

Introduction

CAMPO's BRT Extension Major Investment Study (MIS) and Alternatives Analysis (AA) recommended conducting a Concept of Operations study for both the Southern and Western Extensions corridors. The purpose of the Concept of Operations (CONOP) will be to detail the system concept, how it would be operated, refine cost estimates, and prepare the corridor for potential design work. The CONOP will consider the perspectives of both transit riders and the service provider. This includes the perspectives of the Operator and User, as well as others potentially using the right of way.

Scope of Work

Task 1: Project Management and Partner Coordination

Nelson\Nygaard will be the prime consultant for this task, leading the consultant team and collaborating with CAMPO throughout the process. The consultant team will support a series of project management activities and meetings.

Deliverables:

- Biweekly check-ins with the CAMPO project management team that will be led by Nelson\Nygaard with sub-consultants included as needed/relevant.
- Monthly check-ins with a CTT, which will be comprised of funding partners and stakeholders.
- Development of a project schedule and communication strategy
- Attendance at up to three TPAC meetings
- Stakeholder coordination and meetings at key project milestones
- Monthly progress reports that include project spending, schedule, portion of fee earned by DBE and other pertinent information agreed upon with CAMPO.

Task 2: Confirm BRT Program Design Guidelines

Nelson\Nygaard will work with CAMPO, the City of Raleigh and the TPAC to review and propose updates to the BRT design guidelines developed by the City of Raleigh to ensure applicability and scalability to future BRT extensions and new BRT corridors. This effort will consider project development and design considerations to create a uniform service standard for Wake Transit Plan funded BRT projects. This effort will be coordinated through the TPAC to gain consensus among project partners and ultimately approval of the updated design guidelines. Elements will include:

BRT Concept of Operations Scope of Work

CAMPO

- Definitions and infrastructure requirements associated with BRT and other high-capacity transit modes. While the primary focus of this study is on the Southern and Western BRT extensions, the project team will evaluate strategies that are replicable for future BRT projects.
- Standard and directive drawings related to BRT and rapid bus station platform, canopy and amenity components, including the minimum conditions and/or thresholds for installation of Wake BRT station typologies.
- Wake BRT technology components including but not limited to transit signal priority (TSP), real time passenger information and vehicle arrival information, off-board ticket vending and fare collection equipment.
- Vehicle specifications for operation within transitways, for speed and reliability infrastructure and at station platforms, as well as compatible onboard technology.
- Operating standards for BRT, rapid bus and local fixed route buses within dedicated transitways or other speed and reliability infrastructure.
- BRT, rapid and local bus stop spacing standards and policy related to desired co-locating of rapid local bus stops with Wake BRT stations.
- Connectivity, scheduling and transfer guidelines between BRT, rapid bus and local fixed route buses.
- Branding used to distinguish "core BRT" services (currently branded as "Go+" by GoRaleigh) from other high-capacity transit solutions.

Deliverables:

- Draft and final BRT program guidelines

Task 3: Scenario Analysis

Nelson\Nygaard will develop a set of up to three unique operating scenarios for each of the two proposed BRT extension corridors. The purpose of these scenarios will be to test the feasibility, costs and benefits of different operational strategies including:

- Different project sponsor and operator, considering differential operating costs and access to a vehicle maintenance and storage facility (MSF).
- Different service designs, i.e., interlining extension service with Wake Transit Plan's core BRT or offer 1-seat ride extension service.
- Different alignment strategies, including end of line/termini locations.
- Stop spacing and the number and location of stops.
- BRT operating technology, including type and deployment of technology (traffic signal priorities, queue jumps lanes) and investment assumptions in passenger information (real-time vehicle arrival system) and fare collection systems.

- Potential use of bus on shoulder systems

The scenario analysis will consider feasibility of different strategies and approaches as well as expected costs and benefits of each system. Cost considerations will include capital and operating costs. Ridership impacts will be determined with Triangle Regional Model (TRM) and the FTA STOPS model, which could provide high level estimates. The Nelson\Nygaard team will adapt the existing regional STOPS model (to be supplied by CAMPO) to develop high-level ridership estimates for up to six scenarios (three per corridor). It is assumed that TRM model estimates will be run by others with service plan inputs provided by Nelson\Nygaard. Other benefits may also be calculated as determined by CAMPO and participating stakeholders.

