



North Carolina
Department of Transportation

Report on Capital Improvement Needs Estimate

December 1, 2015

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Executive Summary

In accordance with Session Law 2015-241, section 29.10, by December 1, 2015, the Department is required to provide a detailed report to the Joint Legislative Transportation Oversight Committee on how the Department forms the six-year capital improvement needs estimate required under G.S. 143C-8-4, including how the Department decides (i) how much funding will be required for each fiscal year of the estimate and (ii) what types of projects will be excluded from the estimate.

The Department developed and implemented its own Facility Condition Assessment Program (FCAP) in 2012 in response to the suspended program historically administered by the State Construction Office (SCO) and to justify to the General Assembly its capital improvement priorities. The FCAP is a comprehensive assessment of the condition of the current physical plant inventory. It compiles building data and converts that data into numerical scores based on weighted values for building features and functionality, and input from end-users. Scores are then qualified to represent four conditions: poor, fair, good, and excellent. In summary, data are entered into an Excel™ spreadsheet that utilizes current RS Means Construction Data to estimate repair and replacement costs, and replacement frequency. The final score is the Facility Condition Index (FCI), which is the quotient of the Value of Deferred Repairs and Replacement Value.

The FCAP process is a data-driven methodology that assesses the facility condition with a quantifiable value. Consequently, the initial prioritization is based solely on the facility's physical condition. Capital improvement priorities must also consider how a facility's functional utilization enhances or hampers service delivery. This evaluation has a level of subjectivity; but, is a necessary component in the prioritization process. Since the operational targets and goals are tied directly to the Department's Strategic Plan and associated metrics, end-users must evaluate the more subjective aspects of their building's condition to achieve operational and service delivery goals in finalizing capital improvement priorities. The final prioritization list considers, in addition to the facility's physical condition, the ability of the Department's physical plant to adequately deliver its services.

Capital Improvement Process Budget Development

Pursuant to §143C-8-4, the Department submits to Office of State Budget and Management and Division of Fiscal Research a six-year capital improvement needs estimate, which describes the agency's anticipated capital needs for each year of the six-year planning period. The needs estimate has two sections: *New Construction*, and *Repairs and Renovations*.

Determination of Funding Required for Each Fiscal Year of the Estimate

The Methodology

Step 1: Initial Priorities List Development

The Department developed and implemented its own Facility Condition Assessment Program (FCAP) in 2012 in response to the suspended program historically administered by the State Construction Office and to justify to the General Assembly its capital improvement priorities. The FCAP is a comprehensive assessment of the condition of the current physical plant inventory. It compiles building data and converts that data into numerical scores based on weighted values for building features and functionality, and input from end-users. Scores are then qualified to represent four conditions: poor, fair, good, and excellent. In summary, data are entered into an Excel™ spreadsheet that utilizes current RS Means Construction Data to estimate repair and replacement costs, and replacement frequency. The final score is the Facility Condition Index (FCI), which is the quotient of the Value of Deferred Repairs and Replacement Value. A mathematical equation representation of the methodology is:

$$\text{FCI} = \frac{\text{Value of Deferred Repairs}}{\text{Replacement Value}}$$

Capital improvement priorities must also consider how a facility's functional utilization enhances or hampers service delivery. This evaluation has a level of subjectivity; but, is a necessary component in the prioritization process. Since the operational targets and goals are tied directly to the Department's Strategic Plan and associated metrics, end-users must evaluate the more subjective aspects of their building's condition to achieve operational and service delivery goals in finalizing capital improvement priorities. The final prioritization list, therefore considers, in addition to the facility's physical condition, the ability of the Department's physical plant to adequately deliver its services.

The FCAP is updated on a three-year cycle to reflect the current building condition.

