CITY OF MOBILE

REQUIREMENTS
FOR
INFRASTRUCTURE REPAIR AND REPLACEMENT

DOWNTOWN MOBILE

FEBRUARY, 2004

CITY OF MOBILE

REQUIREMENTS
FOR
INFRASTRUCTURE REPAIR AND REPLACEMENT

DOWNTOWN MOBILE

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PREPARED FOR
MAIN STREET MOBILE
ELIZABETH SANDERS, EXECUTIVE DIRECTOR

FEBRUARY, 2004

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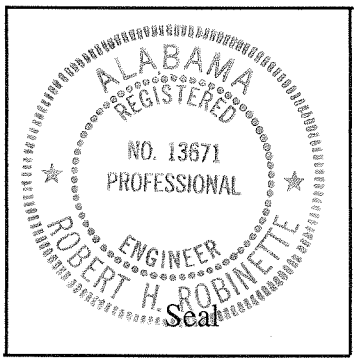

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CITY OF MOBILE
REQUIREMENTS FOR
INFRASTRUCTURE REPAIR AND REPLACEMENT
DOWNTOWN MOBILE

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APPENDIX

The below listed Specifications are for specialized infrastructure items that are not included in the referenced Standard Specifications, (See Section A), or, for items in which the Standard Specifications are amended. These are included for information and guidance only. Where the word Engineer is used it shall mean the City Engineer of the City of Mobile. All references in any of the Specifications to method of measurement and/or payment are voided. Reference to Owner Furnished Items are voided. The City will neither pay for or furnish any materials or equipment.

SECTION A
GENERAL

Revision No: 0
Revision Date: 02/20/04

REQUIREMENTS FOR INFRASTRUCTURE REPAIR AND REPLACEMENT DOWNTOWN MOBILE

SECTION A. GENERAL INFORMATION, CITY ORDINANCES AND PERMIT REQUIREMENTS

1. GENERAL:

The City of Mobile has an on-going rehabilitation program for infrastructure in the Downtown Area. Some streets have already been improved and others are in various planning stages. It is very important that construction activities by utility companies, private developers and other non-City entities not adversely impact these improvements. It is also important that infrastructure not yet improved be properly repaired and returned to acceptable condition after any construction activities.

"Downtown Mobile" is defined as the part of the City inside the Henry Aaron Loop. The Loop is composed of Water, Beauregard, Broad and Canal Streets. Sheet A-3 is a map of this area.

The purpose of this manual is to outline general construction procedures, workmanship and material requirements to be followed for the installation, repair or replacement of various Infrastructure Items within the City Right-of-Way. This Manual is intended as a guide and does not supercede any ordinances or resolutions of the Mobile City Council.

It is the long range goal and intent of the City to improve all streets in the Downtown Area in a manner similar to the infrastructure improvements on Dauphin Street. Given this intent, the following requirements are imposed for Non-City construction activities.

a. If the construction activities of a utility or tele-communications company causes the removal of at least 50% of the sidewalk area within a block, the total block shall be up-dated using new granite curb, sidewalks and handicap ramps in accordance with details as shown herein.

b. If the City so elects, they may install an underground irrigation system and a new lighting system while the old sidewalk is removed. The Permittee shall provide tree well blockouts where directed. At the City's option, they may provide tree grates to be set by the Permittee when the new sidewalk is placed. Cost of irrigation and lighting installation only will be borne by the City. Other costs shall be borne by the Permittee.

In some areas of this manual, reference is made to various ALDOT Sections. This shall mean that particular Section of the Standard Specifications of the State of Alabama Department of Transportation, 2001 Edition or, such later Editions as approved by the City. The City may direct that some materials and work comply with earlier Editions of the Standard Specifications. The City will make available a copy of the Standard Specifications for review and copying by the Permittee. Copies of the Standard Specifications may be obtained from Alabama Department of Transportation, 1409 Coliseum Boulevard, Montgomery, Alabama 36130.

Technical Specifications for specialized infrastructure items not included in the Standard Specifications are included in the Appendix of this Manual. In case of discrepancy, information contained in this Manual and in the specialized infrastructure specifications shall govern over the Standard Specifications.

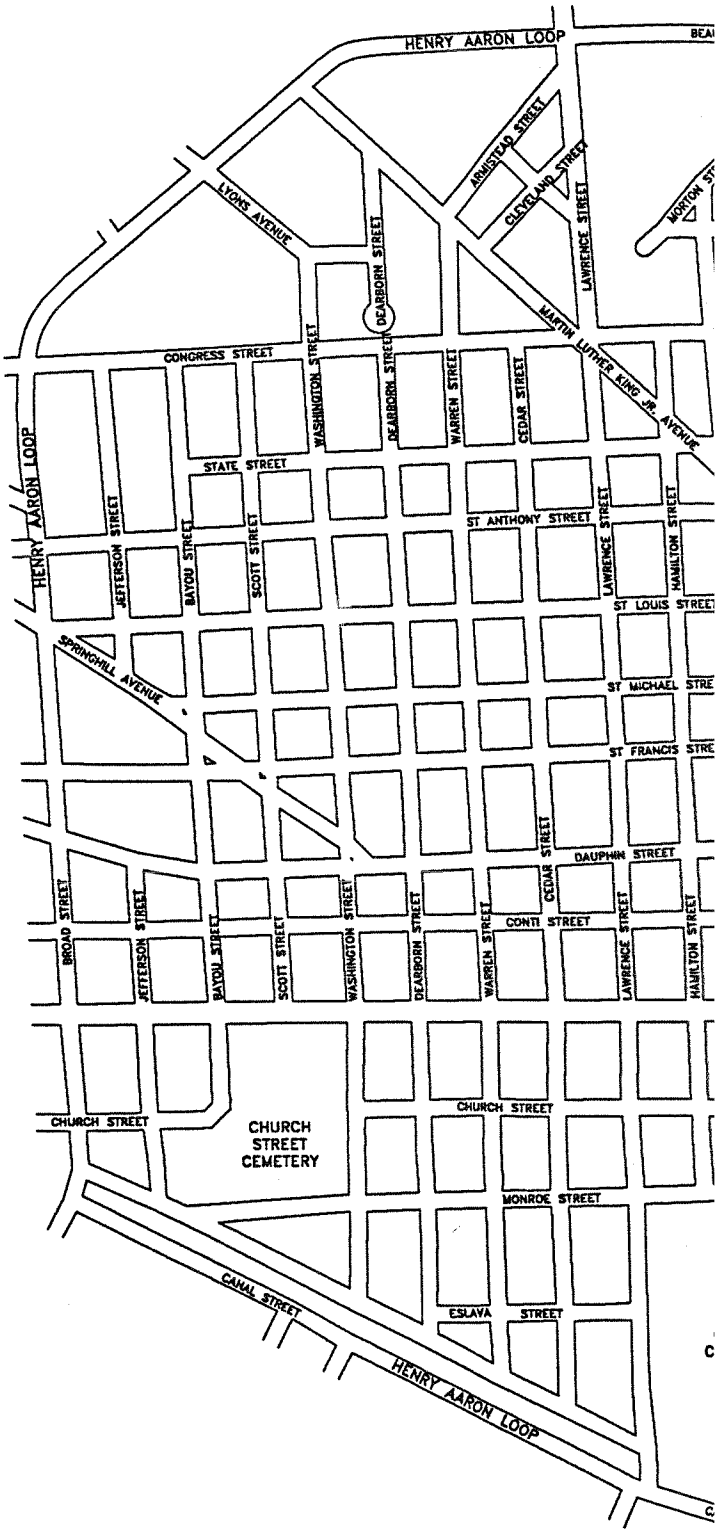
2. PERMITS

All work on any City of Mobile Right-of-Way is regulated by City of Mobile Ordinance No. 57-022, Rights of Way Construction and Administration Ordinance. All work must be approved by the Engineering Department, Rights of Way Division of the City or its successor. Prior to any work or activity the responsible party shall contact this Department and obtain a permit for the work. This Permit is for work within the Right of Way only and is in addition to other Permits that may be needed. In the Downtown area, the City Right-of-Way generally extends from building front to building front or, to the back of sidewalk on each side of public streets.

The City Engineer may require that some or all of the work included in the Permit be done by a contractor licensed by the State of Alabama. He also may require that a Certificate of Liability Insurance, listing the City and its employees as Additional Insureds, be submitted. Levels of coverage for the insurance shall be the same as that contained in the ALDOT Specifications.

3. Demolition and Removal of Infrastructure Items

No person or company may remove any infrastructure item without written prior approval and permission from the Engineering Department, Rights of Way Division. Many infrastructure items in the Downtown area have historical significance and are protected by City Ordinance. This includes paving brick, granite curb, cast iron inlets, manhole lids and other items. Any infrastructure items of this type that permission to remove is granted shall be carefully removed and carried to the City storage yard at 850 Owens Street. Call 251-208-2810 to set up delivery date and time.



E.C.S.
CONSULTING ENGINEERS

RHR
ENGINEERING & CONSTRUCTION SERVICES, INC.

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ENGINEER	

SECTION B
EXCAVATION, BK'FL

REV. NO: 0
DATE: 02/20/04

REQUIREMENTS FOR INFRASTRUCTURE REPAIR AND REPLACEMENT DOWNTOWN AREA

SECTION B. EXCAVATION, BACKFILL AND SUBGRADE PREPARATION FOR PAVEMENTS AND STRUCTURES

A. GENERAL

Referenced Technical Specifications

1. ALDOT Section 210 Excavation and Embankment
2. ALDOT Section 230 Roadbed Processing

B. EXCAVATION

No excavation shall be performed in the Downtown Mobile area until the City, all utility companies and other owners of underground facilities that might be impacted are notified. This may be done by contacting the individual entities or "MISS-ALL" at Phone No. 1-800-292-8525.

Removal of infrastructure items that have historic significance prior to excavation shall be performed in accordance with the City Ordinance regulating historic items. See Section A herein for requirements.

Excavation shall be done in a manner that will not adversely impact adjacent infrastructure or private property and businesses. Excavated material shall be promptly removed from the site. The material shall not be deposited at the work site except on a temporary short term basis. The Permittee shall have an Erosion Control System, approved by the R.O.W. Division, in place prior to any soil disturbance or excavation. Any of this material entering the storm water system or otherwise contaminating adjacent streets and property will subject the responsible party to Censure by the City.

C. BACKFILL

Backfill shall generally be a sand-clay material or, for narrow trenches and other areas where compaction equipment cannot be effectively used, crushed stone, cement stabilized soil or flowable fill. The City Engineer or his representative will direct type of material to be used. Excavated material shall not be used for backfill unless such use has the prior approval of the City Engineer or his representative.

D. SUBGRADE PREPARATION

Prior to placing any pavement or structure, the upper 6 inches of subgrade shall be compacted to 100 % Standard Proctor Density. Lower layers shall be placed in six inch lifts and compacted to 95% S.P.D. The City may require that a Testing Laboratory perform compaction tests and submit results to the City Engineering Department, Right of Way Division. All cost of testing will be borne by the Permittee.

SECTION C
POLLUTION CONTROL

REV. NO: 0
DATE: 02/20/04

CITY OF MOBILE
REQUIREMENTS FOR
INFRASTRUCTURE REPAIR AND REPLACEMENT
DOWNTOWN MOBILE

SECTION C.
POLLUTION CONTROL

1. GENERAL

Any regulated environmental pollutants escaping the work site shall subject the responsible party to penalties imposed by the City of Mobile, Alabama Department of Environmental Management (ADEM) and other regulatory agencies. Any fines assessed against the City due to the responsible party's failure to maintain an adequate erosion control system shall be paid by that party in addition to fines assessed to that party. The Permittee will not be issued a Permit until an acceptable Erosion Control Plan has been submitted and approved by the Rights of Way Division. This Plan shall be followed through out the construction activities.

All construction entrances to the site from the Right of Way or adjacent property shall have aggregate surfacing with filter fabric placed at the entrance to minimize the transportation of mud, silt and other debris off the site. Any of this material deposited on public property shall immediately be removed before additional construction work takes place.

Material removed during the work and not to be reused such as asphalt, concrete, building materials, etc. shall be disposed of in accordance with applicable regulations of the City of Mobile. All asphalt must be placed in permitted landfills.

2. STORM WATER CONTROL

Prior to any demolition or excavation activities, the responsible party shall install silt fence, hay bales, sandbags, sump pits, riprap berms and other items necessary to prevent stormwater from carrying pollution off the site and into the City's drainage system. Any silt runoff entering the system shall be immediately removed by the responsible party prior to any additional construction work taking place.

3. AIR POLLUTION CONTROL

Pollutants released into the air are subject to all requirements of the Mobile County Health Department and ADEM. The permittee shall incorporate dust control measures as necessary to comply with applicable regulations

Open burning of any material is forbidden.

4. NOISE POLLUTION

The City has a Noise Ordinance that must be complied with. Various construction activities have Time of Day requirements. If the proposed activity is such that noise may be a problem, the Permittee shall consult with the City of Mobile Police Dept. to insure compliance with this Ordinance.

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CITY OF MOBILE
REQUIREMENTS FOR
INFRASTRUCTURE REPAIR AND REPLACEMENT
DOWNTOWN MOBILE

SECTION D
ASPHALT AND CONCRETE PAVEMENTS

1. GENERAL

REFERENCED SPECIFICATIONS

ALDOT Section 327	Plant Mix Bituminous Base
ALDOT Section 401	Bituminous Surface Treatments
ALDOT Section 405	Tack Coat
ALDOT Section 408	Planing (Milling) of Existing Pavement
ALDOT Section 410	Bituminous Plant Mix Pavements
ALDOT Section 416*	Bituminous Concrete Wearing Surface
ALDOT Section 450	Portland Cement Concrete Pavement
Specification No. S-456	Pavement Sawing & Drilling

(* This Specification is a part of the ALDOT Specifications, 1992 Edition. It shall be used in place of the 2001 Edition for asphalt surface layers only.)

Materials used and methods of placement shall comply with the above referenced Specifications. Finish surfaces shall be within tolerances listed in the applicable Specification. Pavement not within tolerances will be rejected and shall be re-done by the Permittee.

Thickness of asphalt or concrete to be placed, either as resurfacing or new pavement, shall be as directed by the City Engineering Department, Rights of Way Division.

Removals and repairs to City street pavements are regulated by City of Mobile Ordinance No. 57-022, Rights of Way Construction and Administration Ordinance. This Ordinance lists sizes and extents of removal and replacement of pavement required for various trench dimensions.

SECTION E
SIDEWALK, D.WAYS

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION E.
SIDEWALKS AND DRIVEWAYS

1. GENERAL

Referenced Technical Specifications

1.	ALDOT Sections 501	Structural Portland Cement Concrete
2.	ALDOT Section 618	Sidewalks and Driveways

2. REMOVAL

Spot or partial removals of sidewalk sections and driveways are not allowed. Any removal necessitated by the work will require the complete removal of a sidewalk or driveway to the first existing construction joint on all sides of the area to be removed.

Sidewalks shall be removed from the building line or R.O.W. to the curb. Most sidewalks in the Downtown Area are placed in approximately 8 feet segments longitudinally with the roadway. Complete removal of the segment is required. It may be necessary to saw cut along the joint to remove a segment. Any adjacent segments damaged by the removal/replacement process shall also be removed and replaced.

Driveway removal shall be from the edge of pavement to the R.O.W. line or, if an intermediate joint exists in the driveway, to that point. Any adjacent segments damaged by the removal/replacement process shall also be removed and replaced

3. REPLACEMENT

a. MATERIALS

Concrete mix design shall be in accordance with ALDOT Specification No. 618. It shall be a 3000 psi design.

No concrete shall be placed that an elapsed time of 2 hours or more has passed after addition of water to the mix. For Plant Mixed concrete, the time stamped on the delivery ticket shall be used as the time of adding water.

No concrete shall be placed when freezing temperatures are anticipated within 48 hours. At the time of placement, temperature must be 40° F and rising. Any concrete segment that cracks during the curing process shall be removed and replaced.

b. SUBGRADE PREPARATION

Subgrade under new sidewalks and driveways shall be shaped and compacted. Any material considered unsuitable by the City's Inspector shall be removed and replaced with a sand-clay or aggregate material.

c. SIDEWALK PLACEMENT

New sidewalk shall be a minimum 4 inches thick. Placement and finish shall comply with details shown on sheets E-3, E-4, E-5 and E-6. The sidewalk thickness shall remain the same but be recessed in areas to receive paving stone.

d. DRIVEWAY PLACEMENT

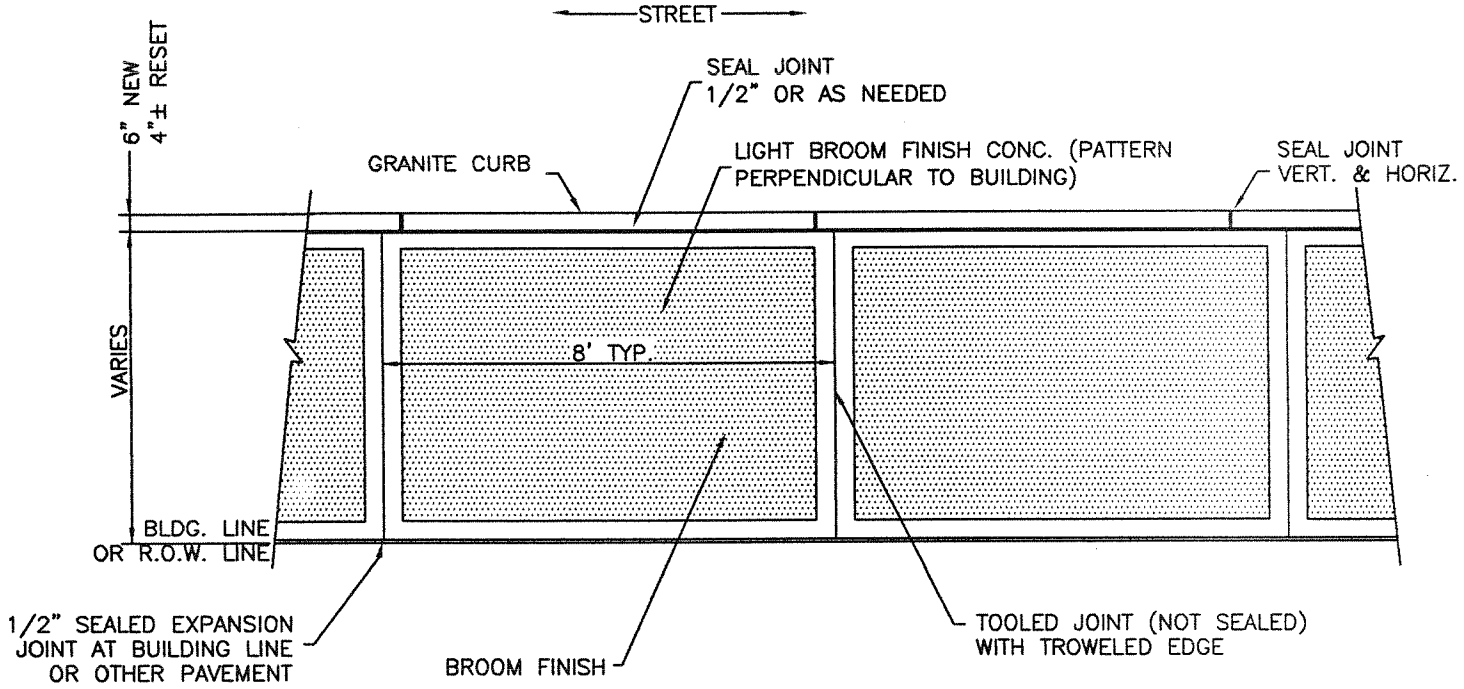
New driveways shall have a minimum thickness of 6 inches. The driveway shall be finished and dressed to match the curbing and gutter on each side. Construction and finish shall comply with details shown on Sheets E-7 and E-8.

Driveway width in the Downtown area shall generally be the minimum width that will allow adequate vehicle movement. Single lane driveways shall generally have a minimum width of 12 feet. Driveways for 2-way traffic shall have a minimum width of 20 feet. The City's inspector may, at his option, adjust this width to better fit local conditions. Extra wide driveways that would allow several vehicles to enter or exit simultaneously will not be allowed. Older driveways not in compliance with this requirement must be adjusted when repairs or updating is performed.

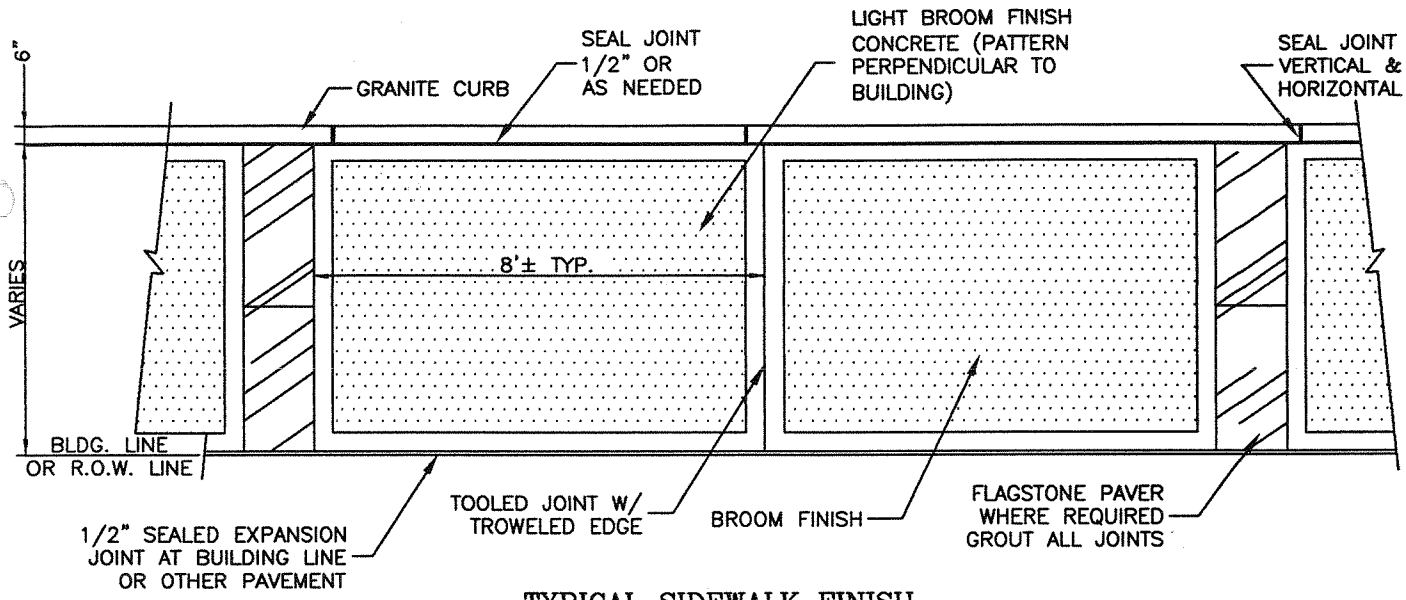
e. OTHER REQUIREMENTS

Finish workmanship on sidewalks and driveways is very important. This work must be done by craftsmen having sufficient experience and ability to obtain a finished product that is pleasing in appearance and quality. The City may reject any work that does not meet this requirement.

NOTE:
PLAN JOINT SPACING PRIOR TO CONCRETE PLACEMENT. NOMINAL JOINT SPACING FOR EACH BLOCK SHOULD BE APPROXIMATELY EQUAL. THE 8 FEET SPACING CAN VARY SLIGHTLY TO OBTAIN EQUAL SPACING.



TYPICAL SIDEWALK FINISH
AREAS WITH NO FLAGSTONE
NOT TO SCALE



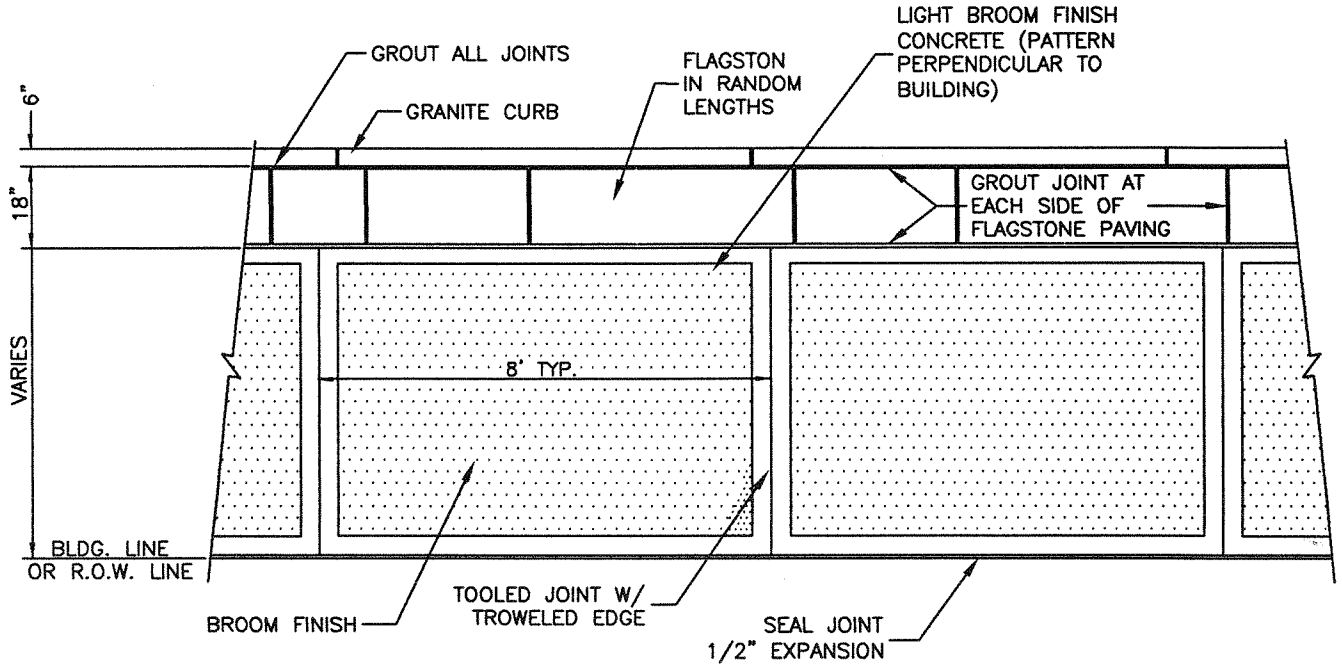
TYPICAL SIDEWALK FINISH

AREAS WITH FLAGSTONE PAVERS PERPENDICULAR TO CURB

NOT TO SCALE

NOTES:

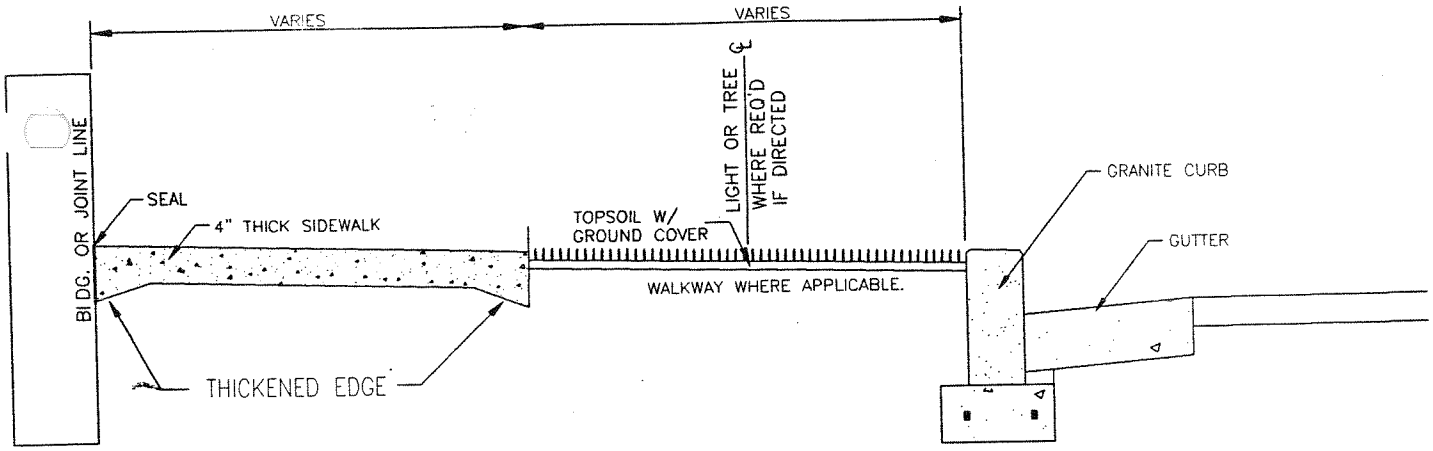
1. CONTRACTOR SHALL PLAN JOINT SPACING FOR EACH BLOCK PRIOR TO CONCRETE PLACEMENT.
2. NOMINAL JOINT SPACING FOR EACH BLOCK SHOULD BE APPROXIMATELY EQUAL.
3. THE 8 FEET SPACING CAN VARY SLIGHTLY TO OBTAIN EQUAL SPACING.
4. SEAL ALL JOINTS IN CURB.
5. TROWELED EDGE TO BE 2" WIDE.



