

APPENDIX

NEW JERSEY POLICY PERSPECTIVE

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Prepared Testimony of Gordon MacInnes, President, New Jersey Policy Perspective, Before the Assembly Transportation Committee, October 14, 2014

Thank you, Mr. Chairman, for this opportunity to testify. And thanks to Speaker Prieto and Senate President Sweeney for seizing the initiative to acknowledge New Jersey's emergent problem of a Transportation Trust Fund that is going bust.

We are at a dangerous intersection and the state's economic future depends on the legislature and governor acting with urgency and uncharacteristic boldness. Here's why.

New Jersey has one competitive asset that no state can match: location, location, location. Only one state sits in the middle of the world's largest market with easy access to the world's most important city in the north and Philadelphia in the south. New Jersey's successful transition from a manufacturing and industrial economy to one of the of the nation's wealthiest, highest income states is best explained by taking advantage of that location to attract a highly educated work force.

At the heart of this attraction is a diverse and pleasant array of residential communities with vibrant business districts, parks and amenities, excellent public schools. And, crucially, convenient road and transit access to jobs in New Jersey, and to New York and Philadelphia.

There is no need to rehearse in detail the practices and policies that brought the Transportation Trust Fund to its current state. Suffice it to say that successive governors and legislatures have chosen politically painless and gimmicky measures to buy a few years while neglecting to take the big steps needed to maintain and modernize the state's transportation network.

And this administration has continued the practice. Its reliance on the cancellation of the ARC rail tunnel to help fund the TTF over the past three years has harmed New Jersey in two important ways: It has seriously delayed improving NJ Transit's access to Manhattan and it has exhausted its sources of one-time funding.

Let's be clear: This transportation-funding problem is not new. The warning signs have been strong and well documented. The bipartisan Blue Ribbon Commission in 2003 urged a significant increase in the gas tax. It was ignored. The Facing our Future report in 2013, again a bipartisan group of veteran public officials, laid out the facts of a rapidly deteriorating highway, bridge and public transit network and called for consideration of a gas tax hike. That was again ignored.

Now we're out of time and calls to fix the TTF can no longer be ignored.

In April, NJPP issued a report that proposed extending the sales tax to gasoline and petroleum sales. At today's average of \$3.25 a gallon, the TTF would benefit from a \$1.18 billion infusion each year, not enough to clear the bar set by the Speaker, but enough to have money to do something other than pay interest and principal on TTF debt. Six months later we stand by that recommendation in part because an excise or sales tax self-adjusts for inflation, unlike the per-gallon taxes New Jersey has relied on.

This proposal, like most, is not perfect.

One, as fuel standards rise and more efficient cars are produced, total reliance on a user tax may not be sufficient over time. But developing and implementing an entirely new way to tax the use of our roads will surely take time to produce a broad consensus – and we don't have time right now.

Second, taxes on gasoline purchases – whether a per-gallon tax or sales tax – are regressive, putting a greater burden on lower-income households than on the state's wealthiest residents. If we extended the 7 percent sales tax rate to gas purchases, the bottom 40 percent of New Jersey households – those with incomes of up to \$45,000 a year – would see a bigger share of their income going to the new tax than other households.

But the good news is that there is a simple way to ensure the state's overall tax structure does not begin to hit poorer families harder: enact tax credits for low-income households. There is no need to reinvent the wheel here: lawmakers and the governor could start by restoring the 2010 cut to the state Earned Income Tax Credit. If this were coupled with our proposal for extending the sales tax, it would greatly flatten the impact of the tax increase. With the credit in place, 80 percent of all households – those with incomes of up to \$121,000 a year – would pay the same percentage of their incomes to cover the tax increase – 0.3 percent. Only households in the top 20 percent would pay a lower share of their incomes.

Last winter's ravaging of New Jersey's highways and public transit affected just about everyone in the state. Years of failing to upgrade roads properly and regularly produced frequent and deep potholes. As more of the TTF funds go to ordinary maintenance previously funded via the general budget instead of for the long-term capital projects intended for TTF, conditions will only worsen.

Once our leaders acknowledge that this is a problem that can only be solved by raising revenues they must avoid the timid steps taken in the past. A nickel a gallon won't work. Stripping chunks of what remains of funding for other critical and highly demanded services by constitutional dedication is not an option because that approach cannot possibly produce enough to continue highway, bridge and transit funding. No, we're left only with big, bold steps to give New Jersey's economic future a chance – so let's take one, together.

Thanks again for this opportunity and for your leadership.



STATEMENT OF ACECNJ PRESIDENT JOE FIORDALISO
ON THE CONDITION OF NEW JERSEY'S TRANSPORTATION
INFRASTRUCTURE AND RECOMMENDATIONS REGARDING NEW
JERSEY'S TRANSPORTATION TRUST FUND

My name is Joe Fiordaliso and I am President of the American Council of Engineering Companies of New Jersey (ACECNJ). ACECNJ represents nearly 100 engineering firms with close to 5,000 employees in New Jersey. Engineers see the condition of our roads, bridges and transit systems up close every day. Engineers from our member firms regularly inspect these assets and understand the consequences of long term wear and tear without repairs and rehabilitation.

I respectfully submit through the Chair a copy of the *Report Card for America's Infrastructure*, recently released by the American Society of Civil Engineers (ASCE). I call attention to several statistics which articulate the critical condition of New Jersey's transportation infrastructure:

- 10% of New Jersey bridges – 651 in total – are structurally deficient;
- 26% of New Jersey bridges – over 1,700 – are functionally obsolete;
- Two thirds of our roads are considered in poor or mediocre condition;
- Driving on poor roads costs every motorist in New Jersey \$600 per year in delays, repairs, and lost productivity.

Failure to adequately invest in the repair and rebuilding of our infrastructure is the primary cause of this deteriorated condition.

The public clearly understands this. A recent survey shows most residents believe the existing transportation network is not meeting their needs. Our region is critically dependent on transportation for the movement of goods and services that support the economy and people who live here. An overwhelming 98% of tri-state residents think the current state of our transportation network is in need of urgent repairs. In that same survey, 27% identified local roads as being most in need of repairs; 20% identified highways; and another 12% identified our bridges. The same survey shows that 85% of residents don't believe our transportation network is reliable.

This is a safety and public health issue as well. NJDOT is responsible for implementing the federal Highway Safety Improvement Program (HSIP). HSIP, enacted as part of the federal SAFETEA-LU Act in 2005 and continued through MAP-21 in 2012, has a goal of achieving a significant reduction in traffic fatalities and serious injuries on all roads. HSIP awards federal funds to states to implement a comprehensive safety program that includes design changes that make roads safer; encouraging better driving habits; stopping unsafe and illegal driving; and timely response to and from traffic accidents. According to NJDOT's 2013 HSIP annual report, New Jersey has reported that over a five-year period, from 2008-2012, there has been a steady drop in the number of crashes. In 2008, there were 303,013 crashes; in 2012, 284,062 – a reduction of 19,951. There were 9,533 fewer crashes in 2012 than in 2011. There has also been a steady decline in the number of crash-related

injuries during the same five year period – from a high of 68,502 in 2008 to a low of 63,333 in 2012. The concerning news is that HSIP is entirely federally funded and no state dollars have been used to leverage its success to improve safety on our roads. TTF insolvency means that some priorities have gone unfunded. Investing state dollars in safety programs like HSIP – perhaps in a matching fashion - would likely correlate to an even more precipitous drop in traffic accidents, injuries and deaths.

Mr. Chairman, it doesn't take an engineer to conclude that our system is broken and in need of immediate repair and reinvestment. In order to adequately protect public health and safety, a long-term sustainable TTF fix must be implemented immediately.

According to the National Conference of State Legislators, since 2007 over half the states around the country have enacted measures to address infrastructure financing and invest in their transportation infrastructure. It is time for New Jersey to do the same.

In addition, New Jersey has the opportunity to put in place a number of important reforms to make sure every dollar we spend is done wisely and efficiently and is utilized properly to repair and rehabilitate our roads, bridges and transit systems. These reforms are tied directly to the condition of our infrastructure today and in the future.

One important reform is constitutionally dedicating all revenues to the Transportation Trust Fund to make sure they are used for their intended purpose. ACECNJ recommends that all TTF revenues be constitutionally dedicated.

Another important reform is strengthening the process for procuring professional services like design & engineering. Qualifications-Based Selection (QBS), a procurement process widely used throughout the state and the country for professional services, designates superior qualifications and experience as the paramount basis for selecting engineering and architectural professionals for public projects. QBS provides the public owner with the most qualified firm who can deliver the best design to meet the project needs.

QBS results in first-rate design and construction and saves taxpayers millions of dollars. QBS allows agencies to select the design firm with the best experience, capabilities, technical approach and quality of personnel, matched to the needs of the project and the agency; generates better plans and specifications, resulting in higher quality contract documents that make bidding on and carrying out construction easier; fosters the development of innovative, cost-effective design solutions at a fair market value, resulting in lower overall project costs; minimizing delays, cost overruns and litigation; and generates design solutions that best meet the needs of the project, emphasizing public health, safety and quality of life.

Cost-based procurement, which focuses primarily on price, may sometimes result in a lower *initial* design cost, but QBS generates a better project with lower *overall* costs--from design through construction to ongoing operation and maintenance. Studies have consistently shown that the use of QBS for public projects produces lower project costs and reduced schedule. Moreover, the rate of change-orders decreased from 10% to 3% on average, and 3% schedule growth compared to the industry average of 8.7%.

New Jersey has a very weak statute governing the procurement of design and engineering. Strengthening this statute is another important TTF reform being recommended by ACECNJ. This reform will save money, reduce delays, and give the public and policy-makers the confidence of knowing that TTF revenues are being spent in the most efficient and effective manner possible to repair our aging infrastructure.

Mr. Chairman, this issue is not overly complicated, but it does require our collective immediate attention. We have myriad success stories to point to when resources are properly directed to our transportation infrastructure. The widening of the Turnpike and Garden State Parkway are examples of the type of success stories we can expect once we have fixed the TTF. The complete reconstruction of Route 35 in Ocean County is another recent example. Unfortunately, Superstorm Sandy pushed the envelope and forced us to invest in projects that would otherwise languish due to lack of funding. Waiting for a crisis or disaster to act is not acceptable.

ACECNJ applauds our Governor and Legislature for taking action on this critically important issue. New Jersey's engineering profession stands ready to provide you with support, information and expertise. Taking the necessary action on this issue will result in a vibrant, safe and reliable transportation network, something New Jersey critically needs.

Thank you.

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Clubs of New Jersey

AAA Testimony for the Assembly Transportation Funding Hearing October 14, 2014

Thank you to the Chairman and members for holding this hearing today, I am Cathleen Lewis and I am here today representing the AAA Clubs of New Jersey and our over 2 million members in the state.

In 1901 nine motor clubs, including the New Jersey Automobile Club of New Jersey, banded together to form the American Automobile Association or AAA in an effort to advocate for safe roads and highways suitable for automobiles.

One hundred and 13 years later, the AAA Clubs of New Jersey sit here today advocating for the necessary funding to maintain safe roads and highways for our vehicles. In order to maintain and expand our transportation infrastructure New Jersey needs a stable, sustainable funding source.

Transportation funding is a constant need, especially here in New Jersey. Our roadways are continually pounded by not only our own residents but by trucks and travelers from throughout the country. Our state is a gateway and as such it is imperative for not only the safety of our motorists but also for our economy.

For over a decade AAA has polled motorists to gauge their views on road conditions and traffic safety issues. In 2009, 39 percent of motorists said their commute had stayed the same over the last two years, asked the same question in 2013, 37 percent said their commute had gotten worse. Those 2013 responses were taken before our roads were pounded by an extremely harsh winter, it's unlikely that opinions of road conditions have gotten any better over the last year.

Across the state drivers rated local and state roads as fair or poor, while major interstate and toll roads received the highest ratings. As transportation funding has dwindled, the local roadways that a majority of New Jerseyans use everyday have suffered the most.

Crumbling infrastructure hurts New Jerseyans in a variety of ways:

- Longer commutes
- Higher repair costs
- Weakened roadways
- Increased crash risk

Most drivers on New Jersey roads have experienced the sudden realization that a large crater is a few feet in front of their car. The driver's choices are to either swerve into another lane of traffic to avoid the pothole or drive over it hoping that it won't cause too much damage to their vehicle.

Costs for repairing damage caused by potholes can range from \$50 for a simple wheel alignment to \$500 or more for replacing a tire and a rim. If the vehicle suspension system or steering components are impacted, the repair cost can rise to \$2,500 or more.

Avoiding the pothole may cause a crash which can result in injuries and even more expensive repairs. For commuters those crashes mean more delays and the possibility of additional crashes as inattentive drivers don't notice the sudden slow down.

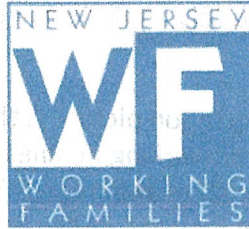
The risks of uneven pavement and potholes is even greater for motorcycle riders, those hazards can quickly launch a rider off their vehicle or cause a wipeout as they try to avoid the hazard.

New Jerseyans have also witnessed the costs of delaying infrastructure maintenance. From the collapse of 287 after Hurricane Irene to a series of collapses earlier this year due to missing manhole covers and sewer grates, which had been loosened after the lanes were shifted and traffic was placed directly on top of the grates.

Waiting until roads are at or near collapse or riddled with potholes often means significant changes to traffic patterns and longer delays. Changes to traffic patterns - where lanes must be shifted or detours are required may lead to increases in crashes as drivers try to make quick alterations to their routines.

New Jersey drivers face commutes that on average are 9 minutes longer than the rest of the country, but many face uncertainty every day - will roadwork or a crash push their 30 minute commute to an hour or more? Will uneven road surfaces cause damage to their vehicle or possibly create hazards that could cause a crash?

New Jersey drivers deserve to have safe transportation infrastructure to travel on. Our roadways are vital to our industries and our quality of life. Finding a stable, sustainable way to fund our infrastructure is key to moving New Jersey forward.



Testimony of New Jersey Working Families Before the New Jersey Assembly Transportation and Independent Authorities Committee

Tuesday, October 14th, 2014

New Jersey Working Families is a coalition of labor and community organizations dedicated to a more socially and economically just New Jersey. We support investments in roadway infrastructure, public transit, and other essential goods that improve the state's quality of life, and we come to the table to ensure that the funding for those investments do not weigh most heavily on New Jersey families living on the edge.

The discussions at these hearings have often focused necessarily on the technical: the needs of roadways, the bridges, the railways, and the ways we address these needs at the municipal, county, state and federal levels. That we must address the critical infrastructure needs of this state is well documented in the testimonies already provided. The need to find sustainable funding of the TTF goes without question. And the need to act swiftly is clear as well. As Tom Bracken pointed out in his September 24th testimony, by June of next year we will not have the funds to pay even our debt never mind any project of repair or growth.

I am here today to ask that as the Legislature consider solutions, that the current economic struggles of an increasing number of New Jersey Families be at the forefront of your minds. New Jersey is struggling to get out of the recession and lagging behind many other states. Poverty is increasing, jobs with livable wages are scarce, and the budget crisis is looming larger and larger. The near-insolvency of the TTF is just a part of this broader picture, and we must keep in mind how any proposed solutions affect the canvas as a whole.

The most frequently discussed solution - or at least initial step - is a gas tax. We have one of the lowest in the country, and it has not been raised in decades. But as the gas tax is discussed keep in mind that the lowest income earners of the state, who saw their earned income tax credit reduced five years ago, will face real hardship paying more at the pump. If the Legislature decides an increase in the gas tax is necessary, we ask you also consider ways in which we can ensure fairness to these low-income families. New Jersey Policy Perspective has recommended a gas tax credit for low

income earners so that people who rely on their cars don't need to lose even more of an already insufficient paycheck.

Another part of the overall transportation picture is the public transportation system in New Jersey upon which many of our working families rely to get to work, to get children to school, to medical treatment, to shop and more. We can not continue to shoulder the burden of the state's lack of investment on those that rely on these systems not only because it is not fair to them - but because in the end it is bad for our overall economy.

As Ray Greaves pointed out at the September 24th hearing, there has been a staggering disinvestment in public transportation in this state that puts us at a competitive disadvantage with our neighbors. So we ask that you carefully consider the necessary ways in invest not just in improving the service provided by public transportation, but the affordability of the system to those that depend in it.

These are just two examples of the perspective we bring to the table and the consideration that we ask you to give to the people of New Jersey who certainly rely on the transportation of this state but cannot fairly be expected to pay a disproportionate part of the solution. We look forward to working with you as you craft the solutions that will improve not just the roadways but the overall economic health of our state.

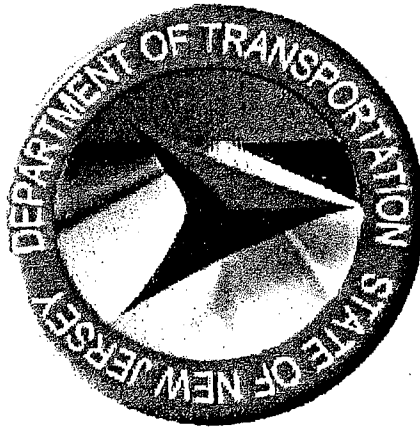
Thank you for your consideration of these comments.

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**ADVISABILITY STUDY
FY 2007**

**NEW JERSEY DEPARTMENT OF
TRANSPORTATION**



**Construction Inspections
*In-house vs. Consultant Costs***

Prepared by

*Division of Budget
Bureau of Program Analysis*

November 2007

EXECUTIVE SUMMARY

The Division of Budget, Bureau of Program Analysis was asked to determine whether it is more cost effective to conduct the function of construction inspection using in-house forces or consultant forces. The scope of this study analyzes six completed construction inspection projects. Three projects consisted of 100% consultant participation and the remaining three projects were a combination DOT/consultant effort. The scope of this review is also confined to cost-related issues only. Although other non-cost related issues impacting the decision to use in-house or consultant forces are listed in this report, we did not attempt to validate or weigh these factors against cost related criteria.

We used the Reason Foundation report "How to Compare Costs Between In-House and Contracted Services" as the basis for what costs and factors should be included in this type of analysis. We have used this model for about 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. We supplemented that methodology with a Transportation Research Board publication ("In House Versus Consultant Design Costs in State Departments of Transportation," Record 1654, Paper 99-1403) that suggests different methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, TRB indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program.

The Actual Consultant vs. Simulated In-house is the methodology used for this study. This methodology compares actual consultant costs to simulated in-house costs on the same project. This methodology assumes that the staff-hours required are equal and isolates salary and overhead cost differentials. Under the Department's current contracting system, construction inspection consultants are specifically told how many inspectors need to be on the job, their qualifications, hours of work, etc. There does not appear to be any opportunity for the consultants to have an influence on cost other than the direct salaries paid to employees and the overhead/profit they charge. Since these costs are the only real variable under the construction inspection consultant's control, the Actual Consultant vs. Simulated In-house methodology is the most feasible option when compared with the other methodologies.

The Bureau of Program Analysis, working with the Bureau of Construction Engineering, identified the consultant/NJDOT construction inspection projects to be analyzed. The source for the project selection was the Monthly Status of Construction Project Reports for fiscal years 2005 - 2006. Upon completing our search, we were able to identify six 100% completed projects that had either 100%

consultant participation or a combination of DOT/consultant participation that we were able to use for cost comparison.

We computed both "avoidable" cost and fully allocated costs for both. Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs, which include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs vs. fully allocated consultant costs is not appropriate for estimating actual cost savings. The avoidable and fully allocated costs per construction inspection project are shown in Table A. The table also shows the cost differential between the fully allocated cost of consultants and in-house forces for the six selected projects:

Table A
Total Costs for In-House/Consultant
Construction Inspections

Job #	Description Consultant	Consultant Performance Costs		In-House Performance Costs		Full Cost Allocation Difference
		Avoidable Cost *	Full Cost Allocation *	Avoidable Cost	Full Cost Allocation	
2203518	Kupper Associates	\$251,556	\$251,556	\$180,080	\$233,569	7.7%
1810531	Kupper Associates	\$1,426,622	\$1,426,622	\$972,288	\$1,269,873	12.3%
1815516	Schoor DePalma, Inc.	\$460,878	\$460,878	\$191,360	\$250,377	84.1%
1332509	DMJM Harris Inc.	\$635,732	\$635,732	\$348,057	\$456,894	39.1%
2203917	Cherry, Weber & Associates	\$295,968	\$295,968	\$198,950	\$258,965	14.3%
1018508	Greenman - Pedersen, Inc.	\$467,712	\$467,712	\$249,742	\$325,683	30.4%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

The results of our analysis show cost differences between conducting construction inspections using in-house forces based on both the avoidable cost, and fully allocated cost method. Because these services are predominantly paid for using Federal and Transportation Trust Fund dollars, there are however additional considerations that factor into any determination as to "savings" to be achieved by the State.

Because of the small sample size of projects, we decided to perform an analysis of hourly wage rates for consultants approved for construction inspection work for comparison with NJDOT salary rates. With assistance from the Division of Accounting and Auditing, we determined that a total of fifteen firms had actual construction inspection wage rates on file. The main cost components for consultants are hourly wage rates, overhead rates and fixed fee or profit margin, which represent the only real cost under the control of the consultants. While at

NJDOT, the main cost components are hourly wage rates, fringe benefits, leave time, and indirect costs. We found that when we compared the average consultant hourly wage rates adjusted to include overhead and fixed fee to the NJDOT hourly wage rates adjusted for fringe and leave additives plus indirect cost that the NJDOT adjusted salary rates were significantly lower than those of the consultants. This analysis of salary rates for consultant firms performing construction inspection parallels the results obtained from the six completed construction inspection projects that were analyzed in this study.

If it is determined that an expansion of the in-house construction inspection effort is desirable based on this cost analysis, we recommend that new in-house construction inspectors be hired to reduce the number of consultant inspectors working on Construction Inspection Projects.

As noted, there are factors other than cost that would have to be weighed in making decisions about how the Department might assign future work. Specialized personnel are necessary for the construction inspection of complex/segmented bridges. Bridge painting inspection also requires personnel with specialized knowledge who must have hazmat training and must be certified. All bridge painting inspectors need to have a baseline blood test on file and subsequent monitoring. In addition, they also need to be fitted with specialized equipment such as a respirator. Specialized engineers such as mechanical, electrical and bridge painting inspectors may not be readily available for hire.

Finally, we recommend that the Division of Construction Services & Materials institute controls to ensure that correct job numbers and proper function codes are used on timesheets. This is critical to identifying costs to an in-house or consultant project because the same job number is used for both. Additionally, the responsible unit(s) in CPM should provide job numbers and function codes to other Departmental units charging construction inspection job numbers to ensure that all costs relative to a particular consultant or in-house project are accounted for.

CONSTRUCTION INSPECTIONS In-house vs. Consultant Costs

November 2007

I. INTRODUCTION

A. Purpose

Compare costs of performing construction inspections using in-house forces or consultant forces. This study updates a study conducted by the Division of Budget, Bureau of Program Analysis in 2003. The study is being updated to comply with the CWA union contract. The same methodology is used in this 2007 study as was used in the 2003 study.

B. Background

The Division of Construction Services & Materials is responsible for the overall function of construction inspection. In 1984, NJDOT performed all construction inspections by using only in-house staff. The following table, provided by the Bureau of Construction Engineering, represents historical data of NJDOT and Consultant personnel, the total number of projects and the total project cost from 1996 until present.

Table 1
NJDOT & Consultant Field Inspection Staffing and Project History
FY 1996-2007

Date	Personnel		Total No.	Total Project
	Consultant	NJDOT Constr.	Projects	Cost in Millions
Apr-96	116	371	151	\$1,448.331
Apr-97	80	349	133	\$1,484.394
Apr-98	75	304	104	\$1,146.497
Apr-99	79	276	83	\$979.358
Apr-00	73	254	93	\$1,121.478
Apr-01	67	248	85	\$1,304.931
Apr-02	95	231	69	\$1,405.311
Apr-03	124	216	92	\$1,735.333
Apr-04	103	227	94	\$1,570.308
Apr-05	103	224	81	\$1,955.069
Apr-06	96	238	88	\$2,382.139
Apr-07	162	235	129*	\$1,498.774
Average	92	267	98	\$1,503.014

- Includes Construction Inspection and Maintenance - Active projects only.
- Prior to November 2006 the project cost included both active and inactive projects

CONSTRUCTION INSPECTIONS

November 2007

In-house vs. Consultant Costs

The above table shows a definite downward trend in the number of field inspection positions in the Division of Construction Services and Materials. Various factors (i.e. attrition, early retirements, hiring freezes, lack of qualified recruits) have all contributed to this decrease and have resulted in the Department being unable to maintain an adequate staff level to administer the entire construction inspection program.

In order to meet the demand of the inspection program, NJDOT has had to rely on outside consultants. The consultants provide the same services that the in-house personnel provide on a construction project. These services include inspection of construction procedures and occasionally materials for conformance to plans and specifications, maintenance of records, payment to contractors, calculation of as-builds and safety to the public.

Consultant engineering firms are selected at NJDOT based on their professional qualifications, as opposed to bidding on a contract and the contract being awarded to the lowest bidder. An engineer at NJDOT analyzes each construction project and a cost estimate is developed. The selected consultant develops a cost proposal, which is subject to audit approval. Some negotiation of the consultant's proposal may occur if the costs are not near the engineer's estimate of costs. The cost of the consultant contract is not fixed and may be modified during the contract to adjust for any unforeseen circumstances.

C. Scope

This study will analyze and compare inspection costs of six completed construction inspection projects. Three projects consisted of 100% consultant participation and the remaining three projects were a combination DOT/consultant effort. Factors other than cost were not part of the scope of this report. However, non-cost factors should be weighed as part of the decision process and some are included in the report. No conclusions were made regarding the validity or importance of these non-cost factors because it was not an element of this project. Also included in the scope of this project is an examination of how our current procurement system for construction inspection consultants impacts our costs.

CONSTRUCTION INSPECTIONS

In-house vs. Consultant Costs

November 2007

D. Methodology

The Division of Budget uses a Reason Foundation report, "How to Compare Costs Between In-house and Contracted Services" as the basis for in-house vs. consultant cost comparisons. We have used this as our core methodology for identifying appropriate costs that should be collected and analyzed when comparing in-house and contract costs. We have used this model for about 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. The methodology emphasizes a comprehensive listing of costs, particularly in-house costs that are associated with procurement and management of contracts. Also emphasized are the overhead support costs that are embedded in the contractor's fee but must be calculated separately when estimating the cost of performing a function with in-house staff.

The methodology also requires that costs be classified as either avoidable or fully allocated. Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs, which include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs vs. fully allocated consultant costs is not appropriate for estimating actual cost savings. The Reason Foundation report recommends the fully allocated cost method be applied whenever the government agency is implementing a new program and considering how it should be delivered. Avoidable costs are usually used where a change in the delivery of an existing program is contemplated. The cost comparison tables in the Appendix include separate columns for fully allocated and avoidable costs.

We also made use of a Transportation Research Board (TRB) publication "In House Versus Consultant Design Costs in State Departments of Transportation", Record 1654, Paper 99-1403 that suggests different methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, the TRB report indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program. As a result, we have identified several different tools that can be used for making cost comparisons depending on the individual circumstances of the projects being examined (See Appendix for Cost Comparison Methods table). These cost comparison methods are as follows:

CONSTRUCTION INSPECTIONS

In-house vs. Consultant Costs

November 2007

1. Comparable Project
2. Actual Consultant vs. Simulated In-house
3. Actual In-house vs. Simulated Consultant
4. Total Cost Per Production Hour

The Actual Consultant vs. Simulated In-house is the methodology used for this study. This methodology compares actual consultant costs to simulated in-house costs on the same project. This methodology assumes that the staff-hours required are equal and isolates salary and overhead cost differentials. Under the Department's current contracting system, construction inspection consultants are specifically told how many inspectors need to be on the job, their qualifications, hours of work, etc. There does not appear to be any opportunity for the consultants to have an influence on cost other than the direct salaries paid to employees and the overhead/profit they charge. Since these costs are the only real variable under the construction inspection consultant's control, the Actual Consultant vs. Simulated In-house methodology is the most feasible option when compared with the other methodologies. See Appendix for description of other cost comparison methods.

The Bureau of Program Analysis, working with the Bureau of Construction Engineering, identified the consultant/NJDOT construction inspection projects to be analyzed. The Bureau of Construction Engineering prepares a Monthly Status of Construction Projects, which contains the status of ongoing and completed construction projects. This document served as the primary source for project selection, we reviewed two fiscal years 2005 and 2006. We concentrated our search on finding 100% completed projects with 100% consultant participation. Upon completing our search, we identified 18 possible projects that had either 100% consultant participation or a combination of DOT/consultant participation. We discovered during the search process that the preponderance of projects that are 100% consultant were still active. In consultation with the Bureau of Construction Engineering, of the 18 possible projects, the majority of the projects were eliminated for various reasons including:

- › follow-up analysis revealed that consultants were not utilized for inspection duties

CONSTRUCTION INSPECTIONS

November 2007

In-house vs. Consultant Costs

- consultant payment invoices are older and are in off-site storage and not readily available
- projects deemed inconsistent with typical construction inspection activity as determined by the Bureau of Construction Engineering

Several projects were rejected by the Bureau of Construction Engineering for various reasons including: third party agreement, other agency projects such as New Jersey Transit or South Jersey Transportation Authority, and design-build.

From the initial pool of 18 possible projects, we were left with only six projects to analyze for our study. Three projects consisted of 100% consultant participation and the remaining three projects were a combination of NJDOT/consultant effort.

Stripped Activity Reports by function code were used to identify cost components, hours worked, and percentage of consultant participation. Consultant invoices were obtained electronically from File Net and from the files in the Division of Accounting and Auditing. All invoices for each project were reviewed, costs were extracted and detailed spreadsheets were created for each invoice. Costs attributed to all individuals associated with consultants and sub-consultants were identified. The amounts paid to the consultants for overhead and fixed fee were also included in the cost detail spreadsheets. The actual overhead rates were provided by the Division of Accounting, and Auditing. Direct expenses from consultant projects were not included in this analysis because we were unable to determine equitable in-house direct expenses.

The first step in determining simulated in-house costs was to convert the job titles of the consultant's staff into equivalent NJDOT titles. The Bureau of Construction Engineering and the Bureau of Construction Services Procurement provided tables for the conversion of consultant job titles to NJDOT equivalents. The simulated in-house methodology is based on the assumption that the same number of hours worked by each consultant person would be converted into NJDOT equivalent hours. To calculate a base payroll cost, the hourly rate in effect at the time of the project as stated in the Department of Personnel Compensation Compendium Guide was used. We used the maximum 9th pay step for each title range for Fiscal Year 2006 due to the senior work force within The Division of Construction Services and Materials. We also computed premium time and applied a fringe and leave additive and indirect cost rate to the base payroll.

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An average hourly rate was calculated for all consultant and in-house titles by project. These salary rate tables are included in the Appendix.

To determine the Indirect Cost, for the purpose of this study, the Division of Budget calculated a single composite overhead rate for Construction Engineering based upon the methodology used in a TRB Study. The overhead was calculated at several organizational levels. Step one was to determine a department-wide overhead rate using the NJDOT FY 2006 Cost Allocation Plan for General and Administrative costs plus risk management costs. Step two identified the costs of upper management (Assistant Commissioner CPM), second tier management (CPM support units), and third tier management (Division Director) that provided supervision to Construction Engineering. Step three determined the non-project time of Construction Engineering unit including training, and administrative. By incorporating unproductive (down) time into the overhead, the impact of unreliable in-house cost data can be minimized. Step three cost estimates were added to the two previous steps and used to calculate a single composite overhead rate of 64.92 percent for Construction Engineering that incorporates all three levels (see Appendix for calculations). This overhead rate is applied to direct salary.

Because of the small sample size of projects, we decided to perform an analysis of hourly wage rates for consultants approved for construction inspection work for comparison with NJDOT salary rates. With assistance from the Division of Accounting and Auditing, we determined that a total of fifteen firms had actual construction inspection wage rates on file. The hourly wage rates were obtained from a listing of individual employee wage rates by title and ASCE Grade applicable to NJDOT construction inspection projects. These listings are submitted by consultants to the Division of Accounting and Auditing for approval. Using the six completed construction inspection projects as a basis, we were able to identify twelve unique job titles. The current overhead rates for the fifteen firms were obtained from the Division of Accounting and Auditing and an average overhead rate was calculated. From this data, we were able to calculate an average hourly rate for each title. Using the average hourly wage rates as the base, we applied the average overhead rate. Finally, an average fixed fee of 10.5% was applied to the total of the average hourly wage rate plus overhead.

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The Bureau of Construction Engineering provided tables for the conversion of consultant job titles to NJDOT equivalents. In order to equate the consultant rates to NJDOT rates, we extracted the hourly wage rates for comparable titles from the Department of Personnel Compensation Compendium Guide for Fiscal Year 2006. We used the 9th step of the comparable range for each title. The Department's FY 2006 fringe benefit and leave additives plus the single composite overhead rate for Construction Engineering were applied to the NJDOT wage rates.

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II. FINDINGS

A. Consultant Construction Inspection Procurement Process

Consultants are awarded a Cost Plus Fixed Fee contract for construction inspections. Construction inspection selections follow the Qualification Based System (QBS) used by NJDOT's Consultant Selection Committee. The firms are selected based on qualifications and technical merit. Once the selection is made, the contract cost is negotiated based on the audit advisory report. There is no price competition in the selection process. The selected firm only has to be reasonable enough in price that the Department does not stop the negotiations and go to the second ranked firm.

The construction inspection function has become a very well defined and standardized function due to the very detailed requirements established by NJDOT. Just about any engineering firm that is pre-qualified and has suitably trained employees can perform construction inspections for NJDOT in an acceptable manner.

B. Consultant Construction Inspection Cost

The cost components for a Cost Plus Fixed Fee contract are direct consultant labor costs, consultant overhead costs, profit margin or fixed fee, and direct consultant expenses. The source of this cost data is invoices submitted by the consultant, which were used to determine the consultant component of the inspection costs.

In addition to the consultant costs, there are in-house administration costs associated with consultant contracts. NJDOT uses a system called CEMM (Construction Engineering Manpower Management) to estimate planned person-hour allotments and skill level guidelines for each project. There are costs to negotiate a consultant contract and provide support to the consultant, costs to monitor a consultant contract, costs to perform pre-award and audit consultant costs, costs to process a consultant agreement and costs to pay a consultant. Other costs associated with consultant contracts includes work required to select consultants such as posting solicitations, rating technical proposals, preparing

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consultant selections, debriefing consultants, etc. In-house salary costs associated with consultant contracts can be identified through timesheet charges to the construction engineering job number. Notwithstanding that the contract administration costs appear to be low, for this analysis an assumption will be made that all costs charged to the six consultant contracts selected are accurate. These contract administration costs are as follows:

Table 2
Contract Administration Costs
By Consultant

Job Number	Consultant Name	Contract Administration Salary Costs	Percent of Total Consultant Invoice Cost
2203518	Kupper Associates	\$2,827	1.1%
1810531	Kupper Associates	\$17,754	0.8%
1815516	Schoor DePalma	\$1,867	0.4%
1332509	DMJM Harris	\$12,102	1.9%
2203917	Cherry, Weber	\$5,649	1.9%
1018508	Greenman - Pedersen	\$1,981	0.4%

According to the Reason Foundation, a reasonable estimate for contract administration costs is between 10 and 20 percent of consultant costs. Based upon the above table, the contract administration costs for the six consultants are significantly below this range.

C. Actual Consultant vs. Simulated In-house Inspection Costs

A total of six construction inspections by five consultants were selected for comparison using the Actual Consultant vs. Simulated In-House methodology. The construction inspection jobs were identified with the assistance of the Division of Construction Services & Materials. A comparison of the fully allocated direct and indirect costs associated with the six projects inspected by in-house/consultant staff revealed that it was more cost effective to use in-house staff in all six projects. An analysis of the six projects is as follows:

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1. **Job Number:** 2203518
Consultant: Kupper Associates

Project Description: This project consisted of the removal and disposal of lead paint and repair of six (6) Bridges on Rt. I-280 in Kearney and Harrison, County of Hudson. The consultant's effort consisted of providing a qualified Resident Engineer, an Assistant Resident Engineer/Inspector and an Inspector from a sub-consultant. Since this was a 100% consultant effort, the State provided only supervisory and oversight functions to support the consultant's inspection work. The project began in October 2005 and was completed in August 2006.

Cost Summary Tables:

Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (Kupper Associates)	\$104,357
Overhead	\$107,488
Premium Time	\$11,048
Subtotal (Kupper Associates)	\$222,893
Fixed Fee	\$23,060
Total (Kupper Associates)	\$245,953
Subconsultant:	
Amercom Corp. (Includes All Costs)	\$4,850
TOTAL CONSULTANT	\$250,803
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$308
Procurement (Base Pay)	\$496
Civil Rights Contract Compliance (Base Pay)	\$875
Fringe & Leave (68.46%)	\$1,149
TOTAL (CONSULTANT & In-House)	\$253,630

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Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$95,449
Fringe & Leave Additive (68.46%)	\$65,344
Premium Time	\$10,092
NJDOT Supervision (Base Pay)	\$308
Fringe & Leave (68.46%)	\$211
Subtotal (Salary Costs)	\$171,404
Indirect Cost (64.92%)	\$62,165
TOTAL	\$233,569

- 2. Job Number:** 1810531
Consultant: Kupper Associates

Project Description: This project is located in the Township of Hillsborough, Boroughs of Somerville and Rariton, Somerset County from south of Brooks Boulevard to Frelinghuysen Avenue. The work consists of the dualization and widening of Rt. 206 mainline and the construction of several jug handles. And new bridge crossing of the Raritan River with scenic views along the river banks, and a bicycle/multipurpose trail for the length of the project. The consultant's effort consisted of providing a qualified Resident Engineer, an Assistant Resident Engineer/Inspector and an Inspector from a sub-consultant. Since this was a 100% consultant effort, the State provided only supervisory and oversight functions to support the consultant's inspection work. The project began in January 2001 and was completed in May 2005.

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Cost Summary Tables:
Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (Kupper Associates)	\$436,598
Overhead	\$427,866
Premium Time	\$16,675
Subtotal (Kupper Associates)	\$881,139
Fixed Fee	\$101,662
Total (Kupper Associates)	\$982,801
Subconsultants:	
HAKS Engineers (Includes All Costs)	\$180,000
AmerCom (Includes All Costs)	\$150,260
Armand Corp. (Includes All Costs)	\$103,621
Stacie A. Davis (Includes All Costs)	\$1,336
TOTAL CONSULTANT	\$1,418,018
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$3,997
Procurement (Base Pay)	\$1,561
Civil Rights Contract Compliance (Base Pay)	\$4,981
Fringe & Leave (68.46%)	\$7,215
TOTAL (CONSULTANT & In-House)	\$1,435,773

Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$528,737
Fringe & Leave Additive (68.46%)	\$361,973
Premium Time	\$26,578
NJDOT Supervision (Base Pay)	\$3,997
Fringe & Leave (68.46%)	\$2,737
Subtotal (Salary Costs)	\$924,022
Indirect Cost (64.92%)	\$345,851
TOTAL	\$1,269,873

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In-house vs. Consultant Costs

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3. **Job Number:** 1815516
Consultant: Schoor DePalma, Inc.

Project Description: This project is located in the Townships of Bedminster, Bernard and Borough of Far Hills, Somerset County. The work consisted of milling and paving from north of Burnt Mill Road to Passaic River. The consultant's effort consisted of providing a qualified Resident Engineer, an Assistant Resident Engineer/Inspector and an Inspector from a sub-consultant. Since this was a 100% consultant effort, the State provided only supervisory and oversight functions to support the consultant's inspection work. The project began in October 2005 and was completed in August 2006.

Cost Summary Tables:

Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (Schoor DePalma)	\$135,149
Overhead	\$247,030
Premium Time	\$6,241
Subtotal (Schoor DePalma)	\$388,420
Fixed Fee	\$26,919
Subtotal (Schoor DePalma)	\$27,028
Subconsultant:	
Kupper Assoc. (Includes All Costs)	\$46,094
TOTAL CONSULTANT	\$461,432
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$122
Procurement (Base Pay)	\$566
Civil Rights Contract Compliance (Base Pay)	\$421
Fringe & Leave (68.46%)	\$759
TOTAL (CONSULTANT & In-House)	\$463,300

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Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$105,530
Fringe & Leave Additive (68.46%)	\$72,246
Premium Time	\$3,807
NJDOT Supervision (Base Pay)	\$122
Fringe & Leave (68.46%)	\$83
Subtotal (Salary Costs)	\$181,788
Indirect Cost (64.92%)	\$68,589
TOTAL	\$250,377

4. **Job Number:** 1332509
Consultant: DMJM Harris, Inc.

Project Description: This project is located on Rt. 33B from the vicinity of NJ Transit to the vicinity of Crowhill Road and Halls Mill/Kozloski Rd. from NJ Transit to Thoreau Drive. This project will replace the current at-grade intersection with a grade-separated interchange. All turning movements will be provided by a combination of slip ramps, clover type loops and dedicated turn lanes. A signal is proposed at 33B/ modified Asbury Avenue intersection. The consultant's inspection staff consisted of a Inspector III and Inspector II. In addition, the consultant billed for direct services rendered by a clerk typist. A sub-consultant and NJDOT staff augmented the consultant's staff in performing inspection duties. The project began in August 2004 and was completed in October 2006.

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In-house vs. Consultant Costs

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Cost Summary Tables:

Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (CTE Engr/DMJM Harris)	\$173,881
Overhead	\$227,785
Premium Time	\$6,439
Subtotal (CTE Engr/DMJM Harris)	\$408,104
Fixed Fee	\$27,821
Total (CTE Engr/DMJM Harris)	\$435,925
Subconsultant:	
IH Engineers (Includes All Costs)	\$190,208
TOTAL CONSULTANT	\$626,133
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$2,675
Procurement (Base Pay)	\$1,095
Civil Rights Contract Compliance (Base Pay)	\$3,414
Fringe & Leave (68.46%)	\$4,918
TOTAL (CONSULTANT & In-House)	\$638,236

Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$192,164
Fringe & Leave Additive (68.46%)	\$131,556
Premium Time	\$2,179
NJDOT Supervision (Base Pay)	\$2,675
Fringe & Leave (68.46%)	\$1,831
Subtotal (Salary Costs)	\$330,405
Indirect Cost (64.92%)	\$126,489
TOTAL	\$456,894

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5. **Job Number:** 2203917
Consultant: Cherry, Weber & Associates

Project Description: This project is located in the Townships of Readington, Branchburg and Bridgewater, Hunterdon and Somerset Counties. The work consisted of milling and paving of Rt. 202 SB, from Mile Post 17.032 to mile Post 22.258. The consultant's inspection staff consisted of PVI, ETV, ETIV, ETII, ETIII. NJDOT staff augmented the consultant's staff in performing inspection duties. The project began in May 2005 and was completed in June 2006.

Cost Summary Tables:

Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (Cherry Weber)	\$105,254
Overhead	\$162,091
Premium Time	\$7,650
Subtotal (Cherry Weber)	\$274,995
Fixed Fee	\$16,838
TOTAL CONSULTANT	\$291,833
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$3,354
Procurement (Base Pay)	\$0
Civil Rights Contract Compliance (Base Pay)	\$0
Fringe & Leave (68.46%)	\$2,296
TOTAL (CONSULTANT & In-House)	\$297,483

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In-house vs. Consultant Costs

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Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$104,084
Fringe & Leave Additive (68.46%)	\$71,256
Premium Time	\$8,226
NJDOT Supervision (Base Pay)	\$3,354
Fringe & Leave (68.46%)	\$2,296
Subtotal (Salary Costs)	\$189,214
Indirect Cost (64.92%)	\$69,748
TOTAL	\$258,962

- 6. Job Number:** 1018508
Consultant: Greenman – Pedersen, Inc.

Project Description: This project is located in the Township of Clinton and Readington, Borough of Lebanon, Hunterdon County. The work was designated as an emergency resurfacing project due to pavement condition from Route 31 Interchange to Potterstown Oldwick Road. The consultant's inspection staff consisted of a PV, PII, ETII, inspectors, plus an additional inspector was utilized from a sub-consultant. NJDOT staff augmented the consultant's staff in performing inspection duties. This project began in October 2005 and was completed in January 2007.

Cost Summary Tables:
Cost Summary - Consultant Services

Expense Item	Cost
Consultant Costs	
Payroll (Greenman Pedersen)	\$96,664
Overhead	\$3,697
Premium Time	\$137,264
Subtotal (Greenman Pedersen)	\$237,625
Fixed Fee	\$21,066
Subtotal (Greenman Pedersen)	\$258,691
Subconsultant:	
KS Engineers. (Includes All Costs)	\$208,936
TOTAL CONSULTANT	\$469,608
In-House Consultant Support Costs	

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Consultant Supv. (Base Pay)	\$189
Procurement (Base Pay)	\$566
Civil Rights Contract Compliance (Base Pay)	\$421
Fringe & Leave (68.46%)	\$805
TOTAL (CONSULTANT & In-House)	\$471,529

Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$135,760
Fringe & Leave Additive (68.46%)	\$92,941
Premium Time	\$8,405
NJDOT Supervision (Base Pay)	\$189
Fringe & Leave (68.46%)	\$130
Subtotal (Salary Costs)	\$237,426
Indirect Cost (64.92%)	\$88,258
TOTAL	\$325,684

Based upon the cost tables for the six projects above, which examined the actual consultant fully allocated cost for construction inspection on a project and compared it to simulated in-house fully allocated cost on the same project; in all six projects it is more cost effective to perform the inspections with in-house staff than with consultants.

