Exhibit A – Bid Schedule

**TOWN OF LAUDERDALE BY THE SEA**
**HARBOR DRIVE**
**STORMWATER IMPROVEMENTS**

**BID SCHEDULE**

| ITEM # | ITEM DESCRIPTION | 1025 SECTION | QUANTITY | UNIT | UNIT PRICE | AMOUNT |
|---|---|---|---|---|---|---|
| | **GENERAL** | | | | | |
| 1 | Mobilization | 1.02 | 1 | LS | | |
| 2 | Maintenance of Traffic | 1.03 | 1 | LS | | |
| 3 | Bonds and Insurance | 1.04 | 1 | LS | | |
| 4 | Construction Allowance | 1.05 | 1 | LS | $10,000.00 | $10,000.00 |
| | TOTAL COST FOR GENERAL SECTION | | | | | |
| | **DRAINAGE** | | | | | |
| 5 | Furnish and Install Type 'C' Drainage Structure | 1.06 | 10 | EA | | |
| 6 | Furnish and Install Frame and Grate | 1.06 | 11 | EA | | |
| 7 | Furnish and Install 4' Round Drainage Structure | 1.06 | 7 | EA | | |
| 8 | Furnish and Install Drainage Manhole Top Slab | 1.06 | 6 | EA | | |
| 9 | Construct Concrete Catch Basin Aprons (6" Thickness) | 1.06 | 5 | EA | | |
| 10 | Furnish and Install 18" RCP Drainage Pipe | 1.07 | 57 | LF | | |
| 11 | Furnish and Install 15" RCP Drainage Pipe | 1.07 | 123 | LF | | |
| 12 | Furnish and Install 18" RCP/XT Drainage Pipe | 1.07 | 940 | LF | | |
| 13 | Connect to Existing Drainage Pipe | 1.08 | 3 | EA | | |
| 14 | Remove and Dispose of Existing Drainage Pipe | 1.09 | 35 | LF | | |
| 15 | Remove and Dispose of Existing Drainage Structure | 1.09 | 2 | EA | | |
| 16 | Clean Existing Drainage Pipes | 1.10 | 100 | LF | | |
| 17 | Clean Existing Drainage Structures | 1.10 | 3 | EA | | |
| 18 | Furnish and Install Baffle Boxes | 1.11 | 9 | EA | | |
| 19 | Offset Existing Sanitary Sewer Lateral | 1.12 | 4 | EA | | |
| | TOTAL COST FOR DRAINAGE | | | | | |
| | **ROADWAY** | | | | | |
| 20 | Remove and Dispose of Existing Asphalt Pavement | 1.13 | 2490 | SY | | |
| 21 | Furnish and Compaction of Subgrade (12" average) | 1.14 | 2740 | SY | | |
| 22 | Furnish and Compaction Limerock Base Material (8" under roadway) | 1.15 | 2615 | SY | | |
| 23 | Furnish & Place 1 1/4" Asphalt Concrete Pavement-Type S-1 1st lift | 1.16 | 2490 | SY | | |
| 24 | Furnish & Place 3/4" Asphalt Concrete Pavement-Type S-III 2nd lift | 1.16 | 2490 | SY | | |
| 25 | Furnish & Place 24" Thermoplastic (stop bar) | 1.17 | 40 | LF | | |
| 26 | Furnish & Place 6" Thermoplastic (double solid) | 1.17 | 200 | LF | | |
| 27 | Furnish & Install Reflective Pavement Markers | 1.18 | 16 | EA | | |
| 28 | Construct Asphalt Driveway | 1.19 | 1180 | SY | | |
| 29 | Construct Concrete Driveway and Miscellaneous Concrete | 1.2 | 40 | SY | | |
| 30 | Construct Specialty Driveway | 1.21 | 60 | SY | | |
| 31 | Clear and Grade Swale | 1.22 | 465 | SY | | |
| 32 | Furish & Install Topsoil | 1.23 | 685 | SY | | |
| 33 | Furnish & Install Sod | 1.24 | 685 | SY | | |
| 34 | Existing Irrigation System Restoration | 1.25 | 8 | LOT | | |
| 35 | Furnish & Install Valley Gutter | 1.26 | 840 | LF | | |
| | TOTAL COST FOR ROADWAY | | | | | |
| | MISCELLANEOUS | | | | | |
| 36 | Indemnification for Owner/Engineer | 1.27 | 1 | EA | $25.00 | $25.00 |
| | TOTAL COST FOR MISCELLANEOUS | | | | | $25.00 |
| | GRAND TOTAL | | | | | |

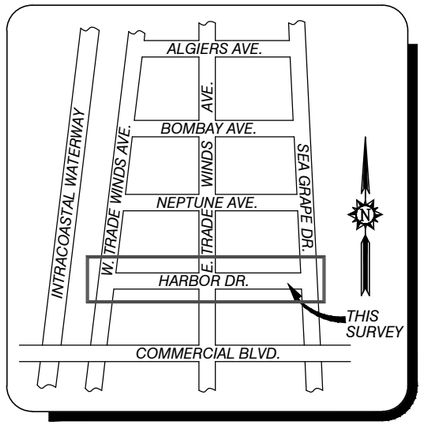
Exhibit B – Construction Plans

# LAUDERDALE BY THE SEA

## HARBOR DRIVE
## STORMWATER IMPROVEMENTS

CHEN MOORE & ASSOCIATES PROJECT NO.: 120.057
FEBRUARY 2012

BID SUBMITTAL




**LOCATION MAP**

*NOT TO SCALE*


CHEN MOORE AND ASSOCIATES
CIVIL AND ENVIRONMENTAL ENGINEERS
500 WEST CYPRESS CREEK ROAD, SUITE 410
FORT LAUDERDALE, FLORIDA 33309
FLORIDA CORPORATE ENGINEERING LICENSE NUMBER 4593


INDEX TO DRAWINGS


| SHEET | DESCRIPTION |
|---|---|
| 1 | COVER SHEET |
| 2-3 | EXISTING CONDITIONS |
| 4-6 | STORMWATER IMPROVEMENTS |
| 7-8 | RESTORATION |
| 9-10 | DETAILS & NOTES |


TOWN COMMISSIONERS

| | |
|---|---|
| MAYOR: | ROSEANN MINNET |
| VICE MAYOR: | STUART DODD |
| COMMISSION: | BIRUTE ANN CLOTTEY |
| | SCOT SASSER |
| | CHRIS VINCENT |
| TOWN STAFF: | BUD BENTLEY |
| | DON PRINCE |

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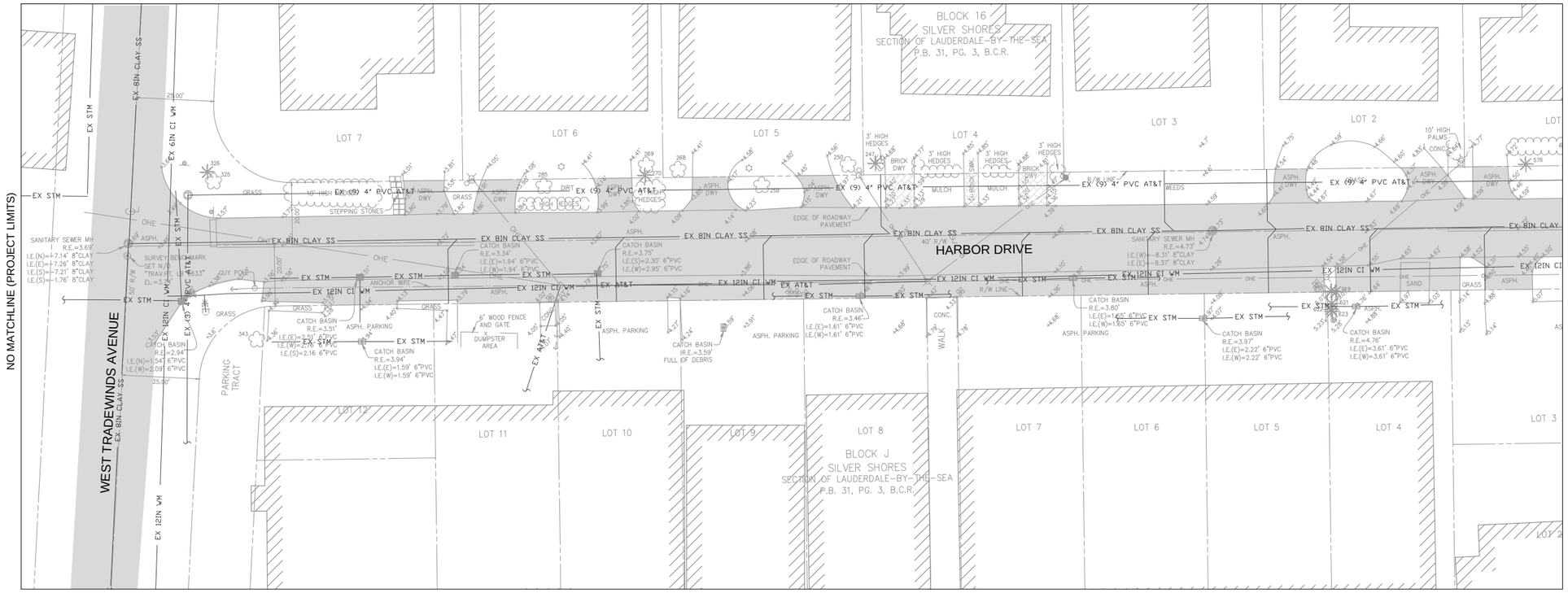
Sunshine State One Call of Florida, Inc.

