

MDOT ROADWAY & BRIDGE PRODUCTION RATES				
Work Item	Production Rate			Comments
	Low	Average	High	
Cross Culvert	75 LF/Day	125 LF/Day	200 LF/Day	Use Low rate for 48" Equivalent culvert, Average rate for 24" Equivalent culvert, and High rate for 15" Equivalent culvert.
CIP Headwalls (Not Outlet Endings)	6 Days/Unit	5 Days/Unit	4 Days/Unit	Use Low rate for more congested areas with less equipment access and more traffic control requirements, and High rate for rural areas where equipment access and traffic control is less restrictive.
Concrete Slab/Box Culverts - Constructed	20 CY/Day	50 CY/Day	80 CY/Day	Rate is dependent upon size, depth and ease of access. Use Low rate for larger culverts, Average for medium size, High for smaller culverts.
Concrete Slab/Box Culverts - Precast	50 LF/Day	100 LF/Day	150 LF/Day	Rate is dependent upon size & depth, ease of access. Low production for larger culverts, Average for medium sizes, High for smaller culverts.
Open-Graded Underdrain	750 LF/Day	1,500 LF/Day	3,500 LF/Day	Use Low rate for areas with rocky soils, smaller projects, and/or larger trench dimensions that can't get into production mode. Typical rate based on the use of a standard tile machine in more typical situations. Use High rate for more rural areas with lighter soils and long open runs.
Round Concrete with Gaskets - Up to 60" Depth	40 LF/Day	70 LF/Day	135 LF/Day	Use Low rate for pipe from 36" to 72", use Average rate for pipe measuring 24" to 36", and High rate for pipe up to 24" diameter.
Reinforced Elliptical Pipe - Up to 60" Depth	22 LF/Day	52 LF/Day	82 LF/Day	Use Low rate for 58" x 91" (72" Equivalent), use Average rate for 29" x 45" (36" Equivalent), and High rate for 14" x 23" (18" Equivalent).
6' Diameter and Over - (Up to 60" depth)	40 LF/Day	70 LF/Day	80 LF/Day	Use Low rate for poor soil conditions/congested areas with higher traffic control requirements, and crane requirements. Use Average rate for more typical situations such as less traffic control requirements/better soil conditions and more open areas. Use High rate for larger open areas with good soil conditions/light traffic conditions.
6' Diameter and Over - (Over 60" depth)	40 LF/Day	55 LF/Day	65 LF/Day	Use Low rate for deeper excavations and poor soil conditions/trench box/shoring requirements, and congested areas with high traffic conditions, Average rate for more typical conditions and High rate in larger open areas, no crane requirements, and less traffic control requirements.
Jacked-in-Place Pipe - 12" to 48" (Include excavation pit & set up - Add Minimum of 5 Days)	20 LF/Day	30 LF/Day	40 LF/Day	Use Low rate for larger diameter pipe/congested areas/higher level of traffic control/poor soil conditions, use Average rate for pipe approximately 24" diameter in more open areas, and use High rate for smaller pipe diameter/open areas/excellent soil conditions and light traffic control requirements.
Manholes	3 Units/Day	4 Units/Day	5 Units/Day	Use Low rate for deeper/larger diameters/congested areas/random locations, use Average rate for medium depth/average diameter/ more typical situations, and use High rate for shallow depths/manholes in-line/lighter traffic control requirements.
Catch Basins	3 Units/Day	5 Units/Day	8 Units/Day	Use low rate for constructed units/congested areas/higher traffic control requirements, use Average rate for more typical situations, use High rate for precast units/in-line locations, open areas with lighter traffic control requirements.
Water Main - Ductile Iron Pipe, Mechanical Joints (Include Flushing/Testing/Chlorination Add Minimum of 4 days)	60 LF/Day	110 LF/Day	200 LF/Day	Use Low rate for 24" pipe, Average rate for 12" pipe, and High rate for 6" pipe. Lower production rates will apply to pipe larger than 24" diameter.
Lead Time - Order & Deliver 24" HP Water Main	45 Days/Order	30 Days/Order	20 Days/Order	This can be either Ductile or C900 if pressure allows. Fittings, valves, and pipe for a reasonable quantity can get procured within 1 month of purchase, larger orders will require additional time, but can be staggered depending on needs. Assume most orders are able to get some material on the jobsite within 1 month. If small quantity may be shorter.
