ACTT WORKSHOP

Montana

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Executive Summary

As highway construction continues to cause strain to the national roadway system, initiatives and processes will be sought to remedy disruptions. The Accelerated Construction Technology Transfer (ACTT) process is one initiative that encourages the use of innovative technologies and methods to accelerate the construction of major highway projects for the purpose of reducing user delay and community disruption. ACTT was developed by Transportation Research Board (TRB) task force A5T60 and is now adopted and encouraged by the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials' (AASHTO) Technology Implementation Group (TIG).

For its ACTT Workshop, the Montana Department of Transportation (MDT) selected the US-93 corridor between Evaro and Polson, in Western Montana. The $100 million project is to reconstruct this 90-km (56 mi) stretch of US-93 to upgrade the facility to today's design standards and add capacity. The project is somewhat unique, for it is entirely located within the Flathead Indian Reservation, the homeland of the Confederated Salish and Kootenai Tribes (CSKT). The Tribes recognize these lands as their homeland as well as the homeland for a variety of wildlife. The biggest challenge the project presents is upgrading to best accommodate traffic demands while minimizing impact on wildlife and other culturally sensitive issues. Another primary challenge is construction under traffic to ensure minimized disruption of tourist traffic, which peaks during the short construction season.

The workshop was conducted on January 26-28, 2004, in Missoula, Montana. The workshop began with welcoming remarks from the MDT senior management, the FHWA Montana Division Administrator, and representatives of both tribes. The skill sets selected for this workshop included: Construction; Traffic/ Work Zone Safety; Right-of-Way/Utilities/Railroad; Public Relations/ITS; Geotechnical and Materials; Innovative Contracting; Environmental; and Structures. These skill sets spent two days focusing on inventive ways to hasten construction on this stretch of US Highway 93. Prior to this workshop, the initial goals for this project included:

- Developing an understanding of the land and the relationship of the CSKT to the land.
- Developing concepts that respect the integrity and character of the place, people, and wildlife.
- Creating a better visitor understanding of the CSKT homeland.
- Respecting and restoring the way of life in small communities along the road.
- Designing a safe and efficient road that is sensitive to the context of the area.

These goals were also used as discussion parameters for the skill sets. The guiding philosophy for modification of the roadway throughout this corridor is to protect the cultural, aesthetic, recreational, and natural resources located along the corridor.

Over the course of two days, national and local transportation professionals teamed up to look for methods and measures that would help the MDT achieve its project goals. Following discussion and skill set intermingling, each group presented a set of final recommendations. As the host agency, the MDT will examine the recommendations and determine which will be implemented in the US Highway 93 Corridor.

CHAPTER 1

ACTT Background & Purpose

Highway construction continues to produce significant disruptions in communities across the nation as Departments of Transportation work to update an aging infrastructure system. While highway construction is unavoidable, excessive construction time is and should be avoided because it is costly and often exposes workers and the traveling public to substandard conditions longer than necessary. The ACTT initiative aims to minimize travel delays and community disruptions by reducing construction time and improving safety and quality.

1.1 BACKGROUND

ACTT is a "process" that encourages the use of innovative technologies and methods to accelerate the construction of major highway projects with extended service lives for the purpose of reducing user delay and community disruption. A complete accelerated construction approach means evaluating the planning, design, and construction activities within a highway corridor using multiple strategies and technologies. Successful ACTT deployment requires thorough examination of all facets of highway corridors with the objective of improving safety and optimizing cost effectiveness while minimizing adverse impacts for the benefit of the traveling public.

Recommendations by Transportation Research Board (TRB) Special Report 249 called for the creation of a strategic forum to promote accelerated construction in the highway infrastructure. TRB Task Force A5T60 was formed with the objective to:

- Facilitate removal of barriers to innovation.
- Advocate continuous quality improvement and positive change.
- Enhance safety and mobility.
- Encourage the development of strategies that generate beneficial change.
- Create a framework for informed consideration of innovation.

Fully supporting the task force's mission and objectives, the Federal Highway Administration (FHWA) and the Technology Implementation Group (TIG) of the American Association of State Transportation Officials (AASHTO) joined the task force in an outreach effort, resulting in the formation of a national resource pool known as the "National Skill Sets Council" and completion of two ACTT pilot workshops (one in Indiana and one in Pennsylvania). Following the completion of these two pilot workshops, TRB Task Force A5T60 passed the concept off to FHWA and TIG to continue the effort by conducting future workshops.

With the successful completion of ACTT workshops in Texas and California, the Montana Department of Transportation (MDT) decided to hold an additional ACTT Workshop in Missoula, Montana, in early 2004 focusing on the central section of the US 93 Highway Corridor. This particular section of US-93 traverses the Flathead Reservation of the CSKT between its north and south boundaries for a distance of approximately 128 km (80 mi). MDT has proposed a reconstruction project for a 90-km (56 mi) segment extending from Evaro, Montana (southern boundary of the Reservation) to Polson, Montana. This particular project was considered a prime candidate for ACTT for several reasons:

- The segment slated for reconstruction traverses the jurisdictions of three separate governmental entities (CSKT, MDT, and FHWA) that historically have experienced great difficulty in reaching agreement on issues necessary to move the project forward.

- An MOA between the three governments was signed in December 2000 and MDT has since scheduled the segment for major reconstruction and rehabilitation.
- There is a need to accelerate construction to minimize impact on local communities during peak (tourist/building) season as well as lessen any environmental impacts to sensitive terrain.
- MDT indicated it was open to innovation and willing to consider and apply new concepts.

1.2 PURPOSE OF THE WORKSHOP

The purpose of this ACTT Workshop was to explore innovative ways that corridor construction could be brought to full service quicker, with less adverse impact on the traveling public and/or environment. The workshop brought together a national team of recognized experts in skill areas to meet with their local counterparts. Over the course of two days, national transportation experts teamed up with local FHWA, CSKT, and MDT representatives to explore innovative ways to accelerate construction throughout the corridor. The workshop included plenary sessions, breakout sessions, skill set interaction, recommendations, and closing remarks.

1.3 ACTT GOALS

Eight skill sets were identified for this ACTT Workshop: Construction; Traffic/Work Zone Safety; Right-of-Way/Utilities/Railroad; Public Relations/ITS; Geotechnical and Materials; Innovative Contracting; Environmental; and Structures. Participants in each skill set had an established set of goals that was unique to their subject area:

Construction

- Minimize environmental impacts.
- Minimize impacts to traffic.
- Minimize cost.
- Ensure short duration.
- Complete segments during construction season.

Traffic/Work Zone Safety

- Keep accidents to a minimum.
- No worker injuries.
- Reduce or eliminate work zone congestion.

Right-of-Way/Utilities/Railroad

- Minimize number of utility relocations.
- Speed up utility relocations to meet project schedule.
- Complete right-of-way acquisition to meet project schedule.

Public Relations/ITS

- Keep public informed of progress.
- Utilize ITS and notification processes to reduce traffic.
- Utilize ITS to reduce congestion.
- Ensure coordination throughout the corridor.

Geotechnical and Materials

- Utilize new methods and materials that will allow for faster construction.
- Employ new materials testing methods that will speed up time involved or reduce personnel requirements.

Innovative Contracting

- Employ new contracting methods to encourage the contractor to speed up construction.
- Refine A+B specification.
- Identify contract administration methods that will allow for better utilization of state personnel.

Environmental

- Minimize impact to the environment including:
    - Cultural sites
    - Wetlands
    - Wildlife
    - Trees and plants
    - Other natural resources

Structures

- Reduce structures construction time.
- Reduce cost of structures.
- Employ SEIS.

A limited number of constraints were placed on each skill set:

- Must follow the intent of the project MOA.
- Lane configuration is set.
- Need to maintain two-way traffic.
- Stay within FEIS, Record of Decision (ROD) and re-evaluation agreements.

Information regarding MOA, FEIS, ROD and other project details are included in the following sections.

CHAPTER 2

Project Details

2.1 CORRIDOR DESCRIPTION

Located in western Montana, the US Highway 93 Corridor is 453 km (283 mi) long and stretches from Idaho to the Canadian border. The highway serves several of the fastest growing counties in Montana and acts as a major tourist corridor during peak season as well as a vital economic link to local communities.

The central section of US-93 traverses the Flathead Reservation of CSKT for a distance of approximately 128 km (80 mi). A 90-km (56 mi) segment extending from Evaro, Montana, to Polson, Montana, is slated for reconstruction and is the subject of this ACTT Workshop.

Over the total project corridor, the highway travels directly through seven rural communities – in most cases bisecting them. Its configuration is mostly two lane with an occasional third passing lane. Vehicle volumes in the year 2000 were 7,975 vehicles per day and are currently increasing more rapidly than forecasts just three years ago indicated. 2-9 percent of the total vehicles are trucks, while RVs make up 2-5 percent of the total number of vehicles. The corridor also crosses several animal migratory routes and waterways as well as the Ninepipe National Wildlife Refuge.

2.2 PROJECT GOALS AND OBJECTIVES

The initial goals for this project included:

- Developing an understanding of the land and relationship of the Confederated Salish and Kootenai Tribe (CSKT) to the land.
- Developing concepts that respect the integrity and character of the place, people, and wildlife.
- Creating a better visitor understanding of the CSKT homeland.
- Respecting and restoring the way of life in small communities along the road.
- Designing a safe and efficient road that is sensitive to the context of the area.

The guiding philosophy for modification of the roadway throughout this corridor is to protect the cultural, aesthetic, recreational, and natural resources located along the corridor. CSKT also desired a way to communicate the respect and value that is commonly held for these resources by the tribes. As such, the following objectives were emphasized during the recently completed design phase:

- Safely accommodate the present and future transportation needs of the citizens of Montana.
- Limit highway-related growth and development outside of established communities.
- Avoid construction in areas of traditional cultural and spiritual significance.

- Minimize intrusion and damage to natural resources located adjacent to the roadway.
- Enhance and restore natural resources that may have been injured and/or disconnected by the existence of US Highway 93.
- Provide safe and functional visitor use facilities at several locations along the highway.
- Develop guidelines for integrated roadside detailing, maintenance, signs and interpretive concepts.

2.3 PROJECT BACKGROUND

The Flathead Indian Reservation was established by the terms of the Hellgate Treaty entered into by the United States and CSKT on July 16, 1855. Today, US Highway 93 traverses the Reservation between its north and south boundaries for a distance of approximately 128 km (80 mi).

A 90-km (56 mi) section, beginning at the Reservation's southern boundary (Evaro) and continuing to Polson, was proposed for reconstruction by the Montana Department of Transportation in the early 1980s. At that time, it was divided into four projects with individual environmental assessments (EAs) completed for each section. Those EAs were subsequently challenged as being "not appropriate," resulting in MDT pursing an EIS in 1991. At that time, CSKT and MDT could not reach an agreement regarding lane configuration, with each recommending a different preferred alternative.

Following this impasse, FHWA issued the following ROD:

"This decision does not provide for the physical construction of highway projects with Federal-aid funds until CSKT [the Confederated Salish and Kootenai Tribes], MDT and FHWA [the Federal Highway Administration] agree on the appropriate design and a project level environmental document is completed that addresses social, economic and environmental impacts. While this Decision does not directly provide for the construction of transportation projects, it leaves the path open to begin activities that lead to transportation projects when agreement on the type of improvement is reached."

From 1996 to 2000 sporadic discussions were held. CSKT concerns were government-to-government relations, tribal sovereignty, cultural issues, population growth, induced land development, and impacts to the landscape and natural resources. While both MDT and CSKT agreed that safety issues needed to be addressed and the roadway alignment examined, lane configuration and the associated impacts continued to be sticking points.

In 1998 the ROD was amended to support an access management plan. Spurred by political and judicial pressures, there was a renewed interest among the parties to work together, and in 2000 talks for an Evaro to Polson agreement began in earnest. During this round of talks, MDT and CSKT worked to reach a shared vision and trust. The resulting project was one that fit the landscape, addressed safety, operational, and capacity issues while minimizing impacts to cultural and natural resources. Details of these discussions were included in an MOA signed by CSKT, MDT and FHWA on December 20, 2000.

In 2001, the Evaro-Polson project corridor was divided into nine segments or project areas. This segmentation approach was utilized for project development and construction purposes. Specifically it sought to:

- Provide a reasonable project length so that a consulting firm could complete the design in a compressed time frame.
- Have a contract wherein a regional contractor could complete a substantial portion of the project during a Montana construction season (April – October).
- Recognize that each project area had unique landscape and cultural issues that needed to be addressed.

Eight of these areas were moved to the final design stage while one area, the Ninepipe to Ronan segment, was placed into a supplement EIS process. A description of these project segments, as well as their status, can be found in the following sections.

2.3.1 PROJECT CHALLENGES

One of the most significant challenges faced by this project is safety. This corridor has received the distinction of being one of the most dangerous in Montana to drive. Injuries occur in 44.2 percent of accidents (compared with 37.1 percent statewide) and 4.8 percent of accidents are fatal (versus only 1.7 percent statewide). Reasons for such statistics vary by road section and can be attributed to everything from poor road alignment and increased animal-vehicle conflict to drunk driving. Fortunately, prior to 2000, improving safety was one of the few issues that CSKT and MDT agreed upon. It was, however, much harder to find consensus on how to improve safety. To understand how this stalemate was overcome, one must first understand the history of the roadway.

The era in which construction of the original project roadway took place is vastly different than today. At that time, environmental and aesthetic concerns were minimal. Primary objectives for road building were economic in nature and often followed the "shortest distance between two points" frame of mind.

When reconstruction talks initially began in the 1980s, the focus was on roadway capacity and safety while environmental, cultural, and aesthetic concerns were once again minimized. The result was a proposed four-lane roadway that was vehemently objected to by the Salish and Kootenai people.

The resulting impasse highlighted the lack of trust between the two governments (CSKT and MDT). Before an agreement could be reached, a shared vision would have to be developed. Entrenched positions that limited creative approaches would have to be thrown away and a sense of urgency would need to be cultivated that would keep all parties "at the table."

This was accomplished in March 2000, when FHWA, MDT and CSKT met and established a tri-governmental team to reach agreement in accordance with the ROD. What came out of this process was identification of the need for a "Spirit of Place" approach. Before any design concepts for the roadway could be conceived, it was essential to get a better understanding of the land, and how the Salish and Kootenai people relate to that land. The design of the roadway would need to be premised on the idea that the road is a visitor and it should respond to and be respectful of the land and the Spirit of Place. This Spirit of Place includes more than just the road and adjacent areas. It consists of the surrounding mountains, plains, hills, forests, valleys,

and sky and includes the paths of waters, glaciers, winds, plants, animals, and native peoples – i.e., it is the whole continuum of what is seen, touched, felt and traveled through.

The resulting design addressed the Spirit of Place. Recognized were factors that had heretofore been overlooked. Plans were put in place to address animal migration routes, which historically had crossed the areas now bisected by the roadway. Areas needing water channel restoration, and in places, reconstruction, were identified. Signing was planned that recognized the unique and diverse nature of the surrounding communities and included place names in English and Salish. These and other design details resulted in a project that, after 20 years, will be constructed.

2.3.2 AGENCY INVOLVEMENT/COORDINATION

One of the most significant features of the MOA was the creation of a Technical Design Committee (TDC) and a Project Oversight Group (POG). The TDC is composed of staff members from all three governments. Additional agencies' representatives are added as needed. They have been tasked with overseeing and solving issues (by consensus) during the design process. All design plans for the eight proposed construction projects have been reviewed by the TDC.

The POG is composed of the MOA negotiation group and decision makers for CSKT, FHWA and MDT. Their role has been to provide policy guidance and, if needed, dispute resolution for the TDC.

To date, limited information has been disseminated to the public regarding expected delays, areas of construction, etc.

2.3.3 DESIGN DEVELOPMENT

As stated previously, the project corridor has been divided into nine segments:

1. Evaro to McClure Road.
2. McClure Road to North End of Arlee.
3. North End of Arlee to White Coyote Road.
4. White Coyote Road to South Ravalli.
5. South Ravalli to Old US-93.
6. Old US-93 to Red Horn Road.
7. SEIS Area (Red Horn Road to Spring Creek/Baptiste Road).
8. Spring Creek/Baptiste Road to Minesinger Trail/North Reservoir Road.
9. Minesinger Trail to MT-35.

