SP-159016a
(Replaces SP-159016)

SPECIAL PROVISIONS
FOR
PROGRESS SCHEDULING

Allamakee County
STP-009-9(82)--2C-03
STP-009-9(83)--2C-03
STP-009-9(84)--2C-03

Effective Date
August 1, 2023

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

159016a.01 DESCRIPTION.

A. General.

1. This specification describes requirements to submit, revise, and update a: project narrative, resource narrative, look ahead schedule, initial project schedule, baseline project schedule, draw schedule, and an as-built schedule. All work on the contract shall be included in each type of narrative or schedule, even if there are separate projects.

2. Critical Path Method (CPM) schedules shall be generated with a software compatible with ~~Microsoft Project~~ Oracle Primavera P6 scheduling software. Electronic submissions shall be ~~.mpp~~ .xer format.

3. Float within any form of Project Schedule, is not for the exclusive use or benefit of either party. It is a project resource available to both parties, as needed, until it is depleted.

4. Project schedules shall not contain float suppression techniques, such as preferential sequencing (arranging critical path through activities more susceptible to a Department-caused delay), special lead/lag logic restraints, zero total or free float constraints, extended activity times, manipulated calendars, or constraint dates other than as required by the Contract.

5. Negative float may be shown, as long as it is not on the critical path.

6. The Engineer will have 14 days to review and respond to any submittals required herein unless stated otherwise.

7. Acceptance of any submittal required herein does not constitute approval of means and methods or waiver of obligation under the contract.

B. Project Narrative.

1. Submit a project narrative report with each CPM schedule submission including:
   - Approach to sequencing the work;
   - Assumptions and restrictions considered in required schedule submittals;
   - Critical path;
   - Near-critical paths;
   - Conflicts that may impact the schedule and potential mitigations for those conflicts;
   - Third party interfaces, such as utilities, that require coordination;
   - Submittals necessary for the work to proceed as scheduled;
   - Calendars, including identification of workdays per week, holidays, number of shifts per day, and number of hours per shift;
   - How the schedule accommodates adverse weather days and changing river elevations for each month; and
   - Execution plan, including number and type of crews, a list of subcontractors' crews, expected equipment, large equipment transport and delivery, transportation permits for oversized/overweight loads, and availability of referenced large equipment.

2. Update the Project Narrative to include the following with each Project Schedule update or revision:
   - Sources of delay with a detailed history of the delay, corrective action, and schedule adjustments to correct the delay;
   - Pending change orders; and
   - Changes made to the CPM schedule and resulting impacts to intermediate, milestone, and project completion dates. Changes include additions, deletions, or revisions to activities due to the issuance of a change order, changes to an activity duration, changes to relationships between activities, or changes to the planned sequence of Work or the method and manner of its performance including any schedule changes due to changes in the planning or progress of the Work.

C. Resource Narrative.

1. Submit a resource narrative report with each CPM schedule including:
   - A brief description of work sequence;
   - Identification of critical and near-critical path activities;
   - Resource commitments for critical path and near-critical path activities;
   - Anticipated number of days worked per week, hours worked per day, and how this may change throughout the project;
   - Anticipated production rates categorized by individual crews; and
   - A spreadsheet detailing large equipment needed to achieve the provided production rates and anticipated dates the equipment will be mobilized and demobilized.

2. Information in the resource narrative report shall match the information in the baseline project schedule.

D. Look Ahead Schedule.

1. Submit a look ahead schedule at each project management meeting (assume weekly) detailing all activities, milestones, and the critical path for the previous 2 weeks, current week, and proceeding 3 weeks. This schedule shall include a bar chart of the current week to be shared with local stakeholders and emergency services.

2. The schedule shall be provided in a PDF format sized to fit 11 inch by 17 inch paper.

E. Initial Project Schedule.

1. Submit an Initial Project Schedule (IPS) to the Engineer for review and acceptance within 30 calendar days after Award. The IPS shall be completed as described in Baseline CPM Schedule for all work contemplated for the first 120 calendar days after the Notice to Proceed is issued. The IPS shall also include all other work, in sufficient detail, to identify the critical path and all contractual milestones.