A step-by-step representation of the process is below:

Step	Activity	Responsible Party
1	Complete FCAP Survey <ul style="list-style-type: none"> Each division is responsible for completing a building condition survey that assesses all building features including plumbing, mechanical, electrical, roof, windows, water & sewer, etc. The real estate data of the facility, as maintained by State Property Office, is verified for accuracy i.e., fixed asset number, construction/acquisition date, size, function, etc. A copy of the FCAP survey is attached in the appendix. 	End-user
2	Submit data to Facilities Management Division (FMD) <ul style="list-style-type: none"> End-users may access the survey electronically. They enter the data into the data fields and electronically submit the form to FMD. 	End-user
3	Enter data into the FCAP model to determine FCI score <ul style="list-style-type: none"> FMD uploads the data into the FCAP model which calculates the FCI. 	FMD
4	Prioritize needs by FCI score and by building type <ul style="list-style-type: none"> The resulting FCI scores are then qualified to indicate condition by the following condition categories: excellent, good, fair, and poor. Data are further categorized by building functions as defined by State Property Office: office, rest area, storage, and vehicle service. For each division, priority lists are developed by building category and priorities by FCI. The prioritized listing presents: fixed asset number, building function, size, replacement cost, total repair/renovation cost, calculated FCI and the qualified condition. An example of a report is included in the appendix. 	FMD
5	Distribute comprehensive scores to end-users	FMD
6	Facility Functionality Assessment <ul style="list-style-type: none"> Divisions assess the ability of a facility (i.e., size, location) to achieve its operational goals and service delivery targets. If there is a need that is not FCI-driven, a division would need to add the priority to the list and substantiate its inclusion on the priority list. The added priority is evaluated to justify a change in priority. Evaluation includes the FCI score, age, and operational goal/target achievement. 	End-user
7	Submission of final priorities list to FMD	End-user

Step 2: OC-25 Preparation

The OC-25 is the budget request for appropriationⁱ. An approved OC-25 is required for each project included in the Department's budget. Cost data utilized for OC-25 preparation are obtained in two ways: 1) RS Means Data from the FCAP methodology or 2) historical data from recent bid tabulations for projects completed within the past year. RS Means provides a national average of construction costs and the historical data provides actual project cost data. OC-25 forms are prepared in *Interscope/InterscopePlus* and submitted electronically for certification/approval from SCO. OC-25 forms are included with the submittal.

Step 3: Submitting the Department's Capital Improvements Plan

The Department has implemented an internal ceiling on its capital improvements budget that reflects the approved allocations from prior years. In previous years, there was legislation (Session Law 2007-323, section 27.6) in place that provided for 0.75% of the funds appropriated to the Department to be used for the maintenance and construction programs for major repair, renovation, or replacement of field facilities that failed to meet safety standards or that were obsolete for current or future use. At that time, the amount of 0.75% averaged \$12M – \$14M per year of the biennial. This legislation was repealed by Session Law 2008-107, section 28.6 and the Department lost its dedicated funding stream for its capital improvement program. In years subsequent to the repeal, internal ceilings were imposed for each year of the biennial budget in an effort to approximate what the dedicated funding would have been. The ceiling for the 2013 and 2014 fiscal years was set at \$15M. For this biennium, the ceiling was set at \$18M. This value, however, does not represent the Department's actual capital improvement needs.

As needs are prioritized for each year of the biennium and the ceiling is reached, the yearly budget is set, projects are listed and totaled. If the total exceeds the ceiling, projects are pushed out to subsequent years. Consequently, it may take several years to fund some larger projects.

The Department enters all of its budget data into IBIS for approval from OSBM and inclusion in the Governor's Recommended Budget. Any concerns and/or questions from OSBM concerning the submitted priorities are addressed to OSBM's satisfaction before it submits the Department's priorities for the Governor's consideration.

Which Projects Are Eliminated

As mentioned earlier, priorities based on the FCI score can be revised by the end-user. If the end-user determines that it must make changes to the FCI-generated priority list to achieve its operational goals and targets, the end-user can revise its priorities. For example, if a building received an FCI score of good, which indicated that the physical condition of the facility was good; however, the facility was undersized to support service delivery goals or targets, the end-user may advance the facility to a higher priority. Consequently, when the list of priorities is

returned to FMD for preparation of the Department's capital improvement budget request, the original priority could be possibly excluded from the final budget submission.