In 2001, following signing of the MOA by CSKT, MDT and FHWA, design of these segments began in earnest. The process included requiring design teams to start with an understanding of the landscape or "Spirit of Place." Cultural and historical resources were explored and research on wildlife crossings (migration patterns) and habitat was conducted. Lastly, design and alignment concepts as well as operational, safety and level of service criteria were developed.

Agreed upon design concepts included:

- Mostly two-lane with passing lanes.
- Four lane divided roadway between the two largest cities (Ronan and Polson).

- The 18 km (11.2 mi) within the Ninepipe National Wildlife Refuge will identify an alternative through a Supplemental Environmental Impact Statement.
- LOS: all sections will operate at "C" or better through 2024. (The design criteria specified at least an LOS C through the entire 20-year design period for summer weekend traffic and an LOS B through the first half and LOS C through the second half of the 20-year design period for normal weekday traffic.)
- Safety: estimated reduction of 1,235 accidents in 20 years (fatal, injury, personal property).

Eight of the nine design segments have been, or are undergoing, final design. Within these segments the following design elements have been implemented:

- Aesthetic treatments on bridges, wildlife crossings, wetlands and other structures.
- Wildlife Crossings
  - One over crossing
  - Eight lengthened Structures
  - 34 under crossings of various sizes (4'x 6', 10'x 22', 12'x 22', and 14'x 40')
- Channel reconstruction.
- Wildlife Fencing: nearly 80 km (50 mi) of wildlife fence.
- Numerous jumpouts and wildlife guards provided.
- Project Signing
  - Portal signing at Reservation boundaries
  - Community signing
  - Place name signing
  - Conventional highway signing

2.3.4 PROPOSED ENHANCEMENTS

Many of the proposed improvements throughout the corridor are aesthetic, cultural or environmentally sensitive. The following highlights some of these elements:

- Establish and consistently use a hierarchy of sign types (portal/boundary signs, community entry signs, official highway signs, place name signs, tourist oriented signs, and interpretive signs).
- Fit the roadway to the landscape, where possible.
- Use native plans in divided four-lane sections, and protect older trees and other existing vegetation.
- Include wildlife crossings/fencing and, where possible, enhance habitat.
- Use stone veneer on structures.
- Restore abandoned roadway sections.

2.3.5 COST CONTAINMENTS

Cost Containments were examined in the context of Value Engineering. Value Engineering is a program to improve project quality, reduce project costs, foster innovation, eliminate unnecessary and costly design elements, and ensure efficient investments. Prior to conducting Value Engineering analysis, the total project cost was over $100 million. Value Engineering sessions cut approximately $8.3 million.

Identified cost containments include:

- Value Engineering sessions - $8.3 million.

- Eliminate three wildlife crossings.
- Change four bridges (for wildlife movement) agreed to in MOA to pipes.
- Reduce the size of nine wildlife crossings (from what was agreed to in MOA).
- Increase the size of three wildlife crossings.
- Eliminate 10,296 sq. meters of retaining wall.

There are still opportunities through plan-in-hands and constructability reviews to further reduce the cost of this project. A prime example of this is traffic control, which is currently estimated at $10.7 million.

Estimated construction costs for the corridor are now $97.5 million. Enhancement costs are currently estimated at $8.1 million for wildlife crossings, $1 million for community landscaping, $310,000 for aesthetic facings and $2.5 million for bridge improvements. Native vegetation costs are still being negotiated.

2.3.6 ENVIRONMENTAL DOCUMENTATION

Final Environmental Impact Statements (FEISs) for eight of the nine project segments have been approved. The 18-km (11.2 mi) segment from Red Horn Road to Spring Creek that transverses the Ninepipe National Wildlife Refuge is currently undergoing a Supplemental EIS. A preliminary alternative was identified in November 2003 and a final decision/approval is expected in 2004.

2.4 PROJECT STATUS

As stated previously, eight of the nine design segments have progressed to final design and are expected to be let to construction in the next four years. It is anticipated that they will be let in the following order:

- Evaro to McClure Road; North End of Arlee to White Coyote Road; Old US-93 to Red Horn Road; Spring Creek/Baptiste Road to Minesinger Trail/North Reservoir Road; and Minesinger Trail to MT-35.
- McClure Road to North End of Arlee and White Coyote Road to South Ravalli.
- South Ravalli to Old US-93.
- Red Horn Road to Spring Creek/Baptiste Road.

Construction issues now being faced are:

- Use of contour grading.
- Clearing and grubbing limits.
- "Do Not Disturb" areas.
- Salvage areas.
- Limited impact to outside clearing limits.
- Worker video completion.

CHAPTER 3

Workshop Meeting Details

MDT, CSKT and FHWA came together to host the ACTT Workshop on January 26-28, 2004, at the Doubletree Hotel Edgewater in Missoula, Montana. Approximately 100 individuals representing a variety of interests were in attendance. A full list of attendees can be found in Appendix A.

In discussions held prior to the workshop, the following eight skill sets were selected as applicable to this project:

- Construction
- Traffic/Work Zone Safety
- Right-of-Way/Utilities/Railroad
- Public Relations/Intelligent Transportation Systems (ITS)
- Geotechnical and Materials
- Innovative Contracting
- Environmental
- Structures

A description of each of the skill sets is included in Appendix B.

Upon arrival at the workshop site, attendees were provided with workshop/project notebooks, reminded of their assigned skill set, and were told where to find their seat within the main meeting room. It should be noted that seating had been arranged by skill sets, with each table accommodating a specific group or skill set. This allowed attendees to easily identify other members of their working group and provided them an opportunity to converse with one another prior to breakout sessions.

3.1 OPENING SESSION

The workshop began with opening remarks from representatives of the three governments (MDT, FHWA & CSKT), including:

- Dave Galt, Director, Montana Department of Transportation
- Loran Frazier, District Administrator, Montana Department of Transportation
- Janice Brown, Division Administrator, FHWA – Montana Division
- Lloyd Irvine, Confederated Salish and Kootenai Tribes
- Joel Clairmont, Confederated Salish and Kootenai Tribes

Their remarks were followed by the presentation "Why ACTT?" by Rick Smith, Director of Innovative Project Delivery at the Washington State Department of Transportation and a member of the national ACTT Management Team. Following the presentation, all participants were asked to introduce themselves. This was followed by an overview of the project by Loran Frazier, District Administrator, MDT, and Craig Genzlinger, Operations Engineer and Statewide American Indian Coordinator, FHWA – Montana Division.

Mike Duman, FHWA, and Joel Marshik, MDT, served as workshop moderators. The Opening Session was followed by a working dinner and comments by Tony Incashola, Director of the Salish Culture Committee, CSKT.

3.2 WORKSHOP PROCESS AND RECOMMENDATIONS

The second day began with a tour of the project. Buses took attendees along the 56-mile route, stopping at pre-selected points along the way. Following lunch, attendees participated in a general working session highlighting the need for innovation. For the remainder of the day and over the following day, the skill sets met together and separately to discuss various aspects of the project – in particular, methods to accelerate project construction.

Each group completed reporting forms, which are included in Appendix C. Each skill set was also asked to prioritize their top five to seven ideas and make a presentation to the whole group. Summaries of the group discussions, as well as the top recommendations from each skill set, are included below.

3.2.1 CONSTRUCTION

The Construction skill set focused much of its discussion around three ideas: constructability, sequence of lettings, and combining projects. It was felt that changing the sequence of project construction would allow for a more efficient use of resources. Two ideas for decreasing construction time included (1) involving the contracting community in project reviews and (2) grouping projects together.

Project Groupings

- Tie the three structures (Jocko Bridge, Evaro wildlife crossing, Burlington Northern overpass) into one contract. This contract should be let in 2004. The group also noted that any bridge construction must take into account environmental restrictions (i.e., high water, bull trout sensitivity, etc.).

- Place the other projects in three separate contracts with the following letting dates: (1) let Polson East, Minesinger Trail-MT 35 and Spring Creek-Minesinger Trail in 2005; (2) let Evaro-McClure Road, McClure Road-North Arlee, and North Arlee-White Coyote in 2006; and (3) let White Coyote-South Ravalli, South Ravalli-Medicine Tree, and Medicine Tree-Red Horn in 2007.

Reduce Travel Disruptions

- Allow one-way traffic at night with closure windows as needed. Apply incentives/disincentives for openings.
- Allow flexibility in Sequence of Operation. Specifically, allow contractors to bid with option for traffic control/sequence of operation. Also discussed were using fall project lettings to advance off roadway work, allow waste/borrow techniques, and implement incentives/disincentives for roadway disturbance time.

Construction Methods

- Utilize contractor staking and predetermined pay quantities. In doing this, accommodate and encourage GPS grade control.
- If mandatory pits are going to be required, upgrade any designated haul roads to all weather surfaces with increased load capacity before full construction start. Any upgrades should be

coordinated with the appropriate roadway owner (city, county, etc.) and should be included in the contract.

- Identify staging areas: old pits; tribal lands, remnant parcels, total takes, etc. Any reclamation/ restoration of these areas should be combined with existing pits where possible.

Project Management

- Assign a project management team with a project coordinator as the leader. This team will enhance project communications and allow for/establish a fast track issue resolution process. The group also recommended using a present claim flowchart as a baseline.

3.2.2 TRAFFIC/WORK ZONE SAFETY

Prior to initiating their brainstorming, the Traffic/Work Zone Safety skill set outlined four primary goals to guide their discussion: (1) no construction-related traffic accidents; (2) zero disabling worker injuries; (3) reduce or eliminate work zone congestion; and (4) minimize cost growth.

Initial discussions covered a broad range of safety, operational, and scheduling/traffic disruption issues. Pedestrian safety, aggressive and elderly drivers, DUIs, school bus stops/routes, etc. are just a modicum of the safety issues put down by the group. Operational discussions highlighted the need to consolidate projects into short durations versus having multiple projects over multiple years.

The area that may allow the most innovation is scheduling/traffic disruption. It was suggested that traffic control plans could be submitted by the contractor as part of the bidding process. Contractor innovations should not be restricted and ways should be found to encourage and share the benefits of reducing congestion and traffic disruptions. Pre-bid meetings and real-time coordination among staff and/or contractors was said to be of utmost importance.

After hearing the preliminary recommendations by the other skill set groups, Traffic/Work Zone Safety examined areas of overlap (i.e., recommendations or comments by other groups that overlapped into traffic and work zone safety) before recording their final recommendations. Some suggestions were: find a way to measure and monitor traffic congestion; review barrier use with resource managers to ensure sensitivity to species that may come in contact with them; include law enforcement in traffic control; utilize ITS in coordination with Public Relations; develop plans to deal with the unexpected (i.e., crashes) or special events; etc.

Final recommendations by this skill set can be divided into four major areas: (1) Resource Assessment; (2) Detailed Traffic Management Plan; (3) Detailed Sequence of Operations; and (4) Special Provisions.

Resource Assessment

This skill set believed that an assessment of resources is important to successfully implementing construction projects along the corridor. The following factors could be addressed in such an assessment:

- **Mega vs. Multiple Projects** – Determine whether individual projects should be combined to minimize the duration of construction. Several project examples have demonstrated that 1, 2, or 3 years of intensive construction may be preferred by the public as compared to 5-7 years of less intensive, staged construction.

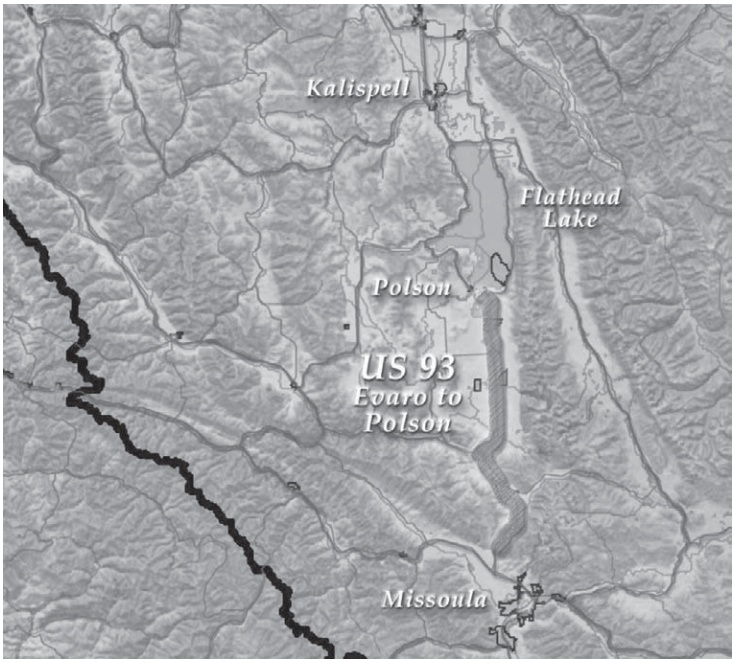
- **Personnel Resource Assessment** (skills, duties, partnering, etc.) – The intensity of the work and the contracting practices (incentives/disincentives) may strain the capabilities of MDT. Cultural, historic, and environmental considerations also present unusual needs and demands.
- **Contracting Practice** – Project management is already considering A+B bidding methods for projects along the corridor. Another tool to deliver a project or set of projects to expedite construction may be design-build.
- **Training/Certification** (Traffic Control Methods, Worker Safety) – Certified work zone traffic control supervision, provided by the contractor, and dedicated to the project may increase the quality of work zone traffic control.

Detailed Traffic Management Plan

It was agreed that detailed traffic management planning would help move travelers through the corridor, minimize adverse impacts to businesses, and improve safety performance. Following are elements of a comprehensive traffic management plan:

- **Traffic Control Plan** (project specific considerations)
  - Pedestrian traffic control – Pertinent when the work effects pedestrian facilities or is within towns and cities.
  - Elderly Drivers – The corridor currently recognizes the higher than average proportion of elderly drivers moving through the corridor. Enhanced Roadway markings have already been placed on portions of US 93.
  - Property access – Maintaining business, agricultural, residential, utility and municipal access while reconstructing the roadway will necessitate proper planning and coordination. Some up-front consideration will avert unplanned disruptions in access.
  - Wildlife concerns – Identify any areas that may require special features such as temporary fencing or provisions for minimizing wildlife mortality.
  - Regular coordination meetings – coordination between projects and among resource agencies and the governmental sponsors will be necessary.
- **Enforcement** (i.e., speed and impaired drivers) – It is recommended that a multi-year enforcement MOA with enforcement agencies be considered. Other considerations include working with local tavern owners, deploying responsible-server training, offering "free rides" home, and integrating 402 projects with the construction projects.
  - Pullouts – Where reconstruction eliminates shoulders or pullout opportunities for significant distances, include provisions for temporary enforcement pullouts. These pullouts could also be used for temporary storage of disabled vehicles.
- **Alternate Route Plan** – Have an alternate route plan for oversized, overweight vehicles. This plan may also review planned or programmed improvements on alternate routes, judging whether improvements are projected during the US-93 reconstruction. If so, the improvements could be deferred or moved up. This consideration includes maintenance division activities.
- **Transportation Demand Management** (TDM) – Local commuters to Missoula and Polson are part of the traffic stream. There is a potential to reduce the number of vehicles on the roadway through TDM techniques. Whether this is reasonable and cost effective needs to be determined.

- Carpool, Public Transportation – Contract provisions could require offering a service to match riders with carpool drivers. Public transportation may also be as little as service from a remote parking site for contractor's employees to the work site.



- **Coordinating Construction Practice** – Construction sequencing while the facility is under traffic presents challenges. The following are solutions/recommendations:
  - Time of day/night – It may be reasonable to permit alternate flows of one-way traffic at night while during the day two lanes (one in each direction) are required.
  - Pilot cars – Continuous use of pilot cars can help control speeds and assist unfamiliar drivers.
  - Incident Management Plan – On scene command structure, communications and response need to be coordinated with contracts.
    - EMS, Hazmat
    - Service Patrols
    - Regular Coordination Meetings.
- **Motorist Information** – Two levels were envisioned by this skill set, (1) corridor wide and beyond, and (2) project.
  - Standard or typical message sets – Develop typical message sets for variable message signs.
  - ITS (511, signs, HAR, DMS, cameras) – Deploy notices in advance of, and through, the corridor about the availability of traveler information through 511. Within the corridor, deploy HAR. Cameras at fixed sites along the corridor can provide real-time information for trip planning purposes.
  - Networking (car rental agencies, National Park Service (NPS), Motor Carrier Services (MCS), AAA, etc.) – This skill set envisioned an extensive list of organizations and services that the corridor public awareness firm would work with.
- **Special Events** – Identify special event times and modify contract provisions accordingly.