2. The IPS shall be accepted prior to the Contractor beginning work.

F. Baseline Project Schedule.

1. Submit a draft baseline CPM schedule to the Engineer and hold a meeting to review within 90 calendar days of Notice to Proceed. Activities shall be defined and sequenced to meet Contract requirements; the scope of work; staging; traffic control requirements; and interim, milestone, and project completion dates. The baseline CPM schedule shall include:

- Planned start and completion dates for each activity;
- Alphanumeric coding structure and activity identification system;
- Duration of each activity stated in working days, and with no activities of more than twenty (20) working days, unless approved by the Engineer;
- Relationships among activities, excluding Start-to-Finish relationships, without leads or lags, unless otherwise approved by the Engineer;
- Interim, milestone, and project completion dates specified in the Contract as the only contractual constraints in the schedule logic;
- The Critical Path identifying the controlling activities of the Work;
- The ~~project~~ activity identification number shall remain the same for the entire duration of the Project;
- Activities related to the procurement of materials, equipment, and articles of special manufacture;
- Activities related to the submission of working drawings, plans, and other data specified for review or approval by the Engineer;
- Activities related to Department inspections and approvals; and
- Specified activities performed by the Department, subcontractors, suppliers, and third parties such as utilities and railroads.

2. Include the following Gantt Charts, in PDF format fit to 11 inch by 17 inch paper, with each Project Schedule submission showing the Activity ID, Activity Description, Original Duration, Remaining Duration, Total Float, and Calendar ID:

- The project Critical Path sorted by early start;
- All uncompleted work activities as of the data date sorted by area and early start; and
- 60-day look-ahead sorted by early start.

3. The Engineer and Contractor will review the draft baseline CPM schedule at a meeting specific for the review of the schedule. The Engineer will accept the draft baseline CPM schedule, provide review comments, or request additional information. Make appropriate adjustments or provide additional information within 7 calendar days. The Department may withhold payments until the Engineer accepts the baseline CPM schedule.

4. Update the schedule monthly to show current progress. Updates shall include: actual start and finish dates of each activity, remaining durations of activities started but not yet completed, and the updated critical path. The data date for each update shall be no more than 7 calendar days prior to the submittal date.

5. Schedule updates may be rejected for changes in relationships between activities on the critical path, inadequate or inaccurate narrative updates, or other deficiencies. If the Contractor fails to provide monthly schedule updates or address the Engineer's comments within 7 calendar days, the Engineer may withhold up to 10% of estimate payments, until an acceptable update has been provided.

6. Relationships between "Out of Sequence Progress" activities that have posted progress without predecessors being completed ~~are not allowed without written approval of the Engineer~~ shall be adjusted to correctly reflect the current plan to complete the work, and the reasoning for the "Out of Sequence Progress" shall be recorded in the Project Narrative.

7. A legend shall be included in the baseline CPM schedule defining all abbreviations, terms, or symbols used.

G. Schedule Revisions.

1. The Engineer will determine the progress of the Contract by either the time versus money straight line method or the schedule updates submitted by the Contractor. If actual construction falls behind the plan of operations or schedule by more than 15% or 60 calendar days, whichever is less, offer for approval a revised schedule that reflects timely completion. Otherwise, the Engineer may request a revised schedule. Circumstances that may lead to such a request include the following:
   - A delay (actual or projected) to scheduled milestone or project completion dates 15% or more behind schedule;
   - A difference between the actual sequence or duration of work and that depicted in the schedule; and
   - The issuance of a Change Order that alters the planned sequence of work or the method and manner of its performance by adding, deleting, or revising activities.

2. Prepare and submit the revised schedule within seven calendar days of the Engineer's request. The Engineer may accept the revised schedule, reject the revised schedule, or request additional information. Address the reasons for rejection or submit the information requested no more than 10 calendar days after the Engineer's request.

3. Do not stop prosecution of the Work without the written consent of the Engineer. If the Work is stopped, give 24 hours' notice to the Engineer before resuming operations.

H. Draw Schedule.

1. Submit anticipated monthly draws calculated at (+/- 10%) in Microsoft Excel Spreadsheet format. It is understood that anticipated draw schedules will be dependent on weather, materials ordered prior to start of project (stockpile) and unanticipated delays.

2. Update anticipated draw schedules on the first work day of December, March, June, and September.

I. As-built Schedule.

Submit a final updated as-built schedule with actual start and finish dates for the activities within 30 days after work completion. Submit a written certificate with this submittal signed by the Contractor's project manager or an officer of the company stating: "To my knowledge and belief, the enclosed final updated schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

159016a.02 Definition of Terms.

