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## I. PURPOSE

This program is designed to reduce the risk of work-related heat illnesses on Gallant Builders (Gallant) projects.

## II. SCOPE

This program and procedures apply in its entirety to all Gallant projects unless a variance is granted by the Gallant Safety Director.

## III. DEFINITIONS

**Acclimatization** - means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

**Heat Illness** - means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

**Preventative Recovery Period** - means a period of time to recover from the heat in order to prevent heat illness.

**Shade** - means blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

## IV. RESPONSIBILITIES AND REQUIREMENTS

Gallant Superintendents and subcontractor supervisors are responsible for implementing and maintaining the Heat Illness Prevention Program in their work areas.

## V. SUBCONTRACTORS

Subcontractors have the primary responsibility for providing training, sources of drinking water, and supporting supervisors in adjusted work schedules to reduce heat exposure during heat events.
Subcontractors are responsible for ensuring their employees who are working in hot environments take necessary precautions as outlined in the section entitled Control of Heat Stress.

## VI. SUPERVISORS

The subcontractor Supervisors have the primary responsibility for the implementation of the Heat Stress Prevention Program in their work area. The supervisor has ultimate responsibility for the safety of the employees. This includes evaluation of the work to be performed, providing ready access to drinking water or

electrolyte replacement drinks, ensuring workers are familiar with the signs and symptoms of heat related illnesses, allow for acclimatization of workers in hot environments, adoption of work rest regimes and scheduling of work to reduce heat stresses as appropriate and providing training for employees.

## VII. EMPLOYEES

Employees have the primary responsibility for working in accordance with the provisions of this policy. Employees are responsible for attending training and following the instructions given. They are also responsible for monitoring themselves for signs and symptoms of heat stress.

## VIII. HEAT STRESS PREVENTION

Many workers in construction work in hot environments and working in hot conditions poses many safety and health hazards to the workers. This policy addresses ways to minimize and control these hazards.

Four environmental factors affect the amount of stress a worker experiences in a hot environment:

- Temperature
- Humidity
- Air velocity
- Radiant heat

Examples of radiant heat include direct heat from the sun or a furnace. Job-related factors that affect heat stress include work rate and physical effort required, type of clothing and protective equipment used, and duration of activity.

All of these factors need to be evaluated in order to minimize their impact on the worker. Personal characteristics such as age, weight, physical fitness, and acclimatization to the heat also need to be factored in to determine those people and areas at high risk.

## IX. HEALTH DISORDERS

The human body regulates high temperatures by two primary mechanisms; blood flow and sweating. Blood is circulated to the skin, increasing the skin temperature and allowing the body to give off the excess heat through the skin. Sweating occurs when the body senses the heat loss due to increased blood circulation is not enough to cool the body. Evaporation of the sweat cools the skin and eliminates large quantities of heat from the body. If the body is unable to release excess heat, it will store it. When this happens, the body's core temperature rises and the heart rate increases. If the body continues to store heat, the person may begin to have difficulty concentrating, may become irritable and lose the desire to drink. The next stage is often fainting which would signal a medical emergency.

Listed in Table 1 are the common heat disorders with the accompanying symptoms and appropriate first aid measures.

Table 1 – Heat Disorders

| DISORDER | CAUSE | SIGNS & SYMPTOMS | TREATMENT |
|---|---|---|---|
| **Heat Cramps** | Heavy sweating<br>Loss of salt | Painful spasms of arms, legs and abdomen<br>Sudden onset<br>Hot, moist skin | Drink water<br>Massage cramped area<br>Rest |
| **Heat Exhaustion** | Dehydration Non-acclimatized | Heavy sweating<br>Intense thirst<br>Pale, moist, cool skin<br>Rapid pulse<br>Fatigue, weakness<br>Fainting, collapse | Move to shade or an air-conditioned space<br>Rest, lying down, legs elevated<br>Loosen clothing<br>Drink water |
| **Heat Stroke** | Excessive exposure to hot environments<br>Body's system of temp. regulation fails<br>Body temp. rises to critical levels | High body temperature<br>Lack of sweating<br>Hot, red, dry skin<br>Rapid pulse, Chills<br>Difficulty breathing<br>Disoriented Weakness<br>Unconsciousness | MEDICAL EMERGENCY<br>Call for emergency help<br>Immerse person in water<br>Massage body with ice |

## X. WORKPLACE SURVEILLANCE

Always monitor signs and symptoms of heat-stressed workers. Discontinue any activity for a person when:

- Sustained heart rate greater than 160 beats per minute for those under 35 and 140 for those 35 and over.
- There are complaints of sudden and severe fatigue, nausea, dizziness, lightheadedness, or fainting.
- There are periods of inexplicable irritability, malaise or flu-like symptoms.
- Sweating stops and the skin becomes hot and dry.

## XI. CONTROL OF HEAT STRESS

The following guidelines should be followed to prevent heat-related disorders.