<u>Detailed Sequence of Operations</u>

- **Attacking PTW** ("How it will be built") – The skill set group expressed the general feeling that more detail than is typically incorporated in MDT construction plans should be given in the project plans and contract provisions.

- **Length of operations** – Implement corridor wide limitations on the extent of driving on an unpaved surface, both in distance and time.
- **Contractor input** – Before bidding the contract, consider a means to obtain contractor feedback on the proposed sequence of operation.
- **Surfacing requirements** – This also relates to length of operations.

Special Provisions

The Traffic/Work Zone Safety skill set felt that three types of special provisions are important to consider before the first contract is let:

- **Incentive clauses** (worker, crashes, etc.) – Apply a monetary incentive for achieving zero disabling crashes and zero disabling worker injuries within the construction project limits (as an example). Keep any contract targets simple and measurable. The intent is to let the contract provision speak to the importance of safety, and this may drive innovation by the contractor.
- **Dust Management** (water quality control) – Consider paving all haul roads. Control source water quality so as not to transplant invasive species in uncontaminated streams and water bodies.
- **Alternate measurement/Payment** (lump sum, cost savings, daily maintenance rates) – Current MDT policy generally prescribes lump sum traffic control for projects with well-defined extent and duration of work. In other contracts, unit prices are used (inspectors become "counters" in unit price contracts). Consider a blend of traffic control payment methods, combining lump sum for certain elements, unit price for others and a daily maintenance item.

3.2.3 RIGHT-OF-WAY (ROW)/UTILITIES/RAILROAD

Before construction can begin on a project, ROW must be identified and/or acquired, utilities should be moved and work having an impact on railroad lines must be identified. Delays in any of these areas can have a serious impact on the accelerated construction and operation of a project.

The ROW/Utilities/Railroad skill set identified several potential obstacles and subsequent solutions to an accelerated construction schedule. Not all of the items discussed were included in the group's final recommendations (found at the end of this section). The following paragraphs highlight a few of their interim suggestions.

Like other skill sets, ROW/Utilities/Railroad recognized prioritizing project segments as one of the first steps in this accelerated process. North End of Arlee to White Coyote Road (Jocko River Bridge) was listed as first priority and Minesinger Trail-MT 35 (Polson-East) was listed second. Next comes the need to complete the necessary ROW acquisition paperwork. It was suggested that MDT staff could be brought on board to assist with the Polson-East project segment, allowing a potential second consultant to focus on some of the secondary segments.

Acquisition/appraisal of right-of-way is rarely smooth or easy. Complicating the process on this project is the additional oversight by CSKT. It was unknown what length of time CSKT would need for review of appraisals and/or any special processes that the Bureau of Indian Affairs (BIA) might require. It was, however, suggested that hiring a mutually acceptable fee reviewer and/or offering to pay more up front to attract a fee appraiser and/or adjust the pay schedules could speed up the appraisal/acquisition process.

Relocations should be addressed as much in advance as possible. Making relocation a priority both in the private sector and with CSKT could help avoid delays in acquiring CSKT, Trust, or private properties. It was suggested that the entire project be examined to determine the number and difficulty of the various relocations. While the preference is handling all relocations in house, other alternatives may have to be considered to ensure that deadlines are met.

Environmental/landscape needs can cause significant project delays if care is not taken to schedule tasks appropriately. Removal of plants (harvesting and seed collection) and other environmental concerns can quickly become major issues when they begin to delay utility work. The window of opportunity for many of these tasks is this year!

The ROW/Utilities/Railroad skill set identified five final recommendations crucial to accelerated construction:

Project Management

- Create a multi-discipline Corridor Management Team or overall Project Manager (possibly with a designated team to work with). This team or individual would establish time lines and accountability for the entire corridor. They would also ensure that coordination between the appropriate agencies/utilities takes place in a timely manner.
- A project manager for ROW and utilities work within the corridor should be established. This individual would have decision authority and could coordinate with a corridor-wide utility agent, tribal representative (with environmental/cultural experience), and ROW agent. He/she would be responsible for creating a ROW and utilities sequencing schedule as well as holding monthly meetings to coordinate all utility and ROW functions.
- A database accessible by all entities should be established to track ROW/Utilities progress. Automated acquisition forms should also be made available.

Utility Deliverable Issues

- Incentives for early utility relocation should be created. Examples include 100 percent reimbursement of costs.
- Utility parcels should be identified first allowing ROW to focus on acquisition of those parcels. Subsequent plans should be developed to identify acquired ROW parcels to allow early entry by utility companies.
- Utilities should be allowed and/or encouraged to contract necessary tasks.
- An Environmental Salvage time line should be finalized up front.
- Physical (onsite) identification of sensitive areas needs to take place prior to utility relocation.

Mapping, Staking, etc.

- Create a master utility agreement that is independent of segmentation.
- There must be close coordination with environmental personnel regarding installation, location, and method of utility relocation. Providing incentives to "get in and get out" of sensitive areas, burying smaller power lines in such areas, running lines along guardrail, curb and gutter sections or utilizing overhead lines are all options in "sensitive" or "do not disturb" areas.
- Additional time would be saved by completing utility permits upon project conclusion (currently done up front).

- Where possible, consider use of right-of-entry and/or Grant of Possession to avoid property condemnation holding up construction.

Right-of-Way Staffing

Allocating an appropriate level of manpower is crucial. Specifically:

- MDT: Shift or add ROW staff.
- CSKT: Add staff and share clerical duties with consultant or MDT.
- Consultant: Determine if staff is adequate. Ability to deliver will be evaluated.

Process Issues

- Currently, there is a multi-agency appraisal review process that can be very lengthy. To lessen this, clerical tasks should be consolidated to eliminate redundancy and every attempt should be made to allow agencies to review appraisals concurrently.
- It is recommended that a pilot project be initiated to access the feasibility of right-of-entry or Grant of Possession.
- Consider using incentive payments to landowners for early acquisition.

3.2.4 PUBLIC RELATIONS/ITS

Public Relations (PR) is often tasked with being everything to everyone. As the most "public" face of a project, it provides a vital link in the communication process by 1) helping customers identify with the project even before construction begins, and 2) disseminating information regarding day-to-day happenings once construction commences.

They must communicate the reasons/need for the project and the long-term benefits that will result from the short-term "discomfort" of construction. In addition, they must help the consumer understand the relationship between factors such as unexpected events (crashes), mobility, commercial and recreational vehicle volumes, the need for lane closures during construction, and so forth. Their goal is to help individuals be informed and feel in control of their driving destiny.

The Public Relations/ITS skill set identified seven major "themes" surrounding this project: (1) cultural preservation (i.e., protecting landmarks); (2) maintaining or facilitating a "Spirit of Place"; (3) improving safety; (4) improving efficiency; (5) protecting the environment (i.e., wildlife, wetlands, native plants, etc.); (6) improving all transportation modes (bike, pedestrian, etc.); and (7) being aware and sensitive to the National Parks systems' mission.

With those guidelines in mind, they sat down to determine the project stakeholders. Who had a keen interest in ensuring that project information was provided in a timely manner? Over two dozen different groups were identified, ranging from governments, local residents, and tourist services to educational facilities, the general media, and emergency medical services. These stakeholders can assist in identifying the target audience for any PR plan.

One key point made by the Public Relations/ITS skill set was that the PR plan shouldn't commence on the day that construction starts, nor should it end on the day the last road stripe is painted. Rather, the public should be invited to "get involved" with the project before, during, and even after roadway construction.

Before Construction

- Prepare pre-construction video.
- Utilize focus groups to review the ad agency's PR plan (see final recommendations).
- Plan phasing of messages.
- Identify committee responsible for hiring ad agency/PR company.

During Construction

- Provide real-time information.
- Conduct milestone celebrations.

After Construction

- Ensure a national conference presence. Encourage paper/abstract submittals and project presentations at a national level.
- Prepare a documentary of project from beginning to completion (PBS/History Channel).

The most crucial ingredient in the information dissemination process may be the budget. It costs money to have a positive image. This skill set recommended presenting a proposed budget to a small group of decision makers, putting it in terms of a percent of the construction cost. While there are alternative marketing methods that encourage community involvement (school contests for logo creation, utilizing the University of Montana or Montana State University's Journalism department, etc.), care should be taken to ensure that ownership, quality control, etc. is maintained. Don't try to cut the budget on the important things!

In identifying ways to partner with local/regional organizations and effectively inform the affected communities and the traveling public about construction delays, the Public Relations/ITS skill set identified six final recommendations to minimize adverse socio-economic impacts.

Brand Project/Develop Logo

- Branding the project will provide local groups with increased ownership and will provide a way of positively identifying the project. This should be done as soon as possible to lessen the use of negative slang/nicknames (i.e., "pray for me I drive on Highway 93" bumper stickers).
- Initially, the Public Relations/ITS group suggested a brand/logo of "Seven Generations." After receiving feedback from members of the other skill sets, including several CSKT staff, the Seven Generations logo was deemed to be too stereotypical. It also may have trademark/registration issues as it is currently used by other organizations/tribes.
- Instead, "Spirit of Place Project/Highway" was suggested. Naming the highway will require congressional approval and additional signing on the roadway. If "project" is used instead of "highway" you do not need to go through this process. Tribal elders will need to approve the project name/logo prior to finalization.
- The tribe started a logo with the reservation outline, mountains, teepee, and a white bison that could potentially be used for this project.

Coordination

- Information, staff and overall corridor coordination are crucial. Construction schedules should be updated weekly (sooner if unexpected changes occur), and MDT should identify milestones and decide what is a priority to be completed (not the contractor). With the need to update traveler information (HAR, VMS, etc.) hourly comes the necessity to collect, analyze and disseminate a vast array of information. Staff/agency relationships in these regards can best be shown via a communications flowchart.

Public Relations Committee

This group or committee will oversee all public relations activities and will select the Ad Agency. Their job is to get PR out on budget and on schedule.

- **Project Public Information Officer (PIO)**. This individual will act as the single point of contact with the public and will oversee the Ad Agency, Documentary Company and Traveler Information Coordinator. He/she will also work alongside the Tribal Liaison and Ombudsman. It should be noted that historically this person has been employed by the Ad Agency. This project will necessitate a change to a MDT employee. It was felt that an outside entity should not be speaking to the press on MDT's behalf.
- **Tribal Liaison**. This individual will have the tribes interests at heart and will work alongside the PIO.
- **Ombudsman**. This individual should be a third party engineer that can answer technical questions and serve as an outside expert that can talk to and/or meet with everyone. He/she will provide a "human face" to the project and will be available to mediate public concerns. He/she can also serve as a community/business contact and can bring ideas back to MDT. While this position will be external to all three governments (CSKT, MDT and FHWA) it would be paid for by all three.
- **Traveler Information Coordinator**. There is an existing 511 information coordinator in the MDT Maintenance Division. They field positive/negative comments on 511 and answer publics' calls to MDT. For this project, they will need construction information on a weekly basis for update in the 511 system. They could also produce a project-specific report for publication on the project website. This individual works very closely with project PIO.

Ad Agency

- The Ad Agency will be accountable for preparing the PR plan. They will report to the PIO and they will be instructed to not converse about the project to the public. They will be in charge of identifying stakeholders and/or target audience. They will run focus groups and ensure that tribal entities (i.e., Flathead Resource Organization, Salish, Pend d'Oreilles, and Kootenai Tribal Elders, Tribal Council, etc.) are involved in the decision making process. They will also create logos, brands, brochures and trinkets.

Documentary Company

- This will be an outside company that reports directly to the PIO. They will be tasked with documenting the project from the 1980s to the present. They will assist as needed in preparing video(s) to show at conferences and on PBS/History channels. They can also assist with trade article preparation, conference papers and conference/professional organization award submissions.

Prepare Implementation Plan

- Start with a pre-construction video showing history of project, reason for project, etc.
- Identify educational efforts (handouts, trinkets, etc.).

- Develop a website plan.
- Ensure the use of HAR, DMS and CCTV. All equipment will have to be purchased through Traffic Control, not PR. For HAR and DMS, the MDT Maintenance Division, specifically the Traveler Information Coordinator, will provide text/document on what should and should not be put into systems. The Contractor will, however, be in charge of physically recording messages. CCTV cameras will be used for traffic control. Portable units may be useable for this project. When possible, cameras should be tied into project and MDT Traveler Information website (the current CCTV web page is one of the most frequently used MDT sites).
- Identify milestone celebrations.
- Include coordination plan for documentary video, trade article submission, project displays, conference presentations and/or award submissions.

3.2.5 GEOTECHNICAL AND MATERIALS

To facilitate accelerated construction of this project, the Geotechnical and Materials skill set divided recommendations into three broad categories: accelerated construction – materials and methods; accelerated acceptance – tests and inspection; and pit sites.

Methods and Materials

Jet Grouting

- Use for ground improvement for embankment foundation. It will make the ground harder and eliminate settlement.
- Can utilize quick installation method.
- It can also be utilized to provide foundations for shallow footings in lieu of piles.

In discussing jet grouting, the Geotechnical and Materials group noted that it is quick, but expensive, if wicks don't work. However, in using jet grouting for shallow foundations (such as bridge structures) there is a cost savings in time (get in and get out) that counterbalances the additional upfront expense. On some grades there may also be an issue of dynamic compaction or densification when using jet grouting. Alternatives may be geofoam or rubber chips. Each has their detractors. Jet grouting may be a hard sell to the MDT Bridge Division while geofoam is expensive and rubber chips are heavy and flammable.

Welded Wire Walls/Precast Concrete Panels for Wall Facings

- Welded Wire Walls offer several benefits for this project. They can be built in less time and any type of architectural facing can be added at any time (i.e., they go in as a two-phase wall with facing being completed after settlement). Precast panels or other facing aesthetic can be utilized with a generic spec that is easily bid. It was noted that there is corrosion potential with some backfills, but this was not thought to be an issue with the soils being used on US 93.

Alternatives to Bridge/Animal Crossings Construction

- Bridges and Animal Crossings can be constructed at night only or over a few accelerated construction days to minimize traffic disruptions. Pipe jacking and top down construction methods can facilitate this accelerated construction.
- Bridge spans could be shortened to reduce embankment/wall height/footprint requirements. For example, on the Jocko River Bridge the adjacent beam heights could be reduced with a resulting savings on approach costs (in line with Washington standard). The main span could be kept as

designed but the approach grade could be lowered 0.6 m (2 ft, pushing 1:1 slope) with the possibility of going to a five span in lieu of current three span.

- Eliminate piles at wildlife overpass by utilizing MSE walls and spread footings. This may face some resistance at MDT as they haven't built a lot of spread footing bridges in Montana. There is the institutional impression that every spread footing bridge has sunk.

Controlled Staging of Geotech Work

- Schedules and sequencing requirements should be specified up front.
- Methods should be utilized to facilitate work under/in traffic. This could be accomplished by routing two lanes at a time with initial work on the opposite side of the roadway or by temporarily shifting lanes to the shoulder/ditch area.

Other Ideas

- Cut slopes to avoid excessive excavations and ROW takes (use slightly steeper cut slopes or small toe cuts).
- Bi-axial geogrids can be used to reduce the thickness of special borrow and pavement sections. Bi-axial geogrids are currently being used in other places with research showing good results.
- Utilize geofoam in areas where lightweight fill is needed/acceptable.
- Soft-cement stabilization should also be examined as a viable method for this project.

Tests and Inspection

Special Provision

- Subgrade special borrow will be pre-approved A-1-a. It saves time because it is R-value tested during preconstruction (meaning testing does not have be completed during construction).

Maturity Testing

- Utilize maturity testing for concrete curing and/or measurement of strength gain (set a thermo coupler or embedded chip). This provides onsite determination when to strip forms and complete backfill, resulting in time savings.

QA/QC

- It is recommended that a corridor-wide team approach be utilized for this project with MDT and consultant staff working together (MDT is concerned with staffing and wants to avoid new FTE). Such a team should provide several measures of consistency resulting in efficiencies of time. The design consultant as well as a CSKT liaison could be invited to preconstruction, prebid, etc. meetings. Going back to the design consultant if errors or problems emerge would also be beneficial.
- One option is to have state (MDT) coordinated QA only. This option should be exercised only if MDT mandates contractor/consultant provided QC.

