

**Table 1. Four-Year Program Summary
AMATS FFY 2015-2018 TIP Administrative Modification 18**

PROJECT LOCATION	FEDERAL FISCAL PROGRAMMING YEAR (Sin Thousands)				4-year total	% of 4-year Non-NHS \$
	October 1 - September 30					
	2015	2016	2017	2018		
Non-National Highway System (Table 3)						
Roadway Improvements without Pavement Replacement Projects	\$12,604	\$19,362	\$13,817	\$13,414	\$59,197	59.3%
Pavement Replacement Projects (Table 10)	\$5,364	\$0	\$3,062	\$7,200	\$15,626	15.7%
	\$17,968	\$19,362	\$16,879	\$20,614	\$74,823	
Non-motorized (Table 4)	\$2,106	\$1,320	\$4,025	\$5,400	\$12,851	12.9%
Congestion Mitigation & Air Quality (Table 5)	\$3,660	\$3,052	\$2,830	\$2,630	\$12,172	12.2%
Non-National Highway System Subtotal for Non-NHS roads, non-motorized & CMAQ projects	\$23,734	\$23,734	\$23,734	\$28,644	\$99,846	100.0%
STIP Non-National Highway System Allocation from ADOT&PF's CTP programs [as of 3/14]	\$23,734	\$23,734	\$23,734	\$28,644	\$99,846	
AMATS CMAQ program set aside [as of 3/14]	\$1,200	\$1,200	\$1,200	\$2,200	\$5,800	
Previously Programmed Projects Utilizing Funding/Deobligations	\$0	\$0	\$0	\$0	\$0	0.0%
STIP Non-NHS Allocation for all projects (including CTP and CMAQ allocation)	\$24,934	\$24,934	\$24,934	\$30,844	\$105,646	
Amount over or (-under) funding allocation level for all Non-National Highway System Projects for roads, non-motorized, CMAQ projects.	\$0	\$0	\$0	\$0	\$0	
Other Funded Projects within the Municipality of Anchorage						
Highway Safety Improvement Program (Table 2)	\$19,536	\$11,799	\$15,167	\$4,665	\$51,167	
National Highway System (Table 6)	\$81,906	\$252,502	\$50,000	\$124,100	\$508,508	
Transit Capital FTA Section 5307 to MOA (Table 7)	\$6,391	\$6,557	\$6,438	\$6,513	\$25,899	
Transit Capital FTA Section 5307 to ARRC (Table 7)	\$3,890	\$3,940	\$4,180	\$4,180	\$16,190	
Transit Capital FTA Section 5337 [State of Good Repair] to ARCC (Table 7)	\$600	\$1,700	\$4,300	\$4,300	\$10,900	
TOTAL PROGRAM ALLOCATION = (Non-NHS + NHS + HSIP Set Aside +AMATS Pave./Bridge Refurbish.+ all FTA 5307, 5337, and 5309)	\$136,057	\$300,232	\$103,819	\$172,402	\$712,510	
Other Federal Funded Projects within AMATS (Table 8)	\$1,145	\$241,045	\$1,045	\$1,465	\$244,700	
National Highway System Improvements Outside AMATS boundaries, but within the MOA (Table 9)	\$5,776	\$159,600	\$71,150	\$23,100	\$259,626	
TOTAL FEDERAL FUNDING For Transportation Improvements within AMATS & the MOA	\$142,978	\$700,877	\$176,014	\$196,967	\$1,216,836	

Notice to MOA Project Managers / Project Sponsors! If your project includes ITS elements and uses funds from the federal highway trust fund, prior to acquisition, construction, or implementation, you must demonstrate compliance with federal Systems Engineering Analysis requirements. Complete the ADOT&PF Systems Engineering Analysis Checklist, link below, and submit to FHWA through ADOT&PF Central Region Planning.

**Table 2. Highway Safety Improvement Program (HSIP)
AMATS FFY 2015-2018 TIP Administrative Modification 18**

	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (\$ in Thousands)						Estimated funding needs after 2020	Est total project cost
			October 1 - September 30							
			2015	2016	2017	2018	2019	2020		
1	Regional High Friction Surface Treatment Project (50% located outside the AMATS boundary)	2015 - C	\$9,200	\$0	\$0	\$0	\$0	\$0	\$0	\$9,200
2	Jewel Lake Road: 88th St to Strawberry TWLTL (Two way left turn lane)	2015 - D 2017 - R 2018 - U/C	\$200	\$1,500	\$8,700	\$0	\$0	\$0	\$0	\$10,400
3	Central Region Sign Assembly Compliance Improvement	2015 - U/C	\$4,074	\$0	\$0	\$0	\$0	\$0	\$0	\$4,074
4	Lake Otis Parkway @ 68th Channelization Improvements	2016 - U/C	\$0	\$435	\$0	\$0	\$0	\$0	\$0	\$435
5	Muldoon Road Channelization Improvements: 11th Court to Boundary Avenue	2015 - C	\$2,766	\$0	\$0	\$0	\$0	\$0	\$0	\$2,766
6	Seward Hwy MP 99-100 Passing Lanes	2015 - C	\$1,080	\$0	\$0	\$0	\$0	\$0	\$0	\$1,080
7	CR Traffic Safety Corridor Left Turn Lanes	2018 - U/C	\$0	\$0	\$0	\$3,870	\$0	\$0	\$0	\$3,870
8	36th Avenue: Arctic Boulevard to C Street 5 Lane Conversion	2015-2016 - C	\$1,991	\$280	\$0	\$0	\$0	\$0	\$0	\$2,271
9	Downtown Curb Bulb / 36th Ave at Latouche / Ingra: 4th Ave to 3rd Ave / 34th Ave at Old Seward Hwy	2016 - U/C	\$0	\$4,388	\$0	\$0	\$0	\$0	\$0	\$4,388
10	Eklutna Overpass Low Bridge Warning	2016 - U/C	\$0	\$811	\$0	\$0	\$0	\$0	\$0	\$811
11	Pedestrian Safety Fencing	2017 - U/C	\$0	\$0	\$2,064	\$0	\$0	\$0	\$0	\$2,064
12	Klatt Rd & Johns Rd Intersection Improvements	2015 - D 2016 - U/C	\$225	\$4,385	\$0	\$0	\$0	\$0	\$0	\$4,610
13	Minnesota / Seward Hwy / Tudor / Muldoon Lighting Improvements	2018 - D/R 2019 - U/C	\$0	\$0	\$0	\$795	\$5,564	\$0	\$0	\$6,359
14	University Medical District Transit and Pedestrian Improvements (possibility of closing the project)	2017 - R/U/C	\$0	\$0	\$1,757	\$0	\$0	\$0	\$0	\$1,757
16	Railroad Crossing Surface Upgrades (80% located outside Municipality)	2017 - D/U	\$0	\$0	\$403	\$0	\$0	\$0	\$0	\$403
17	Tudor Rd at C St and Dimond Blvd at C St - Right Turn Channelization	2017 - D/R 2019 - U/C	\$0	\$0	\$1,175	\$0	\$6,177	\$0	\$0	\$7,352
18	Minnesota Dr Weaving Lane	2017 - D 2019 - U/C	\$0	\$0	\$499	\$0	\$3,519	\$0	\$0	\$4,018
19	Minnesota Dr Guide Sign Upgrades	2017 - D/U/C	\$0	\$0	\$569	\$0	\$0	\$0	\$0	\$569
Total			\$19,536	\$11,799	\$15,167	\$4,665	\$15,260	\$0	\$0	\$66,427