Gas Lines	272 LF/Day	352 LF/Day	544 LF/Day	Use Low rate for 8" line, Average rate for 4" line, and High rate for 1" line. For SDR 11 piping material. Does not include excavation or backfill.
Removing Old Pavement (Bituminous)- Not Milling	1,000 SY/Day	2,000 SY/Day	3,500 SY/Day	Removal is done using excavators and mechanical breakers. Use Low rate for restrictive access areas and thicker pavement, Average rate for more typical areas, and High rate for thinner asphalt courses and easier equipment access/low traffic control requirements.
Removing Existing Pavement for Recycling (24 ft. width)	2,000 SY/Day	3,600 SY/Day	4,500 SY/Day	This can vary between concrete reinforced, asphalt, or non reinforced (assume 10" - 12"). If utilized for recycling, the main factor will be trucking and how quickly it can be processed once broken up. Guillotine / Hammer Hoe can be around 4,000 SY/Day then factor in haul out. Low end would include processing out rebar etc., with some traffic control restrictions. High end assumes asphalt for removal.
Removing Trees (Urban)	9 Units/Day	12 Units/Day	21 Units/Day	Use High rate for trees up to 6" diameter, Average rate for trees 14" to 24" diameter, and Low rate for trees 26" to 36" diameter. Does not include stump removal.
Removing Trees (Rural)	25 Units/Day	37 Units/Day	52 Units/Day	Rural tree removal will increase by a factor of 2.5. Use High rate for trees up to 6" diameter, Average rate for trees 14" to 24" diameter, and Low rate for trees 26" to 36" diameter. Does not include stump removal.
Removing Concrete Pavement	1,000 SY/Day	1,500 SY/Day	4,000 SY/Day	Use Low rate for congested areas/large cities/high traffic volume, use AVERAGE rates smaller cities & towns/fewer buildings & obstacles/easier equipment access, HIGH rate for rural & open areas/minimal building & obstructions/larger areas and unimpeded equipment access.
Removing Sidewalk	200 SY/Day	1,500 SY/Day	2,500 SY/Day	Use Low rate for congested area/ adjacent areas requiring protection/difficult equipment & truck access, use Average rate for more open areas and easier access, use High rate for long runs of straight sidewalk in open areas.
Removing Curb & Gutter	1,000 LF/Day	1,500 LF/Day	3,000 LF/Day	Use Low rate when performed concurrently with removal of thick pavement section or congested area, high rate for rural areas and thin pavement sections.
Removing HMA Surface	1,600 SY/Day	4,800 SY/Day	7,000 SY/Day	Use Low rate when performed concurrently with removal of thick pavement section or congested area, High rate for rural areas and thin pavement sections.
Conditioning Aggregate - Includes adding material/mixing & scarifying/grading & shaping/rolling.	1,500 SY/Day	3,500 SY/Day	4,000 SY/Day	Use Low rate for smaller areas requiring less conditioning, use Average rate for typical conditioning requirements, and High rates for base requiring minimal material/scarifying & shaping added.
HMA Base Stabilizing	3,000 SY/Day	4,000 SY/Day	6,000 SY/Day	Use Low rate for 8" thick base, use Average rate for 6" thick base, and use High rate for 4" thick base.
Ditching	1,100 LF/Day	1,900 LF/Day	2,400 LF/Day	Use the Low rate for larger ditches excavated in congested areas with difficult equipment access and heavier traffic controls, use Average rate for more typical situations and High rate for smaller ditches excavated in rural areas with open equipment access and minimal traffic control requirements.
Trenching for Shoulders	1,100 LF/Day	1,900 LF/Day	2,400 LF/Day	
Clearing & Grubbing - Includes stump removal	1 Acre/Day	2 Acre/Day	3 Acre/Day	Use "High" rate for land where the vegetation is composed mostly of smaller trees (saplings) and light brush. "Average rate to be used where the existing vegetation is mostly medium-size trees (10" to 14") and medium-density underbrush. "Low" rate to be used in those areas with established forest (trees 14" and up, and dense underbrush, as well as having very few open or unwooded spaces.