Deliverables:

- Develop up to three unique operating and capital scenarios
- Evaluate costs and benefits of each scenario
- Technical memo summarizing scenarios, outcomes and recommendations

Task 4: Detailed Operating and Capital Plan

Based on the outcome of the scenario analysis (Task 3), Nelson\Nygaard will develop a draft and final operating plan for the two BRT extension corridors. The operating plan will include:

- Final alignment and turn-by-turns, with the number and location of stops by route and end of line/termini (including access/egress routing).
- Deployment of BRT operating technology, including recommendations of type of technology, locations, cost and benefits (bus on shoulder, traffic signal priorities, queue jumps lanes). The technology analysis will also consider passenger information systems (real-time vehicle arrival system) and fare collection technologies and will coordinate with the Regional Technology Plan that is currently underway and managed by GoTriangle.
- Final operating ridership and cost estimates.
 - Ridership forecasts will be estimated using the STOPS model developed in Task 3. If desired, Nelson\Nygaard will supply the necessary inputs needed to prepare ridership forecasts using the Triangle Region Travel Demand Model (to be done by others).
 - Operating cost estimates will reflect recommended service design, assumed project sponsor, planned schedules and travel time assumptions.
- Final capital cost estimates based on assumed service design, vehicle needs, station assumptions and technology needs.

BRT Concept of Operations Scope of Work

CAMPO

As part of developing the operating plan, Nelson\Nygaard will facilitate interagency coordination for funding and service opportunities such as:

- Utilization of new funding sources, including Clayton-area FTA formula funds for operations and capital.
- Coordination with Garner, Clayton, Cary, Morrisville, GoTriangle and RTP for potential capital investments/operations within jurisdictions.
- Coordination with North Carolina Department of Transportation (NCDOT) to assess the feasibility and extent of Bus on Shoulder System (BOSS) implementation on US 70 given proposed project widening and reconstruction of the facility.
- Transit connectivity, as well as pedestrian safety and circulation improvements included within planned and programmed capital projects (e.g., US 70 at Vandora Springs Road interchange reconstruction; future park and ride at US 70 and NC 42).
- First/last mile shuttle and local circulator services to connect BRT to major activity centers and employment, and residential concentrations offset from the primary alignment. Nelson\Nygaard will work with CAMPO to determine if these costs should be included in the BRT extension plan.

Deliverables:

- Draft and final detailed operating and capital plan

Task 5: Funding and Implementation Plan

The current financial plan for the Southern and Western BRT extensions assumes funding identified in the long-range Wake Transit Plan financial model and \$100M in state funds that are anticipated to be programmed in 2025. It is assumed that federal funding will not be pursued for these corridors.

Nelson\Nygaard will use the estimated capital and operating costs developed in Task 4 to develop an updated financial plan for the Southern and Western BRT extensions and identify potential funding gaps. We will integrate the implementation and funding plan so that steps will work towards both goals, by:

- Using estimated implementation costs and ridership to verify funding capacity
- If necessary, inventorying and creating a detailed strategy for pursuing additional/alternative funding sources
- Preparing a detailed implementation schedule, building on the Wake Transit Plan's experience implementing BRT, recognizing that the two BRT extensions will be more complicated because they cross jurisdictional boundaries and will require additional partner coordination.

BRT Concept of Operations Scope of Work

CAMPO

- Assisting the project sponsor with the Wake Transit Concurrence Process by providing technical assistance and inputs.

Deliverables:

- Funding and Implementation Plan for each corridor and overall system
- Technical inputs needed to facilitate the Wake Transit Concurrence Process

Task 6: Draft and Final Concept of Operations Report

The Nelson\Nygaard team will document and describe draft recommendations for the BRT extension services for review and consideration by CAMPO and project stakeholders. Based on comment and input, Nelson\Nygaard will prepare a final concept of operations to support funding and implementation.

