CATS TAM Plan

Transit Asset Management Plan
for the
City of Anderson Transit System

Produced by CATS October 1, 2018

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530 Dale Keith Jones Road, Anderson, IN 46011, 765-648-6400

City of Anderson & Council of Governments Organization

Mayor

Mayor Thomas J. Broderick

Board of Public Works

David Eicks, Chairman
Jack Keesling, Member
Richard Symmes, Member

City of Anderson Transit System Administrative Staff

Merle F. Jones, General Manager
Leo Williams, Director of Operations
Barb Johnson, Supervisor
Lori Sylvester, Long Range Planner& Accountable Executive
Jack Norris, Administrative Assistant

Madison County Council of Governments (Metropolitan Planning Organization - MPO)

Jerry Bridges, AICP, Executive Director
David Benefiel, AICP, Principal Transportation Planner
(See: http://www.mccog.net/AboutUs.html for a complete list of staff).

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1. INTRODUCTION

Introduction

1.1 Brief Anderson History:

About the City of Anderson: *(courtesy of City of Anderson Web Page/History https://www.cityofanderson.com/209/History)*

Native American Heritage:
The City of Anderson is named for Chief William Anderson, whose mother was a Delaware (Lenape) Indian and whose father was of Swedish descent. Chief Anderson's Indian name was Kikthawenund, meaning "making a noise" or "causing to crack" and is spelled in a variety of ways.

The settlers coming into Anderson referred to the village as "Anderson Town." The Moravian Missionaries called it "The Heathen Town Four Miles Away." Later it was known as "Andersontown." In 1844, the name was shortened by the Indiana legislature to "Anderson."

Industrial Boom:
Between 1853 and the late 1800s, 20 industries of various sizes located here. On March 31, 1887 natural gas was discovered in Anderson. With this discovery several industries, notably those in glass manufacturing, rushed to locate here. Cheap and plentiful natural gas led to a population explosion. Other companies that could benefit from the increased economic activity in Anderson soon began to relocate here.

In 1912, the natural gas ran out. Several factories left and the local economy slowed. The Commercial Club, formed November 18, 1905, was the forerunner of the present-day Chamber of Commerce. This club persuaded the Remy Brothers to stay in Anderson and encouraged other entrepreneurs to locate here. For decades, Delco Remy and Guide Lamp, later to become Fisher Guide, were the top two employers in the city.

Demographics:
Today, Anderson continues to thrive on its manufacturing heritage while at the same time diversifying its economic base by actively recruiting new companies in various industries. Today, Anderson has a rich multicultural quality of life and low cost of living. According to the 2010 U.S. Census, Anderson has a population of 56,129. The altitude of the city is 884 feet. The latitude is 40° 6' 27" N and the longitude is 85° 40' 43" W. The City of Anderson is located in parts of four townships: Anderson, Union, Richland, and Lafayette and located in central Indiana about 50 miles north of Indianapolis.

1.2 Brief CATS History:

About the City of Anderson Transit System (CATS) Overview

CATS operates under the direction of the City of Anderson Mayor and Anderson Board of Public Works, and has less than 40 employees. They are also under the guidance of their Metropolitan Planning Organization (MPO): the MPO is located in downtown Anderson, Indiana. FTA Guidance is received from FTA, Region 5 located in Chicago, Illinois.

CATS admin garage building is located at 530 Dale Keith Jones Road, Anderson, Indiana. It became a city department in 1982. CATS operates their own fleet of 7 fixed routes and a demand response fleet of 9 paratransit buses. CATS have no subcontractors that drive buses or paratransit buses.

The CATS Terminal is located in downtown Anderson at 1109 Main Street and constructed in 1975. Since CATS does not operate rail and has 100 or fewer vehicles in peak revenue service, a Tier II Plan will be submitted, which consist of the following Elements:

1. Inventory of Capital Assets,
2. Condition Assessment,
3. Decision Support tools, and
4. Investment Prioritization.

1.3 Performance Targets & Measures:

EXAMPLE:

Asset Category	Performance Measure	Target
Rolling Stock *All revenue vehicles*	**Age** - % of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	Bus 83%
Equipment *Non-revenue vehicles*	**Age** - % of vehicles that have met or exceeded their Useful Life Benchmark (ULB)	
Facilities *All buildings or structures*	**Condition** - % of facilities with a condition rating below 3.0 on a the FTA Transit Economic Requirements Model (TERM) Scale	

EXAMPLE of TAM Workflow for 30' Rolling Stock: bus:

How many buses do we have? 6
What's the ULB for a 30' bus? 15 years.
How are they doing (condition assessment): 1 is 17 yrs old, 4 are 10 yrs old, 1 is 2 yrs old, therefore; 83.3% are in a state of good repair.
Does it pose a safety risk? No.
Set Target: 100% of buses are in a state of good repair.

1.4 Accountable Executive: CATS has designated their 'Accountable Executive' as the Long Range Planner to oversee, maintain and submit information as requested throughout this process with the assistance of the CATS staff. Other staff involved within this process includes the General Manager, Director of Operation, Administrative Assistant and Crew Leader Mechanic. Please see the table below describing the Roles and Responsibilities of CATS staff:

1.5 Roles and Responsibilities of Administrative Staff:

Department/Individual	(Title and/or Description)	Role
Merle Jones	General Manager	Review & Approve completed document
Leo Williams	Director of Operations	Contribute information as needed; Review & Approve completed document
Lori Sylvester	Long Range Planner/ Accountable Executive, Submitter to FTA	Submit to GM, DoO and Supervisor for approval. Oversee, maintain, revise and submit information to FTA as required.
Travis Daniel	Crew Leader/Mechanic	Submit information to the TAM document, as needed.
Jack Norris	Administrative Assistant	Assist in maintaining, revising and submitting information

1.6 TAM Vision:

The purpose for this plan is to help achieve and maintain a state of good repair for the nation's public transportation system. The City of Anderson Transit System (CATS) will provide this information as stated in the FTA TAM Provisions, to assist in the nation's overall state of good repair (SGR) for transportation systems.

1.7 TAM and SGR Policy:

CATS State of Good Repair Plan is to maintain an effective and efficient working fleet to transport passengers in a safe, reliable, comfortable and clean vehicle as possible. As CATS buses and paratransit vehicles are maintained in good working condition, the passengers may enjoy utilizing CATS transporting them to their destinations. CATS will also maintain its facilities and equipment to the best environment possible by following their Facilities Maintenance Procedures to assure passengers waiting on buses may enjoy a clean and comfortable area.

1.8 TAM Goals and/Objectives:

Increase customer satisfaction in fiscal year.	Respond to customer feedback within three day or no longer than 2 weeks from CATS facebook comments.
	Respond to public feedback within three days or no longer than 2 weeks from CATS Web Page comments.
Maintain vehicles as per Vehicle Maintenance Procedures Manual & provide convenient, reliable, safe and comfortable service to all patrons.	Conduct PMs (Preventative Maintenance) procedures as specified in the manual.
	Conduct daily, weekly, monthly and annual maintenance and upkeep to vehicles as per the Vehicle Maintenance Procedures Manual.

Maintain facilities as per Facility Maintenance Procedures Manual.	Conduct daily, weekly, monthly and annual maintenance and upkeep to buildings as per the Facility Maintenance Procedures Manual.
Provide fixed route and demand responsive services as efficiently and equitably as possible.	Maintain efficient dispatching services to all drivers and utilize and maintain latest software program for dispatching tablets.
To maximize potential ridership within the parameters set forth by CATS' service area and available funds.	Maintain professional relationships with, the City of Anderson, COG , the State of Indiana and FTA regarding all regulations and codes, and by submitting appropriate forms in a timely fashion.

1.9 Plan Coordination: The CATS asset management plan is comprised of the FTA TAM Tier II Template information as well as additional information from FTA webinars and other city's examples. The Tier II plan by CATS will be an independent plan, completed by CATS staff and not be a part of a group plan.

Anderson, Indiana has a population of approximately 56,126 and located in central Indiana approximately 50 miles northeast of Indianapolis. CATS operates under the direction of the City of Anderson Mayor and Board of Public Works, and has less than 40 employees. They own and operate 2 facilities: the passenger terminal and the administration/maintenance building. They operate their own fleet of 7 fixed routes and a demand response fleet of 9 para transit buses. CATS has no subcontractors. Since CATS does not operate rail and has 100 or fewer vehicles in peak revenue service, a Tier II Plan will be submitted, which consist of the following Elements:

1. Asset Portfolio/Inventory of Capital Assets:
    a. Equipment
    b. Rolling Stock
    c. Facilities
    d. Infrastructure
2. Condition Assessment,
3. Management Approach/Decision Support tools,
4. Work Plans & Schedules/Targets, and
5. Documentation and reporting/Investment Prioritization.

1.10 Definitions:

Useful Life Benchmark (ULB)

- ULB does NOT equal Useful life for FTA grant programs.
- Useful Life Benchmark is defined as the expected lifecycle of a capital asset for a particular Transit Provider's operating environment, or the acceptable period of use in service for a particular Transit Provider's operating environment.
- ULB takes into account a provider's unique operating environment (geography, service frequency, passenger loads)

2. ASSET INVENTORY PORTFOLIO

2.1 General Information

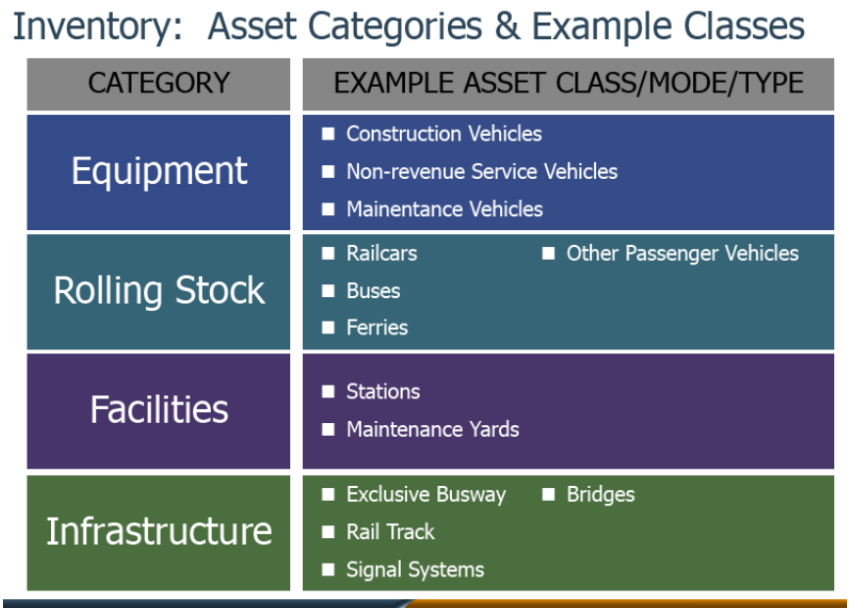
CATS owns, operates and manages all of the Fixed Assets that that support the delivery of public transportation services. CATS does not have any leased assets or assets operated under contract. All of the assets at CATS were purchased with FTA funds in combination with the local required matches. Please see the inventory lists in Appendix 1, 2, and 3 for our Rolling Stock, Equipment and Facility Asset Inventory.

2.2 Definitions:

CATS owns, operates and maintains their own equipment, rolling stock and facilities. CATS does not have any infrastructure.

FTA defines 'Equipment' as construction vehicles, non revenue service vehicles and maintenance vehicles, as well as other equipment valued at over $50,000. CATS has 2 service trucks and 4 non-revenue vehicles. Equipment items that fall into the definition of 'other equipment over $50,000' include a bus lift and a bus wash.

FTA defines 'Rolling Stock' as railcars, buses, ferries and other passenger vehicles. CATS operates 19 buses (10 fixed route and 9 demand response). CATS also owns a trolley that is currently inoperable.



FTA defines 'Facilities' as 'Administrative and Maintenance' or 'Passenger and/or Parking' facilities by FTA. CATS owns, manages and maintains 1 of each or 2 facilities. One building consists of administration offices and a garage, while the other building serves as the bus terminal, including passenger waiting area and ticket fares office.

CATS does not have any leased assets or assets operated under contract. Nor, any assets purchased without federal funds.

2.3 Equipment:

FTA defines 'Equipment' as construction vehicles, non-revenue service vehicles and/or service vehicles by FTA, and other equipment valued at over $50,000. (CATS include their support vehicles on their "Rolling Stock Inventory" in Appendix 1, under the column, Equipment/Support Vehicles. This portion of the spreadsheet breaks down the CATS "Equipment" by Type of vehicle (Support Vehicles), as well as make, capacity, year made, model #, description, condition, age and other contributing factors.). CATS has two maintenance trucks, four administration non-revenue vehicles, a bus lift and a bus wash.

NOTE: FTA email for 2016 NTD Report: For these vehicles, if they are ever used in revenue service (picking up passengers) they should be added to the A-30 Form. If they are solely service vehicles and are not used in revenue service, then you can leave them off the report. In future report years, there will be a form for service vehicles, but this will most likely not be until RY2018.

1. Equipment (maintenance trucks)
    i. CATS has two 2011 Chevrolet 2KH model, 4 X 4 service trucks, purchased in 2010, that are listed in 'excellent' condition with the capacity to carry 2 people. As of February, 2018 one had 50,378 miles on it and the other had 62,135 on it.
2. Administration (non-revenue) vehicles
    i. CATS has 4 administrative non-revenue vehicles.
        1. One is a 2012 GMC S1F model Arcadia, purchased in 2012, that is listed in 'excellent' condition with the capacity to carry 7 and has 45,646 miles on it.
        2. One is a 2011 Chevrolet VS model Traverse, purchased in 2010, that is listed in 'excellent' condition, with the capacity to carry 7 and has 48,801 miles on it.
        3. One is a 2007 Chevrolet CU12216 Uplander Van, purchased in 2007, that is listed in 'poor' condition with the capacity to carry 5 and has 113,075 miles on it.
        4. The last one is a 2015 Dodge RTKH53 model Caravan, purchased in 2014, that is listed in 'excellent' condition with a capacity to carry 7 people and has 25,381 miles on it.
3. Bus Lift
    i. CATS has one "floor lift" purchased in 1975 when the building was constructed and has a general manufacture life of 12 years. It is 43 years old and listed in poor condition.
4. Bus Wash
    i. CATS has one "drive through" bus was installed in 1975 when the building was constructed and has a general manufacture ULB of 10 years. It is 43 years old and listed in poor condition.

2.4 Rolling Stock:

Rolling stock that CATS owns operates and manages:
FTA defines Rolling stock as Rail cars, buses, ferries and other passenger vehicles by FTA. CATS rolling stock is defined as 9 Fixed Route Buses, 8 Nifty Lift or Paratransit buses, 4 Support/Admin Vehicles and 2 service trucks. CATS does not operate any rail, ferries, cars, etc.

Miscellaneous photo 1: Fixed Route Bus

1. Fixed Route Buses:
    CATS has 9 Fixed Route Buses all with the capacity to seat 24 passengers.

    There are 2 Chevrolet C5500 model buses of which 1 is in 'poor' condition and the other is listed in 'fair' condition. These were purchased in 2007 and 2011 and were also manufactured in 2007 and 2010. They have between 292,018 and 334,738 miles on them as of February 13, 2018.

    There are also 7 Freightliner Legacy model buses that are all in 'excellent' condition. Two of these were purchased in 2014 and manufactured in 2014 and one is a 2015 however manufactured in late 2014. They have between 103,497 and 136,356 miles on them as of February 13, 2018. For a specific list of mileage on which vehicle, see the Appendix 1.

2. 8 Paratransit, Nifty Lift Vans:
   CATS has 8 Paratransit, Nifty Lift Vans. Two are 2010 Chevrolet BS25 model, purchased in 2010, and listed as 'good' that have the capacity to carry 14 including passengers and driver, with mileage counts of 167,141 and 170,222. The remaining 6 are 2 purchased and manufactured in 2015, 2016 and 2017 Chevrolet G4500 model, that are listed in 'excellent' condition and have the capacity to seat 17 including the passengers and the driver. Mileage counts for the 2015 buses are 48,366 and 52,534. Mileage counts for the 2016 buses are 31,650 and 39,917. Mileage counts for the 2017 buses are 8,508 and 12,662.

Miscellaneous Photo 2: Paratransit Bus

3. Electric Trolley:
   CATS has an electric trolley that was purchased in 2000 that is currently inoperable and has been since approximately 2013. The model is EFI Electric Trolley BR14, manufactured in 1998, that is currently listed as 'inoperable' in condition with the capacity to carry 22 passengers including the driver. This trolley has been in storage since 2013. Attempts have been made to restore the trolley, however it was cost prohibitive.


Miscellaneous Photo 3: Electric Trolley

Please see Appendix 1, Rolling Stock Inventory, for an Excel spread sheet that shows the buses, nifty lifts, service equipment (trucks), and administrative vehicles, and trolley.
This spreadsheet breaks down the CATS fleet by Type of vehicle (Nifty, Fixed route and Support Vehicles), as well as make, capacity, year made, model #, description, condition, age, and other contributing factors.

Asset Register/Fixed Asset Inventory for Revenue Vehicles and support vehicles. CATS is the owner of all their Rolling Stock, Equipment and Facilities. The items listed in the inventories include:

Tag #, Vehicle #, make, capacity, year made, vehicle ID, Model #, description, serial #/Vin#, License #, Purchase date/ price, condition, age, remaining useful life, potential replacement costs, funding sources, mileage and planned disposition.

2.5 Facilities

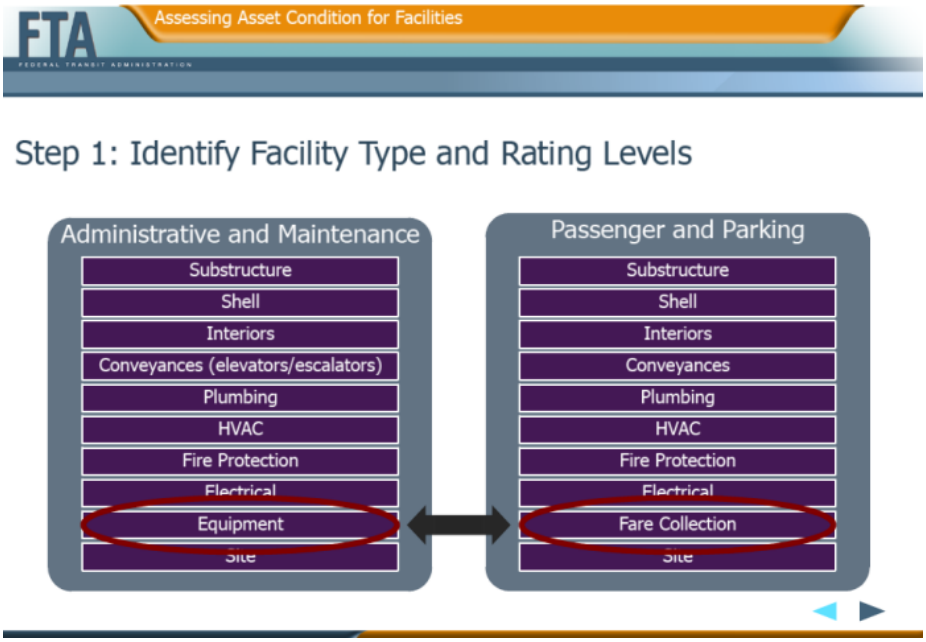
FTA defines Facilities as Stations or maintenance yards. CATS has 1 administration building with offices and a garage, and 1 terminal building that contains the ticket counter, waiting area and bus loading and unloading area.