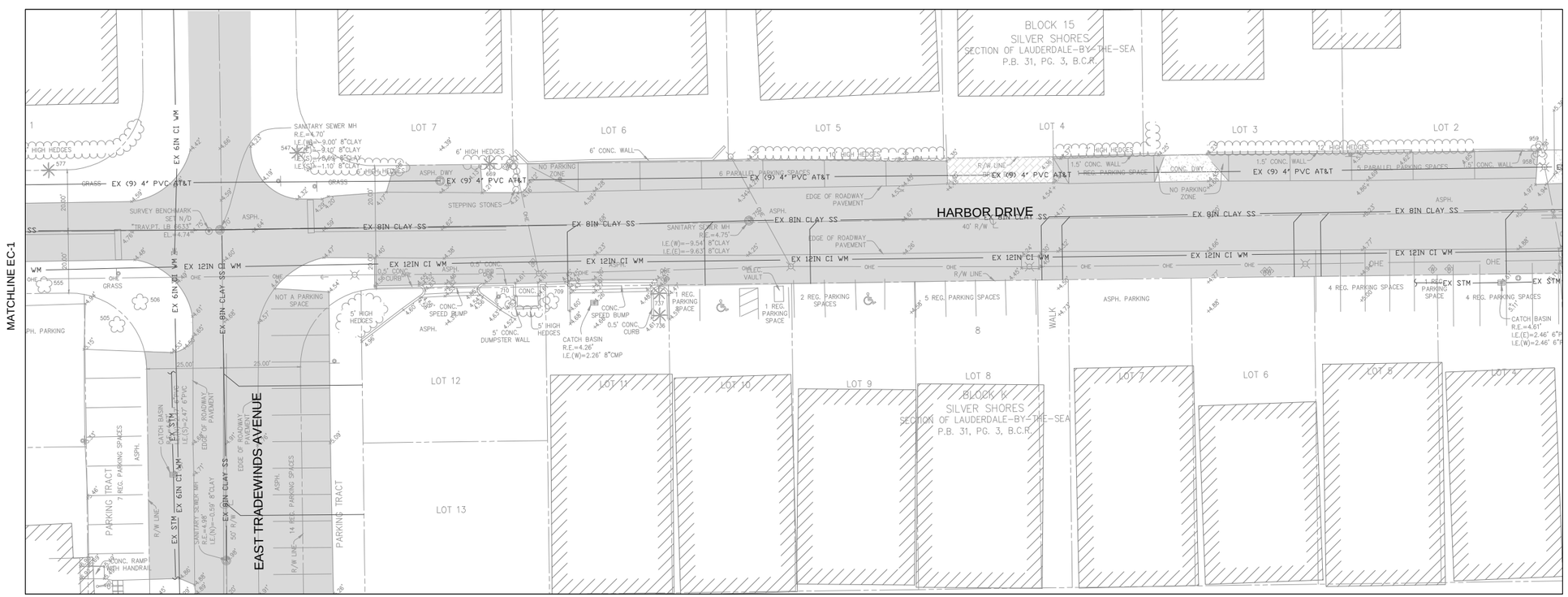

ENGINEER OF RECORD: JASON MCCLAIR P.E.
FLORIDA P.E. REGISTRATION NUMBER: 56962




ALL ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

HATCH LEGEND:

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE DRIVEWAY
- EXISTING SPECIALTY DRIVEWAY




PERMIT SET
MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION

MATERIAL
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NOTICE
INSPECTION REQUIRED
48 HRS. PRIOR TO COMMENCING ANY WORK IN THE PUBLIC RIGHT-OF-WAY CONTACT DON PRINCE WITH THE TOWN OF LAUDERDALE-BY-THE-SEA AT 954-776-0576 AS WELL AS CHEN MOORE AND ASSOCIATES AT 954-730-0707

NOTE
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CONTRACTOR TO USE CAUTION WHEN WORKING UNDER OR AROUND OVERHEAD POWER LINES

0 1/2 1

IF THIS BAR MEASURES 1", THEN THIS DRAWING IS AT FULL SCALE (1" = 20')

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TOWN OF LAUDERDALE BY THE SEA


JASON MCCLAIN, P.E.
CIVIL ENGINEER
FL. Reg. No. 56962

CHEN MOORE & ASSOCIATES
500 W. Cypress Creek Rd Suite 410
Ft. Lauderdale, FL 33309
Tel: 954-730-0707
EB 0004593

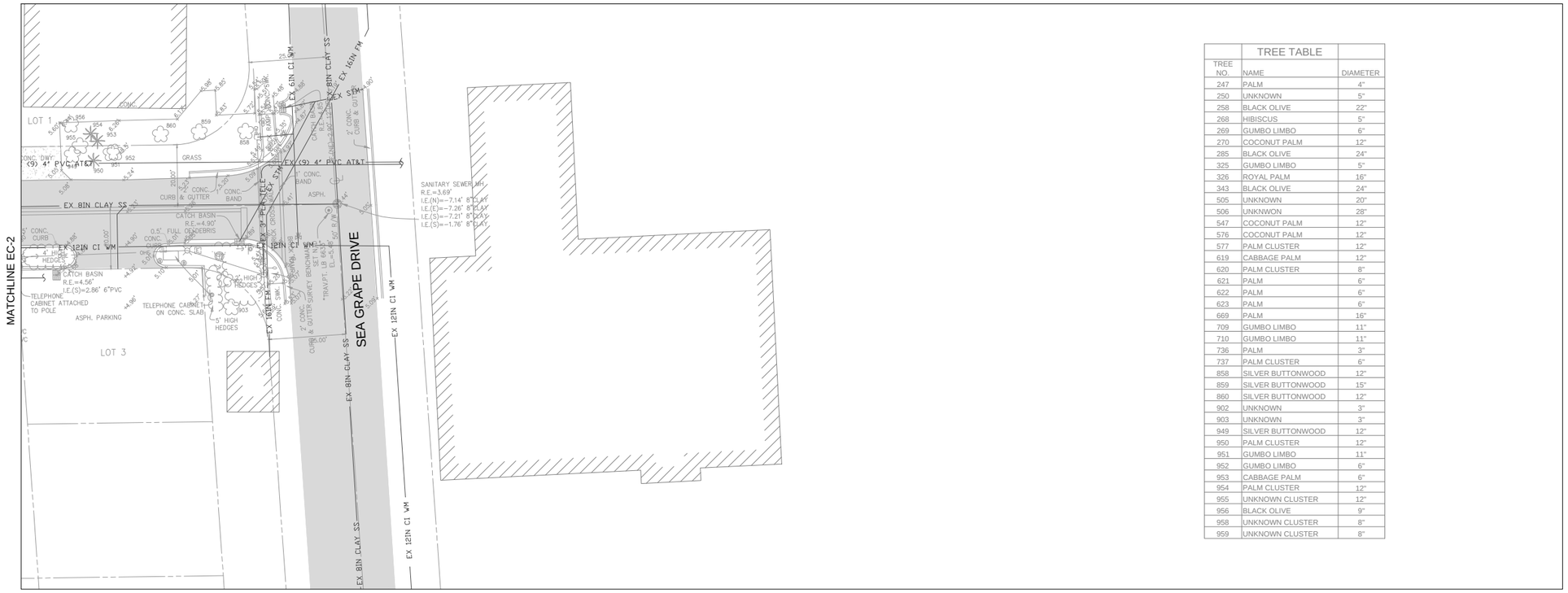

LAUDERDALE BY THE SEA
HARBOR DRIVE

EXISTING CONDITIONS
SHEET EC-1

Date: 2/3/12

Sheet: 2 of 10

Drawing:
File location:




| TREE TABLE | | |
|---|---|---|
| TREE NO. | NAME | DIAMETER |
| 247 | PALM | 4" |
| 250 | UNKNOWN | 5" |
| 258 | BLACK OLIVE | 22" |
| 268 | HIBISCUS | 5" |
| 269 | GUMBO LIMBO | 6" |
| 270 | COCONUT PALM | 12" |
| 285 | BLACK OLIVE | 24" |
| 325 | GUMBO LIMBO | 5" |
| 326 | ROYAL PALM | 16" |
| 343 | BLACK OLIVE | 24" |
| 505 | UNKNOWN | 20" |
| 506 | UNKNWON | 28" |
| 547 | COCONUT PALM | 12" |
| 576 | COCONUT PALM | 12" |
| 577 | PALM CLUSTER | 12" |
| 619 | CABBAGE PALM | 12" |
| 620 | PALM CLUSTER | 8" |
| 621 | PALM | 6" |
| 622 | PALM | 6" |
| 623 | PALM | 6" |
| 669 | PALM | 16" |
| 709 | GUMBO LIMBO | 11" |
| 710 | GUMBO LIMBO | 11" |
| 736 | PALM | 3" |
| 737 | PALM CLUSTER | 6" |
| 858 | SILVER BUTTONWOOD | 12" |
| 859 | SILVER BUTTONWOOD | 15" |
| 860 | SILVER BUTTONWOOD | 12" |
| 902 | UNKNOWN | 3" |
| 903 | UNKNOWN | 3" |
| 949 | SILVER BUTTONWOOD | 12" |
| 950 | PALM CLUSTER | 12" |
| 951 | GUMBO LIMBO | 11" |
| 952 | GUMBO LIMBO | 6" |
| 953 | CABBAGE PALM | 6" |
| 954 | PALM CLUSTER | 12" |
| 955 | UNKNOWN CLUSTER | 12" |
| 956 | BLACK OLIVE | 9" |
| 958 | UNKNOWN CLUSTER | 8" |
| 959 | UNKNOWN CLUSTER | 8" |

