



CITY OF RAPID CITY

RAPID CITY, SOUTH DAKOTA 57701-2724

PLANNING DEPARTMENT

300 Sixth Street

Patsy Horton, Transportation Planning Coordinator
Transportation Planning Division
City web: www.rcgov.org

Phone: 605-394-4120
Fax: 605-394-6636
e-mail: patsy.horton@rcgov.org

MEMORANDUM

TO: Legal and Finance Committee *Patsy*
FROM: Patsy Horton, Transportation Planning Coordinator
DATE: November 1, 2002
RE: Professional Service Agreement with SRF Consulting Group, Inc. for an Intelligent Transportation System (ITS) Master Plan for Integration Strategies in an amount not to exceed \$99,533

Staff is requesting approval of the contract with SRF Consulting Group, Inc. for the completion of an Intelligent Transportation Systems (ITS) Master Plan for Integration Strategies. An Intelligent Transportation System project is any project that involves the application of electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system. The contract identifies three project phases: 1) a needs assessment regarding transportation issues; 2) how ITS can address those transportation issues and a priority listing, with anticipated costs, of those transportation issues based on the transportation needs; and 3) a local ITS architecture for the area's ITS requirements. This local ITS architecture would provide a framework for planning, defining and integrating the local ITS.

The Executive Policy Committee of the Metropolitan Planning Organization approved the Request for Proposals at its July 24, 2002 meeting. Funding for this project is provided by 80% Federal highway planning funds and 20% local match. Adequate funds are available from Transportation Planning Division Budget (706).

Please feel free to contact me anytime if you have questions regarding this project.

STAFF RECOMMENDATION: Staff recommends approval of the contract with minor language changes from SDDOT legal staff review, if appropriate, between SRF Consulting Group, Inc. and the City of Rapid City for an Intelligent Transportation System (ITS) Master Plan for Integration Strategies in an amount not to exceed \$99,533.

c: Marcia Elkins, Planning Director

PROFESSIONAL SERVICES AGREEMENT

RAPID CITY AREA

INTELLIGENT TRANSPORTATION SYSTEMS

MASTER PLAN FOR INTEGRATION STRATEGIEES

THIS IS AN AGREEMENT made on this ____ day of November, 2002 between the City of Rapid City, 300 Sixth Street, Rapid City, South Dakota 57701, hereinafter referred to as OWNER, and SRF Consulting Group, Inc., One Carlson Parkway North, Suite 150, Minneapolis, Minnesota 55447-4443 hereinafter referred to as CONSULTANT. This project will encompass the preparation of an Intelligent Transportation Systems Master Plan for Integration Strategies to develop a needs assessment of the existing intelligent transportation systems within the area, to develop an ITS implementation plan, and to develop a local Intelligent Transportation Systems (ITS) architecture (hereinafter called the Project).

OWNER and CONSULTANT in consideration of their mutual covenants herein agree in respect of the performance of professional services by CONSULTANT and the payment for those services by OWNER as set forth below.

SECTION 1 - BASIC SERVICES TO CONSULTANT

1.1 General

CONSULTANT shall provide to OWNER professional consulting services in all phases of the Project to which this Agreement applies as hereinafter provided. These services will include serving as OWNER's professional consulting representative for the Project, providing professional consultation and advice and furnishing selected transportation planning services.

1.2 Scope of Work

The Basic Services Scope of Work is described in detail in Exhibit A.

SECTION 2 - ADDITIONAL SERVICES OF CONSULTANT

2.1 Services Requiring Authorization in Advance

If authorized in writing by OWNER, CONSULTANT shall furnish or obtain from others Additional Services of the types listed in paragraphs 2.1.1 through 2.1.7, inclusive. These services are not included as part of Basic Services except to the extent provided otherwise in Exhibit A; these will be paid for by OWNER as indicated in Section 5.

2.1.1 Services resulting from significant changes in the general scope, extent or character of the Project including, but not limited to, changes in size, complexity, or method of financing; and revising previously accepted studies,

reports or design documents when such revisions are required by changes in laws, rules, regulations, ordinances, codes or orders enacted subsequent to the preparation of such studies, reports or documents.

- 2.1.2 Investigations and studies involving, but not limited to, detailed consideration of operations, maintenance and overhead expenses; providing value consulting during the course of design; the preparation of feasibility studies, cash flow and economic evaluations, rate schedules and appraisals; assistance in obtaining financing for the Project; evaluating processes available for licensing and assisting OWNER in obtaining process licensing; detailed quantity surveys of material, equipment and labor; and audits or inventories required in connection with construction performed by OWNER.
- 2.1.3 Furnishing services of independent professional associates and consultants for other than Basic Services (which include, but are not limited to, customary civil, structural, mechanical and electrical consulting and customary architectural design incidental thereto);
- 2.1.4 Services during out-of-town travel required of CONSULTANT other than visits to the site, attendance at OWNER's office as required by Section 1, or other services as detailed in Exhibit A.
- 2.1.5 Providing any type of property surveys or related consulting services needed for the transfer of interests in real property and field surveys for design purposes and providing other special field surveys.
- 2.1.6 Preparing to serve or serving as consultant or witness for OWNER in any litigation, arbitration or other legal or administrative proceeding involving the Project (except for assistance in consultations which is included as part of Basic Services).
- 2.1.7 Additional services in connection with the Project, excluding services which are to be furnished by OWNER in accordance with Article 3, and services not otherwise provided for in this Agreement.