Of the six projects analyzed, the overhead rate varied from a low of 103% to a high of 154%. The table below shows the overhead rate approved for each project analyzed.

Table 3
Consultant Overhead Rate

Job Number	Consultant	Overhead Rate
2203518	Kupper Associates	103%
1810531	Kupper Associates	105%
1815516	Schoor DePalma, Inc.	131%
1332509	DMJM Harris Inc.	128%
2203917	Cherry, Weber & Associates	154%
1018508	Greenman – Pedersen, Inc.	129%

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D. Project Cost Component Analysis

In addition to the five consultants for the six projects that we analyzed, Accounting and Auditing provided an additional ten consultant firms that had pre-qualified inspection title wage rates on file. The main consultant cost components on a construction inspection project are hourly wage rates, overhead rates and fixed fee or profit margin.

Hourly Wage Rates - For the fifteen consultant firms that had actual construction inspection wage rates, we determined that the average hourly wage rates for the NJDOT comparable titles were lower than the consultant wage rates. See Appendix for hourly wage rate table.

Overhead Rate - The current average consultant overhead rate, as reported to the Division of Accounting, Audit Bureau, for the fifteen pre-qualified firms to perform construction inspection is 135%. The overhead rate ranges from a high of 172% to a low of 89% with a median of 139%. The current reported overhead rate for the consultant firms on the six projects analyzed in this study are shown as shaded in the table below.

Table 4
Listing of Firms Overhead Rate

	Firm Name	Overhead Rate	As of Date
1	Amercom Corp.	106%	CY 2006
2	Cherry Weber & Associates	144%	CY 2006
3	Dewberry-Goodkind Inc.	122%	CY 2006
4	DMJM Harris, Inc.	130%	CY 2006
5	Edwards and Kelcey, Inc	151%	CY 2006
6	Garnett Fleming, Inc.	155%	CY 2006
7	Greenman-Pedersen, inc.	144%	CY 2006
8	KS Engineers, P.C.	124%	CY 2006
9	Kupper Associates	89%	CY 2006
10	Lichtenstein Consulting Engineers, Inc.	159%	CY 2006
11	Louis Berger Group, Inc.	139%	CY 2006
12	Maitra Associates, PC	118%	CY 2006
13	Michael Baker Jr. , Inc.	152%	CY 2006
14	Schoor, DePalma, Inc.	172%	CY 2006
15	Urbitran Associates, Inc.	125%	CY 2006
	Average	135%	
	Median	139%	

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While the average consultant overhead rate is 135%, the Construction Engineering comparable overhead rate (fringe + leave + indirect) is 133%.

Fixed Fee or Profit Margin - In addition to the hourly wage rate and overhead rate the consultants are paid a fixed fee or profit margin. The fixed fee is a negotiated percentage of the original contract estimate for direct consultant labor costs. The negotiated amount must fall within the allowable Federal Regulations Range of 6 to 15 percent of the direct consultant labor costs plus consultant overhead. We used an average fixed fee of 10.5%, applied to direct consultant labor costs plus consultant overhead.

As stated earlier, the main consultant cost components are hourly wage rates, overhead rates and fixed fee, while at NJDOT, the main cost components are hourly wage rates, fringe, leave and indirect costs. We compared the consultant costs of the twelve job titles used on construction inspection projects to NJDOT costs for comparable titles. We first compared the consultants' average hourly wage rates to NJDOT hourly wage rate equivalents. We found that in all twelve titles the NJDOT wage rate is lower. Secondly, we compared the consultants' average hourly wage rates adjusted for average overhead cost to NJDOT hourly wage rates adjusted for overhead (fringe + leave + indirect). Thirdly, we compared the consultants' average hourly wage rates adjusted for average overhead and average fixed fee to NJDOT hourly wage rates adjusted for overhead (fringe + leave + indirect). In the third comparison, we found that in all twelve titles the NJDOT hourly wage rates with overhead (fringe + leave + indirect) are significantly lower than the consultants'. It should be noted that salary differences are more pronounced in the inspector titles where the majority of consultant time is charged. Table 5 shows the comparison using average consultant hourly rates by title adjusted for average overhead and fixed fee. See Appendix for tables showing comparisons for each title by consultant using actual wage rates and actual overhead rates.

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Table 5
Comparison of Hourly Wage Rate + Overhead Rate + Fixed Fee

TITLE	ASCE GRADE	Consultant Hourly Wage (Avg. of 15)	Consultant Hrs. + Overhead (135%)	Consultant Hrs. + Overhead + Fixed Fee (145.5%)	DOT Hourly Wage Equivalents	DOT Hrs. + Overhead (133%)	DOT Difference Hourly Rate	DOT Difference Hrs. + Over.	DOT Difference Hrs. + Over. + FF
Principal	P IX	\$79.89	\$188.01	\$207.75	\$65.93	\$153.62	(\$13.96)	(\$34.39)	(\$54.13)
Proj. Manager	P VI	\$50.41	\$118.63	\$131.09	\$42.88	\$99.91	(\$7.53)	(\$18.72)	(\$31.18)
Res. Engineer	P V	\$45.65	\$107.43	\$118.71	\$40.27	\$93.83	(\$5.38)	(\$13.60)	(\$24.88)
Engineer	P IV	\$38.86	\$91.45	\$101.05	\$35.00	\$81.55	(\$3.86)	(\$9.90)	(\$19.50)
Engineer	P III	\$32.61	\$76.74	\$84.80	\$30.44	\$70.93	(\$2.17)	(\$5.82)	(\$13.87)
Engineer	P II	\$28.44	\$66.93	\$73.96	\$26.51	\$61.77	(\$1.93)	(\$5.16)	(\$12.19)
Chief Inspector	ET-5	\$36.39	\$85.64	\$94.63	\$29.07	\$67.73	(\$7.32)	(\$17.90)	(\$26.90)
Sr. Inspector	ET-4	\$30.20	\$71.07	\$78.53	\$25.31	\$58.97	(\$4.89)	(\$12.10)	(\$19.56)
Inspector	ET-3	\$25.91	\$60.97	\$67.38	\$23.08	\$53.78	(\$2.83)	(\$7.20)	(\$13.60)
Inspector	ET-2	\$21.52	\$50.64	\$55.96	\$21.07	\$49.09	(\$0.45)	(\$1.55)	(\$6.87)
Arch. Typist	CL	\$21.08	\$49.61	\$54.82	\$22.04	\$51.35	\$0.96	\$1.74	(\$3.46)
OVERHEAD RATE & FIXED FEE				*145.5%		133%			

* The overall percentage rate that results when applying the overhead rate and fixed fee to the hourly wage rate.

The above table shows that differences in straight hourly wage rates are the driving force behind this cost comparison. Although the consultant multiplier of 145.5% (overhead plus fixed fee) is close to the NJDOT multiplier of 133% (fringe plus leave plus indirect), the difference is magnified by the disparity in hourly wage rates. This analysis of current average wage rates for the fifteen consultant firms performing construction inspection parallels the results obtained from the six completed construction inspection projects that were analyzed in this study. Based upon the findings of this analysis, it is highly unlikely that a larger sample size of projects would produce different results.

E. Additional Findings

According to the Bureau of Construction Engineering, it would be difficult for the Division of Construction Services & Materials to convert their entire

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current consultant program to in-house. Specialized personnel are necessary for the construction inspection of complex/segmented bridges. Bridge painting inspection also requires personnel with specialized knowledge who must have hazmat training and are certified. All bridge painting inspectors need to have a baseline blood test on file and subsequent monitoring. In addition, they also need to be fitted with specialized equipment such as respirators. Specialized engineers such as mechanical and electrical and bridge painting inspectors may not be readily available for hire. Based on our discussions with the Bureau of Construction Engineering there are also concerns about the availability of experienced civil engineers and the dearth of recent college graduates with civil engineering degrees.

A major beneficial factor to consider in using in-house forces for construction inspection projects is the "flexibility factor". The Division of Construction Services and Materials has the ability to assign staff to multiple projects concurrently; whereas consultant forces are limited to the project(s) covered under the Cost Plus Fixed Fee contract. An example of this "flexibility factor" occurs when inclement weather or other factors interrupt a project. In-house staff can be reassigned to other related duties or projects, while the consultant staff is project specific, reassignment is not an option.

In analyzing the Stripped Activity Reports, it is important to note that there may have been inaccuracies in recording the proper function codes on time sheets related to field supervision. There was no distinction between charged-time for supervision of NJDOT inspection staff vs. supervision of consultant inspection staff. In order to determine the actual cost related to supervise consultant inspection staff, we calculated the percentage of consultant participation on each project and applied that percentage to the total cost for supervision.

We also note that clerical support staff did not charge time to the projects included in this study. This may indicate that clerical support is not being charged properly.

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III. Summary, Conclusions, and Recommendations

A. Summary and Conclusions

In summary, the results of our analysis show cost differences between conducting construction inspections using in-house forces based on both the avoidable costs, and fully allocated cost method. Because these services are predominately paid for using Federal and Transportation Trust Fund dollars, there are however additional considerations that factor into any determination as to "savings" to be achieved by the State.

Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs, which include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs vs. fully allocated consultant costs is not appropriate for estimating actual cost savings. The avoidable and fully allocated costs per construction inspection project are shown in Table 7. The table also shows the cost differential between the fully allocated cost of consultants and in-house forces for the six selected projects:

Table 7
Total Costs for In-House/Consultant
Construction Inspections

Description		Consultant Performance Costs		In-House Performance Costs		Full Cost Allocation Difference
Job #	Consultant	Avoidable Cost *	Full Cost Allocation *	Avoidable Cost	Full Cost Allocation	
2203518	Kupper Associates	\$251,556	\$251,556	\$180,080	\$233,569	7.7%
1810531	Kupper Associates	\$1,426,622	\$1,426,622	\$972,288	\$1,269,873	12.3%
1815516	Schoor DePalma, Inc.	\$460,878	\$460,878	\$191,360	\$250,377	84.1%
1332509	DMJM Harris Inc.	\$635,732	\$635,732	\$348,057	\$456,894	39.1%
2203917	Cherry, Weber & Associates	\$295,968	\$295,968	\$198,950	\$258,965	14.3%
1018508	Greenman - Pedersen, Inc.	\$467,712	\$467,712	\$249,742	\$325,683	30.4%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

CONSTRUCTION INSPECTIONS

In-house vs. Consultant Costs

November 2007

In addition to the five consultants for the six projects that we analyzed, Procurement provided an additional ten consultant firms that had pre-qualified inspection title wage rates on file. Our analysis of these fifteen consultants shows that when we compared the average consultant hourly wage rate adjusted for average overhead and fixed fee to the NJDOT hourly wage rates adjusted for overhead (fringe+ leave+ indirect) that NJDOT rates are significantly lower than the consultants' rates. This analysis parallels the results obtained from the six completed construction inspection projects that were analyzed in this study.

Clearly on a cost basis alone, construction inspections are generally more cost effective when accomplished with in-house forces. Capital program funding allocated for construction inspections could be lowered if the State added additional qualified and trained construction inspectors.

According to the Bureau of Construction Engineering, specialized engineers such as mechanical and electrical and bridge painting inspectors could be difficult to hire. There are also concerns regarding the availability of experienced civil engineers and the dearth of civil engineering graduates.

B. Recommendations

1. Other factors relevant to staffing increases should be considered before hiring additional qualified State construction inspectors.
2. Continue to perform construction inspections that require specialized engineers with consultants.
3. Institute better controls to ensure that proper function codes are included on timesheets. Additionally, the responsible unit(s) in CPM should provide job numbers to other Departmental units to ensure we account for all costs related to a particular project.

CONSTRUCTION INSPECTIONS
In-house vs. Consultant Costs

November 2007

Glossary of Terms for Consultant Contract

1. **Direct Consultant Labor Costs** - Actual costs taken from the final invoice submitted by the consultant.
2. **Overhead Consultant Costs** - Actual costs taken from the final invoice submitted by the consultant. This percentage of the Direct Consultant Labor Costs is based upon the consultant's approved indirect cost rate. The overhead rates for the six consultants used in this study are as follows:

Job #	Consultant	Overhead Rate
2203518	Kupper Associates	103%
1810531	Kupper Associates	105%
1815516	Schoor DePalma, Inc.	131%
1332509	DMJM Harris Inc.	128%
2203917	Cherry, Weber & Associates	154%
1018508	Greenman – Pedersen, Inc.	129%

3. **Fixed Fee/Profit Margin** - Actual costs taken from the final invoice submitted by the consultant. The fixed fee is a negotiated percentage of the original contract estimate for Direct Consultant Labor Costs. The negotiated amount must fall within the allowable Federal Regulations Range of 6 to 15 percent of Direct Consultant Labor Costs plus Consultant Overhead.
4. **Consultant Expenses** - Actual costs taken from the final invoice submitted by the consultant.

Job #	Consultant	Expenses *
2203518	Kupper Associates	\$1,925
1810531	Kupper Associates	\$7,448
1815516	Schoor DePalma, Inc.	\$109
1332509	DMJM Harris Inc.	\$2,189
2203917	Cherry, Weber & Associates	\$422
1018508	Greenman – Pedersen, Inc.	\$1,157

*These costs were not included in the consultant project cost tables since a comparable estimate was not available for in-house expenses.

CONSTRUCTION INSPECTIONS

November 2007

In-house vs. Consultant Costs

Glossary of Terms for Consultant Contract (cont'd)

5. **Total Consultant Invoice Cost** - The total of Direct Consultant Labor, Overhead, Profit Margin. Consultant expenses were not included for reasons discussed in the report.
6. **In-house Cost to Negotiate Contract & Support Consultant** - The source of this data is the Stripped Activity Reports by Job Number for Budget Codes DHAA and DRAA.
7. **In-house Cost to Monitor Contract** - The source of this data is the Stripped Activity report by Job Number by Function Code for the M250 function code.
8. **In-house Cost to Pay Consultant and Process Agreement** - The Stripped Activity Report for these job numbers did not identify any costs charged to these activities.
9. **In-house Cost to Audit Consultant Costs** - The Stripped Activity Report for these job numbers did not identify any costs charged to these activities.
10. **Fringe and Leave Additive** - The NJDOT fringe and leave additive was obtained from the Stripped Activity Reports by job number.
11. **Taxes Paid by Consultant to State** - 9 percent of the consultant Profit Margin.

CONSTRUCTION INSPECTIONS
In-house vs. Consultant Costs

November 2007

Glossary of Terms for In-house Project

1. **Direct Labor Salary Costs** – An assumption was made that the same number of hours worked by each consultant staff person would be converted into NJDOT equivalent hours. To calculate a direct labor cost, the hourly rate at the 9th step in effect for FY 2006 at the time of the project as stated in the Department of Personnel Compensation Compendium Guide was used.
2. **Leave and Fringe Additive** - The NJDOT fringe and leave additive of .6846 was applied to the Direct Labor Salary Costs.
3. **Direct Labor Overtime** - To calculate a direct labor overtime cost, the hourly rate (9th step for FY 2006) in effect at the time of the project as stated in the Department of Personnel Compensation Compendium Guide was multiplied by 150%.
4. **Direct Labor Supply and Material Costs** - An estimate of these costs was not included because of the simulated methodology chosen for this analysis.
5. **Direct Supervision** - This cost was obtained from the Stripped Activity Reports by Job Number for Budget Center ECA (Division of Construction Services & Materials) by function code number M250.
6. **Direct Clerical Support** - (units charging time to project) - clerical support costs could not be identified to a consultant or in-house project because the project job number was not charged.
7. **Direct Support** (outside units charging time to project) - Outside support costs could not be identified to a consultant or in-house project because the project job number was not charged.
8. **Fringe & Leave Additive on #5** - The fringe and leave additive, as applied, was obtained from the Stripped Activity Reports.
9. **Overhead Rate** - an overhead rate for the Division of Construction Services & Materials was calculated and applied to direct salary. See Appendix for calculation.

CONSTRUCTION INSPECTIONS
In-house vs. Consultant Costs

November 2007

APPENDIX

List of Attachments:

Cost Summaries by Consultant

Attachment #1	Kupper Associates
Attachment #2	Kupper Associates
Attachment #3	Schoor DePalma, Inc
Attachment #4	DMJM Harris, Inc.
Attachment #5	Cherry, Weber & Associates
Attachment #6	Greenman – Pedersen, Inc.

Calculation of Bureau of Construction Engineering Overhead Rate

Cost Comparison Methods

Salary Cost Comparison – Average Hourly Rates for Six Completed Projects

Hourly Rate + Overhead Rate + Fixed Fee Comparisons

Cost Comparison Form			
In-House Versus Contract Performance			
Service Under Study: Construction Inspection	Date: July 2007 Prepared by: Program Analysis		
Consultant: Kupper Associates	Analysis		
Job Name: Removal of lead paint and repair of six bridges			
Type of Cost	Avoidable Cost	Full Cost Allocation	
Consultant Performance Costs			
1. Direct Consultant Labor Costs	\$120,255	\$120,255	
2. Consultant Overhead Costs	\$107,488	\$107,488	
3. Consultant Profit Margin	\$23,060	\$23,060	
4. Consultant Expenses			
5. Total Consultant Invoice Costs	\$250,803	\$250,803	
6. In-house Cost to Negotiate Contract	\$496	\$496	
7. In-house Cost to Monitor Contract	\$1,183	\$1,183	
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs	\$1,149	\$1,149	
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$2,075	-\$2,075	
Total Consultant Costs	\$251,556	\$251,556	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$95,449	\$95,449	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$65,344	\$65,344	
3. Direct Labor Overtime	\$10,092	\$10,092	
4. Direct Labor Supply and Material Costs			
5. Direct Supervisor	\$308	\$308	
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervisor, Clerical & Support	\$211	\$211	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$8,676	\$8,676	
Total In-House Costs	\$180,080	\$233,569	

Cost Comparison Form In-House Versus Contract Performance			
Service Under Study: Construction Inspection	Date: July 2007		
Consultant: Kupper Associates	Prepared by: Program Analysis		
Job Name: Grading, Paving and Structures Maintenance	Avoidable Cost		Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs	\$888,490		\$888,490
2. Consultant Overhead Costs	\$427,866		\$427,866
3. Consultant Profit Margin	\$101,662		\$101,662
4. Consultant Expenses			
5. Total Consultant Invoice Costs	\$1,418,018		\$1,418,018
6. In-house Cost to Negotiate Contract	\$1,561		\$1,561
7. In-house Cost to Monitor Contract	\$8,978		\$8,978
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs	\$7,215		\$7,215
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$9,150		-\$9,150
Total Consultant Costs	\$1,426,622		\$1,426,622
In-House Performance Costs			
1. Direct Labor Salary Costs	\$528,737		\$528,737
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$361,973		\$361,973
3. Direct Labor Overtime	\$26,578		\$26,578
4. Direct Labor Supply and Material Costs			
5. Direct Supervision	\$3,997		\$3,997
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support	\$2,737		\$2,737
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$48,266		\$345,851
Total In-House Costs	\$972,288		\$1,269,873

Cost Comparison Form In-House Versus Contract Performance			
Service Under Study: Construction Inspection		Date: July 2007	
Consultant: Schoor DePalma, Inc.		Prepared by: Program Analysis	
Job Name: Milling and Paving		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$187,484	\$187,484
2. Consultant Overhead Costs		\$247,030	\$247,030
3. Consultant Profit Margin		\$26,919	\$26,919
4. Consultant Expenses			
5. Total Consultant Invoice Costs		\$461,433	\$461,433
6. In-house Cost to Negotiate Contract		\$566	\$566
7. In-house Cost to Monitor Contract		\$543	\$543
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs		\$759	\$759
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$2,423	-\$2,423
Total Consultant Costs		\$460,878	\$460,878
In-House Performance Costs			
1. Direct Labor Salary Costs		\$105,530	\$105,530
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$72,246	\$72,246
3. Direct Labor Overtime		\$3,807	\$3,807
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$122	\$122
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$83	\$83
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$9,572	\$68,589
Total In-House Costs		\$191,360	\$250,377

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Cost Comparison Form In-House Versus Contract Performance			
Service Under Study: Construction Inspection		Date: July 2007	
Consultant: DMJM Harris, Inc.		Prepared by: Program Analysis	
Job Name: Intersection Improvements		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$370,528	\$370,528
2. Consultant Overhead Costs		\$227,785	\$227,785
3. Consultant Profit Margin		\$27,821	\$27,821
4. Consultant Expenses			
5. Total Consultant Invoice Costs		\$626,134	\$626,134
6. In-house Cost to Negotiate Contract		\$1,095	\$1,095
7. In-house Cost to Monitor Contract		\$6,089	\$6,089
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs		\$4,918	\$4,918
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$2,504	-\$2,504
Total Consultant Costs		\$635,732	\$635,732
In-House Performance Costs			
1. Direct Labor Salary Costs		\$192,164	\$192,164
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$131,556	\$131,556
3. Direct Labor Overtime		\$2,179	\$2,179
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$2,675	\$2,675
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervisor, Clerical & Support		\$1,831	\$1,831
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$17,652	\$126,489
Total In-House Costs		\$348,057	\$456,894

Cost Comparison Form In-House Versus Contract Performance			
Service Under Study: Construction Inspection		Date: July 2007 Prepared by: Program Analysis	
Consultant: Cherry Webber			
Job Name: Maintenance Resurfacing			
Type of Cost	Avoidable Cost	Full Cost Allocation	
Consultant Performance Costs			
1. Direct Consultant Labor Costs	\$112,904	\$112,904	
2. Consultant Overhead Costs	\$162,091	\$162,091	
3. Consultant Profit Margin	\$16,838	\$16,838	
4. Consultant Expenses			
5. Total Consultant Invoice Costs	\$291,833	\$291,833	
6. In-house Cost to Negotiate Contract	\$0	\$0	
7. In-house Cost to Monitor Contract	\$3,354	\$3,354	
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs	\$2,296	\$2,296	
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$1,515	-\$1,515	
Total Consultant Costs	\$295,968	\$295,968	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$104,084	\$104,084	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$71,256	\$71,256	
3. Direct Labor Overtime	\$8,226	\$8,226	
4. Direct Labor Supply and Material Costs			
5. Direct Supervision	\$3,354	\$3,354	
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)	\$2,296	\$2,296	
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support			
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$9,734	\$9,734	
Total In-House Costs	\$198,950	\$258,965	

Cost Comparison Form In-House Versus Contract Performance			
Service Under Study: Construction Inspection		Date: July 2007	
Consultant: Greenman Pedersen, Inc.		Prepared by: Program Analysis	
Job Name: Resurfacing			
Type of Cost	Avoidable Cost	Full Cost Allocation	
Consultant Performance Costs			
1. Direct Consultant Labor Costs	\$442,864	\$442,864	
2. Consultant Overhead Costs	\$3,697	\$3,697	
3. Consultant Profit Margin	\$21,066	\$21,066	
4. Consultant Expenses			
5. Total Consultant Invoice Costs	\$467,627	\$467,627	
6. In-house Cost to Negotiate Contract	\$566	\$566	
7. In-house Cost to Monitor Contract	\$610	\$610	
8. In-house Cost to pay consultant and process agreement			
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs	\$805	\$805	
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$1,896	-\$1,896	
Total Consultant Costs	\$467,712	\$467,712	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$135,760	\$135,760	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$92,941	\$92,941	
3. Direct Labor Overtime	\$8,405	\$8,405	
4. Direct Labor Supply and Material Costs			
5. Direct Supervision	\$189	\$189	
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervisor, Clerical & Support	\$130	\$130	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$12,317	\$88,258	
Total In-House Costs	\$249,742	\$325,683	

Single Composite Overhead Rate for Construction Inspection Unit

(Develop a DOT wide support services overhead rate

G&A Direct Labor	\$3,399,000
G&A Indirect Labor	\$18,621,000
Total G&A Labor	\$22,020,000

G&A Leave	\$5,480,000
G&A Fringe	\$9,029,000

Total G&A Labor plus additives	\$36,529,000
G&A non-salary	\$14,372,000
Statewide Cost Allocation	\$5,478,000
Risk Management Costs	\$2,187,000
Total G&A Costs	\$58,566,000

Direct Labor Salary Costs	\$117,212,000
Direct Leave	\$36,145,000
Direct Fringe	\$58,001,000
Total Direct Labor Costs	\$211,358,000

<u>Total G&A Costs</u>	<u>\$58,566,000</u>	=	27.71% DOT wide OH rate
Total Direct Labor Costs	\$211,358,000		

Data Source: NJDOT Cost Allocation Plan FY 2006

2A. Allocate share of Assistant Commissioner CPM to all
M units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
ECA	50101	\$402,667	0.48%	\$5,799
ECA	50141	\$4,734,471	5.69%	\$68,183
ECA	50151	\$1,512,230	1.82%	\$21,778
ECA	50152	\$6,502,200	7.82%	\$93,640
ECA	50153	\$5,097,000	6.13%	\$73,404
ECA	50154	\$5,597,035	6.73%	\$80,605
ECA	50156	\$1,659,925	2.00%	\$23,905
ECA	50157	\$1,633,881	1.97%	\$23,530
ECA	50158	\$1,199,682	1.44%	\$17,277
EDA	50901	\$400,121	0.48%	\$5,762
EDA	50904	\$229,388	0.28%	\$3,303
EDA	50910	\$616,939	0.74%	\$8,885
EDA	50912	\$1,021,978	1.23%	\$14,718
EDA	50913	\$2,569,387	3.09%	\$37,003
EDA	50914	\$2,918,669	3.51%	\$42,033
EDA	50920	\$195,034	0.23%	\$2,809
EDA	50927	\$2,456,313	2.95%	\$35,374
EDA	50928	\$120,745	0.15%	\$1,739
EDA	50929	\$866,521	1.04%	\$12,479
EDA	50930	\$228,757	0.28%	\$3,294
EDA	50931	\$4,198,962	5.05%	\$60,471
EDA	50933	\$403,510	0.49%	\$5,811
EDA	50934	\$1,056,546	1.27%	\$15,216
EDA	50935	\$401,854	0.48%	\$5,787
EDA	50936	\$906,246	1.09%	\$13,051
EDA	50937	\$1,262,521	1.52%	\$18,182
EDA	50940	\$127,516	0.15%	\$1,836
EDA	50941	\$1,588,602	1.91%	\$22,878
EDA	50947	\$2,664,813	3.20%	\$38,377
EDA	50950	\$445,417	0.54%	\$6,415
EDA	50951	\$1,230,483	1.48%	\$17,721
EDA	50952	\$600,712	0.72%	\$8,651
EKA	51001	\$351,904	0.42%	\$5,068
EKA	51004	\$1,141,531	1.37%	\$16,440
EKA	51005	\$1,458,701	1.75%	\$21,007
EKA	51006	\$1,473,255	1.77%	\$21,217
EKA	51007	\$1,404,419	1.69%	\$20,226
EKA	51008	\$1,626,094	1.96%	\$23,418
EKA	51009	\$835,512	1.00%	\$12,033
EYA	50801	\$388,054	0.47%	\$5,589
EYA	50802	\$1,482,044	1.78%	\$21,343
EYA	50803	\$2,855,441	3.43%	\$41,122
EYA	50804	\$1,902,540	2.29%	\$27,399
EZA	50810	\$353,580	0.43%	\$5,092

EZA	50811	\$2,177,252	2.62%	\$31,355
E7A	50812	\$2,260,058	2.72%	\$32,548
(A	51021	\$1,289,901	1.55%	\$18,576
EWA	51022	\$1,544,545	1.86%	\$22,244
EWA	51023	\$1,416,906	1.70%	\$20,405
EWA	51024	\$1,917,246	2.31%	\$27,611
EWA	51025	\$1,707,602	2.05%	\$24,592
EWA	51026	\$229,934	0.28%	\$3,311
EWA	51027	\$481,936	0.58%	\$6,941
Total		\$83,148,580	100.00%	\$1,197,452
EAA	52101	\$937,707	x1.2771	\$1,197,452

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst.

Commissioner CPM

Budget Center	Payroll Unit	Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
ECA	50101	\$402,667	\$111,539	\$5,799	\$520,005
ECA	50141	\$4,734,471	\$1,311,448	\$68,183	\$6,114,102
ECA	50151	\$1,512,230	\$418,888	\$21,778	\$1,952,896
ECA	50152	\$6,502,200	\$1,801,109	\$93,640	\$8,396,950
ECA	50153	\$5,097,000	\$1,411,869	\$73,404	\$6,582,273
ECA	50154	\$5,597,035	\$1,550,379	\$80,605	\$7,228,019
ECA	50156	\$1,659,925	\$459,799	\$23,905	\$2,143,629
ECA	50157	\$1,633,881	\$452,585	\$23,530	\$2,109,996
ECA	50158	\$1,199,682	\$332,312	\$17,277	\$1,549,271
EDA	50901	\$400,121	\$110,834	\$5,762	\$516,717
EDA	50904	\$229,388	\$63,540	\$3,303	\$296,232
EDA	50910	\$616,939	\$170,892	\$8,885	\$796,716
EDA	50912	\$1,021,978	\$283,088	\$14,718	\$1,319,784
EDA	50913	\$2,569,387	\$711,720	\$37,003	\$3,318,110
EDA	50914	\$2,918,669	\$808,471	\$42,033	\$3,769,173
EDA	50920	\$195,034	\$54,024	\$2,809	\$251,867
EDA	50927	\$2,456,313	\$680,399	\$35,374	\$3,172,086
EDA	50928	\$120,745	\$33,446	\$1,739	\$155,930
FDA	50929	\$866,521	\$240,026	\$12,479	\$1,119,026
A	50930	\$228,757	\$63,366	\$3,294	\$295,417
EDA	50931	\$4,198,962	\$1,163,112	\$60,471	\$5,422,545
EDA	50933	\$403,510	\$111,772	\$5,811	\$521,093
EDA	50934	\$1,056,546	\$292,663	\$15,216	\$1,364,425
EDA	50935	\$401,854	\$111,314	\$5,787	\$518,955
EDA	50936	\$906,246	\$251,030	\$13,051	\$1,170,327
EDA	50937	\$1,262,521	\$349,718	\$18,182	\$1,630,421
EDA	50940	\$127,516	\$35,322	\$1,836	\$164,674
EDA	50941	\$1,588,602	\$440,043	\$22,878	\$2,051,523
EDA	50947	\$2,664,813	\$738,153	\$38,377	\$3,441,343
EDA	50950	\$445,417	\$123,381	\$6,415	\$575,212
EDA	50951	\$1,230,483	\$340,844	\$17,721	\$1,589,047
EDA	50952	\$600,712	\$166,397	\$8,651	\$775,760
EKA	51001	\$351,904	\$97,477	\$5,068	\$454,449
EKA	51004	\$1,141,531	\$316,204	\$16,440	\$1,474,175
EKA	51005	\$1,458,701	\$404,060	\$21,007	\$1,883,768
EKA	51006	\$1,473,255	\$408,092	\$21,217	\$1,902,563
EKA	51007	\$1,404,419	\$389,024	\$20,226	\$1,813,669
EKA	51008	\$1,626,094	\$450,428	\$23,418	\$2,099,940
EKA	51009	\$835,512	\$231,437	\$12,033	\$1,078,981
EYA	50801	\$388,054	\$107,491	\$5,589	\$501,133
EYA	50802	\$1,482,044	\$410,526	\$21,343	\$1,913,914
EYA	50803	\$2,855,441	\$790,957	\$41,122	\$3,687,520
A	50804	\$1,902,540	\$527,004	\$27,399	\$2,456,943
EZA	50810	\$353,580	\$97,942	\$5,092	\$456,614
EZA	50811	\$2,177,252	\$603,099	\$31,355	\$2,811,706

EZA	50812	\$2,260,058	\$626,036	\$32,548	\$2,918,642
FWA	51021	\$1,289,901	\$357,303	\$18,576	\$1,665,780
VA	51022	\$1,544,545	\$427,839	\$22,244	\$1,994,627
EWA	51023	\$1,416,906	\$392,483	\$20,405	\$1,829,794
EWA	51024	\$1,917,246	\$531,077	\$27,611	\$2,475,934
EWA	51025	\$1,707,602	\$473,006	\$24,592	\$2,205,200
EWA	51026	\$229,934	\$63,692	\$3,311	\$296,937
EWA	51027	\$481,936	\$133,496	\$6,941	\$622,373
Total		\$83,148,580	\$23,032,157	\$1,197,452	\$107,378,188
EAA	52101	\$937,707	x 1.2771	\$1,197,452	

2B. Allocate share of EYAA to all CPM units

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EYA	50801	\$501,134		
EYA	50802	\$1,913,913		
EYA	50803	\$3,687,520		
EYA	50804	\$2,456,943		
Total EYA		\$8,559,510		
ECA	50101	\$520,005	0.53%	\$45,042
ECA	50141	\$6,114,102	6.19%	\$529,593
ECA	50151	\$1,952,896	1.98%	\$169,157
ECA	50152	\$8,396,949	8.50%	\$727,330
ECA	50153	\$6,582,273	6.66%	\$570,146
ECA	50154	\$7,228,019	7.31%	\$626,079
ECA	50156	\$2,143,629	2.17%	\$185,678
ECA	50157	\$2,109,996	2.14%	\$182,764
ECA	50158	\$1,549,271	1.57%	\$134,195
EDA	50901	\$516,717	0.52%	\$44,757
EDA	50904	\$296,231	0.30%	\$25,659
EDA	50910	\$796,716	0.81%	\$69,010
EDA	50912	\$1,319,784	1.34%	\$114,317
EDA	50913	\$3,318,110	3.36%	\$287,409
EDA	50914	\$3,769,173	3.81%	\$326,480
EDA	50920	\$251,867	0.25%	\$21,816
EDA	50927	\$3,172,086	3.21%	\$274,761
EDA	50928	\$155,930	0.16%	\$13,506
EDA	50929	\$1,119,026	1.13%	\$96,928
EDA	50930	\$295,417	0.30%	\$25,589
EDA	50931	\$5,422,545	5.49%	\$469,692
EDA	50933	\$521,093	0.53%	\$45,136
EDA	50934	\$1,364,425	1.38%	\$118,184
EDA	50935	\$518,955	0.53%	\$44,951
EDA	50936	\$1,170,327	1.18%	\$101,372
EDA	50937	\$1,630,421	1.65%	\$141,224
EDA	50940	\$164,674	0.17%	\$14,264
EDA	50941	\$2,051,523	2.08%	\$177,699
EDA	50947	\$3,441,343	3.48%	\$298,083
EDA	50950	\$575,213	0.58%	\$49,824
EDA	50951	\$1,589,048	1.61%	\$137,641
EDA	50952	\$775,760	0.79%	\$67,195
EKA	51001	\$454,449	0.46%	\$39,364
EKA	51004	\$1,474,175	1.49%	\$127,691
EKA	51005	\$1,883,768	1.91%	\$163,169
EKA	51006	\$1,902,564	1.93%	\$164,797
EKA	51007	\$1,813,669	1.84%	\$157,097
EKA	51008	\$2,099,940	2.13%	\$181,893
EKA	51009	\$1,078,982	1.09%	\$93,460

EZA	50810	\$456,614	0.46%	\$39,551
EZA	50811	\$2,811,706	2.85%	\$243,545
EZA	50812	\$2,918,642	2.95%	\$252,808
EWA	51021	\$1,665,780	1.69%	\$144,287
EWA	51022	\$1,994,628	2.02%	\$172,771
EWA	51023	\$1,829,794	1.85%	\$158,494
EWA	51024	\$2,475,934	2.51%	\$214,461
EWA	51025	\$2,205,200	2.23%	\$191,011
EWA	51026	\$296,937	0.30%	\$25,720
EWA	51027	\$622,373	0.63%	\$53,909
Total		\$98,818,680	100.00%	\$8,559,510

2C. Allocate share of ECAA Director's Office to ECAA payroll units

Budget Center	Payroll Unit	Director's Office	ECAA Payroll	% of ECAA Payroll	Share of Director
ECAA	50101	\$520,005			
ECAA	50141		\$4,734,471.00	16.95%	\$88,127
ECAA	50151		\$1,512,230.00	5.41%	\$28,148
ECAA	50152		\$6,502,200.00	23.27%	\$121,031
ECAA	50153		\$5,097,000.00	18.24%	\$94,875
ECAA	50154		\$5,597,035.00	20.03%	\$104,182
ECAA	50156		\$1,659,925.00	5.94%	\$30,898
ECAA	50157		\$1,633,881.00	5.85%	\$30,413
ECAA	50158		\$1,199,682.00	4.29%	\$22,331
			\$27,936,424	100%	\$520,005

3. Develop a section overhead rate for Construction Inspection

Construction Inspection Base Payroll	\$18,708,467	
Construction Inspection Project Payroll	\$14,130,127	
Construction Inspection non-Project Payroll	\$964,316	includes non-project leave time
Construction Inspection non-Project Payroll x Fringe Benefits	\$964,316 <u>132.75%</u>	
Construction Inspection non-Project charges	\$1,280,129	
Construction Inspection non-Project charges	\$1,280,129	
Base salary x DOT wide OH rate	\$5,182,245	From Step 2A
Share of CPM Asst. Commissioner	\$269,427	From Step 2A
Share of EYAA costs	\$2,092,710	From Step 2B
Share of ECAA Director	<u>\$348,236</u>	From Step 2C
Total Non Project Charges & Overhead	\$9,172,747	
Total Non Project PR Charges & Overhead	\$9,172,747	
Divided by Project PR charges	\$14,130,127	
Equals Construction Inspection Overhead rate	64.92%	

Cost Comparison Methods

Method #	Short Title	Description	Used By:	Comments
1	Comparable Project	Actual costs for different projects that are considered to be of similar size, scope and complexity	Generic	Sometimes difficult to find adequate sample size of comparable projects.
2	Actual Consultant vs Simulated In-House	Actual consultant costs on a project are compared to simulated in-house costs on the same project.	Louisiana	Assumes the staff hours used are equal. Isolates staff and overhead cost differentials.
3	Actual In-House vs Simulated Consultant	Actual in-house costs on a project are compared with simulated consultant costs on the same project using normal formulas used to estimate consultant contract costs.	Louisiana and Missouri	Allows the staff hours to differ. Requires reliable cost estimation model for consultant costs.
4	Total Cost Per Production Hour	Actual costs for different projects relative to staff hours expended.	Louisiana	Assumes staff hours are equal. Isolates staff and overhead cost differentials but does not rely on simulated costs like Method 2.
5	Design Costs as a % of Construction Costs	Compares ratio of design costs to total construction costs. Sometimes done with paired projects of similar complexity and other times done on project pools without regard to complexity	California, Texas, Missouri, Others	Uses actual costs for different projects but attempts to eliminate the effect of size by comparing to construction costs. However, other design effort factors which do not impact construction costs have made this measure unreliable.

Kupper Associates
Job Number: 2203518
Job Name: Maintenance Bridge Contract 2001-6
Function Code: Y525
Agreement Number: 2003 BCE 01

Straight Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Kupper Associates			
Project Manager	6.5	\$60.80	\$395.20
Resident Engineer	60.0	\$31.90	\$1,914.00
Chief Inspector	1,941.5	\$29.32	\$56,915.45
Inspector	2,023.5	\$22.30	\$45,132.65
Amercom Corp.			
Inspector	79.5	\$25.75	\$2,047.13
Total	4,111.0	\$25.88	\$106,404.43

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Kupper Associates			
Chief Inspector	506.5	\$14.68	\$7,437.13
Inspector	322.5	\$11.20	\$3,610.78
Amercom Corp.			
Inspector	31.5	\$12.88	\$405.56
Total	860.5	\$13.31	\$11,453.46

Straight Time Total by Title - NJDOT (FY2003/04)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Supervising Engineer	M-31	6.5	\$41.14	\$267.41
Senior Engineer	P-23	60.0	\$28.44	\$1,706.40
Assistant Engineer	P-20	1,941.5	\$24.76	\$48,071.54
Const. & Maint. Tech 3	L-17	2,023.5	\$21.59	\$43,687.37
Const. & Maint. Tech 3	L-17	79.5	\$21.59	\$1,716.41
Total		4,111.00	\$23.22	\$95,449.12

Premium Time Total by Title - NJDOT (FY2003/04)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Assistant Engineer	P-20	506.5	\$12.38	\$6,270.47
Const. & Maint. Tech 3	L-17	322.5	\$10.80	\$3,481.39
Const. & Maint. Tech 3	L-17	31.5	\$10.80	\$340.04
Total		860.5	\$11.73	\$10,091.90

Kupper Associates
Job Number: 1810531
Job Name: Route 206, Section
15J
Function Code: Y536

Straight Time Total by Employee Class - Consultant Services			
Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Kupper Associates			
ASCE IX	3.0	\$63.00	\$189.00
P-26	4,463.0	\$34.19	\$152,569.58
ET-2	11,630.3	\$24.32	\$282,806.56
AmerCom			
ET-2	2,695.0	\$19.20	\$51,733.20
ER-2	579.0	\$21.23	\$12,294.00
HAKS Engineers			
ET-2	2,530.0	\$26.60	\$67,309.99
Armand			
ET-2	1,900.5	\$20.95	\$39,821.36
Stacie A. Davis			
P-23	19.0	\$30.00	\$570.00
Total	23,819.8	\$25.50	\$607,293.69

Straight Time Total by Title - NJDOT (FY2003-04)				
Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Title				
Supervising Engineer	M-31	3.0	\$41.14	\$123.42
Principal Engineer	P-26	4,463.0	\$32.69	\$145,895.47
Const. & Maint. Tech 4	I-15	11,630.3	\$19.71	\$229,233.21
Const. & Maint. Tech 4	I-15	2,695.0	\$19.71	\$53,118.45
Const. & Maint. Tech 3	I-17	579.0	\$21.59	\$12,500.61
Const. & Maint. Tech 4	I-15	2,530.0	\$19.71	\$49,866.30
Const. & Maint. Tech 4	I-15	1,900.5	\$19.71	\$37,458.86
Senior Engineer	P-23	19.0	\$28.44	\$540.36
Total		23,819.8	\$22.20	\$528,736.68

Kupper Associates
Job Number: 1810531
Job Name: Route 206, Section
15J
Function Code: Y536

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Kupper Associates			
P-26	214.6	\$16.75	\$3,593.70
ET-2	1,024.5	\$12.76	\$13,068.87
AmerCom			
ET-2	40.0	\$12.25	\$490.00
ER-2	35.0	\$9.00	\$315.00
HAKS Engineers			
ET2	346.0	\$13.75	\$4,757.50
Armand			
ET2	125.5	\$10.42	\$1,307.59
Total	1,785.6	\$13.18	\$23,532.65

Premium Time Total by Title - NJDOT (FY2003-04)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Title				
Principal Engineer	P-26	214.6	\$20.57	\$4,414.32
Const. & Maint. Tech 4	I-15	1,024.5	\$16.35	\$16,745.45
Const. & Maint. Tech 4	I-15	40.0	\$9.86	\$394.20
Const. & Maint. Tech 3	I-17	35.0	\$10.80	\$377.83
Const. & Maint. Tech 4	I-15	346.0	\$9.86	\$3,409.83
Const. & Maint. Tech 4	I-15	125.5	\$9.86	\$1,236.80
Total		1,785.6	\$12.88	\$26,578.43

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Schoor DePalma, Inc.
 Job Number: 1815516
 Job Name: SOL #578 - I-287 NB Resurfacing
 CI
 Function Code: Y525

Straight Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Schoor DePalma			
P-II	2,522.5	\$38.30	\$96,607.47
P-III	275.5	\$27.61	\$7,605.70
P-VI	12.0	\$44.00	\$528.00
P-VII	214.8	\$40.32	\$8,659.46
P-VIII	67.0	\$45.59	\$3,054.86
ET-2	894.0	\$20.90	\$18,685.52
R-13	0.5	\$15.00	\$7.50
Kupper Associates			
Inspector	620.0	\$33.08	\$20,510.60
Total	4,606.25	\$33.79	\$155,659.10

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Schoor DePalma			
P-II	272.5	\$20.38	\$5,553.74
P-III	50.0	\$13.75	\$687.50
Kupper Associates			
Inspector	34.0	\$12.29	\$417.70
Total	356.5	\$18.68	\$6,658.94

Straight Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Const. & Maint. Tech 4	I-15	2,522.5	\$20.66	\$52,114.85
Const. & Maint. Tech 3	I-17	275.5	\$22.64	\$6,237.32
Principal Engineer	R-26	12.0	\$34.65	\$415.80
Supervising Engineer	M-31	214.8	\$42.46	\$9,118.29
Director	M-36	67.0	\$54.18	\$3,630.06
Const. & Maint. Tech 4	I-15	894.0	\$20.66	\$18,470.04
		0.5		\$0.00
Const. & Maint. Tech 2	R-19	620.0	\$25.07	\$15,543.40
Total		4,606.25	\$22.91	\$105,529.76

Premium Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Const. & Maint. Tech 4	I-15	272.5	\$10.33	\$2,814.93
Const. & Maint. Tech 3	I-17	50.0	\$11.32	\$566.00
Const. & Maint. Tech 2	R-19	34.0	\$12.54	\$426.19
Total		356.5	\$10.68	\$3,807.12

Consoer Townsend Envirodyne Engineers, Inc. / DMJM Harris, Inc.