Quality Control

- This project should encourage proactive identification of problems allowing them to be addressed early in the process.
- It is recommended that MDT coordinate centerline staking and engineering checks with the option to include earthwork staking. All surveying should be tied to GPS.

- Involving design consultants proactively is critical, particularly in preconstruction and "status" meetings.

Pit Sites

Mandatory Sites

- Have pre-approved mandatory borrow sites. There are plenty of sources/sites that are ready to be utilized (approximately 20 identified). Royalty values should be addressed prior to bid. The pit plan can be coordinated with borrow method spec. However, the possibility of specifying no mixing of sources/blends needs to be determined.

Reclamation Processes

- Incorporate stakeholder criteria in pre-approved reclamation processes and plans to insure reclamation of sources. It should be noted that CSKT pits are already under mandate to not conflict with surrounding areas (eleven of the identified borrow sites are on CSKT lands).

Contractor Pits

- Have prepared criteria to assess proposed contractor pits. Such pits offer a potential project savings and should be evaluated in conformity with stakeholder criteria. Furthermore, preapproved processes and reclamation details will save time.

3.2.6 INNOVATIVE CONTRACTING

The Innovative Contracting skill set organized their discussion into four areas or techniques that can be utilized in exploring state-of-the art contracting practices: delivery methods, procurement methods, contracting methods, and other tools.

Delivery Methods

- Use design-build for the SEIS portion. Utilizing design-build for the SEIS section of this project may result in faster project delivery and enhanced environmental streamlining as well as allowing for best-value procurement. However, this contracting method is limited by legislation and the multiple entities, stakeholders and resource agencies involved in this project may make approval particularly difficult.
- Examine job order contracting for such items as erosion control, stream restoration, etc. (defined further in final recommendations).

Procurement Methods

- A+B (defined further in final recommendations).
- Best Value A+B+Q (cost plus time plus qualifications). Contract awarding is based on price and non-price factors as well as qualification evaluations. It identifies up front specific areas of concern (key personnel, past performance, safety plans, quality management plans, etc.). This procurement method also has legislative hurdles – Montana state law currently requires low bid.

Contracting Methods

- Lane Rental (defined further in final recommendations).
- Incentive/Disincentive provisions include bonuses or deductions for certain contract milestones or features. They can be particularly beneficial in areas of cultural sensitivity or where there exists a

desire to minimize environmental impacts (i.e., clearing and grubbing areas). Barriers to implementation include the need to adequately educate the contractor to reach contract goals; valuing impacts; and measuring the quality of work and relating it to incentives/disincentives.

- Warranties are the guarantee of the integrity of a product and of the maker's responsibility for the repair or the replacement of deficiencies. They offer the possibility for longer-life elements, and ultimate end product or performance related specification. They also hold the contractor accountable and initially decrease the number of MDT project personnel (shift responsibility from MDT to contractor). However, the number of personnel needed after contract completion increases (to ensure long-term contractor compliance). The administration and definition of warranties can also become barriers to warranty implementation. New contract provisions will be required and the possibility exists that bid costs will increase as contractors look at possible future deductions.
- Escalation Agreements help define the decision making process. They reduce the time needed to make decisions, change orders, resolve conflicts and modify schedules. They offer quicker problem resolution and facilitate clear communication lines.
- Drop Dead Dates (no excuses completion dates).
- No Excuse Bonuses (incentives only, L/Ds still apply).
- Performance Related Specifications defines the measurement for acceptance of a completed item (i.e., the end result). This offers significant opportunity in bridgework and work zone control. It allows for greater contractor innovation and more efficient use of resource allocation. However, some contractor education may be needed, and MDT would have to rethink their method specs. For this project, the design process has already proceeded too far.
- Value Engineering (VE) Clauses (based on time).

Other Tools

- Contractor Constructability Reviews (defined further in final recommendations).
- Construction Manager. This individual would be a consultant contracted to provide administration of all projects in the corridor (one manager to manage the entire corridor).
- Consultant Quality Assurance.

Following interaction with the other skill sets; Innovative Contracting identified four final recommendations to accelerate construction of this project. These final recommendations, as well as a synopsis of the associated benefits and implementation issues, are listed below.

Recommendation: Use job order contracting for selective pieces of work that do not have definable quantities (similar to term contracts). Pieces of work to consider include erosion control measures, landscaping, seeding, environmental features, etc.

Benefits:

- Promotes just-in-time procurement of these elements.
- Allows the prime contractor to focus on areas of expertise.
- Can more easily cancel contract for non-performance.

Implementation Issues:

- This is a new delivery method.
- Coordination with prime contractor is critical (coordination requirements should be defined up front).

Recommendation: Consider using A+B (cost plus time) bidding method on all projects. Assign a monetary value to contract time.

Benefits:

- Decreased construction time resulting in reduced impact and increased safety to the traveling public.
- Encourages contractor innovation.
- Decreases contract administration costs.

Implementation Issues:

- Must re-evaluate the definition of "B" portion. Have multiple "B" milestones to compensate for short construction season/winter shutdown.
- Evaluate the use of seasonal road user costs (RUCs).

Recommendation: Use lane rental (incentives/disincentives for lane usage and width restrictions) when two-lane, two-way traffic is not practical.

Benefits:

- Minimize congestion.
- Minimize lane closures.
- Incentive can be tied to time of day and high volume seasons.
- Promote innovation in sequencing.

Implementation Issues:

- New contracting method. There is a lack of experience in Montana when calculating rates.
- Relationship to A+B specification needs to be defined.
- May increase contract administration costs.

Recommendation: Use contractor constructability reviews on all sub-projects. Contractor constructability reviews are a process that involves experienced construction personnel with extensive construction knowledge early in the design stages of a project to ensure that the project is buildable while also being cost effective, bidable and maintainable.

Benefits:

- Introduces construction knowledge into design (i.e., takes a proactive approach to problems).
- Encourages exchange of ideas on new contracting methods, environmental issues, borrow sites and features unique to this project.
- Promotes reasonable schedules for "B" portion of contract.
- Allows refinement of traffic control plans and sequencing prior to initiation.

Implementation Issues:

- Coordination with contractors.
- Legal issues. Contractors involved in reviews may have an advantage over other bidders.

3.2.7 ENVIRONMENT

Nearly all phases and aspects of roadway construction have an impact on the environment in some way. Hence, any discussion of environmental recommendations can be put in context of its impact on other skill sets. Construction, traffic/work zone safety, geotechnical and materials, innovative contracting and structures were all identified as having topics or areas that would need to be coordinated with the Environmental skill set. These interim topics follow:

Construction

- Sequence of operations – specifically, bull trout and stream restoration.
- Fall lettings were identified for bull trout and stream restoration, as well as removal of the old Jocko River structure (this will need a special provision).
- Dust control plans for (predetermined) haul roads should be initiated.
- Detours and alignment shifts that might have an impact on sensitive areas need to be addressed.

Traffic/Work Zone Safety

- Identify alternate routes and have a contingency plan in place for issues such as air quality, maintenance coordination, etc.

Geotechnical and Materials

- Institute a surcharge for settlement areas.

Innovative Contracting

- Use job order contracting (2 year increment contracts) for erosion control, seeding, and landscaping
- While utilization of A+B+Q contracting, where Q would include quality environmental stewardship, is ideal, it cannot be done under current legislation. However, an incentive for environmental stewardship could be worked into an A+B contract (i.e., A+B plus best value bidding or A+B plus prequalification through specifications).
- Encourage innovation! Use three people (construction, environmental, and innovative contract specialists) to develop special provisions, or review existing drafts, for incentives on environmental stewardship, level of quality for wetland and stream restoration as well as landscaping features. Emphasis should be placed on incentives versus disincentives and could include mitigation sites and additional miscellaneous work.
- Consider changing from constructability reviews to PS&E.
- Short list or prequalify contractors for stream restoration, wetlands, and landscaping tasks. (Takes state legislation to prequalify contractors.)

Structures

- Structure heights, beam depths, wildlife crossing, temporary facilities, etc. should be designed and permitted prior to bid letting. Some construction activities adjacent to structures will likely be necessary.
- Let one or more structures as separate contracts from roadway contracts.

As discussions continued, several additional interim recommendations came to light. One particular need was for onsite resource decision makers or an environmental coordination and compliance team. These

resource representative(s) would have authority to make decisions for changes that may come up during construction. While the concern exists that they may not have full authority to make changes to mitigation plans or permits (Tribal, 404, NPDES, etc.) the possibility of having "ranges" of flexibly for changes exists. Regardless, having a resource representative on site would improve implementation of mitigation commitments.

A log of existing conditions should also be developed. A basic photo log or other recording method for cultural and other important tribal sites would be adequate.

The Environmental skill set organized its final recommendations into six basic areas: general construction concerns; traffic/work zone safety; right-of-way/utilities/railroad; public relations/ITS; innovative contracting; and structures. These areas, and the subsequent recommendations for accelerated construction, follow:

General Construction Concerns

- Staging Areas (wetland mitigation sites) should be preapproved. A team approach can be utilized to identify upland or other areas that can be used. It would be preferable to use hard surfaces to reduce mud tracking. Old borrow sites can be used for contractor borrow, staging or plant operations. These same old sites can then be reclaimed and used for restoration credit.
- Separate contracts should be issued for stream restoration, wetlands and landscaping (wetland, urban and rural revegetation/landscaping).
- A specification and pay item for cleaning equipment to address Whirling Disease must be developed.
- Project Oversight Team - determine a project oversight team and resolution process. This team will be charged with working out specifications for rewards and resolving conflicts through a fast-track resolution process. They would hold weekly coordination meetings gathering feedback from the contractor, MDT and CSKT. It is recommended that the team contain the following individuals:
  - Environmental Project Manager (EPM)
  - CSKT EPM
  - Wetland and Stream Restoration Specialist
  - Traffic Control Specialist
  - CSKT Cultural and Resource Representative (MOA – May need funding assistance of tribal staff)
  - Revegetation Specialist (MDT funded)
  - Any resolution process that is developed needs to be agreed upon by all three governments (MDT, FHWA, CSKT).

Traffic/Work Zone Safety

- Barriers to wildlife. Long lengths of traffic barriers are not desirable. Currently, we are unsure how many lengths of concrete barrier or silt fence will be used.

Right-of-Way/Utilities/Railroad

- Utility relocations will conflict with some "Do Not Disturb" areas. A resolution to this conflict must still be coordinated. One option is to have MDT fence "Do Not Disturb" areas.

- The Environmental skill set endorses the use of a US-93 Corridor Management Team. The team could include: utility reps, MDT utilities, CSKT and an Environmental representative.
- What is time critical now? The vegetative agreement has been approved and vegetation must be harvested now so that it may be utilized this year (2004).

Public Relations/ITS

- Public Relations needs to be proactive in answering the question "Why the project is the way it is?" i.e., what will the public be seeing in the upcoming days, weeks, or months and why will they be seeing it. Focus should be on the positive aspects of the project, highlighting the importance and benefits of critter crossings, mitigating wetlands, limiting access, reducing delays and accelerating construction.

Innovative Contracting

- Qualified contractors must be identified to handle environmentally sensitive projects such as stream restoration, wetlands mitigation (on site and adjacent), and revegetation/landscaping (seeding and erosion control). It is recommended that these contracts be let separately or as job orders. Special provisions for prequalification of contractors should be written, and environmental quality stewardship incentives need to be instituted.
- The formation of a Preconstruction Development Team could proactively identify and write Environmental/Innovative and Construction special provisions.

Structures

- Permit temporary facilities prior to bid letting. As the project permitting process is still taking place, there is time to do this.
- When working in wetland areas, pile-driving precautions should be taken to prevent (seal) potential draining of prairie potholes.

3.2.8 STRUCTURES

Initial brainstorming by the Structures skill set resulted in 49 separate ideas for accelerating construction within the project corridor (see Appendix C for a complete list). As discussions progressed, these 49 ideas were narrowed down to 10 basic areas or topics. These topics included questions (that would need to be posed to other skill sets, MDT personnel, etc.), findings, and initial recommendations.

- Let multiple bridges in one contract, e.g., let Jocko River Bridge, MRL Railroad Bridge and the Evaro Hill Wildlife Overpass in one contract.
- Jack and bore wildlife crossings and culverts.
- Prefabricate as many components as possible including decks, caps, and aesthetic treatments.
- Standardized details should be used where possible.
- Schedule letting so that construction occurs in the winter to avoid traffic and allow the contractor a long lead-time to get prefabrication done.
- Modify specifications to encourage innovative ideas from the contract. Consider tying road user costs (RUC) to value engineering (VE).
- Design/build the SEIS section.
- Concrete specification recommendations.
- Wildlife overpasses should be redone.
- The 6-m (20 ft) deep drilled shaft rock sockets need to be reviewed.

Following continued consideration and intermingling with other skill sets, the Structures skill set organized its final recommendations into five areas: materials, contracts/specifications, construction, design, and bridge recommendations. These areas, and the subsequent recommendations for accelerated construction, follow:

Materials

- Use self-consolidating concrete as well as high early strength concrete.
- Use Maturity meter for concrete monitoring.
- Allow fast curing on CIP members, e.g., steam or heat curing for decks.
- Utilize high performance concrete (HPC) on bridge decks. This may necessitate contractor training.

Contracts/Specifications

- Allow longer concrete haul times and develop an end result concrete specification.
- Require contractor QC/QA.
- Provide lead-time in the contract schedule to allow contractor to prefabricate as many of the structural components as possible. Consequently, all structural components that can be prefabricated off-site should be, to allow for shorter construction time at the actual project site including caps, decks, and aesthetic treatments.
- Let multiple bridges in one bridge contract so that structures can be constructed as efficiently as possible, e.g., let Jocko River Bridge, MRL Railroad Bridge and the Evaro Hill Wildlife Overpass in one contract.
- Encourage innovative ideas from contractor(s).
- Consider tying RUC to VE specification.
- Consider completing the SEIS portion of this corridor as a design/build project.

Construction

- Jack and bore culverts and wildlife crossings into place so that disturbance to the traveling public is minimized.
- Winter or off-season construction of structures should be allowed or required to avoid disturbances to seasonal traffic.
- Utilize constructability review.

Design

- Prefabricate bridge components.
- Where possible, structures should use standardized components such as drilled shaft diameters resulting in a quicker (and smoother) construction time.

Specific Bridge Recommendations

- Jock River Bridge
  - Review foundation design and scour analysis (shafts) as 7-m (23-ft) rock sockets appear excessive.
  - Utilize the full shaft diameter to the bottom of the cap.
  - Eliminate the phase construction of the structure and instead phase-construct the approaches – possibly with reinforced temporary slopes to minimize traffic disturbance.
  - Use a full-depth prefabricated deck on prefabricated caps.
- MRL Railroad Bridge

- Review wing wall design (walls for this structure should be squared up with a drilled shaft under them).
- Ensure full shaft diameter to the bottom of the cap.
- Consider providing the contractor the option of using a full depth, precast deck.
- Evaro Hill Wildlife Overpass
- This structure should be redesigned to be more like the other structures in the corridor and let in the combined bridge contract.
- MSE abutments and end walls as well as and prestressed beams should be utilized.
- Spread footing on MSE walls and single span beam should also be considered.
- If the structure will not be redesigned, the existing foundation design should be reexamined, particularly pile footing.

CHAPTER 4

Conclusions

4.1 NEXT STEPS

MDT will be evaluating the recommendations from each of the skill sets and determining which ideas or suggestions should be adopted for use. Loran Frazier, Missoula District Administrator and the project lead for MDT, commended the groups for producing a great set of recommendations. He noted that even with each group's different focus, they came to similar conclusions on such items as project management and coordination. Additional items of agreement, and certainly topics that his office will be examining in more depth, include:

- Prefabrication of bridge components.
- Adopting a communications map.
- Contract reviews.
- Master Utility Plan and corresponding utility agent.
- Reexamine A+B bidding processes.
- Strengthening haul roads before construction start.
- Others.

MDT may or may not have the opportunity to utilize all of the ideas put forth by the skill sets in this corridor. Frazier remarked, however, that some of the ideas brought forward would be used to solve problems on other projects.

4.2 WORKSHOP EVALUATIONS

Workshop participants were provided the opportunity to respond, via email, to a brief post-workshop survey. This survey, or workshop evaluation, was sent to all 104 individuals who attended the workshop. Fifty-nine evaluations were returned for a response rate of 56.7 percent.