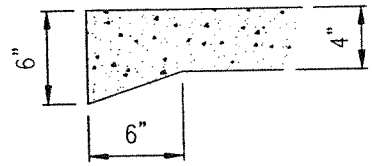
TYPICAL SIDEWALK FINISH

AREAS WITH FLAGSTONE PAVERS NEXT TO CURB

NOT TO SCALE

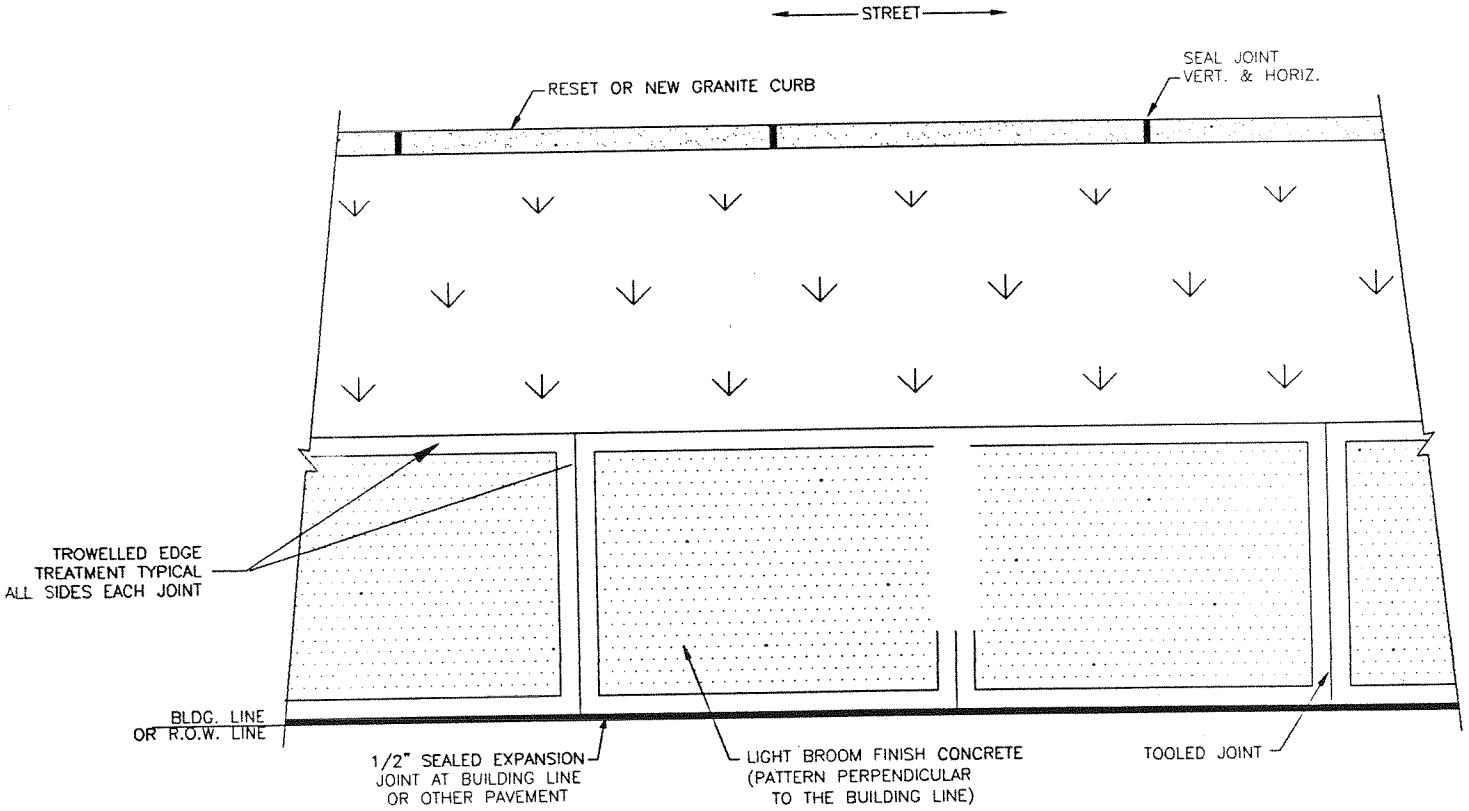


CURB/SIDEWALK WITH GRASS DETAIL
NOT TO SCALE



DETAIL OF THICKENED EDGE

NOTES:
1. GRASS AREAS SHALL BE SOD.



TYPICAL SIDEWALK FINISH
(AT ADJACENT GRASSED AREAS)

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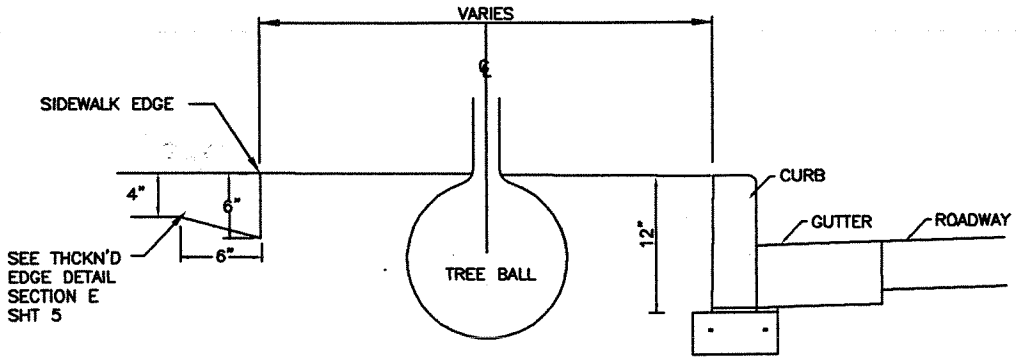
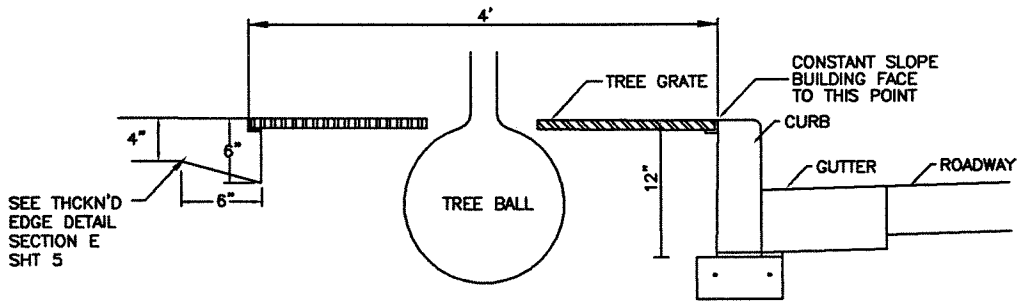
CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

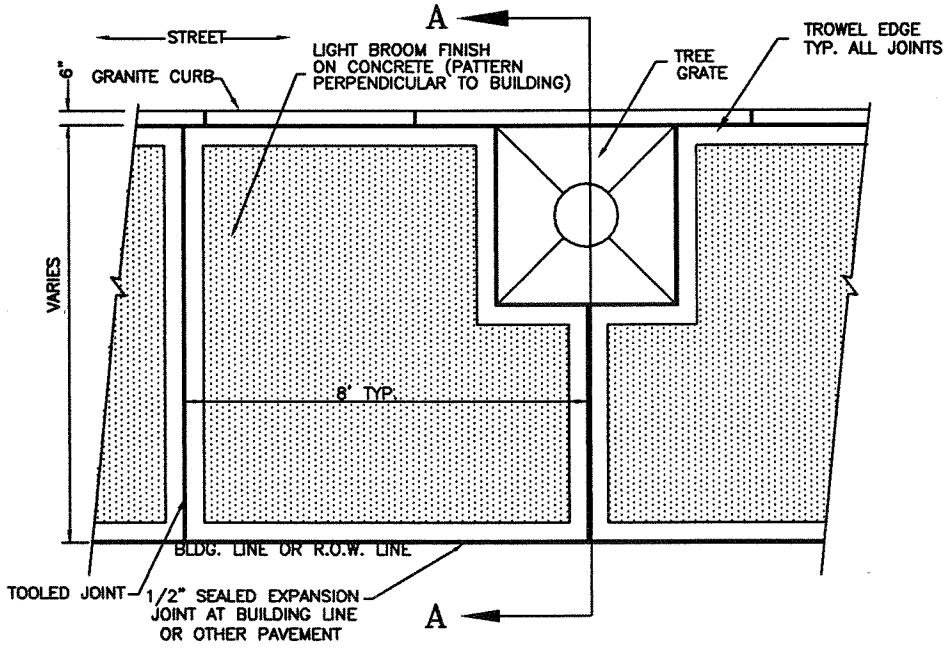
SIDEWALK DETAILS
AT GRASS MEDIAN



SECTION "A-A"
TREES IN GRASSED AREAS
NOT TO SCALE



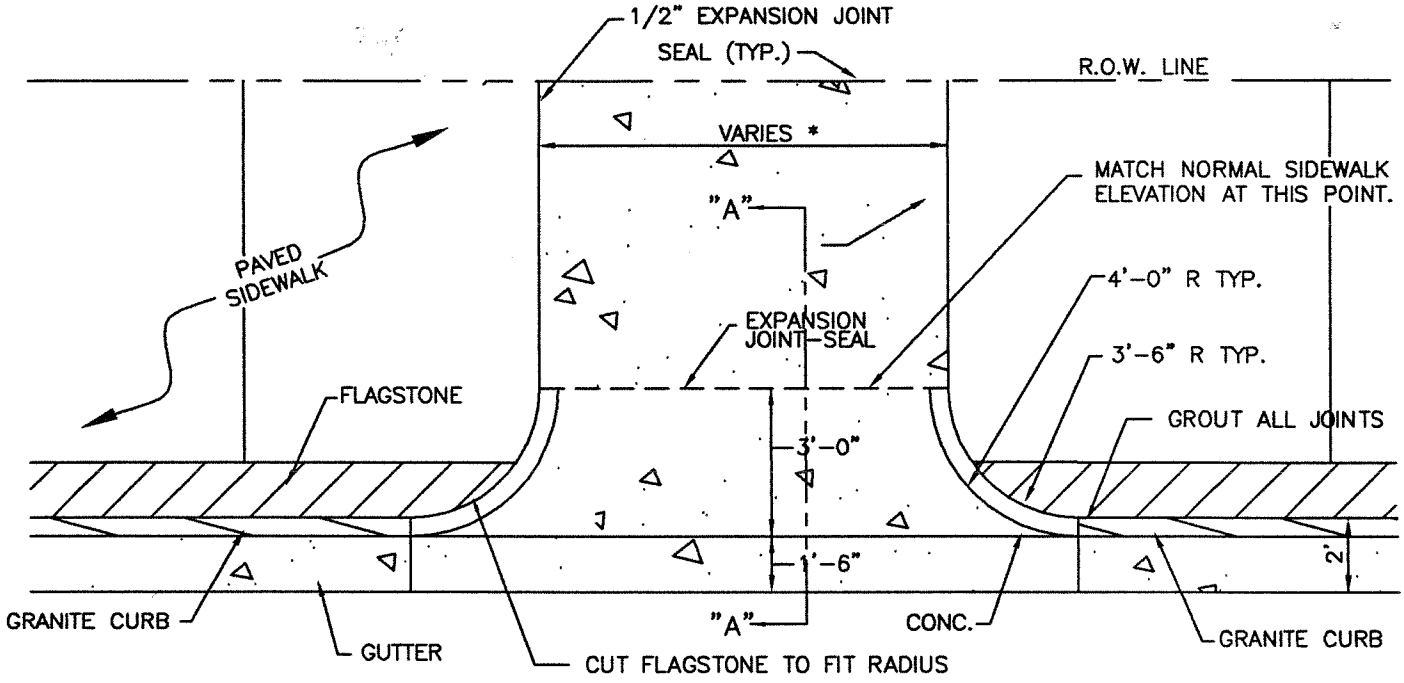
SECTION "A-A"
TREES IN PAVED AREAS
NOT TO SCALE



TYPICAL SIDEWALK FINISH AROUND TREE GRATES
AREAS WITH NO FLAGSTONE
NOT TO SCALE

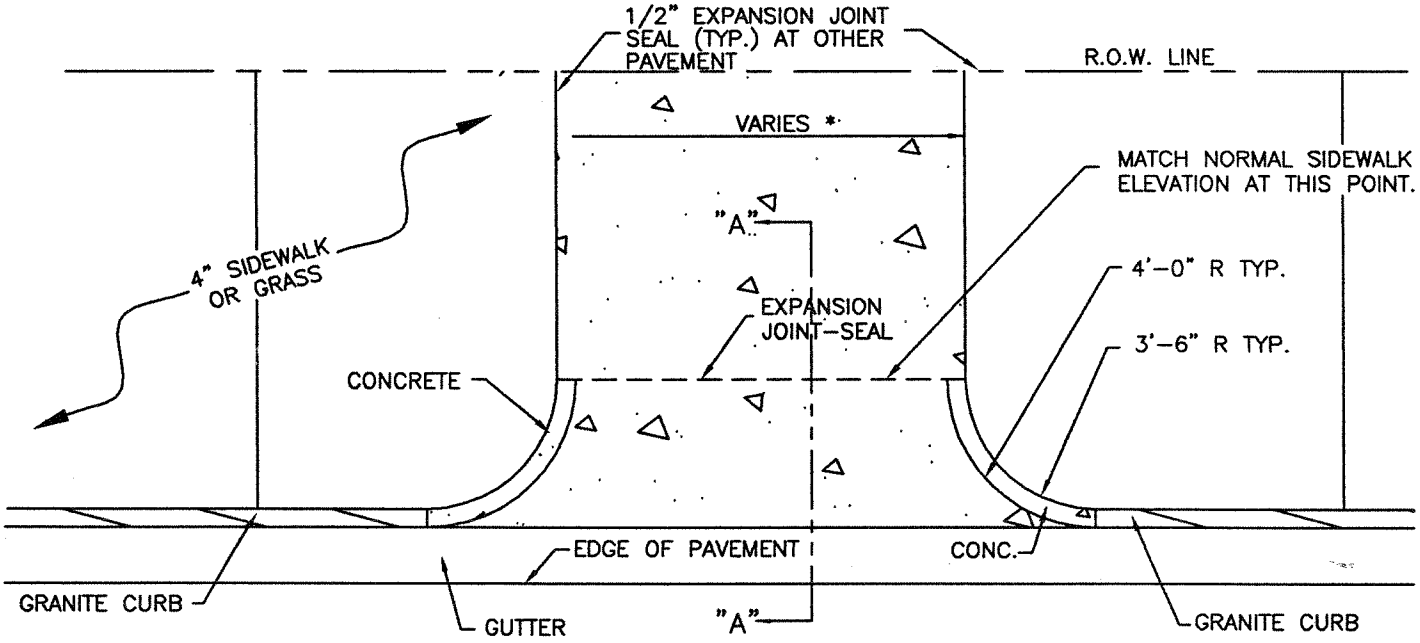
FOR DRIVEWAYS WIDER THAN 12 FEET, LONGITUDINAL JOINTS SHALL BE PROVIDED ON 8 FEET ± CENTERS. DRIVEWAYS SHALL RECEIVE SAME FINISH TREATMENT AS SIDEWALKS.

CONTRACTOR SHALL FORM CONCRETE CURB TRANSITION AS SHOWN.



TYPICAL DRIVEWAY, CURB & GUTTER WITH FLAGSTONE PAVERS

NOT TO SCALE

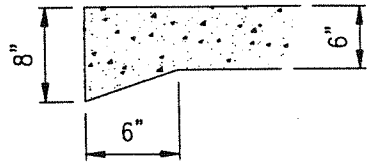


TYPICAL DRIVEWAY, CURB & GUTTER WITHOUT FLAGSTONE

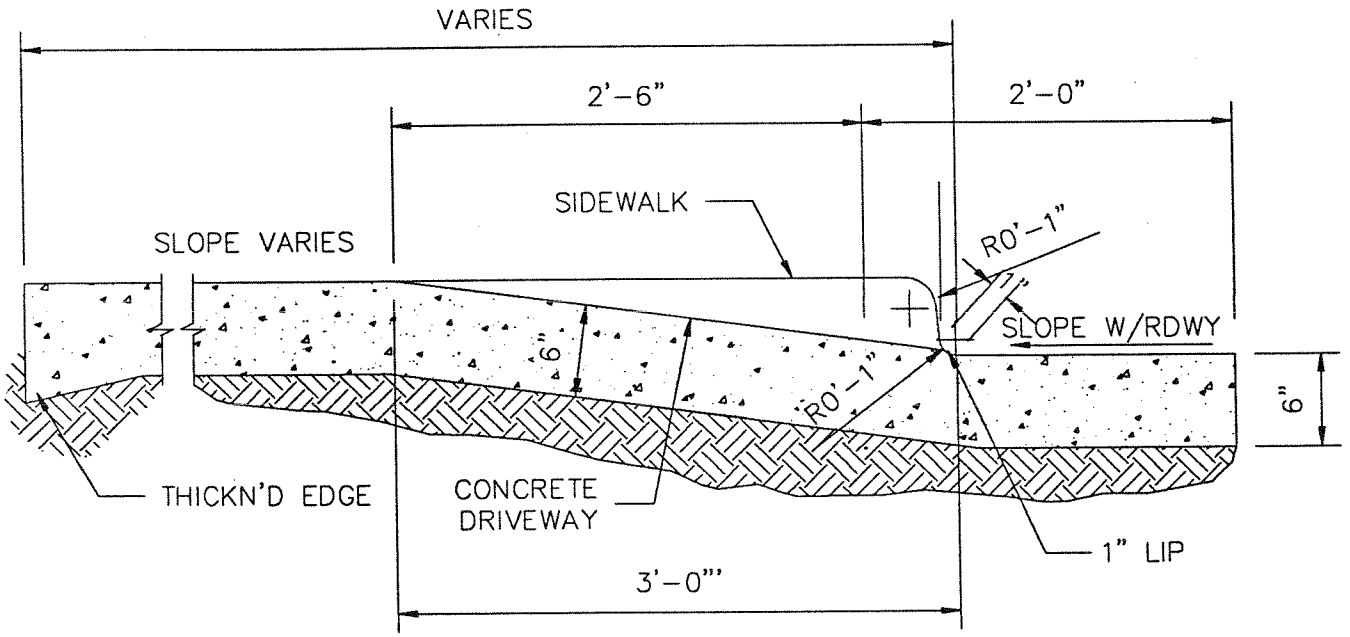
(AT ADJACENT PAVED OR GRASS AREAS)

NOT TO SCALE

SEE SHEET E-8/9 FOR VIEW "A-A"



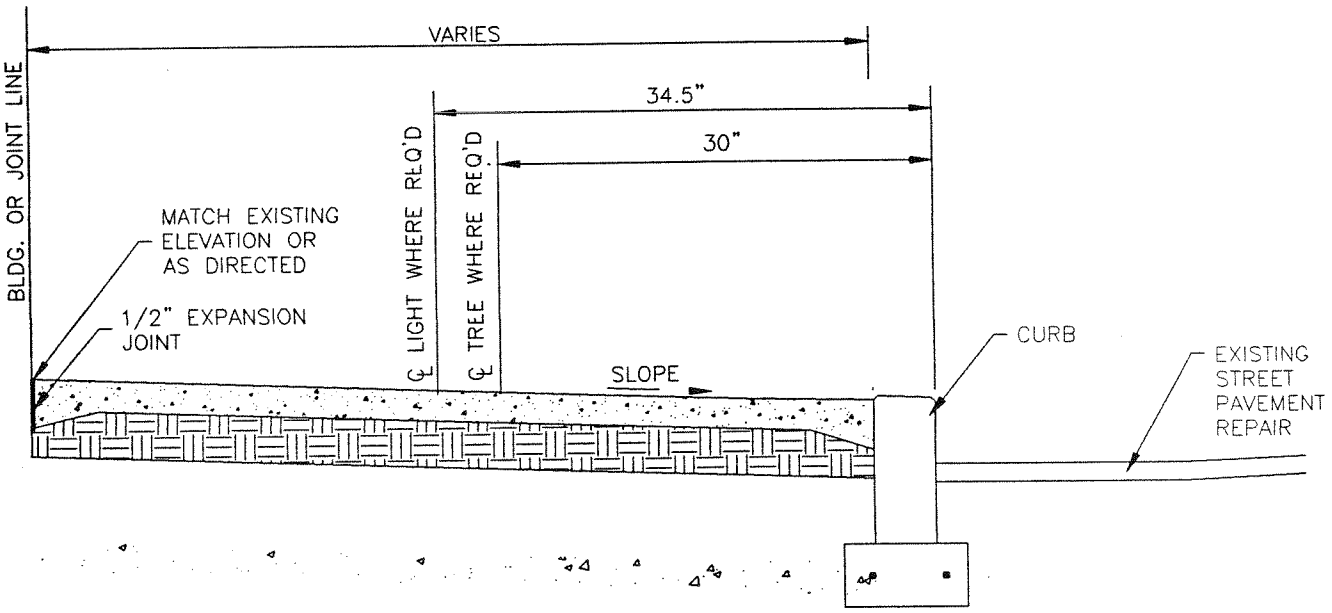
DETAIL OF THICKENED EDGE



SECTION "A"-"A" TYPICAL DRIVEWAY DETAIL

NOT TO SCALE

STREET REPAIR TO COMPLY WITH
CITY ORDINANCE NO. 57-022



DETAIL OF SIDEWALK/TREE/LIGHT PLACEMENT
ALL AREAS
NOT TO SCALE

SECTION F
CURBING, GUTTERS

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION F.
CONCRETE CURBING AND GUTTERS

1. GENERAL

Referenced Technical Specifications

ALDOT Section 501	Structural Portland Cement Concrete
ALDOT Section 623	Curb, Gutter and Combination Curb & Gutter

2. REMOVAL

Spot removals of curbing and gutters are not allowed. Any removal necessitated by the work will require the complete removal of a curb and/or gutter to the first existing construction joint on each side of the area to be removed. In the event no construction joints are present, the City's representative will designate a reasonable length of curbing to be removed.

If tree roots are present at or near the curbing, the Urban Forestry Dept. should be contacted prior to any disturbance of the curb. They, in coordination with the Rights of Way Division, will designate methods of removal and replacement.

Removal of gutters will usually result in damage to roadway pavement. See Section No. D for requirements for removing and repairing pavement.

Some asphalt overlaid streets have original concrete pavement with a monolithic curb. On other streets, the gutter has been overlaid with asphalt. For these situations, the City Inspector will review the location and direct the extent and type of removal.

3. REPLACEMENT

a. MATERIALS

Concrete mix design shall be for 3000 psi in accordance with ALDOT Specification No. 618.

No concrete shall be placed that an elapsed time of 2 hours or more has passed after addition of water to the mix. For Plant Mixed Concrete, the time stamped on the delivery ticket shall be used as the time of adding water.

No concrete shall be placed when freezing temperatures are anticipated within 48 hours. At the time of placement, temperature must be 40° F and rising. Any concrete segment that cracks during the curing process shall be removed and replaced.

Expansion joints shall be provided at approximately 60 feet C. O. C. or, other distance as used for existing curbing on the street.

b. SUBGRADE PREPARATION

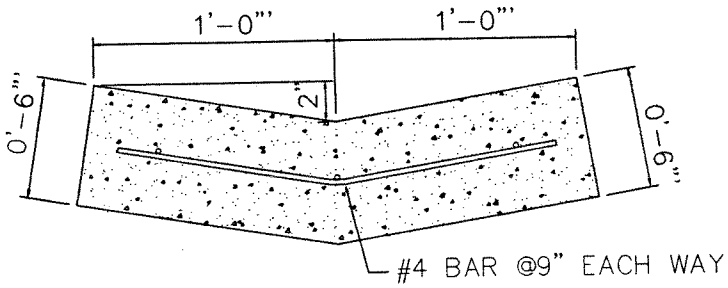
Subgrade under new curbing and gutters shall be shaped and the upper 6 inches compacted. Any material considered unsuitable by the City's Inspector shall be removed and replaced with a sand-clay or other type material.

c. CURBING PLACEMENT

New curbing shall match the shape and dimensions of the curbing removed, or, such other shape as the City Engineer may direct. Shapes and dimensions of curbing and gutters are shown on page F-3

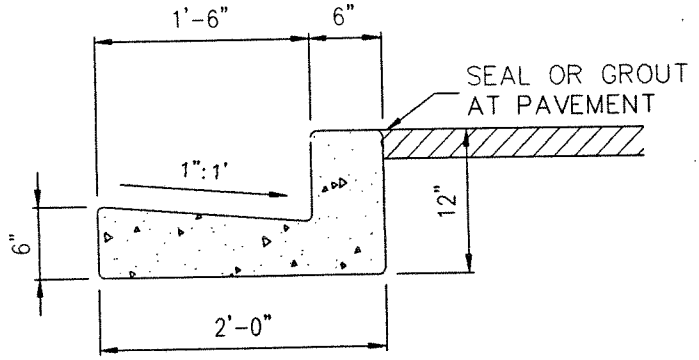
d. GUTTER PLACEMENT

Gutter shall be a minimum of 6 inches thick. Placement of gutter shall be such that the grade line of the street is maintained and storm water does not pond in the gutter. Gutters must be placed to precise longitudinal grade. Sags or high spots in the gutter that create "bird baths" and trap water will cause for the gutter to be rejected and redone.

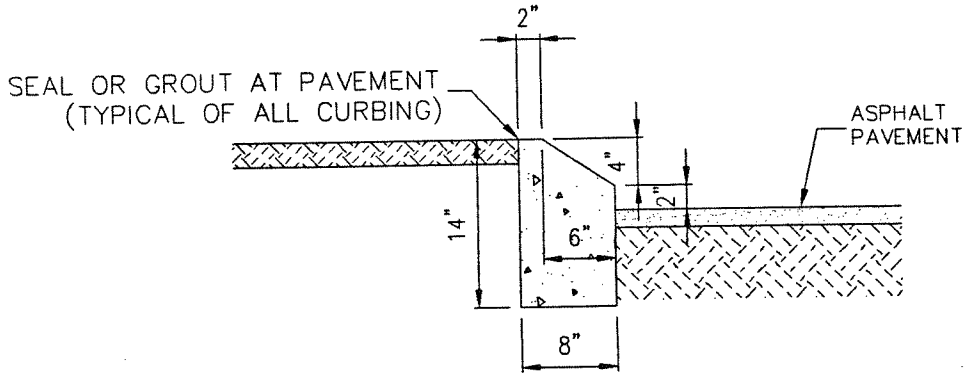


GUTTER DETAIL

NOT TO SCALE



COMBINATION
CURB & GUTTER
(MOBILE STANDARD)



"N" CURB DETAIL

SECTION G
GRANITE CURBING

Revision No: 0
Revision Date: 02/20/04

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION G.
GRANITE CURBING

1. GENERAL

Referenced Technical Specifications

ALDOT Section 501	Structural Portland Cement Concrete
ALDOT Section 502	Steel Reinforcement

2. REMOVAL

Partial removal of granite curbing is not allowed. Any removal necessitated by the work will require the complete removal of a section of granite to the first existing joint on each side of the area to be removed. Existing granite is a protected historical item. It shall be carefully removed without damaging the material. Any granite removed and not reset shall be carried to the City Public Buildings Department at 850 Owens Street. Call 251-208-2810 to arrange for delivery and time.

If tree roots are at or close to the curbing, the Urban Forestry Dept. Shall be notified prior to disturbance to the curb. They, in coordination with the Rights of Way division, will designate methods of removal and replacement.

Removal of granite will usually result in damage to the roadway pavement. See Section D for requirements of removing and repairing pavement.

Granite curbing in the Downtown area is generally of 2 types - the 'weathered type" that has been in place for many years and the rectangular granite that has been installed since 1990.

The "Weathered Granite" is of varying thickness. It is usually about 4 inches thick at the top and 8 - 12 inches or more at the bottom. Height of a section averages about 18 - 24 inches. It has very irregular surfaces and usually does not have a concrete foundation under it.

The newer granite is uniform is shape, 6 inches thick, 12 inches in height and in 10 feet segments. It is placed on a concrete foundation. See Sheet G-4.

All reset granite of either type shall have a concrete foundation in accordance with details shown on Sheet G-4. Small sections of granite, 3 feet or less in length, generally should not be used or reset. Long runs of granite shall use full length segments. The small sections shall be taken to the City Public Buildings Department at the above listed address and phone no.

In areas where the Permittee is required to improve the total block and sufficient existing granite curb is present to redo the entire block, that curb may be cleaned and reset. If insufficient existing granite is present to redo the block, the amount present shall be carefully removed and taken to the City Warehouse and new granite curb used. New granite and the older granite shall not be intermixed on the same block when total block replacement is required.

3. REPLACEMENT

a. FOUNDATION MATERIALS

Concrete mix design and placement shall be in accordance with Section No. F of this Manual.

Grout used as a setting bed must be a material recommended by the manufacturer for the use intended.

b GRANITE

Type of granite to use should generally be the same type as existing on the street. If insufficient "weathered granite" is available at the site, the Permittee shall purchase from the City sufficient weathered granite to complete installation. In the event the City does not have any weathered granite in stock, the Permittee shall obtain new granite or, obtain additional weathered granite as specified by the City Engineer or Historic Development Dept.

New granite and weathered granite should not be mixed during repairs unless approved by the City Engineer. Prior to resetting any granite, the Permittee shall determine that sufficient granite of the type to be used is available.

New granite shall have a split face with sawn top. It shall be light gray in color with an industry standard "Salt & Pepper" appearance. It shall have a rounded exposed edge as shown on Sheet 5. Mountable granite (Sheet 5), shall be used in areas where mountable type curbing is required.

Small quantities of new granite may be purchased from the City if stock is available. Other sources of granite are:

International Tile & Stone Co.	Mobile, Alabama
Garner Sone Co.,	Birmingham, Alabama
Boyd Granite Co. Inc.	Elberton, Geogia

Other sources of granite are available. The Permittee shall be responsible for securing a granite that matches the existing. Non-matching granite will be rejected by the City.

c. JOINT SEALER

Joint sealer shall be one of the types listed in Section J of this Manual. All joints in either type of granite curb shall be sealed. This includes the joint between the curb and sidewalk. See Sheet G-4.

d. SUBGRADE PREPARATION

Subgrade under new curb foundation shall be shaped and the upper 6 inches compacted. Any material considered unsuitable by the City's Inspector shall be removed and replaced with approved material.

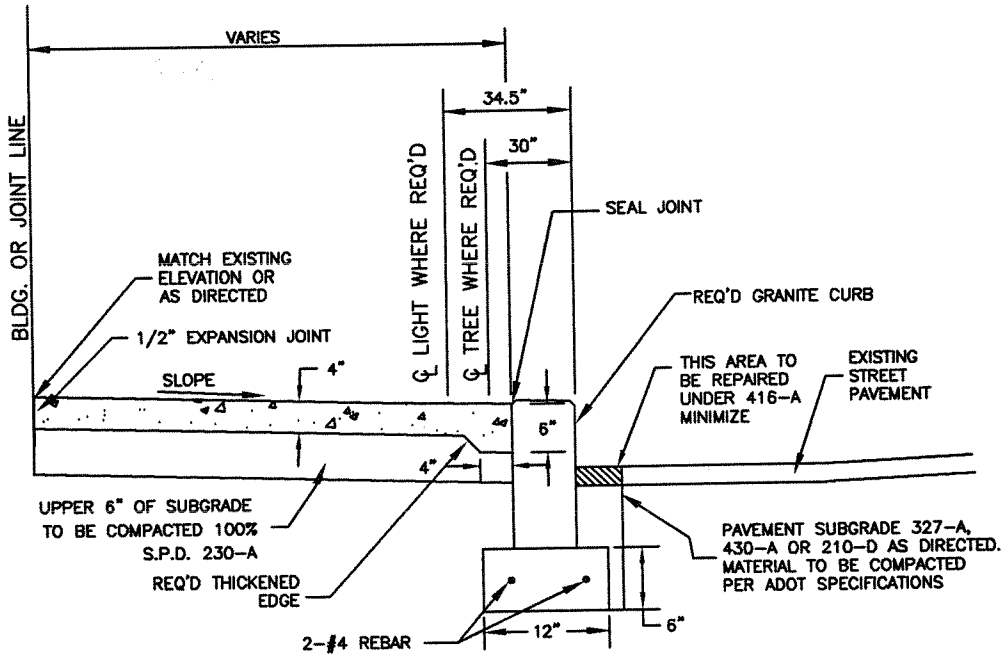
e. GRANITE PLACEMENT

Prior to setting granite, the permittee shall place a concrete foundation as shown on Sheet G-4. Depth of foundation below finish surface will depend on height of granite and shall be determined prior to placement.

New granite shall be carefully set in a grout bed on the foundation. It must be plumb and in proper alignment.

