Wash Station at the Fleet Services Center site.
 - Construct a new facility on the western portion of the Kessler Mill Road site to house Community Development Storm Water Operations.
 - Purchase property located at 901 Russell Drive in Salem for purposes of relocating the Parks, Recreation, and Tourism group's administrative functions.
 - Construct a Parks and Recreation pole barn at 901 Russell Drive (Salem).
 - Construct District Parks and Recreation Storage/Shop facilities at Green Hill and Walrond Parks, respectively.

Rough Order of Magnitude (ROM) cost estimates are included throughout this report, with back-up material located in Appendix B. Estimates include earthwork, stormwater management facilities, paving, demolition, utilities relocations and associated appurtenances. Due to limited site information, total related cost is projected at 25 percent (25%) of the total construction cost (TCC) for the Kessler Mill Road site options (i.e., Option 1, 2, 5 and 6) while total related cost is 15 percent (15%) for the Shell Park and Fleet Services Center sites. The primary factors that determined the higher percentage for the Kessler Mill Road site include the lack of geotechnical information, the age of the facilities, stormwater design and permitting requirements in a floodplain and construction within the designated 100-year flood plain.

For construction of the various buildings, square foot costs were calculated based on the required area for each scenario according to the program information located in Appendix A, and as summarized below:

Table 4. Building Unit Costs Summary

Function	Unit Cost
Departmental Offices and Associated Support Spaces – One or two Stories – Steel framed structure with brick exterior finish	\$180/SF
Shop Additions and Associated Support Spaces at the Fleet Service Center	\$150/SF
Complete Building Renovation Costs at Kessler Mill Road Site	\$120/SF
Utility Offices and Shop Spaces – Pre-engineered metal building	\$115/SF
Pole Barns	\$ 60/SF

NOTE: The above unit cost values include a 25 percent (25%) overhead and profit, architectural/engineering fees of 7 percent (7%) and a project contingency.

The various costs for each option are provided in the Executive Summary and are discussed in detail in the following section.

Preliminary plans for each site are located in Appendix C of this report.

A detailed description of each option is provided below.

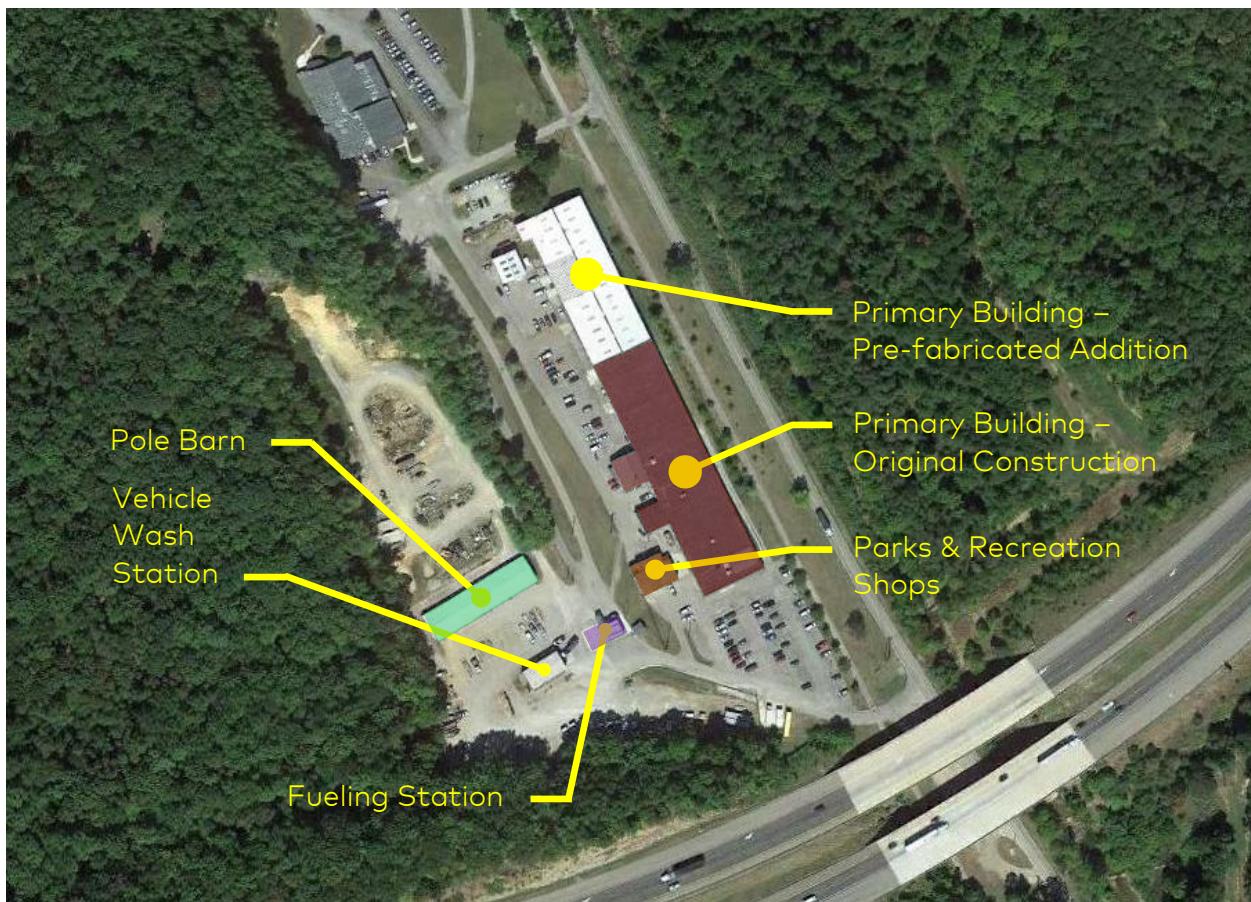
A. OPTION 1 – Renovate Existing Kessler Mill Road Facility/Mitigate Site Stormwater Issues

Refer to Exhibit I in Appendix C for a drawing depicting this option.

The primary building on the site is a single-story structure originally constructed in 1950, consisting of approximately 43,000 square feet (SF). The building was originally utilized as a furniture manufacturing facility before being purchased by Roanoke County in the early 1980s. A pre-fabricated metal structure was added onto the north end of the facility after the County's purchase of the property, bringing the overall square footage to approximately 65,000 SF in size – in a rectilinear configuration (refer to *Figure 1* above) – with a roughly 5,000 square feet detached structure located beside the main building. The primary building's exterior is a combination of brick and heavy gauge corrugated metal. Also located on the site (refer to *Figure 9 below*) are an 11-bay pole barn, a Vehicle Wash Station (primarily for Solid Waste trucks) and a Fueling Station for County vehicles, as well as equipment staging areas and employee and visitor parking areas. In this option, the Kessler Mill Road PSC building would be completely renovated. General Services; Parks, Recreation, and Tourism; Communications/IT; Community Development Stormwater Operations; the Welding and Small Engine Repair Shops; and Surplus Storage would remain on-site. The building would be brought up to current codes and standards, as more than 50 percent of the building would require renovations. The renovations would address energy utilization, accessibility and several maintenance measures, such as re-roofing the entire facility.

Interior renovations would re-allocate departmental spaces in order to create a more efficient use of the facility. Costs for the renovation would be approximately \$8,400,000 (70,000 SF x \$120/SF). Parks and Recreation would require 6,000 SF of Agricultural, Turf, Landscaping, Projects and heavy equipment shops at an approximate cost of \$690,000. An additional pole barn (3,120 SF) for Stormwater Operations would be required at an approximate cost of \$187,200. The Parks and Recreation District Shops would move to the Green Hill and Waldron Parks, respectively, at 2,000 SF each, at an approximate cost of \$460,000. In order to renovate the building, the various departments would need to be relocated temporarily into available swing space elsewhere in Roanoke County; those temporary relocation costs are not included in this report.

The western portion of the site currently stores equipment and material for Stormwater Operations; Parks, Recreation & Tourism; and the Solid Waste service departments. The storage areas would be paved and/or graveled to expand existing storage capacities and to stabilize the area to prevent erosion. Additional expenses will include utility renovations and relocations, (i.e., light poles and new electrical outlets for the Solid Waste Department trucks).



Due to site limitations and the backwater impacts of Mason Creek, the stormwater management facilities would be upgraded. To improve existing stormwater conditions, Option 1 would include the construction of a stormwater pump station that would pump stormwater and discharge it to Mason Creek offsite and downstream of the existing facility. The design would reduce on-site flooding due to the backwater impacts of Mason Creek, but would not improve flooding conditions due to Mason Creek overtopping Kessler Mill Road. The site would remain within the FEMA 100-year flood plain. The site ROM cost for Option 1 is \$3,435,750, which does not include permitting, property and right of way access for discharging stormwater offsite. While the building itself could be renovated, and stormwater mitigation measures could be implemented to improve existing conditions, Roanoke County zoning requirements and the realities of the floodplain effectively nullify the practicality of this option.

According to FEMA's floodplain maps (refer to *Figure 10*), the northeastern and southeastern portions of the primary building are situated within the 100-year flood plain, which provides a

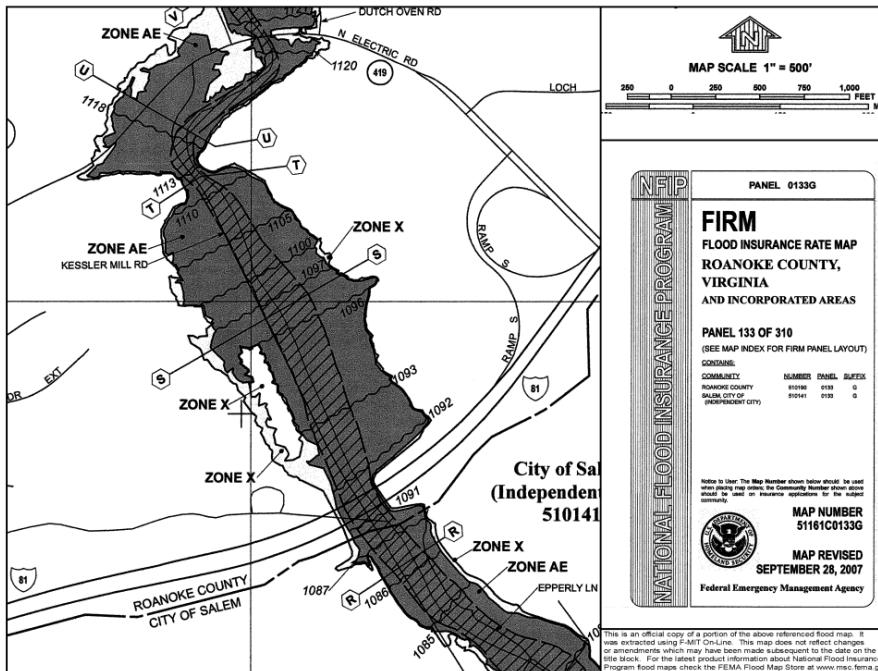


Figure 10. FEMA Floodplain Map for Existing Site

constructed within a floodplain area shall be at least one (1) foot above base flood elevation, unless such structure is floodproofed. In addition, no existing structure shall be modified, expanded or enlarged unless the new construction complies with this standard."

To floodproof the building, one of two paths can be taken – (1) raise the floor of the building to be at least 1'-0" above the floodplain, or (2) provide a means of effectively protecting the structure from flood waters. The first path - raising the elevation of the building's floor approximately 4-5 feet - isn't feasible. The second path – protecting the structure from flood

floodplain elevation that varies between 1096 feet above sea level (ASL) to 1097 feet ASL. Based on drawing files found on Roanoke County's website (www.roanokecountyva.gov) the primary building's elevation is approximately 1093 feet – 3 to 4 feet below the 100-year flood plain elevation.