1. 'Administrative & Maintenance' Building, 530 Dale Keith Jones Road, Anderson, IN 46011

Photo 1 Google Maps street view of admin offices/ garage at CATS

Photo 2 Exterior view of entrance to admin offices at CATS

This building is owned, operated and maintained by CATS, it will be included in the reporting for NTD. It is used as a general purpose and heavy maintenance services, as per FTA. This facility has been identified as an "Administrative and Maintenance' facility as per the FTA table below.



The CATS Administration offices/ Garage were constructed in c. 1975 and is approximately 18,700 square feet in size. (See Photo 4.) It includes 3 administrative offices, a dispatch office, supply room, maintenance room, a conference room, a break room, 2 restrooms and a lobby at the entrance. The entrance to the administrative portion of the building is on the east side. The garage/indoor parking area is located across the west side of the building, has 2 large overhead doors on each end and 2 service doors.

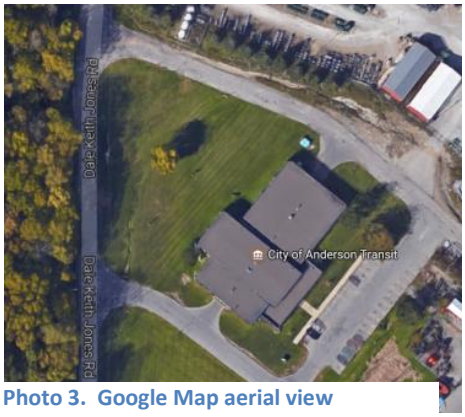


Photo 3. Google Map aerial view

The building contains a 2 bay garage work area with lifts for the buses, and inside parking area for 10 buses, 9 paratransit, 4 administrative vehicles, 2 trucks and the trolley. The roof has been repaired, as needed, with the last time being in 2016. The 2 overhead garage doors were replaced in 2017. The exterior block surface was painted by student volunteers in 2012. New LED, energy efficient lights were installed throughout the entire garage in 2012. ADA deficiencies were brought up to

code in 2015 and 2016.


Photo 4. 18,700 sq. ft. CATS admin/garage building

There is an asphalt parking area on the southeast side of the building that has a total of 32 parking spaces: (See Photo 5) 25 for the public, drivers/mechanics, 5 administration spaces, 1 handicapped space and a space for motorcycles. It is approximately 11,625 square feet in size. Snow removal for the parking lot is completed by CATS staff with CATS owned equipment.


Photo 5. 11,625 sq. ft. of CATS parking area.

The remainder of the land is grass, approximately 62,762 square feet (See Photo 6). There are 3 sections: 2 on the front or southeast side which contain 10,676 and 5,030 sq. ft., and a larger lot in the rear or northwest of the building which contains 47,056 sq. ft. The grass is maintained by the staff of CATS with mower and equipment, etc. purchased and owned by CATS.


Photo 6. 62,762 sq. ft. of CATS grass area.

2. CATS 'Passenger Facility' Terminal, 1109 Main Street, Anderson, IN 46016

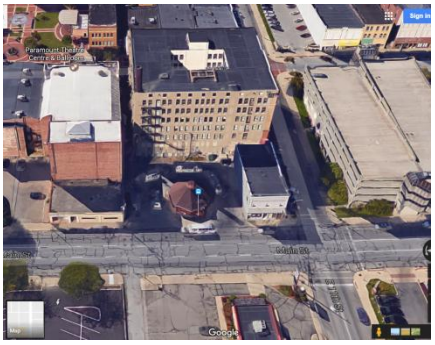
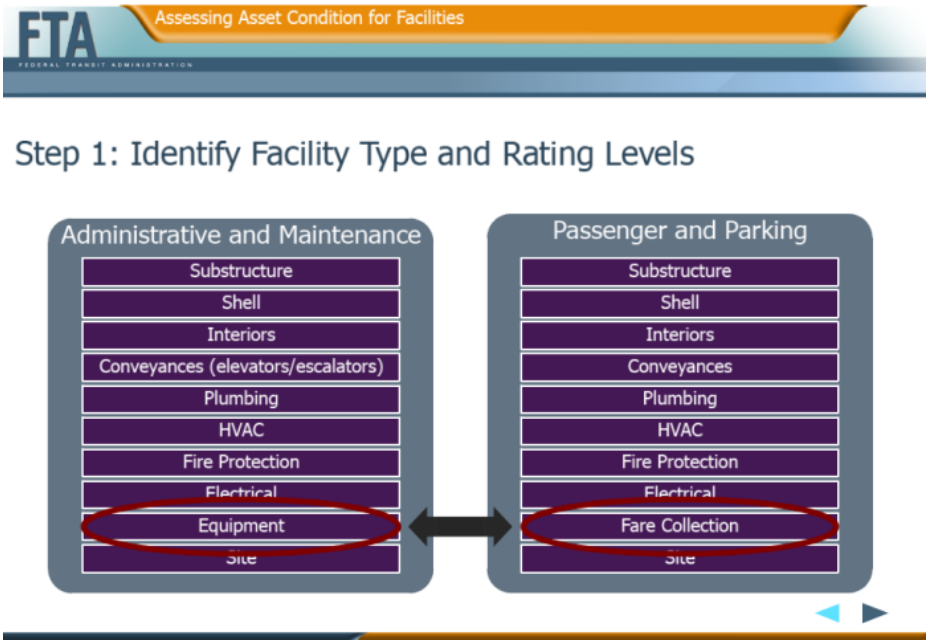


Photo 7. Google Map Aerial View

Photo 8. Google Map street view of CATS Terminal

Since the terminal is owned, operated and maintained by CATS, it will be included in the reporting for NTD. This facility has been identified as a 'Passenger and parking' facility as per the FTA table below.



The terminal was constructed in c. 1975 and is approximately 1,377 square feet in size. (See Photo 9). It includes an attendant's/fare collection/ticket office, a small break room, 2 restrooms, a lobby area, and break area with vending machines. There is a small utility room located within the men's restroom for the water heater and cleaning supplies. There are 3 entrances to the building- 2 for the public (south and east sides of the building) and 1 for employees (north side). The asphalt area that surrounds the building is

Photo 9. Terminal building 1,377 sq ft and asphalt area 6,411 sq ft.

approximately 6,411 square feet and for buses to pull in and drive around to collect passengers only. There is no specific parking available, except for street parking. There is a small seating area outside the east side of the building.

The snow removal for the bus drive around area is maintained by the CATS staff with CATS owned equipment.

CATS does not have any 'Parking Facilities' structures.

2.6 Infrastructure

CATS does not own, operate or maintain any infrastructure, therefore not included in this document.

2.7 DATA REQUIRED for TAM and NTD

CATS will submit the following required information to FTA as needed:

TAM final rules requirements:

- TAM Plans
- Asset Inventory or Asset condition
- SGR performance measure targets
- NTD asset inventory form
- NTD target reporting form
- SGR performance measure targets

3. CONDITION ASSESSMENT

3. CONDITION ASSESSMENT

3.1 Condition Assessment: Asset Condition Data -this information for CATS has been combined into the Inventory spreadsheets for Rolling Stock, Equipment and Facilities found in the Asset Register Excel Spreadsheets in Appendix 1, 2 and 3. The column headers for the 'condition assessment' on each spreadsheet are named: Condition, Age, Remaining Useful Life and Replacement cost.

a. Condition assessments may be collected at the individual or asset class level Rating of the inventoried assets:
b. Age, good/fair/poor, percentage of residual life/ warranty status
c. Ratings should be sufficiently detailed to monitor performance and plan capital investments
d. Inspection schedules are set on an individual basis for Equipment, Facilities and Rolling Stock.

3.2 Definition of State of Good Repair (SGR):

CATS is able to perform their designated function: CATS State of Good Repair Plan is to maintain an effective and efficient working fleet to transport passengers in a safe, reliable, comfortable and clean vehicle as possible. As CATS buses and paratransit vehicles are maintained in good working condition, the passengers may enjoy utilizing CATS transporting them to their destinations. CATS will also maintain its facilities to the best environment possible by following their Facilities Maintenance Procedures to assure passengers waiting on buses may enjoy a clean and comfortable area. There are TAM Workflow sections in each of the inventory sections below to show the State of Good Repair of each subject.

CATS does not pose a known unacceptable safety risk, and its lifecycle investments have been known or recovered. CATS will have a Tier II Individual TAM Plan, however, there are no sub recipients to include. CATS has established SGR performance measures through their Rolling Stock, Equipment, and Facilities Maintenance Procedure Manuals. See Appendix 6 and 7.

CATS will report data to the NTD as required, with a data report and a narrative report.
CATS will receive and search for technical assistance from FTA, as needed and ongoing.

3.3 ULB Useful Life Benchmark Cheat Sheet: Agencies can use their FTA default ULB values or develop their own with FTA approval. Agencies must have justification for their annual NTD inventory report if they decide to customize ULB and the ULBs may only be updated annually and then approved by FTA.

For example the FTA ULB may show 14 years for a bus, however the agency's experience with the buses is that they last on average 16 years or 350,000 miles.

Considerations when customizing ULB:

a. Capital funding levels and vehicle replacement schedule
b. Lifecycle expectations set during procurement
c. Experience with similar vehicles or fleets
d. Maintenance practices and abilities
e. Unique operating environments (extreme climates, heavier working hours or longer mileages)
f. Variation in durability between vehicle models
g. Unplanned rehabilitation or mid life overhaul of vehicles.
h. Reduce the fleet size, however maintain the route size.

FTA
FEDERAL TRANSIT ADMINISTRATION

Default Useful Life Benchmark (ULB) Cheat Sheet

Source: 2017 Asset Inventory Module Reporting Manual, Page 53

Transit Agencies will report the age of all vehicles to the National Transit Database. FTA will track the performance of revenue vehicles (Rolling Stock) and service vehicles (Equipment), by asset class, by calculating the percentage of vehicles that have met or exceeded the useful life benchmark (ULB).

FTA has set a default ULB as the expected service years for each vehicle class in the table below. ULB is the average age-based equivalent of a 2.5 rating on the FTA Transit Economic Requirements Model (TERM) scale. Transit agencies can adjust their Useful Life Benchmarks with approval from FTA.

Vehicle Type		Default ULB (in years)
AB	Articulated bus	14
AG	Automated guideway vehicle	31
AO	Automobile	8
BR	Over-the-road bus	14
BU	Bus	14
CC	Cable car	112
CU	Cutaway bus	10
DB	Double decked bus	14
FB	Ferryboat	42
HR	Heavy rail passenger car	31
IP	Inclined plane vehicle	56
LR	Light rail vehicle	31
MB	Minibus	10
MO	Monorail vehicle	31
MV	Minivan	8
	Other rubber tire vehicles	14
RL	Commuter rail locomotive	39
RP	Commuter rail passenger coach	39
RS	Commuter rail self-propelled passenger car	39
RT	Rubber-tired vintage trolley	14
SB	School bus	14
	Steel wheel vehicles	25
SR	Streetcar	31
SV	Sport utility vehicle	8
TB	Trolleybus	13
TR	Aerial tramway	12
VN	Van	8
VT	Vintage trolley	58

FTA

3.4 Equipment:

SUV, Service Trucks & Admin vehicles

FTA Rating, Description and Condition Scale for Rolling Stock Fixed Route Buses:

Rating	Description	Condition
5	Excellent	0-65,000 miles; 1-3 years of age; no major body damage; no major mechanical issues; 57%-100% residual life remaining.
4	Good	65,001 to 120,000; 3-5 years of age, no major body damage; no major mechanical issues; 28% to 72% residual life remaining.
3	Fair	120,001 to 205,000 miles; 5-8 years of age; minor body damage, minor/repairable mechanical issues;
2	Worn	205,001 to 235,000 miles; 9 to 10 years of age; minor body damage, minor/repairable mechanical issues;
1	Inoperable/Poor	235,001 to over 300,000 miles; over 9 years of age; inoperable or cost prohibitive to repair. This may vary depending on age, miles, accidents, mechanical issues, etc.

As Per the 2017 NTD report for 2016 data: There were no reporting for the admin vehicles or work trucks for 2016 NTD report. See Melisa Conte's email from FTA:
FTA email: "For these vehicles, if they are ever used in revenue service (picking up passengers) they should be added to the A-30 Form. If they are solely service vehicles and are not used in revenue service, then you can leave them off the report. In future report years, there will be a form for service vehicles, but this will most likely not be until RY2018."

3.5 Rolling Stock:

Fixed Route Buses:

The rating system of CATS inventoried assets specifically in the rolling stock section is defined into the following ratings: Excellent, Good, Fair, Worn and Inoperable. There is not an exact science that will evaluate a bus and determine its replacement age; however the guidelines below will be a starting point for CATS to follow. For example, a bus that was only purchased 1-2 years ago should be in excellent condition, as long as normal maintenance and upkeep has been followed. However due to a number of variables (accident, mechanical failure, etc.) it may be deemed as fair or worn due to its individual issues. The opposite may occur, as well. For example, a bus that was purchased 7 years ago may still be in good condition due to the upkeep, maintenance, no accidents and overall design of that particular bus. There are a multitude of variables that may determine a bus needs to be replaced. Some examples may include, but not be limited to: accidents and the severity of them, mechanical failure, lack of available funding, maintenance issues, etc. Below are some guidelines that CATS follows in their rating the conditions of buses:

Note: As Per the 2017 NTD report for 2016 data: BU BUS (Fixed Route Buses) 7
CATS has 10 Fixed route buses, HOWEVER 3 ARE CONSIDERED CUTAWAYS (110, 116, and 117).
Bus #s: 120, 121, 122, 123, 124, 125, 126
Purchased dates: 2 in 2014, 5 in 2015
The ULB for a CATS bus 29.5' to 32' bus is 7 years.
The condition assessment: Although 2 buses were purchased in 2014 and 5 were purchased in 2015, it was during the months of December, January and February; therefore they all will be counted as 2 years old; or **100% are in a state of good repair.**
Does it pose a safety risk? No.
Set Target: 100% of buses are in a state of good repair.

Prioritize Funding: Based on a normal bus life expectancy and available funding, CATS may replace 3 2014 buses in FY22 and replace 4 2015 buses in FY23.

7 fixed route vehicles (although there are 10, 3 are considered cutaways)
= 0 that have lasted longer than their useful lives and
100% have at least 7 to 8 years additional life expected.

No buses earlier than 2014 or 0%
2014 3
2015 4 7 = 100%

Rolling Stock: Para Transit Buses

The rating system is the same for the paratransit buses as the Fixed Route buses listed above. The exception is that the paratransit buses have lasted up to 10 year life expectancy. However, since CATS has replaced some paratransit buses as soon as 7 years old, CATS will continue to keep the life expectancy of their paratransit fleet at 7 years, and then determine the replacement on a case by case basis.

As Per the 2017 NTD report for 2016 data: CU Cutaway (CATS Paratransit buses and 3 CATS fixed route buses are considered "Cutaways") 12
#s: 110, 116, 117, 684, 687, 688, 695, 696, 701, 702, 703, 704
Purchased dates: 3 in 2007; 2 in 2008; 3 in 2010; 2 in 2015 and 2 in 2016.
The ULB for a CATS bus 26' to 29.5' is 7 to 10 years. However CATS is planning the earliest in case a bus becomes inoperable or cost prohibitive to repair.
34% are in a state of good repair.
Does it pose a safety risk? No
Set Target for: 100% of buses are in a state of good repair
Prioritize Funding: Based on a 7-10 year life expectancy, CATS will replace 1 2007 and 1 2008 in FY18; and depending upon regular upkeep, maintenance, and funding 2 2007s in FY19; 1 2008 and 1 2010 in FY20; 2 2010s in FY21; 2 2015s in FY24; and 2 2016s in FY25.

12 cutaways based on 7 year life expectancy
= 8 cutaways (para transit and 3 buses) or 67% have lasted longer than their life expectancy.
=4 cutaways (para transit) have at least 7 to 8 years additional life expected.

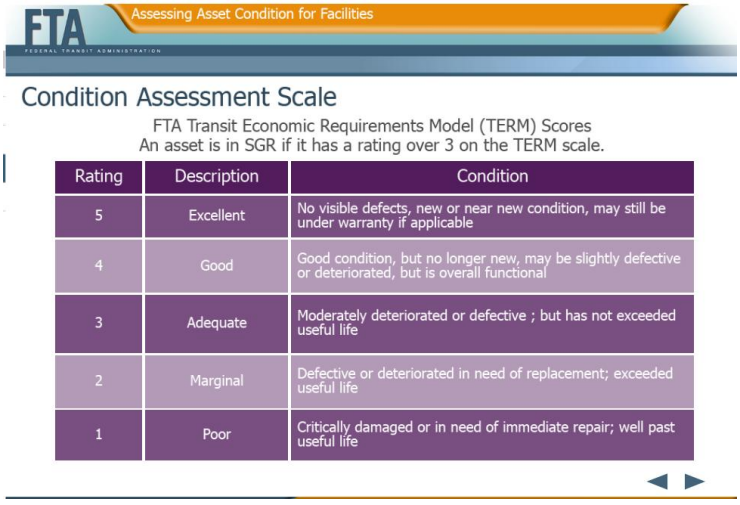
2007 3
2008 2
2010 3 8 = 67%
2015 2
2 4 = 34 %

3.6 Facilities:

CATS has 2 facilities that they own, operate and maintain, a CATS terminal and a CATS administration office/garage. See Appendix 3.

The Definition of state of good repair (SGR):

a. CATS is able to perform their designated function: CATS will maintain its facilities to the best environment possible by following their Facilities Maintenance Procedures/TAM Plan to assure passengers waiting on buses may enjoy a safe, clean, welcoming and comfortable area.
b. CATS conducts maintenance checks on facilities as per their



Facilities Procedures manual (attached in Appendix 6) on a daily, weekly, monthly, etc. basis. Based this information, CATS budgets for any potential facility investments annually. This helps keep the CATS facilities in a state of good repair.

c. CATS does not pose a known unacceptable safety risk, and its lifecycle investments have been known or recovered.

d. CATS partially bases their SGR on the Condition Assessment Form below, as well as the Building Rating Definitions below.

