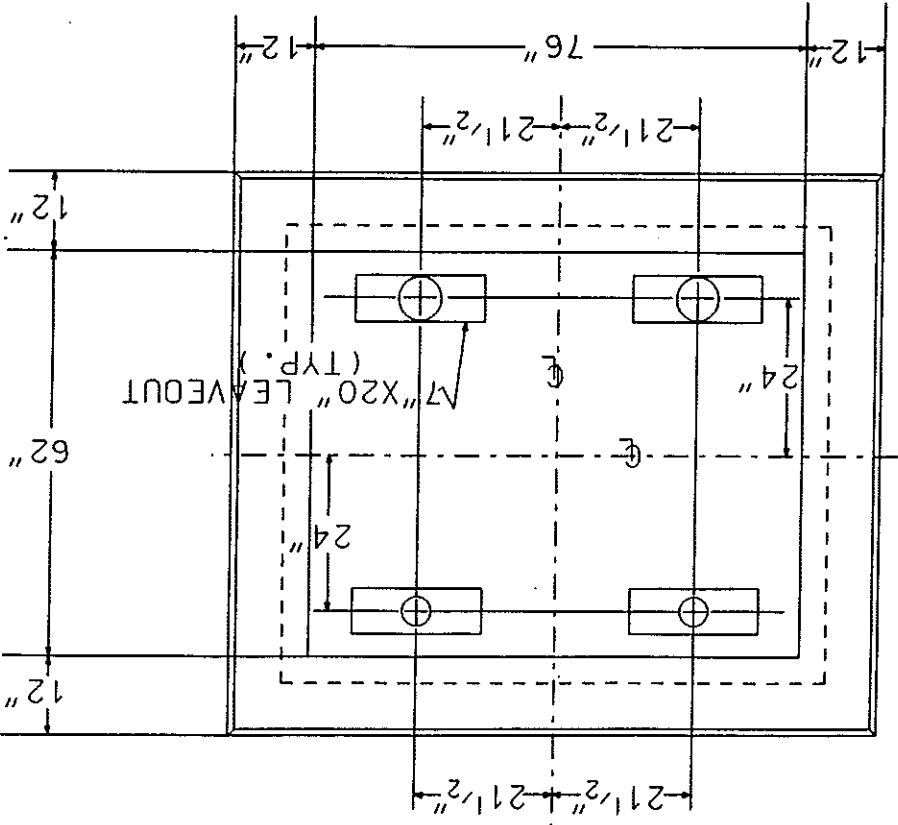
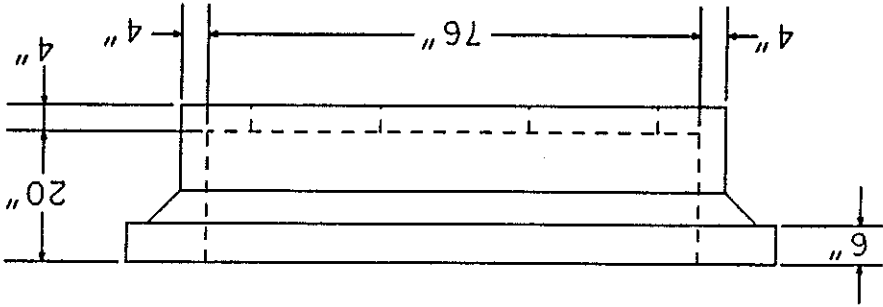


APPROVED SUPPLIER: DALWORTH QUIKSET COMPANY  
 7818 S. COOPER ST.  
 ARLINGTON, TEXAS  
 (817) 477-5366

UTILITY PRECAST, INC.  
 510 E. PLEASANT RUN RD.  
 LANCASTER, TEXAS  
 (214) 227-5577

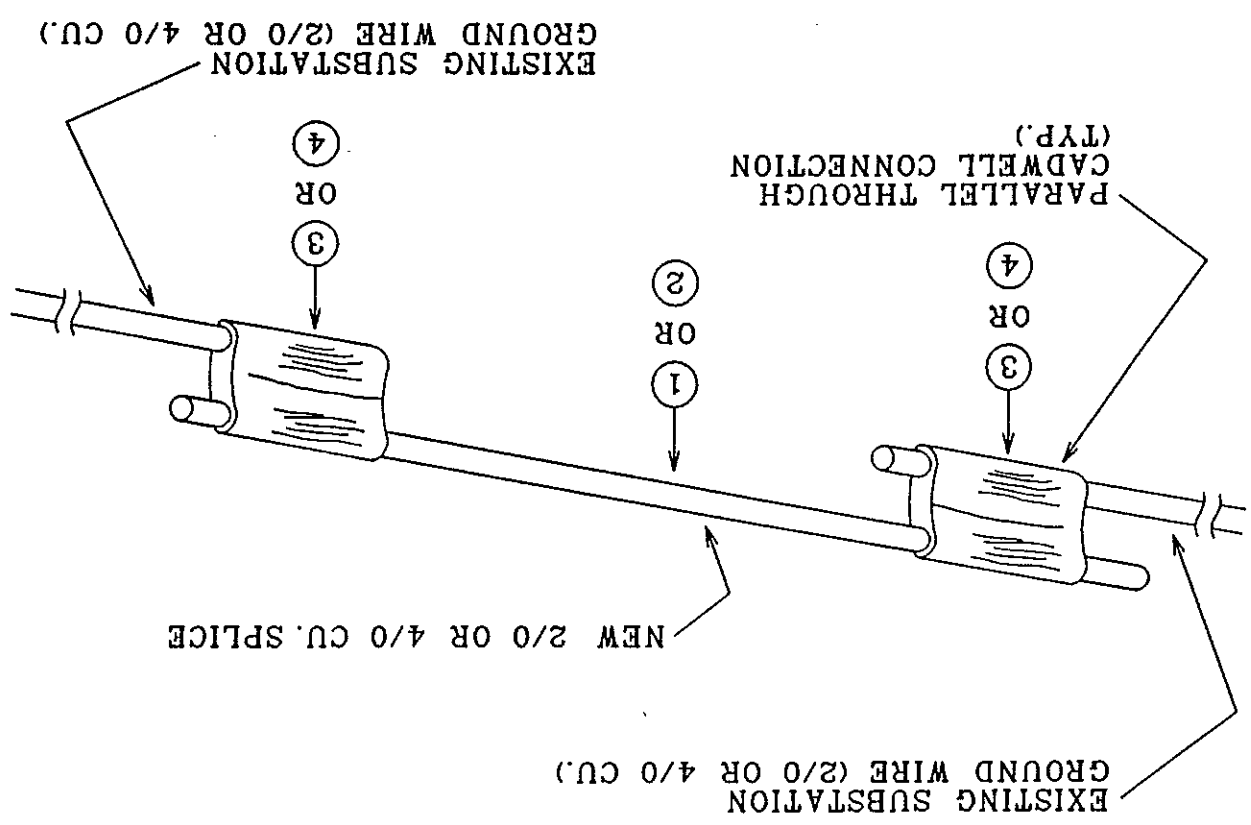


TU ELECTRIC STANDARD  
 PRECAST DEEP WELL 25KV SWITCH PAD

10/21/94

10/21/94

ITEM	DESCRIPTION	TSN	CADWELD PART NUMBER
1	WIRE, 2/0 CU.	303252	N/A
2	WIRE 4/0 CU.	303253	N/A
3	MOLD, PARALLEL THROUGH, FOR 2/0 CU. WIRE	322111	PTC-2628
4	MOLD, PARALLEL THROUGH, FOR 4/0 CU. WIRE	322112	PTC-2020
5	WELD METAL, #115 (FOR ITEM 3)	308031	115
6	WELD METAL, #200 (FOR ITEM 4)	308032	200
7	HANDLE (FITS ITEM 3 AND 4)	287995	L-160
8	MOLD CLEANER	322132	B-136-3
9	FLINT IGNITOR GUN	386189	L-320



TU ELECTRIC SUBSTATION GROUND WIRE REPAIR DETAIL

10/21/94

10/21/94

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 WATER WELL DRILLERS RULES

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Printed: 3/29/93

TEXAS NATURAL RESOURCE  
 CONSERVATION COMMISSION  
 P.O. Box 13087  
 Austin, Texas 78711-3087  
 1-512-239-0530

These sections are promulgated under the Texas Water Code, §5.103, which provides the Texas Water Commission with the authority to adopt any rules necessary to carry out the powers and duties under the provisions of the Texas Water Code and other laws of this state.

§338.1. Purpose of Rules. These sections are adopted by the Texas Water Commission pursuant to Texas Civil Statutes, Article 7621e, titled the Water Well Drillers Act, and the Texas Water Code, §§26.003, 26.011, 26.128 and 28.011. The Water Well Drillers Act requires the executive director of the Texas Water Commission to furnish the Water Well Drillers Board with necessary clerical, legal and investigative services and provides that the Commission shall promulgate procedures and standards for plugging water wells. The sections of the Texas Water Code referenced in this section direct the Commission to establish the level of quality to be maintained, and to control and protect the quality of the underground water in this state.

§338.2. Definitions of Terms. The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise:

Abandoned well - A well that has not been used for six consecutive months. A well is considered to be in use in the following cases:

- (A) a non-deteriorated well which contains the casing, pump and pump column in good condition; or
- (B) a non-deteriorated well which has been capped. Annular space - The space between the casing and borehole wall. Board - The Texas Water Well Drillers Board. Capped well - A well that is closed or capped with a covering capable of preventing surface pollutants from entering the well and sustaining weight of at least 400 pounds. Casing - A tubular watertight structure installed in the excavated or drilled hole to maintain the well opening and, along with cementing, to confine the ground waters to their zones of origin and prevent the entrance of surface pollutants. Cement - A neat Portland or construction cement mixture of not more than seven gallons of water per 94-pound sack of dry cement, or a cement slurry which contains cement along with bentonite, gypsum, or other additives; the well driller will adhere to the manufacturer's recommended water content for the mix. Commission - The Texas Water Commission. Completion - Sealing off access of undesirable water to the well bore by proper casing and/or cementing procedures.

Deteriorated well - A well, the condition of which will cause, or is likely to cause, pollution of any water in this state, including groundwater.

Dewatering well - An artificial excavation constructed to produce groundwater to cause a lowering of the water table or potentiometric surface. The term shall not include any dewatering well which is used for the production of, or to facilitate the production of, any minerals under a state regulatory program.

Dewatering well driller - A person, including an owner, operator, contractor, or drilling supervisor, who engages in the drilling, boring, coring, or construction of a dewatering well, but does not include a person who drills, bores, or constructs a dewatering well under the direct supervision of a licensed dewatering well driller and who is not primarily responsible for the drilling operation.

Driller - A water well driller, injection well driller, dewatering well driller, or monitoring well driller.

Examination fee - The non-refundable fee required of each applicant each time that applicant takes the Water Well Drillers Board's examination.

Executive director - The executive director of the Texas Water Commission, or any authorized individual designated by the executive director to act in his or her place.

Freshwater - Water whose bacteriological, physical and chemical properties are such that it is suitable and feasible for beneficial use.

Injection well - Includes:

- (A) an air conditioning return flow well used to return water used for heating or cooling in a heat pump to the aquifer that supplied the water;
- (B) a cooling water return flow well used to inject water previously used for cooling;
- (C) a drainage well used to drain surface fluid into a subsurface formation;
- (D) a recharge well used to replenish the water in an aquifer;
- (E) a saltwater intrusion barrier well used to inject water into a freshwater aquifer to prevent the intrusion of salt water into the fresh water;
- (F) a sand backfill well used to inject a mixture of water and sand, mill tailings, or other solids into subsurface mines;
- (G) a subsidence control well used to inject fluids into a nonoil or gas producing zone to reduce or eliminate subsidence associated with the overdrift of fresh water; and
- (H) a closed system geothermal well used to circulate water, other fluids, or gases through the earth as a heat source or heat sink.

Licensed driller - Any person who holds a license issued by the State of Texas pursuant to the provisions of the Water Well Drillers Act, Texas Civil Statutes, Article 7621e.

License fee - The fee to be paid by a successful applicant to become a licensed well driller.

Monitoring well - An artificial excavation constructed to measure or monitor the quantity or movement of substances, elements, chemicals, or fluids beneath the surface of the ground. The term shall not include any monitoring well which is used in conjunction with the production of oil, gas, or any other minerals.

Monitoring well driller - A person, including an owner, operator, contractor, or drilling supervisor, who engages in the drilling, boring, coring, or construction of a monitoring well.

Mud - A relatively homogeneous, relatively viscous fluid produced by the suspension of clay-size particles in water.

Plugging - An absolute sealing of the well bore.

Pollution - The alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any water in the state that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.

Public water system - A system supplying water to a number of connections or individuals, as defined by current rules and regulations of the Texas Department of Health.

Renewal fee - The annual fee paid by a previously registered well driller, which is \$100.00.

Undesirable water - Water that is injurious to vegetation, to land or to fresh water, or water that can cause pollution.

Water or water in the state - Groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Gulf of Mexico inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.

Water well - Any artificial excavation constructed for the purpose of exploring for or producing groundwater. The term, however, shall not include any test or blast holes in quarries or mines, or any well or excavation for the purpose of exploring for, or producing oil, gas, or any other minerals unless the holes are used to produce groundwater. The term shall not include any injection water source well regulated by the Railroad Commission of Texas pursuant to the Natural Resources Code, Section 91.101.

Water well driller - Any person (including an owner, operator, contractor, or drilling supervisor) who engages in the drilling, boring, coring, or construction of any water well in this state. The term, however, shall not include any person who drills, bores, cores, or constructs a water well on his or her own property for his

or her own use or a person who assists in the construction of a water well under the direct supervision of a licensed driller and is not primarily responsible for the drilling operations.  
Water well drillers board - An examining board consisting of nine members appointed by the Governor with the advice and consent of the Senate and designated according to Texas Civil Statutes, Article 7621e.  
Well - A water well, injection well, dewatering well, or monitoring well.  
Well log - A log accurately kept, on forms prescribed by the commission, at the time of drilling showing the depth, thickness, character of the different strata penetrated, location of water-bearing strata, depth, size and character of casing installed, together with any other data or information required by the commission. Each copy of a well log, other than a commission copy, shall include the name, mailing address, and telephone number of the board and the commission.

These sections are promulgated under the Texas Water Code, §5.103, which provides the Texas Water Commission with the authority to adopt any rules necessary to carry out the powers and duties under the provisions of the Texas Water Code and other laws of this state.

§338.41. Responsibility.

(a) All well drillers and persons having a well drilled, deepened, or otherwise altered shall adhere to the provisions of this subchapter prescribing the location of wells and proper drilling, completion, capping, and plugging.

(b) Where a landowner, or person having the well drilled, deepened, or otherwise altered, denies a licensed well driller access to the well and thereby precludes the driller from performing his or her duties under the Water Well Drillers Act and this chapter, the well driller shall file a statement with the commission as prescribed in §338.71-338.74 of this title (relating to Miscellaneous Provisions).

§338.42. Standards of Completion for Public Water System Wells.

Wells supplying a public water system shall be completed according to presubmitted plans approved by the Texas Department of Health.

- (1) The water well driller shall to the best of his or her ability ascertain whether a well which he or she is to drill, deepen, or otherwise alter is intended for use as part of a public water system.
- (2) By way of his or her water well log, the water well driller shall inform the commission of the well's purported intended use.
- (3) The person having the well drilled, deepened, or otherwise altered is responsible for ascertaining that a well intended for use as a part of a public water system meets the current rules and regulations of the Texas Department of Health.

§338.43. Location of Dewatering, Monitoring, Domestic, Industrial, Injection and Irrigation Wells.

- (a) A well shall be located a minimum horizontal distance of 50 feet from any water-tight sewage and liquid-waste collection facility, except in the case of monitoring wells and dewatering wells which may be located where necessity dictates.
- (b) Except as noted in §338.44(b) of this title (relating to Standards of Completion for Dewatering, Monitoring,



(c) Domestic, Industrial, Injection and Irrigation Wells, a well shall be located a minimum horizontal distance of 150 feet from any concentrated sources of contamination, such as existing or proposed livestock or poultry yards, privies, and septic system absorption fields, except in the case of monitoring wells and dewatering wells which may be located where necessity dictates.

A well shall be located at a site not generally subject to flooding; provided, however, that if a well must be placed in a flood prone area, it shall be completed with a watertight sanitary well seal and steel casing extending a minimum of 24 inches above known flood level.

338.44. Standards of completion for Dewatering, Monitoring, Domestic, Industrial, Injection and Irrigation Wells. Dewatering, monitoring, domestic, industrial, injection and irrigation wells shall be completed in accordance with the following specifications and in compliance with local county or incorporated city ordinances:

- (1) The annular space shall be filled from ground level to a depth of not less than 10 feet below the land surface or well head with cement slurry except in the case of monitoring and dewatering wells when the water to be monitored or dewatered is located at a more shallow depth. In that situation the cement slurry shall only extend down to the level immediately above the monitoring or dewatering level. The distances given in §338.43 (b) of this title (relating to Location of Dewatering, Monitoring, Domestic, Industrial, Injection and Irrigation Wells) may be decreased provided the total depth of cement slurry is increased by twice the horizontal reduction. In no case, with the exception of monitoring wells and dewatering wells, shall the distances established in §338.43 (relating to Location of Dewatering, Monitoring, Domestic, Industrial, Injection and Irrigation Wells) be less than 50 feet. In areas of shallow, unconfined groundwater aquifers, the cement need not be placed below the static water level. In areas of shallow, confined groundwater aquifers having artesian head, the cement need not be placed below the top of the water-bearing strata.
- (2) In all wells where plastic casing is used, except when a steel sleeve or pitless adapter as described in paragraph (3) of this section is used, a concrete slab or sealing block shall be placed above the cement slurry around the well at the ground surface.
- (A) The slab or block shall extend at least two feet from the well in all directions and have

- a minimum thickness of four inches and should be separated from the well casing by a plastic or mastic coating or sleeve to prevent bonding of the slab to the casing.
- (B) The surface of the slab shall be sloped to drain away from the well.
- (C) The top of the casing shall extend a minimum of one foot above the top of the slab except in the case of monitoring wells when it is impractical or unreasonable to extend the casing above the ground. Monitoring wells shall be placed in a waterproof vault the rim of which extends two inches above the ground surface and a sloping cement slurry shall be placed around and two feet below the base of the vault between the casing and the wall of the borehole so as to prevent surface pollutants from entering the monitoring well. The well casing shall be capped or completed in a manner that will prevent pollutants from entering the well. The annular space of the monitoring well shall be sealed with an impervious bentonite or similar material from the top of the interval to be tested to the cement slurry below the vault of the monitoring well.
- (3) In wells where a steel sleeve is used:
- (A) The steel sleeve shall be a minimum of 3/16 inches in thickness and 18 inches in length, and shall extend 6 inches into the cement, except when steel casing or a pitless adapter as described in paragraph (2) of this section is used. The casing shall extend a minimum of one foot above the original ground surface, and the steel sleeve shall be 2 inches larger in diameter than the plastic casing being used; or
- (B) A slab or block as described in paragraph (2)(A) of this section is required above the cement slurry except when a pitless adapter may be used. Pitless adapters may be used in such wells provided that:
- (i) the adapter is welded to the casing or fitted with another suitably effective seal; and
- (ii) the annular space between the borehole and the casing is filled with cement to a depth not less than 15 feet below the adapter connection.
- (4) All wells, especially those that are gravel packed, shall be completed so that aquifers or zones con-

authorization is obtained.

flow onto the land surface except when appropriate state such a manner that will not allow undesirable fluids to wells producing undesirable water shall be completed in water-bearing or other permeable sections from the well.

(d) If the undesirable water does not enter the cased part of the well, the lowermost and uppermost 10 feet (minimum) of the casing shall be cemented in order to seal off all other water-bearing or other permeable sections from the well.

(c) The annular space between the casing and the wall of the borehole shall be cemented to the land surface, or as a minimum, to a height greater than the hydrostatic head of the undesirable-water aquifer plus the uppermost 10 feet of casing.

(b) The annular space between the casing and the wall of the borehole shall be cemented to the land surface, or as a minimum, to a height greater than the hydrostatic head of the undesirable-water aquifer plus the uppermost 10 feet of casing.

(a) Wells completed to produce undesirable water shall be cased from the top of the undesirable water zone or 50 feet below the lowermost fresh water zone to the land surface. Wells completed to produce undesirable water shall be cased from the top of the undesirable water zone or 50 feet below the lowermost fresh water zone to the land surface.

(a) Standards for Wells Producing Undesirable Water Wells completed to produce undesirable water shall be cased from the top of the undesirable water zone or 50 feet below the lowermost fresh water zone to the land surface.

(b) The person who performs the well completion operation on a well shall, within 30 days after completing the well, submit a well completion report to the executive director, on forms supplied by the executive director.

(3) The annular space between the casing and the wall of the borehole shall be cemented to the land surface. When undesirable water is encountered in a zone underlying a fresh water zone, the part of the wellbore opposite the undesirable-water zone shall be filled with cement to a height that will prevent the entrance of the undesirable water into the pumping well.

(4) When undesirable water is encountered in a zone underlying a fresh water zone, the part of the wellbore opposite the undesirable-water zone shall be filled with cement to a height that will prevent the entrance of the undesirable water into the pumping well.

(2) When undesirable water is encountered in a zone overlying fresh water, the well shall be cased from the top of the fresh water zone to the land surface. The annular space between the casing and the wall of the borehole shall be cemented to the land surface.

(1) When undesirable water is encountered in a well, the undesirable water shall be sealed off and confined to the zone(s) of origin.

(1) If a well encounters undesirable water and the well is not plugged, the licensed well driller shall see that the well is plugged, deepened or otherwise altered in accordance with the following. When undesirable water is encountered in a well, the undesirable water shall be sealed off and confined to the zone(s) of origin.

(5) The well casing shall be capped or completed in a manner that will prevent pollutants from entering the well. The well casing shall be capped or completed in a manner that will prevent pollutants from entering any aquifer or zone. The gravel pack and cause quality degradation of commingle through the borehole-casing annulus or casing in chemical quality are not allowed to containing waters that are known to differ significantly.

§338.45. Standards of Completion for Wells Encountering Undesirable Water.

§338.46. Standards for Wells Producing Undesirable Water

§338.47. Recompilations.

(a) The landowner shall have the continuing responsibility of insuring that a well does not allow the commingling of undesirable water and fresh water or the unwanted loss of water through the wellbore to other porous strata.

(b) If a well is allowing the commingling of undesirable water and fresh water or the unwanted loss of water, and the casing in the well cannot be removed and the well recompleted in accordance with the applicable rules, the casing in the well shall be perforated and squeeze cemented in a manner that will prevent the commingling or loss of water. If such a well has no casing then the well shall be cased and cemented, or plugged in a manner that will prevent such commingling or loss of water.

(c) The executive director may direct the landowner to take proper steps to prevent the commingling of undesirable water and fresh water, or the unwanted loss of water.

§338.48. Well plugging and capping.

(a) It is the responsibility of the landowner or person having the well drilled, deepened, or otherwise altered, to cap or have capped, under standards set forth in §338.4-338.50 of this title (relating to well drilling, completion, capping, and plugging), any well which is open at the surface.

(b) It is the responsibility of the landowner or person having the well drilled, deepened or otherwise altered to plug or have plugged a well which is abandoned.

(c) It shall be the responsibility of each licensed well driller to inform a landowner or person having a well drilled, deepened, or otherwise altered that the well must be plugged if it is abandoned.

(d) It is the responsibility of the licensed well driller to see that any well which encounters undesirable water is plugged under the standards set forth in §338.41-338.50 of this title (relating to well drilling, completion, capping, and plugging).

(e) The person that plugs such a well shall, within 30 days after completion or plugging is complete, submit a well completion and plugging report to the executive director, on forms supplied by the executive director.

§338.49. Standards for plugging wells.

(a) If the use of a well that does not contain any undesirable water zones is abandoned and deteriorating, all removable casing shall be removed from the well and the entire well pressure filled with cement from the bottom up to the land surface.

(b) In lieu of the procedure in subsection (a) of this section, the well may be filled with bentonite mud (10 lb. per gallon mud or more with a marsh funnel viscosity of 50

seconds or equivalent) followed by a cement plug extending from land surface to a depth of not less than 10 feet.

§338.50. Standards for Plugging Wells That Penetrate Undersirable Water Zones.

- (a) If the use of a well that penetrates undesirable water is to be permanently discontinued, all removable casing shall be removed from the well and the entire well pressure filled with cement from the bottom up to the land surface.
- (b) In lieu of the procedure in subsection (a) of this section, either the zone(s) contributing undesirable water, or the fresh water zone(s), shall be isolated with cement plugs and the remainder of the wellbore filled with bentonite mud (10 lb. per gallon mud or more with a marsh funnel viscosity of 50 seconds or equivalent) to form a base for a cement plug extending from land surface to a depth of not less than 10 feet.

Subchapter D  
Miscellaneous Provisions  
§§338.71-338.74

These new sections are adopted under the Texas Water Code, §5.103, which provides the Texas Water Commission with the authority to adopt any rules necessary to carry out the powers and duties under the provisions of the Texas Water Code and other laws of this state.

§338.71. Minimum Standards.

- (a) If the party having the well drilled, deepened, or otherwise altered, or the licensed well driller, or the party plugging the well, finds any of the procedures prescribed by §§338.41-338.50 of this title (relating to well drilling, completion, capping and plugging) inapplicable, unworkable or inadequate, combinations of the prescribed procedures or alternative procedures may be employed, provided that the adopted alternative procedures will prevent injury and pollution.
- (b) Proposals to use combinations of prescribed procedures or alternative procedures shall be submitted to the executive director for approval prior to their implementation.

§338.72. Field Inspection. The executive director may initiate field inspection and investigation of well drilling, capping, plugging or completion operations.

§338.73. Plugging Responsibility. A licensed well driller is responsible for assuring that a well which encounters undesirable water is plugged or completed forthwith pursuant to the following: (1) Where a person having the well drilled, deepened or otherwise altered denies a licensed driller access to a well which requires plugging or completion or otherwise precludes the driller from plugging or completing a well which has encountered undesirable water, the driller shall immediately file a signed statement with the executive director and provide a copy of the statement to the board. (2) The statement shall indicate that:

- (A) The driller, or person under his or her supervision, encountered injurious water while drilling the well;
- (B) The driller has informed the person having the well drilled, deepened or otherwise altered, that injurious water was encountered and that the well must be plugged or completed pursuant to this chapter;
- (C) The person having the well drilled, deepened or otherwise altered, has denied the driller access to the well;

- (D) The reason, if known, for which access has been denied; and,
- (E) If known, whether the person having the well drilled, deepened or otherwise altered, intends to have the well plugged or completed.
- (3) Upon receipt of the statement described in paragraph (2) of this section:
  - (A) the executive director shall determine whether injurious water has been encountered;
  - (B) if injurious water has been encountered, the executive director shall determine whether the person having the well drilled, deepened or otherwise altered, intends to have the well plugged or completed within 30 days;
  - (C) Where a person having the well drilled, deepened, or otherwise altered does not intend to have the well plugged or completed as required by commission rules, or where he or she does not have the well plugged or completed within the prescribed time period, the executive director shall file a complaint before the commission or board requesting that the person having the well drilled, deepened or otherwise altered, appear before the commission or board and show cause why the well should not be plugged or completed pursuant to commission rules.