Deliverables:

- Draft and final Concept of Operations Report

Task 7: Contingency

A contingency budget will be established to cover additional services requested by CAMPO throughout the duration of this contract. The CONSULTANT shall not expend funds under this task unless authorized in writing by CAMPO. Potential services that may be funded under this task include but are not limited to:

- Additional ridership model runs beyond those scoped in Tasks 3 and 4 and/or additional modeling assistance
- Additional stakeholder and/or committee meetings (e.g. TPAC, CTT)
- Public engagement assistance, including development of engagement materials and/or event participation

BRT Concept of Operations Scope of Work
CAMPO

Fee Proposal

Task Description	Nelson\Nygaard Labor Costs										Subconsultant Costs										Total Labor Hours	Total Labor Costs	Total Direct Expenses	Total Costs			
	Wittmann, Thomas	Nelson, Daniel	Griffin, Gwendolyn	Kweon, Yonghyeon	Boone, Jenny	Waters, Glen	Johnson, Christopher	Dey, Bibhas Kumar	Project Accountant	Project Manager	Public Involvement Specialist	Deputy Project Manager/Tran	Three Oaks Engineering	Betty White	Mary Kate Moorkian	KHA		Total Subconsultants Labor Hours	Total Subconsultants Labor Costs	Total Labor Hours					Total Labor Costs	Total Direct Expenses	Total Costs
	Senior Principal 2	Principal 3	Associate 3	Associate 2	Senior Associate 2	Principal 3	Principal 3	Associate 3	Project Accountant	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours					Cost	Hours	Cost
	Base Rate	185.73% FY23 Overhead	185.73% Profit	10%	Base Rate	185.73% FY23 Overhead	185.73% Profit	10%	Base Rate	185.73% FY23 Overhead	185.73% Profit	10%	Base Rate	185.73% FY23 Overhead	185.73% Profit	10%	Base Rate	185.73% FY23 Overhead	185.73% Profit	10%					Base Rate	185.73% FY23 Overhead	185.73% Profit
1.0 Project Management and Partner Coordination																											
1.1 Kickoff Meeting	4	4	4						12	2,729.00	2.00			2.00	489.26	2.00		2.00	566.00	4.00	1,055.26	16.00	3,784.26	\$ 3,784.26			
1.2 Biweekly check in	4	12	12						28	5,805.54	6.00			6.00	1,467.78	6.00		6.00	1,698.00	12.00	3,165.78	40.00	8,971.32	\$ 8,971.32			
1.3 CTT Meetings	8	16	16						40	8,534.54	6.00			6.00	1,467.78	6.00		6.00	1,698.00	12.00	3,165.78	52.00	11,700.32	\$ 11,700.32			
1.4 TPAC meetings	8	16	16						40	8,534.54	8.00			8.00	1,957.04	8.00		8.00	2,264.00	16.00	4,221.04	56.00	12,755.58	\$ 12,755.58			
1.5 Stakeholder engagement	8	24	24						56	11,611.08	12.00	12.00	12.00	36.00	7,147.44	10.00	10.00	20.00	4,760.00	56.00	11,907.44	112.00	23,518.52	\$ 23,518.52			
1.6 Progress reports and invoices			6						18	3,427.11	6.00			6.00	1,467.78					6.00	1,467.78	24.00	4,894.89	\$ 4,894.89			
Task Total 1	32	78	72	-	-	-	-	-	194	40,641.80	40.00	12.00	12.00	64.00	13,997.08	32.00	10.00	42.00	10,986.00	106.00	24,983.08	300.00	65,624.88	\$6,900	\$ 72,524.88		
2.0 BRT Program Design Guidelines																											
2.1 Discuss/determine guidelines	4	8							12	3,245.78				-	-			-	-	-	-	12.00	3,245.78	\$ 3,245.78			