Condition Assessment Form (as shown on the Sample form)

A. Roof
   a. Roof surface, gutters, eaves, skylights and chimney surrounds

B. Shell: Superstructure/structural frame: columns, pillars, and walls
   a. Exterior: Windows, doors, and all finishes, (paint, masonry).

C. Interiors

D. Conveyance (Elevators/Escalators)

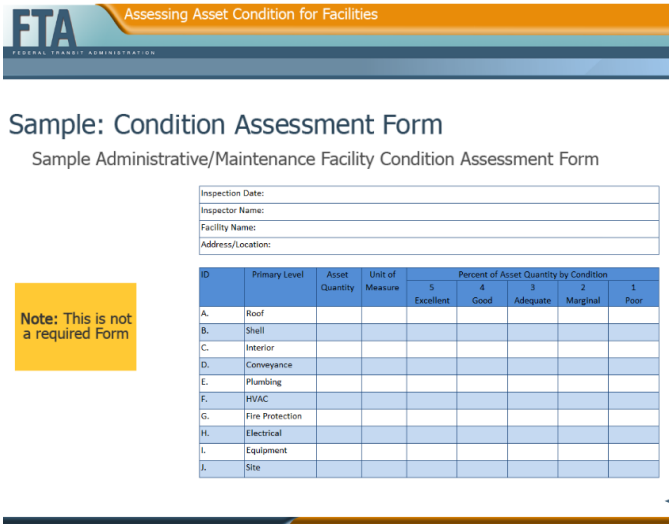
E. Plumbing:
   a. Fixtures
   b. Water distribution
   c. Sanitary waste
   d. Rain water drainage

F. HVAC: Ratings:

G. Fire Protection

H. Electrical

I. Site



Building Rating Definitions:

5: Excellent – New construction, no visible defects or damage. Meets efficiency and capacity goals and maintains desired temperature and air quality throughout the facility.

4: Good – Minor improvements needed, may be slightly outdated and less efficient and consistent. Minor deterioration or defect with no functional impact typically addressed through routine maintenance.

3: Adequate – Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets needs. -Still within its useful life.

2: Marginal – System has exceeded its useful life; fails to meet standards or needs. System needs extensive repair at a minimum. Currently does not appear to be any safety issue.

1: Poor – System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.

- Energy supply
- Heat and cooling generation and distribution systems
- Testing, balancing, controls and instrumentation and chimneys

Primary Level/Item **CATS Terminal Building**	Asset Quantity	Unit of Measure	Percent of Asset Quantity by condition				
			5 Excellent	4 Good	3 Adequate	2 Marginal	1 Poor
A. Roof	1	1,377					X
B. Shell	1	1,377					X
C. Conveyance	-	-					N/A
D. Plumbing	-	-				X	
E. HVAC	-	-				X	
F. Fire	-	-			X		

Protection							
G. Electrical	-	-			X		
H. Site	-	-					X
TOTAL PERCENTS Perfect score = 40 **Total Terminal bldg = 13**			0	0	6	4	3

The CATS Terminal is located in downtown Anderson. It is slated to be replaced in 2018/2019. It was constructed in c. 1975, consisting of a wood structure. It has suffered tremendous deterioration over the years and is cost prohibitive to repair. Its useful life is quickly coming to an end.

The CATS administration office/garage was constructed in c. 1975 consisting of concrete block, with wooden walls within the structure. It has experienced normal ware over the years; however has a long life expectancy of approximately 25-30 years minimum with proper maintenance.

50% or 1 of the CATS buildings are in a state of good repair. Do they pose a safety risk? No Set Target for: 100% of facilities to be in a state of good repair Prioritize Funding: CATS currently has an active Design and Engineering Grant from FTA that is taking care of the soft costs for this project. CATS is working with FTA on the Environmental Review aspects currently. CATS will submit a grant to FTA for Construction during late 2018. Plans for construction are anticipated to take place in late spring 2019.

Primary Level/Item **Garage/Admin offices**	Asset Quantity	Unit of Measure	Percent of Asset Quantity by condition				
			5 Excellent	4 Good	3 Adequate	2 Marginal	1 Poor
A. Roof	1 (4 sections)	18,700’					X
B. Shell	1	18,700’		X			
C. Conveyance	-	-					N/A
D. Plumbing	-	-			X		
E. HVAC	-	-		X			
F. Fire Protection	-	-		X			
G. Electrical	-	-		X			
H. Site	1			X			
TOTAL PERCENTS Perfect Score = 40 **Total Admin/Garage = 24**			0	20	3	0	1

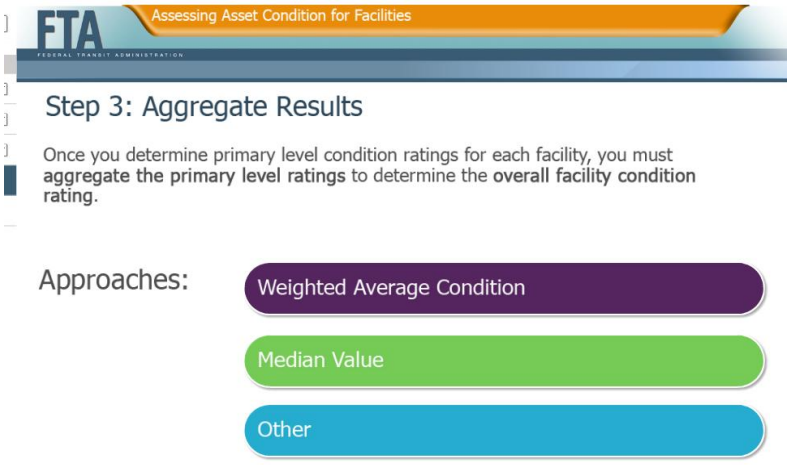
The ULB for a wooden structure terminal is: 25 to 75+ years depending on maintenance and upkeep.

The ULB for a concrete structure administrative offices/ garage is: 25-75 years depending on maintenance and upkeep.

Weighted Average Condition Approach.

The aggregate results on the two facilities that CATS maintains are explained below. The primary level condition ratings for each facility and each subject area were rated and added to obtain the Aggregate results for each building. CATS has 50% of their facilities that rank ‘Adequate’ and the other 50% ranks ‘Poor’.

The total Condition Assessment forms above show that the Terminal scored a 13 point from a total possible perfect score of 40. This shows that the building has serious deterioration issues on the interior and exterior shell as well as electric, plumbing and HVAC systems. Five of the seven categories that were rated on their condition only scored Marginal or Poor. The remaining two scored Adequate.



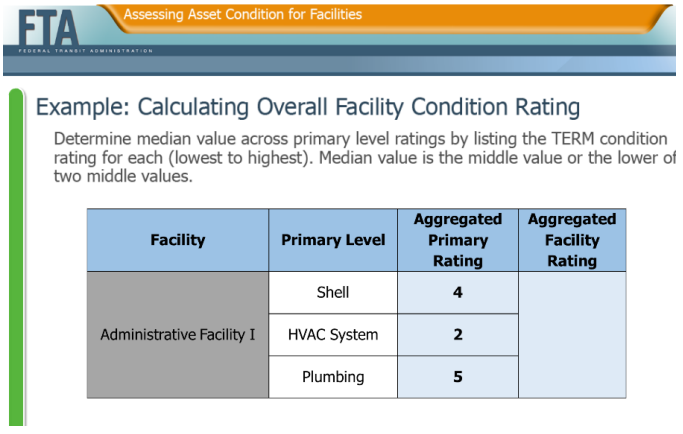
CATS Owned Facilities Condition Report					
Facility Code	Facility Name	Condition (points)	Age (UL) years	Replacement Cost $	Comments
1. Admin Garage	Admin Garage	24 out of 40	33	$750,000	No new admin garage is planned at this time.
2. Bus Terminal	Terminal	13 out of 40	33	$8.3	A new terminal is in the process.*

*CATS has been working with FTA for over 10 years to secure a sight, acquire, demo and construct a terminal. At this time, CATS has 'submitted' an application to FTA for funding, and working on securing the ownership needed for demo and construction. This grant information can be found in FTA Grant # IN-2018-028-00, FY 2016-18 CMAQ and STP funds for ACQ DEMO and CONST of CATS Transit Center.

The total Condition Assessment form above for the Admin/Garage scored a 24 from a total possible perfect score of 40. There are some cosmetic and some minor repairs needed, however the overall building structure, electric, plumbing and HVAC systems are in good working order. The roof is the only item that scored Poor, however CATS is in the process of hiring a contractor to replace the roof with a grant from CY2018. Therefore after this is replaced, our score should jump to 28 out of 40, which reflects mostly '4's on all of the condition ratings out of the total possible 5.

Table: Example Calculating overall facility condition rating = Median Value Approach.

Approach 3 allows agencies to choose their own approach. Must be consistent, repeatable and yields a single rating value for each facility using the 5 point Term scale.



4. MANAGEMENT APPROACH

1.1 Decision Support Tools / Calculate Performance Measures

CATS has the following processes and/or tools in place to support investment decision-making, including project selection and prioritization. To estimate capital investment needs over time based on, however not limited to, need, condition, age, hours and mileage.

Decision Support Table	
Process/Tool	Brief Description
Meetings, as needed	To review preventative maintenance, unexpected issues on buses, paratransit and review budget goals.
Annual budget meeting	Annually meet with all applicable staff, Board and Mayor to review expenditures from previous years and set budget and goals for future year.
Inventory Asset Review	Review asset inventory, condition, life expectancy, etc.
Software	Software programs run diagnostic checks on the buses to determine if there are any issues and let the mechanic know what the next step is.
Update, Record and Report Data	As required by FTA, submit all reports at specific timeframes, and include or update CATS documents with any updates by FTA, in a timely fashion including but not limited to: Civil Rights, DBE, Procurement, TAM, Operations, Finance, NTD,
State Board of Accounts	Report to SBA a variety of items requested by SBA regarding grant expenditures, processes, etc. annually.
Triennial Reviews	Meet and review all Federal policies with FTA once, every 3 years. Make revisions, updates, and any corrections to deficiencies found by FTA.
MPO quarterly reports	Submit TIP and quarterly reports to MPO Annually and quarterly. Maintain communication open between departments regarding projects, funds, etc.
FTA FFR and MPRs	Submit FFR and MPR's to FTA TrAMS quarterly
City Controller reports	Submit reports to Controller prior to drawing down funds from FTA to assure funds match is in line with Federal draws, balance with Controllers grant balances throughout the year.
PM reports for buses, nifty lifts,	Complete PM inspections and actions to all rolling stock at specific mileage levels as well if on an 'as needed' basis.
FTA communication	Periodically email/telephone FTA reps with progress on projects, discuss and make sure everything is on track.
INDOT meetings	Email/telephone INDOT rep to discuss funds at the beginning and end of each year to confirm existing funding, future funding and to discuss projects.

4.2 Investment Prioritization

CATS conducts maintenance checks on vehicles and facilities as per their Vehicle Procedures Manual and the Facilities Procedures manual (Appendix 5 & 6) on a daily, weekly, monthly, etc. basis. CATS also utilized 2 software systems to maintain data to monitor issues in their fleet and/or facilities. Based on this information, periodical meeting with Admin staff, and the review of CATS expenditures, conducting regular preventative maintenance checkups, this keeps the CATS fleet in a state of good repair.

a. *List of analytical process(es) used to make investment prioritization*
    i. *Investment Prioritization: To assist in prioritization by following CATS Procedure Manuals. CATS conducts maintenance checks on vehicles and facilities as per their Vehicle Procedures Manual on a daily, weekly, monthly, etc. basis. CATS also utilized 2 softwares to maintain data to monitor issues in their fleet. Based upon all of this information, CATS budgets for any potential vehicles investments annually. This keeps the CATS fleet in a state of good repair.*
    ii. *Maintenance Strategy: Regularly planned maintenance activities, and unplanned maintenance needs: For specific Maintenance Strategy on vehicles for CATS, Please see the CATS Vehicle Maintenance Procedure Policy listed in Appendix 7.*
b. *The tool does not have to be software*

4.3 Risk Management:

CATS has identified unacceptable safety risks and accessibility requirements below and the mitigation strategies for each. CATS Mitigation Strategy would consist of relying on other local, state or federal funds to provide transportation in Anderson. CATS would have to significantly increase their competitive funding by writing grants and competing with other transportation funding. If additional funds were not obtainable, potential decrease in staff, routes, facility repairs, and other necessary tools in providing transportation to the citizens of Anderson would be decreased.

Potential Risk Management Table	
Risk	Mitigation Strategy
Loss or reduction of federal funds	Decrease staff, routes, repairs and other necessary tools in providing transportation to the citizens of Anderson. Extend ULB if possible. Request additional funds from grants, FTA or State.
Loss or reduction of state funds	
Loss or reduction of city funds	
Fuel supply chain disruption	Make arrangements to fuel off-site.
Parts supply chain disruption	CATS has a variety of suppliers that they purchase parts from, therefore there should usually have access to parts and supplies.

4.4 Maintenance Strategy

CATS regularly planned maintenance activities (e.g., inspections, routine preventive maintenance activities, etc.) are described in the Vehicle Maintenance Procedure Policy and the Facility Maintenance Procedure Policy. These can both be reviewed in the Appendix 8. These documents include weekly, monthly, quarterly and annual requirements as well as by mileage. There are check lists that are completed at specific time points to show documentation of what has been completed on each bus saved in files. CATS also operates 2 software systems to monitor issues with buses and paratransit vehicles.

4.5 Overhaul Strategy

CATS does not 'overhaul' buses. See the Acquisition and Renewal Strategies below.

4.6 Disposal Strategy

Rolling Stock: CATS vehicles at the end of their useful lives (8 to 15 years) are retired according to the Disposal guidelines set forth by FTA 5010.1D. Appraisals are obtained for the buses and if they are estimated to be of a value of $5,000 or less, it is auctioned by the city or given to a non for profit charity. If it is valued at $5,000 or more, the funds go back to the FTA.

Overhaul Strategy Table		
Asset Category	Asset Class	Acquisition & Renewal Strategy
Rolling Stock	BU-Buses & TR-Trolley	CATS repairs damaged or non-functional assets and components on an 'as needed basis'. We do not overhaul or rehabilitate our assets unless additional funding is obtained and a replacement asset is made available during the time period in which our asset is unavailable. Assets are replaced when the asset's ULB is met, an asset is considered a total loss by insurance, funds are available and/or when replacement is approved by FTA.
Rolling Stock	CU-Para transit	
Equipment	SV-SUVs	
Equipment	AO-Maintenance Trucks	
Facility	Admin Offices & Garage / Terminal	

Equipment: CATS acquires their equipment new. They maintain their equipment throughout its useful life. If the equipment breaks, it is looked at to see if it is financially feasible to repair. If it is, CATS repairs their equipment. However if it is not, CATS will replace it, depending upon funding. This may be due to accidental breakage, reaching its useful life or no longer meeting code or ADA requirements. Items that are broken and unusable are disposed of appropriately by recycling or garbage depending upon the equipment. Outdated or items that have met their useful life expectancy and no longer workable are disposed of by city auction.

4.7 Acquisition and Renewal Strategy

Acquisition and Renewal Strategy:

Acquisition and Renewal Strategy		
Asset Category	Asset Class	Acquisition and Renewal Strategy
	BU – Bus / TB – Trolley Bus Fixed route buses	The ULB for CATS fixed route buses is an average of 7 years. Buses are sometimes phased into the fleet, and others they have been purchased at one time. Variables include available funding, age, condition, miles, hours, etc.
Para transit bus	CU – Paratransit Bus	The ULB for CATS DR is 7-10 years. Replacement variables are the same as Fixed Route.
Equipment	SV - SUV	CATS ULB is 8 yrs for SUV
Equipment	AO – Truck/Van	CATS ULB is 8 yrs for Truck
Facility	Admin & Garage and Terminal	Cost estimates are obtained if any repairs need completed. If funds are available, the repair is completed. If they are not, they are temporarily repaired until funds become available in the next annual budget.

		The Facility Maintenance Policy assists CATS with preventative maintenance as planned.

Facility: IF CATS would require an additional facility, they would organize a team consisting of city officials, architect, attorney, engineer, etc. and decide to build or buy. Depending upon what is on the market and if the market assists their needs they would determine whether to build a new facility or purchase an existing building. Cost estimates are obtained if any repairs need completed. If funds are available, the repair is completed. If they are not, they are temporarily repaired until funds become available in the next annual budget. The Facility Maintenance Policy assists CATS with preventative maintenance as planned.

5. WORK PLANS & SCHEDULES/INVESTEMENT PRIORITIZATION

5.1 Proposed Investment/Work Plan

CATS will complete an investment analysis on an annual basis as the inventory is updated. CATS will determine what type of capital investments are needed, the cost and their priority in order to meet the State of Good repair requirements for TAM.

The investment priority analysis aids in making more informed investment decisions to improve the state of good repair of our capital assets, and define when as asset needs overhaul or replacement. The investment prioritization list is a list containing the work plan(s) and schedule(s) of the proposed projects and programs that estimates would achieve its SGR goals, and ranking of projects and programs based on implementation priority over the TAM horizon period of four years.

CATS will rank selected projects and programs to improve or manage the SGR of capital assets for which we have a direct capital responsibility. The ranking criteria of projects and programs shall be consistent through the TAM. Priority consideration will be given to local projects and programs that A. both improve SGR and correct an identified unacceptable safety risk, and B. Take into consideration ADA requirements concerning maintenance of accessible features and the alteration of transit facilities. Furthermore, when developing an investment prioritization list, CATS shall take into consideration its estimation of funding levels from all sources that it reasonably expects will be available in each fiscal year during the TAM horizon period.

The ranking of investment prioritization programs and projects will be expressed as: High, Medium or Low Priority. Each investment prioritization program or project ranked shall contain a year and or day in which CATS intends to carry out the program or project. This output process is a list of ranked projects and programs at the asset class level that identify assets from the asset inventory.

CATS list of selected project and programs prioritized based on CATS Criteria. The projects are ranked below by year planned, along with the project name, asset/class/ cost and priority rating.