5338.74. Complaints.

- (a) When a violation is alleged of the Texas Civil Statutes, Article 7621e, of the Texas Water Code, Chapter 26 or Chapter 28, or of regulations set forth in this chapter, the executive director may seek remedial action on his or her own initiative or a complainant may seek relief by filing a complaint setting forth the name and address of the alleged violator, as well as facts and circumstances concerning the particular problem.
- (b) The executive director may file his or her complaint directly with the commission or the board; all others must file their sworn complaints with the executive director.
- (c) If the executive director determines, upon investigation, that evidence exists of a violation of Texas Civil Statutes, Article 7621e, or of any provision of this chapter promulgated pursuant to Texas Civil Statutes, Article 7621e, the executive director may refer the complaint to the board, to the attorney general, or act in accordance with any provisions of Texas Civil Statutes, Article 7621e.
  - (1) Where the executive director refers a complaint to the board for suspension or revocation of the

- (2) The notice shall be given at least 10 days prior to the date set for hearing and shall inform the alleged violator of the nature of the complaint, the complainant's name, and the nature of the hearing.
- (d) If the executive director determines, upon investigation, that evidence exists of a violation of the Texas Water Code, Chapter 26 or Chapter 28, or of any provision of this Chapter promulgated pursuant to the Texas Water Code, Chapter 26 or Chapter 28, the executive director may refer the complaint to the commission or the attorney general, or may act in accordance with any provisions of the Texas Water Code.
- (e) Where the executive director refers a complaint to the commission:
  - (1) A hearing will be called and a show-cause order will be sent by certified mail to the alleged violator; and
  - (2) Notice of the hearing will be sent by first class mail to all interested parties of record at least 10 days prior to the hearing date and shall indicate the nature of the violation, the date and place the commission shall consider the matter, and other information deemed appropriate.
- (f) The commission shall keep an information file about each complaint filed with the commission relating to a licensee.
- (g) If a written complaint is filed with the commission relating to a licensee, the commission at least as frequently as quarterly, shall notify the complainant of the status of the complaint until its final disposition unless the notification would jeopardize an undercover investigation.



Subchapter E  
Licensing Procedures  
§§338.91-338.99

These sections are promulgated under the Texas Water Code, §5.103, which provide the Texas Water Commission with the authority to adopt any rules necessary to carry out the powers and duties under the provisions of the Texas Water Code and other laws of this state and is in response to House Bill 5, §5(a).

§338.91. License Required. It shall be unlawful for any person to act as or to offer to perform services as a water well driller or as a driller of injection, monitoring, or dewatering wells, as defined in this chapter, without first obtaining a license pursuant to the Water Well Drillers Act and the board's substantive rules, §§231.31-231.53 of this title (relating to Licensing Procedures).

§338.92. Exceptions. The following persons are exempt from the requirement of obtaining licenses from the board:

- (1) Any person who drills, bores, cores, or constructs a water well on his or her property for his or her own use; or
- (2) A person who assists in the construction of a well under direct supervision of a licensed well driller and is not primarily responsible for the drilling operation.

§338.93. Requirements for Issuance of a License.

- (a) Each person desiring to obtain a well drillers license must submit a completed application to the commission.
- (b) Each applicant shall have been a resident of the state for not less than 90 consecutive days prior to making application for licensing as a well driller, unless the board waives this requirement in accordance with its rules.

- (c) Each applicant must pay the required examination fee to the commission upon submission of his or her application.
- (d) Each applicant's qualifications must be certified by the board before he or she may take the examination.
- (e) Subsequent to certification and within 90 days thereof, each applicant must pass an examination prepared and administered by the board.
- (f) Subsequent to passing the examination, an applicant must submit the required license fee to the commission.

§338.94. Applications.

- (a) Applications shall be made on forms which may be obtained from the commission.
- (b) Applications shall include:

- (1) The applicant's name, business address, and permanent mailing address;
  - (2) A sworn and satisfactory letter of reference from a licensed well driller with at least two years' licensed experience in water well drilling, or other references satisfactory to the board;
  - (3) Satisfactory letters of reference from:
    - (A) The applicant's banker; and
    - (B) Two satisfied well drilling customers who are not related within the second degree of consanguinity to the applicant;
  - (4) The applicant's sworn statement that he or she has been a resident of Texas for 90 consecutive days immediately prior to making his or her application, or a request for waiver of this requirement containing a statement that the applicant is licensed in another state which has similar licensing requirements;
  - (5) The applicant's sworn statement that he or she has drilled wells under the supervision of a driller licensed under the Texas Water Well Drillers Act for two years or that he or she has other comparable well drilling experience; and
  - (6) The applicant's acknowledgment that he has read the board's standards of conduct.
- (c) The application must be received by the commission 28 days prior to the board meeting at which it is considered. The commission will issue written notice sent to the applicant by certified mail within 5 working days after receipt of the application informing the applicant that the application is administratively complete and accepted for filing, or that the application is deficient in specific areas. If the application is insufficient the applicant shall be notified by certified mail that he has thirty (30) days to submit the additional information. If the additional information is received within thirty (30) days of receipt of the deficiency notice, the staff will evaluate the information within five (5) working days and where applicable, shall prepare a statement of receipt of the application and declaration of administrative completeness in accordance with 31 TAC §281.17 of this title (relating to Notice of Receipt of Application and Declaration of Administrative Completeness). If the required information is not forthcoming from the applicant within thirty (30) days of the date of receipt of the deficiency notice the staff shall return the incomplete application to the applicant. If the applicant disagrees that the application is deficient or when notice was not issued within 5 working days, the applicant may file a direct appeal to the board by filing a request with the chief clerk of the board for board

(d) consideration at the next regularly scheduled board meeting. The request for board consideration must be filed with the commission 10 days prior to the board meeting being requested. The filing fee shall be reimbursed to any applicant that written notice was not issued to within the 5 working days and/or when the board rules the application was not deficient. An application shall be null and void, and the examination fee shall be forfeited, if the applicant fails to take the examination within 90 days after the board certifies the application.

5338.95. Notification to Applicants.  
 (a) Upon receipt of a complete application, the examination fee required by the board, and the required letters of reference, the executive director shall inform the applicant of the date, time, and place of the board meeting at which his or her application will be evaluated for certification. The executive director will issue written notice by certified mail within 5 working days of receipt of the application informing the applicant that the application is administratively complete and accepted for filing, or that the application is deficient in specific areas.  
 (b) The executive director shall notify by certified mail each applicant as to the disposition of his or her application after the board's decision and shall advise the applicant of the dates, times and places of the examinations for which he or she is eligible. The executive director shall mail by certified mail this notification within 10 working days after the board's decision. If the executive director fails to mail by certified mail this notification within 10 working days after the board's decision, the examination fee shall be reimbursed and returned with the notification.

5338.96. Administration of Examination.  
 (a) The commission shall offer and proctor the examination once a month at a time and place designated by the executive director.  
 (1) The examination shall be offered more frequently if more than 10 persons petition the board in writing, or if the board should so provide.  
 (2) The board will immediately notify the executive director of the applicants eligible to take the examination.  
 (3) Not less than 30 days prior to a scheduled examination, an applicant may petition the board, in writing, to request that an oral examination be administered to him or her.  
 (b) The executive director shall notify by certified mail any applicant who fails or passes an examination within 30

days of the administration of the examination. If the notification is not mailed within 30 days, the examination fee shall be returned along with the notification.

(c) An applicant may take the examination only twice within any 12-month period.

(d) At any time within six months of the date he or she is notified of the results of an examination, an applicant may inspect his or her examination paper in the commission's offices during normal business hours for the purpose of challenging the propriety of the questions, the method of grading, and the accuracy of grading.

(e) If requested in writing by a person who fails the examination, the commission shall furnish the person with an analysis of the person's performance.

5338.97. Licenses.

(a) After an application meets the requirements prescribed by the rules of the board, passes the required examination, and submits the license fee required by the board, the executive director shall issue a license to the applicant. The license shall be issued within 30 days after the license fee of \$115.00 is submitted. If the executive director does not mail the license within 30 days after submission of the license fee, the license fee shall be returned along with the license.

(b) The license shall not be transferable or assignable and will be issued one time only.

(c) The executive director shall also issue a small (billfold size) card indicating the expiration date of the license. The card shall be issued within 30 days after the license fee is submitted.

(d) A duplicate license to replace a lost or destroyed license shall be issued by the commission upon proper application and payment of the fee required by the board. The duplicate license shall be issued within 30 days after the proper application and fee have been received.

5338.98. Renewal of License.

(a) All licenses will expire on August 31 of each year.

(b) The commission shall notify by certified mail each licensee in writing of the licensee's impending license expiration at least 30 days before the expiration. If the commission fails to mail notice of the impending license expiration at least 30 days before said expiration, the required license renewal fee is waived.

(c) The executive director shall furnish application forms for renewal.

(d) A completed application for renewal shall be submitted to the executive director on or before August 31 of each year.

- (1) The application must be accompanied by the renewal fee prescribed by the board.
- (2) The renewal fee shall be payable to the commission. Upon receipt of a properly completed renewal form and the renewal fee, the executive director shall renew the license and issue a small (billfold size) card indicating the expiration date of the license. The card shall be mailed within 30 days after receipt of the properly completed renewal form and renewal fee.

- §338.99. Disposition of Revenues.
- (a) The state auditor shall audit the financial transactions of the board and commission in connection with the administration of the Water Well Drillers Act during each fiscal biennium.
  - (b) All money collected by the commission under the provisions of the Water Well Drillers Act shall be deposited in the state treasury to the credit of a special fund to be known as the water well drillers fund and may be used only to administer this Act.
  - (c) On or before January 1 of each year, the commission shall submit in writing to the governor and the presiding officer of each house of the legislature a complete and detailed report accounting for funds received and disbursed under the Water Well Drillers Act by the commission and the board during the preceding year.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

(NPDES)

STORM WATER POLLUTION PREVENTION PLAN

1. CERTIFICATION AND NOTIFICATION

The Contractor in conjunction with the Owner must (A) certify the Storm Water Pollution Prevention Plan (SWP3) and (B) submit a Notice of Intent to the appropriate agency.

(A) Certify the Pollution Prevention Plan

The EPA General Permit requires that the SWP3 be certified. The plan should identify an **Authorized Representative** of the Contractor to sign the plan. The authorized representative must be someone at or near the top of the management chain, such as the president, vice president, or a general partner, who has been delegated the authority to sign and certify this type of document. In signing the plan, the authorized representative certifies that the information is true and assumes liability for the plan. Note that Section 309 of the Clean Water Act provides for significant penalties where information is false or the permittee violates, either knowingly or negligently, permit requirements.

In addition to the party or parties considered to be operators, construction activities often have a number of different short-term contractors and subcontractors coming onsite during each phase of the project development. The EPA General Permit requires that the contractors and subcontractors responsible for implementing measures in the Pollution Prevention Plan be listed in the plan with the measures for which they are responsible and that they sign a certification statement that they understand the permit requirements.

(B) Submit a Notice of Intent

The General Permit for Storm Water Discharges Associated with Industrial Activity from Construction Activities requires that the Contractor submit a Notice of Intent (NOI) at least 2 days before construction activities begin. The NOI is essentially an application and contains important information about the project site, including site location, owner information, operator (general contractor) information, receiving water(s), existing NPDES Permit Number (if any), an indication of existing quantitative data, and a brief description of the project.

Each party or each of the parties who have day-to-day responsibilities for site operations, and each party or each of the parties who have control over the designs and specifications necessary to ensure compliance with plan requirements and permit conditions, must submit a NOI. The Contractor and Dallas County will each submit a NOI and will become co-permittees.

**DEADLINES - A NOI must be postmarked at least 2 days before construction begins.**

The Contractor will use the form at the end of this section for submittal of NOI to EPA. NOIs for the EPA General Permit will be submitted directly to EPA's central processing center at the following address:

Storm Water Notice of Intent  
P.O. Box 1215  
Newington, VA 22122

## 2. CONSTRUCTION/IMPLEMENTATION PHASE

Once the Contractor and the County of Dallas have filed a Notice of Intent, the Contractor may start construction of the project as early as 2 days after the NOI is postmarked. However, all requirements of the permit have not yet been met. The Contractor must now do the things that were outlined in the Storm Water Pollution Prevention Plan: (a) implement the controls, (b) inspect and maintain the controls, (c) maintain records of construction activities, (d) update/change the plan to keep it current, (e) take proper action when there is a reportable quantity spill, and (f) have plans accessible.

### **(A) Implement Controls**

The first action that should be taken is to construct or perform the controls that were selected for the Storm Water Pollution Prevention Plan. The controls should be constructed or applied in accordance with State or local specifications. If there are no State or local specifications for control measures, then the controls should be constructed in accordance with good engineering practices. The controls must be constructed in the order indicated in the sequence of major activities. Stabilization measures must be applied within the time frame specified in the permit.

To ensure that controls are adequately implemented, it is important that the work crews who install the measures are experienced and/or adequately trained. Improperly installed controls can have little or no effect and may actually increase the pollution of storm water. It is also important that all other workers on the construction site be made aware of the controls so that they do not inadvertently disturb or remove them.

### **(B) Inspect and Maintain Controls**

Inspection and maintenance of the protective measures that are part of this plan are as important to pollution prevention as proper planning, design/selection, and installation. The General Contractor will provide for the systematic inspection of the Storm Water Pollution Prevention Controls.

If, at any time during the effective period of the permit, the permitting authority finds that the plan does not meet one or more of the minimum, standards established by the General Permit, the permitting authority will notify the permittee of require changes necessary to bring the plan up to standard.

For a construction activity to be in full compliance with its NPDES storm water permit, and for the Storm Water Pollution Prevention Plan to be effective, the plan must accurately reflect site features and operations. When it does not, the plan must be changed. The plan must also be changed if the operators observe that it is not effective in minimizing pollutant discharge from the site.

**(D) Update/Change the Plan**

These records can be used to make sure that areas where there is no construction activity will be stabilized within the required time frame.

- The dates when major grading activities occur in a particular area
- The dates when construction activities cease in an area, temporarily or permanently.
- The dates when an area is stabilized, temporarily or permanently.

In addition to the inspection and maintenance reports, the inspector should keep records of the construction activity on the site. In particular, the inspector should keep a record of the following information:

**(C) Maintain Records of Construction Activities**

**Maintenance/repairs** - The inspector must record any damages or deficiencies in the control measures on an inspection report form provided for this purpose. These reports document the maintenance and repair and to prove that inspection and maintenance were performed. The Contractor should correct damage or deficiencies as soon as practicable after the inspection but in no case later than 7 days after the inspection. Any changes that may be required to correct deficiencies in the Storm Water Pollution Prevention Plan should also be made as soon as practicable after the inspection but in no case later than 7 days after the inspection.

**Inspection** - The EPA General Permit requires inspection every 7 days or within 24 hours of a storm of 0.5 inches or more in depth. All disturbed areas of the site, areas for material storage, locations where vehicles enter or exit the site, and all of the erosion and sediment controls that were identified as part of the plan must be inspected. Controls must be in good operating condition until the area they protect has been completely stabilized and the construction activity is complete. The inspector for the General Contractor will sign all inspection reports. The form at the end of this section will be used.



Operators of a construction site must continue to comply with permit conditions until: (1) they no longer meet the definition of an operator of a construction site; or (2) the construction activity is complete, all disturbed soils have been finally stabilized, and temporary erosion and sediment controls have been or will be removed. A permittee should submit a Notice of Termination (NOT) to inform EPA that he/she is no longer an operator of a construction activity.

### **3. FINAL STABILIZATION/TERMINATION PHASE**

**Access** - Although plans and associated records are not necessarily required to be submitted to the Director, these documents must be made available upon request to the Director, or any State or local agency who is approving erosion and sediment control plans, or storm water management plans. If site storm water runoff is discharged to a municipal separate storm sewer system, the plans must be made available upon request to the municipal operator of the system.

**Retention of records** - Retention of records requires that copies of the Storm Water Pollution Prevention Plan and all other reports required by the permit, as well as all of the data used to complete the NOI, be retained for 3 years after the completion of final site stabilization.

**Plan location** - A copy of the Pollution Prevention Plan must be kept at the construction site from the time construction begins until the site is finally stabilized.

The General Permit has specific requirements regarding plan location and access.

#### **(F) Provide for Plan Location and Access**

Modify the pollution prevention plan to include the information listed above.

Within 14 days, submit a written description of the release to the EPA Regional Office providing the date and circumstances of the release and the steps to be taken to prevent another release.

Notify the National Response Center immediately at (800) 424-8802; in Washington, D.C., call (202) 426-2675.

Because construction activities may handle certain hazardous substances over the course of the project, spills of these substances in amounts that equal or exceed Reportable Quantity (RQ) levels are a possibility. EPA has issued regulations that define what reportable quantity levels are for oil and hazardous substances. These regulations are found at 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302. If there is a RQ release during the construction period, then the Contractor must take the following steps:

#### **(E) Report Releases of Reportable Quantities**

**4. MEASUREMENT AND PAYMENT.** If the Contractor is required to install temporary erosion, sediment and water pollution control measures due to his negligence, carelessness, lack of maintenance, or failure to install permanent controls as part of the work as scheduled, and measures are ordered in writing by the Engineer, such work shall not be measured for payment but shall be performed at the Contractor's expense. All labor, tools, equipment and incidentals to complete the work specified under Subarticle 2 (A) will not be paid for under applicable contract bid items but will be considered subsidiary to the various bid items, unless otherwise noted.

**C. Record Retention -** Following the termination of construction activities the permittees must keep a copy of the Storm Water Pollution Prevention Plan and records of all the data used to complete the Notice of Intent for a period of at least three years following final stabilization. The record retention period may be extended by EPA's request. Prior to submitting the NOT, the Contractor will furnish the County of Dallas copies of all NOTs, certificates, and inspection forms for record retention purposes.

Storm Water Notice of Termination  
P.O. Box 1185  
Newington, Virginia 22122

NOT's should be mailed to the following address:

Note that when there is a change in operators of a construction activity, then the new operator must submit an NOI to be covered by the permit at least 2 days before the change in operator. The form at the end of this section will be used.

**B. Notice of termination -** The NOT is a one-page form which should be completed and submitted to EPA when a site has been finally stabilized or when an operator of a construction activity changes. Information to be included on the NOT includes the location of the construction site; the name, address, and telephone number of the operator terminating coverage; the NPDES general permit number; an indication of why coverage under the permit should be terminated for the operator; and a signed certification statement.

**A. Final stabilization -** Final stabilization is defined by the EPA General Permit as meaning that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 70 percent of the cover for unpaved areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

When the need for control measures can not be attributed to the Contractor's negligence, carelessness, lack of maintenance or failure to install permanent water pollution control measures and these measured are shown on the plans and/or directed by the Engineer, these measures shall be measured and paid for in accordance with the applicable contract bid items. For work performed under the requirements of this item which is not comparable to work performed under contract bid items, such work shall be performed on a force account basis in accordance with Item 9 or by agreed unit prices. Removal of control measures not incorporated as permanent control measures shall be measured and paid for in accordance with applicable contract bid items.

In case of failure on the part of the Contractor to prevent and control soil erosions, sedimentation and water pollution which may degrade receiving water, the Engineer reserves the right to employ outside assistance or to use County forces to provide the necessary corrective measures. All costs including engineering costs will be deducted from any moneys due or to become due to the Contractor.

Pollution control measures may be applicable to Contractor operations outside the right of way where such work is necessary as a result of roadway related construction such as construction and haul roads, field offices, equipment and supply areas, and material sources. Pollution control measures outside the right of way will not be measured for payment but shall be performed at the Contractor's expense.

# Storm Water Pollution Prevention Plan

## Part A - Site Description

Attach NOI for general site information

Type of Project

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## Schedule

Milestone	Start	Finish	Scheduled	Start	Finish	Revised	Start	Finish
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## Part B - Existing Site Conditions

### Existing Foliage

Type of Grass / Vegetation

Approximate Density %

Site Coverage %


### Drainage Impacts

Pre-development Runoff Coefficient (C in Rational Formula)

Post-development Runoff Coefficient

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**Existing Areas of Erosion**  
Brief description of areas which show signs of existing erosion i. e. areas with gullies or rills, sediment buildup in creeks, soil loss around structures, etc.. Note location, approximate area and probable cause (disturbed area, steep slope, etc.)

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**Offsite Systems**  
Systems Impacting Site?  Yes  No  
If yes, brief description and potential site impacts.

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**Other Systems Present** (Channel, creek, watercourse, etc.)  Yes  No  
If yes, brief description (name, location, floodplain/floodway considerations, etc.)

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**Onsite Systems**  
Pipe System Present  Yes  No  
If yes, brief description (size, location, number of onsite inlets)

**Part C - Pollution Prevention Techniques**

**Erosion and Sediment Control**

**Technique Used**

**Project Phasing**  
(Limits of phasing shall be shown on SWPPP Plan View)

Phase	Start	Finish
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**Vegetative Techniques**

**Type of Vegetation**  
Description of Use (application schedule, rate, maintenance schedule)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Install Date**      **Remove Date**      **Perm.?**

**Mulch**

Type: \_\_\_\_\_

**Interceptor Swale**  
Design Capacity \_\_\_\_\_  
Design Velocity \_\_\_\_\_

**Diversion Dike**  
Design Capacity \_\_\_\_\_  
Design Velocity \_\_\_\_\_

**Pipe Slope Drain**  
Design Capacity \_\_\_\_\_  
Design Velocity \_\_\_\_\_

**Hay Bale Dike**  
Design Capacity \_\_\_\_\_

**Silt Fence**  
Design Capacity \_\_\_\_\_

\_\_\_\_\_  
Design Capacity \_\_\_\_\_



**Part D - Contractor / Sub Contractor Certifications**

Any contractor or subcontractor responsible for portions of the SWPPP or impacts the efforts of the SWPPP shall sign the following certification prior to providing services at the site.

I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signed: \_\_\_\_\_  
Name (Printed): \_\_\_\_\_  
Title: \_\_\_\_\_  
Name of Firm: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Date: \_\_\_\_\_  
Nature of Firm's Responsibility: \_\_\_\_\_

Signed: \_\_\_\_\_  
Name (Printed): \_\_\_\_\_  
Title: \_\_\_\_\_  
Name of Firm: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Date: \_\_\_\_\_  
Nature of Firm's Responsibility: \_\_\_\_\_

Signed: \_\_\_\_\_  
Name (Printed): \_\_\_\_\_  
Title: \_\_\_\_\_  
Name of Firm: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Date: \_\_\_\_\_  
Nature of Firm's Responsibility: \_\_\_\_\_

Add additional certification sheets as necessary. Plan view of site showing pollution prevention techniques is required to complete SWPPP.





# Erosion and Sediment Control Calculations

1	2	3	4 Existing Conditions				7 Disturbed Conditions				10	11
DA #	Area (Ac)	Avg. K	LSu	Cu	ZAsu	Lsd	Cd	ZAsd	Fe	ZAre1		
<b>Totals</b>												

**Rating Factor**

Appendix C - NOI Form Instructions


Form Approved, OMB No. 2040-0046  
 Approved by GSA: 84-146

See Reverse for Instructions

United States Environmental Protection Agency  
 Washington, DC 20460

**Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity Under the NPDES General Permit**

**NPDES FORM**



Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a NPDES permit issued for storm water discharges associated with industrial activity in the State identified in Section II of this form. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

**I. Facility Operator Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

Phone: \_\_\_\_\_

Status of Owner/Operator:  Owner/Operator

**II. Facility/Site Location Information**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_

Quarter: \_\_\_\_\_

Is the Facility Located on Indian Lands? (Y or N)

**III. Site Activity Information**

MSA Operator Name: \_\_\_\_\_

Receiving Water Body: \_\_\_\_\_

If You are Filing as a Co-Permittee, Enter Storm Water General Permit Number: \_\_\_\_\_

Are There Existing Quantitative Data? (Y or N)

Is the Facility Required to Submit Monitoring Data? (1, 2, or 3)

SIC or Designated Activity Code: \_\_\_\_\_

Primary: \_\_\_\_\_ 2nd: \_\_\_\_\_ 3rd: \_\_\_\_\_ 4th: \_\_\_\_\_

If This Facility is a Member of a Group Application, Enter Group Application Number: \_\_\_\_\_

If You Have Other Existing NPDES Permits, Enter Permit Numbers: \_\_\_\_\_

**IV. Additional Information Required for Construction Activities Only**

Project Completion Date: \_\_\_\_\_

Estimated Area to be Disturbed (in Acres): \_\_\_\_\_

Is the Storm Water Pollution Prevention Plan in Compliance with State and/or Local Sediment and Erosion Plans? (Y or N)

**V. Certification:** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Instructions - EPA Form 3510-  
Notice Of Intent (NOI) For Storm Water Discharges Associated With Industrial Activity  
To Be Covered Under The NPDES General Permit

Those facilities that must submit monitoring data (e.g., choice 2) are: Section 313  
EPCRA facilities; primary metal industries; land disposal units/increased/flat wood  
treatment facilities; facilities with coal pile runoff; and battery reclaimers.

List in descending order of significance, up to four 4-digit standard industrial  
classification (SIC) codes that best describe the principal products or services provided  
at the facility or are derived in Section II of the application.

For industrial activities defined in 40 CFR 122.26(b)(1)(4)(i)-(ii) that do not have SIC  
codes that accurately describe the principal products produced or services provided, the  
following 2-character codes are to be used:

- HZ - Hazardous waste treatment, storage, or disposal facilities, including those that  
are operating under permit status or a permit under subtitle C of RCRA [40  
CFR 122.26 (b)(1)(4)(vi)]
- LF - Landfill, land application area, and open dumps that receive or have received  
any industrial wastes, including those that are subject to regulation under  
subpart D of RCRA [40 CFR 122.26 (b)(1)(4)(v)]
- SE - Steam electric power generating facilities, including coal handling area [40 CFR  
122.26 (b)(1)(4)(iv)]
- TW - Treatment works treating domestic sewage or any other sewage sludge or  
wastewater treatment device or system, used in the storage, treatment,  
recycling, and recclamation of municipal or domestic sewage [40 CFR 122.26  
(b)(1)(4)(iii)] or,
- CO - Construction activities [40 CFR 122.26 (b)(1)(4)(ii)]

If the facility listed in Section II has participated in Part 1 of an approved storm water  
group application and a group number has been assigned, enter the group application  
number in the space provided.  
If there are other NPDES permits presently issued for the facility or site listed in Section  
II, list the permit number. If an application for the facility has been submitted but no  
permit number has been assigned, enter the application number.  
Section IV Additional Information Required for Construction Activities Only  
Construction activities must complete Section IV in addition to Sections I through III.  
Only construction activities need to complete Section IV.  
Enter the project start date and the estimated completion date for the entire  
development plan.  
Provide an estimate of the total number of acres of the site on which soil will be  
disturbed (found to the nearest acre).  
Indicate whether the storm water pollution prevention plan for the site is in compliance  
with approved state and/or local sediment and erosion plans, permits, or storm water  
management plans.

Section V Certification  
Federal statutes provide for severe penalties for submitting false information on the  
application form. Federal regulations require the application to be signed as follows:  
For a corporation: by a responsible corporate officer, which means: (i) president,  
secretary, treasurer, or vice-president of the corporation in charge of a principal  
business function, or any other person who performs similar policy or decision making  
functions; or (ii) the manager of one or more manufacturing, production, or operating  
facilities employing more than 250 persons or having gross annual sales or expenditures  
exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents  
has been assigned or delegated to the manager in accordance with corporate  
procedures;  
For a partnership or sole proprietorship: by a general partner or the proprietor, or  
For a municipality, state, federal, or other public facility: by either a principal executive  
officer or a duly elected official.  
Paperwork Reduction Act Notice  
Public reporting burden for this application is estimated to average 0.5 hours per  
application, including time for reviewing instructions, searching existing data sources,  
gathering and maintaining the data needed, and completing and reviewing the collection  
of information. Send comments regarding this burden estimate, any other aspect of the  
collection of information, or suggestions for improving the form, including any  
suggestions which may reduce the burden to: Chief, Information Policy  
Division, PFD-221, U.S. Environmental Protection Agency, 401 M Street, SW,  
Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office  
of Management and Budget, Washington, DC 20503.