SECTION 3 – OWNER'S RESPONSIBILITIES

OWNER shall do the following in a timely manner so as not to delay the services of CONSULTANT:

- 3.1 Ms. Patsy Horton, Transportation Planning Coordinator with the Rapid City Planning Department, shall act as OWNER's representative with respect to the services to be rendered under this Agreement. Ms. Horton shall have complete authority to transmit instructions, receive information, interpret and define OWNER's policies and decisions with respect to CONSULTANT's services for the Project.
- 3.2 Assist CONSULTANT by placing at CONSULTANT's disposal all available information pertinent to the Project including previous reports and any other data

relative to the Project.3.3 Examine all studies, reports, sketches, drawings, proposals and other documents presented by CONSULTANT, obtain advice of an attorney, insurance counselor and other consultants as OWNER deems appropriate for such examination and render in writing decisions pertaining thereto within a reasonable time so as not to delay the services of CONSULTANT.

- 3.4 Give prompt written notice to CONSULTANT whenever OWNER observes or otherwise becomes aware of any development that affects the scope or timing of CONSULTANT's services.
- 3.5 Furnish or direct CONSULTANT to provide Additional Services as stipulated in paragraph 2.1 of this Agreement or other services as required.

SECTION 4 - PERIOD OF SERVICE

- 4.1 The provisions of this Section 4 and the various rates of compensation for CONSULTANT's services provided for elsewhere in this Agreement have been agreed to in anticipation of the orderly and continuous progress of the Project. CONSULTANT's obligation to render services hereunder will extend for the schedule as defined in Exhibit B.

SECTION 5 - PAYMENTS TO CONSULTANT

5.1 Methods of Payment for Services and Expenses of Engineer

5.1.1 *For Basic Services.* OWNER shall pay CONSULTANT for Basic Services rendered under Section 1 (as amended and supplemented in Exhibit A) an amount not-to-exceed \$99,533.

5.1.1.1 *Direct Labor Costs and Overhead.* Direct labor costs and overhead shall be paid at a rate equal to CONSULTANT's salary cost times a factor of 1.3206 for all Basic Services rendered on the Project.

5.1.1.2 *Fixed Fee.* A fixed fee of 15% of the actual direct labor and overhead costs shall be paid upon each billing.

5.1.1.3 OWNER shall pay CONSULTANT the actual costs (except where specifically provided otherwise) of all Reimbursable Expenses approved by OWNER. The term "Reimbursable Expenses" has the meaning assigned to it in paragraph 5.4.

5.1.2 *For Additional Services.* OWNER shall pay CONSULTANT for Additional Services rendered under Section 2 as follows:

5.1.2.1 *General.* For additional services of CONSULTANT's principals and employees engaged directly on the Project and rendered pursuant to paragraph 2.1 on the same basis as outlined in paragraphs 5.1.1.1, 5.1.1.2 and 5.1.1.3.

5.2 Times of Payments

- 5.2.1 CONSULTANT shall submit monthly statements for Basic and Additional Services rendered and for Reimbursable Expenses incurred. OWNER shall make prompt monthly payments in response to CONSULTANT's monthly statements.

For these services the OWNER shall make prompt monthly payments to the ENGINEER based on monthly billings submitted by the ENGINEER up to 90% of the maximum fee for each Task as shown on Appendix C. The remaining 10% shall be due upon final approval of the Final Report for the Project by the OWNER.

5.3 Other Provisions Concerning Payments

- 5.3.1 If OWNER fails to make any payment due CONSULTANT for services and expenses within forty-five (45) days after receipt of CONSULTANT's statement therefor, the amounts due CONSULTANT will be increased at the rate of 1.5% per month from said forty-fifth day, and in addition, CONSULTANT may, after giving seven (7) days written notice to OWNER, suspend services under this Agreement until CONSULTANT has been paid in full all amounts due for services, expenses and charges.

- 5.3.2 In the event of termination by OWNER upon completion of any phase of Basic Services, progress payments due CONSULTANT for services rendered through such phase shall constitute total payment for such services. In the event of such termination by OWNER during any phase of the Basic Services, CONSULTANT also will be reimbursed for the charges of independent professional associates and consultants employed by CONSULTANT to render Basic Services incurred through such phase. In the event of any such termination, CONSULTANT will be paid for unpaid Reimbursable Expenses previously incurred.

- 5.3.3 The employees of CONSULTANT, professional associates and consultants, whose time is directly assignable to the program shall keep and sign a time record showing the element of the Project, date and hours worked, title of position and compensation rate.

- 5.3.4 *Records.* The CONSULTANT shall maintain an accurate cost keeping system as to all costs incurred in connection with the subject to this Agreement and shall produce for examination books of accounts, bills, invoices and other vouchers or certified copies thereunder if originals be lost at such reasonable time and place as may be designated by the OWNER and shall permit extracts and copies thereof to be made during the contract period and for three years after the date of final payment to CONSULTANT.

All personnel employed by CONSULTANT shall maintain time records for

time spent performing work on study described in this Agreement for a period of three years from the conclusion of the study. Time records and payroll records for said personnel shall be similarly retained by CONSULTANT for a period of three years from the conclusion of the study.

Upon reasonable notice, the CONSULTANT will allow OWNER auditors to audit all records of the CONSULTANT related to this Agreement. These records shall be clearly identified and readily accessible. All records shall be kept for a period of three (3) years after final payment under Agreement is made and all other pending matters are closed.

5.3.5 *Inspection of Work.* OWNER auditors shall at reasonable times be accorded proper CONSULTANT facilities for review and inspection of the work in this Agreement. OWNER shall have access to CONSULTANT's premises and to all books, records, correspondence, instructions, receipts, vouchers and memoranda of every description pertaining to this Agreement.

5.3.6 *Audits.* The CONSULTANT shall, with reasonable notice, afford representatives of the OWNER reasonable facilities for examination and audits of the cost account records; shall make such returns and reports to a representative as he may require; shall produce and exhibit such books, accounts, documents and property as he may determine necessary to inspect and shall, in all things, aid him in the performance of his duties.