Proposed Investments Project List

Project Year	Project Name	Asset/Asset Class	Estimated Cost	Priority Rating
2018/19	Construction of new Terminal	Facility	$8,300,000.00	High
2019	Purchase of 2 Para transit buses	26 ' para transit buses	$198,000.00	High
	Purchase of new Trolley		$175,000	Medium
	Purchase of new Lawn mower		$5,000	Medium
	Diagnostic Scanner			High
2020	Purchase of 2 Para transit buses	26 ' para transit buses	$217,000.00	High
	Bus Lift	Floor lift	$30,000	High
	Bus Wash	Roll over bus wash	$80,000	Medium
	Purchase of 2 service trucks		$90,000	Medium
2021	Purchase of 2 Para transit buses	26 ' para transit buses	$238,000.00	High

	2 SUV support vehicles		$100,000	Medium
	2 buses (est $150,000/bus)	32’ bus	$300,000	High
2022	Purchase of 2 Para transit buses	26 ' para transit buses	$261,000.00	High
	5 buses (est $165,000/bus)	32’ bus	825,000	High
2023	Purchase of 2 Para transit buses	26 ' para transit buses	$287,1000.00	High

5.2 Capital Investment Activity Schedules: Work plans and/or schedules that CATS works from on their capital investment activities are listed below.

- ✓ The Vehicle Maintenance Procedures Manual is for all of CATS rolling stock.
- ✓ The Facility Maintenance Procedure manual is for both of our facilities.
- ✓ Preventative Maintenance Form or PM Sheet is used for the documentation of completion of all maintenance checks on vehicles and filed.

Capital Investment Activity Schedules:		
Document Name	**Appendix Title**	**Appendix**
CATS Vehicle Maintenance Plan	CATS Vehicle Maintenance Procedures Manual	# 6
CATS Facility Maintenance Plan	CATS Facility Maintenance Procedures Manual	# 7
Preventative Maintenance Form or PM	CATS PM (Preventative Maintenance) Sheet	Included in Vehicle Maintenance Policy

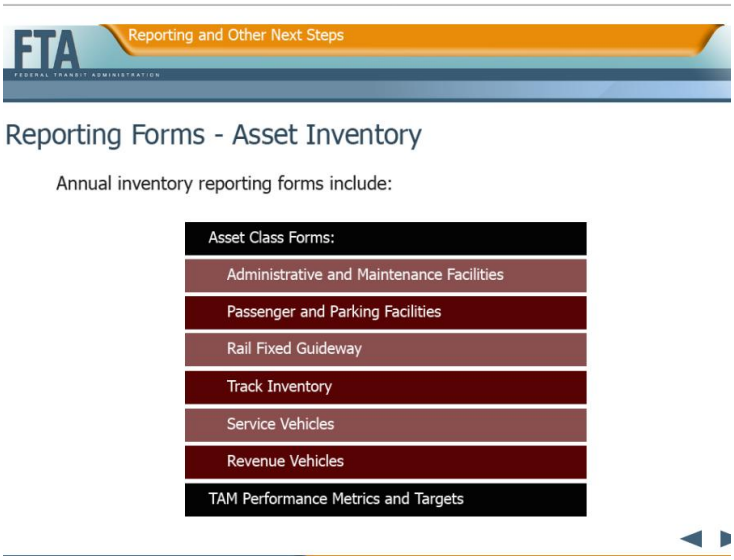
6. RECORD KEEPING AND NTD REPORTING

Recordkeeping and Reporting Requirements

CATS will maintain assets in a state of good repair by reporting financial, operating and asset conditions of assets to TAM and NTD with forms and timelines set forth by FTA. CATS will make the TAM plan available to Federal (FTA), State (INDOT) and our MPO (the Madison County Government Center (COG) to assist in the overall process.

6.1 Annual Reporting Requirements (Record keeping, Performance measures, Target reminders)

- ✓ CATS will submit NTD, as required by FTA annually.
- ✓ CATS submitted the TAM data into the 2017 NTD Report by May 30, 2017. However, since the Final TAM plan is due to FTA by October 1, 2018, CATS will submit their annual update of TAM annually in October.
- ✓ If an NTD or TAM filing extension is required for any reason, an extension letter must be filed with NTD and/or FTA accordingly.



Annual information to be reported to NTD:

6.2 Data Report:

Publish projected performance targets for next fiscal year
System Condition and Performance Reports

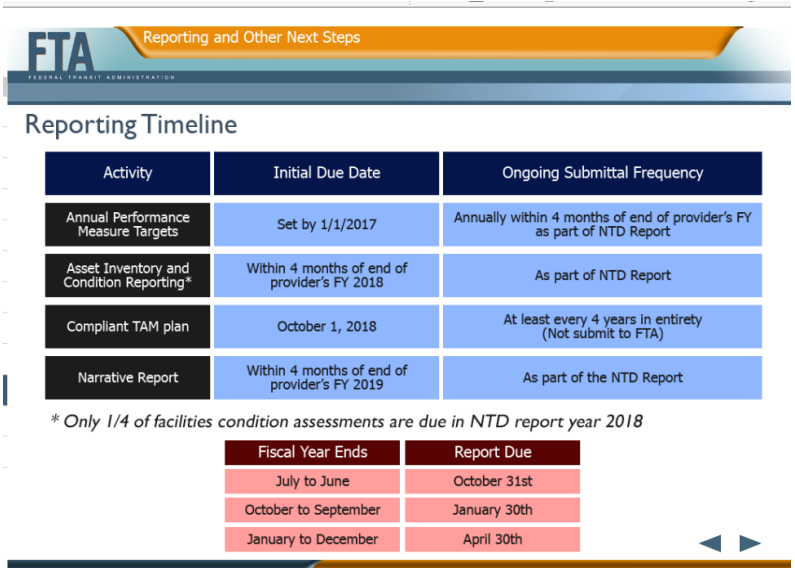
a) Inventory of assets
b) Condition inspection assessment and performance measurers of capital assets;
c) Performance results,
d) Investment strategies,
e) SGR Projected performance targets for next fiscal year

6.3 Narrative Report:

a. This gives each Transit provider the chance to change in condition.
b. Progress toward targets set in previous fiscal year.

6.4 Reporting Timeline:

- ✓ Initial Targets projections are set for all sections of the capital assets, 3 months after Final Rule.
- ✓ *Initial TAM Plan* completed no later than 2 years after effective date.
- ✓ Plans would be updated in their entirety at least every 4 years, thereafter.



- ✓ coincide with relevant (Statewide Transportation Improvement Program)
- ✓ Cover and submit at least 4 years
- ✓ Should be amended during the horizon period when there is a significant change.
- ✓ 2 years after the Final Rule date, Narrative Report is due annually within 4 months of end of provider FY.

6.5 Course Completion by CATS:

Since 2016, CATS has been following the TAM requirements. FTA will:

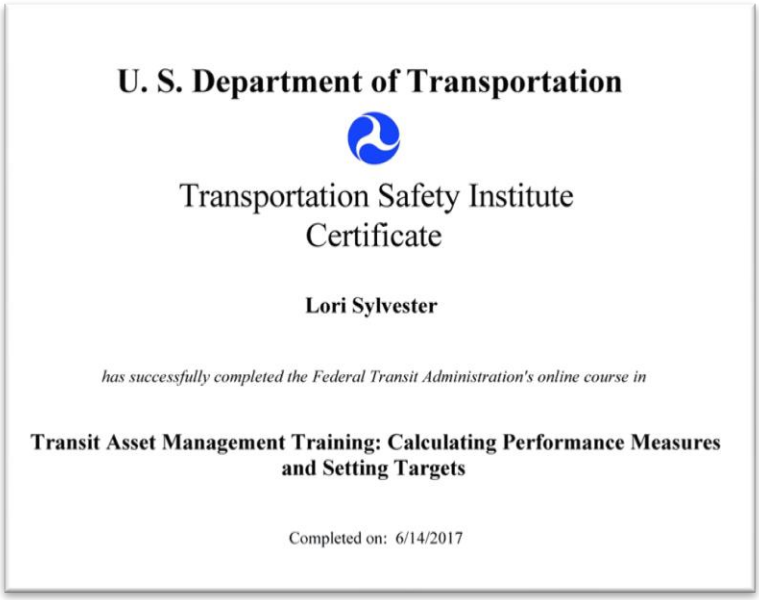
- ✓ update Certifications and Assurances to reflect TAM Plan requirements, and
- ✓ review Plans and Progress during Triennial and State Management Reviews as well as during MPO Certification Reviews.

CATS will review updated information and webinars as put forth by FTA . Training & Webinars provided by FTA, attended by Lori Sylvester, Accountable Executive consist of the following to date:

- July 26, 2016, TAM Final Rule, Webinar Series 1, 2pm, 1.5 hours,
- July 28, 2016, TAM Performance Measures Guidebooks, Webinar Series 2, 2pm, 1.5 hours
- July 27, 2016, TAM Facility Performance Assessment & Infrastructure Performance Assessment,
- Webinar Series 3, 2pm, 1.5 hours
- August 4, 2016, Webinar Series 4, TAM Final Rule, 2pm. 1.5 hours
- August 9, 2016: Webinar Series 5, TAM Small Systems Focus, 2pm, 1.5 hours
- June 6, 2017: Final TAM Performance Measurer Guidebooks, 2pm, 1 hour
- June 20, 2017: Performance-Based Planning Roundtable, 1:30, 2 hours
  - https://www.transit.dot/performance-based-planning
  - https://www.transit.dot.gov/TAM
- June 11, 2018: TAM plans for small and medium providers, 2pm, 1.2 hours

Additional information that CATS has reviewed include the following:

- Facility Condition and Rail Guide way Guidebooks
- TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation
- Transportation Safety Institute's, Transit Asset Management Training: Calculating Performance Measures and Setting Targets, Course and Certificate



U. S. Department of Transportation

Transportation Safety Institute
Certificate

Lori Sylvester

has successfully completed the Federal Transit Administration's online course in

Transit Asset Management Training: Calculating Performance Measures and Setting Targets

Completed on: 6/14/2017

7. ANNUAL PERFORMANCE TARGETS AND MEASURES

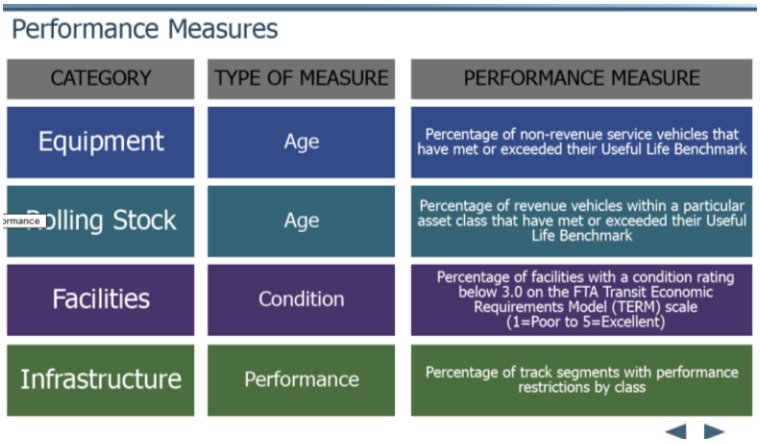
7. Annual Performance Targets & Measures

Annual Performance Targets and Measures lists the process, data sources, and methodology used in the development of the FTA requirement of CATS to set annual SGR performance targets. An asset is in a state of good repair when the condition of a capital asset is able to operate at a full level of perforance. The means that an asset is:

A. able to perform its designed function,
B. does not pose a known and or unacceptale safety risk (condition), and
C. its lifecycle investments have been met or recovered (useful life benchmark).
D. CATS may then set targets for percent of assets below performance measures for next reporting year.
E. Compare to historical asset condition data, if available. Consider new influencing factors.

7.1 Targets for Proposed Performance Measures

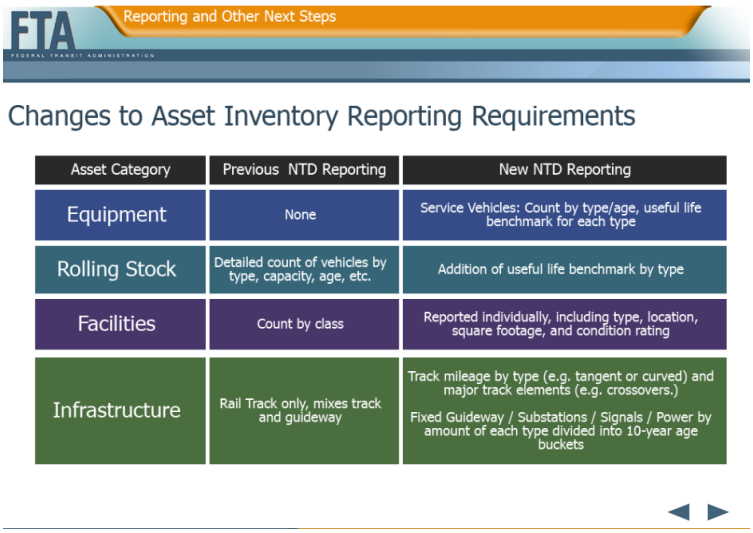
Reporting Performance Measurers:
Equipment – Age: Percentage of non-revenue service vehicles that have met or exceeded their Useful Life Benchmark (ULB)
Rolling Stock: - Age: Percentage of revenue vehicles within a particular asset class that have met or exceeded their ULB
Infrastructure – Performance: Not applicable to CATS.
Facilities – Condition: Percentage of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) scale (1=Poor to 5=Excellent)



Example Facility Target: 25% of maintenance facilities will have a condition rating below 3.0 on the FTA TERM scale by the next annual reporting date.

The following target information has been compiled for proposed performance measures at CATS as per FTA requirements:

A. Set targets annually for each asset class:
   i. Equipment
   ii. Rolling Stock
   iii. Facilities
B. Supported by data
   i. Most recent condition data



ii. Reasonable financial projections

C. Targets for group plans apply to the group as a whole. This statement is not applicable to CATS
D. Reported annually to NTD: Completed in 2017 NTD report by May 30, 2017.
E. There is no reward for reaching your target, nor a penalty for not reaching your target.

7.2 Target Timeframes

CATS will establish one or more performance targets for each applicable asset class performance measure on an annual basis for the next fiscal year. The timeline for establishing SGR performance targets and measures are as follows:

A. Initial Targets projections are set for all sections of the capital assets, 3 months after Final Rule.
B. *Initial TAM Plan* completed no later than 2 years after effective date.
C. Plans would be updated in their entirety at least every 4 years, thereafter.
    1. Coincide with relevant (Statewide Transportation Improvement Program)
    2. Cover at least 4 years
    3. Should be amended during the horizon period when there is a significant change.
D. 3 years after the Final Rule date, Narrative Report is due annually within 4 months of end of provider FY.

7.3 Target Performance Measures & Targets

Asset Category	Performance Measure	Target
Rolling Stock *All revenue vehicles*	**Age** - % of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	Bus 22% DR 25% TB 100%
Equipment *Non-revenue vehicles*	**Age** - % of vehicles that have met or exceeded their Useful Life Benchmark (ULB)	SV 100%
Facilities *All buildings or structures*	**Condition** - % of facilities with a condition rating below 3.0 on a the FTA Transit Economic Requirements Model (TERM) Scale	50%

TAM Workflow setting the targets:

Rolling Stock direct response buses 9:

a) CATS has 9 fixed route buses: 110, 117, 120, 121, 122, 123, 124, 125, 126
b) The FTA ULB for a CATS bus 29.5' to 32' bus is 7 years.
c) The condition assessment: 5 are 3 yrs old, 2 are 4 years old, 1 is 9 years old and 1 is 11 years old. Therefore; 78% are in a state of good repair.
d) They do not pose a safety risk at this time.
e) Set Target: 78% of buses are in a state of good repair.
f) Prioritize Funding: Replace 2 busses in 2021 and 5 buses in 2022.

Rolling Stock para-transit buses: 8

a) CATS has 8 para-transit buses. #687, 688, 701, 702, 703, 704, 705, 706
b) The FTA ULB for a 26' bus is 7 to 10 years; and an estimated mileage of 200,000 to 250,000. CATS will set forth funds at the earliest year in case they become inoperable or cost prohibitive to repair.
c) The condition assessment: 2 are 1 year old, 2 are 2 years old; 2 are 3 years old; 2 are 8 years old. The mileage ranges from 8,508 to 170,222. Six of eight of CATS busses are less than 4 years old.
d) Therefore; 75% are in a state of good repair.
e) This does not set a safety risk at this time.
f) Set Target: 75% of para-transits are in a state of good repair.
g) Prioritize Funding: Based on a 7 to 10 year life expectancy, and/or 150,000 to 200,000 miles, and depending upon regular upkeep, maintenance, and funding CATS will potentially replace 2 8 year old niftys in 2019. And depending upon maintenance and upkeep, replace additional nifty lifts as needed.
h) This should put CATS at 100% in 2020.

Trolley:

a) CATS has 1 electric trolley.
b) The FTA ULB for an electric is 13 years; however CATS will set forth funds at the earliest year in case they become inoperable or cost prohibitive to repair.
c) The condition assessment: 1 trolley is 20 years old, and has a broken armature generator shaft inside engine. It is financially unfeasible to repair.
d) Therefore; 0% are in a state of good repair.
e) This poses a safety risk at this time and has been removed from service.
f) Set Target: 0% of the trolley is in a state of good repair.
g) Prioritize Funding: Based on a 13 year life expectancy and depending upon regular upkeep, maintenance, and funding CATS will potentially replace trolley 2019.

Equipment: SUV, Service Trucks and Admin Vehicles

a) CATS has 2 service trucks and 4 (SUV) administrative vehicles or a total of 6.
b) #s: 481, 100, 675, 699, 007, 10 respectively
c) Purchase dates: 1 in 2007, 2 in 2010, 1 in 2012, and 1 in 2014.
d) The FTA ULB for a SUV is eight years and for a service truck is eight years old: 1 SUV is 11 years old, Three (1 SUV) and (2 service trucks) are seven years old, one SUV is three years old, and one SUV is four.
e) The FTA ULB for service trucks and SUVs are 8 yrs and/or 100,000 to 150,000 miles. CATS mileage for SUV and trucks range from 25,381 to 113,075, or an average of 57,569 each. (Only 1 SUV is over 100,000, while the others range from 25,381 to 62,135).
f) Therefore, 100% of CATS service trucks and admin vehicles are in a state of good repair.
g) They do not pose a safety risk at this time.
h) Two of two or 100% of SUVs are in a state of good repair. And 2 of 4 or 50% of the service trucks are in a state of good repair.

i) Set target for: Based on a 8 year life expectancy, or 100,000 to 150,000 miles, and depending upon regular upkeep, maintenance, and funding CATS will potentially replace 2 service trucks in FY19; and 3 SUVs in FY20; 1 SUV in 2021.

Bus Lift:

a) CATS has 1 bus lift in the garage.
b) Purchase date: Approximately 1975.
c) The manufacturer's ULB for a bus lift is: 12 years.
d) Therefore, the lift is in a fair state of good repair.
e) Do they pose a safety risk. Based on the age of the bus lift, it poses a risk. However, all parts and hydraulics are working properly at this time.
f) Set Target for: CATS bus lift is in a state of poor repair
g) Prioritize Funding: Based on a 10 year life expectancy, and depending upon regular upkeep, maintenance, and funding CATS will potentially replace this bus lift in 2019/20.