Job Number: 1332509

Job Name: Construction Inspection Services for Route 33 Halls Mill/Kosloski Road

Function Code: Y536

Agreement Number: 2005 BCE 525R

Straight Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
CTE Engineers			
Associate Vice President	16.0	\$64.81	\$1,037.00
Program Manager	25.0	\$59.48	\$1,487.00
Inspector	2,531.5	\$34.16	\$86,476.97
Inspector II	497.0	\$24.44	\$12,146.68
Inspector III	1,999.0	\$32.15	\$64,272.43
Scheduler	228.3	\$37.06	\$8,456.19
IH Engineers			
Inspector	2,005.5	\$28.94	\$58,032.90
Typist	445.0	\$28.75	\$12,793.20
Total	7,747.25	\$31.59	\$244,707.37

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
CTE Engineers			
Inspector	208.5	\$16.70	\$3,481.87
Inspector II	41.0	\$12.22	\$501.02
Inspector III	131.0	\$16.26	\$2,130.08
IH Engineers			
Inspector	192.5	\$14.53	\$2,796.65
Typist	4.5	\$14.00	\$63.00
Total	577.5	\$15.54	\$8,972.63

Straight Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Director	M-36	16.0	\$54.18	\$866.88
Supervising Engineer	M-31	25.0	\$42.46	\$1,061.50
Assistant Engineer	P-20	2,531.5	\$26.25	\$66,451.88
Const. & Maint. Tech 3	I-17	497.0	\$22.64	\$11,252.08
Assistant Engineer	P-20	1,999.0	\$26.25	\$52,473.75
Senior Engineer	P-23	228.3	\$30.14	\$6,879.46
Const. & Maint. Tech 3	I-17	2,005.5	\$22.64	\$45,404.52
Senior Clerk Typist	A-08	445.0	\$17.47	\$7,774.15
Total		7,747.25	\$30.25	\$192,164.21

Premium Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Assistant Engineer	P-20	208.5	\$13.13	\$2,736.56
Const. & Maint. Tech 3	I-17	41.0	\$11.32	\$464.12
Assistant Engineer	P-20	131.0	\$13.13	\$1,719.38
Const. & Maint. Tech 3	I-17	192.5	\$11.32	\$2,179.10
Senior Clerk Typist	A-08	4.5	\$8.74	\$39.31
Total		577.5	\$11.53	\$7,138.47

42x

Cherry Weber & Associates, P.C.
 Job Number: 2203917
 Job Name: Maintenance Resurfacing Contract #
 241
 Function Code: Y536
 Agreement Number: 2005BCE499C

Straight Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Cherry Weber			
PIX	0.3	\$67.31	\$20.19
PIV	34.4	\$38.34	\$1,318.86
ETV	1,391.0	\$33.95	\$47,220.68
ETIV	2,270.5	\$22.65	\$51,432.65
ETII	125.5	\$18.50	\$2,321.75
ETIII	147.0	\$20.00	\$2,940.00
Total	3,968.70	\$26.52	\$105,254.13

Straight Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Director	M-36	0.3	\$54.18	\$16.25
Principal Engineer	P-26	34.4	\$34.65	\$1,191.96
Const. & Maint. Tech 1	S-22	1,391.0	\$28.78	\$40,032.98
Const. & Maint. Tech 2	R-19	2,270.5	\$25.07	\$56,921.44
Const. & Maint. Tech 4	I-15	125.5	\$20.66	\$2,592.83
Const. & Maint. Tech 3	I-17	147.0	\$22.64	\$3,328.08
Total		3,968.70	\$26.23	\$104,083.54

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Cherry Weber			
ETV	55.0	\$17.34	\$953.64
ETIV	527.5	\$11.31	\$5,967.13
ETIII	53.0	\$10.00	\$530.00
ETII	21.5	\$9.25	\$198.88
Total	657.0	\$11.64	\$7,649.64

Premium Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Const. & Maint. Tech 1	S-22	55.0	\$14.39	\$791.45
Const. & Maint. Tech 2	R-19	527.5	\$12.54	\$6,612.21
Const. & Maint. Tech 3	I-17	53.0	\$11.32	\$599.96
Const. & Maint. Tech 4	I-15	21.5	\$10.33	\$222.10
Total		657.0	\$12.52	\$8,225.72

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Greenman Pedersen, Inc.

Job Number: 1018508

Job Name: Route 78 Resurfacing, Clinton Twp. MP 18.0 to 23.1

Function Code: Y536

Agreement Number: 2006 BCE 584

Straight Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Greenman Pedersen			
PV	1,469.5	\$40.89	\$60,086.05
Pil	471.5	\$29.00	\$13,673.50
ETII	1,022.5	\$22.40	\$22,904.90
KS Engineers			
Inspector	991.5	\$36.24	\$35,931.96
Inspector	530.5	\$31.50	\$16,710.75
Total	4,485.50	\$33.29	\$149,307.16

Premium Time Total by Employee Class - Consultant Services

Summary	Hours	Avg. Hourly Rate	Total Employee Cost
Greenman Pedersen			
PV	91.5	\$19.97	\$1,827.43
Pil	91.5	\$14.50	\$1,326.75
ETII	51.5	\$10.53	\$542.35
KS Engineers			
Inspector	186.5	\$18.12	\$3,379.38
Inspector	158.5	\$15.94	\$2,526.80
Total	579.5	\$16.57	\$9,602.70

Straight Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Project Engineer	S-29	1,469.5	\$39.87	\$58,588.97
Senior Engineer	P-23	471.5	\$30.14	\$14,211.01
Const. & Maint. Tech 4	I-15	1,022.5	\$20.66	\$21,124.85
Const. & Maint. Tech 1	S-22	991.5	\$28.78	\$28,535.37
Const. & Maint. Tech 2	R-19	530.5	\$25.07	\$13,299.64
Total		4,485.50	\$30.27	\$135,759.83

Premium Time Total by Title - NJDOT (FY2006)

Summary	Range	Hours	Avg. Hourly Rate	Total Employee Cost
Project Engineer	S-29	91.5	\$19.94	\$1,824.05
Senior Engineer	P-23	91.5	\$15.07	\$1,378.91
Const. & Maint. Tech 4	I-15	51.5	\$10.33	\$532.00
Const. & Maint. Tech 1	S-22	186.5	\$14.39	\$2,683.74
Const. & Maint. Tech 2	R-19	158.5	\$12.54	\$1,986.80
Total		579.5	\$14.50	\$8,405.49

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HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Hr. Rate		Hr.+Overhead		Hr.+Over.+FF		Hr. Rate		Hr.+Overhead		Hr.+Over.+FF	
		Principal P-IX	Principal P-IX	Principal P-IX	Principal P-IX	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI
Amercom Corp	106%												
Cherry Weber & Associates	144%	\$67.31	\$164.24	\$181.48	\$47.53	\$97.91	\$108.19	\$108.87	\$120.30	\$123.69	\$138.11	\$131.94	\$158.92
Dewberry-Goodkind Inc.	122%	\$82.92	\$184.08	\$203.41	\$50.42	\$111.93	\$123.69	\$138.11	\$131.94	\$158.92	\$131.94	\$158.92	\$131.94
DMJM Harris, Inc.	130%				\$54.34	\$124.98	\$138.11	\$131.94	\$158.92	\$131.94	\$158.92	\$131.94	\$158.92
Edwards & Kelcey, Inc.	151%				\$47.57	\$119.40	\$131.94	\$158.92	\$131.94	\$158.92	\$131.94	\$158.92	\$131.94
Garnett Fleming, Inc.	155%				\$56.40	\$143.82	\$158.92	\$131.94	\$158.92	\$131.94	\$158.92	\$131.94	\$158.92
Greenman - Pedersen, Inc.	144%				\$55.78	\$136.10	\$150.39	\$168.36	\$181.47	\$194.58	\$207.75	\$220.86	\$233.97
KS Engineers, P.C.	124%	\$100.00	\$224.00	\$247.52	\$68.02	\$152.36	\$168.36	\$181.47	\$194.58	\$207.75	\$220.86	\$233.97	\$247.08
Kupper Associates	89%	\$60.63	\$114.59	\$126.62	\$43.80	\$82.78	\$91.47	\$100.16	\$108.85	\$117.54	\$126.23	\$134.92	\$143.61
Lichtenstein Consulting Engineers, Inc.	159%	\$86.54	\$224.14	\$247.67	\$46.76	\$121.11	\$133.82	\$146.53	\$159.24	\$171.95	\$184.66	\$197.37	\$210.08
Louis Berger Group, Inc.	139%	\$77.70	\$185.70	\$205.20									
Maitra Associates, P.C.	118%				\$49.86	\$108.69	\$120.11	\$131.53	\$142.95	\$154.37	\$165.79	\$177.21	\$188.63
Michael Baker Jr., Inc.	152%	\$68.98	\$224.23	\$247.77	\$52.26	\$131.70	\$145.52	\$159.34	\$173.16	\$186.98	\$200.80	\$214.62	\$228.44
Schoor DePalma, Inc.	172%				\$40.17	\$109.26	\$120.73	\$131.20	\$141.67	\$152.14	\$162.61	\$173.08	\$183.55
Urban Associates, Inc.	125%	\$75.03	\$168.82	\$186.54	\$48.22	\$108.50	\$119.89	\$131.28	\$142.67	\$154.06	\$165.45	\$176.84	\$188.23
Summary:													
Average	135%	\$79.89	\$188.00	\$207.75	\$50.41	\$118.63	\$131.09	\$143.55	\$156.01	\$168.47	\$180.93	\$193.39	\$205.85
Median	139%	\$80.31	\$191.94	\$212.09	\$49.04	\$117.21	\$129.51	\$141.81	\$154.11	\$166.41	\$178.71	\$191.01	\$203.31

*** Wge rate table shows PIV = Senior Inspector & PIII = Inspector

NJDOT 133% \$65.93 \$153.62 \$153.62 \$42.88 \$99.91 \$99.91
 DOT Difference -2% (\$12.99) (\$24.09) (\$54.13) (\$7.53) (\$18.70) (\$21.19)

HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Hr. Rate		Hr.+Overhead		Hr.+Over.+FF		Hr. Rate		Hr.+Overhead		Hr.+Over.+FF	
		Resident Engr. P.V	Resident Engr. P.V	Resident Engr. P.V	Resident Engr. P.V	Engineer P-IV	Engineer P-IV	Engineer P-IV	Engineer P-IV	Engineer P-IV	Engineer P-IV	Engineer P-IV	Engineer P-IV
Amercom Corp	106%	\$44.20	\$91.05	\$100.61	\$42.50	\$87.55	\$96.74						
Cherry Weber & Associates	144%				\$33.20	\$81.01	\$89.51						
Dewberry-Goodkind Inc.	122%	\$44.55	\$98.90	\$109.29	\$40.01	\$88.82	\$98.15						
DMJM Harris, Inc.	130%	\$49.02	\$112.75	\$124.58	\$43.93	\$101.04	\$111.65						
Edwards & Kelcey, Inc.	151%	40.86	\$102.56	\$113.33	\$33.67	\$84.51	\$93.39						
Garnett Fleming, Inc.	155%	\$46.01	\$117.33	\$129.64	\$37.10	\$94.61	\$104.54						
Greenman - Pedersen, Inc.	144%	\$45.98	\$112.19	\$123.97	\$39.57	\$96.55	\$106.69						
KS Engineers, P.C.	124%	\$64.56	\$144.61	\$159.80	\$43.92	\$98.38	\$108.71						
Kupper Associates	89%	\$46.90	\$88.64	\$97.95	\$39.95	\$75.51	\$83.43						
Lichtenstein Consulting Engineers, Inc.	159%	\$47.28	\$122.46	\$136.31	\$38.58	\$99.92	\$110.41						
Louis berger Group, Inc.	139%	\$44.81	\$107.10	\$118.34									
Maitra Associates, P.C.	118%	\$47.94	\$104.51	\$115.48	\$42.97	\$93.67	\$103.51						
Michael Baker Jr., Inc.	162%	\$38.46	\$96.92	\$107.10	\$39.86	\$100.45	\$110.99						
Schoor DePalma, Inc	172%	\$35.64	\$96.94	\$107.12	\$30.95	\$84.18	\$93.02						
Urban Associates, Inc.	125%	\$42.87	\$96.46	\$106.59	\$37.77	\$84.98	\$93.91						
Summary:													
Average	135%	\$45.65	\$107.43	\$118.71	\$38.86	\$91.44	\$101.04						
Median	139%	\$45.40	\$108.49	\$119.89	\$39.72	\$94.92	\$104.89						

*** Wge rate table shows PIV = Senior Inspector & PII = Inspector

NUDOT	133%	\$40.27	\$93.83	\$93.83	\$35.00	\$81.55	\$81.55
DOT Difference	-2%	(\$8.98)	(\$13.59)	(\$24.98)	(\$3.99)	(\$9.99)	(\$19.49)

66x

HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Hr. Rate		Hr.+Overhead		Hr.+Over.+FF		Hr. Rate		Hr.+Overhead		Hr.+Over.+FF	
		Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-III
Amercom Corp	106%	\$34.00	\$70.04	\$77.39	\$32.94	\$67.86	\$74.98						
Cherry Weber & Associates	144%	\$29.50	\$71.98	\$79.54									
Dewberry-Goodkind Inc.	122%	\$34.83	\$77.32	\$85.44	\$29.98	\$66.56	\$73.54						
DMJM Harris, Inc.	130%	\$34.41	\$79.14	\$87.45	\$30.05	\$69.12	\$76.37						
Edwards & Kelcey, Inc.	151%	\$31.06	\$77.96	\$86.15									
Garnett Fleming, Inc.	155%	\$34.67	\$88.41	\$97.69	\$27.91	\$71.17	\$78.64						
Greenman - Pedersen, Inc.	144%	\$34.86	\$85.06	\$93.99	\$32.20	\$76.57	\$86.82						
KS Engineers, P.C.	124%	\$36.81	\$82.45	\$91.11	\$31.47	\$70.49	\$77.89						
Kupper Associates	89%												
Lichtenstein Consulting Engineers, Inc.	159%	\$30.36	\$78.63	\$86.89	\$26.65	\$69.02	\$76.27						
Louis Berger Group, Inc.	139%	\$26.11	\$62.40	\$68.96	\$24.40	\$58.32	\$64.44						
Maitra Associates, P.C.	118%	\$34.63	\$75.49	\$83.42	\$26.00	\$56.68	\$62.63						
Michael Baker Jr., Inc.	152%	\$34.07	\$85.86	\$94.87									
Schoor DePalma, Inc.	172%	\$29.43	\$80.05	\$88.45	\$26.53	\$72.16	\$79.74						
Urbiran Associates, Inc.	125%	\$31.84	\$71.64	\$79.16	\$24.70	\$55.58	\$61.41						
Summary:													
Average	135%	\$32.61	\$76.75	\$84.81	\$28.44	\$66.93	\$73.95						
Median	139%	\$34.04	\$81.34	\$89.88	\$27.91	\$66.70	\$73.71						
*** Wage rate table shows PIV = Senior Inspector & PIII = Inspector													

NJDOT	133%	\$30.44	\$70.93	\$70.93	\$26.51	\$61.77	\$61.77
DOT Difference	-2%	(\$2.47)	(\$6.92)	(\$12.99)	(\$4.03)	(\$5.49)	(\$12.49)

HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Chief Inspector ET-5	Chief Inspector ET-5	Chief Inspector ET-5	Sr. Inspector ET-4	Sr. Inspector ET-4	Sr. Inspector ET-4
Anercom Corp	106%	\$32.81	\$67.59	\$74.69	\$30.36	\$62.54	\$69.11
Cherry Weber & Associates	144%	\$33.47	\$81.67	\$90.24	\$23.33	\$66.93	\$62.90
Dewberry-Goodkind Inc.	122%	\$36.06	\$90.05	\$88.46	\$29.39	\$65.25	\$72.10
DMJM Harris, Inc.	130%	\$29.79	\$68.52	\$75.71	\$33.39	\$76.80	\$84.86
Edwards & Kelcey, Inc.	151%				\$33.00	\$82.83	\$91.53
Garnett Fleming, Inc.	155%	\$37.65	\$96.01	\$106.09	\$26.37	\$67.24	\$74.30
Greenman - Pedersen, Inc.	144%	\$38.95	\$95.04	\$105.02	\$33.18	\$80.96	\$89.46
KS Engineers, P.C.	124%	\$39.32	\$88.08	\$97.32	\$32.27	\$72.28	\$79.87
Kurper Associates	89%	\$34.11	\$64.47	\$71.24	\$31.49	\$59.52	\$65.77
Lichtenstein Consulting Engineers, Inc.	159%	\$32.71	\$84.72	\$93.61	\$25.97	\$67.26	\$74.32
Louis Berger Group, Inc.	139%	\$35.74	\$85.42	\$94.39	\$28.12	\$67.21	\$74.26
Mastra Associates, P.C.	118%	\$44.11	\$96.16	\$106.26	\$38.08	\$83.01	\$91.73
Michael Baker Jr., Inc.	152%				\$27.18	\$68.49	\$75.69
Schoor DePalma, Inc.	172%						
Urbiran Associates, Inc.	125%	\$41.95	\$94.39	\$104.30	\$30.60	\$68.85	\$76.08
Summary:							
Average							
Median	135%	\$36.39	\$85.64	\$94.63	\$30.20	\$71.06	\$78.52
*** Wage rate table shows PIV = Senior Inspector & PII = Inspector	139%	\$35.90	\$85.80	\$94.81	\$30.48	\$72.85	\$80.50

NJDOT	133%	\$29.07	\$67.73	\$67.73	\$25.31	\$58.97	\$58.97
DOT Difference	-2%	(\$7.32)	(\$17.00)	(\$26.99)	(\$4.89)	(\$12.00)	(\$10.55)

98x

HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Hr. Rate		Hr. Rate		Hr. Rate	
		Inspector ET-3	Inspector ET-3	Inspector ET-3	Inspector ET2	Inspector ET2	Inspector ET2
Amercom Corp	106%	\$25.91	\$53.37	\$58.98	\$17.30	\$35.64	\$39.38
Cherry Weber & Associates	144%				\$19.40	\$47.34	\$52.31
Dewberry-Goodkind Inc.	122%	\$29.11	\$64.62	\$71.41	\$22.33	\$49.57	\$54.78
DMJM Harris, Inc.	130%	\$26.75	\$61.53	\$67.99	\$25.99	\$59.78	\$66.05
Edwards & Kelcey, Inc.	151%	\$20.10	\$50.45	\$55.75			
Garnett Fleming, Inc.	155%	\$22.50	\$57.38	\$63.40	\$16.60	\$42.33	\$46.77
Greenman - Pedersen, Inc.	144%	\$26.03	\$63.51	\$70.18	\$19.67	\$47.99	\$53.03
KS Engineers, P.C.	124%	\$28.80	\$64.51	\$71.29	\$26.63	\$59.65	\$65.91
Kupper Associates	89%	\$27.85	\$52.64	\$58.16	\$24.81	\$46.89	\$51.81
Lichtenstein Consulting Engineers, Inc.	159%	\$23.51	\$60.89	\$67.28	\$23.43	\$60.68	\$67.06
Louis Berger Group, Inc.	139%	\$24.10	\$57.60	\$63.65	\$15.91	\$38.02	\$42.02
Maitra Associates, P.C.	118%	\$32.86	\$71.63	\$79.16			
Michael Baker Jr., Inc.	152%						
Schoor DePalma, Inc.	172%				\$22.85	\$62.15	\$68.68
Urban Associates, Inc.	125%				\$23.29	\$52.40	\$57.90
Summary:							
Average	135%	\$25.91	\$60.97	\$67.38	\$21.52	\$50.64	\$55.95
Median	139%	\$26.03	\$62.21	\$68.74	\$22.59	\$53.99	\$59.66

*** Wage rate table shows PIV = Senior Inspector & PIII = Inspector

NJDOT	133%	\$23.08	\$53.78	\$53.78	\$21.07	\$49.09	\$49.09
DOT Difference	-2%	(\$2.93)	(\$7.20)	(\$13.60)	(\$0.45)	(\$1.54)	(\$0.90)

69x

HOURLY RATE + OVERHEAD + FIXED FEE COMPARISONS

Firm Name	OVERHEAD RATE	Hr. Rate		
		Tech. Typist CL	Tech. Typist CL	Tech. Typist CL
Amercom Corp	106%	\$16.53	\$34.05	\$37.63
Cherry Weber & Associates	144%	\$18.30	\$44.65	\$49.34
Dewberry-Goodkind Inc.	122%			
DMJM Harris, Inc.	130%	\$32.03	\$73.67	\$81.40
Edwards & Kelcey, Inc.	151%	\$23.41	\$58.76	\$64.93
Garnett Fleming, Inc.	155%	\$17.38	\$44.32	\$48.97
Greenman - Pedersen, Inc.	144%	\$24.37	\$59.46	\$65.71
KS Engineers, P.C.	124%	\$19.90	\$44.58	\$49.26
Kupper Associates	89%			
Lichtenstein Consulting Engineers, Inc.	159%			
Louis Berger Group, Inc.	139%			
Maitra Associates, P.C.	118%	\$21.22	\$46.26	\$51.12
Michael Baker Jr., Inc.	152%	\$21.14	\$53.27	\$58.87
Schoor DePalma, Inc.	172%			
Urbistran Associates, Inc.	125%	\$16.50	\$37.13	\$41.02
Summary:				
Average	135%	\$21.08	\$49.60	\$54.81
Median	139%	\$20.52	\$49.04	\$54.19

*** Wage rate table shows PIV = Senior Inspector & PIII = Inspector

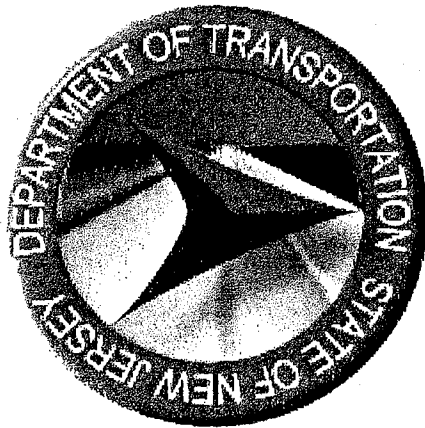
NJDOT	133%	\$22.04	\$51.35	\$51.35
DOT Difference	-2%	\$0.96	\$1.75	(\$3.65)

* Represents 10.5% fixed fee based on consultant hourly rate and overhead

* Represents 10.5% fixed fee based on consultant hourly rate and overhead

**ADVISABILITY STUDY
FY 2007**

**NEW JERSEY DEPARTMENT OF
TRANSPORTATION**



BRIDGE INSPECTIONS
In-house vs. Consultant Costs

Prepared by

*Division of Budget
Bureau of Program Analysis*

November 2007

EXECUTIVE SUMMARY

The Division of Budget, Bureau of Program Analysis was asked to determine whether it is more cost effective to conduct the function of bridge inspection using in-house forces or consultant forces. The scope of this study includes all State owned bridges over 20 feet in length. The scope of this review is also confined to cost-related issues only. Although other non-cost related issues impacting the decision to use in-house or consultant forces are listed in this report, we did not attempt to validate or weigh these factors against cost related criteria.

We used the Reason Foundation report "How to Compare Costs Between In-House and Contracted Services" as the basis for what costs and factors should be included in this type of analysis. We have used this model for over 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. We supplemented that methodology with a recent Transportation Research Board publication ("In House Versus Consultant Design Costs in State Departments of Transportation," Record 1654, Paper 99-1403) that suggests different methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, TRB indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program. However, in the case of bridge inspection, we were able to identify a sufficiently large sample of similar scope projects performed by in-house and consultant forces that no simulation of costs was necessary. In this study, we compared the actual cost of eight bridge inspection contracts totaling 284 bridges with the actual cost of performing 453 similar bridge inspections using in-house staff. We computed both "avoidable" cost and fully allocated costs for both. Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs which include certain components, such as overhead, that are not easily reduced or eliminated in the short term.

The results of our analysis show cost differences between, conducting bridge inspections using in-house forces based on both the avoidable cost, and fully allocated cost method. Because these services are predominantly paid for using federal dollars, there are however additional considerations that factor into any determination as to "savings" to be achieved by the State.

Table A
In-House vs. Consultant Bridge Inspection
Cost Per Bridge

Description	Avoidable Cost Per Bridge	Fully Allocated Cost Per Bridge
In-House Forces	\$1,943	\$2,552
Consultant Forces		
Cherry Weber	\$3,537	\$3,537
B & H Engineering	\$2,765	\$2,765
Parsons Brinckerhoff	\$3,137	\$3,137
Churchill	\$2,631	\$2,631
Arora & Associates	\$3,815	\$3,815
Polytran Engineering	\$5,267	\$5,267
KS Engineers	\$3,609	\$3,609
Parsons Brinckerhoff	\$3,191	\$3,191
Average	\$3,494	\$3,494

As noted, there are factors other than these direct cost factors that would have to be weighed in making decisions about how the Department might assign future work. These factors need to be considered in addition to the amount of State budget savings relative to direct state costs. Some of these additional factors are as follows:

1. Specialized personnel are necessary for the inspection of complex/movable bridges. These personnel (specialized mechanical and electrical engineers, and divers) cannot be hired and their availability is limited to existing staff which limits the number of complex/moveable bridges that can be inspected in-house.
2. The average inspection crew consists of a Principal Engineer and another staff member. To satisfy the National Bridge Inspection Standards (NBIS), team leaders must meet NBIS qualifications and there is only a limited number of in-house staff that meet these standards. Hiring this type of experience may be very difficult.
3. Support from Materials staff would be necessary for the inspection of fracture critical bridges. Current materials support is very limited.

If it is determined that an expansion of the in-house bridge inspection effort is desirable based on this direct cost analysis we recommend that new in-house bridge inspectors be hired to reduce the number of State bridges inspected by consultants. However, please note that an initial review has determined that other factors are relevant to any potential staffing increase and need to be considered.

In such event, the authorized staffing level could include existing field inspection staff, new bridge inspectors and current Structural Evaluation consultant monitoring staff that could need to be shifted to bridge inspection field work as a result of the reduced reliance on consultants, as well as other potential savings resulting from ways in which the work is performed.

Another recommendation is to continue to utilize consultants for most special or complex bridges but assign some of these inspections to in-house staff so that Structural Evaluation maintains expertise. The Department now has a term contract which provides access to bridge inspection equipment and traffic safety. This contract relieves a previous difficulty with in-house inspections.

Finally, we recommend that the Bureau of Structural Evaluation institute controls to ensure that appropriate function codes and sub-jobs are included on timesheets. Such controls are critical to fully identifying costs relevant to an in-house or consultant project because the same job number is used for both. Additionally, Structural Evaluation should provide sub-job codes to other Departmental units charging bridge inspection job numbers to ensure that all costs relative to a particular consultant or in-house project are accounted for. This is essential because such reviews must be ongoing.

BRIDGE INSPECTIONS
In-house vs. Consultant Costs

November 2007

I. INTRODUCTION

A. Purpose

Compare costs of performing bridge inspections using in-house forces or consultant forces. This study updates a study conducted by the Division of Budget, Bureau of Program Analysis in 2003. The study is being updated to comply with the CWA union contract. The same methodology is used in this 2007 study as was used in the 2003 study.

B. Background

NJDOT is required by National Bridge Inspection Standards (NBIS) to do a biennial safety inspection of all State owned bridges over 20 feet in length. There are approximately 2,500 bridges that meet this criterion. The annual workload of 1,250 bridges is divided up between consultants and in-house staff. The percentage of inspections performed by in-house forces over the last thirteen years has dropped from a high of 47 percent down to a low of 15 percent. However the actual number of bridges inspected by in-house forces has been on an upswing since the low in Fiscal Year 2003.

Table 1
State Owned Bridges Over 20 Feet

Fiscal Year	# of Bridges by Consultant	% of Bridges by Consultant	# of Bridges by In-house	% of Bridges by In-house	Total Bridges
1995	516	53%	463	47%	979
1996	700	61%	450	39%	1150
1997	680	69%	300	31%	980
1998	778	70%	339	30%	1117
1999	900	75%	300	25%	1200
2000	928	79%	249	21%	1177
2001	1014	80%	250	20%	1264
2002	972	77%	286	23%	1258
2003	1155	85%	200	15%	1355
2004	788	64%	435	36%	1223
2005	1013	70%	435	30%	1448

BRIDGE INSPECTIONS
In-house vs. Consultant Costs

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2006	920	69%	416	31%	1336
2007	747	58%	541	42%	1288

Source: Transportation Systems Improvement Program Data (evaluation data) contained in the State Budget Message.

Some of the decrease through the years can be explained by a steady reduction of staff available to the Bureau of Structural Evaluation. Adjusting for the transfer of three moveable bridge engineering staff into the unit in 2000, staffing has declined by 17 positions or 25 percent from June 1994 to June 2006:

Table 2
Bureau of Structural Evaluation
Staffing History FY 95-2007

As of date	Filled Positions
June 1994	57
June 1995	52
June 1996	47
June 1997	47
June 1998	45
June 1999	43
June 2000*	44
June 2001*	45
June 2002*	43
June 2003*	44
June 2004*	41
June 2005 *	44
June 2006 *	43
June 2007*	47**

Source: Master File Listing of Filled Positions by Budget Code & Payroll Unit.

* includes 3 movable bridge engineering staff transferred into unit.

** includes 10 Civil Engineer Trainees (CETs) hired in June 2007.

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In-house vs. Consultant Costs

The remainder of the decline in in-house inspections can be explained by other factors that have limited the number of staff that can actually be assigned to performing inspections. A number of new Federal mandates and NJDOT initiatives have diverted staff to other related functions as shown below:

**Table 3
New FHWA/NJDOT
Program Requirements**

Name of Program	In-house	Consultant
Scour critical evaluation		X
Special fracture critical evaluations		X
Pontis Bridge Management System	X	X
Seismic evaluations	X	X
Load Factor capacity ratings	X	X
Inspection of bridges less than 20 ft		X
Inspection of high mast light poles		X
Inspection of overhead sign structures		X

The 43 current employees of the Structural Evaluation bureau are assigned as follows based on the FY 2006 Final Budget Implementation Plan:

**Table 4
Allocation of Structural Evaluation Staff
By Function**

Major Activities	Person Years
Maintain NBIS Compliance & Safety of State owned bridges in-house staff inspection	11.0
Maintain NBIS Compliance & Safety of State owned bridges monitoring of consultant inspections	19.0
Moveable Bridge Engineering Group	3.5
Analysis of routing for overweight permit vehicles	2.5
Bridge Management System	1.0
Other Structural Evaluation Functions	6.0
Total	43

BRIDGE INSPECTIONS In-house vs. Consultant Costs

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Consultant engineering firms are selected at NJDOT based on their professional qualifications, as opposed to bidding on a contract and the contract being awarded to the lowest bidder. Fixed Price (Lump Sum) Agreements are used for bridge inspection projects in addition to Cost Plus Fixed Fee Agreements. The decision as to the type of agreement is negotiated with the consultant at the scope-of-work meeting. The Cost Plus Fixed Fee agreement requires the consultant to submit to NJDOT a cost proposal plus a fixed fee. Some negotiation of the proposal may occur if the costs are not near the engineer's estimate of costs. The cost of the consultant contract is not fixed and may be modified during the contract to adjust for any unforeseen circumstances. FHWA has approved the use of Fixed Price Agreements since the scope-of-work for bridgework is well defined. Complex or movable bridge inspection work is invariably Cost Plus rather than Fixed Price. The advantage to Fixed Price is in the consultant's invoicing that is much simpler and results in a reduction in their overhead costs. In addition, the back-up information provided to the Department is less resulting in a more efficient review process. Since 2005, all bridge inspection agreements have been negotiated as Fixed Price (Lump Sum) projects. The only remaining Cost Plus Fixed Fee agreements were negotiated prior to 2005. Some of these earlier Cost Plus Fixed Fee agreements are still in effect for the second cycle inspections, which could potentially have an effect on the equation.

Beginning in the first quarter of the 2003 calendar year, Capital Program Management instituted an initiative that impacted the amount of work that is contracted to consultants. This initiative was a reduction in the review process for bridge inspection projects. Rather than performing complete reviews of work submitted by consultants for State bridge inspection projects, a reduced review process was instituted that focuses on making the consultant responsible for the accuracy of the work submitted. The reviews that will continue to be conducted are designed to allow the assignment of proper Consultant Evaluation System (CES) ratings rather than to assure the accuracy of the work. To this end, 20 percent of State bridge inspection reports (10 percent for county bridges) will be reviewed. In addition, approximately 10 percent of the bridges will be verified in the field for accuracy. The manpower that was freed-up by the reduced reviews was utilized to conduct inspections of State bridges which accounts for the large

BRIDGE INSPECTIONS

November 2007

In-house vs. Consultant Costs

increase in the number of bridges inspected by in-house staff from FY 2003 to FY 2004.

In addition, Structural Evaluation has implemented Pontis Lite which allows consulting engineers to submit bridge inspection data updates to the Department electronically. The electronic submissions allow the in-house staff previously tasked to manually performing the data updates to be redirected to performing additional in-house inspections.

The Department has also instituted revisions to reduce the scope of bridge inspection reports that reduce overall bridge inspection program costs. The primary reductions are in the areas of documentation of defects: minor defects will no longer be noted, photographs of minor defects will no longer be required, and CADD drawing requirements will be reduced. The resulting reports will only document significant deficiencies with notations, photographs, and other bridge data. These reductions will not affect the high quality of the inspection program but will reduce costs by eliminating information from the reports that is not critical to our needs.

To assist in the problem area of equipment availability, Structural Evaluation has developed statewide vendor contracts for bridge inspection access equipment and traffic safety to serve in-house needs. This proposal will allow our in-house staff to conduct inspections of bridges requiring such equipment that was not possible in the past without involving our limited resources in Operations.

It should also be noted that Structural Evaluation has identified a problem with inconsistencies between NJ Civil Service requirements and Federal requirements regarding certification for bridge inspectors. This situation is currently under review, once a determination has been made regarding these requirements, additional comparison may be required relative to potential savings.

C. Scope

This study will analyze and compare in-house and consultant inspection

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costs for State owned bridges over 20 feet in length. Bridges under 20 feet in length and county bridges, which are inspected exclusively by consultants, were not considered. Factors other than cost were not part of the scope of this report. However, non-cost factors should be weighed as part of the decision process and some are included in the report. No conclusions were made regarding the validity or importance of these non-cost factors because it was not an element of this project. Also included in the scope of this project is an examination of how our current procurement system for bridge inspection consultants impacts our costs.

D. Methodology

The Division of Budget uses a Reason Foundation report "How to Compare Costs Between In-house and Contracted Services" as the basis for in-house vs. consultant cost comparisons. We have used this as our core methodology for identifying appropriate costs that should be collected and analyzed when comparing in-house and contract costs. We have used this model for over 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. The methodology emphasizes a comprehensive listing of costs, particularly in-house costs that are associated with procurement and management of contracts. Also emphasized are the overhead support costs that are embedded in the contractor's fee but must be calculated separately when estimating the cost of performing a function with in-house staff.

The methodology also requires that costs be classified as either avoidable or fully allocated. Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs, which include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs versus fully allocated consultant costs is not appropriate for estimating actual cost savings. The Reason Foundation report recommends the fully allocated cost method be applied whenever the government agency is implementing a new program and considering how it should be delivered. Avoidable costs are usually used where a change in the delivery of an existing program is contemplated. The cost comparison tables in the Appendix include separate columns for fully allocated and avoidable costs.

We also made use of a recent Transportation Research Board (TRB) publication "In House Versus Consultant Design Costs in State Departments of Transportation", Record 1654, Paper 99-1403 that suggests different

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methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, the TRB report indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program. As a result we have identified several different tools that can be used for making cost comparisons depending on the individual circumstances of the projects being examined (See appendix for Cost Comparison Methods table). These cost comparison methods are as follows:

1. Comparable Project
2. Actual Consultant vs. Simulated In-house
3. Actual In-house vs. Simulated Consultant
4. Total Cost Per Production Hour

The comparable project method was selected for this study because of the sufficient sample size of comparable projects. The comparable project method is preferable to other methods, which require simulation of costs because it compares actual cost to actual cost.

The Bureau of Structural Evaluation identified the consultant-inspected bridges that are comparable to the bridges inspected by in-house staff based upon physical characteristics and complexity. The criteria used by Structural Evaluation for the identification of comparable bridges is as follows:

- a. Relatively simple state owned bridges (excludes moveable bridges, and large structures and viaducts)
- b. No specialized access is required
- c. Consultant direct expenses were low
- d. Hands on inspection of fracture critical structure (in jeopardy of failure if one support is required)

For the purpose of this study, the Division of Budget calculated a single composite overhead rate for the Structural Evaluation unit based upon the methodology used in the TRB Study. The overhead was calculated at several

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organizational levels. Step one was to determine a department-wide overhead rate using the NJDOT FY 2006 Cost Allocation Plan for General and Administrative costs plus risk management costs. Step two identified the costs of upper management (Assistant Commissioner CPM), second tier management (CPM support units), and third tier management (Division Director) that provided supervision to Structural Evaluation. Step three determined the non-project time of the Structural Evaluation unit including leave, training, and administrative. By incorporating unproductive (down) time into the overhead, the impact of unreliable in-house cost data can be minimized. Step three cost estimates were added to the two previous steps and used to calculate a single composite overhead rate of 73.4 percent for Structural Evaluation (see Appendix for calculations). This overhead rate is applied to direct salary.

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In-house vs. Consultant Costs**II. FINDINGS****A. In-House Bridge Inspection Costs**

The fully allocated direct and indirect costs associated with the 453 projects inspected by in-house staff was \$1,156,000 or about \$2,600 per bridge. The matching avoidable cost calculation was about \$1,900 per bridge. A breakout by cost component is provided below:

Table 5
Total Costs for In-House
Bridge Inspections
453 Selected Projects

Description	Avoidable Costs	Fully Allocated Costs
Direct Labor Salary Costs		
Inspection Staff	\$443,242	\$443,242
Fringe and Leave	\$300,518	\$300,518
Overtime	0	0
Direct Labor Material Costs	0	0
Direct Supervision	\$24,317	\$24,317
Direct Clerical Support	\$11,893	\$11,893
Direct Outside Support	(A)	(A)
Fringe and Leave on Direct Supervision, Clerical, & Support	\$24,544	\$24,544
Structural Evaluation Overhead	\$76,104	\$351,918
Total Cost	\$880,618	\$1,156,432
Number of Bridges	453	453
Average Cost Per Bridge	\$1,943	\$2,552

Footnote A: No outside support costs were charged to the in-house sub-job.

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B. Consultant Bridge Inspection Costs

A total of 284 bridges (279 on-system and 5 off-system) inspected by eight consultants were selected for comparison with the bridges inspected in-house. The bridges were identified with the assistance of the Bureau of Structural Evaluation to ensure that the consultant-inspected bridges were comparable to the bridges inspected by in-house staff.

The 279 on-system and 5 off-system bridges inspected by consultants were as follows:

Table 6
Number of Bridges by Consultant Contract
8 Selected Contracts

Consultant Name	# On-System	# Off-System	Total
Cherry Weber	25	1	26
B & H Engineering	24	1	25
Parsons Brinckerhoff	56	1	28
Churchill	42	0	42
Arora & Associates	25	1	57
Polytran Engineering	26	0	57
KS Engineers	24	1	26
Parsons Brinckerhoff	57	0	26
Total	279	5	284

These 284 bridges (279 on-system and 5 off-system) were inspected by consultants for the inspection period beginning June 2002. The inspections have been completed and the final invoices have been received. These inspections also cover the same time period as the in-house inspections.

Consultants are awarded a cost-plus or fixed price contract for bridge inspections. The cost components for both types of contracts are direct consultant labor costs, overhead consultant costs, profit margin or fixed fee, and expenses. The source of this cost data is invoices submitted by the consultant. Invoices for fixed price contracts are billed as a percentage of jobs complete except for direct expenses. These invoices combine consultant salary, overhead, and profit margin into one lump sum amount. Consultant expenses include job related travel, postage, reproduction costs, permit costs, and equipment rental. Since similar costs for in-house projects could not be identified, these costs were excluded from this cost analysis.

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In-house vs. Consultant Costs

In addition to the consultant costs, there are in-house administration costs associated with consultant contracts. These are costs to negotiate a consultant contract and provide support to the consultant, costs to monitor a consultant contract, costs to perform pre-award and audit consultant costs, costs to process a consultant agreement and costs to pay a consultant. The costs associated with consultant contracts includes work required to select consultants such as posting solicitations, rating technical proposals, preparing consultant selections, debriefing consultants, etc. It also includes work associated with updating data in the bridge inspection records (Structure Inventory and Appraisal—SI&A and Pontis Bridge Management System—BMS). In-house salary costs associated with consultant contracts assigned the same job number and an individual sub-job number can be identified through timesheets. For this analysis an assumption will be made that all costs charged to the eight consultant contracts selected are accurate. These contract administration costs are as follows:

Table 7
Contract Administration Costs
By Consultant

Consultant Name	Contract Administration Salary Costs	Percent of Total Consultant Invoice Cost
Cherry Weber	\$ 5,347	8%
B & H Engineering	4,725	8%
Parsons Brinckerhoff	22,401	16%
Churchill	11,130	12%
Arora & Associates	9,776	12%
Polytran Engineering	10,660	9%
KS Engineers	5,150	6%
Parsons Brinckerhoff	18,354	12%

According to the Reason Foundation, a reasonable estimate for contract administration costs is between 10 and 20 percent of consultant costs. Based upon the above table, the contract administration costs for four of the eight consultants fall within this range. Salary costs to monitor consultant contracts are dependent upon the quality of the consultants' work and the ability of the engineer doing the review. There are also instances where engineers are being trained to review consultant work, which requires a second review, by an experienced engineer.

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In-house vs. Consultant Costs

The total avoidable/fully allocated costs charged by the consultant and by in-house staff responsible for contract management are provided below:

Table 8
Total Costs for Consultant
Bridge Inspections
284 Selected Bridges

Consultant Name	Total Consultant Invoice Costs (A)	In-House Contract Mgmt/Other	Total Costs	# of Units	Cost Per Unit
Cherry Weber	\$81,581	\$10,374	\$91,955	26	\$3,537
B & H Engineering	61,528	\$7,600	\$69,128	25	\$2,765
Parsons Brinckerhoff	143,232	\$35,568	\$178,800	57	\$3,137
Churchill	92,235	\$18,270	\$11,505	42	\$2,631
Arora & Associates	83,209	\$15,990	\$99,199	26	\$3,815
Polytran Engineering	119,313	\$17,628	\$136,941	26	\$5,267
KS Engineers	82,047	\$8,175	\$90,222	25	\$3,609
Parsons Brinckerhoff	151,776	\$30,096	\$181,872	57	\$3,191

Footnote A: Includes Consultant Labor, Overhead and Fixed Fee & Excludes Consultant Expenses.

C. Consultant Bridge Inspection Procurement Process

One reason that consultant bridge inspection costs appear to be high compared with in-house costs is the method of procurement. Bridge inspection selections follow the Qualification Based System used by NJDOT's Consultant Selection Committee. The firms are selected first based on qualifications alone. Once the selection is made, contract cost is negotiated. There is no price competition in the selection process. The selected firm only has to be reasonable enough about price that the Department does not stop the negotiations and go to the second ranked firm--a very rare event.

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In-house vs. Consultant Costs

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III. Summary, Conclusions, and Recommendations

A. Summary and Conclusions

In summary, the avoidable and fully allocated costs per bridge are as follows:

Table 10
In-House vs. Consultant Bridge Inspection
Cost Per Bridge

Description	Avoidable Cost Per Bridge	Fully Allocated Cost Per Bridge
In-House Forces	\$1,943	\$2,552
Consultant Forces		
Cherry Weber	\$3,537	\$3,537
B & H Engineering	\$2,765	\$2,765
Parsons Brinckerhoff	\$3,137	\$3,137
Churchill	\$2,631	\$2,631
Arora & Associates	\$3,815	\$3,815
Polytran Engineering	\$5,267	\$5,267
KS Engineers	\$3,609	\$3,609
Parsons Brinckerhoff	\$3,191	\$3,191
Average	\$3,494	\$3,494

Based upon the results of this analysis, which examined the inspection of similar State owned bridges over 20 feet; it is more cost effective to perform the inspections with in-house staff than with consultants. As can be seen, there is a fairly wide range for actual consultant contract costs per bridge, ranging from Churchill at \$2,631 per bridge to Polytran Engineering in excess of \$5,200 per

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bridge. We do not know what factors are involved in this range of results. However, the overall average of \$3,494 per bridge is 37 percent higher than the fully allocated cost per bridge of in-house forces, and 80 percent higher than the avoidable costs associated with the in-house bridge inspection function.

Clearly on a cost basis alone, routine bridge inspections are cost effectively accomplished with State forces alone. Capital program funding allocated for bridge inspections could be lowered if the State added additional qualified and trained bridge inspectors.

According to the Bureau of Structural Evaluation, it would be impossible to convert their entire current consultant program to in-house for the following reasons:

1. Specialized personnel are necessary for the inspection of complex/movable bridges. These personnel (specialized mechanical and electrical engineers, and divers) cannot be hired and their availability is limited to existing staff which limits the number of complex/movable bridges that can be inspected in-house.
2. The average inspection crew consists of a Principal Engineer and another staff member. To satisfy the National Bridge Inspection Standards (NBIS), team leaders must meet NBIS qualifications and there is only a limited number of in-house staff that meet these standards. Hiring this type of experience would be very difficult.
3. Support from Materials staff would be necessary for the inspection of fracture critical bridges. Current materials support is very limited.