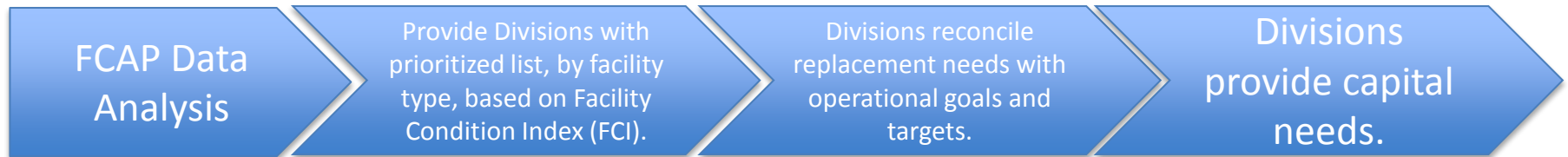
Projects can also be eliminated if they are pushed to subsequent years as the internal ceiling is reached. Any project pushed beyond the six-year will be eliminated from the capital improvement budget request.

Appendix

1. PowerPoint™ illustration of process
2. FCAP survey
3. Example of an FCI-priority generated spreadsheet

ⁱ State Construction Manual. Section 109, Request for Capital Improvement Funding. January 30, 2006.

Capital Improvements Plan Process



Capital Improvements Plan Process

The NCDOT Facility Condition Assessment Program:

- Created and implemented in 2012
- Developed as a result of suspended State Construction FCAP
- Required by General Assembly to justify Department's capital improvements plan
- Comprehensive assessment of the total building condition
- Completed on a three-year cycle
- Data are entered into an EXCEL spreadsheet that utilizes RS Means Construction Data to estimate repair and replacement costs and replacement frequency
- Relies on limited level of subjectivity
- Final score is FCI (Facility Condition Index) = Value of Deferred Repairs/Replacement Value
- $\leq 10\%$ - Excellent
- $> 10\%$ and $\leq 25\%$ - Good
- $> 25\%$ and $\leq 50\%$ - Fair
- $> 50\%$ - Poor

General Information

Fixed Asset Number: 000-000-000
Facility Name: [Click here to enter text](#)
Facility Function: [Select Function](#)
Facility Utilization: [Select Utilization](#)
Original Construction Year: [Click here to enter text](#)
Addition or Renovation Year: [Click here to enter text](#)
Total Building Size (S.F.): [Click here to enter text](#)
Number of Floors: [Click here to enter text](#)
Construction Type: [Select Type](#)
RSmeans Location: [Select closest city from the list](#)
Facility Address: [Click here to enter text](#)
Date of Visit: [Click here to enter text](#)
Name of Person Completing Assessment: [Click here to enter text](#)
Phone#: [Click here to enter text](#)
Name of Facility Contact: [Click here to enter text](#)
Phone#: [Click here to enter text](#)
Work In Progress/Past Renovation
Description of work in progress or being planned:
[Click here to enter text](#)
Description of past addition/renovation (include date of construction):
[Click here to enter text](#)
Length to With Ratio: 3
Wall Height: 12

Building Exterior/Parking Lot

Number of parking spaces [Click here to enter text](#)
Number of Handicapped Spaces [Click here to enter text](#)
Handicapped Access to Facility [Select](#)
Handicapped Ramp(s) Present [Select](#)
Storm Drains Present: [Select](#)
Erosion/Flooding Issue [Select](#)
Ramp(s) Condition: [Select Condition](#)
NOTES:
[Click here to enter text](#)

Roof /Attic Structure

Roof Framing Material 1

Select Type

Condition

Select Condition

Roof Geometry

Select Slope

Est % of Roof

Select %

Roof Style

Select Style

Roof Deck/Sheeting Material 1

Select Type

Est % of Roof

Select %

Condition

Select Condition

Roof Material 1

Select Type

Est % of Roof

Select %

Condition

Select Condition

Past Roof Repair

Select

Past Leaks

Select

Active Leaks

Est. Age

[Click here to enter text](#)

