



CONTRACT TIME DETERMINATION

**MISSOURI DEPARTMENT
OF
TRANSPORTATION**

March 15, 2004

DEFINITIONS

Calendar Day: Any day shown on the calendar beginning and ending at midnight.

Working Day: A calendar day during which major construction operations could proceed for 6 hours or more. The following days are not counted as working days: Saturday, Sundays, holidays, and the period from December 15 to March 15, both dates inclusive.

Controlling Item(s): Contract work item(s) that (a) is large enough in volume, (b) requires a lengthy period for completion, or (c) is on the critical path of a precedence diagram.

Completion Date: The contractor must have all (essential) work completed by a specific date without regard for working days.

Production Rate: The amount constructed over a specified time period.

CONTRACT TIME DETERMINATION

The validity of the contract time included in contracts is extremely critical. Contracts that specify too few working days or a short time period may:

- Encourage higher bids
- Eliminate some qualified contractors
- Increase number of time overruns and contractor claims
- Increase bond costs for contractors
- Encourage good management and thus high production
- Lower administration and engineering costs

Contracts that specify an excessive number of working days or a long time period may:

- Encourage lower bid prices
- Permit both high and low production contractors to bid on project
- Allow contractors to stop all work on projects for extended periods.
- Encourage contractors to bid more work than they can handle in a timely manner
- Subject the public to added inconvenience by forcing travel on a roadway where safety is less than desirable.
- Reduce the bonding capacity of contractors
- Discourage innovative management and/or construction techniques
- Increase administration and engineering costs

Several different procedures can be used to estimate the number of working days or calendar days needed to complete construction projects. Some of these techniques are simple and depend on individual judgment. Others are more complicated, drawing heavily on past data accumulated by the department and possibly using a computer program to develop time schedules. Each of these procedures, however, depends on first developing a progress schedule.

DISTRICT ROLE

District Design personnel should develop the progress schedule. This should be developed late in the design phase of the project. Preferably after the quantities have been completely tabulated. District Construction personnel should review this schedule prior to submitting it to GHQ with final plan submittal. A suggested time for review would be during the final field check for the project when both functional units can discuss the length of contract time.

A. Developing A Progress Schedule

The progress schedule shows the items of work and the durations associated with the chosen production rates. The time to complete each controlling item of work included in the progress schedule is computed based on the production rates applicable to that project. Items should be arranged by chronological sequence of construction operations. Minor items that may be performed concurrently with controlling items or that can be completed in a comparatively short length of time need not be analyzed.

In determining a progress schedule it should be remembered that the start and ending dates for each controlling item need to be based on the earliest date on which work on that time will begin and how long it will take to complete. The earliest start date for each activity will be determined by the completion of the activities which precede it, allowing for the fact that some activities can begin before the preceding activity is entirely completed.

Along with the time established for all controlling items, additional time should be allowed in the contract for initial mobilization and final cleanup. It should be remembered there are seasonal limitations for some construction activities and consideration should be made in the progress schedule (i.e. asphalt paving). Care should be exercised at this stage to coordinate controlling items with the average working days per month (see Exhibit A).

1. Adapting Production Rates To a Particular Project

Before time durations for individual work items can be computed, certain project specific information should be determined and some management decisions made. A determination should be made relative to the urgency of the completion of the proposed project. The traffic volumes affected as well as the effect of detours should be analyzed. The size and location of the project should be reviewed as well as the effects of staging, working double shifts, and the feasibility of night work as well as restrictions on closing lanes and other restrictions set out in the traffic control plan.

Also, the availability of material for controlling items of work should be investigated. For example, it might be appropriate to consider the need for multiple crews on a specific item to expedite the completion when there are exceptionally large quantities or when there is a large impact on traffic.

In April 1993, December 1997 and August 2000, a survey of the production rates in all ten districts and the AGC was made, and the results tabulated (see Exhibit B).

The low production rates category would include those projects which may include some of the following characteristics:

- heavy traffic
- urban area
- tight working conditions
- complex staging
- mostly hand work or "piece-work"
- not readily available material
- reconstruction
- difficult earthwork (poor soil type; steep grading; truck haul)
- non-standard construction (variable pavement widths, etc.)

The average production rates category would include those projects which may include some of the following characteristics:

- light traffic
- rural area
- simple staging
- mostly machine work (i.e. slip-form paving)
- readily available material
- new construction or relocation
- easy earthwork (good soil type; scraper haul)
- standard construction (uniform pavement widths, etc.)

The high production rates or "accelerated" category would include critical types of projects where an efficient contractor is working more than 8 hours per day, more than 5 days per week, and possibly with additional workers.

The production rates used should be based on the desired level of resource commitment (labor, equipment, etc.) deemed practical given the physical limitations of the project.

2. Other Factors Which Influence Contract Time

In addition to production rates, the following items should be considered when determining contract time:

- (a) Effects of maintenance of traffic requirements on scheduling and the sequence of operations.

- (b) Curing time and waiting periods between successive paving courses or between concrete placement operations, as well as specified embankment settlement periods.
- (c) Seasonal limitations for certain items which affect the number of days the contractor will be able to work as well as production rates.
- (d) Conflicting operations of adjacent projects, both public and private.
- (e) Review time for falsework plans, shop drawings, post-tensioning plans, mix designs, etc.
- (f) Time for fabrication of structural steel, signal mast arms, and other specialty items.
- (g) Coordination with utilities.
- (h) Time to obtain permits.
- (i) The effect of permit conditions and/or restrictions.
- (j) Restrictions for nighttime and weekend operations.
- (k) Time of the year of the letting as well as duration of the project.
- (l) Location.
- (m) Delivery of materials
- (n) Coordination with major community events and holidays.
- (o) Commitments which have been made.
- (p) Other pertinent items.

B. Procedures For Setting Contract Time

Once the progress schedule is developed, then a decision must be made on which procedure to use for setting the contract time. The working-day and calendar-day methods have an advantage over the completion-date method in that the contractor is not liable for circumstances beyond his control; however, each day that is charged must be carefully documented. In setting contract time it is recommended that a completion date be applied only when project completion is critical or when a large volume of traffic is affected.

Management should be involved in identifying the projects that must be completed at the earliest practical date. Procedures which would accelerate project completion, such as a "Liquidated Damages Specified," "Liquidated Savings" or "Acceleration of Work" clause, should be considered when construction will affect traffic substantially or when project completion is crucial. It should be remembered that while high traffic volumes can greatly delay a contractor's work, if a contractor were to initiate double shifts to complete a project by an unreasonable date, greater exposure to hazards and traffic disruptions might result than would occur with the expeditious continuation of work with moderate use of overtime.

1. Working Days Based on Quantity and Production Rates

Working days which are developed from production rates for work items are usually based on experience and past data from completed projects. The controlling items are used as the primary basis for specifying contract time.

Large, complicated projects requiring extensive coordination of materials, equipment, personnel, and administrative support can best be handled by means of work-flow techniques such as CPM (Critical Path Method).

2. Completion Date Based on Construction Season Limits

Time limits are set at the end of the construction season for certain surfacing and paving projects. This method is satisfactory when:

- (a) the projects are awarded early in the season
- (b) a sufficient time is available to finish the project before the completion date
- (c) a large number of projects is not awarded to a single contractor
- (d) materials are readily available
- (e) the contractor is held responsible for the expense of maintaining the project over the winter or paying liquidated damages

Example: Leveling course jobs, let in the spring, are assigned a completion date of October 1, which is the last day asphalt may be placed by specification.

3. Completion Date Based on Stage Construction

Some projects or portions of projects must be completed by a specific date to allow access by subsequent contractors to adjoining projects. Delays in completion of the project can result in considerable claims for delay costs by the subsequent contractor. Therefore a specific completion date associated with a sufficiently high rate for

liquidated damages is advisable. A realistic completion date must be assigned or the final costs will outweigh the desired benefits.

4. Calendar Days Set by Contractor

Contractors enter a bid and Calendar Days. For specific phases or final completion of project, the product of the number of calendar days and the road user cost is then added to the amount bid for work items and the total is used to determine the low bidder. This procedure is known as an Acceleration of Work Clause or "A plus B" bidding. It should be used sparingly, generally when phases or final completion is one season or less and only when the desired project completion is critical.