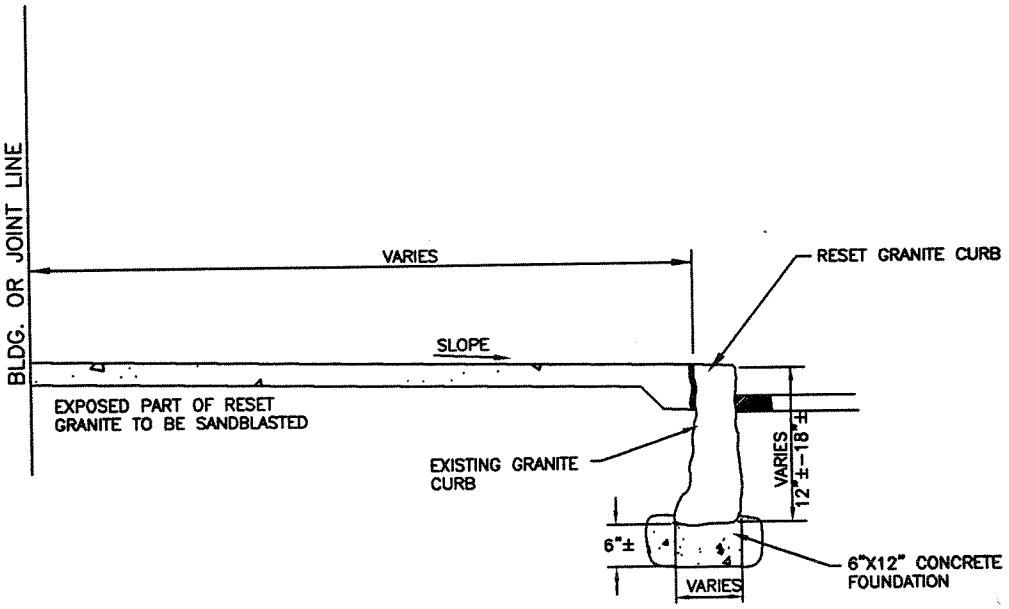
Weathered granite shall be set in a grout bed with the foundation placed to allow for varying heights of granite or, held in place while the foundation is poured and cured. Ends shall be saw cut to provide a uniform vertical joint.

Weathered granite reset shall be sandblasted after setting. After placement of the granite curb, new gutter shall be placed where appropriate.



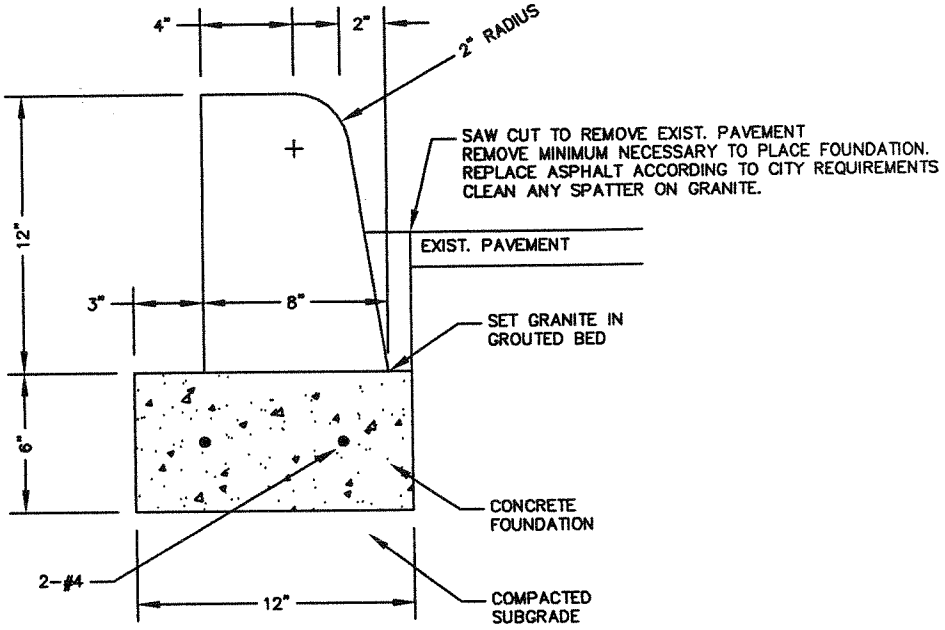
DETAIL OF SIDEWALK/TREE/LIGHT PLACEMENT

NOT TO SCALE



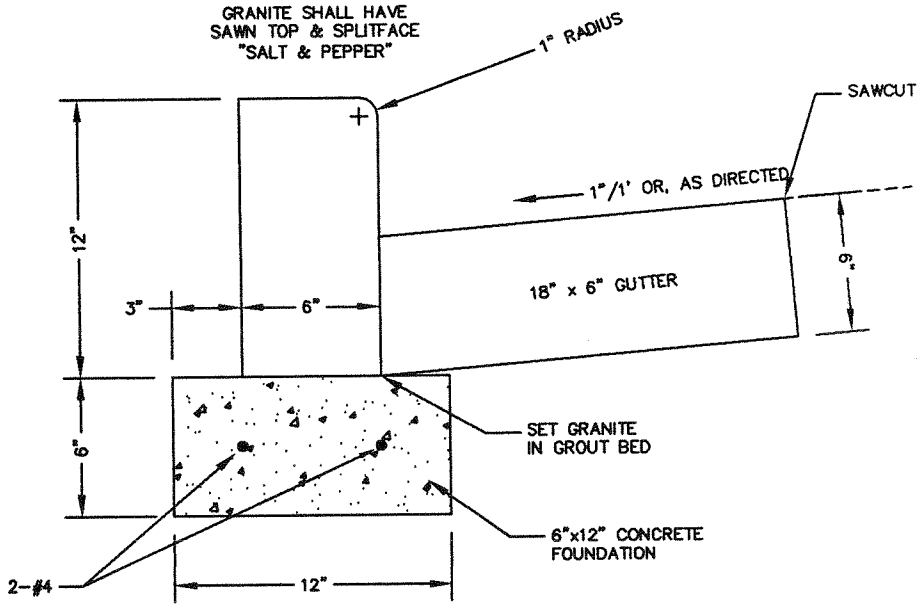
RESET GRANITE CURB

NOT TO SCALE



DETAIL OF MOUNTABLE GRANITE CURB

NOT TO SCALE



DETAIL OF STANDARD GRANITE CURB (WITH GUTTER WHERE APPLICABLE)

NOT TO SCALE

SECTION H
HANDICAP RAMPS

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION H.
HANDICAP RAMPS

1. GENERAL

Referenced Specifications
ALDOT Section 618 Concrete Sidewalks and Driveways

Handicap Ramps are required at each street corner and other locations as directed by the Engineering Department. Ramps are of two types, depending on adjacent surfaces, and are as shown on Sheets H-2 and H-3.

All Ramps must meet standards as set by the American With Disabilities Act. By Federal Law, any construction activity at a handicap ramp or, where one should be, requires that a ramp be installed or updated to current standards.

2. REMOVAL

Partial Removal will not be accepted. Removal shall be to the perimeter joints of the existing ramp.

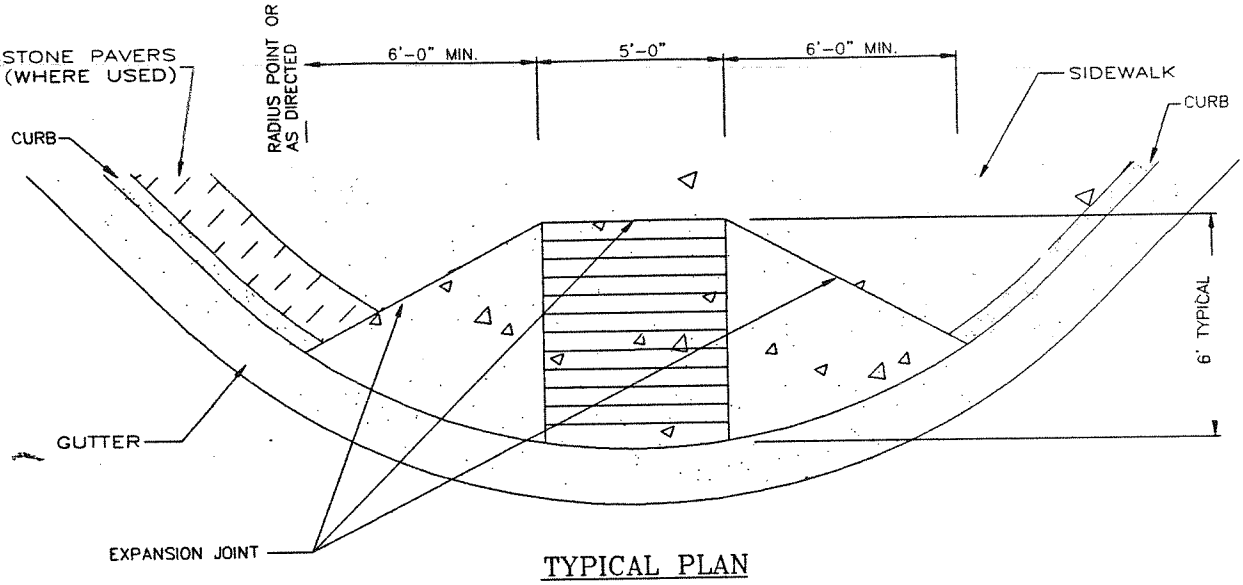
3. REPLACEMENT

Concrete used shall meet the requirements of ALDOT Section 618. New ramp shall be 6 inches thick in compliance with details shown on Sheet H-2 or H-3 as appropriate. All expansion joints around the ramp must be sealed.

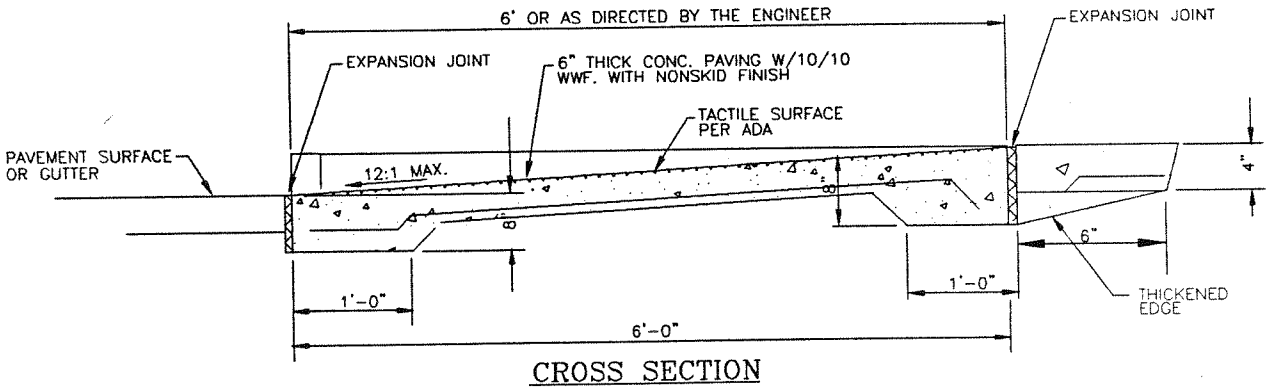
The City Engineer, or his representative, will direct the type of ramp to use. Ramps shall be constructed to prevent rain water ponding at the bottom of the ramp.

Existing manholes, valve boxes or other subsurface items penetrating the surface shall be relocated from the ramp area if feasible. If not feasible, the covers should be adjusted to match the slope of the ramp. Covers shall be suitable for handicapped pedestrian and wheelchair traffic.

Expansion joints shall be provided around the perimeter of the ramp where it connects to other concrete pavement. All joints shall be sealed in accordance with Section J of this Manual.

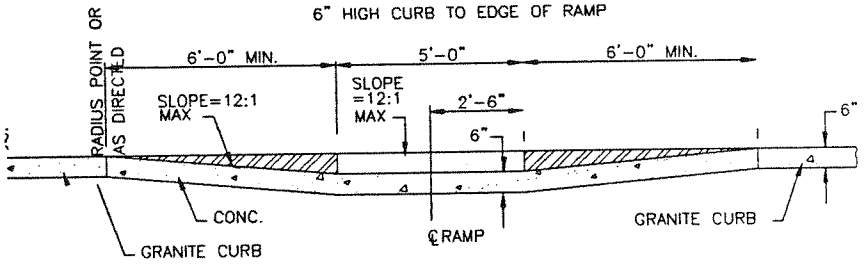


TYPICAL PLAN



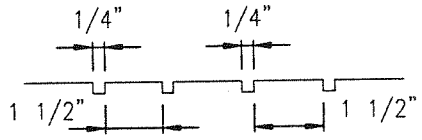
CROSS SECTION

NOTE:
FORM A SMOOTH TRANSITION FROM
6" HIGH CURB TO EDGE OF RAMP



ELEVATION

TYPICAL HANDICAP/CURB RAMP
(AT ADJACENT PAVED AREAS)

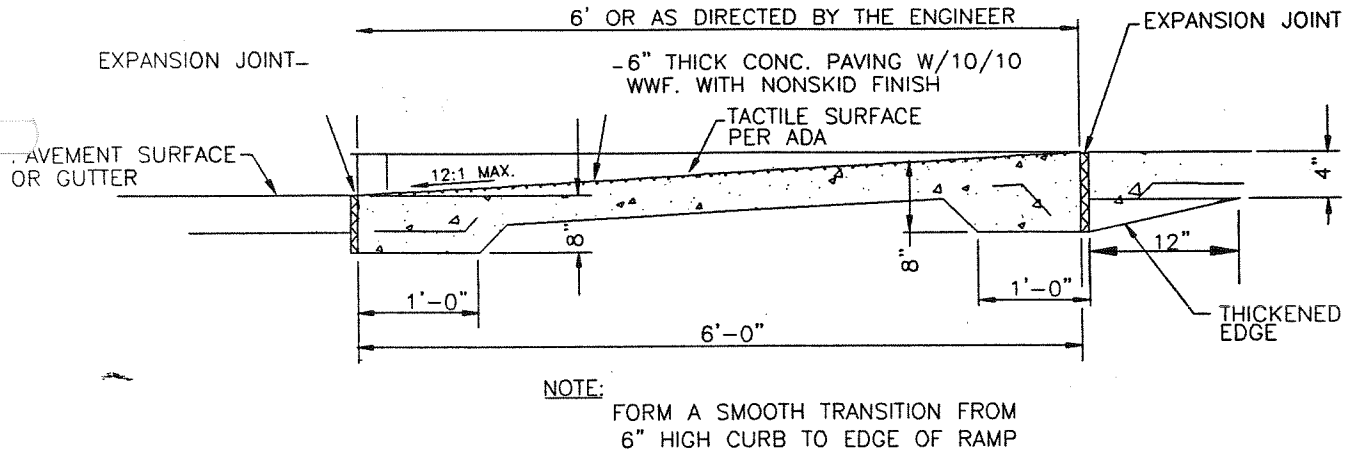


TYPICAL TACTILE SURFACE
(GROOVES FULL WIDTH OF RAMP)

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

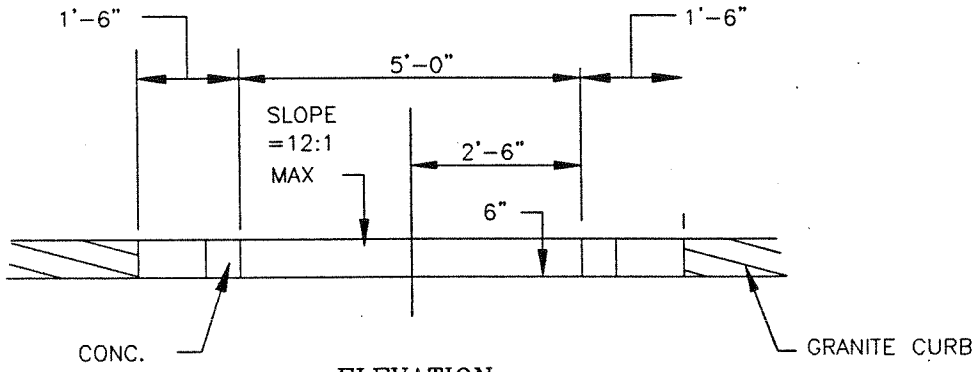
CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

HANDICAPPED RAMPS
AT FULL WIDTH PAVED SIDEWALKS

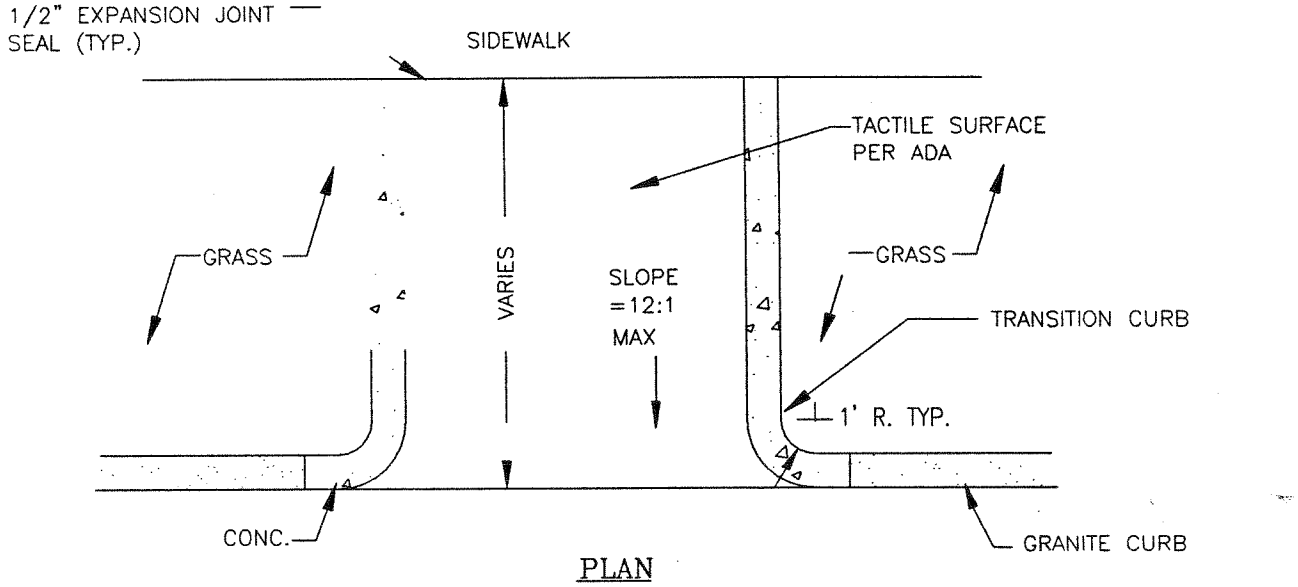


NOTE:
FORM A SMOOTH TRANSITION FROM 6" HIGH CURB TO EDGE OF RAMP

CROSS SECTION



ELEVATION



PLAN

TYPICAL HANDICAP/CURB RAMP

(AT ADJACENT GRASS AREAS)

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION I.
FLAGSTONE PAVERS AND PAVING STONE

A. GENERAL

Referenced Technical Specifications
Specification No. S-820 Pavers and Paving Stone (See Appendix)

1. REMOVAL

Existing flagstone pavers have a nominal thickness of 1 inch or 1 ½ inches. The pavers are nominally 16 ½ - 17 inches wide and of random length. The site should be investigated to determine thickness of existing pavers. All new construction should be of 1 ½ inch pavers.

Flagstone pavers are very fragile. Generally it is not possible to remove and reset this item.

All flagstone pavers are placed on a 4 inch thick concrete slab with reinforcement. Pavers are bedded with a Portland Cement setting compound.

2. REPLACEMENT

a. CONCRETE FOR FOUNDATION

Concrete mix design and placement shall be in accordance with Section E of this Manual. See Pages I-3, 4 & 5 for details.

b. FLAGSTONE

The approved flagstone for use in Downtown Mobile is classified as "Pennsylvania Bluestone". See Specification No. 820 for material requirements.

Type of flagstone to use should generally be the same type as existing on the street. If the work requires the removal of the concrete foundation, the replacement shall be 1 ½ inch flagstone. For areas where no existing flagstone is present, new flagstone shall be 1 ½ inches thick.

The permittee shall obtain sufficient flagstone for the re-installation. Small quantities may be purchased from the City if available. Some other sources of flagstone pavers are as follows:

International Tile & Stone Co.	Mobile, Al.
Gulf Coast Stone,	Spanish Fort Al.
Johnston & Rhodes Bluestone Co.	East Branch, New Jersey

c. SUBGRADE PREPARATION

Subgrade under new concrete foundation shall be shaped and the upper 6 inches compacted. Any material considered unsuitable by the City's Inspector shall be removed and replaced with approved material.

d. FLAGSTONE PLACEMENT

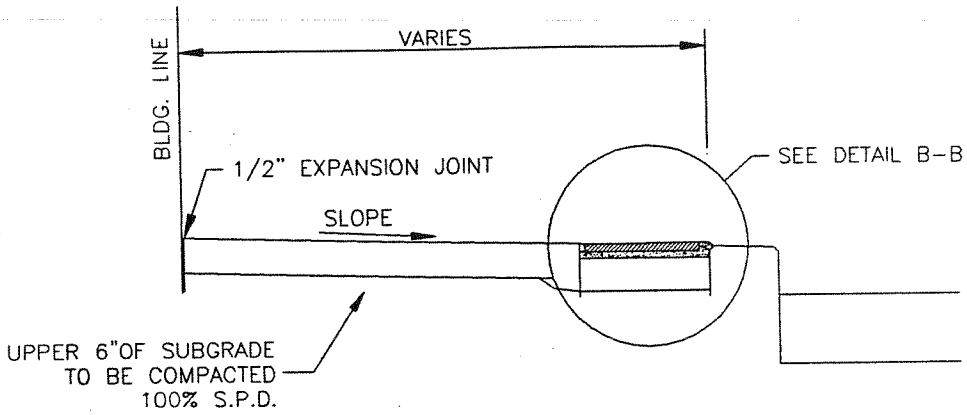
Prior to setting flagstone, the permittee shall place a concrete foundation as shown on page I-3. Depth of foundation below finished surface of adjacent sidewalk will depend on thickness of flagstone and shall be determined prior to placement.

Bedding and placement of the flagstone shall comply with Specification S-820.

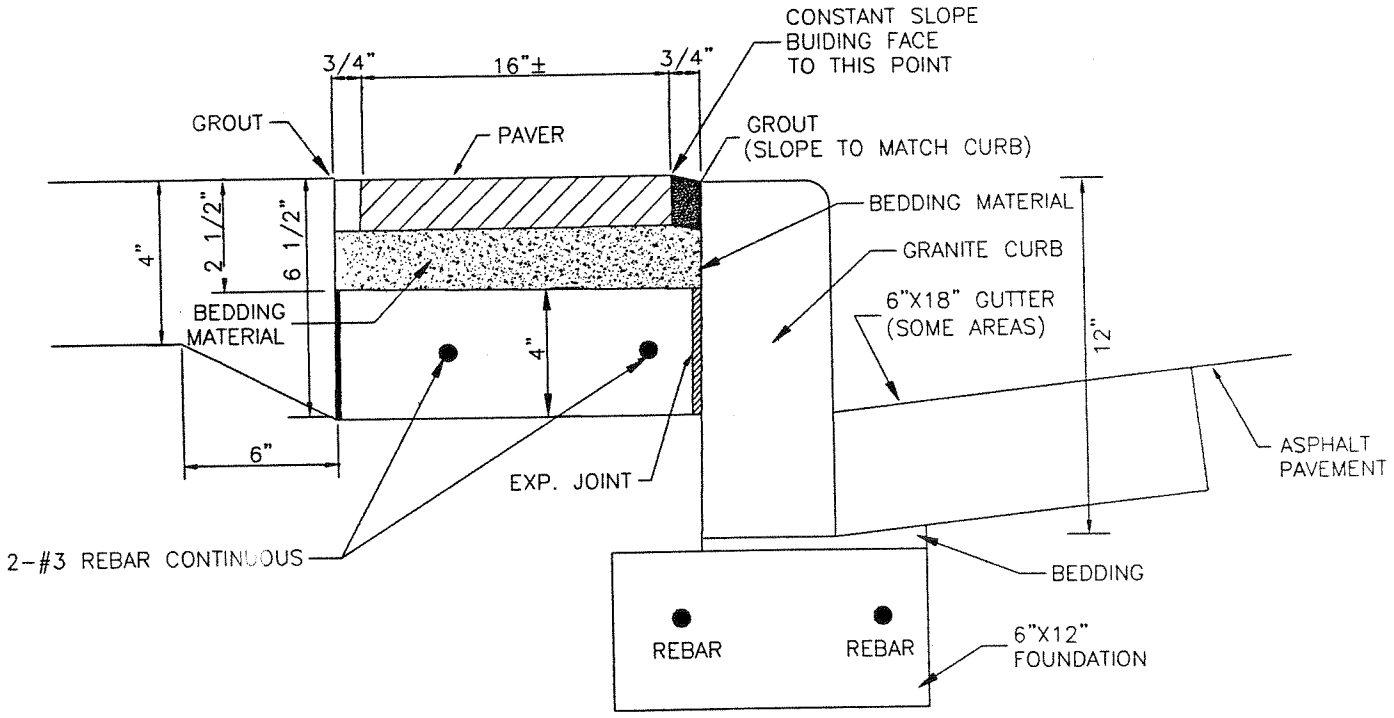
Horizontal joints shall be uniform. After setting and curing, the joints shall be filled and dressed with grout, Holnam - color Limestone or approved equal. See Section K of this Manual.

For areas where the total surface is finished with flagstone, the individual sections shall be of random length and width. See Sheets I-6 & 7 for typical details.

Placing and Grouting of Flagstone Pavers requires skill and experience in this type work. Poor workmanship will be cause for rejection. Craftsmen placing flagstone in the Downtown area must be able to demonstrate ability to place, finish and grout the material in an acceptable manner.

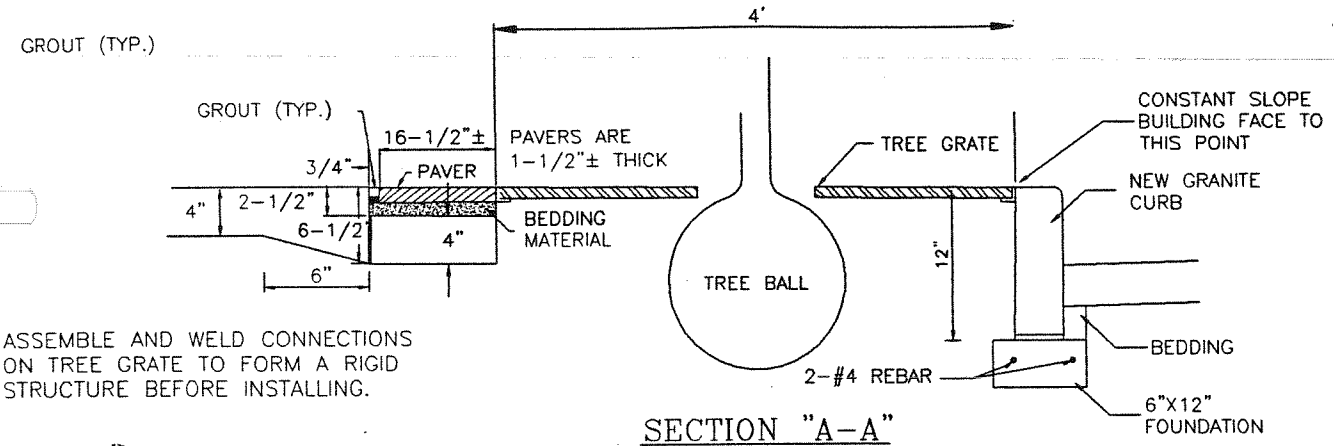


FLAGSTONE INLAID SIDEWALK
WHERE FLAGSTONE PAVERS PLACED
NEXT TO CURB
NOT TO SCALE



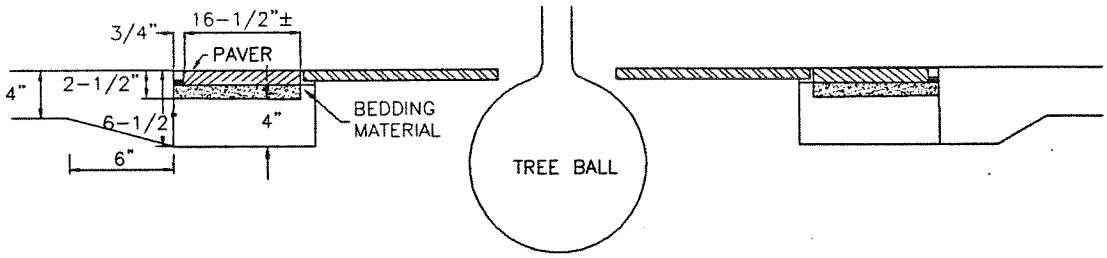
"B-B"

TYPICAL DETAIL FLAGSTONE PAVERS
FLAGSTONE INLAID NEXT TO CURB
NOT TO SCALE

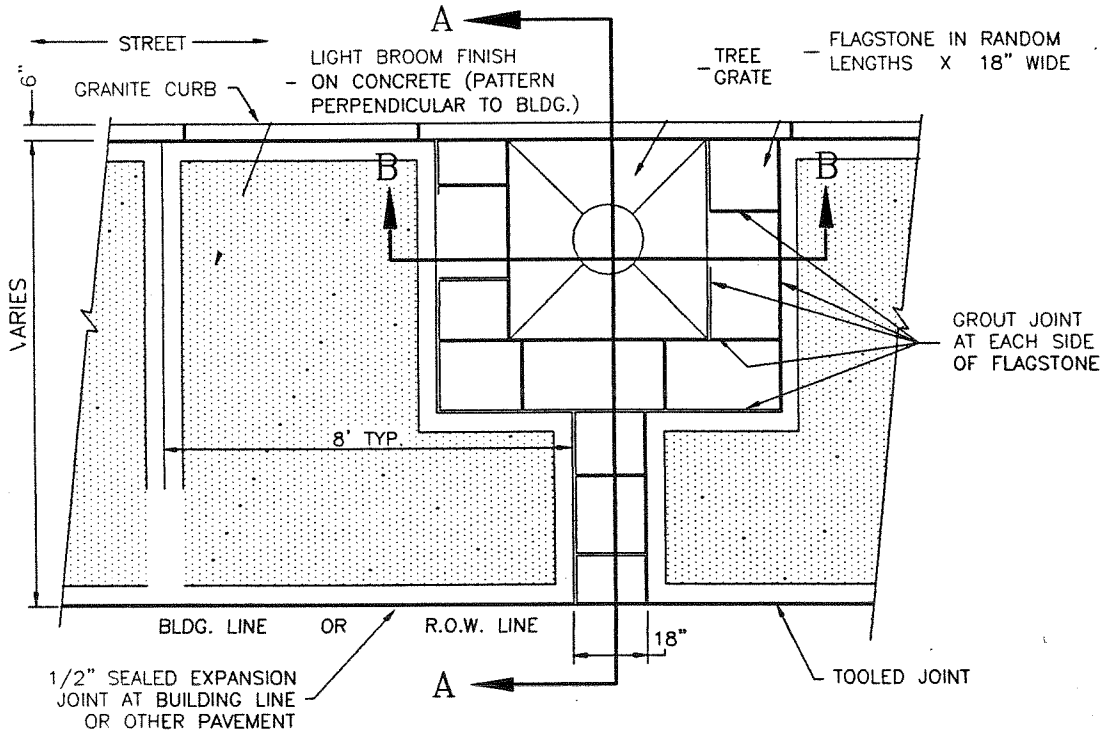


ASSEMBLE AND WELD CONNECTIONS ON TREE GRATE TO FORM A RIGID STRUCTURE BEFORE INSTALLING.