Participants were asked to rate the evaluation statements according to the following scale:

1 – Agree
2 – Somewhat Agree
3 – Neutral
4 – Somewhat Disagree
5 - Disagree

Overall, the statements received an "agree" to "somewhat agree" rating. Statement one (adequate notice/ information prior to workshop) rated the lowest with an average score of 1.68 while statement nine (workshop staff courteous/helpful) rated highest with a score of 1.05. The statements, along with their average score, are summarized below:

1. There was adequate notice and information dissemination prior to the Workshop.
   Average Score: 1.68
2. The materials provided were relevant and of sufficient quantity.
   Average Score: 1.27
3. The objectives of the Workshop were clear.
   Average Score: 1.41
4. At the conclusion of the Workshop, the objectives were met.*
   Average Score: 1.59

*Several individuals commented that the objectives will only be met if MDT implements recommendations.

5. The facilitators effectively guided discussion and allowed for appropriate input.
   Average Score: 1.49
6. Different viewpoints were encouraged and respected.
   Average Score: 1.22
7. The Workshop was relevant and valuable to your job.
   Average Score: 1.32
8. The facilities were adequate.
   Average Score: 1.29
9. The Workshop staff was courteous and helpful.
   Average Score: 1.05

Participants were also given the opportunity to provide additional comments. Thirty-two of the 59 respondents did so. A sample of comments is included below:

> "Was surprised that important partners such as enforcement or EMS or County Road Superintendents in the project area were not present, especially in view of FHWA's push for multi-disciplinary team approach. Was shocked that the motel could not guarantee a 'non-smoking' room reservation two weeks prior to the conference."
>
> "It was a very valuable exercise and very relevant to the issues at hand with my current position. I took away many good ideas that will affect my approach to problems associated with highway construction."
>
> "Only MDT and the final construction plans and project will tell if workshop helped."
>
> "I thought it was a good workshop, an interesting project, a good balance between local and visitor experience and participation. My only comment is the brainstorming felt a little rushed - we could have used another day, but I realize that time is limited."
>
> "The current design status of the project (0-90 percent complete design) did not lend itself to major changes or innovation at this point; however, all factors considered, MDT seemed to be open for suggestions for change."
>
> "I think the input from those experts that were invited from out of state, different DOT's, the private sector, Federal agencies, and local contractors was invaluable and really added to the creativity and constructability of the ideas presented."

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APPENDIX B

Skill Set Descriptions

Skill Set Descriptions

- Construction (Techniques, Automation, and Constructability) – Accelerated construction may press the contractor to deliver a quality product in confined time frames and areas, while maintaining traffic. Completion milestones and maintenance and protection of traffic are key elements visible to the traveling public. Allowing contractors to have input on design elements that would impact time or quality during construction can improve the effectiveness and efficiency of the overall project completion. The use of automation to enhance construction equipment performance and contract administration should be explored and implemented.

- Traffic/Work Zone Safety – Enhanced safety and improved traffic management by corridor contracting should be considered. Developing and evaluating contract models may illustrate the best use of incentives to enhance safety and improve traffic flow during and after construction. Evaluating both the construction and maintenance work may help assess traffic and safety issues more fully than the conventional project-by-project approach.

- Right-of-Way/Utilities/Railroad Coordination – Right-of-way, utility, and RR delays have a serious impact on accelerated operations. More innovative solutions are required for both short and long-term time sensitive construction projects. Right-of-way considerations include State laws and procedures covering acquisition and relocation, numbers and types of businesses and residences that may be impacted, ready availability of additional right-of-way, and sometimes, the number of outdoor advertising structures in the project area. Other items to consider are industry responsiveness, incentive-based utility agreements, corridor approaches to utility agreements, contracting for utility work, and non-destructive methods of utility relocation. When applicable, close railroad coordination is essential for a project for construction access or work having an impact on the railroad lines.

- Public Relations/Intelligent Transportation Systems (ITS) – The vast majority of our nation's highway projects involve reconstruction of existing facilities, typically under or adjacent to traffic. It's imperative to partner with local entities and effectively inform the communities and the traveling public to minimize construction delays as well as adverse socio-economic impacts. This provides better information to the traveling public and politicians on the relationships among crashes, delays, mobility, total traffic volume, truck traffic volumes, and the need for lane closures during construction. Implement integrated ITS systems to communicate construction information to motorists via radio, Internet, wireless alters, along with incident management systems/services.

- Geotechnical and Materials – Subsurface conditions and issues should be explored to assess their impacts on the project. Based on the geography of the project, subsurface investigation may be complicated by traffic volume, environmental hazards, utilities, railroad property, and right-of-way. Pursue options to expedite and facilitate turnaround times in material testing for material acceptance and contractor payment. The use of innovative materials should be explored and encouraged on projects to maximize the creative characteristics of the designer and contractor. By identifying project performance goals and objectives, the designer and contractor have the maximum freedom to determine the appropriate methodology for constructing the project.

- Innovative Contracting – Explore the state-of-the art in contracting practices and obtain a better knowledge of how these techniques could be selected, organized, and assembled to match the specific situations needed on this project. Techniques to be considered include performance related specifications, warranties, design/build, maintain, operate, cost + time, partnering escalation agreements, lane rental, incentive/disincentives, value engineering, and any other innovative contracting techniques that would apply to the project.

- Environment – Scope-of-work and construction activities need to reflect environmental concerns to ensure the most accommodating and cost effective product while minimizing natural and socio-economic impacts.

- Structures (bridges, retaining walls, culverts, miscellaneous) – Accelerating the construction of structures will require deviation from standard practices for design and construction and include early coordination between designers and contractors. A systems approach from the "ground up" will be necessary instead of emphasis on individual components. Prefabrication, preassembly, incremental launching, lift-in, roll-in, etc., are systems or concepts that have a proven contribution to accelerating construction and should be understood and receive priority consideration. Designers have several options in structure types and materials to meet design requirements, but identifying the most accommodating system while minimizing adverse project impacts should be the objective.

APPENDIX C

Skill Set Reporting Forms

Roadway Geometrics/Environmental
Innovative Financing
Right of Way, Utilities, Railroad
Structures
Geotechnical, Materials, and Pavements

Construction Skill Set

Participants:

Mike Brown, CSKT	Jim Mitchell, MDT
Rob Elliot, FHWA NRC	Ellis Powell, North Carolina DOT
Paul Ferry, MDT	Matt Strizich, MDT
Gene Hoelker, FHWA NRC	Jim Walther, MDT
Paul Jagoda, MDT	Terry Wickman, MDT
Dean Jones, MDT	Terry Zoller, Minnesota DOT

CONSTRUCTION		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Constructability	Involve contracting community in project reviews	
Sequence	Change sequence to a more logical order	
Combine Projects	Group projects together for bigger contract, less contractors, shorter time frame	

Notes recorded, but not entered into form:

Allow one lane traffic at night

· Utilize for wildlife crossings and drainage structures

· Use closure windows

· Incentive/disincentive for opening to traffic

Modify sequence of operations for less traffic disruptions. Utilize waste/borrow techniques to accomplish.

Allow contractor to innovatively bid traffic control and sequence of operation. Use base bid and alternate bid?

Shop drawing review was discussed. The process needs to be streamlined or eliminated by the acceptance of PE stamped submittals.

R/W and utility moves by contractor.

Contractor staking and predetermined pay quantities. Use GPS for grade control.
Establish issue resolution process and project management team.
Coordinate letting of Jocko Bridge with the high water and Bull Trout restrictions.
Sequence as much work off the roadway as possible. Have incentive/disincentive for roadway disturbance timeframe.
Upgrade haul roads to all weather surface and upgrade load capacity. Coordinate with road owners.
Mandatory pits and contractor optioned pits were discussed. Pros and cons were discussed and no agreement was reached on which method was best.
Preapproved staging areas was discussed and the possibility of restoring existing pits.
Contour grading was discussed. GPS?
Gravel hauled by train along the rail.
The use of site manager for the project management team was discussed.
Prepermitting was discussed.
CPM Schedule. Updates, new spec, schedule changes
Utilities and R/W. Include in contract? Expedite the process
Enforcement of do not disturb areas.
Environmental effects on utility relocations.
Water rights issues.
Mud Creek fill consolidation issues. Use light weight fills. Piles?

Traffic/Workzone Safety Skill Set

Members:

Mark Baum, MDT	Lloyd Rue, FHWA - Montana
Glen Cameron, MDT	Greg Schertz, FHWA CFLHD
Don Dusek, MDT	Stefan Streeter, MDT
Pierre Jomini, MDT	Mark Urban, HNTB
Lissa Peel, CSKT	

Notes recorded, but not entered into form:

Agenda

1. Elect Speaker — Mark Urban, HNTB
2. Introductions
3. Work Zone Safety Goals
4. Issues/Observations
5. Brainstorming
6. Worker Safety/Hygiene

Work Zone Safety Goals

- No construction –related traffic accidents
- Zero disabling worker injuries
- Reduce or eliminate work zone congestion
- Minimize cost growth

Initial Brainstorming/Issues

- Consolidate projects into short duration vs. multiple projects over multi-years
- Pedestrian safety
- Maintain two way traffic at all times-how do we maintain the safety or flow of the traffic through the work site.
- Balancing access vs. positive worker protection
- Aggressive drivers
- Lane widths – large loads and RV's through work zone, construction materials
- Elderly drivers
- Seasonal conditions (winter shut down)
- Traffic re-routing
- Incident management/Emergency vehicles
    - o Tow trucks/service patrols as part of contract
- DUI's
- Building Structures under traffic
- Oversize loads – windows of opportunity
- Night work
- Staging of construction – sequence of operations – how much PTW open up before paving
- Special event accommodations
- Motorcycles/bicycles
- School bus stops/routes
- Traffic control plans submitted by contractor as part of bidding process

- Tourist volumes/summer traffic
- Multi-media motorist information
- PTW edges/drop offs
- Winter issues/drainage
- Local Enforcement – MHP/temporary pullouts
- Communications with public/Drivers
- Temporary park and ride for public as well as workers
- Worker safety and re-sourcing – fatigue, overwork
- Construction Change Orders minimize for WZTC – traffic control supervision
- Partnering
- Don't restrict contractor innovation/share benefits
- Real time coordination among staff/contractors and between projects
- Constructability review (independent)
    - o Dwane Kailey - Projects have gone through a constructability review by MDT, design firm, design management firm
- Pre-bid meeting (traffic controls)
- Very detailed traffic control plans showing everything down to the last barrel

Consolidation/Breakdown

1. Public Relations/ Community Involvement
    a. Communications
        i. Multi-media
        ii. Project/corridor or alternate route
    b. Branding/Identity
        i. "Enjoy The Valley"
    c. Special events
    d. Emergency responders (fire, EMS, MHP, public lands)
    e. Schools
    f. Alternative transportation – TDM/Commuter's
2. User Issues
    a. Aggressive drivers
    b. School children/Bus drivers
    c. Impaired drivers
    d. Pedestrians
    e. Elderly
    f. Motorcycles/bicycles
    g. Tourist/RVs
    h. Property access
    i. Oversize loads/commercial vehicles
    j. Construction equipment/materials
3. Design Issues
    a. Edge conditions
    b. Access/circulation vs. worker protection
    c. Structures built under traffic
    d. Detailed Traffic Control Plans
        i. Maintain bus stops

e. Maintenance of traffic/winter shutdown
    i. Evaluating construction duration issues
f. Enforcement provisions
    i. Temporary pull outs
g. Re-routing/detouring locally
h. Plan for alternate routes
    i. Suspend other construction/projects
    ii. Short term/spot improvements

4. Construction Field Operations
    a. Night work
    b. Staffing/Resources
        i. Resource Assessment
        ii. MDT personnel
        iii. Consultants
    c. Worker Safety
    d. Contractor administration
        i. Construction change orders
        ii. Claims
    e. Traffic Rerouting
    f. Property access
    g. Enforcement
    h. Dust management
    i. Incident management
    j. Motorist information
    k. Worker access (park/ride)
5. Contract
    a. Mega vs. Multiple
        i. Resource assessment
    b. Contractor innovation/VE
    c. Cost growth
    d. Coordination between contracts
    e. Bidding process for traffic control
    f. Partnering
    g. Traffic Control Supervisor
    h. Pre-bid Traffic Control meeting
    i. Traffic flow (two way traffic at all times)
    j. Public information
    k. End result specifications – Better

Day 2

What have we heard? How does it apply to Traffic/Workzone Safety?

- Off season / Nighttime work
    - o Enhanced enforcement
        - DUI checks
    - o Transportation from taverns
    - o Tavern owner training
    - o Pilot car at night

- One lane travel at night - Explore use of one lane to provide for construction operations
    - Pilot cars
    - Enforcement
    - Provide one lane of travel in each direction, one on route and one off of route (detour)
- Contract Idea
    - Incentive for off season work (contract idea)
    - Review timing and type of work for contract letting
- Jacking and Boring
- Mega vs. multi-project
    - Tie projects together
        - Different contracts for dirt work, paving, structures
- Alternate traffic control bidding
- Coordination committees/groups
    - Traffic control

Intermingling

Ideas / Comments by other groups

- Barrier use
    - Review biological crossings with resource managers
- Source water quality
    - Specification for dust control
- One way traffic at night
    - Can this be done
    - Goal is to limit traffic congestion
- Particular areas where two-way traffic may not be possible while construction is in process (ie. Ravalli Canyon)
- Monitor the traffic congestion
    - Measure congestion somehow
    - Keep it simple to measure
- Law enforcement within and/or tied to traffic control
- Maintain consistency of signs through out the projects
    - Standard message set
- Hire outside media control
    - Works with contractor on a daily basis to update
- ITS should be served under traffic control
    - Work in coordination with PR
        - Keep up to date all DMS/HAR
        - Maintain weekly meetings for updates in construction or upon any construction changes
- Traffic Queing
    - Expected travel time delays
    - Unexpected events (crashes)
- Utilities
    - Proper traffic control

- o Increased training
- o Increased enforcement to follow proper traffic control
- o Included in contract to reflect increased standard
- o Better monitoring by MDT

• Incident management

• Cameras
- o Use real time to monitor progress of construction
- o Monitor traffic

• Contract
- o Incentives/disincentives
  - • Possibly tie to number of crashes
- o Will be A + B bidding
  - • B portion will only apply when impacting the user

Final recommendations

• Detailed Traffic Management Plan
- o Traffic Control Plan
  - • Pedestrian traffic control, Elderly
  - • Property Access
  - • Wildlife concerns
  - • Regular coordination meetings
- o Enforcement (ie. Speed and impaired drivers)
  - • Pullouts
- o Alternate Route Plan
- o Transportation Demand Management (TDM)
  - • Carpool, Public transportation
- o Coordinating Construction Practice
  - • Time of day / Night
  - • Pilot Cars
- o Incident Management Plan
  - • EMS, Hazmat
  - • Service Patrols
  - • Regular coordination meetings
- o Motorist Information
  - • Standard or typical message sets
  - • ITS

• 511, Signs, HAR, DMS

• Cameras
  - • Networking

• Car Rental

• National Park Service (NPS)

• Motor Carrier Services (MCS)

• AAA
- o Special Events

• Resource Assessment
- o Mega vs. Multiple Projects

- Personnel Resource Assessment
    - Number of
    - Skills
    - Duties
    - Partnering – Inter-agency
- Contracting Practice
    - Lump sum vs. Unit price
- Training / Certification
    - Traffic Control Methods
    - Worker Safety

- Detailed Sequence of Operations
- Attacking PTW
- "How it will be built"
- Length of operations
- Contractor input
- Surfacing requirements

- Special Provisions / Unique Standard Details
- Incentive clauses
    - Worker / crashes
- Dust Management
    - Water quality control
- Alternate measurement / Payment
    - Lump Sum
    - Cost Savings
    - Daily maintenance rates

Right-of-Way/Utilities/Railroad Skill Set

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John Horton, MDT
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Linda Martin, MDT
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Mike Suderman, Blackfoot Telephone Company
Ivan Ulberg, MDT
Kerry Wiedrich, Mission Valley Power

RIGHT-OF-WAY/UTILITIES/RAILROAD		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Acquisition/Appraisals	Prioritize segments. Concurrent appraisal reviews.	Provide 75% of r/w acquisition and utilize "quick take." Length of time for Tribal review of appraisals. Consolidate appraisal review. Special process for BIA. Use MDT staff to appraise and negotiate. Pay more up front to attract fee appraisals/adjust pay schedule. Utilize out of state fee appraisers/must be certified by state of Montana.
Prioritize Segments	Jocko/Minesinger, Polson-East as first priority.	Employ staffing to assist in completion of paperwork. Bring MDT staff on board to assist. Possibly shift to another consultant to focus on other segments.
Consultants	Renegotiate with consultant/change consultant .	Understaffing. Possibly eliminate consultant and work within MDT.
Training of Tribal Members	FHWA/LLP Training.	FHWA source of training. Tribe finds consultant or Tribal staff dedicated to package preparation.