Roof Attic Insulation Present 1

Select

Insulation Location 1

Select Location

Est % of Roof

Select %

Roof Insulation Type

Select Type

Gutters Present

Select

Down Spouts Present

Select

Overall Roof Condition

Notes:

[Click here to enter text](#)

Roof Framing Material 2

Select Type

Condition

Select Condition

Roof Geometry

Select Slope

Est % of Roof

Select %

Roof Style

Select Style

Roof Deck/Sheeting Material 2

Select Type

Estimated % of Roof

Select %

Condition

Select Condition

Roof Material 2

Select Type

Est % of Roof

Select %

Condition

Select Condition

Past Roof Repair

Select

Past Leaks

Select

Active Leaks

Select

Est. Age

[Click here to enter text](#)

Roof Attic Insulation Present 2

Select

Insulation Location 2

Select Location

Est % of Roof

Select %

Roof Insulation Type

Select Type

Gutter Condition

Select Condition

Down Spouts Condition

Select Condition

Exterior Wall

Structural Material>>>

Select Type

Curtain/Infill Wall Material 1

Select Type

Est % of Roof

Select %

Condition

Select Condition

Wall Insulation Present

Select

Insulation Type

Select Type

Condition

Select Condition

Curtain/Infill Wall Material 2

Select Type

Est % of Roof

Select %

Condition

Select Condition

Wall Insulation Present

Select

Insulation Type

Select Type

Condition

Select Condition

Curtain/Infill Wall Material 3

Select Type

Est % of Roof

Select %

Condition

Select Condition

Wall Insulation Present

Select

Insulation Type

Select Type

Condition

Select Condition

Exterior Cladding/Siding 1

Select Type

Est % of Wall

Select %

Condition

Select Condition

Exterior Finish 1

Select Type

Condition

Select Condition

Active Wall Leaks

Select

Struct Damage/or Deterioration

Select

Termite Damage

Select

Masonry, Plaster, Drywall Cracks

Select

Exterior Cladding/Siding 2

Select Type

Est % of Wall

Select %

Condition

Select Condition

Exterior Finish 2

Select Type

Condition

Select Condition

Active Wall Leaks

Select

Struct Damage/or Deterioration

Select

Termite Damage

Select

Masonry, Plaster, Drywall Cracks

Select

Exterior Cladding/Siding 3

Select Type

Est % of Wall

Select %

Condition

Select Condition

Exterior Finish 3

Select Type

Condition

Select Condition

Active Wall Leaks

Select

Struct Damage/or Deterioration

Select

Termite Damage

Select

Masonry, Plaster, Drywall Cracks

Select

Overall Wall Structure Condition:

Select Condition

Notes:

[Click here to enter text](#)

Windows

Window Type 1

Select Type

Frame Material

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Window Sill Type

Select Type

Window Sill Condition

Select Condition

Broken, Missing Glass

Select

Condensation Present

Select

Number of Windows

[Click here to enter text](#)

Window Type 2

Select Type

Frame Material

Select Item

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Window Sill Type

Select

Window Sill Condition

Broken, Missing Glass

Select

Condensation Present

Select

Number of Windows

[Click here to enter text](#)

Window Type 3

Select Type

Frame Material

Select Item

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Window Sill Type

Select

Window Sill Condition

Broken, Missing Glass

Select

Condensation Present

Select

Number of Windows

[Click here to enter text](#)

Garage Doors

Garage Door Type 1

Select Type

Number of Garage Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Material Type

Select Type

Insulated

Select

Condition

Select Condition

Garage Door Type 2

Select Type

Number of Garage Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Material Type

Select Type

Insulated

Select

Condition

Select Condition

Garage Door Type 3

Select Type

Number of Garage Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Material Type

Select Type

Insulated

Select

Condition

Select Condition

Notes:

[Click here to enter text](#)