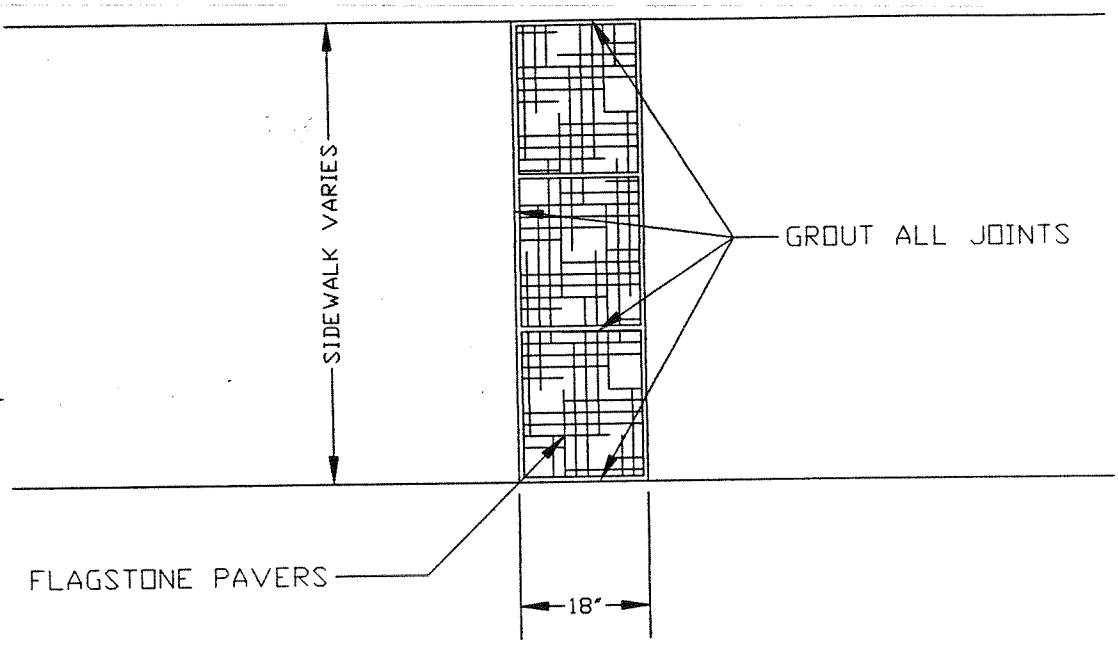
SECTION "A-A"
NOT TO SCALE

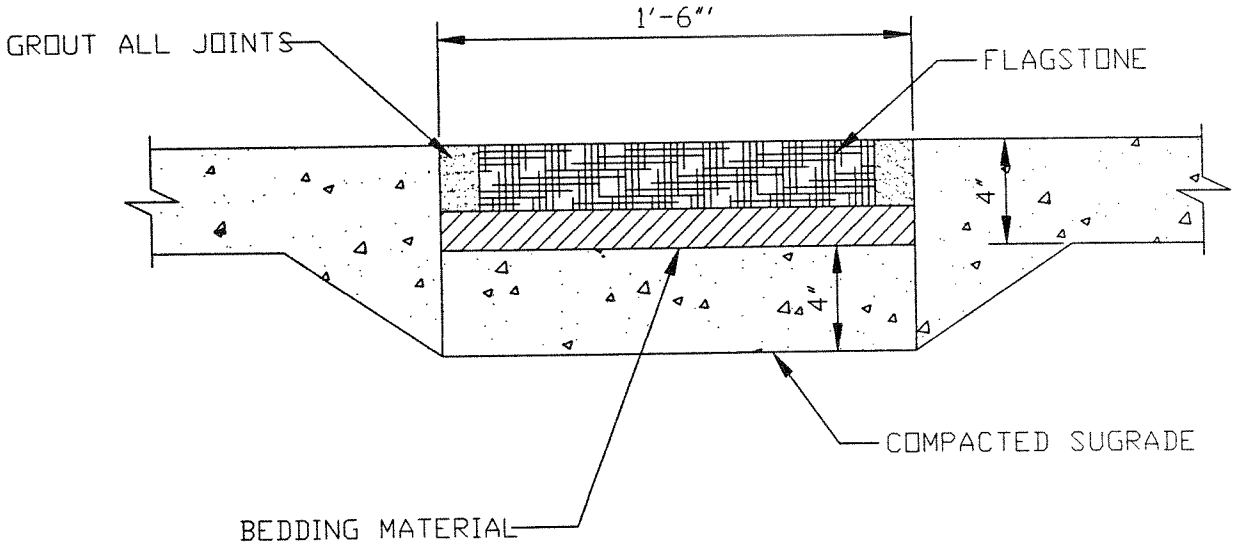


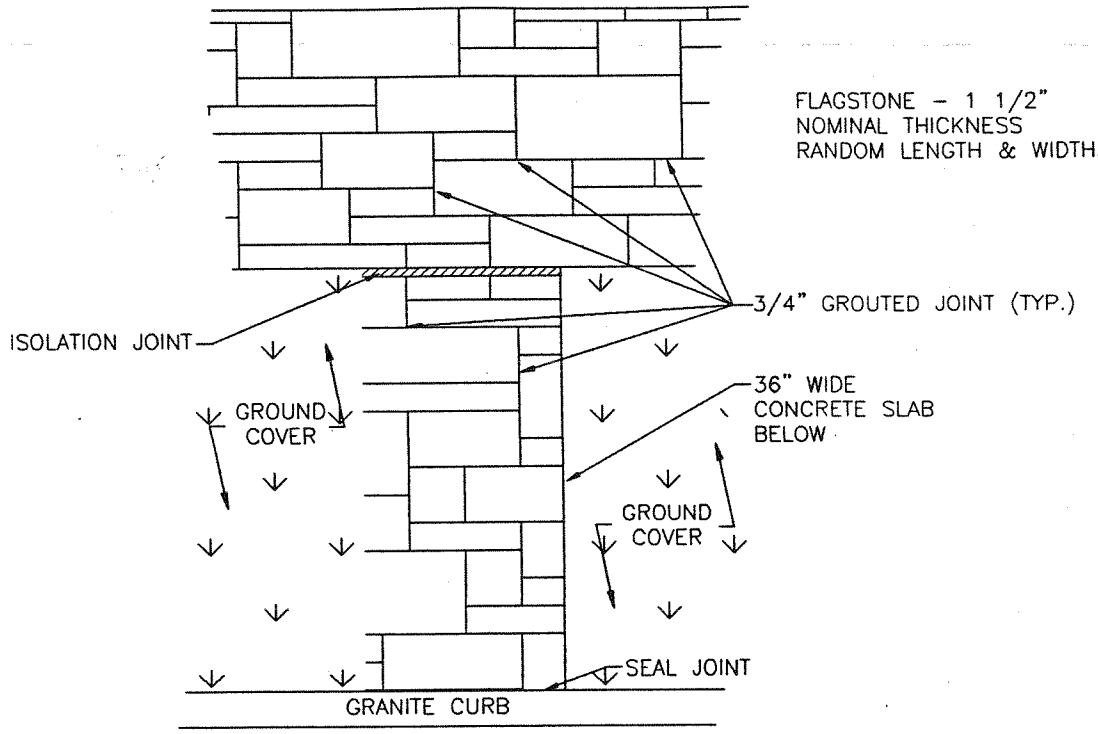
SECTION "B-B"
NOT TO SCALE



SIDEWALK FINISH AROUND TREE GRATES
AREAS WITH FLAGSTONE PAVERS
NOT TO SCALE

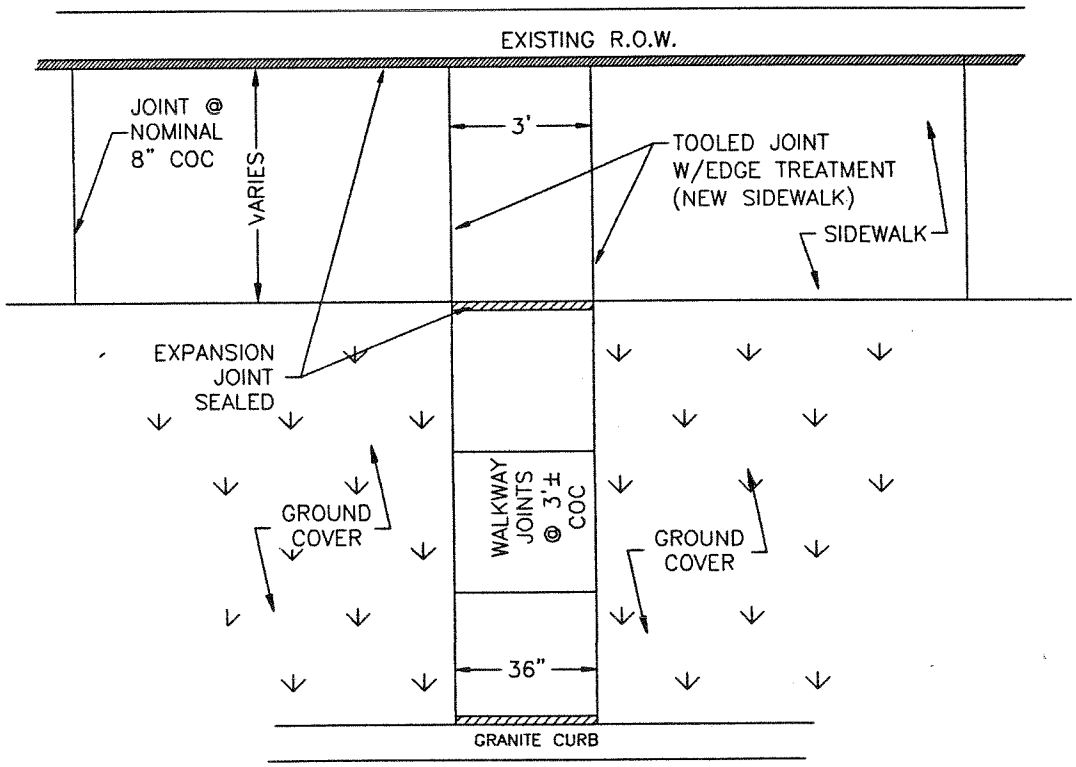

SIDEWALK VARIES
GROUT ALL JOINTS
FLAGSTONE PAVERS
18"


GROUT ALL JOINTS
1'-6"
FLAGSTONE
4"
4"
COMPACTED SUGRADE
BEDDING MATERIAL



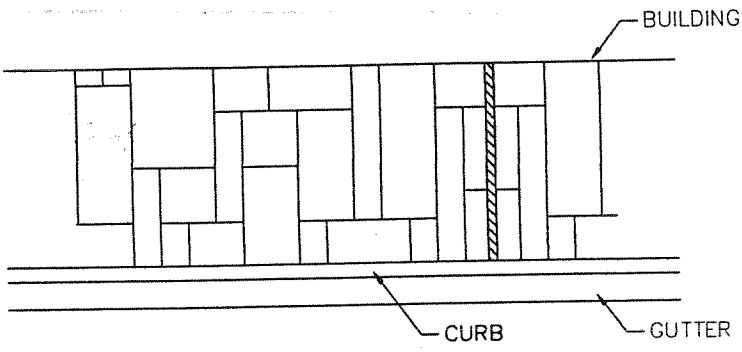
PLAN DETAIL OF FLAGSTONE PAVED WALKWAYS WITH GRASS MEDIAN

NOT TO SCALE



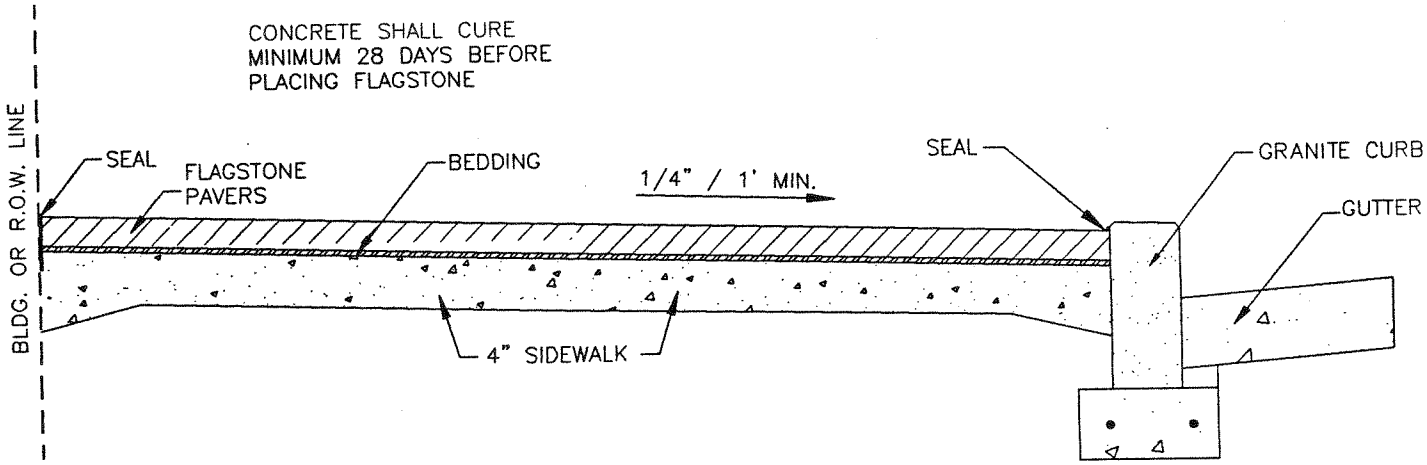
PLAN DETAIL OF CONCRETE WALKWAYS WITH GRASS MEDIAN

NOT TO SCALE



SIDEWALK PLAN VIEW
FULL FLAGSTONE PAVED AREAS
NOT TO SCALE

SET BACK LOCATION
OF LIGHTS SAME AS
OTHER STREETS



SIDEWALK CROSS SECTION
FULL FLAGSTONE PAVED AREAS
NOT TO SCALE

SECTION J
JOINT SEALERS

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION J
JOINT SEALER AND EXPANSION JOINTS

1. GENERAL

All joints in concrete curbing, gutter and granite curbing shall be sealed. Expansion joints in sidewalks, driveways and ramps shall be sealed. This includes joints at building lines. Sealer shall be an approved brand and color as listed or approved.

2. REMOVAL

Sealer and expansion joints are generally removed with the adjacent pavement. In the event the sealer or expansion joint in adjacent slabs to remain are damaged by construction activities, the Permittee shall make repairs and reseal these joints also.

3. REPLACEMENT

Acceptable Joint Sealer brands for use in the Downtown Area are as follows:

1. Sonoplastic NP 1 Polyurethane Sealant
2. Sikaflex 1A Polyurethane Sealant

Other brands of sealer must be submitted to the City for approval.

The manufacturer shall approve of the planned use of the sealer. All work shall be in accordance with manufacturer recommendations.

Joint sealer color shall be color Limestone or, as otherwise approved or directed by the City. For horizontal surfaces, the self leveling type of the same brand and color sealer may be used.

Placing sealant in an acceptable manner requires experience and expertise. The sealant shall be installed by workmen skilled in this type work. Finish product shall be smooth, uniform and recessed in the joint. Sealer showing characteristics of poor workmanship will be rejected.

Any sealer that sags in the joint shall be replaced. This indicates improper placement of "backer rod" or, insufficient sealer. Any sealer tracked or spilled on adjacent surfaces shall be completely removed. Area shall be barricaded to prevent foot traffic on new sealer until it has cured.

4. RESEALING EXISTING JOINTS

Existing joints to be resealed shall be sandblast or waterblast cleaned to "near white" condition. All fugitive sand must be controlled. A backer rod shall be used in all joints to be sealed as appropriate. It shall be firmly placed into the joint such that it provides full support to the sealant.

4. NEW JOINTS

New joints shall be cleaned by compressed air or other methods to obtain a "near white" surface. Curing compound, if used, should be removed. Installation shall be the same as listed above for existing.

All expansion joints shall be sealed as listed above. Expansion joints shall be provided at all locations previously having expansion joints and, at all locations where new concrete pavement abuts structures and other penetrations not a part of the concrete slab. Expansion joint material shall be trimmed in the joint to allow proper placement of sealer. Depth of sealer shall be as recommended by the manufacturer.

SECTION K
GROUT & MORTAR

Revision No: 0
Revision Date: 02/20/04

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION K.
GROUT AND MORTAR JOINTS

1. GENERAL

Referenced Technical Specifications

ALDOT Section 611	Mortar for Masonry
Spec. No. S-820	Pavers and Paving Stone

2. REMOVAL

Where necessary to remove grout without removing the adjacent stone, the grout shall be removed with appropriate tools that do not damage the stone. Any stone damaged or loosened by grout removal shall be replaced or repaired.

3. REPLACEMENT

The joint to be sealed shall be cleaned the full depth of the joint. Full depth is equal to the thickness of the adjacent stone as a minimum. All existing grout, mortar, concrete, dirt or other objectionable material shall be removed. The joint shall be cleaned by sand blasting or other method approved by the City representative.

Grout shall be either a manufactured product or a masonry cement mixed at the time of placement. Mixing shall be in accordance with manufacturer recommendations. The grout must be approved by the manufacturer for the intended use.

Approved grout is Holnam Masonry Cement as manufactured by Holnam Inc. Color is Limestone. Other brands must have prior approval before use.

The joint receiving the grout shall be dampened sufficiently to aid adhesion of the grout. Grout shall be placed in the joint without voids or air pockets. Thickness should generally be uniform along the length of the joint. All materials preventing reasonably uniform thickness shall be removed sufficiently to allow this.

Excessive cracking of the grout indicates improper placement, irregular thickness, improper mixing or failure to adequately clean the joint. Areas having this problem shall be re-done.

After placing, the grout shall be protected from traffic until sufficiently cured.

SECTION L
TREES, GRATES

CITY OF MOBILE
DOWNTOWN AREA
REPAIR OF INFRASTRUCTURE

SECTION L.
TREES AND TREE GRATES

1. GENERAL

Referenced Technical Specifications

Specification No. S-660 Trees (See Appendix)
Specification No. S-810 Tree Grates (See Appendix)

2. REMOVAL

The Mobile Tree Commission must issue a permit for removal of any tree in the public right of way. This permit must be secured in advance of the tree removal. Contact the Urban Forestry Department at 251-208-7091 for a permit application. Applications can also be downloaded from the City's web site at www.City of Mobile.org

Most street trees in the Downtown area have an irrigation bubblier in the tree well. See detail on Page L-3. Removal of the tree may damage this bubblier as well as the irrigation main. This may necessitate removal of adjacent concrete sidewalk in order to make proper repairs. Irrigation system repairs shall be in accordance with Section M of this Manual.

Tree grate frames are imbedded in the concrete sidewalk as shown on Page L-3. Any damage to the frame due to removal will require the purchase and installation of a new frame.

3. REPLACEMENT

TREES

Trees furnished for replacement must be individually approved by the Main Street Director and the City Forester. Tree shall be of the same type as removed unless directed otherwise. Trees shall comply with Specification 660.

Trees shall be warranted to the City for a period of one year after planting by the Permittee. Any replacement tree not performing satisfactorily within this one year period shall be replaced with a tree warrantied for an additional one year.

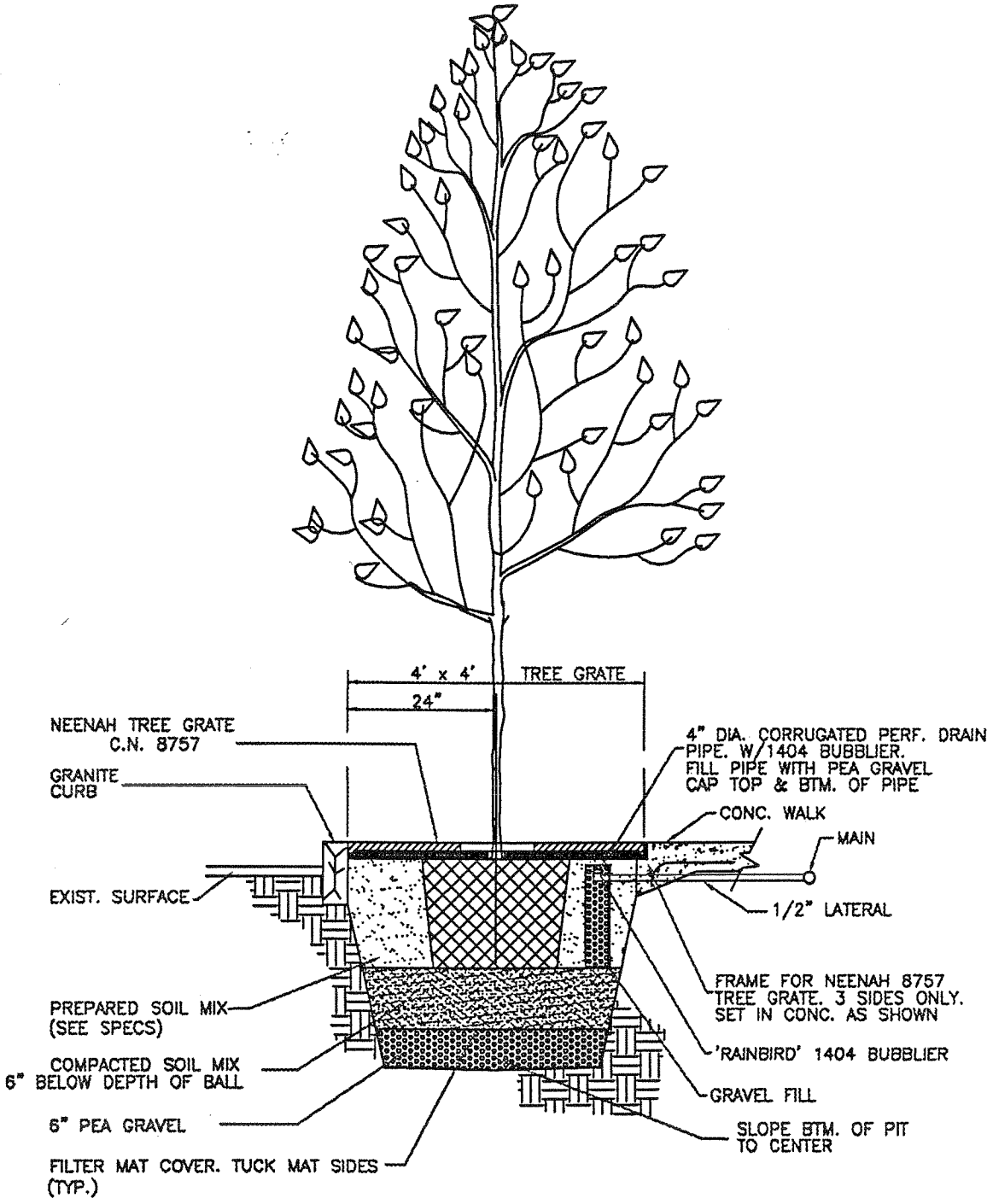
Trees shall be installed with a protective frame device around the tree to maintain a vertical plumb position until the root system can hold the tree vertical. The frame shall not be a hazard to pedestrians and should be removed at the proper time by the Permittee.

TREE GRATES AND FRAMES

Tree grates and frames are Model No. R8757 as manufactured by Neenah Foundry. A replacement unit may be purchased from the City if available.

The grate frame is shipped in four sections. The sections shall be assembled and welded to obtain a rigid frame. Welding shall be done prior to installation.

The unit shall be installed such that it will be completely flush with the adjacent pavement. Variation from this will create a pedestrian trip hazard and shall require rework until an acceptable installation is obtained.



NOTE: TREE GRATE FRAME IS SHIPPED IN SECTIONS WITH BOLTED CONNECTIONS. AFTER ASSEMBLY AND SETTING, OR BEFORE SETTING, EACH CONNECTION SHALL BE WELDED TO MAINTAIN RIGIDITY.

DETAIL OF TREE GRATE

TYPICAL

NOT TO SCALE

SECTION M
IRRIGATION SYSTEM

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION M.
IRRIGATION COMPONENTS

1. GENERAL

Referenced Specifications

Specification No. S-670	Irrigation System (See Appendix)
Specification No. S-660	Trees (See Appendix)

2. REMOVAL

Generally, all trees in the Downtown Area have an irrigation bubblier in the tree well. See detail on Page No. L-2. Bubbliers are supplied by an irrigation main running tree to tree under the sidewalk and/or pavement.

Mains are connected to Irrigation Controllers at various locations Downtown. The system is maintained by the City's Mechanical Maintenance Department. This agency should be contacted prior to any work that could damage or impact the irrigation system. Typical Schematic diagrams of the system are shown on Sheet M-2.

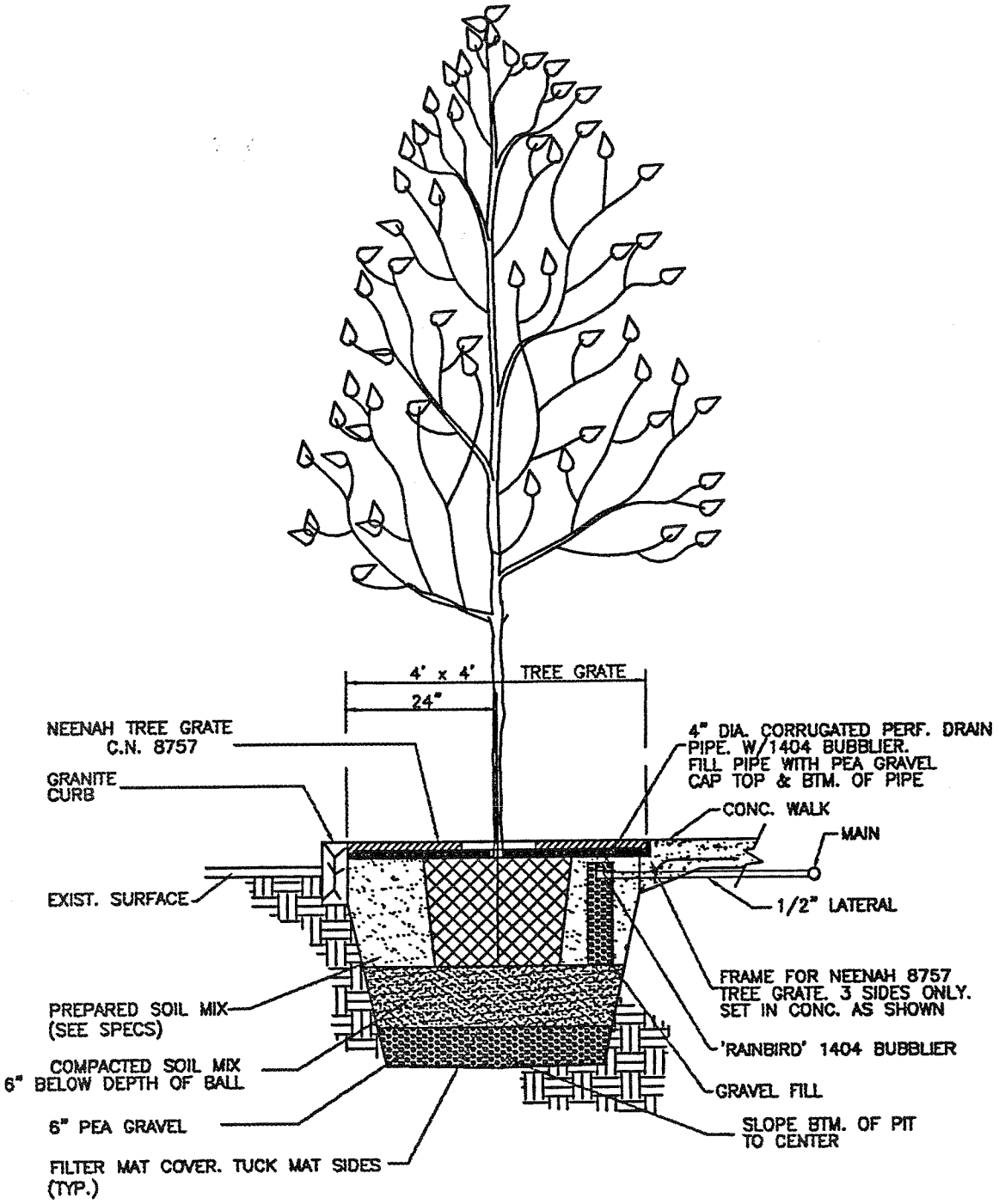
The main is either a 1 inch or 3/4 inch PVC pipe. It is encased in a sleeve under streets. Mains are generally located under the sidewalk on the building side of the tree. Placement depth should be 30 inches. Location and depth of existing lines vary in some areas due to underground obstructions. Locations are not warrantied and should be determined prior to demolition/excavation.

Any trees removed must have pre-approval from the Mobile Tree Commission. See Section L for details.

3. REPLACEMENT

Materials: See Specification No. S-670. All materials and work shall comply with this Specification.

Any irrigation component damaged shall be fully repaired by the responsible person. Depending on extent of damage additional sidewalk and street removal may be necessary. The responsible person shall perform leak tests on the system prior to placing new pavement. Tests shall be witnessed by the City's Engineering Department, Rights of Way Division representative.



DETAIL OF TREE IRRIGATION
TYPICAL
NOT TO SCALE

IRRIGATION NOTES

'RAINBIRD' 1402 BUBBLER

'RAINBIRD' 1812 – 15 EST

'RAINBIRD' 1812 – 15 CST

'RAIN BIRD' RC–7C OUTDOOR ELECTROMECHANICAL CONTROLLER WALL MOUNTED. INSIDE SIGNAL CABINET.