Activity (Task).
A portion of the project that requires time or resources to complete. An activity has a description, start date, finish date, duration, and one or more logic ties. A critical activity is an activity on the critical path.

Activity ID.
A unique, alphanumeric, identification code assigned to an activity that remains constant throughout the project.

Baseline Schedule.
The original, approved project schedule before the project begins with no progress.

Calendar.
Defined work periods and no work periods that determine when project activities can occur. Multiple calendars may be used.

Constraint.
A restriction imposed in a schedule, which fixes a value that would otherwise be calculated within the schedule. Examples of values that can be fixed by a constraint include start date, end date, and completion date, and interim milestones.

Critical milestone.
Milestones that are identified in the contract, that are traffic critical.

Critical Path Method (CPM) Scheduling.
CPM Scheduling is a logic-based planning technique using activity durations and relationships between activities to calculate a schedule determining the minimum total project duration and the interdependencies of all activities.

Critical Path.
The longest logical path through the CPM network driven by calendars, constraints, and activity logic. It consists of activities that determine the shortest time for project completion and the sequence of activities such that a delay to any of the activities on the critical path will prolong contractual project milestones, such as project completion.

Data Date.
The starting point from which to schedule all remaining work. It can also be considered the cut-off date wherein all work before this date has actual starts, actual finishes, or both.

Duration.
The estimated amount of time needed to complete an activity.

Free Float (Free Slack).
The amount of time an activity can be delayed without delaying the Early Start or Early Finish of its successor activity or activities.

Gantt Chart.
A time-scaled graphical display of the project's schedule.

Lag.
A time-value assigned to a relationship.

Logic.
Relationships between activities defining the sequence of work (See also predecessor activity and successor activity).

Milestone.
An activity, with zero duration used to represent an event.

Near-Critical Activity.
An activity with a total float of five days or fewer, or as defined by the Engineer.

Near-Critical Path.
A sequence of logical activities, not on the critical path, with less than twenty days of total float.

Planned Completion Date.
The date that the schedule shows work is planned to be completed.

Predecessor Activity.
An activity that is defined by schedule logic to precede another activity.

Relationship.
The interdependence between activities.

Successor Activity.
An activity that is defined by schedule logic to follow another activity.

Time-Scaled Logic Diagram.
Gantt chart that illustrates logic links depicting both schedule logic and the time that activities are performed.

Total Float (Total Slack).
The amount of time between the earliest date an activity can start and the latest date when an activity must start, or the earliest date an activity can finish and latest date when an activity can finish before the activity causes a delay to the time specified in the Commencement and Completion of Work special provision.

159016a.03 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
~~All costs for complying with this special provision shall be included in the bid item for Mobilization.~~

A. Lump Sum price for Progress Scheduling shall be full compensation for all costs for complying with this special provision for all projects included on the contract.

B. Partial payment of Progress Scheduling will be made as work progresses. An initial payment of 20% of the contract price for Progress Scheduling will be made upon acceptance of the initial Baseline Schedule. The remainder of progress payments for this item will be made at the same rate as the percent of work complete.

Examples of combined Project Narrative and Resource Narrative

- Attachment A Minnesota DOT
- Attachment B Colorado DOT

Attachment A

Minnesota DOT:

A. Milestone Dates

See chart below.

Milestone	Scheduled Dates	Contractual Dates
Award Date:	1/15/20	1/15/20
Start Date:	3/18/20	No later than 3/1/20
Start Field Work:	6/3/20	4/15/20
Interim Open to Traffic Date:	10/10/20	10/31/20
Project Completion Date:	10/19/20	10/31/20

B. Work Sequence

Upon award of the contract, work will begin on the various shop drawings and submittals required for the project. Once the CPM schedule is approved, field work begins on both the temporary crossovers and watermain installation. When the temporary crossover work is complete the traffic will be switched, and the bridge work will begin on B01-1, B02-1 and B02-2, with the B02 bridges not starting until the demolition work is complete at B01-
1. As soon as B01-1 is complete, traffic will be switched to the final stage for reconstruction of B01-2.

C. Resources

The resources committed to this project will slowly ramp up starting with one crew working on the watermain installation as well as one crew work on construction of the temporary crossovers. Once the traffic is switched, two full bridge crews will be mobilized to work on B01-1, B02-1 and B02-2. Crews will be demobilized upon completion of the various areas of work.