GENERAL HEADQUARTERS ROLE

One objective in the determination of a time period is to encourage a reasonable number of contractors to bid on the project. This allows for competitive bidding and results in lower bid prices. Knowledge of the capabilities and work loads of the contractors that normally bid each type of work is required.

GHQ will review the district's working day study so that these factors are considered, as well as to insure that production rates and other considerations are applied uniformly throughout the state. GHQ will also review the district's progress schedule for coordination with the progress schedule supplied by Bridge, or for any projects which are let in combination. GHQ may adjust the working day counts as necessary for the reasons previously stated after consultation with the project manager.

CONCLUSIONS AND RECOMMENDATIONS

In setting contract time limits, a decision must be made on whether to have the construction project completed by a specific date at any cost, or to have the project completed in a reasonable period of time at a reasonable cost. Once specified, contract time becomes a contractual condition, and as such, affects both the bidding and the administration of the project.

An essential element of MoDOT's procedure should be the monitoring of existing projects to determine if the contract times being specified are appropriate. As a part of this process, updates and changes should be made as determined to be necessary. In addition, good communication between Design, Construction and Bridge is essential in preparing realistic working day counts.

When establishing a new time-estimation procedure or modifying the existing procedure, the performance of the existing procedure should be carefully monitored both for projects with major time overruns and for projects completed much earlier than the contract date. It is also important to identify projects that were completed on time, even though work was not continuous. Special attention should be given to identifying items of work that must be completed in specific sequence. Although the experience of other organizations can be useful in

establishing contract time estimating procedures, MoDOT should use its own data and historical files to develop new methods or to check the validity of existing procedures.

Missouri North and Central (D1, D2, D3, D5)						
MONTH	CLASS A EXC.	CLASS C EXC.	BRIDGE SUBS.	BRIDGE SUPERS.	CONC. PAVING	ASPH. PAVING
JANUARY	0	2	0	0	0	0
FEBRUARY	0	2	0	0	0	0
MARCH	3	5	7	5	0	0
APRIL	11	13	11	12	7	6
MAY	14	14	15	15	13	13
JUNE	15	16	16	16	17	18
JULY	18	18	17	17	18	19
AUGUST	18	18	18	18	18	19
SEPTEMBER	16	16	15	15	16	15
OCTOBER	12	13	13	13	14	4
NOVEMBER	9	10	10	10	4	0
DECEMBER	3	5	5	0	0	0
TOTAL	119	132	127	121	107	94
Missouri Urban (D4 and D6)						
JANUARY	0	8	0	0	0	0
FEBRUARY	0	9	0	0	0	0
MARCH	6	10	9	9	0	0
APRIL	11	13	14	14	11	7
MAY	14	15	15	16	15	14
JUNE	16	16	17	17	17	15
JULY	16	17	18	17	17	17
AUGUST	18	18	18	18	18	18
SEPTEMBER	17	17	16	16	16	17
OCTOBER	14	15	15	14	15	10
NOVEMBER	9	11	12	9	8	3
DECEMBER	5	8	7	0	0	0
TOTAL	126	157	141	130	117	101
Missouri South (D7, D8, D9, D10)						
JANUARY	0	6	0	0	0	0
FEBRUARY	0	6	0	0	0	0
MARCH	5	8	8	6	0	0
APRIL	10	12	13	13	10	8
MAY	13	14	13	14	14	14
JUNE	16	16	16	16	16	17
JULY	17	18	17	17	18	18
AUGUST	19	19	19	19	18	18
SEPTEMBER	16	17	16	16	16	16
OCTOBER	15	15	15	15	15	8
NOVEMBER	8	9	10	11	7	0
DECEMBER	3	5	5	0	0	0
TOTAL	122	145	132	127	114	99

Exhibit A

PRODUCTION RATES

March 2004

N/R = NO RESPONSE

REMOVALS														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
BITUMINOUS PAVEMENT REMOVAL	SY / DAY	LOW	1000.0	1500.0		1500.0	1500.0	2000.0	2000.0	1500.0		1000.0	1500.0	1500.0
		AVERAGE	4000.0	4000.0	N / R	2250.0		5000.0	6000.0		N / R	3500.0	2250.0	3857.1
		HIGH	7000.0	6500.0		3000.0	6000.0	8000.0	8000.0	6500.0		6000.0	3000.0	6000.0
CONCRETE PAVEMENT REMOVAL	SY / DAY	LOW	200.0	500.0		180.0	500.0	1000.0	700.0	500.0		200.0	1000.0	531.1
		AVERAGE	1250.0	2000.0	N / R	757.0		2500.0	2000.0		N / R	250.0	1500.0	1465.3
		HIGH	2250.0	4000.0		1333.0	4000.0	5000.0	2500.0	1500.0		300.0	2000.0	2542.6
GUARDRAIL REMOVAL	LF / DAY	LOW	200.0	500.0		200.0	800.0	400.0	375.0	500.0			500.0	434.4
		AVERAGE	500.0	1275.0	N / R	850.0	1000.0	800.0	1500.0		N / R		850.0	967.9
		HIGH	750.0	2000.0		1500.0	1200.0	1500.0	3000.0	1500.0		1560.0	1000.0	1556.7
CURB AND GUTTER REMOVAL	LF / DAY	LOW	200.0	200.0		500.0	500.0	100.0	500.0	100.0			2000.0	512.5
		AVERAGE	500.0	500.0	N / R	1000.0		300.0	1000.0		N / R	N / R	3000.0	1050.0
		HIGH	1200.0	1000.0		1500.0	2000.0	500.0	4000.0	1000.0			4000.0	1900.0
CLEARING & GRUBBING	ACRES / DAY	LOW	0.5	0.5		1.0	12.0	0.5	0.5	1.0			1.0	2.1
		AVERAGE	1.0	1.5	N / R	1.5	16.0	1.5	2.0		2.0	N / R	2.0	3.4
		HIGH	1.6	4.0		2.0	20.0	3.0	3.0	3.0			3.0	5.0
CULVERT REMOVAL (LESS THAN 36" IN DIAMETER)	LF / DAY	LOW		60.0		100.0	300.0	80.0	100.0	10.0			200.0	121.4
		AVERAGE	N / R	200.0	N / R	300.0		150.0	250.0		N / R	N / R	350.0	250.0
		HIGH		400.0		500.0	500.0	250.0	300.0	100.0			500.0	364.3
CULVERT REMOVAL (GREATER THAN 36" IN DIA.)	LF / DAY	LOW		60.0		75.0	300.0	80.0	50.0	10.0			100.0	96.4
		AVERAGE	N / R	200.0	N / R	138.0		150.0	100.0		N / R	N / R	200.0	157.6
		HIGH		400.0		200.0	500.0	250.0	200.0	100.0			300.0	278.6
BUILDING REMOVAL	SY / DAY	LOW		500.0		32.0	75.0	300.0		100.0				201.4
		AVERAGE	N / R	1250.0	N / R	32.0	100.0	600.0	N / R		N / R	N / R	N / R	495.5
		HIGH		2000.0		32.0	125.0	900.0		1000.0				811.4
COLDMILL BITUMINOUS SURFACE (3" OR LESS)	SY / DAY	LOW	2000.0	2000.0		5000.0	5000.0	2500.0	1000.0	3500.0		4194.4		3149.3
		AVERAGE	13500.0	12500.0	7000.0	10000.0	7000.0	6000.0	2000.0		N / R	6000.0	N / R	8000.0
		HIGH	26000.0	25000.0		15000.0	8000.0	12000.0	5000.0	15000.0		13000.0		14875.0
COLDMILL BITUMINOUS SURFACE (OVER 3")	SY / DAY	LOW		800.0		5280.0	2000.0	1500.0	800.0	2500.0				2146.7
		AVERAGE	N / R	6000.0	N / R	11640.0		4000.0	1000.0		N / R	4000.0	N / R	5328.0
		HIGH		12000.0		18000.0	10000.0	8000.0	15000.0	10000.0				12166.7
COLDMILL CONCRETE SURFACE (3" OR LESS)	SY / DAY	LOW	420.0	1000.0		890.0	1000.0	1000.0	1000.0					885.0
		AVERAGE	1250.0	4500.0	N / R	4445.0		4500.0	2000.0	N / R	N / R	N / R	N / R	3339.0
		HIGH	4250.0	9000.0		8000.0	3000.0	7500.0	3500.0					5875.0