In Roanoke County's Zoning Ordinances, APPENDIX A, Section 30-74-7 - Floodplain Area Provisions, Generally, Paragraph C, states the following: "The lowest floor elevation of any new non-residential structure

waters – would necessitate the construction of a floodwall around the entirety of the building approximately 4-5 feet in height. The floodwall would need to include gates where vehicles could pass through the wall to get to the building. While such a floodwall could be constructed, and automatic gates are manufactured for that purpose, the cost would be prohibitive. Further, construction of such a dam would disturb the natural floodways of the area, which would necessitate a lengthy (years) permitting process that would involve the US Army Corps of Engineers and other regulatory entities. Further, it is not logical for a renovated building with windows to have its occupants look through them at a floodwall on all sides of the building.

Given the impracticalities of resolving floodplain issues associated with this option it is not recommended for further consideration by Roanoke County.

B. OPTION 2 – Relocation at Kessler Mill Road Site

Refer to Exhibit II in Appendix C for a drawing depicting this option.

In this option, the Kessler Mill Road site will be relocated out of the 100-year flood plain. All current functions and organizations located at the Kessler Mill Road location would remain on-site. The site would utilize existing topography to balance earthwork volumes from the western portion of the site to create a new building pad. Additional facilities would be provided as required for on-site utility distribution, on-site access roads and stormwater management facilities. A preliminary site plan for the Kessler Mill Road site renovation, which depicts the general layout of the new facilities, is presented in Appendix C as Exhibit II.

Site preparation for the Kessler Mill Road site would require grading to a maximum slope of 2 horizontal to 1 vertical (2:1) for cut and fill slopes. The median elevation of the Kessler Mill Road site is located near the existing Fueling Station facility. Therefore, the Fueling Station would remain undisturbed and the area north of the Fueling Station would be excavated to generate fill material that would be utilized to the east and south of cut area to create one (1) large building pad. Earthwork quantities would be extensive; however, the benefits of grading include enhanced traffic circulation, improvements to the management of stormwater and reduced effects of flooding.

Electrical, water, sewer and gas utility extensions would be required to service the new building. Electrical distribution would include the connections to the proposed building, light poles, pole barn, shops and Solid Waste truck outlets. Upon completion of the new building, the existing site structures would be demolished.

The stormwater management facility would be located along the eastern border of the property where the existing building is located. The relocation of the buildings to the upper western portion of the site would allow for construction of larger stormwater management facilities on the eastern portion. Detention ponds and water quality swells/cells would be the primary stormwater management facilities. Water quantity measures would utilize the two (2) existing culverts under Kessler Mill road as discharge points. The stormwater management facilities would be located within the 100-year flood plain. Additionally, the access roads to the proposed

Kessler Mill Road site would remain in the 100-year flood plain. The site ROM cost for Option 2 is approximately \$4,834,500.

The building illustrated in Exhibit II of Appendix C would be a new brick one-story building of 67,798 SF, but could be a two-story facility, as well, and would house General Services; Parks, Recreation, and Tourism; Communications; Community Development Stormwater Operations; the Welding and Small Engine Repair Shops; and Surplus Storage at a cost of \$12,203,640. Parks and Recreation will require 6,000 SF of Agricultural, Turf, Landscaping, Projects and heavy equipment shops at a cost of \$690,000. The Parks and Recreation District Shops will move to Green Hill and Waldron Parks, respectively, at 2,000 SF each and a total cost of \$460,000. New pole barns totaling 10,000 SF would cost approximately \$600,000.

Table 5. Option 2 Cost Summary

Facility	Size	Unit Cost	Value
New Kessler Mill Rd. Building	67,798SF	\$ 180/SF	\$ 12,203,640
Pole Barns	10,000 SF	\$ 60/SF	\$600,000
Parks & Rec. Shops	6,000 SF	\$ 115/SF	\$ 690,000
Parks & Rec. District Shops (2)	4,000 SF	\$ 115/SF	\$ 460,000
BUILDING TOTAL	87,798 SF	\$ 158.93	\$ 13,953,640
Civil/Sitework			\$3,867,000
OPTION 2 TOTAL COST			\$17,820,640

C. OPTION 3 – Additions to Fleet Center, New Shell Park Facility, Stormwater Operations at Kessler Mill Road

Refer to Exhibits III, IV and V in Appendix C for drawings depicting this option.

Option 3 includes the dispersion of nearly all of the existing functions and organizations currently located at the Kessler Mill Road site. General Services, Communications/IT and the Welding and Small Engine Repair Shops would be relocated to the Fleet Services Center, while Community Development Stormwater Operations would remain at the Kessler Mill Road site. Parks, Recreation, and Tourism would be relocated to a new facility at Shell Park. The District Shops included with Parks, Recreation, and Tourism would be relocated to Green Hill and Waldron Parks, respectively. A pole barn for Parks, Recreation and Tourism would be constructed at Starkey Park (refer to Figure 11).



Figure 11. Starkey Park

Fleet Services Center Additions

The Fleet Services Center requires two (2) proposed additions to the existing facility. The Communications, General Services and Solid Waste addition would be located at the north end of the existing building while the Welding and Small Engine Repair Shops would be located on the southern end of the existing Fleet Services Center. The building additions would require an additional 88 vehicle parking spaces, including 30 truck stalls. The proposed parking additions can be integrated within the existing parking layout. The majority of the proposed parking expansion is located on the south, east and north portion of the Fleet Services Center. A retaining wall would be installed along the eastern edge of the property to allow for expansion of the existing parking lot. The stormwater management facility would include expansion of the existing underground storage system, bio-cells and a new detention basin. Along with the relocation of the Solid Waste department, a new Fueling Station is required at this location. The total site ROM cost for the Fleet Services Center additions for Option 3 is approximately \$2,119,600.

The Welding and Small Engine Repair Shops would be located in a new 3,000 SF addition on the south end of the existing facility at an approximate cost of \$450,000. The General Services and Communications functions would occupy a new 16,448 SF two-story addition on the north end of the existing building, at a cost of approximately \$2,467,200. With the expansions, relocation of the Surplus Storage would be required. The adjacent property to the north of the Fleet Services Center site would need to be purchased for the County's use. The adjacent property is currently for sale for \$995,000. This property would house Surplus Storage and several General Service shops and storage areas, as well as additional required parking areas. The newly acquired 21,000 SF building on the adjacent property would require some renovation, estimated at a cost of \$5/SF or \$105,000. A new fueling station would be constructed at a cost of approximately \$250,000.

New Shell Park Facility



Figure 12. View of Site for New Parks and Recreation Facility at Shell Park

The proposed site for Parks and Recreation, and Tourism is located east of Merriman Road at Shell Park in the Cave Spring District of Roanoke, Virginia. It features a new brick partial two-story 29,975 SF building. The shops and storage areas would occupy approximately 20,000 SF at the ground level and an additional 10,000 SF of office space would be located on the upper level, at a total cost of approximately \$5,215,500. The District Shops would be relocated to Green Hill and Waldron Parks, respectively, at a cost of \$460,000. A new pole barn would be constructed at nearby Starkey Park at an estimated cost of \$420,000.

The proposed building and parking lot (refer to *Figure 12*) would be located on the northern portion of the property, bordered by three (3) baseball/softball fields to the south. Parks, Recreation, and Tourism require a total of 60 vehicle parking stalls. Restrictions for the proposed

site include zoning buffers, space requirements and the 100-year flood plain. Stormwater quality and quantity controls would consist of an underground detention system and bio-retention and/or a manufactured water quality unit. The existing walking trail would require relocation as depicted on Exhibit IV or as determined by the County. The Clowers Memorial could be relocated along the proposed relocated walking trail as depicted on Exhibit IV or moved to either entrance to the proposed parking lot. The proposed parking lot would provide additional parking spaces during sporting events at Shell Park. The total site ROM cost for the Shell Park for Option 3 is approximately \$877,680.

Kessler Mill Road Site

The existing Kessler Mill Road buildings would be demolished in Option 3. A new building is proposed at the west end of the property for the Community Development Stormwater Operations Department of Roanoke County. The single story, 6,500 SF facility would be a pre-engineered metal building housing offices, shops and other support spaces at a cost of approximately \$747,500.

Option 3 provides additional storage for materials and equipment required by the department, and current off-site storage could be relocated to this site. The existing Fueling Station and pole barn would remain at the Kessler Mill site. Earthwork operations would be required to provide a level pad for the aforementioned facilities. The building pad elevation would be set roughly at the same elevation as the Fueling Station to provide ease of access to the existing Fueling Station and the storage lots located on the western portion of the property. Demolition would include the primary building, two (2) detached storage sheds, paving and associated utilities along Kessler Mill Road. The demolition would provide 4.1 acres of newly acquired space. As depicted in Exhibit III of Appendix C, the newly acquired space could be utilized for sports fields and stormwater management control. The total site ROM cost for the Kessler Mill for Option 3 is approximately \$1,363,440. As previously discussed, the access roads to the Kessler Mill site are within the 100-year flood plain and access would continue to be hindered during significant flooding events.

Table 6. Option 3 Cost Summary

Facility	Size	Unit Cost	Value
Fleet Services Center Addition – Gen. Services & Comm./IT	16,448 SF	\$ 150/SF	\$ 2,467,200
Fleet Services Center Addition – Weld & Small Engine Shops	3,000 SF	\$ 150/SF	\$ 450,000
New Fueling Station at the Fleet Center			\$250,000
Procurement of Adjacent Property	21,000 SF	\$ 47.38/SF	\$ 995,000
Renovation of Adjacent Property		\$ 5/SF	\$ 105,000
New Stormwater Operation Bldg. at Kessler Mill Road	6,500 SF	\$ 115/SF	\$ 747,500
New Parks & Rec. Facility at Shell Park	28,975 SF	\$ 180/SF	\$ 5,215,500

Parks & Rec. District Shops (Green Hill and Walrond Parks)	4,000 SF	\$ 115/SF	\$ 460,000
Pole Barn at Starkey Park	7,000 SF	\$ 60/SF	\$ 420,000
BUILDING TOTAL	85,923 SF	\$129.30	\$ 11,110,200
Civil/Sitework – Fleet Services Center			\$ 2,119,600
Civil/Sitework – Kessler Mill Road			\$ 1,363,440
Civil/Sitework – Shell Park			\$ 877,680
Civil/Sitework – Parks & Rec. District Shops			\$ 115,000
Civil/Sitework – Starkey Park Pole Barn			\$ 105,000
CIVIL/SITEWORK TOTAL			\$ 4,580,720
OPTION 3 TOTAL COST			\$ 15,690,920

D. OPTION 4 - Additions to Fleet Center, New Shell Park Facility, Stormwater Operations and Solid Waste at Kessler Mill Road

Refer to Exhibits IV, VI and VII in Appendix C for drawings depicting this option.

Option 4 includes the dispersion of some of the existing functions and organizations currently located at the Kessler Mill Road site. Communications/IT, Welding, and Small Engine Repair Shops would be relocated to the Fleet Services Center, while Community Development Stormwater Operations, Solid Waste and General Services would remain at Kessler Mill Road. Parks, Recreation, and Tourism would be relocated to the proposed new facility at Shell Park described in Option 3 above. The District Shops included with Parks, Recreation, and Tourism would be relocated to Green Hill and Waldron Parks, respectively.