D. Work Schedule

As currently scheduled, all work is based on a standard five (5) day work week (four ten-hour days and one eight- hour day), with Saturdays being used as makeup days to account for the required number of adverse weather days. The holidays periods as defined in the Maintaining Traffic SP have also been included (5/28/20 – 5/30/20, 7/2/20 - 7/4/20, 9/3/20 – 9/5/20). No work is currently scheduled during the overnight hours or outside of the normal construction season

E. Weather

See Work Schedule above. Saturdays will be used as makeup days to account for the required number of adverse weather days.

F. Critical Path

The critical path for this project starts with submission, review and approval of the baseline schedule. Once the schedule is approved, work will begin on the temporary crossovers required for the traffic switch. As soon as the crossovers are complete, traffic is scheduled to be switched, and the critical path then moves to the bridge work required at B01-1 with an estimated start of June 17, 2020 and running until the deck work is complete and traffic is switched on August 29, 2020. Once traffic is switched, work on the B01-2 bridge is completed and Open to Traffic on October 11, 2020. However, the longest path continues 2 through the required 28-day cure and concrete surface coating work which is scheduled to be complete on October 20, 2020.

G. Delays

Field work is scheduled to start late due to delays in permitting issues, so we are getting a late start but still project to hit the Contractual Completion date of October 31, 2020. Additionally, no contingency has been added to this baseline schedule, as any inefficiencies between the work as planned and the work as performed can be mitigated through additional working hours or crews as needed.

H. Third Party Interfaces

Utility work is being coordinated with DTE, all dates in the schedule for utility work are currently tentative. DTE will send us their Coordination Plan with final dates by the end of April.

I. Lags

There are no lag relationships utilized in the Baseline Schedule.

J. Additional Information

The schedule assumes an average 48-hour work week, with Saturdays and Sundays (as needed) being used to make up the required number of adverse weather days. No contingency has been added to this baseline schedule as any inefficiencies between the work as planned and the work as performed can be mitigated through additional working hours or crews as needed. The production rates utilized will be provided if requested by the Engineer.

Attachment B

Example from Colorado DOT

INTRODUCTION

The enclosed Proposal Schedule and Narrative shall serve as the basis for the development of the Baseline Schedule. Our team, I-70 Mile High Partners (MHP) anticipates close collaboration with CDOT through the prescribed workshops and continuous communication to deliver a Baseline Schedule which suites the needs of all stakeholders.

The attached Proposal Schedule is comprehensive and serves to assure CDOT that MHP will meet the project milestones and completion date requirements. Through the design-build process construction activities are anticipated to be further detailed and broken down as design is finalized.

PROJECT OVERVIEW

The Central 70 Project in Denver, CO. is a proposed 9.4-mile corridor along I-70 from the I-25/I-70 interchange to Chambers Road with the purpose of reconfiguring/ reconstructing the highway to accommodate a 1+1 Tolled Express Lanes configuration. The can be divided into 3 major sections depending on scope. The western section from I-25 to Brighton Blvd requires re-stripping of the existing pavement and ITS work associated with the addition of the tolled lanes. The central section from Brighton Blvd to Quebec St requires the full reconstruction of the highway and includes the removal of a 1.2-mile, 50-year-old viaduct between Brighton Blvd and Colorado Blvd to build a lowered section with a 1000 ft. partial cover that will serve as a community park. The eastern section from Quebec St to Chambers Rd requires a partial widening, mill and overlay of the existing pavement surface, and the construction of a new EB I-270 flyover. The project scope is as follows:

- Removal and replacement of the existing I-70 Mainline on viaduct from Brighton Boulevard to Colorado Boulevard, with the I-70 Mainline lowered below existing grade
- Construction of Cover over the I-70 Mainline between Columbine Street and Clayton Street
- Reconstruction of the I-70 Mainline from Brighton Boulevard to Quebec Street;
- Widening of the I-70 Mainline to include a Tolled Express Lane in each direction from Quebec Street to Chambers Road
- Restriping of the existing I-70 Mainline from east of I-25 to Brighton Boulevard;
- Construction of cross streets at Brighton Boulevard, York Street, Josephine Street, Columbine Street, Clayton Street, Fillmore Street, Steele Street/Vasquez Boulevard, Cook Street, Monroe Street, Colorado Boulevard, Dahlia Street, Holly Street, Monaco Street, Quebec Street, and Peoria Street (reconstruction of the cross streets at Central Park Boulevard, Havana Street and Chambers Road is not included)
- Combining existing ramps at Dahlia Street and Monaco Street into a single interchange at Holly Street
- Reconstruction of the UPRR Crossing, UPRR Pepsi Lead Crossing, UPRR York Street Crossing, BNSF Crossing, and DRIR Crossing
- Reconstruction of the I-270 eastbound bridge over I-70 Mainline
- Provision of ITS and ETC system infrastructure, including an Active Traffic Management system
- Maintenance of traffic including maintenance of existing roadways, including detours, during the Construction Period