Bus Wash:

a) CATS has 1 stationery bus wash.
b) Purchase date: Approximately 1975.
c) The ULB for a bus wash similar to CATS is 10 years,
d) Therefore, the bus wash is in a state of poor repair.
e) Do they pose a safety risk? Not at this time.
f) Set Target for: CATS Bus wash is in a state of poor repair
g) Prioritize Funding: Based on a 10 year life span, by the general manufacturer, the year life expectancy, and depending upon regular upkeep, maintenance, and funding; CATS will potentially replace this bus wash machine in 2020/2021.

Facilities:

a) CATS has 2 facilities. One garage/admin building and one terminal. 50% or 1 of the CATS buildings are in a state of good repair.
b) The locations for the buildings are 530 Dale Keith Jones Road and 1109 Main Street, respectively.
c) Both structures were constructed in 1975. The garage/admin building ULB is anticipated at 50 to 75 years. The terminal's ULB is anticipated to be 30-40 years.
d) Therefore, the garage/admin building has an additional 25+ years depending upon maintenance and upkeep, and the terminals ULB has expired at its current age of 43.
e) They do not pose a safety risk at this time.
f) Set Target for: The garage/admin building is 100% or in a state of good repair. The terminal is 0% and in a state of poor repair.
g) Prioritize Funding: Based on a 25+ years remaining in the garage/admin building, plan to reroof building in 2019. Based on no years remaining on the terminal, plan to acquire, demolish and construct a new facility. CATS is currently waiting the approval of a grant in the amount of $6.3 million to complete this task throughout 2018/29/20. CATS currently has an active Design and Engineering Grant from FTA that is funding the soft costs for this project. FTA has approved

the environmental review with the exception of the Phase 1a to be completed after demolition is done on the site. CATS has also submitted a grant to FTA that is currently under FTA Review for Acquisition, Demolition and Construction in September, 2018. CATS is also in the process of working with a consultant to obtain ownership of the property. Anticipated ownership of the land is by December, 2018. Plans for demolition are anticipated to take place in late winter, 2018. Construction is anticipated to begin in spring, 2019.

The CATS Terminal is slated to be replaced in 2018/2019. The current structure was constructed in c. 1975, consisting of a wood frame, octagonal structure and 3 tab shingle roofing. It has suffered tremendous deterioration over the years, and is cost prohibitive to repair. Its useful life is quickly coming to an end.

The CATS administration office/garage was constructed in c. 1975 consisting of concrete block, with wooden walls within the structure and a rubber roof system. It has experienced normal ware over the years; however has a long life expectancy of approximately 25-30 years minimum with proper maintenance.

7.4 Performance Targets for CATS: (See Appendix1 & 2 for individual rolling stock information)

CATS Annual Asset Performance Targets; **Fixed route rolling stock**							
Asset Category	Asset Class	Fleet Size	Vehicle Age	Default FTA ULB	FFY 17 Performance Metric (% Exceeding ULB)	SGR Target FFY 18	FTA (Default Performance Metric
Rolling Stock: FR bus	Freightliners & Chevrolets	10	Avg 4.7 (5=3yrs 2=4 1=9 1=11)	7 to 10 yrs	25%	75%	75%
Paratransit	Chevrolets	9	Avg.3.5 (2 = 1 2=2 2=3 2=8)	7 to 10 yrs	25%	75%	75%

CATS Annual Asset Performance Targets; **Equipment**							
Asset Category	Asset Class	Fleet Size	Vehicle Age	Default FTA ULB	FFY 17 Performance Metric (% Exceeding ULB)	SGR Target FFY 18	FTA (Default Performance Metric
SV	GMC, Dodge and Chevrolet	4	11, 7 , 9, 3 or avg of 7.5	8	50%	50%	100%
Truck	Chevrolet	2	Both 7 yrs old	8	100%	100%	100%

CATS Annual Asset Performance Targets; **Facilities**							
Asset Category	Asset Class	Number of Buildings	Building Age	Default CATS ULB	FFY 17 Performance Metric (% Exceeding ULB)	SGR Target FFY 18	FTA (Default Performance Metric
Facilities	Admin/Garage	1	1975 or 43 years old	50 to 75 yrs	100%	100%	100%
Facilities	Terminal	1	1975 or 43 years old	40 years	0%	0%	100%

APPENDIX

8. Appendix

10. Rolling Stock Inventory - Paratransit, Fixed Route and Trolley

11. Equipment (Support) Vehicles

12. Facilities (Building Inventory and condition report)

Asset Condition Data (-this information has been combined into the Inventory spreadsheets for Rolling Stock, Equipment and Facilities found on the Asset Register Excel Spreadsheets in Appendix 1, 2 and 3. The column headers on each spreadsheet are named: Condition, Age, Remaining Useful Life and Replacement cost.

13. Photo Index

14. Slide Index

15. Vehicle Maintenance Procedures Manual
    a. PM Checklist

16. Facility Maintenance Procedures Manual

17. Contractor Review Check lists from FTA for new buses -cutaways or Para transits (2 forms)

18. CATS TAM Certification

1. **Rolling Stock Inventory Excel Spreadsheet**
2. **Equipment (or Support) vehicles Excel Spreadsheet**

   Fixed Route, Paratransit, and Equipment (or support) Vehicle, and Trolley Inventory and Condition Sheet

Rating, Description and Condition Scale for Rolling Stock Fixed Route Buses:

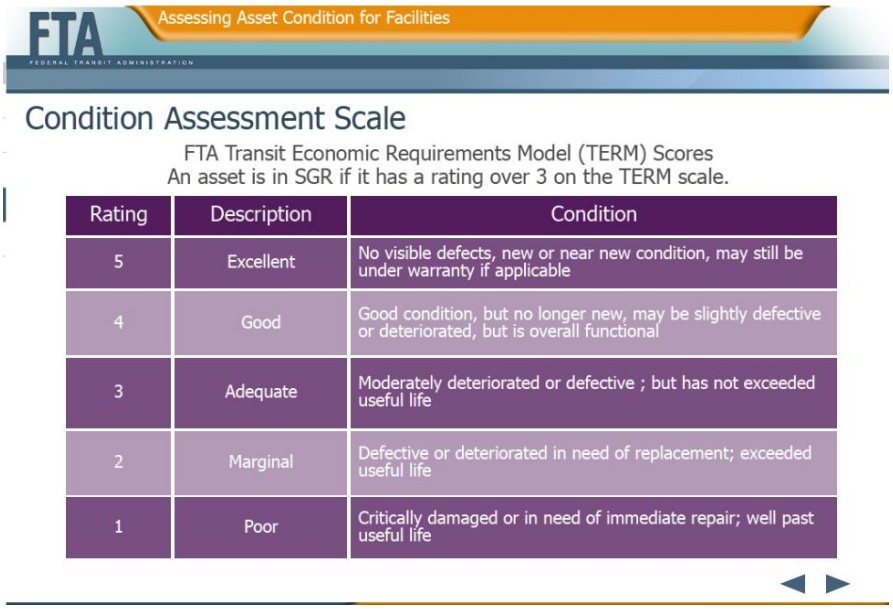
Rating	Description	Condition
5	Excellent	0-65,000 miles; 1-3 years of age; no major body damage; no major mechanical issues; 57%-100% residual life remaining.
4	Good	65,001 to 120,000; 3-5 years of age, no major body damage; no major mechanical issues; 28% to 72% residual life remaining.
3	Fair	120,001 to 205,000 miles; 5-8 years of age; minor body damage, minor/repairable mechanical issues;
2	Worn	205,001 to 235,000 miles; 9 to 10 years of age; minor body damage, minor/repairable mechanical issues;
1	Inoperable/Poor	235,001 to over 300,000 miles; over 9 years of age; inoperable or cost prohibitive to repair. This may vary depending on age, miles, accidents, mechanical issues, etc.

CITY OF ANDERSON TRANSIT SYSTEM (CATS) — February 13, 2018
FIXED ASSET INVENTORY
TAM TRANSIT ASSET MANANGEMENT INVENTORY (ROLLING STOCK AND EQUIPMENT)

ROLLING STOCK BUSES

TAG#	VEHICLE#	MAKE	CAPACITY seated + driver	YEAR	VEH. ID	MODEL #	DESCRIPTION	SERIAL # / VIN #	LICENSE	PURCHASE DATE	PURCHASE PRICE	CONDITION	AGE	RATING	REMAINING USEFUL LIFE	POTENTIAL REPLACEMENT COST	FUNDING SOURCE (S)	MILEAGE (correct)	PLANNED DISPOSITION
	110	CHEVROLET	24	2007	29642	C5500/BUS	CHEVY TRANSIT BUS/WHITE	1GBE5V1907F423660	76265	9/29/2007	$130,000	POOR	11	1	1	$147,847.00	FTA/CATS	334,738	In Use
	117	CHEVROLET	24	2009	42698	C5500/BUS	CHEVY TRANSIT BUS/WHITE	1GBG5V1959F413329	83590	8/25/2010	$130,000	WORN	9	2	1	$147,847.00	FTA/CATS	292,018	In Use
	120	FREIGHTLINER	24	2014	331339	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU9ECFT3148	29432	12/3/2014	$134,407	FAIR/GOOD	4	3.4	2	$147,847.00	FTA/CATS	130,927	In Use
	121	FREIGHTLINER	24	2014	337214	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU0ECFT3149	29431	12/3/2014	$134,407	FAIR/GOOD	4	3.4	2	$147,847.00	FTA/CATS	121,422	In Use
	122	FREIGHTLINER	24	2015	337215	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU9FCGD0319	29433	12/3/2014	$134,407	GOOD	3	4	2	$147,847.00	FTA/CATS	113,077	In Use
	123	FREIGHTLINER	24	2015	342788	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU5FCGP2300	30065	1/7/2015	$134,407	GOOD	3	4	2	$147,847.00	FTA/CATS	103,497	In Use
	124	FREIGHTLINER	24	2015	342789	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU7FCGP2301	30066	1/7/2015	$134,407	GOOD	3	4	2	$147,847.00	FTA/CATS	134,727	In Use
	125	FREIGHTLINER	24	2015	342790	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU4FCGR9424	30432	2/5/2015	$134,407	GOOD	3	4	2	$147,847.00	FTA/CATS	136,356	In Use
	126	FREIGHTLINER	24	2015	342791	LEGACY/BUS	FREIGHTLINER BUS/WHITE	4UZADRDU6FCGR9425	30505	2/5/2015	$134,407	GOOD	3	4	2	$147,847.00	FTA/CATS	121,983	In Use
NIFTY LIFT VANS (ADA Complementary Paratransit Service)																			
	687	CHEVROLET	14	2010	37345	BS25	CHEVY WHITE SUPR/VAN	1GB6G2ALXA1167640	84563	12/14/2010	$63,585	FAIR	8	3	2	$87,000.00	FTA/CATS	170,222	In Use
	688	CHEVROLET	14	2010	37346	BS25	CHEVY WHITE SUPR/VAN	1GB6G2AL7A1173816	84564	12/14/2010	$63,585	FAIR	8	3	2	$87,000.00	FTA/CATS	167,141	In Use
	701	CHEVROLET	17	2015	342811	G4500	CHEVROLET G4500	1GB6G5BL1F1259839	33680	9/2/2015	$83,998	EXCELLENT	3	4	7	$87,000.00	FTA/CATS	48,366	In Use
	702	CHEVROLET	17	2015	342812	G4500	CHEVROLET G4500	1GB6G5BL0F1259329	33681	9/2/2015	$83,998	EXCELLENT	3	4	7	$87,000.00	FTA/CATS	52,534	In Use
	703	CHEVROLET	17	2016	349024	G4500	CHEVROLET G4500	1GB6GUBL0G1139025	40493	7/20/2016	$84,935	EXCELLENT	2	5	8	$87,000.00	FTA/CATS	39,317	In Use
	704	CHEVROLET	17	2016	349025	G4500	CHEVROLET G4500	1GB6GUBL2G1139978	40492	7/20/2016	$84,935	EXCELLENT	2	5	8	$87,000.00	FTA/CATS	31,650	In Use
	705	CHEVROLET	17	2017	353421	G4500	CHEVROLET G4500	1GB6G5BL4F1166703	51567	8/23/2017	$85,909	EXCELLENT	1	5	9	$87,000.00	FTA/CATS	12,662	In Use
	706	CHEVROLET	17	2017	353422	G4500	CHEVROLET G4500	1GB6G5BL9F1167085	51566	8/23/2017	$85,909	EXCELLENT	1	5	9	$87,000.00	FTA/CATS	8,508	In Use
TROLLEY																			
	690 T	EFI	22	1998	52443	BR14	ELECTRIC TROLLEY	IS9BR14J4WC143832	25923	3/14/2000	$60,000	INOPERABLE	20	1	0	$165,000.00	FTA/CATS		CATS GARAGE (to be sold or scrapped)
EQUIPMENT AND SERVICE VEHICLES																			
	481	GMC	7	2012	NA	S1F	ACADIA SUPPORT VEHICLE	1GKKRRED4CJ179337	10491	2/22/2012	$37,538	FAIR	6	3	4	$50,000.00	FTA/CATS	45,646	In Use
	100	CHEVROLET	7	2011	NA	TVS	TRAVERSE SUPPORT VEHICL	1GNKVEED5BJ212836	84376	10/26/2010	$26,669	FAIR	7	3	3	$50,000.00	FTA/CATS	48,801	In Use
	675	CHEVROLET	2	2011	NA	2KH	4X4 SERVICE TRUCK	1GB0KVCG7BF151888	83769	10/26/2010	$31,429	FAIR	7	3	3	$45,000.00	FTA/CATS	62,135	In Use
	699	CHEVROLET	2	2011	NA	2KH	4X4 SERVICE TRUCK	1GCGKVCG2BF152894	83770	10/26/2010	$28,318	FAIR	7	3	3	$45,000.00	FTA/CATS	50,378	In Use
	007	CHEVROLET	5	2007	NA	CU12216	UPLANDER VAN/ WHITE	1GBDV13W77D192680	74619	7/24/2007	$31,623	POOR	11	1	1	$50,000.00	FTA/CATS	113,075	In Use
	10	DODGE	7	2015	NA	RTKH53	CARAVAN/WHITE	2C7WDGBG4FR536775	29351	11/21/2014	$35,000	GOOD	3	2	3	$50,000.00	FTA/CATS	25,381	In Use
		BUS WASH		1975			DRIVE THROUGH			5/28/1905	$30,000.00	POOR	43	1	2	$30,000.00	FTA/CATS		2020
		BUS LIFT		1975			FLOOR LIFT			5/28/1905	$80,000.00	POOR	43	1	2	$80,000.00	FTA/CATS		2020

3. Facilities: TAM Building Asset Inventory



Assessing Asset Condition for Facilities

FTA
FEDERAL TRANSIT ADMINISTRATION

Condition Assessment Scale

FTA Transit Economic Requirements Model (TERM) Scores
An asset is in SGR if it has a rating over 3 on the TERM scale.

Rating	Description	Condition
5	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable
4	Good	Good condition, but no longer new, may be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective ; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

CITY OF ANDERSON TRANSIT SYSTEM (CATS) — February 13, 2018

FIXED ASSET INVENTORY

Facilities: Admin/Garage and Terminal

NAME OF BUILDING	LOCATION	DESCRIPTION	SQUARE FOOTAGE	YEAR CONST-RUCTED	AGE	CONDITION	RANKING	REMAIN-ING USEFUL LIFE	APPROX. REPLACEMENT COST	PLANNED DISPOSITION	PURCHASE PRICE	FUNDING SOURCE (S)
Administrative/ Garage	530 Dale Keith Jones Road	Concrete Block and wood structure	18,700 building 11,625 parking area	1975	33	Good	4	25-50 yrs	$500,000	Varies depending upon upkeep and maintenance	unnknown	FTA
Terminal	1109 Meridian Street	Wood frame structure	1,377 building 6,411 bus lot	1975	33	Poor	1	0	$6,300,000	Grant in progress	$6,300,000	FTA, CMAQ, STP, local,

4. Photo Index:

Miscellaneous Photo 1: Fixed Route Bus, CATS staff, Lori Sylvester.
Miscellaneous Photo 2: Paratransit Bus, CATS staff, Lori Sylvester.
Photo 1. Street view of CATS Administration/Garage, Google Maps
Photo 2. Exterior photo of CATS Administration office, CATS staff, Lori Sylvester, 2012
Photo 3. Aerial view of CATS Administration/Garage, Google Maps
Photo 4. 18,700 sq. ft. CATS admin/garage building area, City IT Dept. John Richardson
Photo 5. 11,625 sq. ft. CATS parking area at admin/garage building area, City IT Dept., John Richardson
Photo 6. 62,727 sq. ft. CATS grass land -3 areas, City IT Dept., John Richardson
Photo 7. Street view of CATS Terminal, Google Maps
Photo 8. Aerial view of CATS Terminal, Google maps
Photo 9. 1,377 sq. ft. CATS Terminal Building and 6,411 sq. ft. asphalt drive around, City IT, John Richardson
Miscellaneous Photo 3: Electronic trolley, CATS staff, Lori Sylvester, 2006.

5. Slide Index:

All FTA Slides were taken from the Transportation Safety Institute, "Transit Asset Management Training: Calculating Performance measures and Setting Targets" course.

6. Vehicle Maintenance Procedures Manual:

VEHICLE MAINTENANCE PROCEDURES MANUAL

FOR

CITY OF ANDERSON TRANSIT SYSTEM

(August 30, 2017)

TABLE OF CONTENTS

1.Purpose Statement

1.1 Purpose

The City of Anderson Transit System (CATS), operates a in the city of Anderson, Indiana, which includes two types of buses operated on both fixed routes and in demand response service. Administrative, maintenance and passenger transfer facilities are also required for the operation of this service. All of these facilities and pieces of equipment require effective maintenance in order to provide high quality, cost efficient service throughout their life. The purpose of this document is to provide a complete description of Anderson's maintenance procedures for use by Anderson personnel to assure proper care and maintenance of Anderson' facilities and equipment.

1.2 Policy

Anderson shall at all times and with all available means, strive to insure that the vehicles, facilities, and equipment entrusted to it's care are utilized to their maximum public benefit, and are maintained in a manner that derives the most advantageous use at the least possible cost. Anderson shall be diligent in this endeavor in several ways. First, Anderson will pursue creative ways to minimize financial expenditures while upgrading the quality of services. Secondly, all tangible assets will be kept in as good condition as possible to extend their useful life and maintain the quality of Anderson's services. This will be accomplished by continually updating and monitoring the effectiveness of established maintenance programs for vehicles, buildings, and equipment. Finally, Anderson shall encourage each employee to take pride in their association with the City of Anderson Transit System, pride in the duties they perform, and to treat and care for CATS' equipment and facilities as if each item was their own personal property. Utilizing these methods, CATS can continue to provide the excellent quality of service that the Anderson community deserves and has come to expect.