PRODUCTION RATES

EARTHWORK														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
COMMON EXCAVATION - PLASTIC SOILS	CY / DAY	LOW	750.0	500.0		1700.0	2000.0	500.0	1000.0	1000.0		262.0	6000.0	1523.6
		AVERAGE	2500.0	1500.0	1000.0	5200.0	3200.0	1500.0	2500.0	4000.0	1418.0	2629.0	8000.0	3040.6
		HIGH	13000.0	3500.0		8800.0	4140.0	3000.0	3500.0	7500.0		5000.0	10000.0	6493.3
COMMON EXCAVATION - GRANULAR SOILS	CY / DAY	LOW	1000.0	250.0		1700.0	3000.0	500.0	1000.0	1200.0		115.0	500.0	1029.4
		AVERAGE	2000.0	1000.0	N / R	5000.0		1500.0	2000.0	4500.0	3300.0	555.0	1500.0	2372.8
		HIGH	3000.0	2500.0		7300.0	10000.0	3000.0	3000.0	8000.0		1445.0	3000.0	4582.8
LINEAR GRADING	STA. / DAY	LOW	1.0	1.0		2.5	10.0	2.0	5.0	1.0		11.4	20.0	6.0
		AVERAGE	2.0	2.5	N / R	3.8		5.0	10.0		7.2	11.7	35.0	9.7
		HIGH	5.0	5.0		5.0	50.0	10.0	25.0	10.0		11.9	50.0	19.1
COMPACTING EMBANKMENT	CY / DAY	LOW	600.0	500.0	200.0	200.0	2000.0	500.0	1000.0	560.0		177.0	6000.0	1173.7
		AVERAGE	1900.0	1500.0	1000.0	350.0	3200.0	1500.0	2100.0	8000.0	1272.0	2785.0	8000.0	2873.4
		HIGH	14000.0	3500.0		500.0	4140.0	3000.0	3500.0	10000.0		8701.0	10000.0	6371.2
SUBGRADE COMPACTION	STA. / DAY	LOW				1.0	10.0	3.0	5.0			1.0	3.0	3.8
		AVERAGE	N / R	N / R	N / R	1.5		6.0	15.0	N / R	N / R	13.0	6.0	8.3
		HIGH				2.0	50.0	10.0	20.0			51.4	10.0	23.9
HYDRAULIC EMBANKMENT	CY / DAY	LOW						300.0						300.0
		AVERAGE	N / R	N / R	N / R	N / R	N / R	800.0	N / R	N / R	N / R	N / R	N / R	800.0
		HIGH						1200.0						1200.0
SHAPING SHOULDERS	MILES/DAY	LOW	0.5	1.0	1.0	0.3	0.3	0.5	1.0	0.5		0.5		0.6
		AVERAGE	2.0	2.0	3.0	1.7		1.0	2.0	1.3	N / R	0.7	N / R	1.7
		HIGH	4.0	4.0	5.0	3.0	2.0	2.0	3.0	2.3		1.2		2.9
ROCK EXCAVATION - BLASTING	CY / DAY	LOW	500.0	250.0		1500.0	2000.0	1500.0	500.0	1500.0			1500.0	1156.3
		AVERAGE	1000.0	500.0	N / R	3000.0	3700.0	5000.0	750.0	6300.0	1677.0	N / R	3000.0	2769.7
		HIGH	2000.0	1500.0		5600.0	4300.0	10000.0	2000.0	11000.0			4500.0	5112.5
ROCK EXCAVATION - NON BLASTING	CY / DAY	LOW		300.0		50.0	300.0	50.0	100.0	1350.0			50.0	314.3
		AVERAGE	N / R	1250.0	N / R	175.0		200.0	250.0	1900.0	N / R	N / R	200.0	662.5
		HIGH		2000.0		300.0	3000.0	500.0	400.0	2400.0			500.0	1300.0
CLASS 3 EXCAVATION	CY / DAY	LOW	32.0	100.0		140.0	200.0	75.0	50.0	7.0		8.0	200.0	90.2
		AVERAGE	65.0	350.0	N / R	395.0	350.0	125.0	100.0	140.0	94.0	70.0	350.0	203.9
		HIGH	81.0	500.0		650.0	500.0	200.0	150.0	369.0		246.0	500.0	355.1
CLASS 3 EXCAVATION IN ROCK	CY / DAY	LOW		50.0		67.0	25.0	20.0	20.0	7.0			100.0	41.3
		AVERAGE	N / R	100.0	N / R	234.0	50.0	50.0	50.0	23.0	N / R	N / R	150.0	93.9
		HIGH		200.0		400.0	75.0	100.0	100.0	43.0			200.0	159.7

CLASS 4 - LOW = 300 CY/DAY; AVG. = 400 CY/DAY;
 HIGH = 500 CY/DAY, CLASS 4 ROCK - LOW = 100
 CY/DAY; AVG = 150 CY/DAY; HIGH = 200 CY/DAY

PRODUCTION RATES

BASE CONSTRUCTION

ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
AGGREGATE BASE	TONS/DAY	LOW	450.0	1000.0			500.0	300.0	200.0	500.0				491.7
		AVERAGE	950.0	1500.0	N / R	N / R		1000.0	500.0		N / R	N / R	600.0	910.0
		HIGH	1750.0	2000.0			2500.0	3000.0	800.0	2000.0				2008.3
AGGREGATE BASE, 4"	SY/DAY	LOW	750.0	2000.0	2000.0	1000.0	1000.0	1000.0	500.0	1340.0		500.0	1000.0	1109.0
		AVERAGE	2000.0	6000.0	6000.0	2500.0		3500.0	2000.0	3960.0	3681.0	1250.0	3500.0	3439.1
		HIGH	9000.0	10000.0	10000.0	4000.0	5000.0	6000.0	4000.0	7607.0		2300.0	6000.0	6390.7
PLACING ROCK BASE (18 IN. THICK)	SY/DAY	LOW	937.5	2500.0		1250.0	1250.0	1250.0	625.0	1675.0				1355.4
		AVERAGE	2500.0	7500.0	N / R	3125.0		4375.0	2500.0		N / R	N / R	N / R	4000.0
		HIGH	11250.0	12500.0		5000.0	6250.0	7500.0	5000.0	9508.8				8144.1