Walk Through Doors

Door Type 1

Select Type

Number of Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Insulated

Select

Condition

Select Condition

Broken, Missing Glass

Select

Condensation Present

Select

Air Gaps Present

Select

Door Type 2

Select Type

Number of Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Insulated

Select

Condition

Select Condition

Broken, Missing Glass

Select

Condensation Present

Select

Air Gaps Present

Select

Door Type 3

Select Type

Number of Doors

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Insulated

Select

Condition

Select Condition

Broken, Missing Glass

Select

Condensation Present

Select

Air Gaps Present

Select

Basement

Basement Type

Select Type

Floor Framing Type

Select Type

Ground Floor Framing Type

Select Type

Above Grade Framing Type

Select Type

Evidence of Structural Settling

Select

Ground Floor Framing Condition

Select Condition

Above Grade Framing Condition

Select Condition

Notes:

[Click here to enter text](#)

Interior

Ceiling Type 1

Select Type

Est % of Ceiling

Evidence of Moisture

Select

Condition

Select Condition

Cause of Moisture (If Known)

[Click here to enter text](#)

Flooring Type 1

Select Type

Est % of Floors

Select %

Condition

Select Condition

Interior Wall Material 1

Select Type

Est % of Building

Select %

Condition

Select Condition

Evidence of Moisture

Select

Interior Wall Finish Type 1

Select Type

Est % of Building

Select %

Condition

Select Condition

Lighting Type 1

Select Type

Est % of Building

Select %

Condition

Select Condition

Ceiling Type 3

Select Type

Est % of Ceiling

Select %

Evidence of Moisture

Select

Condition

Select Condition

Flooring Type 2

Select Type

Est % of Floors

Select %

Condition

Select Condition

Interior Wall Material 2

Select Type

Est % of Building

Select %

Condition

Select Condition

Evidence of Moisture

Select

Interior Wall Finish Type 2

Select Type

Est % of Building

Select %

Condition

Select Condition

Lighting Type 2

Select Type

Est % of Building

Select %

Condition

Select Condition

Ceiling Type 3

Select Type

Est % of Ceiling

Select %

Evidence of Moisture

Select

Condition

Select Condition

Flooring Type 3

Select Type

Est % of Floors

Select %

Condition

Select Condition

Interior Wall Material 3

Select Type

Est % of Building

Select %

Condition

Select Condition

Evidence of Moisture

Select

Interior Wall Finish Type 3

Select Type

Est % of Building

Select %

Condition

Select Condition

Lighting Type 3

Select Type

Est % of Building

Select %

Condition

Select Condition

Adequate Lighting

Select

Notes:

[Click here to enter text](#)

Utilities

Water

Water Present

Select

Water Type

Select Type

Back Flow Preventer

Select

Source

Select Provider

Fixtures Present

Select

Water Supply Pipe Material

Select Type

Adequate Pressure & Flow

Select

Fixtures Condition

Select Condition

Water Supply Material Condition

Select Condition

Water Heater

Water Heater(s) Present

Select

Number of Water Heaters

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Water Heater Condition

Select Condition

Energy Source

Select Type

Sewage System

S. S. Dedicated to Building

Select

Drain/ Waste Pipe Material

Select Type

Sewer/Septic Problems

Select

Drain/Waste Pipe Material Condition

Select Condition

Water Quality Issues

Select

Known Deficiencies

[Click here to enter text](#)

Electrical

Electricity Present

Select

Electric Service

Select Type

Building/Service Voltage

Select Size

Service Equip Type

Select Type

Building/Service Disconnect Size (Amps)

Select Size

Dedicated Meter for Building

Select

Condition

Select Condition

Does this Building Electrical Service Feed Other Buildings

Select

Is this Building fed from another Building Electrical Service

Select

Generator Present

Select

Condition

Select Condition

Generator Age

[Click here to enter text](#)

Type of Transfer Switch

Select Type

Functional

Select

Known Electrical Issue

Select

Notes:

[Click here to enter text](#)