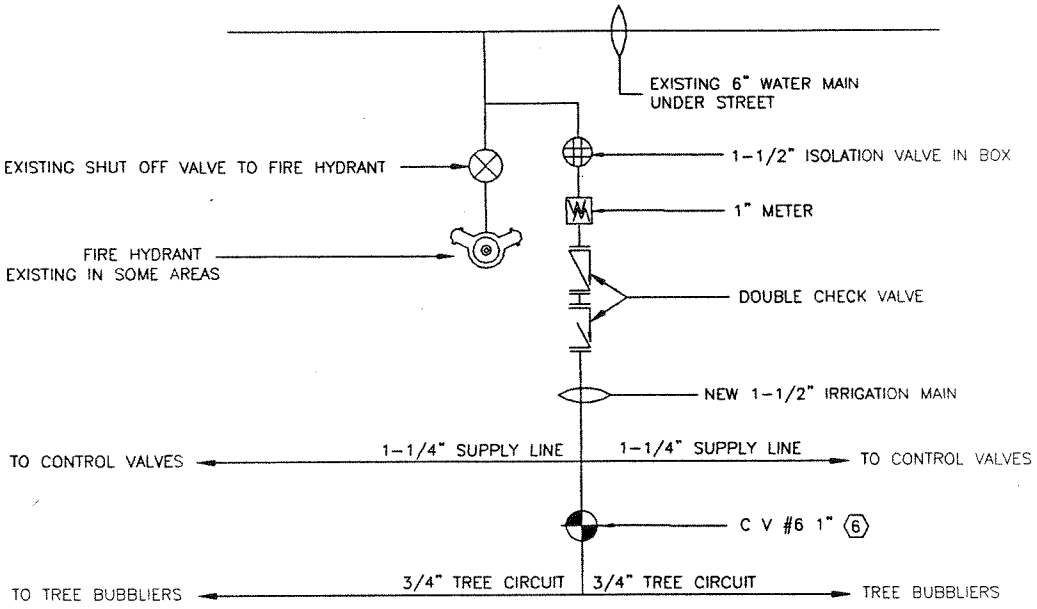
'RAINBIRD' 100–PEB SERIES 1" VALVE

(1) CIRCUIT NUMBER

'RAINBIRD' 1812 – 15 SST

1–1/4" ISOLATION VALVE

1–1/4" MAINLINE (SCH 40 PVC)



DETAIL OF CONNECTION TO 6" WATER MAIN

NOT TO SCALE

IRRIGATION NOTES

1. CONNECT VALVES #1,3,&4 AS ONE STATION AT CONTROLLER
2. CONNECT VALVES #5&6 AS ONE STATION AT CONTROLLER
3. CONTROLLER IS 'RAINBIRD' RC–4C, OUTDOOR ELECTRO–MECHANICAL WALL MOUNTED.

DETAILS SHOWN ARE FOR TYPICAL INSTALLATIONS AND INFORMATION ONLY. PARTICULAR INSTALLATIONS MAY VARY FROM THIS.

Revision No: 0
Revision Date: 02/20/04

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION N.
LIGHTING SYSTEM AND FIXTURES

1. GENERAL

Referenced Technical Specifications

Specification No. S-750 Electrical Materials and Methods (See Appendix)
Specification No. S-751 Lighting (See Appendix)

Lighting in the Downtown Area is generally composed of two types; The 120 volt, 175 watt Mercury Halide System on "Deco" or Green Street Poles and the 220 volt Cobra Head System on High Mount Poles. The cobra head system is gradually being replaced, except where needed at major intersections, by the Deco System. Each system has separate controllers. The lights are served via underground conduits. The conduit for Deco Lights is generally under the sidewalk in line with the lights. Each area of Downtown has its own controller.

Both systems are under the jurisdiction of the City Electrical Department. Any needed information can be obtained by contacting the Electrical Department. Sheets N–2 & N -3 show typical details of the Deco Lights.

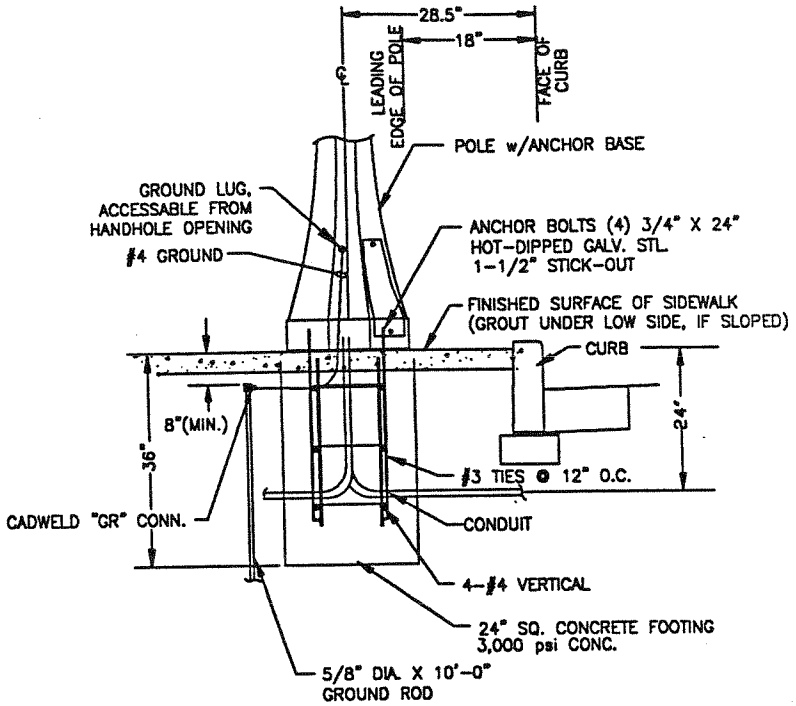
2. REMOVAL

Generally, permission to remove street lights will not be granted. No demolition or excavation around a light may be undertaken until approved by the Electrical Department. If a light is removed, it should be taken to the City's Public Building Department at 850 Owens Street. Provision for temporary street lighting shall be done if directed by the Electrical Department.

3. REPLACEMENT

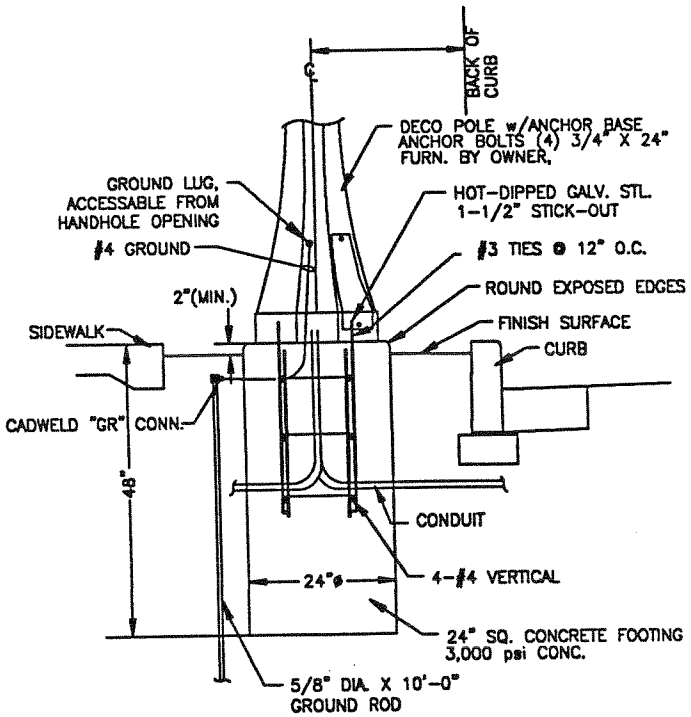
If, for an acceptable reason, it is necessary to remove or relocate a light or lights, it shall be done by a licensed electrician working under direction of the Electrical Department.

The City maintains a supply of both types of Lights. If needed, the Permittee may purchase a light from the City.

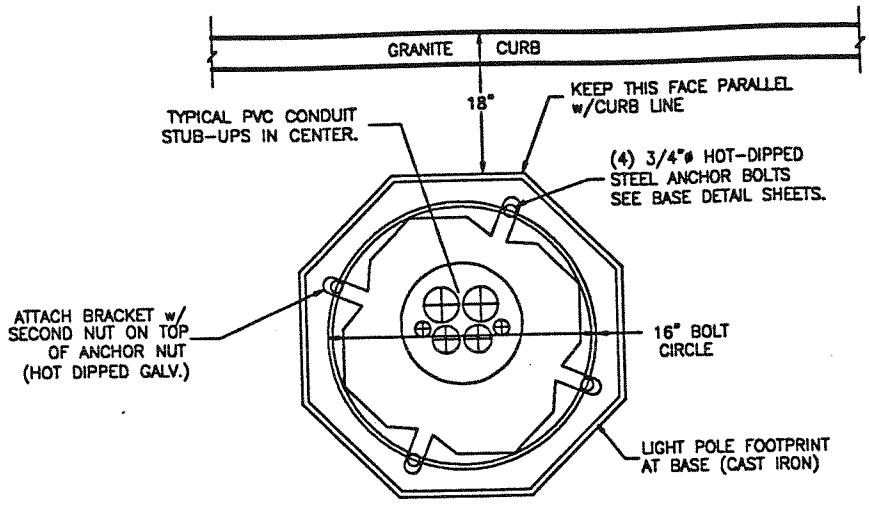


STREET LIGHT POLE BASE DETAIL
IN PAVED AREAS
NOT TO SCALE

ACCESS PLATE SHOULD FACE BUILDING SIDE (SHOWN FOR CLARITY)

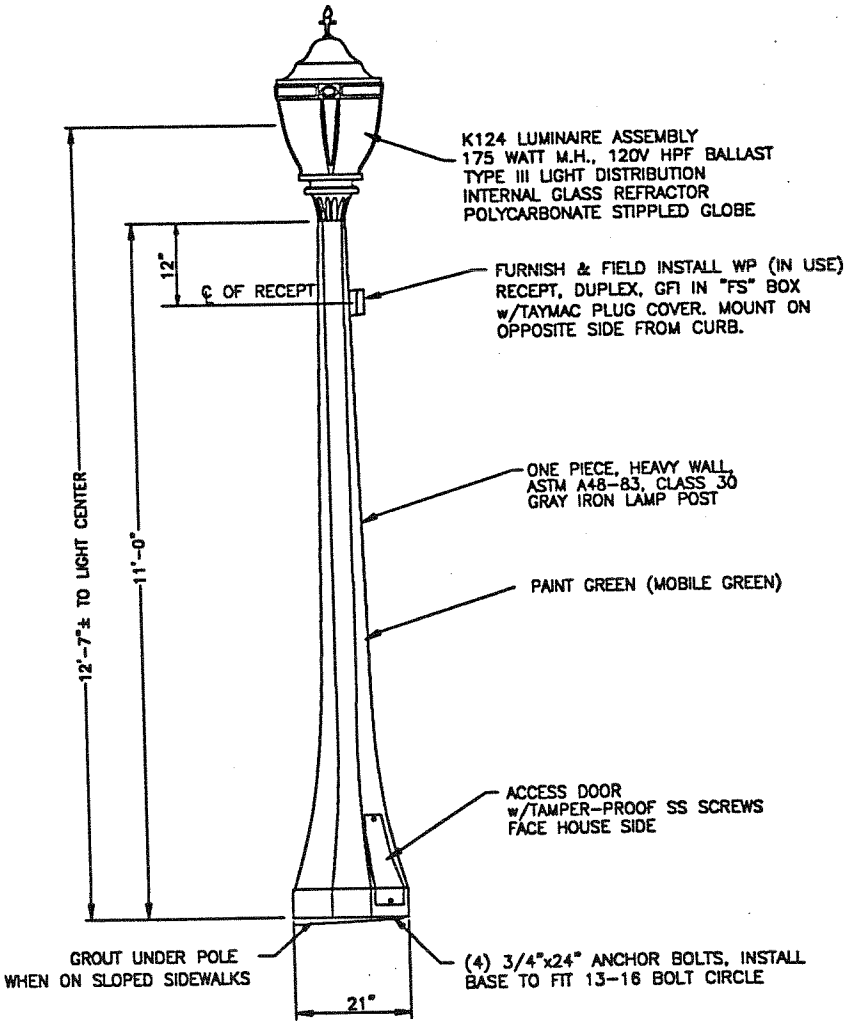


STREET LIGHT POLE BASE DETAIL
IN GRASSED AREAS
NOT TO SCALE



STREET LIGHTING POLE BASE TEMPLATE

NOT TO SCALE



DETAILS OF STREET LIGHTING POLE & LUMINAIRE

NOT TO SCALE

SECTION O
ROOF DRAINS

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION O.
ROOF DRAINS

1. GENERAL

No roof drains, or drainage from a roof, shall be permitted to empty onto paved or grass surfaces in the Downtown Area except in an emergency situation due to plugged lines. All buildings shall have a system to capture rain falling on the roof and transporting it to the City's storm water drainage system. All roof drains shall be connected by underground piping from the building line to the storm water drainage system at the street or other location.

Any roof drain system damaged due to construction activities or other reasons shall be repaired. The new system shall be routed to the closest available street storm water inlet except when directed by the Engineering Department to route piping to other locations. To accomplish this, it may be necessary to remove sidewalk, curbing and other items. All shall be replaced in accordance with this Manual.

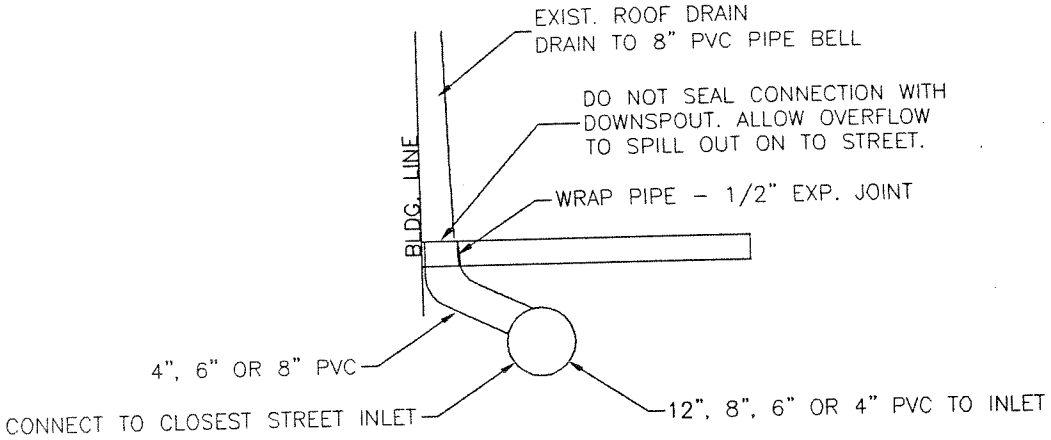
2. REMOVAL

If it becomes necessary to remove or interrupt a functioning roof drain, provision for temporary drainage shall be provided. Silt and debris shall not be permitted to enter the City Storm Water System.

3. REPLACEMENT

Piping and fittings on City property shall be Schedule 40 PVC, HPDE or other material approved by the Engineering Department. All joints shall be water tight.

At the back of sidewalk or property line, the Permittee shall connect the roof drain down spouts to an underground piping system similar to that shown on Sheet O-2. The Permittee shall allow for an overflow release as shown or, other method approved by the Engineering Department. If the piping system is not in place, the Permittee shall install one as noted above.



SIZE OF DRAIN PIPE TO BE
AS DETERMINED BY
LICENSED ENGINEER.

PIPE TO BE FIELD ROUTED TO INLET.

MAINTAIN SLOPE TO INLET

TYPICAL ROOF DRAIN DETAIL

NOT TO SCALE

SECTION P
STORM WATER DRN'.

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION P.
STORM WATER DRAINAGE SYSTEM

1. GENERAL

Referenced Specifications

ALDOT Section 530	Roadway Pipe Culverts
ALDOT Section 533	Storm Sewers

The Permittee will not be allowed to perform any activity that will impede performance of the City's storm water drainage system. No activity can be performed that would cause "ponding" of storm water on City property or private property of others

Silt runoff from the Permittee's construction activities must not cross the bounds of the property or, enter the City System. Violating this will subject the Permittee to significant penalty from the City of Mobile and the Alabama Department of Environmental Management.

Prior to any earth disturbing activity, the Permittee shall have in place a complete and functioning storm water pollution control system. This includes: silt fence, hay bales, sand bags, sump pits, riprap and other devices as needed. If the City Inspector feels the system is deficient and requests changes or modifications to the control system, the Permittee shall suspend other activities and immediately correct the deficiencies.

2. REMOVAL

No part of the City System shall be removed or modified without being so directed by the Engineering Department. If the Permittee is directed to remove, relocate or replace a component of the system, provision shall be made to allow flow during periods of rainfall.

If, due to activities of the Permittee, The City decides that a larger pipe or structure is needed, they may direct the Permittee to replace the pipe or structure with the proper size.

The Permittee shall not begin work on the storm water system until a traffic control plan for vehicles and pedestrians is in place and approved by the City Traffic Engineer.

3. REPLACEMENT

The trench shall be excavated to required depth in compliance with all applicable rules for this type work. Bedding for the pipe shall be Class 3 in accordance with ALDOT Specifications.

All pipe placed on City Right of Way shall be Class 3 Reinforced Concrete Pipe. References in the ALDOT Specifications to other types of pipe being acceptable are voided. Pipe shall have rubber gasket joints. All joints shall also be wrapped with a 2 feet wide layer of geotextile fabric centered on the joint using an approved adhesive material

After pipe placement, the trench shall be backfilled with select granular material placed and compacted in 6 inch layers. Pavement, curbing, sidewalks and other items damaged due to this work shall be repaired in compliance with the appropriate sections of this manual and Ordinance No. 57-022.

Drainage inlets shall be the same type as removed or, the same type as in place at other locations in the area. Castings may be purchased from the City if available. If none are available, the Permittee shall obtain needed castings from the manufacturer. Castings shall match others in the area.

The system, and any required modifications to the City system, shall be designed by an engineer licensed by the State of Alabama. All submittals and construction drawings shall bear the seal of the engineer. All design shall comply with the City Storm Water Ordinance.

The pipe and structures shall be installed by a licensed contractor experienced in this type work and approved by the City Engineering Department. If directed, the contractor shall furnish the City with Proof of Liability Insurance. Levels of insurance coverage shall comply with insurance requirements of the ALDOT Specifications.

SECTION Q
PAINTING EQUIP.

CITY OF MOBILE
DOWNTOWN AREA
INFRASTRUCTURE REPAIR AND REPLACEMENT

SECTION Q.
PAINTING OF STREET EQUIPMENT AND FIXTURES

1. GENERAL

Referenced Specifications:

Specification No. S-870 Painting Street Equipment and Fixtures (See Appendix)

Except where otherwise approved by the City, all equipment and fixtures placed on the Right of Way by the Permittee shall be painted B.L.P. Jet Green in compliance with the referenced Specification. Certain items not appropriate for painting will be exempted from this requirement on a case by case basis by the City representative.

Signs placed on Right of Way shall be of a color approved by the City Traffic Engineer and the Main Street Department.

Any street item previously painted and damaged by the Permittee's activities shall be repainted.

All painting and preparation work shall comply with recommendations of the manufacturer.

APPENDIX
SPECIFICATIONS

Revision No: 0
Revision Date: 07/15/03

SPECIFICATION S-456

PAVEMENT SAWING AND DRILLING

456.01 DESCRIPTION

Work under this item includes the saw cutting and/or core drilling, with removal and disposal where applicable, of concrete and/or asphalt pavement as called for in the plans or as directed by the Engineer.

456.02 MATERIALS

N/A

456.03 CONSTRUCTION REQUIREMENTS

Equipment used for sawing or core drilling of pavement shall be capable of producing a smooth full-depth vertical cut without excessive spalling, raveling or other damage to adjacent pavement surfaces to remain. Sawing or drilling shall be full depth of the pavement structure unless approved otherwise by the Engineer.

Pavement designated for removal shall be carefully removed such that remaining pavement is not damaged or dislocated. Adjacent pavement damaged during sawing or drilling shall be repaired at the expense of the contractor.

Any water necessary in the sawing or drilling process shall be provided by the contractor at his expense.

456.04 METHOD OF MEASUREMENT

Saw cuts ordered and accepted will be measured in linear feet along the surface to the nearest tenth (0.10) of a foot. Any saw cutting not ordered, not accepted or done only for the convenience of the contractor will not be measured for payment.

Core Drills ordered and accepted will be measured per each for the various sizes called for. Any drilling not ordered, not accepted or done only for the convenience of the contractor will not be measured for payment. Drills shall be of the size called for.

456.05 BASIS OF PAYMENT

Saw cuts ordered and accepted, measured as noted above, will be paid for at the contract unit price which shall be payment in full and shall include sawing, cleaning of residue and satisfactory removal and disposal of all waste pavement. Payment per linear foot includes all materials, equipment, tools, labor and incidentals necessary to complete the work.

Core Drills ordered and accepted, measured as noted above, will be paid for at the contract unit price for each type and size which shall be payment in full and shall include drilling, cleaning of residue and satisfactory disposal of all waste pavement. Payment per each includes all material, equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under Item No.

S-456-A PAVEMENT SAWING (Type & thickness of Pavement) Per Linear Feet

S-456-B PAVEMENT CORE DRILLING (Size of Drill)(Type and Thickness of Pavement) Per Each

SPECIAL NOTE:

Measurement and Payment provided under this item only when not included under other items

Revision No: 0
Revision Date: 07/15/03

SPECIFICATION S 618

CONCRETE SIDEWALKS, DRIVEWAYS & CURB RAMPS

All work performed under this Section shall be in accordance with all requirements of ALDOT Section 618 except as modified below.

Cost of all thickened edges, expansion joints, joint sealers and special finishes shall be included in the bid price for the item.

No deduction in area measured for payment will be made for areas of block outs, penetrations, vault tops and other items less than four (4), square feet in surface area. Deductions will be made for all non-paved areas greater than four (4), square feet in area.

Expansion joints shall be placed as shown in the plans.

Add:

Concrete Curb Ramp:

Curb ramps shall be measured complete in place as shown in the plans. The ramp shall include the wing flares and/or transition curbs. No separate measurement will be made for work required to obtain special surface. All ramps and wings shall comply with all ADA requirements. Curb ramps will be paid for under Item No.:

618-C	Concrete Curb Ramp (6" Thick) (Complete in Place) per square yard

SPECIFICATION S- 660
TREES

660.01 - DESCRIPTION

Work under this section includes the furnishing, planting and acceptance of trees of the types and sizes shown in the plans.

A. General:

Provide trees as shown and specified. The work includes

1. Soil preparation.
2. Trees.
3. Planting mixes.
4. Mulch and planting accessories.
5. Maintenance.

B. Related work:

1. Section ALDOT-210: Earthwork.
2. Section S-670: Irrigation System.

C. Quality Assurance:

1. Comply with all standards of good practice.

2. Plant names indicated, comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

3. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock." A plant shall be dimensioned as it stands in its natural position.

4. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

SPECIFICATION S- 660
TREES

5. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two measurements so that only a maximum of 25% are of the minimum size indicated and 75% are of the maximum size indicated.

6. Provide "specimen" plants with a special height, shape, or character of supply. The Engineer and Owner will inspect specimen selections at the source of supply for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.

7. Plants will be inspected and approved at the place of growth by the Engineer and Owner for compliance with specification requirements for quality, size, and variety. Plants should not be shipped until approved.
Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.

8. Provide and pay for material testing. Testing agency shall be acceptable to the Engineer. Provide the following data:

   a. Test representative material samples proposed for use.

   b. Topsoil:
      (1) pH factor.
      (2) Mechanical analysis.
      (3) Percentage of organic content.
      (4) Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

SPECIFICATION S- 660
TREES

D. Submittals:

1. Submit the following material samples:

   a. Mulch.
   b. Planting accessories.
   c. Peat Moss.

2. Submit the following materials certification:

   a. Topsoil source and pH value.
   b. Plant fertilizer.

3. Submit material test reports.

4. Upon plant material acceptance, submit written maintenance instructions recommending procedures for maintenance of plant material.

E. Delivery, Storage, And Handling:

1. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

2. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival the certificate shall be filed with the Engineer. Protect all immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Engineer. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

SPECIFICATION S- 660
TREES

3. Cover plants transported on open vehicles with a protective covering to prevent wind burn.

4. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is not acceptable.

F. Project Conditions:

1. Work notification: Notify Engineer at least 7 working days prior to installation of plant material.

2. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

3. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings or provided by Addendum. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.

4. The irrigation system will be installed prior to planting. Locate, protect, and maintain the irrigation system during planting operations. Repair irrigation system components damaged during planting operations at the Contractor's expense.

G. Warranty:

1. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after completion and acceptance of entire project. Inspection of plants will be made by the Engineer at completion of planting.

2. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Engineer, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches or other causes due to the Contractor's negligence. The cost of such replacement (s) is at Contractor's

SPECIFICATION S- 660
TREES

expense. Warrant all replacement plants for 1 year installation.

3. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour.

4. Remove and immediately replace all plants, as determined by the Engineer, to be unsatisfactory during the initial planting installation.

660.02 - MATERIALS

A. Plants:

Provide plants typical of their species or variety, with normal, densely-developed branches and vigorous fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.

2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.

   a. No plants shall be loose in the container.
   b. Container stock shall not be pot bound.

3. Provide tree species that mature at heights over 25'-0" with a single main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.

SPECIFICATION S- 660
TREES

4. Plants planted in rows shall be matched in form.

5. Plants larger than those specified in the plant list may be used when acceptable to the Engineer. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant

6. The height of the trees, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the plant list.

7. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

B. Accessories:

1. Topsoil for Planting Pits: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials, with acidity range of between pH 6.0 and 6.8.

   a. Identify source location of topsoil proposed for use on the project.
   b. Provide topsoil free of substances harmful to the plants which will be grown in the soil.

2. Peat Moss: Brown to black in color, weed and seed free granulated raw peat or baled peat, containing not more than 9% mineral on a dry basis. Provide ASTM D2607 sphagnum peat moss with a pH below 6.0 for ericaceous plants.

3. Fertilizer:

   a. Plant Fertilizer Type "A": Commercial type approved by the Engineer, containing 12% nitrogen, 12% phosphoric acid, and 12% potash by weight. 1/4 of nitrogen in the form of

nitrates, 1/4 in form of ammonia salt, and 1/2 in form of organic nitrogen.

b. Plant Fertilizer Type "B": Approved acid-base fertilizer.

4. Anti-Desiccant: Protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration. Mixed and applied in accordance with manufacturer's instructions.

5. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by Contractor.

6. Twine: Two-ply jute material.

7. Drainage Fill: Water worn, hard, durable gravel washed, free of loam, sand, clay and other foreign substances. Size range shall be 3/8" maximum, 1/8" minimum.

8. Filter Mat Cover: Water permeable filtration fabric of fiberglass or polypropylene fabric.

660.03 - INSTALLATION REQUIREMENTS

A. Inspection:

Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

B. Preparation:

1. Time of planting: Planting times will be acceptable to the Engineer and will commence when areas are available. Trees will be container grown.
2. Planting shall be performed only by experienced workmen familiar with planting procedures under supervision of a qualified supervisor.

SPECIFICATION S- 660
TREES

3. Locate plants as indicated. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until directed by Engineer.

4. Excavate circular plant pits with vertical sides. Provide pits for trees at least 24" greater than the diameter of the root system. Depth of pit shall be 12" deeper than ball. (See Planting Detail). Remove excavated materials from the site.

5. Provide pre-mixed planting mixture for use around the balls and roots of the plants consisting of 4 parts topsoil and 1 part peat moss and 1/2 lb. plant fertilizer Type "A" per cu. yd.

C. Installation:

1. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Backfill the pit with planting mixture.

2. After balled and burlapped or, container grown plants are set, muddle planting soil mixture around bases of balls or containers and fill all voids. Remove all burlap, ropes, and wires from the tops of balls.

4. Pruning:

a. Prune branches of deciduous stock, after planting, to balance the loss of roots and preserve the natural character appropriate to the particular plant requirements. In general, remove 1/4 to 1/3 of the leaf bearing buds, proportion shall in all cases be acceptable to the Engineer. Remove or cut back broken, damaged, and unsymmetrical growth of new wood.

b. Multiple leader plants: Preserve the leader which will best promote the symmetry of the plant. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or

SPECIFICATION S- 660
TREES

bud a distance of not less than 1/2 the diameter of the supporting branch. Make cut on an angle.

D. Maintenance:

1. Maintain plantings until completion and acceptance of the entire project.

2. Maintenance shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

   a. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
   b. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
   c. Water trees within the first 24 hours of initial planting, and not less than twice per week until final acceptance.

E. Acceptance:

1. Planted areas will be inspected at completion of installation and accepted subject to compliance with specified materials and installation requirements.

2. Upon acceptance, the Owner will assume plant maintenance.

F. Cleaning:

Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

SPECIFICATION S- 660
TREES

660.04 - METHOD OF MEASUREMENT

Trees will be measured per each complete in place for each of the various types furnished, planted and accepted.

660.05 - BASIS OF PAYMENT

The Contractor will be paid at the contract bid price per each for the types of trees furnished, planted and accepted.

Payment will be made under Item No.

660-A, Trees (Type) per each.

Revision No: 0
Revision Date: 08/15/02

SPECIFICATION S-670

IRRIGATION SYSTEM

670.01 DESCRIPTION

Work under this section includes the furnishing and installation of an irrigation system complete in place as shown in the plans.

A. General:

Provide an underground irrigation system as shown and specified. The work includes:

1. Automatic irrigation system including piping, fittings, sprinkler heads, and accessories.
2. Valves, Backflow preventor, and fittings.
3. Controller, control wire.
4. Testing.
5. Excavating and backfilling irrigation system work.
6. Associated interior and exterior plumbing, and accessories to complete the system.
7. Pipe sleeves.
8. Supply and installation of encasement pipe by approved boring or tunneling procedures under streets.

B. Specifications for Related work:

1. Section ALDOT-210 - Earthwork.
2. Section S-660 - Trees.
3. Section S-751 - Electrical.

SPECIFICATION S-670

IRRIGATION SYSTEM

C. Quality Assurance:

1. Comply with all standards of good practice.

2 Installer's qualifications: Minimum of 5 years experience installing irrigation systems of comparable size

3. Materials, equipment, and methods of installation shall comply with the following codes and standards:

   a. National Fire Protection Association, (NFPA).
   b. National Electrical Code.
   c. American Society for Testing and Materials, (IA).
   d. National Sanitation Foundation, (NSF).
   e. The Irrigation Association, (IA).

4. Excavating, backfilling, and compacting operations: Comply with Section 210 requirements and as specified.

5. Obtain Engineer's acceptance of installed and tested irrigation system prior to installing backfill materials.

D. Submittals:

1. Submit manufacturer's product data and installation instructions for each of the system components.

2. Upon irrigation system acceptance, submit written operating and maintenance instructions. Provide format and contents as directed by the Engineer.

3. Provide irrigation system record drawings:

   a. Legibly mark drawings to record actual construction.
   b. Indicate horizontal and vertical locations, referenced to permanent surface improvements.
   c. Identify field changes of dimension and detail and changes made by Change Order.

SPECIFICATION S-670

IRRIGATION SYSTEM

E. Delivery, Storage, And Handling:

1. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.

2. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends, both threaded or plain.

3. Store and handle materials to prevent damage and deterioration.

4. Provide secure, locked storage for valves, sprinkler heads, and similar components that can not be immediately replaced, to prevent installation delays.

F. Project Conditions:

1. Known underground and surface utility lines will be furnished. Accuracy is not warranted. The Contractor should perform his own investigation of conditions.

2. Protect existing features designated to remain.

3. Promptly repair damage to adjacent facilities caused by irrigation system work operations. Cost of repairs at Contractor's expense.

4. Promptly notify the Engineer of unexpected sub-surface conditions.

5. Cutting and patching: (If Required)

   a. Cut through concrete and masonry with core drills. Jack hammers not permitted.
   b. Materials and finishes for patching shall match existing cut surface materials and finish. Exercise special care to provide patching at openings in exterior walls water tight.
   c. Methods and materials used for cutting and patching shall be acceptable to the Engineer.