5.3.7 Payment shall be made subject to audit by duly authorized representatives of the OWNER.

5.4 Definitions

5.4.1 Reimbursable Expenses means the actual expenses incurred by CONSULTANT or CONSULTANT's independent professional associates or consultants directly in connection with the Project, including expenses for: transportation and subsistence incidental thereto; reproduction of reports, graphics, and similar Project related items; and if authorized in advance by OWNER, overtime work requiring higher than regular rates. In addition, if authorized in advance by OWNER, Reimbursable Expenses will also include expenses incurred for computer time and other highly specialized equipment, including an appropriate charge for previously established programs and expenses of photographic production techniques times a factor of 1.0.

5.5 Ownership of Data

Documents and all products of this Agreement are to be the property of the OWNER.

5.6 Publication and Release of Information

The CONSULTANT shall not copyright material developed under this Agreement

without written authorization from the OWNER. The OWNER reserves a royalty-free non-exclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, the work for government purposes.

5.7 Acquisition of Property or Equipment

The acquisition of property or equipment will be in accordance with 49 CFR 18.32.

5.8 Subcontracting

CONSULTANT shall perform all work except specialized services. Specialized services are considered to be those items not ordinarily furnished by CONSULTANT which must be obtained for proper execution of this Agreement. Specialized services required by the study, if any, are itemized in Exhibit A of this Agreement.

Neither this Agreement nor any interest therein shall be assigned, sublet or transferred unless written permission to do so is granted by the OWNER. Subcontracts are to contain all the required provisions of the prime contract as required by 49 CFR Part 18, definitions.

5.9 Personnel Employment

The CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the CONSULTANT, to solicit or secure this agreement, and that he has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the CONSULTANT, any fee, commission, percentage, brokerage fee, gifts, or any other considerations, contingent upon or resulting from the award of making of this Agreement. For breach or violation of this warranty, the OWNER shall have the right to annul this Agreement without liability, or, in its discretion to deduct from the agreement price or consideration, or otherwise recover, the full amount of such fees, commission, percentage, brokerage fee, gift or contingent fee.

5.10 Nondiscrimination/ADA

The CONSULTANT agrees to comply with the requirements of Title 49, CFR Part 21 and Title VI of the Civil Rights Act of 1964. The CONSULTANT agrees to submit upon request quarterly Title VI (Civil Rights) State of Contractor reports to the State.

The CONSULTANT agrees to provide services in compliance with the Americans With Disabilities Act of 1990.

5.11 Claims

To the extent authorized by law, the CONSULTANT shall indemnify and hold harmless the OWNER, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses and attorney fees, to the extent such claims are caused by any negligent act or omission of, or breach of contract by, the CONSULTANT, its employees, agents, subcontractors or

assignees, or other parties not under the control of or responsible to the CONSULTANT. It is further agreed that any and all employees of either party, while engaged in the performance of any work or services, shall not be considered employees of the other party, and that any and all claims that may or might arise under the Worker's Compensation Act of the State of South Dakota on behalf of said employees, while so engaged on any of the work or services provided to be rendered herein, shall in no way be the obligation or responsibility of the other party.

5.12 Acceptance and Modification

This Agreement together with the Exhibits and schedules identified above constitute the entire agreement between OWNER and CONSULTANT and supersede all prior written or oral understandings. This Agreement and said Exhibits and schedules may only be amended, supplemented, modified or canceled after consultation with, and approval in writing by, the parties to this Agreement.

5.13 Termination or Abandonment

The CONSULTANT and the OWNER share the right to terminate this Agreement upon giving thirty (30) days written notice of such cancellation to the other party. If this Agreement is terminated under this paragraph, CONSULTANT shall deliver to OWNER all work product produced up to the time of termination. OWNER shall reimburse CONSULTANT for all work completed to the date of termination.

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement by their duly authorized officers on the day, month and year first written above.

OWNER:

Mayor
City of Rapid City
300 Sixth Street
Rapid City, SD 57701

ATTEST:

Finance Officer

(SEAL)

CONSULTANT:

Brian L. Scott, P.E., Principal
SRF Consulting Group, Inc.
One Carlson Parkway North, Suite 150
Minneapolis, MN 55447-4443

STATE OF MINNESOTA

COUNTY OF _____

On this _____ day of November, 2002, before me, a Notary Public, personally appeared Brian L. Scott, known to me to be a Principal of SRF Consulting Group, Inc., and acknowledge to me that he did sign the foregoing document as such officer and for the purposes therein stated.

Notary Public

My Commission Expires:

(SEAL)

Address for Giving Notices:

City of Rapid City
Planning Department
300 Sixth Street
Rapid City, South Dakota 57701
(605) 394-4120

Address for Giving Notices:

SRF Consulting, Group
One Carlson Parkway North, Suite 150
Minneapolis, Minnesota 55447-4443
(763) 475-0010