Fleet Services Center Additions

The Fleet Services Center expansion would require two (2) proposed additions to the existing facility. The 11,517 SF Communications addition is located at the north end of the existing building (\$1,727,550 at \$150/SF) while the 3,000 SF Welding and Small Engine Repair Shops' addition would be located on the southern end of the existing Fleet Services Center (\$450,000 at \$150/SF). The approximate cost for the new building additions would be approximately \$2,177,550.

Site demolition for the new construction would include approximately 20 parking spaces and associated curbs and gutters. The proposed building expansion would require the replacement of the 20 demolished parking spaces and an additional 28 parking spaces. The proposed parking expansion is located primarily on the south and eastern portions of the Fleet Services Center site. Water quality and quantity controls measures would be required to accommodate the new facilities. Stormwater management improvement would include expansion of the existing underground storage system and existing bio-cells. The total site ROM cost for the Fleet Services Center for Option 4 is approximately \$350,060.

New Shell Park Facility

The proposed location for Parks, Recreation, and Tourism utilizes the same layout as under Options 3 and 4. Please refer to New Shell Park Facility under Option 3 for a complete description of the proposed site and facility.

Kessler Mill Site

In this alternative, a new 30,825 SF one-story brick building would be constructed on the western portion of the site outside the 100-year flood plain. The proposed building would be relocated to the west end of the property boundary for the General Services and Community Development Stormwater Operations departments, at a cost of approximately \$5,548,500. As an option, the General Services department could relocate to the adjacent Regional Fire Training Building, if that facility became available, although extensive stormwater mitigation issues would be required for that facility.

Option 4 provides additional storage for materials and equipment required by the departments. The existing Fueling Station and pole barn would remain at the Kessler Mill Road site. The existing gravel lot south and west of the Fueling Station would be paved. Earthwork would be required to create a pad for the proposed building and parking areas. The proposed building pad would provide ease of access to the existing Fueling Station and storage lots located on the central portions of the property. A total of 72 parking stalls and 30 truck stalls are needed for the expansion. Demolition would include the primary building, two (2) detached storage sheds, paving and associated utilities along Kessler Mill Road. The demolition would provide 4.1 acres of newly acquired space. As depicted in Exhibit VI of Appendix C, the newly acquired space could be utilized for sports fields and stormwater management control. The total site ROM cost for the Kessler Mill site for Option 4 is approximately \$2,906,100.

Table 7. Option 4 Cost Summary

Facility	Size	Unit Cost	Value
New Bldg. at Kessler Mill Road	30,825 SF	\$ 180/SF	\$ 5,548,500
New Parks & Rec. Facility at Shell Park	29,975 SF	\$ 180/SF & \$150/SF	\$ 5,215,500
Parks & Rec. District Shops (Green Hill and Walron Park)	4,000 SF	\$ 115/SF	\$ 460,000
Pole Barn at Starkey Park	7,000 SF	\$ 60/SF	\$ 420,000
Fleet Services Center Addition – Comm./IT	11,517 SF	\$ 150/SF	\$ 1,727,500
Fleet Services Center Addition – Weld & Small Engine Shops	3,000 SF	\$ 150/SF	\$ 450,000
BUILDING TOTAL	91,000 SF	\$ 167/SF	\$ 13,821,500
Civil/Sitework – Kessler Mill Road			\$ 2,906,100
Civil/Sitework – Shell Park			\$ 877,680
Civil/Sitework – Parks & Rec. District Shops			\$ 115,000
Civil/Sitework – Starkey Park Pole Barn			\$ 105,000

Civil/Sitework – Fleet Services Center	\$ 350,060
CIVIL/SITEWORK TOTAL	\$ 4,248,840
OPTION 4 TOTAL COST	\$ 18,070,340

E. OPTION 5 – Relocation of all Current Kessler Mill Road Occupants to a New Facility in Roanoke County

In this option, all of the departments and services from the Kessler Mill Road site would be relocated to an undetermined location. This option's costs assume the following conditions would be present at whatever site the County might select for the new facilities:

- Minimal earthwork would be required.
- Close proximity to existing utilities.
- Available space for stormwater management facilities.
- Minimal environmental permitting and geotechnical evaluations.

A one-story brick building would be approximately 66,728 SF in size at an approximate cost of \$12,011,040. There would also be requirements for 6,000 SF of Parks and Recreation's Storage and Shop Spaces at an approximate cost of \$690,000, and approximately 10,000 SF of Pole Barns at \$600,000. A new Fueling Station would be required along with a new Vehicle Wash Station at a cost of approximately \$500,000, not including permitting fees. Parking requirements for the complex would be for 30 Solid Waste trucks, 136 staff members and 20 visitors, with associated drive aisles and turning areas. Exterior Storage space for the Community Development Stormwater Operations organization would require 3.0 acres. The overall site requirements, including area for stormwater management, would be approximately 12.5 acres of buildable land in accordance with the assumptions above. As land costs can vary greatly, an acquisition cost is assumed at \$150,000 per acre for commercial/industrial property, or \$1,875,000 for the purposes of this report.

Since the proposed site is undetermined, it is assumed that the site ROM cost for the undetermined site is approximately 25 percent (25%) of the construction cost for the new building, or approximately \$3,545,000.

Table 8. Option 5 Cost Summary

Facility	Size	Unit Cost	Value
New Building	67,798 SF	\$ 180/SF	\$ 12,011,040
Parks & Rec. Shops	6,000 SF	\$ 115/SF	\$ 690,000
New Fueling Station and Vehicle Wash Station	(estimated)		\$ 500,000
Pole Barns	10,000 SF	\$ 60/SF	\$ 600,000
Land Acquisition Cost	12.5 acres	\$150k/acre	\$ 1,875,000
Parks & Rec. District Shops (Green Hill and Walrond Parks)	4,000 SF	\$ 115/SF	\$ 460,000
BUILDING TOTAL	87,798 SF	\$ 164.62/SF	\$ 16,136,040
Civil/Sitework			\$ 3,545,000
CIVIL/SITEWORK TOTAL			\$ 3,545,000
OPTION 5 TOTAL COST			\$ 19,681,040

F. OPTION 6 – Additions to Fleet Center, Renovations to Russell Drive (Salem) Facility, Stormwater Operations at Kessler Mill Road



Figure 13. Property at 901 Russell Drive, Salem, VA

between approximately 9,800 SF of two-story office space and 14,000 SF of single-story (16'-0" clear height) warehouse space with a. The facility is zoned as Business Commerce District (BCD). The warehouse space is sprinklered and has high ceilings, two (2) loading dock doors with levelers, and a drive-in door separate from the docks doors. The building also has a 2,500 SF mezzanine level. The building has natural gas heating and is cooled by five (2) separate cooling units. There are 24 asphalt paved parking spaces currently at the site. The facility is a pre-engineered steel building with an exterior insulation and finish system (EIFS) exterior on a reinforced concrete foundation. The roof consists of metal panels with skylights in the warehouse area.

The office area has an identical floor plan on both levels with individual offices on two adjoining sides and open areas on each level suitable for placement of modular/systems furniture (cubicles). There currently is no elevator between the two office levels.

The property was visited by representatives of Roanoke County and T&L the week of 17 October 2016 and was deemed to be in good condition with relatively minimal renovation required. (Renovation would include the addition of an elevator and toilet facilities on the second floor of the offices area.)

Relatively level ground exists on the site where a new pole barn would be constructed. Some

This option is identical to Option 3 with the exception of the destination of the Parks, Recreation, and Tourism organization. In lieu of a newly constructed facility at Shell park in Option 3, the Parks, Recreation and Tourism organization would relocate to a renovated facility located at 901 Russell Drive in Salem just off of Electric Road – about 1.7 miles from the current Kessler Mill Road complex and just half a mile from Interstate 81. The property is currently for sale and is an 8.12-acre site.

The site includes an existing 24,800 SF two-story facility (currently vacant) that was originally constructed in 1996 and was formerly used as a religious services facility. The facility is split



Figure 13. Offices Area Inside Property at 901 Russell Drive, Salem, VA

additional parking spaces would be required along with re-paving and improvements to vehicular circulation.

Renovations of the facility at 901 Russell Drive are estimated at \$50/SF. Sitework costs are estimated at 25 percent of the renovation cost.

Table 9. Option 6 Cost Summary

Facility	Size	Unit Cost	Value
Fleet Services Center Addition – Gen. Services & Comm./IT	16,448 SF	\$ 150/SF	\$ 2,467,200
Fleet Services Center Addition – Weld & Small Engine Shops	3,000 SF	\$ 150/SF	\$ 450,000
Procurement of Adjacent Property	21,000 SF	\$ 47.38/SF	\$ 995,000
Renovation of Adjacent Property		\$ 5/SF	\$ 105,000
New Fueling Station at the Fleet Center			\$250,000
New Stormwater Operation Bldg. at Kessler Mill Road	6,500 SF	\$ 115/SF	\$ 747,500
Procurement of Russell Drive Property	24,800 SF	\$ 78.62/SF	\$ 1,950,000
Renovation of Russell Drive Facility and Site		\$ 50/SF	\$ 1,240,000
Parks & Rec. District Shops (Green Hill and Walrond Parks)	4,000 SF	\$ 115/SF	\$ 460,000
Pole Barn at Russell Drive	7,000 SF	\$ 60/SF	\$ 420,000
BUILDING TOTAL	82,748 SF		\$ 9,084,700
Civil/Sitework – Fleet Services Center			\$ 2,119,600
Civil/Sitework – Kessler Mill Road			\$ 1,363,440
Civil/Sitework – Russell Drive			\$ 310,000
Civil/Sitework – Parks & Rec. District Shops			\$ 115,000
Civil/Sitework – Russell Drive Pole Barn			\$ 105,000
CIVIL/SITEWORK TOTAL			\$ 4,013,040
OPTION 6 TOTAL COST			\$ 13,097,740

VI. APPENDICES

- A. Building Program
- B. Civil/Sitework ROM Cost Estimates Back-Up
- C. Exhibits (Layouts)
- D. Summary Spreadsheet
- E. Photographs

APPENDIX A

BUILDING PROGRAM

Roanoke County Service Center Expansion Study
Departmental Programs

<u>General Services</u>	Area
Director Office	200
Assistant Dir Office	150
Solid Waste Manager	150
House Keeping Supervisor	120
Business Coordinator	120
Capital Support	120
Facility Manager	150
Solid Waste Foremen (3)	200
Building Maint. Techs (2)	120
Main Open Office	280
Work Room	120
File Room	120
SW Staff Room w/ lockers (30-35)	560
House Keeping Storage	1,500
Housekeeping Crew Leaders	150
Conference Room (12)	300
Training Room (40)	600
General Services Storage	3,000
Reception Lobby	200
Break Room	320
Potential Growth	1,000
Assignable Space	9,480