Who Must File A Notice Of Intent (NOI) Form  
Federal law at 40 CFR Part 122 prohibits point source discharges of storm water  
associated with industrial activity to a water body (as of the U.S. without a National  
Pollutant Discharge Elimination System (NPDES) permit. The operator of an industrial  
activity that has such a storm water discharge must submit a NOI to obtain coverage  
under the NPDES Storm Water General Permit. If you have questions about whether  
you need a permit under the NPDES Storm Water program, or if you need information  
as to whether a particular program is administered by EPA or a state agency, contact  
the Storm Water Hotline at (703) 621-4423.

Where To File NOI Form  
NOI must be sent to the following address:  
Storm Water Notice of Intent  
PO Box 1215  
Hennington, VA 22122  
Completing The Form  
You must type or print, using upper-case letters, in the appropriate areas only. Please  
place each character allowed on the market. Abbreviate if necessary to save space.  
Use one space for breaks between words.  
Number of characters allowed for each item. Use one space for breaks between words.  
But not for punctuation marks unless they are needed to clarify your response. If you  
have any questions on the form, call the Storm Water Hotline at (703) 621-4423.

Section I Facility Operator Information  
Give the legal name of the person, firm, public organization, or any other entity that  
operates the facility or site specified in the application. The name of the operator may  
or may not be the same as the name of the facility. The responsible party is the legal  
entity that controls the facility's operation, rather than the plant or site manager. Do not  
use a colloquial name. Enter the complete address and telephone number of the  
operator.  
Enter the appropriate letter to indicate the legal status of the operator of the facility.  
F = Federal  
S = State  
M = Public (other than federal or state)  
P = Private  
Section II Facility/ Site Location Information  
Enter the facility's or site's official or legal name and complete street address, including  
city, state, and ZIP code. If the facility or site lacks a street address, indicate the state,  
the latitude and longitude of the facility to the nearest 15 seconds, or the quarter  
section, township, and range (to the nearest quarter section) of the approximate center  
of the site.  
Indicate whether the facility is located on Indian lands.  
Section III Site Activity Information  
If the storm water discharges to a municipal separate storm sewer system (MS4), enter  
the name of the operator of the MS4 (e.g., municipality name, county name) and the  
receiving water of the discharge from the MS4. (A MS4 is defined as a conveyance  
or system of conveyances (including roads with drainage systems, municipal streets,  
catch basins, gutters, ditches, man-made channels, or storm drains) that is  
owned or controlled by a state, city, town, borough, county, parish, district, association,  
or other public body which is designed or used for collecting or conveying storm water.)  
If the facility discharges storm water directly to receiving water(s), enter the name of the  
receiving water.  
If you are filing as a co-permittee and a storm water general permit number has been  
issued, enter that number in the space provided.  
Indicate whether or not the owner or operator of the facility has existing qualitative  
data that represent the characteristics and concentration of pollutants in storm water  
discharges.  
Indicate whether the facility is required to submit monitoring data by entering one of the  
following:  
1 = Not required to submit monitoring data;  
2 = Required to submit monitoring data;  
3 = Not required to submit monitoring data; submitting certification for monitoring  
exclusion

Appendix D - NOT Form Instructions

Form Approved. OMB No. 5608-0002  
Approved optional 6-87-85

Please see instructions before completing this form

United States Environmental Protection Agency  
Washington, DC 20460

**NPDES FORM**  
**Notice of Termination (NOT) of Coverage Under the NPDES General Permit for Storm Water Discharges Associated with Industrial Activity**



Submission of this Notice of Termination constitutes notice that the party identified in Section II of this form is no longer authorized to discharge storm water associated with industrial activity under the NPDES program. ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM.

**I. Permit Information**

NPDES Storm Water General Permit Number: \_\_\_\_\_

Check Here if You are No Longer the Operator of the Facility:

Check Here if the Storm Water Discharge is Being Terminated:

**II. Facility Operator Information**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_  
Phone: \_\_\_\_\_

**III. Facility/Site Location Information**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_  
County: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
Sector: \_\_\_\_\_ Quarter: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_

IV. Certification: I certify under penalty of law that all storm water discharges associated with industrial activity from the identified facility that are authorized by a NPDES general permit have been eliminated or that I am no longer the operator of the facility or construction site. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with industrial activity under the general permit, and that discharging pollutants in storm water associated with industrial activity in waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submitter of this Notice of Termination does not release an operator from liability for any violations of the permit or the Clean Water Act.

Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

**Instructions for Completing Notice of Termination (NOT) Form**

Where to File NOT Form  
Send this form to the following address:  
Storm Water Notice of Termination  
P.O. Box 1165  
Newington, VA 22122

Completing the Form

Type or print, using upper-case letters, in the appropriate areas only. Please place each character between the marks. Allowances if necessary to any within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. If you have any questions about the form, call the Storm Water Hotline at (703) 621-4822.

PLEASE SEE REVERSE OF THIS FORM FOR FURTHER INSTRUCTIONS

Permittees who are presently covered under the EPA based National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activity may submit a Notice of Termination (NOT) form when they no longer have any storm water discharges associated with industrial activity as defined in the storm water regulations at 40 CFR 122.26 (b)(1)(4), or when they are no longer the operator of the facility.

For construction activities, elimination of all storm water discharges associated with industrial activity occurs when disturbed soils at the construction site have been fully stabilized and temporary erosion and sediment control measures have been removed or will be removed at an appropriate time, or that all storm water discharges associated with industrial activity from the construction site are authorized by a NPDES general permit that has otherwise been determined. Final stabilization means that all soil-disturbing activities at the site have been completed, and that a uniform permanent vegetative cover with a density of 70% or more has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed.

Instructions - EPA Form 3610-7  
Notice of Termination (NOT) of Coverage Under The NPDES General Permit  
for Storm Water Discharges Associated With Industrial Activity

Section IV Certification

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation by a responsible corporate officer, which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars). If authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, State, Federal, or other public facility: by either a principal executive officer or ranking elected official.

Payment/Reduction Act Notice

Public reporting burden for this application is estimated to average 0.5 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate, any other aspect of the collection of information, or suggestions for improving this form, including any suggestions which may increase or reduce the burden on: Chief, Information Policy Branch, PIA-223, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

Section I Permit Information

Enter the existing NPDES Storm Water General Permit number assigned to the facility or site identified in Section III. If you do not know the permit number, contact the Storm Water Hotline at (703) 621-4823.

Indicate your reason for submitting this Notice of Termination by checking the appropriate box:

If there has been a change of operator and you are no longer the operator of the facility or site identified in Section III, check the corresponding box.

If all storm water discharges at the facility or site identified in Section III have been terminated, check the corresponding box.

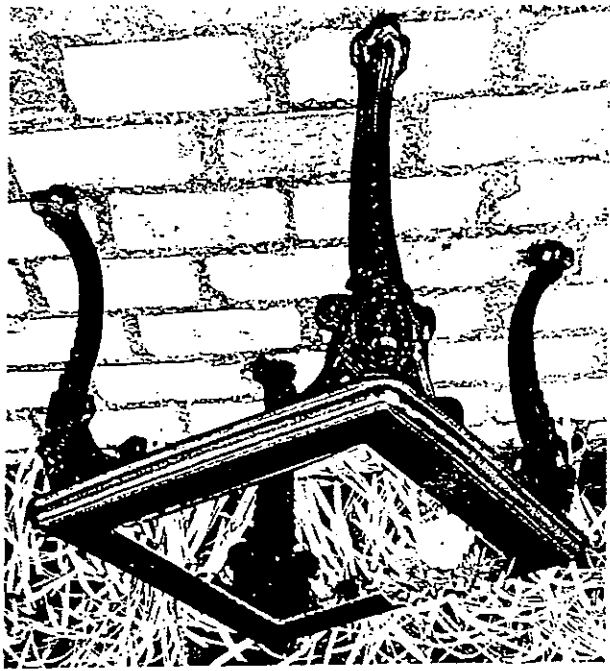
Section II Facility Operator Information

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Section III Facility/ Site Location Information

Enter the facility's or site's official or legal name and complete address, including city, state and ZIP code. If the facility lacks a street address, indicate the state, the latitude and longitude of the facility to the nearest 15 seconds, or the quarter, section, township, and range (to the nearest quarter section) of the approximate corner of the site.

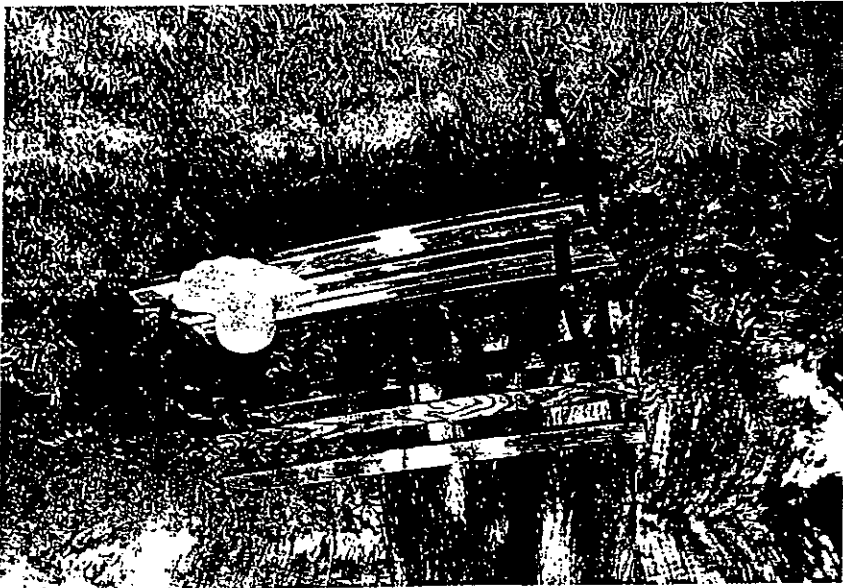
[FR Doc. 92-21385 Filed 9-8-92; 8:45 am]  
BILLING CODE 6560-50-C



CAMBO TABLE:  
 HT 13", L 6" SQ  
 AT TOP (GLASS  
 NOT INCLUDED)  
 WT 52 LBS.



RUSTIC SETTEE:  
 HT 25", HT TO SEAT 14"  
 L 3'10", DEPTH 1'8"  
 WT 151 LBS.  
 RUSTIC CHAIR:  
 HT 25", HT TO SEAT 14"  
 WD 1'6-1/2"  
 WT 85 LBS.



\*R...  
 EXPO BENCH:  
 HT 2'10", L 4'  
 WD 2'2", WT 120 LBS.  
 (ALSO AVAILABLE IN 5'  
 AND 8' LENGTHS  
 ASSEMBLED OR  
 UNASSEMBLED)

Bench C

*Robinson Iron*

*5*

*Expo Bench, but not finished, w/chem.*

315.00	COURTYARD FINIAL
230.00	PINEAPPLE FINIAL
920.00	ENGLISH SUNDIAL
590.00	VICTORIAN FINIAL
290.00	BIRDHOUSE
990.00	PINEAPPLE MAILBOX
1,440.00	#4
840.00	#3
	VENETTAN FINIAL
100.00	w/o wiring & pipe stand
180.00	LEAFLIGHT
100.00	RABBIT
100.00	BUNNY
100.00	STANDING SQUIRREL
100.00	CROUCHING SQUIRREL
45.00	TOAD
45.00	FROG
55.00	CAT
75.00	ELEPHANT
670.00	PINEAPPLE POST
670.00	#41 FENCE POST
475.00	ORNATE STANCHION
1,030.00	FLUTED BOLLARD
860.00	#80 HORSEHEAD HITCHING POST
190.00	#72 HORSEHEAD FINIAL
365.00	#75 HORSEHEAD HITCHING POST
3,140.00	STURBRIDGE w/o Fixture
2,420.00	WYNLAKE w/o Fixture
3,560.00	WYNLAKE w/o Fixture
1,750.00	IOLANI w/o Fixture
2,280.00	ROSEMONT w/o Fixture
2,390.00	POTOMAC w/o Fixture
3,840.00	POTOMAC w/o Fixture
3,333.00	BREWTON w/o Fixture
1,500.00	BREWTON w/o Fixture
1,720.00	ONE NINETEEN w/o Fixture
2,890.00	ONE NINETEEN w/o Fixture
1,450.00	GRAND RAPIDS w/o Fixture
2,690.00	GRAND RAPIDS w/o Fixture

350.00	CAMBO TABLE
660.00	Chair
1,310.00	Settee
	RUSTIC
440.00	End Support Only
	required
	Deduct 60.00 if assembly not
1,290.00	4 Feet (2 Supports)
1,730.00	6 Feet (3 Supports)
1,840.00	8 Feet (3 Supports)
	EXPO BENCH
1,400.00	JANNY TABLE
180.00	FERN STAND
2,240.00	BOTANICAL GARDENS SETTEE
1,220.00	SETTEE
	FRENCH RENAISSANCE
1,350.00	Bench
1,111.00	Chair
1,820.00	Settee
1,400.00	Loveseat
	GOTHIC
	End Support only
320.00	required
	Deduct 60.00 if assembly not
1,030.00	4 Feet (2 Supports)
1,200.00	6 Feet (3 Supports)
1,270.00	8 Feet (3 Supports)
	SCROLL BENCH
230.00	CURULE STOOL
2,720.00	Table
950.00	Chair
1,450.00	Settee
	FERN
970.00	Chair
1,760.00	Settee
	LAUREL

5,930.00	CANDELABRA w/Polycarbonate Incandescent Globe & Wiring
6,230.00	WHIPPET Small
1,200.00	WHIPPET Large
1,790.00	SCOTTISH TERRIER
840.00	AMERICAN EAGLE w/option 2' Ht Stand
1,760.00	LABRADOR RETRIEVER
1,830.00	DEER
3,580.00	IRISH SETTER
2,830.00	SCREAMING SWAN
750.00	CYGNET
5,810.00	HEBE
750.00	GRIFFIN
1,750.00	LION
1,200.00	JOCKEY w/Special Painting as shown
1,440.00	FERN STAND
1,400.00	JANNY TABLE
	EXPO BENCH
1,840.00	8 Feet (3 Supports)
1,730.00	6 Feet (3 Supports)
1,290.00	4 Feet (2 Supports)
	Deduct 60.00 if assembly not
440.00	End Support Only
	required
1,310.00	Settee
660.00	Chair
350.00	CAMBO TABLE

POSTS & FINIALS

FURNITURE

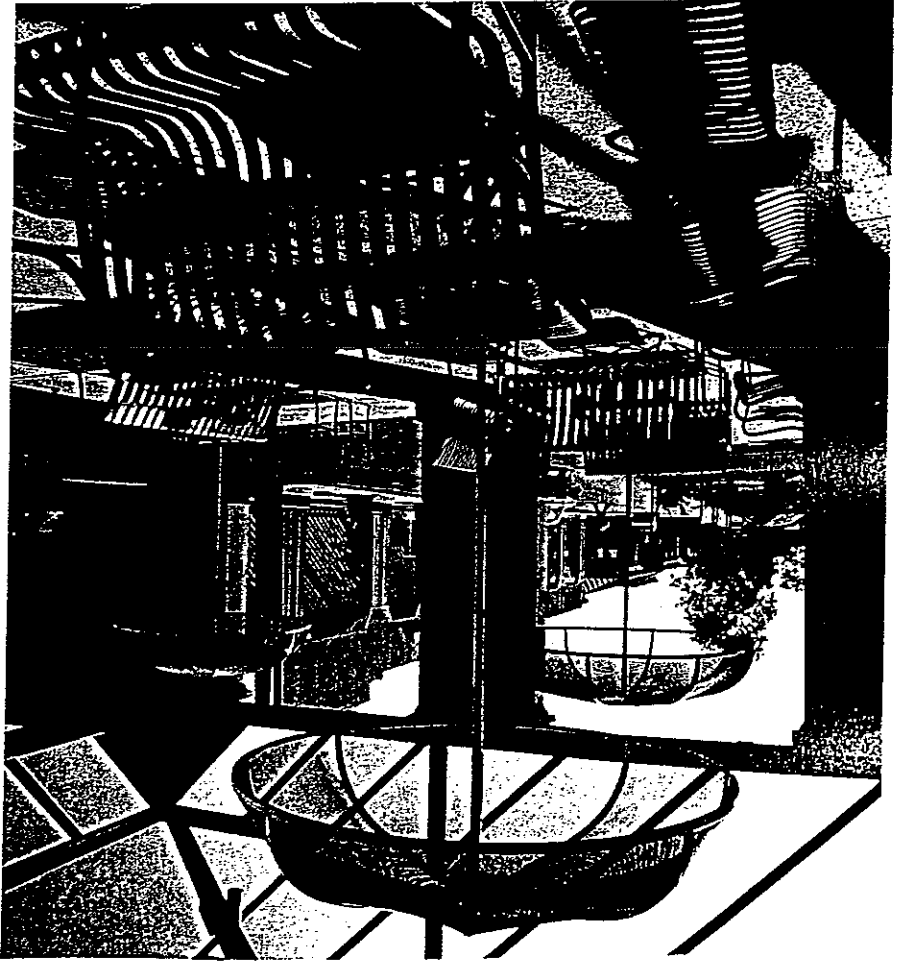
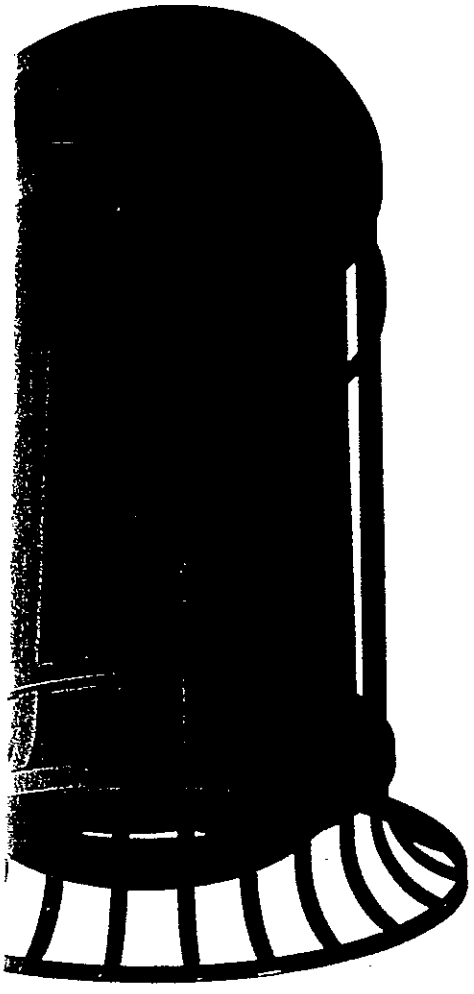
STATUARY



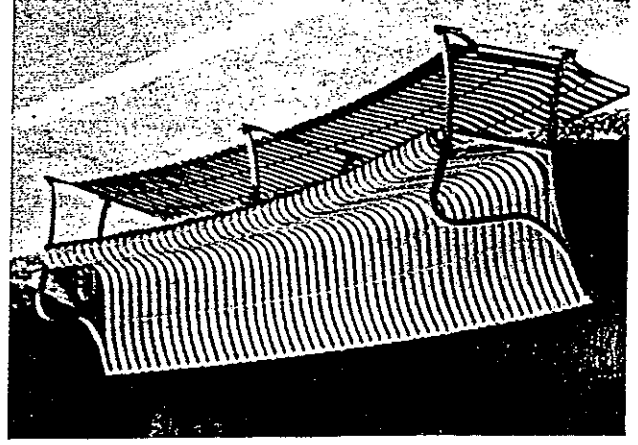
02870/CAN  
Buy Line 5404

**Bowery Trash Receptacle**

vandal resistant, wrought steel strap, with cast iron base, standard black finish, custom colors available, rigid plastic liner, capacity approximately 44 gallons. Optional permanent steel liner and cast aluminum top cover casting with stainless steel cable.



**Bowery Seating System**  
Seating system with hand wrought steel table, bench and umbrella with woven mesh sunscreen. Suitable for custom applications.



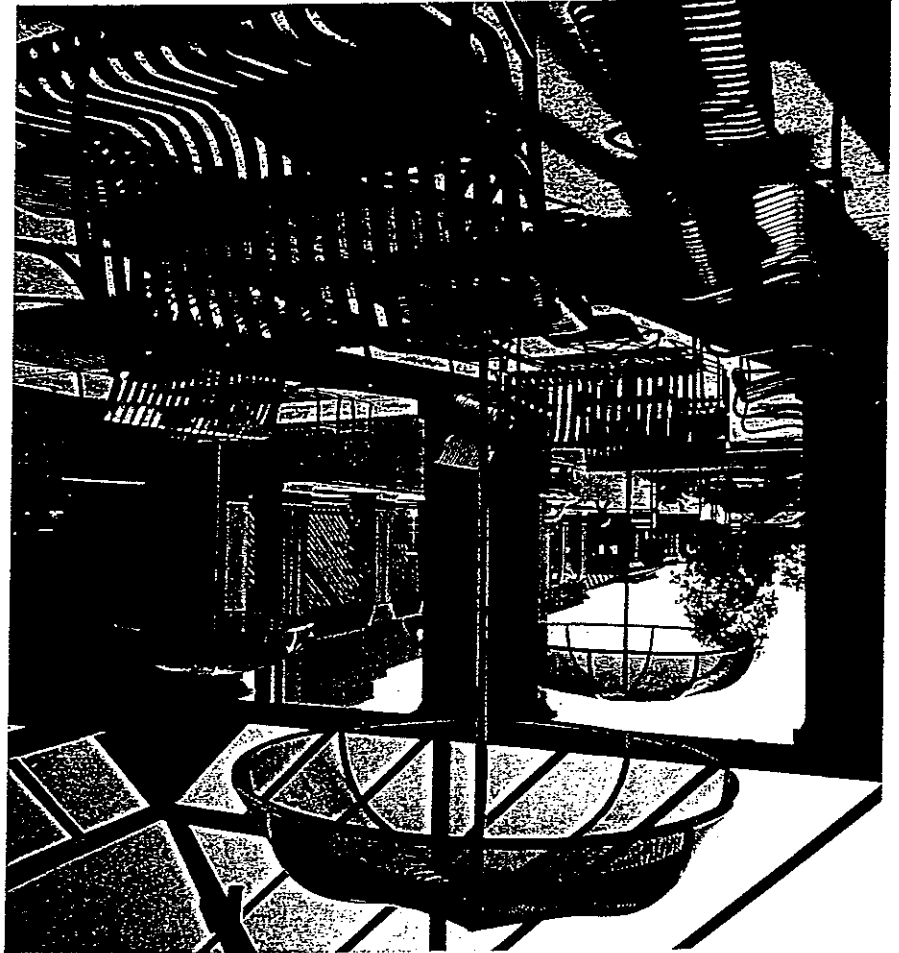
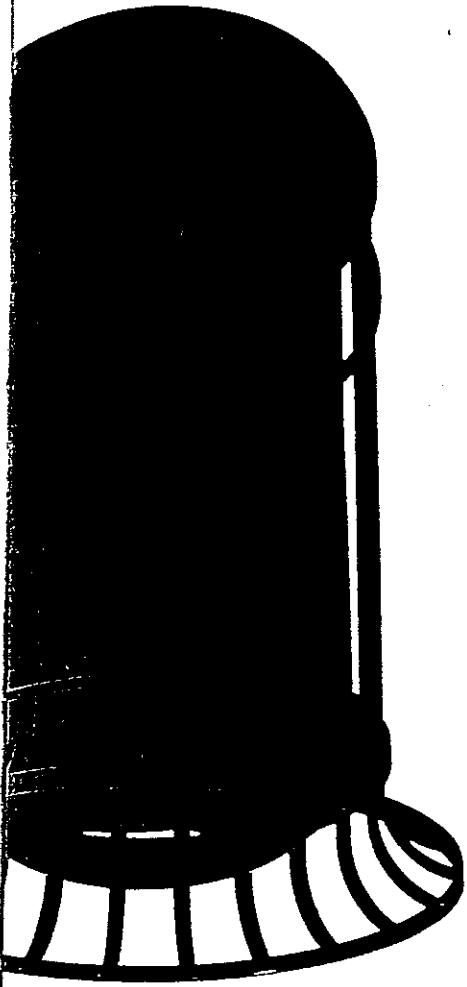
**Bowery Curved Bench**  
Custom vandal resistant wrought steel, many colors and sizes available.

Trash Receptacle '14'

02870/CAN  
Buy Line 5404

1-800-  
935-7111

**Bowery Trash Receptacle**  
Vandal resistant, wrought  
steel strap, with cast iron  
base, standard black finish,  
custom colors available,  
rigid plastic liner, capacity  
approximately 44 gallons.  
Optional permanent steel  
liner and cast aluminum  
top cover casting with  
stainless steel cable.



**Bowery Seating System**  
Seating system with hand wrought steel table, bench and umbrella with  
woven mesh sunscreen. Suitable for custom applications.

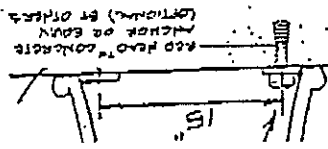
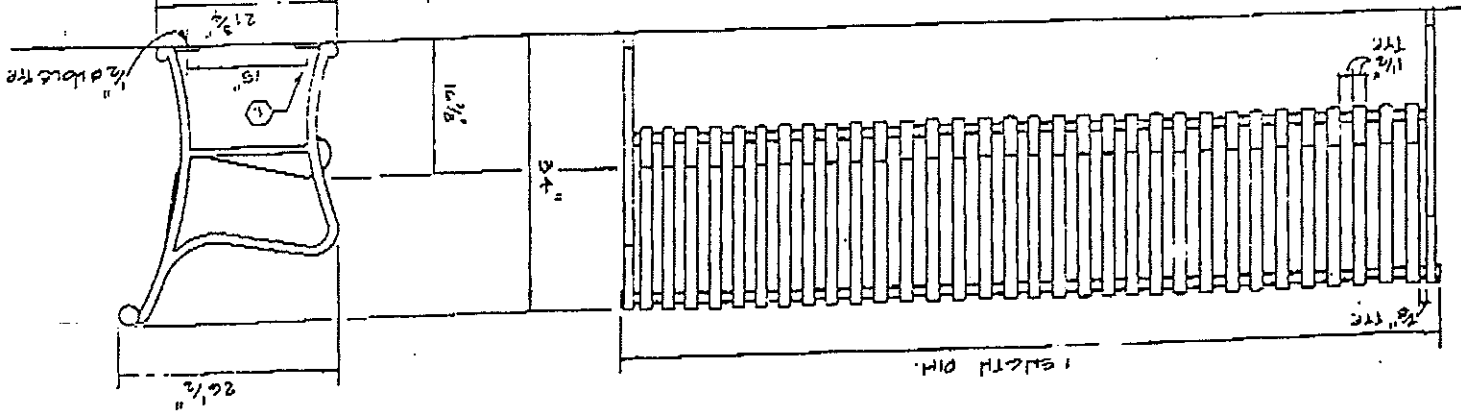


**Bowery Benches**

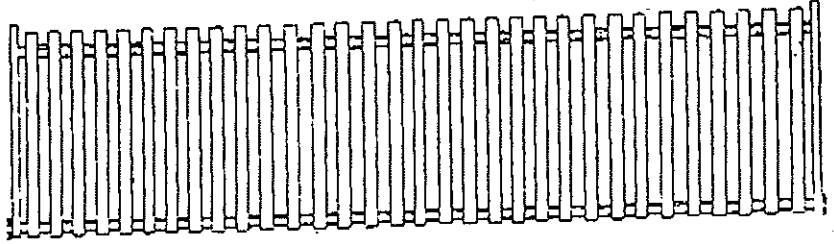
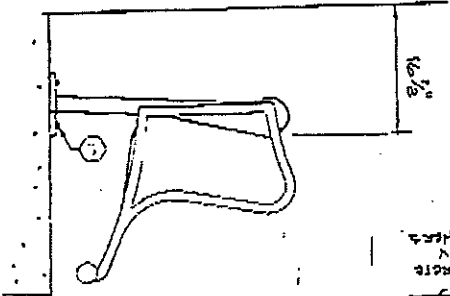
Arm and legs 1" square solid hand wrought steel bar. Formed  
metal seating 1/4" x 2", welded and ground for maximum  
strength and beauty. Maintenance free. Bronze and stainless  
steel available as a custom application. Shown here with  
Pennsylvania Ave. trash receptacle see next page for details.