B. Recommendations

1. Other factors relevant to staffing increases should be considered before hiring additional qualified State bridge inspectors.
2. Continue to perform most special or complex bridge inspections using consultant forces but assign some of these inspections to in-house staff so that Structural Evaluation maintains expertise. The Department now has a term contract which provides access to bridge inspection equipment and traffic safety.

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3. Investigate the reason(s) for the inconsistencies between NJ Civil Service requirements and Federal requirements regarding certification for bridge inspectors.
4. Institute better controls to ensure that sub-jobs and appropriate function codes are included on timesheets. Additionally, Structural Evaluation should ensure that sub-job codes are provided to other Departmental units charging bridge inspection job numbers to account for all costs related to a particular project.
5. The specific level of staffing to be hired shall be determined based upon the cost differences described herein and the other factors that have also been noted.

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In-house vs. Consultant Costs**Glossary of Terms for Consultant Contract**

- 1A. Direct Consultant Labor Costs** – Actual costs taken from the final invoice submitted by the consultant. Some invoices reviewed for this study had combined totals for labor, overhead, and profit margin (fixed fee) because the contracts are fixed price (lump sum).
- 1B. Overhead Consultant Costs** – Actual costs taken from the final invoice submitted by the consultant. This percentage of the Direct Consultant Labor Costs is based upon the consultant's approved indirect cost rate. Some invoices reviewed for this study had combined totals for labor, overhead, and profit margin (fixed fee) because the contracts are fixed price (lump sum). The overhead rates for the eight consultants used in this study are as follows:

Consultant Name	Overhead Rate
Cherry Weber	145%
B & H Engineering	121%
Arora & Associates	143%
Churchill	135%
Parsons Brinckerhoff (2)	143%
KS Engineers	123%
Polytran	190%

- 1C. Profit Margin (Fixed Fee)** – Actual costs taken from the final invoice submitted by the consultant. The profit margin is a negotiated percentage of the original contract estimate for Direct Consultant Labor Costs. The fixed fee for the contracts included in this study was 18 percent. This amount does not fluctuate if the actual direct consultant labor costs are more or less than the original estimate. Some invoices reviewed for this study had combined totals for labor, overhead, and profit margin (fixed fee) because the contracts are fixed price (lump sum).

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Glossary of Terms for Consultant Contract (Cont'd)

Consultant Name	Fixed Fee
Cherry Weber	\$5,587
B & H Engineering	\$ 4,634
Arora & Associates	\$5,738
Churchill	\$6,562
Parsons Brinckerhoff	\$9,934
Parsons Brinckerhoff	\$10,469
KS Engineers	\$6,128
Polytran	\$6,973

2. **Consultant Expenses** – Actual costs taken from the final invoice submitted by the consultant.

Consultant Name	Expenses
Cherry Weber	\$11,232
B & H Engineering	\$7,882
Arora & Associates	\$8,552
Churchill	\$500
Parsons Brinckerhoff	\$24,756
Parsons Brinckerhoff	\$21,645
KS Engineers	\$14,669
Polytran	\$7,182

3. **Total Consultant Invoice Cost** – The total of Direct Consultant Labor, Overhead, Profit Margin. Consultant expenses were not included for reasons discussed in the report.
4. **In-house Cost to Negotiate Contract & Support Consultant** – The source of this data is the Stripped Activity Reports by Job Number 2203871 (on-system) and 2203872 (off-system). Each consultant has a separate sub-job.

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In-house vs. Consultant Costs

Glossary of Terms for Consultant Contract (Cont'd)

5. **In-house Cost to Monitor Contract** - The source of this data is the Stripped Activity report by Job Number for the sub job numbers assigned to each of the consultants used in this study.
6. **In-house Cost to Pay Consultant and Process Agreement** - These costs could not be determined.
7. **In-house Cost to Audit Consultant Costs** - The source of this data is the Stripped Activity Report by Job Number for Budget Code DFAA (Accounting) and the auditing function code. The auditors do not have a bridge inspection job number for the pre-award.
8. **Fringe and Leave Additive** – The actual NJDOT fringe and leave costs from the Stripped Activity Reports.
9. **Taxes Paid by Consultant to State** – 9 percent of the consultant Profit Margin.

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In-house vs. Consultant Costs

Glossary of Terms for In-house Project

1. **Direct Labor Salary Costs** - This cost was obtained from the Stripped Activity Reports by Job Number for Budget Center EDAA (Structural Evaluation) by sub job number DDDD and Function Code K 802 Direct Labor Bridge Inspection.
2. **Leave and Fringe Additive** - The actual NJDOT fringe and leave costs from the Stripped Activity Report.
3. **Direct Labor Overtime** - No overtime was included in the Stripped Activity Reports by Job Number for Budget Center EDAA (Structural Evaluation) sub job number DDD.
4. **Direct Labor Supply and Material Costs** - This cost was not available from the Stripped Activity Reports by Job Number for Budget Center EDAA (Structural Evaluation) by sub job number DDDD.
5. **Direct Supervision** - This cost was obtained from the Stripped Activity Reports by Job Number for Budget Center EDAA (Structural Evaluation) by sub job number DDDD and Function Code K 800 Direct Supervision Bridge Inspection.
6. **Direct Clerical Support** - This cost was obtained from the Stripped Activity Reports by Job Number for Budget Center EDAA (Structural Evaluation) by sub job number DDDD and Function Code K 801 Direct Clerical Bridge Inspection.
7. **Direct Support** (outside units charging time to project) - Outside support costs could not be identified to a consultant or in-house project because no sub job number was used.
8. **Fringe & Leave Additive on #5, #6, #7** - The actual NJDOT fringe and leave costs from the Stripped Activity Report.
9. **Overhead Rate** - an overhead rate of 73.4 % for Structural Evaluation was calculated and applied to direct salary. See Appendix for calculation.

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In-house vs. Consultant Costs

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APPENDIX

List of Attachments

Cost Summaries by Consultant

Attachment #1	Cherry Weber
Attachment #2	B & H Engineering
Attachment #3	Parsons Brinckerhoff
Attachment #4	Churchill
Attachment #5	Arora & Associates
Attachment #6	Polytran Engineers
Attachment #7	KS Engineers
Attachment #8	Parsons Brinckerhoff

Calculation of Structural Evaluation Overhead Rate

Cost Comparison Methods

<h2 style="text-align: center;">Cost Comparison Form</h2> <h3 style="text-align: center;">In-House Versus Contract Performance</h3>		
Service Under Study: Bridge Inspection		Date: June 2007
Consultant : B&H Engineering		Prepared by: Program Analysis
Number of Bridges: 25	Avoidable Cost	Full Cost Allocation
Type of Cost		
Consultant Performance Costs		
1. Consultant Labor , Overhead, Fixed Fee	\$2,461	\$2,461
2. Consultant Expenses	\$0	\$0
3. Total Consultant Invoice Costs	\$2,461	\$2,461
4. In-house Cost to Negotiate Contract & Support Consul	\$15	\$15
5. In-house Cost to Monitor Contract	\$142	\$142
6. In-house Cost to pay consultant and process agreement	\$0	\$0
7. In-house Cost to audit consultant cost	\$32	\$32
8. Fringe & Leave Additive on In-house Costs	\$132	\$132
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$17	-\$17
Consultant Cost per Bridge	\$2,765	\$2,765
In-House Performance Costs		
1. Direct Labor Salary Costs	\$978	\$978
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663
3. Direct Labor Overtime	\$0	\$0
4. Direct Labor Supply and Material Costs	\$0	\$0
5. Direct Supervision	\$54	\$54
6. Direct Clerical Support	\$26	\$26
7. Direct Support (outside units charging time to project)		
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777
In-house Cost per Bridge	\$1,943	\$2,552

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : Parsons Brinckerhoff		Prepared by:	Program Analysis
Number of Bridges: 57	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$2,663	\$2,663	
2. Consultant Expenses	\$0	\$0	
3. Total Consultant Invoice Costs	\$2,663	\$2,663	
4. In-house Cost to Negotiate Contract & Support Consul	\$19	\$19	
5. In-house Cost to Monitor Contract	\$271	\$271	
6. In-house Cost to pay consultant and process agreement	\$0	\$0	
7. In-house Cost to audit consultant cost	\$32	\$32	
8. Fringe & Leave Additive on In-house Costs	\$223	\$223	
. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$17	-\$17	
Consultant Cost per Bridge	\$3,191	\$3,191	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978	\$978	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs	\$0	\$0	
5. Direct Supervision	\$54	\$54	
6. Direct Clerical Support	\$26	\$26	
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777	
In-house Cost per Bridge	\$1,943	\$2,552	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : Churchill		Prepared by: Program Analysis	
Number of Bridges: 42	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$2,196	\$2,196	
2. Consultant Expenses	\$0	\$0	
3. Total Consultant Invoice Costs	\$2,196	\$2,196	
4. In-house Cost to Negotiate Contract & Support Consul	\$10	\$10	
5. In-house Cost to Monitor Contract	\$223	\$223	
6. In-house Cost to pay consultant and process agreement	\$0	\$0	
7. In-house Cost to audit consultant cost	\$32	\$32	
Fringe & Leave Additive on In-house Costs	\$184	\$184	
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$14	-\$14	
Consultant Cost per Bridge	\$2,631	\$2,631	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978	\$978	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs	\$0	\$0	
5. Direct Supervision	\$54	\$54	
6. Direct Clerical Support	\$26	\$26	
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777	
In-house Cost per Bridge	\$1,943	\$2,552	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : Arora & Associates		Prepared by:	Program Analysis
Number of Bridges: 26	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$3,200	\$3,200	
2. Consultant Expenses	\$0	\$0	
3. Total Consultant Invoice Costs	\$3,200	\$3,200	
4. In-house Cost to Negotiate Contract & Support Consul	\$23	\$23	
5. In-house Cost to Monitor Contract	\$321	\$321	
6. In-house Cost to pay consultant and process agreement	\$0	\$0	
7. In-house Cost to audit consultant cost	\$32	\$32	
8. Fringe & Leave Additive on In-house Costs	\$259	\$259	
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$20	-\$20	
Consultant Cost per Bridge	\$3,815	\$3,815	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978	\$978	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs	\$0	\$0	
5. Direct Supervision	\$54	\$54	
6. Direct Clerical Support	\$26	\$26	
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777	
In-house Cost per Bridge	\$1,943	\$2,552	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : Polytran Engineering		Prepared by:	Program Analysis
Number of Bridges: 26	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$4,589	\$4,589	
2. Consultant Expenses	\$0	\$0	
3. Total Consultant Invoice Costs	\$4,589	\$4,589	
4. In-house Cost to Negotiate Contract & Support Consul	\$101	\$101	
5. In-house Cost to Monitor Contract	\$277	\$277	
6. In-house Cost to pay consultant and process agreement	\$0	\$0	
7. In-house Cost to audit consultant cost	\$32	\$32	
Fringe & Leave Additive on In-house Costs	\$292	\$292	
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$24	-\$24	
Consultant Cost per Bridge	\$5,267	\$5,267	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978	\$978	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs	\$0	\$0	
5. Direct Supervision	\$54	\$54	
6. Direct Clerical Support	\$26	\$26	
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777	
In-house Cost per Bridge	\$1,943	\$2,552	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : KS Engineers		Prepared by:	Program Analysis
Number of Bridges: 25	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$3,282	\$3,282	
2. Consultant Expenses	\$0	\$0	
3. Total Consultant Invoice Costs	\$3,282	\$3,282	
4. In-house Cost to Negotiate Contract & Support Consul	\$28	\$28	
5. In-house Cost to Monitor Contract	\$146	\$146	
6. In-house Cost to pay consultant and process agreement	\$0	\$0	
7. In-house Cost to audit consultant cost	\$32	\$32	
Fringe & Leave Additive on In-house Costs	\$143	\$143	
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$22	-\$22	
Consultant Cost per Bridge	\$3,609	\$3,609	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978	\$978	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663	\$663	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs	\$0	\$0	
5. Direct Supervision	\$54	\$54	
6. Direct Clerical Support	\$26	\$26	
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54	\$54	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168	\$777	
In-house Cost per Bridge	\$1,943	\$2,552	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Bridge Inspection		Date: June 2007	
Consultant : Parsons Brinckerhoff		Prepared by:	Program Analysis
Number of Bridges: 57	Avoidable Cost	Full Cost Allocation	
Type of Cost			
Consultant Performance Costs			
1. Consultant Labor , Overhead, Fixed Fee	\$2,513		\$2,513
2. Consultant Expenses	\$0		\$0
3. Total Consultant Invoice Costs	\$2,513		\$2,513
4. In-house Cost to Negotiate Contract & Support Consul	\$6		\$6
5. In-house Cost to Monitor Contract	\$355		\$355
6. In-house Cost to pay consultant and process agreement	\$0		\$0
7. In-house Cost to audit consultant cost	\$32		\$32
Fringe & Leave Additive on In-house Costs	\$247		\$247
9. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$16		-\$16
Consultant Cost per Bridge	\$3,137		\$3,137
In-House Performance Costs			
1. Direct Labor Salary Costs	\$978		\$978
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$663		\$663
3. Direct Labor Overtime	\$0		\$0
4. Direct Labor Supply and Material Costs	\$0		\$0
5. Direct Supervision	\$54		\$54
6. Direct Clerical Support	\$26		\$26
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on #5,#6,#7	\$54		\$54
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$168		\$777
In-house Cost per Bridge	\$1,943		\$2,552

Single Composite Overhead Rate for Bridge Inspection Unit

1. Develop a DOT wide support services overhead rate

G&A Direct Labor	\$3,399,000
G&A Indirect Labor	\$18,621,000
Total G&A Labor	\$22,020,000

G&A Leave	\$5,480,000
G&A Fringe	\$9,029,000

Total G&A Labor plus additives	\$36,529,000
G&A non-salary	\$14,372,000
Statewide Cost Allocation	\$5,478,000
Risk Management Costs	\$2,187,000
Total G&A Costs	\$58,566,000

Direct Labor Salary Costs	\$117,212,000
Direct Leave	\$36,145,000
Direct Fringe	\$58,001,000
Total Direct Labor Costs	\$211,358,000

<u>Total G&A</u> <u>Costs</u>	\$58,566,000	=	27.71%	DOT wide OH rate
Total Direct Labor Costs	\$211,358,000			

Data Source: NJDOT Cost Allocation Plan FY 2006

2A. Allocate share of Assistant Commissioner CPM to all CPM units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
ECA	50101	\$402,667	0.48%	\$5,799
ECA	50141	\$4,734,471	5.69%	\$68,183
ECA	50151	\$1,512,230	1.82%	\$21,778
ECA	50152	\$6,502,200	7.82%	\$93,640
ECA	50153	\$5,097,000	6.13%	\$73,404
ECA	50154	\$5,597,035	6.73%	\$80,605
ECA	50156	\$1,659,925	2.00%	\$23,905
ECA	50157	\$1,633,881	1.97%	\$23,530
ECA	50158	\$1,199,682	1.44%	\$17,277
EDA	50901	\$400,121	0.48%	\$5,762
EDA	50904	\$229,388	0.28%	\$3,303
EDA	50910	\$616,939	0.74%	\$8,885
EDA	50912	\$1,021,978	1.23%	\$14,718
EDA	50913	\$2,569,387	3.09%	\$37,003
EDA	50914	\$2,918,669	3.51%	\$42,033
EDA	50920	\$195,034	0.23%	\$2,809
EDA	50927	\$2,456,313	2.95%	\$35,374
EDA	50928	\$120,745	0.15%	\$1,739
EDA	50929	\$866,521	1.04%	\$12,479
EDA	50930	\$228,757	0.28%	\$3,294
EDA	50931	\$4,198,962	5.05%	\$60,471
EDA	50933	\$403,510	0.49%	\$5,811
EDA	50934	\$1,056,546	1.27%	\$15,216
EDA	50935	\$401,854	0.48%	\$5,787
EDA	50936	\$906,246	1.09%	\$13,051
EDA	50937	\$1,262,521	1.52%	\$18,182
EDA	50940	\$127,516	0.15%	\$1,836
EDA	50941	\$1,588,602	1.91%	\$22,878
EDA	50947	\$2,664,813	3.20%	\$38,377
EDA	50950	\$445,417	0.54%	\$6,415
EDA	50951	\$1,230,483	1.48%	\$17,721
EDA	50952	\$600,712	0.72%	\$8,651
EKA	51001	\$351,904	0.42%	\$5,068
EKA	51004	\$1,141,531	1.37%	\$16,440
EKA	51005	\$1,458,701	1.75%	\$21,007
EKA	51006	\$1,473,255	1.77%	\$21,217
EKA	51007	\$1,404,419	1.69%	\$20,226
EKA	51008	\$1,626,094	1.96%	\$23,418
FKA	51009	\$835,512	1.00%	\$12,033
A	50801	\$388,054	0.47%	\$5,589

L/A	50802	\$1,482,044	1.78%	\$21,343
EYA	50803	\$2,855,441	3.43%	\$41,122
EYA	50804	\$1,902,540	2.29%	\$27,399
EZA	50810	\$353,580	0.43%	\$5,092
EZA	50811	\$2,177,252	2.62%	\$31,355
EZA	50812	\$2,260,058	2.72%	\$32,548
EWA	51021	\$1,289,901	1.55%	\$18,576
EWA	51022	\$1,544,545	1.86%	\$22,244
EWA	51023	\$1,416,906	1.70%	\$20,405
EWA	51024	\$1,917,246	2.31%	\$27,611
EWA	51025	\$1,707,602	2.05%	\$24,592
EWA	51026	\$229,934	0.28%	\$3,311
EWA	51027	\$481,936	0.58%	\$6,941
Total		\$83,148,580	100.00%	\$1,197,452
EAA	52101	\$937,707	x 1.2771	\$1,197,452

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst.

Commissioner CPM

Budget Center	Payroll Unit	Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
ECA	50101	\$402,667	\$111,539	\$5,799	\$520,005
ECA	50141	\$4,734,471	\$1,311,448	\$68,183	\$6,114,102
ECA	50151	\$1,512,230	\$418,888	\$21,778	\$1,952,896
ECA	50152	\$6,502,200	\$1,801,109	\$93,640	\$8,396,950
ECA	50153	\$5,097,000	\$1,411,869	\$73,404	\$6,582,273
ECA	50154	\$5,597,035	\$1,550,379	\$80,605	\$7,228,019
ECA	50156	\$1,659,925	\$459,799	\$23,905	\$2,143,629
ECA	50157	\$1,633,881	\$452,585	\$23,530	\$2,109,996
ECA	50158	\$1,199,682	\$332,312	\$17,277	\$1,549,271
EDA	50901	\$400,121	\$110,834	\$5,762	\$516,717
EDA	50904	\$229,388	\$63,540	\$3,303	\$296,232
EDA	50910	\$616,939	\$170,892	\$8,885	\$796,716
EDA	50912	\$1,021,978	\$283,088	\$14,718	\$1,319,784
EDA	50913	\$2,569,387	\$711,720	\$37,003	\$3,318,110
A	50914	\$2,918,669	\$808,471	\$42,033	\$3,769,173
EDA	50920	\$195,034	\$54,024	\$2,809	\$251,867
EDA	50927	\$2,456,313	\$680,399	\$35,374	\$3,172,086
EDA	50928	\$120,745	\$33,446	\$1,739	\$155,930
EDA	50929	\$866,521	\$240,026	\$12,479	\$1,119,026
EDA	50930	\$228,757	\$63,366	\$3,294	\$295,417
EDA	50931	\$4,198,962	\$1,163,112	\$60,471	\$5,422,545
EDA	50933	\$403,510	\$111,772	\$5,811	\$521,093
EDA	50934	\$1,056,546	\$292,663	\$15,216	\$1,364,425
EDA	50935	\$401,854	\$111,314	\$5,787	\$518,955
EDA	50936	\$906,246	\$251,030	\$13,051	\$1,170,327
EDA	50937	\$1,262,521	\$349,718	\$18,182	\$1,630,421
EDA	50940	\$127,516	\$35,322	\$1,836	\$164,674
EDA	50941	\$1,588,602	\$440,043	\$22,878	\$2,051,523
EDA	50947	\$2,664,813	\$738,153	\$38,377	\$3,441,343
EDA	50950	\$445,417	\$123,381	\$6,415	\$575,212
EDA	50951	\$1,230,483	\$340,844	\$17,721	\$1,589,047
EDA	50952	\$600,712	\$166,397	\$8,651	\$775,760
EKA	51001	\$351,904	\$97,477	\$5,068	\$454,449
EKA	51004	\$1,141,531	\$316,204	\$16,440	\$1,474,175
EKA	51005	\$1,458,701	\$404,060	\$21,007	\$1,883,768
EKA	51006	\$1,473,255	\$408,092	\$21,217	\$1,902,563
EKA	51007	\$1,404,419	\$389,024	\$20,226	\$1,813,669
A	51008	\$1,626,094	\$450,428	\$23,418	\$2,099,940
EKA	51009	\$835,512	\$231,437	\$12,033	\$1,078,981

EYA	50801	\$388,054	\$107,491	\$5,589	\$501,133
EYA	50802	\$1,482,044	\$410,526	\$21,343	\$1,913,914
EYA	50803	\$2,855,441	\$790,957	\$41,122	\$3,687,520
EYA	50804	\$1,902,540	\$527,004	\$27,399	\$2,456,943
EZA	50810	\$353,580	\$97,942	\$5,092	\$456,614
EZA	50811	\$2,177,252	\$603,099	\$31,355	\$2,811,706
EZA	50812	\$2,260,058	\$626,036	\$32,548	\$2,918,642
EWA	51021	\$1,289,901	\$357,303	\$18,576	\$1,665,780
EWA	51022	\$1,544,545	\$427,839	\$22,244	\$1,994,627
EWA	51023	\$1,416,906	\$392,483	\$20,405	\$1,829,794
EWA	51024	\$1,917,246	\$531,077	\$27,611	\$2,475,934
EWA	51025	\$1,707,602	\$473,006	\$24,592	\$2,205,200
EWA	51026	\$229,934	\$63,692	\$3,311	\$296,937
EWA	51027	\$481,936	\$133,496	\$6,941	\$622,373
Total		\$83,148,580	\$23,032,157	\$1,197,452	\$107,378,188
EAA	52101	\$937,707.00	x1.2771	\$1,197,452	

2B. Allocate share of EYAA costs to all CPM units

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EYA	50801	\$501,134		
EYA	50802	\$1,913,913		
EYA	50803	\$3,687,520		
EYA	50804	\$2,456,943		
Total EYA		\$8,559,510		
ECA	50101	\$520,005	0.53%	\$45,042
ECA	50141	\$6,114,102	6.19%	\$529,593
ECA	50151	\$1,952,896	1.98%	\$169,157
ECA	50152	\$8,396,949	8.50%	\$727,330
ECA	50153	\$6,582,273	6.66%	\$570,146
ECA	50154	\$7,228,019	7.31%	\$626,079
ECA	50156	\$2,143,629	2.17%	\$185,678
ECA	50157	\$2,109,996	2.14%	\$182,764
FCA	50158	\$1,549,271	1.57%	\$134,195
A	50901	\$516,717	0.52%	\$44,757
EDA	50904	\$296,231	0.30%	\$25,659
EDA	50910	\$796,716	0.81%	\$69,010
EDA	50912	\$1,319,784	1.34%	\$114,317
EDA	50913	\$3,318,110	3.36%	\$287,409
EDA	50914	\$3,769,173	3.81%	\$326,480
EDA	50920	\$251,867	0.25%	\$21,816
EDA	50927	\$3,172,086	3.21%	\$274,761
EDA	50928	\$155,930	0.16%	\$13,506
EDA	50929	\$1,119,026	1.13%	\$96,928
EDA	50930	\$295,417	0.30%	\$25,589
EDA	50931	\$5,422,545	5.49%	\$469,692
EDA	50933	\$521,093	0.53%	\$45,136
EDA	50934	\$1,364,425	1.38%	\$118,184
EDA	50935	\$518,955	0.53%	\$44,951
EDA	50936	\$1,170,327	1.18%	\$101,372
EDA	50937	\$1,630,421	1.65%	\$141,224
EDA	50940	\$164,674	0.17%	\$14,264
EDA	50941	\$2,051,523	2.08%	\$177,699
EDA	50947	\$3,441,343	3.48%	\$298,083
EDA	50950	\$575,213	0.58%	\$49,824
EDA	50951	\$1,589,048	1.61%	\$137,641
EDA	50952	\$775,760	0.79%	\$67,195
A	51001	\$454,449	0.46%	\$39,364

EKA	51004	\$1,474,175	1.49%	\$127,691
EKA	51005	\$1,883,768	1.91%	\$163,169
EKA	51006	\$1,902,564	1.93%	\$164,797
EKA	51007	\$1,813,669	1.84%	\$157,097
EKA	51008	\$2,099,940	2.13%	\$181,893
EKA	51009	\$1,078,982	1.09%	\$93,460
EZA	50810	\$456,614	0.46%	\$39,551
EZA	50811	\$2,811,706	2.85%	\$243,545
EZA	50812	\$2,918,642	2.95%	\$252,808
EWA	51021	\$1,665,780	1.69%	\$144,287
EWA	51022	\$1,994,628	2.02%	\$172,771
EWA	51023	\$1,829,794	1.85%	\$158,494
EWA	51024	\$2,475,934	2.51%	\$214,461
EWA	51025	\$2,205,200	2.23%	\$191,011
EWA	51026	\$296,937	0.30%	\$25,720
EWA	51027	\$622,373	0.63%	\$53,909
Total		\$98,818,680	100.00%	\$8,559,510

2C. Allocate share of EDAA Director's Office to EDAA payroll units

Budget Center	Payroll Unit	Director's Office	EDAA Payroll	% of EDAA Payroll	Share of Director
EDA	50901	\$516,717			
EDA	50904		\$229,388.00	0.88%	\$4,539
EDA	50910		\$616,939.00	2.36%	\$12,209
EDA	50912		\$1,021,978.00	3.91%	\$20,224
EDA	50913		\$2,569,387.00	9.84%	\$50,846
EDA	50914		\$2,918,669.00	11.18%	\$57,758
EDA	50920		\$195,034.00	0.75%	\$3,860
EDA	50927		\$2,456,313.00	9.41%	\$48,609
EDA	50928		\$120,745.00	0.46%	\$2,389
EDA	50929		\$866,521.00	3.32%	\$17,148
EDA	50930		\$228,757.00	0.88%	\$4,527
EDA	50931		\$4,198,962.00	16.08%	\$83,095
EDA	50933		\$403,510.00	1.55%	\$7,985
EDA	50934		\$1,056,546.00	4.05%	\$20,908
EDA	50935		\$401,854.00	1.54%	\$7,952
EDA	50936		\$906,246.00	3.47%	\$17,934
EDA	50937		\$1,262,521.00	4.84%	\$24,984
EDA	50940		\$127,516.00	0.49%	\$2,523
EDA	50941		\$1,588,602.00	6.08%	\$31,437
EDA	50947		\$2,664,813.00	10.21%	\$52,735
EDA	50950		\$445,417.00	1.71%	\$8,814
EDA	50951		\$1,230,483.00	4.71%	\$24,350
EDA	50952		\$600,712.00	2.30%	\$11,888
			\$26,110,913	100.00%	\$516,717

3. Develop a section overhead rate for Bridge Inspection

Bridge Inspection Base Payroll	\$2,918,669	
Bridge Inspection Project Payroll	\$2,146,701	
Bridge Inspection non-Project Payroll	\$256,832	includes non-project leave time
Bridge Inspection non-Project Payroll x Fringe Benefits	\$256,832 132.75%	
Bridge Inspection non-Project charges	\$340,944	
Bridge Inspection non-Project charges	\$340,944	
Base salary x DOT wide OH rate	\$808,471	From Step 2A
Share of CPM Asst. Commissioner	\$42,033	From Step 2A
Share of EYAA costs	\$326,479	From Step 2B
Share of EDAA Director	\$57,758	From Step 2C
Total Non Project Charges & Overhead	\$1,575,685	
Total Non Project PR Charges & Overhead	\$1,575,685	
Divided by Project PR charges	\$2,146,701	
Equals Bridge Inspection Overhead rate	73.40%	

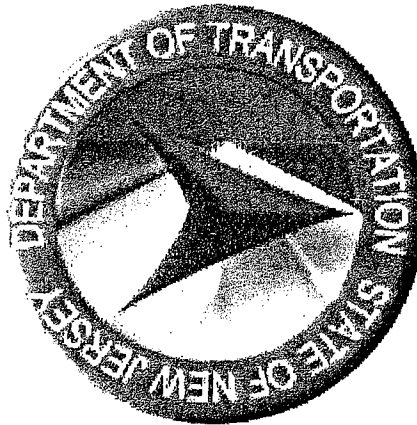
Cost Comparison Methods

Method #	Short Title	Description	Used By:	Comments
1	Comparable Project	Actual costs for different projects that are considered to be of similar size, scope and complexity	Generic	Sometimes difficult to find adequate sample size of comparable projects.
2	Actual Consultant vs Simulated In-House	Actual consultant costs on a project are compared to simulated in-house costs on the same project.	Louisiana	Assumes the staff hours used are equal. Isolates staff and overhead cost differentials.
3	Actual In-House vs Simulated Consultant	Actual in-house costs on a project are compared with simulated consultant costs on the same project using normal formulas used to estimate consultant contract costs.	Louisiana and Missouri	Allows the staff hours to differ. Requires reliable cost estimation model for consultant costs.
4	Total Cost Per Production Hour	Actual costs for different projects relative to staff hours expended.	Louisiana	Assumes staff hours are equal. Isolates staff and overhead cost differentials but does not rely on simulated costs like Method 2.
5	Design Costs as a % of Construction Costs	Compares ratio of design costs to total construction costs. Sometimes done with paired projects of similar complexity and other times done on project pools without regard to complexity	California, Texas, Missouri, Others	Uses actual costs for different projects but attempts to eliminate the effect of size by comparing to construction costs. However, other design effort factors which do not impact construction costs have made this measure unreliable.

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**ADVISABILITY STUDY
FY 2007**

**NEW JERSEY DEPARTMENT OF
TRANSPORTATION**



DESIGN PROJECTS
In-house vs. Consultant Costs

Prepared by

*Division of Budget
Bureau of Program Analysis*

January 2008

EXECUTIVE SUMMARY

During 2003, the Division of Budget, Bureau of Program Analysis, was asked to determine whether it is more cost effective to design road and bridge projects using in-house forces or consultant forces. The 2007 labor agreement between CWA and the State contains a clause that required the NJDOT to "update" the cost study for the design of road and bridge projects. The scope of the 2003 and 2007 studies analyzes completed design projects.

We used the Reason Foundation report "How to Compare Costs Between In-House and Contracted Services" as the basis for what costs and factors should be included in this type of analysis. We have used this model for about 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. We supplemented that methodology with a recent Transportation Research Board (TRB) publication ("In House vs. Consultant Design Costs in State Departments of Transportation," Record 1654, Paper 99-1403) that suggests different methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, TRB indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program.

The TRB report suggested using multiple methods for design work since each method has strengths and weaknesses. Accordingly, we applied the two primary methods recommended by TRB. Actual Consultant vs. Simulated In-house was the first methodology applied. This methodology compares actual consultant costs to simulated in-house costs using the same project. The methodology assumes the staff-hours required are equal and isolates salary and overhead cost differentials. Actual In-house vs. Simulated Consultant was the second methodology used. This methodology compares costs for designs from completed in-house projects to the costs that would have been paid to consultants if the work had been contracted out. The consultant costs and hours were estimated using the Department's Independent Cost Estimating System (ICES).

The Bureau of Program Analysis, working with the Bureaus of Design Services and Program Support Services identified the consultant/NJDOT design projects to be analyzed. The source for the project selection was a listing of design projects completed by in-house staff and consultants during fiscal years 2006 and 2007.

We computed both "avoidable" cost and fully allocated costs. Avoidable costs are

those that represent real out-of-pocket budget savings versus fully allocated costs, which include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs vs. fully allocated consultant costs is not appropriate for estimating actual cost savings.

The avoidable and fully allocated costs per design project are shown in Table A. The table also shows the cost differential between the fully allocated cost and avoidable cost of consultants and in-house forces for the six selected simulated in-house projects. All projects were cheaper using in-house forces except for the Parsons BFG project using the full cost allocation method:

Table A
Total Costs for Actual Consultant versus Simulated In-House Design Projects

Job #	Description Consultant	Consultant Performance Costs		In-House Performance Costs		Avoidable Full Cost	
		Avoidable Cost *	Full Cost Allocation *	Avoidable Cost	Full Cost Allocation	Cost Difference	Allocation Difference
1809508	French & Parrello	\$417,731	\$417,731	\$220,497	\$289,838	47.22%	30.62%
5707312	Arora	\$945,261	\$945,261	\$536,501	\$704,375	43.24%	25.48%
0722509	HNTB	\$535,178	\$535,178	\$335,259	\$441,143	37.36%	17.57%
1021509	ParsonsBFG	\$865,193	\$865,193	\$730,153	\$960,758	15.61%	(11.05)%
1402522	Cherry Weber	\$557,047	\$557,047	\$342,244	\$450,335	38.56%	19.16%
0101519	Taylor Wiseman & Taylor	\$327,697	\$327,697	\$199,628	\$262,153	39.08%	20.00%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

Table B shows the fully allocated cost and avoidable cost comparison of simulated consultant versus actual in-house for the five selected in-house projects. All projects were cheaper using in-house staff when using both the avoidable cost and full cost allocation methods.

Table B
Total Costs for Simulated Consultant vs. Actual In-House
Design Projects

Description	ICES Hours	Consultant Avoidable Cost *	Consultant Full Cost Allocation *	DOT Hours	In-house Avoidable Cost	In-House Full Cost Allocation	Avoidable Cost Difference	Full Cost Allocation Difference
Rt. 50 over South River	3,509	\$332,301	\$332,301	3,129	\$183,464	\$241,605	44.79%	27.29%
West Oak St. Bridge	7,824	\$740,929	\$740,929	3,774	\$221,283	\$291,408	70.13%	60.67%
Rt. 130 Kinkora Bridge	17,790	\$1,684,704	\$1,684,704	14,937	\$875,809	\$1,153,357	48.01%	31.54%
Pedestrian Bridge Rt. 38	10,837	\$1,026,258	\$1,026,258	11,669	\$684,194	\$901,019	33.33%	12.20%
Garretson Rd Bridge	14,233	\$1,347,858	\$1,347,858	6,683	\$393,106	\$517,683	70.83%	61.59%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

Because of the small sample size of projects, we decided to perform an analysis of hourly wage rates for consultants approved for design work for comparison with NJDOT salary rates. With assistance from the Division of Accounting and Auditing, we determined that 38 firms had current design wage rates on file. The main cost components for consultants are hourly wage rates, overhead rates and fixed fee or profit margin. At NJDOT, the main cost components are hourly wage rates, fringe benefits, leave time, and indirect costs. We found that when we compared the average consultant hourly wage rates adjusted to include overhead and fixed fee to the NJDOT hourly wage rates adjusted for fringe and leave additives plus indirect cost that the NJDOT adjusted salary rates were lower than those of the consultants across most job titles. This analysis of salary rates for consultant firms performing design work supports the results obtained from the eleven completed design projects that were analyzed in this study.

Care should be exercised if a major shift of work is contemplated. While the NJDOT overhead costs used in the full cost allocation method are generally fixed and not of concern, a major increase in in-house staff could create actual incremental overhead costs. For example, if the number of staff to be hired creates the need to lease additional space, there would be an out-of-pocket budgetary impact. Similarly, it might be necessary to hire additional human resource staff and

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I. INTRODUCTION**A. Purpose**

Compare costs of designing road and bridge projects using in-house forces or consultant forces. This study updates a study conducted by the Division of Budget, Bureau of Program Analysis in 2003. The study is being updated to comply with the CWA union contract. The same methodology is used in this 2007 study as was used in the 2003 study.

B. Background

In order to meet the demands of the Department's Capital Program, NJDOT has had to rely on outside consultants for design services. Consultants provide basically the same services that the in-house personnel provide on a design project. The following table, provided by Capital Program Management (CPM), shows historical data of NJDOT and consultant personnel including the total number of projects and total construction award cost from Fiscal Years 1998 to 2007.

**TOTAL COST OF AWARDED CONSTRUCTION PROJECTS
& NUMBER OF PROJECTS BY DESIGNER**

FISCAL YEAR	IN-HOUSE DESIGN AWARD AMOUNT \$	CONSULTANT DESIGN AWARD AMOUNT \$	NUMBER OF PROJECTS IN HOUSE	NUMBER OF PROJECTS BY CONSULTANT
1998	\$15,200,000	\$291,100,000	18	33
1999	\$18,300,000	\$278,400,000	16	28
2000	\$16,500,000	\$349,400,000	9	39
2001	\$43,800,000	\$354,000,000	10	33
2002	\$24,600,000	\$332,000,000	5	24
2003	\$22,400,000	\$400,600,000	6	21
2004	\$14,700,000	\$215,600,000	6	24
2005	\$77,300,000	\$514,500,000	17	35
2006	\$58,900,000	\$490,300,000	14	26
2007 **	\$210,000,000	\$383,000,000	30	46

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Consultant design firms are selected at NJDOT based on their professional qualifications, as opposed to bidding on a contract and the contract being awarded to the lowest bidder. Under the Department's current contracting system for obtaining design services qualified consultants submit proposals that contain cost estimates that detail the number of hours and costs that will be needed to achieve the objectives provided in the Solicitation for Technical Proposals. The Department then negotiates with the selected consultant to ensure that the consultant estimate is in line with the Department's estimates (ICES). Design consultants are normally reimbursed through a cost plus fixed fee agreement. This agreement reimburses the consultant for costs (salary, overhead, direct expenses) in addition to a negotiated amount known as a fixed fee.

C. Scope

This study will analyze and compare design costs of completed design projects. Consultants completed six projects and in-house staff completed five projects. Factors other than cost were not part of the scope of this report. However, non-cost factors should be weighed as part of the decision process, some are included in the report. No conclusions were made regarding the validity or importance of these non-cost factors because it was not an element of this project.

D. Methodology

The Division of Budget uses a Reason Foundation report, "How to Compare Costs Between In-house and Contracted Services" as the basis for in-house vs. consultant cost comparisons. We have used this as our core methodology for identifying appropriate costs that should be collected and analyzed when comparing in-house and contract costs. We have used this model for about 14 years since it is the only detailed and comprehensive approach to conducting such studies that we have been able to find in literature. The methodology emphasizes a comprehensive listing of costs, particularly in-house costs that are associated with procurement and management of contracts. Also emphasized are the overhead support costs that are embedded in the contractor's fee but must be calculated separately when estimating the cost of performing a function with in-house staff.

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The methodology also requires that costs be classified as either avoidable or fully allocated. Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs, which include components such as overhead that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs vs. fully allocated consultant costs is not appropriate for estimating actual cost savings. The Reason Foundation report recommends the fully allocated cost method be applied whenever the government agency is implementing a new program and considering how it should be delivered. Avoidable costs are typically used where a change in the delivery of an existing program is contemplated. The cost comparison tables in the Appendix include separate columns for fully allocated and avoidable costs.

We also made use of a recent Transportation Research Board (TRB) publication "In House Versus Consultant Design Costs in State Departments of Transportation," Record 1654, Paper 99-1403 that suggests different methods for making "apples to apples" comparisons when the two groups have not worked on comparable projects or programs. In those instances, the TRB report indicates that actual costs for one group can be compared with simulated costs of the other group on the same project or program. As a result, we have identified several different tools that can be used for making cost comparisons depending on the circumstances of the projects being examined (See Appendix for Cost Comparison Methods table).

These cost comparison methods are as follows:

1. Comparable Project
2. Actual Consultant vs. Simulated In-house
3. Actual In-house vs. Simulated Consultant
4. Total Cost Per Production Hour

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The comparable project methodology compares actual costs for different projects that are considered to be of similar size, scope and complexity. In the prior study, a request was made to Project Management to match in-house projects with comparable consultant projects. This could not be done for two reasons: NJDOT staff are generally designing less complex projects and because each design project is "unique" making project matching extremely difficult.

The Actual Consultant vs. Simulated In-house is one methodology used for this study. This methodology compares actual consultant costs to simulated in-house costs on the same project. It assumes that the staff-hours required are equal and isolates salary and overhead cost differentials. In addition, the Actual In-house vs. Simulated Consultant methodology was used. This methodology compares costs for designs from completed in-house projects to the costs that would have been paid to consultants if the work had been contracted out. The consultant costs and hours were estimated using the Department's Independent Cost Estimating System (ICES).

The population of projects used to identify the samples for this study were designs completed in fiscal years 2006 and 2007. The Bureau of Program Analysis working with the Bureau of Design Services and Capital Program Support identified 15 projects completed by diverse consultants and 6 projects completed by in-house staff. The sample population of 15 consultant projects was reviewed and design projects involving signing, and landscaping, improvements were purged. Special projects, such as, park and ride lots and pedestrian crossings were also purged. The remaining consultant projects were reviewed to determine if exceptional environmental or engineering work was required during design and those projects were removed from the consultant sample population reducing the pool to 6. Further these projects were analyzed for work in the preliminary engineering or final phase. Several projects in the pool had invoices going back to 1998 and work may have been suspended over the time period. Therefore the study attempted to limit work to design activities to target work that was completed recently. The sample population of in-house projects was reviewed and 5 projects represent the type of design work that is similar to the type of design work that consultants are performing.

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For the Actual Consultant vs. Simulated In-house methodology, Stripped Activity Reports by Job Number were used to identify invoice payments to consultants. Consultant invoices were obtained either electronically from File Net or from the files in the Division of Accounting and Auditing. All invoices for each project were reviewed, costs were extracted and a detailed spreadsheet was created for each invoice. Costs attributed to all individuals associated with consultants and sub-consultants were identified. The amounts paid to the consultants for overhead and fixed fee were also included in the cost detail spreadsheets. Direct expenses from consultant projects were not included in this analysis because we were unable to determine equitable in-house direct expenses.

The first step in determining simulated in-house costs was to convert the job titles of the consultant's staff into equivalent NJDOT titles. The Bureau of Construction Services, Division of Procurement provided tables for the conversion of consultant job titles to NJDOT equivalents. The simulated in-house methodology is based on the assumption that the same number of hours worked by each consultant title would be converted into NJDOT equivalent hours. To calculate a base payroll cost, an hourly rates in effect at the time of the project as stated in the Department of Personnel Compensation Compendium Guide was used. Additionally, we used the maximum pay step (9th) for each title range due to the senior work force within the Design units. No premium time or overtime was used for the design projects. A fringe and leave additive and indirect cost rate were applied to the base payroll.

The basis for the Actual In-house vs. Simulated Consultant methodology is the Department's Independent Contract Estimating System (ICES). Using ICES, the Bureau of Program Support Services provides estimates of hours needed and costs by project, which is used for negotiating a contract with a selected consultant. The Bureau of Civil Engineering provided project descriptions, construction costs, scopes of work, and activity schedules for the five selected projects.

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Because of the small sample size of projects, we decided to perform an analysis of hourly wage rates for consultants approved for design work for comparison with NJDOT salary rates. With assistance from the Division of Accounting and Auditing, we determined that a total of 38 firms had current design wage rates on file. The hourly wage rates were obtained from a listing of individual employee wage rates by title and ASCE Grade applicable to NJDOT design projects. These listings are submitted by consultants to the Division of Procurement for approval. Using the six completed consultant design projects as a basis, we were able to identify fifteen unique job titles. The current overhead rates for the 38 firms were obtained from the Division of Accounting and Auditing, Bureau of Auditing, and an average overhead rate was calculated. From this data, we were able to calculate an average hourly rate for each title. Using the average hourly wage rates as the base, we applied the average overhead rate. Finally, an average fixed fee of 24 percent was applied to the average hourly wage rate.

The Bureau of Construction Services, Procurement, provided tables for the conversion of consultant job titles to NJDOT equivalents. In order to equate the consultant rates to NJDOT rates, we extracted the hourly wage rates for comparable titles from the Department of Personnel Compensation Compendium Guide for Fiscal Year 2006. We used the 9th step of the comparable range for each title. The Department's FY 2006 fringe benefit and leave additives plus the single composite overhead rates for Roadway Design and Bridge Design were applied to the NJDOT wage rates.

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Using this data, ICES calculated the total consultant hours per project. An average FY 2006 wage rate weighted by task group was applied to the estimated consultant hours per project to determine salary costs. An average overhead rate and fixed fee rate were applied to the salary costs to calculate the total estimated consultant costs per project. To ensure an "apples to apples" cost comparison, actual FMIS in-house costs per project were not used. Instead, actual in-house hours were used and an average wage rate weighted by task group was applied to determine the in-house salary costs. Additionally, leave and fringe benefit additives and an overhead rate (roadway or bridge) were applied to calculate a total in-house cost per project.