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HATCH LEGEND:

EXISTING ASPHALT PAVEMENT

EXISTING CONCRETE DRIVEWAY

EXISTING SPECIALTY DRIVEWAY

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CONTRACTOR TO USE CAUTION WHEN WORKING UNDER OR AROUND OVERHEAD POWER LINES

0 1/2 1

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TOWN OF LAUDERDALE BY THE SEA

JASON MCCLAIR, P.E.
CIVIL ENGINEER
FL. Reg. No. 56962

CHEN MOORE & ASSOCIATES
500 W. Cypress Creek Rd Suite 410
Ft. Lauderdale, FL 33309
Tel: 954-730-0707
EB 0004593

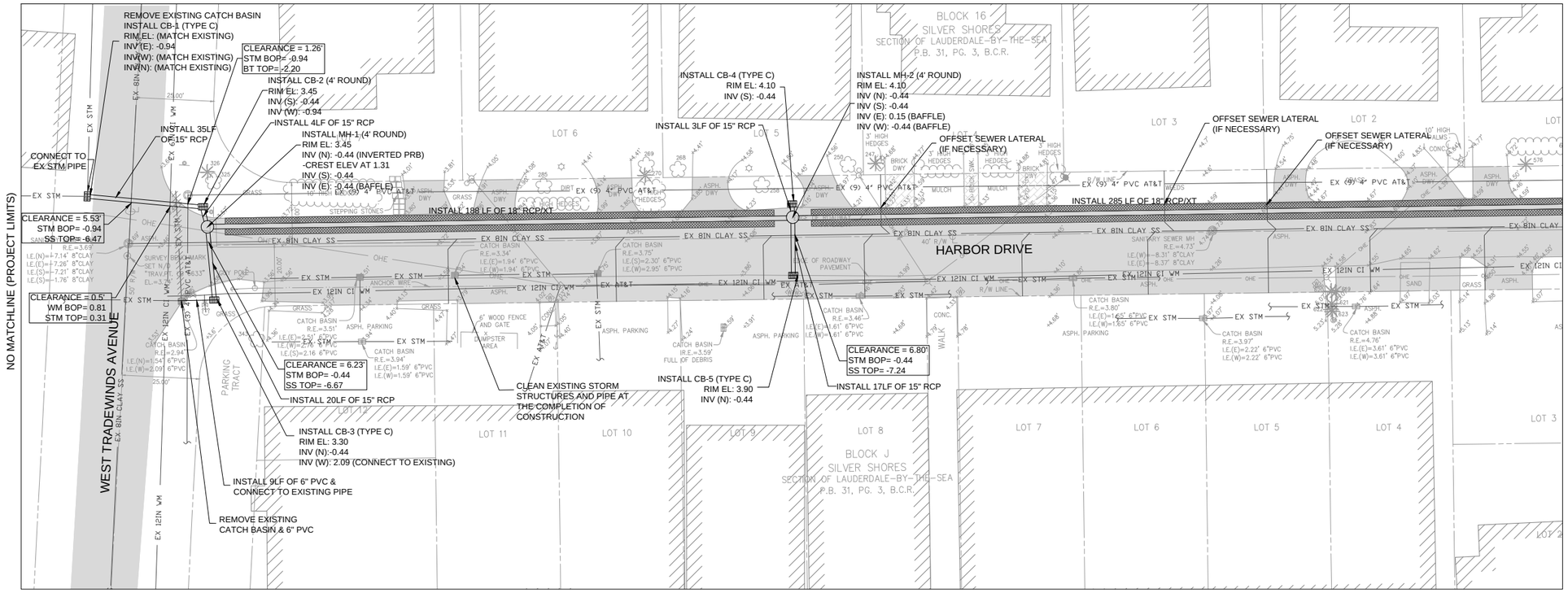
LAUDERDALE BY THE SEA
HARBOR DRIVE

EXISTING CONDITIONS
SHEET EC-2

Date: 2/3/12

Sheet: 3 of 10

Drawing:
File location:

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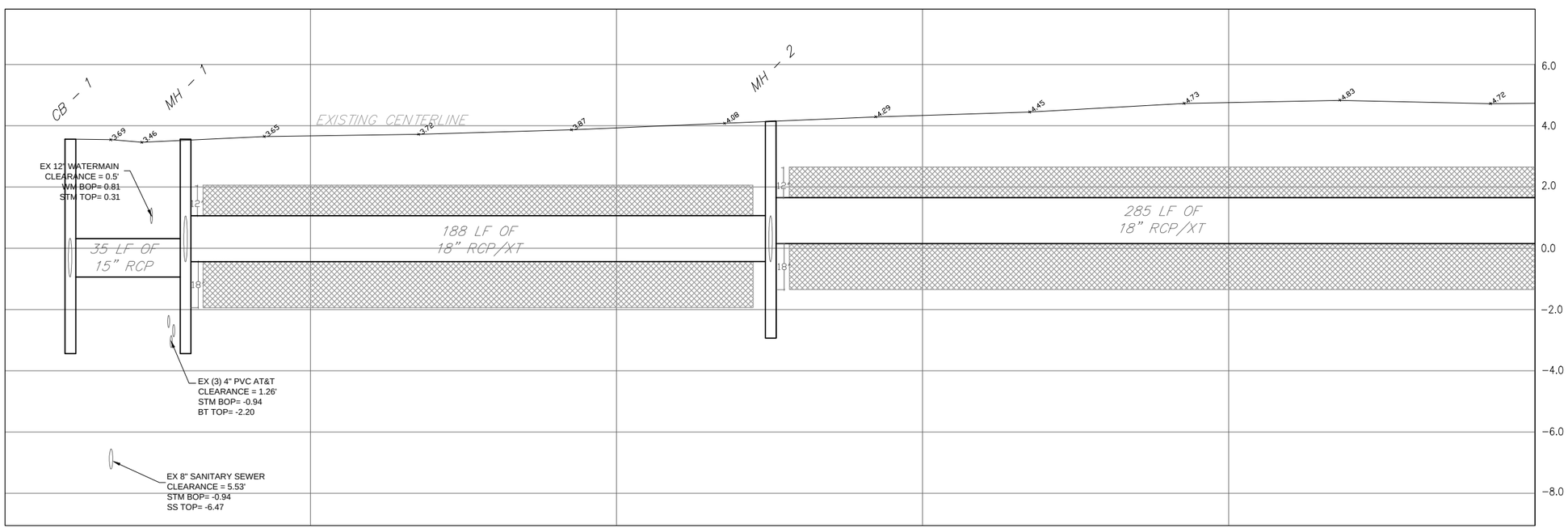


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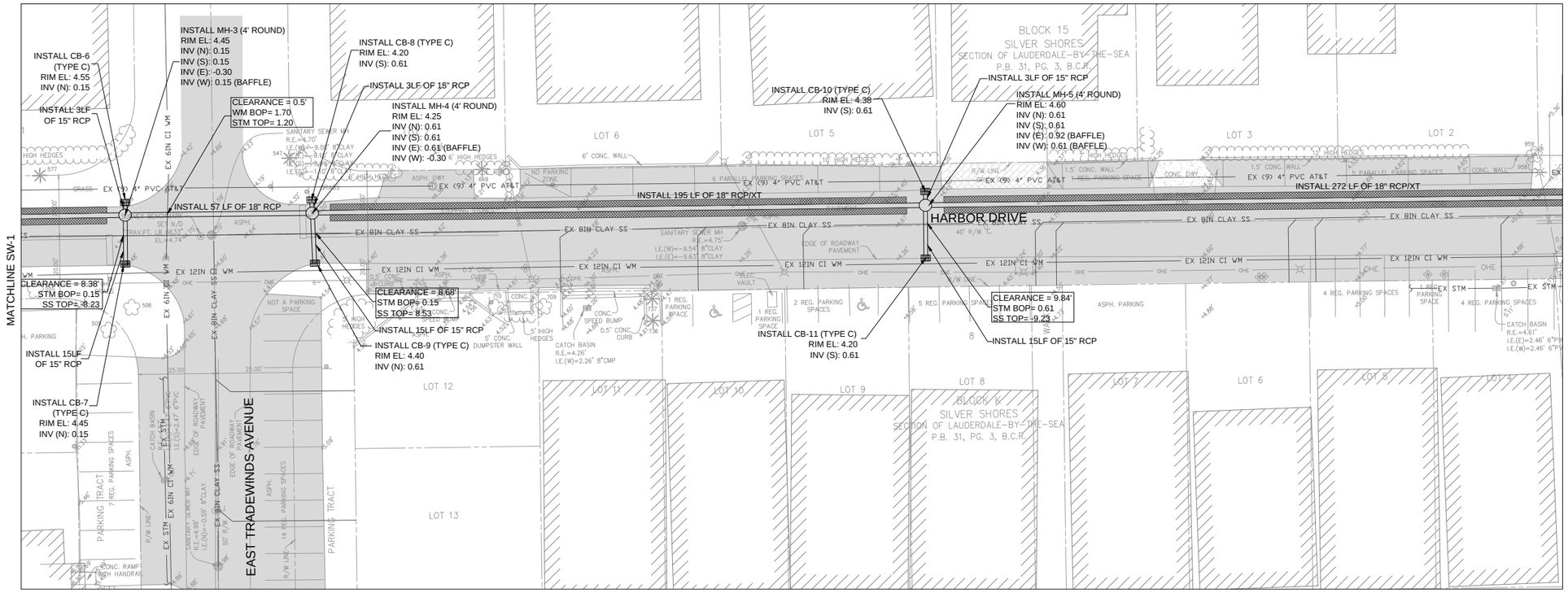
LAUDERDALE BY THE SEA
HARBOR DRIVE