Table 3. Roadway Improvements
AMATS FFY 2015-2018 TIP Administrative Modification 18

	STIP Need ID #	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)						Estimated funding needs after 2020	Est total project cost 2015-2020
				October 1 - September 30							
				2015	2016	2017	2018	2019	2020		
Constructing	8499	Dowling Road Extension West/Reconstruction [Minnesota Drive to Old Seward Highway] - Connect Minnesota to 'C' Street and continue to Dowling Road. Location and size of improvements to be determined. Project will be built in phases. Phase I consisting of section from C Street to Old Seward Highway. Phase II also includes \$6.8M in earmark funding shown in Table 8 and \$6.9M identified in the STIP . FFY16 was updated to reflect funding required to cover overruns for active construction project.	2015 - U/C	\$1,672	\$0	\$0	\$0	\$0	\$0	\$0	\$1,672
Constructing	2299	Eagle River Road Rehabilitation [MP 5.3 to MP 12.6] - Upgrade the road with widened shoulders, improved visibility, and replacement. No landscaping improvements recommended. FFY17 was updated to reflect funding required to cover overruns for active construction project.	2015 - U/C	\$1,671	\$0	\$512	\$0	\$0	\$0	\$0	\$2,183
G	2159	O'Malley Road Reconstruction [Seward Highway to Hillside Drive] - Reconstruct the roadway to improve safety and capacity at intersections and improve pedestrian facilities and 3 lane section east of Lake Otis Pkwy, and 5 lane section between Seward Hwy and Lake Otis Pkwy. Landscaping @ 5% of Construction \$ = to be determined. \$1.0M in Design and \$4.3M ROW funding for Phase I in 2015. \$500,000 ROW in 2016 for Phase II. \$12.2M in U/C funding for Phase I in 2017 is A/C into 2016 for a total of \$26.7M. Phase I will receive additional funds of \$4.2M from FFY 2013 GO Bond or other non-AMATS sources of funding such as NHPP or statewide STP funds. Phase II is funded with the remainder of the FFY 2013 GO Bond supplemented by TIP funds.	2015 - D/ROW 2016 - ROW/U/C 2017 - U/C 2018 - C/ROW	\$5,255	\$14,504	\$12,200	\$500	\$9,500	\$12,000	\$0	\$44,469
G	2174	Abbott Road Rehabilitation - Phase I [Lake Otis Parkway to Jupiter Drive] - Project will increase from 2 to 4 lanes and improve intersections and pedestrian facilities. Project recommended to be developed as 3R per ADOT's Pre-Construction Manual. \$8.8M in U/C funding is A/C from 2016 into 2015 for a total of \$12.0M.	2015 - U/C	\$3,156	\$8,822	\$0	\$0	\$0	\$0	\$0	\$11,978
G	2174	Abbott Road Rehabilitation - Phase II [Elmore Road to Birch Road] - project will widen the roadway, add a center two-way-left-turn lane, and construct intersection and pedestrian amenities.	2018 - U/C	\$0	\$0	\$0	\$12,304	\$0	\$0	\$0	\$12,304
	19497	Pavement Replacement Program - This program will provide a single funding source for several pavement overlay and/or replacement projects. Improvements are also expected to include ADA and some existing curb and sidewalk repair. May include those projects listed in Table 10 or other priorities. FFY17 includes \$1,172,000 funding for construction overrun on Eagle River Road 0.0 to 5.3 Pavement Preservation.	2015-2018 Programming	\$5,364	\$0	\$3,062	\$7,200	\$2,500	\$2,500	\$2,500	\$23,126
	19497	<i>Pavement Replacement Program - This program will provide a single funding source for several pavement overlay and/or replacement projects. Improvements are also expected to include ADA and some existing curb and sidewalk repair. May include those projects listed in Table 10 or other priorities. Illustrative funding is shown to allow project to advance if funds become available.</i>	2015-2018 Programming Illustrative	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
1	16582	Spenard Road Rehabilitation [Minnesota Dr to Benson Blvd] - Project will rehabilitate to improve traffic flow. Includes Spenard Rd/36th Ave couplet.	2018 - PE	\$0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$1,000
2	29249	Spenard Road Rehabilitation [Hillcrest to Benson] - Project will rehabilitate to improve traffic flow to improve circulation and access. New pedestrian facilities are recommended.		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Table 3. Roadway Improvements
AMATS FFY 2015-2018 TIP Administrative Modification 18