SPECIFICATION S-670

IRRIGATION SYSTEM

G. Acceptable Manufacturers:

Rainbird Sprinkler Manufacturing Company, Glendora, California
The Toro Company, Riverside, California
L. R. Nelson Corporation, Peoria, Illinois
Hardie Irrigation, Niguel Laguna, California
Other acceptable manufacturers: Submit for approval.

670.02 - MATERIALS

A. General:

1. Provide only new materials, without flaws or defects and of the highest quality of their specified class and kind.

2. Comply with pipe sizes indicated. No substitution of smaller pipes will be permitted. Larger sizes may be used subject to acceptance of the Engineer. Remove damaged and defective pipe.

3. Provide pipe continuously and permanently marked with manufacturer's name or trademark, size schedule and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (NSF) approval.

B. Plastic pipe, fittings, and connections:

1. Polyvinyl chloride pipe: ASTM D2241, rigid, unplasticized PVC, extruded from virgin parent material. Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles, and dents.

2. All pipe will be Schedule 40.

3. PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld, slip joint ring tite seal, or screwed connections. Fittings made of other materials are not permitted.

   a. Schedule 80 PVC pipe may be threaded.

SPECIFICATION S-670

IRRIGATION SYSTEM

b. Use male adapters for plastic to metal connections. Hand tighten male adapters plus one turn with a strap wrench.

4. Insert fittings: ASTM D2466 insert type fittings.

a. Saddle and cross fittings not permitted.

C. Sprinkler heads, controls, valves backflow preventor and associated equipment:

1. Refer to drawings.

D. Electrical control wire:

1. Electrical control and ground wire: Type UF 600 volt AWG control cable #14 or larger.

2. Wire color code: Provide control or "hot" wires either black or red in color. Provide common or "ground" wires white in color.

E. Accessories:

1. Drainage fill: ½" to 3/4" washed pea gravel.

2. Fill: Clean soil free of stones larger than 2" diameter foreign matter, organic material, and debris.

a. Provide imported fill material as required to complete the work. Obtain rights and pay all costs for imported materials.
b. Suitable excavated materials removed to accommodate the irrigation system work may be used as fill material subject to the Engineer's review and acceptance.

3. Low voltage wire connectors: Socket seal type wire connectors and waterproof sealer.

4. Valve backflow preventor access boxes: Cast iron with lockable lid, black in color. Provide lid of same material, black in color.

a. Valve Box: 6" dia, minimum X variable from 18" - 24".
b. Backflow Preventor: Sufficient to enclose equipment.

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IRRIGATION SYSTEM

670.03 - CONSTRUCTION REQUIREMENTS

A. General:

Examine installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

B. Preparation:

1. Layout and stake the location of each pipe run and all sprinkler heads and sprinkler valves. Obtain Engineer's acceptance of layout prior to excavating.

2. Place sleeves as indicated for installation of piping and control wire as indicated on drawings.

C. Installation:

1. Excavating and backfilling:

   a. All excavation shall be considered unclassified excavation and include all materials encountered.
   b. Excavate trenches of sufficient depth and width to permit proper handling and installation of pipe and fittings.
   c. Excavate to depths required to provide 2" depth of earth fill or sand bedding for piping.
   d. Fill to match adjacent grade elevations with imported approved structural fill material. Remove excavated material from the site. Place and compact fill in layers not greater than 8" depth.
   e. Provide 1 cu. ft. of washed pea gravel ½" to 3/4" in each valve box and 2 cu. ft. at backflow preventor box.
   f. Install irrigation lines with a minimum cover of 18" based on finished grades.
   g. Excavate trenches and install piping and fill during the same working day. Do not leave open trenches or partially filled trenches open overnight.

2. Plastic pipe:

   a. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and

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IRRIGATION SYSTEM

contraction.

b. Saw cut plastic pipe. Use a square-in-sawing vice to ensure a square cut. Remove burrs and shavings at cut ends prior to installation.

c. Make plastic to plastic joints with solvent weld joints or slip joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipe fittings in accordance with pipe manufacturer's instructions. Contractor shall make arrangements with pipe manufacturer for all necessary field assistance.

d. Make plastic to metal joints with plastic male adapters.

e. Make solvent weld joints in accordance with manufacturer's recommendations.

f. Allow joints to set at least 24 hours before pressure is applied to the system.

g. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is not in progress.

3. Sprinklers, fittings, valves and accessories:

a. Install fittings, valves, sprinkler heads and accessories in accordance with manufacturer's instructions, except as otherwise indicated.

b. Install backflow preventor as shown or required to complete the system.

c. Install controller as detailed.

d. Install in-ground control valves in a valve access box as indicated.

e. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box.

f. Seal threaded connections on pressure side of control valves with teflon tape or approved plastic joint type compound.

4. Control wiring:

a. Install electric control cable in 2" PVC pipe adjacent to a new 1-1/2" sleeve for an irrigation main under all street crossings. The 2" PVC pipe will also serve electrical lines for streetlights.

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Install electric control cable in new 2" PVC Schedule 40 sleeve under all new paving for entire length. Install wire with slack to allow for thermal expansion and contraction. Where necessary to run wire in a separate trench, provide a minimum cover of 18".

b. Provide sufficient slack at site connections at remote control valves in control boxes, and at all wire splices to allow raising the valve bonnet or splice to the surface without disconnecting the wires when repair is required.

c. Connect each remote control valve to one station of a controller except as otherwise indicated.

d. Connect remote control valves to common ground wire system.

e. Make wire connections to remote control electric valves and splices of wire in the field, using wire connectors and sealing cement in accordance with manufacturer's recommendations.

f. Provide tight joints to prevent leakage of water and corrosion build-up on the joint.

5. Sleeves:

Sleeves under streets have been provided. Install new sleeves prior to paving installation.

6. Flushing, testing, and adjustment:

a. After sprinkler piping is installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water.

b. Perform system testing upon completion of each section. Make necessary repairs and retest sections as required.

c. Test and demonstrate the controller by operating appropriate day, hour and station selection features as required to automatically start and shut down irrigation cycles to accommodate plant requirements and weather conditions.

D. Disposal Of Waste Material:

1. Stockpile, haul from site, and legally dispose of waste materials, including unsuitable excavated materials, rock, trash and debris. Maintain disposal route clear, clean, and free of debris.

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IRRIGATION SYSTEM

E. Acceptance:

1. Test and demonstrate satisfactory operation of system free of leaks.

2. Instruct the Owner's personnel in the operation of the system.

F. Cleaning:

1. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris and equipment. Repair damage resulting from system installation.

670.04 - METHOD OF MEASUREMENT

Measurement will be for a system complete in place, functioning and accepted.

670.05 - BASIS OF PAYMENT

The Contractor will be paid at the lump sum bid price for a complete in place, functioning and accepted system.

Payment will be under Item No.

S-670-A, Irrigation System per lump sum.

SPECIFICATION S-751

ELECTRICAL SERVICE AND DISTRIBUTION

751-01 DESCRIPTION

Work included under this Specification includes electrical work related to installation and repair of lighting fixtures, Street Vendor Power Cabinets and other electrical items installed within the Right of Way.

1.01 RELATED WORK SPECIFIED ELSEWHERE IN THE SPECIFICATIONS

A. Specification S-752, Lighting and Controls

1.02 GENERAL DESCRIPTION OF WORK

A. New Power Service to control panels: Provide and install electrical power feeders in conduit to control panels, in new underground PVC conduit as indicated on the drawings. Provide new panelboards, breakers, contactors, etc., as noted on the drawings, as a package with the custom Street Lighting Control Panels specified in Section 752.

B. Power: 120/208 volts (or 120/240 volts), 3 phase, 4 wire, solid neutral; served from Alabama Power Company vaults and manholes where indicated on the drawings.

C. Grounding: Provide complete grounding system as indicated on the drawings with copper ground buses, copper conductors, and ground rods. Cadweld connections (below grade) and use mechanical terminal lugs where accessible. Grounding shall meet all requirements of the National Electrical Code (N.E.C.) and local Electrical Code amendments. Minimum size of grounding and bonding conductors shall be #6 AWG, with larger sizes as indicated on the plans.

1.03 SUBMITTALS

A. Submit 6 copies of catalog data and technical data for the following items, to the Engineer for approval:

1. Panelboards
2. Circuit breakers
3. Lighting contactors and auxiliary relays

751-02 MATERIALS

2.01 Panelboards

A. Dead-front type, equipped with thermal-magnetic molded case circuit breakers and tin-plated copper bus bars.

B. Circuit breakers: Quick-make, quick-break, thermal- magnetic, trip indicating, bolted-on, with trip and frame ratings as shown on panel schedules, and have common trip on all multi-pole breakers. Trip indication to be clearly shown by the breaker handle taking position between ON and OFF when the breaker is tripped.

C. Bus bar connections to the branch circuit breakers: Bolted connection to line side of breaker, distributed phase or phase sequence type. Three phase, four-wire bussing to be such that any three adjacent single-pole breakers are individually connected to each of the three different phases in such a manner that two or three pole breakers can be installed at any location. All current-carrying parts of the bus assembly shall be tin or silver plated.

D. Panel mains: Main breaker (M.B.) or main lugs only (M.L.O.) as indicated on the diagrams and schedules.

E. Each panelboard, as a complete unit, to have a rating equal to or greater than the integrated equipment rating shown on the one-line diagram and/or schedules on the plans. 277/480 volt power panel interrupting rating shall be 22,000 Amps symmetrical at 480 volts, 3 phase; 120/208 volt panels rating shall be 10,000 Amps symmetrical at 240 volts, 3 phase.

F. Terminals for feeder conductor to the panelboard mains and neutral to be UL listed as suitable for aluminum or copper conductors. Terminals for branch circuit wiring, both breaker and neutral, to be UL listed as suitable for copper wires.

G. Each circuit breaker to be clearly defined by a number corresponding to the circuit description shown on the directory. All panel directories to be typewritten, indicating area and item being served by each breaker. The directory to be of the removable type, protected by clear plastic and mounted in a metal holder located on the internal face of the door.
Provide circuit directories arranged by the contractor, as built, after balancing the phase loads. Panel schedules on the drawings may not be balanced; balance in the field based on clamp-on ammeter readings of actual phase loads. Achieve a tolerance of less than 10% imbalance between phases.

H. Enclose the panelboard bus assembly in a code gauge steel cabinet in accordance with NEMA PB 1 and UL Standard No. 67 for panelboards. Fabricate the box from galvanized steel or equivalent rust-resistant steel.

I. Fronts: Surface trim, without door; painted galvanized steel. Fronts to have adjustable indicating trim clamps.

J. Acceptable manufacturers for panelboards: Square-D, Siemens, or G.E.

2.02 Circuit breakers, individually mounted mains in control panels: Similar to panelboard breakers, above, rated for 120 and 240 volt service as indicated on the drawings. When mounted in lighting control panels, furnish with base-plate and line lugs. Minimum short circuit interrupting rating shall be 22,000 amps, RMS, symmetrical. Breakers shall be as manufactured by Square-D, G.E., or Heinemann.

2.03 Lighting Contactors: Mechanically held, NEMA rated, with auxiliary control relay for 2 wire control, 120VAC control/coil voltage, with latch and unlatch coils having control circuit clearing contacts. Contacts shall be easily replaceable without removing the line and load wires or terminals. Provide on surface mounting base, and fitted with solderless pressure connectors on line and load terminals. Contactors as manufactured by G.E., Zenith (MVPX series), or Asco.

751-03 CONSTRUCTION REQUIREMENTS

3.01 INSTALLATION

A. Grounding

Provide grounding conductors in accordance with National Electrical Code and requirements of the drawings.

B. Street Lighting Control Panels:

Mount panelboards inside street lighting control panels as indicated on the drawings. Panelboard shall be installed complete, as a UL approved assembly; do not leave out any parts such as trim or enclosures. Lay out feeder and branch circuits to enter power panel at proper locations.

C. Housekeeping Pads:

All free standing control panels shall be raised above the surrounding concrete sidewalk on a concrete pad, 3-1/2 inches thick, with #3 reinforcing steel rods and welded-wire mesh in the pour, as required to prevent cracking.

3.02 FIELD QUALITY CONTROL

Train and tie-wrap wires in control panel interiors; provide Panduit wireway with covers installed.

751-04 METHOD OF MEASUREMENT

Work will be measured in accordance with details in the contract documents..

751.05 BASIS OF PAYMENT

Payment will be made in accordance with details in the contract documents. .

SPECIFICATION S-752
LIGHTING AND CONTROLS

752-01 DESCRIPTION

1.01 CONDITIONS AND REQUIREMENTS

A. The General Conditions and Technical Specifications apply.

1.02 DESCRIPTION OF WORK

A. Installation of Owner furnished Deco poles and associated fixtures; furnish lamps for Deco fixtures. Furnish and install receptacles on each Deco pole and terminal strips (with fused points for fixture ballast and each receptacle served from the pole) for wire terminations in the base of each pole.

B. Custom fabricated Street Lighting Control Panels; furnish complete operating panels with main and control power circuit breakers, panelboard, surge arrester, contactors and relays. Controls shall be connected at lighting control panel to serve the entire area via the "Pilot Wire" running to the control panel and connecting to the existing system.

C, Luminaires with lamps as shown on the drawings. Paint existing poles, extensions, arms and fixtures as directed per Section 1090, Painting.

1.03 RELATED WORK SPECIFIED ELSEWHERE IN THE SPECIFICATIONS

A. Service and Distribution - Specification S-751.

1.04 SUBMITTALS

A. Submit six (6) copies of shop drawings and catalog cuts for each item listed below, including but not limited to, dimensioned drawings, photometric characteristics, ballast specifications, finish, mounting accessories, and lamp requirements. Prior approval by the Engineer is required on all fixtures proposed to be furnished as alternates to those listed on the drawings.

1. Lighting Control Panels and all main components contained inside
2. Fluorescent fixtures and door switches for interior of lighting control panels
3. Terminal blocks and fuses

1.05 QUALITY ASSURANCE

A. All lighting fixtures and components of control panels shall be UL listed and labeled.

B. Ballasts shall be CBM and ETL approved, non-attenuating, input voltage: 120VAC. Selection and application of ballasts by fixture manufacturer to conform to fixture mounting and environmental conditions.

752-02 MATERIALS

2.01 LAMPS

A. Fluorescent control panel interior lights: 20 watt, F20-T12/CW.

B. Metal-Halide: Wattages as scheduled, mogul base 175 watt, and medium base, clear bulb, color corrected, high-output, vibration resistant, long-life design. At street intersections, replace all existing H.P.S. luminaires with new metal halide lamped luminaires of the types specified, as indicated on the drawings.

C. Acceptable Manufacturers: General Electric, Sylvania, Venture or Philips.

2.02 BALLASTS

A. H.I.D.: High-power-factor, rated for the voltage and wattage indicated in the fixture schedule. Output shall conform with lamp operating requirements for maximum lumen output and long life. Acceptable Manufacturers: Advance, General Electric, or Universal.

B. Fluorescent: Normal power factor, magnetic, sound rated A, class P thermal protected, rapid start.

2.03 STREET LIGHTING CONTROL PANELS

A. Furnish completely assembled, custom fabricated, lighting control panels to enclose main circuit breakers, lighting contactors, control relays and panelboard (for convenience receptacle circuits).

1. Cabinets shall be ventilated NEMA 3R, with dual doors having 2-point door latch on the active leaf, and rain shield over the doors. Cabinets shall be constructed of 11 gauge aluminum plate, with braked corners and "Heliarc" welded joints. All hardware shall be stainless steel or aluminum alloy. Chemically treat the aluminum exterior, apply epoxy zinc-chromate primer and two coats of jet green epoxy enamel. Color chip shall be obtained from the owner, to match existing poles.

2. Door latch outside handle shall be corrosion resistant aluminum alloy forging or casting, with stainless steel hardware and lock. Active leaf shall close over the inactive leaf with a gasketed overlap. Lock shall be cylinder type, keyed the same as existing traffic signal control panels. Obtain key combination code from the Owner.

3. In the active leaf of the two doors, furnish a small "police access" door, having lock keyed with police skeleton key, with lighting control and receptacle control switches inside. Furnish back box for switch mounting, recessed inside the police door, with adequate depth to allow the door to close over the switch handles.

4. Layout and size of cabinets shall be as shown on the drawings. Furnish all components indicated, with equal quality to those specified, mounted on an aluminum mounting panel, bolted on studs in the back of the cabinet.

5. Use Panduit, or equal, wireways; train and tie-wrap all wiring neatly. Provide a loop in the wires at the door hinge where running to the control switches mounted inside the police access door.

6. Wire control circuits with #14 AWG, fine stranded copper (19 strands minimum), MTW 600 volt wire. Use larger sizes, as indicated on the drawings, for lighting and receptacle circuits.

7. Provide terminals for trip wire coming from control panel #1, main photo-control point in the system, and wire to the lighting contactor auxiliary control relays and control switches as shown on the drawings. Contactors shall be mechanically held.

752-03 CONSTRUCTION REQUIREMENTS

3.01 INSTALLATION

A. Install all fixtures complete with lamps as indicated in the fixture schedule. Connect all fixture and ballast leads as specified in Section 750, Electrical Materials and Methods. Wipe all reflectors and lenses free of dust and streaks.

B. Ground fixtures by mechanical means or by the use of auxiliary grounding conductors in the circuit conduits.

C. Test each fixture for a period of not less than 4 hours continuously. Control fixtures "ON" and "OFF" at least three (3) times during test period. Replace all defective ballasts or erratic lamps encountered and retest.

752-04 METHOD OF MEASUREMENT

No measurement will be made under this item. See Section No. 751 for method of measurement.

752-05 METHOD OF PAYMENT

No payment will be made under this item. Section No. 751 for basis of payment

Revision No: 0
Revision Date: 08/15/02

SPECIFICATION NO. S-810
TREE GRATES

810.01 DESCRIPTION

Work under this item includes the installation of cast iron tree grates at locations shown in the plans and as directed.

810.02 MATERIALS

Tree grates shall be Neenah Model No. R8757.

810.03 CONSTRUCTION REQUIREMENTS

Installation of new grates shall be in accordance with manufacturer's recommendations. Frames are shipped in four (4), sections. Prior to setting, the sections shall be assembled with each section welded to the adjacent sections to provide a rigid frame. Welder shall be experienced with cast iron welding. Prior to welding, the frame shall be adjusted for square and level such that the finished in place frame will allow the grate to be setted without "rocking" or other movement under pedestrian traffic.

Frame shall be carefully set in fresh concrete. After setting and curing of the concrete, the frame and grate shall be cleaned of concrete residue and any other objectionable material.

810.04 METHOD OF MEASUREMENT

Tree grates will be measured per each for each tree grate installed and accepted.

810.05 BASIS OF PAYMENT

The Contractor will be paid per each for each tree grate installed and accepted.

Payment will be made under Item No.

S-810-A, Installation of Tree Grates per each.

SPECIFICATION NO. S-820
PAVERS AND PAVING STONE

820.01 DESCRIPTION

Work under this section includes the furnishing and installation of paving stone in accordance with Plan requirements and manufacturers' recommendations at locations shown in the plans.

Installation and grouting of pavers requires skill and experience in this type work. The installer must be able to show prior acceptable experience and provide references when requested.

820.02 MATERIALS

1. Paving Stones

a. Provide "Bluestone," a hard sandstone of characteristic blue, green and lilac colors quarried in the states of Pennsylvania and New York. Any shipment containing more than 10% panels that are predominantly brown in color may be rejected.

b. Building Stone Standard: ASTM C-616.

c. Association Standard: Building Stone Institute for Paving Stone.

d. Color: Matching approved samples.

e. Finish: Natural cleft face with sawn edges.

f. Thickness: 1" nominal (7/8" to 1-1/4") for light traffic areas.
Average thickness must be 1" or greater.
1-1/2" nominal (1-3/8" to 1-3/4") for heavy traffic areas
Average thickness must be 1-1/2"
Consistently thin panels will be cause for rejection of a shipment.

g. Laying Pattern: To be selected by the Engineer and Owner.

2. Setting Materials

a. Portland Cement: ASTM C 150, Type I.

b. Hydrated Lime: ASTM C 207, Type S. (Optional).

c. Aggregate: ASTM C 144.

d. Water: Clean, non-alkaline and potable.

e. Grout: Grouting color shall match color of other existing grout/joint sealer or as selected by the Engineer and Owner

3. Fabrication

a. General: Fabricate stonework in sizes and shapes required to comply with requirements indicated, including details on drawings and final shop drawings.

(1) Cut stones to produce joints of uniform width and in locations indicated.

(2) Cut and drill holes as required to fit around drains, access covers etc., with a uniform grout line to match the width of the grout specified in the section.

4. Mortar and Grout Mixes

a. Setting Bed for Paving: Mix 30 shovels of sand to 1 bag of cement with only enough water to produce a stiff mix that can be formed into a 3" round ball without losing its shape or falling apart. During periods of high ambient temperature the Engineer may direct additional water and cement in the mix.

B. Grout Factory prepared as manufactured by Holnam Inc. Color shall be Limestone or, as directed by the City.

820.03 CONSTRUCTION REQUIREMENTS

1. Inspection

a. Examine surfaces to receive stone paving for compliance with requirements of installation or with the standards of the setting materials manufacturer.

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PAVERS AND PAVING STONE

Do not proceed with stone paving installation until conditions comply with all applicable requirements.

2. Installation (General)

a. Do not use stone with chips, cracks, voids, discolorations or other defects which might be visible or cause staining in finished work.

b. Where cutting is necessary cut stone with motor driven saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units wherever possible.

c. Set stone in patter and with uniform joints of 3/4" width or as shown on the Plans.

d. Tolerances: Do not exceed 1/8" stone to stone offset from flush, and a tolerance of 1/8" in 2'-0" and 1/4" in 10'-0" from level or slope as indicated, for finished surface of stone paving.

3. Setting Stone on Concrete

a. Clean concrete subbase to remove dirt, dust, debris and loose particles.

b. Saturate concrete subbase with clean water several hours before placing setting bed. Remove surface water about 1 hour before placing setting bed.

c. Apply a slush coat of cement grout over the surface of the concrete subbase about 15 minutes prior to placing the setting bed. Limit the area of slush to avoid it drying out prior to placing the setting bed. Mix the slush coat to a consistency similar to that of thick cream and consisting of either neat cement and water or cement, sand and water. Do not exceed 1/16" thickness for cement slush coat.

d. Mix setting bed in proportions to produce stiff mixture with moist surface when setting bid is ready to receive stone.

e. Spread and screed setting bid to uniform thickness at subgrade elevations required for accurate setting of stone to finished grades indicated. Mix and

place only that amount which can be covered with stone prior to initial set. Cut back, bevel edge, remove and discard setting bed material which has reached initial set prior to placing stone.

(1) Setting bed thickness 1" +- depending on stone thickness.

f. Wet stone thoroughly before laying, but do not lay stone with free moisture on the surface.

g. Place stone before initial set of mortar occurs by tamping into the position required and then lift the stone up from the bed to observe where the stone has not made contact with the setting bed. Fill in those voids with bed mortar then fluff up the bid slightly. Immediately prior to resetting the stone on the setting bed, apply either a slurry of 1/16" bond coat with a trowel or sift an equal amount of dry cement on the top of the bed and then wet it with a watering can to make a slurry. The latter method will allow the setting bed to remain in position to fill in the voids. If the stone has a fairly uniform surface the first slurry method may be better. Prior to resetting apply a similar slurry to the back face of the stone as an option.

h. Tamp and beat the stone to obtain full contact with the setting bed. Force setting material into the vertical joints. Set and level each stone in a single operation, prior to initial set of mortar; do not return to areas already set and disturb stone for leveling purposes. After setting remove any excess setting material in the vertical joints to allow placement of grout.

I. Grout joints as soon as possible after initial set of setting bed. Force grout into joints, taking care not to smear grout on adjoining stone and other surfaces. After initial set of grout, finish joints by tooling to produce a very slightly concave joint, dense and free from drying cracks.

1. Mix grout consisting of factory-prepared color pigment grout and liquid admixture in proportions as recommended by the manufacturer.

4. Repair, Pointing, Cleaning and Protection

a. Remove and replace stone units which are loose, chipped, broken, stained and otherwise damaged, or if units do not match adjoining units as intended.

place only that amount which can be covered with stone prior to initial set. Cut back, bevel edge, remove and discard setting bed material which has reached initial set prior to placing stone.

(1) Setting bed thickness 1" +- depending on stone thickness.

f. Wet stone thoroughly before laying, but do not lay stone with free moisture on the surface.

g. Place stone before initial set of mortar occurs by tamping into the position required and then lift the stone up from the bed to observe where the stone has not made contact with the setting bid. Fill in those voids with bed mortar then fluff up the bid slightly. Immediately prior to resetting the stone on the setting bed, apply either a slurry of 1/16" bond coat with a trowel or sift an equal amount of dry cement on the top of the bid and then wet it with a watering can to make a slurry. The latter method will allow the setting bed to remain in position to fill in the voids. If the stone has a fairly uniform surface the first slurry method may be better. Prior to resetting apply a similar slurry to the back face of the stone as an option.

h. Tamp and beat the stone to obtain full contact with the setting bed. Force setting material into the vertical joints. Set and level each stone in a single operation, prior to initial set of mortar; do not return to areas already set and disturb stone for leveling purposes. After setting remove any excess setting material in the vertical joints to allow placement of grout.

I. Grout joints as soon as possible after initial set of setting bed. Force grout into joints, taking care not to smear grout on adjoining stone and other surfaces. After initial set of grout, finish joints by tooling to produce a very slightly concave joint, dense and free from drying cracks.

1. Mix grout consisting of factory-prepared color pigment grout and liquid admixture in proportions as recommended by the manufacturer.

4. Repair, Pointing, Cleaning and Protection

a. Remove and replace stone units which are loose, chipped, broken, stained and otherwise damaged, or if units do not match adjoining units as intended.

SPECIFICATION NO. S-820
PAVERS AND PAVING STONE

Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

b. Pointing: During tooling of joints, enlarge voids or holes and completely fill with mortar or grout.

c. Cleaning: Remove excess mortar/grout from exposed stone surfaces, wash and scrub clean.

d. Provide final protection and maintain conditions in a manner acceptable to the Owner, which ensures stone paving work being without damage or deterioration at time of substantial completion.

820.04 METHOD OF MEASUREMENT

Measurement of paving stone furnished, installed and accepted will be per square foot complete in place. No deduction will be made for space occupied by joints.

820.05 BASIS OF PAYMENT

The Contractor will be paid at the contract bid price per square foot for each square foot of paving stone furnished, installed and accepted.

Payment will be made under :

Item No. S-820-A, Flagstone Pavers (Thickness), per S.F.Complete in Place.

Revision No: 0
Revision Date: 08/15/02

SPECIFICATION NO. S-870
PAINTING STREET EQUIPMENT AND FIXTURES

870.01 DESCRIPTION

Work under this item includes surface preparation and painting of signal pole assemblies, street lights, posts, controller cabinets and other designated street fixtures.

A signal pole assembly is defined as a pole with all the equipment fastened to it. This includes mastarm, signal heads, ped signals, light and other items mounted on the pole. If the controller is mounted on the pole it is considered a part of the pole assembly.

870.02 MATERIALS

Color of paint shall match B.L.P. color Jet Green.

Topcoat Paint - acceptable brands of paint are:

Amershield Ameron manufactured by Ameron Protective Coatings

B.L.P. stock manufactured by B.L.P. Paint Co.

Undercoat Surface Preparation

B.L.P. 10-10 Rust Kill manufactured by B.L.P. Paint Co. or approved equal

870.03 CONSTRUCTION REQUIREMENTS

All painting shall be in accordance with manufacturer's recommendations. All rust spots shall be cleaned to bare metal. Areas of new welding shall be ground down to an acceptable smooth finish. Following surface preparation all bare metal areas shall receive an antirust undercoating. Dry thickness of application shall be 1.0-1.5 mils.

Top coat may be applied by brush or spray. All glass lenses and items not normally painted shall be protected. Dry thickness of application shall be 1.5-2.0 mils.

Any damage caused by overspray will be the responsibility of the Contractor. If the Contractor so prefers, he may remove the item and paint it in another location. The City should be notified prior to removal.

SPECIFICATION NO. S-870
PAINTING STREET EQUIPMENT AND FIXTURES

870.04 METHOD OF MEASUREMENT

Each signal pole assembly painted and accepted will be measured. No differentiation will be made as to type of pole (signalization or ped signal) height, presence of light, number of signal heads, etc.

Each controller cabinet (except those mounted on signal poles) painted and accepted will be measured. No differentiation will be made due to various sizes of cabinet.

Each street light painted and accepted will be measured. No differentiation will be made due to various types of street lights.

Other items painted and accepted will be measured as noted in the plans.

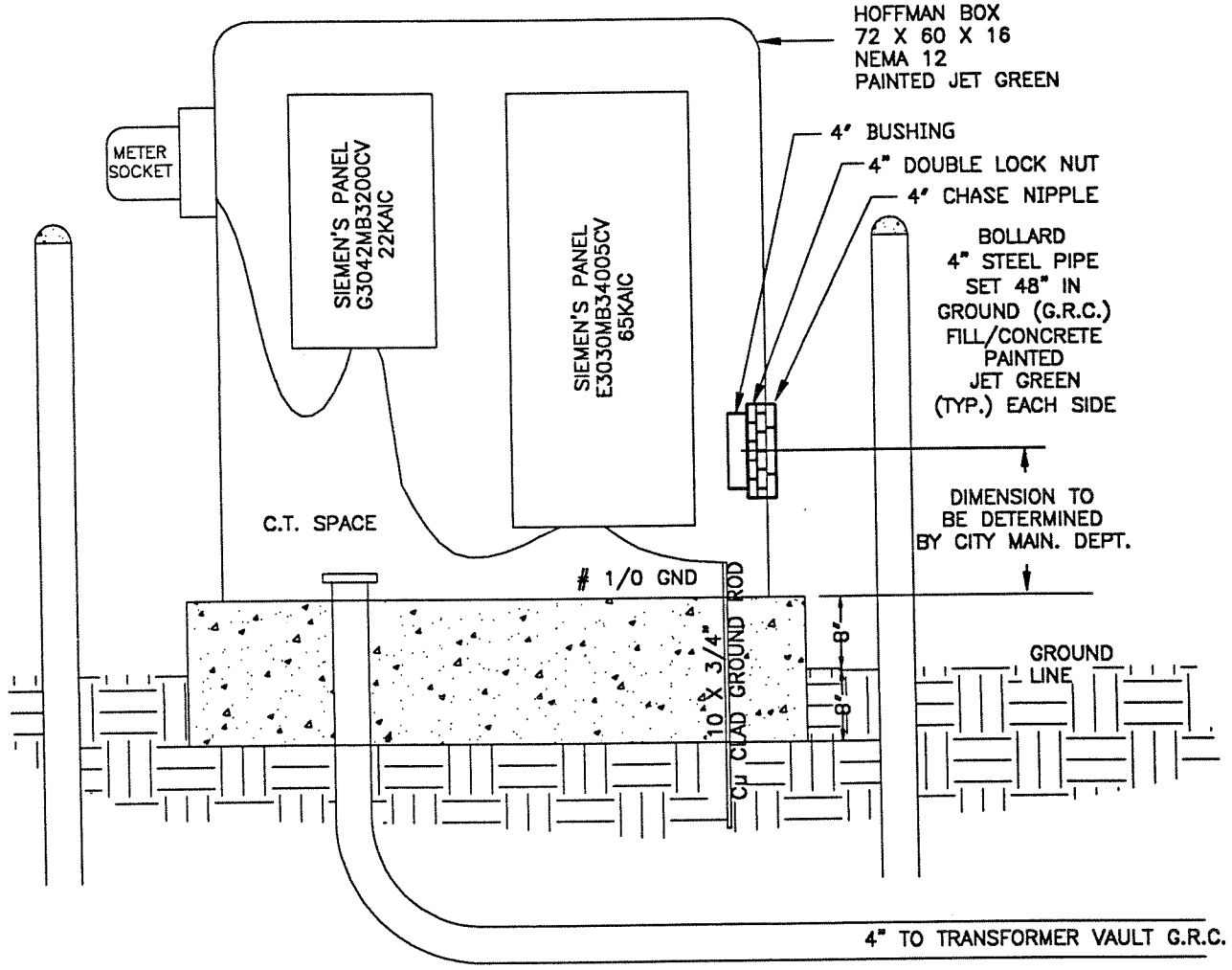
870.05 BASIS OF PAYMENT

The Contractor will be paid per each for each signal pole assembly, separate controller cabinet, street light or other item as listed that is painted and accepted.