STORMWATER IMPROVEMENTS
SHEET SW-1

Date: 2/3/12

Sheet: 4 of 10

Drawing:
File location:

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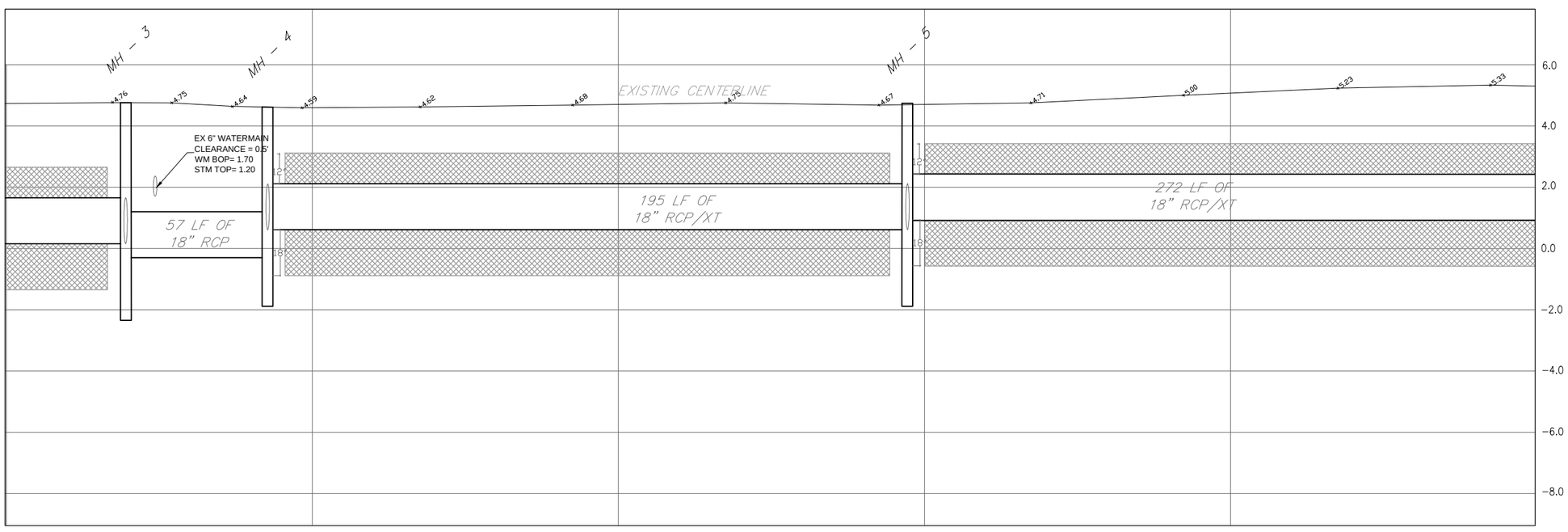


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CONTRACTOR TO USE CAUTION WHEN WORKING UNDER OR AROUND OVERHEAD POWER LINES

0 1/2 1

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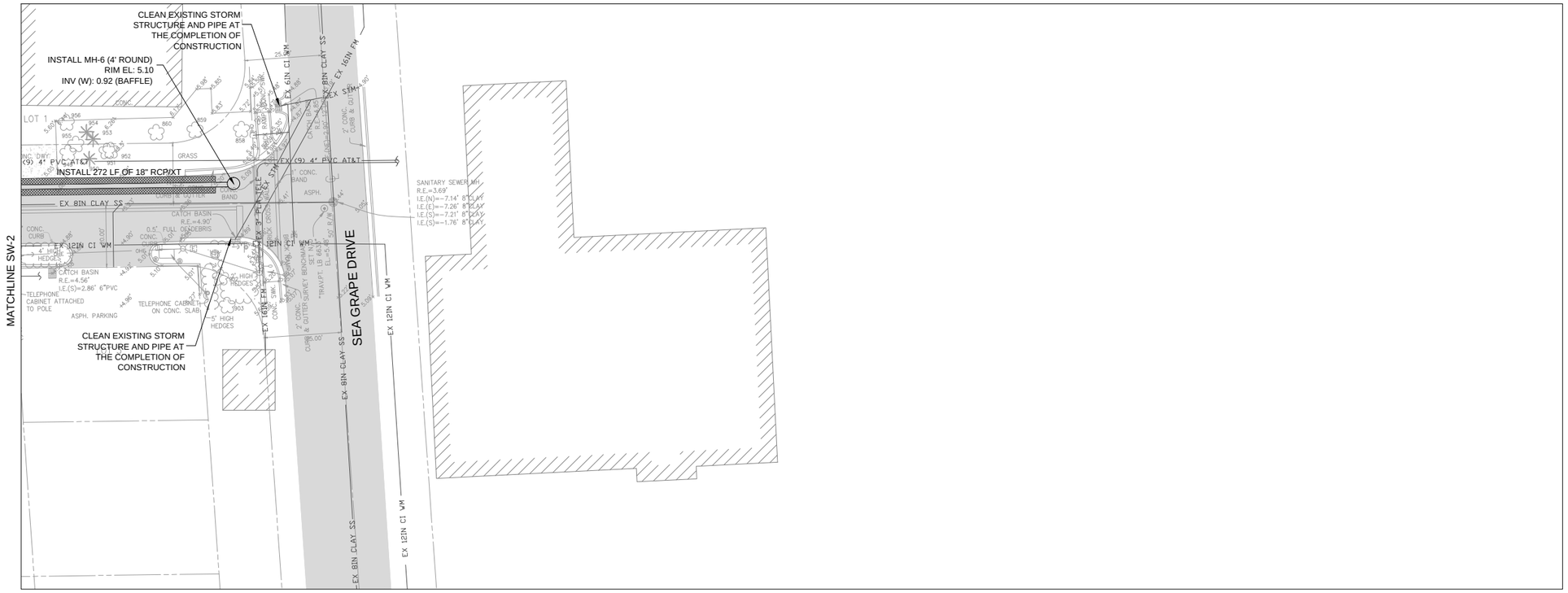
LAUDERDALE BY THE SEA
HARBOR DRIVE

STORMWATER IMPROVEMENTS
SHEET SW-2

Date: 2/3/12

Sheet: 5 of 10

Drawing:
File location:

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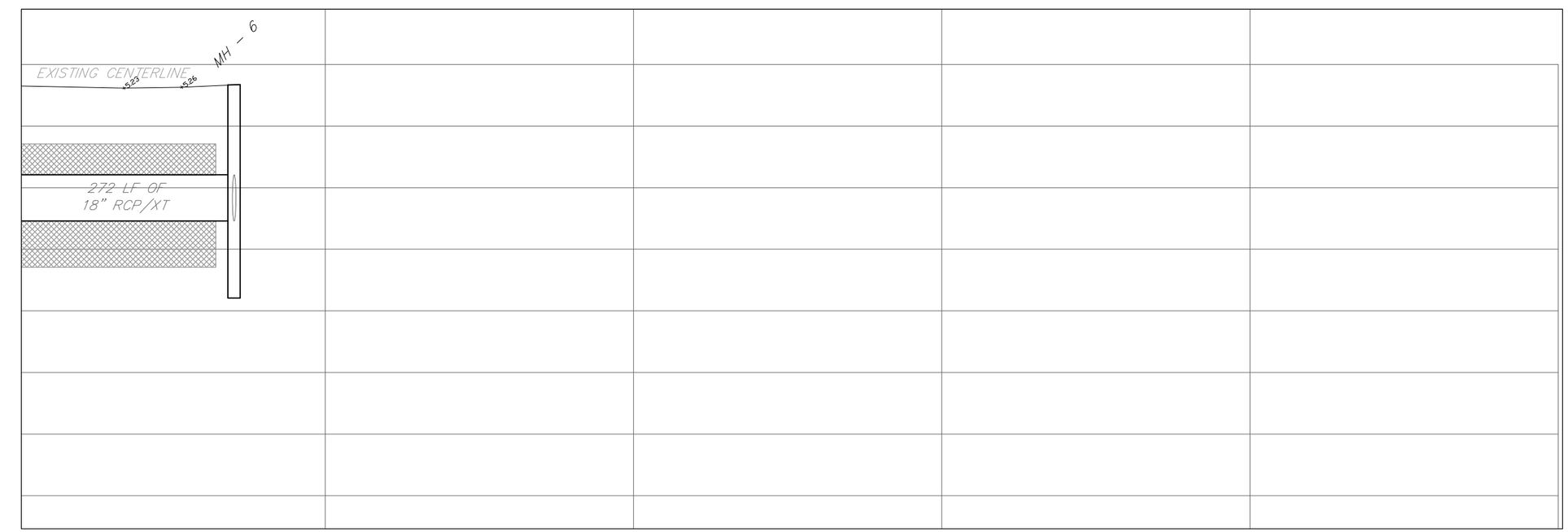
- EXISTING SPECIALTY DRIVEWAY