	STIP Need ID #	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)						Estimated funding needs after 2020	Est total project cost 2015-2020
				October 1 - September 30							
				2015	2016	2017	2018	2019	2020		
3	29250	Minnesota Drive Mobility and Safety Study [Westchester Lagoon to Seward Highway] - Project will identify opportunities to reduce congestion and improve safety for corridor users. Study will also evaluate interchange and signal alternatives on Minnesota Drive at New and Old Seward Highways.	2016 - Study	\$0	\$150	\$0	\$0	\$0	\$0	\$0	\$150
4	29251	Spenard Road Corridor Strategic Plan - Project will present transportation and land use policies and design solutions that accommodate existing and future traffic volumes, enhance vehicle access, promote pedestrian connectivity and safety, present parking solutions, and integrate land use with transportation options. The plan will direct implementation actions that focus on capital improvements throughout the corridor.	2015 - Study	\$250	\$0	\$65	\$0	\$0	\$0	\$0	\$315
5	29252	Glenn Highway Integrated Corridor Management Study [ICM] - Project will produce a final Concept of Operations for a comprehensive ICM approach to the Glenn Highway operations, to address traffic congestion, including congestion caused by crashes.	2017 - Study	\$0	\$0	\$200	\$0	\$0	\$0	\$0	\$200
6	29253	Ingra Gambell Couplet Extension reconnaissance study - Project will look at extension of Ingra and Gambell Streets to Ship Creek Avenue and Whitney Road. Project will study project area emphasizing implementation actions related to access, circulation, and freight mobility.	2017 - Study	\$0	\$0	\$200	\$0	\$0	\$0	\$0	\$200
7	29254	C Street Ocean Dock Road Access Ramp Reconnaissance Study - Project will look at reconstruction and redesign of C Street bridge/Port Exit (Ocean Dock Road) Access ramp in both directions and offer recommendations related to safety, maintenance, and freight mobility improvements.	2015 - Study	\$0	\$250	\$0	\$0	\$0	\$0	\$0	\$250
8	29255	Rabbit Creek Reconstruction (Seward Highway to Goldenview Drive) - Project would construct center lane, sidewalk, and pathway to increase capacity.	2018 - PE	\$0	\$0	\$0	\$0	\$0	\$0	\$15,000	\$15,000
9	29256	Birch Road Rehabilitation (Huffman Road to Abbott Road) - Project will rehabilitate pavement, including adjoining multi-use pathway and fix subsurface issues.	2018-19 - PE	\$0	\$0	\$0	\$0	\$1,000	\$0	\$0	\$1,000
	19518	Safety Improvement Program (Traffic Count Support) - Collect traffic data within the AMATS area completed by the ADOT&PF Central Region Highway Data Section and MOA Traffic Department Data Section.	2015-18 Programming	\$600	\$675	\$640	\$610	\$495	\$500	\$505	\$4,025
		The contingency list of projects for each year will consist of the following year's projects.	ANNUAL TOTALS	\$17,968	\$19,362	\$16,879	\$20,614	\$5,005	\$15,000	\$18,005	\$112,833
		STIP ALLOCATIONS FOR ALL TYPES OF NON-NHS PROJECTS [as of March 2014] = CTP.		\$23,734	\$23,734	\$23,734	\$28,644	\$24,955	\$24,955	\$0	\$149,756
		Approximate percentage (%) for roadways		53%	82%	58%	47%			<i>4-year average</i>	60%
		Approximate percentage (%) for pavement replacement projects		23%	0%	13%	25%			<i>4-year average</i>	15%

**Table 4. Non-Motorized
AMATS FFY 2015-2018 TIP Administrative Modification 18**

	STIP Need ID's	Project #	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)						Estimated funding needs after 2020	Est total project cost
					October 1 - September 30							
					2015	2016	2017	2018	2019	2020		
G	26628	56083/ 56092	Bicycle Plan Project Implementation - Project would sign, stripe, and mark bike lanes or shoulders on existing roadways within the AMATS boundary area to create a safe, connected network of bicycle facilities as identified in the Anchorage Bicycle plan. Project consists of nominated projects Core Bicycle Network Phase I-III.	2015-18 Programming	\$1,103	\$602	\$1,099	\$1,400	\$0	\$0	\$0	\$4,204
G	26629	57574/ 57575	Pedestrian Plan Project Implementation - Project would improve pedestrian safety and construct missing links as identified in 2007 Anchorage Pedestrian Plan. FFY16 funded with non-AMATS sources.	2015-18 Programming	\$203	\$1,010	\$216	\$0	\$0	\$0	\$0	\$1,429
1	29257		Dimond Center Pedestrian and Transit Improvements - multiphase effort focusing on pedestrian, bicycle, transit and travel way improvements. Primary improvements includes sidewalk connectivity, bicycle infrastructure, pedestrian and bicycle	2015 - D/C	\$800	\$0	\$0	\$0	\$0	\$0	\$0	\$800
2	29258	58464	Anchorage Areawide Trails Rehabilitation - Project will analyze existing pathways for rehabilitation needs community-wide and promote specific projects to rehabilitate those existing pathways. The scope is primarily expected to include pavement replacement with a focus on trails that form the Anchorage Bicycle Plan Core Bicycle Network.	2015-18 - D/U/C	\$0	\$718	\$2,710	\$4,000	\$500	\$500	\$0	\$8,428
3	29259		Implement Bike Plan - Multi use path on Benson between Lois Drive and Minnesota Boulevard - project would construct multi-use path between Lois Drive and Minnesota Boulevard.	2017 - D/C	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	29260		Implement Bike Plan - Multi use path on O'Malley Road - project constructs multi-use path on O'Malley Road between Old Seward Highway and C Street.	2018 - D/C	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	29261		Implement Bike Plan - sign existing bike network.	2018 - Implementation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
			The contingency list of projects for each year will consist of the following year's projects.	Section Totals	\$2,106	\$1,320	\$4,025	\$5,400	\$500	\$500	\$0	\$13,851
			STIP ALLOCATIONS FOR ALL TYPES OF NON-NHS PROJECTS [as of March 2014] = CTP		\$23,734	\$23,734	\$23,734	\$28,644	\$24,955	\$24,955	6 year total=	\$149,756
			Approximate percentage (%) for all Non-Motorized projects		9%	6%	17%	19%	2%	2%	4-year Avg=	12.9%