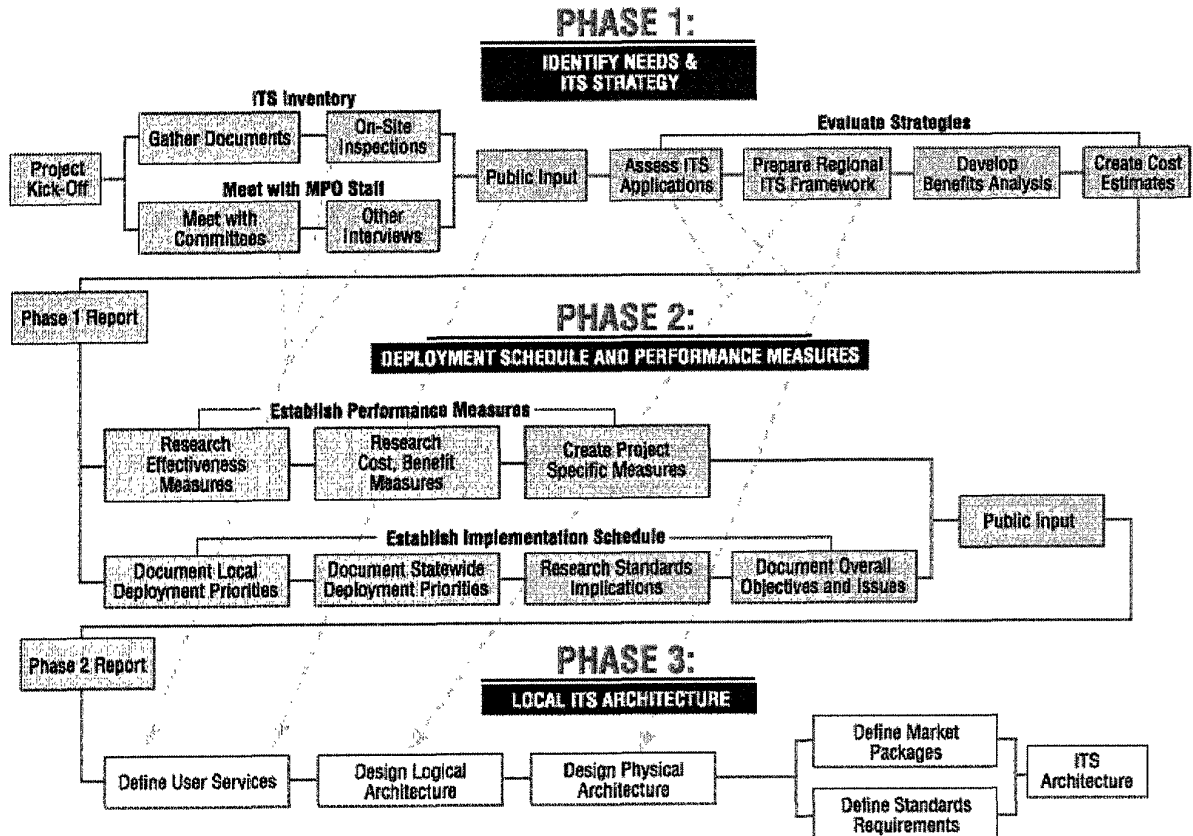
EXHIBIT A

Basic Services

Scope of Work and Schedule

The development of the Master Plan for Integration Strategies will be undertaken in three phases, each of which will consist of a set of subtasks. Throughout the course of the project, SRF proposes to work closely with the Rapid City Area MPO staff, the City of Rapid City and all other appropriate stakeholders in the region.

The flow chart shown below provides an overview of the proposed process.



Phase I – Identify Needs and ITS Strategy

It is critical in any ITS planning effort that the existing deployment efforts and the infrastructure upon which they rely is well understood and documented. Once these conditions are well understood, a comprehensive analysis of the needs in the region should be undertaken to be certain that any future deployments effectively addresses these concerns. The specific solutions must be considered in terms of their operational and infrastructure or supporting system needs, as well as their construction and on-going costs.

Task 1 – Perform a Background Search on ITS Initiatives Underway in Rapid City (System Inventory)

Several steps will be taken to ensure that a complete and accurate picture of the current state of ITS in the Rapid City area can be obtained.

- SRF will identify key stakeholders in the transportation and ITS community to allow the most efficient and complete data-gathering effort.
- SRF will then identify and document the existing ITS-related systems (signal systems, transit systems, VMSs, HAR, dispatch centers, weigh scales, etc.) in the region and adjacent areas. A standardized format will be created for presenting inventory data, relevant documents will be collected and interviews or on-site inspections will be conducted. The following types of information will be collected for each system:
 - Location where the system is used or operated
 - Agency responsible for operating and maintaining the system
 - System goals
 - Technologies used by the system
 - Location System functions
 - System geographic coverage
 - System customers
 - Date when the system became operational
 - Plans to upgrade or expand the system
- A Technical Memorandum will be prepared to summarize the inventory findings.

Task 2 – Meet with MPO Staff to Finalize the ITS Deployment Plan and Initiate Establishment of an ITS Strategy (Issue Identification)

Understanding the issues being faced in the region is the key to developing an effective ITS strategy. Without this process, the strategy risks emphasizing solutions that are not

cost-effective in meeting the region's needs, or do so inadequately. To gain this understanding, a two-pronged approach will be undertaken:

- Engage the appropriate stakeholders and the Rapid City MPO staff in a strategic planning session to gain insight to the needs and issues of the region. This session will be used to identify the transportation issues as well as the issues that are being encountered in ITS deployments.
- Conduct on-site and telephone interviews with stakeholders who may not be directly involved with this project, but who may have first-hand knowledge of the issues in the region.

Task 3 – Public Involvement

SRF has found the public to be a rich source of both information about specific transportation issues and of insight about how those issues may be addressed. A public meeting will be conducted to ensure that the needs of the public are reflected in the recommendations made in the plan, and to gain additional information for the system inventory. The public meeting will be conducted after appropriate notice has been published. The meeting will occur in two parts:

- A presentation of the existing inventory, with brief summaries of the types of systems in place and their functions, followed by an open comment period.
- A presentation of projects that could be implemented in the area, again followed by an open comment period soliciting additional deployment suggestions from the public.

Task 4 – Identification and Evaluation of ITS Strategies

Once a complete understanding is gained of the transportation issues in the Rapid City region and an inventory of existing ITS deployments is obtained, SRF will complete an assessment of possible deployments for the area. Several steps will be necessary to be certain that the best possible strategy is developed:

- Assess potential ITS applications based on the parameters of the South Dakota Rural ITS Deployment Plan and Rural ITS Architecture, Statewide and local transportation plans, and the information collected in Tasks 1 through 3.