Payment will be made under Item Nos.:

S-870-A, Painting Signal Pole Assembly, per each.
S-870-B, Painting Controller Cabinet, per each.
S-877-C, Painting _____, per each

NOTE!
CUT CIRCLE FROM #12 GAUGE FLAT METAL TO FIT INSIDE OF 4" BUSHING IN ORDER TO CLOSE HOLE.



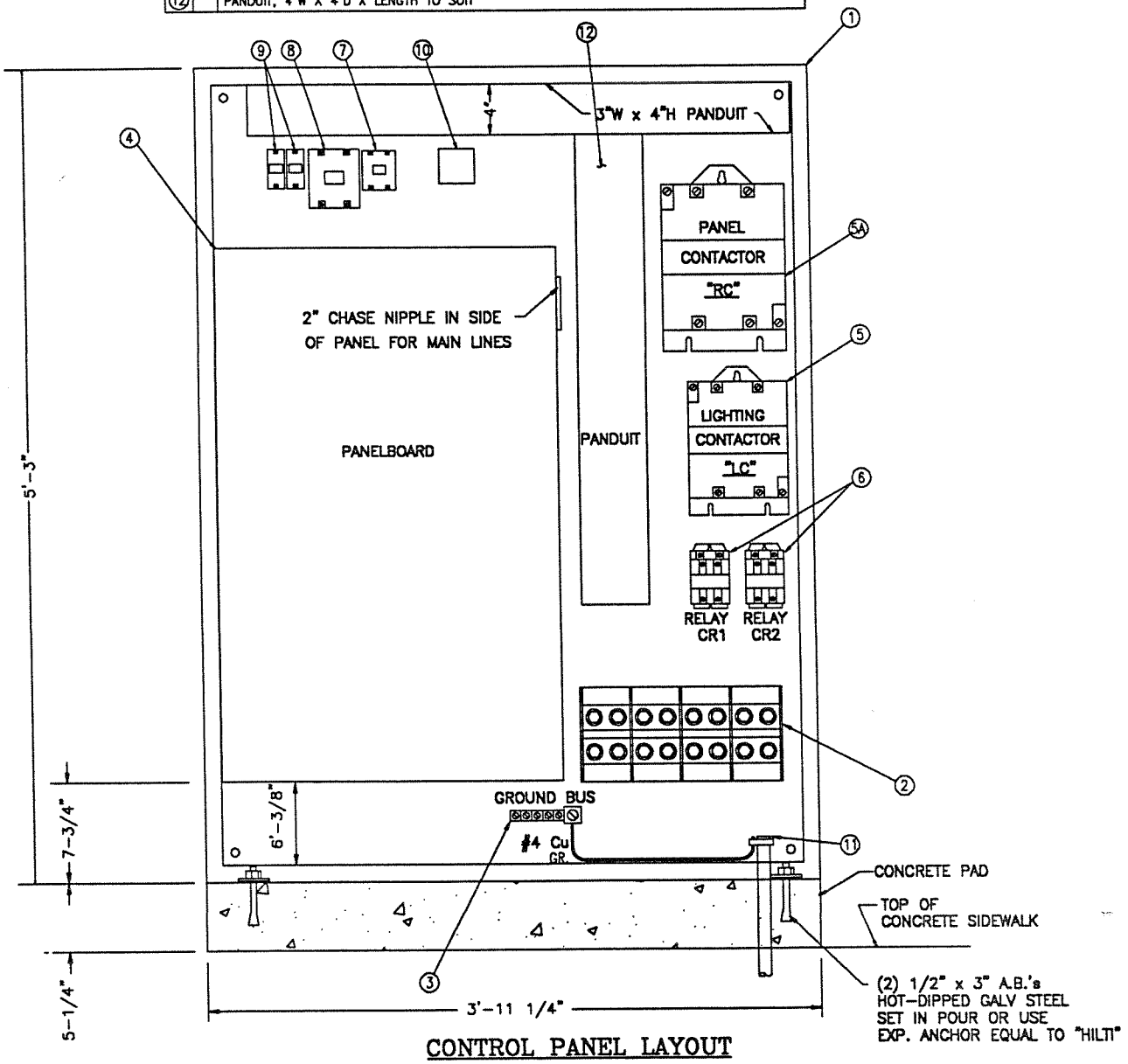
TYPICAL ELEVATION VIEW – STREET VENDOR PANELS

ST. FRANCIS ST. SOUTH SIDE BETWEEN JOACHIM ST. & CONCEPTION ST.
ST. JOSEPH ST. EAST & WEST SIDES BETWEEN ST LOUIS ST. & ST. MICHAEL ST.
ST. LOUIS ST. SOUTH SIDE BETWEEN ROYAL ST. & WATER ST.
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	STREET VENDOR POWER PANELS ST. FRANCIS ST. (S), EAST OF JOACHIM ST. JOSEPH ST. (E & W), NORTH OF ST. MICHAEL ST. LOUIS ST. (S), WEST OF WATER ST.

MATERIAL LIST

ITEM	QTY	DESCRIPTION
①	1	ENCLOSURE, NEMA 3R, (2) DOOR, ALUMINUM
②	2	POWER TERMINATION BLOCK, 600V, 620A, 3 POLE, A-B
③	1	GROUND BUS, GE #TNLK1 WITH (2) ADD-ON LUG GE
④	1	PANELBOARD, SURFACE TRIM, 24 CKT, 225A, 2ø, 4W, MAIN LUGS ONLY, 10,000 A.I.C. WITH (20) TYPE THQB, SINGLE POLE 60A/1P BOLT-ON BREAKERS
⑤	1	LIGHTING CONTACTOR, 100A, 1 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑤A	1	LIGHTING CONTACTOR, 225A, 1 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑥	2	RELAY, 2 POLE, 300VAC, 10A w/N.O.& N.C. CONTACTS, 120VAC COIL,
⑦	1	BREAKER, 3 POLE, 70A, 120/208V, LINE AND LOAD LUGS,
⑧	1	BREAKER, 3 POLE, 225A, 120/208V, LINE AND LOAD LUGS
⑨	2	BREAKER, 1 POLE, 20A, 120/240V, LINE AND LOAD LUGS,
⑩	1	SURGE ARRESTER, SQUARE-D #SDSA-1175
⑪	1	GROUND ROD, 5/8" X 10' W/GROUND CLAMP
⑫		PANDUIT, 4"W X 4"D X LENGTH TO SUIT



CONTROL PANEL LAYOUT

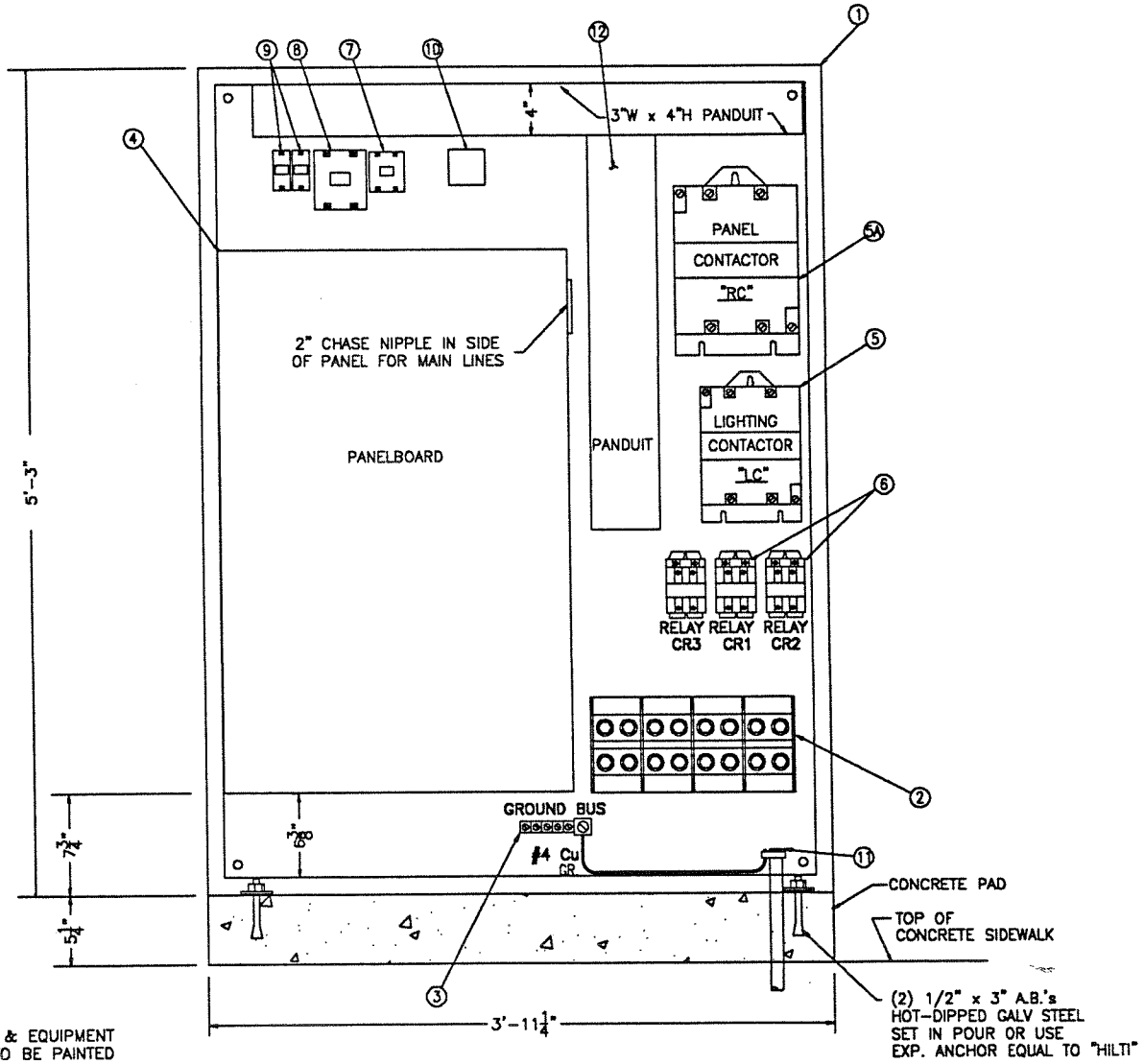
ST. FRANCIS ST. SOUTH SIDE BETWEEN JOACHIM ST. & CONCEPTION ST.
ST. JOSEPH ST. EAST & WEST SIDES BETWEEN ST LOUIS ST. & ST. MICHAEL ST.
ST. LOUIS ST. SOUTH SIDE BETWEEN ROYAL ST. & WATER ST.

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

STREET VENDOR CONTROL PANEL LAYOUT
ST. FRANCIS ST. (S), EAST OF JOACHIM
ST. JOSEPH ST. (E & W), NORTH OF ST. MICHAEL
ST. LOUIS ST. (S), WEST OF WATER ST.

MATERIAL LIST		
ITEM	QTY	DESCRIPTION
①	1	ENCLOSURE, NEMA 3R, (2) DOOR, ALUMINUM, USE CITY APPROVED BOX
②	2	POWER TERMINATION BLOCK, 600V, 620A, 3 POLE, A-B
③	1	GROUND BUS, GE #TNLK1 WITH (2) ADD-ON LUG GE
④	1	PANELBOARD, SURFACE TRIM, 24 CKT, 225A, 2ϕ, 4W, MAIN LUGS ONLY, 10,000 A.I.C. WITH (20) TYPE THQB, SINGLE POLE 60A/1P BOLT-ON BREAKERS
⑤	1	LIGHTING CONTACTOR, 100A, 2 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑤A	1	PANEL CONTACTOR, 225A, 2 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑥	2	RELAY, 2 POLE, 300VAC, 10A w/N.O.& N.C. CONTACTS, 120VAC COIL,
⑦	1	BREAKER, 2 POLE, 70A, 120/240V, LINE AND LOAD LUGS,
⑧	1	BREAKER, 2 POLE, 225A, 120/240V, LINE AND LOAD LUGS
⑨	2	BREAKER, 1 POLE, 20A, 120/240V, LINE AND LOAD LUGS,
⑩	1	SURGE ARRESTER, SQUARE-D #SDSA-1175
⑪	1	GROUND ROD, 5/8" X 10' W/GROUND CLAMP
⑫		PANDUIT, 4"W X 4"D X LENGTH TO SUIT



ALL PANELS & EQUIPMENT EXTERIORS TO BE PAINTED JET GREEN.

LIGHTING CONTROL PANEL LAYOUT

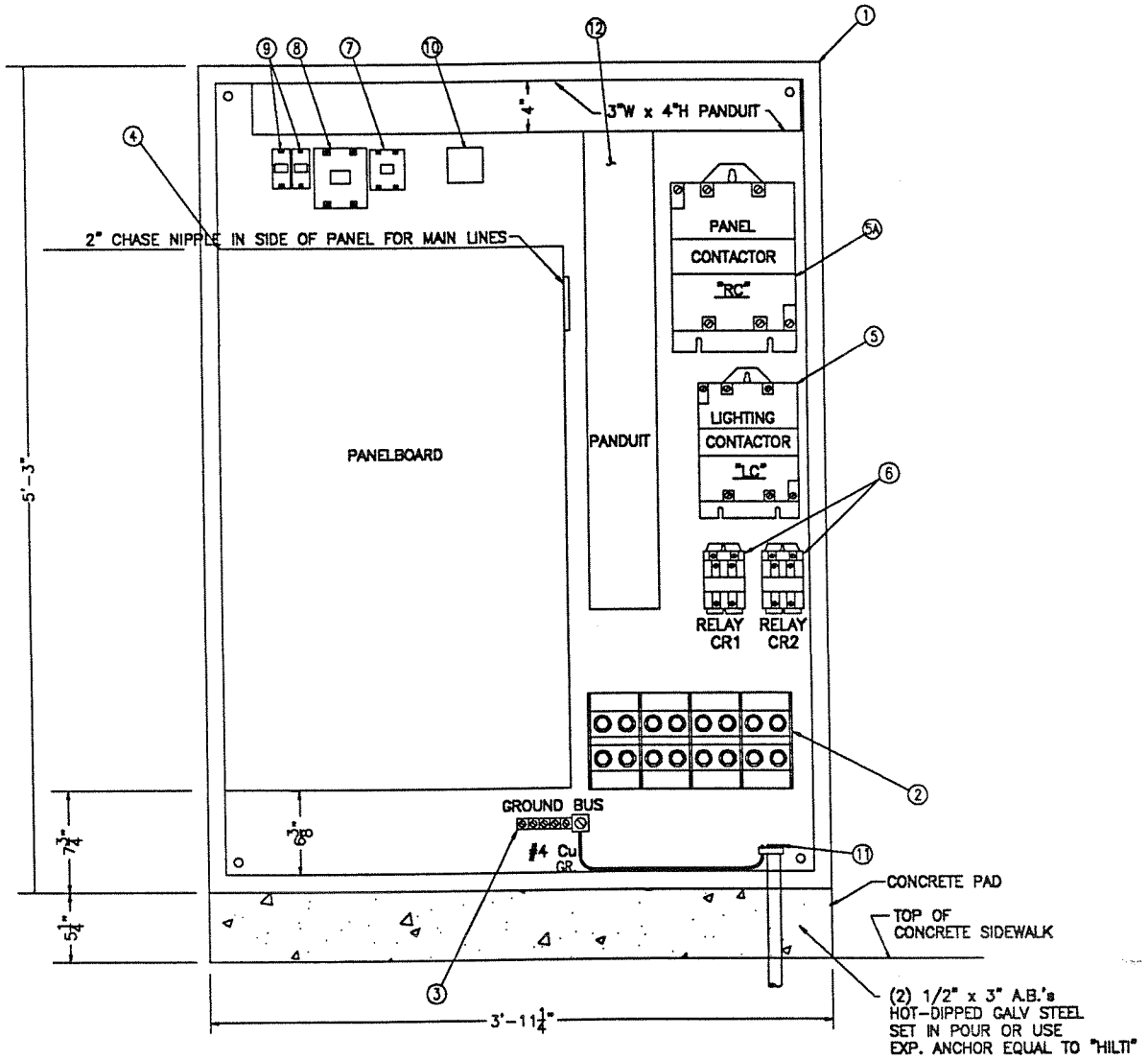
BAYOU ST. (WEST SIDE) AT DAUPHIN
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

ELECTRICAL DETAIL
LIGHTING CONTROL PANEL LAYOUT
BAYOU ST. WEST SIDE NEAR DAUPHIN

MATERIAL LIST		
ITEM	QTY	DESCRIPTION
①	1	ENCLOSURE, NEMA 3R, (2) DOOR, ALUMINUM
②	2	POWER TERMINATION BLOCK, 600V, 620A, 3 POLE
③	1	GROUND BUS, GE #TNLK1 WITH (2) ADD-ON LUG GE
④	1	PANELBOARD, SURFACE TRIM, 24 CKT, 225A, 2ø, 4W, MAIN LUGS ONLY, 10,000 A.I.C. WITH (20) TYPE THQB, SINGLE POLE 20A/1P BOLT-ON BREAKERS
⑤	1	LIGHTING CONTACTOR, 100A, 3 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑤A	1	LIGHTING CONTACTOR, 225A, 3 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑥	2	RELAY, 2 POLE, 300VAC, 10A w/N.O.& N.C. CONTACTS, 120VAC COIL
⑦	1	BREAKER, 3 POLE, 70A, 120/208V, LINE AND LOAD LUGS,
⑧	1	BREAKER, 3 POLE, 225A, 120/208V, LINE AND LOAD LUGS
⑨	2	BREAKER, 1 POLE, 20A, 120/240V, LINE AND LOAD LUGS,
⑩	1	SURGE ARRESTER, SQUARE-D #SDSA-1175
⑪	1	GROUND ROD, 5/8" X 10' W/GROUND CLAMP
⑫		PANDUIT, 4"W X 4"D X LENGTH TO SUIT



CONTROL PANEL LAYOUT

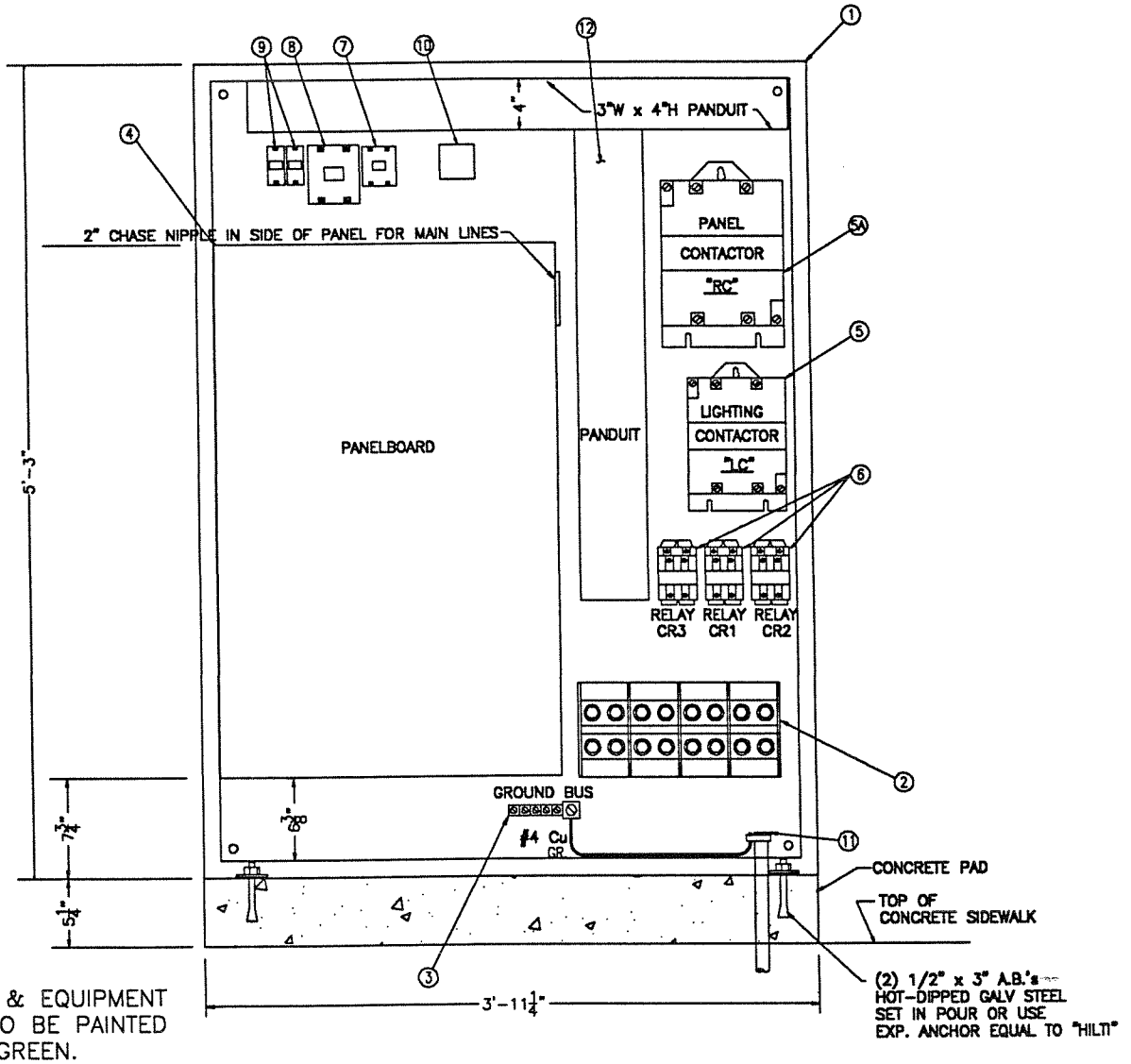
ON CONTI ST. WEST OF CONCEPTION
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

ELECTRICAL DETAILS
LIGHTING CONTROL PANEL
ON CONTI ST. WEST OF CONCEPTION

MATERIAL LIST		
ITEM	QTY	DESCRIPTION
①	1	ENCLOSURE, NEMA 3R, (2) DOOR, ALUMINUM
②	2	POWER TERMINATION BLOCK, 600V, 620A, 3 POLE
③	1	GROUND BUS, GE #TNLK1 WITH (2) ADD-ON LUG GE
④	1	PANELBOARD, SURFACE TRIM, 24 CKT, 225A, 2#, 4W, MAIN LUGS ONLY, 10,000 A.I.C. WITH (20) TYPE THQB, SINGLE POLE 20A/1P BOLT-ON BREAKERS
⑤	1	LIGHTING CONTACTOR, 100A, 3 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑤A	1	LIGHTING CONTACTOR, 225A, 3 POLE, MECH. HELD, w/120VAC COIL, SQUARE D
⑥	3	RELAY, 2 POLE, 300VAC, 10A w/N.O.& N.C. CONTACTS, 120VAC COIL,
⑦	1	BREAKER, 3 POLE, 70A, 120/208V, LINE AND LOAD LUGS,
⑧	1	BREAKER, 3 POLE, 225A, 120/208V, LINE AND LOAD LUGS
⑨	2	BREAKER, 1 POLE, 20A, 120/240V, LINE AND LOAD LUGS,
⑩	1	SURGE ARRESTER, SQUARE-D #SDSA-1175
⑪	1	GROUND ROD, 5/8" X 10' W/GROUND CLAMP
⑫		PANDUIT, 4"W X 4"D X LENGTH TO SUIT



ALL PANELS & EQUIPMENT EXTERIORS TO BE PAINTED JET GREEN.

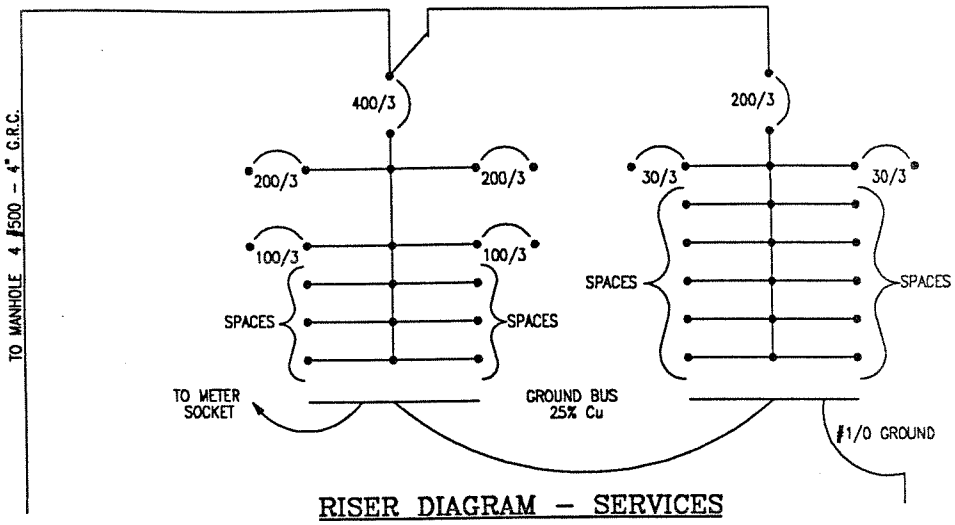
CONTROL PANEL LAYOUT

ON DEARBORN ST. AT DAUPHIN &
ON FRANKLIN ST. AT DAUPHIN ST.
NOT TO SCALE

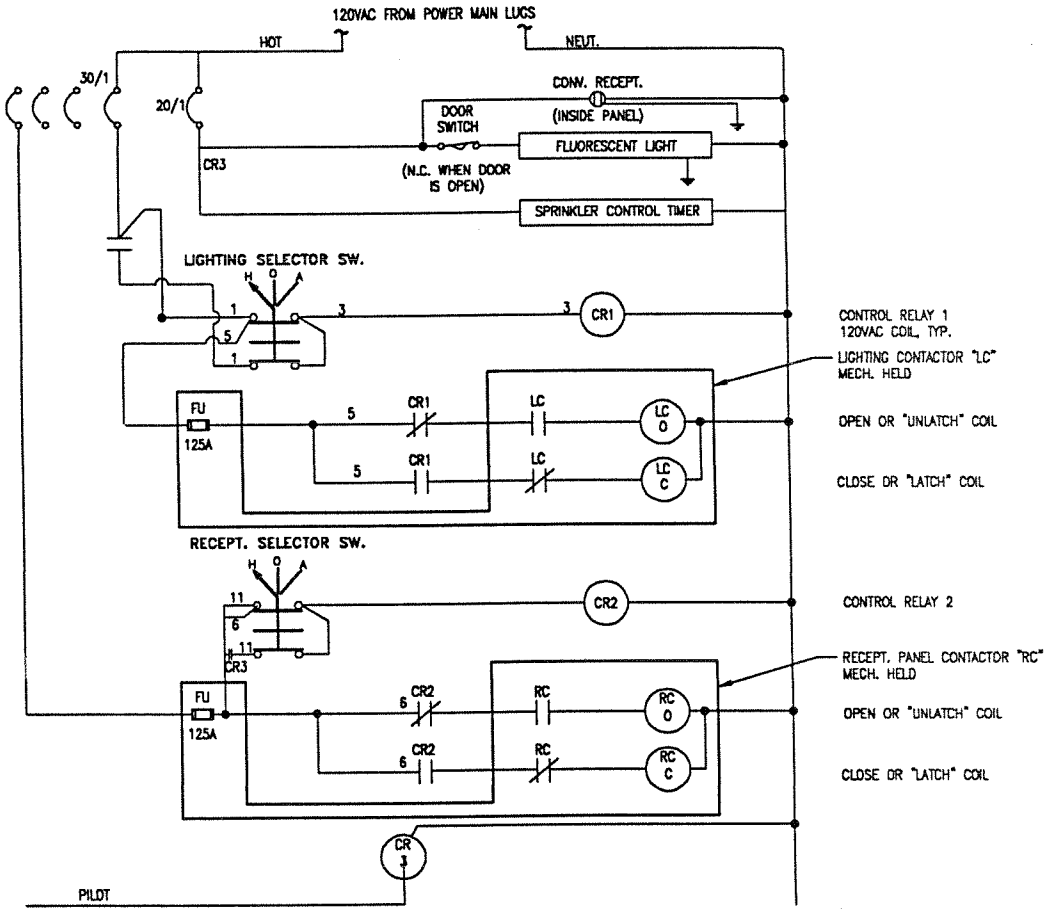
E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

ELECTRICAL DETAILS – LIGHTING CONTROL PANEL
ON DEARBORN AT DAUPHIN
ON FRANKLIN AT DAUPHIN



RISER DIAGRAM – SERVICES

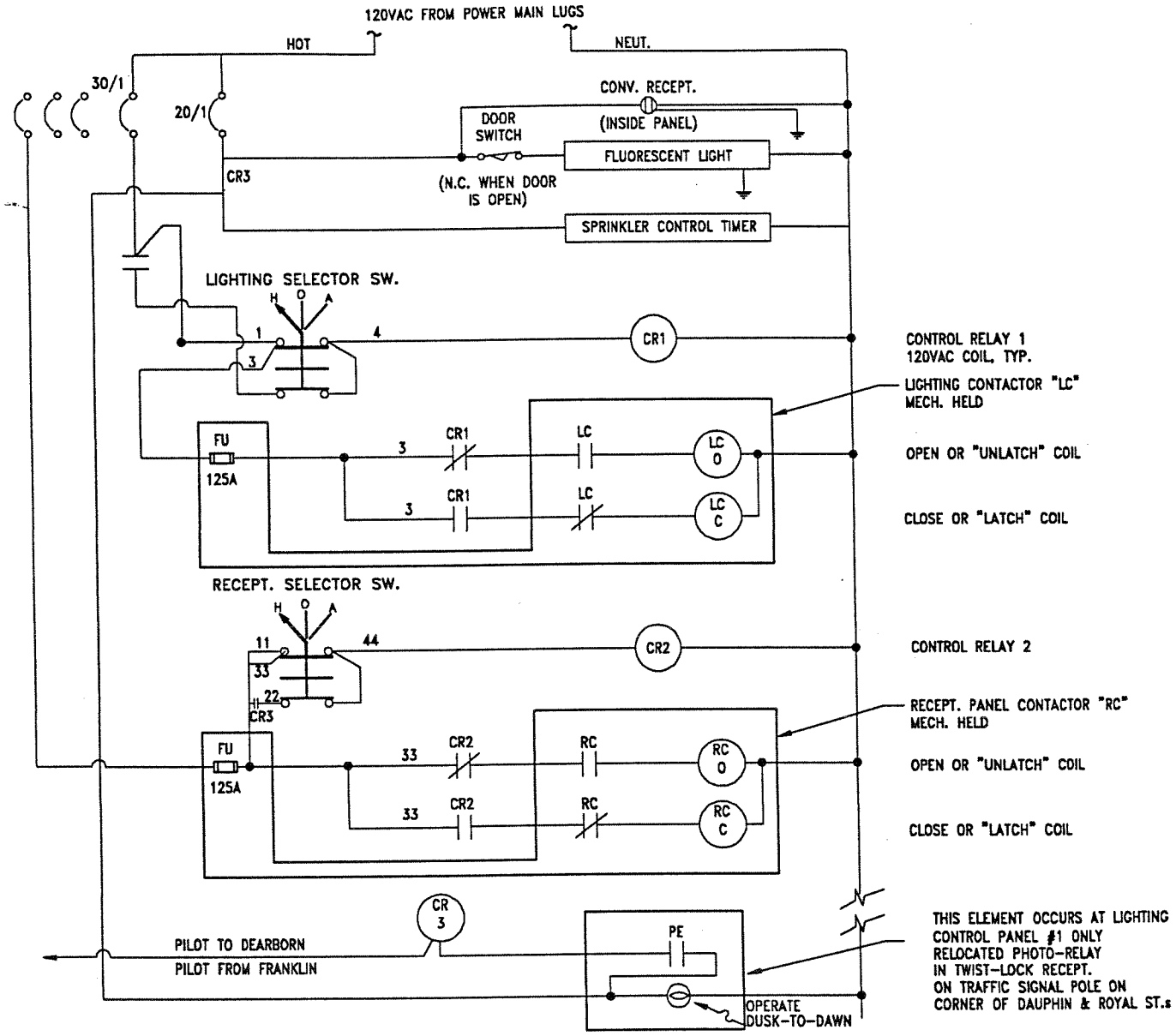


LIGHTING CONTROLS – ELEMENTARY DIAGRAM

LIGHTING CONTROLS – DIAGRAMS

ST. FRANCIS ST. SOUTH SIDE BETWEEN JOACHIM ST. & CONCEPTION ST.
ST. JOSEPH ST. EAST & WEST SIDES BETWEEN ST LOUIS ST. & ST. MICHAEL ST.
ST. LOUIS ST. SOUTH SIDE BETWEEN ROYAL ST. & WATER ST.
NOT TO SCALE

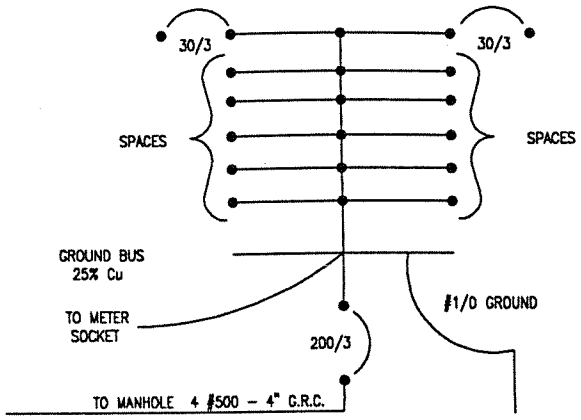
E.C.S. CIVIL ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	STREET VENDOR PANELS, LIGHTING CONTROLS ST. FRANCIS ST. (S), EAST OF JOACHIM ST. JOSEPH ST. (E & W), NORTH OF ST. MICHAEL ST. LOUIS ST. (S), WEST OF WATER ST.