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0 1/2 1

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TOWN OF LAUDERDALE BY THE SEA

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500 W. Cypress Creek Rd Suite 410
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Tel: 954-730-0707
EB 0004593

LAUDERDALE BY THE SEA
HARBOR DRIVE

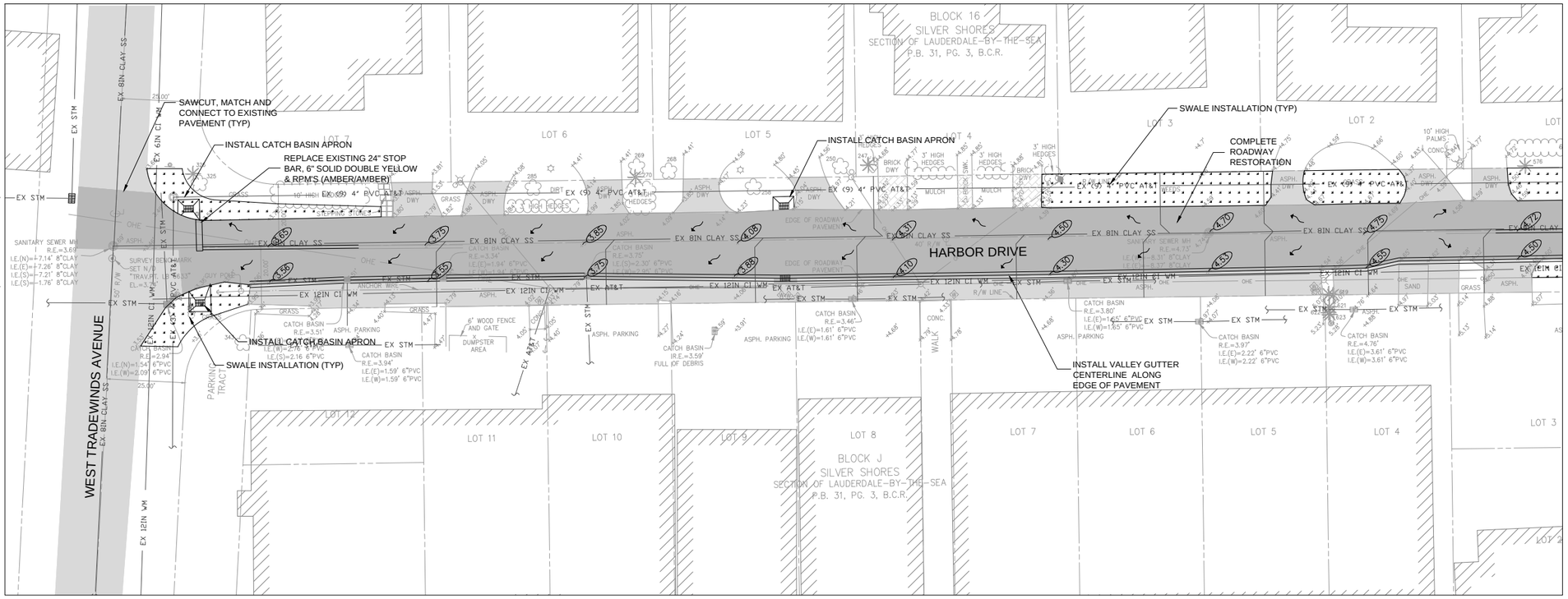
STORMWATER IMPROVEMENTS
SHEET SW-3

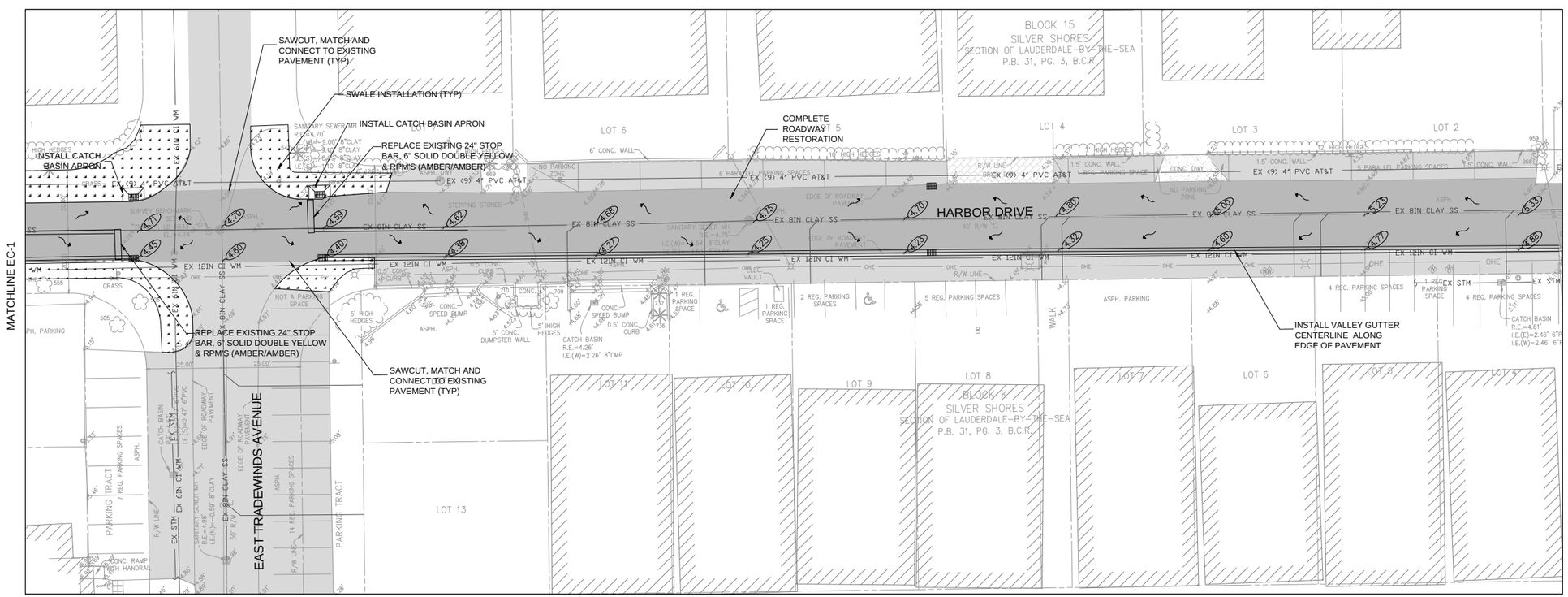
Date: 2/3/12

Sheet: 6 of 10

Drawing:
File location:

ALL ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)




HATCH LEGEND:

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE DRIVEWAY
- EXISTING SPECIALTY DRIVEWAY
- PROPOSED SWALE RESTORATION
- PROPOSED ROADWAY RESTORATION

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0 1/2 1

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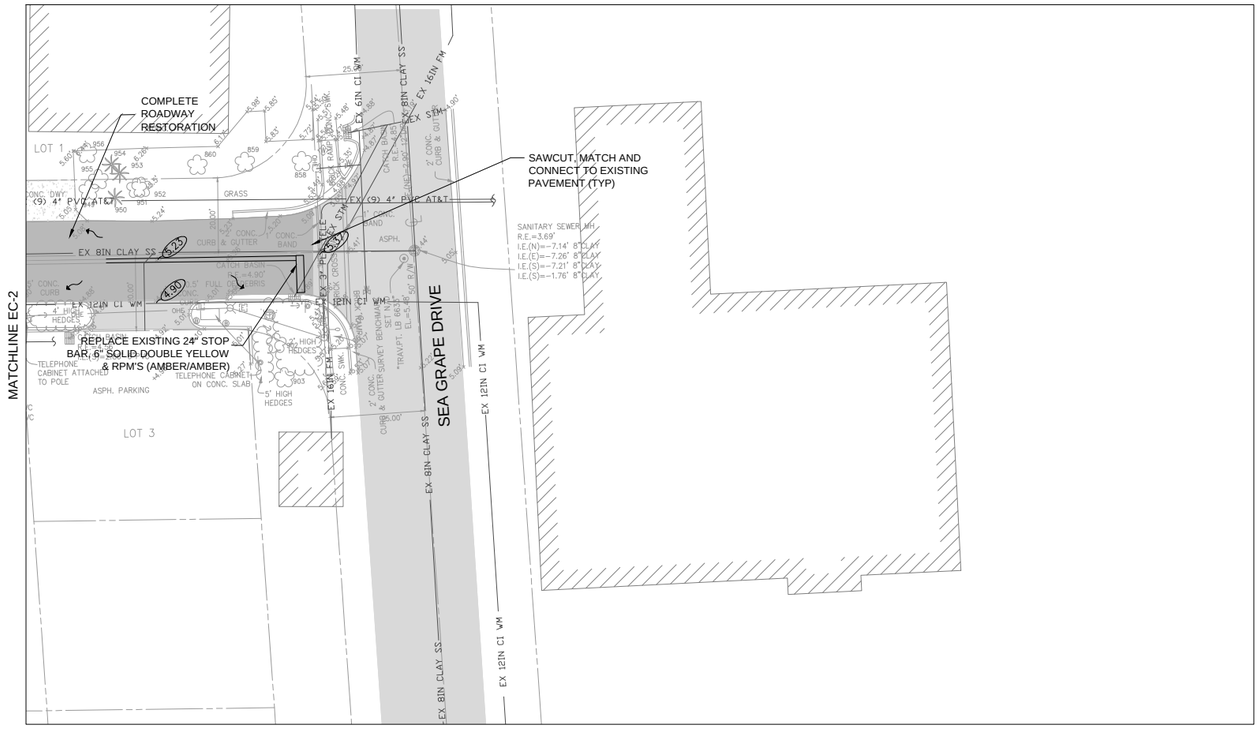
LAUDERDALE BY THE SEA
HARBOR DRIVE