Aggregate Base	800 Ton/Day	1,200 Ton/Day	2,000 Ton/Day	Low rate for more difficult access and small areas, High rate for large open areas with easier access.
Aggregate Shoulder	400 SY/Day	700 SY/Day	1,000 SY/Day	Low rate for more difficult access and High rate for good access.
Embankment (CIP)	1,000 CY/Day	2,000 CY/Day	5,000 CY/Day	Use Low rate for large city/high traffic/high complexity/poor soil conditions and small quantities, use High rate for low traffic/low complexity/light traffic/good soils/large quantity conditions.
Embankment (Lightweight Fill)	200 CY/Day	400 CY/Day	500 CY/Day	Various different types of lightweight fill, EPS, Concrete, Fly Ash, etc. 400CY/Day is reasonable, but widely varies. Assume concrete and EPS average daily rate is 400 CY/Day. Increase 25-30% for open construction and decrease 25% for tight restricted areas. Assume low rate for EPS block at skewed bridge abutments.
Excavation (Freeway) - Plastic Soils - Dozer	900 CY/Day	2,000 CY/Day	4,000 CY/Day	Use High rate for rural areas, Average rate for Metro highway, in combination with Low rate for 300' push, Average rate for 150' push, and High rate for 50' push.
Excavation (Freeway) - Plastic Soils - Scraper	1,800 CY/Day	2,200 CY/Day	3,000 CY/Day	Use High rate for rural, Average rate for Metro highway, in combination with Low rate for 5000' haul, Average rate for 3000' haul, and High rate for 1500' haul.
Excavation (Freeway) - Granular Soils - Dozer	3,050 CY/Day	5,800 CY/Day	9,150 CY/Day	Use High rate for rural, Average rate for Metro highway, in combination with Low rate for 300' push, Average rate for 150' push, and High rate for 50' push.
Excavation (Freeway) - Granular Soils - Scraper	3,360 CY/Day	4,270 CY/Day	5,330 CY/Day	Use High rate for rural, Average rate for Metro highway, in combination with Low rate for 5000' haul, Average rate for 3000' haul, and High rate for 1500' haul.
Muck (Excavated Waste & Backfill) - Includes haul-off. Excavation completed with long-arm large excavator.	3,500 CY/Day	4,250 CY/Day	5,000 CY/Day	Rates used will depend upon soil conditions and accessibility. Use Low rate for very poor soil, Average rate for typical soils and High rate for better soils. Haul-off time for removal will also be a factor.
Excavation (Widening)	500 CY/Day	1,000 CY/Day	1,500 CY/Day	Use Low rate for smaller areas with higher traffic control requirements, Average rate for more typical situations, and High rate for larger open areas with less traffic control requirements.
Grading (Grader, Dozer, and Scraper)	400 SY/Day	1,040 CY/Day	2,000 CY/Day	Use Low rate for small, congested areas, use Average rate for larger areas/concrete slab subgrades, and High rate for larger open areas with less traffic control requirements.
Subbase & Selected Subbase	3,800 SY/Day	4,500 SY/Day	6,000 SY/Day	Rates are for 1 1/2" crushed stone, compacted. Use Low rate for 12" depth/high traffic conditions/smaller projects, Average rate for 8" depth/average conditions, and High rate for 4" depth/low traffic conditions/larger areas.

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Subgrade Undercut and Backfill	410 CY/Day	800 CY/Day	1,650 CY/Day	Use the Low rate for common Earth/300' haul, use the Average rate for common earth/150' haul, and use the High rate for common earth/50' haul. Use a factor of .65 for clay soils and 1.15 for sand/gravel.
Concrete Pavement - Mainline & Shoulder - Freeway	750 CY/Day	1,500 CY/Day	3,000 CY/Day	Additional 3 days due to cure, may be 5 days with inclement weather (7 days max).
Concrete Pavement - Mainline & Shoulder - Non-Freeway	500 CY/Day	750 CY/Day	1,500 CY/Day	Additional 3 days due to cure, may be 5 days with inclement weather (7 days max).
Concrete Pavement - Misc	100 CY/Day	300 CY/Day	500 CY/Day	Additional 3 days due to cure, may be 5 days with inclement weather (7 days max).