This task will identify projects in adopted transportation plans for the region for which ITS applications may be appropriate. SRF will correlate each proposed ITS application to the needs previously identified by the key stakeholders in an effort to demonstrate the extent to which the regional needs can be met by these applications. For this activity, the SRF team will study the degree to which each

proposed ITS application can meet the regional needs by mapping the application to needs and will identify the extent to which an application meets the need (i.e., high, medium, low). For example, one application may go a long way toward meeting a transportation need while another application may only minimally meet a need. The initial needs mapping will be delivered to the Technical Committee for review, followed by a meeting in which SRF will facilitate discussion for review and modification of this material. The SRF team will then incorporate the results into a matrix that identifies the need met by each proposed ITS project.

- Prepare a conceptual regional ITS framework that will facilitate the integration of all appropriate proposed projects.

The RFP suggests that development of a regional architecture be performed in an optional third phase. SRF has a great deal of experience in developing ITS architecture ranging from projects that require the lowest level of documentation (mapping a region's architecture to the National ITS Architecture) to a multi-year effort of creating a statewide ITS architecture. This experience with ITS architecture development allows us to be very flexible in the degree of architecture development tailored to the Rapid City area's needs. SRF has moved the development of the regional architecture forward to Phase 1. The development of the deployment plan and regional architecture go hand-in-hand during this phase to make the most efficient use of the momentum of the overall project.

SRF will develop key portions of the regional architecture in parallel with the development of the deployment plan to make the most efficient use of the momentum of the project.

Since the enactment of TEA-21, the FHWA and FTA have developed an additional ITS architecture and standards regulation and policy, respectively. Specifically, regional architecture development was targeted through the new regulation and policy. Policy 940.9 Regional Architecture, states the following:

- The FHWA rule and FTA policy require that a region currently implementing ITS projects must develop a regional ITS architecture to guide their deployment by April 8, 2005.
- Regions without ITS will have to meet this requirement within four years of their first ITS project advancing to final design.
-
- The National ITS Architecture shall be used as a resource for developing the regional architecture.
-
- The regional ITS architecture shall be on a scale commensurate with the ITS investment in the region.

SRF has a great deal of experience with both the content and the tools, such as TurboArchitecture, used to create local, regional and statewide architectures. The

development of an architecture compatible with the National Architecture format is essentially a five-step process.

Step 1 – Define User Services

This process creates a statement of what the deployed system will offer in terms of a standardized set of functions. For this process, the understanding of the needs of the area gained from Tasks 2 and 3 from Phase I is key.

Step 2 – Design the Logical Architecture

After the services that are desired are clearly defined, the information needed to drive those services and the processes needed to create them are defined. The logical architecture provides a clear “roadmap” for the flows of data and the mechanisms needed to synthesize that data into a final user service.

Step 3 – Design the Physical Architecture

In this step, SRF will define how the processes of the logical architecture can be implemented by a system of physical entities and equipment packages for deployment designed to manage and process the “flows” of information through the architecture.

Step 4 – Define Market Packages

Market packages represent “slices” that address a specific need, which is in turn addressed by a user service defined in the first step of the architecture process. The market packages are collections of equipment packages and architecture data flows that allow comprehensive management of the deployment process by clearly defining all of the needed subsystems to deliver a service to the end users.

Step 5 – Define and Document Standards Requirements

In parallel with the definition of Market Packages, it is necessary to document all of the standards relevant to a proposed deployment. The standards requirements are the mechanisms by which future interoperability and expandability are ensured. All of the necessary standards for a given Market Package will be documented in a clear, non-redundant format.

The following chart displays the components of Policy 940.9 – Regional ITS Architecture Requirements that SRF proposes to complete during the development of the ITS Master Plan.

| REGIONAL ITS ARCHITECTURE | |
|----------------------------------|--|
| X | A description of the region |
| X | Identification of participating agencies and other stakeholders |
| X | An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture |
| | Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the ITS architecture |
| X | System functional requirements |
| X | Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture |
| X | Identification of ITS standards supporting regional and national interoperability |
| X | The sequence of projects required for implementation |
| | Develop and implement procedures and responsibilities for maintaining the regional ITS architecture, as needed |

Completion of this task will result in a conceptual ITS framework, which includes a regional architecture, for the Rapid City metropolitan area. This framework will include the desired systems or functions and the primary interfaces between these systems. This framework will be aligned with existing institutional structures for operations and maintenance purposes. The framework will define each of the following:

- Project elements: the specific ITS systems, subsystems, interfaces, equipment and software will be delineated as part of the framework.
- Communications elements: the minimum communications requirements to interconnect the deployment plan elements will also be documented. Solutions will be recommended that are most suited to local financial and

technical situations, as well as maximizing interoperability with other systems in the area and compliance with the Statewide and National ITS architectures.

- Institutional elements: the relationships of organizations and individuals that influence ITS implementation and operations will be documented along with suggested relationships. This layer will further delineate the physical ITS element's relationship with existing land use plans and will consider forecasted growth in the area.
- ITS standards compliance issues and requirements will be defined and documented where applicable.

SRF will also provide an early identification of many operational and maintenance issues that may arise with these deployments. Early identification of these operations and maintenance "tails" will aid in the determination of staffing and budgeting issues. In many cases, these issues are so significant that they alter or defer the deployment of certain projects until the proper staffing levels, training/maintenance expertise and maintenance equipment are available. All of this information will aid in the selection and prioritization of deployments.

- Develop an analysis of the benefits of the integration strategy.

This task details how the ITS framework may be implemented in the short-term planning and implementation process. In this task, SRF will:

- Conduct initial benefit analysis. This task will identify and quantify the expected benefits from the ITS projects. The potential benefits that will be considered include:
 - Safety (for example, reduced vehicle speeds and accidents in work zones).
 - Road user benefits (reduced delays, reliability improvements, accident reductions, etc.).
 - Operator benefits (increased throughput capacity and better operational data).
 - Maintenance benefits (reduced agency operating costs).
 - Environmental benefits (reduced emissions, noise and fuel consumption).

The findings of this task and this analysis will identify projects that should be pursued in the short term.

SRF will present the implementation strategy to the Technical Committee for review and comment.

- Create a cost estimate for the short-range implementation strategy.