RESTORATION PLAN
SHEET SW-4

Date: 2/3/12

Sheet: 7 of 10

Drawing:
File location:




*GENERAL NOTES:*

1. *EXISTING CONDITIONS BASED ON SURVEY PREPARED BY STONER AND ASSOCIATES IN NOVEMBER 2011.*
2. *ALL WORK ALONG THE ENTIRE PROJECT SHALL BE LOCATED AND CONSTRUCTED USING THE ROADWAY BASE/CENTER LINE AS REFERENCE. ALL ELEVATIONS SHOWN HEREON ARE IN FEET AND REFER TO N.A.V.D. OF 1988.*
3. *EXISTING PUBLIC UTILITIES SHOWN ARE BASED ON INFORMATION SUPPLIED BY OTHERS. THIS INFORMATION IS NOT GUARANTEED AS TO ITS ACCURACY OR COMPLETENESS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UNDERGROUND FACILITIES PRIOR TO THE START OF THE CONSTRUCTION AND COORDINATE WITH THE VARIOUS UTILITY AGENCIES TO RELOCATE, BYPASS OR OTHERWISE INSURE THAT UTILITY SERVICES WILL NOT BE INTERRUPTED OR DAMAGED DURING THE CONSTRUCTION. THE CONTRACTOR SHALL PROTECT ALL PUBLIC UTILITY INSTALLATIONS DURING THE CONSTRUCTION. THE CONTRACTOR SHALL PROTECT ALL PUBLIC UTILITY INSTALLATIONS AND STRUCTURES FROM DAMAGE AS SPECIFIED IN SECTION 01005 "GENERAL REQUIREMENTS". FOR UNDERGROUND LOCATIONS CALL SUNSHINE STATE ONE CALL OF FLORIDA, INC. AT 1-800-432-4770.*
4. *CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH CURRENT SITE CONDITIONS AND SHALL REPORT ANY DISCREPANCIES TO THE TOWN ENGINEER PRIOR TO STARTING WORK.*
5. *THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS TO CHEN MOORE AND ASSOCIATES FOR ALL DRAINAGE STRUCTURES AND PIPING.*
6. *WHERE NEW PAVEMENT IS TO MEET EXISTING PAVEMENT, OR WHERE EXISTING PAVEMENT IS TO BE RECONSTRUCTED, THE EDGES OF EXISTING PAVEMENT SHALL BE SAW CUT. RESTORATION SHALL BE IN ACCORDANCE WITH CONTRACT DOCUMENTS.*
7. *ALL EXISTING FEATURES WITHIN CONSTRUCTION LIMITS SHALL REMAIN UNDISTURBED UNLESS OTHERWISE NOTED. ALL CONSTRUCTION ACTIVITIES SHALL BE INSIDE THE PUBLIC RIGHT OF WAY.*
8. *UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR LEAVE EXCAVATED TRENCHES, OR PARTS OF, EXPOSED OR OPEN AT THE END OF THE WORKING DAY, WEEKENDS, HOLIDAYS OR OTHER TIMES WHEN THE CONTRACTOR IS NOT WORKING. ALL TRENCH AND EXCAVATIONS SHALL BE COVERED, FIRMLY SECURED, BARRICADED, AND MARKED ACCORDINGLY FOR PEDESTRIAN TRAFFIC.*
9. *THE CONTRACTOR SHALL MAINTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.*
10. *WHERE REPLACEMENT OF SIDEWALKS, PAVEMENTS, PAVEMENTS MARKINGS, ETC. ARE NEEDED, CONTRACTOR SHALL MATCH EXISTING SECTIONS, ELEVATIONS, MATERIALS, ETC.*
11. *ALL DIMENSIONS ON THESE PLANS ARE APPROXIMATED AND SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD.*
12. *ALL PROPOSED PERFORATED PIPES SHALL BE SMOOTH LINED REINFORCED CONCRETE PIPE (RCP) UNLESS OTHERWISE STATED.*
13. *CATCH BASIN GRATE ELEVATIONS SHALL BE 1" MINIMUM BELOW LOW POINT OF EDGE OF EXISTING PAVEMENT; ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE. ALL MANHOLES SHALL BE SET FLUSH WITH FINAL PAVEMENT ELEVATION.*
14. *CONTRACTOR TO DEMOLISH THE EXISTING ASPHALT APRON AND CONSTRUCT CATCH BASIN PAVEMENT.*
15. *CONTRACTOR SHALL CLEAN EXISTING CATCH BASINS, MANHOLES AND PIPING IN THE EXISTING DRAINAGE SYSTEM.*
16. *ALL AREAS DAMAGED BY CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER. GRASSED AREAS DAMAGED BY CONSTRUCTION SHALL BE RESTORED. ALL REPAIRS SHALL BE AT THE CONTRACTOR'S EXPENSE.*
17. *ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF FLORIDA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE CITY OF POMPANO BEACH STANDARDS.*
18. *THE CONTRACTOR SHALL PROVIDE A DIGITAL COPY AND FOUR SETS OF 'AS-BUILT' DRAWINGS FOR THE TOWN UPON COMPLETION OF CONSTRUCTION. THESE DRAWINGS SHALL INDICATE BUT NOT BE LIMITED TO ALL CHANGES OCCURRING DURING CONSTRUCTION AND THE ACTUAL 'AS-BUILT' INVERT, RIM, AND GRATE ELEVATIONS OF ALL PIPING AT THE DRAINAGE STRUCTURES.*
19. *THE CONTRACTOR SHALL KEEP THE EXISTING STORM SYSTEM CLEAR AND CLEAN OF ALL DEBRIS FROM THE CONSTRUCTION OF THIS PROJECT.*
20. *THE CONTRACTOR SHALL CONSTRUCT SILT BARRIERS, HAY BAIL FENCES, ETC. TO PREVENT TURBID RUNOFF FROM LEAVING THE CONSTRUCTION SITE.*
21. *THE CONTRACTOR SHALL PROVIDE SAFETY MEASURES IN COMPLIANCE WITH OSHA REQUIREMENTS AND, FOR TRENCHES 5-FEET AND DEEPER, COMPLY WITH ALL REQUIREMENTS OF THE FLORIDA TRENCH SAFETY ACT.*
22. *CONTRACTOR IS TO NOTIFY THE BROWARD SHERIFF'S OFFICE, FIRE DEPARTMENT AND THE SCHOOL DISTRICT ABOUT CONSTRUCTION.*
23. *AFTER REMOVING ANY EXISTING STRUCTURES, SURFACE SHALL BE BACKFILLED AND RESTORED TO ITS ORIGINAL CONDITION UNLESS OTHERWISE NOTED.*
24. *CONTRACTOR SHALL MEET WITH THE TOWN ONCE THE LOCATION OF THE CATCH BASIN HAVE BEEN STAKED OUT. THE TOWN SHALL MODIFY THE LOCATION AS NECESSARY.*

ALL ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

HATCH LEGEND:

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE DRIVEWAY
- EXISTING SPECIALTY DRIVEWAY
- PROPOSED SWALE RESTORATION
- PROPOSED ROADWAY RESTORATION

PERMIT SET
MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION

MATERIAL
ALL MATERIAL USED AND INSTALLATIONS MADE WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS SHALL BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION "MINIMUM STANDARDS"

NOTICE
INSPECTION REQUIRED
48 HRS. PRIOR TO COMMENCING ANY WORK IN THE PUBLIC RIGHT-OF-WAY CONTACT DON PRINCE WITH THE TOWN OF LAUDERDALE-BY-THE-SEA AT 954-776-0576 AS WELL AS CHEN MOORE AND ASSOCIATES AT 954-730-0707

NOTE
APPROVAL OF THIS PLAN DOES NOT CONSTITUTE A PERMIT FOR CONSTRUCTION A PERMIT FOR CONSTRUCTION MAY BE NECESSARY FROM THE TOWN OF LAUDERDALE-BY-THE-SEA, BROWARD COUNTY OR ANY OTHER AGENCY WITH JURISDICTION IN THIS PROJECT AREA, PRIOR TO COMMENSING CONSTRUCTION IN THE PUBLIC RIGHT-OF-WAY.

ANY LANDSCAPING, PAVEMENT MARKINGS OR SIGNS THAT ARE DAMAGED OR DESTROYED SHALL BE REPAIRED OR REPLACED.

LOCATIONS OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS TO POTHOLE AHEAD OF EXCAVATION TO AVOID ANY CONFLICT WTH EXISTING UTILIES.