PRODUCTION RATES

BITUMINOUS PAVING														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
PLANT MIX BITUMINOUS PAVEMENT PLACEMENT	TONS/DAY	LOW	50.0	200.0	400.0	750.0	500.0	500.0	800.0	300.0		405.0		433.9
		AVERAGE	1500.0	800.0	1500.0	1500.0	1800.0	1000.0	2500.0	1200.0	800.0	2040.0	N / R	1464.0
		HIGH	4000.0	1500.0	3000.0	2300.0	3000.0	2000.0	3500.0	1800.0		2980.0		2675.6
PLANT MIX BITUMINOUS BASE WIDENING (OVER 8	TONS / DAY	LOW	55.0	100.0		700.0	500.0	500.0	800.0	250.0				415.0
		AVERAGE	500.0	500.0	N / R	1100.0	1000.0	1000.0	2500.0		N / R	N / R	N / R	1100.0
		HIGH	1200.0	750.0		1500.0	1500.0	2000.0	3500.0	2000.0				1778.6
VERTICAL SAW CUT (FULL DEPTH) (ASPHALT)	LF / DAY	LOW	20.0	100.0		200.0	700.0	100.0	50.0	300.0			100.0	196.3
		AVERAGE	750.0	300.0	1500.0	850.0	1000.0	500.0	400.0	500.0	71.0	N / R	200.0	607.1
		HIGH	1500.0	500.0		1500.0	1200.0	1000.0	1000.0	600.0			300.0	950.0
SUPERPAVE ASPHALTIC CONCRETE PAVEMENT	TONS / DAY	LOW	150.0	500.0	500.0	500.0	1800.0	300.0	1000.0	400.0		227.6		597.5
		AVERAGE	2500.0	1200.0	1500.0	1600.0	2000.0	900.0	2500.0	1800.0	N / R	449.9	N / R	1605.5
		HIGH	3500.0	2000.0	3000.0	2700.0	2800.0	1500.0	3000.0	2500.0		796.8		2421.9
MICROSURFACING (SLURRY SEAL)	SY / DAY	LOW	2500.0	4000.0		3000.0	10000.0	1000.0						4100.0
		AVERAGE	15000.0	10000.0	N / R	17200.0	20000.0	3000.0	8000.0	N / R	N / R	N / R	N / R	12200.0
		HIGH	25000.0	20000.0		30000.0	30000.0	8000.0						22600.0
SCRUB SEAL	SY / DAY	LOW	2500.0	12000.0				1000.0						5166.7
		AVERAGE	15000.0	24000.0	N / R	N / R	N / R	4000.0	N / R	N / R	N / R	N / R	N / R	14333.3
		HIGH	25000.0	36000.0				9000.0						23333.3
SURFACE LEVELING	TONS / DAY	LOW	200.0	400.0	1000.0		1200.0	500.0	1000.0	1100.0		371.0		721.4
		AVERAGE	2750.0	1500.0	1700.0	N / R	1800.0	1200.0	2000.0	2200.0	N / R	1865.0	N / R	1876.9
		HIGH	4000.0	2200.0	3000.0		2500.0	2000.0	3000.0	3000.0		2727.0		2803.4
ULTRATHIN BONDED WEARING SURFACE (TYPE A,B,C)	SY / DAY	LOW						5000.0		10000.0				7500.0
		AVERAGE	N / R	N / R	N / R	N / R	N / R	12000.0	N / R		N / R	N / R	N / R	12000.0
		HIGH						20000.0		15000.0				17500.0
BITUMINOUS FOG SEALING	LF / DAY	LOW	10000.0	26400.0	5000.0			5200.0						11650.0
		AVERAGE	40000.0	37000.0	25000.0	N / R	N / R	10000.0	N / R	N / R	N / R	N / R	N / R	28000.0
		HIGH	50000.0	52800.0	50000.0			20000.0						43200.0
LAYING RECLAIMED MATERIAL	TONS / DAY	LOW	1000.0				1500.0	500.0						1000.0
		AVERAGE	3000.0	N / R	N / R	N / R		900.0	N / R	N / R	N / R	N / R	N / R	1950.0
		HIGH	4000.0				3000.0	1400.0						2800.0
PAVEMENT CRACK SEALING (BITUMINOUS)	LF / DAY	LOW		300.0				1000.0						650.0
		AVERAGE	N / R	900.0	N / R	N / R	N / R	2500.0	N / R	N / R	N / R	N / R	N / R	1700.0
		HIGH		1500.0				4000.0						2750.0

PRODUCTION RATES

CONCRETE PAVING														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
NON-REINFORCED CONCRETE PAVEMENT 8" TO 11" (15 FT. JOINTS)	SY / DAY	LOW	1000.0	1000.0	1600.0	180.0	5000.0	500.0	800.0	910.0		24.0	500.0	1151.4
		AVERAGE	10500.0	6500.0	3333.0	2090.0		3500.0	5000.0	6500.0	3740.0	5528.0	3500.0	5019.1
		HIGH	14000.0	12000.0	10000.0	4000.0	10000.0	6000.0	8000.0	8500.0		10003.0	6000.0	8850.3
NON-REINFORCED CONCRETE PAVEMENT 12" TO 14" (15 FT. JOINTS)	SY / DAY	LOW	800.0	1000.0	1600.0	1200.0	2500.0	500.0	600.0	850.0		1000.0	500.0	1055.0
		AVERAGE	9000.0	6000.0	3333.0	2267.0		3500.0	5500.0	6000.0	5500.0	5844.0	3500.0	5044.4
		HIGH	13250.0	11000.0	10000.0	3333.0	8000.0	6000.0	7000.0	9400.0		7150.0	6000.0	8113.3
CONCRETE PAVEMENT REPAIR	SY / DAY	LOW	100.0	50.0		30.0	100.0	50.0		75.0			50.0	65.0
		AVERAGE	450.0	200.0	N / R	278.0		100.0	N / R		N / R	N / R	100.0	225.6
		HIGH	600.0	320.0		525.0	300.0	150.0		400.0			150.0	349.3
VERTICAL SAW CUT (FULL DEPTH) (CONCRETE)	LF/DAY	LOW	300.0	175.0		300.0	50.0	100.0		200.0			100.0	175.0
		AVERAGE	1500.0	700.0	N / R	1350.0		250.0	N / R		48.0	N / R	250.0	683.0
		HIGH	2250.0	1200.0		2400.0	500.0	500.0		500.0			500.0	1121.4
DIAMOND GRINDING (CONCRETE PAVEMENT)	SY / DAY	LOW	3000.0	3500.0		900.0	1000.0	1000.0						1880.0
		AVERAGE	7000.0	7000.0	N / R	1379.0		8000.0	3500.0	N / R	11260.0	N / R	N / R	6356.5
		HIGH	11000.0	14000.0		2667.0	5000.0	14000.0						9333.4
CONCRETE PAVED APPROACH	SY / DAY	LOW	100.0	150.0		130.0	100.0	50.0	70.0	60.0		26.0	50.0	81.8
		AVERAGE	200.0	225.0	N / R	171.0		250.0	150.0	155.0	N / R	143.0	250.0	193.0
		HIGH	300.0	300.0		211.0	300.0	400.0	250.0	280.0		493.0	400.0	326.0
CONCRETE MEDIAN	SY / DAY	LOW		100.0		200.0	100.0	50.0	40.0	105.0			50.0	92.1
		AVERAGE	N / R	175.0	N / R	350.0		250.0	140.0	426.0	N / R	N / R	250.0	265.2
		HIGH		250.0		500.0	300.0	400.0	150.0	700.0			450.0	392.9
CONCRETE MEDIAN STRIP (4 FT. WIDE)	LF/DAY	LOW				200.0		50.0		100.0			50.0	100.0
		AVERAGE	N / R	N / R	N / R	350.0	N / R	250.0	N / R		N / R	N / R	250.0	283.3
		HIGH				500.0		400.0		750.0			400.0	512.5
CONCRETE TRAFFIC BARRIER TYPE A (CAST IN PLACE)	LF / DAY	LOW				600.0	50.0	100.0					100.0	212.5
		AVERAGE	N / R	N / R	N / R	800.0		1000.0	N / R	N / R	N / R	N / R	1000.0	933.3
		HIGH				1000.0	200.0	2000.0					2000.0	1300.0
CONCRETE TRAFFIC BARRIER TYPE C (CAST IN PLACE)	LF / DAY	LOW				500.0	500.0	100.0		300.0			100.0	300.0
		AVERAGE	N / R	N / R	N / R	750.0	1000.0	1000.0	N / R		N / R	N / R	1000.0	937.5
		HIGH				1000.0	1500.0	2000.0		1500.0			2000.0	1600.0
ULTRATHIN CONCRETE WHITETOPPING	SY / DAY	LOW						500.0	4000.0	400.0				1633.3
		AVERAGE	N / R	N / R	N / R	N / R	N / R	2500.0	7000.0	1000.0	N / R	N / R	N / R	3500.0
		HIGH						6000.0	9000.0	1200.0				5400.0
PAVEMENT CRACK SEALING	LF / DAY	LOW		1000.0				400.0	1200.0					866.7
		AVERAGE	N / R	2500.0	N / R	N / R	N / R	1000.0	1500.0	N / R	N / R	N / R	N / R	1666.7
		HIGH		4000.0				2500.0	1800.0					2766.7
CONCRETE APPROACH PAVEMENT	SY / DAY	LOW	80.0	125.0	66.0	167.0	50.0	100.0	70.0	312.0			100.0	118.9
		AVERAGE	80.0	250.0	122.0	250.0		350.0	150.0	670.0	75.0	130.0	350.0	242.7
		HIGH	160.0	375.0	200.0	333.0	200.0	500.0	250.0	890.0			500.0	378.7