1.3 Goals and Objectives

Operate fixed route and demand response service in the most cost efficient and effective way possible. All of the equipment requires high effective maintenance in order to provide high quality service. We shall strive to endure that the vehicles and equipment entrusted to provide these services are utilized to their maximum public benefit and are maintained in a manner that derives the most advantageous use at the least possible cost.

2. Vehicle Maintenance

2.1 Preventive Maintenance

2.1.1. Overview & PM Checklist

The Anderson Preventive Maintenance Program for revenue service vehicles consists of a series of inspections which are performed at intervals based on accumulated mileage. There are five levels of inspections for vehicles and three levels for paratransit vehicles, each of which has an assigned letter designation.

Preventive maintenance inspections for all vehicles are tracked and projected by use of a computer software package. This software tracks vehicle mileage as recorded by the service lane employees each night. The software issues a warning when vehicles have accumulated mileage within 500 miles of a due inspection. The notification is made in advance of the actual due mileage in order to allow for efficient scheduling of the inspection(s) due. From the time that a work order has been issued, the accumulating mileage is tracked daily by the Director of Operations in order to

assure that the inspection does not occur too soon nor significantly past due. The established acceptable parameters for the performance of preventive maintenance inspections are a 500 mile window. If an inspection is performed more than 500 miles after it is due, the inspection is considered late. In addition, the computer generates a monthly summary report of inspection activity for use by the Director of Operation as a means of monitoring the timeliness of inspections. This report shows the amount of miles that a vehicle was serviced early. The end result of the preventive maintenance scheduling process is that vehicle is in the shop for an inspection of one level or another every 4,000 miles.

Once a scheduled inspection is performed, any defects noted therein are either repaired immediately, which is most commonly the case; or in the case of major, time consuming, non safety related items, the defect may be scheduled for repair at a later date. The results and accuracy of inspections are monitored by the Director of Operations. The results of road call summaries, fluid consumption reports, defect cards, pre-trip inspections, and casual observation of general vehicle condition all contribute to the evaluation of the effectiveness of the preventive maintenance program. All employees are encouraged to provide input into the maintenance process and do so through informal means as well as more structured forums such as employee meetings.

PM Checklist:

CITY OF ANDERSON TRANSIT SYSTEM

PM Checklist

BUS# _____ **DATE:** _____

Drive on inspection
Condition of operator's area (seat, floor, etc.)
Check transmission start operation
Start engine listen for unusual noises
Check starter protection circuit
Check reverse warning system
Check brake pedal and park brake operation
Check service brakes
Check glass & mirror condition
Check wiper and washer operation
Check instruments and horns
Check oil pressure and water temperature
Check operation of all accessories
Check door operation & interlock
Interior Circle Inspection
Check HVAC system
Check seats and floor covering
Check safety equiptment
Check interior lights and chimes
Check window and hatch operation
Check and tighten grabrails
Check physical damage, water leaks, & graffiti
Exterior Circle Inspection
Check wiper blade and arm condition
Re-fill washer fluid
Check mirrors & mounting
Check lights & reflectors
Check passenger & access door operation
Check & lubricate door linkages
Check fuel tank cap and vent
Check physical damage, water leaks, & graffiti
Tire and Wheel Inspection
Check tread depth and air pressure
Check sidewall wear
Check for cuts & tears
Check for mismatched tread and casings
Check valve stems
Check for valve caps
Check wheels for cracks and loose lugs
Check wheel nut torque
Check tires for Irregular or alignment wear
Rotate tires & repack bearings if needed
Under Vehicle Inspection
Check bulkheads and crossbeams
Check vibration damper
Check engine and transmission mounting
Check starter and wiring
Check bottom of engine for oil leaks
Check transmission for leaks
Check differential fluid and breather
Check exhaust system
Check driveline bolts, U-joints, & slip yokes
Check fuel tank and lines
Check suspension components
Check brake lining, rotors, and drums
Check inner wheel seals for leaks
Check service brake condition and adjustment
Check parking brake condition and adjustment
Check brake hoses
Check tires for cuts and damage
Check entire steering system & lube
Check ball joints
Lubrication
Change oil and filter
Inspect and change air filter as needed
Change fuel filter
Flush power steering fluid with differential service
Change differential fluid if needed
Lubricate chassis
Engine Compartment Inspection
Check engine compartment door and lights
Check fan, shroud, & radiator (Clean if needed)
Check coolant hose and waterpump condition
Check Alternator mount and connections
Check fuel, oil, & transmission lines
Check transmission fluid level
Check all belts for condition, alignment, & tension
Check exhaust system
Check intake system
Check power steering fluid
Check engine oil level
Check all engine or belt driven components
Check for oil leaks
Lube all pivoting mechanisms
Check master cylinder and booster

HVAC Inspection
Check refrigerant level, evidence of leaks
Check A/C compressor and alignment
Check clutch gap and lube clutch
Check A/C hose condition
Clean HVAC filters
Check heater valves and mode operation
Clean epavorator and condensor
Check A/C drier
Check evaporator valve
Check high & low switch operation
Check rear unit controls
Battery Inspection & Service
Check alternator output
Clean batteries and lubricate slides
Check hold downs, tray, corrosion, cables, etc.
W/C Lift Inspection
Check access door for operation & hold back
Check platform emergency release mechanism
Operate lift through complete cycle and check for
Unusual noises
Jerky operation
Operates too slowly or too fast
Drift down
Check bridgeplate operation and handrails
Check all pivot points for wear and looseness
Check rollers for wear and smooth rotation
Check operation of platform barrier mechanism
Check cam slots for wear and proper alignment
Check cable condition (if applicable)
Check hydraulic hoses for leaks, chafing, or cracks
Check electrical connections and routing of wires
Check operation of all safety interlocks
Check all micro switch and light operation
Check all mounting bolts, wear blocks, welds, etc.
Operate the manual back-up raise/lower system
Check hydraulic pump reservoir oil level
Are operator decals in place?
Check for a complete set of hold-downs
Check hold-down operation and cleanliness
W/C Lift Lubrication
Clean all linkages and mechanisms if needed
Lubricate (don't over lubricate):
Emergency platform release mechanism
Platform barrier latch mechanism
Bridgeplate hinge & all pivot points

Video Surveillance
Check and make sure cameras come on when vehicle is
Check and make sure all systems are functioning properly
Remove hard drives and make sure they are recording
Check all wires are in good order
Check all systems are in working order

2.1.2 Fixed-route Vehicles

2.1.2.1

A Inspection- The first level of preventive maintenance for fixed-route vehicles is the A inspection which is performed every 2,000 miles. This inspection is intended to provide for frequent monitoring of brake wear and function. In addition, it encompasses tire inspection with specific attention to safety related factors, wheel inspection for cleanliness, draining of moisture from air reservoirs and replacement of HVAC filters.

2.1.2.2

B Inspection- The second level of preventive maintenance performed on fixed route vehicles is the B inspection. As the most comprehensive and detailed inspection, it serves as the baseline for the entire program. It is performed every 4,000 miles and encompasses almost all systems and components of the vehicle including those related to ADA accessibility such as wheelchair lifts. Although the C,D, and E inspections contain slightly more items than the B, they are simply

extended versions of this mainstay inspection which take place on a less frequent time frame. The B inspection is not the same for all full size buses. Each particular bus series has an inspection guideline form tailored specifically to meet the requirements of the vehicle as equipped.

2.1.2.3

C Inspection- The third level is the C inspection. This inspection is basically the same as the B except for those items required to be performed on a less frequent basis such as changing the transmission filter. This inspection is performed every 12,000 miles and, as in the case of the B, the form used in the performance of this is bus series-specific.

2.1.2.4

D Inspection- The D level inspection is, again, based on the B with minor additions for items required to be performed at the 24,000 mile interval such as changing air dryer components and testing door emergency release mechanisms.

2.1.2.5

E Inspection- The last and most infrequent of the inspections performed on the Anderson fixed route buses is the E level inspection. This inspection is based on the D inspection with the addition of a tune-up process designed to assure maximum engine performance in terms of power and fuel efficiency. The exact diagnostic procedures and adjustments performed depend on the particular series of vehicle and, consequently, which type of engine it is equipped with. The E inspection also includes the addition of several other items such as cleaning of transmission and differential vents and replacing differential fluid. This inspection is performed every 48,000 miles.

2.1.3 Nifty Lift Vehicle Inspections

2.1.3.1

A Inspection- The A inspection for a vehicle is the basis for all levels. This inspection is performed every 4,000 miles and encompasses the vast majority of all vehicle systems.

2.1.3.2

B Inspection- The B level inspection for a vehicle is very similar to the A with several additions for items due at the scheduled interval of 12,000 miles. The main additions to this level relate to changing fuel filters, replacing front brake pads, and changing the engine air filter.

2.1.3.3

C Inspection- The C inspection is identical in content to the "B" excepting for the addition of several items required to be performed at this mileage interval such as changing transmission fluid, changing differential fluid and checking steering column mounting. This inspection takes place every 24,000 miles.

2.2 Daily Maintenance

2.2.1 Cleaning and Washing

All CATS vehicles are serviced each day at the end of their scheduled runs. Each vehicle is driven into the service lane area where a structured routine of fueling and cleaning activities. The details related to fueling activity are recorded. Each vehicle is scheduled for routine cleaning, washing, and fluid checks once per week. However, they may be washed more frequently as required during periods of inclement weather. After the vehicle completes the service lane procedure, it is parked in the storage area. Then a general interior cleaning process is performed which includes cleaning rear view mirrors, dusting the seats, dash, window ledges, mullions and wheelchair control boxes; cleaning windows as required and mopping the floors and step wells. At times a third party contractor is utilized to conduct vehicle cleaning.

2.2.2 Fluid Replenishment

All revenue service vehicles are checked nightly for proper fluid levels by the service lane mechanic. These fluids are checked and replenished after being parked in order to obtain the most accurate readings from dipsticks.

2.3 Response Maintenance

2.3.1 Pre-Trip Inspection

CATS Operators are required to perform a thorough pre-trip inspection of their vehicle prior to pull-out from the garage. Those drivers who take possession of a vehicle from another operator while the vehicle is in service are required to perform a "mini pre-trip" inspection. The transfer driver notes any defects in the vehicle on the designated portion of the combination pre-trip/defect card and reports these to the mechanic on duty for determination as to whether the vehicle should be held and repaired immediately or allowed to run as is until repairs can be effected. In either case, the completed pre-trip inspection form is deposited in a container kept in the parking area prior to vehicle pull-out and is filed as a record of these inspections.

2.3.2 Roadcalls

Roadcalls are performed by the Maintenance Department when the problem reported is of a serious nature requiring immediate attention. Vehicle deficiencies involving a threat to human safety, or which pose a potential threat of damage to public or company property receive priority treatment. Roadcalls are not performed for minor deficiencies. These types of problems are deferred to the defect card. When a problem develops which requires that a roadcall be performed, the attending mechanic records pertinent details of the action taken on a roadcall report work order.

2.3.3 Fluid Consumption

Fluid consumption for all vehicles is monitored by the Maintenance Department. Excessive use of fluids is reported to the Director of Operations. Fuel consumption is computer recorded. This report provides the latest usage and current fuel mileage average information thereby allowing the Director to easily spot potential problems with a vehicle and implement corrective actions, as needed, quickly and accurately. The main purpose of these reports is to provide informative data indicative of small problems which can be solved prior to becoming large ones. It should also be noted that the Director confirms that the total amount of fuel dispensed into vehicles matches the amount indicated by the dispenser readings and the electronic fuel reservoir level monitor. This is done to uncover any theft, leakage, or errors which might occur.

2.4. Body and Paint

2.4.1 General Maintenance

CATS has established a standard of maintaining the outward appearance of it's vehicles in the best possible condition at all times. Daily wear and tear, aging of the paint, and minor scratches and dents all combine over a period of time to necessitate corrective action. Each year, as part of the establishment of yearly goals and objectives for the department, determinations are made as to the number of vehicles to be repainted, the extent of the repairs to be made, and the time frame allotted for completion of the repairs. Throughout the year, cosmetic repairs are scheduled and performed, as fleet status and manpower allow, in an attempt to reach the goal established for that year.

2.4.3 Collision Repair

When CATS vehicles are involved in accidents which cause physical damage, the vehicle is held out of service and scheduled for repairs as soon as possible. Typically, a vehicle is repaired by an outside vendor. Decisions on these matters are made on a case by case basis.

2.5 Data Collection and Recordkeeping

2.5.1 Work Orders

The mechanic’s daily work assignments are scheduled or approved by the Director of Operations. As the mechanic clocks on to his or her shift, the city begins to track and record the time and material used by the mechanic in performance of each task. Upon completing the task, the mechanic closes the work order. The Director of Operations reviews all completed tasks for accuracy before being transferred to the hard file for the applicable vehicle. In the event of problems which prevent the recording of repair activity on the computer, a paper “Repair Order” form is available as a backup. In the rare case where these are used, the information is transferred into the computer as soon as problems are corrected.

2.5.2 Vehicle Service History

Each CATS vehicle has an assigned file used to maintain written documentation of it's service and repair history. This paper file contains all documentation of service activity pertaining to the vehicle and a summary sheet which functions as a quick reference and table of contents for the file. While hard copy files are maintained for use as described, the same information contained therein is maintained in computer historical files and backup files as insurance in the event of need.

2.6 Warranty Protection and Tracking

Nearly every vehicle or component purchased by CATS has a warranty of some type associated with it. Tracking the provisions and expiration of these is one of the duties of the Director of Operations. This person also checks each repair order to determine whether any activity is compensable under the terms of the vehicle warranty or individual component warranties. When it is determined that compensation is due, the appropriate request is made to the applicable vendor. In some cases, the request takes the form of a written claim while, in others, the action is as simple as making a telephone call to effect corrective action. After a warranty-related action has been made, the details of the action are entered into the appropriate file(s) and maintained as a part of the permanent record.

2.7 Parts Use Monitoring

CATS maintains a Parts Room which contains a substantial inventory of the parts most commonly required to maintain it's active fleet of vehicles. In addition, the same storage area is used to harbor commonly used supplies for the Building and Grounds Department. This area is secured from entry by unauthorized persons via locked entry points between the hours of 8:00 AM and 4:00 PM. A mechanic serves as Parts Supervisor and is on duty Monday through Friday, CATS does not have the capability to staff a full-time parts person.

Manufacturer Recommended Maintenance Schedules:

Kdrive - 2014 Triennial Review Worksheet – Adobe - 3.c. Manufacture Recommended maintenance

CITY OF ANDERSON TRANSIT SYSTEM

Manufacturer Recommended Maintenance Schedule

Chevrolet C5500 Medium Duty Bus

Fixed route
Pages numbers 385-402

Chevrolet 3400 Light Duty Bus

Paratransit
Pages numbered 11-2 to 11-7

Ford E-450 Light Duty Bus

Paratransit
Pages numbered 63-75

100 Miles (160 km)

- ❑ Wheel stud nut service. *(36)*

1,000 Miles (1 600 km)

- ❑ Wheel stud nut service. *(36)*
- ❑ Rear axle air shift motor service. *(10)*

7,500 Miles (12 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

Chevrolet Medium Buses

15,000 Miles (24 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*

- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

22,500 Miles (36 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Cooling system service. Clean the cooling system filter cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*

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- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*
- ❑ Rear axle air shift motor service. *(10)*

24,000 Miles (40 000 km)

- ❑ Lubricate U-joints (or every 6 months, whichever occurs first).

30,000 Miles (48 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*

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- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheel bearing (grease type) service (and whenever hubs are removed). *(22) (36)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first.) *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

37,500 Miles (60 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

45,000 Miles (72 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Replace engine air cleaner filter. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*

- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24) †*
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

48,000 Miles (75 000 km)

- ❑ Lubricate U-joints (or every 6 months, whichever occurs first).

50,000 Miles (80 000 km)

- ❑ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first.)

52,500 Miles (84 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ DURAMAX® Diesel Engine Only: Adjust valve lash (or every 2,625 hours of engine operation, whichever occurs first). *(18)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

60,000 Miles (96 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*

- ❑ Gasoline Engine Only (Vehicles with GVW greater than 16,000 lbs): Spark plug service. *(2) (25)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheel bearing (grease type) service (and whenever hubs are removed). *(22) (36)*
- ❑ Wheels and tires service. *(14)*
- ❑ Isuzu Diesel Engine Only: Adjust valve lash (or every 2,625 hours of engine operation, whichever occurs first). *(18)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*

- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

67,500 Miles (108 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*

- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24)* †

72,000 Miles (115 000 km)

- ❑ Lubricate U-joints (or every 6 months, whichever occurs first).

75,000 Miles (120 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Inspect engine air cleaner filter. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.

- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ Fuel tank, fuel cap and fuel lines service (or every 72 months, whichever occurs first). *(2) (26)* †
- ❑ Exhaust Gas Recirculation (EGR) system inspection (if equipped) (or every 72 months, whichever occurs first). *(2) (27)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

82,500 Miles (132 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

90,000 Miles (144 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ DURAMAX®/Isuzu Diesel Without Engine Oil Life System Only: Change engine oil and filter (or every 12 months, or every 750 hours of engine operation, whichever occurs first). *(2)*
- ❑ DURAMAX®/Isuzu Diesel With Engine Oil Life System Only: Check oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (DURAMAX®/Isuzu Diesel)" in the Index. *(2) (9)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Gasoline Engine: Replace engine air cleaner filter. See *Engine Air Cleaner/Filter on page 297* for more information.