RIGHT-OF-WAY/UTILITIES/RAILROAD		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Communication	Parcel priority list/GIS Data Base/Schedule regular meetings with consultant, Tribes and MDT.	Performance criteria, work on line, staffing issues. Proper instruction. One tracking system for entire project controlling data base through MDT regarding approaches, utilities, parcels, etc.
Design/Build	Settle on right-of-way area.	Too many changes in design. One consultant to encompass all phases of r/w, negotiate with utilities for relocation/deliver project.
Condemnation	Set definite date for acquisition and adhere to it.	Try to use Grant of Possession to avoid condemnation.
Pilot Project	Right-of-entry.	Landowner can draw appraised funds. Safeguard closing of parcels.
Relocation	Handle in-house/look at entire project to determine number and difficult/consider alternatives.	Address relocation parcels in advance. Relocation with Tribal, Trust, or private properties possible issues. Make relocation a priority both in private sector and with Tribe. Could delay project.
Utilities	Concentrate on side of road where utilities are located. Incentive program for timely relocation of utilities. Minimize environmental impact.	Identify sensitive areas. Reduce impact on parcels. Acquire first. Hold monthly utility meetings to coordinate with design at the same time. Install conduit in advance by using road contractor in sensitive areas. Incentives to "get in and get out." Advance payment to permit stockpiling of materials. Provide staff for staking to assist utilities. Have right of entry for utilities. Have someone with authority to make decisions in the field. Bury smaller power lines in sensitive areas, landscape. Run lines along guardrail, curb and gutter sections.
Public Involvement	Hold public meetings. Newspapers, media, etc. to keep public involved.	Inform public of deadline that needs to be met to gain support and understanding. This includes right of way, utilities, railroad, etc.

RIGHT-OF-WAY/UTILITIES/RAILROAD		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Plan In Hand for utilities on Project (PIH)	Communication with Tribes. End misinformation. Bring immediate coordinating team including utilities, Tribes, MDT, and environmental into program.	Outside contractor creates concern to environment. Utilities do not agree design/build is feasible. Sensitive areas have versatility using overhead lines. "Do not disturb" is time consuming/detailed issue. Already depicted on plans. Take design build out of equation for utilities for 93 project. One contractor could causes difficulty on project, may not be able to meet construction deadlines. Use coordinator with authority to make decisions and that has a lot of experience (possibly project manager).
(PIH continued) Management Coordination	Create management team within MDT to oversee project! Corridor management team necessary from beginning to end on 93 project!	Coordinate all phases/contractors/consultants during entire project. Immediate Authority regarding R/W, Environment, Tribal entities. Know what is going on from one hand to the other. Sequence support. Contract forces. Time frame to locate contractor necessary. Time lines are necessary for each segment, activity. Scheduling essential. Bonding as it relates to right of way. Utility coordinator throughout project. Realistic goals must be established. Utility funding and manpower time line includes cost and availability. Set and make dates available i.e. due dates, ready dates, etc. Memorandum of Agreement to be signed by all parties involved. Plan swapping between utilities, i.e. phone, power, etc.
Environmental	Scheduling issue.	Must have specific time for completion i.e. removal of plants, other environmental issues, etc. that hold up utilities. Harvesting and seed collection are major issues including price/cost. Window of opportunity is this year.

Public Relations/ITS Skill Set

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Mark Ball, TXDOT
Cliff Franklin, TTI
Jaime Helmuth, WTI
Prudy Hulman, MDT
Martin Knopp, FHWA
Shane Stack, MDT
Bob Seliskar, FHWA - Montana
Brandi Tesch, MDT
Lisa Vander Heiden, MDT
RC Lewis Yellowrobe, CSKT

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Draft Brand Project	Needs to be done ASAP so it does not get branded as something people don't like. It needs to be approved by tribal elders.	• MT seven generations • Flathead seven generations • CSKT seven generations • Need to trademark the logo so no-one steals it - tribe should trademark - may have issue with this • Use a logo of intertwining circles (important to the tribes) and have pictures of people of different generations and races
Draft Branding/Logo	We need to name it so a constituent or media does not name it something that is unacceptable - sticks that is bad and someone that takes credit for the name.	• Coyote, heart, fish, bear, turtles, elder, chief, heroes, 7 generations • Seven Generations Highway • Symbol of 7 overlapping circles in a circle with pictures in them (baby CSKT, middle age CSKT, elder CSKT, and then fill other 4 with different races) • Teepee with a white buffalo would be an acceptable logo - not arrow with white buffalo logo as this is National Park Service logo

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Final Brand/Logo decision	"Spirit of Place Highway"	• 7 Generations brand is "stereotypical" - may have trademark/registering issues as it is the name of organizations and another tribe came up with the name. • The name needs to go through POG first. Naming the highway will require congressional approval and additional signing on the road. If name it "project" instead of "highway" do not need to go through this process. • The tribe started a logo with the reservation outline, mountains, teepee, and white bison – can start with this one.
7 Main Objectives/ Key Points	1. Cultural preservation - protecting landmarks 2. Spirit of Place 3. Improve Safety 4. Improve Efficiency 5. Protecting the environment - wildlife, wetlands, native plants 6. Improve all Modes - Bike/Pedestrian 7. National Park mission	• More detail - • Working with three governments • Wetlands Preservation • Working with the landscape • Animal Crossings • Timeline and Schedule • Safety, LOS, and environment - moving people safely, efficiently, and in harmony with the environment
Budget	MDT $500,000 for 7 years TxDOT $260 M project and $100,000 PR	It costs money to have a positive image. Present proposed budget to a small group and put it in terms of a percent of the construction cost. Does MDT have a survey that says public still not in touch with project? Show 'Pray for me I drive on hwy 93' sign - don't want this type of image
Audience	• Local • Regional • National (Commercial Vehicle Operators) • Tourists	Need a plan for stakeholders to identify the audiences - over a dozen most likely

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Stakeholders	• MDT • CSKT • FHWA • State, Tribe, and Federal Agencies • Farmers/Ranchers • Commercial Vehicle Operators • Tourists/tourism industry • RV parks • Car rental agencies • Airports • Property owners/businesses • Law officers • Emergency services • Schools/colleges • Commuters • Elected officials/local gov'ts • Chambers of Commerce • Recreationists • Media • Mail service/delivery services • Utilities • Rail road • Local transit	

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Ombudsman	One contact person that can talk to everyone. An expert that is meeting with everyone. Need a human face. MDT person and a tribal member. Someone that can be there for the people to speak with and explain why things cannot be done or bring ideas back to DOT. Have an outside person (TxDOT had a TTI engineer do this). People felt good about talking to him and he could be a "problem solver" or "liaison" between the DOT and the public. Goal is to not have DOT on the front page of the newspaper and to get calls to ombudsman and not the department.	External to all three governments - paid by all 3 gov'ts. Project Description is to mediate during public concerns, be the businesses contact, and land owner contact. It should be an engineer to answer technical questions, but also have communication skills for PR.
Project PIO	MDT employee	This is the "go-to person." They talk to the public and oversee the ad agency, documentary agency, and traveler information coordinator. They are the spokesperson for the DOT and public. Usually this spokesperson has been with the ad agency, but NEED to change it for this project - no outside entity should be speaking to press on DOTs behalf.
Tribal Liaison	Has tribes interests at heart and works alongside the PIO	
PR Committee	• Tribal liaison (same as construction liaison) • Project Public Information Officer (PIO) • Ombudsman (Mobility Coordinator)	This group would oversee all public relations and write the RFP and choose the AD agency. There job is to get out PR - on budget and on schedule and sell the idea of the brand also sell schedule as "Contractors Progress Report" to hand over the responsibility.

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Hire Ad Agency	Reports to PIO. Never talks to public (usually done differently, but needs to be changed). They will be in charge of: • Focus groups • Logo/brand • Work Plan • Trinkets • Brochure	Need to tell the ad agency what images want to see on the logo, but let them be creative. Also need to ensure that the logo can be put onto trinkets - it is usable - not a lot of colors
Traveler Information Coordinator	Current position in the maintenance department.	• Needs construction information weekly for updating 511 • Will feed public information when they call department • Possibly produce a project specific report for the website • Field positive/negative 511 comments on accuracy • Must have complete contact with PIO
Documentary Company	Outside company	• Reports to the PIO • Documents project in a report (80s to present) • Conference Papers such as Transportation Research Board (TRB), National Rural ITS (NRITS), ITS America, ITE, ITS World Congress • Video (begin to end) to show at conferences and on PBS and History channel • Trade articles such as Public Roads
Transportation Awareness Program	Biggest bang for your buck is talking directly to the public. 4H Fairs in US-93 corridor and state fairs.	

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Alternative Marketing Options with Community Involvement	• Some agencies do free marketing for local community • U of Missoula or MSU Journalism school might help put together a marketing campaign • Do a school contest to create the logo • SKC College - logos or video creation	Watch out in pro-bono work as to who owns the information/logo, etc. Write the ownership into the contract. Is Jones and Jones still working on logos? Watch trying to cut the budget on the important things.
Keep Locals and Travelers Informed	Do not surprise travelers and locals with information. Don't make too cute or not let people know all the information. Make sure they know prior to things happening and keep the Elders involved. Fix mistakes and always be honest.	
Focus Groups	Test brands and marketing ideas with focus groups. Keep the Flathead Resource Organization (FRO), Salish and Pend D'Oreilles Elders, the Kootenai Elders, and the Tribal Council in the loop. Talk to Tom Smith to get contact for FRO. The Tribal Council makes the final decision, but get their recommendations from the elders. Due to being on southpart of reservation Salish and Pend D'Oreilles more involved, but Kootenai do not want to be left out. With the tribes silence does not mean agreement - they are thinking for 7 generations so takes a lot of thought. Tony Incashola is the spokesperson to the Elders.	• Different focus groups - CSKT, non-tribal locals, tourists, etc • Posters at theatre, universities, drive-thrus on US-93 corridor is a way to get information, airports • Free placemats for local restaurants - coffee shops, gas stations. St. Ignatius has local restaurant where Chamber of Commerce people meet for breakfast. Polson and Ronan probably have it too. • Calendars promoting corridor - school districts print their own school group calendars and sport schedules - they are always looking for donations
Display	Tribes have quarterly meetings - present a display to them. We need to keep the elders informed.	Sharon Silberman and Renee Pierre contacts

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Before Construction	• Pre-construction video • Focus Groups - ad agency to meet with these people • Phasing the messages • Committee for hiring/RFP PR company	
During Construction	• Real-time information • Milestone celebrations	
After Construction	• National Conference Presence • Video of Project from beginning to completion - for PBS/History Channel	
Construction Coordination	• Need to have liaison with construction/contractor and schedules - updated monthly at MDT - need to put this in the contract and tie to money that the schedule needs to be updated. MDT create milestones and decide what is a priority to be completed - not the contractor. Need to speak with construction group. Need input and coordination with construction office and contractor, etc. • Fine for No disturbance area • Traveler information - hourly information on HAR, DMS, etc	

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Pre-construction & Documentation Video	The 'High Five' project in Dallas created a video to give to library, schools, and video rental store to explain to people what will be happening and showing a visualization of what the road will look like after - tribes thought this was going to happen already. They sent this to businesses and local groups. Also do a documentation video of entire project for history channel.	In Montana have a unique aspect to this project so need to explain it to visitors - the three entity collaboration and the money spent on more things than just pavement. Explain why we are spending so much money on the wildlife crossing. CSKT did a 5 minute video with a song and talks about preserving the environment - you can take some excerpts and the song in the background from this video for MDT's. SKC has a video production department. They could video it for us, plus learn about the project, have hands-on experience with videoing, and can play it on the CSKT tv station as well. Also show on cable access and PBS.
Logo on Trinkets	Logo pins work well and key chains	
Blank Billboards	Use this free method for publicity. Create	
Utility Company and Phone Company inserts	Ronan and Blackfoot Telephone - put out newsletters also	
Website	Created and updated by Ad Agency	In past has been done by the contractor, but not as "real-time" as it should be

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Milestone Celebrations	• Showcase accomplishments as they go. • Free meal donated by private firms, adjacent property owners (no public money). • Hire a local drum group and Native American for prayers before meal. Have politicians speak and news stations attend. Make sure people know good things of project. Every year or at finish of section of project.	
Kiosks	Rest area kiosks	
Media Coverage	North Carolina DOT has strongest media coverage because they are located in the construction office	
Newspapers/Newsletters	• Larger companies on US-93 newsletter • Tribe company newsletter (1000 people) • Char'koosta Newspaper • Late County Leader • Advertiser	Janet can give us list of major corporations in area - project PIO to give info to them.
Radio Stations KERR - KQRK	On tribal lands	
CSKT Maps	Instead or to supplement the roadside signs, they are going to create a map to distribute with the place names on them. Phonetic information on Salish names. Also considered putting this on HAR or on a cd with names pronounced.	
Free Coffee on US-93	People hand out free coffee on US-93 during summer - get them to hand out info	

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Work Zone signage	• Teach public how to read work zone signs, but then don't put them up correctly. • Also use TAP's slogan "Drive Slow - Think Fast." Perhaps put this on signs in the corridor as they hand out stickers and people will recognize the saying.	
511	• Maintenance Traveler Information Coordinator is the contact for this. • Put up signs on US-93 to promote 511. Put supplemental signs on pole saying "construction information." And when install signs check cell coverage in the area.	
CCTV	• Use cameras for traffic control. Portables may be more usable for this project. Tie them into the project and MDT Traveler Information web site. • The current CCTV web page is one of the most frequently used MDT sites.	Permanent cost approx. $20,000-30,000 depending on camera color, and weather ability, and pole height

PUBLIC RELATIONS/ITS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
HAR	• Traffic Control group, not PR, to put purchasing of these and operation in contract. MDT maintenance division (Traveler Information Coordinator) to provide document on what should/should not be put on equipment. Contractor will be in charge of physically recording messages. Weekly project meetings will provide info to put on HAR. • FHWA vs state money. Lifespan of these is only about 10 years and this is how long the project is	• Want low powered radio at Ravalli Hill for tribal information. DOT owns a low powered frequency. Buy HAR for construction and then leave for Tribal info after - if turn over after can't use FHWA monies unless use for transportation as well. Be careful in mountain areas with lighting. Be careful with having a road person putting the information on there as may not upgrade as much. Put together a plan for HAR - what info put on it, what type of HAR use, and full time the solar power won't work. • Tony Incashola wants to be involved in this. • Teepee with a white buffalo would be an acceptable logo
Portable DMS	• Most important traveler information • Traffic Control group, not PR, to put purchasing of these and operation in contract. MDT maintenance division (Traveler Information Coordinator) to provide document on what should/should not be put on equipment. Contractor will be in charge of physically recording messages. Weekly project meetings will provide info to put on DMS.	
Enforcement (ITS and non-ITS)	Speed trailers - ITS equipment and police presence	
ITS and Contractor	There needs to be special provisions in the contract about information needed for 511, DMS, HAR, and how often it needs to be provided and to whom. Put a special provision about schedule too, but do not associate with money - need to pick battles on fees/incentives.	

Geotechnical and Materials Skill Set

Members:

Bob Burkhardt, FHWA - Montana
Kevin Christensen, MDT
Doug Dupuis, CSKT
Rich Jackson, MDT
George Machan, Landslide Technology
Jim Powell, NWACPA
Larry Prinkki, MDT
Barry Siel, FHWA RC
Bob Weber, MDT
Mark Zitzka, FHWA - Montana

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Method Spec/A-1a Special Provision	Existing MDT special provision tied to soil type. A-1a is not moisture sensitive. # of passes on adequate soil. Preapproved all or a substantial number of borrow sites. JUST FOR BORROW SITES. Throw out R Tests for roadway borrow.	Method specs is too detailed specific to contractor. MDT stuck with results. Final product not checked. MDT is rewriting specs to performance specs.
Pretested/Approved Mandatory Sources	Plenty of sources (17). At least preapproved the Tribal borrow sites. Royalty values addressed prior to bid. Pit Plan can coordinate with borrow method spec. Possibly specify no mixing of sources/blends. **Bob Weber 4:30 pm question: Preferable to allow an alternate if you have a state source. On the onus of the contractor. Just throw it out during presentation. Will be put it out for everybody's bid including Marvin.**	Minimum R value is specified in contract. If A-1a then R spec should be thrown out. Tribe still addressing source issue. Tribal Elders will respond as it progresses. Proof roll if you can't get a proctor in accordance with spec.
Preapproved reclamation process	Assure reclamation of sources…Tribal pits are mandatory to not conflict with surrounding areas/values. 11 of (17 to 20) sites are on Tribal lands.	Permitting agencies need to buy-in in advance.