CONTRACTOR TO USE CAUTION WHEN WORKING UNDER OR AROUND OVERHEAD POWER LINES

0 1/2 1

IF THIS BAR MEASURES 1", THEN THIS DRAWING IS AT FULL SCALE (1" = 20')

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TOWN OF LAUDERDALE BY THE SEA

JASON MCCLAIR, P.E.
CIVIL ENGINEER
FL. Reg. No. 56962

CHEN MOORE & ASSOCIATES
500 W Cypress Creek Rd Suite 410
Ft. Lauderdale, FL 33309
Tel: 954-730-0707 EB 0004593

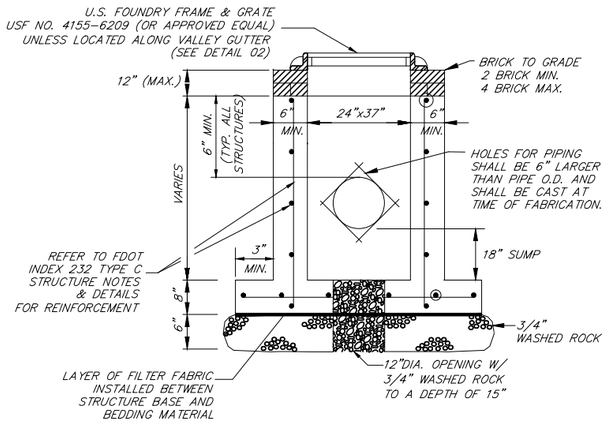
LAUDERDALE BY THE SEA
HARBOR DRIVE

RESTORATION PLAN & NOTES
SHEET SW-5

Date: 2/3/12

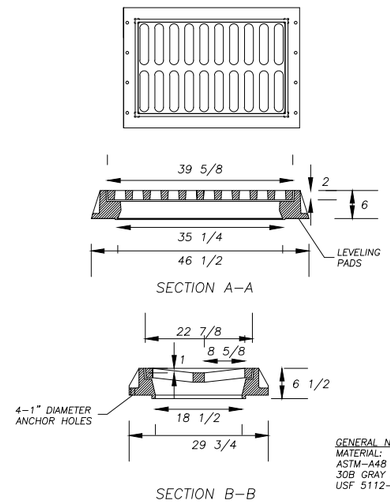
Sheet: 8 of 10

Drawing:
File location




NOTES:
1. RECOMMENDED MAXIMUM PIPE SIZE
   2'-0" WALL – 18" PIPE
   3'-1" WALL – 24" PIPE
2. TYPE C INLETS ARE TO USE USF 4155-6209 FRAME AND GRATE; UNLESS LOCATED ALONG VALLEY GUTTER, SEE DETAIL 02
3. ALL DRAINAGE MANHOLE CONNECTIONS ARE TO HAVE A WATER STOP GASKET (ADS GASKET OR APPROVED EQUAL).
4. ANY STRUCTURES ABOVE WATER TABLE REQUIRES WEEP HOLES
5. MINIMUM SUMP ALLOWABLE IS 18"

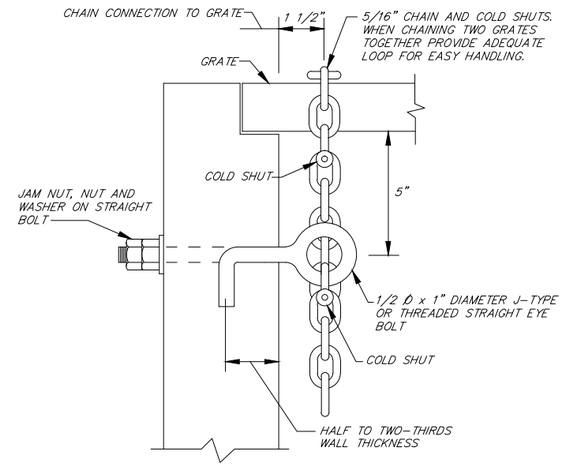
## 1 TYPE "C" INLET WITH FRAME AND GRATE
N.T.S.




GENERAL NOTES:
MATERIAL:
ASTM-A48 CLASS 30B GRAY IRON
USF 5112-6143

NOTES:
1. TYPE C INLETS LOCATED ALONG VALLEY GUTTER, ARE TO USE USF 5112-6143.
2. TYPE C INLETS NOT LOCATED ALONG VALLEY GUTTER, REFER TO DETAIL 01.

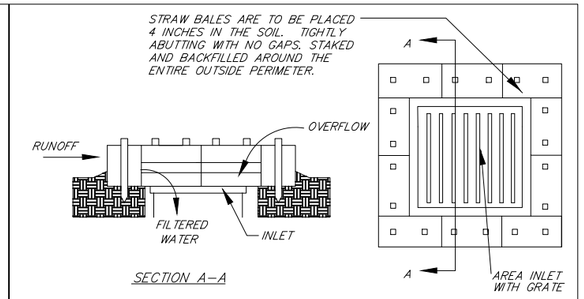
## 2 VALLEY GUTTER FRAME AND GRATE
N.T.S.




NOTE: WHEN ALTERNATE "G" GRATE IS SPECIFIED, THE CHAIN, BOLT, NUTS, WASHER AND COLD SHUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE GRATE.

COST OF EYE BOLT AND CHAIN TO BE INCLUDED IN THE CONTRACT UNIT PRICE FOR INLETS.

## 3 EYE BOLT AND CHAIN
N.T.S.




NOTES:

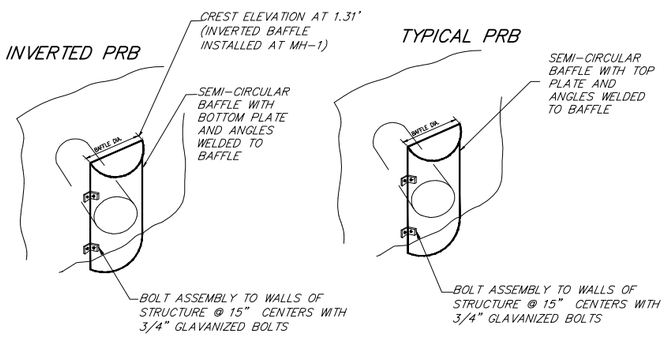
1. STRAW BALE FILTERS ARE NOT TO BE USED IF ADJACENT AREA TO INLET IS PAVED.

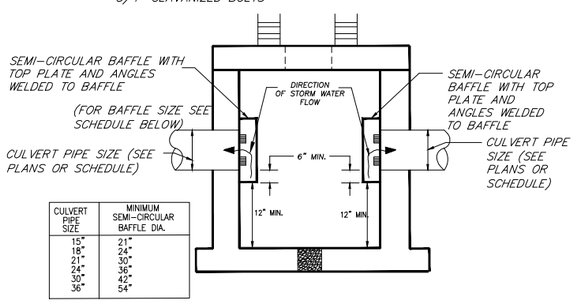
2. DROP INLET SEDIMENT BARRIERS ARE TO BE USED FOR SMALL, NEARLY LEVEL DRAINAGE AREAS. (LESS THAN 5%)

3. EMBED THE BALES 4" INTO THE SOIL AND OFFSET CORNERS OR PLACE BALES WITH ENDS TIGHTLY ABUTING, GRAVEL BACKFILL WILL PREVENT EROSION OR FLOW AROUND THE BALES.

4. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

## 4 STRAW BALE INLET BARRIER DETAIL
N.T.S.

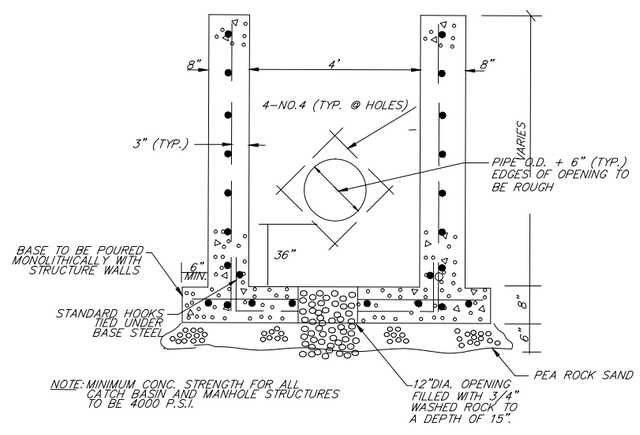



| CULVERT PIPE SIZE | MINIMUM SEMI-CIRCULAR BAFFLE DIA. |
|---|---|
| 15" | 21" |
| 18" | 24" |
| 21" | 30" |
| 24" | 36" |
| 30" | 42" |
| 36" | 54" |

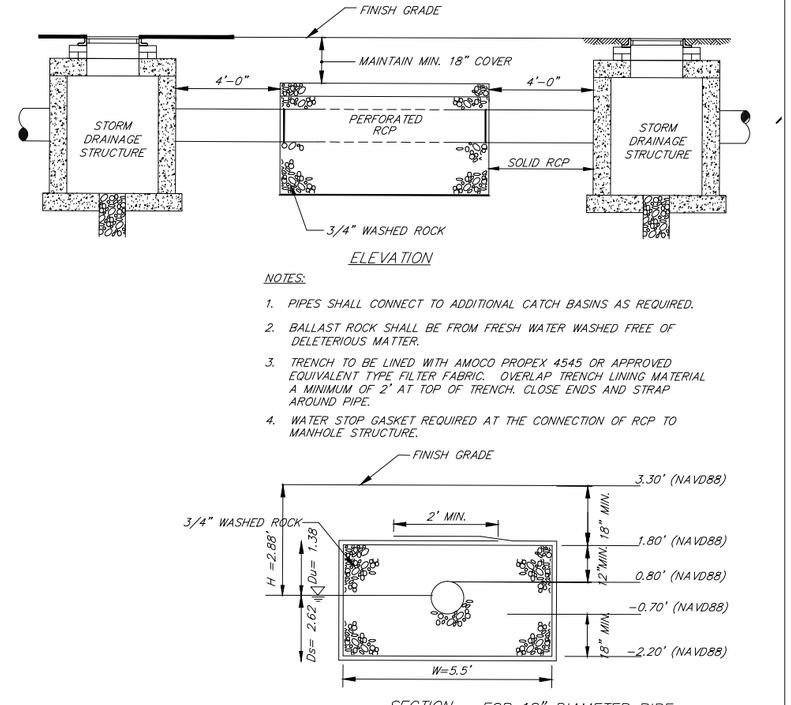
NOTE:
1. FOR LOCATION OF BAFFLES, SEE PLAN SHEETS.
2. INVERTED BAFFLE INSTALLED ON MH-1, SEE PLAN SHEETS.

