The practice of scheduling overtime in machine-paced fabricating and other types of manufacturing operations is widespread. Perhaps some scheduled overtime to maintain production schedules is less costly than bringing new employees into the workforce in some repetitive, machine-paced factory operations. However, any advantages of scheduled overtime which might be found in manufacturing do not apply to construction. Non-repetitive work, fatiguing physical labor and other features make construction work far different from machine-paced factory employment.

Scheduled overtime is seldom found on competitively-bid firm-price contracts; most contractors are mindful of some of the deleterious effects of overtime on costs and productivity. However, particularly on large cost-reimbursable projects, scheduled overtime is sometimes ordered by owners or construction managers in an effort to accelerate completion, make up for previous delays, complete as originally scheduled a project which has been increased in size and complexity by change orders, or compensate for shortages of skilled construction workers in the area. One of the worst but most common reasons is to use overtime premium pay to induce needed workers to leave other jobs and accept employment on the project on which the overtime is scheduled.

Simple arithmetic shows that premium pay for double time or time and one-half makes overtime work much more expensive. However, people who insist on overtime seldom realize that other costs associated with overtime may be even more significant than premium pay. Premiums affect only overtime hours, but continuing...
scheduled overtime drastically affects costs of all hours. All available research findings indicate a serious inverse ratio between the amount and duration of scheduled construction overtime hours. In the first few weeks of scheduled overtime, total productivity per man is normally greater than in a 40-hour week but not as much more as the number of additional work hours. **After seven to nine consecutive 50- or 60-hour weeks productivity is likely to be no more than that attainable by the same work force in a 40-hour week.** Productivity will continue to diminish as the overtime schedule continues. After another eight weeks or so of scheduled overtime, the substandard productivity of later weeks can be expected to cancel out the costly gains in total weekly production realized in early weeks of the overtime schedule so that total work accomplished during the entire period over which weekly overtime was worked will be no greater or possibly even less than if no overtime had been worked.

When the loss of productivity is added to the higher wage cost with premiums, productive value per wage dollar paid after several weeks of scheduled overtime drops to less than 75% for five 10-hour days, less than 62% for six 10-hour days, and less than 40% for seven 12-hour days.

Studies on this subject conducted by the Bureau of Labor Statistics of the U.S. Department of Labor, Proctor and Gamble Company, the Business Roundtable, the National Electrical Contractors Association, and the Mechanical Contractors Association of America produced similar results. All of them showed that continuing scheduled overtime has a strong negative effect on productivity which increases in magnitude proportionate to the amount and duration of overtime. Abandonment of the overtime schedule appears to be the only effective remedy. Only the BLS study evaluated what happens when scheduled overtime is discontinued. That study showed a dramatic jump in productivity per hour upon return to a 40-hour week.

**Reasons for declining productivity under overtime schedules . . .**

Several logical reasons have been found to account for declining productivity under overtime schedules.

**Work pace inertia**

Industrial engineers have found that workers expend energy at an established pace determined by long periods of adaptation. Hence, when the hours of work increase, there is a tendency to adjust the pace to accomplish about the same amount of work in an extended workday or workweek as was accomplished before the extension. The interdependency of construction workers with others on the same crew and with workers of other trades on
the same project makes it difficult or impossible for any individual worker who may attempt to overcome this tendency to do so without the problem of “running out of work” while waiting for other work to be performed.

**Absenteeism**

Bureau of Labor Statistics Bulletin 917 states: “But, whatever the reason, one fact stands out clearly in the survey: the longer the hours, the more scheduled worktime lost through absenteeism.” Absenteeism is promoted when the effects of cumulative fatigue, desires of workers to spend more time with their families, and need for time away from the job to take care of personal business combine with lack of economic necessity to work all available hours because of the high pay received during overtime weeks. Absenteeism of even a few employees seriously disrupts scheduled daily operations and reduces total project efficiency.

**Accidents**

The productivity-killing effects of accidents is widely acknowledged. The BLS Bulletin states: “Injuries also increased as hours increased, not only in absolute numbers, but also in rate of incidence. In most of the observed instances, the number of injuries per million hours worked was very much higher at the longer hours.”