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Reclamation details/ options	Review wetland reclamation details and present various selections/ proposals. Follow-up all ideas with Skillings-Connely.	
Private Sources	Discuss prior to bid regarding preapproval, reclamation issues, level bidding ground, quantity/quality, ripe for VE during project (?)	Legal issues the Tribe cannot comment on. (i.e. equal bids, excluding business opportunities,) Two sources on northern section may be an issue.
Reduce inspection time	Reduce MDT personnel's time for embankment testing. Maybe as an experimental feature or research if other States have used.	Nice idea but not there yet. Elasticity modulus rather than density.
Soft soils/geogrids	Soft soils/geogrids prevalent. Interface between new fills and existing. Fabric over grass…less disturbance. Bi-axial geogrid is being used in other places. Research has shown good results. Other places beyond research. Upper zone (6" below pavement) reduces rutting. Surcharge already designed will reduce settlement time.	(Off on tangent with Swamp Creek.) MDT uses biaxial as a constructability issue. Synthetic more than geogrid designed now. Wick drains and A-1a with loading.
Approach embankments	• Mud creek Wildlife crossings …extensive grade raises…. Keep traffic moving. • Dynamic compaction/densification? Address a concern of mud wave? • Jetgrouting is quick but expensive IF WICKS DON'T WORK. Cost savings with Shallow fdtns for bridge structures for additional cost of JG. • JG get in …get out. Used throughout the country. • Geofoam is a valid option. Prepare fdtn area, place it, and encapsulation. FOAM BLOCKS. Costs available through Salt Lake City. Subex can be used for encapsulating. • Rubber chips. • *Wood fibers.	Dynamic compaction is hard to control extent of compaction. Pore pressures increase…..mainly for sandy soils. *For Main US-93 route do not want additional deflections. Jetgrouting may be a hard sell to MDT Bridge Geofoam more expensive. Rubber chips are heavy and flammable.

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Jocko River Bridge	Reduce adjacent beam heights and save on approach costs in line with Washington standard. Keep main span as designed. Lower approach grade 2 feet (pushing 1:1).	Vetoed by MDT Bridge Rats previously. Need to keep in mind graves outside of ROW.
Staging geotech work		
Overall Project Issue (OPI) WWF	Build WWF in less time and any type of facing at any time. Two phase wall…Facing after settlement. Precast panels or whatever aesthetic group selects. Uniformity of wall type. Generic spec so Hilfilker, Tensar, etc can bid. Stockpile mats…redundancy. Precast or CIP for facing or even sculpted shotcrete. VARIETY OF WALL FACINGS.	Corrosion potential with some backfills but not on US-93. Other wall manufacturers may be upset.
Loran Frazier (LF) Interruption…Facings	• CO and AZ have fancy patterns. Repeatable/rustic patterns. Intersection with 35 should be fairly quick (LF). Sheet piles w/ facing as an option? • Fill height below 14' w/ shredded rubber is not fire hazard.	
LF Lightweight Fill followup	• Geofoam is viable..$65 per cubic yard. Soft compressible replaced with jet grouted fdtn in lieu of Wick drains. Compare options w/ time of construction, settlement reductions, evaluate traffic control convenience. • Haven't built a lot of spread footing bridges in MT.	LF - Doesn't want to pour water on brainstorming but….every spread footing bridge has sunk.

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
OPI Stage Construction	• Widen on non-work side upfront w/ temporary pavement for temporary traffic. Look at alignment to see where opportunities are. THREE LANE is setup currently to take advantage of this. • Take up ditch on rock hill side TEMPORARILY up front. • FOLLOW-UP: Lake Missoula sediment cut follow-up. Slope stability is an issue. Old dump site discussions..leave as is?	TWO LANE is pretty tight….Ravalli Canyon to Pistol Creek and hill by Polson. Peccia/MDT has already addressed constructability issues. Rock/Canyon to river is pretty culturally significantly. Peccia group has come up with permanent 'nicks.'
OPI Stage Construction.. Get In Get Out	Specify consecutive days, complete other area(s) before commencing, . Bidder has to think through process instead of stumbling. Possibly allow a range of days to complete. Identify the most critical/most important areas for this regulation.	
OPI Quality Control	All control control, survey on contractor. (Tie to GPS) Best quality and accelerated construction with MDT being the direct lead.	Previous project(s) MDT setup plan and was doing QA since MDT did better job than contractor's staff on a project intended for consultants to perform QA.
OPI Animal Crossings	• Drive piling at night, precast beams/slabs set at night, maximizes traveling public's inconvenience. Either night only or two or so days accelerated. • 'Old days' would be a shoofly, etc. • Sunset Highway in Portland to minimize traffic conflicts.	
OPI Swallow	• Cut it vertical, knowing and planning for it to sluff. If concern for birds then cut a few holes in. • Convenient solution exists on this side of road.	Solution arrived at will be to pull roadway away from cut.

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
OPI QA/QC	Owner QA…Contractor QC became partners for a Utah (?) project. One organization to take care of all QA and QC. MDT very concerned with adequate staffing if ROW, etc do not slow down process….(8 Projects in two year period) A patch of consortium….uniform testing, etc. and apply TEAM throughout the project. TEAM IS ASSEMBLED IF PROJECTS ARE DELAYED. Consultant can be released or added on. Better than 8 different teams. Tribal personal can also be brought on board. Working with hiring program…i.e. Fort Belknap had testing trailer, personal. Survey control piece meal may lead to errors..therefore a TEAM or oversight person to recognize connection between surveying and engineering. CONTRACTOR STAKING? Corridor wide is contractor staking but holding back on this ****** Control Staking is CRITICAL. Survey term contracts can allow this in lieu of 'Give us FTE.' Check and balance on Engineering side, i.e. Team Leader. Allow option to go back to design consultant if errors/problems found during construction. Stating as an extra emphasis and well understood. Would also be a benefit to design consultant to be tied in to the construction world. Learning experience for future designs.	500 plus ROW cases may slow down the need to accelerate/coordinate. Not a design build project. "Give us FTE" may be a bomb. ******Contractor staking predetermined bid item detracts from shaping slopes, etc.

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
OPI QA /QC	• Invite design consultant to precon, prebid. • Liaison to represent Tribe. Corridor coordinator for MDT as well as the Tribe. • Butte - Mandatory weekly meetings is working well.	
OPI QA versus QC	• Qualified technician training is in place. • Plan in advance so consultant can staff up. • If concerned start with at least QA. • Suggesting MDT paying for QA & QC. • This is HUGE project, if it works anytime in MT it would be this project. • (Contractor performs QC for State and State verifies.)	Need to validate the process between the QA/QC. Contractor's controls to make end product may be different.(Is this right MZ?) Also does MDT/contractor share test labs? Does MDT want to get involved with QC? MDT does not have the processes in place to make this happen. Acceptance with Direct Federal and MDT are under totally different regulations.
Maturity testing	• Maturity testing for concrete to monitor continually. Time and temperature function. Set a thermo coupler or embedded chip. • Real time/insitu testing. • Determines safe stripping, allowable time. • Accelerate testing, Methods to Accelerate Project, etc.	
Alternative Surfacing Sections	(Bob Weber tangent) Possibly could eliminate as a VE proposal.	

GEOTECHNICAL AND MATERIALS		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
WED MORNING DISCUSSIONS	• Difficult pile driving locations. • Shortening spans. • Foam Concrete Fdtn @ Mud Creek. • One shaft size throughout (at least on a single str.). • End result concrete / HPC / Maturity Testing. • Tribal Vegetation surveys, Coordination w/ Env (include borrow sources for veg. survey). • Pipe Jacking Impacts versus Top/Down. • **Special borrow R35 requirement too easy to meet? Recommend taking out R value and replace w/ A-1a** • Contractor furnished sources are A-1b. • A+B bid - **No work on Sunday????,** winter shut down, holidays, etc. • Borrow source soils details? • Some sites are in sandy soils.	
Structures Intermingling	Jet Grouting - Injects concrete/water to increase soil strength. Pile shafts ground up..up to 25' diameter. Usually 4 feet diameter. Do not need to butt shafts together. East, West Coasts, TX, WA, OR, ID. Any soil types. Permanent pile supported embankment. Bi-axial Geogrid - Under pavements. Reduce structural section or in lieu of special borrow. Just look at and evaluate. Tensar has a design procedure. Stabilize existing materials w/ chemical. Would not work for high water tables. Hilfiker WWF will need backing to assure backfill stays in place. Perched water concerns w/ pile driving and draining ponds. Technology available to plug if necessary.	
Environment Intermingling	Construct ditches for wetlands. Refilling borrow ditches with excess poor clayey, etc. material.	

Innovative Contracting Skill Set

Members:

Lisa Durbin, MDT
Bill Fogarty, MDT
Gene Kaufman, FHWA - Montana
Keith Molenaar, University of Colorado at Boulder
Gary Neville, MDT
Bill Squires, MDT
Doug Wilmot, MDT
Mark Wissinger, MDT
Jerry Yakowenko, FHWA

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
A+B bidding (cost plus time)	Bid contract amount plus time taken to complete project. Assign monetary value to contract time.	**Barriers:** • And addition to speed of contract, need to be aware of cultural understanding/relationship • Safety • Availability of contractors to perform the work • Extra work issue (completion date contracts), how do you add time? • Short construction season • Engineers schedule estimate • Unforeseen conditions (delay claims) **Opportunities:** • Safety, reduce impact to traveling public • Shorten construction season • "B" start date (delayed start) • Reduce CE costs • Multiple "B" milestones (winter shutdown) • Minimize traffic disturbance by allowing contractor to set start date for charging time within a final specified time or completion date

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Lane Rental	Charged a fee when occupying land or shoulders.	**Barriers:** • administrative barriers • availability of MDT personnel (CE cost increase) • calculating the cost (lack of experience), disincentive tied to road user cost **Opportunities:** • different rates for different times of the day/year • encourages contractors to keep traffic moving • reduces traffic flow impacts • minimize lane closures • minimize cultural and environmental impacts • encourages work to be completed at night • State law
Design-Build	DB-DesignBuild.	**Barriers:** • Limited with legislature, no authority • multiple entities and stakeholders, resource agencies involved • project goals may not align with DB advantages **Opportunities:** • Might be a possibility in the Ninepipe portion (SEIS section) • faster delivery • enhanced environmental streamlining • allows for best-value procurement • advanced R/W acquisition?

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Best Value A+B+Q	Cost plus time plus qualifications. (Awarding on price and non-price factors) Based on evaluation qualifications.	**Barriers:** • quantifying the "Q" • Administrative Rules Montana (ARM) • contractor buy-off **Opportunities:** • legislative hurdles, state law requires low bid. Pilot legislation changes. • identifies specific areas of concern (Key personnel, past performance, safety plans, quality management plans) • best qualified
Escalation agreements	Defines the decision making process.	**Barriers:** • new contract provisions **Opportunities:** • reduce time needed to make decisions • change orders, conflicts, scheduling • quicker problem resolution • clear communication lines

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Incentives/Disincentives	Bonuses/deductions for certain contract milestones or contract feature.	**Barriers:** • -educating contractor to reach contract goals with incentives • -how do you put a value on impacts? • -measuring quality and relating to I/D **Opportunities:** • -Culture, safety, traffic congestion • -limited clearing and grubbing (minimizing impacts outside our limits) • -contractor comes up with restraints (share incentives with employees/operators) • -time reduction • -work zone incentives
Warranties	Is the guarantee of the integrity of a product and of the maker's responsibility for the repair or the replacement of deficiencies.	**Barriers:** • -requires personnel after contract completion • -administration and definition of the warranty • -contractor education • -new contract provisions • -increase bid costs for possible future deducts **Opportunities:** • -possibility for longer life elements • -ultimate end product or performance related specification • -holds contractor accountable • -decreases project personnel

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Performance related specifications	• defines the measurement for acceptance of a completed item (end result)	**Barriers:** • would have to rethink our method specs • educate contractor • design has proceeded too far already **Opportunities:** • bridge work, work zone control • allows for contractor innovation • efficient use of resource allocation
Job order contracting	Award one contract for numerous smaller projects/items with ranges of quantities.	**Barriers:** • good scope but unsure on quantities • define coordination requirements **Opportunities:** • landscaping, BMP's, public relations program, project coordinator (tribe, MDT)
Contractor Constructability reviews	A process that utilizes experienced construction personnel with extensive construction knowledge early in the design stages of projects to ensure that the projects are buildable while also being cost effective, bidable and maintainable.	**Barriers:** • legal issues having an advantage over other bidders • contractor experience, resistance to change **Opportunities:** • new ideas from experts in field • get contractors involved prior to award • hold forum(s) to get interest in projects, as well as exchange ideas (talk about lane rental, environmental issues, other new things)

INNOVATIVE CONTRACTING		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Value engineering clauses	• VE clauses for items beyond cost • expand on existing specification	**Barriers:** • have to be able to quantify savings **Opportunities:** • special provision where contractor is required to come up with time or cost savings ideas or other areas where impacts come be reduced • rewarding for innovation • savings in RUC and contract time
Construction Manager	Consultant contract administration (one manager to manage entire corridor)	
Corridor Contracting (All sections)	A process that utilizes experienced construction personnel with extensive construction knowledge early in the design stages of projects to ensure that the projects are buildable while also being cost effective, bidable and maintainable.	**Opportunities:** • able to build all at once • subcontract majority of the work
Drop dead dates	• no excuses completion date	
No excuse bonuses	• incentive only, L/D's still apply	
Non-binding administrative meetings		
Active management payment method	Based on incentives for minimal delay	
Prequalification	Prequalify contractors for certain items of work	**Barriers:** • Define criteria **Opportunities:** • Mechanism to address sensitive issues like stream restoration
Consultant Contract Administration	Use consultants to administer part of contract	

Environment Skill Set

Members:

Carol Adkins, FHWA
Pat Basting, MDT
Dale Becker, CSKT
Joanne Bigcrane, CSKT
Janet Camel, CSKT
Darin Grenfell, FHWA - Montana
Amanda Hardy, WTI
Dave Hill, MDT
Christie McOmber, MDT
Dale Paulson, FHWA - Montana
Mary Price, CSKT
Dave Scott, Vermont Department of Transportation
Lesly Tribelhorn, MDT

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
On-site Resource Decision Makers - Environmental Coordination and Compliance Team	Have resource representative(s) on site, with authority to make decisions for changes that may come up during construction.	1. Concern: Lack of authority or ability to make changes to mitigation, permits (Tribal, 404, NPDES, etc.). Possibility of having ranges of flexibilities for changes. 2. Positive: Improved implementation of wetland mitigation and other mitigation commitments. 3. Use of computers, Faxs, digital cameras, etc. to improve communications and decision making. 4. Develop reporting process and decision making tree to track changes and decision making.
On-site Restoration Specialist	Specialists with wetlands, construction, MDT and agency coordination experience; Specific expertise in stream and wetland restoration and construction.	1. Not a trainee. 2. Consultant or MDT (paid by MDT). 3. Regular coordination like weekly meetings with Project Managers. 4. Define level of authority.