Building Requirement

Assignable space / 80% Efficiency	11,850
Includes Utilities, Toilets, Corridors	

Parking w/ Electrical for Garbage Trucks, pickups, & dump trucks - 30

Parking for Staff - 50

Parking for Visitors - 10

Pole barn Storage - 1,000 SF

Space for Tire trailer, 2 payloaders, & up to 500 cans

Roanoke County Service Center Expansion Study
Departmental Programs

<u>Parks and Recreation and Tourism</u>	Area
Director Office	200
Assistant Director Office	150
Assistant Director Office	150
Supervisor Offices (14@150)	1,680
General Office (8@120)	960
Athletics Office (3)	240
Intern Cubicles (4)	240
Explorer Park Offices (5@120)	600
Reception / Waiting	350
Application cubicle	50
Media Room	320
File Room	120
Athletic File / Weigh-in / Support	150
Catering Kitchen / Pantry	300
Sign Shop (2)	3,600
Building Techs Shop (2)	1,500
Conference Room (12)	300
Medium Conference (30)	650
Large Conference / Training (50)	800
Explorer Park Storage	1,500
Deliveries, swing space, uniforms	200
IT / Parks Cameras Servers	120
General Storage (events, propaganda, etc)	2,000
Interior equipment storage	3,000
Assignable Space	19,180

Building Requirement

Assignable space / 80% Efficiency	23,975
Includes Utilities, Toilets, Corridors	

Agricultural Products / Supply Storage Building - 2,000 SF

Turf and Landscape Shop - 2,000 SF

Projects and Heavy Equipment Shop - 2,000 SF

District Office / Storage / Shop - 2,000 SF Building

1,000 Sf External Storage - parking for 6 (trucks & trailers)

Main Pole Barn Storage for materials and equipment - 7,000 SF

Parking for Staff - 50

Parking for Visitors - 10

Roanoke County Service Center Expansion Study
Departmental Building Programs

<u>Storm Water</u>	Area
Office	250
Break / Kitchen / warming / Meeting	450
Storage	4,000
Growth	500
Assignable Space	5,200

Building Requirement

Assignable space / 80% Efficiency	6,500
Includes Utilities, Toilets, Corridors	

Exterior storage - 3 acres

Pole Barn - 3,120 Sf

Parking for staff - 12

Roanoke County Service Center Expansion Study

Departmental Programs

<u>Communications</u>	Area
Supervisor Office	150
Office	120
Installers/ Techs Shared Offices	300
Reception / Waiting	100
Work Room	120
Lockers / Equipment Storage	240
Meeting / Break	240
Tech Waiting Repair	360
Metal Fab Room	150
Paint Room	150
RF Shielded Room	288
Inventory Stock Room	240
Lrg Vehicle Drive Thru Maintenance Bays	1,600
Automobile Maintenance Bays	1,080
Combined Equipment Storage	2,500
Potential Growth	1,000
Assignable Space	8,638

Building Requirement

Assignable space / 80% Efficiency 10,798
Includes Utilities, Toilets, Corridors

Parking for staff & vehicles awaiting service or return - 24
Enclosed Trailer Storage - 400 SF
Tower Pad - 144 SF or Roof mounted

Roanoke County Service Center Expansion Study
Departmental Programs

<u>Welding / Small Engine Repair</u>	Area
Staff Office Space(2)	240
Reception / Waiting	120
Welding Shop	1,250
Small Engine Repair	1,250
Assignable Space	2,860

Building Requirement

Assignable space / 95% Efficiency	3,011
Shared Toilets, Utilities, etc.	

Parking - 2-4

Roanoke County Service Center Expansion Study
Departmental Programs

Combined General Services, Parks & Rec, Storm Water, & Communications - Including Growth
Options 1,2, & 5

<u>General Svices</u>	Area
Director Office	200
Assistant Dir Office	150
Solid Waste Manager	150
House Keeping Supervisor	120
Business Coordinator	120
Capital Support	120
Facility Manager	150
Solid Waste Foremen (3)	200
Building Maint. Techs (2)	120
Main Open Office	280
Work Room	120
File Room	120
SW Staff Room w/ lockers (30-35)	560
House Keeping Storage	1,500
Housekeeping Crew Leaders	150
Conference Room (12)	300
General Services Storage	3,000
Reception Lobby	200
Potential Growth	1,000

Parks and Recreation and Tourism

Director Office	200
Assistant Director Office	150
Assistant Director Office	150
Supervisor Offices (14@150)	1,680
General Office (8@120)	960
Athletics Office (3)	240
Intern Cubicles (4)	240
Explorer Park Offices (5@120)	600
Reception / Waiting	350
Application cubicle	50
Media Room	320
File Room	120
Athletic File / Weigh-in / Support	150
Sign Shop (2)	3,600
Building Techs Shop (2)	1,500
Conference Room (12)	300
Medium Conference (30)	650
Explorer Park Storage	1,500
Deliveries, swing space, uniforms	200
IT / Parks Cameras Servers	120
General Storage (events, propaganda, etc)	2,000
Interior equipment storage	3,000

Roanoke County Service Center Expansion Study
Departmental Programs

Storm Water

Office	250
Break / Kitchen / warming / Meeting	450
Storage	4,000
Growth	500

Communications

Supervisor Office	150
Office	120
Installers/ Techs Shared Offices	300
Reception / Waiting	100
Work Room	120
Lockers / Equipment Storage	240
Meeting / Break	240
Tech Waiting Repair	360
Metal Fab Room	150
Paint Room	150
RF Shielded Room	288
Inventory Stock Room	240
Lrg Vehicle Drive Thru Maintenance Bays	1,600
Automobile Maintenance Bays	1,080
Combined Equipment Storage	2,500
Potential Growth	1,000

Welding / Small Engine Repair

Staff Office Space(2)	240
Reception / Waiting	120
Welding Shop	1,250
Small Engine Repair	1,250

Shared Spaces

Fitness	450
Training Room (40)	600
Catering Kitchen / Pantry / Break Room	450
Surplus Storage	9,400
Assignable Space	54,238

Building Requirement

Assignable space / 80% Efficiency	67,798
Includes Utilities, Toilets, Corridors	

Parks and Recs Agriculture. Landscaping, Shops - 6,000 Sf

Parking w/ Electrical for Garbage Trucks, pickups, & dump trucks - 30

Parking for Staff - 136

Parking for Visitors - 20

Pole barn Storage - 3,120 SF & 7,000 SF

Roanoke County Service Center Expansion Study
Departmental Programs

Combined General Services & Communications - Including Growth - Option 3 & 6

<u>General Svrcies</u>	Area
Director Office	200
Assistant Dir Office	150
Solid Waste Manager	150
House Keeping Supervisor	120
Business Coordinator	120
Capital Support	120
Facility Manager	150
Solid Waste Foremen (3)	200
Building Maint. Techs (2)	120
Main Open Office	280
Work Room	120
File Room	120
SW Staff Room w/ lockers (30-35)	560
Housekeeping Crew Leaders	150
Conference Room (12)	300
Reception Lobby	200
Potential Growth	1,000

Communications

Supervisor Office	150
Office	120
Installers/ Techs Shared Offices	300
Reception / Waiting	100
Work Room	120
Lockers / Equipment Storage	240
Meeting / Break	240
Tech Waiting Repair	360
Metal Fab Room	150
Paint Room	150
RF Shielded Room	288
Inventory Stock Room	240
Lrg Vehicle Drive Thru Maintenance Bays	1,600
Automobile Maintenance Bays	1,080
Combined Equipment Storage	2,500
Potential Growth	1,000

Welding / Small Engine Repair

Staff Office Space(2)	240
Reception / Waiting	120
Welding Shop	1,250
Small Engine Repair	1,250
Assignable Space	15,558

Roanoke County Service Center Expansion Study
Departmental Programs

Building Requirement

Assignable space / 80% Efficiency 19,448

Includes Utilities, Toilets, Corridors

Parking w/ Electrical for Garbage Trucks, pickups, & dump trucks - 30

Parking for Staff - 74

Parking for Visitors - 10

Roanoke County Service Center Expansion Study
Departmental Programs

Combined General Services & Storm Water - Including Growth - Option 4

<u>General Svices</u>	Area
Director Office	200
Assistant Dir Office	150
Solid Waste Manager	150
House Keeping Supervisor	120
Business Coordinator	120
Capital Support	120
Facility Manager	150
Solid Waste Foremen (3)	200
Building Maint. Techs (2)	120
Main Open Office	280
Work Room	120
File Room	120
SW Staff Room w/ lockers (30-35)	560
House Keeping Storage	1,500
Housekeeping Crew Leaders	150
Conference Room (12)	300
General Services Storage	3,000
Reception Lobby	200
Potential Growth	1,000

Stormwater

Office	250
Break / Kitchen / warming / Meeting	450
Storage	4,000
Growth	500

Shared Spaces

Fitness	450
Training Room (40)	600
Catering Kitchen / Pantry / Break Room	450
Surplus Storage	9,400
Assignable Space	24,660

Building Requirement

Assignable space / 80% Efficiency	30,825
Includes Utilities, Toilets, Corridors	

Parking w/ Electrical for Garbage Trucks, pickups, & dump trucks - 30

Parking for Staff - 62

Parking for Visitors - 10, Pole Barn Storage - 4,120 SF

APPENDIX B

CIVIL/SITE ROM COST ESTIMATES BACK-UP

**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
KESSLER MILL BUILDING REMAINS
OPTION I**

CONSTRUCTION COST:

Demolition @ \$148,500 L.S.	\$148,500
Paving, Surfacing, Agg. @ \$778,000 L.S.	\$778,000
Stormwater Quality and Quantity Control @ \$1,048,000 L.S.	\$1,048,000
Earthwork (Cut/Fill) @ \$140,000 L.S.	\$140,000
Landscaping @ \$10,000 L.S.	\$10,000
Erosion & Sediment Control @ \$16,000 L.S.	\$16,000
Utility Relocation @ \$150,000 L.S.	\$150,000
Mobilization and Temporary Facilities @ \$58,000 L.S.	\$58,000
Bonds, Taxes, Permits and Insurance @ \$58,000 L.S.	\$58,000
 Sub-Total Construction Cost	 \$2,290,500
Contingency Cost (20%)	\$458,100
Total Construction Cost (TCC)	\$2,748,600

RELATED COST

Total Related Cost (25% TCC)	\$687,150
TOTAL PROBABLE PROJECT COST	\$3,435,750

Please be advised that since Thompson & Litton has no control over the cost of labor, materials, equipment, or services furnished by others, or over Contractor(s') methods of determining prices, or over competitive bidding or market conditions, our opinions of probable project cost and construction cost provided herein are made on the basis of our experience and qualifications and represent our best judgment as experienced and qualified Professional Engineers familiar with the construction industry. Thompson & Litton cannot and does not guarantee that proposals, bids, or actual project construction cost will not vary from those opinions of probable costs prepared by Thompson & Litton.