**Table 4a. Transportation Alternatives Program
AMATS FFY 2015-2018 TIP Administrative Modification 18**

STIP Need ID's	Project #	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (Sin Thousands)			Est total project cost
				October 1 - September 30			
				2016*	2017*	2018*	
30711		Vision Zero Program - Project will study and inventory existing conditions; begin a process of education and citizen engagement; institute new municipal policies and means of enforcement; provide improvements to transit facilities; fund a Safe Routes to School program coordinator; update the Anchorage Bike Plan, Anchorage Pedestrian Plan, and Anchorage Trails Plans; and start a smart lighting project.	2016 - 2017 Programming	\$990	\$150	\$0	\$1,140
30710		Multi-Modal Volume Counters - Project will purchase multi-modal counters and provide reporting capabilities with the goal of assessing areas in regards to: travel demand, route identification, traffic patterns, and seasonal use to include vehicles, bicyclists, pedestrians, and other non-motorized forms of transportation.	2016 - Programming	\$486	\$0	\$0	\$486
30709		Bike Sharing Education Trailer Program - Project will purchase a bicycle fleet and transportation trailers for a bicycle sharing education program used by the Anchorage School District (ASD) Physical Education Department to instruct studies in grades K-8 on bicycle safety, rider skills and encourage the use of bicycles as transportation.	2016 - Programming	\$170	\$0	\$0	\$170
30712		Westchester Lagoon Trail Rehabilitation - Project will rehabilitate the existing Westchester Lagoon pathway between Spenard Road and Arctic Boulevard. Will include trailhead and parking lot replacement.	2018 - C	\$0	\$0	\$588	\$588
30713		Chugach Foothills Connector, Phase II - Project will construct a multi-use path on Tudor Road between Regal Mountain Drive and Campbell Airstrip Road.	2018 - D	\$0	\$0	\$332	\$332
31209		AMATS Fish Creek Trail Rehabilitation - Project will rehabilitate the Fish Creek trail from Turnagain Blvd to Kona Lane.	2017 - C	\$0	\$1,125	\$0	\$1,125
31210		AMATS Mountain View Drive Pathway Reconstruction - Project will reconstruct a multi-use pathway connecting Peterkin Avenue with Mountain View Drive between Bliss Street and North Bunn Street.	2018 - D/ROW	\$0	\$0	\$229	\$229
			Section Totals	\$1,646	\$1,275	\$1,149	\$4,070

*Programmed amounts includes a 20% match.

**Table 5. Congestion Mitigation Air Quality (CMAQ)
AMATS FFY 2015-2018 TIP Administrative Modification 18**

STIP Need ID's	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (in Thousands)						Estimated funding needs after 2020	Est total project cost	
			October 1 - September 30								
			2015	2016	2017	2018	2019	2020			
SIP-Mandated Projects and Programs											
1	9299	Anchorage Ridesharing/Transit Marketing - This project funds the Municipal Share-A-Ride program which promotes, subsidizes, and contract manages an area-wide vanpool commuter service; and a comprehensive public transportation marketing effort.	2015-18 Programming	\$900	\$900	\$900	\$900	\$900	\$900	\$900	\$6,300
2	9299	Air Quality Public & Business Awareness Education Campaign - The goal of this program is to further inform the public about air quality issues and what steps people may take to reduce pollution.	2015-18 Programming	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$2,100
			Section Totals	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$8,400
STIP Non-National Highway System Allocation from ADOT&PF's CMAQ program [as of 3/14]				\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$8,400
Studies and Plans											
1	29129	Consolidated Municipality of Anchorage MTP - Funding for the consolidated Municipality of Anchorage Metropolitan Transportation Plan.	2020 - Plan	\$0	\$292	\$0	\$0	\$0	\$1,000	\$0	\$1,292
2	29262	Midtown Transit Facility - Phase I will analyze location alternatives, site suitability and route restructuring for a midtown Transit facility. Phase II is the construction of the Midtown Transit Facility based on the recommendations of the study in Phase I.	2015 - Study	\$0	\$0	\$0	\$0	\$8,000	\$0	\$0	\$8,000
			Section Totals	\$0	\$292	\$0	\$0	\$8,000	\$1,000	\$0	\$9,292
Programs											
1	24819	Arterial Roadway Dust Control - Magnesium chloride (MgCl2) dust palliative will be applied to approximately 70 miles of high volume State and Municipal roadways prior to and after spring sweeping. FFY16 funded with non-AMATS sources.	2015-18 Implementation	\$200	\$200	\$200	\$200	\$0	\$0	\$0	\$800
2	18126	Traffic Control Signalization - Program would provide proactive efficiencies with better/more updated signal timing plans to address intersection congestion and improve air quality. Funding supports development of Traffic Management Center and emergency vehicle and low priority transit signal preemption. FFY16 funded with non-AMATS sources.	2015-18 Programming	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$2,450
3	19457	Bus Stop & Facility Improvements - This projects funds the upgrade of bus stop sites to meet both the federally mandated Americans with Disabilities Act [ADA] requirements and the operational needs. Typical improvements include bus shelters, benches, trash receptacles, landscaping, grading, pacing, utility relocations, lighting, curb adjustments, drainage, constructing paths, and construction/reconstruction of turnouts. Table 5 of CMAQ funds supplement FTA funds in projects 4 on Table 7. FFY15 amount includes \$510,000 from FFY14 that will be transferred to FTA in FFY15. FFY16 funded with non-AMATS sources.	2015-18 Implementation	\$2,220	\$210	\$210	\$210	\$210	\$210	\$210	\$3,480
4	29263	Multimodal trip planner and smartphone application - project will provide for operation of multimodal trip planner and smartphone app to provide carpool, vanpool, and bicycle commuter matching, transit and shuttle schedules, and multimodal directions.	2016-18 Implementation	\$0	\$0	\$70	\$70	\$70	\$0	\$0	\$210
			Section Totals	\$2,770	\$760	\$830	\$830	\$630	\$560	\$560	\$6,940
Programs											
1	14519	Transit Fleet Expansion/Replacement Operations - This project provides funding for replacement, expansion and potential operational funds of the public transportation fleet. The fleet consists of 40' buses, vanpool vehicles, and AnchorageRIDES paratransit vehicles. Vanpool and AnchorageRIDES vehicles have a useful life of 4-years, People Mover buses have a 12-year useful life cycle. Based on the People Move Blueprint and the 2035 MTP, fleet expansion, service and operations are needed to grow the system annually. FFY15 amounts includes \$1,825,000 from FFY14 that will be transferred to FTA in FFY15. FFY16 funded with non-AMATS sources.	2015-18 Purchase	\$3,225	\$2,000	\$2,000	\$1,800	\$10,000	\$1,000	\$1,000	\$21,025
			Section Totals	\$3,225	\$2,000	\$2,000	\$1,800	\$10,000	\$1,000	\$1,000	\$21,025
The contingency list of projects for each year will consist of the following year's projects.			ANNUAL TOTALS	\$3,660	\$3,052	\$2,830	\$2,630	\$18,630	\$2,560	\$1,560	\$37,257
STIP ALLOCATIONS FOR ALL TYPES OF NON-NHS PROJECTS [as of March 2014] = CTP				\$23,734	\$23,734	\$23,734	\$28,644	\$24,955	\$24,955	6 year total=	\$149,756
Approximate percentage (%) for all Congestion Mitigation/Air Quality (CMAQ) projects				15%	13%	12%	9%	75%	10%	4-year Avg=	12.2%