- ❑ Diesel Engine: Inspect engine air cleaner filter change indicator. If necessary, replace the filter. If vehicle is driven in dusty/dirty conditions, inspect filter change indicator at every engine oil change. See *Engine Air Cleaner/Filter on page 297* for more information.
- ❑ DURAMAX®/Isuzu Diesel Only: Replace fuel filter (or every 750 hours of engine operation, whichever occurs first).
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Cooling system service. Clean the cooling system filler cap with clean water, clean the core, pressure test the cap and the system for proper pressure capability, and inspect condition of cooling and heater hoses and clamps. Replace hoses if cracked, swollen, or damaged.
- ❑ Replace fuel filter(s) (or every 12 months, whichever occurs first). *(2)*
- ❑ Steering system service. *(12)*
- ❑ Front and rear suspension service. *(13)*
- ❑ Spring-to-axle U-bolts and shackle bolts service. *(15)*
- ❑ Exhaust system service (or every 6 months, whichever occurs first). *(2) (3) (16)*
- ❑ Inspect door hinge pins and bushings and replace as necessary.
- ❑ Wheel bearing (grease type) service (and whenever hubs are removed). *(22) (36)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*
- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

- ❑ Air brake system valve service (or every 3 months, or every 900 hours, whichever occurs first). *(37)*
- ❑ Air compressor dry element pleated paper air strainer service (or every 2 months, or every 800 hours, whichever occurs first).
- ❑ C600, C700, and C800 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*
- ❑ Thermostatically controlled engine cooling fan service. *(3) (19)*
- ❑ Shields and underhood insulation service. *(3) (4) (20)*
- ❑ Rear axle air shift motor service. *(10)*
- ❑ Air intake system service (or every 24 months, whichever occurs first). *(3) (4) (23)*
- ❑ Evaporative Control System service, if equipped, (or every 24 months, whichever occurs first). *(2) (24)* †
- ❑ Gasoline Engine: Air compressor remote mounted air filter dry element pleated paper air strainer service (or every 6 months or every 1800 hours, whichever occurs first).

96,000 Miles (152 000 km)

- ❑ Lubricate U-joints (or every 6 months, whichever occurs first).

97,500 Miles (156 000 km)

- ❑ Gasoline Engine Only: Check engine oil life system. If engine oil and filter are changed, reset system. See "Engine Oil (Gasoline Engine)" in the Index. *(2) (8)*
- ❑ Check fluid levels (or every 3 months, whichever occurs first). *(1) (5)*
- ❑ Chassis lubrication service (or every 6 months, whichever occurs first). *(11)*
- ❑ Wheels and tires service. *(14)*
- ❑ Hydraulic brake service (or every 6 months, whichever occurs first). *(6) (36)*
- ❑ Parking brake service (or every 6 months, whichever occurs first). *(21)*
- ❑ Air brake service (or every 6 months, whichever occurs first). *(32)*
- ❑ Air brake automatic slack adjuster service (or every 500 hours, whichever occurs first). *(33)*

- ❑ Check air brake relay valve operation and check for leaks (or every month, or every 300 hours, whichever occurs first).
- ❑ Clean air brake application valve (or every 3 months, or every 300 hours, whichever occurs first). Lubricate linkage.
- ❑ Air brake chamber service (or every 2 months, whichever occurs first). *(34)*

100,000 Miles (160 000 km)

- ❑ Diesel Only: Inspect engine drive belt; replace as necessary.
- ❑ Gasoline Engine Only (Vehicles with GVW of 16,000 lbs or less): Spark plug service. *(2) (25)*
- ❑ Change power steering fluid (or every 36 months, whichever occurs first). *(12)*
- ❑ Replace power steering reservoir filter element (or every 24 months, whichever occurs first).
- ❑ Wheel bearing (oil type) service (and whenever hubs are removed). *(22) (36)*
- ❑ Except four-wheel drive: Front axle service. *(31)*
- ❑ Four-wheel drive only: Front axle service. *(30)*
- ❑ Four-wheel drive only: Transfer case service. *(30)*
- ❑ Rear axle service — Eaton®, Rockwell®, Spicer® axles (or every 12 months, whichever occurs first). *(30)*
- ❑ Exhaust brake service, if equipped. Check for excessive spindle free play and smooth operation. Lubricate ball joint cap.
- ❑ Inspect air compressor discharge port (or every 6 months or every 1,800 hours, whichever occurs first).
- ❑ Manual transmission (ZF 6-speed only) fluid replacement (or every 48 months, whichever occurs first).
- ❑ Trailer brake hand control valve service (or every 12 months, or every 3,600 hours, whichever occurs first). *(35)*

120,000 Miles (192 000 km)

- ❑ C600, C700, and C800 Gasoline Engines Only: Replace engine drive belts.
- ❑ C400 and C500 Gasoline Engines Only: Engine drive belts service (or every 12 months, whichever occurs first). *(17)*

150,000 Miles (240 000 km)

- ❑ Cooling system service (or every 60 months since last service, whichever occurs first). *(2) (29)*
- ❑ Diesel Engine Only: Inspect engine drive belt; replace as necessary.
- ❑ Diesel Particulate Filter (DPF) service (or every 4,500 hours, whichever occurs first). Then, every 10,000 miles (16 000 km), or every 12 months, or every 3,000 hours, whichever occurs first. *(7)*

200,000 Miles (320 000 km)

- ❑ Rear axle service — Eaton®, Rockwell®, Spicer® axles (or every 12 months, whichever occurs first). *(30)*
- ❑ Remove, disassemble, clean, and inspect the air brake trailer supply valve (or every 2 years, or every 7,200 hours, whichever occurs first).
- ❑ Diesel Engine Only: Inspect engine drive belt; replace as necessary.
- ❑ Diesel Particulate Filter (DPF) service (or every 4,500 hours, whichever occurs first). Then, every 10,000 miles (16 000 km), or every 12 months, or every 3,000 hours, whichever occurs first. *(7)*

250,000 Miles (400 000 km)

- ❑ Four-wheel drive only: Front axle service. *(30)*
- ❑ Four-wheel drive only: Transfer case service. *(30)*

- ❑ Manual transmission (except ZF 6-speed) fluid replacement (or every 60 months, whichever occurs first).
- ❑ Diesel Particulate Filter (DPF) service (or every 4,500 hours, whichever occurs first). Then, every 10,000 miles (16 000 km), or every 12 months, or every 3,000 hours, whichever occurs first. *(7)*

300,000 Miles (480 000 km)

- ❑ Rear axle service — Eaton®, Rockwell®, Spicer® axles (or every 12 months, whichever occurs first). *(30)*
- ❑ Remove, disassemble, clean, and inspect the air brake air dryer (or every 3 years, or 10,800 hours, whichever occurs first). Replace desiccant.
- ❑ Diesel Particulate Filter (DPF) service (or every 4,500 hours, whichever occurs first). Then, every 10,000 miles (16 000 km), or every 12 months, or every 3,000 hours, whichever occurs first. *(7)*

Footnotes

† = The U.S. Environmental Protection Agency or the California Air Resources Board has determined that the failure to perform this maintenance item will not nullify the emission warranty or limit recall liability prior to the completion of the vehicle's useful life. We, however, urge that all recommended maintenance services be performed at the indicated intervals and the maintenance be recorded.

(1) = If your vehicle has an Allison Transmission®, your owner manual is supplemented by an Allison Transmission® Operator's Manual. Always refer to these manuals for related maintenance services.

(2) = An Emission Control Service.

(3) = A Noise Emission Control Device.

(4) = Applies to vehicles sold in the United States and is recommended for vehicles sold in Canada.

(5) = Check fluid level in brake master cylinder, power steering pump, front and rear axles, transmission, and hydraulic spring parking brake pump (if equipped). A low fluid level in the brake master cylinder can indicate worn brake linings and should be checked accordingly.

> **⚠ WARNING**
>
> Performing maintenance work on a vehicle can be dangerous. In trying to do some jobs, you can be seriously injured. Do your own maintenance work only if you have the required know-how and the proper tools and equipment for the job. If you have any doubt, see your dealer to have a qualified technician do the work. See "Doing Your Own Service Work" in the owner manual.

At your General Motors dealer, you can be certain that you will receive the highest level of service available. Your dealer has specially trained service technicians, uses genuine GM replacement parts, as well as, up-to-date tools and equipment to ensure fast and accurate diagnostics.

The proper replacement parts, fluids, and lubricants to use are listed in *Recommended Fluids and Lubricants on page 11-8* and *Maintenance Replacement Parts on page 11-11*. We recommend the use of genuine parts from your dealer.

Rotation of New Tires

To maintain ride, handling, and performance of the vehicle, it is important that the first rotation service for new tires be performed. Tires should be rotated every 12 000 km/7,500 miles. See "Tire Inspection and Rotation" in the owner manual.

Scheduled Maintenance

When the Change Engine Oil Soon Message Displays

Change engine oil and filter. See *Engine Oil on page 10-7. An Emission Control Service.*

When the CHANGE ENGINE OIL SOON message displays in the Driver Information Center (DIC), service is required for the vehicle as soon as possible, within the next 1 000 km/600 miles. If driving under the best conditions, the engine oil life system might not indicate the need for vehicle service for more than a year. The engine oil and filter must be changed at least once a year and the oil life system must be reset. Your dealer has trained service technicians who will perform this work and reset the system.

Oil - 5,000 2 Per GM
Fuel - 15,000 3 Tech @ Here
Chevrolet

If the engine oil life system is reset accidentally, service the vehicle within 5 000 km/3,000 miles since the last service. Reset the oil life system whenever the oil is changed. See *Engine Oil Life System on page 10-10.*

Every Engine Oil Change

- Change engine oil and filter. Reset oil life system. See *Engine Oil on page 10-7* and *Engine Oil Life System on page 10-10. An Emission Control Service.*
- Add diesel exhaust fluid.
- Engine coolant level check. See *Engine Coolant on page 10-22.*
- Engine cooling system inspection. Visual inspection of hoses, pipes, fittings, and clamps and replacement, if needed.
- Windshield washer fluid level check. See "Washer Fluid" in the owner manual.
- Windshield wiper blade inspection for wear, cracking, or contamination and windshield and wiper blade cleaning, if contaminated. See "Exterior Care" in the owner manual. Worn or damaged wiper blade replacement. See "Wiper Blade Replacement" in the owner manual.
- Tire inflation pressures check. See "Tire Pressure" in the owner manual.
- Tire wear inspection. See "Tire Inspection" in the owner manual.
- Rotate tires if necessary. See "Tire Rotation" in the owner manual.
- Fluids visual leak check (or every 12 months, whichever occurs first). A leak in any system must be repaired and the fluid level checked.
- Engine air cleaner filter inspection. See *Engine Air Cleaner/Filter on page 10-18.*
- Brake system inspection (or every 12 months, whichever occurs first).
- Steering and suspension inspection. Visually inspect front and rear suspension and steering system for damaged, loose, or missing parts, signs of wear or lack of lubrication. Inspect power steering lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Pickup models: Visually check constant velocity joints, rubber boots, and axle seals for leaks.

- Lubricate the front suspension, steering linkage, rear driveline center splines (van models), and parking brake cable guides. Control arm ball joints on pickup models require lubrication but should not be lubricated unless their temperature is −12°C (10°F) or higher, or they could be damaged. Vehicles used under severe commercial operating conditions require lubrication on a regular basis every 5 000 km/3,000 miles.
- Body component lubrication. Lubricate all key lock cylinders, body door hinges, hood latch assembly, secondary latch, pivots, spring anchor, release pawl, fuel door hinge, locks, latches, and any folding or moving seat hardware. Pickup models: Lubricate tailgate hinges, tailgate linkage, tailgate handle pivot points, and latch bolt. Van models: Lubricate hood hinges and rear compartment hinges. See *Recommended Fluids and Lubricants on page 11-8*. More frequent lubrication may be required when the vehicle is exposed to a corrosive environment. Applying silicone grease on weatherstrips with a clean cloth makes them last longer, seal better, and not stick or squeak.
- Restraint system component check. See "Safety System Check" in the owner manual.
- Fuel system inspection for damage or leaks.
- Exhaust system, including DPF pressure lines, and nearby heat shields inspection for loose or damaged components. Check to be sure that mud or dirt is not caked on the exhaust system, especially in the area of the diesel particulate filter and tailpipe. Clean the area as needed. See *Diesel Particulate Filter (Exhaust Filter) on page 9-10*. At high mileages, the DPF becomes loaded with ash. This is normal. When the amount of ash loading is high, see your dealer for DPF cleaning or replacement.
- For vehicles with Allison Transmission® only: At the first engine oil change only, replace external transmission filter.
- Vans with GVWR above 4 536 kg (10,000 lbs) and all pickups: Shields inspection for damage or looseness. Adjust or replace as required. This is a Noise Emission Control Service. Applicable to vehicles sold in the United States and recommended for vehicles sold in Canada.
- Air intake system check. Check the air intake system installation to assure that gaskets are properly sealed and that all hose connections, fasteners, and other components are tight. Also check to be sure that the air cleaner housing is properly seated and the cover fits tightly. Tighten connections and fasteners or replace damaged parts as necessary. This is a Noise Emission Control Service. Applicable to vehicles sold in the United States and recommended for vehicles sold in Canada.
- Fuel filter service. *An Emission Control Service.*

  This vehicle has a CHANGE FUEL FILTER message in the Driver Information Center (DIC) to tell you when to replace the fuel filter. See *Fuel System Messages on page 5-12*. Change the fuel filter a minimum of once every two years. The PERCENT FUEL FILTER LIFE REMAINING message may be used to decide if the filter should be changed during routine vehicle service.

Additional Required Services

At the First 160 km/100 Miles, 1 600 km/1,000 Miles, and 10 000 km/6,000 Miles

- For pickups with dual wheels: Check dual wheel nut torque. For proper torque, see "Capacities and Specifications" in the owner manual.

Every 12 000 km/7,500 Miles

- Rotate tires. Tires should be rotated every 12 000 km/ 7,500 miles. See "Tire Rotation" in the owner manual.

At Each Fuel Stop

- Engine oil level check. See *Engine Oil on page 10-7*.
- Engine coolant level check. See *Engine Coolant on page 10-22*.
- Windshield washer fluid level check. See "Washer Fluid" in the owner manual.

Once a Month

- Tire inflation pressures check. See "Tire Pressure" in the owner manual.
- Tire wear inspection. See "Tire Inspection" in the owner manual.
- Sunroof track and seal inspection, if equipped. See "Sunroof" in the owner manual.

Once a Year

- See "Starter Switch Check" in the owner manual.
- See "Automatic Transmission Shift Lock Control Function Check" in the owner manual.
- See "Ignition Transmission Lock Check" in the owner manual.
- See "Park Brake and P (Park) Mechanism Check" in the owner manual.
- Accelerator pedal check for damage, high effort, or binding. Replace if needed.
- Underbody flushing service.

First Engine Oil Change After Every 40 000 km/25,000 Miles

- Pickup Models: Automatic transmission fluid and external filter change (severe service) for vehicles mainly driven in heavy city traffic in hot weather, in hilly or mountainous terrain, when frequently towing a trailer, or used for taxi, police, or delivery service. See *Automatic Transmission Fluid on page 10-11.*
- Four-wheel drive pickup models only: Transfer case fluid change (extreme duty service) for vehicles mainly driven off-road in four-wheel drive. Vehicles used for farming, mining, forestry, Department of Natural Resources (DNR), and snow plowing occupations meet this definition. Check vent hose at transfer case for kinks and proper installation. Check to be sure vent hose is unobstructed, clear, and free of debris. During any maintenance, if a power washer is used to clean mud and dirt from the underbody, care should be taken to not directly spray the transfer case output seals. High pressure water can overcome the seals and contaminate the transfer case fluid. Contaminated fluid will decrease the life of the transfer case and should be replaced.

First Engine Oil Change After Every 80 000 km/50,000 Miles

- Engine air cleaner filter replacement. See *Engine Air Cleaner/Filter on page 10-18.*
- Pickup Models: Automatic transmission fluid and filter change (normal service). See *Automatic Transmission Fluid on page 10-11.*
- Van Models: Automatic transmission fluid and filter change (severe service) for vehicles mainly driven in heavy city traffic in hot weather, in hilly or mountainous terrain, when frequently towing a trailer, or used for taxi, police, or delivery service. See *Automatic Transmission Fluid on page 10-11.*

- Four-wheel drive pickup models only: Transfer case fluid change (severe service) for vehicles mainly driven when frequently towing a trailer, or used for taxi, police, or delivery service. Check vent hose at transfer case for kinks and proper installation. Check to be sure vent hose is unobstructed, clear, and free of debris. During any maintenance, if a power washer is used to clean mud and dirt from the underbody, care should be taken to not directly spray the transfer case output seals. High pressure water can overcome the seals and contaminate the transfer case fluid. Contaminated fluid will decrease the life of the transfer case and should be replaced.

First Engine Oil Change After Every 160 000 km/100,000 Miles

- Van Models: Automatic transmission fluid and filter change (normal service). See *Automatic Transmission Fluid on page 10-11.*
- Four-wheel drive pickup models only: Transfer case fluid change (normal service). Check vent hose at transfer case for kinks and proper installation. Check to be sure vent hose is unobstructed, clear, and free of debris. During any maintenance, if a power washer is used to clean mud and dirt from the underbody, care should be taken to not directly spray the transfer case output seals. High pressure water can overcome the seals and contaminate the transfer case fluid. Contaminated fluid will decrease the life of the transfer case and should be replaced.

First Engine Oil Change After Every 240 000 km/150,000 Miles

- Engine cooling system drain, flush, and refill (or every five years, whichever occurs first). See *Engine Coolant on page 10-22. An Emission Control Service.*
- Engine drive belts inspection for fraying, excessive cracks, or obvious damage (or every 10 years, whichever occurs first). Replace, if needed.

Scheduled Maintenance: General Information

Check every month

- ☐ Check function of all interior and exterior lights
- ☐ Check tires for wear and adjust air pressure (including spare tire)
- ☐ Check that holes in the tail-pipe of the exhaust system are clear of debris-the holes/slots are functional (F-Super Duty)
- ☐ Check engine oil level
- ☐ Check windshield washer fluid level
- ☐ Check and drain fuel filter/water separator

Check every six months

- ☐ Check lap/shoulder belts and seat latches for wear and function
- ☐ Check that externally-mounted spare tire is tight (see *Owner's Guide*)
- ☐ Check power steering fluid level
- ☐ Check washer spray, wiper operation and clean all wiper blades (replace as necessary)
- ☐ Check parking brake for proper operation
- ☐ Check and lubricate all hinges, latches and outside locks
- ☐ Check and lubricate door rubber weatherstrips
- ☐ Check and clean body and door drain holes
- ☐ Check safety warning lamps (brake, ABS, air bag, safety belt) for operation
- ☐ Check engine cooling system level, coolant strength and hoses
- ☐ Check fuel cooling system for fluid level and coolant strength (F-Super Duty)
- ☐ Check battery connections and clean if necessary
- ☐ Check clutch fluid level, if equipped

Retightening lug nuts

- ☐ On vehicles equipped with single rear wheels, retighten the lug nuts to the specified torque at 500 miles (800 km) after any wheel disturbance (tire rotation, changing a flat tire, wheel removal, etc.).
- ☐ On vehicles equipped with dual rear wheels, retighten the wheel lug nuts to the specified torque at 100 miles (160 km), and again at 500 miles (800 km) of new vehicle operation and after any wheel disturbance (tire rotation, changing a flat tire, wheel removal, etc.).
- ☐ Refer to *Wheel Lug Nut Torque Specification* in your *Owner's Guide* for the proper lug nut torque specification.