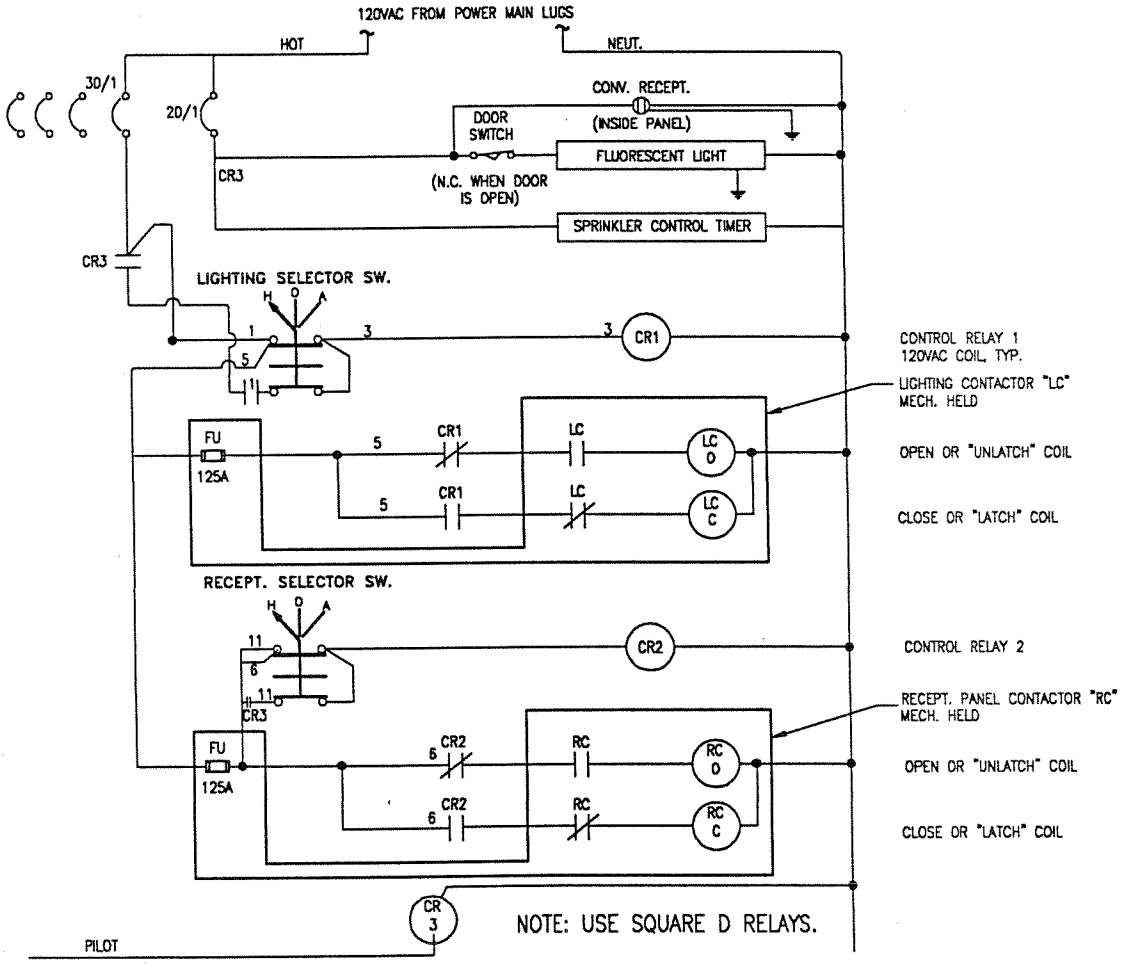
LIGHTING CONTROLS – ELEMENTARY DIAGRAM

ON FRANKLIN ST. AT DAUPHIN &
ON DEARBORN ST. AT DAUPHIN
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	ELECTRICAL DETAILS – LIGHTING CONTROL PANEL ON FRANKLIN STR. AT DAUPHIN ON DEARBORN ST. AT DAUPHIN



RISER DIAGRAM – SERVICES

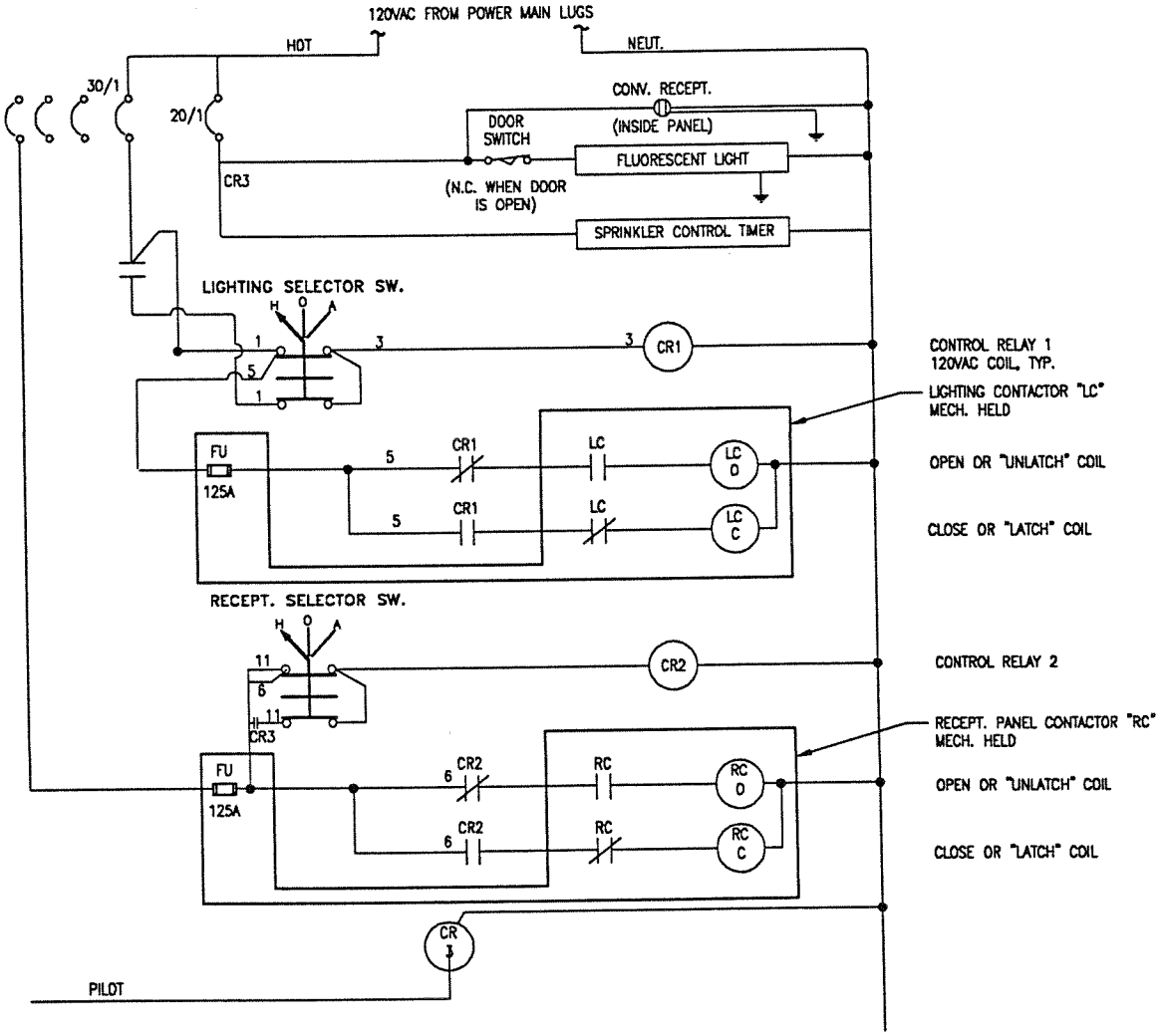


ELEMENTARY DIAGRAM

LIGHTING CONTROLS

ST. FRANCIS ST., SOUTH SIDE NEAR JOACHIM ST

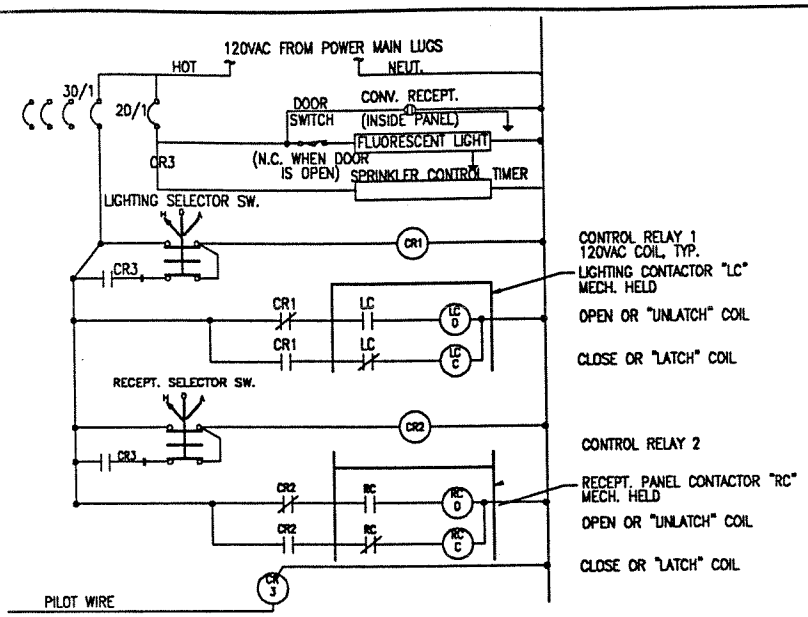
E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	ELECTRICAL DETAILS LIGHTING CONTROL PANEL ST. FRANCIS ST., SOUTH SIDE NEAR JOACHIM



LIGHTING CONTROLS – ELEMENTARY DIAGRAM

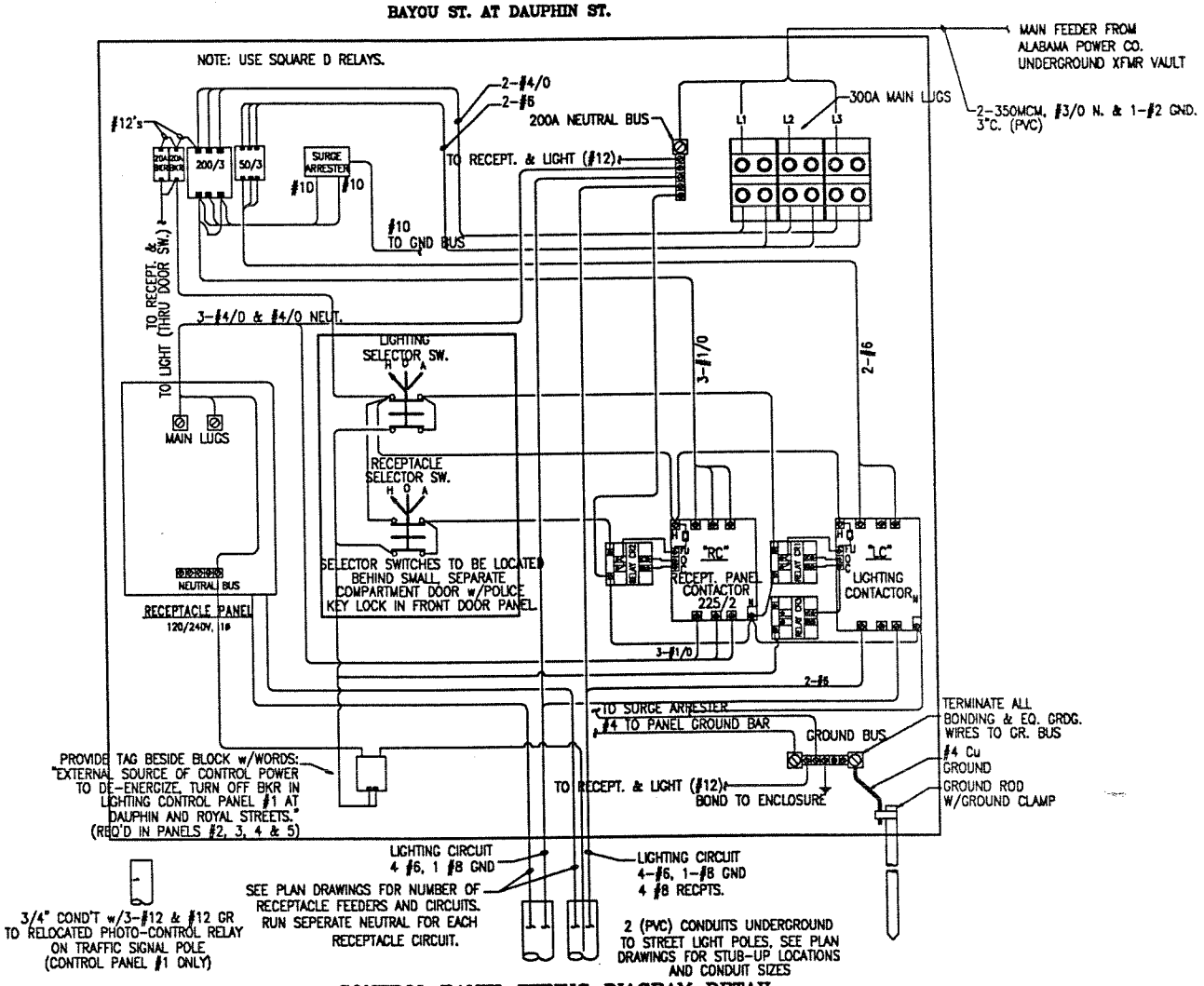
ON CONTI ST. WEST OF CONCEPTION
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	ELECTRICAL DETAILS LIGHTING CONTROL PANEL ON CONTI ST. WEST OF CONCEPTION



LIGHTING CONTROLS ELEMENTARY DIAGRAM

BAYOU ST. AT DAUPHIN ST.



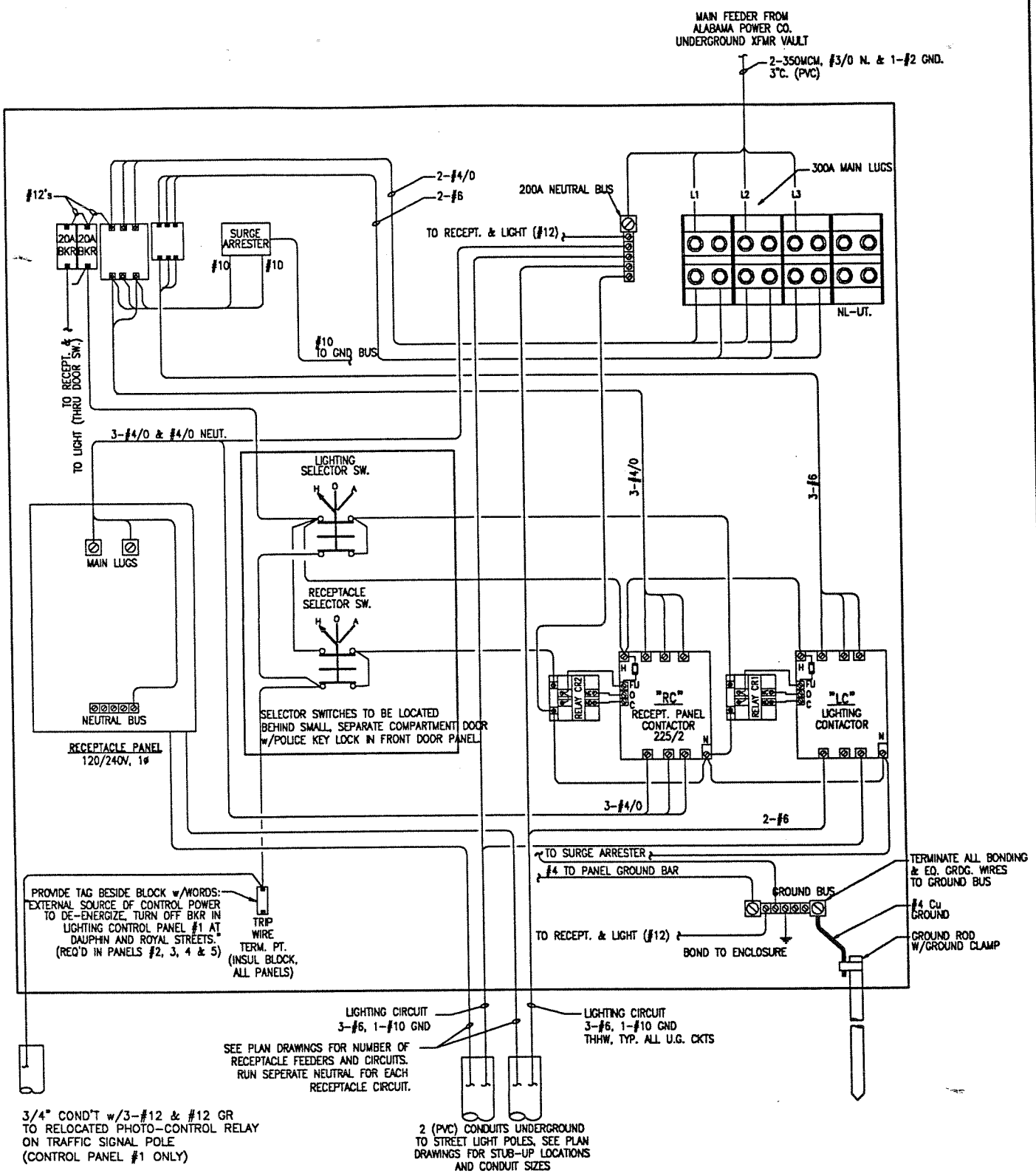
CONTROL PANEL WIRING DIAGRAM DETAIL

BAYOU ST.(WEST SIDE) AT DAUPHIN ST.

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

ELECTRICAL DETAILS
LIGHTING CONTROL PANEL
BAYOU ST. WEST SIDE AT DAUPHIN



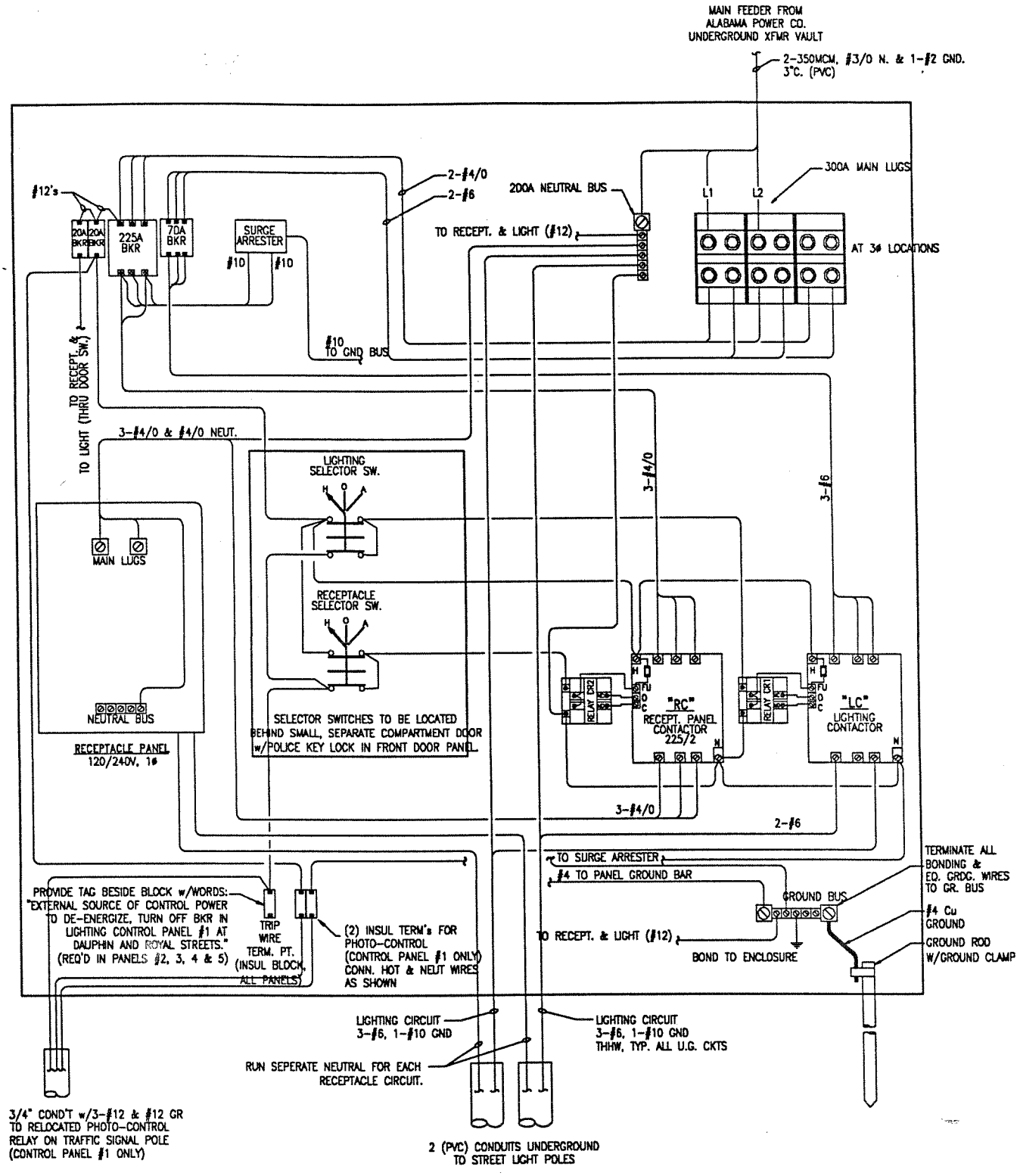
CONTROL PANEL WIRING DIAGRAM

ON CONTI ST. WEST OF CONCEPTION
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.

CITY OF MOBILE, ALABAMA
DOWNTOWN MOBILE
INFRASTRUCTURE REPAIRS

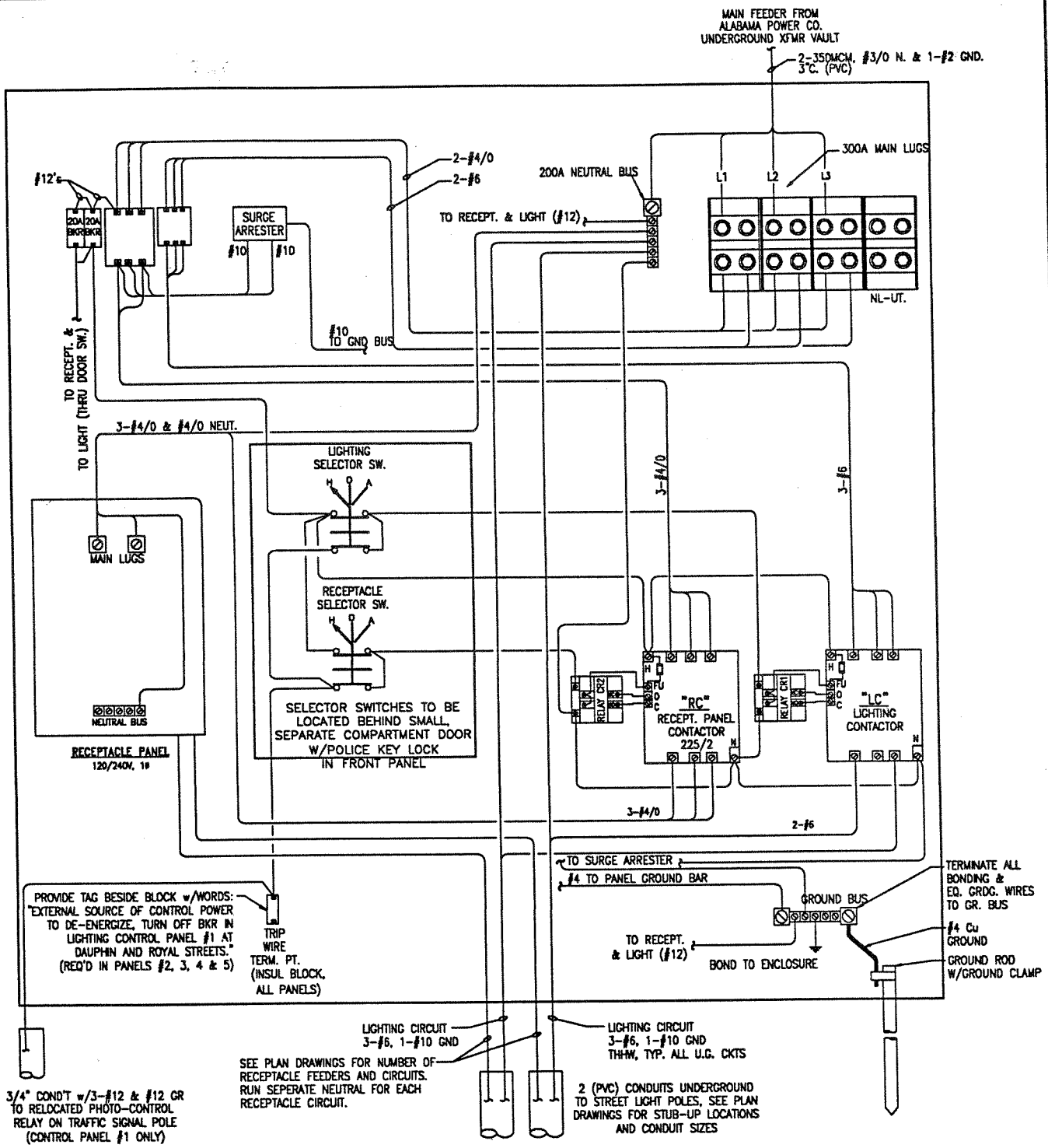
ELECTRICAL DETAILS
LIGHTING CONTROL PANEL
ON CONTI ST. WEST OF CONCEPTION



CONTROL PANEL WIRING DIAGRAM

ON DEARBORN ST. AT DAUPHIN &
ON FRANKLIN ST. AT DAUPHIN ST.
NOT TO SCALE

E.C.S. CONSULTING ENGINEERS — ENGINEERING & CONSTRUCTION SERVICES, INC.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	ELECTRICAL DETAILS – LIGHTING CONTROL PANEL ON DEARBORN AT DAUPHIN ON FRANKLIN AT DAUPHIN



CONTROL PANEL WIRING DIAGRAM

ST. FRANCIS ST. SOUTH SIDE BETWEEN JOACHIM ST. & CONCEPTION ST.

NOT TO SCALE

E.C.S. Engineering & Construction Services, Inc.	CITY OF MOBILE, ALABAMA DOWNTOWN MOBILE INFRASTRUCTURE REPAIRS	ELECTRICAL DETAILS – LIGHTING CONTROL PANEL ST. FRANCIS ST. SOUTH SIDE BETWEEN JOACHIM ST. & CONCEPTION ST.