CALPURNIA EPPENWORTH

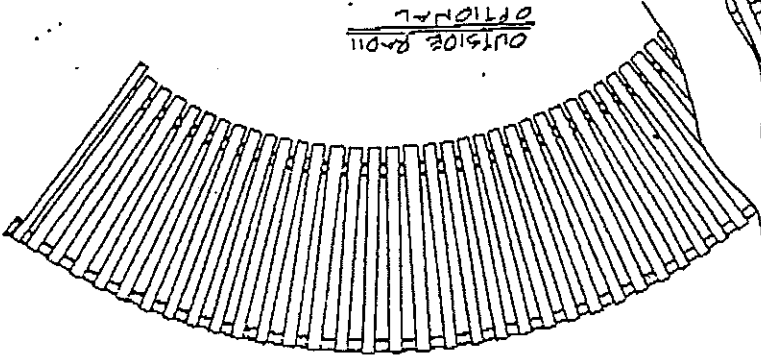
# Bowery Bench



FREE STAIRS



PLAN



① PREFERENCE ONLY  
 DUE TO THE CUSTOM NATURE OF THIS PRODUCT VERIFY ALL MOUNTING LOCATIONS WITH FACTORY PRIOR TO ANY MOUNTING INSTALLATION AND/OR REPAIRATION.

PRODUCT NO. LENGTH

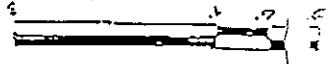
PRODUCT NO.	LENGTH
CDBB 805-48*	4'-0"
CDBB 805-60-*	5'-0"
CDBB 805-72-*	6'-0"
CDBB 805-84-X	7'-0"
CDBB 805-96-X	8'-0"
CDBB 805-120-X	10'-0"
CDBB 805-144-X	12'-0"

Bench B

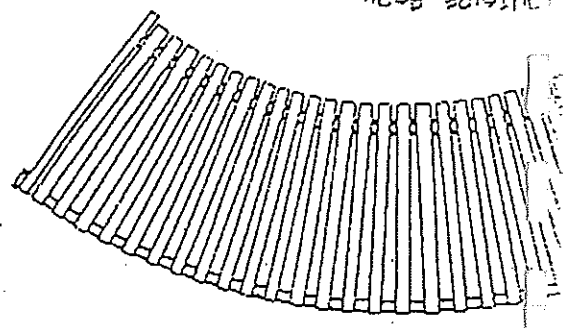
**SPECIFICATIONS**  
 MATERIAL - WROUGHT IRON  
 FINISH - STAIRFORD BLACK  
 - CUSTOM COLORS AVAILABLE  
 - CUSTOM REQUIREMENTS - CUSTOM RELISTS AVAILABLE  
 - CUSTOM APPLICATION SUBJECT TO DESIGN  
 SPECIAL FEATURES - VAPOR RESISTANT WROUGHT IRON & WELD PROTECTION  
 PACKAGING - SHIPPED COMPLETE ASSEMBLED  
 OPERATOR - WELD CORROSION RESISTANT PRODUCT 10 PER YEAR

505-06	7'-0"
505-04	7'-0"
505-72	6'-0"
505-00	5'-0"
505-48	4'-0"
505-24	2'-0"

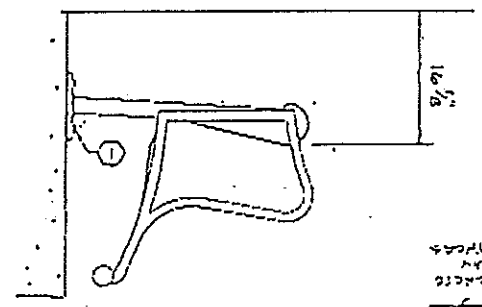
JCT NO. LENGTH



UPSIDE FROM

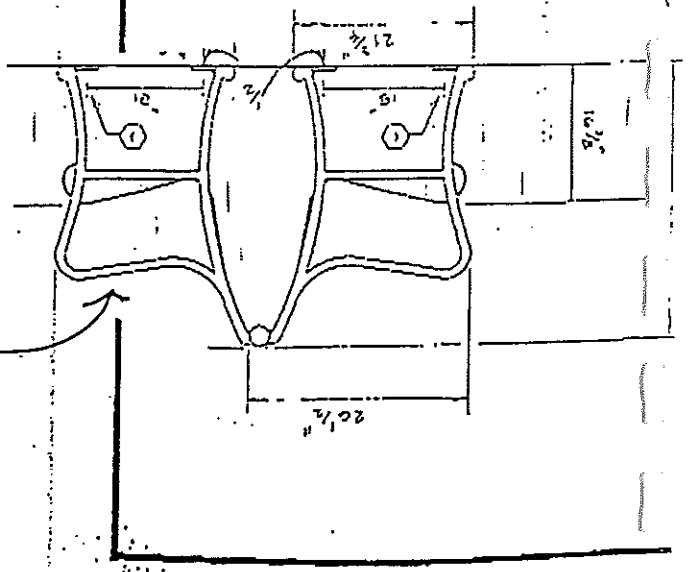


CAPITULEVERED



CONCRETE  
- 6004  
- 10004

FREE STAIRS

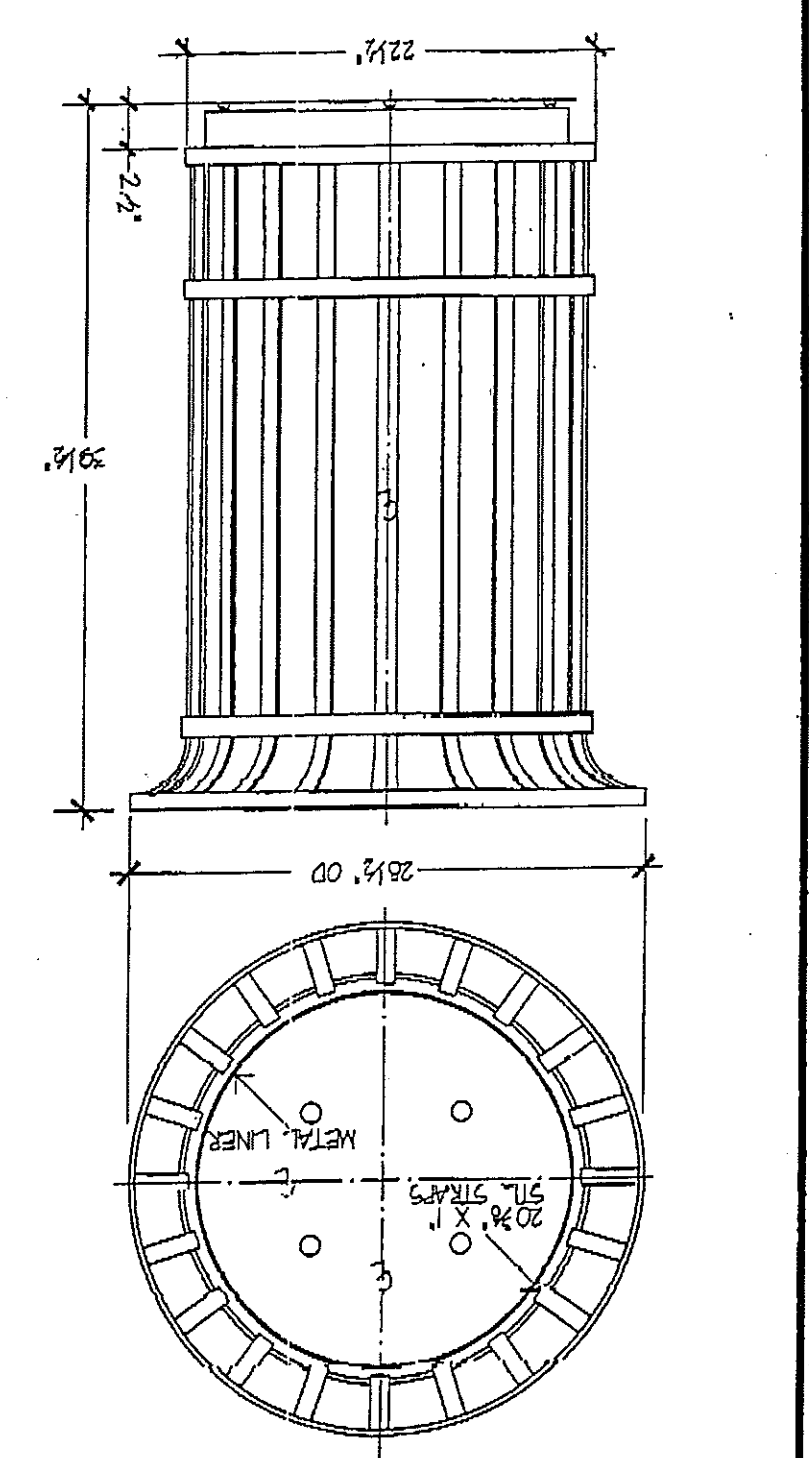
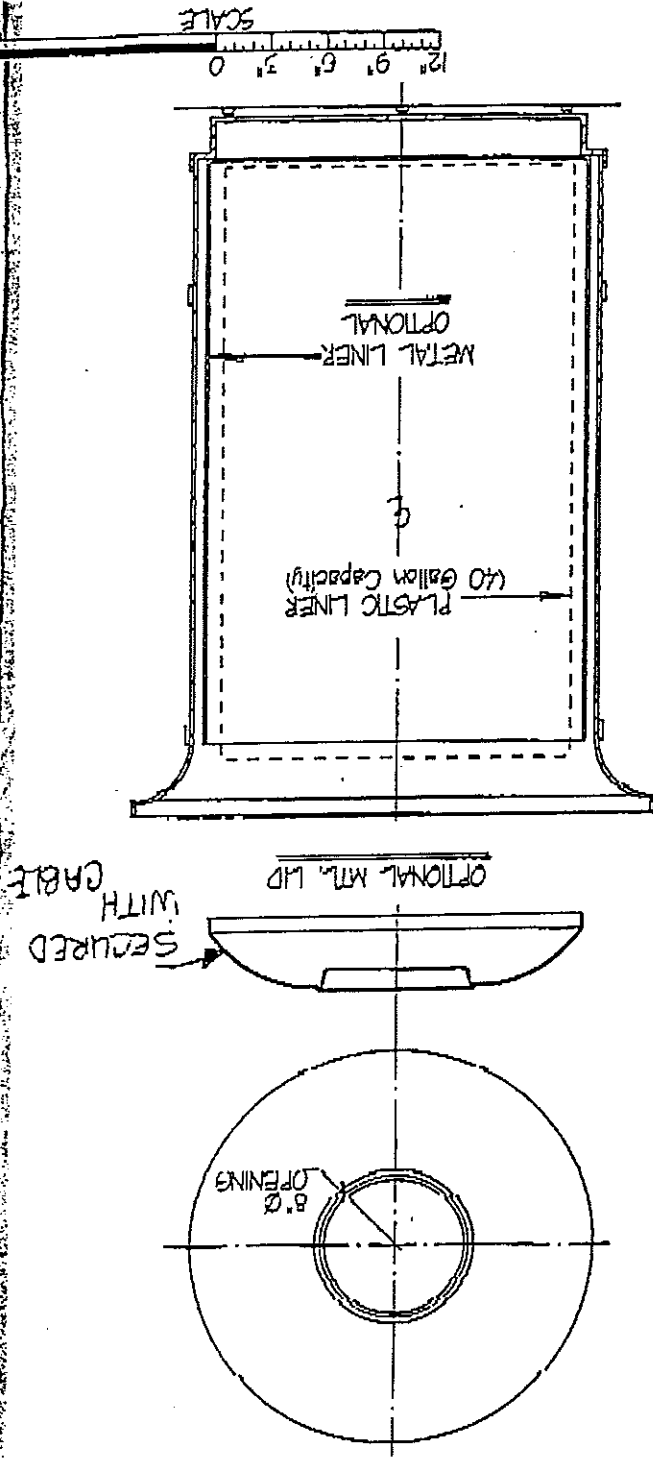


Custom 5' Double  
Bouncy Bench  
(Bench A)

002/002

**CANTEBURY INTERNATIONAL**  
 FINISHES: PAINTED FINISH IN COLORS PER CHART. CUSTOM COLORS AVAILABLE.  
 PACKAGING: UNIT SHIPPED FULLY ASSEMBLED.  
 ORDERING: PLEASE SPECIFY  
 "BOWERY TRASH RECEPTACLE"  
 WITH LID, WITH METAL LINER IF DESIRED.

SPECIFICATIONS:  
 BARREL - WELDED CONSTRUCTION WITH 1 1/2" STL. STRAPS  
 BOTTOM - STEEL W/ 1/2" Ø LEVELER BOLT & JAM NUT (3 PLS.)  
 METAL LINER - 1/8" STEEL - 40 GALLON CAPACITY.



Bowery Trash Receptacle

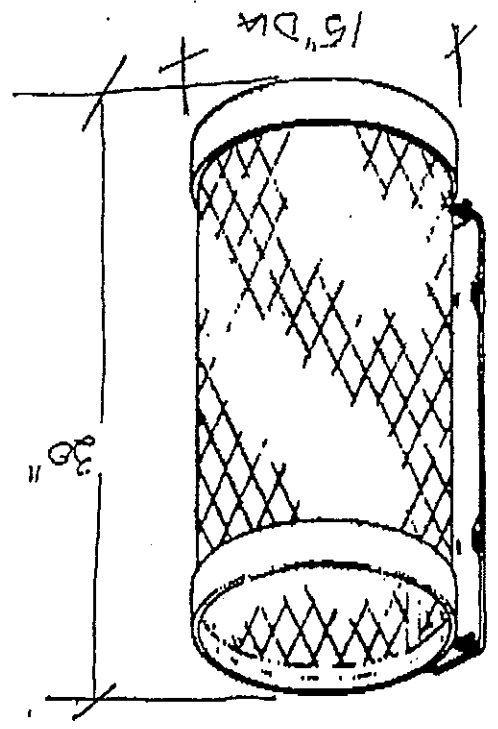


**GameTime**

**ULTRUM™**

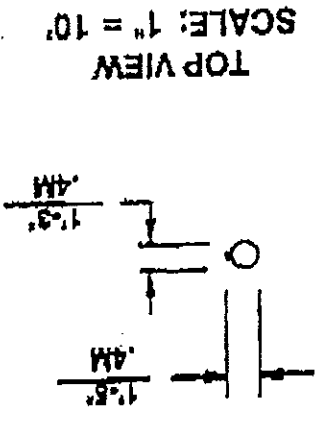
**UL2015  
EXPANDED METAL  
POLE MOUNT  
TRASH RECEPTACLE**  
SHIPPING WEIGHT: UL2015-54 LBS./24 KGS.

*Trash Receptacle 'B' (Pole Mounted)*



**SPECIFICATIONS**

**TRASH RECEPTACLE:** Shall be an all welded construction of 3/4" - #9F expanded metal, 3/16" x 2-1/2" H.R. steel flat, 3/16" x 2" H.R. steel flat and 1/8" x 1" H.R. steel flat with a powder coat brown finish.  
**HUNTING BRACE:** Shall be formed of 3/16" x 2-1/2" H.R. flat steel with a powder coat brown finish.  
**NOTE:** All weights are based on average comparisons of each part.  
**WARRANTY:** GAME TIME provides warranties on all materials and workmanship for one year excluding warranty on pressure-treated wood products against decay and termite, a ten year limited warranty against corrosion on all Durascape uprights, and a two year warranty on Flex Play Nets. Manufacturer's warranties apply on items distributed by GAME TIME.  
To the extent permitted by law, these warranties are expressly in lieu of any other expressed or implied warranties or representation by any person including implied warranty of merchantability or fitness.  
**SPECIFICATIONS:** GAME TIME has a policy of continuous improvement and reserves the right to discontinue or change specifications without notice.

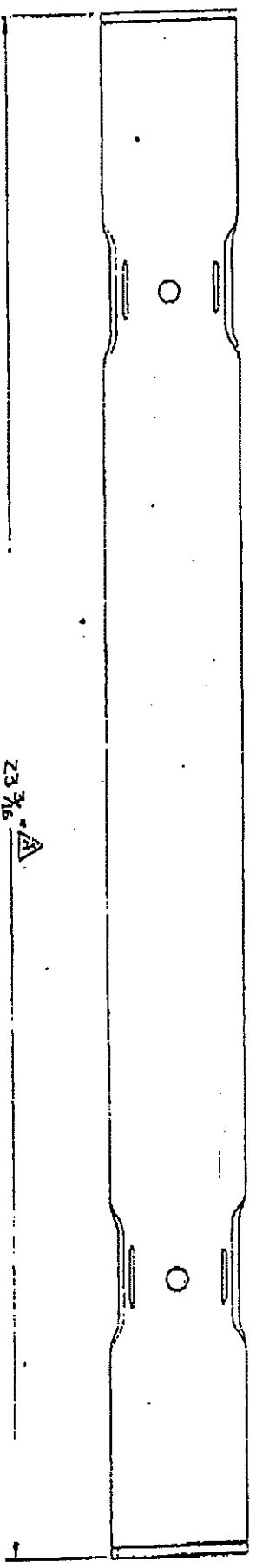
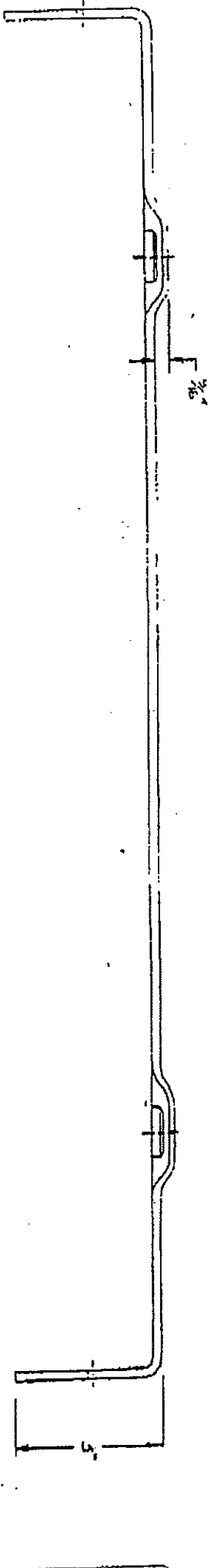
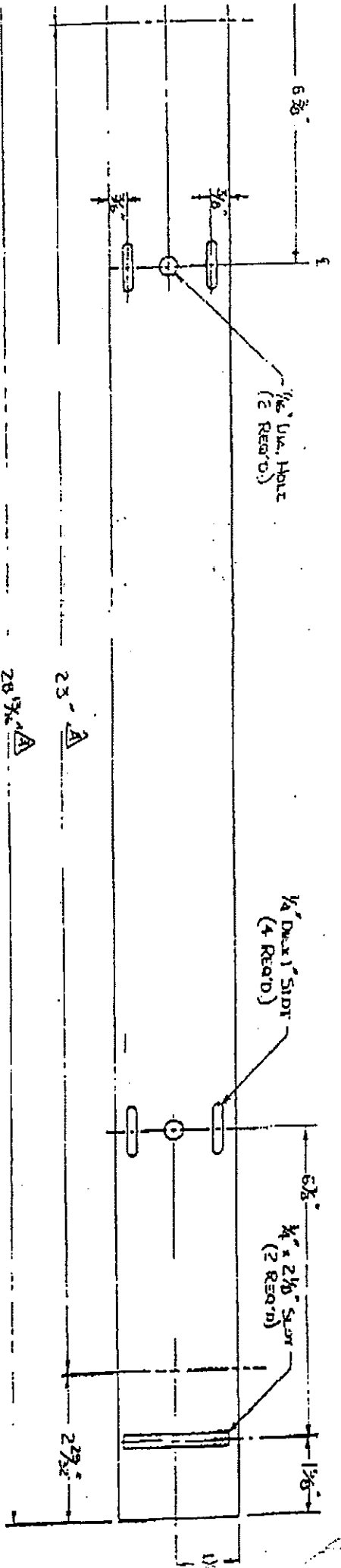


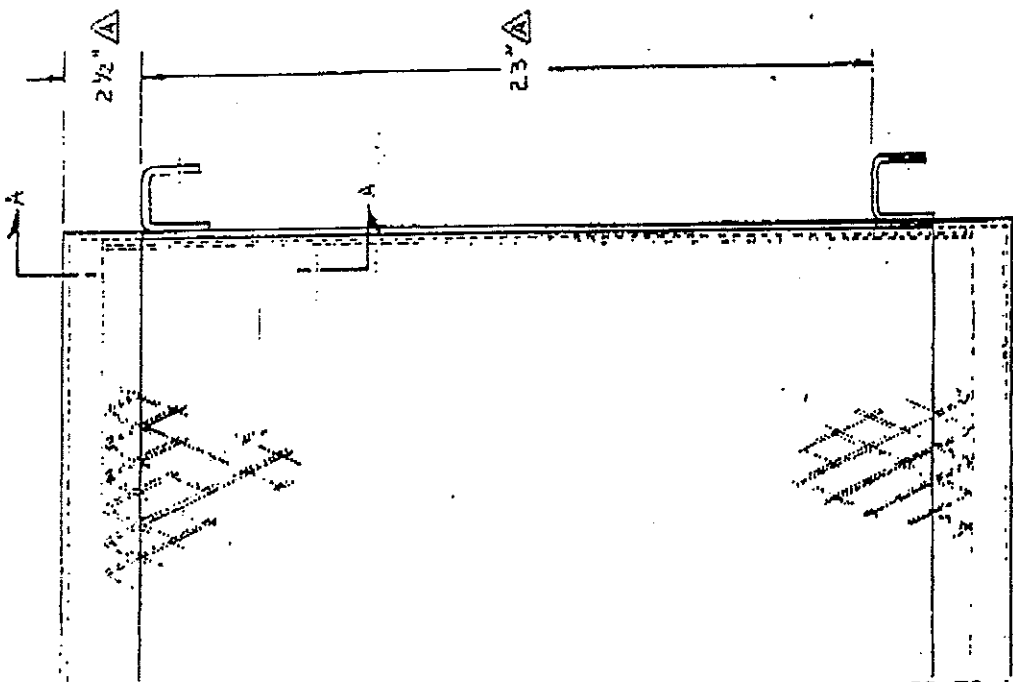
**TOP VIEW**  
SCALE: 1" = 10"

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By Game Time, Inc.  
Revised 4/88

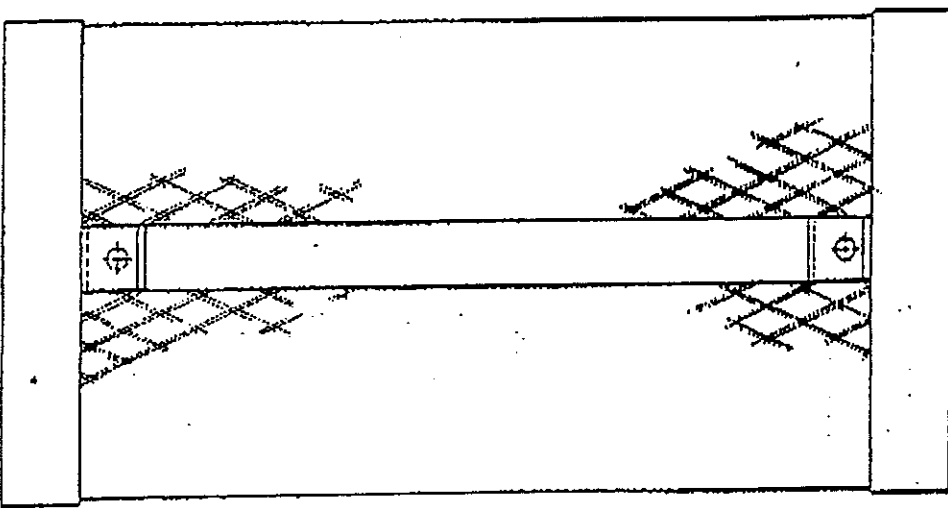
*Pat. Pending (214) 492-5444*  
*Pat. Pending (214) 492-5444*

*Produce Consulting Services*





SIDE VIEW



REAR VIEW

07.12.95 10:35AM \*RESOURCE CON. SERV. GAMETIME-  
 SENT BY:GAMETIME-MARKETING : 7-12-95 : 7:37 :  
 P04 214 492 3155:# 4/ 4



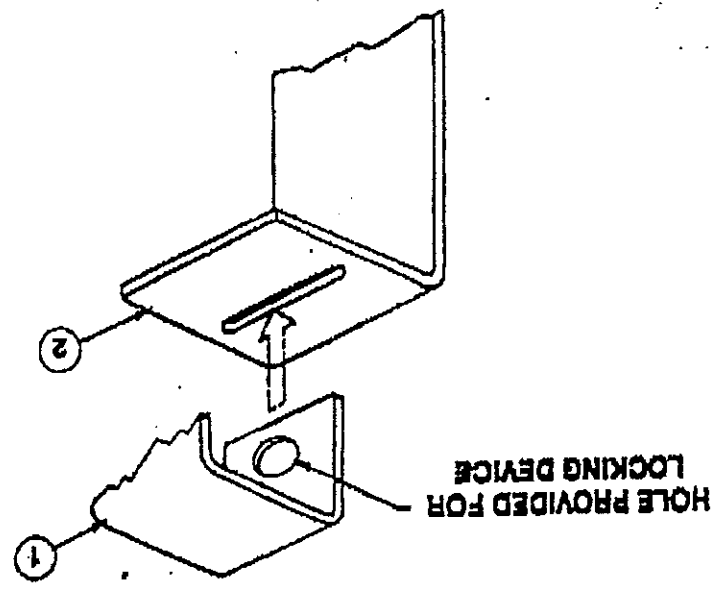
REF. NO.	DESCRIPTION	NO. REQ'D.	PART NO.	WEIGHT LB.	WEIGHT KG.
1	Expanded Metal Receptacle, Ea.	1	128543	32.45	14.60
2	Mounting Brace, Ea.	1	128544	3.89	1.76

### REPLACEMENT PARTS

**WARNING/INSTALLATION**  
**NOTE: THIS SPECIFICATION BOOKLET SHOULD BE KEPT IN CUSTOMER'S FILE FOR FUTURE REFERENCE.**  
**STEP 1:** Attach mounting brace to post (attachment of mounting brace and hardware required are the responsibility of the customer).  
**STEP 2:** Attach receptacle to mounting brace (as shown in Detail Drawing "A") by sliding the mounting hooks of the receptacle through the slots of the mounting brace.