To determine an indirect cost rate, for the purpose of this study, the Division of Budget calculated a single composite overhead rate based upon the methodology used in a TRB Study. One overhead rate was computed for Roadway Design and another rate for Structural Design. The overhead rates were calculated at several organizational levels. Step one was to determine a Department-wide overhead rate using the NJDOT FY 2006 Cost Allocation Plan for General and Administrative costs plus risk management costs. Step two identified the costs of upper management (Assistant Commissioner CPM), second tier management (CPM support units), and third tier management (Division Director) that provided supervision to the Geometric and Structural Design units. Step three determined the non-project time of both Design units including training, and administration. By incorporating unproductive (down) time into the overhead, the impact of unreliable in-house cost data can be minimized. Step three cost estimates were added to the two previous steps and used to calculate a single composite overhead rate of 108.29 percent for Roadway Design and 81.36 percent for Structural Design that incorporates all three levels (see Appendix for calculations). These overhead rates are applied to direct salary.

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II. Findings

A. Consultant Design Procurement Process

Consultants are awarded a Cost Plus Fixed Fee contract for design projects. Design selections follow the Qualification Based System (QBS) used by NJDOT's Consultant Selection Committee. The firms are selected based on qualification and technical merit. Once the selection is made, the contract cost is negotiated based on the audit advisory report. There is no price competition in the selection process.

B. Consultant Design Cost

The cost components for a Cost Plus Fixed Fee contract are direct consultant labor costs, consultant overhead costs, profit margin or fixed fee, and direct consultant expenses. The source of this cost data is invoices submitted by the consultant.

In addition to the consultant costs, there are in-house administration costs associated with consultant contracts. NJDOT uses a system called ICES, Independent Consultant Estimating System, to estimate planned person-hour allotments and skill level guidelines for each design project. There are costs to negotiate a consultant contract, costs to monitor a consultant contract, costs to perform pre-award and audit consultant costs, costs to process a consultant agreement and costs to pay a consultant. Other costs associated with consultant contracts include work required to select consultants such as posting solicitations, rating technical proposals, preparing consultant selections, debriefing consultants, etc. In-house salary costs associated with consultant contracts can be identified through timesheet charges to the design job number. Notwithstanding that the contract administration costs appear to be low, for this analysis an assumption will be made that all costs charged to the six consultant contracts selected are accurate. The following table illustrates the contract administration costs as a percentage of total consultant invoice costs for the six consultant projects used in this study:

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Table 1
Contract Administration Costs
By Consultant

Job Number	Consultant Name	Contract Administration Salary Costs	Percent of Total Consultant Invoice Cost
1809508	French & Parrello	\$272	0.06%
5707312	Arora & Associates	\$1,048	0.11%
0722509	HNTB	\$132	0.03%
1021509	ParsonsBFG	\$485	0.05%
1402522	Cherry Weber & Associates	\$19	0.003%
0101519	Taylor Wiseman & Taylor	\$702	0.21%

According to the Reason Foundation, a reasonable estimate for contract administration costs is between 10 and 20 percent of consultant costs. Based on the information contained in the above table, the contract administration costs for the six consultants are significantly below this range.

C. Actual Consultant vs. Simulated In-house Design Costs

A total of six projects designed by six different consultants were selected for comparison using the Actual Consultant vs. Simulated In-House methodology. The design projects were identified with the assistance of the Bureau of Project Support Services. A comparison of the fully allocated direct and indirect costs associated with the six projects revealed that it was generally more cost effective to use in-house staff in five of the six projects.

An analysis of the six projects is as follows;

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1. Job Number: 1809508 Consultant: French and Parrello

Project Description: This project will replace the route 202 structure over Mine Brook. The existing structure has been classified as structurally deficient and functionally obsolete due to poor and substandard width for current traffic volumes.

Cost Summary - Consultant Services

Expense Item	Cost
Payroll (French & Parrello)	\$117,910
Overhead (184%)	\$216,990
Subtotal	\$334,900
Fixed Fee (22%)	\$25,916
Subtotal	\$360,816
Subconsultant:	
Malick	\$52,890
TBE	\$5,881
TOTAL CONSULTANT	\$419,587
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$272
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$0
Fringe & Leave (68.05%)	\$185
TOTAL (CONSULTANT & In-House)	\$420,044

Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$116,208
Fringe & Leave (68.05%)	\$79,231
Indirect Costs (81.36%)	\$94,547
Total	\$289,986

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2. Job Number: 570312 Consultant: Arora and Associates P.C.

Project Description: Chesterfield – Sykesville Road Bridge over Blacks Creek. This project includes replacement of the historic structure carrying Chesterfield-Sykesville Road over Black's Creek, as well as roadway improvements to various substandard geometric features.

Cost Summary - Consultant Services

Expense Item	Cost
Payroll (Arora)	\$324,338
Overhead (160%)	\$518,941
Subtotal	\$843,279
Fixed Fee (25.5%)	\$82,544
Subtotal	\$925,823
Subconsultant:	
Greene	\$25,022
TOTAL CONSULTANT	\$950,845
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$1,048
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$0
Fringe & Leave (69.01%)	\$723
TOTAL (CONSULTANT & In-House)	\$952,616

Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$281,337
Fringe & Leave (69.01%)	\$194,150
Indirect Costs (81.36%)	\$228,896
Total	\$704,383

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3. Job Number: 0722509 Consultant: HNTB

Project Description: Route 46, Section 52 Intersection Improvements. Operational, safety and intersection interim improvements at Rt. 46 / Rt. 159 Clinton Road and Plymouth Street in the township of Fairfield and Montville, Counties of Essex and Morris. Due to the high volume of traffic, inadequate storage and numerous conflict points, traffic backs up within the intersection resulting in a high incidence of accidents and operational deficiencies.

Cost Summary - Consultant Services

Expense Item	Cost
Payroll (HNTB)	\$177,980
Overhead (148%)	\$263,411
Subtotal	\$441,391
Fixed Fee (24%)	\$42,644
Subtotal	\$484,035
Subconsultant:	
Amercom	\$43,904
Taylor Wiseman & Taylor	\$10,844
TOTAL CONSULTANT	\$538,783
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$132
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$0
Fringe & Leave (66.60%)	\$87
TOTAL (CONSULTANT & In-House)	\$539,002

Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$160,480
Fringe & Leave (66.06%)	\$120,890
Indirect Costs (108.29%)	\$173,984
Total	\$455,354

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4. Job Number: 1021509 Consultant: Parsons Brinkerhoff – FG, Inc

Project Description: Case Blvd / US Rt. 202 NJDOT. This project will provide continuity to Case Boulevard Across Rt. 202. The project will provide traffic relief for heavily congested Rt. 31 corridor north of the Flemington circle in Flemington and Raritan.

Cost Summary - Consultant Services

Expense Item	Cost
Payroll (Parsons)	\$331,777
Overhead (136%)	\$451,549
Subtotal	\$783,326
Fixed Fee (23%)	\$76,588
Subtotal	\$859,914
Subconsultant:	
Carpenter	\$11,440
TOTAL CONSULTANT	\$871,354
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$325
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$160
Fringe & Leave (66.6%)	\$323
TOTAL (CONSULTANT & In-House)	\$872,162

Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$349,506
Fringe & Leave (66.6%)	\$232,770
Indirect Costs (108.29%)	\$378,480
Total	\$960,756

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5. Job Number: 1402522 **Consultant:** Cherry Webber**Project Description:** Route 10 Drainage Improvements. Drainage and geometric improvements to reduce flooding in the vicinity of milepost 14.20.**Cost Summary - Consultant Services**

Expense Item	Cost
Payroll (Cherry Weber)	\$162,601
Overhead (155%)	\$251,870
Subtotal	\$414,471
Fixed Fee (25%)	\$41,089
Subtotal	\$455,560
Subconsultant:	
K & S	\$92,022
Greene	\$13,129
TOTAL CONSULTANT	\$560,711
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$19
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$0
Fringe & Leave (66.6%)	\$13
TOTAL (CONSULTANT & In-House)	\$560,743

Cost Summary - NJDOT

Expense Item	Cost
Payroll	\$163,824
Fringe & Leave Additive (66.6%)	\$109,106
Indirect Cost (108.29%)	\$177,405
TOTAL	\$450,335

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6. Job Number: 0101519 Consultant: Taylor Wiseman & Taylor

Project Description: Route 9 and Tilton Road City of Northfield. This project calls for the widening of four approaches, signal improvements and the grading and paving of the intersection.

Cost Summary – Consultant Services

Expense Item	Cost
Payroll (Taylor)	\$101,375
Overhead (176%)	\$178,552
Subtotal	\$279,927
Fixed Fee (15.6%)	\$15,794
Subtotal	\$295,721
Subconsultant:	
Greene	\$10,474
Brinkerhoff	\$5,293
Malick	\$16,393
TOTAL CONSULTANT	\$327,881
In-House Consultant Support Costs	
Consultant Supv. (Base Pay)	\$702
Procurement (Base Pay)	\$0
Contract Auditing (Base Pay)	\$0
Fringe & Leave (68.35%)	\$470
TOTAL (CONSULTANT & In-House)	\$329,053

Cost Summary – NJDOT

Expense Item	Cost
Payroll	\$94,763
Fringe & Leave Additive (68.35%)	\$64,770
Indirect Cost (108.29%)	\$102,619
TOTAL	\$262,152

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The cost tables for the six projects above examined the actual consultant fully allocated cost for a design project and compared it to the simulated in-house fully allocated cost on the same project. The table shows in five of the six projects analyzed, it is generally more cost effective to perform the design work with in-house staff rather than with consultants. Of these six projects, the overhead rate varied from a low of 136 percent to a high of 184 percent. The table below shows the overhead rate approved for each of the projects analyzed.

Table 2
Consultant Overhead Rate

Job Number	Consultant	Overhead Rate
1809508	French & Parrello	184%
5707312	Arora & Associates	160%
0722509	HNTB	148%
1021509	ParsonsBFG	136%
1402522	Cherry Weber & Associates	155%
0101519	Taylor Wiseman & Taylor	180%

D. Actual In-house Design Costs vs. Simulated Consultant Costs

Five projects designed by In-House forces were selected for comparison using the Actual In-House vs. Simulated Consultant methodology. The design projects were identified with the assistance of the Bureau of Project Support Services. A comparison of the fully allocated direct and indirect costs associated with the five projects indicates that it was more cost effective to use in-house staff. An analysis of the five projects is as follows:

The table shows the cost comparison of recommended consultant costs versus actual in-house costs for the five selected projects.

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Table 3
Total Costs for Simulated Consultant vs. Actual In-House
Design Projects

Description	ICES Hours	Consultant Avoidable Cost *	Consultant Full Cost Allocation *	DOT Hours	In-house Avoidable Cost	In-House Full Cost Allocation	Avoidable Cost Difference	Full Cost Allocation Difference
Rt. 50 over South River	3,509	\$332,301	\$332,301	3,129	\$183,464	\$241,605	44.79%	27.29%
West Oak St. Bridge	7,824	\$740,929	\$740,929	3,774	\$221,283	\$291,408	70.13%	60.67%
Rt. 130 Kinkora Bridge	17,790	\$1,684,704	\$1,684,704	14,937	\$875,809	\$1,153,357	48.01%	31.54%
Pedestrian Bridge Rt. 38	10,837	\$1,026,258	\$1,026,258	11,669	\$684,194	\$901,019	33.33%	12.20%
Garretson Rd Bridge	14,233	\$1,347,858	\$1,347,858	6,683	\$393,106	\$517,683	70.83%	61.59%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

The table above shows that a major determining factor for cost effectiveness is the number of hours. Using fully allocated cost, the five projects in which the number of NJDOT hours is less than the consultant ICES hours are less expensive to design by in-house forces. However the one project in which the number of NJDOT hours exceeds the consultant ICES hours also is less expensive using fully allocated cost. This shows that the main factor affecting project cost is personnel cost per hour. Program Support Services (using our project cost component analysis data) developed an average weighted hourly wage rate for both consultants and in-house staff. The average weighted hourly rates, which are based on an average project staffing mix, are \$35.92 for consultants and \$31.14 for in-house. The difference in the hourly rates is \$4.78. However, when a multiplier of 166 percent (142 percent overhead plus 24 percent fixed fee) is applied to the consultant hourly rate of \$35.92 the adjusted hourly rate is \$95.55. For the in-house calculation, when leave, fringe benefit, and overhead additives are applied to the hourly rate of \$31.14, the adjusted hourly rates are \$85.60 for in-house road design and \$77.13 for in-house bridge design. The hourly differences of \$9.95 for road and \$18.42 for bridge become determining factors when in-house and consultant hours are equal or in proximity of each other.

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E. Project Cost Component Analysis

In addition to the eleven projects that were analyzed, the Division of Procurement provided an additional eighteen consultant firms that had current pre-qualified design title wage rates on file. As discussed earlier in the report, the main consultant cost components on a design project are hourly wage rates, overhead rates and fixed fee.

Hourly Wage Rates – For the eighteen consultant firms that had filed design wage rates with the DOT, in the spring of 2006, We determined that the differences in the average hourly wage rates between NJDOT comparable titles and consultant titles are insignificant across most titles. DOT wage rates in effect at that time were used in the comparison See Appendix for hourly wage rate table.

Overhead Rate - The current average consultant overhead rate for the 68 consultants who have overhead rates filed with the department is 141.8 percent. The overhead rates are from firms that filed in 2006 or an average of the five previous years. The overhead rate ranges from a high of 202 percent to a low of 106 percent with a median of 140 percent. The current overhead rate for the primary consultant firms on the projects analyzed in this study are shown as shaded in the table below.

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Table 4
Listing of Firms Overhead Rate

FIRM NAME	OVERHEAD RATE
Advanced Infrastructure	144%
Abbington Associates, Inc.	161%
Amercom Corp.	106%
Ammann & Whitney Consulting Engineers, P.C.	122%
Arora & Associates, P.C.	150%
BET Engineering	140%
Bergman Associates	150%
Boswell Engineering	129%
Buchart-Horn, Inc.	160%
Chas. H. Sells, Inc.	139%
Cherry Weber & Associates, P.C.	144%
Chilton Engineering, Inc	154%
Churchill, P.C.	137%
Clough Harbour & Associates LLP	159%
CME Assoc.	118%
Dewberry- Goodkind Inc.	122%
DMGM+HARRIS, Inc.	130%
Earth Tech, Inc.	153%
Edwards and Kelcey, Inc	151%
Fay, Spofford & Thorndike, LLC	145%
Figg Bridge Engineers, Inc.	174%
French & Parrello Associates, P.A.	202%
Garnett Fleming, Inc.	155%
Geod Corp.	135%
Gibson Associates, P A.	138%
Greenman-Pedersen, inc.	144%

HAKS Engineering, P.C.	125%
Hardesty & Hanover, LLP	139%
Harold Pellow	125%
HDR Engineering, Inc.	165%
HNTB Corporation	150%
IH Engineers	120%
Infra tech. Assoc.	138%
Jacobs Civil Inc.	121%
Jenny Engineering Corporation, Inc	140%
KMA Consulting Engineers, PC	130%
KS Engineers, P.C.	124%
L. Robert Kimball & Assoc.	186%
Lichtenstein Consulting Engineers, Inc.	154%

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Lord, Worrell & Richter, Inc.	125%
Louis Berger Group, Inc.	139%
Maguire group, Inc.	131%
Maitra Associates, PC	118%
Maser Consulting, P.A.	168%
McCormick Taylor, Inc.	150%
Medina Consultants, P.C.	136%
Michael Baker Jr. , Inc.	152%
Modjeski & Masters, Inc.	156%
Naik Prasad, Inc.	133%
Orth- Rodgers & Associates, Inc.	152%
Parsons Transportation Group, Inc.	122%
Pennoni Associates, Inc.	124%
Pickering, Corts & Summerson, Inc.	168%
Polytran Engineering associates P.C.	166%
QBS International, Inc.	165%
RBA Group, The	108%
Remington & Vernick Engineers, Inc.	119%
Schoor, DePalma, Inc.	172%
Site-Blauvelt Engineers, Inc.	143%
STV Incorporated	122%

T & M Associates	170%
T.Y. Lin International	168%
Taylor, Wiseman & Taylor	180%
Urban Engineers, Inc.	127%
Urbitran Associates, Inc.	125%
URS Corporation	121%
Vollmer Associates LLP	136%
Wilbur Smith & Associates	167%
Total	9742%
Average	141.8
Median	140%

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While the average consultant overhead rate is 142 percent, the NJDOT comparable overhead rate (fringe + leave + indirect) is 175 percent for road design and 148 percent for bridge design projects.

Fixed Fee or Profit Margin - In addition to the hourly wage rate and overhead rate, the consultants are paid a fixed fee or profit margin. The fixed fee is a set amount stated in the agreement. The fixed fee is a negotiated percentage of the original contract estimate for direct consultant labor costs (18 percent - 30 percent). For purposes of this study, we used an average fixed fee of 24% applied to direct consultant labor costs.

As stated earlier, the main consultant cost components are hourly wage rates, overhead rates, and fixed fee. At NJDOT, the main cost components are hourly wage rates, fringe, leave, and indirect costs. We compared the consultant costs of the fifteen job titles used on design projects (road and bridge) to NJDOT costs for comparable titles. In road design, we found that in twelve of the fifteen wage grades, the NJDOT rates were lower than the consultants wage rates. For bridge design, fourteen NJDOT rates were lower.

The following table compares the average consultant hourly rates by title adjusted for average overhead and fixed fee to the NJDOT hourly rates by title adjusted for leave and fringe benefit additives and overhead (civil design and bridge design).

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In-house vs. Consultant Costs

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Table 5**Comparison of Hourly Wage Rate + Fixed Fee**

Title	ASCE Grade	Consultant Hrly Wage Rate	Consult. Hrs + Overhead (142%)	Consult. Hrs + Overhead + Fixed Fee (24%)	NJDOT Hourly Wage Equiv.	NJDOT Hrs + Overhead Road (174.89%)	NJDOT Hrs + Overhead Bridge (147.96%)	NJDOT Hourly Wage Diff	NJDOT Diff Hrly Rate + OH + FF (Road)	NJDOT Diff Hrly Rate + OH + FF (Bridge)
Principal	P-IX	\$78.77	\$168.82	\$186.82	\$65.93	\$181.23	\$163.48	(\$12.84)	(\$28.35)	(\$46.10)
Managing Engr	P VIII	\$68.66	\$153.61	\$169.99	\$61.07	\$167.88	\$151.43	(\$7.59)	\$21.96	\$5.51
Project Mgr.	P VII	\$57.83	\$137.05	\$151.67	\$52.76	\$145.03	\$130.82	(\$5.07)	(\$3.41)	(\$17.62)
Project Mgr.	P VI	\$50.62	\$108.50	\$120.07	\$42.88	\$117.87	\$106.33	(\$7.74)	(\$12.18)	(\$23.73)
Principal Eng	P V	\$44.55	\$96.46	\$106.75	\$40.27	\$110.70	\$99.85	(\$4.28)	(\$6.95)	(\$17.79)
Engineer	P IV	\$39.17	\$84.98	\$94.05	\$35.00	\$96.21	\$86.79	(\$4.17)	(\$15.48)	(\$24.90)
Engineer	P III	\$32.26	\$71.64	\$79.28	\$30.44	\$83.68	\$75.48	(\$1.82)	(\$24.24)	(\$32.44)
Engineer	P II	\$28.36	\$58.57	\$64.81	\$26.51	\$72.87	\$65.73	(\$1.85)	(\$21.94)	(\$29.08)
Engineer Trainee	P I	\$24.13	\$57.38	\$63.17	\$21.53	\$59.18	\$53.39	(\$2.60)	(\$15.60)	(\$21.40)
Prin eng Design	ET 5	\$36.38	\$94.39	\$104.46	\$29.07	\$79.91	\$72.08	(\$7.31)	(\$24.06)	(\$31.89)
Sr Eng. Design	ET 4	\$29.07	\$68.85	\$76.19	\$25.31	\$69.57	\$62.76	(\$3.76)	(\$10.16)	(\$16.98)
Sr Eng. Design	ET 3	\$26.05	\$56.00	\$61.98	\$23.08	\$63.44	\$57.23	(\$2.97)	(\$15.50)	(\$21.72)
Engr. Design	ET 2	\$23.29	\$52.40	\$57.99	\$21.07	\$57.92	\$52.25	(\$0.00)	(\$13.10)	(\$18.77)
Engr. Design	ET 1	\$21.07	\$42.86	\$47.43	\$17.54	\$48.22	\$43.49	\$1.35	\$1.79	(\$2.93)
Adm. Tech typist	CL	\$16.19	\$37.13	\$41.09	\$22.04	\$60.59	\$54.65	\$0.95	\$1.70	(\$4.23)
OVERHEAD RATE & FIXED FEE				***166%						

*** Represents 24 percent fixed fee based on consultant hourly wage rate only.

This analysis of current average wage rates for the (38) consultant firms performing design functions supports the results obtained from the eleven completed design projects that were analyzed in this study. Based upon the findings of this analysis, it is highly unlikely that a larger sample size of projects would produce different results.

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E. Additional Findings

1. In-house staff is given first right of refusal for new design projects. The mix of projects to be completed in-house is selected to match staffing levels. In-house design stays away from large projects that require dedicated staff because it reduces their flexibility. In addition, consultants are performing unique projects that require a high degree of public participation and elaborate graphic presentations. Projects that require a high degree of permitting (e.g., Army Corps of Engineers, DEP, etc.) are also being done by consultants.
2. One of the overhead issues in the in-house design units pertains to providing service to the public. In-house staff receive calls and correspondence from the public that are handled internally whether the project is being worked on by in-house staff or consultants.
3. In analyzing the Stripped Activity Reports, it is important to note that there appears to be inaccuracies in recording the proper function codes on time sheets related to costs of contract preparation and contract management as the percentage of contract administration costs to total consultant cost is extremely low. This problem could also be the result of not using the proper job number.

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III. Summary, Conclusions, and Recommendations

A. Summary and Conclusions

In summary, our analysis indicates that in ten of the eleven projects it is more cost effective to design projects in-house. The cost differential ranges from a high of 61.59 percent to a low of 12.2 percent for the ten projects that would be less costly to design with in-house forces. For the one project calculated to be less costly to use consultants, the differential was 11.05 percent.

Avoidable costs are those that represent real out-of-pocket budget savings versus fully allocated costs that include certain components, such as overhead, that are not easily reduced or eliminated in the short term. The use of fully allocated in-house costs versus fully allocated consultant costs is not appropriate for estimating actual cost savings. The avoidable and fully allocated costs per design project are shown in Table 6. The table also shows the cost differential between the fully allocated cost and avoidable cost of consultants and in-house forces for the six selected simulated in-house projects:

Table 6
Total Costs for Actual Consultant vs. Simulated In-House Design Projects

Job #	Description Consultant	Consultant Performance Costs		In-House Performance Costs		Avoidable Full Cost	
		Avoidable Cost *	Full Cost Allocation *	Avoidable Cost	Full Cost Allocation	Cost Difference	Allocation Difference
1809508	French & Parrello	\$417,731	\$417,731	\$220,497	\$289,838	47.22%	30.62%
5707312	Arora & Associates	\$945,261	\$945,261	\$536,501	\$704,375	43.24%	25.48%
0722509	HNTB	\$535,178	\$535,178	\$335,259	\$441,143	37.36%	17.57%
1021509	ParsonsBFG	\$865,193	\$865,193	\$730,153	\$960,758	15.61%	(11.05)%
1402522	Cherry Weber	\$557,047	\$557,047	\$342,244	\$450,335	38.56%	19.16%
0101519	Taylor Wiseman & Taylor	\$327,697	\$327,697	\$199,628	\$262,153	39.08%	20.00%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

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In-house vs. Consultant Costs

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Table 7 shows the fully allocated and avoidable cost comparison of simulated consultant versus actual in-house for the five selected simulated consultant projects. The table also shows the cost differential for fully allocated and avoidable costs.

Table 7
Total Costs for Simulated Consultant vs. Actual In-House
Design Projects

Description	ICES Hours	Consultant Avoidable Cost *	Consultant Full Cost Allocation *	DOT Hours	In-house Avoidable Cost	In-House Full Cost Allocation	Avoidable Cost Difference	Full Cost Allocation Difference
Rt. 50 over South River	3,509	\$332,301	\$332,301	3,129	\$183,464	\$241,605	44.79%	27.29%
West Oak St. Bridge	7,824	\$740,929	\$740,929	3,774	\$221,283	\$291,408	70.13%	60.67%
Rt. 130 Kinkora Bridge	17,790	\$1,684,704	\$1,684,704	14,937	\$875,809	\$1,153,357	48.01%	31.54%
Pedestrian Bridge Rt. 38	10,837	\$1,026,258	\$1,026,258	11,669	\$684,194	\$901,019	33.33%	12.20%
Garretson Rd Bridge	14,233	\$1,347,858	\$1,347,858	6,683	\$393,106	\$517,683	70.83%	61.59%

*Consultant Performance Costs (Avoidable & Full Cost Allocated) have been adjusted to reflect taxes paid by the consultant to the State.

The Division of Accounting and Auditing provided the names of eighteen consultant firms that had pre-qualified design title wage rates on file. Our analysis of these consultants shows that when we compared the average consultant hourly wage rate adjusted for average overhead and fixed fee to the NJDOT hourly wage rates adjusted for overhead (fringe + leave + indirect) that NJDOT rates are lower than the consultants' rates across most job titles. This analysis supports the results obtained from the eleven completed design projects that were analyzed in this study.

Care should be exercised if a major shift of work is contemplated. While the NJDOT overhead costs used in the full cost allocation method are generally fixed and not of concern, a major increase in in-house staff could create actual incremental overhead costs. For example, if the number of staff to be hired creates the need to lease additional space, there would be an out-of-pocket budgetary impact.

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In-house vs. Consultant Costs

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Similarly, it might be necessary to hire additional human resource staff and IT staff to support the new staff and associated computers. In order to ensure the cost savings suggested by this report are realized, impacts on support costs need to be assessed if a significant shift of workload is contemplated.

B. Recommendations

1. Other factors relevant to staffing increases should be considered before hiring additional qualified State engineers to perform design work.
2. If the number of engineers to be hired is significant and achievable at current State pay scales, assess the impact on support services that might be impacted such as Human Resources, IT, and Physical Plant.
3. Institute better controls to ensure that proper job numbers and function codes are included on timesheets. Additionally, Design units should ensure that job numbers are provided to other Departmental units so that all costs related to a particular project are accounted for.

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In-house vs. Consultant Costs

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Glossary of Terms for Consultant Contract

1. **Direct Consultant Labor Costs** - Actual costs taken from the final invoice submitted by the consultant.
2. **Overhead Consultant Costs** - Actual costs taken from the final invoice submitted by the consultant. The overhead rates for the six consultants used in this study are as follows:

Job Number	Consultant	Overhead Rate
1809508	French & Parrello	184%
5707312	Arora & Associates	160%
0722509	HNTB	148%
1021509	ParsonsBFG	136%
1402522	Cherry Weber & Associates	155%
0101519	Taylor Wiseman & Taylor	180%

3. **Fixed Fee/Profit Margin** - Actual costs taken from the final invoice submitted by the consultant. The fixed fee or profit margin is a negotiated percentage of the original contract estimate for Direct Consultant Labor Costs (18 percent – 30 percent).
4. **Consultant Expenses** - Actual costs taken from the final invoice submitted by the consultant. These costs were not included in the consultant project cost tables because a comparable estimate was not available for in-house expenses.
5. **Total Consultant Invoice Cost** - The total of Direct Consultant Labor, Overhead, Profit Margin. Consultant expenses were not included for reasons discussed in the report.
6. **In-house Cost to Negotiate Contract & Support Consultant** - The source

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In-house vs. Consultant Costs

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of this data is the Stripped Activity Reports by Job Number for Budget Codes DHAA and DRAA.

7. **In-house Cost to Monitor Contract** - The source of this data is the Stripped Activity report by Job Number, by Function Code.
8. **In-house Cost to Pay Consultant and Process Agreement** - The Stripped Activity Report for these job numbers did not identify any costs charged to these activities.
9. **In-house Cost to Audit Consultant Costs** - The source of this data is the Stripped Activity report by Job Number, by Function Code.
10. **Fringe and Leave Additive** - The NJDOT fringe and leave additive of 66.60% percent was applied to in-house salary costs.
11. **Taxes Paid by Consultant to State** - 9 percent of the consultant Profit Margin.

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In-house vs. Consultant Costs

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Glossary of Terms for In-house Project

1. **Direct Labor Salary Costs** - The assumption was made that the same number of hours worked by each consultant staff person would be converted into NJDOT equivalent hours. To calculate a direct labor cost, the hourly rate at the ninth step in effect at the time of the project as stated in the Department of Personnel Compensation Compendium Guide was used.
2. **Leave and Fringe Additive** - The NJDOT fringe and leave additive of .666 was applied to the Direct Labor Salary Costs.
3. **Direct Labor Overtime** - No overtime on the selected projects.
4. **Direct Labor Supply and Material Costs** - An estimate of these costs was not included because of the simulated methodology chosen for this analysis.
5. **Direct Supervision** - This cost was obtained from the Stripped Activity Reports by Job Number.
6. **Direct Clerical Support** - (units charging time to project) - Clerical support costs could not be identified to an in-house project because the project job number was not charged.
7. **Direct Support** (outside units charging time to project) - Outside support costs could not be identified to an in-house project because the project job number was not charged.
8. **Fringe & Leave Additive** - The NJDOT fringe and leave additive of in-effect during the time of the contract was applied to the Direct Supervision, Clerical Support and Support Salary Costs.
9. **Overhead Rate** - an overhead rate for the Roadway and Structural Design units was calculated and applied to direct salary. See Appendix for calculation.

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In-house vs. Consultant Costs

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APPENDIX List of Attachments:

Cost Summaries by Consultant (Simulated In-house)

Attachment #1 French & Parrello
Attachment #2 Arora & Associates
Attachment #3 HNTB
Attachment #4 Parsons BFG
Attachment #5 Cherry Weber & Associates
Attachment #6 Taylor Wiseman & Taylor

Cost Summaries by Project (Simulated Consultant)

Attachment #1 Rt. 50 over South River
Attachment #2 West Oak St. Bridge
over Rt.287
Attachment #3 Rt. 130 Kinkora Bridge
Attachment #4 Replacement of
Pedestrian Bridge
Attachment #5 Rt. 280 EB Morris &
Essex RR

Calculation of Civil Eng. Design Overhead Rate

Calculation of Structural Design Overhead Rate

Cost Comparison Methods

Hourly Rate + Overhead Rate + Fixed Fee Comparisons

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In House v Consultant		Date: July 2007	
Consultant: French & Parrello		Prepared by:	Program Analysis
Job Name: Rt 202 over Mine Brook		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$117,910	\$117,910
2. Consultant Overhead Costs		\$216,990	\$216,990
3. Consultant Profit Margin		\$25,916	\$25,916
4. Sub Consultant Costs		\$58,771	\$58,771
5. Total Consultant Invoice Costs		\$419,587	\$419,587
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$272	\$272
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs		\$204	\$204
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$2,332	-\$2,332
Total Consultant Costs		\$417,731	\$417,731
In-House Performance Costs			
1. Direct Labor Salary Costs		\$116,208	\$116,208
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$79,083	\$79,083
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$25,205	\$94,547
Total In-House Costs		\$220,497	\$289,838

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In House v Consultant		Date: July 2007	
Consultant: Arora		Prepared by: Program Analysis	
Job Name: Chesterfield Sykesville Rd Bridge			
Type of Cost		Avoidable Cost	Full Cost Allocation
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$324,338	\$324,338
2. Consultant Overhead Costs		\$518,941	\$518,941
3. Consultant Profit Margin		\$82,544	\$82,544
4. Sub Consultant Costs		\$25,023	\$25,023
5. Total Consultant Invoice Costs		\$950,846	\$950,846
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$1,048	\$1,048
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs		\$796	\$796
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$7,429	-\$7,429
Total Consultant Costs		\$945,261	\$945,261
In-House Performance Costs			
1. Direct Labor Salary Costs		\$281,337	\$281,337
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$194,142	\$194,142
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$61,022	\$228,896
Total In-House Costs		\$536,501	\$704,375

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In House v Consultant		Date: July 2007	
Consultant: HNTB		Prepared by: Program Analysis	
Job Name: Rt 46 Rt 52 Intersection Improvements		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$177,980	\$177,980
2. Consultant Overhead Costs		\$263,411	\$263,411
3. Consultant Profit Margin		\$42,644	\$42,644
4. Sub Consultant Costs		\$54,749	\$54,749
5. Total Consultant Invoice Costs		\$538,784	\$538,784
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$132	\$132
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost			
Fringe & Leave Additive on In-house Costs		\$100	\$100
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$3,838	-\$3,838
Total Consultant Costs		\$535,178	\$535,178
In-House Performance Costs			
1. Direct Labor Salary Costs		\$160,480	\$160,480
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$106,880	\$106,880
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$67,899	\$173,784
Total In-House Costs		\$335,259	\$441,143

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In House v Consultant		Date: July 2007	
Consultant: PBFG		Prepared by: Program Analysis	
Job Name: Rt 202 Case Blvd Intersection Development Design		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$331,777	\$331,777
2. Consultant Overhead Costs		\$451,549	\$451,549
3. Consultant Profit Margin		\$76,588	\$76,588
4. Sub Consultant Costs		\$11,441	\$11,441
5. Total Consultant Invoice Costs		\$871,355	\$871,355
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$325	\$325
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost		\$160	\$160
10. Fringe & Leave Additive on In-house Costs		\$245	\$245
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$6,893	-\$6,893
Total Consultant Costs		\$865,193	\$865,193
In-House Performance Costs			
1. Direct Labor Salary Costs		\$349,506	\$349,506
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$232,771	\$232,771
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$147,876	\$378,480
Total In-House Costs		\$730,153	\$960,758

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In House v Consultant		Date: July 2007	
Consultant: Cherry Weber		Prepared by: Program Analysis	
Job Name: Rt 10 Drainage Improvements		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$162,601	\$162,601
2. Consultant Overhead Costs		\$251,870	\$251,870
3. Consultant Profit Margin		\$41,089	\$41,089
4. Sub Consultant Costs		\$105,151	\$105,151
5. Total Consultant Invoice Costs		\$560,712	\$560,712
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$19	\$19
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost			
10. Fringe & Leave Additive on In-house Costs		\$15	\$15
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$3,698	-\$3,698
Total Consultant Costs		\$557,047	\$557,047
In-House Performance Costs			
1. Direct Labor Salary Costs		\$163,824	\$163,824
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$109,107	\$109,107
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$69,314	\$177,405
Total In-House Costs		\$342,244	\$450,336

Cost Comparison Form		
In-House Versus Contract Performance		
Service Under Study: Design Projects In House v Consultant	Date: July 2007	
Consultant: Taylor Wiseman & Taylor	Prepared by: Program Analysis	
Job Name: Rt 9 Grading and Paving	Avoidable Cost	Full Cost Allocation
Type of Cost		
Consultant Performance Costs		
1. Direct Consultant Labor Costs	\$101,375	\$101,375
2. Consultant Overhead Costs	\$178,552	\$178,552
3. Consultant Profit Margin	\$15,794	\$15,794
4. Sub Consultant Costs	\$32,160	\$32,160
5. Total Consultant Invoice Costs	\$327,881	\$327,881
6. In-house Cost to Negotiate Contract	\$0	\$0
7. In-house Cost to Monitor Contract	\$702.04	\$702.04
8. In-house Cost to pay consultant and process agreement	\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost	\$0	\$0
Fringe & Leave Additive on In-house Costs	\$535	\$535
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$1,421	-\$1,421
Total Consultant Costs	\$327,697	\$327,697
In-House Performance Costs		
1. Direct Labor Salary Costs	\$94,763	\$94,763
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$64,771	\$64,771
3. Direct Labor Overtime	\$0	\$0
4. Direct Labor Supply and Material Costs		
5. Direct Supervision	\$0	\$0
6. Direct Clerical Support		
7. Direct Support (outside units charging time to project)		
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support	\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$40,094	\$102,619
Total In-House Costs	\$199,628	\$262,153

French and Parrello Job Number: 1809508 Job Name: US Rt. 202 over Mine Brook Cont # 0407774 Function Code: Y505							
Straight Time Total by Employee Class - Consultant Services				Straight Time Total by Title - NJDOT			
Summary	Hours	Avg. Hourly Rate		Summary	Range	Hours	Avg. Hourly Rate
French & Parrello				Title			
Project Manager PVIII	331.5	\$56.41		Director	M-36	331.5	\$61.07
Supervising Eng PVI	260.0	\$46.20		Supv. Eng.	M-31	260.0	\$44.11
Senior Eng. PV	10.5	\$39.25		Project Engineer	S-29	10.5	\$40.27
Engineer IV	1,019.5	\$35.46		Principal Engineer	R26	1,019.5	\$35.00
Engineer III	97.0	\$28.40		Senior Engineer	P-23	97.0	\$26.59
Asst. Engineer II	481.0	\$23.44		Asst. Engineer	P-20	481.0	\$26.43
Asst. Engineer I	45.5	\$20.76		CET	P-95	45.5	\$21.34
Sr. Drafter ET4	952.5	\$28.37		Tech 2	R-19	952.5	\$25.23
Drafter ET3	34.0	\$19.87		Tech 3	A-17	34.0	\$23.01
Drafter ET2	289.0	\$24.88		Tech 4	A-15	289.0	\$21.00
Trainee ET1	8.0	\$14.50		Eng tech 5	A-11	8.0	\$17.55
Clerical	41.5	\$15.58		WP spec2	R-13	41.5	\$24.00
Total	3,570.0			Total		3,570.0	
Straight Time Sub Consultant				Straight Time Total by Title - NJDOT			
Summary	Hours	Avg. Hourly Rate		Summary	Range	Hours	Avg. Hourly Rate
Malick				Title			
PVI	97.0	\$51.98		Supvr Engineer	S-31	97.0	\$44.11
Pv	2.0	\$39.00		Project Engineer	S-29	2.0	\$40.27
Piii	321.0	\$29.51		Senior Eng	P-23	321.0	\$26.59
et1	8.5	\$16.00		Eng. Tech 5	A-11	8.5	\$17.55
ET3	154.5	\$22.94		Eng. Tech 3	A-17	154.5	\$23.01
Drft tech	59.0	\$14.46		Eng. Tech 5	A-11	59.0	\$21.00
word pro	6.5	\$14.54		Sec Asst	A-15	6.5	\$24.00
Total	648.5			Total		648.5	
Sub Consultant				Straight Time Total by Title - NJDOT			
Summary	Hours	Avg. Hourly Rate		Summary	Range	Hours	Avg. Hourly Rate
TBE				Title			
PM (pv)	2.5	\$35.00		Project Engineer	S-29	4.6	\$40.15
SUE Spr (piii)	36.75	\$33.41		Sr. Engineer	P-23	36.75	\$26.59
sue tech2	30.0	\$21.33		Eng tech 4	A 15	41.4	\$21.00
sue tech (et1)	4.6	\$12.00		Eng tech 5	A11	4.6	\$17.55
Total	73.9			Total		87.3	

Arora and Associates P.C.