**Fatigue**

Physical and mental fatigue build up at an accelerated rate from excessive hours on the job and lack of recuperative time off the job even when overtime work is resulting in little or no additional work being accomplished. In work such as construction which is not machine-paced and which requires sustained physical effort as well as mental alertness, fatigue obviously reduced productivity during all hours worked. The BLS Bulletin stated: “For hours above 8 per day and 48 per week, it usually took 3 hours of work to produce 2 additional hours of output when work was light. When the work was heavy, it took about 2 hours of work to produce 1 hour of additional output.”

**Morale and attitude**

Anything which adversely affects morale and which lessens cooperative and positive attitudes toward the work, the employer and customer will result
About AGC, ASA and ASC

The Associated General Contractors of America (AGC), the American Subcontractors Association (ASA), and the Associated Specialty Contractors (ASC) have a variety of unique and exclusive functions, but one common goal: to promote equitable and ethical general contractor-subcontractor relations.

This commitment led to the creation of an AGC-ASA-ASC Joint Cooperative Committee charged with working on issues of common concern and interest. This committee has developed a series of joint guidelines, forms, and policy statements which advocate construction practices that are fair and equitable to general contractors and subcontractors alike. These joint guidelines, forms, and policy statements have been endorsed by the boards of directors of the three associations.

The Associated General Contractors of America (AGC) is a national trade association with 110 chapters nationwide representing more than 32,000 firms, including 8,400 of America’s leading general contracting companies which are responsible for the employment of more than 3,400,000 individuals. These member contractors perform more than 80 percent of America’s contract construction of commercial buildings, highways, industrial and municipal facilities as well as federal construction projects.

ASA, based in metropolitan Washington, D.C., is a national organization representing the concerns and interests of all construction subcontractors, both union and non-union, regardless of trade specialty. ASA concentrates primarily on the business, contract, and payment issues affecting all subcontractors. The association seeks solutions to the problems created by retainage, bid shopping and peddling, slow pay, delay claims, and unreasonable federal, state and local government regulations. ASA has more than 6,000 members participating in 55 chapters nationwide.

ASC is an “umbrella organization” of eight national associations of construction specialty contractors, whose combined membership totals more than 25,000 firms. Its members include: Mason Contractors Association of America; Mechanical Contractors Association of America; National Association of Plumbing-Heating-Cooling Contractors; National Electrical Contractors Association; National Insulation Contractors Association; National Roofing Contractors Association; Painting and Decorating Contractors of America; and Sheet Metal and Air Conditioning Contractors’ National Association. The association’s goals are to promote efficient management and productivity; to improve contracting forms and practices; to coordinate the work of specialized branches of the industry in labor relations, management information, research, public information, government relations and construction relations, and serve as a liaison among specialty trade associations in the areas of public relations, government relations and with other organizations.
in lowered output. Fatigue causes a deterioration in morale and positive attitude. In addition, continuing expensive overtime can quickly result in an attitude that, “Cost means nothing to the customer, so why should we workers worry about efficiency?” Deteriorating morale and attitude coupled with fatigue increase friction among the workers, grievances against management and jurisdictional disputes with other trades.

**Turnover**

Frequent turnovers of workers is expensive and disruptive. Regardless of the skills of new workers, a considerable amount of time is needed to train them to the specific needs of the project and orient them to what they will be doing and how it meshes with the work done by others on the job. Turnover can be expected at an accelerating rate as overtime schedules continue because of fatigue, poor morale and attitude, and lack of economic need to continue working.

**Job Shopping**

In an area where one or more large projects have scheduled overtime, workers seem to spend more effort finding the project having the highest premiums than in getting the work accomplished. If other construction employers feel induced to schedule overtime to keep their share of the area work force, a daily “auction” for available manpower is likely to occur. The effects on productivity are obvious.