### SET UP INSTRUCTIONS

DETAIL DRAWING A



○ PART REFERENCE



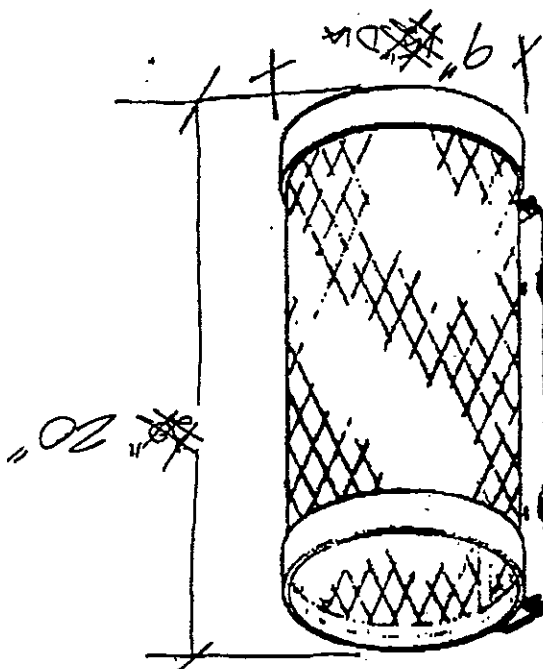
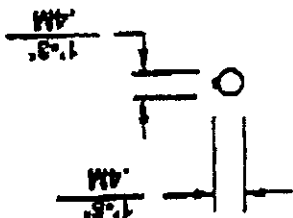
Copyright 1988  
By Game Time, Inc.  
Revised 4/88

decay and termite, a ten year limited warranty against corrosion on all Duracape uprights, and a two year warranty on Flex Play Nets. Manufacturer's warranties apply on items distributed by GAME TIME.  
To the extent permitted by law, these warranties are expressly in lieu of any other expressed or implied warranties or representation by any person including any implied warranty of merchantability or fitness.  
SPECIFICATIONS: GAME TIME has a policy of continuous improvement and reserves the right to discontinue or change specifications without notice.

TRASH RECEPTACLE: Shall be an all welded construction of 3/4" - #8F expanded metal, 3/16" x 2-1/2" H.R. steel flat and 1/8" x 1" H.R. steel flat with a powder coat brown finish.  
MOUNTING BRACE: Shall be formed of 3/16" x 2-1/2" H.R. flat steel with a powder coat brown finish.  
NOTE: All weights are based on average comparisons of each part.  
WARRANTY: GAME TIME provides warranties on all materials and workmanship for one year excluding vandalism. In addition, GAME TIME offers a ten year warranty on pressure-treated wood products against

### SPECIFICATIONS

TOP VIEW  
SCALE: 1" = 10"



*Trash Receptacle 'C' (Wall Mount)*

SHIPPING WEIGHT: UL2015-54 LBS./24 KGS.

TRASH RECEPTACLE

POLE MOUNT

EXPANDED METAL

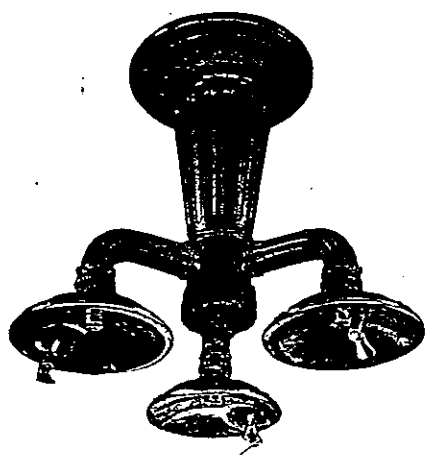
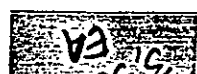
UL2015

ULTRUM™

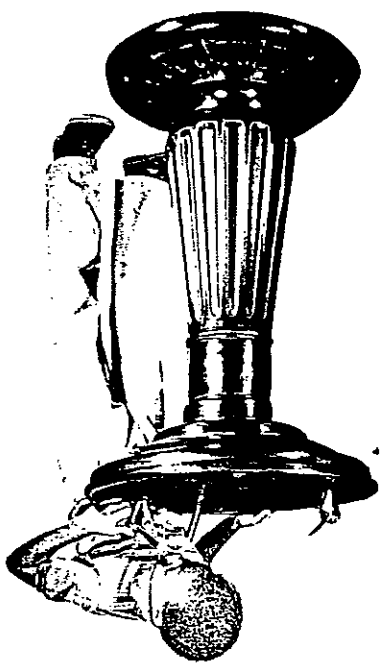
GameTime®

**CANTERBURY INTERNATIONAL**  
S I T E F U R N I S H I N G S

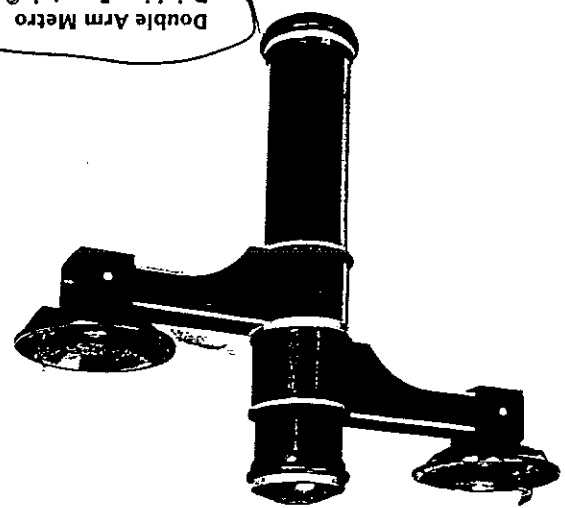
1-800-935-7111



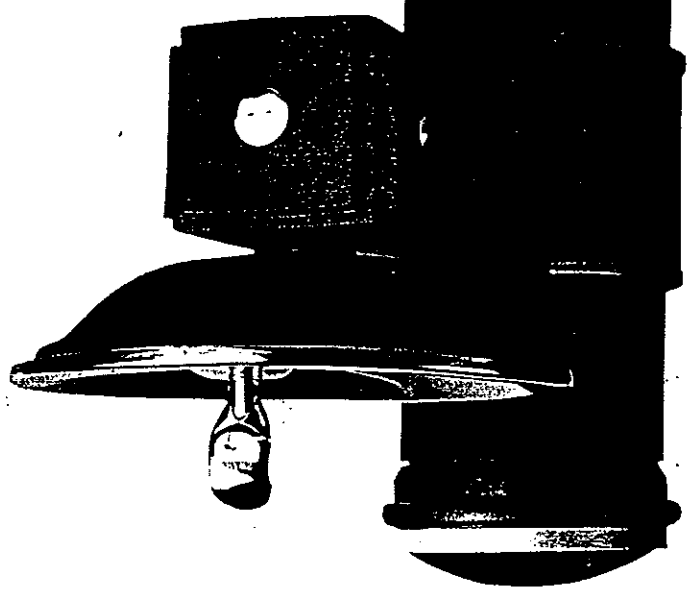
**1890 Drinking Fountain**  
Triple arm and solid  
bronze bowls. Cast iron,  
cast aluminum or cast  
bronze base. 41" diameter  
x 36" high.



**1890 Drinking Fountain**  
Single bowl, solid bronze.  
Cast iron, cast aluminum or  
cast bronze base. 27" diameter  
x 27 1/2" high.



**Double Arm Metro  
Drinking Fountain**  
Cast iron, cast aluminum or  
cast bronze. Bowls are solid  
bronze. Handicapped  
approved includes single,  
double, and triple arm.



**Single Arm  
Metro Drinking Fountain**

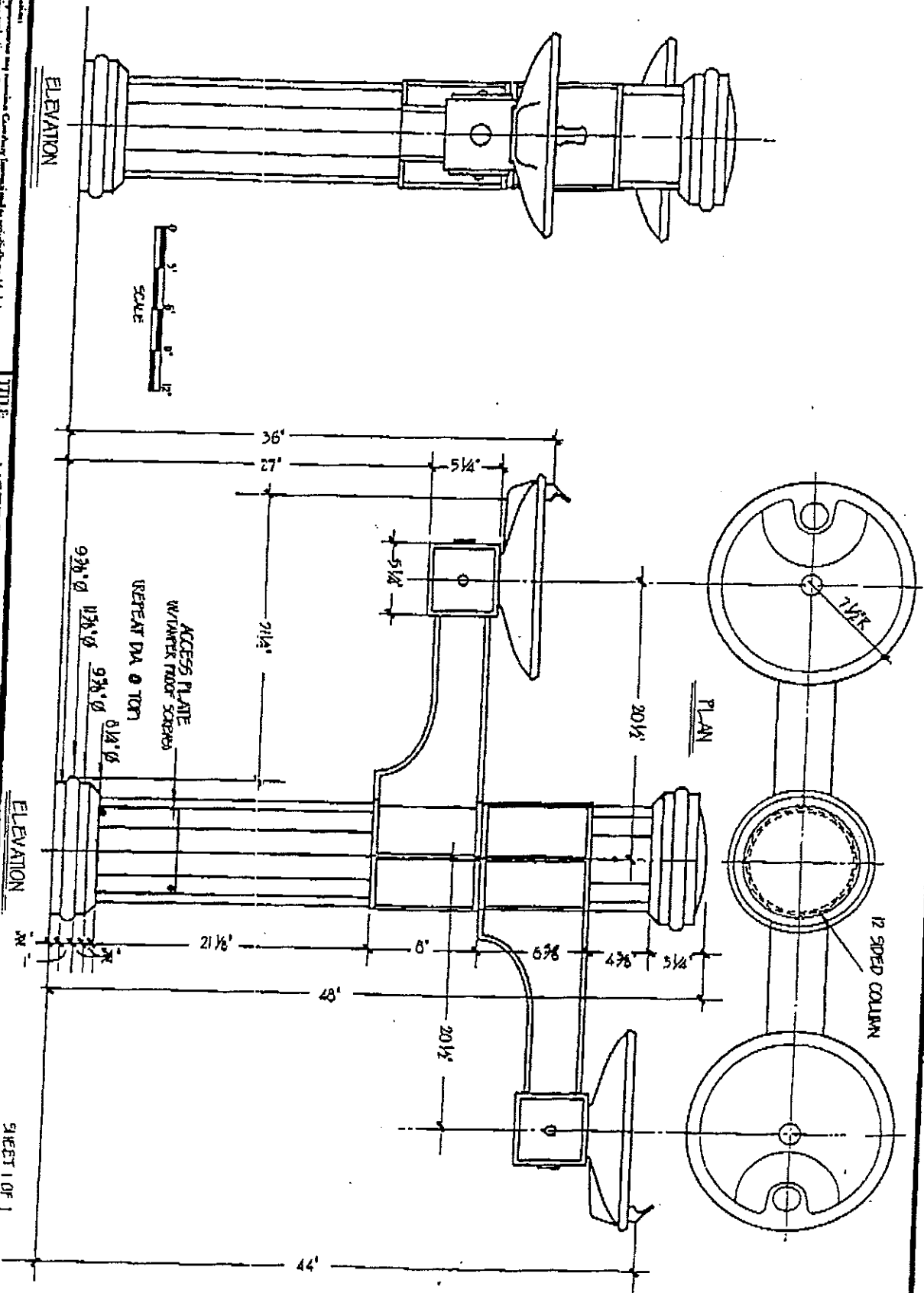
Specification sheets are available for all products.

Single Bowl - 2,800  
Double Bowl - 3,500  
Triple Bowl - 6,000

Canterbury International  
1155 Broadway, New York, NY 10018  
Canterbury International is a Division of Canterbury Design, Inc.  
Canterbury Design, Inc. is a registered professional engineering firm in the State of California.  
It is hereby certified that the design and construction of this fountain is in accordance with the California State Board of Professional Engineers, Registration and Discipline.  
The design and construction of this fountain is in accordance with the California State Board of Professional Engineers, Registration and Discipline.  
The design and construction of this fountain is in accordance with the California State Board of Professional Engineers, Registration and Discipline.

TITLE: METRO DRINKING FOUNTAIN - DOUBLE BUBBLER  
DATE: 7/26/94  
REV: 02

CANTERBURY INTERNATIONAL  
Canterbury International, A Division of Canterbury Design, Inc.  
5633 W. Washington Blvd., Los Angeles, CA 90048  
Phone: 213/936-7111 FAX: 213/936-7115



SHEET 1 OF 1

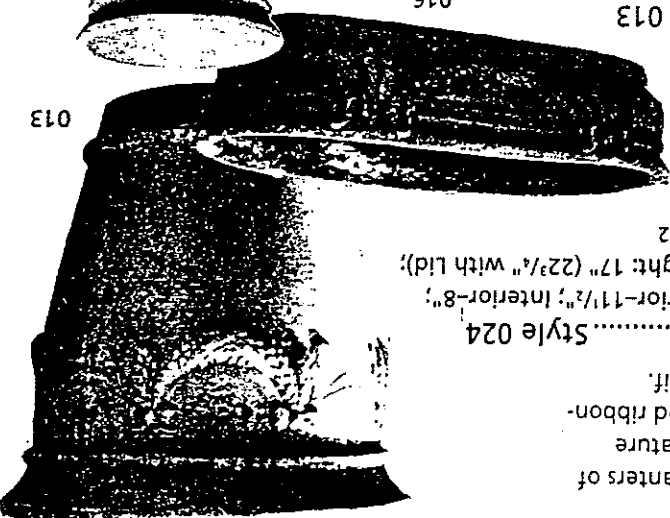
Brookfield Planters are cast of fiber reinforced concrete, which has been approved by the Federal government for use on interstate highways. This material has extreme weather resistance, less porosity and greater flexibility than ordinary concrete, thus allowing these planters to be used outdoors indefinitely in any climate or location. An applied surface, such as paint, will adhere more dependably to Brookfield Planters. Planters are available in a variety of colors and finishes; many are also available with a nubby, textured surface. Please see page 6 for more information. See page 7 for size/scale comparisons of various planters.



024 024A

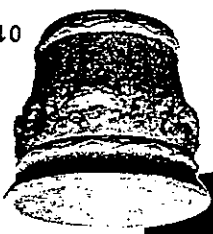
The variously sized planters of the Garland Group feature a delicately interpreted ribbon-wrapped garland motif.

Garland Urn ..... Style 024  
 Size: Diameter, Exterior-11 1/2"; Interior-8";  
 Base-7" Square. Height: 17" (22 1/4" with Lid);  
 Weight: 24 lbs. ©1992



013

016

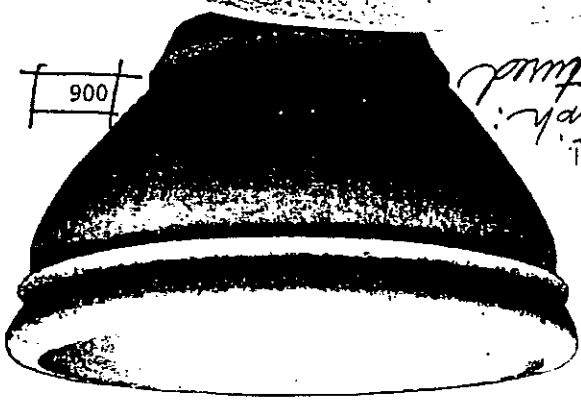


015

Large Garland Planter ..... Style 013  
 Size: Diameter, Exterior-22 1/2"; Interior-19 1/2";  
 Base-13". Height: 24"; Weight: 130 lbs. ©1990  
 Oval Garland Planter ..... Style 016  
 Size: Length: 25 1/2"; Width: 12 3/4"; Height: 6 1/2";  
 Weight: 37 lbs. ©1990  
 Small Garland Planter ..... Style 015  
 Size: Diameter, Top-9"; Height: 8";  
 Weight: 6 lbs. ©1990

The Riverbend Group offers a selection of simply styled planters that fit well into any style garden - formal or casual.

©1987 *Color: Sandstone Finish: Textured*  
 Garden Planter ..... Style 006  
 Size: Diameter, Exterior-30 1/2"; Interior-27";  
 Base-15"; Height: 19";  
 Weight: 179 lbs.



006

Terrace Planter ..... Style 002  
 Size: Diameter, Exterior-32 1/2"; Interior-28 1/2";  
 Height: 11 1/2";  
 Weight: 153 lbs.

Patio Planter ..... Style 003  
 Size: Diameter, Exterior-23"; Interior-20";  
 Height: 8 1/2"; Weight: 60 lbs.

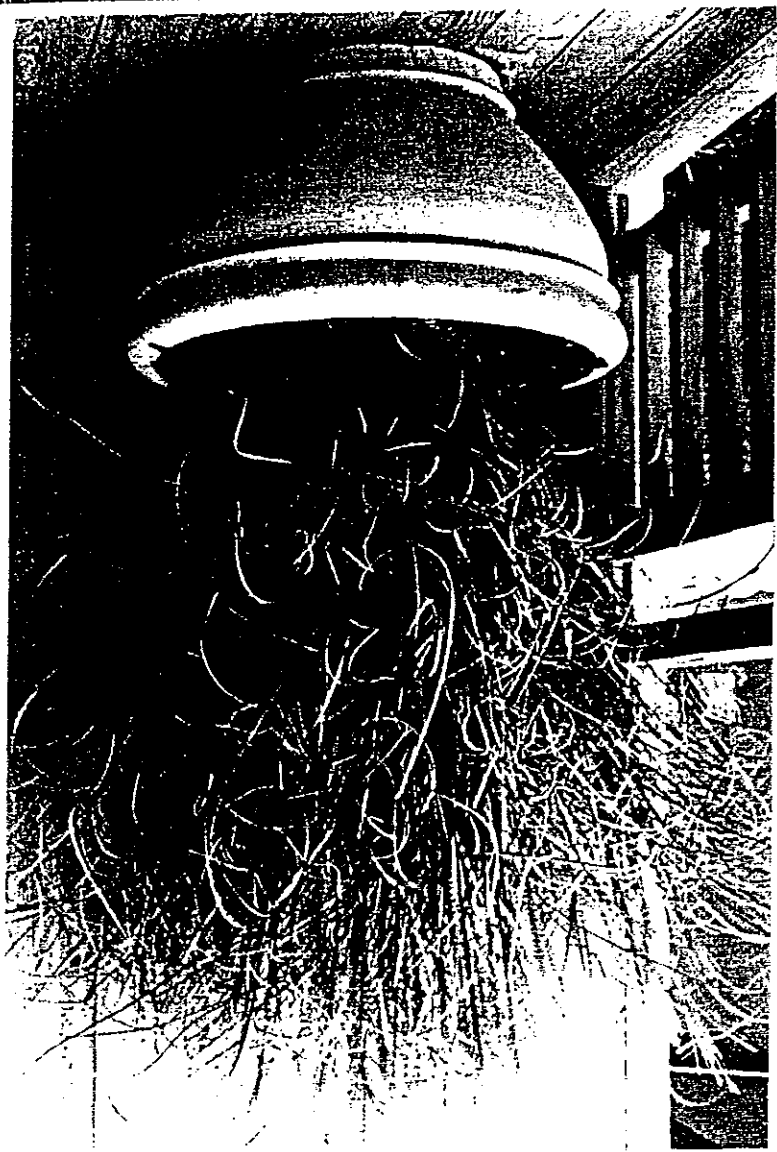
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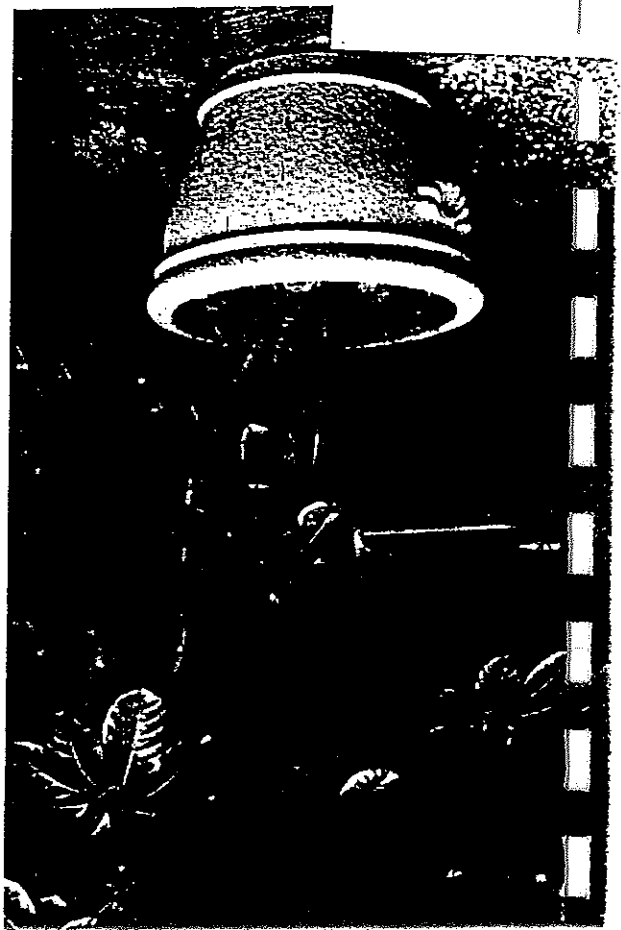
003

Garland Group  
 Riverbend Group

The Brookfield Co.  
(615) 899. 8224



(Above Left)  
Townhouse Planter,  
Brick Color,  
Textured Surface  
(Above Right)  
Patio Planter,  
Brick Color,  
Textured Surface  
(Right)  
Garden Planter,  
Natural Color,  
Smooth Surface

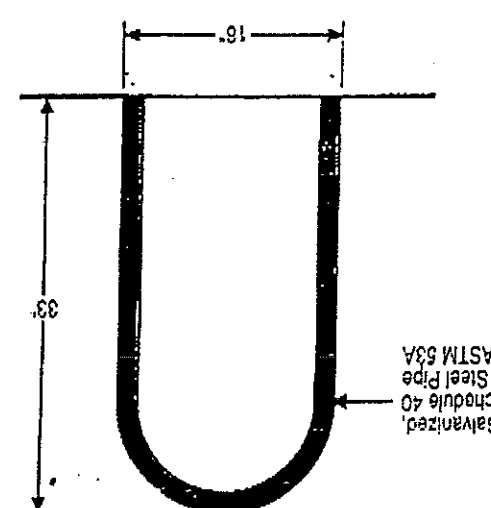


# The Bike Rib®

## SPECIFICATIONS

- Galvanized: The racks are fabricated using galvanized Schedule 40 Pipe, ASTM 53A.

- Powder Coat Paint: A polyester powder coat is applied to galvanized pipe. Galvanized pipe is used as substrate to protect against rusting if paint scratching occurs.
- Vinyl-Like Powdercoat: A kind to bikes' (coil to touch) thermoplastic coating applied to galvanized pipe provides excellent resistance to acids, weather, and abrasion.
- Stainless Steel: A 1 1/2" T. 304 stainless, .083" wall/14 gauge tubing with #4 (brushed) to #7 (polished) finish is available.

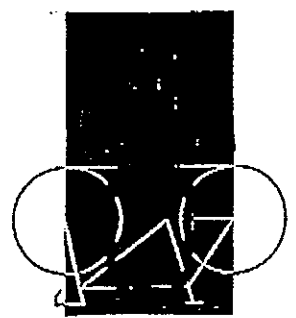


## MOUNTING OPTIONS

- MODEL BR-1 Rectangle Base Plate (6" x 2" x 3/16")
- MODEL BR-2 Round Base Plate (6" x 3/16")

Drill four 1/2" d. holes approx. 2" deep, then insert anchors and attach rack with bolt (bolts and anchors included).

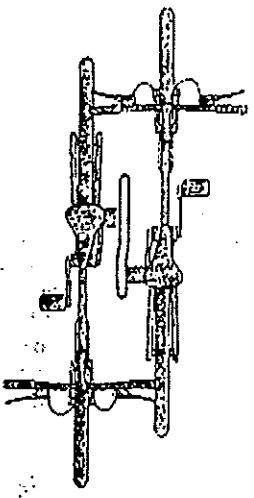
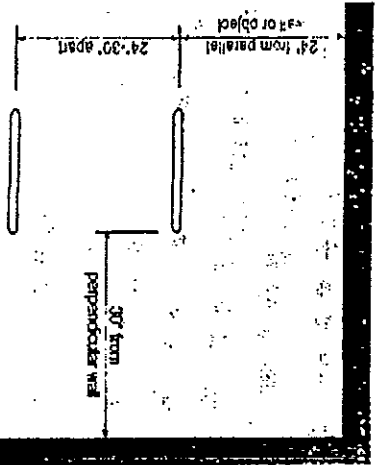
Function First Bike Security was established to encourage bicycle use as a transportation alternative to automobiles. Our goal is to provide products that support cycling.



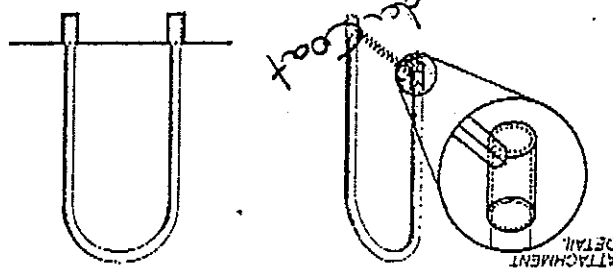
Function First Bike Security  
P.O. Box 44137  
Tucson, AZ 85733-4137  
(602) 322-9626

## PLACEMENT SUGGESTIONS for the Bike Rib®

The Bike Rib® bike rack provides optimum flexibility in site orientation. It can be positioned in many ways - in parallel (as illustrated), end to end, at a 45 degree angle, in groups (see above right), or dispersed around a building.



## INGROUND MOUNT

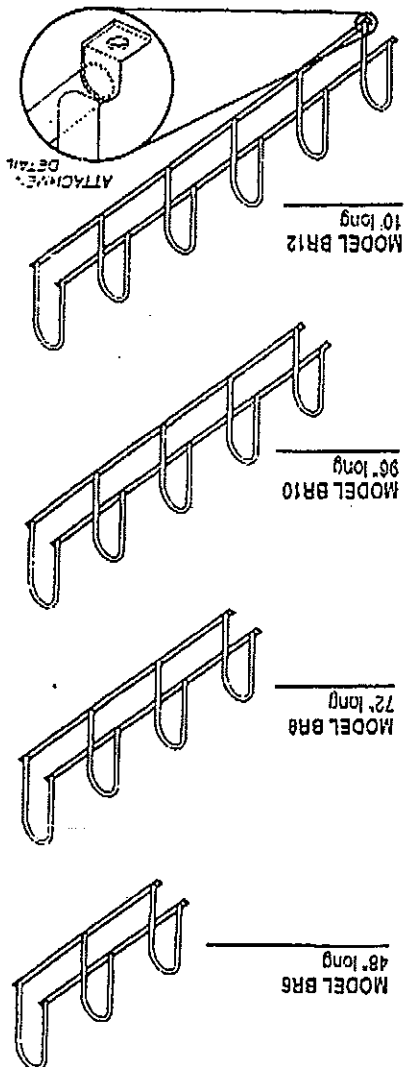


MODEL BR-3 (imbedded) Bike Rib® drops into sleeves imbedded in concrete, and is anchored with epoxy.