SCHEDULE NARRATIVE

The purpose of the Proposal Schedule is to ensure that adequate planning, scheduling, and resource allocations are understood to provide a reasonable and executable work plan, cash flow projections at the proposal level. The development of the Baseline Schedule with the collaboration of CDOT will further ensure these goals are met.

The following Schedule Narrative is a breakdown of our approach to a successful project that addresses all the needs and requirements of all stakeholders, including CDOT, Federal, State and local authorities and the traveling public. Our objective is to exceed expectations and meet all completion milestone goals. The following described the flow and sequencing of the work activities within our schedules.

Segment Definitions

To manage the work efficiently and comply with the key milestone designations, we have divided the project into the following segments:

- Segment 1 I-25 to Brighton Blvd Sta 1095+00 to 2000+00
- Segment 2 Brighton Blvd to Dahlia St. Sta 2000 to 2105
- Segment 3 Dahlia St. to Quebec St. Sta 2105 to 2184
- Segment 4 Quebec St. to Peoria St. Sta 2184 to 2344
- Segment 5 Peoria St. to Chambers Rd. Sta 2344 to 2448

Sub-Segments

We have divided each Segment into sub-segments for a more manageable tracking of the work.

Segment 2 Brighton Blvd to Dahlia St. Sta 2000 to 2105Section

- Seg 2 UPRR Railroad Crossing Alignment (Seg 2A)
- Seg 2 BNSF XRR Bridge Sta 2065 (Seg 2C)
- Seg 2 Viaduct Demoliition Sta 2005 to 2070
- Seg 2 Cover Sta 2031+50 to 2041+50
- 2A Brighton Blvd to York St Sta 2000+00 to 2025+00
- 2B York St to Fillmore St Sta 2025+00 to 2053+00
- 2C Fillmore St to Colorado Blvd Sta 2053+00 to 2079+00
- 2D Colorado Blvd to Dahlia StSTA 2079 - STA 2104)

Alignments

The Work Areas are further broken down to phasing levels and then finally the alignment level. The alignments are laid out similar to the layout of the plan view for accuracy and consistency as shown:

2A Brighton Blvd to York St Sta 2000+00 to 2025+00 Phase 1

- 2A WB Entry Ramp Brighton Blvd PH 1 ST 1 Sta 100+00 to 111+56
- 2A WB Entry Ramp Brighton Blvd PH 1 ST 2 Sta 100+00 to 111+56
- 2A WB 46th Ave North STA (2000 to 2025)
- 2A WB Exit Brighton Blvd Ramp Sta 2005+00 to 2018+54
- 2A XST Brighton Blvd STA (2005) PH 1 ST 1 Sta 500+00 to 514+76
- 2A WB Entry Ramp Brighton Blvd PH 1 ST 2 Sta 100+00 to 111+56
- 2A WB 46th Ave North STA (2000 to 2025)
- 2A WB Exit Brighton Blvd Ramp Sta 2005+00 to 2018+54
- 2A XST Brighton Blvd STA (2005) PH 1 ST 1 Sta 500+00 to 514+76
- 2A XST Brighton Blvd STA (2005) PH 1 ST 2 Sta 500+00 to 514+76
- 2A WB GP & AUX Lane Sta 2000+00 to 2025+00
- 2A WB Express Lane Sta 2000+00 to 2025+00
- 2A WB Express Lane Sta 2000+00 to 2001+00 (Viaduct Wedge)
- 2A WB GP & EL I70 Roadway Under UPRR (Sta 2016 to 2024)
- 2A EWB Access Local Rd Sta 7000+00 to 7009+62
- 2A SST E 47th Ave PH 1 ST 1 Sta 8000+00 to 8007+46
- 2A SST E 47th Ave PH 1 ST 2 Sta 8000+00 to 8007+46
- 2A EB 46th Ave South (Drainage for Pond and Pump Station) STA (2000 to 2025)