The objective of this task is to identify and estimate the costs involved with deployment and operation of the ITS projects identified in the short-range implementation strategy. For this task, SRF will utilize cost estimation and information from tools we are currently using on other projects, such as the ITS Deployment Analysis System (IDAS – a model developed under contract with FHWA), for the initial cost estimation of each project. ITS strategies typically require that a greater proportion of resources be expended for the ongoing operations and maintenance activities than do traditional improvements. Failure to account for these ongoing costs and funding responsibilities may result in future shortfalls in funding or personnel. The cost estimate will be approached in the following manner:

- Refine the implementation plan as needed
 - Estimate the capital and operating costs of specific plan elements
 - Define the procurement approach
- Prepare a technical memorandum summarizing the recommendations of Task 4 for review by the appropriate MPO Committees.

Task 5 – Completion of the Phase I Report

For this task, SRF will prepare the final draft plan and provide 26 copies of the Plan (25 bound copies plus one unbound original) along with one compact disc containing all text and graphics files to the Rapid City Area Metropolitan Planning Organization.

SRF will present the Phase I report to the appropriate committees of the MPO.

Phase II – Deployment Schedule and Performance Measures

Once consensus is reached on the Strategy and regional architecture established in Phase I, SRF will develop a schedule for the deployment of ITS in the region and a set of performance measures to determine effectiveness of investments made.

Task 1 – Establish a Performance Measurement System for Future ITS Projects

Each proposed ITS project will be mapped directly to an identified need in Task 4 of Phase I. This will allow a quantification of the needs and from that a set of measures of effectiveness for each ITS project. Additionally, there have been efforts on the national level to establish quantification methods and estimates of the benefits from projects within each ITS discipline (Advanced Public Transportation Systems, Advanced Traffic Management Systems, etc.). Where applicable, these measures will also be

incorporated to give an estimate of cost/benefit ratio and return on investment (ROI) for ITS projects.

This two-level approach will allow the MPO to consider both the pure financial aspects of ITS deployment, as well as the benefits received (reduction in pollutants, more consistent travel times, etc.)

Task 2 – Establish an Implementation Schedule of ITS Strategies

Based on the input received from the MPO and public, an implementation schedule will be prepared that considers the following:

- The priority of the need or issue addressed by the project
- The costs of and funding availability for the project
- The requirements for infrastructure or supporting and complementary systems to be in place
- The technical, budgetary, and scheduling risks associated with the project
- Interoperability with other existing or planned systems
- Administrative or organizational structures that may need to be adapted to successfully deploy the project
- The time necessary to realize the benefits from the project

The existing South Dakota Rural ITS Deployment Plan will also be considered in creating the implementation schedule, as there are several projects recommended for deployment in the Rapid City area. Any recommendations for priority or schedule will be factored into the implementation schedule for the integration strategy.

Where needed, the applicable NTCIP, EIA, SAE and other standards will be reviewed for projects, and if issues with their implementation arise, recommendations for resolving conflicts and achieving interoperability will be made.

The ITS National Standards effort is becoming increasingly important from both a technical and funding application. Federal requirements for standards are becoming more stringent and the availability of Federal funding may one day be contingent upon projects complying with the standards. SRF will develop a recommended procedure for including standards compliance requirements in procurement documents and verifying vendor compliance with applicable standards.

Task 3 – Public Involvement

As in Phase I, public input will be sought throughout Phase II, both through the participation of the MPO committees and through a public Open House. The second Open House will present to the public a summary of the work performed and the findings of Phase I. Following this introduction, the a proposed schedule for

deployments will be presented and the public will then have an opportunity to ask questions and offer comments on all aspects of the projects.

Task 4 – Completion of the Phase II Report

Once consensus is reached on the deployment schedule and performance measures, SRF will prepare a draft report for review by the appropriate committees of the MPO. This report will detail the work performed in tasks 1 through 3, the methods used, the data collected, and research performed, and the specific findings and recommendations. Once the Phase II report has been reviewed and revised, it will be finalized for presentation in Task 5.

Task 5 – Presentation

The report completed in Task 4 will be presented, upon request, to the MPO. Additionally, SRF will produce 26 copies (25 bound and one unbound original) of the Phase II Final Report, along with one compact disc containing the text and graphics files used in the report.

Phase III Development of a Local ITS Architecture

Since the enactment of TEA-21, the FHWA and FTA have developed an additional ITS architecture and standards regulation and policy, respectively. Specifically, regional architecture development was targeted through the new regulation and policy. Policy 940.9 Regional Architecture, states the following:

- The FHWA rule and FTA policy require that a region currently implementing ITS projects must develop a regional ITS architecture to guide their deployment by April 8, 2005.
- Regions without ITS will have to meet this requirement within four years of their first ITS project advancing to final design.
- The National ITS Architecture shall be used as a resource for developing the regional architecture.
- The regional ITS architecture shall be on a scale commensurate with the ITS investment in the region.

As previously mentioned, SRF recommends that the Rapid City Area MPO take advantage of the synergies of Phase I to create a substantial portion of the Local ITS Architecture in parallel with the work that will be accomplished in that phase. Properly

defined architectures offer short-term benefits for proper system design and definition of functional requirements, as well as longer-term advantages in system interoperability and expandability. SRF has a great deal of experience with both the content and the tools, such as TurboArchitecture, used to create local, regional and statewide architectures. The development of an Architecture compatible with the National Architecture format is essentially a five-step process.

Task 1 – Define User Services

This process creates a statement of what the deployed system will offer in terms of a standardized set of functions. For this process, the understanding of the needs of the area gained from Tasks 2 and 3 from Phase I is key.

Task 2 – Design the Logical Architecture

After the services that are desired are clearly defined, the information needed to drive those services and the processes needed to create them are defined. The logical architecture provides a clear “roadmap” for the flows of data and the mechanisms needed to synthesize that data into a final user service.