HVAC

Heating

Heating Present >>>

Select

Heating Type 1

Select Type

Est % of Building

Select %

Heating Fuel

Select Type

Est. Age

Condition

Select Condition

Heating Type 2

Select Type

Est % of Building

Select %

Heating Fuel

Select Type

Est. Age

Condition

Select Condition

Heating Type 3

Select Type

Est % of Building

Select %

Heating Fuel

Select Type

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Cooling

Cooling Present >>>

Select

Cooling Type 1

Select Type

Est % of Building

Select %

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Cooling Type 2

Select Type

Est % of Building

Select %

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Cooling Type 3

Select Type

Est % of Building

Select %

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Mechanical Ventilation

Mech Vent Present >>>

Select

Mech. Vent. Type 1

Select Type

Number of Ventilation

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Known Mechanical Issue

Select

Mech. Vent. Type 2

Select Type

Number of Ventilation

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Mech. Vent. Type 3

Select Type

Number of Ventilation

[Click here to enter text](#)

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Notes:

[Click here to enter text](#)

Life Safety

Fire Alarm

Fire Alarm System Present

Select

Est. Age

[Click here to enter text](#)

Condition

Select Condition

Regular Service/Testing for Fire Alarm

Select

If Yes, Service Schedule: every [Month]

[Click here to enter text](#)

Fire Suppression

Fire Suppression Present

Select

Type

Select Type

Condition

Select Condition

Regular Service/Testing for Fire Suppression

If Yes, Service Schedule: every [Month]

[Click here to enter text](#)

Fire Escape Support

Posted Fire Escape Plan

Select

Exit Signs Present

Select

Lighted Exit Signs Present

Select

Emergency Exit Lights Present

Select

Lighted Exit Signs Functional

Select

Emergency Exit Lights Functional

Select

Notes:

[Click here to enter text](#)

Overall Facility Condition

Overall Condition

Select Condition

Known Deficiencies not Listed:

[Click here to enter text](#)

Top 5 Worst Priorities in Division 14

Division 14 - Office

Division	Asset #	Construction Type	Facility Name	Function	FCI	Condition
14	056-001-001	Wood Frame	MATERIALS & TEST OFFICE	Office	29%	Fair
14	050-003-017	Masonry	Maintenance Supervisor's Office	Office	27%	Fair
14	056-001-020	Masonry	Bridge Maintenance Office	Office	18%	Good
14	044-005-001	Masonry	Assembly / Office Building (Maintenance)	Office	17%	Good
14	020-002-001	Masonry	Maintenance Office Building	Office	14%	Good

Division 14 - Rest Area

Division	Asset #	Construction Type	Facility Name	Function	FCI	Condition
14	075-005-004	Wood Frame	Welcome Center Building	Rest Area	19%	Good
14	044-013-015	Wood Frame	Vending Building	Rest Area	16%	Good
14	075-005-001	Wood Frame	Vending Machine Bldg	Rest Area	13%	Good
14	044-020-001	Wood Frame	Public Restroom Building	Rest Area	11%	Good
14	044-020-005	Wood Frame	Information Building (Rest Area)	Rest Area	10%	Excellent

Division 14 - Storage

Division	Asset #	Construction Type	Facility Name	Function	FCI	Condition
14	056-001-022	Masonry	Equipment Steam Jenny Building	Storage	172%	Poor
14	050-004-004	Masonry	Pump House/Bridge Maintenance	Storage	116%	Poor
14	022-001-002	Masonry	Maint. Inventory Storage	Storage	102%	Poor
14	087-001-004	Masonry	Equipment Storage Building	Storage	90%	Poor
14	075-005-005	Wood Frame	Rest Area Storage Bldg	Storage	89%	Poor

Division 14 - Vehicle Service

Division	Asset #	Construction Type	Facility Name	Function	FCI	Condition
14	044-005-003	Masonry	Gas Pump Station Lake Junalaska	Vehicle Service	41%	Fair
14	022-001-003	Masonry	Wash/Grease building	Vehicle Service	33%	Fair
14	050-003-025	Masonry	Service Station	Vehicle Service	30%	Fair
14	075-003-003	Steel Frame	Equipment Shop	Vehicle Service	29%	Fair
14	050-003-005	Masonry	Wash and Grease Building	Vehicle Service	27%	Fair