Concrete Pavement - Ramps - Freeway	500 CY/Day	1,000 CY/Day	1,500 CY/Day	Additional 3 days due to cure, may be 5 days with inclement weather (7 days max). Ramp production would be based on allowable closures or part width construction. If full ramp construction production will be higher.
Concrete Median Barrier	75 LF/Day	600 LF/Day	800 LF/Day	Add 7 days for cure time. Use Low rate for hand forming and High rate for slip forming
Joint Sealing	1,800 LF/Day	2,000 LF/Day	2,500 LF/Day	Use Low rate for urban areas and high traffic, High rate for light traffic and rural areas.
Curb	800 LF/Day	1,300 LF/Day	2,000 LF/Day	Use Low rate for large city/heavy traffic/small quantity, Average rate for small city/moderate traffic/medium quantity, and High rate for rural/light traffic/large quantity.
Rubblizing	1,000 SY/Day	2,000 SY/Day	4,000 SY/Day	Use Low rate for thicker existing concrete, congested areas and higher traffic control requirements, use Average rate for more typical situations, and use High rate for thinner existing concrete sections/rural areas, and less traffic control requirements.
Diamond Grinding/Profile Texturing Concrete	1,280 SY/Day	5,100 SY/Day	8,960 SY/Day	Typical grinding on reasonable access is approximately 5000 SY/Day, adjust up or down based on quantity or availability of traffic control.
Concrete Glare Screen	100 LF/Day	400 LF/Day	600 LF/Day	These rates assume that the anti glare structure is being added to existing median barriers. Use Low rate where traffic conditions restrict access and the median barrier is curved, use Average rate for typical situations and High rate where equipment and materials are easily accessed and the median is straight.
Sidewalk (Patching)	40 SY/Day	80 SY/Day	120 SY/Day	Use Low rate for areas with adjacent obstacles/difficult access/traffic re-routing, Average rate for more typical situations, and High rate for long, straight sidewalks with easier traffic access and few adjacent obstacles.
Sidewalk (Hand Placed)	500 SY/Day	625 SY/Day	700 SY/Day	Use Low rate for built-up or congested areas/curves/curb ramps/tactile warning surfaces, Average rate for more open areas/fewer runs of curved or angled sidewalk, High rate for large runs of straight sidewalk/no buildings or other obstacles. Not for ADA retrofits.
ADA Sidewalk Ramp	1 Unit/Day	2 Units/Day	3 Units/Day	Use Average rate for typical size (5' x 5" Units) units with ready access for equipment & materials, use high rates for multiple units in close proximity, use LOW rate for units in congested areas with higher traffic volumes and for retrofit applications where existing conditions demolition is required.
Concrete Patching	60 SY/Day	80 SY/Day	100 SY/Day	Use Low rate for congested area with higher traffic control requirements/ numerous small patches, Average rate for urban area, and high rate for rural areas with less traffic control requirements and/or larger patch areas.
HMA Pavement - Mainline & Shoulder- Freeway	1000 Tons/Day	1,700 Tons/Day	2,500 Tons/Day	Use Low rate for small thicknesses and small areas and High rate for large lifts and large areas.
HMA Pavement - Mainline & Shoulder - Non-freeway	600 Tons/Day	1,300 Tons/Day	2,100 Tons/Day	Use Low rate for small thicknesses and small areas and High rate for large lifts and large areas.
HMA Pavement - Misc	100 Tons/Day	200 Tons/Day	500 Tons/Day	Use Low rate for small thicknesses and small areas and High rate for large lifts and large areas.
Cold Milling	2,000 SY/Day	8,000 SY/Day	15,000 SY/Day	Use Low rate for milling thick sections with poor access and High rate for thin sections with easier access.
Overband Crack Sealing	15,000 LF/Day	17,500 LF/Day	20,000 LF/Day	Use Low rate for high-traffic areas and High rate for low traffic areas where less barricade setup and removal is required.
Repairing Pavement Joints - Detail 7/8	300 LF/Day	450 LF/Day	600 LF/Day	Includes (Detail 8) saw cutting edges, removing loose base, placement & compaction of new HMA material. Detail 7 includes saw cutting edges, partial removal of deteriorated pavement, and placement of HMA Top Course Mixture. Use Low rate for areas with higher percentage of full-depth patches and more traffic control requirements and High rate for rural areas with higher percentage of partial-depth repairs and low traffic control requirements.