Task 3 – Design the Physical Architecture

In this step, SRF will define how the processes of the logical architecture can be implemented by a system of physical entities and equipment packages for deployment designed to manage and process the “flows” of information through the architecture.

Task 4 – Define Market Packages

Market packages represent “slices” that address a specific need, which is in turn addressed by a user service defined in the first step of the architecture process. The market packages are collections of equipment packages and architecture data flows that allow comprehensive management of the deployment process by clearly defining all of the needed subsystems to deliver a service to the end users.

Task 5 – Define and Document Standards Requirements

In parallel with the definition of Market Packages, it is necessary to document all of the standards relevant to a proposed deployment. The standards requirements are the mechanisms by which future interoperability and expandability are ensured. All of the necessary standards for a given Market Package will be documented in a clear, non-redundant format.

The following chart displays the components of Policy 940.9 – Regional ITS Architecture Requirements that SRF proposes to complete during the development of the ITS Master Plan.

| REGIONAL ITS ARCHITECTURE | |
|----------------------------------|--|
| X | A description of the region |
| X | Identification of participating agencies and other stakeholders |
| X | An operational concept that identifies the roles and responsibilities of participating agencies and stakeholders in the operation and implementation of the systems included in the regional ITS architecture |
| | Any agreements (existing or new) required for operations, including at a minimum those affecting ITS project interoperability, utilization of ITS related standards, and the operation of the projects identified in the ITS architecture |
| X | System functional requirements |
| X | Interface requirements and information exchanges with planned and existing systems and subsystems (for example, subsystems and architecture flows as defined in the National ITS Architecture |
| X | Identification of ITS standards supporting regional and national interoperability |
| X | The sequence of projects required for implementation |
| | Develop and implement procedures and responsibilities for maintaining the regional ITS architecture, as needed |

We feel that the architecture components checked above can be accomplished during the development of the ITS Master Plan. Completion of interagency agreement and implementing architecture maintenance can be included in a later phase of architecture development.

EXHIBIT B**CLIENT: RAPID CITY MPO****CONSULTANT: SRF CONSULTING GROUP, INC.****PROJECT: ITS MASTER PLAN FOR INTEGRATION STRATEGIES**

File: Rapid City ITS Plan -Ver1

******* ESTIMATED PERSON - HOURS *******

Brian Scott Brian Shorter Mark Gallagher Craig Vaughn Ferrol Robinson Dana Whitlow
 SR

| Phase NO. | WORK TASK DESCRIPTION | PRINCIPAL | ASSOCIATE | ASSOCIATE | PROF. | ADVISOR | CLERICAL | TOTALS |
|------------|---|------------|-----------|------------|------------|-----------|-----------|------------|
| 1.0 | Identify Needs and ITS Strategy | | | | | | | |
| | - System Inventory | 24 | 0 | 60 | 50 | 0 | 5 | 139 |
| | - Issue Identification | 24 | 20 | 30 | 20 | 6 | 5 | 105 |
| | - Public Involvement | 24 | 16 | 30 | 4 | 2 | 4 | 80 |
| | - Identify and Evaluate Strategies | 40 | 12 | 60 | 10 | 0 | 10 | 132 |
| | - Phase 1 Report | 20 | 4 | 40 | 20 | 2 | 5 | 91 |
| | SUBTOTAL - PHASE 1 | 132 | 52 | 220 | 104 | 10 | 29 | 547 |
| 2.0 | Deployment Schedule and Performance Measures | | | | | | | |
| | - Develop Performance Measures | 20 | 0 | 20 | 5 | 4 | 2 | 51 |
| | - Establish Implementation Schedule of ITS Strategies | 15 | 10 | 30 | 0 | 0 | 0 | 55 |
| | - Public Involvement | 20 | 12 | 30 | 2 | 0 | 8 | 72 |
| | - Phase 2 Report | 20 | 4 | 35 | 15 | 2 | 5 | 81 |
| | - Presentations | 16 | 0 | 20 | 0 | 0 | 0 | 36 |
| | SUBTOTAL - PHASE 2 | 91 | 26 | 135 | 22 | 6 | 15 | 295 |
| 3.0 | Develop Local ITS Architecture - (optional) | | | | | | | |
| | - Define User Services | 4 | 0 | 8 | 16 | 0 | 0 | 28 |
| | - Design the Logical Architecture | 4 | 0 | 8 | 20 | 0 | 0 | 32 |
| | - Design the Physical Architecture | 10 | 0 | 10 | 24 | 0 | 0 | 44 |
| | - Define Market Packages | 2 | 0 | 4 | 16 | 0 | 0 | 22 |
| | - Define and Document Standards Requirements | 4 | 0 | 4 | 8 | 0 | 5 | 21 |
| | SUBTOTAL - PHASE 3 | 24 | 0 | 34 | 84 | 0 | 5 | 147 |

CLIENT: RAPID CITY MPO

CONSULTANT: SRF CONSULTING GROUP, INC.

PROJECT: ITS MASTER PLAN FOR INTEGRATION STRATEGIES

File: Rapid City ITS Plan -Ver1

***** ESTIMATED PERSON - HOURS *****

Brian Scott Brian Shorter Mark Gallagher Craig Vaughn Ferrol Robinson Dana Whitlow
SR