MODEL BR-4 (Inground) The rack is left long to accommodate core drill installation (4"-12").

## GROUPING OPTIONS

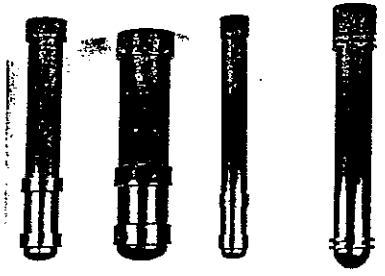
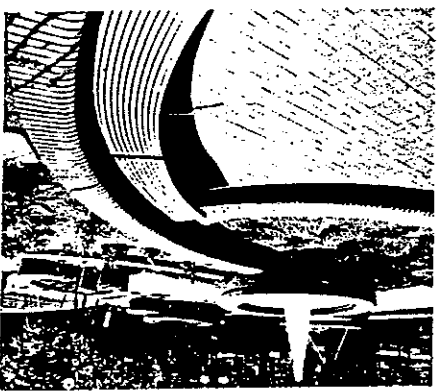
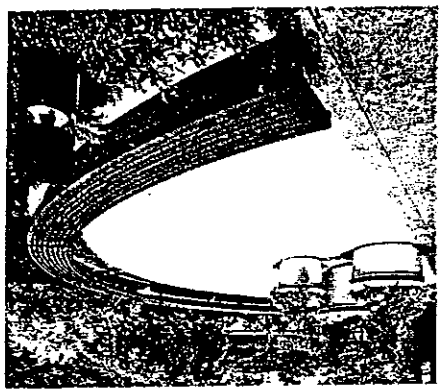
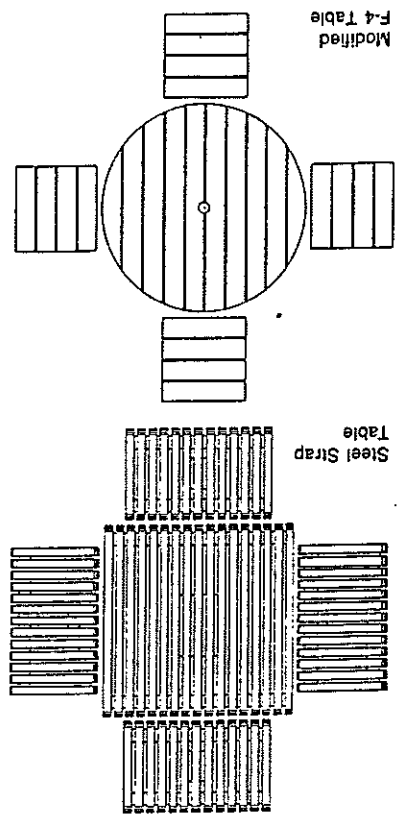
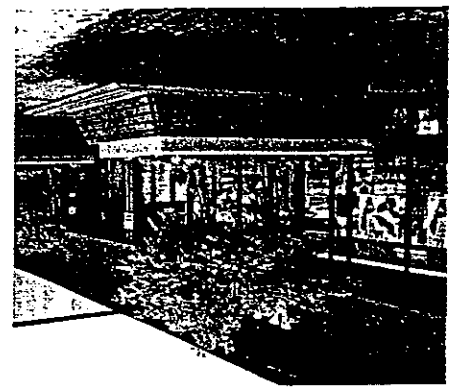
The Bike Rib® Bike Rack is a series of Bike Rib®'s connected to bottom rails spaced 24" on center. Model numbers correspond to the number of bikes each rack holds. See Attachment Detail and Surface Mount instructions.



# CUSTOM

While we take great pride in our standard products, we especially enjoy the challenge of creating furnishings to meet special needs. We can manufacture to your specifications, or work with you through the design process as well.

Our construction method of laminating curved benches gives us the ability to create bench forms that will match curved surfaces.



## BOLLARDS

Steel Bollards define traffic and pedestrian areas. Removable bollards permit access for maintenance or emergency vehicles. Our bollards are fabricated with schedule 10 pipe for ease of removal.

B-1 bollards are available in nominal 4" and 6" diameters with wide decorative collars and fully welded steel tops.

B-3 bollards are available in a nominal 6" diameter with a round dome top and 1/2" and 4" decorative collars.

**OPTIONS:**  
 MOUNTING: removable (supplied with an in ground receiver), embed, movable.

**HEIGHT:** 24", 30", 36"  
**Eye bolts:**  
 Sch. 40 or sch. 80 pipe, B-1 only; No collars, decorative rivets.

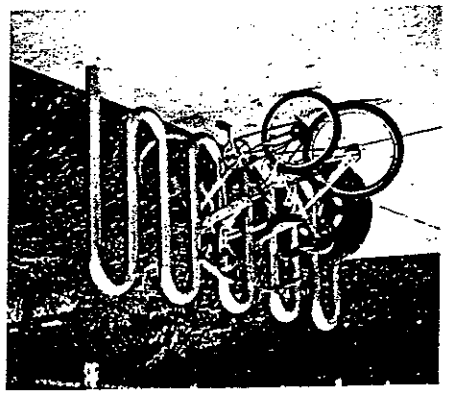
B-1: 4"  
 B-2: 6"  
 B-3: 6"

## BIKE RACKS

Choose From the stylish good looks of our multiple loop BR-1 racks with sizes ranging from 5 to 13 bike capacity, or the compact BR-2 bike bollard available with a 1, 2, or 3 bike capacity. The inverted U shaped BR-3 works well where space is limited. BR-1 and BR-3 bike racks are fabricated with 2" schedule 40 pipe. BR-2 bike bollards are fabricated with 4" schedule 10 pipe and 1" pipe bike loops with a fully welded steel cap.

**OPTIONS:**  
 BR-1 5 to 13 bike capacity  
 Embed, surface mount, free standing

BR-1 H: 36"  
 BR-2 H: 36"  
 BR-3 H: 34" W: 30"





APPENDIX A



**TEXAS SALES AND USE TAX EXEMPTION CERTIFICATE**

Name of purchaser, firm or agency	
Address (Street & number, P.O. Box or Route number)	
City, State, ZIP code	
Phone (Area code and number)	

I, the purchaser named above, claim an exemption from payment of sales and use taxes for the purchase of taxable items described below or on the attached order or invoice form:

Seller: \_\_\_\_\_

Street address: \_\_\_\_\_  
 City, State, ZIP code: \_\_\_\_\_

Description of items to be purchased or on the attached order or invoice: \_\_\_\_\_

Purchaser claims this exemption for the following reason:

TAX EXEMPT USE BY POLITICAL SUBDIVISION OF THE STATE OF TEXAS

I understand that I will be liable for payment of sales or use taxes which may become due for failure to comply with the provisions of the Tax Code, Limited Sales, Excise, and Use Tax Act, Municipal Sales and Use Tax Act, Sales and Use Tax for Special Purpose Taxing Authorities, County Sales and Use Tax Act, County Health Services Sales and Use Tax and the Texas Health and Safety Code: Special Provisions Relating to Hospital Districts, Emergency Services Districts, and Emergency Services Districts in counties with a population of 125,000 or less.

I understand that it is a misdemeanor to give an exemption certificate to the seller for taxable items which I know, at the time of purchase, will be used in a manner other than that expressed in this certificate and that upon conviction may be fined not more than \$500 per offense.

Purchaser	Title	Date
-----------	-------	------

Sign here

Note: This certificate cannot be issued for the purchase, lease or rental of a motor vehicle.

**THIS CERTIFICATE DOES NOT REQUIRE A NUMBER TO BE VALID**

Sales and Use Tax "Exemption Numbers" or "Tax Exempt" Numbers do not exist.

This certificate should be furnished to the supplier. Do not send the completed certificate to the Comptroller of Public Accounts.

APPENDIX B

SEPTEMBER, 1995

COLUMBUS REALTY TRUST  
DALLAS, TEXAS

*Report to:*

PROJECT NO. 0751-1075

PROPOSED ADDISON URBAN CENTER  
PHASE I  
ADDISON, TEXAS  
GEOTECHNICAL INVESTIGATION

FUGRO-McCLELLAND (SOUTHWEST), INC.



2880 Virgo Lane  
Dallas, Texas 75229  
Tel: (214) 484-8301  
Fax: (214) 620-7328

Report No. 0751-1075  
September 15, 1995

Columbus Realty Trust  
15851 North Dallas Parkway  
Suite 855  
Dallas, Texas 75248

Attention: Mr. Bryant Nail, Vice President

**GEOTECHNICAL INVESTIGATION  
PROPOSED ADDISON URBAN CENTER  
PHASE I  
ADDISON, TEXAS**

Gentlemen:

This report presents the results of a geotechnical investigation performed at the site of the proposed Phase I of the Addison Urban Center in Addison, Texas. This study was performed in accordance with our Proposal No. P0751-1075, dated June 7, 1995 and authorized on July 15, 1995.

Our engineering analysis as well as the results of the field and laboratory investigation are included in this report. Our firm is interested in providing the professional material testing that will be required during the construction phase of the project.

We appreciate the opportunity to be of assistance on this project. Please feel free to contact us if you have any questions or if we can be of further service.

Very truly yours,

FUGRO-McCLELLAND (SOUTHWEST), INC.

Saad M. Hineidi, P.E.  
Manager, Geotechnical Engineering Services

SMH/md  
Copies submitted:

Columbus Realty Trust, Bryant Nail (3)  
Brockette, Davis, Drake, Inc., Bob Williams, P.E. (1)  
Hult-Zollars, Inc., Andy Oakley, P.E. (1)  
RTKL Associates, Inc., Jeff Nigh (2)

A member of the Fugro group of companies with offices throughout the world

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1	Site Description.....	
1	Project Description.....	
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3	LABORATORY TESTING.....	
3	GENERAL SUBSURFACE CONDITIONS	
3	Stratigraphy.....	
4	Subsurface Water Conditions.....	
5	ANALYSIS AND RECOMMENDATIONS	
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8	Garage Structures Lower Level Slabs.....	
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10	Site Preparation.....	
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12	SURFACE PAVING AREAS	
12	General.....	
13	Concrete Pavement.....	
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14	LANDSCAPING.....	
15	LIMITATIONS.....	





Plan of Borings ..... 1

Cross Sections ..... 2

Generalized Subsurface Profile B-B' ..... 3

Generalized Subsurface Profile C-C' ..... 4

Interpolated Elevation of Top of Gray Limestone ..... 5

Boring Logs ..... 6-21  
*(with the exception of No. 19)*

Key to Terms and Symbols used on Boring Logs ..... 22-23

Summary of Free Swell Tests ..... 24

Plate

# ILLUSTRATIONS



**PROPOSED ADDISON URBAN CENTER  
PHASE I  
ADDISON, TEXAS**

**INTRODUCTION**

**General**

In this report we present the results of a geotechnical investigation for the proposed Addison Urban Center, Phase I. The site of the project is located on Quorum Drive in Addison, Texas. The construction will consist of three wood-framed apartment buildings and two elevated concrete-framed parking structures. Structural information is not available at this time, but the structural loads are expected to be light for the apartment buildings and relatively heavy for the parking structures.

**Site Description**

The site of the proposed project is located at the northwest corner of Quorum Drive and Mildred Street in Addison. At the time of this investigation, the site surface was covered with light grass. A concentration of medium and large size trees exist in the central portion of the project. The site surface slopes gently downward toward the southeast. Total relief across the site is approximately 10 feet.

**Project Description**

Three apartment buildings are proposed for this phase of the project. These buildings will be wood-framed and will have up to four levels of living space. The north and west buildings (Buildings 'C' and 'B', respectively) will also have an adjacent elevated parking structure each. The parking garages will be concrete-framed and will have up to six parking levels. It is anticipated that the apartment structural loads will be relatively light and the garage column loads will be on the order of 500 kips. The apartment buildings will be built approximately 2 feet above the ground surface. The lowest level of parking structures 'B' and 'C' will be approximately 10 and 5 feet below the surrounding ground surface.



Continuous cores of the rock stratum were obtained in selected borings using a size NX core barrel. The percentage of core recovered is tabulated in the "Percent Recovery" column on the

The borings were advanced with a truck-mounted rig. The rig was equipped with: (1) continuous flight augers for advancing the boreholes dry and recovering disturbed samples, (2) thin-walled tubes for obtaining undisturbed samples of cohesive strata in general accordance with ASTM D 1587-83, and (3) coring equipment used to obtain samples of the rock material.

A total of 15 test borings were drilled and sampled to explore the subsurface conditions at the site. Twelve (12) of the test borings (B-9 through B-18, and B-20 and B-21) were advanced in August, 1995. Three (3) test borings (Borings B-4, A-7 and A-9) were advanced in September, 1994 as part of a preliminary geotechnical investigation that encompassed a 40-acre site (our Report No. 074-1103). The location of Boring B-19 was not accessible because of the presence of trees. This boring will be advanced after the site grading operations are completed. The approximate locations of the borings are shown on Plate 1.

### FIELD INVESTIGATION

The first sections of the report describe the field and laboratory phases of the study. The remaining sections present our recommendations to guide design and preparation of plans and specifications. Boring logs and laboratory test results are presented in the report **illustrations**.

### Report Format

- 1) Develop soil and rock stratigraphy at the boring locations.
- 2) Evaluate soil swell potential and alternatives to reduce the movement.
- 3) Recommend foundation design parameters.
- 4) Estimate uplift loads on drilled piers due to expansive clays.
- 5) Provide site preparation recommendations.
- 6) Provide alternate pavement cross-sections for the proposed surface parking area and vehicular drive.

The purpose of this investigation was to:

### Scope of Work



The site of the proposed Addison Urban Center is located within the Austin Chalk geologic formation. Based on our interpretation of the borings drilled for this study, the subsurface stratigraphy consist of dark brown clay underlain by light brown calcareous clays underlain by

## Stratigraphy

## GENERAL SUBSURFACE CONDITIONS

Free swell tests were performed on undisturbed soil samples from selected borings in order to estimate soil volume change characteristics at the present moisture contents. Results of the Swell tests are presented on Plate 24.

Engineering properties of foundation soils were evaluated in the laboratory by tests performed on representative soil samples. A series of moisture content and dry unit weight determinations were performed to develop soil moisture profiles at the boring locations and to aid in evaluating the uniformity of soil conditions. Plastic and liquid limit tests (Atterberg limits) were performed on selected samples from the borings to confirm visual classification and to evaluate soil volume change potentials. Results of these tests are presented on the boring logs. Shear strengths of cohesive soils were estimated by field pocket penetrometer tests. Unconfined compression tests were performed on selected soil and rock samples to determine the load carrying capability of the overburden soils and rock formation.

## LABORATORY TESTING

All the borings with descriptions of the soils and rock sampled are presented on Plates 6 through 21. A key to the terms and symbols used on the boring logs is presented on Plates 22 and 23. Soil strata boundaries shown on the boring logs are approximate.

In alternate borings, the rock was tested in-place using the Texas Department of Transportation Cone Penetrometer. A 3-inch diameter steel cone driven by a 170-pound hammer dropped 24 inches is the basis for Texas State Department of Highways and Public Transportation strength correlations. Depending on the resistance of the materials, either the number of blows of the hammer required to provide 12 inches of penetration, or the inches of penetration of the cone due to 100 blows of the hammer are recorded on the field log included in this report.



tan weathered limestone. Below the tan weathered limestone, gray limestone is present. The gray limestone remained in evidence to the completion depths of the borings advanced within the building's footprint. The following table summarizes the subsurface rock profile at the boring locations advanced within the study area:

**SUMMARY OF SOIL/ROCK PROFILE**

Boring Number	Surface Elevation <sup>(1)</sup>	Depth to Tan Weathered Limestone (feet)	Elevation of Tan Weathered Limestone	Depth to Gray Limestone (feet)	Elevation of Gray Limestone
---------------	----------------------------------	---	--------------------------------------	--------------------------------	-----------------------------

<i>Building C</i>					
A-7	626.5	4	622.5	12	614.5
B-9	626.2	6	620.2	13	613.2
B-10	632.3	3	629.3	14	618.3
B-11	628.3	5	623.3	9	619.3
B-12	625.1	9	616.1	N.E.	N.E.
B-13	628.6	8	620.6	14	614.6
<i>Building B</i>					
B-14	632.5	4	628.5	N.E.	N.E.
B-15	629.1	13	616.1	16	613.1
B-16	631.1	3	628.1	14	617.1
B-17	623.3	6	617.3	10	613.3
A-9	631.3	3	628.1	8.5	622.6
B-20	629.6	4	625.6	10	619.6
<i>Building A</i>					
B-18	626.7	3	623.7	7	619.1
B-19	Not Accessible				
B-4	624.2	3	621.2	5.5	618.7
B-21	628.1	2	626.1	8	620.1

N.E.: None Encountered.  
<sup>(1)</sup> Furnished by Huitt-Zollars, Inc.

Selected cross sections through parking structures 'B' and 'C' are shown on Plates 2, 3 and 4. A plan showing the interpolated top of gray limestone elevation contour lines is shown on Plate 5.

**Subsurface Water Conditions**

Subsurface water seepage was not encountered in the test borings drilled. The depth to subsurface water will be affected by changes in atmospheric conditions and site drainage. With



Grade beams should be designed by the structural engineer to resist the movements expected at the site. They should be founded within existing soils or recompacted and tested fill. The Grade beams should be designed by the structural engineer to resist the movements expected designed using an allowable soil bearing pressure of 2,400 pounds per square foot.

The structural loads of the lightly loaded wood-framed apartment buildings may be supported by a slab with interior and exterior grade beams (waffle type) foundation system. The foundations may be reinforced with conventional steel or post-tension tendons and should be designed to resist the vertical movements expected at the site. The grade beams may be designed using an allowable soil bearing pressure of 2,400 pounds per square foot.

### Foundation Types – Apartment Buildings

The results of the swell tests performed yielded slightly lower potential for vertical movement; however, it should be noted that the tests were performed on samples at the reported moisture contents. If the tests had been performed on drier samples of the same material, the percent swell and total movements could be higher or if the tests were performed on wetter samples of the same material, the percent swell and total movement could be lower.

As previously mentioned, two types of clays were encountered at the site. The surficial dark brown and brown clays exhibited high Plasticity Indices. The thickness of the dark brown and brown clay varies between 2 and 6 feet. These clays were underlain by yellowish brown calcareous clays. The Plasticity Indices of the calcareous clays were considerably lower and, therefore, they are considered less expansive in nature. The magnitude of the moisture induced vertical movement at the present ground surface calculated using the Texas Department of Transportation method is estimated to be on the order of 2.25 inches at Building 'A', and 3 inches at Buildings 'B' and 'C'. Considerably more movement will occur in areas where water ponding is allowed to occur during or after construction.

### Soil Movement

## ANALYSIS AND RECOMMENDATIONS

regard to the aforementioned, we recommend that the depth to subsurface water be checked just prior to construction that may be affected by its presence. It is not uncommon to detect water seepage within the soils atop the underlying limestone, particularly after periods of heavy rains. Any change from the subsurface conditions described in this report should be communicated to this office.





bottom of the beams should be free of any loose or soft material prior to the placement of the concrete. All grade beams and floor slabs should be adequately reinforced to minimize cracking as normal movements occur in the foundation soils. Also, a moisture barrier of polyethylene sheeting or similar material should be placed between the slab and the subgrade soils to retard moisture migration through the slab. It should be understood by all parties that a soil-supported foundation system will experience movement with time.

The available information indicates that up to 2 feet of fill will be required to bring the subgrade of the proposed apartment buildings up to the desired finished floor elevation. The type of fill material used to grade the buildings will affect the previously mentioned vertical soil movements. If on-site material obtained from the excavation of the below grade sections of parking 'B' and 'C' are used as fill material, the estimated vertical movement will be on the order of 2 and 2.5 inches for Building 'A', and Buildings 'B' and 'C', respectively. If imported select fill is used as fill material, then the estimated vertical movement will be on the order of 1 and 1.5 inches for Building 'A', and Buildings 'B' and 'C', respectively. The following table summarizes the expected moisture induced vertical soil movement at the site at the three apartment buildings.

Estimated Movement (inches)		Conditions		
Building 'A'	Building 'B'	Building 'C'	Existing elevation	
2.25	3	3	With addition of 2 feet of on-site material from parking structures 'B' and 'C' excavation	With addition of 2 feet of off-site select fill
2.0	2.5	2.5		
1.0	1.5	1.5		

The fill material should be placed and processed in accordance with the recommendations provided in this report.

**Foundation Types – Parking Structures 'B' and 'C'**

In view of the relatively high parking structures' loads, we recommend that the structural loads be supported by auger excavated straight-sided, cast-in-place, reinforced concrete piers.

Grade beams should be structurally connected into the top of the piers. A minimum void space of 6 inches should be provided beneath them. This void space allows movement of the soils

### Grade Beams (Used with a Pier Foundation System)

Reinforcing steel and concrete should be placed immediately after the excavation has been completed and observed. In no event should a pier excavation be allowed to remain open for more than 8 hours. Concrete placed in excavation in excess of 10 feet should be placed in such a manner to prevent segregation of the aggregates. Subsurface conditions at the time our borings were advanced indicate that temporary casing will not be required. However, based on our prior experience in the project area, casing of some isolated foundation piers may be required after periods of rain.

The construction of all piers should be observed by experienced geotechnical personnel during construction to insure compliance with design assumptions and to verify: (1) the bearing stratum; (2) the minimum penetration; (3) the removal of all smear zones and cuttings; (4) that groundwater seepage, if encountered, is correctly handled; and (5) that the shafts are vertical and are within the acceptable tolerance.

### Pier Installation

These piers should be founded at least 2 feet into the underlying gray limestone encountered at a depth of 8.5 to 14 feet (between elevations 613.1 and 622.7) at the location of the garage structures. The piers may be designed using an allowable end bearing pressure of 55,000 pounds per square foot and a skin friction value of 9,000 pounds per square foot of shaft area in direct contact with the gray limestone below the recommended minimum penetration and a minimum pier depth of 10 feet. The resistance against uplift loads is estimated to be on the order of 6,700 pounds per square foot of shaft area in contact with the gray limestone. The piers should be provided with enough steel reinforcement to resist the uplift pressures that will be exhibited by the near surface soils. These pressures are approximated to be on the order of 1,200 pounds per square foot of shaft area in contact with the dark brown clays. Foundation piers designed and constructed in accordance with the information provided in this report will have a factor of safety in excess of 2.5 against shear type failure, and will experience minimal settlement (less than one inch). A reduction of the allowable bearing pressure will be required if piers are placed less than 2 diameters apart.

below the grade beams without distressing the structural system. Structural cardboard forms are typically used to provide this void beneath grade beams. Cardboard forms must have sufficient strength to support the concrete grade beams during construction. The provision of the void space will not be required in areas where the gray or tan limestone is exposed in the grade beams excavation.

Our experience indicates that major distress in grade beams will occur if the integrity of the void box is not maintained during construction. The excavation in which the void box lays must remain dry. Cardboard cartons can easily collapse during concrete placement if the cardboard becomes wet. Backfill material must not be allowed to enter the carton area below grade beams, since this reduces the void space which underlying soils need to swell. The provision of the void space will not be required where the grade beams are founded within the tan limestone.

### Garage Structures Lower Level Slabs

As previously mentioned, current information indicates that excavation on the order of 10 and 5 feet will be required to achieve the desired finished floor elevations at Parking Structures 'B' and 'C'.

The available data indicates that the tan or gray limestone should be exposed at the bottom of the excavation at Parking Structure 'B'. The tan limestone should be exposed in Parking Structure 'C' excavation with the exception of the southwest corner (area of Boring B-13) where up to 3 feet of brown calcareous clay with limestone fragments should be exposed. The use of heavy excavation equipment will be required to complete excavations that will extend into the tan or gray limestone.

Taking the above into consideration, the lower level concrete of the parking structures may be placed on the exposed material. The subgrade should be sloped to drain towards the below grade drainage system provided behind the basement walls. This system should result in negligible water infiltration into the lower level garage. The provision of a below slab drainage system should be considered in areas where water infiltration or the formation of wet spots cannot be tolerated into the lower level (such as mechanical rooms or dry storage rooms, etc.). A free draining coarse gravel is normally used for such system. Additional recommendations will be provided by this office if the use of a drainage system is desired.

### Below Grade Garage Walls

The walls of the proposed below ground section of the parking structures should be supported by foundation piers designed using the recommendations provided in the *Foundation Types - Parking Structures 'B' and 'C'* of this report and should be designed to resist the expected lateral earth pressures. The magnitude of lateral earth pressure against the walls is dependent on the method of backfill placement, the type of backfill soils, drainage provisions, and whether the walls are permitted to yield after placement of the backfill. Our recommendations contained herein assume that the walls of the below ground structure will be rigid and restrained from movement.

We recommend that a clean, relatively well-graded granular material consisting of either a sand or a sand and gravel mixture be used as backfill immediately against the below grade walls. For such materials, an in-place total unit weight of 120 pcf can be assumed. The granular backfill should extend upward and outward from the base of the wall on 1 (horizontal) to 1 (vertical) slope. Restrained retaining walls should be designed to resist equivalent fluid pressures on the order of 60 pounds per cubic foot that will be exerted by the retained granular backfill.

We recommend the use of a proper filter fabric between the clay soils and the granular materials to prevent migration of finer soils into the granular materials. A perforated PVC pipe should be placed 12 to 18 inches below the bottom of the wall and the lower level slab. The pipe should be connected to a gravity flow system or a sump pump. The pipe will be used to dispose of excess water that will flow into the excavation from the area surrounding the lower level garage or any seepage water that is originating from the lower level slab.

As indicated, approximately 4 feet of fill soils will be placed atop existing grade of the main plant building to establish final grade elevation. We assume that the perimeter grade beams or tilt wall panels (lower portion) will act as retaining walls. The lateral earth pressures provided above may also be used for the perimeter grade beams/retaining walls.

### Temporary Excavations

The use of heavy excavation equipment will be required for excavations extending into the tan or gray limestone. Temporary construction embankments can be sloped on a one horizontal to one vertical within the overburden soils and the extremely weathered limestone. Vertical or



near vertical slopes can be used in the hard tan or gray limestone. The slopes should be periodically checked during construction to insure their safety. Construction equipment, construction material or excavated material should not be placed near the top of the excavation. A temporary retention system should be used in areas where vertical excavations are planned adjacent to streets and/or structures. Based on the current project layout, it does not appear that a temporary retention system will be required. Our firm should be contacted to review this assumption and provide additional design criteria if the building layout or the construction sequence requires the use of a temporary retention system.

### Site Preparation

Prior to placing any fill material, all existing surface vegetation, loose fill, existing concrete slab, sidewalks and debris should be removed. All exposed surfaces should then be scarified, watered as required and recompacted to between 95 and 100 percent of the maximum dry density as defined by ASTM D 698 (Standard Proctor Test) at a moisture content between the optimum moisture value and five (5) percent above optimum. The site may then be filled to grade using a suitable fill, free from deleterious matter and rock larger than 4 inches in size. Fill materials should be placed in six (6) to eight (8)-inch loose lifts at moisture contents between optimum and five (5) percentage points above optimum (between -3 and +3 percent for select fill) and each lift compacted to between 95 and 100 percent of the maximum dry density as defined in ASTM D 698. Field density tests should be taken at the rate of one test per each 5,000 square feet, per lift, in the area of all compacted fills. For areas where hand tamping is required, the testing frequency should be increased to approximately one test, per lift, per 100 linear feet of area. The frequency of field density tests may be reduced in areas where fill material is placed under a structural slab system.