2A Brighton Blvd to York St Sta 2000+00 to 2025+00 Phase 2

- 2A EB Express Lane STA (2000 to 2025)
- 2A EB GP & AUX Lane STA (2000 to 2025)
- 2A EB Entry Ramp Brighton Blvd STA (2008 to 2018)
- 2A EB Exit Ramp Brighton Blvd STA (1063 to 2000)
- 2A EB 46th Ave South STA (2000 to 2025)

Milestone Dates

EXECUTION OF PROJECT AGREEMENT	29-Sep-17
FINANCIAL CLOSE	30-Nov-17
NOTICE TO PROCEED 1	2-Jan-18
FINANCIAL CLOSE DEADLINE	26-Jan-18
NOTICE TO PROCEED 2 CONDITIONS	5-Dec-18
COMMENCEMENT OF CONSTRUCTION	5-Dec-18
NOTICE TO PROCEED 2	5-Dec-18
NOTICE TO PROCEED 3	4-Jan-19
SNOW AND ICE COMMENCEMENT DATE	3-Feb-19
MILESTONE 1 (CONSTRUCTION COMPLETE)	17-Sep-20
MILESTONE 2 (CONSTRUCTION COMPLETE)	8-Jun-22
MILESTONE 4 (CONSTRUCTION COMPLETE)	5-Nov-22
FINAL ACCEPTANCE	4-Mar-23

Payment Milestones

Milestone 1 Payment	17-Oct-20
Milestone 2 Payment	9-Jul-22

Critical Path

The Critical Path summary for this project is included in this Appendix C. It begins with the execution of the Project Agreement followed by the conditions to achieve Financial Close/NTP1 and NTP1 itself. It then continues with the initial surveys and filed investigations and the advancement of design and design packages followed by the construction of the westbound lowered section and cover (Milestone 3). The demolition of the existing viaduct and the construction eastbound lowered section (Milestone 4) are next followed by Substantial Completion and Final Acceptance.

MEANS AND METHODS

Project Management Plan

Based on our previous experience, we have allocated two review periods for the project management submittals. We will start with the Execution of Project Agreement items that are due before NTP1 which have already been completed, including financial close, identification legal firms, insurance, identification of licenses, performance security, payment security, evidence of corporate structure and confirmation of underwriters. The Project Development Plan, ROW Management Plan and Communication plans and all required submittals will be submitted as soon as possible to start with and plan on having all project required submittals push out with in the first two to three months.

Permitting

Due to the long lead time for acquiring the USACE permitting, we will work diligently towards achieving this goal by advance look-a-heads and meetings with USACE starting from Selection of Preferred Proposer. We have outlined our multi-meeting process to advance to approval process as much as possible. Which we will build on as more details become available.

Design

The design group will be working aggressively towards advancing drawings to 60 percent. Early Work for design will cover geotechnical field work, survey field work, alignment design and drainage design. Specifically, identifying the drainage report as it relates to USACE and all related permitting requirements.

Subtask Description

- Roadway plans, profiles, and cross sections
    - Preliminary work/gathering existing information
    - Existing condition analysis for culverts and utilities in the cross sections
    - Review and establish existing grade and typical sections

        - Develop Preliminary Roadway Horizontal and Vertical alignments for EL/GPLs, ramps, interchanges and crossing streets
        - Preliminary Typical cross sections along the corridor
        - Locations of special design elements in the cross sections
        - Geopak analysis of the cross sections
- Drainage, storm water management, and erosion and sediment control plans
    - Preliminary investigation. Existing data collection
    - Drainage Area Map
    - Hydrologic Analysis and Computations. Discharges. Preliminary Culvert Locations
    - Drainage Report for Major Stream Crossings
    - Review of the effects of Allowable Computed Headwater
    - Culverts Preliminary Hydraulic Design
    - Hydrologic-Hydraulic Design Criteria
    - Mayor Culverts layout and Geometry
- Conceptual Staging and maintenance of traffic (MOT) plans
    - Criteria for Traffic Management Design
    - Collection of existing traffic data
    - Develop conceptual options for traffic management
    - Analysis of collected information
    - Definition of General construction phases
    - Develop traffic management plans for Early Packages
- Sound wall locations
- Type, size, and location plans of all new structures and modifications to bridges(i.e. widening)
    - Bridges Typology Study
    - Bridges Typical cross section Study
    - Bridges Conceptual Design
    - Bridge Design Criteria
    - Develop General Arrangement Plans
    - Geotechnical Review and Checks
    - Preliminary Locations of Retaining Walls
    - Preliminary Layout of Retaining Walls
    - Existing Retaining Wall Info Review and Check
    - RW preliminary Geometry and Layout
    - RW Geotechnical Recommendations
    - RW Typology/Material/Construction Method Preliminary Analysis
    - RW Design Criteria
    - RW Develop Aesthetic Elements
- Pedestrian and bike trail plans;

Key/Priority Areas:

- Segment2
    - UPRR Crossing
    - Cover Park
    - Drainage

Resource Plan

Resource Plan will be addressed in the Baseline Schedule Narrative.