| Phase NO. | WORK TASK DESCRIPTION | PRINCIPAL | ASSOCIATE | ASSOCIATE | PROF. | ADVISOR | CLERICAL | TOTALS |
|-----------|---------------------------------------|------------|-----------|----------------------------------|------------|-----------|-----------|-----------------|
| | TOTAL ESTIMATED PERSON HOURS | 247 | 78 | 389 | 210 | 16 | 49 | 989 |
| | AVERAGE HOURLY PAYROLL RATES | \$49.00 | \$45.00 | \$31.00 | \$22.00 | \$70.00 | \$16.00 | |
| | ESTIMATED LABOR | \$12,103 | \$3,510 | \$12,059 | \$4,620 | \$1,120 | \$784 | \$34,196 |
| | ESTIMATED OVERHEAD COST | 132.06% | | | | | | \$45,159 |
| | TOTAL ESTIMATED LABOR AND OVERHEAD | | | | | | | \$79,355 |
| | FIXED FEE | 15% | | | | | | \$11,903 |
| | ESTIMATED DIRECT NON-SALARY EXPENSES: | | | | | | | |
| | | | | Draft & Final Plans Reproduction | | | | \$200 |
| | | | | Airfare | | | | \$5,500 |
| | | | | Hotel | | | | \$1,100 |
| | | | | Meals | | | | \$500 |
| | | | | Rental Car, Parking, etc. | | | | \$975 |
| | TOTAL ESTIMATED FEE | | | | | | | \$99,533 |

CLIENT: RAPID CITY MPO

CONSULTANT: SRF CONSULTING GROUP, INC.

PROJECT: ITS MASTER PLAN FOR INTEGRATION STRATEGIES

File: Rapid City ITS Plan -Ver1

***** ESTIMATED PERSON-HOURS *****

Brian Scott Brian Shorter Mark Gallagher Craig Vaughn Ferrol Robinson Dana Whitlow
SR

| Phase NO. | WORK TASK DESCRIPTION | PRINCIPAL | ASSOCIATE | ASSOCIATE | PROF. | ADVISOR | CLERICAL | TOTALS |
|-----------|-----------------------|-----------|-----------|-----------|-------|---------|----------|--------|
|-----------|-----------------------|-----------|-----------|-----------|-------|---------|----------|--------|

COST SUMMARY

COSTS PER TASK

| | | | | | | | | |
|-----|--|----------|---------|----------|---------|---------|---------|----------|
| 1.0 | Identify Needs and ITS Strategy | \$17,261 | \$6,245 | \$18,200 | \$6,106 | \$1,868 | \$1,238 | \$50,918 |
| 2.0 | Deployment Schedule and Performance Measures | \$11,900 | \$3,122 | \$11,168 | \$1,292 | \$1,121 | \$640 | \$29,243 |
| 3.0 | Develop Local ITS Architecture - (optional) | \$3,138 | \$0 | \$2,813 | \$4,932 | \$0 | \$213 | \$11,096 |

ESTIMATED DIRECT NON-SALARY EXPENSES: \$8,275

TOTAL ESTIMATED FEE \$99,532
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Exhibit C -- Project Schedule

| | 11/19/02 | 12/1/02 | 1/1/03 | 2/1/03 | 3/1/03 | 4/1/03 | 5/1/03 | 6/1/03 | 7/1/03 | 8/1/03 |
|---|----------|-------------|--------|--------|--------|---------|--------|--------|--------|--------|
| Notice to proceed -- 11/19 | | | | | | | | | | |
| PHASE 1: IDENTIFY NEEDS & ITS STRATEGY | | | | | | | | | | |
| <i>Task 1 -- System Inventory</i> | | | | | | | | | | |
| Collect documentation | | | | | | | | | | |
| On-site inspections | | 12/2 - 12/5 | | | | | | | | |
| <i>Task 2 -- Issue Identification</i> | | | | | | | | | | |
| Meet with staff and other stakeholders | | 12/2 - 12/5 | | | | | | | | |
| Preliminary report to TAC | | | 1/8/03 | | | | | | | |
| <i>Task 3 -- Public Involvement (Open House)</i> | | | | 2/4/03 | | | | | | |
| <i>Task 4 -- Identify and evaluate strategies</i> | | | | | | | | | | |
| Identify candidate solutions | | | | | | | | | | |
| Determine infrastructure needs | | | | | | | | | | |
| Preliminary report to MPO | | | | 2/4/03 | | | | | | |
| Estimate costs | | | | | | | | | | |
| Benefit analysis | | | | | | | | | | |
| <i>Task 5 -- Complete Phase 1 report</i> | | | | | | | | | | |
| Draft Phase 1 report | | | | | | | | | | |
| Finalize Phase 1 Report | | | | | | | | | | |
| Present Phase 1 report to MPO | | | | | | 4/23/03 | | | | |
| PHASE 2: DEPLOYMENT SCHEDULE AND PERFORMANCE MEASURES | | | | | | | | | | |
| <i>Task 1 -- Develop Performance Measures</i> | | | | | | | | | | |
| Research measurement methods | | | | | | | | | | |
| Develop project specific effectiveness measures | | | | | | | | | | |
| Develop project specific cost/benefit measures | | | | | | | | | | |
| Present preliminary findings to TAC | | | | | | 4/23/03 | | | | |
| <i>Task 2 -- Establish an implementation schedule of ITS Strategies</i> | | | | | | | | | | |
| <i>Task 3 -- Public Involvement</i> | | | | | | | | | | |
| Present Preliminary Findings to MPO | | | | | | 4/23/03 | | 6/4/03 | | |
| <i>Task 4 -- Completion of the Phase 2 report</i> | | | | | | | | | | |
| Draft Phase 2 Report | | | | | | | | | | |
| Finalize Phase 2 report | | | | | | | | | | |
| <i>Task 5 -- Presentation</i> | | | | | | | | | | 8/6/03 |
| PHASE 3: DEVELOPMENT OF A LOCAL ITS ARCHITECTURE | | | | | | | | | | |
| <i>Task 1 -- Define User Services</i> | | | | | | | | | | |
| <i>Task 2 -- Design the Logical Architecture</i> | | | | | | | | | | |
| <i>Task 3 -- Design the Physical Architecture</i> | | | | | | | | | | |
| <i>Task 4 -- Define Market Packages</i> | | | | | | | | | | |
| <i>Task 5 -- Define and Document Standards Requirements</i> | | | | | | | | | | |