Notice to MOA Project Managers/Project Sponsors! If your project includes ITS elements and uses funds from the federal highway trust fund, prior to acquisition, construction, or implementation, you must demonstrate compliance with federal Systems Engineering Analysis requirements. Complete the ADOT&PF Systems Engineering Analysis Checklist and submit to FHWA through ADOT&PF Central Region Planning.

**Table 6. National Highway System (NHS)
AMATS FFY 2015-2018 TIP Administrative Modification 18**

	STIP Need ID's	Project #	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)				Estimated funding needs after 2018	Est total project cost
					October 1 - September 30					
					2015	2016	2017	2018		
1	2201 2202	52503 50816 53626	Seward Highway [Rabbit Creek Road to 36th Avenue]- Analyze and identify needed transportation improvements in the Seward Highway corridor, between Rabbit Creek and 36th Avenue Improvements to be considered may include, but are not limited to: widening from four to six lanes; modify existing interchanges; grade separation at 36th Ave; extend western frontage road between Dimond Blvd; and O'Malley Road; overcrossings at International Airport Road, 68th, 76th, and 92nd Avenues; and pedestrian and bike facilities. The initial phase will construct an additional travel lane on the Seward Highway in both the North and South directions between Dimond Blvd. and Tudor Road interchanges. This work will include adjusting on and off ramp geometry and drainage modifications.	2015+ - D/U/C	\$12,750	\$77,790	\$20,000	\$56,000	\$76,430	\$242,970
2	26793		Seward Highway: Midtown Congestion Relief including 36th and Seward Intersection - Connect Anchorage Initiative: Project will design, acquire right-of-way and construct improvements to the Seward Highway through midtown Anchorage, from Tudor Road to 20th Avenue. Project includes the grade separation at 36th Avenue. FFY13 GO Bond funding = \$26M, GF funding = \$10M	2018+ - All Phases	\$0	\$0	\$0	\$6,000	\$200,000	\$206,000
3	27470		Glenn Hwy/Muldoon Road Interchange Reconstruction - Reconstruct interchange at Muldoon and Glenn Highway.	2015 - D 2016 - U/C	\$3,387	\$48,461	\$0	\$0	\$0	\$51,848
4	27249		5th and 6th Avenue Repaving - Resurface 5th & 6th Avenue from L Street to Ingra Street and improve curb ramps to meet ADA standards. The scope does not include landscaping or other elements inconsistent with a pavement preservation focus.	2015 - U/C	\$4,050	\$0	\$0	\$50	\$4,050	\$8,150
5	27250 28290		Ingra Street and Gambell Street Repaving - Resurface Ingra Street and Gambell Street from 5th Avenue to 36th Avenue and improve curb ramps to meet ADA standards. The scope does not include landscaping or other elements inconsistent with a pavement preservation focus.	2015 - C	\$0	\$0	\$0	\$0	\$0	\$0
6	27472		Glenn Highway, Hiland Road to Artillery Road Reconstruction - Add a 3rd lane to both northbound and southbound Glenn Highway. Improvements at Hiland Road and Artillery Road Interchanges on the Glenn Highway. Replace Eagle River bridges with capacity for pathway and future HOV lanes. First construction phase will be northbound improvements. FFY 2013 GO Bond funding = \$35M.	2015-2018+ - D/U/C	\$0	\$0	\$0	\$0	\$0	\$0
7	28290	TBD	Anchorage Area Principal Arterial Pavement Resurfacing and ADA Compliance - This Preventative Maintenance project will extend the service life of Principal Arterials and improve curb ramps to meet ADA standards. The scope does not include landscaping or other elements inconsistent with a pavement preservation focus. Initial phase includes auditing State roads as part of resurfacing efforts to determine ADA compliance and identify those issues that can be resolved. Prioritization and construction of needed ADA improvements will be identified per audit.	2015 - D/Planning 2016 - All Phases 2018+ - All Phases	\$20,766	\$0	\$0	\$0	\$9,150	\$29,916
8	29733		Glenn Highway: Airport Heights to Hiland Road Pavement Preservation - This project will resurface the Glenn Highway from Airport Heights to Hiland Road.	2017 - U/C	\$0	\$0	\$10,000	\$0	\$0	\$10,000
The contingency list of projects for each year will consist of the following year's projects. (Note: Table is not shown in priority order. These projects have no been ranked by AMATS.)					\$40,953	\$126,251	\$20,000	\$62,050	\$289,630	\$538,884
The contingency list of projects for each year will consist of the following year's projects. (Note: Table is not shown in priority order. These projects have no been ranked by AMATS.)					\$81,906	\$252,502	\$50,000	\$124,100	\$579,260	\$1,087,768