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Specifying Contractor Experience	Special Provisions describing proven specific stream and wetland construction and restoration experience (3-5 years of experience; length of stream restoration, actual specific project examples).	1. Prequalification of contractors. 2. Other areas of mitigation besides streams and wetlands. 3. Coordination between Agency oversight versus construction quality.
Specific CSKT specialists identified and available	CSKT cultural, wetlands, fisheries, etc. specialists to be identified and available to MDT and contractor(s) for coordinations and decision making.	1. Not a trainee. 2. Consultant or MDT (paid by MDT). 3. Regular coordination like weekly meetings with Project Managers. 4. Define level of authority.
Fines or disincentives for violating "do not disturb" areas	"Do Not Disturb Area" will be clearly marked and a special provision identifying fines for violations.	1. Incentive for not disturbing "Do Not Disturb Areas. 2. Restriction on bidding next project if violations in "Do Not Disturb Area." 3. Fees and/or incentives for superior environmental implementation and quality.
Environmental Preconstruction Conference	Hold a mandatory preconstruction conference to discuss ROD and MOA commitments and special provisions.	1. MOA, ROD, permits. 2. Specific specialists to develop special provisions. Consensus between three governments on special provisions.
Recording Log of Existing Conditions	Use of photo log and other recording of existing conditions for cultural and other important tribal sites.	
Detour span requirements	Permits may require detours to allow critter crossings or span widths.	1. Permitting Issue.
Changes in cut slope construction	Changes in slopes can impact vegetation, cultural sites.	1. MOA limits clearing and grubbing to construction limits (?)

ENVIRONMENT		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Specify Construction Equipment in Specific Areas	Identify and use equipment that will reduce impacts to vegetation.	1. Work with.
Identify MDT and CSKT Liaison and Project Team	With 2004 construction, time is nearly past for identifying, training and preparing key personnel to manage these projects.	1. Need Liaisons identified now so that they have time to prepare for construction and coordination for this Key Note project.
Utilities Need to be Clear on Environmental	Utilities may not be sufficiently prepared to be knowledgeable of MOA and environmental commitments, and to relocate utilities accordingly.	1. Utility companies may have difficulty coordinating permits with MOA and environmental commitments. 2. Insufficient MDT personnel to coordinate utility issues for this large project.
Design and Permit Temporary Facilities Prior to Letting	Input, review and concurrence from appropriate agencies for design and permitting of temporary facilities (detours, pipes, work structures, staging areas, etc.).	1. Some past positive experience by MDT. 2. Consider standard practices, available equipment, span lengths, etc. for temp. Structures. 3. Coordination with construction sequencing. 4. Coordination with Construction and Innovative Contracting Skills sets.
Alternative Bridge Abutment Construction	Avoid in-stream activities through use of alternative bridge abutment construction.	1. No or little in stream disturbance.
No Waiver of Specification Limiting Areas of Disturbance		1. Eco berms or other erosion devices that can be used and left in place (unlike silt fence).
Finalize Revegetation Agreement	This agreement needs to be completed to improve revegetation of impacted areas.	1. Specialist to be identified. 2. Identify planting salvage areas. 3. Potential Utility impacts.

Notes recorded, but not entered into form:
SKILL SET INTERMINGLING (with Environment Skill Set)
CONSTRUCTION [Mary & Pat]
Facilitator – Jim Walther, MDT
Note Taker – Jim Mitchell, MDT
Topics to Coordinate:

- Staging areas: Preapproved areas (wetland mitigation sites), team approach to identify upland areas or other areas that can be used; Use of hard surfaces to reduce mud tracking; Old borrow sites used for contractor borrow, staging or plant operations, then reclaim and use for restoration credit; Old borrow sites used for storing plants
- Sequence of operations: Bull Trout and stream restoration
- Fall lettings: Bull Trout and stream restoration; Removal of old Jocko River structure (Need Special Provision)
- Project Oversight Team (TDC – Construction Members Added); And have Fast track resolution process– STRONG RECOMMENDATION FROM SEVERAL ACTT GROUPS; RECOMMEND TDC Determine Oversight Team and Resolution Process; Resolution Team to work out specifications for rewards and working out conflicts; Dispute resolution; Weekly coordination meetings and feedback back and forth with contractor/MDT/ CSKT: NEED IT NOW!
  - EPM
  - CSKT EPM
  - Resolution Process Developed and agreed upon between three governments
  - Wetland and Stream Restoration Specialist
  - Traffic Control Specialist
  - CSKT Cultural and Resource Rep. (MOA - May need funding assistance of tribal staff)
  - Revegetation Specialist (MDT funded)
- Dust control on predetermined haul roads
- *Workshop*
- Separate contracts for stream restoration, wetlands and landscaping (wetland, urban and rural revegetation/ landscaping)
- Detours and shifted alignments impacts to sensitive areas
- Specification and pay item for cleaning equipment to address Whirling Disease

TRAFFIC/WORKZONE SAFETY [Dale and Amanda]
Facilitator – Lloyd Rue, FHWA MT
Note Taker – Glen Cameron, MDT
Topics to Coordinate:

- Alternate Routes – Have a contingency plan in place for issues such as air quality, coordination with maintenance, CSKT
- Barriers to wildlife – Long lengths are not desirable; not sure how much length of concrete barriers or silt fence will be used

RIGHT OF WAY/UTILITIES/RR [Carol]
Facilitator – Greg Hahn, MDT
Note Taker – Linda Martin, MDT
Topics to Coordinate:

- Utility conflicts with "Do Not Disturb" areas still need to be coordinated; MDT to fence "DND" areas
- Endorsed a US 93 Corridor Management Team
- Team to be set up: Utility reps, MDT utilities, CSKT and Environmental Rep.
- Time Critical: Vegetative agreement approved (Joe H. and Loran Frazier); Vegetation needs to be harvested now, to be used in 2004.

PUBLIC RELATIONS/ITS [Joanne]
Facilitator – Lisa Vanderheiden, MDT
Note Taker – Jaime Helmuth, WTI
Topics to Coordinate:

- PR with why the project is the way it is? Focus on the positive aspects of the project. Highlight importance and benefits of critter crossings, mitigating wetlands, limited access, reduced delays, accelerated construction
- Keep two lane operations at all time – Can this be done through the narrow canyon area?

GEOTECHNICAL AND MATERIALS
Facilitator – Rich Jackson, MDT
Note Taker – Bob Burkhardt, FHWA MT
Topics to Coordinate:

- Surcharge of settlement areas

INNOVATIVE CONTRACTING [Lesly]
Facilitator – Lisa Durbin, MDT
Note Taker – Gene Kaufman, FHWA MT
Topics to Coordinate:

- Qualified Contractors For: stream restoration, wetlands (on site and adjacent mitigation), and revegetation/landscaping; (seeding and erosion control); Separate Contracts
  - Job Orders
  - Special Provisions for prequalification of contractors
  - Environmental Quality Stewardship Incentives
- Job Order Contracting (2 year increment contracts) for erosion control, seeding, and landscaping (Doug Wilmot)
- A+B+Q, where Q would include quality environmental stewardship
- Incentives for environmental stewardship; Cannot Be Done - Will take legislation for "Q" part; could use A+B for award, plus an incentive for "Q" for quality environmental stewardship; A+B plus best value bidding; A+B plus prequalification through specifications
- Preconstruction Development Team: For Environmental/Innovative and Construction Special Provisions
- Innovation: Use three people (construction, environmental and innovative contract specialists) to develop special provisions (or review existing drafts) for incentive on environmental stewardship, level of quality for wetland and stream restoration and landscaping features; incentive versus disincentive; Incentive could include mitigation sites, miscellaneous work
- Pre-bid: Consider changes to PS&E from Constructability Reviews and Pre-bid meeting
- Short list or prequalify contractors for stream restoration, wetlands, and landscaping; Take state legislation to prequalify contractors; Cannot prequalify for award basis; So, use a short list and special provision to specify quality and experience generally

STRUCTURES [Dale & Dave]
Facilitator – Ted Burch, FHWA MT
Note Taker – John Miller, FHWA MT
Topics to Coordinate:

- Structure heights, beam depths, wildlife crossing; Temporary facilities should be designed and permitted prior to bid letting. Some construction activities adjacent to structures are likely necessary
- In stream work
- Permitting of temporary facilities prior to bid letting; Project permitting is still in progress
- Structures: Let one or more structures as separate contracts from roadway contracts

Pile driving precautions to seal potential draining of prairie pot holes

Structures Skill Set

Members:

Ted Burch, FHWA - Montana
Doug Edwards, FHWA FLDO
Gary Kalberg, MDT
Joe Kolman, MDT
Mac McArthur, MDT
William McEleney, NSBA
John Miller, FHWA - Montana
Bob Modrow, MDT
Jerry Potter, FHWA
Jesus Rohena, FHWA

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Concrete Recommendations	Use self consolidating concrete, high early strength concrete, require rapid curing of CIP members, use high performance concrete on bridge decks with contractor training, allow longer haul times, develop an end result concrete specification, require contractor QC/QA, and use a Maturity Meter for concrete monitoring.	These changes would involve special provisions and spec revisions. Construction personnel would have to be on board with this.
Prefabrication	All structural components that can be prefabricated off site should be to allow for shorter construction time at the actual project site.	
Prefabrication Lead Time	Provide lead-time in the contract scheduling to allow the contractor to prefabricate as many of the structural components as possible.	
Standardized Components	Where possible, the structures should use standardized components, such as drilled shaft diameters, so that construction can go smoother and quicker.	
Bridge Contract Combination	Let the bridge construction as one contract with many bridges so that the structures can be constructed as efficiently as possible.	

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
Jack & Bore	Jack and bore the culverts and wildlife crossings into place so that disturbance into the traveling public is minimized.	
Off -Season Construction	The structural construction at the project site should be accomplished in the winter/off-season when traffic is minimal.	Winter weather
Contractor Innovation	The contractor should be encouraged to share any innovative ideas he might have to expedite construction.	
RUC and VE	Consider tying road user costs to the requirements of value engineering.	
Design/Build SEIS	Consider doing the SEIS portion of this corridor as a design/build project.	
Redesign Wildlife Overpass	This structure should be redesigned to be more like the other structures in this corridor and let in the combined bridge project. We suggest MSE abutments with prestressed beams. If this is not done the foundation of this structure should definitely be reevaluated.	
Jocko Hollow Bridge	Recommendations for this structure are to eliminate the phase construction of the structure and phase construct the approaches, possibly with reinforced temporary slopes, to minimize traffic disturbance. A full-depth prefabricated deck on prefabricated caps should be used. The columns should be the same size as the drilled shafts on which they sit and these diameters should be standardized to no more than two different diameters. The 20' rock sockets on the drilled shafts need to be reevaluated. Consider providing the contractor the option of using a full depth precast deck.	

STRUCTURES		
IDEA (Short Name)	**IDEA (Detailed Description)**	**Implementation Details (Barriers, Skill Set Coordination, etc.)**
MRL Railroad Overpass	A full-depth prefabricated deck should be used. The columns should be the same size as the drilled shafts on which they sit and these diameters should be standardized to no more than two different diameters. The wing walls for this structure should be squared up with a drilled shaft under them. Consider providing the contractor the option of using a full depth precast deck.	

Notes recorded, but not entered into form:
Structures Brainstorming

1) Can any of the bridges be grouped into a single construction contract?
2) Top down construction for short bridges.
3) Prefabricate everything.
4) Cast deck on girders and then erect shallow superstructures.
5) Jack and bore the small wildlife crossings.
6) Temporary detour bridges on offset alignments.
7) Prefabricated caps.
8) Sequence so as to reuse temporary structures.
9) Standardized detour structures & work bridges (early permits).
10) Build the new structure adjacent to the old one and roll it in.
11) Build over width and do half at a time.
12) Build them long enough to facilitate permitting.
13) Standard details as much as possible.
14) Wildlife 200ft overpass, foundation needs to be revisited. Longer may be cheaper.
    a) Just make it a bridge and cover it with dirt.

15) Build in winter for less traffic.
16) Give the contractor a long lead time to allow for prefabrication and mobilization.
17) State furnished materials.
18) Incentive / disincentive for contract time and completion.
19) Use lightweight concrete for shipping larger prefabed units.
20) Expedite permits for oversized loads for hauling prefabed pieces.
21) Use High performance concrete decks on all and provide training to contractors.
22) Steam treat the cast in place for speed curing.
23) Saline treatment specification should be modified to expedite construction using contractor innovation.
24) Modify specs to encourage innovative ideas from contractor.
25) Precast desk panels.
26) Work from each end and top down to stay out of sensitive areas.
27) Continuous decks regardless of number of spans.
28) ? Integral Abutments?
29) self consolidating concrete.
30) high early strength concrete.
31) pile bents.
32) Drilled shafts rather than cofferdams.
33) Develop a standard aesthetic treatment (rail).
34) Precast aesthetic treatment.
35) Staining preformed concrete stuff.
36) Native artists to theme aesthetics.
37) Maturity meter for concrete control.
38) Con spans for long structures. (earth filled arch)
39) Design build on SEIS part.
40) Minimize MSE walls.
41) Modify conc. Specs to allow for longer mud hauls and less moving of conc. plants. (end result spec to give contractor more freedom an mix design)
42) Set up a plant.
43) Bailey Bridge approach for temp structures.
44) Ensure reliability and integrity of structure during design so they won't need to be worked on for a while.

45) Warranty.
46) More contractor QC/QA.
47) Integral wearing course and grind it for ride ability.
48) Spread footings for simple spans.

SEIS Commitments

10' X 22' openings for wildlife.
Long bridge is continuous.
Long structures must provide for wildlife passage.
12' clearance is for large structures.
Same grade at pot holes pretty much.

Already Designed Bridges

- Jocko River Bridge – 15.6m wide, 3 spans, 120m long, 3 sizes of drilled shafts, staged construction, M72 Beam, full height abutments, 30° skew, int. bents 3 column pier cap.
  - Suggestions:
    - Multiple Bridges in one contract.
    - Prefab caps.
    - Full depth prefab decks.
    - Eliminate phase construction.
    - Phase approaches with reinforced slopes.
    - Standard sizes/details (shaft diameters).
    - Make all columns same size as shafts.
    - No more than two sizes of drilled shafts.
    - Continuous deck.
    - Review need for 20' rock socket.
- Mission Creek Bridge – 16.5m wide, 1 span, 40m long, pipe piles.
- Wildlife overpass – 61m long, tunnel type deal, conspan, concrete end walls.
  - Suggestions:
    - MSE for end walls.
    - Consider using a conventional bridge and cover it with dirt.

    - MSE wall inside walls w/ spread footing abutments.
- Railroad Bridge – 103.5m long, 3 span, 13m wide, 30° skew, drilled shafts.
  - Suggestions:
    - Make all columns same size as shafts.
    - Precast deck.
    - Square and flat bottom of wing wall (add 1 drilled shaft).
    - Include with Jocko Hollow Bridge.

Generic Findings and Recommendations

A) Can multiple bridges be let in one contract.
B) Jack and bore wildlife crossings and culverts.
C) Prefabricate as many components as possible.
D) Standardized details should be used where possible.
E) Schedule letting so that construction occurs in the winter to avoid traffic and allow the contractor a long lead time to get prefabrication done.
F) Modify specifications to encourage innovative ideas from the contractor. Consider tying RUC to VE. (get w/ innovative contracting).
G) Design / build the SEIS section.
H) Concrete Spec. Recommendations.
   a) Modify the concrete spec to allow longer haul times.
   b) Modify the concrete spec to be a end result spec with a contractor mix design.
   c) More contractor QC/QA.
   d) Require self consolidating concrete on some elements.
   e) Require high early strength concrete.
   f) Require the use of a maturity meter for concrete monitoring.
   g) Require fast curing on CIP members.
   h) Require HPC decks and provide training to the contractors.
I) We think the wildlife overpass should be completely redone.
J) The 20’ rock sockets need to be reviewed.

Intermingling

- Intermingling with Environmental, Joe: permits, draining potholes, Equip in crossings, changing animal overpass.
  - Likes idea of changing critter structure too, concerns: Jocko river and Mission creek timing restriction (only time work in stream is allowed is June 1 to August 31), erosion control is very important on the smaller drainages, likes permitting temporary facilities ahead of time.
- Intermingling with Geotechnical, Bob: jet grouting, welded wire wall, top-down bridge construction, jack and bore, ardulite, is scour an issue with it, draining potholes, changing critter overpass.
  - Drilled shaft wet construction to keep from draining potholes, told us how jet grouting worked, look at rock sockets again, let contractor know what he is getting into.
- Intermingling with Innovative Contracting, Ted: design build, VE clauses for items beyond cost, qualifications based contractors prior to bid.
  - VE, they are considering it.
- Intermingling with Construction, Gary: contract sequencing N to S or S to N, VE for traffic control and sequence of operations, combining of contracts, electronic data transfer.
  - Traffic disturbance with critter overpass, likes combining projects, likes night work for lane closures, likes idea of changing critter structure.
- Intermingling with Utilities/ROW, Bill: utilities on bridges.