Job Number: 5707312

Job Name: Chesterfield-Sykesville Rd. Bridge over Blacks Creek

Function Code: Y505

**Straight Time Total by Employee Class -
Consultant Services**

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Range	Hours	Avg. Hourly Rate
Arora			Title			
PVIII	5.0	\$73.00	Director	M36	5.0	\$59.62
PVI	672.5	\$53.32	Supvr Engineer	S-31	672.5	\$42.19
PV	2,546.0	\$43.69	Project Engineer	S-29	2,546.0	\$38.41
			Principal			
PIII	1,968.5	\$33.12	Engineer	R26	1,968.5	\$29.03
PI	4,303.5	\$24.28	CET	P-95	4,303.5	20.75
ET3	383.0	\$18.78	Eng Tech 3	A17	383.0	\$22.01
Total	9,878.5	\$0.00	Total		\$9,878.50	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Avg. Hourly Rate	Summary	Range	Hours	Avg. Hourly Rate
Greene		Title			
PIX	9.25	Asst Comm.	M-98	9.25	\$65.68
PVI	37.00	Supvr Eng	S-31	37.00	\$42.19
PIII	148.50	Sr Engineer	P23	148.50	\$29.03
PII	2.25	CET	P95	2.25	20.75
ET3	72.50	Tech 3	A17	72.50	\$22.01
Cler	28.25	Sec asst	A15	28.25	\$22.97
Total	288.50	Total		288.5	

HNTB

Job Number: 0722509

Job Name: Rt 46, Section 52 Intersection Improvements Cont # 960389

Function Code: Y505

**Straight Time Total by Employee Class -
Consultant Services**

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
HNTB			Title	Range	
Pvi	492.0	\$48.87	Supvr Engineer	S-31	492.0
Pv	711.0	\$41.35	Project Engineer	S-29	711.0
Piv	24.5	\$39.16	Principal Engineer	R26	24.5
Piii	1,776.3	\$32.77	Senior Engineer	P-23	1,776.3
Pi	429.5	\$26.11	CET	P-95	429.5
et5	59.0	\$39.31	Eng tech 1	S-22	59.0
et4	6.0	\$29.19	Tech 2	R-19	6.0
et2	1,592.8	\$25.14	Tech 4	A-15	1,592.8
et1	162.5	\$16.32	Eng tech 5	A-11	162.5
eng intern	527.0	\$17.00	cet	P-95	527.0
Total	5,780.5		Total	5,780.5	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Amercon			Title	Range	
Pv	297.0	\$42.02	Project Engineer	S-29	297.0
Piii	161.5	\$29.82	Sr Engineer	P-23	161.5
Pi	75.0	\$24.63	CET	P-95	75.0
et2	18.0	\$15.56	Tech 4	A-15	18.0
Total	551.5		Total	551.5	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
TWT			Title	Range	
PV	26.5	\$40.20	Project Engineer	R-29	26.5
PI	4.0	\$25.00	CET	P-95	4.0
ET2	68.0	\$19.44	Tech 4	A-15	68.0
ET1	115.0	\$11.96	Tech 5	A11	115.0
Total	213.5		Total	213.5	

Parsons Brinckerhoff - FG, Inc

Job Number: 1021509

Job Name: Case Blvd / US Rt. 202 NJDOT Contract

Function Code: Y505

**Straight Time Total by Employee Class -
Consultant Services**

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
PBFG			Title	Range	
Pviii	95.5	\$63.24	Director	M-36	95.5
Pvii	1,056.0	\$54.05	Manager	M-33	1,056.0
Pvi	597.0	\$44.03	Supv. Eng.	S-31	597.0
Pv	2083	\$36.47	Project Engineer	S-29	2,083.0
			Principal		
Piv	567.0	\$31.62	Engineer	R26	567.0
Piii	985.0	\$27.00	Senior Engineer	P-23	985.0
Pii	2,571.0	\$23.37	Asst. Engineer	P-20	2,571.0
Pi	97.5	\$21.05	CET	P-95	97.5
et2	477.0	\$14.08	Tech 4	A-15	477.0
et3	401.5	\$22.01	Tech 3	A-17	401.5
et4	1,041.0	\$21.24	Tech 2	R-19	1,041.0
et5	700.0	\$27.75	Tech 1	S-22	700.0
Cler	125.0	\$21.22	WP spec2	R-13	125.0
Total	10,796.5		Total	10,796.5	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Carpenter			Title	Range	
Pvii	15.0	\$40.53	Manager	M-33	15.0
Pvi	21.8	\$38.00	Supv. Eng.	S-31	21.8
			Principal		
Piv	41.75	\$0.00	Engineer	R26	41.8
Piii	105.3	\$28.47	Senior Engineer	P-23	105.3
ET5	26.3	\$23.18	WP spec2	R-13	26.3
Total	210.0		Total	210.0	

Cherry Weber & Associates
Job Number: 14022522
Job Name: Rt 10 Drainage Improvements
Function Code: Y505

**Straight Time Total by Employee Class -
Consultant Services**

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Cherry Weber			Title Range		
PIX	20.4	\$67.31	Asst Comm. M-98	20.4	\$65.68
PVII	200.0	\$52.38	Manager M-33	200.0	\$52.69
PVI	459.2	\$48.19	Supvr Engineer S31	459.2	\$43.49
PV	12.0	\$38.55	Project Engineer S-29	12.0	\$39.59
PIV	368.2	\$33.55	Principal Engineer R26	368.2	\$34.40
PIII	1,544.1	\$31.76	Senior Engineer P-23	1,544.1	\$29.92
PII	505.6	\$25.72	Asst. Engineer P-20	505.6	\$26.05
ET5	466.3	\$28.13	Eng tech 1 S-22	466.3	\$28.57
ET4	379.5	\$22.04	Tech 2 R-19	379.5	\$24.88
ET3	1,332.9	\$20.21	Tech 3 A17	1,332.9	\$22.686
ET2	298.30	\$17.31	Tech 4 A-15	298.3	\$20.71
Cler	11.9	\$15.79	Sec asst P-95	11.9	\$23.67
Total	5,598.4		Total	\$5,598.35	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
KS			Title Range		
Proj. Man. Pviii	202	\$59.53	Director M-36	202.0	\$60.98
Eng. PIV	663.5	\$33.48	Prin. Engineer P-26	663.5	\$34.40
CADD Piii	179.5	\$21.54	Sr. Engineer P-23	179.5	\$29.92
Survey Chief ET5	1.0	\$55.50	Tech 1 S22	1.0	\$28.57
Total	1,046.0		Total	1,046.0	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Greene			Title Range		
PIX	6.5	\$79.38	Asst Comm. M-98	6.5	\$65.68
PVI	29.0	\$40.36	Supvr Eng. S-31	29.0	\$43.49
PIII	8.5	\$31.90	Sr. Engineer P-23	8.5	\$29.92
PII	66.5	\$25.45	Engineer P20	66.5	\$26.05
ET3	47.5	\$19.93	Tech 3 A17	47.5	\$22.69
Cler	10.5	\$17.75	Sec asst A15	10.5	\$23.67
Total	168.5		Total	168.5	

Taylor Wiseman & Taylor

Job Number 0101519

Job Name: Rt 9 & Tilton Rd Northfield Atlantic County

Function Code Y505

Straight Time Total by Employee Class - Consultant
Services

Summary	Hours	Avg. Hourly Rate
TWT		
PVII	267.50	\$48.00
PVI	21.5	\$39.83
PV	239.5	\$35.88
PIV	24.50	\$34.28
PII	924.0	\$29.87
PI	1,525.3	\$22.39
ETIV	20.5	\$27.57
ETIII	657.0	\$23.97
CLE	13.5	\$13.50
Total	3,693.3	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
			Title	Range	
			Manager	M-33	267.5
			Supv. Eng.	S-31	21.5
			Project Engineer	S-29	239.5
			Principal Engineer	R26	24.5
			Senior Engineer	P-23	924.0
			CET	P-95	1,525.3
			Tech 2	R-19	20.5
			Tech 3	A-17	657.0
			WP spec2	A-15	13.5
Total	3,693.3		Total	3,693.3	

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Greene			Title	Range	
PIX	4.5	\$80.00	Asst Com	M-98	4.5
PVI	43.5	\$38.92	Project Engineer	S-29	43.5
PIII	24.50	\$22.25	Sr Engineer	P-23	24.5
ET3	47.0	\$20.08	Tech 3	A-17	47.0
CLE	21.3	\$17.00	WP spec2	A-15	21.3
Total	140.8		Total	140.8	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Brinkerhoff			Title	Range	
PIX	2.5	\$55.29	Asst Comm.	M-98	2.5
PIII	69.00	\$24.04	Engineer	P-23	69.0
PI	9.8	\$16.06	CET	P-95	9.8
Total	81.3		Total	81.3	

Straight Time Sub Consultant

Straight Time Total by Title - NJDOT

Summary	Hours	Avg. Hourly Rate	Summary	Hours	Avg. Hourly Rate
Malick			Title	Range	
PVI	55.0	\$50.00	Supvr Engineer	S-31	55.0
PV	6.00	\$39.00	Principal Engineer	R26	6.0
PIII	113.00	\$30.23	Sr. Engineer	P23	113.0
CLE	9.00	\$14.00	Sec Asst	A-15	9.00
Total	183.0		Total	183.0	

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In house v Consultant		Date: July 2007	
Consultant: Simulated		Prepared by: Program Analysis	
Job Name: Rt 50 over South River		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$126,043	\$126,043
2. Consultant Overhead Costs		\$178,729	\$178,729
3. Consultant Profit Margin		\$30,250	\$30,250
4. Sub Consultant Costs		\$0	\$0
5. Total Consultant Invoice Costs		\$335,023	\$335,023
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$0	\$0
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost		\$0	\$0
10. Fringe & Leave Additive on In-house Costs		\$0	\$0
11. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$2,723	-\$2,723
Total Consultant Costs		\$332,301	\$332,301
In-House Performance Costs			
1. Direct Labor Salary Costs		\$97,437	\$97,437
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$64,893	\$64,893
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$21,134	\$79,275
Total In-House Costs		\$183,464	\$241,605

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In house v Consultant		Date: July 2007	
Consultant: Simulated		Prepared by: Program Analysis	
Job Name: West Oak St. Bridge over Rt 287		Avoidable	Full Cost
Type of Cost		Cost	Allocation
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$281,038	\$281,038
2. Consultant Overhead Costs		\$398,512	\$398,512
3. Consultant Profit Margin		\$67,449	\$67,449
4. Sub Consultant Costs		\$0	\$0
5. Total Consultant Invoice Costs		\$746,999	\$746,999
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$0	\$0
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost		\$0	\$0
10. Fringe & Leave Additive on In-house Costs		\$0	\$0
1. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$6,070	-\$6,070
Total Consultant Costs		\$740,929	\$740,929
In-House Performance Costs			
1. Direct Labor Salary Costs		\$117,522	\$117,522
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$78,270	\$78,270
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$25,491	\$95,616
Total In-House Costs		\$221,283	\$291,408

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In house v Consultant		Date: July 2007	
Consultant: Simulated		Prepared by: Program Analysis	
Job Name: Rt 130 Kinkora Bridge		Avoidable Cost	Full Cost Allocation
Type of Cost			
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$639,017	\$639,017
2. Consultant Overhead Costs		\$906,126	\$906,126
3. Consultant Profit Margin		\$153,364	\$153,364
4. Sub Consultant Costs		\$0	\$0
5. Total Consultant Invoice Costs		\$1,698,507	\$1,698,507
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$0	\$0
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost		\$0	\$0
10. Fringe & Leave Additive on In-house Costs		\$0	\$0
(Subtract Taxes paid by Consultant to State (% of profit margin)		-\$13,803	-\$13,803
Total Consultant Costs		\$1,684,704	\$1,684,704
In-House Performance Costs			
1. Direct Labor Salary Costs		\$465,138	\$465,138
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$309,782	\$309,782
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$100,888	\$378,436
Total In-House Costs		\$875,809	\$1,153,357

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Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In house v Consultant		Date: July 2007	
Consultant: Simulated		Prepared by: Program Analysis	
Job Name: Replace Ped Bridge over Rt 38			
Type of Cost		Avoidable Cost	Full Cost Allocation
Consultant Performance Costs			
1. Direct Consultant Labor Costs		\$389,265	\$389,265
2. Consultant Overhead Costs		\$551,978	\$551,978
3. Consultant Profit Margin		\$93,424	\$93,424
4. Sub Consultant Costs		\$0	\$0
5. Total Consultant Invoice Costs		\$1,034,666	\$1,034,666
6. In-house Cost to Negotiate Contract		\$0	\$0
7. In-house Cost to Monitor Contract		\$0	\$0
8. In-house Cost to pay consultant and process agreement		\$0	\$0
9. In-house Cost to do pre-award & audit consultant cost		\$0	\$0
10. Fringe & Leave Additive on In-house Costs		\$0	\$0
1. Subtract Taxes paid by Consultant to State (% of profit margin)		-\$8,408	-\$8,408
Total Consultant Costs		\$1,026,258	\$1,026,258
In-House Performance Costs			
1. Direct Labor Salary Costs		\$363,373	\$363,373
2. Fringe & Leave Additive on Direct Labor Salary Costs		\$242,006	\$242,006
3. Direct Labor Overtime		\$0	\$0
4. Direct Labor Supply and Material Costs			
5. Direct Supervision		\$0	\$0
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support		\$0	\$0
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)		\$78,816	\$295,640
Total In-House Costs		\$684,194	\$901,019

Cost Comparison Form

In-House Versus Contract Performance

Service Under Study: Design Projects In house v Consultant		Date: July 2007	
Consultant: Simulated		Prepared by: Program Analysis	
Garretson Rd over Rt 202/206			
Type of Cost	Avoidable Cost	Full Cost Allocation	
Consultant Performance Costs			
1. Direct Consultant Labor Costs	\$511,249	\$511,249	
2. Consultant Overhead Costs	\$724,952	\$724,952	
3. Consultant Profit Margin	\$122,700	\$122,700	
4. Sub Consultant Costs	\$0	\$0	
5. Total Consultant Invoice Costs	\$1,358,901	\$1,358,901	
6. In-house Cost to Negotiate Contract	\$0	\$0	
7. In-house Cost to Monitor Contract	\$0	\$0	
8. In-house Cost to pay consultant and process agreement	\$0	\$0	
9. In-house Cost to do pre-award & audit consultant cost	\$0	\$0	
10. Fringe & Leave Additive on In-house Costs	\$0	\$0	
11. Subtract Taxes paid by Consultant to State (% of profit margin)	-\$11,043	-\$11,043	
Total Consultant Costs	\$1,347,858	\$1,347,858	
In-House Performance Costs			
1. Direct Labor Salary Costs	\$208,777	\$208,777	
2. Fringe & Leave Additive on Direct Labor Salary Costs	\$139,045	\$139,045	
3. Direct Labor Overtime	\$0	\$0	
4. Direct Labor Supply and Material Costs			
5. Direct Supervision	\$0	\$0	
6. Direct Clerical Support			
7. Direct Support (outside units charging time to project)			
8. Fringe & Leave Additive on Direct Supervision, Clerical & Support	\$0	\$0	
9. Overhead Rate (applied to direct salary) including G&A, Unit Upper Management, and Section Overhead Rates)	\$45,284	\$169,861	
Total In-House Costs	\$393,106	\$517,683	

Single Composite Overhead Rate for Structural Engineering

1. Develop a DOT wide support services overhead rate

G&A Direct Labor	\$3,399,000
G&A Indirect Labor	\$18,621,000
Total G&A Labor	\$22,020,000

G&A Leave	\$5,480,000
G&A Fringe	\$9,029,000

Total G&A Labor plus additives	\$36,529,000
G&A non-salary	\$14,372,000
Statewide Cost Allocation	\$5,478,000
Risk Management Costs	\$2,187,000
Total G&A Costs	\$58,566,000

Direct Labor Salary Costs	\$117,212,000
Direct Leave	\$36,145,000
Direct Fringe	\$58,001,000
Total Direct Labor Costs	\$211,358,000

<u>Total G&A</u> <u>Costs</u>	<u>\$58,566,000</u>	=	27.71%	DOT wide OH rate
Total Direct Labor Costs	\$211,358,000			

Data Source: NJDOT Cost Allocation Plan FY 2006

2A. Allocate share of Assistant Commissioner CPM to all CPM units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
ECA	50101	\$402,667	0.48%	\$5,799
ECA	50141	\$4,734,471	5.69%	\$68,183
ECA	50151	\$1,512,230	1.82%	\$21,778
ECA	50152	\$6,502,200	7.82%	\$93,640
ECA	50153	\$5,097,000	6.13%	\$73,404
ECA	50154	\$5,597,035	6.73%	\$80,605
ECA	50156	\$1,659,925	2.00%	\$23,905
ECA	50157	\$1,633,881	1.97%	\$23,530
ECA	50158	\$1,199,682	1.44%	\$17,277
EDA	50901	\$400,121	0.48%	\$5,762
EDA	50904	\$229,388	0.28%	\$3,303
EDA	50910	\$616,939	0.74%	\$8,885
EDA	50912	\$1,021,978	1.23%	\$14,718
EDA	50913	\$2,569,387	3.09%	\$37,003
EDA	50914	\$2,918,669	3.51%	\$42,033
EDA	50920	\$195,034	0.23%	\$2,809
EDA	50927	\$2,456,313	2.95%	\$35,374
EDA	50928	\$120,745	0.15%	\$1,739
EDA	50929	\$866,521	1.04%	\$12,479
EDA	50930	\$228,757	0.28%	\$3,294
EDA	50931	\$4,198,962	5.05%	\$60,471
EDA	50933	\$403,510	0.49%	\$5,811
EDA	50934	\$1,056,546	1.27%	\$15,216
EDA	50935	\$401,854	0.48%	\$5,787
EDA	50936	\$906,246	1.09%	\$13,051
EDA	50937	\$1,262,521	1.52%	\$18,182
EDA	50940	\$127,516	0.15%	\$1,836
EDA	50941	\$1,588,602	1.91%	\$22,878
EDA	50947	\$2,664,813	3.20%	\$38,377
EDA	50950	\$445,417	0.54%	\$6,415
EDA	50951	\$1,230,483	1.48%	\$17,721
EDA	50952	\$600,712	0.72%	\$8,651

2A. Allocate share of Assistant Commissioner CPM to all CPM units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
EKA	51001	\$351,904	0.42%	\$5,068
EKA	51004	\$1,141,531	1.37%	\$16,440
EKA	51005	\$1,458,701	1.75%	\$21,007
EKA	51006	\$1,473,255	1.77%	\$21,217
EKA	51007	\$1,404,419	1.69%	\$20,226
EKA	51008	\$1,626,094	1.96%	\$23,418
EKA	51009	\$835,512	1.00%	\$12,033
EYA	50801	\$388,054	0.47%	\$5,589
EYA	50802	\$1,482,044	1.78%	\$21,343
EYA	50803	\$2,855,441	3.43%	\$41,122
EYA	50804	\$1,902,540	2.29%	\$27,399
EZA	50810	\$353,580	0.43%	\$5,092
EZA	50811	\$2,177,252	2.62%	\$31,355
EZA	50812	\$2,260,058	2.72%	\$32,548
EWA	51021	\$1,289,901	1.55%	\$18,576
EWA	51022	\$1,544,545	1.86%	\$22,244
EWA	51023	\$1,416,906	1.70%	\$20,405
EWA	51024	\$1,917,246	2.31%	\$27,611
EWA	51025	\$1,707,602	2.05%	\$24,592
EWA	51026	\$229,934	0.28%	\$3,311
EWA	51027	\$481,936	0.58%	\$6,941
Total		\$83,148,580	100.00%	\$1,197,452
EAA	52101	\$937,707	X 1.2771	\$1,197,452

166x

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst. Commissioner CPM

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
ECA	50101	\$402,667	0.48%	\$111,539	\$5,799	\$520,005
ECA	50141	\$4,734,471	5.69%	\$1,311,448	\$68,183	\$6,114,102
ECA	50151	\$1,512,230	1.82%	\$418,888	\$21,778	\$1,952,896
ECA	50152	\$6,502,200	7.82%	\$1,801,109	\$93,640	\$8,396,950
ECA	50153	\$5,097,000	6.13%	\$1,411,869	\$73,404	\$6,582,273
ECA	50154	\$5,597,035	6.73%	\$1,550,379	\$80,605	\$7,228,019
ECA	50156	\$1,659,925	2.00%	\$459,799	\$23,905	\$2,143,629
ECA	50157	\$1,633,881	1.97%	\$452,585	\$23,530	\$2,109,996
ECA	50158	\$1,199,682	1.44%	\$332,312	\$17,277	\$1,549,271
EDA	50901	\$400,121	0.48%	\$110,834	\$5,762	\$516,717
EDA	50904	\$229,388	0.28%	\$63,540	\$3,303	\$296,232
EDA	50910	\$616,939	0.74%	\$170,892	\$8,885	\$796,716
EDA	50912	\$1,021,978	1.23%	\$283,088	\$14,718	\$1,319,784
EDA	50913	\$2,569,387	3.09%	\$711,720	\$37,003	\$3,318,110
EDA	50914	\$2,918,669	3.51%	\$808,471	\$42,033	\$3,769,173
EDA	50920	\$195,034	0.23%	\$54,024	\$2,809	\$251,867
EDA	50927	\$2,456,313	2.95%	\$680,399	\$35,374	\$3,172,086
EDA	50928	\$120,745	0.15%	\$33,446	\$1,739	\$155,930
EDA	50929	\$866,521	1.04%	\$240,026	\$12,479	\$1,119,026
EDA	50930	\$228,757	0.28%	\$63,366	\$3,294	\$295,417
EDA	50931	\$4,198,962	5.05%	\$1,163,112	\$60,471	\$5,422,545
EDA	50933	\$403,510	0.49%	\$111,772	\$5,811	\$521,093
EDA	50934	\$1,056,546	1.27%	\$292,663	\$15,216	\$1,364,425
EDA	50935	\$401,854	0.48%	\$111,314	\$5,787	\$518,955
EDA	50936	\$906,246	1.09%	\$251,030	\$13,051	\$1,170,327
EDA	50937	\$1,262,521	1.52%	\$349,718	\$18,182	\$1,630,421
EDA	50940	\$127,516	0.15%	\$35,322	\$1,836	\$164,674
EDA	50941	\$1,588,602	1.91%	\$440,043	\$22,878	\$2,051,523
EDA	50947	\$2,664,813	3.20%	\$738,153	\$38,377	\$3,441,343
EDA	50950	\$445,417	0.54%	\$123,381	\$6,415	\$575,212
EDA	50951	\$1,230,483	1.48%	\$340,844	\$17,721	\$1,589,047
EDA	50952	\$600,712	0.72%	\$166,397	\$8,651	\$775,760

167x

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst.
Commissioner
CPM

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
EKA	51001	\$351,904	0.42%	\$97,477	\$5,068	\$454,449
EKA	51004	\$1,141,531	1.37%	\$316,204	\$16,440	\$1,474,175
EKA	51005	\$1,458,701	1.75%	\$404,060	\$21,007	\$1,883,768
EKA	51006	\$1,473,255	1.77%	\$408,092	\$21,217	\$1,902,563
EKA	51007	\$1,404,419	1.69%	\$389,024	\$20,226	\$1,813,669
EKA	51008	\$1,626,094	1.96%	\$450,428	\$23,418	\$2,099,940
EKA	51009	\$835,512	1.00%	\$231,437	\$12,033	\$1,078,981
EYA	50801	\$388,054	0.47%	\$107,491	\$5,589	\$501,133
EYA	50802	\$1,482,044	1.78%	\$410,526	\$21,343	\$1,913,914
EYA	50803	\$2,855,441	3.43%	\$790,957	\$41,122	\$3,687,520
EYA	50804	\$1,902,540	2.29%	\$527,004	\$27,399	\$2,456,943
EZA	50810	\$353,580	0.43%	\$97,942	\$5,092	\$456,614
EZA	50811	\$2,177,252	2.62%	\$603,099	\$31,355	\$2,811,706
EZA	50812	\$2,260,058	2.72%	\$626,036	\$32,548	\$2,918,642
EWA	51021	\$1,289,901	1.55%	\$357,303	\$18,576	\$1,665,780
EWA	51022	\$1,544,545	1.86%	\$427,839	\$22,244	\$1,994,627
EWA	51023	\$1,416,906	1.70%	\$392,483	\$20,405	\$1,829,794
EWA	51024	\$1,917,246	2.31%	\$531,077	\$27,611	\$2,475,934
EWA	51025	\$1,707,602	2.05%	\$473,006	\$24,592	\$2,205,200
EWA	51026	\$229,934	0.28%	\$63,692	\$3,311	\$296,937
EWA	51027	\$481,936	0.58%	\$133,496	\$6,941	\$622,373
Total		\$83,148,580	100%	\$23,032,157	\$1,197,452	\$107,378,188
EAA	52101	\$937,707	X1.2771	\$1,197,452		

2B. Allocate share of EYAA to all CPM units

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EYA	50801	\$501,134		
EYA	50802	\$1,913,913		
EYA	50803	\$3,687,520		
EYA	50804	\$2,456,943		
Total EYA		\$8,559,510		
ECA	50101	\$520,005	0.53%	\$45,042
ECA	50141	\$6,114,102	6.19%	\$529,593
ECA	50151	\$1,952,896	1.98%	\$169,157
ECA	50152	\$8,396,949	8.50%	\$727,330
ECA	50153	\$6,582,273	6.66%	\$570,146
ECA	50154	\$7,228,019	7.31%	\$626,079
ECA	50156	\$2,143,629	2.17%	\$185,678
ECA	50157	\$2,109,996	2.14%	\$182,764
ECA	50158	\$1,549,271	1.57%	\$134,195
EDA	50901	\$516,717	0.52%	\$44,757
EDA	50904	\$296,231	0.30%	\$25,659
EDA	50910	\$796,716	0.81%	\$69,010
EDA	50912	\$1,319,784	1.34%	\$114,317
EDA	50913	\$3,318,110	3.36%	\$287,409
EDA	50914	\$3,769,173	3.81%	\$326,480
EDA	50920	\$251,867	0.25%	\$21,816
EDA	50927	\$3,172,086	3.21%	\$274,761
EDA	50928	\$155,930	0.16%	\$13,506
EDA	50929	\$1,119,026	1.13%	\$96,928
EDA	50930	\$295,417	0.30%	\$25,589
EDA	50931	\$5,422,545	5.49%	\$469,692
EDA	50933	\$521,093	0.53%	\$45,136
EDA	50934	\$1,364,425	1.38%	\$118,184
EDA	50935	\$518,955	0.53%	\$44,951
EDA	50936	\$1,170,327	1.18%	\$101,372
EDA	50937	\$1,630,421	1.65%	\$141,224
EDA	50940	\$164,674	0.17%	\$14,264
EDA	50941	\$2,051,523	2.08%	\$177,699
EDA	50947	\$3,441,343	3.48%	\$298,083
EDA	50950	\$575,213	0.58%	\$49,824
EDA	50951	\$1,589,048	1.61%	\$137,641
EDA	50952	\$775,760	0.79%	\$67,195

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EKA	51001	\$454,449	0.46%	\$39,364
EKA	51004	\$1,474,175	1.49%	\$127,691
EKA	51005	\$1,883,768	1.91%	\$163,169
EKA	51006	\$1,902,564	1.93%	\$164,797
EKA	51007	\$1,813,669	1.84%	\$157,097
EKA	51008	\$2,099,940	2.13%	\$181,893
EKA	51009	\$1,078,982	1.09%	\$93,460
EZA	50810	\$456,614	0.46%	\$39,551
EZA	50811	\$2,811,706	2.85%	\$243,545
EZA	50812	\$2,918,642	2.95%	\$252,808
EWA	51021	\$1,665,780	1.69%	\$144,287
EWA	51022	\$1,994,628	2.02%	\$172,771
EWA	51023	\$1,829,794	1.85%	\$158,494
EWA	51024	\$2,475,934	2.51%	\$214,461
EWA	51025	\$2,205,200	2.23%	\$191,011
EWA	51026	\$296,937	0.30%	\$25,720
EWA	51027	\$622,373	0.63%	\$53,909
Total		\$98,818,680	100.00%	\$8,559,510

170x

2C. Allocate share of EDAA Director's Office to EDAA payroll units

Budget Center	Payroll Unit	Director's Office	EDAA Payroll	% of EDAA Payroll	Share of Director
EDA	50901	\$516,717			
EDA	50904		\$229,388	0.88%	\$4,539
EDA	50910		\$616,939	2.36%	\$12,209
EDA	50912		\$1,021,978	3.91%	\$20,224
EDA	50913		\$2,569,387	9.84%	\$50,846
EDA	50914		\$2,918,669	11.18%	\$57,758
EDA	50920		\$195,034	0.75%	\$3,860
EDA	50927		\$2,456,313	9.41%	\$48,609
EDA	50928		\$120,745	0.46%	\$2,389
EDA	50929		\$866,521	3.32%	\$17,148
EDA	50930		\$228,757	0.88%	\$4,527
EDA	50931		\$4,198,962	16.08%	\$83,095
EDA	50933		\$403,510	1.55%	\$7,985
EDA	50934		\$1,056,546	4.05%	\$20,908
EDA	50935		\$401,854	1.54%	\$7,952
EDA	50936		\$906,246	3.47%	\$17,934
EDA	50937		\$1,262,521	4.84%	\$24,984
EDA	50940		\$127,516	0.49%	\$2,523
EDA	50941		\$1,588,602	6.08%	\$31,437
EDA	50947		\$2,664,813	10.21%	\$52,735
EDA	50950		\$445,417	1.71%	\$8,814
EDA	50951		\$1,230,483	4.71%	\$24,350
EDA	50952		\$600,712	2.30%	\$11,888
			\$26,110,913	100.00%	\$516,717

3. Develop a section overhead rate for Civil Engineering

Civil Engineering Base Payroll	\$13,962,531	
Civil Engineering Project Payroll	\$8,798,528	
Civil Engineering non-Project Payroll	\$2,804,048	includes non-project leave time
Civil Engineering non-Project Payroll	\$2,804,048	
x Fringe Benefits	<u>132.75%</u>	
Civil Engineering non-Project charges	\$3,722,374	
Civil Engineering non-Project charges	\$3,722,374	
Base salary x DOT wide OH rate	\$3,866,743	From Step 2A
Share of CPM Asst. Commissioner	\$201,065	From Step 2A
Share of EYAA costs	\$1,461,632	From Step 2B
Share of EDAA Director	<u>\$276,285</u>	From Step 2C
Total Non Project Charges & Overhead	\$9,528,099	
Total Non Project PR Charges & Overhead	\$9,528,099	
Divided by Project PR charges	\$8,798,528	
Equals Civil Engineering Overhead rate	108.29%	

Single Composite Overhead Rate for Structural Engineering

1. Develop a DOT wide support services overhead rate

G&A Direct Labor	\$3,399,000
G&A Indirect Labor	\$18,621,000
Total G&A Labor	\$22,020,000

G&A Leave	\$5,480,000
G&A Fringe	\$9,029,000

Total G&A Labor plus additives	\$36,529,000
G&A non-salary	\$14,372,000
Statewide Cost Allocation	\$5,478,000
Risk Management Costs	\$2,187,000
Total G&A Costs	\$58,566,000

Direct Labor Salary Costs	\$117,212,000
Direct Leave	\$36,145,000
Direct Fringe	\$58,001,000
Total Direct Labor Costs	\$211,358,000

<u>Total G&A Costs</u>	<u>\$58,566,000</u>	=	27.71%	DOT wide OH rate
Total Direct Labor Costs	\$211,358,000			

Data Source: NJDOT Cost Allocation Plan FY 2006

2A. Allocate share of Assistant Commissioner CPM to all CPM units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
ECA	50101	\$402,667	0.48%	\$5,799
ECA	50141	\$4,734,471	5.69%	\$68,183
ECA	50151	\$1,512,230	1.82%	\$21,778
ECA	50152	\$6,502,200	7.82%	\$93,640
ECA	50153	\$5,097,000	6.13%	\$73,404
ECA	50154	\$5,597,035	6.73%	\$80,605
ECA	50156	\$1,659,925	2.00%	\$23,905
ECA	50157	\$1,633,881	1.97%	\$23,530
ECA	50158	\$1,199,682	1.44%	\$17,277
EDA	50901	\$400,121	0.48%	\$5,762
EDA	50904	\$229,388	0.28%	\$3,303
EDA	50910	\$616,939	0.74%	\$8,885
EDA	50912	\$1,021,978	1.23%	\$14,718
EDA	50913	\$2,569,387	3.09%	\$37,003
EDA	50914	\$2,918,669	3.51%	\$42,033
EDA	50920	\$195,034	0.23%	\$2,809
EDA	50927	\$2,456,313	2.95%	\$35,374
EDA	50928	\$120,745	0.15%	\$1,739
EDA	50929	\$866,521	1.04%	\$12,479
EDA	50930	\$228,757	0.28%	\$3,294
EDA	50931	\$4,198,962	5.05%	\$60,471
EDA	50933	\$403,510	0.49%	\$5,811
EDA	50934	\$1,056,546	1.27%	\$15,216
EDA	50935	\$401,854	0.48%	\$5,787
EDA	50936	\$906,246	1.09%	\$13,051
EDA	50937	\$1,262,521	1.52%	\$18,182
EDA	50940	\$127,516	0.15%	\$1,836
EDA	50941	\$1,588,602	1.91%	\$22,878
EDA	50947	\$2,664,813	3.20%	\$38,377
EDA	50950	\$445,417	0.54%	\$6,415
EDA	50951	\$1,230,483	1.48%	\$17,721
EDA	50952	\$600,712	0.72%	\$8,651

2A. Allocate share of Assistant Commissioner CPM to all CPM units

Budget Center	Payroll Unit	Base Salary	% of Base Salary	Share Of Assistant Comm. Salary
EKA	51001	\$351,904	0.42%	\$5,068
EKA	51004	\$1,141,531	1.37%	\$16,440
EKA	51005	\$1,458,701	1.75%	\$21,007
EKA	51006	\$1,473,255	1.77%	\$21,217
EKA	51007	\$1,404,419	1.69%	\$20,226
EKA	51008	\$1,626,094	1.96%	\$23,418
EKA	51009	\$835,512	1.00%	\$12,033
EYA	50801	\$388,054	0.47%	\$5,589
EYA	50802	\$1,482,044	1.78%	\$21,343
EYA	50803	\$2,855,441	3.43%	\$41,122
EYA	50804	\$1,902,540	2.29%	\$27,399
EZA	50810	\$353,580	0.43%	\$5,092
EZA	50811	\$2,177,252	2.62%	\$31,355
EZA	50812	\$2,260,058	2.72%	\$32,548
EWA	51021	\$1,289,901	1.55%	\$18,576
EWA	51022	\$1,544,545	1.86%	\$22,244
EWA	51023	\$1,416,906	1.70%	\$20,405
EWA	51024	\$1,917,246	2.31%	\$27,611
EWA	51025	\$1,707,602	2.05%	\$24,592
EWA	51026	\$229,934	0.28%	\$3,311
EWA	51027	\$481,936	0.58%	\$6,941
Total		\$83,148,580	100.00%	\$1,197,452
EAA	52101	\$937,707	x1.2771	\$1,197,452

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst.

Commissioner CPM

Budget Center	Payroll Unit	Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
ECA	50101	\$402,667	\$111,539	\$5,799	\$520,005
ECA	50141	\$4,734,471	\$1,311,448	\$68,183	\$6,114,102
ECA	50151	\$1,512,230	\$418,888	\$21,778	\$1,952,896
ECA	50152	\$6,502,200	\$1,801,109	\$93,640	\$8,396,950
ECA	50153	\$5,097,000	\$1,411,869	\$73,404	\$6,582,273
ECA	50154	\$5,597,035	\$1,550,379	\$80,605	\$7,228,019
ECA	50156	\$1,859,925	\$459,799	\$23,905	\$2,143,629
ECA	50157	\$1,633,881	\$452,585	\$23,530	\$2,109,996
ECA	50158	\$1,199,682	\$332,312	\$17,277	\$1,549,271
EDA	50901	\$400,121	\$110,834	\$5,762	\$516,717
EDA	50904	\$229,388	\$63,540	\$3,303	\$296,232
EDA	50910	\$616,939	\$170,892	\$8,885	\$796,716
EDA	50912	\$1,021,978	\$283,088	\$14,718	\$1,319,784
EDA	50913	\$2,569,387	\$711,720	\$37,003	\$3,318,110
EDA	50914	\$2,918,669	\$808,471	\$42,033	\$3,769,173
EDA	50920	\$195,034	\$54,024	\$2,809	\$251,867
EDA	50927	\$2,456,313	\$680,399	\$35,374	\$3,172,086
EDA	50928	\$120,745	\$33,446	\$1,739	\$155,930
EDA	50929	\$866,521	\$240,026	\$12,479	\$1,119,026
EDA	50930	\$228,757	\$63,366	\$3,294	\$295,417
EDA	50931	\$4,198,962	\$1,163,112	\$60,471	\$5,422,545
EDA	50933	\$403,510	\$111,772	\$5,811	\$521,093
EDA	50934	\$1,056,546	\$292,663	\$15,216	\$1,364,425
EDA	50935	\$401,854	\$111,314	\$5,787	\$518,955
EDA	50936	\$906,246	\$251,030	\$13,051	\$1,170,327
EDA	50937	\$1,262,521	\$349,718	\$18,182	\$1,630,421
EDA	50940	\$127,516	\$35,322	\$1,836	\$164,674
EDA	50941	\$1,588,602	\$440,043	\$22,878	\$2,051,523
EDA	50947	\$2,664,813	\$738,153	\$38,377	\$3,441,343
EDA	50950	\$445,417	\$123,381	\$6,415	\$575,212
EDA	50951	\$1,230,483	\$340,844	\$17,721	\$1,589,047
EDA	50952	\$600,712	\$166,397	\$8,651	\$775,760

2A. Calculate CPM Adjusted Payroll Expenses to include DOT wide OH rate and share of Asst.

Commissioner CPM

Budget Center	Payroll Unit	Base Salary	Base x 0.277 OH	Share of Asst. Comm Salary	CPM Adjusted PR Expenses
EKA	51001	\$351,904	\$97,477	\$5,068	\$454,449
EKA	51004	\$1,141,531	\$316,204	\$16,440	\$1,474,175
EKA	51005	\$1,458,701	\$404,060	\$21,007	\$1,883,768
EKA	51006	\$1,473,255	\$408,092	\$21,217	\$1,902,563
EKA	51007	\$1,404,419	\$389,024	\$20,226	\$1,813,669
EKA	51008	\$1,626,094	\$450,428	\$23,418	\$2,099,940
EKA	51009	\$835,512	\$231,437	\$12,033	\$1,078,981
EYA	50801	\$388,054	\$107,491	\$5,589	\$501,133
EYA	50802	\$1,482,044	\$410,526	\$21,343	\$1,913,914
EYA	50803	\$2,855,441	\$790,957	\$41,122	\$3,687,520
EYA	50804	\$1,902,540	\$527,004	\$27,399	\$2,456,943
EZA	50810	\$353,580	\$97,942	\$5,092	\$456,614
EZA	50811	\$2,177,252	\$603,099	\$31,355	\$2,811,706
EZA	50812	\$2,260,058	\$626,036	\$32,548	\$2,918,642
EWA	51021	\$1,289,901	\$357,303	\$18,576	\$1,665,780
EWA	51022	\$1,544,545	\$427,839	\$22,244	\$1,994,627
EWA	51023	\$1,416,906	\$392,483	\$20,405	\$1,829,794
EWA	51024	\$1,917,246	\$531,077	\$27,611	\$2,475,934
EWA	51025	\$1,707,602	\$473,006	\$24,592	\$2,205,200
EWA	51026	\$229,934	\$63,692	\$3,311	\$296,937
EWA	51027	\$481,936	\$133,496	\$6,941	\$622,373
Total		\$83,148,580	\$23,032,157	\$1,197,452	\$107,378,188
EAA	52101	\$937,707	X 1.2771	\$1,197,452	

2B. Allocate share of EYAA to all CPM units

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EYA	50801	\$501,134		
EYA	50802	\$1,913,913		
EYA	50803	\$3,687,520		
EYA	50804	\$2,456,943		
Total EYA		\$8,559,510		
ECA	50101	\$520,005	0.53%	\$45,042
ECA	50141	\$6,114,102	6.19%	\$529,593
ECA	50151	\$1,952,896	1.98%	\$169,157
ECA	50152	\$8,396,949	8.50%	\$727,330
ECA	50153	\$6,582,273	6.66%	\$570,146
ECA	50154	\$7,228,019	7.31%	\$626,079
ECA	50156	\$2,143,629	2.17%	\$185,678
ECA	50157	\$2,109,996	2.14%	\$182,764
ECA	50158	\$1,549,271	1.57%	\$134,195
EDA	50901	\$516,717	0.52%	\$44,757
EDA	50904	\$296,231	0.30%	\$25,659
EDA	50910	\$796,716	0.81%	\$69,010
EDA	50912	\$1,319,784	1.34%	\$114,317
EDA	50913	\$3,318,110	3.36%	\$287,409
EDA	50914	\$3,769,173	3.81%	\$326,480
EDA	50920	\$251,867	0.25%	\$21,816
EDA	50927	\$3,172,086	3.21%	\$274,761
EDA	50928	\$155,930	0.16%	\$13,506
EDA	50929	\$1,119,026	1.13%	\$96,928
EDA	50930	\$295,417	0.30%	\$25,589
EDA	50931	\$5,422,545	5.49%	\$469,692
EDA	50933	\$521,093	0.53%	\$45,136
EDA	50934	\$1,364,425	1.38%	\$118,184
EDA	50935	\$518,955	0.53%	\$44,951
EDA	50936	\$1,170,327	1.18%	\$101,372
EDA	50937	\$1,630,421	1.65%	\$141,224
EDA	50940	\$164,674	0.17%	\$14,264
EDA	50941	\$2,051,523	2.08%	\$177,699
EDA	50947	\$3,441,343	3.48%	\$298,083
EDA	50950	\$575,213	0.58%	\$49,824
EDA	50951	\$1,589,048	1.61%	\$137,641
EDA	50952	\$775,760	0.79%	\$67,195

2B. Allocate share of EYAA to all CPM units

	Payroll Unit	CPM Adjusted PR Expenses	% of Payroll	Share of EYAA Payroll
EKA	51001	\$454,449	0.46%	\$39,364
EKA	51004	\$1,474,175	1.49%	\$127,691
EKA	51005	\$1,883,768	1.91%	\$163,169
EKA	51006	\$1,902,564	1.93%	\$164,797
EKA	51007	\$1,813,669	1.84%	\$157,097
EKA	51008	\$2,099,940	2.13%	\$181,893
EKA	51009	\$1,078,982	1.09%	\$93,460
EZA	50810	\$456,614	0.46%	\$39,551
EZA	50811	\$2,811,706	2.85%	\$243,545
EZA	50812	\$2,918,642	2.95%	\$252,808
EWA	51021	\$1,665,780	1.69%	\$144,287
EWA	51022	\$1,994,628	2.02%	\$172,771
EWA	51023	\$1,829,794	1.85%	\$158,494
EWA	51024	\$2,475,934	2.51%	\$214,461
EWA	51025	\$2,205,200	2.23%	\$191,011
EWA	51026	\$296,937	0.30%	\$25,720
EWA	51027	\$622,373	0.63%	\$53,909
Total		\$98,818,680	100.00%	\$8,559,510

2C. Allocate share of EDAA Director's Office to EDAA payroll units

Budget Center	Payroll Unit	Director's Office	EDAA Payroll	% of EDAA Payroll	Share of Director
EDA	50901	\$516,717			
EDA	50904		\$229,388	0.88%	\$4,539
EDA	50910		\$616,939	2.36%	\$12,209
EDA	50912		\$1,021,978	3.91%	\$20,224
EDA	50913		\$2,569,387	9.84%	\$50,846
EDA	50914		\$2,918,669	11.18%	\$57,758
EDA	50920		\$195,034	0.75%	\$3,860
EDA	50927		\$2,456,313	9.41%	\$48,609
EDA	50928		\$120,745	0.46%	\$2,389
EDA	50929		\$866,521	3.32%	\$17,148
EDA	50930		\$228,757	0.88%	\$4,527
EDA	50931		\$4,198,962	16.08%	\$83,095
EDA	50933		\$403,510	1.55%	\$7,985
EDA	50934		\$1,056,546	4.05%	\$20,908
EDA	50935		\$401,854	1.54%	\$7,952
EDA	50936		\$906,246	3.47%	\$17,934
EDA	50937		\$1,262,521	4.84%	\$24,984
EDA	50940		\$127,516	0.49%	\$2,523
EDA	50941		\$1,588,602	6.08%	\$31,437
EDA	50947		\$2,664,813	10.21%	\$52,735
EDA	50950		\$445,417	1.71%	\$8,814
EDA	50951		\$1,230,483	4.71%	\$24,350
EDA	50952		\$600,712	2.30%	\$11,888
			\$26,110,913	100.00%	\$516,717

3. Develop a section overhead rate for Structural Engineering

Structural Engineering Base Payroll	\$3,186,326	
Structural Engineering Project Payroll	\$2,258,972	
Structural Engineering non-Project Payroll	\$369,054	includes non-project leave time
Structural Engineering non-Project Payroll	\$369,054	
x Fringe Benefits	<u>132.75%</u>	
Structural Engineering non-Project charges	\$489,919	
Structural Engineering non-Project charges	\$489,919	
Base salary x DOT wide OH rate	\$882,612	From Step 2A
Share of CPM Asst. Commissioner	\$45,888	From Step 2A
Share of EYAA costs	\$356,419	From Step 2B
Share of EDAA Director	<u>\$63,054</u>	From Step 2C
Total Non Project Charges & Overhead	\$1,837,892	
Total Non Project PR Charges & Overhead	\$1,837,892	
Divided by Project PR charges	\$2,258,972	
Equals Structural Engineering Overhead rate	81.36%	