### Select Fill

"Select Fill", as referred to in this report, should consist of clayey sands free of organic materials and have a Plasticity Index between 4 and 15, a Liquid Limit of 40 or less, and between 20 and 45 percent passing a No. 200 sieve. Placement and compaction of the select fill should be performed in accordance with the "Building Pad" section of this report. It is preferable to place the select fill above the surrounding ground surface. The select fill should not extend beyond the outside perimeter of the building.

### Additional Design Consideration

The following information has been assimilated after examination of numerous projects constructed in similar soils throughout the area. If these features are incorporated in the overall design of the project, the performance of the structure should be improved.

1) Any structural floor system must have the underlying exposed soils graded to drain to a collection point where the water is channeled away from the structure. We further recommend that any stepdown, below grade walls, etc., be provided with suitable dewatering devices to reduce accumulated water.

2) Special consideration should be given to completion items outside the building area, such as stairs, sidewalks, signs, etc. They should be adequately designed to sustain the potential vertical movements mentioned in the report.

3) Roof drainage should be collected by a system of gutters and downspouts and transmitted by pipe to a storm drainage system or to a paved surface where the water can drain away without entering the building subgrade.

4) Sidewalks should not be structurally connected to the building. They should be sloped away from the building so that water will drain away from the structure.

5) The parking lot and the general ground surface should be sloped away from the building on all sides so that water will always drain away from the structure. Water should not be allowed to pond near the building after the slab has been placed.

6) Every attempt should be made to limit the extreme wetting or drying of the subsurface soils since swelling and shrinkage will result. Standard construction practices of providing good surface water drainage should be used. A positive slope of the ground away from the foundation and ditches or swales provided to carry off the runoff water both during and after construction are necessary.

7) Backfill for utility lines or along the perimeter beams should consist of on-site material so that they will be stable. If the backfill is too dense or too dry, swelling may form a mound along the ditch line. If the backfill is too loose or too wet, settlement may form a sink along the ditch line. Either case is undesirable since several inches of movement is possible and floor cracks are likely to result. The

For heavy traffic areas, we have assumed 10 equivalent 18-kip axle loadings per day for a design period of 15 years. For light traffic areas, we have assumed 2 equivalent 18-kip axle loadings per day for a design period of 15 years.

Specific wheel loading and traffic volume characteristics have not been provided to us, but we assume that passenger vehicles traffic will be predominant in the parking areas, and some relatively heavy truck and bus traffic will occur in drive areas around and behind the structures, and in the fire lanes. We have developed Portland Cement pavement designs for light traffic and heavy traffic areas.

**General**

**SURFACE PARKING AREAS**

- 9) An adequate isolation joint should be placed between the pier supported parking structures and the ground supported apartment buildings.
- 8) The floor slab placed at or below existing grades should be provided with a moisture barrier in order to prevent wet spots.

solis should be processed using the previously discussed compaction criteria. Where the utility lines pass through the parking lot, the top six (6) inches should be compacted similarly to the remainder of the lot. It is also recommended that the utility ditches be visually inspected during the excavation process to ensure that undesirable fill that was not detected by the test borings does not exist at the site. This office should be notified immediately if any such fill is detected.



Design of the concrete pavements should specify a minimum 28-day concrete compressive strength of 3000 psi with 4 percent to 6 percent entrained air. Hand-placed concrete should have a maximum slump of four inches. A sand leveling course should not be permitted beneath pavements. The concrete should be placed within one and one-half hours of batching. During hot weather, the concrete placement should follow ACI 311 Hot Weather concreting. In no case should concrete temperature exceed 95°F. Consideration should be given to limiting concrete placement to the time of day which will minimize large differences in the ambient and concrete

thicknesses if design traffic volume and characteristics can be specified to us. if our assumed loading conditions are too severe. We will be happy to review these pavement sections could be used if greater maintenance costs and shorter pavement life is acceptable, or maintenance for the design life of 15 years for the assumed traffic loadings. Thinner pavement accepted design procedures that should provide satisfactory performance with relatively low clays. Pavement recommendations are based on assumed loading conditions and commonly Some differential movements in the pavements are anticipated due to swelling of the subgrade points above the optimum value.

On-site soils can be used as fill to raise site grade for the pavement areas. The fill should be placed in 8-inch loose lifts and compacted to between 95 to 100 percent of the maximum Standard Proctor dry density at a moisture content between optimum and five percentage moisture content between optimum and five percentage points above optimum. The subgrade soils should be lime stabilized to a depth of six inches and compacted to a minimum of 95 percent of the maximum standard Proctor dry density (ASTM D 698) at a

Thickness (inches)	
6.0	Compacted Subgrade
6.0	Portland Cement Concrete
6.0	Fire Lanes and Heavy Traffic Areas
6.0	Compacted Subgrade
5.0	Portland Cement Concrete
	Passenger Parking and Light Traffic Areas

The following concrete pavement sections are recommended for this site:

**Concrete Pavement**





temperature. Use of superplasticizer should be considered to improve the concrete workability without increasing water cement ratio.

Past experience indicates that pavements with sealed joints on 15 to 20-foot spacings, cut to a depth of at least one-quarter of the pavement thickness, have generally exhibited less uncontrolled post-construction cracking than pavements with wider spacings. As a minimum, expansion joints should be used wherever the pavement will abut a structural element subject to a different magnitude of movement, e.g., light poles, retaining walls, existing pavement, stairways, entryway piers, building walls, or manholes. After construction, the construction and expansion joints should be inspected periodically and resealed, if necessary. The pavement should be reinforced using at least No. 3 bars, 24 inches on center, each way.

### STREETS AND PUBLIC IMPROVEMENTS

City streets and public improvements should be constructed to meet the City of Addison standards. The subgrade of concrete pavement should be lime stabilized where clay soils are exposed at the subgrade level. Lime stabilization will not be necessary in areas where the tan or gray limestone is exposed. Lime Series Tests should be performed after the completion of the site grading operations on the exposed material to determine the percentage of lime required to stabilize the exposed clays. For preliminary pricing purposes, we estimate that up to 7 percent lime will be required to stabilize the dark brown clays (33 and 42 pounds per square yard for a 6- and 8-inch stabilized subgrade, respectively), and up to 5 percent lime will be required to stabilize the brown and yellowish brown calcareous clays (24 and 31 pounds per square yard for a 6- and 8-inch stabilized subgrade, respectively).

It is anticipated that the use of heavy excavation equipment will be required in areas where utility excavations extend into the deeper limestone. In general, vertical excavations are possible in the unweathered gray limestone. However, vertical excavations should be observed by experienced personnel to insure the absence of fissure or joints that will allow the rock to slide into open excavations.

### LANDSCAPING

Excess water ponding on and beside roadways, sidewalks, and structural slabs can cause unacceptable heave of these structures. To reduce this potential heave, good surface drainage

The results, conclusions, and recommendations contained in this report are directed at, and intended to be utilized within, the scope of work contained in the proposal letter executed by implied, is made as to the professional advice set forth.

The professional services that form the basis for this report have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in the same locality. No other warranty, expressed or

Since some variation was found in subsurface conditions at boring locations, all parties involved should take notice that even more variation may be encountered between boring locations. Statements in the report as to subsurface variation over given areas are intended only as estimations from the data obtained at specific boring locations.

## LIMITATIONS

The completed landscaping should be carefully inspected to verify that plantings properly drain. Soil in plantings may settle, which will tend to pond water, or plantings may block entrances to surface drains. Therefore, maintaining positive drainage from landscape irrigation will be an ongoing concern.

Bedding soils for plants may collect and direct water underneath the buildings and pavements; therefore, care should be taken to insure that water entering the bedding soils drains away from these structures. If positive drainage away from these structures cannot be achieved, an impermeable synthetic membrane should be considered to reduce the risk of water migrating beneath the buildings and pavements. An 18-inch deep vertical water barrier along the pavement edge fronting landscaped areas may be desirable to help prevent irrigation water from having ready access to the soils beneath the pavement. Special attention should be given to provide good drainage from plantings inside the building courtyards and planter boxes.

Trees will remove water from the soil and, as a result, can cause the soil to shrink; therefore, where pavements are planned, trees should either a) not be planted closer than the mature tree height from the building, b) have a controlled irrigation system, or c) be planted in containers.

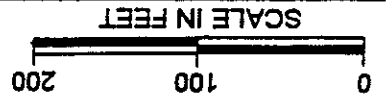
should be established, and sprinkler systems should be designed and operated to minimize saturation of soil adjacent to these structures. Sprinkler mains next to buildings are not recommended.

Fugro-McClelland (Southwest), Inc. and client. This report is not intended to be used for any other purposes. Fugro-McClelland (Southwest), Inc. makes no claim or representation concerning any activity or condition falling outside the specified purposes to which this report is directed, said purposes being specifically limited to the scope of work as defined in said agreement. Inquiries as to said scope of work or concerning any activity or condition not specifically contained therein should be directed to Fugro-McClelland for a determination and, if necessary, further investigation.



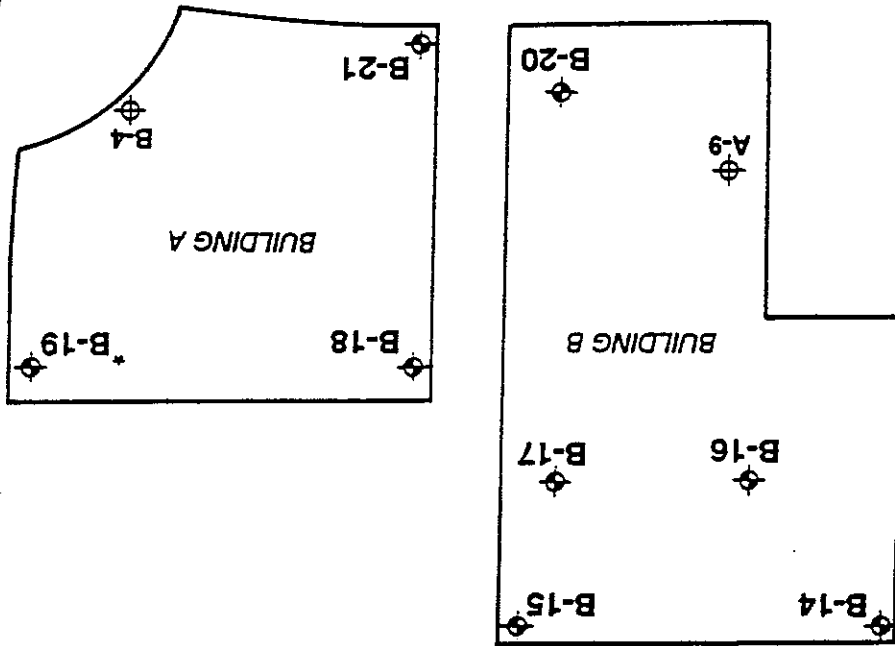


PLAN OF BORINGS  
ADDISON URBAN CENTER / PHASE I  
ADDISON, TEXAS  
PROJECT NO. 0751-1075



**KEY:**  
⊕ APPROXIMATE BORING LOCATIONS  
⊕ BORINGS ADVANCED DURING PRELIMINARY INVESTIGATION  
\* LOCATION OF BORING B-19 WAS NOT ACCESSIBLE AT THE TIME THIS INVESTIGATION WAS PERFORMED

MILDRED STREET



QUORUM DRIVE



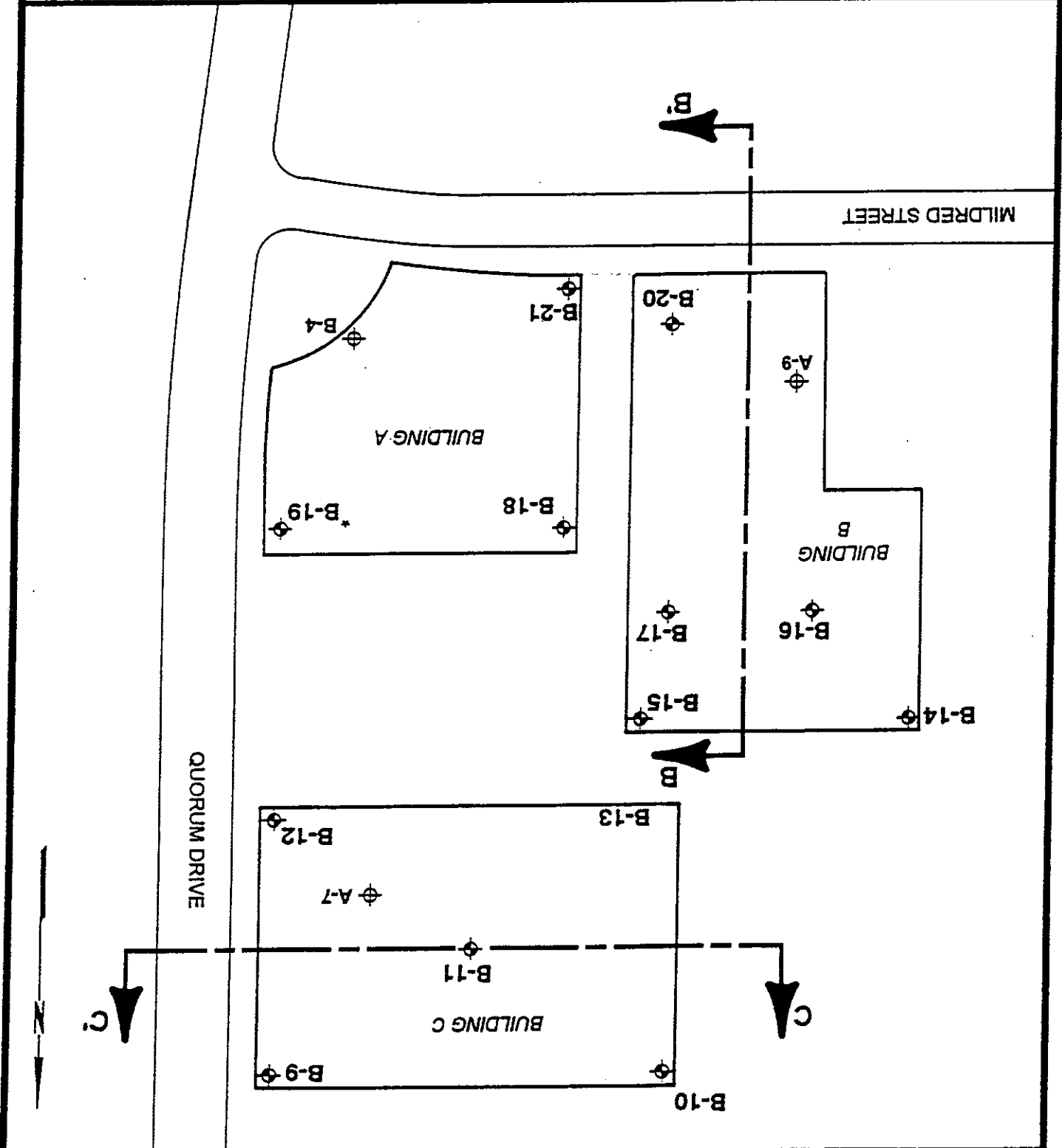


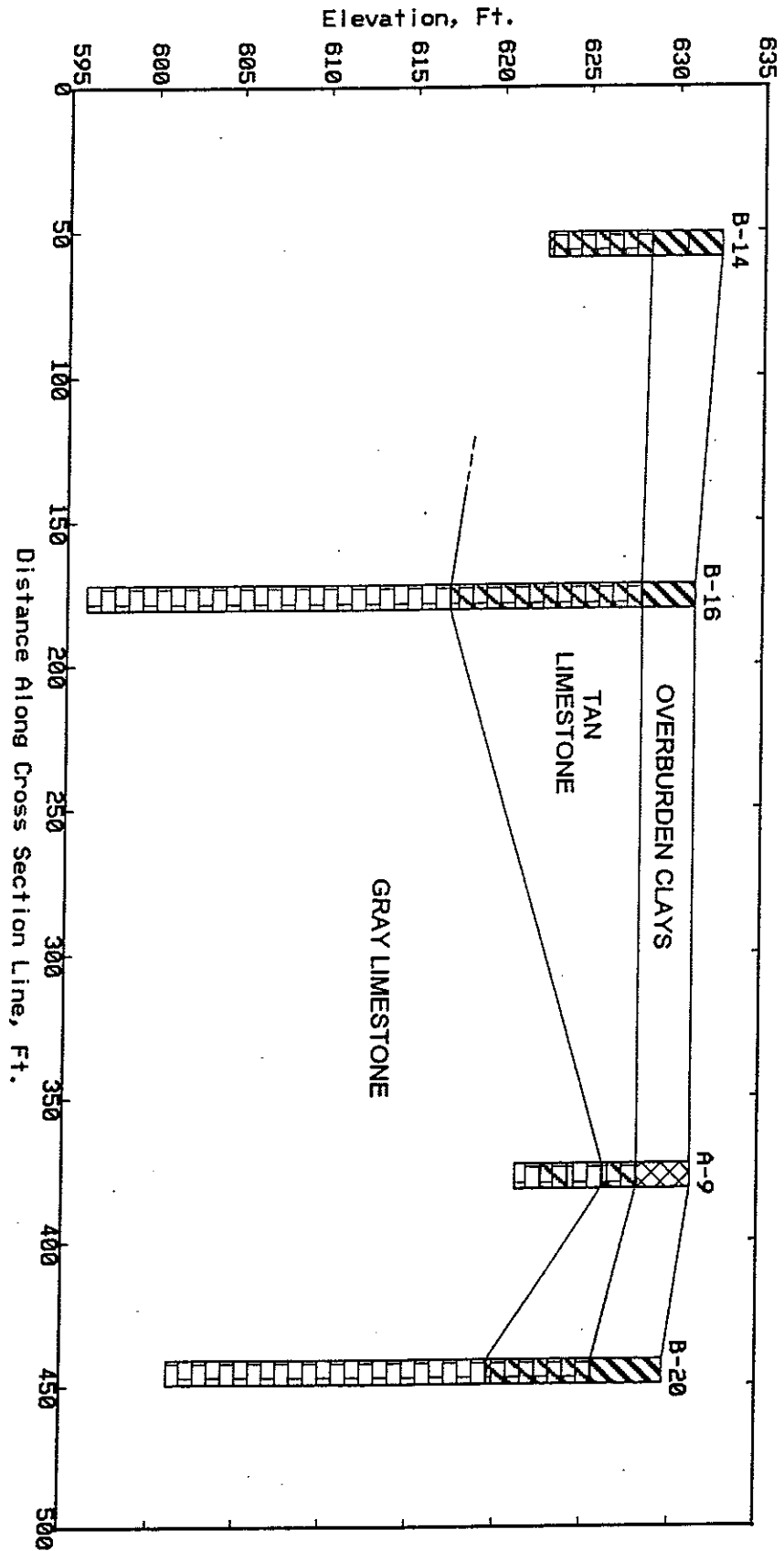


CROSS SECTIONS  
ADDISON URBAN CENTER / PHASE I  
ADDISON, TEXAS  
PROJECT NO. 0751-1075



KEY:  
⊕ APPROXIMATE BORING LOCATIONS  
⊕ BORINGS ADVANCED DURING PRELIMINARY INVESTIGATION  
\* LOCATION OF BORING B-19 WAS NOT ACCESSIBLE AT THE TIME THIS INVESTIGATION WAS PERFORMED

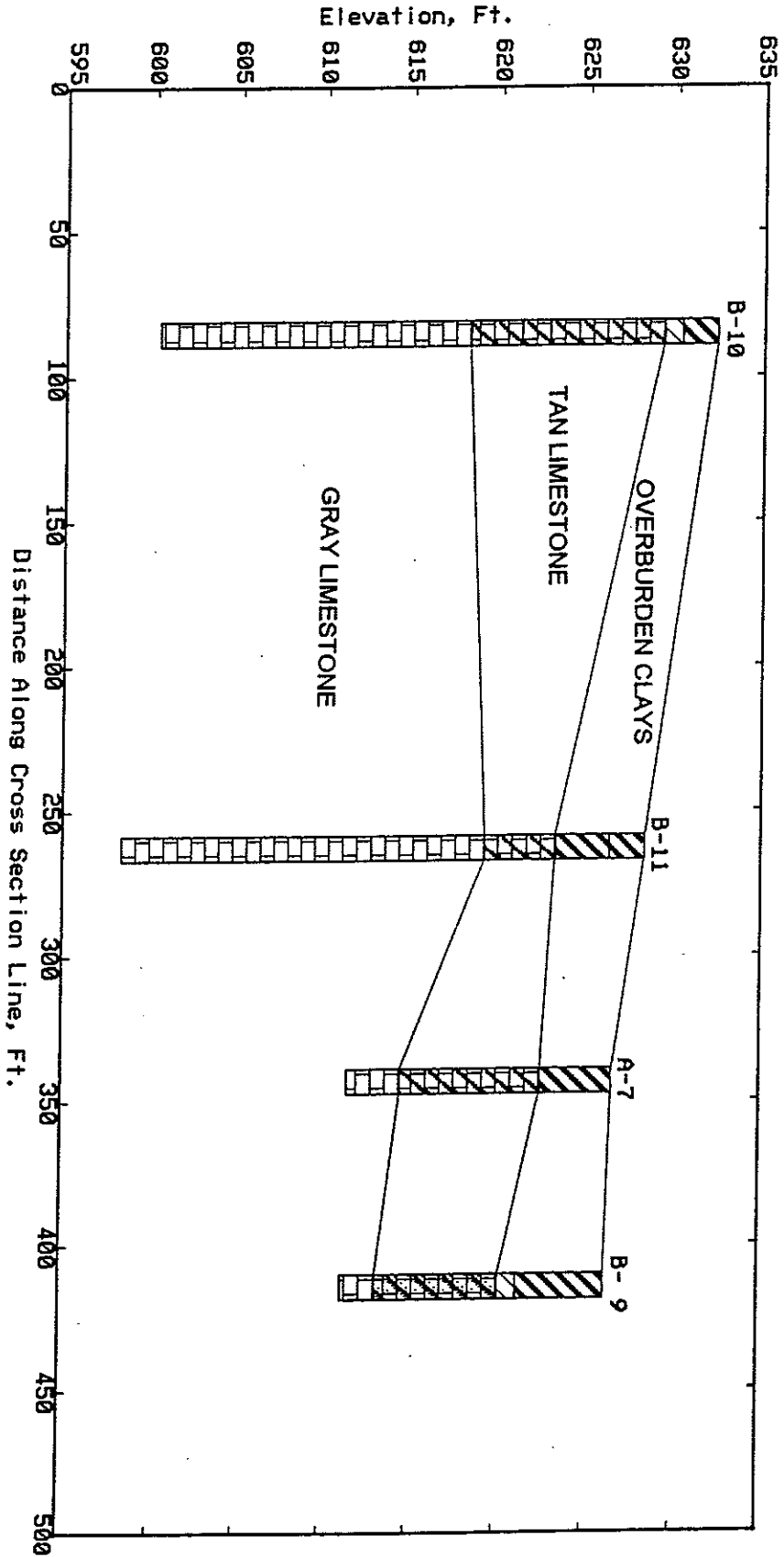




Vertical Scale 1"=10'  
 Horizontal Scale 1"=65'

**GENERALIZED SUBSURFACE PROFILE B-B'**  
 ADDISON URBAN CENTER / PHASE I  
 ADDISON, TEXAS

Data concerning subsurface conditions have been obtained at boring locations only. Actual conditions may vary from the generalized profile shown here.



Vertical Scale 1"=10'  
Horizontal Scale 1"=65'

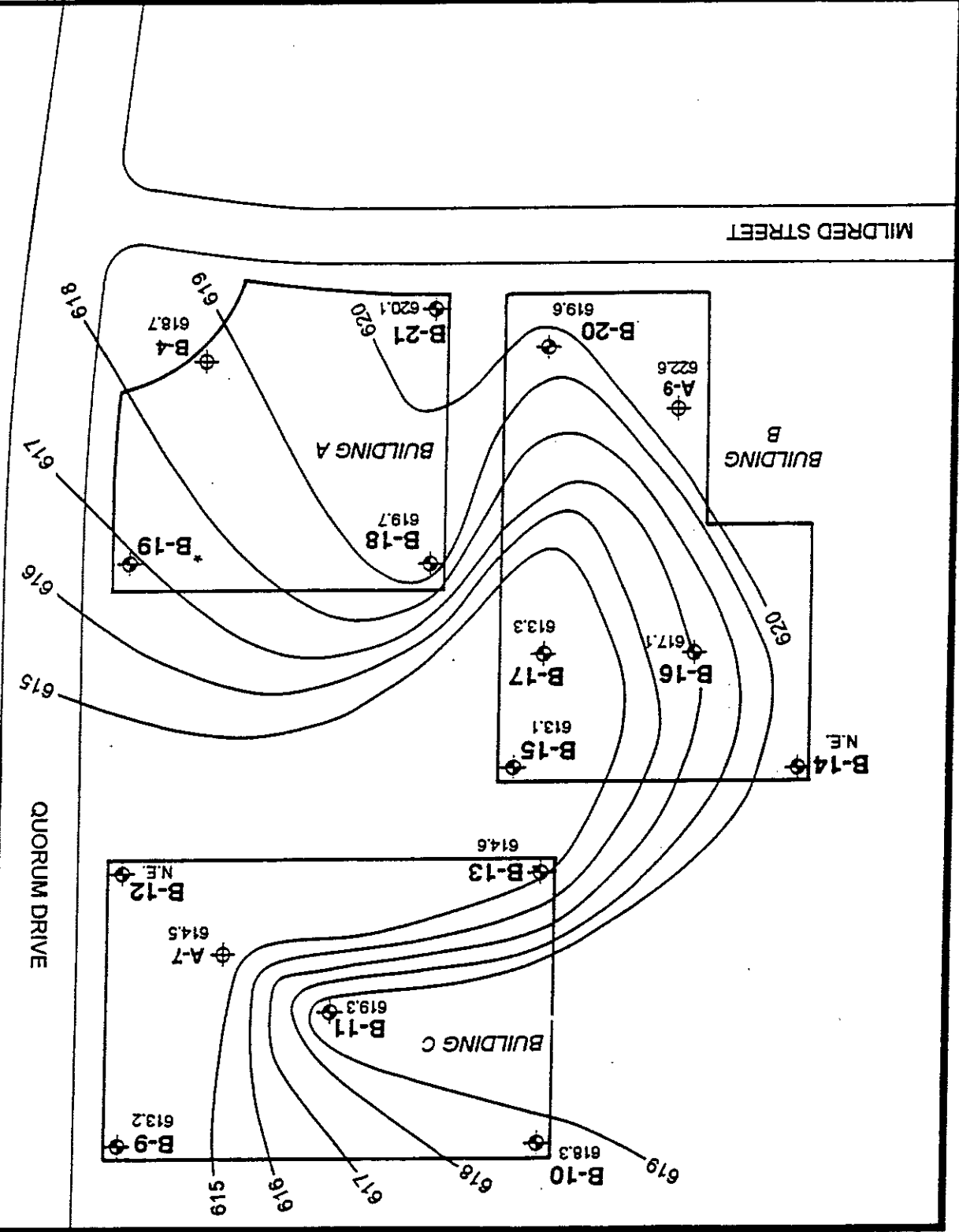
**GENERALIZED SUBSURFACE PROFILE C-C'**  
ADDISON URBAN CENTER / PHASE I  
ADDISON, TEXAS

Data concerning subsurface conditions have been obtained at boring locations only. Actual conditions may vary from the generalized profile shown here.