Scheduled Maintenance: General Information

Multi-point Inspection

In order to keep your vehicle running right, it is important that you have the systems on your vehicle checked regularly. This can help identify any potential issue before there are any problems. Ford Motor Company suggests the following multi-point inspection to be performed at every scheduled maintenance interval as the way to ensure your vehicle keeps running right.

Multi-point inspection - recommended at every visit

- ☐ Check and top up fluid levels:
- ☐ brake
- ☐ coolant recovery reservoir
- ☐ fuel coolant recovery reservoir (F-Super Duty)
- ☐ manual and automatic transmission
- ☐ power steering
- ☐ window washer
- ☐ Inspect tires for wear and check air pressure, including spare.
- ☐ Check exhaust system for leaks, damage, loose parts and foreign materials.
- ☐ Check that holes in the tail-pipe of the exhaust system are clear of debris; the holes/slots are functional (F-Super Duty)
- ☐ Check battery performance.
- ☐ Check operation of horn, exterior lamps, turn signals and hazard warning lights.
- ☐ Check radiator, coolers and heater and air conditioning hoses.
- ☐ Inspect windshield washer spray and wiper operation.
- ☐ Check windshield for cracks, chips and pitting.
- ☐ Inspect for oil and fluid leaks.
- ☐ Inspect air filter.
- ☐ Check shocks and struts and other suspension components for leaks and damage.

NORMAL SCHEDULED MAINTENANCE AND LOG

The following section contains the "Normal Schedule." This schedule is presented at specific mileage intervals with exceptions noted.

Additional information available on the Web

To learn more about the importance of routine and dealer-performed maintenance on your vehicle, please visit the Ford Customer Service website. You'll also find important warranty information, customer assistance, technical expertise, frequently asked questions and much more. The website location is at: www.ford.com in the U.S. or www.ford.ca in Canada.

Then go to the vehicles and service pick at the web site.

7,500 miles (12,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

15,000 miles (24,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

22,500 miles (36,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

30,000 miles (48,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required.
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system
- ☐ Inspect exhaust system and heat shields
- ☐ Inspect automatic transmission fluid level
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

37,500 miles (60,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

45,000 miles (72,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

52,500 miles (84,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

60,000 miles (96,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Change automatic transmission fluid and filter on all vehicles equipped with the Torqshift transmission. Consult your dealer for particular requirements.
- ☐ Replace front wheel bearing grease and grease seals on 4x2 wheel bearings (if non-sealed bearings)
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

67,500 miles (108,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

75,000 miles (120,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

82,500 miles (132,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

90,000 miles (144,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Inspect accessory drive belt(s)
- ☐ Inspect automatic transmission fluid level
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

97,500 miles (156,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Change rear axle lubricant (E-450 equipped with DANA axles only)
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:
DATE: MILEAGE:

105,000 miles (168,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Change engine coolant (see Motorcraft Premium Gold Coolant Change Record)
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

112,500 miles (180,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

120,000 miles (192,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Change automatic transmission fluid and filter on all vehicles equipped with the Torqshift transmission. Consult your dealer for particular requirements.
- ☐ Replace front wheel bearing grease and grease seals on 4x2 wheel bearings (if non-sealed bearings)
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system
- ☐ Inspect exhaust system and heat shields
- ☐ Inspect accessory drive belt(s)
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

127,500 miles (204,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

Scheduled Maintenance: E-Series

135,000 miles (216,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped wit Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

142,500 miles (228,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

Scheduled Maintenance: E-Series

150,000 miles (240,000 km)

- ☐ Change engine oil and replace oil filter
- ☐ Replace engine- and frame-mounted fuel filters
- ☐ Replace accessory drive belt(s) (if not replaced in the last 100,000 miles [160,000 km])
- ☐ Replace front wheel bearing and wheel bearing grease seals (if non-sealed bearings)
- ☐ Change Premium Gold coolant (see Motorcraft Premium Gold Coolant Change Record)
- ☐ Change rear wheel drive (RWD) axle fluid - DANA axles **not** using synthetic fluid only
- ☐ Rotate tires, inspect tires for wear and measure tread depth and inspect wheel ends for endplay and noise (vehicles with dual rear wheels should only rotate if unusual wear is noted)
- ☐ Inspect air filter restriction gauge, replace filter as required
- ☐ Inspect and lubricate steering linkage, ball joints, suspension, tie rod ends, driveshaft and U-joints (lubricate if equipped with Zerk fittings)
- ☐ Inspect engine cooling system level, coolant strength and hoses
- ☐ Inspect brake pads, shoes, rotors, drums, brake lines and hoses and parking brake system.
- ☐ Inspect exhaust system and heat shields
- ☐ Inspect automatic transmission fluid level
- ☐ Perform multi-point inspection (recommended)

DEALER VALIDATION:

RO#: P&A CODE:

DATE: MILEAGE:

7.Facility Maintenance Procedures Manual:

FACILITY MAINTENANCE PROCEDURES MANUAL

FOR

CITY OF ANDERSON TRANSIT SYSTEM

POLICY

City of Anderson Transit System has made a significant investment of federal funds in a facility capable of supporting the daily operations of the transit system administrative offices and garage. The facility was completed in 1975. City of Anderson Transit System desires to maintain its facilities and equipment to the highest possible standards.

Safety and good housekeeping practices complement each other and at City of Anderson Transit System they are everyone's responsibility. Keeping the facility safe and clean and free of clutter is the responsibility of every City of Anderson Transit System employee.

The Director of Operations is responsible for the facility maintenance plan. The Director may appoint a subordinate to supervise the implementation and management of the facility maintenance plan.

OBJECTIVE

The objective of the facility maintenance plan is ensuring that assets are protected and maintained so that they reach their maximum useful life. The facility used in support of public transit at City of Anderson Transit System will be maintained at or above the specifications provided with the facility operation and equipment manuals. Permanent records may be kept on spreadsheets, equipment maintenance log sheets, or other suitable means of recording periodic maintenance. Warranty periods will be closely tracked so that no public funds are expended on repairs for covered facility or equipment.

Facility and Equipment Maintenance Schedule

Safety and Security Equipment	Inspection Interval	Performed By
Fire Protection System	Weekly	City of Anderson Transit System
Exit and Emergency Lighting System	Monthly	City of Anderson Transit System
Fire Extinguishers Inspection	Monthly	City of Anderson Transit System
Fire Extinguishers (Annual Inspection and Service)	Annual	Contractor
Fire Panel & Monitoring System	Annual	Contractor

Facility Equipment	Inspection Interval	Performed By
Shelters Cleaned and Inspected	Quarterly	City of Anderson Transit System
Building Roof	Biannual	City of Anderson Transit System
Building Roof	Annually	Contractor
Building Exterior	Biannual	City of Anderson Transit System
Air Conditioning and Furnace Units	Quarterly	Contractor
Water Heater	Annual	Contractor

Facility and Equipment Maintenance Procedures

Maintenance Procedure for Exit and Emergency Lighting
Monthly

Check to see that all exit routes are clear and free from obstructions.

Exit Signs

1. Clean
2. Make sure sign is securely fastened

Exit Lights

1. Clean
2. Replace missing or nonfunctioning bulbs
3. Test unit following manufacturer's instructions on fixture

Emergency Lighting

1. Clean
2. Replace missing or nonfunctioning bulbs
3. Test unit following manufacturer's instructions on fixture

Fire Extinguisher inspection Procedure
Monthly

The monthly fire extinguisher inspection details the visual condition of the extinguisher.

1. Verify extinguisher is in the correct location
2. Check seals and tamper indicators intact
3. Check pressure gauges or indicators to verify they are in proper operating range and position
4. Check labels and inspection signs
5. Check hoses and nozzles
6. Check hydrostatic test date. Hydrostatic testing must be completed every five years
7. Path to the extinguisher is unobstructed
8. Check date of service and verify that it is current

Facility Roof Inspection
Biannual (spring and fall)

1. Visually inspect the roof for the following conditions:
   - 1.1 Debris
   - 1.2 Drainage
   - 1.3 Physical damage
   - 1.4 Structural deformation

2. Flat/Membrane Roof Area
   - 2.1 Condition of coating or membrane
   - 2.2 Aggregate loss
   - 2.3 Punctures
   - 2.4 Cracks
   - 2.5 Blisters
   - 2.6 Ponding of water

3. Inspect roof features for visible signs of damage
   - 3.1 Fascia
   - 3.2 Soffit
   - 3.3 Flashing
   - 3.4 Gutters/Drains
   - 3.5 Skylights
   - 3.6 Vents
   - 3.7 Access door
   - 3.8 Vents

Facility Exterior Inspection
Biannual (spring and fall)

1. Building address clearly visible
2. Fire department Knox Box unobstructed
3. Exterior wall condition-new cracks or other damages
4. Windows free from cracks and broken panes
5. Stairs, landings and handrails in good repair and fastened securely
6. Irrigation covers in place
7. Exterior lights
8. Parking lot

Facility and Equipment Interior Maintenance Procedures

Facility Interior
Cleaning Procedures

TASK	FREQUENCY
Hard Surface Floors	
Dust mop floors	Daily
Wet mop floors	Daily
Carpet Surface Floors	
Vacuum public areas	Daily
Vacuum offices	Weekly
Spot clean carpet	Quarterly
Shampoo carpeted areas	Annually
Non-Upholstered Furniture	
Dust Chairs/desks/file cabinets	Weekly
Polish wood surfaces	Monthly
Straighten lobby chairs	Daily
Upholstered Furniture	
Vacuum surfaces	Monthly
High and Low Dusting	
Dust cobwebs	Weekly
Dust baseboards	Weekly
Dust window ledges	Weekly
Dust blinds	Monthly
Dust HVAC vents	Monthly
Dust doors and frames	Monthly
Telephone	
Wipe down and sanitize	Weekly

TASK	FREQUENCY
Windows	
Clean vestibule glass	Daily
Clean exterior of windows	Biannually
Clean inner windows	Biannually
Restroom Cleaning	
Clean and sanitize toilets	Daily
Clean and sanitize vanity/sinks	Daily
Clean mirrors	Daily
Wet mop/sanitize floors	Daily
Dust mop floors	Daily
Spot clean walls and doors	Weekly
Spot clean partitions	Weekly
Waste Receptacles	
Empty waste receptacles/liners	Weekly
Wash waste receptacles	Weekly
Empty outside -main entrance and cigarette receptacles	Weekly
Lounge/Break Room	
Wipe down counters	Daily
Clean sinks	Daily
Wipe down tables	Daily
Miscellaneous	
Clean Janitorial Storage Area	Weekly

Sample Contractor Review Checklist
30-35 FOOT DIESEL COACH

Vehicle #_____ Performed By:_____Date:_____
Mileage_____

START-UP

_____ Turn key, make sure bus starts properly

OPERATING CONTROLS

_____ Warning Lights and Indicator Lamps
_____ Gauges & Lighting
_____ Door Controls
_____ Brake Interlock
_____ Exit Door Interlock
_____ Defrost & Heaters
_____ Fans
_____ Horn
_____ Drivers Controls & Switches
_____ Drivers Seat & Restraint
_____ Stop Request
_____ Radio & PA System
_____ Steering Wheel Adjustment
_____ Destination Sign

INTERIOR INSPECTION

_____ Interior Lights
_____ Stanchions , Grab Handles and Rails
_____ Emergency Windows & Exits
_____ Roof Hatches
_____ Door Alignment
_____ Mirrors
_____ Decals
_____ Glass & Windshield
_____ Emergency Equipment: Fire Extinguisher, First Aid Kit, Body Fluid Kit, Strap Cutter,
_____ Triangles

EXTERIOR INSPECTION

_____ Wiper Arms & Blades, Washer Fluid Level
_____ Mirrors
_____ Reflectors
_____ Body Panels
_____ Bumpers
_____ Moldings
_____ Bike Rack

TIRES AND WHEELS

_____Pressure

WHEELCHAIR LIFT

_____Lift Operation
_____Warning Light and Alarm or Override
_____W/C Restraints
_____Clean Tie-down Pocket
_____Lift Extension Belt (Ricon Lifts Only)

UNDERCARRIAGE

_____Steering Box and Joints
_____Tie Rod Ends and Drag Links
_____King Pin Play
_____Shock Absorbers
_____Brake Lines
_____Brake Lining Thickness
_____Wheel Seals
_____Slack Adjusters
_____Wheel Bearings
_____Fluid Leaks
_____Air Leaks
_____Fuel Tank: Condition, Mounting, Lines & Vents
_____Axles, Differential Oil & Vent
_____Underbody: Mud Flaps, Spray Guards
_____Frame Cracks, Loose Crossmembers

EXHAUST SYSTEM

_____Hangers
_____Mufflers
_____Pipes

ENGINE COMPARTMENT

_____ Turbo, intercooler piping, clamps and hoses
_____ Hydraulic Fluid
_____Coolant Level
_____Hoses & Clamps
_____Check Belt Tension
_____Air Intake (Check trap in duct.)
_____Starter Cables
_____Run Selenoid

BATTERIES

_____Terminals & Cables
_____Fluid Level
_____Hold Downs
_____Door Hinge Stability

ROAD TEST

_____Acceleration
_____Engine Performance
_____Transmission Performance
_____Steering Performance
_____Braking Performance

Sample Contractor Review Checklist
CUTAWAYS

Vehicle #_____Performed By:_____
Date:_____ Mileage:_____

OPERATING CONTROLS

_____ Start up
_____ Warning Lights and Indicator Lamps
_____ Gauges & Lighting
_____ Parking Brake
_____ Door Controls
_____ Brake Interlock
_____ Exit Door Interlock
_____ Defrost & Heaters
_____ Fans
_____ Horn
_____ Drivers Controls & Switches
_____ Drivers Seat & Restraint
_____ Stop Request
_____ Radio
_____ Steering Wheel Adjustment
_____ Destination Sign, if applicable

INTERIOR INSPECTION

_____ Interior Lights
_____ Stanchions, Grab Handles and Rails
_____ Emergency Windows & Exits
_____ Roof Hatches
_____ Door Alignment
_____ Mirrors
_____ Decals
_____ Glass & Windshield
_____ Emergency Equipment: Fire Extinguisher, First Aid Kit, Body Fluid Kit, Strap Cutter, Triangles

EXTERIOR INSPECTION

_____ Wiper Arms & Blades, Washer Fluid Level
_____ Mirrors
_____ Reflectors
_____ Body Panels
_____ Bumpers
_____ Moldings
_____ Bike Rack

TIRES AND WHEELS

_____Pressure
_____Sidewall Condition
_____Lug Nuts
_____Rims

WHEELCHAIR LIFT

_____Lift Operation
_____Warning Light and Alarm or Override
_____W/C Restraints
_____Clean Tie-down Pocket
_____Lift Extension Belt (Ricon Lifts Only)

UNDERCARRIAGE

_____Steering Box and Joints
_____Tie Rod Ends and Drag Links
_____Ball Joints
_____Shock Absorbers
_____Brake Lines
_____Brake Lining Thickness
_____Wheel Bearings
_____Fluid Leaks
_____Air Leaks
_____Fuel Tank: Condition, Mounting, Lines & Vents
_____Axles, Differential Oil & Vent
_____Underbody: Mud Flaps, Spray Guards
_____Frame Cracks, Loose Crossmembers

EXHAUST SYSTEM

_____Hangers
_____Mufflers
_____Pipes

ENGINE COMPARTMENT

_____ Power Steering Fluid
_____Coolant Level
_____Brake Fluid
_____Hoses & Clamps
_____Check Belt Tension
_____Starter Cables
_____Radiator & Fan Shroud
_____Fan

BATTERIES

_____Terminals & Cables
_____Fluid Level
_____Hold Downs

ROAD TEST

_____Acceleration
_____Engine Performance
_____Transmission Performance

_____Steering Performance
_____Braking Performance

OPERATING CONTROLS

_____ Start up
_____ Warning Lights and Indicator Lamps
_____ Gauges & Lighting
_____ Parking Brake
_____ Door Controls
_____ Brake Interlock
_____ Exit Door Interlock
_____ Defrost & Heaters
_____ Fans
_____ Horn
_____ Drivers Controls & Switches
_____ Drivers Seat & Restraint
_____ Stop Request
_____ Radio
_____ Steering Wheel Adjustment
_____ Destination Sign, if applicable

INTERIOR INSPECTION

_____ Interior Lights
_____ Stanchions, Grab Handles and Rails
_____ Emergency Windows & Exits
_____ Roof Hatches
_____ Door Alignment
_____ Mirrors
_____ Decals
_____ Glass & Windshield
_____ Emergency Equipment: Fire Extinguisher, First Aid Kit, Body Fluid Kit, Strap Cutter, Triangles

EXTERIOR INSPECTION

_____ Wiper Arms & Blades, Washer Fluid Level
_____ Mirrors
_____ Reflectors
_____ Body Panels
_____ Bumpers
_____ Moldings
_____ Bike Rack

TIRES AND WHEELS

_____Pressure
_____Sidewall Condition
_____Lug Nuts
_____Rims

WHEELCHAIR LIFT

_____Lift Operation
_____Warning Light and Alarm or Override
_____W/C Restraints
_____Clean Tie-down Pocket
_____Lift Extension Belt (Ricon Lifts Only)

UNDERCARRIAGE

_____Steering Box and Joints
_____Tie Rod Ends and Drag Links
_____Ball Joints
_____Shock Absorbers
_____Brake Lines
_____Brake Lining Thickness
_____Wheel Bearings
_____Fluid Leaks
_____Air Leaks
_____Fuel Tank: Condition, Mounting, Lines & Vents
_____Axles, Differential Oil & Vent
_____Underbody: Mud Flaps, Spray Guards
_____Frame Cracks, Loose Crossmembers

EXHAUST SYSTEM

_____Hangers
_____Mufflers
_____Pipes

ENGINE COMPARTMENT

_____ Power Steering Fluid
_____Coolant Level
_____Brake Fluid
_____Hoses & Clamps
_____Check Belt Tension
_____Starter Cables
_____Radiator & Fan Shroud
_____Fan

BATTERIES

_____Terminals & Cables
_____Fluid Level
_____Hold Downs

ROAD TEST

_____Acceleration
_____Engine Performance
_____Transmission Performance
_____Steering Performance
_____Braking Performance

9. CATS TAM Certification

CATS TAM Certification

As of 2017

CATS will certify the FTA Annual Certifications and Assurances to reflect TAM Plan requirements have been satisfied; and

CATS will work with MPO to review CATS TAM Plan; and

CATS will review Plans and Progress during Triennial and State Management Review with FTA.

Merle Jones, General Manager, CATS

Lori Sylvester, Long Range Planner/ Accountable Executive