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Principal P-IX	Principal P-IX	Principal P-IX	Managing Engineer P-VIII	Managing Engineer P-VIII	Managing Engineer P-VIII
Advanced Infrastructure Design Inc.	144%						
Amercom Corp.	106%				\$60.23	\$124.07	\$138.53
Arora & Associates,P.C.	150%	\$107.00	\$267.50	\$293.18	\$84.50	\$211.25	\$231.53
BET Engineering Consultants Inc.	140%						
Chas. H. Sells, Inc.	139%	\$65.57	\$156.71	\$172.45	\$60.35	\$144.24	\$158.72
Cherry Weber & Associates, P.C.	144%	\$67.31	\$164.24	\$180.39	\$57.59	\$140.52	\$154.34
Dewberry-Goodkind Inc.	122%	\$82.92	\$184.08	\$203.98	\$74.46	\$165.30	\$183.17
DMGM+HARRIS,Inc.	130%				\$82.59	\$189.96	\$209.78
Earth Tech, Inc.	153%	\$95.11	\$240.63	\$263.45	\$67.91	\$171.81	\$188.11
Edwards and Kelcey, Inc	151%						
French & Parrello Associates,P.A.	202%						
Gannett Fleming, Inc.	155%				\$75.00	\$191.25	\$209.25
Geod Corp.	135%	\$48.08	\$112.99	\$124.53			
Greenman-Pedersen, inc.	144%				\$68.00	\$165.92	\$182.24
Hardesty & Hanover, LLP	139%	\$100.00	\$239.00	\$263.00	\$64.47	\$154.08	\$169.56
Harold Pellow	125%	\$62.50	\$140.63	\$155.63			
HINTB Corporation	150%						
IH Engineers	120%						
Jacobs Civil Inc.	121%				\$93.14	\$205.84	\$228.19
KMA Consulting Engineers, PC	130%						
Engineers, P.C.	124%	\$100.00	\$224.00	\$248.00			
L. Robert Kimball & Assoc.	186%				\$52.65	\$150.58	\$163.22
Lichtenstein Consulting Engineers, Inc.	154%	\$86.54	\$219.81	\$240.58	\$68.11	\$173.00	\$189.35
Louis Berger Group, Inc.	139%	\$77.70	\$185.70	\$204.35	\$60.34	\$144.21	\$158.69
Maltra Associates, PC	118%						
McCormick Taylor, Inc.	150%						
Medina Consultants, P.C.	136%				\$63.68	\$150.28	\$165.57
Michael Baker Jr. , Inc.	152%	\$88.98	\$224.23	\$245.58			
Parsons Transportation Group, Inc.	122%				\$75.97	\$168.65	\$186.89
Pickering, Corts & Summerson, Inc.	168%	\$60.40	\$161.87	\$176.37			
Polytran Engineering associates P.C.	166%	\$54.69	\$145.48	\$158.60			
RBA Group, The	108%				\$67.47	\$140.34	\$156.53
Schoor, DePalma, Inc.	172%				\$59.73	\$162.47	\$176.80
STV Incorporated	122%				\$88.52	\$196.51	\$217.76
T.Y. Lin International	168%	\$74.20	\$198.86	\$216.66			
Taylor, Wiseman & Taylor	180%				\$48.00	\$134.40	\$145.92
Urban Engineers, Inc.	127%	\$85.00	\$192.95	\$213.35	\$75.30	\$170.93	\$189.00
Urbitrans Associates, Inc.	125%	\$75.03	\$168.82	\$186.82	\$68.27	\$153.61	\$169.99
Vollmer Associates LLP	136%	\$86.76	\$204.75	\$225.58	\$62.86	\$148.35	\$163.44
	142%	\$78.77	\$190.68	\$209.58	\$68.66	\$163.37	\$179.85
NJDOT (Road Design)	175%	\$65.93	\$181.23	\$181.23	\$61.07	\$167.88	\$167.88
NJDOT (Bridge Design)	148%	\$65.93	\$163.49	\$163.49	\$61.07	\$151.44	\$151.44
DOT Difference (Road Design)	33%	(\$12.34)	(\$9.45)	(\$28.35)	(\$7.59)	\$4.50	(\$11.98)
DOT Difference (Bridge Design)		(\$12.34)	(\$27.19)	(\$46.09)	(\$7.59)	(\$11.93)	(\$28.41)
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Project Manager P-VII	Project Manager P-VII	Project Manager P-VII	Project Manager P-VI	Project Manager P-VI	Project Manager P-VI
Advanced Infrastructure Design Inc.	144%	\$64.00	\$156.16	\$171.52	\$39.87	\$97.28	\$106.85
Amercom Corp.	106%				\$47.53	\$97.91	\$109.32
Arora & Associates, P.C.	150%				\$56.90	\$142.25	\$155.91
BET Engineering Consultants Inc.	140%				\$55.70	\$133.68	\$147.05
Chas. H. Sells, Inc.	139%				\$54.37	\$129.94	\$142.99
Cherry Weber & Associates, P.C.	144%	\$50.00	\$122.00	\$134.00	\$44.62	\$108.87	\$119.58
Dewberry-Goodkind Inc.	122%	\$61.39	\$136.29	\$151.02	\$50.42	\$111.93	\$124.03
DMGM+HARRIS, Inc.	130%	\$61.41	\$141.24	\$155.98	\$54.34	\$124.98	\$138.02
Earth Tech, Inc.	153%	\$48.67	\$123.14	\$134.82			
Edwards and Kelcey, Inc.	151%	\$63.36	\$159.03	\$174.24	\$48.48	\$121.68	\$133.32
French & Parrello Associates, P.A.	202%						
Gannett Fleming, Inc.	155%	\$66.70	\$170.09	\$186.09	\$56.40	\$143.82	\$157.36
Geod Corp.	135%						
Greenman-Pedersen, Inc.	144%	\$65.44	\$159.67	\$175.38	\$55.78	\$136.10	\$149.49
Hardesty & Hanover, LLP	139%	\$59.37	\$141.89	\$156.14	\$53.44	\$127.72	\$140.55
Harold Pellow	125%	\$41.82	\$94.10	\$104.13	\$38.46	\$86.54	\$95.77
IINTB Corporation	150%						
IH Engineers	120%						
Jacobs Civil Inc.	121%	\$68.72	\$151.87	\$168.36	\$59.70	\$131.94	\$146.27
KMA Consulting Engineers, PC	130%				\$48.01	\$110.42	\$121.95
Engineers, P.C.	124%				\$68.02	\$152.36	\$168.69
L. Robert Kimball & Assoc.	186%				\$44.66	\$127.73	\$138.45
Lichtenstein Consulting Engineers, Inc.	154%	\$54.87	\$139.37	\$152.54	\$46.76	\$118.77	\$129.99
Louis Berger Group, Inc.	139%				\$52.26	\$124.90	\$137.44
Maltra Associates, PC	118%	\$54.23	\$118.22	\$131.24	\$49.86	\$108.69	\$120.66
McCormick Taylor, Inc.	150%	\$72.12	\$180.30	\$197.61	\$53.49	\$133.73	\$146.56
Medina Consultants, P.C.	136%				\$53.05	\$125.20	\$137.93
Michael Baker Jr., Inc.	152%				\$58.10	\$146.41	\$160.36
Parsons Transportation Group, Inc.	122%	\$68.06	\$151.09	\$167.43	\$56.76	\$126.01	\$139.63
Pickering, Corts & Summerson, Inc.	168%				\$49.93	\$133.81	\$145.80
Polytran Engineering associates P.C.	166%	\$46.00	\$122.36	\$133.40	\$45.13	\$120.05	\$130.88
RBA Group, The	108%	\$55.46	\$115.36	\$128.67	\$50.64	\$105.33	\$117.48
Schoor, DePalma, Inc.	172%	\$49.20	\$133.82	\$145.63	\$40.17	\$109.26	\$118.90
STV Incorporated	122%	\$62.83	\$139.48	\$154.56	\$51.23	\$113.73	\$126.03
T.Y. Lin International	168%						
Taylor, Wiseman & Taylor	180%	\$48.83	\$136.72	\$148.44	\$42.78	\$119.78	\$130.05
Urban Engineers, Inc.	127%	\$51.27	\$116.38	\$128.69	\$47.44	\$107.69	\$119.07
Urbitran Associates, Inc.	125%	\$60.91	\$137.05	\$151.67	\$48.22	\$108.50	\$120.07
Vollmer Associates LLP	136%	\$55.39	\$130.72	\$144.01	\$47.87	\$112.97	\$124.46
	142%	\$57.83	\$138.10	\$151.98	\$50.62	\$121.21	\$133.36
NJDOT (Road Design)	175%	\$52.76	\$145.03	\$145.03	\$42.88	\$117.87	\$117.87
NJDOT (Bridge Design)	148%	\$52.76	\$130.83	\$130.83	\$42.88	\$106.33	\$106.33
DOT Difference (Road Design)	33%	(\$5.07)	\$6.93	(\$6.95)	(\$7.74)	(\$3.34)	(\$15.49)
Difference (Bridge Design)	6%	(\$5.07)	(\$7.27)	(\$21.15)	(\$7.74)	(\$14.88)	(\$27.03)
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Principal Engr. P-V	Principal Engr. P-V	Principal Engr. P-V	Engineer P-IV	Engineer P-IV	Engineer P-IV
Advanced Infrastructure Design Inc.	144%	\$32.00	\$78.08	\$85.76			
Amercom Corp.	106%	\$44.20	\$91.05	\$101.66	\$42.50	\$87.55	\$97.75
Arora & Associates, P.C.	150%	\$45.13	\$112.83	\$123.66			
BET Engineering Consultants Inc.	140%	\$46.50	\$111.60	\$122.76	\$45.80	\$109.92	\$120.91
Chas. H. Sells, Inc.	139%	\$45.59	\$108.96	\$119.90	\$37.48	\$89.58	\$98.57
Cherry Weber & Associates, P.C.	144%	\$40.80	\$99.55	\$109.34	\$33.20	\$81.01	\$88.98
Dewberry-Goodkind Inc.	122%	\$44.55	\$98.90	\$109.59	\$40.01	\$88.82	\$98.42
DMGM+HARRIS, Inc.	130%	\$49.02	\$112.75	\$124.51	\$41.47	\$95.38	\$105.33
Earth Tech, Inc.	153%	\$45.12	\$114.15	\$124.98	\$42.87	\$108.46	\$118.75
Edwards and Kelcey, Inc.	151%	\$40.86	\$102.56	\$112.37	\$34.90	\$87.59	\$95.96
French & Parrello Associates, P.A.	202%						
Gannett Fleming, Inc.	155%	\$46.01	\$117.33	\$128.37	\$37.10	\$94.61	\$103.51
Geod Corp.	135%	\$37.19	\$87.40	\$96.32			
Greenman-Pedersen, Inc.	144%	\$45.98	\$112.19	\$123.23	\$39.57	\$96.55	\$106.05
Hardesty & Hanover, LLP	139%	\$45.60	\$108.98	\$119.93	\$40.60	\$97.03	\$106.78
Harold Pellow	125%	\$38.18	\$85.91	\$95.07			
HINTB Corporation	150%						
III Engineers	120%						
Jacobs Civil Inc.	121%	\$54.16	\$119.69	\$132.69	\$44.98	\$99.41	\$110.20
KMA Consulting Engineers, PC	130%	\$45.00	\$103.50	\$114.30	\$41.00	\$94.30	\$104.14
Engineers, P.C.	124%	\$64.56	\$144.61	\$160.11	\$43.92	\$98.38	\$108.92
L. Robert Kimball & Assoc.	186%	\$38.63	\$110.48	\$119.75	\$31.88	\$91.18	\$98.83
Lichtenstein Consulting Engineers, Inc.	154%	\$47.28	\$120.09	\$131.44	\$38.58	\$97.99	\$107.25
Louis Berger Group, Inc.	139%	\$38.46	\$91.92	\$101.15	\$39.86	\$95.27	\$104.83
Maltra Associates, PC	118%	\$47.94	\$104.51	\$116.01	\$42.97	\$93.67	\$103.99
McCormick Taylor, Inc.	150%	\$43.11	\$107.78	\$118.12			
Medina Consultants, P.C.	136%	\$37.25	\$87.91	\$96.85			
Michael Baker Jr., Inc.	152%	\$44.81	\$112.92	\$123.68	\$36.87	\$92.91	\$101.76
Parsons Transportation Group, Inc.	122%	\$54.83	\$121.72	\$134.88	\$41.02	\$91.06	\$100.91
Pickering, Corts & Summerson, Inc.	168%				\$42.79	\$114.68	\$124.95
Polytran Engineering associates P.C.	166%				\$35.12	\$93.42	\$101.85
RBA Group, The	108%	\$42.68	\$88.77	\$99.02	\$39.12	\$81.37	\$90.76
Schoor, DePalma, Inc.	172%	\$35.64	\$96.94	\$105.49	\$30.96	\$84.21	\$91.64
STV Incorporated	122%	\$44.08	\$97.86	\$108.44	\$33.00	\$73.26	\$81.18
T.Y. Lin International	168%	\$59.45	\$159.33	\$173.59	\$47.64	\$127.68	\$139.11
Taylor, Wiseman & Taylor	180%	\$38.70	\$108.36	\$117.65	\$36.74	\$102.87	\$111.69
Urban Engineers, Inc.	127%	\$41.00	\$93.07	\$102.91	\$36.93	\$83.83	\$92.69
Urbitrans Associates, Inc.	125%	\$42.87	\$96.46	\$106.75	\$37.77	\$84.98	\$94.05
Vollmer Associates LLP	136%	\$47.46	\$112.01	\$123.40	\$38.43	\$90.69	\$99.92
	142%	\$44.55	\$106.48	\$117.17	\$39.17	\$94.26	\$103.66
NJDOT (Road Design)	175%	\$40.27	\$110.70	\$110.70	\$35.00	\$96.21	\$96.21
NJDOT (Bridge Design)	148%	\$40.27	\$99.86	\$99.86	\$35.00	\$86.79	\$86.79
DOT Difference (Road Design)	33%	(\$4.28)	\$4.22	(\$6.47)	(\$4.17)	\$1.96	(\$7.44)
DOT Difference (Bridge Design)	6%	(\$4.28)	(\$6.61)	(\$17.31)	(\$4.17)	(\$7.46)	(\$16.86)
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Engineer P-III	Engineer P-III	Engineer P-III	Engineer P-II	Engineer P-II	Engineer P-II
Advanced Infrastructure Design Inc.	144%						
Amercom Corp.	106%	\$34.00	\$70.04	\$78.20	\$32.94	\$67.86	\$75.76
Arora & Associates, P.C.	150%	\$34.65	\$86.63	\$94.94			
BET Engineering Consultants Inc.	140%						
Chas. H. Sells, Inc.	139%	\$31.51	\$75.31	\$82.87	\$31.70	\$75.76	\$83.37
Cherry Weber & Associates, P.C.	144%	\$29.50	\$71.98	\$79.06			
Dewberry-Goodkind Inc.	122%	\$34.83	\$77.32	\$85.68	\$29.98	\$66.56	\$73.75
DMGM+HARRIS, Inc.	130%	\$34.41	\$79.14	\$87.40	\$30.05	\$69.12	\$76.33
Earth Tech, Inc.	153%			\$0.00	\$35.51	\$89.84	\$98.36
Edwards and Keleey, Inc.	151%	\$31.06	\$77.96	\$85.42	\$24.95	\$62.62	\$68.61
French & Parrello Associates, P.A.	202%						
Gannett Fleming, Inc.	155%	\$34.70	\$88.49	\$96.81	\$28.21	\$71.94	\$78.71
Geod Corp.	135%						
Greenman-Pedersen, Inc.	144%	\$34.86	\$85.06	\$93.42	\$32.20	\$78.57	\$86.30
Hardesty & Hanover, LLP	139%	\$34.21	\$81.76	\$89.97	\$30.44	\$72.75	\$80.06
Harold Pellow	125%	\$21.75	\$48.94	\$54.16			
HNTB Corporation	150%						
IH Engineers	120%						
Jacobs Civil Inc.	121%	\$38.78	\$85.70	\$95.01	\$32.12	\$70.99	\$78.69
KMA Consulting Engineers, PC	130%				\$28.50	\$65.55	\$72.39
Engineers, P.C.	124%	\$36.81	\$82.45	\$91.29	\$31.47	\$70.49	\$78.05
L. Robert Kimball & Assoc.	186%				\$25.26	\$72.24	\$78.31
Lichtenstein Consulting Engineers, Inc.	154%	\$30.36	\$77.11	\$84.40	\$26.65	\$67.69	\$74.09
Louis Berger Group, Inc.	139%	\$34.07	\$81.43	\$89.60	\$24.40	\$58.32	\$64.17
Maitra Associates, PC	118%	\$34.63	\$75.49	\$83.80	\$26.00	\$56.68	\$62.92
McCormick Taylor, Inc.	150%	\$31.39	\$78.48	\$86.01	\$23.80	\$59.50	\$65.21
Medina Consultants, P.C.	136%	\$28.75	\$67.85	\$74.75	\$22.13	\$52.23	\$57.54
Michael Baker Jr., Inc.	152%						
Parsons Transportation Group, Inc.	122%	\$34.68	\$76.99	\$85.31	\$33.95	\$75.37	\$83.52
Pickering, Corts & Summerson, Inc.	168%	\$30.28	\$81.15	\$88.42			
Polytran Engineering associates P.C.	166%	\$30.00	\$79.80	\$87.00	\$20.50	\$54.53	\$59.45
RBA Group, The	108%	\$31.29	\$65.08	\$72.59			
Schoor, DePalma, Inc.	172%	\$29.43	\$80.05	\$87.11	\$26.53	\$72.16	\$78.53
STV Incorporated	122%	\$27.82	\$61.76	\$68.44			
T.Y. Lin International	168%						
Taylor, Wiseman & Taylor	180%	\$35.50	\$99.40	\$107.92	\$31.19	\$87.33	\$94.82
Urban Engineers, Inc.	127%	\$30.25	\$68.67	\$75.93	\$26.31	\$59.72	\$66.04
Urbitrans Associates, Inc.	125%	\$31.84	\$71.64	\$79.28	\$26.03	\$58.57	\$64.81
Vollmer Associates LLP	136%	\$31.91	\$75.31	\$82.97	\$28.13	\$66.39	\$73.14
	142%	\$32.26	\$76.82	\$81.65	\$28.36	\$68.11	\$74.92
NJDOT (Road Design)	175%	\$30.44	\$83.68	\$83.68	\$26.51	\$72.87	\$72.87
NJDOT (Bridge Design)	148%	\$30.44	\$75.49	\$75.49	\$26.51	\$65.74	\$65.74
NOT Difference (Road Design)	33%	(\$1.82)	\$6.86	\$2.03	(\$1.85)	\$4.76	(\$2.04)
NOT Difference (Bridge Design)	6%	(\$1.82)	(\$1.34)	(\$6.16)	(\$1.85)	(\$2.37)	(\$9.18)
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Engineer P-1	Engineer P-1	Engineer P-1	Prin Engring Designer ET-5	Prin Engring Designer ET-5	Prin Engring Designer ET-5
Advanced Infrastructure Design Inc.	144%	\$24.25	\$59.17	\$64.99			
Amercom Corp.	106%	\$27.41	\$56.46	\$63.04	\$32.81	\$67.59	\$75.46
Arora & Associates,P.C.	150%	\$24.94	\$62.35	\$68.34			
BET Engineering Consultants Inc.	140%	\$21.70	\$52.08	\$57.29	\$39.00	\$93.60	\$102.96
Chas. H. Sells, Inc.	139%						
Cherry Weber & Associates, P.C.	144%	\$24.10	\$58.80	\$64.59	\$30.00	\$73.20	\$80.40
Dewberry-Goodkind Inc.	122%	\$24.72	\$54.88	\$60.81	\$36.06	\$80.05	\$88.71
DMGM+HARRIS,Inc.	130%	\$27.96	\$64.31	\$71.02	\$40.78	\$93.79	\$103.58
Earth Tech, Inc.	153%	\$23.07	\$58.37	\$63.90			\$0.00
Edwards and Kelcey, Inc	151%						
French & Parrello Associates,P.A.	202%						
Gannett Fleming, Inc.	155%	\$24.03	\$61.28	\$67.04	\$32.48	\$82.82	\$90.62
Geod Corp.	135%				\$28.81	\$67.70	\$74.62
Greenman-Pedersen, Inc.	144%	\$25.93	\$63.27	\$69.49	\$38.95	\$95.04	\$104.39
Hardesty & Hanover, LLP	139%	\$25.13	\$60.06	\$66.09			
Harold Pellow	125%	\$23.84	\$53.64	\$59.36	\$50.00	\$112.50	\$124.50
HNTB Corporation	150%						
IH Engineers	120%						
Jacobs Civil Inc.	121%	\$29.33	\$64.82	\$71.86			
KMA Consulting Engineers, PC	130%	\$17.00	\$39.10	\$43.18	\$40.00	\$92.00	\$101.60
Kline Engineers, P.C.	124%				\$39.32	\$88.08	\$97.51
L. Robert Kimball & Assoc.	186%						
Lichtenstein Consulting Engineers, Inc.	154%	\$22.60	\$57.40	\$62.83	\$32.71	\$83.08	\$90.93
Louis Berger Group, Inc.	139%				\$35.74	\$85.42	\$94.00
Maitra Associates, PC	118%	\$21.00	\$45.78	\$50.82	\$44.11	\$96.16	\$106.75
McCormick Taylor, Inc.	150%				\$28.49	\$71.23	\$78.06
Medina Consultants, P.C.	136%				\$27.42	\$64.71	\$71.29
Michael Baker Jr., Inc.	152%				\$34.87	\$87.87	\$96.24
Parsons Transportation Group, Inc.	122%	\$28.54	\$63.36	\$70.21	\$36.79	\$81.67	\$90.50
Pickering, Corts & Summerson, Inc.	168%				\$32.90	\$88.17	\$96.07
Polytran Engineering associates P.C.	166%	\$19.50	\$51.87	\$56.55	\$25.94	\$69.00	\$75.23
RBA Group, The	108%				\$39.49	\$82.14	\$91.62
Schoor, DePalma, Inc.	172%						
STV Incorporated	122%				\$37.64	\$83.56	\$92.59
T.Y. Lin International	168%				\$48.70	\$130.52	\$142.20
Taylor, Wiseman & Taylor	180%	\$24.60	\$68.88	\$74.78	\$34.20	\$95.76	\$103.97
Urban Engineers, Inc.	127%	\$23.65	\$53.69	\$59.36	\$32.00	\$72.64	\$80.32
Urbitrans Associates, Inc.	125%				\$41.95	\$94.39	\$104.46
Vollmer Associates LLP	136%	\$23.46	\$55.37	\$61.00	\$41.23	\$97.30	\$107.20
	142%	\$24.13	\$57.38	\$63.17	\$36.38	\$86.30	\$91.63
NJDOT (Road Design)	175%	\$21.53	\$59.18	\$59.18	\$29.07	\$79.91	\$79.91
NJDOT (Bridge Design)	148%	\$21.53	\$53.39	\$53.39	\$29.07	\$72.09	\$72.09
DOT Difference (Road Design)	33%	(\$2.60)	\$1.81	(\$3.99)	(\$7.31)	(\$6.39)	(\$11.72)
DOT Difference (Bridge Design)	6%	(\$2.60)	(\$3.99)	(\$9.78)	(\$7.31)	(\$14.21)	(\$19.55)
CONSULTANT FIXED FEE RATE	24%						

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Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Sr Engring Designer ET-4	Sr Engring Designer ET-4	Sr Engring Designer ET-4	Sr Engring Designer ET-3	Sr Engring Designer ET-3	Sr Engring Designer ET-3
Advanced Infrastructure Design Inc.	144%						
Amercom Corp.	106%	\$30.36	\$30.36	\$37.65	\$25.91	\$53.37	\$59.59
Arora & Associates,P.C.	150%				\$22.94	\$57.35	\$62.86
BET Engineering Consultants Inc.	140%	\$26.17	\$26.17	\$32.45	\$25.80	\$61.92	\$68.11
Chas. H. Sells, Inc.	139%				\$31.40	\$75.05	\$82.58
Cherry Weber & Associates, P.C.	144%	\$26.80	\$65.39	\$71.82			
Dewberry-Goodkind Inc.	122%	\$29.39	\$65.25	\$72.30	\$29.11	\$64.62	\$71.61
DMGM+HARRIS, Inc.	130%	\$33.39	\$76.80	\$84.81	\$26.75	\$61.53	\$67.95
Earth Tech, Inc.	153%						
Edwards and Kelcey, Inc	151%				\$20.10	\$50.45	\$55.28
French & Parrello Associates,P.A.	202%						
Gannett Fleming, Inc.	155%	\$26.37	\$67.24	\$73.57	\$22.50	\$57.38	\$62.78
Geod Corp.	135%	\$25.46	\$59.83	\$65.94			
Greenman-Pedersen, inc.	144%	\$33.18	\$80.96	\$88.92	\$26.03	\$63.51	\$69.76
Hardesty & Hanover, LLP	139%	\$37.18	\$88.86	\$97.78	\$30.41	\$72.68	\$79.98
Harold Pellow	125%	\$23.58	\$53.06	\$58.71			
HNTB Corporation	150%						
IH Engineers	120%				\$33.19	\$73.02	\$80.98
Jacobs Civil Inc.	121%				\$35.91	\$79.36	\$87.98
KMA Consulting Engineers, PC	130%	\$33.00	\$75.90	\$83.82	\$26.00	\$59.80	\$66.04
Kline Engineers, P.C.	124%	\$32.27	\$72.28	\$80.03	\$28.80	\$64.51	\$71.42
L. Robert Kimball & Assoc.	186%	\$27.03	\$77.31	\$83.79	\$31.46	\$89.98	\$97.53
Lichtenstein Consulting Engineers, Inc.	154%	\$25.97	\$65.96	\$72.20	\$23.51	\$59.72	\$65.36
Louis Berger Group, Inc.	139%	\$28.12	\$67.21	\$73.96	\$24.10	\$57.60	\$63.38
Maltra Associates, PC	118%	\$38.08	\$83.01	\$92.15	\$32.86	\$71.63	\$79.52
McCormick Taylor, Inc.	150%	\$24.12	\$60.30	\$66.09	\$22.20	\$55.50	\$60.83
Medina Consultants, P.C.	136%	\$26.96	\$63.63	\$70.10			
Michael Baker Jr., Inc.	152%	\$27.18	\$68.49	\$75.02			
Parsons Transportation Group, Inc.	122%	\$31.79	\$70.57	\$78.20			
Pickering, Corts & Summerson, Inc.	168%	\$24.43	\$65.47	\$71.34	\$14.13	\$37.87	\$41.26
Polytran Engineering associates P.C.	166%				\$24.50	\$65.17	\$71.05
RBA Group, The	108%	\$28.24	\$58.74	\$65.52	\$22.75	\$47.32	\$52.78
Schoor, DePalma, Inc.	172%						
STV Incorporated	122%	\$27.05	\$60.05	\$66.54	\$24.07	\$53.44	\$59.21
T.Y. Lin International	168%						
Taylor, Wiseman & Taylor	180%	\$26.23	\$73.44	\$79.74	\$25.97	\$72.72	\$78.95
Urban Engineers, Inc.	127%	\$27.62	\$62.70	\$69.33	\$18.30	\$41.54	\$45.93
Urbitran Associates, Inc.	125%	\$30.60	\$68.85	\$76.19	\$24.89	\$56.00	\$61.98
Vollmer Associates LLP	136%	\$34.19	\$80.69	\$88.89	\$29.70	\$70.09	\$77.22
	142%	\$29.07	\$66.24	\$73.22	\$26.05	\$61.97	\$68.22
NJDOT (Road Design)	175%	\$25.31	\$69.57	\$69.57	\$23.08	\$63.44	\$63.44
NJDOT (Bridge Design)	148%	\$25.31	\$62.76	\$62.76	\$23.08	\$57.23	\$57.23
DOT Difference (Road Design)	33%	(\$3.76)	\$3.33	(\$3.64)	(\$2.97)	\$1.48	(\$4.77)
DOT Difference (Bridge Design)	6%	(\$3.76)	(\$3.48)	(\$10.45)	(\$2.97)	(\$4.73)	(\$10.99)
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Engring Designer ET-2	Engring Designer ET-2	Engring Designer ET-2	Engring Designer ET-1	Engring Designer ET-1	Engring Designer ET-1
Advanced Infrastructure Design Inc.	144%						
Amercom Corp.	106%	\$17.30	\$35.64	\$39.79			
Arora & Associates,P.C.	150%						
BET Engineering Consultants Inc.	140%	\$20.90	\$50.16	\$55.18			
Chas. H. Sells, Inc.	139%	\$22.25	\$53.18	\$58.52	\$22.25	\$53.18	\$58.52
Cherry Weber & Associates, P.C.	144%	\$15.90	\$38.80	\$42.61	\$16.00	\$39.04	\$42.88
Dewberry-Goodkind Inc.	122%	\$22.33	\$49.57	\$54.93	\$14.75	\$32.75	\$36.29
DMGM+HARRIS,Inc.	130%	\$25.99	\$59.78	\$66.01	\$15.95	\$36.69	\$40.51
Earth Tech, Inc.	153%	\$26.29	\$66.51	\$72.82	\$9.98	\$25.25	\$27.64
Edwards and Kelcey, Inc	151%						
French & Parrello Associates,P.A.	202%						
Gannett Fleming, Inc.	155%	\$16.60	\$42.33	\$46.31			
Geod Corp.	135%	\$20.20	\$47.47	\$52.32	\$15.31	\$35.98	\$39.65
Greenman-Pedersen, inc.	144%	\$19.67	\$47.99	\$52.72	\$16.13	\$39.36	\$43.23
Hardesty & Hanover, LLP	139%	\$23.66	\$56.55	\$62.23	\$15.37	\$36.73	\$40.42
Harold Pellow	125%				\$22.00	\$49.50	\$54.78
HNTB Corporation	150%						
IH Engineers	120%						
Jacobs Civil Inc.	121%	\$20.28	\$44.82	\$49.69			
KMA Consulting Engineers, PC	130%	\$23.50	\$54.05	\$59.69	\$17.07	\$39.26	\$43.36
Engineers, P.C.	124%	\$26.63	\$59.65	\$66.04			
L. Robert Kimball & Assoc.	186%	\$16.11	\$46.07	\$49.94	\$13.63	\$38.98	\$42.25
Lichtenstein Consulting Engineers, Inc.	154%	\$23.43	\$59.51	\$65.14	\$18.47	\$46.91	\$51.35
Louis Berger Group, Inc.	139%	\$15.91	\$38.02	\$41.84	\$10.00	\$23.90	\$26.30
Maltra Associates, PC	118%				\$19.00	\$41.42	\$45.98
McCormick Taylor, Inc.	150%	\$19.31	\$48.28	\$52.91	\$16.44	\$41.10	\$45.05
Medina Consultants, P.C.	136%				\$16.44	\$38.80	\$42.74
Michael Baker Jr., Inc.	152%						
Parsons Transportation Group, Inc.	122%	\$23.68	\$52.57	\$58.25	\$16.83	\$37.36	\$41.40
Pickering, Corts & Summerson, Inc.	168%						
Polytran Engineering associates P.C.	166%	\$17.64	\$46.92	\$51.16	\$15.68	\$41.71	\$45.47
RBA Group, The	108%				\$14.80	\$30.78	\$34.34
Schoor, DePalma, Inc.	172%	\$22.85	\$62.15	\$67.64	\$16.91	\$46.00	\$50.05
STV Incorporated	122%						
T.Y. Lin International	168%						
Taylor, Wiseman & Taylor	180%	\$23.36	\$65.41	\$71.01	\$15.27	\$42.76	\$46.42
Urban Engineers, Inc.	127%	\$17.00	\$38.59	\$42.67			
Urbitrans Associates, Inc.	125%	\$23.29	\$52.40	\$57.99	\$19.05	\$42.86	\$47.43
Vollmer Associates LLP	136%	\$22.72	\$53.62	\$59.07	\$15.09	\$35.61	\$39.23
	142%	\$21.07	\$50.80	\$55.86	\$16.19	\$38.95	\$42.84
NJDOT (Road Design)	175%	\$21.07	\$57.92	\$57.92	\$17.61	\$48.41	\$48.41
NJDOT (Bridge Design)	148%	\$21.07	\$52.25	\$52.25	\$17.61	\$43.67	\$43.67
DOT Difference (Road Design)	33%	(\$0.00)	\$7.12	\$2.06	\$1.42	\$9.45	\$5.57
Difference (Bridge Design)	6%	(\$0.00)	\$1.45	(\$3.61)	\$1.42	\$4.72	\$0.83
CONSULTANT FIXED FEE RATE	24%						

Name of Firm	OVERHEAD RATE	Hr. Rate	Hr.+Overhead	HR.+Over.+FF
		Adm. Sec. Tech. Typist CL	Adm. Sec. Tech. Typist CL	Adm. Sec. Tech. Typist CL
Advanced Infrastructure Design Inc.	144%			
Amercom Corp.	106%	\$16.53	\$34.05	\$38.02
Arora & Associates,P.C.	150%			
BET Engineering Consultants Inc.	140%	\$22.10	\$53.04	\$58.34
Chas. H. Sells, Inc.	139%			
Cherry Weber & Associates, P.C.	144%	\$19.30	\$47.09	\$51.72
Dewberry-Goodkind Inc.	122%			
DMGM+HARRIS,Inc.	130%	\$32.03	\$73.67	\$81.36
Earth Tech, Inc.	153%			
Edwards and Kelcey, Inc	151%	\$23.41	\$58.76	\$64.38
French & Parrello Associates,P.A.	202%			
Gannett Fleming, Inc.	155%	\$17.38	\$44.32	\$48.49
Geod Corp.	135%	\$19.00	\$44.65	\$49.21
Greenman-Pedersen, inc.	144%	\$24.37	\$59.46	\$65.31
Hardesty & Hanover, LLP	139%	\$22.29	\$53.27	\$58.62
Harold Pellow	125%	\$19.33	\$43.49	\$48.13
HNTB Corporation	150%			
IH Engineers	120%	\$25.58	\$56.28	\$62.42
Jacobs Civil Inc.	121%	\$25.97	\$57.39	\$63.63
KMA Consulting Engineers, PC	130%			
KS Engineers, P.C.	124%	\$19.90	\$44.58	\$49.35
L. Robert Kimball & Assoc.	186%	\$20.02	\$57.26	\$62.06
Lichtenstein Consulting Engineers, Inc.	154%			\$0.00
Louis Berger Group, Inc.	139%			
Maitra Associates, PC	118%	\$22.83	\$49.77	\$55.25
McCormick Taylor, Inc.	150%			
Medina Consultants, P.C.	136%	\$19.18	\$45.26	\$49.87
Michael Baker Jr., Inc.	152%			
Parsons Transportation Group, Inc.	122%	\$23.09	\$51.26	\$56.80
Pickering, Corts & Summerson, Inc.	168%	\$14.55	\$38.99	\$42.49
Polytran Engineering associates P.C.	166%	\$17.00	\$45.22	\$49.30
RBA Group, The	108%	\$22.15	\$46.07	\$51.39
Schoor, DePalma, Inc.	172%			
STV Incorporated	122%	\$24.00	\$53.28	\$59.04
T.Y. Lin International	168%			
Taylor, Wiseman & Taylor	180%	\$19.37	\$54.24	\$58.88
Urban Engineers, Inc.	127%			
Urbiltran Associates, Inc.	125%	\$16.50	\$37.13	\$41.09
Vollmer Associates LLP	136%	\$20.22	\$47.72	\$52.57
	142%	\$21.09	\$49.84	\$52.71
NJDOT (Road Design)	175%	\$22.04	\$60.59	\$60.59
NJDOT (Bridge Design)	148%	\$22.04	\$54.65	\$54.65
DOT Difference (Road Design)	33%	\$0.95	\$10.74	\$7.88
DOT Difference (Bridge Design)	6%	\$0.95	\$4.81	41.95
CONSULTANT FIXED FEE RATE	24%			

**Report of the
Subcommittee on Transportation**

NJ Department of Transportation

NJ TRANSIT

January 5, 2010

Overview

New Jersey's transportation system has always been critical to the State's prosperity. Since the beginning of the last century, investments in the State's transportation network have been instrumental in developing New Jersey's complex economy and diverse society. Transportation is the table at which nearly every aspect of our society comes together, providing the ease of mobility that is essential to our quality of life. And, transportation is deeply rooted in the State's history and largely responsible for creating the State's wealth.

Unquestionably, New Jersey's system of highways, transit, rail, and waterways has provided residents with exceptional access to jobs, recreation, education, health care, and the many other aspects of life that make the State unique. And just as New Jersey is a complex and diverse place, so too is its transportation system.

The state's critical transportation network is overseen not only by NJ DOT and NJ TRANSIT but also by the NJ Turnpike Authority, the South Jersey Transportation Authority, the Port Authority of NY and NJ, the Delaware River Port Authority, the Delaware River and Bay Authority and the Delaware River Joint Toll Bridge Commission. Coordination and cooperation among these diverse agencies is essential to the success of New Jersey

However, growth in population, roadway traffic and mass transit ridership will test an already aging infrastructure system during the next ten years as it has never been tested before. There will be demand for ever higher levels of goods and services that will necessarily rely on the transportation system. As a result, travel demand will grow at a rate even greater than the population. In this era of an increasingly integrated global economy, New Jersey must anticipate greater pressure on its ports and domestic freight distribution network to deliver product throughout the region. This unprecedented increase in demand for both personal and freight transportation poses a dilemma for New Jersey that cannot be ignored if we are to restore the state's economy.

The realities that will drive transportation need in New Jersey for the foreseeable future include:

- The deterioration of the state's infrastructure due to inadequate maintenance and capital investment
- Massive international trade and its impact on our road and rail systems
- Crippling traffic congestion that wastes the public's time, money, and energy

- Continued loss of life on the State's highway; both vehicle and pedestrians
- Growing needs of aging residents
- Escalating demand for mobility choices, including bicycling, walking, and public transportation

In confronting these forces to address New Jersey's transportation needs, it is critical to remember that:

1. Transportation investment can be a major force for revitalizing New Jersey's economy.
2. Highway, rail, marine and aviation projects generate jobs.

SUBCOMMITTEE ACTIVITY

Against this backdrop, the Transition Subcommittee on Transportation conducted a series of meetings beginning on November 28 with:

- Interviewed the NJ Department of Transportation senior management team;
- Interviewed the senior leadership of NJ Transit;
- Interviewed key leaders/managers of the toll and interstate transportation agencies that are integral to New Jersey's transportation program and network;
- Held a day-long listening session hosted by the AAA Clubs of New Jersey at which some 38 stakeholder groups who have an on-going involvement in transportation in New Jersey testified.
- Held various conference calls in preparation for the submission of this report.
- Collaborated on the recommendations contained herein.

Transportation Subcommittee members also have met with senior representatives of the Turnpike, the South Jersey Transportation Authority, the Port Authority of NY and NJ, the Delaware River Port Authority, the Delaware River Joint Toll Bridge Commission and the Delaware River and Bay Authority as well as the Motor Vehicle Commission in an effort to provide a complete picture of the issues and challenges that will face the new administration when it assumes office on January 19, 2010. The meetings with these independent authorities were coordinated with the Subcommittee on Authorities through the respective chairs.

KEY FINDINGS

The Subcommittee on Transportation believes the key transportation issues facing the new administration are:

1. **Stimulus projects:** DOT must assure that the \$652 million in American Recovery and Reinvestment Funds (ARRA) received for state and local projects are fully obligated by March 2, 2010 or risk losing them for reallocation to other areas of the country. This is going well but requires continued focus.
2. **NJ TRANSIT Budget Deficit:** There will be a \$200 million structural deficit in the NJ TRANSIT 2011 budget primarily as the result of having used stimulus funds to replace state general funds to cover operating cost in 2010.
3. **NJ DOT funding for system operations** in 2010 is at a level that could threaten the safety and efficiency of the state's highway and bridge network.
4. **Transportation Trust Fund:** At the end of State Fiscal Year 2011 essentially all revenues paid into the trust fund will be used to pay debt service for the next 30 years, thus eliminating the possibility of trust fund support for the capital programs at NJDOT and/or NJTransit.
5. **Major Project Continuation:** The ARC rail tunnel and the widening of the NJ Turnpike, Garden State Parkway and Atlantic City Expressway are critically important to the economic recovery of New Jersey.
6. **Collective Bargaining** agreements with the ATU (NJ Transit Bus System) expire on June 30, 2010 at the end of a one-year, no increase extension of the old contract.

RECOMMENDATIONS:

Recognizing the need for further study, the Transportation Subcommittee makes the following recommendations:

Capital Projects and Initiatives:

1. While capital projects are an important part of the economy, not every desirable project can be pursued in the short term. Therefore careful consideration should be given to which projects should advance immediately including but not limited to:
 - Bayonne Bridge, owned and operated by the NYNJ Port Authority, must be addressed. Current air draft of 152 feet will not allow newer ships that soon will be put in service and will require at least 205 feet to pass under the bridge. The current estimated solution cost ranges from \$700 million to \$1billion if a crossing is to remain in service.

- The I-295/ 42/676 Direct Connection and I-295/ 42 Missing move projects in Camden and Gloucester Counties.
 - The Atlantic City access improvements on Rtes 40/322, Rt. 30 Absecon Boulevard, and implementing the Atlantic-Pacific One-Way Pair.
 - Improvement of coastal bridges to support travel and tourism, such as: Rt. 152, Rt. 72, and Rt.37 crossings.
2. The ARC Rail Tunnel project should proceed as planned; however, NJ TRANSIT should ensure that it is fully prepared to begin work when authorizing new contracts.
 3. The current widening projects on the state's three toll roads should continue
 4. With emphasis on its program to maintain a state of good repair, NJ TRANSIT should continue advancing its rail and bus rapid transit (BRT) projects, such as:
 - Northern Branch
 - MOM
 - Bergen-Passaic Line
 - Hudson-Bergen extension
 - Lackawanna Cutoff
 - Route 1 and Route 9 Rapid Bus Transit projects
 5. NJDOT should continue and enhance its highway safety program (e.g. median barrier program) in a continuing effort to reduce highway fatalities and accidents. It should quickly implement and complete a series of improvements that will reduce the growing number of pedestrian fatalities as well as perform an analysis of bicycle-related injuries/ fatalities and implement appropriate safety improvements.
 6. Construct rail freight infrastructure improvements to upgrade railways both Class 1 and short line, to accommodate 286,000 lb railcars.
 7. Construct roadway improvement projects to the Port of Newark and Elizabeth and NJ smaller ports at Salem, Camden, Paulsboro, Edison at Raritan Center, and Repauno to spur economic growth and reduce congestion.
 8. Expedite the expansion of the apron and terminal area at the Atlantic City Airport. Also, fast track the design and construction of a direct connection from the AC Expressway to the Airport to support the Airport and Technology Park. Continue the support for improvements at the general aviation airports to bring them to a state of good repair.
 9. The toll-funded Delaware River Joint Toll Bridge Commission Scudder Falls replacement should go forward.

Organization:

1. The role of the Commissioner as Chair of the NJ Turnpike Authority and the South Jersey Transportation Authority should be further evaluated but continued in the interim.
2. The Commissioner of Transportation should be appointed to the Port Authority of NY&NJ Board, as was the practice under former Governors Kean and Whitman.

Cost and Red Tape Reduction

1. Consider consolidating the NJ Turnpike and the South Jersey Transportation Authority. Merging the toll roads can achieve efficiencies in management and operations, promote common, best practices, standards and contracting methods, as well as make traversing of the roadways seamless to motorists.
2. With lowest cost as the objective and using fully allocated cost analyses, seriously study permitting NJDOT to increase staff levels when providing service (e.g. construction inspection, maintenance functions, design/ engineering) in-house is more cost-effective than using contracted services.
3. Within the toll road authorities, NJDOT, and NJ TRANSIT investigate and eliminate duplicative function, and implement best practices across the agencies. Investigate the barriers and deficiencies that would prevent successful consolidation of the toll agencies.
4. Review options to reduce costs when providing safety protection in construction zones. Currently the State Police frequently provide this service. Investigate ways to use other trained and certified personnel and to better schedule actual need for State Police.
5. Encourage provisions for use of all viable methods for contracting and financing, e.g. design-build, design-build-finance-maintain.
6. Encourage provisions for adopting construction standards that are cost effective and meet the requirements of the project. In particular, look at more use of the recycled materials in the end product while reducing the need to mill asphalt in Northern New Jersey and adopt standards for all highways of certain classes or performance requirements and seek out cost saving inspection procedures.
7. To reduce the time and cost of utility relocation delays on construction projects, engage the utility companies and the PUC to permit transportation agencies to perform relocation work using utility company certified contractors.
8. Provide for expedited review of NJDOT Highway Access by having applicants utilize NJDOT-approved engineering firms to perform traffic analyses and design/engineering tasks.

Finance:

1. Collect gas tax at distribution to reduce the losses and expenses from multiple collection points currently used. It has been estimated that the federal government realized a 10% increase in collections without a rate increase as a result of this more efficient process.
2. Recover statutorily dedicated revenues (\$112 million from heavy truck fees and driver surcharges) pledged to the Transportation Trust Fund. This may need to be done over time as these funds have been used to cover other transportation related activities within the state budget.
3. Explore limited tolling of select interstate highways to pay for improvements to those highways.
4. Consider a public referendum on a gas tax increase after showing that cost savings are being achieved.
5. Investigate options to reverse the use of capital funds for operating purposes. Operating tasks normally have a 1 to three year service life and are paid for with 31-year term TTF bonds. This may need to be done over time because pay-as-you-go funds would have to come from general fund appropriations.
6. Implement enhanced toll collection methods for motorists who evade electronic tolls.

NJ Department of Transportation Profile

Agency Purpose

To provide, operate and maintain a safe, efficient and productive transportation system that effectively provides for the movement of people, goods and services within NJ and supports interstate commerce.

Structure and Function

- Staff of 3,400 employees
- Maintains more than 12,950 lane miles of highways
- 2,578 bridges
- NJ has the highest traffic densities in the nation.
- Regulates, plans for and funds capital and safety improvements for 44 general aviation airports
- Plans and funds capital improvements for rail freight facilities (rail freight system carries more than 100 million tons of cargo per year).
- \$3.6 billion capital program in 2010 for the planning, design, construction, and long-term maintenance of:
 - o The State highway system
 - o NJ TRANSIT railways, including bus and rails cars
 - o Funding support for county and municipal roadways and bridges

Organization

The department's senior leadership includes the following positions:

- Commissioner, (\$141,000)
- 1 Deputy Commissioner (currently vacant),
- 1 Chief of Staff, (\$104,000)
- 7 Assistant Commissioners (\$117,000 - \$126,000)
- 3 Executive Directors for various line and staff functions(\$102,000-\$124,000)
- 1 Inspector General (\$118,000)

The Commissioner also serves ex officio as:

- Chair of NJ TRANSIT
- Chair of NJ Turnpike Authority and South Jersey Transportation Authority. He is a member of the board by statute and designated chair by gubernatorial discretion.

The DOT is a member of the three federally-established metropolitan planning organizations (MPO's) which bring county, local and State agencies together to establish regional priorities for transportation capital programs.

The Commissioner is responsible for overall state transportation policy which impacts the programs and operations of four (4) bi-state independent authorities and vice versa.

NJDOT Funding Overview

In order to get a proper perspective on NJDOT's capital and operating budgets, it is important to understand the sources of the funds and the purpose for which they are provided. As a result of the various sources of transportation funding, budgetary and operating decisions have become complex due to the nature and stipulations associated with the fund sources. However, it should be noted that seemingly good budget and revenue decisions do not allow the NJDOT to provide the best transportation service at the lowest possible cost to New Jersey residents and businesses.

NJDOT Operating Budget

The current NJDOT operating budget is comprised of funding from the general State budget, the Transportation Trust Fund, Federal Highway funds, and miscellaneous other sources. Increasingly, the

department's operating budget relies less and less on the General Fund and more on State and federal capital sources. This funding arrangement may address budgetary problems, but it distorts decision-making. Activities are not always undertaken on the basis of merit, but rather are rationalized for budgetary purposes.

DOT's general fund budget support has declined from \$79 million in FY 2008 to \$49 million in the current fiscal year in response to statewide revenue shortfalls. The critical impacts of these reductions are:

- Many road and bridge maintenance activities have been curtailed and deferred. Those activities and materials that are critical to maintaining the viability of the road infrastructure (e.g. emergency repairs of bridges, roadway surface repairs) are now being funded by federal and State TTF fund. This, in turn, reduces the amount of capital funds for major rehabilitation and construction projects.
- The severe reduction of maintenance and capital improvement capability has led to New Jersey's highways being ranked by respected national organizations as among the worst in the country.
- Routine tasks as mowing and snow removal are performed at decreased intervals further exacerbating the situation.

Transportation Capital Budget Overview (NJDOT /NJ TRANSIT)

The Transportation Capital Program for Fiscal Year 2010 is funded at a level of \$3.5 billion, including \$2.1 billion NJDOT and \$1.4 billion NJ TRANSIT.

About 45 percent of the total program (\$1.6 billion) is funded by the New Jersey Transportation Trust Fund which provides New Jersey's contribution to infrastructure and transit improvements and enables New Jersey to draw down federal funding. However, as the Statewide Capital Investment Strategy report shows in detail, even the current funding level falls far short of meeting New Jersey's documented needs for infrastructure renewal, transit extensions, local aid, and other pressing demands.

NJDOT Capital Budget

The 2010 NJDOT Capital Program is \$2.14 billion composed of the following elements: NJ TTF -\$908 million; Federal -\$960 million; Stimulus - \$93 million; and \$183 million from other sources.

Notwithstanding this level of investment, it is estimated that it falls short by approximately \$1 billion annually of current needs. Consequently, the current level of investment in the state highway system is resulting rapid deterioration and increased congestion

In the bridge area alone, while progress is being made 319 (12%) remain deficient and \$1.5 billion of high-cost bridges will come due for rehabilitation or replacement over the next 3 to 5 years.

Capital Program Delivery

The NJDOT capital construction program is the largest in the State's history, bolstered by the American Recovery and Reinvestment Act (ARRA); also known as "stimulus funds". The traditional NJDOT construction program comprised of State TTF and federal funds is summarized below:

- FY 2010 Planned Construction Project Lettings – \$915 million
 - 50 capital projects valued at \$730 million
 - 50 operations/maintenance projects valued at \$185 million
- The letting status as of November 30, 2009
 - 28 projects awarded - \$156 million
 - 7 bids received, not awarded - \$124 million
- 2 advertised, not yet bid - \$6 million
- 222 active construction projects are underway

The immediate economic value of the program is the number of jobs that have been supported by the program and is represented in part by the cash payments rate to contractors. The normal rate is approximately \$70 million per month. In September of 2009, the rate was \$110 million, and in October the payout rate was \$124 million.