INTERPOLATED ELEVATION OF TOP  
OF GRAY LIMESTONE  
ADDISON URBAN CENTER / PHASE I  
ADDISON, TEXAS  
PROJECT NO. 0751-1075



**KEY:**  
◊ APPROXIMATE BORING LOCATIONS  
◊ BORINGS ADVANCED DURING PRELIMINARY INVESTIGATION  
◊ LOCATION OF BORING B-19 WAS NOT ACCESSIBLE AT THE TIME THIS INVESTIGATION WAS PERFORMED



LOG OF BORING NO. B-4													
ADDISON TOWN CENTER ADDISON, TEXAS PROJECT NO. 0741-1103													
TYPE: INTERMITTENT SAMPLING													
LOCATION: SEE PLAN OF BORINGS													
DEPTH, FT	SYMBOL	SAMPLES	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	SURF. ELEVATION: 624.20	LAYER ELEV./DEPTH	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. #200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0.0 - 2.0		P 4.0		CLAY (CH), Dark Brown		622.2	28						
2.0 - 3.0		P 4.5		CALCAREOUS CLAY (CL), Tan		621.2	19	48	25	23			
3.0 - 5.5				WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth		618.7							
5.5 - 11.0				LIMESTONE, Gray		613.2							
11.0 - 11.0						11.0							

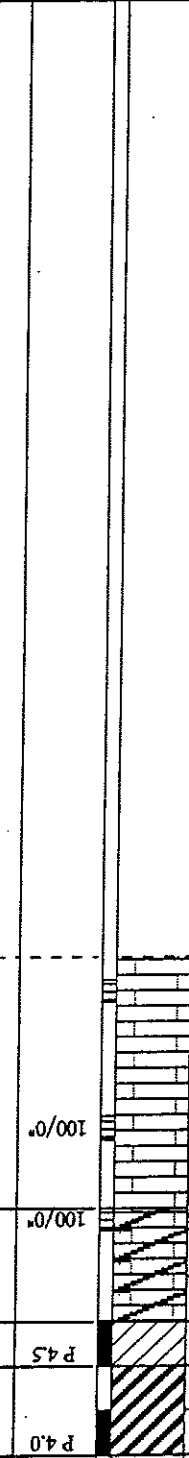
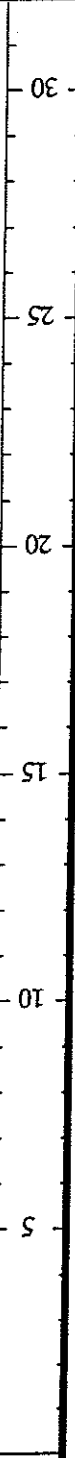
START DATE: 9-22-94

END DATE: 9-22-94

COMPLETION DEPTH: 11.0'

DEPTH TO WATER: DRY

P = Pocket Penetrometer  
Q = Unconsolidated Undrained  
T = Torvane  
Triaxial




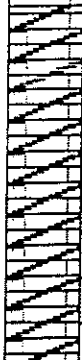

CLAY (CH), Dark Brown  
CALCAREOUS CLAY (CL), Tan  
WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth  
LIMESTONE, Gray

622.2	621.2	618.7	613.2	11.0
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**LOG OF BORING NO. A-7**  
**ADDISON TOWN CENTER**  
**ADDISON, TEXAS**  
**PROJECT NO. 0741-1103**

TYPE: AUGER BORING

LOCATION: SEE PLAN OF BORINGS

DEPTH, FT	SYMBOL	STRATUM DESCRIPTION	LAYER DEPTH ELBV /	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 4.0		CLAY (CH), Dark Brown	622.5							
4.0 - 614.5		WEATHERED LIMESTONE, Tan, with clay seams	614.5							
614.5 - 611.5		LIMESTONE, Gray	611.5							
611.5 - 15.0			15.0							
15.0 - 30.0										

DEPTH, FT  
 SYMBOL  
 SAMPLES  
 POCKET PEN N PER FOOT RECOVERY, %

SURF. ELEVATION: 626.50

STRATUM DESCRIPTION

LAYER DEPTH ELBV /

WATER CONTENT, %  
 LIQUID LIMIT, %  
 PLASTIC LIMIT, %  
 PLASTICITY INDEX (PI), %  
 PASSING NO. 200 SIEVE, %  
 UNIT DRY WEIGHT, PCF  
 UNCONFINED STRENGTH TSF

COMPLETION DEPTH: 15.0'

DEPTH TO WATER: DRY

START DATE: 9-22-94

END DATE: 9-22-94

P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 T<sub>axial</sub>

# LOG OF BORING NO. A-9

ADDISON TOWN CENTER  
 ADDISON, TEXAS  
 PROJECT NO. 0741-1103

TYPE: AUGER BORING

LOCATION: SEE PLAN OF BORINGS

DEPTH, FT	SYMBOL	STRATUM DESCRIPTION	LAYER ELEV./DEPTH	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI), %	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0.0 - 2.0		FILL, Gravel and Asphalt	628.1							
2.0 - 3.0		WEATHERED LIMESTONE, Tan, with clay seams	626.1							
3.0 - 5.0		LIMESTONE, Gray	624.1							
5.0 - 7.0		WEATHERED LIMESTONE, Tan	622.6							
7.0 - 8.5		LIMESTONE, Gray	621.1							
8.5 - 10.0			10.0							

**LOG OF BORING NO. B-9**  
 ADDISON URBAN CENTER / PHASE I  
 ADDISON, TEXAS  
 PROJECT NO. 0751-1075

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	SURF. ELEVATION: 62620	LAYER ELEV./DEPTH, (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 5	Diagonal hatching	P 25		CLAY (CH), Dark Brown, with calcareous nodules		621.2	31	22	79	24	55		
5 - 6.0	Diagonal hatching	P 4.0		CLAY (CL), Brown, with limestone fragments		620.2	26						
6.0 - 13.0	Diagonal hatching			EXTREMELY WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth		613.2							
13.0 - 15.0	Diagonal hatching	100/15"		LIMESTONE, Gray		611.2							
15.0 - 15.0	Diagonal hatching	100/75"		LIMESTONE, Gray		15.0							

COMPLETION DEPTH: 15.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-2-95

P = Pocket Penetrometer  
 Q = Unconsolidated Undrained  
 T = Torvane  
 Triaxial



**LOG OF BORING NO. B-10**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

TYPE: INTERMITTENT SAMPLING & ROCK CORING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN PER FOOT RECOVERY, %	STRATUM DESCRIPTION	LAYER ELBV/ DEPTH, (ft.)	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX(PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 1.5		P 4.0		CLAY (CH), Dark Brown	630.3	29	78	29	48	83	2.7	
1.5 - 2.0		P 4.5		CLAY (CL), Brown, with limestone fragments	629.3	24						
2.0 - 3.0				WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	3.0							
3.0 - 14.0		100/15"			618.3							
14.0 - 16.0		100/17"		- 3" gray limestone seam at 12.0 feet								
16.0 - 32.0		94		LIMESTONE, Gray	14.0							
16.0 - 17.0				- 12" tan limestone seam at 16.0 feet								
17.0 - 18.0		87			17							
18.0 - 19.0					15							
19.0 - 20.0					13							
20.0 - 21.0					126							
21.0 - 22.0												
22.0 - 23.0												
23.0 - 24.0					121							
24.0 - 25.0												
25.0 - 26.0												
26.0 - 27.0												
27.0 - 28.0												
28.0 - 29.0												
29.0 - 30.0												
30.0 - 31.0												
31.0 - 32.0					600.3							

COMPLETION DEPTH: 32.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-8-95  
 START DATE: 8-8-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 Triaxial

**LOG OF BORING NO. B-11**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING & ROCK CORING

DEPTH, (ft.)	SYMBOL	STRATUM DESCRIPTION	LAYER / ELEV. / DEPTH, (ft.)	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 4.5	P 45	CLAY (CH), Dark Brown	626.3	24						
4.5 - 6.5	P 45	CLAY (CH), Brown, with limestone fragments	623.3	20	65	23	42			
6.5 - 9.0	100/2"	WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	5.0							
9.0 - 13.0	100/0"	LIMESTONE, Gray	619.3							
13.0 - 13.5	70	- 6" weathered limestone seam at 13.0 feet		13				126		52.5
13.5 - 14.0	100/0"									
14.0 - 15.0	70									
15.0 - 16.0	100/0"									
16.0 - 17.0	60									
17.0 - 18.0	100/0"									
18.0 - 19.0	60									
19.0 - 20.0	100/0"									
20.0 - 21.0	60									
21.0 - 22.0	100/0"									
22.0 - 23.0	60									
23.0 - 24.0	100/0"									
24.0 - 25.0	60									
25.0 - 26.0	100/0"									
26.0 - 27.0	60									
27.0 - 28.0	100/0"									
28.0 - 29.0	60									
29.0 - 30.0	100/0"									
30.0 - 31.0	60									
31.0 - 32.0	100/0"									
32.0 - 33.0	60									
33.0 - 34.0	100/0"									
34.0 - 35.0	60									

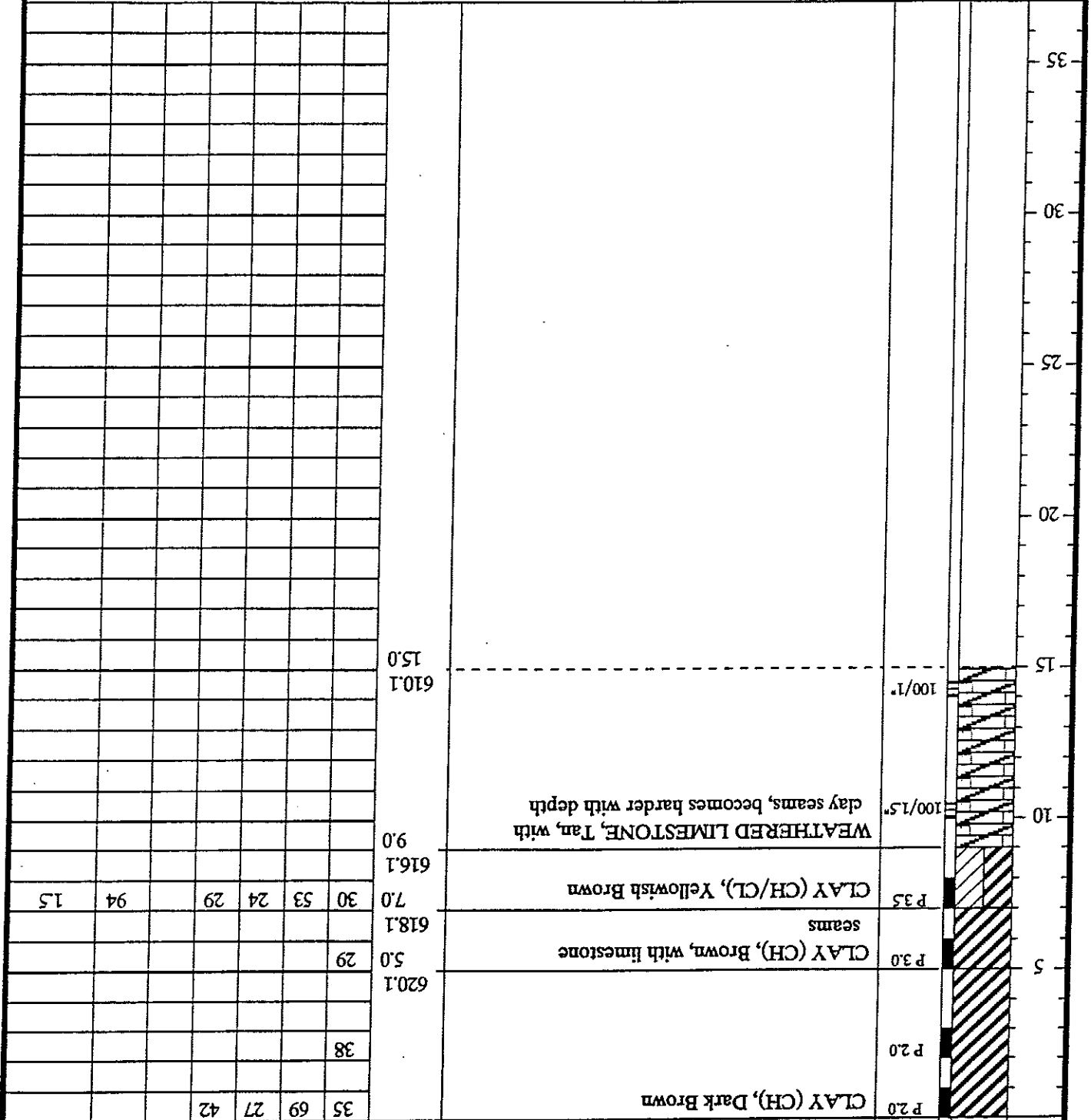
COMPLETION DEPTH: 30.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-11-95  
 START DATE: 8-11-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 Triaxial

**LOG OF BORING NO. B-12**  
 ADDISON URBAN CENTER / PHASE I  
 ADDISON, TEXAS  
 PROJECT NO. 0751-1075

TYPE: INTERMITTENT SAMPLING & ROCK CORING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	STRATUM DESCRIPTION	LAYER ELEV./DEPTH, (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH ISF
0 - 2.0	P 2.0	CLAY (CH), Dark Brown	620.1	35	69	27	42			
2.0 - 5.0	P 3.0	CLAY (CH), Brown, with limestone seams	618.1	29						
5.0 - 7.0	P 3.5	CLAY (CH/CL), Yellowish Brown	616.1	30	53	24	29	94	15	
7.0 - 9.0		WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	610.1							
9.0 - 15.0			15.0							

COMPLETION DEPTH: 15.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-2-95  
 P = Pocket Penetrometer  
 Q = Unconsolidated Undrained  
 T = Torvane  
 Traxal



**LOG OF BORING NO. B-13**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

TYPE: INTERMITTENT SAMPLING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	STRATUM DESCRIPTION	LAYER ELEV./DEPTH (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 2.0	P 2.0	CLAY (CH), Dark Brown	626.6	37						
2.0 - 6.20	P 2.0	CLAY (CH/CL), Brown, with limestone fragments	626.6	38	67	25	42	85	1.0	
6.20 - 8.0	P 2.5	WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	620.6	25	21	31	14	17		
8.0 - 14.6	100/1*		614.6							
14.6 - 15.0	100/5*	LIMESTONE, Gray	613.6							
15.0 - 35.0			15.0							

COMPLETION DEPTH: 15.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-2-95  
 START DATE: 8-2-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 Trial

**LOG OF BORING NO. B-14**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./DEPTH (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 10.0				CLAY (CH), Dark Brown	630.5	26						
10.0 - 2.0		P 45		CLAY (CH), Brown, with limestone fragments	628.5	24	75	27	48			
2.0 - 4.0		P 45		CLAY (CH), Brown, with limestone fragments	628.5							
4.0 - 10.0				WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	622.5							
10.0 - 10.0					10.0							

COMPLETION DEPTH: 10.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-10-95  
 START DATE: 8-10-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained Triaxial

**LOG OF BORING NO. B-15**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING

DEPTH, (ft.)	SYMBOL	STRATUM DESCRIPTION	LAYER DEPTH, (ft.)	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 5	P 45	CLAY (CH), Dark Brown	624.1	21	74	24	50			
5 - 7.0	P 35	CLAY (CL), Brown	622.1	27						
7.0 - 10	P 40	CLAY (CL), Yellowish Brown, with limestone fragments	616.1	18	45	17	28	94	1.0	
10 - 13.0	P 15	WEATHERED LIMESTONE, Tan, with clay seams	613.1	27						
13.0 - 16.0	100/1"	LIMESTONE, Gray	609.1	22						
16.0 - 20.0			20.0	17						
20.0 - 35										

COMPLETION DEPTH: 20.0'  
 DEPTH TO WATER: DRY  
 END DATE: 8-11-95

P = Pocket Penetrometer  
 Q = Unconsolidated Undrained  
 T = Torvane  
 Triaxial

**LOG OF BORING NO. B-16**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

TYPE: INTERMITTENT SAMPLING & ROCK CORING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	STRATUM DESCRIPTION	LAYER ELEV./DEPTH, (ft.)	MATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 2.5		CLAY (CH), Dark Brown, with limestone fragments	628.1	24	85					
2.5 - 3.0	P 45	WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	617.1	17	65	26	39			
3.0 - 14.0	P 45	LIMESTONE, Gray, with weathered limestone seams to 20.0 feet	596.1	12	124	123	160.0			
14.0 - 15.0	100/5"			12	123	123	52.7			
15.0 - 19.0	100			12	123	123	157.0			
19.0 - 20.0	100			11	132	132	170.8			
20.0 - 25.0	100			11	123	123	115.2			
25.0 - 30.0	100			11	61.1	125	61.1			
30.0 - 35.0	100			14	116	116	183.8			

**LOG OF BORING NO. B-17**  
**ADDRESS URBAN CENTER / PHASE I**  
**ADDRESS, TEXAS**  
**PROJECT NO. 0751-1075**

TYPE: INTERMITTENT SAMPLING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN M PER FOOT RECOVERY, %	STRATUM DESCRIPTION	LAYER	ELRV. /	DEPTH, (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 15.0		P 4.5 P 4.0 P 4.5		CLAY (CH), Dark Brown, with limestone fragments	23	617.3	20							
15.0 - 10.0		P 4.5		WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	25	613.3	20	43	19	24				
10.0 - 15.0		100/5"		LIMESTONE, Gray	16	608.3	15							
15.0 - 35.0		100/0"												

COMPLETION DEPTH: 15.0'  
 DEPTH TO WATER: DRY  
 START DATE: 8-11-95  
 END DATE: 8-11-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 Triaxial

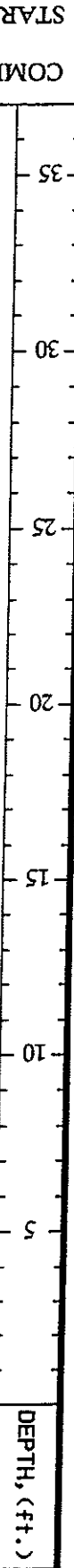


**LOG OF BORING NO. B-18**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	SURF. ELEVATION: 626.70	LAYER	DEPTH, (ft.)	WATER CONTENT, %	LIOUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0 - 2.0				CLAY (CH), Dark Brown		P 45	20							
2.0 - 3.0				- with limestone seams from 2.0 to 3.0 feet		P 45	19	623.7						
3.0 - 7.0				WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth			14	619.7						
7.0 - 10.0				LIMESTONE, Gray			12	7.0						
10.0 - 10.0							12	616.7						



COMPLETION DEPTH: 10.0'  
 DEPTH TO WATER: DRY  
 START DATE: 8-11-95  
 END DATE: 8-11-95

P = Pocket Penetrometer  
 T = Torrance  
 Q = Unconsolidated Undrained  
 Triaxial

**LOG OF BORING NO. B-20**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

TYPE: INTERMITTENT SAMPLING & ROCK CORING  
 LOCATION: SEE PLAN OF BORINGS

DEPTH, (ft.)	SYMBOL	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	LAYER ELEV./DEPTH, (ft.)
16		16	CLAY (CH), Brown, with limestone fragments	625.6
28		28		625.6
100/15'		100/15'	WEATHERED LIMESTONE, Tan, with clay seams	4.0
100/5'		100/5'	LIMESTONE, Gray	619.6
15		100	- 6" bentonite seam at 14.5 feet	601.1

DEPTH, (ft.)	POCKET PEN N PER FOOT RECOVERY, %	SYMBOL	STRATUM DESCRIPTION	LAYER ELEV./DEPTH, (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
16	16		CLAY (CH), Brown, with limestone fragments	625.6	16	60	24	36			
28	28			625.6	13						
100/15'	100/15'		WEATHERED LIMESTONE, Tan, with clay seams	4.0							
100/5'	100/5'		LIMESTONE, Gray	619.6							
15	100		- 6" bentonite seam at 14.5 feet	601.1	18	120	131	100.9	126	123.8	
16	117			601.1	16	117	131	101.4	126	123.8	
11	131			601.1	11	131	131	95.1	126	123.8	

COMPLETION DEPTH: 28.5  
 DEPTH TO WATER: DRY  
 END DATE: 8-8-95  
 START DATE: 8-8-95  
 P = Pocket Penetrometer  
 T = Torvane  
 Q = Unconsolidated Undrained  
 Triaxial

**LOG OF BORING NO. B-21**  
**ADDISON URBAN CENTER / PHASE I**  
**ADDISON, TEXAS**  
**PROJECT NO. 0751-1075**

LOCATION: SEE PLAN OF BORINGS

TYPE: INTERMITTENT SAMPLING

DEPTH, (ft.)	SYMBOL	SAMPLES	POCKET PEN N PER FOOT RECOVERY, %	STRATUM DESCRIPTION	LAYER ELBV / DEPTH (ft.)	WATER CONTENT, %	LIQUID LIMIT, %	PLASTIC LIMIT, %	PLASTICITY INDEX (PI)	PASSING NO. 200 SIEVE, %	UNIT DRY WEIGHT, PCF	UNCONFINED STRENGTH TSF
0				CLAY (CH), Dark Brown, with limestone fragments	626.1	17						
4.5		45		WEATHERED LIMESTONE, Tan, with clay seams, becomes harder with depth	620.1	10						
10.0			100/0*	LIMESTONE, Gray	618.1							
10.0			100/0*		10.0							

COMPLETION DEPTH: 10.0' DEPTH TO WATER: DRY  
 START DATE: 8-8-95 END DATE: 8-8-95  
 P = Pocket Penetrometer T = Torvane  
 Q = Unconsolidated Undrained Triaxial

Information on each boring log is a compilation of subsurface conditions and soil and rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and observed at the times and places indicated, and may vary with time, approximate in nature. Water level measurements refer only to those geologic condition or construction activity.

REFERENCES:  
 1) ASTM D 2488  
 2) Peck, Hanson, and Thornburn, (1974), Foundation Engineering.

DESCRIPTION	CRITERIA	MOISTURE
Stratified	Alternating layers of varying material or color with layers at least 6 mm thick.	Dry: No water evident in sample; fines less than plastic limit. Sample feels damp; fines near the plastic limit. Water visible on sample; fines greater than plastic limit and less than liquid limit. Sample bears free water; fines greater than liquid limit.
Laminated	Alternating layers of varying material or color with the layers less than 6 mm thick.	Very Moist: Water visible on sample; fines greater than plastic limit and less than liquid limit. Sample bears free water; fines greater than liquid limit.
Fractured	Breaks along definite planes of fracture with little resistance to fracturing.	
Stickersided	Fracture planes appear polished or glassy, sometimes striated.	
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.	
Lensed	Inclusions of small pockets of different soils.	

INCLUSIONS (1)

CONSISTENCY	UNDRAINED COMPRESSIVE STRENGTH Tons Per Sq. Ft.	NUMBER OF BLOWS PER FT. N	RELATIVE DENSITY
Very soft	Less than 0.25	0-4	Very loose
Soft	0.25 to 0.50	4-10	Loose
Firm	0.5 to 1.00	10-30	Medium
Stiff	1.00 to 2.00	30-50	Dense
Very stiff	2.00 to 4.00	Over 50	Very Dense
Hard	greater than 4.00		

DESCRIPTIVE TERMS FOR SOIL (1)

STRENGTH OF COHESIVE SOILS (2)













DENSITY OF GRANULAR SOILS (2)

SOIL GRAIN SIZE U.S. STANDARD SIEVE	SOIL GRAIN SIZE IN MILLIMETERS			
	BOULDERS	COBBLES	GRAVEL	SAND
6"	152	76.2	3/4"	4.75
3"	76.2	19.1	2.00	0.420
10			0.075	0.002
60				
200				

SOIL TYPES	Symbol	Soil Type	Symbol	Soil Type
Well-graded		Well-graded (GM)		Poorly-graded (GP)
Sand (SM)		Silty sand (SM)		Poorly-graded sand (SP)
Clay (CH)		Silty clay (CL)		Sandy clay (CL)
		Landfill		
		Clayey sand (SC)		
		Silt (ML)		

SAMPLER TYPES

ROCK TYPES

	Thin-walled tube		Sandstone		Shale		Limestone
	Standard Penetration Test Auger Sample		Weathered Sandstone		Weathered Shale		Weathered Limestone
	1/30 Cone Penetration Test Pitcher Barrel		Granite		Dolomite		Highly Weathered Limestone

HARDNESS

**Friable**  
Crumbles under hand pressure  
Can be carved with a knife  
Low Hardness  
Moderately hard  
Can be scratched easily with a knife  
Very hard  
Cannot be scratched with a knife

SOLUTION & VOID CONDITIONS

**Void**  
Interstices; a general term for pore space or other openings in rock.

**Cavities**  
Small solutional cavities.

**Vuggy**  
Containing small cavities, usually lined with a mineral of different composition from that of the surrounding rock.

**Vesicular**  
Containing numerous small, unlined cavities, formed by expansion of gas bubbles or steam during solidification of the rock.

**Porous**  
Containing pore, interstices, or other openings which may or may not interconnect.

**Cavernous**  
Containing cavities or caverns, sometimes quite large. Most frequent in limestones and dolomites.

JOINT DESCRIPTION

<b>Slightly</b> Discoloration indicates weathering of rock material and discontinuity surfaces. Less than half of the rock material is decomposed or disintegrated to a soil.	<b>Moderately</b> More than half of the rock material is decomposed or disintegrated to a soil.	<b>Highly</b> More than half of the rock material is decomposed and/or disintegrated to a soil. The original mass structure is still largely intact.	<b>Residual Soil</b> All rock material is converted to soil. The mass structure and material fabric are destroyed.
<b>Very Thick</b> >4'	<b>Thick</b> 2'-4'	<b>Thin</b> 2m-2'	<b>Very Thin</b> 1/2m-2m
<b>Horizontal</b> 0-5	<b>Shallow</b> 5-35	<b>Moderate</b> 35-65	<b>Steep</b> 65-85
<b>Vertical</b> 85-90	<b>Polished, grooved</b> Slickensided	<b>Smooth</b> Irregular	<b>Rough</b> Jagged or pitted

SURFACES

INCLINATION

SPACING

BEDDING THICKNESS (2)

<b>Very Close</b> <2"	<b>Close</b> 2m-12m	<b>Medium Close</b> 12m-3'	<b>Wide</b> >3'
<b>Very Thick</b> >4'	<b>Thick</b> 2'-4'	<b>Thin</b> 2m-2'	<b>Very Thin</b> 1/2m-2m
<b>Laminated</b>	<b>Laminated</b> 0.08m-1/2m	<b>Thinly-laminated</b> <0.08m	

REFERENCES:

1) British Standard (1981)  
Code of Practice for Site Investigation, BS 5930.  
2) The Bridge Div., TX-Highway Dept.  
Foundation Exploration & Design Manual  
2nd Edition, revised June, 1974.

Information on each boring log is a compilation of subsurface conditions and soil and rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.



**PROPOSED ADDISON URBAN CENTER  
PHASE I  
ADDISON, TEXAS**

SUMMARY OF FREE SWELL TESTS				
Boring Number	B-9	B-13	B-15	B-16
Sample Depth (ft.)	2-3	7-8	2-3	2-3
Initial Moisture Content (%)	23.7	28.2	23.3	17.1
Final Moisture Content (%)	35.2	29.7	34.0	30.1
Applied Surcharge Pressure (psf)	312	1,000	312	312
Vertical Swell (%)	2.9	0	3.1	3.1
Liquid Limit	79	31	74	65
Plastic Limit	24	14	24	26
Plasticity Index	55	17	50	39