Longitudinal Joint Repair	1,800 LF/Day	2,000 LF/Day	2,500 LF/Day	Use Low rate for urban areas and high traffic, High rate for light traffic and rural areas.
Cable Barrier	200 ft/day	500 ft/day	800 ft/day	
Restoration - (Topsoil/Seeding/Fertilizer & Mulch)	500 SY/Day	1,500 SY/Day	2,000 SY/Day	Use Low rate for small areas and quantities and High rate for larger open areas
Sodding	1,500 SY/Day	2,510 SY/Day	5,000 SY/Day	Rates assume all levelling, raking, and other planting bed preparation has been completed. Rates depend upon type of equipment used and terrain type/shape of area to be sodded.
Seeding	10,000 SY/Day	23,500 SY/Day	30,000 SY/Day	Rates assume all levelling, raking, and other planting bed preparation has been completed. Rates depend upon type of equipment used and terrain type/shape of area to be seeded.
Guardrail	550 LF/Day	850 LF/Day	1,000 LF/Day	Use Low rate for small sections and High rate for larger open sections with good access.
Fence (Woven Wire)	1,200 LF/Day	1,450 LF/Day	1,700 LF/Day	Rate will depend upon evenness of the terrain, obstacles, type of soil or base. Use High rate for flat terrain with no obstacles and Low rate for hilly areas and/or rocky ground.
Fence (Chain Link)	1,100 LF/Day	1,250 LF/Day	1,500 LF/Day	Rate will depend upon evenness of the terrain, obstacles, type of soil or base. Use High rate for flat terrain with no obstacles and Low rate for hilly areas and/or rocky ground. Corners and fencing around obstacles will also lower the production rate.
Reroute Traffic (Add 4 days if first item)	2 Day/Move	1 Day/Move	.5 Day/Move	Use 1 day/direction of traffic. May be able to use .5 day/direction of traffic for small shifts.
Light Pole Foundations	2 Units/Day	4 Units/Day	6 Units/Day	Use Low rate for large foundations or foundations spread out over a large distance, High rate for foundations spaced at a small distance.
Freeway Signing - 3# Post type	30 Signs/Day	50 Signs/Day	70 Signs/Day	Use Low rate for rural areas with a large distance between signs, use High rate for small signs spaced at a shorter distance.
Raised Pavement Markers	100 Each/Day	110 Each/Day	120 Each/Day	Use Low rate for larger markers (13" x 7 1/2", Average rate for medium-sized markers, and High rate for smaller markers (4" x 4").
Shoulder Corrugations - Ground or Cut	3 Miles/Side/Day	5 Miles/Side/Day	7 Miles/Side/Day	Production rate will be dependent primarily upon traffic control requirements. Use Low rate in congested/high traffic areas, Average rate for more typical situations and High rates for rural areas with relatively lighter traffic.
Thrie Beam Retrofit	80 LF/Day	120 LF/Day	200 LF/Day	Adjust production rate based on quantity, traffic control requirements, and equipment access.
CIP Retaining Wall	150 SF/Day	225 SF/Day	275 SF/Day	Assume wall height <15' with standard footing. Formliner requirements, access, height, and quantity will change production rate up or down.
MSE Retaining Wall	200 SF/Day	500 SF/Day	750 SF/Day	Production rate will increase when constructing larger walls.
MSE Retaining Wall Coping	150 LF/Day	285 LF/Day	355 LF/Day	Production rate will increase where longer lengths of coping are used.
MSE Retaining Wall - Footings/Leveling Pads	70 LF/day	180 LF/day	300 LF/day	Production rate will depend on soil conditions, equipment access, and length of wall.
Grade Temporary Runaround	500 CY/Day	1,000 CY/Day	2,000 CY/Day	Assume a typical shoo fly for production rate, a larger embankment will have increased production with larger footprint. Increase to 2000 CY/Day to match typical embankment. Smaller embankment, silver fills, or restricted areas will reduce to 500CY/Day.
Ballast/Ties & Track	150 LF/Day	200 LF/Day	400 LF/Day	This will vary depending on length of track, track protection, and mainline/spur etc. Low production rate is based on short window and low quantity. Higher production is based on large quantity, new installation, and reasonable access.