**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
KESSLER MILL SITE RENOVATION, ALL PUBLIC SERVICES REMAIN
OPTION 2**

CONSTRUCTION COST:

Demolition @ \$530,000 L.S.	\$530,000
Paving, Surfacing, Agg. @ \$850,000 L.S.	\$850,000
(4") Sidewalk @ \$40,000 L.S.	\$40,000
Stormwater Quality and Quantity Control @ \$299,000 L.S.	\$299,000
Earthwork (Cut/Fill) @ \$1,070,000 L.S.	\$1,070,000
Landscaping @ \$15,000 L.S.	\$15,000
Erosion & Sediment Control @ \$43,000 L.S.	\$43,000
Utility Relocation @ \$376,000 L.S.	\$376,000
Mobilization and Temporary Facilities @ \$81,000 L.S.	\$81,000
Bonds, Taxes, Permits and Insurance @ \$81,000 L.S.	\$81,000
Sub-Total Construction Cost	\$3,223,000
Contingency Cost (20%)	<u>\$644,600</u>
Total Construction Cost (TCC)	\$3,867,600

RELATED COST

Total Related Cost (25% TCC)	<u>\$966,900</u>
TOTAL PROBABLE PROJECT COST	\$4,834,500

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**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
KESSLER MILL - STORM REMAINS
OPTION 3**

CONSTRUCTION COST:

Demolition @ \$535,000 L.S.	\$535,000
Paving, Surfacing, Agg. @ \$175,000 L.S.	\$175,000
(4") Sidewalk @ \$12,000 L.S.	\$12,000
Stormwater Quality and Quantity Control @ \$88,000 L.S.	\$88,000
Earthwork (Cut/Fill) @ \$32,000 L.S.	\$32,000
Landscaping @ \$5,000 L.S.	\$5,000
Erosion & Sediment Control @ \$24,000 L.S.	\$24,000
Utility Relocation @ \$117,000 L.S.	\$117,000
Mobilization and Temporary Facilities @ \$25,000 L.S.	\$25,000
Bonds, Taxes, Permits and Insurance @ \$25,000 L.S.	\$25,000
Sub-Total Construction Cost	\$988,000
Contingency Cost (20%)	\$197,600
Total Construction Cost (TCC)	\$1,185,600

RELATED COST

Total Related Cost (15% TCC)	<u>\$177,840</u>
TOTAL PROBABLE PROJECT COST	\$1,363,440

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**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
WELDING/SMALL ENG., COMM/IT, GENERAL SERVICES, & SOLID WASTE TO FLEET SERVICES
OPTION 3**

CONSTRUCTION COST:

Demolition @ \$29,000 L.S.	\$29,000
Paving, Surfacing, Agg. @ \$316,000 L.S.	\$316,000
Curb/Curb & Gutter @ \$19,000 L.S.	\$19,000
(4") Sidewalk @ \$20,000 L.S.	\$20,000
Fencing @ \$21,000 L.S.	\$21,000
Retaining Wall @ \$295,000 L.S.	\$295,000
Stormwater Quality/Quantity Control @ \$257,000 L.S.	\$257,000
Earthwork (Cut/Fill) @ \$242,000 L.S.	\$242,000
Landscaping @ \$7,000 L.S.	\$7,000
Erosion & Sediment Control @ \$20,000 L.S.	\$20,000
Utility Relocation @ \$70,000 L.S.	\$70,000
Fuel Station @ \$240,000 L.S.	\$240,000
Mobilization and Temporary Facilities @ \$39,000 L.S.	\$39,000
Bonds, Taxes, Permits and Insurance @ \$39,000 L.S.	\$39,000
 Sub-Total Construction Cost	 \$1,536,000
Contingency Cost (20%)	\$307,200
Total Construction Cost (TCC)	\$1,843,200

RELATED COST

Total Related Cost (15% TCC)	\$276,480
TOTAL PROBABLE PROJECT COST	\$2,119,680

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**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
PARKS, RECREATION, AND TOURISM TO SHELL PARK
OPTION 3 & 4**

CONSTRUCTION COST:

Demolition @ \$17,000 L.S.	\$17,000
Paving, Surfacing, Agg. @ \$185,000 L.S.	\$185,000
Curb/Curb & Gutter @ \$22,000 L.S.	\$22,000
(4") Sidewalk @ \$20,000 L.S.	\$20,000
Walking Trail @ \$18,000 L.S.	\$18,000
Stormwater Quality and Quantity Control @ \$143,000 L.S.	\$143,000
Earthwork (Cut/Fill) @ \$62,000 L.S.	\$62,000
Landscaping @\$15,000 L.S.	\$15,000
Erosion & Sediment Control @ \$11,000 L.S.	\$11,000
Utility Relocation @ \$143,000 L.S.	\$143,000
Mobilization and Temporary Facilities @ \$16,000 L.S.	\$16,000
Bonds, Taxes, Permits and Insurance @ \$16,000 L.S.	\$16,000
 Sub-Total Construction Cost	 \$636,000
Contingency Cost (20%)	<u>\$127,200</u>
Total Construction Cost (TCC)	\$763,200

RELATED COST

Total Related Cost (15% TCC)	<u>\$114,480</u>
TOTAL PROBABLE PROJECT COST	\$877,680

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**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE, VIRGINIA
KESSLER MILL - GENERAL SERVICES, STORM, & SOLID WASTE REMAIN
OPTION 4**

CONSTRUCTION COST:

Demolition @ \$505,000 L.S.	\$505,000
Paving, Surfacing, Agg. @ \$477,400 L.S.	\$477,400
(4") Sidewalk @ \$12,000 L.S.	\$12,000
Stormwater Quality and Quantity Control @ \$218,000 L.S.	\$218,000
Earthwork (Cut/Fill) @ \$390,000 L.S.	\$390,000
Landscaping @ \$5,000 L.S.	\$5,000
Erosion & Sediment Control @ \$43,000 L.S.	\$43,000
Utility Relocation @ \$287,000 L.S.	\$287,000
Mobilization and Temporary Facilities @ \$49,000 L.S.	\$49,000
Bonds, Taxes, Permits and Insurance @ \$49,000 L.S.	\$49,000
Sub-Total Construction Cost	\$1,937,400
Contingency Cost (20%)	\$387,480
Total Construction Cost (TCC)	\$2,324,880

RELATED COST

Total Related Cost (25% TCC)	\$581,220
TOTAL PROBABLE PROJECT COST	\$2,906,100

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**ROUGH ORDER OF MAGNITUDE PROJECT COST
FOR THE
ROANOKE COUNTY SERVICE CENTER EXPANSION PROGRAM
ROANOKE , VIRGINIA
WELDING/SMALL ENG. & COMM/IT TO FLEET SERVICES
OPTION 4**

CONSTRUCTION COST:

Demolition @ \$20,000 L.S.	\$20,000
Paving, Surfacing, Agg. @ \$35,000 L.S.	\$35,000
Curb/Curb & Gutter @ \$10,000 L.S.	\$10,000
(4") Sidewalk @ \$20,000 L.S.	\$20,000
Stormwater Quality/Quantity Control @ \$93,000 L.S.	\$93,000
Earthwork (Cut/Fill) @ \$32,000 L.S.	\$32,000
Landscaping @ \$5,000 L.S.	\$5,000
Erosion & Sediment Control @ \$7,000 L.S.	\$7,000
Utility Relocation @ \$20,000 L.S.	\$20,000
Mobilization and Temporary Facilities @ \$7,000 L.S.	\$7,000
Bonds, Taxes, Permits and Insurance @ \$7,000 L.S.	\$7,000
Sub-Total Construction Cost	\$242,000
Contingency Cost (20%)	<u>\$48,400</u>
Total Construction Cost (TCC)	\$304,400

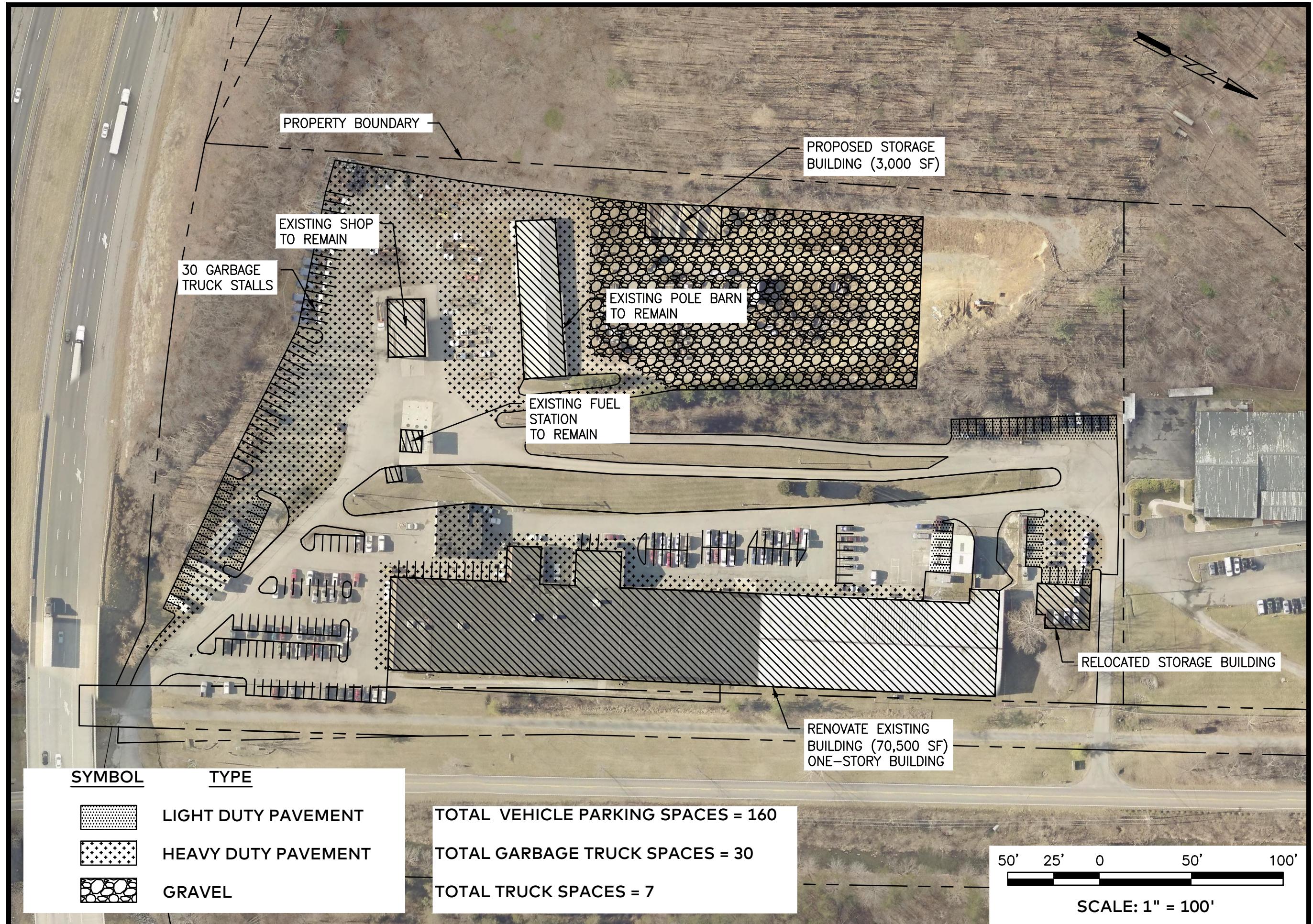
RELATED COST

Total Related Cost (15% TCC)	<u>\$45,660</u>
TOTAL PROBABLE PROJECT COST	\$350,060

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APPENDIX C

EXHIBITS (LAYOUTS)



PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
KESSLER MILL OPTION 1

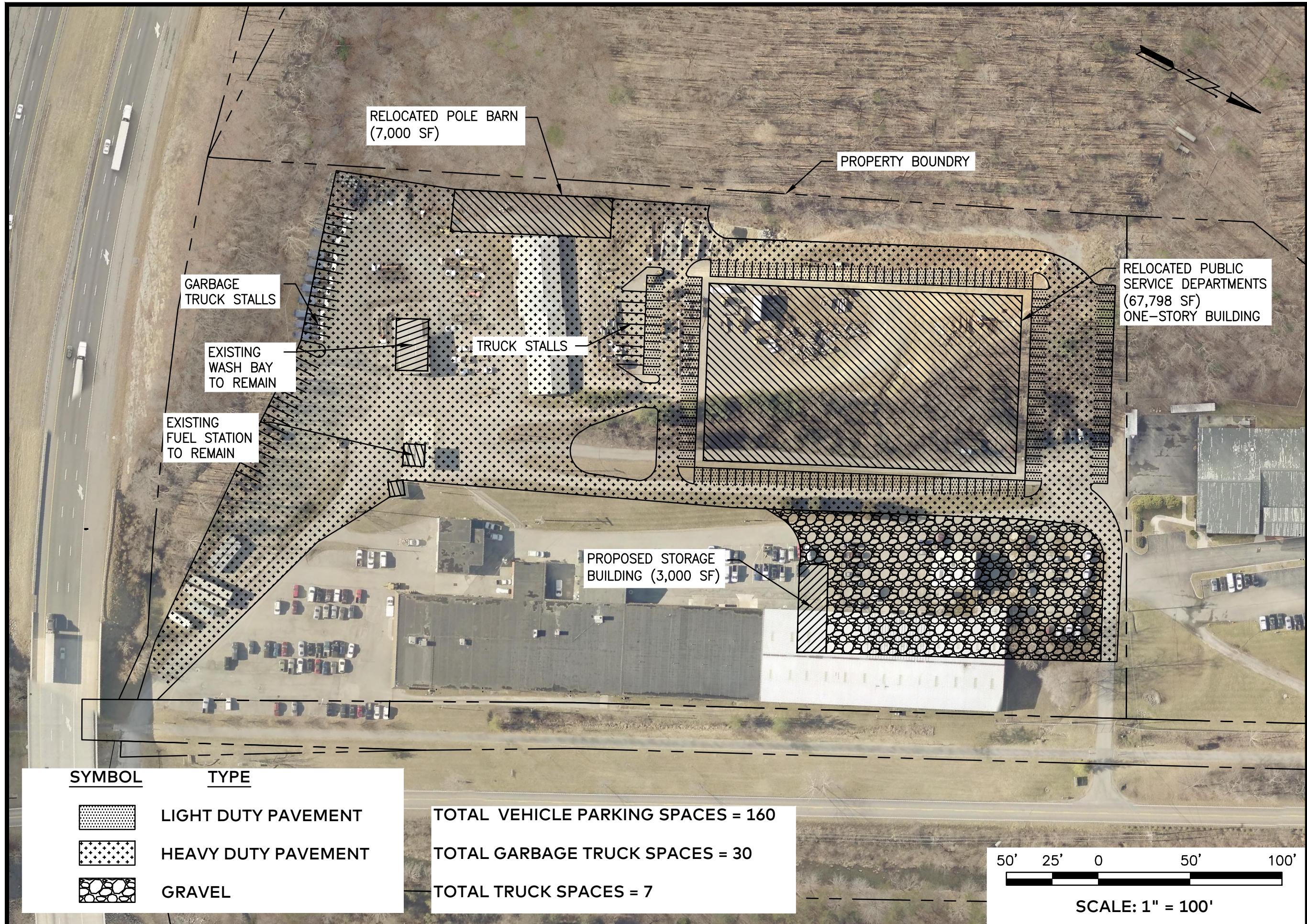
Designed	RJM
Drawn	TCR
Checked	MAM
Date	SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

EXHIBIT
I



PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
KESSLER MILL OPTION 2

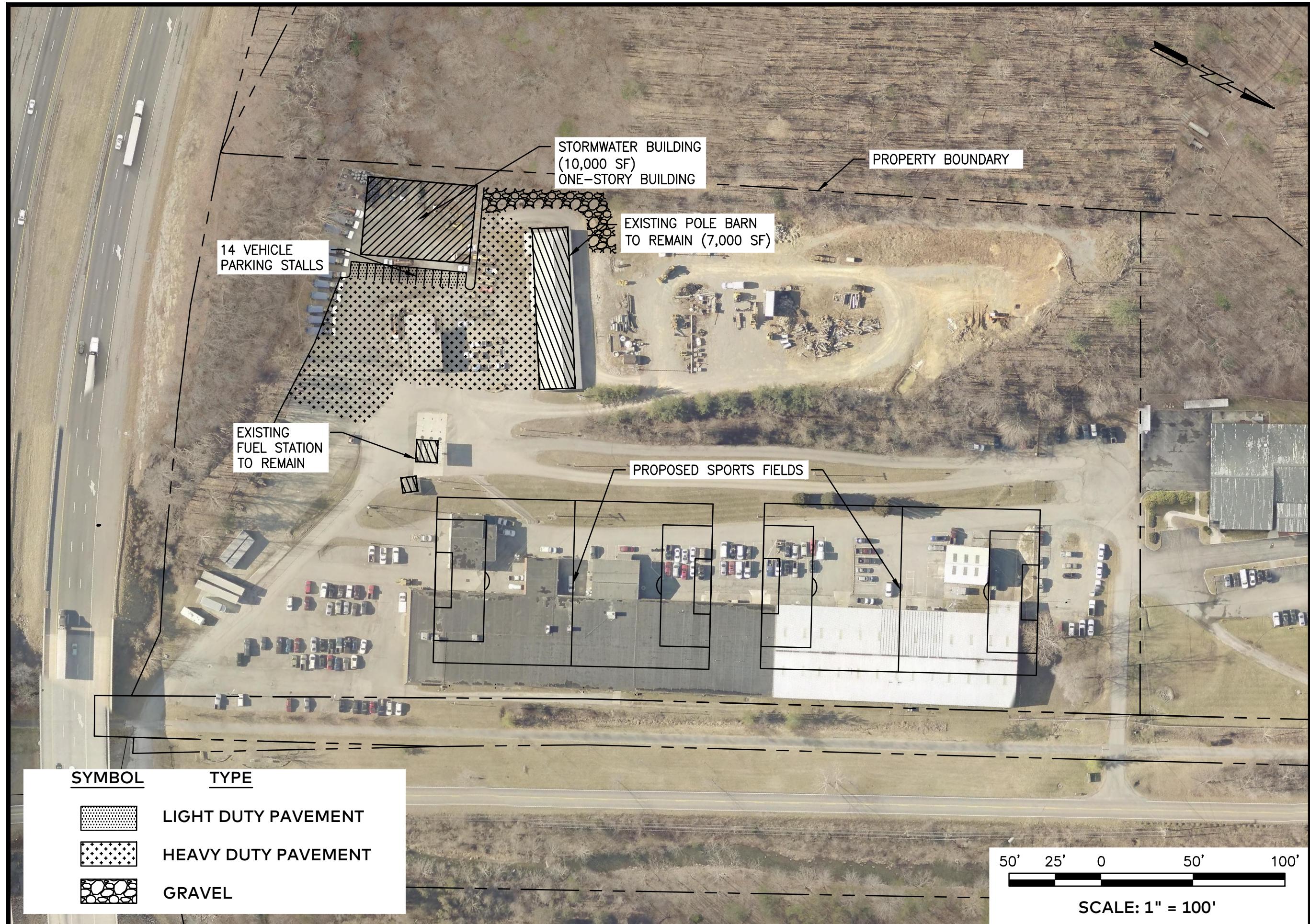
Designed	RJM
Drawn	TCR
Checked	MAM
Date	SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

EXHIBIT
II



PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
KESSLER MILL OPTION 3

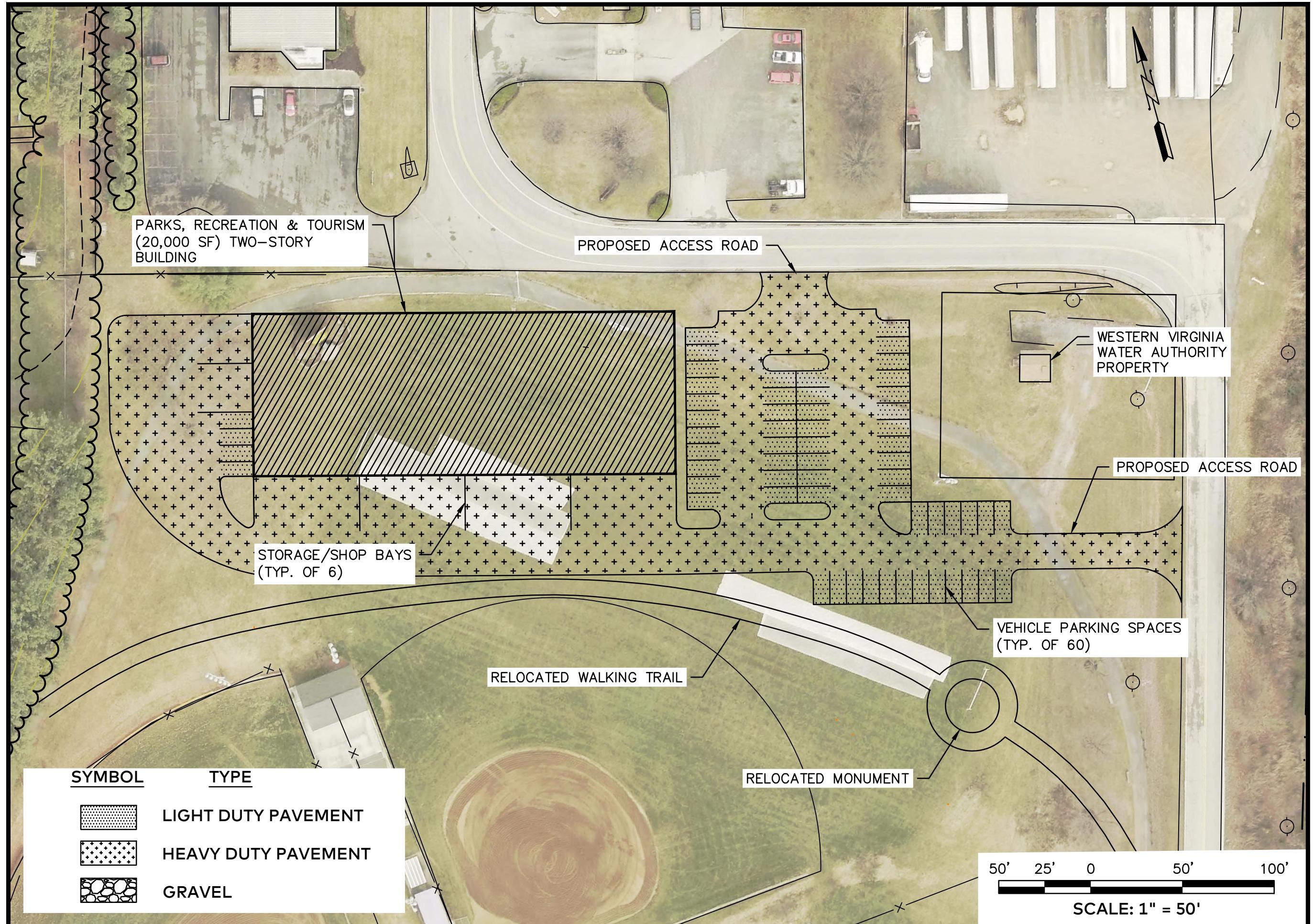
Designed	RJM
Drawn	RJM
Checked	MAM
Date	SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