**Supervision problems**

Because of their greater responsibilities, supervisory employees are likely to feel the fatiguing and demoralizing effects of prolonged overtime schedules even more than production workers. Loss of key supervisors part way through a construction job can have highly detrimental effects, but such loss can be expected on a job with prolonged overtime due to illness or resignations because of overwork. Pressures resulting from scheduled overtime also cause supervisors to become careless, to make errors in judgment and to become irascible, thus adversely affecting their relations with workers and others. Obviously, the alternative of not having experienced supervisors present during all overtime hours being worked can have even more serious consequences.

**Stacking of trades**

Scheduled overtime almost always distorts the orderly sequence schedule originally adopted. This inevitably results in space conflicts and undesirable mixing of employees of different crews and different contractors.

**Pressure for more overtime**

It is common for jobs with scheduled overtime to have worker pressures for more overtime and slowdowns among workers receiving less overtime pay than others. Competition to get the largest paychecks seems to become a greater motivator than pride of participating in a successful project.

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**Avoiding the effects of scheduled overtime . . .**

(1) All parties concerned with planning and scheduling construction projects, including owners, construction managers, architects, engineers and contractors, should be fully aware of the magnitude of the extra costs caused by scheduling overtime and that productivity losses will affect work during normal hours as well as during overtime hours. All must recognize that the supposed benefits to be gained from scheduling overtime, such as accelerating completion or making up for previous delays, are unlikely to be realized and too costly to attempt.

(2) Initial completion schedules should be realistic and take into account such factors as availability of skilled manpower and potential delays from weather, strikes, licensing delays, interference by environmental interests, etc. Completion schedules should allow sufficient flexibility to absorb unexpected but unavoidable delays. Design should be completed and construction started early enough that the customers’ needs for a completion date will be taken care of without artificial acceleration.
(3) Change orders of a size or number which will delay completion should be avoided unless the completion time can be extended to permit performance of both the changed work and the original work without resorting to overtime. No change should be contemplated or authorized without full consideration by all parties of its effect on completion time.

(4) If the costs of scheduled overtime are to be paid by the customer under a cost-reimbursable contract or under cost-reimbursement provisions for changes or acceleration orders, the contractor should not be permitted to proceed with scheduled overtime without the previous written agreement of the customer. Prior to agreeing to the proposed overtime schedule, the customer should thoroughly study the inherent disadvantages, consult with contractor associations in the area for their opinions on what the effects of scheduled overtime will be, and make sure that no other alternative is available.

(5) Contractors on firm-price contracts must be fully compensated for loss of productivity as well as for overtime premiums and additional supervisory and administrative costs resulting from working on overtime schedules if required by the customer to perform changed or accelerated work which necessitates scheduled overtime.

(6) An effort should be made to negotiate and utilize workable shift work clauses to perform much of the work which must be performed outside scheduled working hours with employees who are not employed during regular working hours. It should be recognized, however, that productivity during shift periods is not likely to equal that during regularly scheduled working hours.

(7) Overtime should never be used to induce needed workers to leave other jobs and accept employment on the project on which the overtime is scheduled. The significance of this factor is indicated by the results of a survey of members of the National Constructors Association reported by the Construction Users’ Anti-Inflation Roundtable in an article in the AACE Bulletin of the American Association of Cost Engineers in 1973. The survey indicated that 23% of the contractors reporting worked on a scheduled overtime basis in 1968 and 20% of these constructors’ dollar volume of construction was performed on an overtime basis. Two-thirds of this overtime was scheduled to attract labor.

Editor’s Note: This is one of a continuing series of reprints of policy statements. It has been mutually developed and adopted by the American Subcontractors Association, the Associated Specialty Contractors, and the Associated General Contractors of America.

The goal of these guidelines is to set and communicate a standard for fair and efficient business procedures in the construction industry. This is the seventh of the nine guidelines, three standard forms, and four joint policy statements which appear in The Construction Industry Survival Kit, a publication jointly developed by the three associations. Over 30,000 copies of the publication, which costs $1.00, have been printed. For more information, contact ASA at (703) 684-3450.