Place Deck Plates	7 Days/Span	5 Days/Span	3 Days/Span	Assume simple span two tracks and standard deck plates on through truss or similar bridge structure. Complex will require additional time.
Deck Waterproof/Shotcrete & Mastic	5 Days/Span	4 Days/Span	3 Days/Span	Typical through truss railroad structure flooded with ballast.
Railroad Crossing Reconstruction	15 Days	12 Days	5 Days	Time required is dependent upon the need to replace the concrete base and number of traffic lanes. RR traffic will also be a factor. Some rural crossings (non signalized) can be completed in shorter windows.
Sheeting, for SPT blow counts (N-values) up to 30 - Add 1 Day for Setup	350 SF/Day	750 SF/Day	1,000 SF/Day	Based on area of sheeting below cut off. Use low rate for areas with dense/hard soils with SPT blow counts (N-values) up to 30, or where tiebacks are required. Use High rate where no bracing/tiebacks are required, or for temporary sheeting. If using excavator mounted vibratory hammer (instead of crane), then cut shown production rates in half.
Cofferdam & Sheeting into dense soils, for SPT blow counts (N-values) greater than 30 - Add 1 Day for Setup	50 SF/day	75 SF/day	100 SF/day	Use high rate for soils with SPT blow counts (N-values) between 30 and 40. Use average rate for soils with SPT blow counts (N-values) greater than 40. Use low rate if using excavator mounted vibratory hammer. These rates are for installation, use other provided rates for extraction.
Temporary Sheeting - Drive and Remove	485 SF/Day	540 SF/Day	560 SF/Day	Use Low rate for 25' depth, use Average rate for 20' depth and High rate for 15' depth. 25' sheet piling will be 38 PSF material. If using excavator mounted vibratory hammer (instead of crane), then cut shown production rates in half.
Cofferdam - Add 1 Day for Setup	290 SF/Day	380 SF/Day	545 SF/Day	Use Low rate for cofferdams 36' to 45" in depth. Average rate for 23' to 35' in depth, and High rate for 15' to 22' in depth. If using excavator mounted vibratory hammer (instead of crane), then cut shown production rates in half.

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Cofferdam Excavation	100 CY/Day	200 CY/Day	300 CY/Day	Use Low rate for difficult to reach excavations requiring a clamshell excavator, Use Average rate for deeper excavations where an long-arm excavator may be used, and High rate for easy-access areas where a regular excavator may be used.
Excavation for Substructure	55 CY/Day	144 CY/Day	200 CY/Day	Use Low rate for 1/2 CY bucket excavator, Average rate for 1 1/2 CY bucket and High rate for a 2 CY bucket. All rates apply to excavations in common earth. Rates do not include cofferdams.
Substructure - Tremie	2 Days/Unit	1 Day/Unit	.5 Days/Unit	Assume standard tremie pour for footing, most applications will require one day, 2 days/unit is for a pour that requires bulkheads or additional stage.
Substructure - Footing	10 CY/Day	20 CY/Day	30 CY/Day	Rates will depend on size and complexity of footing
Substructure - Pier Column	16 VLF/Day	28 VLF/Day	40 VLF/Day	Based on a 36" diameter column
Substructure - Abutment	10 CY/Day	15 CY/Day	20 CY/Day	Typical roadway bridge construction, additional time will be needed for complex or architectural requirements.
Pier Cap	3 CY/Day	6 CY/Day	10 CY/Day	Includes forming, tying, pouring. Add time for curing and stripping forms.
General Excavation at Bridge Site	700 CY/Day	930 CY/Day	1,120 CY/Day	Use Low rate based on a 1 1/2 CY bucket, use Average rate for 2 CY bucket and High rate for a 3 CY bucket. Add 60% for heavy/clay soil, deduct 15% for soft soil/sand
Piles (60" - Steel Pipe & H)	5 Piles/Day	10 Piles/Day	15 Piles/Day	Add 1 day for setup.
Micropiles	1 Unit/Day	2 Units/Day	3 Units/Day	Allow two weeks for verification and proof test before getting into production.
Full Penetration Weld Splices	3/Day/Man	4/Day/Man	5/Day/Man	Assumes passing visual inspection. Can usually be done concurrently with pile driving.
Splice Plate Welding	5/Day/Man	7/Day/Man	9/Day/Man	Assumes passing visual inspection. Can usually be done concurrently with pile driving.