EXHIBIT
III



PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
SHELL PARK OPTION 3 & 4

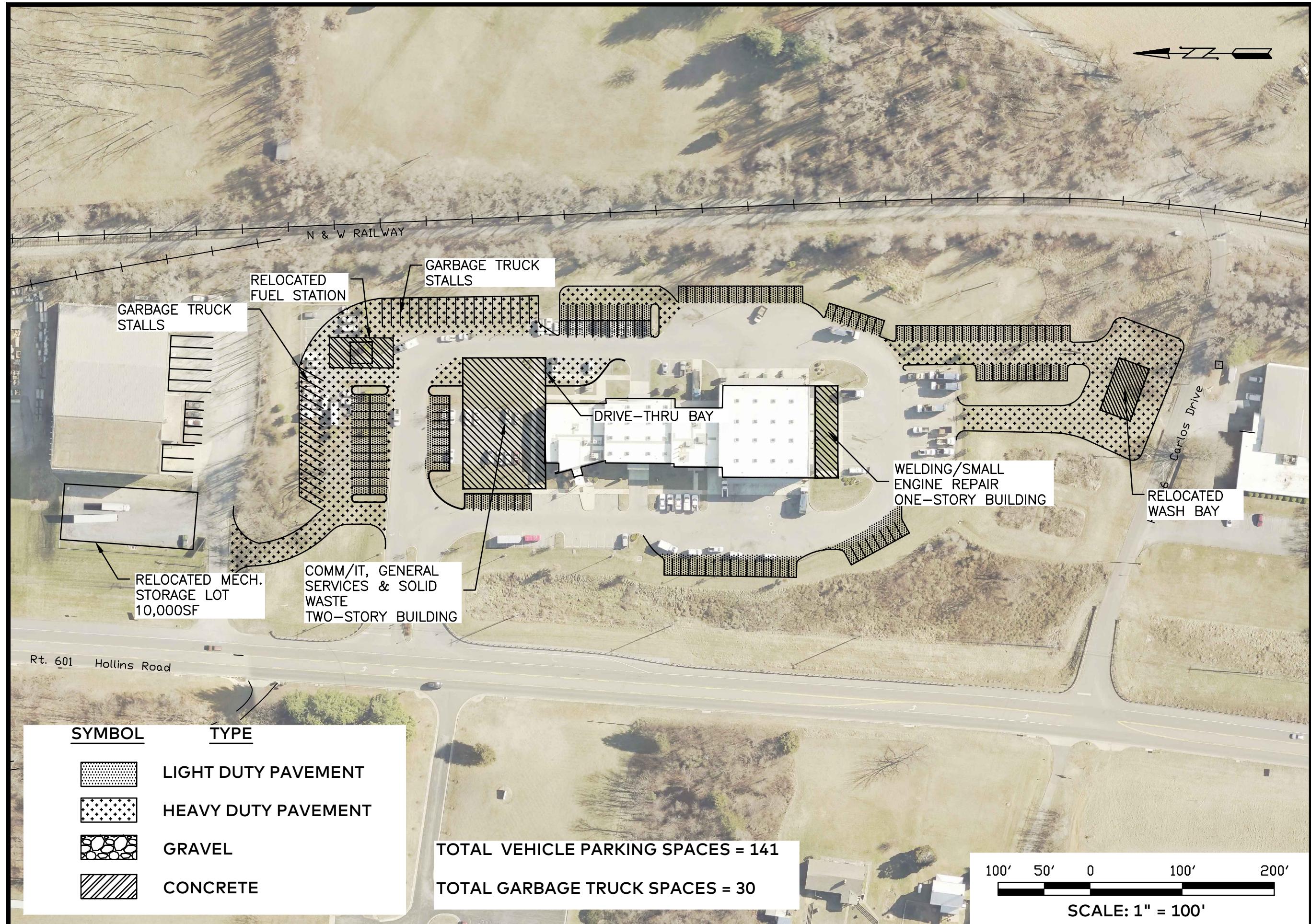
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Checked	MAM
Date	SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

EXHIBIT
IV



**PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
FLEET SERVICES CENTER OPTION 3**

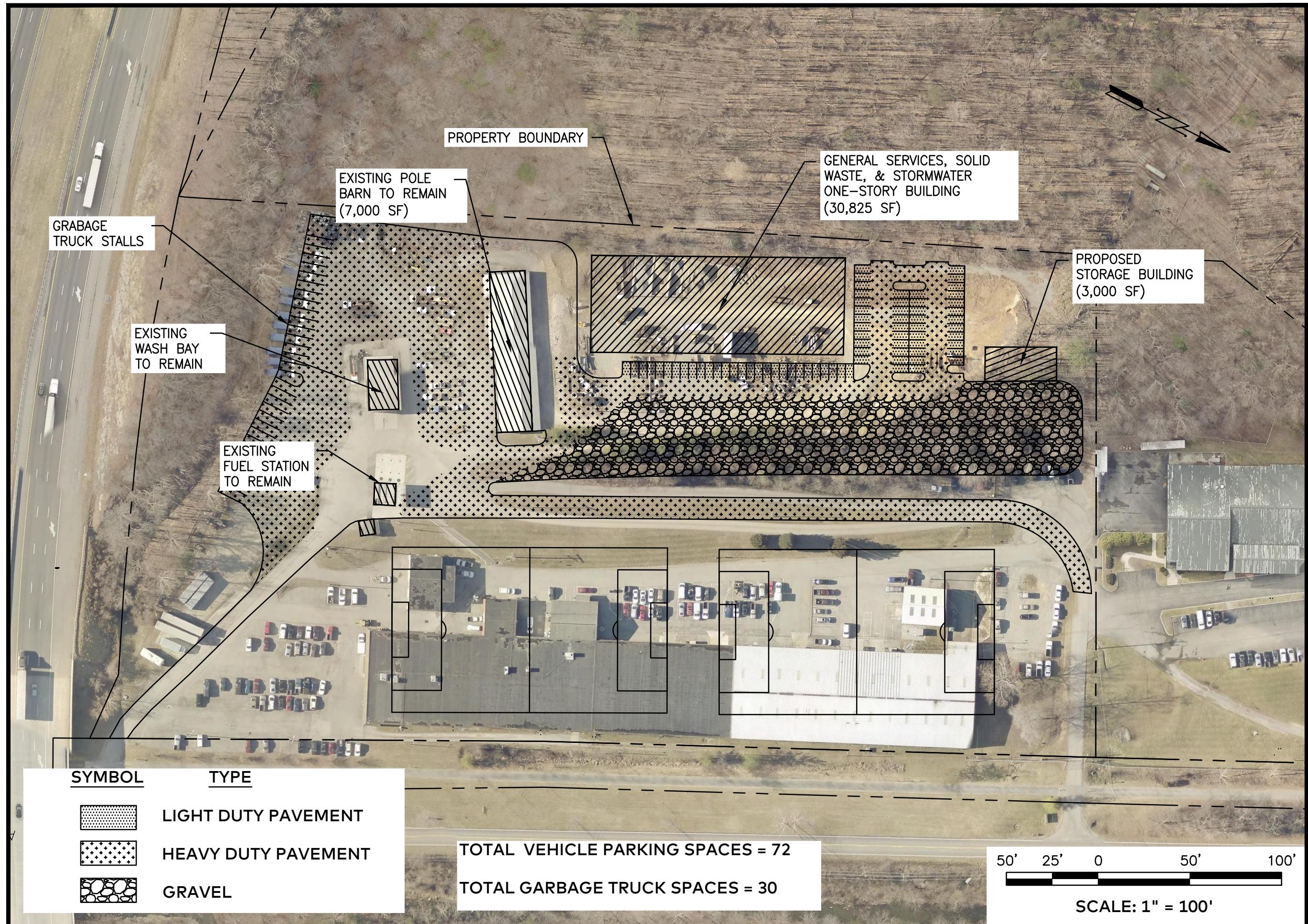
Designed RJM
Drawn TCR
Checked MAM
Date SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

**EXHIBIT
V**



PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
KESSLER MILL OPTION 4

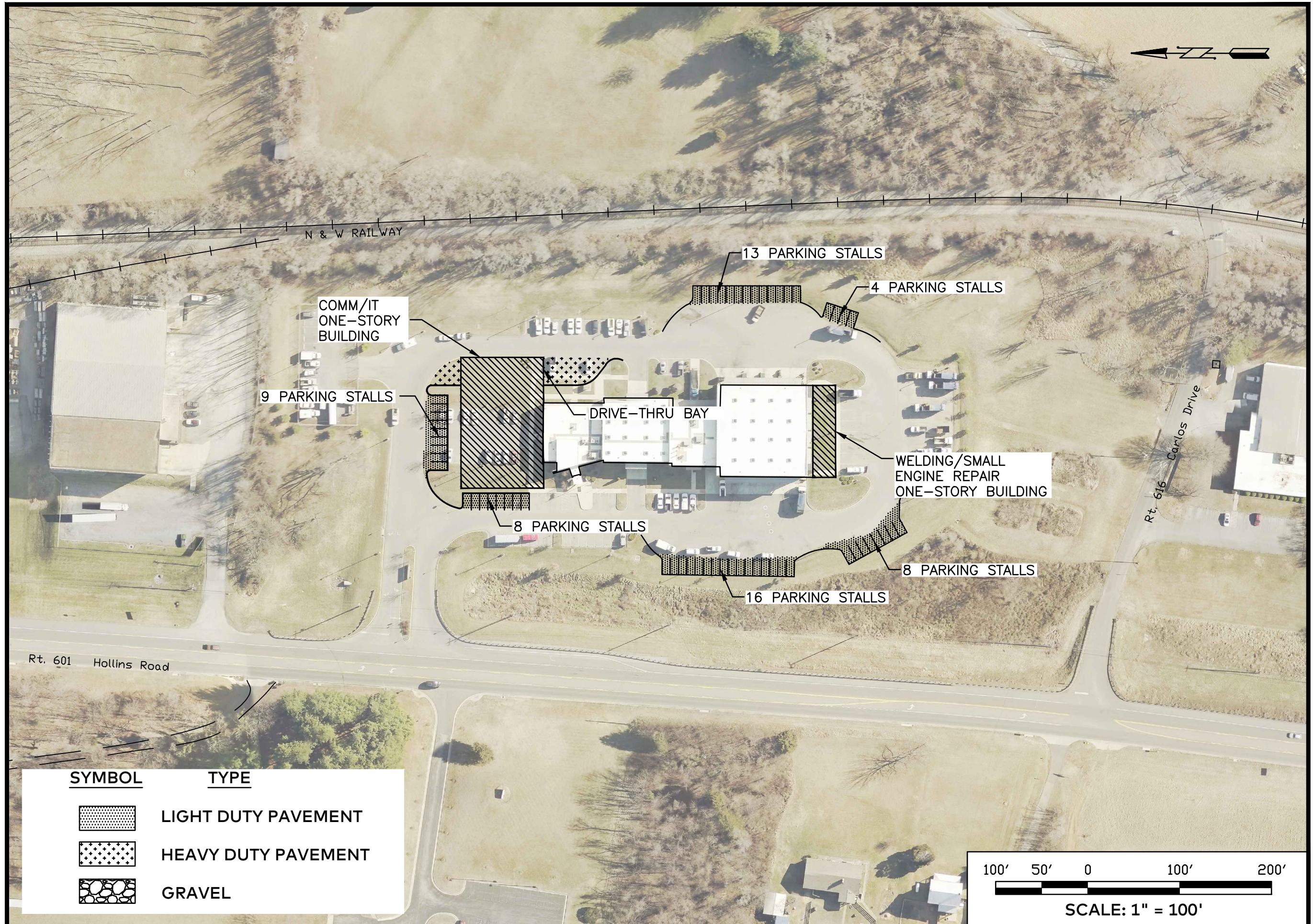
Designed RJM
Drawn RJM
Checked MAM
Date SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