PRODUCTION RATES

DRAINAGE ITEMS														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
CURB AND GUTTER	LF / DAY	LOW	50.0	300.0		75.0	200.0	300.0	40.0	163.0			100.0	153.5
		AVERAGE	100.0	1000.0	N / R	838.0		1000.0	80.0	416.0	N / R	N / R	200.0	519.1
		HIGH	600.0	1760.0		1600.0	1000.0	2000.0	120.0	852.0			300.0	1029.0
GECOMPOSITE PAVEMENT EDGE DRAIN	LF / DAY	LOW	100.0			200.0	500.0	500.0		793.0				418.6
		AVERAGE	800.0	N / R	N / R	300.0		1500.0	N / R	3360.0	N / R	N / R	N / R	1490.0
		HIGH	1250.0			400.0	5000.0	3500.0		6040.0				3238.0
LONGITUDAL PIPE AGGRREGATE UNDERDRAIN	LF / DAY	LOW	60.0	1000.0		50.0	200.0	500.0	500.0	200.0		80.0		323.8
		AVERAGE	200.0	3300.0	N / R	375.0		1500.0	2500.0	680.0	3400.0	1549.0	600.0	1567.1
		HIGH	500.0	4000.0		700.0	2000.0	3500.0	4000.0	1370.0		3340.0		2426.3
DROP INLETS	EACH / DAY	LOW	2.0	2.0		3.0	2.0	1.0	1.0	1.0		4.0	5.0	2.3
		AVERAGE	5.0	5.0	4.0	6.5	3.0	3.0	2.0	3.0	2.0	5.0	7.5	4.2
		HIGH	8.0	7.0		10.0	4.0	5.0	3.0	5.0		7.0	10.0	6.6
MANHOLES	EACH / DAY	LOW	1.0	1.0		1.0	1.0	1.0	1.0	1.0			5.0	1.5
		AVERAGE	2.0	3.0	N / R	4.0		3.0	2.0	2.0	N / R	N / R	7.5	3.4
		HIGH	3.0	5.0		6.0	3.0	5.0	3.0	3.0			10.0	4.8
PLACING ROCK BLANKET	CY / DAY	LOW	230.0	100.0		100.0	100.0	30.0	50.0	145.0		35.0	300.0	121.1
		AVERAGE	300.0	300.0	250.0	175.0	150.0	100.0	100.0	310.0	367.0	325.0	400.0	252.5
		HIGH	320.0	500.0		250.0	200.0	200.0	150.0	450.0		550.0	500.0	346.7
PLACING ROCK DITCH LINER	CY / DAY	LOW	60.0	100.0		100.0	150.0	30.0	100.0	300.0		7.0	300.0	127.4
		AVERAGE	140.0	200.0	400.0	200.0	200.0	100.0	200.0	412.0	N / R	70.0	400.0	232.2
		HIGH	200.0	300.0		300.0	250.0	200.0	300.0	560.0		208.0	500.0	313.1
RCP CULVERTS LESS THAN 36" IN DIAMETER	LF / DAY	LOW	45.0	75.0		100.0	200.0	50.0	20.0	80.0		31.0	300.0	100.1
		AVERAGE	105.0	150.0	N / R	250.0	300.0	150.0	80.0	150.0	82.0	62.0	400.0	172.9
		HIGH	190.0	300.0		400.0	400.0	300.0	125.0	311.0		74.0	500.0	288.9
RCP CULVERTS 36"-60" IN DIAMETER	LF / DAY	LOW	50.0	50.0		100.0	100.0	50.0	20.0	40.0			200.0	76.3
		AVERAGE	100.0	125.0	N / R	150.0	200.0	100.0	80.0	110.0	138.0	N / R	250.0	139.2
		HIGH	200.0	200.0		200.0	300.0	200.0	120.0	289.0			300.0	226.1
RCP CULVERTS GREATER THAN 60" IN DIAMETER	LF / DAY	LOW		25.0		100.0	100.0	30.0	25.0	65.0			100.0	63.6
		AVERAGE	N / R	100.0	N / R	150.0	150.0	80.0	50.0	93.0	225.0	N / R	150.0	124.8
		HIGH		175.0		200.0	200.0	150.0	75.0	112.0			200.0	158.9

PRODUCTION RATES

MISCELLANEOUS CONSTRUCTION														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
GUARD RAIL INSTALLATION	LF / DAY	LOW	750.0	250.0	100.0	200.0	400.0	100.0	100.0	156.0		150.0	300.0	250.6
		AVERAGE	1200.0	750.0	300.0	1420.0	500.0	600.0	300.0	780.0	420.0	305.0	800.0	670.5
		HIGH	1725.0	1000.0	500.0	2640.0	600.0	1200.0	600.0	1240.0		537.0	1000.0	1104.2
GUARD CABLE INSTALLATION	LF / DAY	LOW				1000.0		100.0	150.0	150.0			500.0	380.0
		AVERAGE	N / R	N / R	N / R	3140.0	N / R	600.0	650.0		475.0	N / R	1000.0	1173.0
		HIGH				5280.0		1200.0	1200.0	1500.0			1500.0	2136.0
SNOWPLOWABLE RAISED PAVEMENT MARKERS	EACH / DAY	LOW	50.0	200.0	100.0	3.0	500.0	100.0	200.0	166.0		471.0		198.9
		AVERAGE	200.0	400.0	600.0	1052.0	800.0	250.0	500.0	375.0	270.0	580.0	N / R	502.7
		HIGH	400.0	600.0	1000.0	2100.0	1000.0	500.0	1000.0	540.0		688.0		869.8
SIDEWALKS	SF / DAY	LOW	250.0	200.0		22.0	200.0	100.0	50.0	50.0				124.6
		AVERAGE	1000.0	500.0	N / R	511.0		250.0	75.0		N / R	N / R	800.0	522.7
		HIGH	2000.0	800.0		1000.0	2700.0	500.0	100.0	200.0				1042.9
PREFORMED MARKING TAPE	LF / DAY	LOW	1300.0	1200.0		1500.0	1200.0	500.0	200.0	1200.0				1014.3
		AVERAGE	1500.0	3600.0	1000.0	10750.0	1500.0	2000.0	400.0	3760.0	5600.0		N / R	3345.6
		HIGH	1700.0	4800.0		20000.0	1800.0	4000.0	500.0	4500.0		1814.0		4889.3
PAINT STRIPE	LF / DAY	LOW	600.0	10560.0	200.0	5000.0	2000.0	1000.0	10000.0	4500.0		50.0		3767.8
		AVERAGE	10000.0	21120.0	2000.0	17500.0	3000.0	2500.0	20000.0	6700.0	33000.0	3625.0	N / R	11944.5
		HIGH	15000.0	34320.0	5000.0	30000.0	4000.0	6000.0	40000.0	10100.0		9265.0		17076.1
SIGNING INSTALLATION	SF / DAY	LOW	350.0	500.0		240.0	300.0	50.0	50.0	1206.0		21.0	200.0	324.1
		AVERAGE	750.0	1750.0	N / R	495.0	400.0	200.0	334.0	1893.0	230.0	125.0	350.0	652.7
		HIGH	1000.0	3000.0		750.0	500.0	400.0	1500.0	2500.0		302.0	500.0	1161.3
THERMOPLASTIC PAVEMENT MARKING	LF / DAY	LOW	2500.0	3000.0		7000.0	1500.0	1000.0	8000.0	1900.0				3557.1
		AVERAGE	7500.0	6000.0	N / R	16700.0	2000.0	3000.0	12000.0	4200.0	N / R	N / R	N / R	7342.9
		HIGH	12500.0	12000.0		26400.0	2500.0	7000.0	20000.0	10500.0				12985.7
MECH. STABILIZED EARTH WALL - LARGE BLOCK	SF / DAY	LOW				500.0	200.0	500.0		1000.0				550.0
		AVERAGE	N / R	N / R	N / R	750.0	300.0	750.0	N / R	2000.0	N / R	N / R	500.0	860.0
		HIGH				1000.0	400.0	1000.0		3000.0				1350.0
MECH. STABILIZED EARTH WALL - SMALL BLOCK	SF / DAY	LOW	50.0			750.0		300.0		1000.0				525.0
		AVERAGE	150.0	N / R	N / R	1125.0	N / R	500.0	N / R	2000.0	N / R	N / R	N / R	755.0
		HIGH	275.0			1500.0		750.0		3000.0				1381.3