Daily Production Rates

Local Historical Daily Production Rates were applied in the creation of this schedule, to improve the accuracy of activity logic flow within the schedule. We have also reviewed possible haul routes, while taking into consideration options during peak traffic hours.

Schedule Constraints
The schedule has four activities with constraints. They are described below.

1. Execution of Project Agreement
2. Start On or Before 29-Sep-17
3. Service Commencement\Substantial Completion Deadline
4. Finish On or Before 05-Nov-23

Contractor's Standard Working Calendar (N/A) Schedule Calendars
The schedule has been developed using a five day workweek. The five day workweek allows for built in weather days and additional days to cover minor unforeseen occurrences. There are four driving calendars and one work restriction calendar in this the schedule.

- Standard 5 Day w/Holidays: Based on normal work days (Monday through Friday) and major CDOT holidays: this is the default calendar and applied to construction and management activities.
- 7 Day: For tracking calendar days for curing and or submittal tracking.
- 5 Day HMA Paving: For construction activities, this calendar uses a five day workweek with major CDOT holidays and prevents work from occurring between December 15th and March 1st. This calendar is applied to temperature sensitive activities such as HMA.
- SMA 5 Day Paving Calendar: Specific to SMA construction activities and associated milling. Historically SMA availability in Colorado, along with temperature restrictions prevents SMA installation from approximately Thanksgiving to March 15th.

The Calendars incorporated into this schedule should cover the overall timeframes accurately and as more information becomes available we realize that there will be additional Calendars added to the Baseline Schedule. As we detail the construction phases we will add Calendars' that will add value to the outcomes of areas and/or weather related issues.

WBS
The WBS contained in this Proposal Schedule was developed based on the Table 1 WBS Levels called out in the RFP. Additional levels of WBS are utilized to convey construction progress by Segment and Areas. This format allows the schedule to be analyzed by Milestone areas. During the Baseline Schedule development and as part of the collaboration with CDOT; a final WBS will be developed to ensure both CDOT and MHP achieve the optimal tool to meet all needs and requirements.

SCHEDULE ACTIVITY ALIGNMENT STRUCTURE
Activity IDs
There are three distinct numbering patterns for the project schedule's activity IDs. The IDs are designed to be intuitive to understand the information contained within.

Construction Activities
Construction activities are easiest to identify, as they will always start with a capital C. The next two characters identify the segment and sub-segment of the project to which the activity pertains. This is followed by a directional or location indicator, such as NB for the northbound traffic lanes, or CR for road crossings. This is followed by an indication of the type of roadway being built. Examples of this are EN for entry ramp, EX for exit ramp, and BR for bridge. The next section indicates the phasing for a given section of road, such as P1 for Phase 1, P2, for Phase 2, etc. The penultimate section describes the type of work or activity involved. Examples include DR for Drainage, TC for Temporary Construction, and RW for Retaining Wall. There is a special case in this section for bridges, which are identified here by a capital B followed by a three digit number identifying the bridge involved. The final spaces are numbers that insure a unique identifier for each activity. Below is a specific example:

C5EBGPP1ST2348-260 – Construction, Segment 5, eastbound direction, general purpose lanes, phase 1, start ST, beginning station 2348, activity number 260
As seen in the activity description, 5A - EB GP, Start, Ph1S5 (Mill and Overlay), Sta 2344+00 to 2448+00 this id represents Mill and Overlay on eastbound I70 general purpose lanes starting station 2344 in segment 5 as part of Phase 1 of work for this segment.

Right of Way Acquisition

Utility Conflicts

CONSTRUCTION SEQUENCING

Segment 1 Construction Sequencing

This Segment is mainly re-stripping, realignment of traffic barriers and some minor drainage improvements. The plan for this segment is to have it start when we are getting ready to shift traffic from the viaduct to the newly constructed Westbound Lanes. This will assist in the new traffic pattern created by the traffic shift in Segment 2.