Sources of Capital Funds: Federal Stimulus Funding Capital Program (ARRA)

The State of New Jersey received \$651 million of ARRA funds for highways. The funds grant was allotted in the following manner:

- | | |
|-------------------------------|------------------------------------|
| ◦ NJDOT roads and bridges | \$469 million |
| ◦ County and Local roadways | \$164 million |
| ◦ Transportation Enhancements | \$19.5 million (local governments) |

The deadline for getting projects under contract is March 2, 2010. Funds that are not obligated at that point will be re-distributed to other States. Given the contracts already awarded and the schedule for the balance, it appears that the State is not at risk of losing federal stimulus funds due to a lack of delivery. While NJDOT is confident that all \$469 million will be contracted by the deadline it has taken the precautionary step of securing Joint Budget Oversight Committee (JBOC) approval to increase the number of eligible projects should low bids or non-contracted county and local projects produce ARRA fund balances.

Transportation Trust Fund (TTF)

The FY 2006 reauthorization of the TTF contemplated a 5-year, \$1.6 billion annual capital program through 2011. By July 2011, all revenue into the TTF (\$895 million) will be needed to pay debt service. Essentially, current revenue sources cannot support a program past 2011. Without net new revenue, this condition will exist for the next 30 years.

This circumstance was brought about by insufficient new revenue to support a \$1.6 billion program; increasing bond terms from 21 to 31 years; adjusting the debt service curve and using capital appreciation bonds.

The current TTF debt is approximately \$11 billion and is projected to be \$14 billion at the end of FY 2011. Given current revenues, bond sale interest rates, and capital appreciation bond sales, the ability of the TTF to sustain the FY 2011 Capital Program is tenuous and the unfunded liability of TTF projects that will be ongoing after June 30, 2011 will be approximately \$2 billion over the next four year period.

Given the continuation of the current program, the anticipated contract awards for the 2011 program and current revenues to the TTF, another TTF bond sale mostly likely will be needed within the next year with a value of approximately \$1.2 to \$1.4 billion.

NJDOT ISSUES SUMMARY:

- The Transportation Trust Fund does not have funds for the FY 2012 program or ongoing projects.
- Following the current path, another TTF bond sale will still be required over the next 12 – 14 months
- Routine maintenance projects/activities are being deferred because of budget reductions.
- Heavy trucks pose a series of issues that should be addressed including weight issues, heavy truck route designation, axle loadings, MVC instant permitting
- Increase rail car weights to 286,000 lbs on routes east of the Northeast Corridor to eliminate disadvantage for port rail operations. This is a barrier to economic recovery.

- The DOT must monitor and be involved in the reauthorization of the federal transportation funding act. The Department should also become actively involved in national organizations that will set many of the national framework and practices in the next bill.
- Heavy reliance on TTF and federal funding for maintenance/operating costs must be addressed and steps should be considered to decrease the rate of capital to operating transfers
- Funding arrangements with MPOs should be revisited to allow for more flexibility across regions when doing funding/project distributions. This will allow for a better allocation of resources to promote economic recovery and job growth.
- Insufficient funding for county and municipal highway and bridge needs (impact on property tax). County and local roadways move half of the State's traffic and comprised 90% of the infrastructure.
- Airport Safety Zones are coming under intense pressure from development and tree growth causing safety concerns. Efforts must be undertaken to work with adjoining property owners and airport operators to monitor clear zones. Efforts should be undertaken to get municipalities to review building codes and enforcement
- Relationships with stakeholder groups need attention. To this end: Stakeholders should meet regularly with the department to resolve business process difficulties and provide the rapid means for dispute resolution.

NJ TRANSIT Summary

Agency Purpose

Created by the Public Transit Act of 1979, NJ TRANSIT's mission is to provide safe, reliable, convenient and cost-effective transit service for New Jersey

Structure

NJ TRANSIT is the nation's third largest public transit system with 11,000 employees of whom 10,000 are union employees in bus and rail operations. It provided more than 270 million passenger trips in FY '09 of which 62% were bus, 30% rail and 8% light rail.

Senior Management

- Executive Director CEO (\$262,000)
- VP General Manager, Rail (\$206,000)
- VP General Manager, Bus (\$202,000)
- 3 Assistant Executive Directors (\$172,000-\$191,000)

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- CFO & Treasurer (\$183,000)
- Acting Chief of Police (\$153,000)
- Chief, Tunnel Project (\$193,000)
- Customer Advocate (\$140,000)
- VP of Diversity (\$152,000)

NJ TRANSIT Operating Budget

NJ TRANSIT's operating budget is funded through fare box and other revenues, State operating assistance (general fund appropriation – Transit Subsidy), Federal highway funds from NJDOT, miscellaneous reimbursements, capital funds transfer, and in FY 2010 federal ARRA (Stimulus) funding.

For the FY10 Operating Budget, NJ TRANSIT projected conservative economic growth starting at the end of CY2009. If current ridership trends continue for the remainder of the fiscal year, NJ TRANSIT could experience a significant year-end fare box revenue shortfall.

For FY2011, NJ TRANSIT is projecting a \$200 M gap as a result of:

- The end of \$150 M of one-time FY10 Revenue (Stimulus and Federal Highway funds)
- At least \$50M of inflationary costs.
- The continued reduction in State operating support in FY10
- Possible drop-off in passenger revenue
- Two consecutive years with no fare increase

In FY10, NJT closed a \$178 M operating shortfall, including a \$62 M reduction in operating assistance. For FY10, \$178 M gap was closed by: one time use of \$70 M of federal stimulus grants; one time use of \$80 M of federal highway funding; and, administrative cuts of \$23 M.

NJ TRANSIT is currently working on a number of alternatives to address the FY11 budget deficit which could include any combination of service cuts, fare increases and new revenue sources. For FY 2011, NJ TRANSIT cannot realistically balance the budget through internal actions alone. If Congress enacts a second stimulus initiative, NJ TRANSIT's operating budget challenge will be alleviated for FY 2011

Like NJDOT, NJ TRANSIT uses capital funds to supplement the operating budget. In recent years, the capital to operating transfer has been approximately \$350 million annually (\$250 million FTA Federal funds,

\$100 million TTF). This necessary and allowable practice, however, greatly diminishes the agency's ability to adequately meet its ongoing capital needs.

NJ TRANSIT Capital Budget

The NJ TRANSIT Capital program funds projects and programs for the construction and rehabilitation of railway infrastructure, facilities, and rolling stock. The program also provides funding for transportation services for aging and physically challenged residents.

The 2010 NJ TRANSIT Capital Program is \$1.808 billion composed of the following elements: NJ TTF - \$692 million; Federal - \$637 million; stimulus - \$423.million; Other - \$56.million

NJ TRANSIT infrastructure is generally in a state of good repair. This is primarily due to having the largest capital program of any transit agency. NJ TRANSIT also employs a modern fleet of new electric locomotives and has replaced more than half of the passenger rail fleet since 2003. Also, the procurement of more than 1100 new buses is currently underway with 200 now in service. Nonetheless, it is estimated that the current level of funding falls short by approximately \$600 to \$800 million annually of current needs which largely is the expansion of the rail network and rapid transit bus service with projects such as the Northern Branch, Bergen-Passaic Line, Lackawanna Cutoff and MOM rail service; and Route 9 and Route 1 rapid bus service.

Sources of Capital Funds – Federal Transit and Highway Funds

The NJDOT expects to receive approximately \$637 million from federal highway sources in FY 2010 that began on October 1, 2009. That funding level should continue into FY 2011. Also the NJDOT plans to transfer \$150M of Federal Highway funds to NJ TRANSIT for the ARC project.

Similar to NJDOT, the current 5-year federal authorization period for federal transit funding expired last October 1, 2009. The Congress continues to fund the program through continuing resolutions. The reauthorization is also likely to be delayed for at least a year.

NJ TRANSIT's priorities for SAFETELU reauthorization include ARC, Liberty Corridor and a correction to federal funding formulas to ensure NJ receives the maximum allocation from the NY/NJ region. Timing of a funding agreement on ARC will influence the level of effort required for ARC during reauthorization.

Sources of Capital Funds: Federal Stimulus Funding Capital Program (ARRA)

NJ TRANSIT received over \$420 M for stimulus transit projects under the FTA's formula programs. With the approval of the state's three Metropolitan Planning Organizations, NJ TRANSIT allocated these funds to 15 projects. All ARRA funds have been put under contract; and as such, NJ TRANSIT is not at risk of losing any ARRA funding. All but two of the projects are underway. None of the projects will increase NJ TRANSIT's long term operating budget. In fact, projects such as Edison parking expansion, Pennsauken Transfer Station and ARC will contribute more fare revenue to NJ TRANSIT than they cost to operate.

ARC Tunnel Project

The Access to the Region's Core project (ARC) is an \$8.7 B project to construct a new trans-Hudson rail tunnel. The project is expected to serve 250,000 daily riders and create 6,000 construction jobs and 44,000 permanent jobs.

With rail trips predicted to double in the next 20 years, riders from suburban communities will have expanded direct "One-Seat Ride" service and improved service from Monmouth, Ocean, Morris, Somerset, Union, Hunterdon, Warren, Sussex, Bergen, Passaic counties. Also, more service can be provided from Essex, Middlesex, Mercer and Hudson counties. ARC also supports New Rail Lines such as MOM, Lackawanna Cutoff, and West Trenton/Somerset Line.

The project presents the State with positive long term investment (ROI) with \$4 Billion in real personal income (Annually), \$30 Million in operating profits for NJT annually, and will reduce the annual state operating subsidy to NJT.

ARC is also an economic engine for New Jersey. Today, about \$50 billion in wages is brought home to New Jersey from New York jobs. When ARC is completed it will generate \$10 Billion in new gross regional product, \$4 Billion in new real personal income, and 44,000 new permanent jobs

ARC will also have a positive effect on the State's economy in generating annually \$370 million NJ Gross Regional Product, \$224 million NJ real personal income and by 2013 will support 6,000 construction-related jobs.

The project is being funded with pay as you go financing and won't require further state debt, use of State TTF funds, or an annual state appropriation:

Sources of Funds

Federal New Starts (Competitive)	\$3 Billion
Port Authority of NY & NJ	\$3 Billion

Uses of Funds	Federal Transportation Funds	\$1.45 Billion
	NJ Turnpike	\$1.25 Billion
	Total	\$8.7 Billion
	Tunnels	\$1.3 Billion
	Station	\$2.0 Billion
	Tracks, Bridges, Etc	\$2.8 Billion
	Rail Storage Yard	\$0.4 Billion
	Contingency	\$1.9 Billion
	Locomotives and Rail Cars	\$0.3 Billion
	Total	\$8.7 Billion

ARC Tunnel – Construction Underway

Preliminary Engineering	Completed
1) Federal Environmental Review	Completed
2) Final Design	Ongoing
3) Construction Contracts	
• Tonnelle Avenue	Ongoing
• Manhattan Tunnel	Ready
• Palisades Tunnel	Ready (Dec.)
• Hudson Tunnel	2010
• 20+ Additional Contracts	2010 - 2015

NJ TRANSIT Issues

- **ARC Tunnel project** - The award of the two tunnel projects awards approved by the NJ TRANSIT Board may be delayed due to the need for public input as prescribed by the Port Authority. All efforts are being made to expedite this process, but a delay of 4 to 6 months can be expected. NJ TRANSIT must review contract provisions to ascertain whether contractor will hold bid prices. Normally, contractors will hold bid prices for 60 days. A Full Funding Grant Agreement with Federal Transit Administration (FTA) must be negotiated once federal reauthorization bill is enacted. The Full Funding Grant Agreement requires: (1) Congress to increase FTA's commitment authority, (2) NJT to continue to demonstrate its ability to maintain its system in a state of good repair and (3) continue partnering with Amtrak to replace and expand Portal Bridge.

- Notwithstanding the FY 10 budget cut \$62 million in state operating subsidy, NJ may confront an operating deficit this fiscal year due to a decline in ridership from the economic downturn. Economic recession has resulted in 5% decline in transit ridership/revenues.
- \$200m gap in FY 2011 because of: 1) the end of \$150 million of one-time FY10 Revenue (Stimulus and Federal Highway funds), 2) At least \$50 M of inflationary costs, 3) the continued reduction in State operating support in FY 2010, 4) possible continued drop-off in passenger revenue, and 5) Two consecutive years with no fare increase.
- Leveraged Leases - Beginning in the early 1990's NJ TRANSIT, along with most other major transit agencies in the country, used leveraged lease transactions to generate \$160 million in funding. NJ TRANSIT entered into its last leveraged lease transaction in 2006. Some of these transactions were guaranteed by financial institutions, such as AIG. A number of financial institutions experienced drops in their credit ratings, thereby causing potential technical defaults on many of our outstanding transactions. NJ TRANSIT's liability could be as much as \$150 million. NJ TRANSIT is working with other transit agencies to find a legislative solution on Capitol Hill considering many of the banks that are seeking this funding from public transit agencies are themselves taking public funding.
- Demand for new rail services increases need for operating subsidies. New rail expansion projects such as the Northern Branch, Bergen-Passaic, Lackawanna Cut-off could require as much as \$40 million more in operating subsidy for NJ TRANSIT
- State and federal capital funds transfer to operating - In recent years, the capital to operating transfer has been approximately \$350 million annually (\$250 million FTA Federal funds, \$100 million TTF). Federal law allows these expenses to be considered capital expenses, but NJ TRANSIT has maxed out the amount of FTA Federal funds for preventative maintenance at approximately \$250 million.
- Similarly, the Transportation Trust Fund allows these expenses to be funded by TTF funds, provided the vehicles being rehabilitated have 5 years of useful life remaining. Under the TTF reauthorization, TTF preventative maintenance expenses are capped at \$100 million.
- New York Harbor ferry service operated by NY Waterways and Billybey is short of funds and exploring the possibility of capital investment by NJ TRANSIT. Existing private ferry service serves 30,000 customers a day with no government operating subsidy.
- Status of Labor Agreements requires quick attention. NJ TRANSIT recently negotiated a 0% increase in bus contracts for FY10. For FY 2010, NJ TRANSIT continues to honor the rail labor contracts that were negotiated in 2004. That contract included 3% annual increases in pay along with a new employee contribution to health care that grows by 3% compounded annually.

- Private Bus Carriers are seeking additional funding or agreement to drop service that would add to NJ Transit's operating deficit. It is an on-going issue exacerbated by current economic conditions.
- Drop in Casino Revenues impacting elderly service - Each year, funding from taxes on Atlantic City casino revenues provide transit services for New Jersey's senior citizens and disabled residents. NJ TRANSIT distributes this funding to counties by legislative formula that, in turn, uses the funding to operate transit services. NJ TRANSIT retains a portion (15%), for support of capital projects and administration that provides greater access to transit for the disabled. The fund typically provides approximately \$33 - 36M annually, but is only anticipated to be \$30.2 million in FY 2010. Casino revenue represents about 45% of overall county budgets for local transportation (i.e. senior citizens and disabled travelers).
- Real Estate/Private Sector Development Opportunities, including rail station parking should be explored.

IN CONCLUSION

This report is backed up by substantial documentation that has been provided to the Subcommittee by the various agencies and the stakeholders who took the time to offer their views to the subcommittee during the stakeholder listening sessions. Those stakeholders included the following organizations:

AAA
Alliance for Action
Amalgamated Transit Union (ATU)
Association General Contractors (AGC)
Commerce and Industry Association
Communications Worker of America (CWA)
Conrail
Consulting Engineers Council (CEC)
CSX Railroad
International Federation of Profession and technical Engineers (Local 195)
Laborers International Union of North America (LIUNA)
National Association of Industrial & Office Properties (NAIOP)
NationsPort
NJ Association of Counties
NJ Association of Railroad Passengers
NJ Aviation Association
NJ Builders Association
NJ Building Trades Council
NJ Business and Industry Association (NJBIA)

NJ Concrete and Aggregate Association
NJ Concrete Pipe Association
NJ County Engineers
NJ Future
NJ League of Municipalities
NJ Motor Truck Association
NJ Motorists Association
NJ SEED
NJ Short Line Railroad Association
Norfolk Southern Railroad
NY Shipping Association
Operating Engineers
PlanSmart NJ
Sierra Club
South Jersey Development Council
Tri-State Transportation Campaign
United Steel Workers
United Transportation Union (UTU)
Utility Transportation Contractors Association (UTCA)
Rutgers HR Program

Respectfully submitted:

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Transition Subcommittee on Transportation

Jerry Amedeo
James Crawford
Frank Druetzler
Ron Gravino
Jerry Langer
Jack Lettiere
Jon Livingston
Frank Luna

Nevins McCann
Samuel Raia
David Ragonese
Bill Schiels
Ed Vergopia
Norbert Weldon
James Weinstein

A Safe New Jersey

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Message to: Members of the Assembly Transportation Committee

From: Grace Applegate-Tissiere, Chair

Date: October 14, 2014

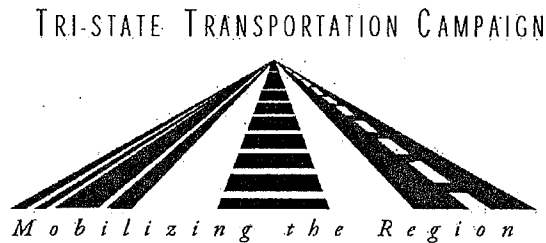
Every day that passes the debt services for previous road and bridge projects grows, the horrible conditions of New Jersey's roads and bridges gets worse and the need for funding to address these problems goes unresolved. As elected officials you have known for years about the developing condition of the Transportation Trust Fund. The problem would not exist today if the revenue for the original Transportation Trust Fund had been dedicated to transportation needs. However these "**HEARINGS**" or better known as "**ROAD SHOWS**" are doing nothing to solve the problem. Knowing the problem and not taking **ACTION NOW** to solve the problem is reprehensible. The lack of a long-term solution to this dire problem is **threatening** the **safety** and **quality of life** of residents and commuters, as well as the New Jersey's **business climate** and **economy**.

A Safe New Jersey calls on this Committee to cancel future "**HEARINGS** and instead using the information from "**FORWARD NEW JERSEY**" and other reliable sources, **ACT NOW**; draft legislation, pass it and send it to the Governor.

Raising the Gas Tax (see enclosed COMMENTARY) should be part of the solution since so much of the gas sold in New Jersey is to out of State drivers and gas prices are dropping. Opposition to a gas tax increase is dropping because of COMMENTARYS like ours and pro news paper articles; not from "**HEARINGS**" like today.

The voters of New Jersey elected you to solve their problems. So do it, take **ACTION NOW**.

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**Testimony of Janna Chernetz, NJ Advocate at Tri-State Transportation Campaign
Transportation Funding/TTF
Assembly Transportation & Independent Authorities Committee
Busch Campus Center, Busch Campus, Rutgers University, Piscataway, NJ
October 14, 2014**

Good morning Chairman Wisniewski, Vice Chair Stender and members of the Assembly Transportation Committee. I'd like to thank you for holding this series of important hearings regarding the future of transportation in New Jersey.

My name is Janna Chernetz and I am the New Jersey Advocate for the Tri-State Transportation Campaign, a non-profit transportation policy advocacy organization working for a more balanced and equitable transportation system in New Jersey, downstate New York and Connecticut.

This Committee is certainly fully aware of the current state of transportation in New Jersey given the insolvency of the Transportation Trust Fund. Roadways, bridges, and transit need significant investment but there is no sustainable plan to raise revenue for transportation. This also means new initiatives and projects such as bus rapid transit, light rail expansion, more NJTransit one-seat-rides, or more bicycle and pedestrian infrastructure cannot be built. And successful and desired state funded programs such Transit Village cannot expand.

My testimony today will focus around the need to adequately funding public transportation in New Jersey.

Transit Ridership

According to the American Communities Survey, almost 11 percent of New Jersey workers 16 years and older use public transportation to get to work. Of that 11 percent, two-thirds travel by bus. Hudson, Essex and Bergen Counties (those counties closest to New York City) have the highest percentage of commuters using transit: 39, 20.5 and 13.3 percent respectively. Seventy percent of New Jersey residents who commute to New York City use mass transit and 24 percent who commute to Philadelphia use mass transit. These numbers far exceed the national average when it comes to commuters using transit but New Jersey is no better than the national average when it comes to those commuting within New Jersey as those using transit falls to only 5 percent. Thus, there is need for improvement and expansion to New Jersey's public transportation network.

As mentioned above, two thirds of all transit trips are taken by bus. In FY2013, there were over 160 million unlinked passenger trips by bus. Of the roughly 61 percent of transit trips by bus, the North Jersey local represents 27 percent of all trips, followed by NY Interstate, South Jersey and Contract Carriers at 21, 9 and 4 percent respectively. The implementation of Bus Rapid Transit (BRT), a cost effective approach to transit service that incorporates features such as off-board fare collection and bus exclusive lanes to offer faster and more reliable service especially on high ridership routes is lacking in New Jersey. There are currently 5 routes being advanced in the Bergen County BRT study. Other study locations in the past have included Camden-Glassboro, Monmouth and Union Counties, and the congested Route 1 corridor. However, without adequate funding, the Bergen County project, and any other BRT service, will not come to fruition and NJTransit will be unable to expand bus service.

hubs. The program is an overwhelming success and there are currently 28 designated Transit Villages with other municipalities in the process of seeking designation. However; without an increase in funding, NJDOT will not be able to expand this program.

Cross Hudson Rail Capacity

Finally, I would be remiss if I did not address the cross Hudson rail commute especially in light of the recent report identifying the need to overhaul the two existing tunnels due to damage sustained by Superstorm Sandy. According to Amtrak, each tunnel would need to be shut down for at least a year. Reducing cross Hudson capacity to that extent would have devastating effects on the 160,000 daily commuters that go through the tunnels. The now defunct Access to the Region's Core (ARC) project would have provided not only fast and more frequent service between New York and New Jersey as well as similar increases in property values as Midtown Direct, but it would have ensured sustainable cross-Hudson transit infrastructure and more importantly would have been completed by 2018. Amtrak's proposed Gateway project would significantly expand and improve NJTransit service as well as provide additional one-seat rides to Penn Station and allow for the much needed maintenance of the tunnels without significant service disruption. So far, the right-of-way has been preserved, but funding for the project has yet to be identified. While this is an Amtrak headed project, leaders in both New York and New Jersey must continue to advocate for Federal funding for this project given the regional significance.

Without public transportation, there would be roughly 440,000 additional cars on New Jersey's roads every day. Imagine 440,000 more vehicles clogging our already-congested roadways. Imagine 440,000 more vehicles adding to the wear and tear of our already-crumbling roads and bridges. Imagine 440,000 additional tailpipes and their associated pollutants and CO2 emissions.

The ability to expand New Jersey's public transportation system doesn't just create construction jobs; transit also improves access to jobs. As a key driver in stimulating development and fostering economic vitality, any solution to restoring the solvency of the TTF must also adequately address the needs of transit.

On behalf of Tri-State Transportation Campaign, I appreciate the opportunity to testify before this esteemed committee today.



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM

Forward NJ is a coalition of NJ-based organizations focused on reforming the state's transportation system. Forward NJ will educate stakeholders and the public as to the crisis we are confronting in relation to our outdated infrastructure.

We must **REFORM** and consolidate management of the system, **REDUCE** the burden on consumers and create Public-Private Partnership capacity and **INVEST** revenue in a reliable, sustainable, constitutionally dedicated fashion to move **NJ FORWARD**.

1 REFORM

Consolidate into a Single Efficient, Strategic Transportation Planning Unit to Recognize Massive Savings

- **Massive savings over 10 years = \$1 billion** by making government more effective, efficient and innovative.
- **Consolidate NJDOT, NJ Transit, NJ Turnpike, NJ Parkway, and SJTA into one efficient, strategic infrastructure unit** that would realize increased buying and bonding capacity, lower interest rates, improve credit rating over current units, and allow us to leverage private capital to increase project development.

2 REDUCE

Burden on Consumers – Public Private Partnerships

- Public Private Partnerships would be utilized to help finance mega-projects, **freeing up hundreds of millions in TTF funds**.
- With the additional resources made available, **the number of capital projects underway at one time could double**.
- **Program would be structured to incorporate global best practices** and also ensure a level playing field for our local NJ contractors.

3

INVEST

Reform Revenue Process, Transportation Money for Transportation

Revenue Options Include:

-  **\$.15 Gas Tax**, Indexed to CPI
\$.20 Gas Tax, Indexed to CPI
-  **7% Sales Tax** on Total Motor Fuels Sales
3.5% Sales Tax on Total Motor Fuels Sales
-  Revert to percentage-based **Petroleum Products Gross Receipts Tax at 6%, 7%, or 8% (Wholesale)**
-  Camera Enforcement and School Zone **Safety Program**
-  Dedication of **Online Gaming Revenue**
-  Dedication of funds realized due to change in **Utility Relocation law**
-  Raising Car Rental Fee to **\$15**
Raising Car Rental Fee to **\$20**
-  Dedication of **Good Driver Surcharge** Proceeds
-  Dedication of **Undedicated Diesel Charges**
-  Full Dedication of **MVC Surplus Funds**

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach insolvency and have no capacity to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years to **maintain** and **improve** the state's roads, bridges and mass transit systems, as well as to **begin critical** projects. The lack of a long-term solution to this dire problem **threatens** the **safety** and **quality of life** of residents and commuters, as well as the state's **business** climate and **economy**.



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts To Transportation Logistics & Distribution Industry

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach insolvency and have no capacity to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years. Without investment in a robust highway and bridge network necessary to sustain **New Jersey's**

transportation logistics and distribution industry the state will fail to gain a competitive edge when the Panama Canal expansion brings in larger container ships to Port Newark-Elizabeth. The lack of a long-term solution to support future logistics growth **threatens** the state's **business** climate and **economy**.

THE FACTS

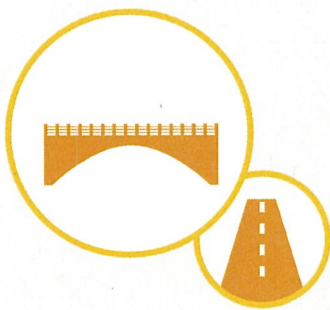
- ✓ Inter-state truck shipments along NJ's highway and bridge network are **vital to the economic growth** of the state.
- ✓ In 2011, NJ businesses shipped a total of **\$959.8 billion** in freight. Most of these goods—**70 percent**— were shipped via truck over the state's highway and bridge network.
- ✓ The value of freight shipments from NJ businesses for both domestic and export markets **will more than double from \$755 billion in 2011 to over \$1.5 trillion in 2040.**
- ✓ An estimated **12-15% increase of goods will come through the ports** and onto our highways once the Port Authority completes the Bayonne Bridge raising.
- ✓ NJ imports, traveling by all modes, will increase from **\$204 billion to \$510.7 billion over the same time period.**
- ✓ Crashes due to **poor and dangerous road conditions** cost NJ families, businesses, and local governments at least **\$4.6 billion annually.**

↓ Transportation Investment

↑ Congestion
Damage
Potholes

↓ On Time Deliveries
Exports Shipping Volume

A BROKEN SUPPLY CHAIN



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

A modern transportation system allows the TLD sector to increase operating efficiencies and better serve firms that rely on shipping goods. This enables business in all sectors to continue to grow and expand.

INVESTMENT BENEFITS

A \$2 Billion TFF

**\$2.64
BILLION**

Annual business savings on truck operating and maintenance costs

**\$1.60
BILLION**

Annual truck savings from reduced travel times

REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

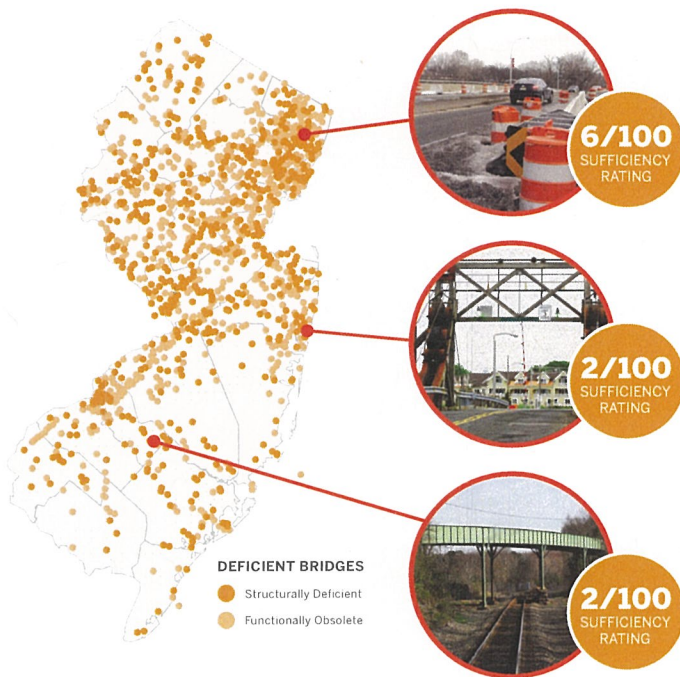


Impacts to Public Safety and Welfare

Without upgrades and repairs to our transportation infrastructure, the safety of our families and loved ones are put at risk. Thousands of miles of state roadways and hundreds of bridges are in desperate need of repair or replacement, ranking New Jersey among the worst in the nation.

In fact, 46 percent of NJ roads eligible for federal aid are rated "not acceptable" and need major repairs or replacement. This is the highest percentage in all 50 states. Much needed improvements to our crumbling transportation infrastructure will prevent a disaster and saves lives.

STRUCTURALLY DEFICIENT BRIDGES



Cedar Lane-Anderson St. Bridge,

Hackensack River, Hackensack/Teaneck

Built: 1971

Daily Traffic: 30,000

Notes: Before the 15-ton weight restriction banning buses, 400 NJ Transit buses crossed the bridge every weekday.

Glimmer Glass Draw Bridge

Glimmer Glass tidal inlet, Manasquan/Brielle

Built: 1920

Daily Traffic: 6,712

Notes: Bridge closed on August 7th to vehicular traffic after large truck fractured the bridge's timber deck at three locations

Old White Horse Pike, County Road 716 Bridge

Bridge over NJ Transit Rail Line, Winslow Township

Built: 1902

Daily Traffic: 900

Notes: Bridge closed on September 25, 2013 after engineers determined the bridge had structural concerns.



2,334

PROBLEMATIC BRIDGES



624

STRUCTURALLY
DEFICIENT BRIDGES



1,710

FUNCTIONALLY
OBSOLETE BRIDGES

THE PROBLEM

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach **insolvency and have no capacity** to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years to **maintain and improve** the state's roads, bridges and mass transit systems, as well as to **begin critical** projects. The lack of a long-term solution to this dire problem **threatens the safety and quality of life** of residents and commuters, as well as the state's **business** climate and **economy**.



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts to Business & Economy

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach insolvency and have no capacity to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years to **maintain** and **improve** the state's roads, bridges and mass transit systems, as well as to **begin critical** projects. The lack of a long-term solution to this dire problem **threatens** the **safety** and **quality of life** of residents and commuters, as well as the state's **business** climate and **economy**.

As New Jersey's neighboring states continue to gain jobs well past pre-recession economic levels, New Jersey has struggled, regaining only **40% of jobs lost during the recession**. The efficient and safe movement of goods and people is **critical to the economic competitiveness of New Jersey and the quality of life for its citizens**. Collectively, NJ's **3.9 million commuters** are stuck in the car for the equivalent of an additional **35 million minutes** every day, directly impacting business productivity. Every employee, customer and business pays a price when the system is **congested, unsafe or in poor condition**.

JOBS AND GROWTH AT RISK

New Jersey's highway, bridge and transit network is crucial to the success of the state economy—**facilitating the shipment of nearly \$500 billion in goods** produced by New Jersey businesses, over **\$59.6 billion** in output related to the state's retail trade, tourism and service industries and **\$70 billion** in international trade. **Nearly, 2.0 million New Jersey jobs fully depend on a modern updated infrastructure system.**



**Advanced
Manufacturing**



Aerospace & Defense



**Transportation,
Logistics & Distribution**



Healthcare



Finance



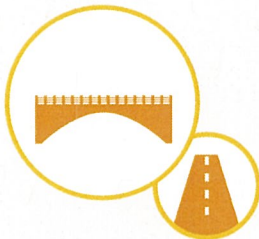
Tourism



Technology



Life Sciences



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

BENEFITS:

- Overall estimates are that every \$1 increase in the highway and bridge capital stack generates a **total of 30 cents in business savings**.
- Fully investing in the New Jersey highway and bridge system would generate **an additional \$3.7 billion in sales and output across all industries**.
- Money invested in highways, bridges and transit generates nearly **\$9.5 billion in total annual economic activity** for the state and **contributes about \$5 billion to New Jersey's Gross State Product (GSP)**.



REFORMING

NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts to Business & Economy

RIPPLE EFFECTS THROUGHOUT ECONOMY

As a result of an improved highway network, New Jersey businesses will enjoy reduced operating costs and increased market access. These spillovers, or network effects, will benefit all businesses, but will be particularly important for those industries that rely more heavily on transportation, such as manufacturing, warehousing and storage, tourism and retail and wholesale trade.



Staying Competitive as logistics and global transportation networks become increasingly important.



Maximizing Port Investment to ensure the region is ready for the 12-15% increase in shipping volume when the expanded Panama Canal and raised Bayonne Bridge open.



Improved Access to Markets for New Jersey exporters, at the ports of Newark and Elizabeth will help increase competitiveness and lower the cost of shipping goods.



Improved Access To Labor provides easier commutes for employees and enables recruiting from a larger pool of potential workers.



Reduced Production Costs with transportation links to larger markets and reduced transaction costs.



Increase Market Share & More Customers with transportation links to larger markets and reduced transaction costs.



Increased Operational Efficiency as businesses can make better decisions about their products, inputs, deliveries, and workforce without worry about poor roadways or congestion.



Increased Demand for Inputs as the economy expands businesses will purchase more goods from their suppliers and will increase their demand for private capital.



Agglomeration Economies are strengthened as it becomes easier for firms to locate closer to one another.



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts to the Labor & Construction Industry

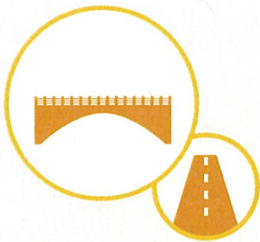
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the state's roads, bridges and mass transit systems, as well as to **begin critical** projects. The lack of a long-term solution to this dire problem threatens the **safety** and **quality of life** of residents and commuters, as well as the state's **business** climate and **economy**

JOBS AND GROWTH AT RISK

Transportation construction spending in New Jersey supports:

- ✓ **104,913** full-time jobs.
- ✓ **52,264** direct jobs in transportation construction and related activities
- ✓ **52,649** jobs induced, or sustained, by transportation construction and services
- ✓ **\$9.5 billion** in total annual economic activity
- ✓ Contributes about **\$5 billion** or 1% to New Jersey's Gross State Product (GSP)
- ✓ Nearly **2.0 million** NJ jobs are fully dependent on the work done by the state's transportation industry



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

MAXIMIZING GROWTH OPPORTUNITIES

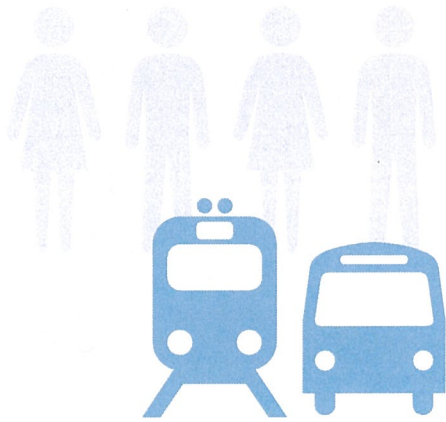
- An estimated **12-15% increase of goods will come through the ports** once the Port Authority completes the Bayonne Bridge raising. 70 percent of all goods will be shipped by the roadway network and need to be distributed in closely located industrial space.
- According to a leader in real estate research, demand for Class A Industrial space will continue to increase in the NJ Turnpike corridor and Port areas with over **23.6 million square feet** either approved or under construction that can be delivered over the next two years.

↑ Transportation Investment

↓ Congestion Potholes Damage

↑ On Time Deliveries Exports Shipping Volume

CREATES DEMAND FOR TRANSPORTATION & DISTRIBUTION CONSTRUCTION



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts to Residents and Commuters

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach insolvency and have no capacity to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years to **maintain** and **improve**

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THE FACTS

- ✓ New Jersey workers have the **second longest average commute** in the United States at 33 minutes, according to the U.S. Census Bureau.
- ✓ This is **37 percent above the national average of 24 minutes**. The nine additional minutes have significant consequences on worker productivity and quality of life.
- ✓ Collectively, New Jersey's 3.9 million commuters are stuck in the car for the equivalent of an additional **35 million minutes every day**.
- ✓ Getting there, **72.3 percent of commuters drive alone**, **8.4 percent car-pool** and **10.8 percent take public transportation**. Other employees walked, took a taxi or bicycled.

ROAD CONDITIONS AND SAFETY TODAY



52.7%
OF ROADWAY FATALITIES

Poor roadway conditions are a contributing factor in more than half of roadway fatalities, according to research by the Pacific Institute for Research and Evaluation (PIRE)



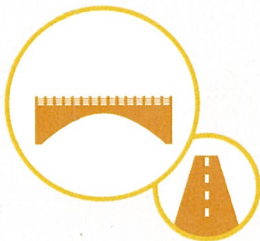
627+
PEOPLE KILLED

Over 627 people lost their lives on New Jersey roads in 2011, according to the national highway traffic safety administration.



\$4.6
BILLION ANNUALLY

The PIRE study estimates that road condition related crashes cost New Jersey **\$4.6 Billion annually**.

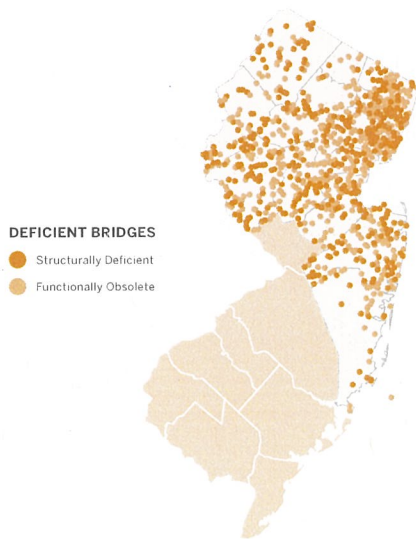


THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

BENEFITS:

- A fully funded transportation system will help the **571,585 commuters in New Jersey save almost 6.3 million hours** a year.
- Improvements in road conditions and traffic congestion mean that New Jersey drivers, on average, would have an **additional 11 hours** each year for their own interests, rather than sitting in traffic



REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

Impacts to North Jersey

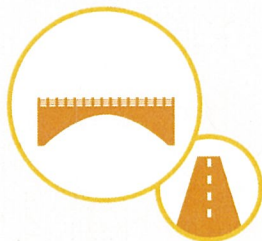
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THE FACTS

- ✓ New Jersey workers have the **second longest average commute** in the United States at 33 minutes, according to the U.S. Census Bureau.
- ✓ This is **37 percent above the national average of 24 minutes**. The nine additional minutes have significant consequences on worker productivity and quality of life.
- ✓ Collectively, New Jersey's 3.9 million commuters are stuck in the car for the equivalent of an additional **35 million minutes every day**.
- ✓ Getting there, **72.3 percent of commuters drive alone, 8.4 percent car-pool and 10.8 percent take public transportation**. Other employees walked, took a taxi or bicycled.
- ✓ An estimated **12-15% increase of goods will come through the ports** once the Port Authority completes the Bayonne Bridge raising. The North Jersey roadway network will ship 70 percent of all goods from the Port.

ROAD CONDITIONS AND SAFETY TODAY IN NORTH JERSEY



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

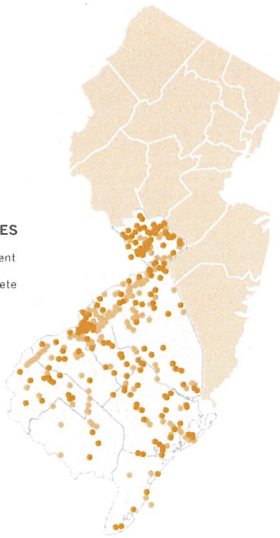
FUTURE TRANSPORTATION PROJECTS:

- Replacement of Structurally Deficient Bridges
- New Hudson River Train Tunnels
- Hudson-Bergen Light Rail Expansion
- Port of Newark/Elizabeth Transportation Improvements
- A fully funded transportation system will help the **571,585 commuters in New Jersey save almost 6.3 million hours a year**.
- Improvements in road conditions and traffic congestion mean that New Jersey drivers, on average, would have an additional **11 hours each year for their own interests, rather than sitting in traffic**

REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:

DEFICIENT BRIDGES

- Structurally Deficient
- Functionally Obsolete



Impacts to South Jersey

On June 30th 2015, less than one year from today, New Jersey's Transportation Trust Fund will reach insolvency and have no capacity to pay for any transportation projects. According to New Jersey Policy Perspective, the TTF needs **\$20 billion** over the next 10 years to **maintain** and **improve** the state's roads, bridges and mass transit systems, as well as to **begin critical** projects. The lack of a long-term solution to this dire problem **threatens** the **safety** and **quality of life** of **residents and commuters**, as well as the state's **business** climate and **economy**.

As New Jersey's neighboring states continue to gain jobs well past pre-recession economic levels, **New Jersey has struggled, regaining only 40% of jobs lost during the recession.** New Jersey's economic incentives has put a new focus on business expansion in South Jersey. **To realize the full benefits of this economic development strategy South Jersey needs a modern and efficient public transportation system.**

JOBS & GROWTH AT RISK

New Jersey's highway, bridge and transit network is crucial to the success of the state economy—facilitating the shipment of nearly **\$500 billion in goods** produced by New Jersey businesses, over **\$59.6 billion in output** related to the state's retail trade, tourism and service industries and **\$70 billion in international trade**. **Nearly, 2.0 million New Jersey jobs fully depend on a modern updated infrastructure system.**

FUTURE TRANSPORTATION PROJECTS

• **Paulsboro Port Transportation Improvements**

• **Glassboro-Camden Light Rail**

• **Replacement of 191 Structurally Deficient and 327 Functionally Obsolete Bridges**

BENEFITS



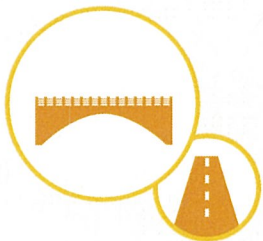
Staying Competitive
as logistics and global transportation networks become increasingly important.



Maximizing Port Investment
to ensure the region is ready for the increase in shipping volume when the Port of Paulsboro opens for business.



Increase Market Share & More Customers
with transportation links to larger markets and reduced transaction costs for business.



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

REFORMING NEW JERSEY'S TRANSPORTATION SYSTEM:



Impacts to Mass Transit

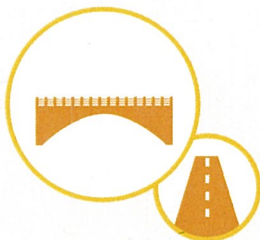
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New Jersey mass transit users are facing **increasing** amounts of **delays** and **service cancellations**. Investment in NJ's mass transportation systems is critical to the vibrancy of NJ's **cities, social mobility**, and **economic competitiveness**. NJ Transit's announcement to upgrade the fleet with 1,388 buses and 113 multi-level rail cars could be **in jeopardy** because of an **unfunded Transportation Trust Fund**. Our mass transit riders **need** a **modern, reliable**, and **safe** transportation system.

THE FACTS

- ✓ NJ Transit is the third largest transit system in the country with **165 rail stations, 62 light rail stations and more than 19,000 bus stops** linking major points in New Jersey, New York and Philadelphia.
- ✓ NJ Transit provides more than **895,000 weekday trips** on 262 bus routes, three light rail lines, and 12 commuter rail lines.
- ✓ To get to work, **10.8% of all New Jersey workers** or 436,074 people take public transportation.
- ✓ New Jersey residents make up 12% of Manhattan's workforce. Everyday approximately **250,000 commuters use buses, PATH and NJ Transit**.
- ✓ The Newark Light Rail and The Hudson-Bergen Light Rail are critical **to social mobility and economic opportunity** in New Jersey's two largest cities, Newark and Jersey City.

STATUS OF MASS TRANSIT



THE GOAL:

Achieve sufficient revenue that allows for \$2B in annual statewide TTF capital spending, maximize the federal match, and continue to pay annual debt service obligations.

BENEFITS:

- Replacement of single-level rail cars with multi-level cars to add capacity and reliability.
- New cruiser buses will increase capacity and comfort.
- Future expansion projects.
- Reduces Road Congestion
- Enhances Social and Economic Mobility
- Drives Economic Growth
- Reduces Carbon Footprint

ADDITIONAL APPENDIX MATERIALS
SUBMITTED TO THE
ASSEMBLY TRANSPORTATION AND INDEPENDENT AUTHORITIES
for the
OCTOBER 14, 2014 MEETING

Submitted by Grace Applegate-Tissiere, Chair, A Safe New Jersey:

Grace Applegate-Tissiere, “COMMENTARY: Raise N.J. gasoline tax to repair roads, bridges,” September 24, 2014, *Asbury Park Press*, APP.COM.

Grace Applegate-Tissiere, “Assembly Hearing accomplished nothing,” October 10, 2014, *Asbury Park Press*, APP.COM.

Peter Finger, “FEATURED LETTER: Taxes worth it to repair New Jersey’s roads, bridges,” September 29, 2014, *Asbury Park Press*, APP.COM.