Concrete Beam Erection	4 Beams/Day	6 Beams/Day	8 Beams/Day	Assume low end production is large beams, difficult access or hard picks, and high end production assumes extended hours, simple erection and reasonable access.
Steel Beam Erection	4 Pieces/Day	5 Pieces/Day	6 Pieces/Day	Assuming pieces are plate girders, and standard roadway structures will vary from complex curved or multi-tiered overpasses. Utilizing production rates assuming weekend or night time shut downs.
Concrete Diaphragms	1 Ea/Day	2 Ea/Day	4 Ea/Day	Use Low rate for bridges having easier access/shorter spans/equipment access restrictions, use average rate for bridges work conducted under typical conditions, and high rate for new work, open equipment access, smaller spans/diaphragms.
Steel Diaphragms	5 Ea/Day	10 Ea/Day	15 Ea/Day	Use Low rate for bridges having easier access/shorter spans/equipment access restrictions, use average rate for bridges work conducted under typical conditions, and high rate for new work, open equipment access, smaller spans/diaphragms.
Post Tensioning	80 LF/Day	100 LF/Day	150 LF/Day	Assume this is based on 1/2" post tension strand 12 - 19 strand tendons. Rates do not include anchorages, blisters, and duct installation. The rates do include Stress/Grout/Cure/Air Testing.
Bridge Deck - Form & Place Rebar (150 ft. Structure)- Assume two lane/bike path/barrier. Lane closures/working hours/access	18 Days	15 Days	13 Days	Assume typical 150 LF span, and typical roadway bridge. Additional time will be needed for complex multi-tiered structure, or partial construction.
Bridge Deck - Pour	1 Day/Pour	1 Day/Pour	1 Day/Pour	Assume one day per pour, does not include cleaning deck and dry run of Bidwell.
Bridge Deck - Cure	7 Days	7 Days	7 Days	7 day wet cure is required.
Bridge Sidewalks & Parapets	75 LF/Day	100 LF/Day	125 LF/Day	Assumes typical roadway bridge, additional time will be needed for architectural parapet, or additional sidewalk and requirements.
Barriers - Hand formed	45 LF Day	60 LF/Day	80 LF/Day	Production can be adjusted up or down based on quantity of barrier, and site requirements. If barrier has high quantity and forms can be cycled then production rate may be adjusted.
Clean Up To Open Bridge To Traffic	4 Day/Bridge	2 Days/Bridge	1 Days/Bridge	This activity is typically concurrent with construction activities, assume this is prior to opening to traffic, not demobilization.
Pedestrian Fencing - Plan Approval & Fabrication	3 Months	2 Months	1 Month	Rates will be based on design complexity and quantity.
Pedestrian Fencing - Erection	75 LF/Day	100 LF/Day	125 LF/Day	Rates will be based on design complexity and quantity.
Riprap Placement	100 CY/Day	300 CY/Day	200 CY/Day	Use Low rate for steep slopes/silver fills/smaller projects, use average rate for typical slopes, medium-sized projects, and high rate for larger open areas with minimal slopes. Use High rates for Class 1 through 3 (Max 22" size stone) and Low rates for Class 4 & 5 (Stone larger than 22")
Drilled Shafts	.25 Shaft/Day	.5 Shaft/Day	1 Shaft/Day	Assume 4' to 6' shafts 50' - 75' in depth. Minimum two days mobilization in / out, and depending on number of shafts, may be able to drill numerous in a shift. Assume 1 week between first test shaft and production shafts.
Bridge Painting - Includes lane closure requirements, cleaning (SP10 Level), overspray protection placement & removal.	7 Days/Lane	6 Days/Lane	5 Days/Lane	All repainting will be done using SP10 cleaning (abrasive blast to near white metal), and includes traffic controls, setup and cleanup. Use Low rate for longer bridges with higher requirements for traffic control, Average rate for typical bridge size and traffic control requirements, and High rates for shorter bridges with minimal traffic control requirements.
Pin & Hangar Replacement	3 Beams/Day	4 Beams/Day	5 Beams/Day	Use average 4 days/set. Weather and/or manpower may influence production. Equipment access and traffic control requirements will affect the rate of replacement.