**Table 7. Transit
AMATS FFY 2015-2018 TIP Administrative Modification 18**

	STIP Need ID's	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (in Thousands)							Estimated funding needs after 2020	Est total project cost
				October 1 - September 30								
				Carryover	2015	2016	2017	2018	2019	2020		
1	19458	Preventative Maintenance/Capital Maintenance - FTA [Federal Transit Administration] allows grantees to use capital funds for overhauls and preventative maintenance. FTA assistance for those items is based on a percentage of annual vehicle maintenance costs.	2015 - 2018 - Implementation	\$0	\$4,413	\$3,834	\$4,182	\$4,413	\$4,413	\$4,413	\$4,413	\$30,081
2	19462	Fleet Replacement/Expansion - This project funds the fleet expansion and replacement for the AnchorRIDES paratransit service, as well as the fixed route fleet.	2015 - 2018 - Implementation	\$0	\$250	\$0	\$0	\$0	\$0	\$0	\$0	\$250
3	19464	ADA Complementary Paratransit Services - Costs associated with ADA paratransit programs are eligible for this funding. The project funds the ADA paratransit eligibility process with a transportation skills assessment and a travel training program for people who could benefit from individualized instruction regarding how to independently ride People Moved buses. May also be used to purchase AnchorRIDES trips.	2015 - 2018 - Implementation	\$0	\$500	\$142	\$0	\$500	\$500	\$500	\$500	\$2,642
4	19457	Bus Stop Improvements/1% Section 5307 Transit Improvements - This project funds the upgrade of bus stop sites to meet both the federally-mandated Americans with Disabilities Act [ADA] requirements and the operational needs. Typical improvements include bus shelters, benches, trash receptacles, landscaping, grading, paving, utility relocations, lighting, curb adjustments, drainage, constructing paths, and construction/reconstruction of turnouts. Table 7 FTA funds supplement CMAQ funds in program 4 in Table 5.	2015 - 2018 - Implementation	\$0	\$200	\$277	\$0	\$250	\$250	\$250	\$250	\$1,477
5	19463	ITS/Automated Operating System/Management Information Systems - This projects funds information systems necessary for efficient management of the public transportation system. Typical projects include: Geographical Information Systems [GIS] capabilities, upgrades to the automated maintenance system, refueling, and inventory system; a new computerized dispatch system; and upgrades to the scheduling/run-cutting process, customer information and telephone communications system, and desktop computers. This project also funds staff and capital resources to provide project oversight and capital for ITS for all modes of public transportation services. Provide day to day operational support to all ITS projects.	2015 - 2018 - Implementation	\$0	\$170	\$1,500	\$222	\$200	\$200	\$200	\$200	\$2,692
6	19459	Fleet Improvement/Support Equipment/Support Vehicle - This project funds improvements to existing transit and paratransit fleets. Typical projects include a ticket reader and issue attachment, which issues passenger passes on the bus; security systems; transit/signal improvements for headway enhancements; mechanical equipment and other improvements for facilities; mobile display terminals' and vehicle communications, radios and locations systems. This project also funds the purchase of replacement vehicles and equipment to support operation of the transit system. Typical purchases include pickup racks, maintenance trucks with special equipment, supervisor vehicles, shift change vehicles, fork lifts, sweepers, and bus access snow removal equipment.	2015 - 2018 - Purchase	\$0	\$270	\$0	\$1,232	\$200	\$200	\$200	\$200	\$2,302
7	19456	Transit Planning Program - To include on-board and attitudinal surveys for FTA required reporting (Triennial Review, Title VI, Fare Equity, Environmental Justice, Affirmative Action) and other transit planning activities and documents.	2015 - 2018 - Implementation	\$0	\$25	\$0	\$0	\$0	\$0	\$0	\$0	\$25
8	29264	Transit Centers/Support Facilities - This project supports an on-going effort to provide major transit facilities include, but not limited to town centers and major destinations. The Anchorage 2020 and the 2035 MTP identified a network of Town Centers intended to function as focal points for community activities with a mix of retail, residential, and public services and facilities, and with pedestrian connections to surrounding neighborhoods and transit. Existing and future facility improvements in Midtown, Downtown, and U-Med, Dimond Center and Muldoon areas are vital to the implementation of these community planning documents.	2016 - 2018 - Implementation	\$0	\$25	\$0	\$0	\$0	\$0	\$0	\$0	\$25
		Operating Assistance - Section 5307 operating assistance for fixed route, demand responsive, and/or Microtransit public transit service.	2018- Implementation	\$0	\$0	\$0	\$0	\$148	\$148	\$148	\$148	\$592
		subtotal FTA Section 5307 & 5340		\$0	\$5,853	\$5,753	\$5,636	\$5,711	\$5,711	\$5,711	\$5,711	\$40,086
		MAP-21 Section 5310 Enhanced Mobility of Seniors & Individuals w/ Disabilities		\$0	\$0	\$208	\$207	\$207	\$207	\$207	\$207	\$1,243
		MAP-21 Section 5339 Bus and Bus Facilities Program Replace, rehabilitate and purchase buses and related equipment and conduct bus-related facilities.		\$0	\$538	\$596	\$595	\$595	\$595	\$595	\$595	\$4,109
		subtotal FTA section 5307, 5310, 5316, 5317, 5340 Transit funding to the MOA		\$0	\$6,391	\$6,557	\$6,438	\$6,513	\$6,513	\$6,513	\$6,513	\$45,438