EXHIBIT
VI



**PLANNING STUDY
FOR THE
ROANOKE COUNTY
PUBLIC SERVICE DEPARTMENT
FLEET SERVICES CENTER OPTION 4**

Designed	RJM
Drawn	TCR
Checked	MAM
Date	SEPT 2016

Project No.
13530-00



THOMPSON
& LITTON

**EXHIBIT
VII**

APPENDIX D

SUMMARY SPREADSHEET

Group	OPTION 1 - NOT FEASIBLE (PROHIBITIVE FLOODPROOFING)			OPTION 2			OPTION 3		
	Remain in current building; address storm water drainage issues; complete building renovation on an area-by-area basis, necessitating temporary relocation of groups within the building			Build new building at Kessler Mill Road (KMR) site at a higher elevation; upon relocation, demolish existing Kessler Mill Road building			Dispersion - Alternative 1 New facilities at Fleet Center, Kessler Mill Rd. (Storm Water only) and Shell and Starkey Parks. Demolish existing facility after relocations are complete		
	Location	Cost		Location	Cost		Location	Cost	
		Civil/Site	Bldg.		Civil/Site	Bldg.		Civil/Site	Bldg.
DGS							Fleet Center - New Addition	\$ 2,119,600	\$ 3,272,200
Storm Water	Renovated Kessler Mill Rd. Bldg.	\$ 3,435,750	\$ 9,277,200	New Kessler Mill Rd. Bldg.	\$ 4,834,500	\$ 13,493,640	New Kessler Mill Rd. Bldg.	\$ 1,363,440	\$ 747,500
Solid Waste							Fleet Center - New Addition	incl. w/DGS above	incl. w/DGS above
Parks & Rec. Admin.							New Shell Park Facility	\$ 877,680	\$ 5,215,500
Parks & Rec. District Shops	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000
Parks & Rec. Pole Barn							Starkey Park	\$ 105,000	\$ 420,000
Comm./IT	Renovated Kessler Mill Rd. Bldg.	incl. above	incl. above	New Kessler Mill Rd. Bldg.	incl. above	incl. above	Fleet Center - New Addition	incl. w/ DGS above	incl. w/ DGS above
Welding Shop							Fleet Center - New Addition		
Small Engine Repair Shop							Fleet Center - New Addition		
Property Acquisition	N/A	N/A	N/A	N/A	N/A	N/A	Property located adjacent (north) of Fleet Center		
	TOTALS	\$ 3,550,750	\$ 9,737,200	TOTALS	\$ 3,867,000	\$ 13,953,640	TOTALS	\$ 4,580,720	\$ 11,110,200
		\$ 13,287,950			\$ 17,820,640			\$ 15,690,920	
PROs	1. Remain in existing building, no dispersion.			1. New building located out of FEMA flood plain.			1. Roanoke County would have one additional fuel station (located at the Fleet Services Center.)		
	2. No land purchase required.			2. Stormwater management upgrades without the need of a pump station.			2. Adjacent (currently for sale) property can create additional storage space for the County.		
	3. Takes advantage of existing fuel and wash stations.			3. No land purchase required.			3. New Merriman Rd. facility would provide parking for citizens using ball fields after normal business hours.		
	4.			4. Takes advantage of existing fuel and wash stations.			4. All groups get new facilities programmed for anticipated future growth.		
	5.			5.			5. Locates Parks & Rec. shops closer to the areas they serve.		
	6.			6.			6.		
CONs	1. Easements would need to be obtained/procured for downstream storm drainage.			1. Requires site disruptions to temporarily store cut-and-fill material.			1. Would utilize the majority of property at Fleet Services Center; i.e., no further expansion possible.		
	2. Necessitates temporary relocations of various groups - space availability; costs; disruptions			2. Access to new building would still be in designated FEMA flood plain.			2. Would not mitigate flooding at building/site entrances at Kessler Mill due to Mason Creek.		
	3. Building remains in a designated FEMA flood plain. <u>Floodproofing costs/logistics are prohibitive; floodproofing costs not included above.</u>			3. Large quantity of earthwork movement required, but would balance cut/fill operations on site.			3. Increase in water quality and quantity controls.		
	4. Requires significant redesign of the stormwater management system (new pump station, etc.).			4. Would not mitigate flooding at building/site entrances at Kessler Mill due to Mason Creek.			4. Multiple smaller projects - greater County project management demands.		
	5. Would not mitigate flooding at building/site entrances at Kessler Mill due to Mason Creek.			5.			5. Would require the purchase of additional adjacent (currently for sale) property.		
	6.			6.			6. No room for a Wash Station for vehicles.		

Group	OPTION 4			OPTION 5			OPTION 6				
	Dispersion - Alternative 2			Complete new building for all groups currently at Kessler Mill Road location at a to-be-determined location within Roanoke County			Dispersion - Alternative 3				
	Location	Cost		Location	Cost		Location	Cost			
		Civil/Site	Bldg.		Civil/Site	Bldg.		Civil/Site	Bldg.		
DGS	New Kessler Mill Rd. Bldg.	\$ 2,906,100	\$ 5,548,500	New Roanoke County Site TBD	\$ 3,300,260	\$ 13,201,040	Fleet Center - New Addition	\$ 2,119,600	\$ 3,272,200		
Storm Water							New Kessler Mill Rd. Bldg.	\$ 1,363,440	\$ 747,500		
Solid Waste							Fleet Center - New Addition	incl. w/DGS above	incl. w/DGS above		
Parks & Rec. Admin.	New Shell Park Facility	\$ 877,680	\$ 5,215,500				Renovate 901 Russell Dr. (Salem)	\$ 310,000	\$ 1,240,000		
Parks & Rec. District Shops	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000	Green Hill Park and Walrond Park	\$ 115,000	\$ 460,000		
Parks & Rec. Pole Barn	Starkey Park	\$ 105,000	\$ 420,000		\$ 150,000	\$ 600,000	901 Russell Drive (Salem)	\$ 105,000	\$ 420,000		
Comm./IT	Fleet Center - New Addition	\$ 350,060	\$ 2,177,500		incl. above	incl. above	Fleet Center - New Addition	incl. w/ DGS above	incl. w/ DGS above		
Welding Shop	Fleet Center - New Addition						Fleet Center - New Addition				
Small Engine Repair Shop	Fleet Center - New Addition						Fleet Center - New Addition				
Property Acquisition	N/A	N/A	N/A	Site TBD - 12.5 acres estimated at \$150,000 per acre			Purchase price for 901 Russell Drive (Salem) and property adjacent to Fleet Center		\$ 2,945,000		
	TOTALS	\$ 4,248,840	\$ 13,821,500	TOTALS	\$ 3,545,000	\$ 16,136,040	TOTALS	\$ 4,013,040	\$ 9,084,700		
		\$ 18,070,340			\$	\$ 19,681,040		\$	\$ 13,097,740		
PROs	1. Smaller site construction scopes of work.	1. Current Public Services Center groups remain together.			1. Lowest cost option evaluated.						
	2. No land purchase required.	2. One large project over multiple smaller projects; lessens County project management demands.			2. Property at 901 Russell Drive (Salem) requires minimal renovation - both site and building; relatively swift relocation and occupancy.						
	3. Lower stormwater/erosion and sediment controls costs.	3. Stormwater controls could be minimized.			3. All groups get new/renovated facilities programmed for anticipated future growth.						
	4. Would not require an additional fuel station at Fleet Services Center.	4.			4. Eliminates recurring site storm water issues at KMR facility.						
	5. New Merriman Rd. facility would provide parking for citizens using ball fields after normal business hours.	5.			5. Roanoke County would have one additional fuel station (located at the Fleet Services Center.)						
	6. All groups get new facilities programmed for anticipated future growth.	6.			6.						
CONS	1. Multiple smaller projects - greater County project management demands.	1. May necessitate purchase of large tract of property to house all groups currently at KMR facility.			1. Multiple smaller projects - greater County project management demands.						
	2. Would not mitigate flooding at building/site entrances at Kessler Mill due to Mason Creek.	2.			2. Would not mitigate flooding at building/site entrances at Kessler Mill due to Mason Creek.						
	3. No room for a Wash Station for vehicles.	3.			3.						
	4.	4.			4.						
	5.	5.			5.						
	6.	6.			6.						

APPENDIX E

PHOTOGRAPHS

KESSLER MILL ROAD



Drive Up to Fueling Station,
Wash Station and Pole Barn



West Side of Primary Building



Fueling Station Viewed from Primary Building



Loading Dock



Base of Communications Tower



Communications Tower

KESSLER MILL ROAD



Fueling Station



Pole Barn



Back Side of Pole Barn



Stormwater Operations
Soils Material Area



Entrance on Southeast Corner of Site



Stormwater Conveyance Channel

KESSLER MILL ROAD



Eroded Stormwater Conveyance Channel



Solid Waste Tracks Storage Area



Power Pole for Solid Waste Trucks



Vehicle Wash Station



Storm Drainage Ditch
Along Access Road to Pole Barn



Clogged Storm Drainage Pipe

KESSLER MILL ROAD



Stormwater Operations
Equipment Storage Yard



Stormwater Operations
Equipment Storage Yard



Storage Yard Sediment Trap



Gravel Road at Stormwater Operations
Equipment Storage Yard



View of Pole Barn from High Point of Site
(Looking Southeast)



Paved Entrance to Roanoke County Fire
Training Facility (North of PSC Primary Bldg.)

ROANOKE COUNTY FLEET SERVICES CENTER



Main Entrance to Fleet Services Center



North End of Fleet Services Center



South End of Fleet Services Center – Location of Potential Welding & Small Engine Shops Addition



Vehicle Entrance to Fleet Services Center



Back Side of Fleet Services Center



Back Entrance to Administrative Area
of Fleet Services Center

ROANOKE COUNTY FLEET SERVICES CENTER



Vehicle Doors on Back Side
Of Fleet Services Center



Location of Potential Addition on North End
Of Fleet Services Center



Parking Area on Back Side
of Fleet Services Center



Stromwater Drain Inlet on South End
of Fleet Services Center



Concrete Stormwater Drainage Pipe



Drainage Channel Along Hollins Road

SHELL PARK and STARKEY PARK



Clower Family Memorial



Proposed Site for New Parks & Rec. Facility



Proposed Site for New Parks & Rec. Facility



Proposed Pole Barn Site at Starkey Park



Proposed Pole Barn Site at Starkey Park

PROPERTY/FACILITY AT 901 RUSSELL DRIVE, SALEM, VA



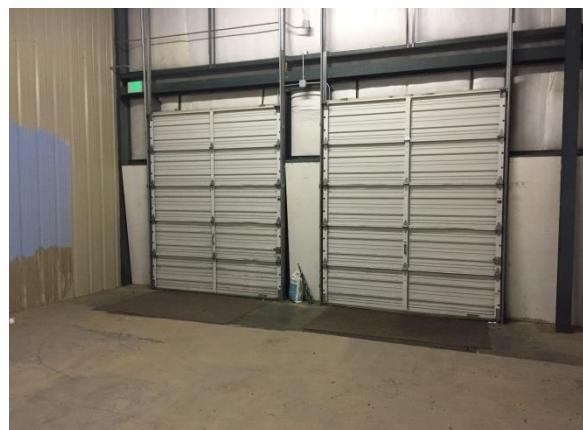
Building Main Entrance



Loading Dock



Inside Warehouse Space



Inside of Loading Dock Area



HVAC Units



Parking Lot Viewed from Office Second Level