We will begin as soon as possible to clear the proposed construction Work Areas of utility conflicts to advance the availability of Segment 1. We will prioritize by CPM and complexity of the conflict adjustment. As more accurate information becomes available during both the utility design and design phase, we will identify additional conflict adjustment approaches. Some conflict adjustments we can protect in place while still advancing construction work and finish the adjustments as the Work Area construction completes. Some conflict adjustments will need to be completed before construction starts and some can be addressed at times by adjusting a bent location or through creative planning.

Segment 2 Construction Sequencing Phase 1

Segment 2 is the critical path for the entire project so we took extra precautions when sequencing the work due to the complexity of the overall construction requirements. Starting with the pre-construction items such, as temp fencing, temp barriers, temp sound walls, de-watering, soil mapping and erosion control to be installed in the area's with special attention for the school and local neighborhoods before the start of construction.

We will then start with cross streets and crossing bridges in the Segment 2 Work Area's, this includes our bridge work which we identified early on as areas of opportunity. The UPPR bridge is the most critical bridge followed by the cover section of the Segment.
We plan on fully building the bridges at York St, Josephine Columbine, Clayton and Colorado using shoo fly bypasses so we will never close these streets during the course of the project. This will allow for better traffic movement through these cross streets areas.

There are some major construction items such as the amount of drill shafts and excavation required to create the temp and permanent ground water cut off walls for the final placement of the roadway in the trench areas. While the crossing bridges are being addressed we will be work excavation, drainage and retaining wall work in the depressed area. The whole of the Segment depressed area will be advanced with the exception of the construction at the UPRR crossing we will address the work under the UPRR once the second of two brides are installed and one of the shoofly's are no longer need to get an advanced start to completing the mainlanes for the WB traffic.

Once we construct the westbound mainlines we will be able to re-direct the existing westbound traffic onto the north half of the lowered section. We will then be able to complete the removal of a small "wedge" of the viaduct east of Brighton Rd and the construction of a small area west of Colorado Rd to allow for the eastbound traffic shift. Once the "wedge" sections have been completed in about a 3 month period we will shift the eastbound traffic to the north half of the lowered section. Traffic will remain in this configuration until the completion of the eastbound mainlanes. During the construction of the WB mainlanes, we will install the conduit and foundations for the ITS/ETC systems.

Phase 2
Traffic will remain in its new configuration as we push to work the southern side of the project in the trench areas. We will continue to advance exit and entry ramps both temp and final configurations during Phase 2 which overlaps Phase 3.

Phase 3

This will be the final phase for the depressed area as we address the construction of the cover and southern section of highway. We will also address the final commissioning of the cover as well as, up top area and installation of landscaping once we complete the southern portion we will realign the traffic to the new configuration and work the final finishes and punchlist items for the Grand Opening.

Segment 3 Construction Sequencing

Upon completion of design, ROW, and utility relocations, the construction is scheduled to be consistent with the MOT plan and Phasing in an “outside-inside” sequence.

Phase 1 consists of constructing the outside service Roads (Stapleton North and South) in Stages 1 though 3. This creates the work area to complete the outside general purpose lanes of WB and EB I-70 in the remaining Phase 1 stages.

Phase 2 includes completion of the inside EB and WB I70 roadway and structures upon shifting I-70 to the new outside widened lanes.

Phases 3 and 4 address completion of the cross streets once the full width is available based on completing the interior portions of the Phase 2 bridges.

Segment 4 Construction Sequencing

Upon completion of design and utility relocations the primary construction is included in a single phase with multiple stages per the MOT plan. Phase 2 is included to cover the ITS and Tolling.

The primary component to completing Segment 4 is the I270 to I70 flyover bridge. Completion of this structure accommodates the final widening of I70. Upon completion of the widening the milling and overlay can be completed at the end of Phase 1.

Segment 5 Construction Sequencing

Upon completion of design and utility relocations the primary construction is included in a single phase with multiple stages per the MOT plan.

The primary component to completing Segment 5 is the Peoria Bridge structure. Stage 1 includes shifting traffic to accommodate the EB and WB outer portions of the Peoria Bridge in Stage 2. Stage 3 includes the completion of the interior portions of the EB and WB Peoria Bridge.

The completion of the Peoria cross street occurs in Stages 3 through 5 upon the full width access created by the completion of the bridge.

Stage 5 includes the final milling and overlay.