PRODUCTION RATES

LANDSCAPING														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
ROADSIDE MOWING - URBAN	ACRES / DAY	LOW	5.0											5.0
		AVERAGE	30.0	N / R	N / R	N / R	N / R	N / R	N / R	N / R	N / R	N / R	N / R	30.0
		HIGH	57.0											57.0
ROADSIDE MOWING - RURAL	ACRES / DAY	LOW								10.0				10.0
		AVERAGE	N / R	N / R	N / R	N / R	N / R	N / R	N / R	15.0	N / R	N / R	N / R	15.0
		HIGH								20.0				20.0
SODDING	SY / DAY	LOW	150.0	1000.0		500.0	600.0	1200.0		500.0				658.3
		AVERAGE	400.0	2000.0	N / R	1000.0	1000.0	2000.0	N / R			N / R	N / R	1280.0
		HIGH	1000.0	3000.0		1500.0	1400.0	4500.0		2000.0				2233.3
SEEDING AND MULCHING	ACRES / DAY	LOW	2.0	2.0		1.0	4.0	0.5		6.0		1.6		2.4
		AVERAGE	30.0	5.0	2.0	33.0	5.0	5.0	N / R	9.0	3.7	3.2	N / R	10.7
		HIGH	75.0	10.0		65.0	6.0	8.0		12.0		5.9		26.0
PLANTING TREES 2"- 4" IN DIAMETER	EACH / DAY	LOW	5.0			30.0		5.0		10.0				12.5
		AVERAGE	25.0	N / R	N / R	40.0	N / R	20.0	N / R	15.0	N / R	N / R	N / R	25.0
		HIGH	50.0			50.0		50.0		20.0				42.5
PLANTING TREES GREATER THAN 4" IN DIAMETER	EACH / DAY	LOW				20.0		5.0		5.0				10.0
		AVERAGE	N / R	N / R	N / R	28.0	N / R	20.0	N / R		N / R	N / R	N / R	24.0
		HIGH				35.0		50.0		10.0				31.7
DITCH CHECKS	EACH / DAY	LOW	5.0	10.0	10.0	10.0	30.0	3.0		32.0		4.0		13.0
		AVERAGE	10.0	25.0	25.0	20.0	40.0	6.0	N / R	45.0	56.0	6.0	4.0	23.7
		HIGH	50.0	35.0	50.0	30.0	50.0	12.0		67.0		9.0		37.9
SILT FENCE	LF / DAY	LOW	100.0	500.0	50.0	200.0	800.0	100.0		800.0		100.0		331.3
		AVERAGE	500.0	1500.0	500.0	1100.0	1000.0	500.0	N / R	2560.0	1330.0	1075.0	300.0	1036.5
		HIGH	1000.0	3000.0	1000.0	2000.0	1200.0	1000.0		3700.0		2500.0		1925.0

PRODUCTION RATES

SIGNALS / LIGHTING														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
ELECTRIC CABLE	LF / DAY	LOW	300.0	500.0		200.0	500.0	50.0		365.0				319.2
		AVERAGE	450.0	1250.0	N / R	450.0		100.0	N / R	565.0	N / R	N / R	N / R	563.0
		HIGH	750.0	2000.0		700.0	2000.0	200.0		1200.0				
CONDUIT - TRENCHED	LF / DAY	LOW	250.0	200.0		250.0	300.0	20.0	300.0	182.0				214.6
		AVERAGE	475.0	600.0	N / R	625.0	400.0	100.0	600.0	396.0	N / R	N / R	N / R	456.6
		HIGH	675.0	1000.0		1000.0	500.0	300.0	1500.0	545.0				
CONDUIT - PUSHED	LF / DAY	LOW	50.0	60.0		60.0	100.0	20.0	45.0	62.0				56.7
		AVERAGE	125.0	200.0	N / R	230.0	150.0	60.0	60.0	87.0	N / R		N / R	130.3
		HIGH	250.0	300.0		400.0	200.0	150.0	100.0	112.0		457.0		
TRAFFIC SIGNAL HEAD	EACH / DAY	LOW	4.0	5.0		2.0	1.0	3.0	2.0	2.0				2.7
		AVERAGE	6.0	10.0	N / R	6.0	2.0	6.0	5.0	3.0	N / R	N / R	N / R	5.4
		HIGH	10.0	15.0		10.0	3.0	9.0	9.0	5.0				
TRAFFIC SIGNAL / LIGHTING POST	EACH / DAY	LOW	2.0	2.0		1.0	1.0	1.0	5.0	1.0				1.9
		AVERAGE	3.0	3.0	N / R	4.0	2.0	2.0	7.0	2.0	N / R	N / R	N / R	3.3
		HIGH	5.0	5.0		6.0	3.0	4.0	10.0	3.0				
DETECTOR LOOP	EACH / DAY	LOW	2.0	4.0		3.0	2.0	2.0	1.0	2.0				2.3
		AVERAGE	4.0	6.0	N / R	7.0		4.0	2.0	4.0	N / R	N / R	N / R	4.5
		HIGH	6.0	9.0		10.0	5.0	8.0	5.0	5.0				
TRAFFIC SIGNALS (COMPLETE INSTALLATION)	DAYS/ INTERSECTI	LOW	60.0	45.0		28.0	5.0	8.0	20.0	7.0				24.7
		AVERAGE	30.0	30.0	N / R	25.0	4.0	4.0	15.0	5.0	N / R	N / R	N / R	16.1
		HIGH	10.0	15.0		21.0	3.0	2.0	10.0	3.0				
PULL BOXES	DAYS/ INTERSECTI	LOW	5.0	10.0		7.0	3.0	8.0	3.0	6.0				6.0
		AVERAGE	3.0	6.0	N / R	6.0	2.0	4.0	2.0	4.0	N / R	N / R	N / R	3.9
		HIGH	2.0	4.0		4.0	1.0	2.0	1.0	1.0				
HIGH MAST LIGHTING - 120 FT. OR LESS	EACH / DAY	LOW		4.0		1.0		0.3						1.8
		AVERAGE	N / R	6.0	N / R	3.0	N / R	0.5	N / R	N / R	N / R	N / R	N / R	3.2
		HIGH		8.0		4.0		0.8						4.3
HIGH MAST LIGHTING - GREATER THAN 120 FT.	EACH / DAY	LOW		4.0		1.0		0.3						1.8
		AVERAGE	N / R	6.0	N / R	2.0	N / R	0.5	N / R	N / R	N / R	N / R	N / R	2.8
		HIGH		8.0				0.8						4.4
VIDEO DETECTION SYSTEM	DAYS/ INTERSECTI	LOW	30.0				1.0	0.5						10.5
		AVERAGE	21.0	N / R	N / R	N / R	2.0	1.0	N / R	N / R	N / R	N / R	N / R	8.0
		HIGH	10.0				3.0	1.5						4.8

PRODUCTION RATES

BRIDGE CONSTRUCTION (NEW)

ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
SUBSTRUCTURE EXCAVATION	CY / DAY	LOW				100.0	35.0	30.0	20.0	3.0		90.0		39.7
		AVERAGE		N / R	N / R	175.0	75.0	100.0	40.0	22.0	65.0	111.0	80.0	74.2
		HIGH				250.0	115.0	200.0	70.0	36.0		124.0		132.5
DRIVE PILING	LF / DAY	LOW	120.0	100.0	80.0	56.0	200.0	250.0	80.0	166.0		30.0		120.2
		AVERAGE	240.0	250.0	200.0	466.0		500.0	250.0	212.0	354.0	648.0	N / R	346.7
		HIGH	300.0	500.0	300.0	875.0	400.0	1000.0	450.0	322.0		2057.0		689.3
FOOTINGS, COLUMNS, & CAPS (3 COLUMN BENTS)	DAYS / EACH	LOW	10.0	10.0	35.0	21.0	10.0	10.0	8.0	24.0				16.0
		AVERAGE	7.0	7.0	25.0	6.0	8.0	7.0	10.0	16.0	8.0	N / R	15.0	10.9
		HIGH	6.0	5.0	18.0	4.0	6.0	5.0	13.0	10.0				8.4
BUILD ABUTMENTS	DAYS / EACH	LOW	12.0	5.0	21.0	12.0	15.0	5.0	2.0	12.0				10.5
		AVERAGE	6.0	4.0	15.0	7.0	6.0	3.0	4.0	7.0	4.0	N / R	10.0	6.6
		HIGH	5.0	3.0	10.0	1.0	3.0	2.0	6.0	5.0				4.4
P/S I-GIRDER ERECTION	DAYS / SPAN	LOW	3.0	2.0		2.0	2.0	12.0	2.0	3.5		1.0		3.4
		AVERAGE	2.0	1.0	N / R	2.0	1.0	8.0	3.0	3.0	0.8	1.0	1.0	2.3
		HIGH	0.5	0.5		2.0	0.5	4.0	5.0	2.0		1.0		1.9
STRUCTURAL DECK CONCRETE	CY / DAY	LOW	125.0	125.0		119.0	200.0	150.0	150.0	75.0		300.0		155.5
		AVERAGE	250.0	250.0	N / R	360.0	400.0	350.0	260.0	200.0	450.0	773.0		173.3
		HIGH	375.0	400.0		600.0	600.0	500.0	300.0	370.0		1941.0		635.8
ERECTING STRUCTURE STEEL	LB / DAY	LOW	20000.0	50000.0		100000.0	50000.0	15000.0	26000.0	25000.0				40857.1
		AVERAGE	70000.0	87500.0	N / R	150000.0	100000.0	45000.0	40000.0	48000.0	20265.0	N / R	N / R	70095.6
		HIGH	120000.0	125000.0		200000.0	150000.0	75000.0	60000.0	65000.0				113571.4
ROCK SOCKETS (3' DIA. AND UNDER)	LF / DAY	LOW		5.0		50.0		20.0	5.0	5.0				17.0
		AVERAGE	N / R	10.0	6.0	75.0	N / R	50.0	10.0	10.0	N / R	N / R	N / R	26.8
		HIGH		30.0		100.0		100.0	15.0	15.0				52.0
ROCK SOCKETS (OVER 3' DIA.)	LF / DAY	LOW		5.0	10.0	40.0	10.0	15.0	5.0					14.2
		AVERAGE	N / R	10.0	25.0	60.0	15.0	40.0	10.0	N / R	N / R	N / R	N / R	26.7
		HIGH		20.0	35.0	80.0	20.0	80.0	15.0					41.7
DRILLED SHAFTS (3' DIA. AND UNDER)	LF / DAY	LOW		50.0		150.0		40.0	40.0					70.0
		AVERAGE	N / R	100.0		213.0	N / R	80.0	60.0		N / R	N / R	N / R	113.3
		HIGH		200.0		275.0		150.0	100.0					181.3
DRILLED SHAFTS (OVER 3' DIA.)	LF / DAY	LOW		50.0	10.0	125.0	25.0	30.0	30.0					45.0
		AVERAGE	N / R	100.0	25.0	188.0	50.0	60.0	50.0	N / R	N / R	N / R	N / R	78.8
		HIGH		200.0	35.0	250.0	75.0	120.0	70.0					125.0
SAFETY BARRIER CURB	LF / DAY	LOW	44.0	100.0	200.0	300.0	300.0	100.0	100.0	90.0				154.3
		AVERAGE	78.0	250.0	600.0	650.0	400.0	250.0	300.0	220.0	507.0	620.0	60.0	357.7
		HIGH	150.0	500.0	900.0	1000.0	500.0	500.0	600.0	350.0				562.5

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PRODUCTION RATES

BRIDGE CONSTRUCTION (NEW) (CONT.)

ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
BRIDGE APPROACH SLAB	DAYS / EACH	LOW	8.0	5.0	15.0	8.0	10.0	2.0	3.0	5.0				7.0
		AVERAGE	5.0	3.0	8.0	5.0	7.5	3.0	5.0	3.0	1.5	1.0	4.0	4.2
		HIGH	4.0	2.0	3.0	1.0	5.0	4.0	6.0	2.0				3.4
P/S PRE-CAST PANELS (ERECTING)	DAYS / SPAN	LOW	2.0	1.0	3.0	1.0	3.0	3.0	2.0	2.2		7.0		2.7
		AVERAGE	1.0	0.5	2.0	1.0		1.0	0.8	1.4	0.5	3.0	1.0	1.2
		HIGH	0.5	0.3	1.0	1.0	2.0	0.5	0.5	0.5		0.3		0.7
BRIDGE PAINTING	SF / DAY	LOW		500.0		400.0		300.0		400.0				400.0
		AVERAGE	N / R	1000.0	N / R	2700.0	N / R	1000.0	N / R	10000.0	N / R	N / R	N / R	3675.0
		HIGH		2000.0		5000.0		2500.0		1950.0				2862.5
FABRICATING & FURNISHING STEEL GIRDER	DAYS / SPAN	LOW		21.0						5.0				13.0
		AVERAGE	N / R	14.0	N / R	N / R	N / R	N / R	N / R	4.0	N / R	N / R	N / R	9.0
		HIGH		7.0						2.0				4.5
FABRICATING & FURNISHING P/S I-GIRDER	DAYS / SPAN	LOW		28.0			20.0			5.0				17.7
		AVERAGE	N / R	21.0	N / R	N / R		N / R	N / R	3.0	N / R	N / R	N / R	12.0
		HIGH		14.0			8.0			2.0				8.0
PREBORING	LF / DAY	LOW	105.0	50.0		90.0	50.0	100.0	40.0	80.0				73.6
		AVERAGE	130.0	125.0	N / R	245.0	75.0	250.0	100.0	120.0	85.0	207.0	N / R	148.6
		HIGH	200.0	250.0		400.0	100.0	500.0	200.0	270.0				274.3
TEMPORARY BRIDGE ERECTING & DISMANTLING	DAYS	LOW	14.0	25.0			20.0			18.0				19.3
		AVERAGE	10.0	15.0	N / R	N / R		N / R	N / R	14.0	N / R	N / R	N / R	13.0
		HIGH	6.0	10.0				10.0			12.0			9.5