## XII. CONTROL MEASURES

Each work location involved in working in hot environments shall implement measures that must be in place to control the effects of environmental factors that can contribute to heat related illnesses. The most common environmental factors are air temperature, humidity, radiant heat sources and air circulation.

Physical factors that can contribute to heat related illness shall be taken into consideration before performing a task. The most common physical factors that can contribute to heat related illness are type of work, level of physical activity and duration, and clothing color, weight and breathability.

Supervisors must ensure personal factors that contribute to heat related illness are taken into consideration before assigning a task where there is the possibility of a heat-related illness occurring. The most common personal factors that can contribute to heat related illness are age, weight/fitness, drug/alcohol use, prior heat-related illness, etc.

## XIII. ENGINEERING CONTROLS

Heat may be controlled through general ventilation and spot cooling by local exhaust ventilation at the point of high heat production. Shielding may be needed for protection against radiant heat sources. Other control measures include opening windows or using fans and misting fans to create airflow. Outdoor work areas need to have a shaded area accessible to the employees. Shaded areas can be created by using tarps or canopies or equipping tractors with canopies or cabs.

## XIV. ACCLIMATIZATION

Employees need to adapt to new temperatures. This adaptation period is usually 5 days. New employees and employees returning from an absence of two weeks or more should have a 3-5-day period of acclimatization. This period should begin with 50% of the normal workload the first day and gradually build up to 100% on the last day.

## XV. WEATHER CONDITIONS

Check weather conditions frequently during the day and adjust the work schedule. It might be appropriate to change the actual hours of work to minimize working during the heat of the summer months. Heavy work should be scheduled for the cooler hours of the day. Non-essential tasks should be postponed when there is a heat warning issued.

## XVI. WORK/REST CYCLES

Heavy and minimal work activities should be alternated. Tasks should be rotated among workers. Employees should be allowed sufficient breaks in a cool area to avoid heat strain and promote recovery. Shade or an air-conditioned break room should be provided.

## XVII. PERSONAL PROTECTIVE EQUIPMENT

During work in hot environments, workers should use the lightest weight or "breathable" protective garments that give adequate protection. For work in extremely hot environments, cool vests are available from several manufacturers. These vests typically provide 1-2 hours of cooling, recharge in 20 minutes, and maintain a constant temperature of 55 F.

## XVIII. PROVISION OF WATER

Employees shall have access to potable drinking water. Employees shall have access to potable drinking water. Where it is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift.

## XIX. FLUID INTAKE

Fluids, such as water or electrolyte replacement drinks, i.e. Gatorade need to be conveniently available to workers so they can drink about 8 oz. of liquids every 20 minutes. The ideal temperature for liquids should be 50 – 60 F. For remote outdoor work locations this means providing a cooler of liquids and ice that the workers can transport with them to the location.

## XX. ACCESS TO SHADE

Employees will be provided with access to shade. Employees suffering from heat illness or believing a preventative recovery period is needed, shall be provided access to an area with shade that is either open to the air or provided with ventilation or cooling. Such access to shade shall be permitted at all times. See definition of "Shade".

## XXI. TRAINING

Employees should be trained prior to working in a high heat area to be aware of the hazards of working in the heat, how to recognize heat-related illnesses and procedures for first aid and medical attention. They should also be aware of the methods used to avoid heat-related illnesses, including how some things, which happen off the job, can increase the risk of heat illnesses at work

Training in the following topics shall be provided to all supervisory and non-supervisory employees:

- The environmental and personal risk factors for heat illness;
- The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;
- The importance of acclimatization;
- The different types of heat illness and the common signs and symptoms of heat illness;

- The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- The procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary;
- The procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider;
- The procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

Each work site shall develop site specific procedures but shall include the minimum:

- Bring at least 4 quarts per employee at the start of the shift and the supervisor or designated persons will monitor water containers. Employees are encouraged to report to supervisor or designated person when there are low levels or dirty water.
- Supervisors will provide frequent reminders to employees to drink frequently.
- Every morning there will be short tailgate meetings to remind workers about the importance of frequent consumption of water throughout the shift during hot weather.
- Place water containers as close as possible to the workers.
- When drinking water levels within a container drop below 50%, the water shall be replenished immediately or water levels should not fall below the point that will allow for adequate water during the time necessary to effect replenishment.
- Disposable and single use drinking cups will be provided to employees or provisions will be made to issue employees their own cups each day.
- Supervisors will set-up an adequate number of umbrellas, canopies or other portable devices at the start of the shift and will relocate them to be closer to the crew, as needed.
- Subcontractors can use other cooling measures if they demonstrate that these methods are as effective as shade.
- Working hours will be modified to work during the cooler hours of the day, when possible.
- When a modified or shorter work-shift is not possible, more water and rest breaks will be provided.
- Supervisors will continuously check all employees and stay alert to the presence of heat related symptoms.
- Every morning, workers will be reminded about address and directions to the worksite to inform medical responders and emergency procedures.
- All newly hired workers will be assigned a buddy or experienced co-worker to ensure that they understood the training and follow the Gallant procedures.