Pin & Hangar Replacement - Order Pin & Hangar Lead Time	60 Days	60 Days	60 Days	Order and lead time will vary only if extra costs are incurred to expedite.
Scarifying / Hydro - Including Cleanup	1,000 SF/Day	1,500 SF/Day	1,800 SF/Day	Assumes 2" to 4" hydrodemolition. Low production rates factor in thicker hydrodemolition higher rate is at the 2" depth hydrodemolition.
Bridge Deck Overlay	200 SY/Day	350 SY/Day	500 SY/Day	Based on other previous production rates, and assumes grinding or scarifying already completed. Deck set rail, and one day pour - requires cure time.
Cure Bridge Deck Overlay	7 Days	7 Days	7 Days	Rigid overlay cure varies from 3 to 7 days depending on temperature.
Expansion Joint Replacement	10 LF/Day	20 LF/Day	25 LF/Day	This rate is dependent on availability of lane closure, and type of expansion joint.
Barrier Removal - Demo	250 LF/Day	390 LF/Day	430 LF/Day	Use Low rate for areas with restricted access and higher traffic control requirements, and remove/reset, Average rate for more typical situations and remove/reset and High rate for rural areas with open equipment access and lower traffic control requirements and remove/store.
Hand Chipping - Other Than Deck	.25 CY/Day per Person	.35 CY/Day per Person	.5 CY/Day per Person	Assume work is completed over small areas with manual and hand-held power tools.
Beam End Repairs/Steel Repairs - Welded Repairs Includes grinding/cleaning, setup, welding & testing.	1 Day/Repair	.75 Days/Repair	.5 Days/Repair	Rate would increase with additional crew and easier access, decrease with additional lift/reach equipment requirements.
Beam End Repairs/Steel Repairs - Bolted Repairs - Includes drilling/fastening, equipment setup, testing.	1 Day/Repair	.5 Days/Repair	.25 Days/Repair	Rate would increase with additional crew and easier access, decrease with additional lift/reach equipment requirements.
Beam End Repairs/Steel Repairs - Bolted Stiffeners (Pair), Welded Stiffeners, Grinding Beam Ends.	1 Day/Repair	.5 Days/Repair	.25 Days/Repair	Rate would increase with additional crew and easier access, decrease with additional lift/reach equipment requirements.
Beam End Repairs - H Pedestal Repairs - Welded Repair	1 Day/Repair	.5 Days/Repair	.25 Days/Repair	Rate will depend on size, complexity, and ease of equipment access.
Beam End Repairs - H Pedestal Repairs - Replacement	1.5 Days/Repair	1 Day/Repair	.5 Days/Repair	Rate will depend on size, complexity, and ease of equipment access.
Deck Patching	400 SF/Day	650 SF/Day	800 SF/Day	Productivity will adjust based on new structure/old structure, crew size, and allowable work area.
Deck Removal	140 SY/Day	280 SY/Day	420 SY/Day	This assumes low end production rate will require hand chipping, restricted access, and higher production rates are assuming reasonable access, dropping deck with hammer hoe, etc.
Thin Epoxy Overlay	400 SY/Day	560 SY/Day	720 SY/Day	Varies depending on CSP levels, shot blasting requirements, and level of cracking. Need a minimum of 2 hour cure per each layer, and assumes deck preparation to medium scarification.
Healer Sealer	880 SY/Day	2,500 SY/Day	3,100 SY/Day	May vary depending on level of surface preparation or quantity. Also traffic control may drive production rate. Based on previous applications - add 2 hour cure.
Substructure Patching	480 SF/Day	600 SF/Day	800 SF/Day	Use High rate for minor cosmetic patching points, Average rate for larger/deeper patches and Low rate for patches requiring structural reinforcement. Production will also depend on access off grade, ladders, manlifts, etc.
Concrete Surface Coating	1,600 SF/Day	2,100 SF/Day	2,700 SF/Day	Assume some minor surface prep, and reasonable access with a small crew. Production rate will be lower if manlifts, ladders, etc. are required.
Expansion Joint Removal and Replacement	5 LF/Day	10 LF/Day	15 LF/Day	Use Low rate for larger joints/congested areas with more restrictive traffic controls, Average rate for more typical situations, and High rate where traffic control and equipment access is less difficult/smaller joints. +3 days for cure