2.2 Document Guidelines		16	20					8	44	7,993.57						40.00	40.00	80.00	19,040.00	80.00	19,040.00	124.00	27,033.57	\$ 27,033.57			
Task Total 2	4	24	20	-	8	-	-	-	56	11,239.35	-	-	-	-	-	40.00	40.00	80.00	19,040.00	80.00	19,040.00	136.00	30,279.35	\$0	\$ 30,279.35		
3.0 Scenario Testing																											
3.1 Service designs	8	40	40	24					138	27,799.19				-	-			-	-	-	-	138.00	27,799.19	\$ 27,799.19			
3.2 Alignments	4	16	40	24					84	13,508.98				-	-			-	-	-	-	84.00	13,508.98	\$ 13,508.98			
3.3 Stop Spacing		16	12	24					52	8,743.06	8.00		12.00	20.00	4,519.52					20.00	4,519.52	72.00	13,262.58	\$ 13,262.58			
3.4 Technology Inventory and Benefits		40	24						64	13,339.74	8.00		12.00	20.00	4,519.52	20.00	80.00	100.00	21,100.00	120.00	25,619.52	184.00	38,959.26	\$ 38,959.26			
3.5 Ridership Analysis		8	8	60					216	37,816.09												216.00	37,816.09	\$ 37,816.09			
3.6 Operating and Capital Costs		24	24						48	9,229.63												48.00	9,229.63	\$ 9,229.63			
3.7 Draft and Final Plan	2	8	12					6	28	5,179.95												28.00	5,179.95	\$ 5,179.95			
Task Total 3	14	152	160	132	6	26	40	100	630	115,616.66	16.00	-	24.00	40.00	9,039.04	20.00	80.00	100.00	21,100.00	140.00	30,139.04	770.00	145,755.70	\$0	\$ 145,755.70		
4.0 Capital and Operating Plan																											
4.1 Capital and Operating Plan	2	80	80	80					242	41,696.52				-	-			-	-	-	-	242.00	41,696.52	\$ 41,696.52			
Task Total 4	2	80	80	80	-	-	-	-	242	41,696.52	-	-	-	-	-	-	-	-	-	-	-	242.00	41,696.52	\$0	\$ 41,696.52		
5.0 Funding and Implementation Plan																											
5.1 Funding and Implementation Plan	2	40	40	40					122	21,145.94				-	-			-	-	-	-	122.00	21,145.94	\$ 21,145.94			
5.2 Assist with Wake Transit Concurrence Process	4	8	8						20	4,267.27						8.00	8.00	16.00	3,808.00	16.00	3,808.00	36.00	8,075.27	\$ 8,075.27			
Task Total 5	6	48	48	40	-	-	-	-	142	25,413.21	-	-	-	-	-	8.00	8.00	16.00	3,808.00	16.00	3,808.00	158.00	29,221.21	\$0	\$ 29,221.21		
6.0 Final and Draft Report																											
6.1 Draft Report	4	8	16	16					44	7,355.90				-	-			-	-	-	-	44.00	7,355.90	\$ 7,355.90			
6.2 Final Report	4	4	8	16	8				40	6,636.63				-	-			-	-	-	-	40.00	6,636.63	\$ 6,636.63			
Task Total 6	8	12	24	32	8	-	-	-	84	13,992.53	-	-	-	-	-	-	-	-	-	-	84.00	13,992.53	\$0	\$ 13,992.53			
7.00 Contingency																											
7.10 Contingency										12,631.00														12,631.00	\$ 12,631.00		
Task Total 7	-	-	-	-	-	-	-	-	-	12,631.00	-	-	-	-	-	-	-	-	-	-	-	-	12,631.00	\$0	\$ 12,631.00		
TOTAL HOURS	66	394	404	284	22	26	40	100	1,348	261,231.07	56.00	12.00	36.00	104.00	23,036.12	100.00	138.00	238.00	54,934.00	342.00	77,970.12	1,690.00	339,201.19	\$6,900	\$ 346,101.19		
SUBTOTAL BILLABLE COSTS	19,646.96	101,211.61	51,584.98	36,691.85	3,656.79	6,934.31	11,725.92	15,261.83	1,885.82	261,231.07	13,699.28	1,649.40	7,687.44	23,036.12	28,300.00	26,634.00	54,934.00	77,970.12	339,201.19	\$6,900	\$ 346,101.19						
SUBCONSULTANT MARKUP														1,151.81				2,746.70		3,898.51				\$ 3,898.51			
TOTAL COSTS														24,187.93				57,680.70		81,868.63				\$ 349,999.70			