Table 7. Transit
AMATS FFY 2015-2018 TIP Administrative Modification 18

	STIP Need ID's	PROJECT LOCATION	PROJECT PHASING PLAN	FEDERAL FISCAL PROGRAMMING YEAR (in Thousands)							Estimated funding needs after 2020	Est total project cost
				October 1 - September 30								
				Carryover	2015	2016	2017	2018	2019	2020		
		Alaska Railroad - FTA Section 5307 (Rail Tier) Funds										
10		1% Transit Security on the Alaska Railroad Corporation projects	2015 - 2018 - Implementation	\$120	\$120	\$120	\$150	\$150	\$150	\$150	\$150	\$990
11		Preventive Maintenance - This project partially funds statewide maintenance costs of passenger vehicle railcars and locomotives. Preventive maintenance is defined as all activities, supplies, materials, labor, services and associated costs required to preserve or extend the functionality and serviceability of the asset.	2015 - 2018 - Implementation	\$2,420	\$3,450	\$3,500	\$3,500	\$3,500	\$500	\$3,500	\$3,500	\$21,450
12		1% Associated Transit Enhancements - can include benches, landscaping, and other transit related amenities.	2015 - 2018 - Implementation	\$120	\$120	\$120	\$130	\$130	\$135	\$135	\$140	\$1,030
13		Track Rehab - Rail and tie rehabilitation within AMATS boundaries.	2015 - 2018 - Implementation	\$358	\$200	\$200	\$400	\$400	\$700	\$400	\$400	\$3,058
	31091	Radio System - Replace and/or upgrade radio system equipment and communication components.	2018 - Implementation	\$0	\$0	\$0	\$0	\$290	\$400	\$350	\$0	\$1,040
		<i>subtotal FTA Section 5307 (Rail Tier) Transit funding to Railroad</i>		\$3,018	\$3,890	\$3,940	\$4,180	\$4,180	\$1,885	\$4,535	\$4,190	\$26,528
		Alaska Railroad - FTA Section 5337 (State of Good Repair) Funds										
14		Track Rehab - Rail and tie rehabilitation within AMATS boundaries.	2015 - 2018 - Implementation	\$430	\$100	\$0	\$400	\$400	\$400	\$400	\$400	\$2,100
15		Preventive Maintenance - This project partially funds statewide maintenance costs of passenger vehicle railcars and locomotives. Preventive maintenance is defined as all activities, supplies, materials, labor, services and associated costs required to preserve or extend the functionality and serviceability of the asset.	2015 - 2018 - Implementation	\$415	\$500	\$1,700	\$3,900	\$3,900	\$2,000	\$3,900	\$3,600	\$19,500
		<i>subtotal FTA Section 5337 (SGR) funding to Railroad</i>		\$845	\$600	\$1,700	\$4,300	\$4,300	\$2,400	\$4,300	\$4,000	\$21,600
		Alaska Railroad - FTA Section 5337 (SGR) Funds		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		<i>subtotal FTA Section 5337 funding to Railroad</i>		\$845	\$600	\$800	\$4,300	\$4,300	\$2,400	\$4,300	\$4,000	\$21,600
		<i>subtotal FTA Sections 5307 (Rail Tier) & 5337 Transit funding to ARRC</i>		\$3,863	\$4,490	\$5,640	\$8,480	\$8,480	\$4,285	\$8,835	\$8,190	\$48,128
		Total Transit Program (FTA {5307+5337})		\$3,863	\$10,881	\$12,197	\$14,918	\$14,993	\$10,798	\$15,348	\$14,703	\$93,566
		<i>The Municipality of Anchorage's Transportation Improvement Program (TIP) process is used to satisfy the public participation process of the Program of Projects (POP) that is required in U.S.C. Section 5307. The POP as presented is the proposed Program of Projects and will also be the final Program of Projects unless amended.</i>										

Table 8. Other Federal, State, and Local Funded Projects within the AMATS Area
AMATS FFY 2015-2018 TIP Administrative Modification 18

STIP Need ID's	PROJECT LOCATION	PROJECT PHASING PLAN	Funding Source	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)							Estimated funding needs after 2020	Est total project cost	
				October 1 - September 30									
				Carryover	2015	2016	2017	2018	2019	2020			
1	Anchorage Port Modernization Project (APMP). The \$240M shown in 2016 for the Anchorage Port Modernization Project reflects the state bond request to the Alaska Legislature in 2016.		State GF GO Bond	\$108,000	\$0	\$240,000	\$0	\$0	\$0	\$0	\$0	\$0	\$348,000
2	12259 Recreational Trails for Alaska - This program provides funding for various small recreational trail projects statewide. The program is administered by ADNR.	2015-2018 Programming	RTP		\$45	\$45	\$45	\$1,465	\$45	\$45	\$0	\$0	\$1,690
3	19469 Rail Extensions, signalization and remotely controlled power switches.	2015-2018 Programming	FRA		\$1,000	\$1,000	\$1,000	\$0	\$0	\$0	\$0	\$0	\$3,000
4	20255 Knik Arm Crossing Access Connections - Design and construct approximately 2.5 miles of roadway behind the Port of Anchorage from the Northern terminus of the planned port expansion south through Government Hill and connecting to the A/C couplet to serve as an alternative access to the port and a primary access to the planned Knik Arm Crossing.				\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	20256 Knik Arm Crossing Toll Financed Bridge Facilities - Design and construct a bridge across Knik Arm between Anchorage and Mat-Su Borough and a connecting roadway between northern terminus of the planned Port of Anchorage expansion and the Bridge and a connecting roadway between the Point Mackenzie Road and the bridge. This is project 2 of 3 supporting the EIS known as the Knik Arm Crossing. See need ID 20254 (completed) and 20255				\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	19482 AK094 & AK105 - Construction & Road Improvements @ APU. This project is not included in the Air Quality conformity analysis for the 10-13 TIP.	2015-2018 Programming	Earmark	\$4,794	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,794
7	19485 AK149 & AK158 - Dimond Center Intermodal Parking Facility - upgrade existing transit center, including but not limited to design, engineering, permitting and construction.	FTA direct transfer to MOA	Earmark	\$3,292	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,292
9	26849 People Mover Maintenance Facility Roof Replacement - FTA State of Good Repair grant to replace the aging, leaking, poorly insulated roof of the People Mover maintenance facility.	2012 - C	FTA Grant	\$2,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,400
10	27429 People Mover Veterans Transportation Community Living Initiative - project will develop a travel options application for mobile devices.	2012 - programming		\$120	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$120
11	People Mover State of Good Repair Vehicle Replacement- project will replace 3 buses and 10 paratransit vehicles. [Federal share only]		FTA Grant	\$1,304	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,304
12	People Mover Transportation, Community, and System Preservation Program Winter City Pedestrian Safety & Bus Stop Improvements- project will improve safety, accessibility, and maintenance of existing pedestrian facilities and bus stops during winter months. [Federal share only]		FHWA Grant	\$280	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$280
15	Campbell Tract Facility Alternate Entrance Alignment	2015 - PE	FLAP		\$100	\$0	\$0	\$0	\$250	\$0	\$0	\$0	\$350
TOTALS - Other Federally or State funded Improvements within the AMATS Area - (Note: Table is not shown in priority order. These projects have not been ranked).				\$120,190	\$1,145	\$241,045	\$1,045	\$1,465	\$295	\$45	\$0	\$0	\$365,230
TOTALS - Other Federally or State funded Improvements within the AMATS Area - (Note: Table is not shown in priority order. These projects have not been ranked).				\$120,190	\$1,145	\$241,045	\$1,045	\$1,465	\$295	\$45	\$0	\$0	\$365,230