PRODUCTION RATES

BRIDGE RECONSTRUCTION

ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
BRIDGE REMOVAL	SF / DAY	LOW	400.0	500.0		500.0	500.0	1000.0		400.0				550.0
		AVERAGE	700.0	1500.0	N / R	1750.0		3000.0	170.0	600.0	430.0	N / R	1000.0	1143.8
		HIGH	1200.0	2500.0		3000.0	1500.0	5000.0		1000.0				2366.7
REMOVE BRIDGE DECK	SF / DAY	LOW	400.0	500.0	500.0	800.0	500.0	1000.0		850.0				650.0
		AVERAGE	500.0	1250.0	1500.0	840.0		3000.0	550.0	1300.0	N / R	N / R	3000.0	1492.5
		HIGH	1200.0	2000.0	2000.0	1600.0	1500.0	5000.0		2100.0				2200.0
MILL DECK (1/4")	SF / DAY	LOW		1000.0		1200.0	2000.0	2000.0		3800.0				2000.0
		AVERAGE	N / R	3500.0	N / R	2400.0		5000.0	8000.0	5200.0	N / R	N / R	6000.0	5016.7
		HIGH		10000.0		3600.0	4000.0	10000.0		7500.0				7020.0
ASPHALT OVERLAY	SF / DAY	LOW	1000.0	2500.0		3000.0	1000.0	2000.0		11000.0				3416.7
		AVERAGE	2000.0	7500.0	N / R	3500.0		5000.0	N / R	14000.0	N / R	N / R	N / R	6400.0
		HIGH	2500.0	15000.0		4000.0	3000.0	10000.0		19000.0				8916.7
LOW SLUMP OVERLAY	SY / DAY	LOW		2000.0		400.0	500.0	300.0		650.0				770.0
		AVERAGE	N / R	5000.0	N / R	700.0		600.0	N / R	900.0	N / R	N / R	600.0	1560.0
		HIGH		10000.0		1000.0	1500.0	1000.0		1600.0				3020.0
EPOXY POLYMER CONCRETE OVERLAY	SF / DAY	LOW	1000.0	1000.0				1000.0		265.0		1304.0		913.8
		AVERAGE	2000.0	2000.0	N / R	N / R	N / R	2500.0	N / R	372.0	N / R	1472.0	100.0	1407.3
		HIGH	4000.0	3000.0				5000.0		665.0		1640.0		2861.0
EXPANSION JOINT REPLACEMENT	LF / DAY	LOW	10.0	10.0		2.0	10.0	35.0		60.0				21.2
		AVERAGE	16.0	50.0	N / R	76.0		75.0	N / R	85.0	N / R	N / R	40.0	57.0
		HIGH	32.0	100.0		150.0	35.0	150.0		175.0				107.0
RAILING RECONSTRUCTION	LF / DAY	LOW						50.0		77.0				63.5
		AVERAGE	N / R	N / R	N / R	N / R	N / R	100.0	N / R	145.0	N / R	N / R	100.0	172.5
		HIGH						200.0		180.0				190.0
REINFORCEMENT BARS (SUBSTRUCTURE)	LB / DAY	LOW	2000.0	500.0		2000.0		1000.0	700.0	1600.0				1300.0
		AVERAGE	4100.0	2000.0	N / R	3000.0	N / R	3500.0	1200.0	4100.0	N / R	N / R	N / R	2983.3
		HIGH	5000.0	3500.0		4000.0		5000.0	3000.0	6700.0				4533.3
REINFORCEMENT BARS (SUPERSTRUCTURE)	LB / DAY	LOW	3000.0	1000.0		4000.0		3500.0	7000.0	1920.0				3403.3
		AVERAGE	8500.0	3000.0	N / R	6000.0	N / R	7500.0	8000.0	4560.0	N / R	N / R	N / R	6260.0
		HIGH	10000.0	5000.0		8000.0		10000.0	10000.0	7700.0				8450.0
CONCRETE DECK REPAIR (HALF SOLING)	SF / DAY	LOW	50.0	100.0	200.0	75.0	50.0	10.0		49.0		90.0		78.0
		AVERAGE	100.0	250.0	300.0	113.0		50.0	N / R	135.0	N / R	594.0	50.0	199.0
		HIGH	250.0	500.0	500.0	150.0	200.0	100.0		186.0		981.0		358.4
CONCRETE DECK REPAIR (FULL DEPTH)	SF / DAY	LOW	25.0	50.0		10.0	25.0	10.0		40.0				26.7
		AVERAGE	75.0	200.0	N / R	605.0		50.0	N / R	85.0	N / R	N / R	50.0	177.5
		HIGH	150.0	300.0		1200.0	100.0	100.0		115.0				327.5

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PRODUCTION RATES

BRIDGE RECONSTRUCTION (CONT.)

ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
BRIDGE SLAB EDGE REPAIR	LF / DAY	LOW	25.0	25.0		100.0	30.0	20.0		27.0				37.8
		AVERAGE	50.0	50.0	N / R	175.0		75.0	N / R	48.0	N / R	N / R	75.0	78.8
		HIGH	75.0	75.0		250.0	100.0	150.0		72.0				120.3
UNFORMED SUPERSTRUCTURE REPAIR	SF / DAY	LOW	5.0			40.0	20.0	10.0		42.0				23.4
		AVERAGE	25.0	N / R	N / R	370.0		30.0	N / R	96.0	N / R	N / R	30.0	110.2
		HIGH	50.0			700.0	75.0	50.0		165.0				208.0
UNFORMED SUBSTRUCTURE REPAIR	SF / DAY	LOW	5.0			40.0	20.0	10.0		25.0			12.0	18.7
		AVERAGE	25.0	N / R	N / R	80.0		50.0	N / R		N / R	N / R		39.0
		HIGH	75.0			120.0	75.0	75.0		100.0				89.0
CLEAN AND REPAINT BRIDGE	SF / DAY	LOW		2500.0		3000.0		560.0						2020.0
		AVERAGE	N / R	7500.0	N / R	3750.0	N / R	11000.0	N / R	N / R	N / R	N / R	N / R	7416.7
		HIGH		10000.0		4500.0		14000.0						9500.0

PRODUCTION RATES

DAYS BASED ON NUMBER OF SPANS & DEGREE OF DIFFICULTY														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
TWO SPANS	DAYS	LOW		120.0		62.0			38.0	135.0				88.8
		AVERAGE	N / R	60.0	N / R	57.0	N / R		50.0	95.0	N / R	N / R	75.0	84.3
		HIGH		40.0		52.0			55.0	40.0				37.4
THREE SPANS	DAYS	LOW	105.0	120.0		93.0	45.0		47.0	105.0				85.8
		AVERAGE	75.0	80.0	N / R	86.0	40.0		60.0	75.0	N / R	N / R	120.0	89.3
		HIGH	50.0	50.0		78.0	35.0		64.0	55.0				55.3
FOUR SPANS	DAYS	LOW	120.0	120.0		124.0			75.0	130.0				113.8
		AVERAGE	85.0	90.0	N / R	114.0	N / R		100.0	110.0	N / R	N / R	160.0	131.8
		HIGH	65.0	60.0		104.0			125.0	75.0				71.5

MOBILIZATION / DEMOBILIZATION (TOTAL FOR BOTH)														
ITEM	UNIT		DIST 1	DIST 2	DIST 3	DIST 4	DIST 5	DIST 6	DIST 7	DIST 8	DIST 9	DIST 10	AGC	AVG
BRIDGE OVER MAJOR RIVER OR LAKE	DAYS	LOW		15.0			10.0	7.0	10.0	30.0				14.4
		AVERAGE	N / R	20.0	N / R	75.0	11.0	10.0	15.0		N / R	N / R	N / R	26.2
		HIGH		30.0			12.0	15.0	25.0	60.0				28.4
GRADING	DAYS	LOW	1.0	5.0	3.0	2.0	7.0	3.0		5.0				3.7
		AVERAGE	4.0	14.0	5.0	31.0	8.0	6.0	10.0		N / R	N / R	6.0	10.5
		HIGH	7.0	30.0	8.0	60.0	9.0	9.0		20.0				20.4
BITUMINOUS PAVING	DAYS	LOW	1.0	1.0			2.0	3.0	1.0	2.0				1.7
		AVERAGE	2.0	3.0	N / R		3.0	6.0	2.0		N / R	N / R	N / R	3.2
		HIGH	3.0	5.0			4.0	9.0	3.0	8.0				5.3
PORTLAND CEMENT PAVING	DAYS	LOW	2.0	3.0	3.0	2.0	10.0	3.0	8.0	10.0				5.1
		AVERAGE	4.0	5.0	5.0		20.0	6.0	16.0		N / R	N / R	10.0	9.4
		HIGH	6.0	7.0	8.0		30.0	9.0	25.0	25.0				15.7
GRADING & PAVING (P.C.C.)	DAYS	LOW	4.0	10.0		3.0	10.0	5.0	15.0	10.0				8.1
		AVERAGE	8.0	20.0	N / R	5.0	15.0	8.0	20.0		N / R	N / R	15.0	13.0
		HIGH	12.0	30.0		6.0	20.0	12.0	30.0	25.0				19.3
GRADING & PAVING (BIT.)	DAYS	LOW	4.0	10.0		2.0	9.0	5.0	10.0	5.0				6.4
		AVERAGE	8.0	20.0	N / R	3.0	10.0	8.0	15.0		N / R	N / R	N / R	10.7
		HIGH	12.0	30.0		4.0	11.0	11.0	20.0	20.0				15.4
GRADING, PAVING (BIT.) & BRIDGES	DAYS	LOW	10.0	10.0		4.0	14.0	10.0	25.0	10.0				11.9
		AVERAGE	15.0	20.0	N / R	6.0	15.0	15.0	30.0		N / R	N / R	20.0	17.3
		HIGH	20.0	30.0		7.0	16.0	20.0	35.0	25.0				21.9
GRADING, PAVING (P.C.C.) & BRIDGES	DAYS	LOW	10.0	10.0		4.0	10.0	10.0	25.0	15.0				12.0
		AVERAGE	15.0	20.0	N / R	6.0	15.0	15.0	30.0		N / R	N / R	25.0	18.0
		HIGH	20.0	30.0		8.0	20.0	20.0	35.0	30.0				23.3