**Table 9. NHS/Non-NHS Improvements outside AMATS within the MOA
AMATS FFY 2015-2018 TIP Administrative Modification 18**

	STIP Need ID's	PROJECT LOCATION	PROJECT PHASING PLAN	Funding Source	FEDERAL FISCAL PROGRAMMING YEAR (\$in Thousands)					Estimated total funding needs after 2018	Estimated total project cost
					October 1 - September 30						
					Carryover	2015	2016	2017	2018		
1	11439	Whittier Tunnel: Maintenance and Operations - Federal-aid eligible portion of Whittier tunnel and approaches, maintenance and operations.	2015-2018 - C	NHS / STP	\$0	\$2,600	\$2,600	\$2,600	\$2,600	\$2,600	\$13,000
2	11925	Seward Highway - MP 75-90 Ingram Creek to Girdwood Road and Bridge Rehabilitation.	2015 - 2016 - D/C/U	NHS	\$0	\$500	\$156,500	\$0	\$0	\$0	\$157,000
3	12640	Seward Highway - MP 99-105 Bird and Indian Improvements: Design and construct Seward Highway improvements. May include possible bypass of Bird and Indian. Project includes passing lanes and bike/ped trail.	2015-18 - ROW/U/C	NHS	\$0	\$2,676	\$500	\$0	\$20,500	\$0	\$23,676
4	12641	Seward Highway - MP 105-115 Passing Lanes - Indian to Potter Marsh.	2017 - U/C	NHS / OSF	\$0	\$0	\$0	\$68,550	\$0	\$0	\$68,550
5	16057	Portage Glacier Road Embankment Stabilization: Project will stabilize the Portage Creek stream bank at three locations along Portage Glacier Road.	2014 - U/C	Forest Hwys	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	19261	Olympic Circle Road Paving: Pave Olympic Circle Road in Girdwood. Project may include improvements to parking, drainage, lighting and pedestrian facilities. Under Construction	2014 - U/C	OSF / High Priority 1702	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	26651	Seward Hwy Right-of-Way Study: Project will provide Right-of-Way survey and As-Built information as needed for portions of the Seward Highway from Girdwood to Potter Marsh. Project may include documentation of corridor agreements with various public landowners within the corridor.	2014 - P&R	NHS	\$1,500	\$0	\$0	\$0	\$0	\$0	\$1,500
8	26536	Seward Highway Corridor Study- Develop a clear departmental vision for the corridor to guide capital project selection and scoping, aid in management decisions, and help preserve the function of the Seward Highway as a critical NHS corridor.	2015 - Planning	NHS / TCSP	\$2,500	\$0	\$0	\$0	\$0	\$0	\$2,500
9	26791	Seward Highway: Seward at Alyeska Highway Improvements - Construct a divided intersection on the Seward Hwy at the Alyeska Hwy to allow queuing for left-turning vehicles.	2015- All Phases	OSF	\$0	\$0	\$0	\$0	\$0	\$7,400	\$7,400
10	18924	Alyeska Highway Resurfacing [Seward Highway to Arlberg Avenue] - This project will resurface the existing pavement, make minor structural improvements and striping on the Alyeska Highway from the Seward Highway to Arlberg Avenue.	2015 - D 2016 - U/C	NHS/STP	\$0	\$113	\$4,200	\$0	\$0	\$0	\$4,313
11		Alyeska Highway Pathway Rehabilitation - This project will repair and refurbish the trail along the Alyeska Highway in Girdwood.	2015- 2016 - D/U/C	GF	\$0	\$269	\$2,731	\$0	\$0	\$0	\$3,000
The contingency list of projected for each year will consist of the following year's projects.			ANNUAL TOTALS		\$4,000	\$5,776	\$159,600	\$71,150	\$23,100	\$10,000	\$273,626

**Table 10. Pavement Replacement Program
AMATS FFY 2015-2018 TIP Administrative Modification 18**

2015 - 2018 TIP, Pavement Replacement Projects	
	Project Location
1	Airport Hts Rd - Debarr Rd to Glenn Hwy
2	Boundary Ave - Boniface Pkwy to Oklahoma
3	Brayton Drive - Dearmoun Road to - O'Malley Road
4	Elmore Rd - Huffman Rd to O'Malley Rd
5	Fireweed Ln - Arctic Blvd to Seward Hwy
6	Hiland Rd - MP 0 to MP 3.2
7	Post Rd - 3rd Ave to Reeve Blvd
8	Rabbit Creek Rd - Old Seward Hwy to Hillside Dr
9	Upper Huffman - Hillside Dr to Toilsome Hill Dr
10	Reeve Blvd - 5th Ave to Post Road
11	Dowling Road - Old Seward Highway to Lake Otis Blvd
	*Projects not in priority order
	Pavement Replacement Annual Totals shown in Table 3