## 5 TYPICAL BAFFLE
N.T.S




NOTE: MINIMUM CONC. STRENGTH FOR ALL CATCH BASIN AND MANHOLE STRUCTURES TO BE 4000 P.S.I.

## 6 CIRCULAR DRAINAGE STRUCTURE DETAIL
N.T.S.




NOTES:

1. PIPES SHALL CONNECT TO ADDITIONAL CATCH BASINS AS REQUIRED.

2. BALLAST ROCK SHALL BE FROM FRESH WATER WASHED FREE OF DELETERIOUS MATTER.

3. TRENCH TO BE LINED WITH AMOCO PROPEX 4545 OR APPROVED EQUIVALENT TYPE FILTER FABRIC. OVERLAP TRENCH LINING MATERIAL A MINIMUM OF 2' AT TOP OF TRENCH. CLOSE ENDS AND STRAP AROUND PIPE.

4. WATER STOP GASKET REQUIRED AT THE CONNECTION OF RCP TO MANHOLE STRUCTURE.

## 7 EXFILTRATION TRENCH
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TOWN OF LAUDERDALE BY THE SEA


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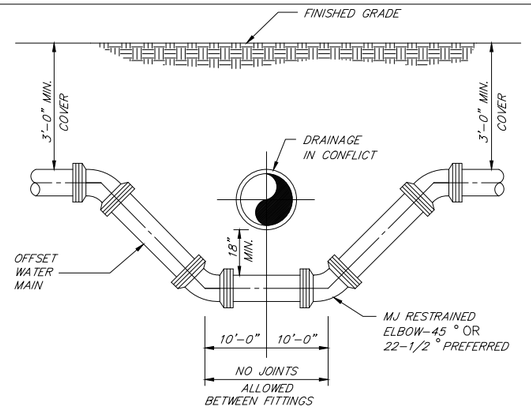
LAUDERDALE BY THE SEA
HARBOR DRIVE

STORMWATER DETAILS
SHEET SW-6

Date: 2/3/12

Sheet: 9 of 10

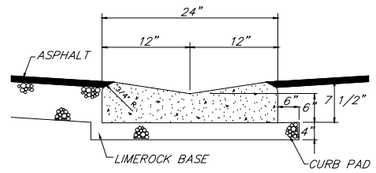
Drawing:
File location:




NOTE: WHERE CONDITIONS PERMIT, PIPE DEFLECTION MAY BE USED INSTEAD OF BENDS TO OBTAIN THE MINIMUM CLEARANCE. FACTORY OFFSETS MAY BE USED ON 6" OR SMALLER MAINS.

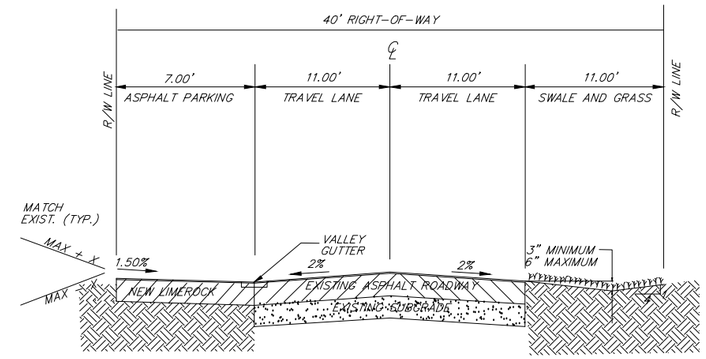
## 8 TYPICAL CONFLICT DETAIL

N.T.S




## 9 VALLEY GUTTER

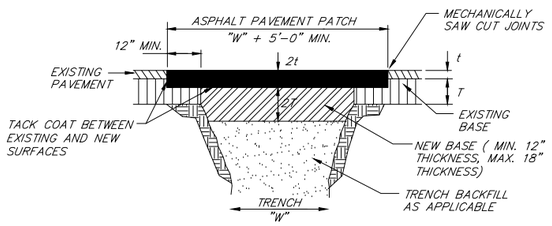
N.T.S



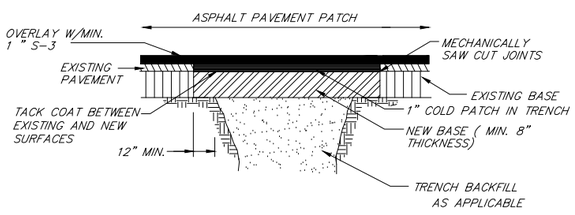

FOR ASPHALT AND CONCRETE X=12:1
FOR FILL AND SOD X=3:1

## 10 TYPICAL 40' ROAD SECTION

N.T.S




PERPENDICULAR ROAD CROSSINGS (TYPE Ⅲ )



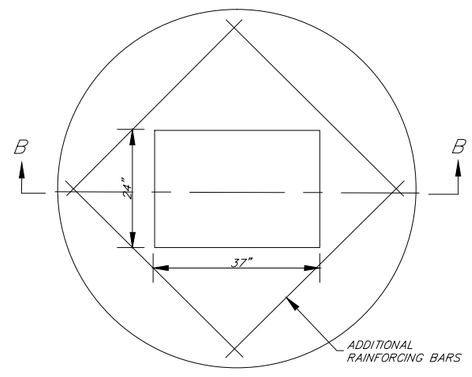

STANDARD PARALLEL ROAD RESTORATION (TYPE Ⅳ )

GENERAL NOTES:

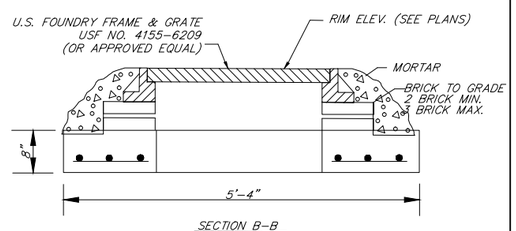
1. REPLACE BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. MINIMUM 12", MAXIMUM 18", MINIMUM LBR 100.
2. BASE MATERIAL SHALL BE PLACED IN 6" MAXIMUM (LOOSE MEASUREMENT) LAYERS AND EACH LAYER THOROUGHLY ROLLED AND TAMPED TO 98% OF MAXIMUM DENSITY, PER A.A.S.H.T.O. T-180.
3. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
4. ALL EDGES AND SURFACES SHALL BE TACK COATED.
5. SURFACE MATERIAL SHALL BE CONSISTENT WITH THE EXISTING SURFACE.
6. BASE MATERIAL SHALL BE CONSISTENT WITH THE EXISTING BASE.
7. IF THE DITCH IS FILLED TEMPORARILY IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE/PATCH TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL REPLACED WITH PERMANENT PATCH.
8. MECHANICAL COMPACTION NOT ALLOWED BELOW THIS LEVEL.
9. COMPACTION PERCENTAGES SHOWN REFER TO A.A.S.H.T.O. T-180.
10. A MINIMUM 6" BEDDING OF 3/4" ROCK IS TO BE INSTALLED ABOVE AND BELOW THE PIPE.
11. HOT MIX WILL BE REQUIRED FOR ALL LONGITUDINAL TRENCHES EXCEPT DRIVEWAYS.

## 11 SURFACE RESTORATION DETAIL

N.T.S




PLAN



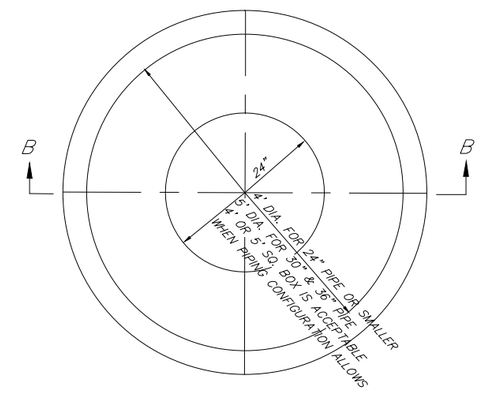

SECTION B-B

DRAINAGE NOTES:

1. DETAIL TO BE USED FOR CATCH BASIN CB-2

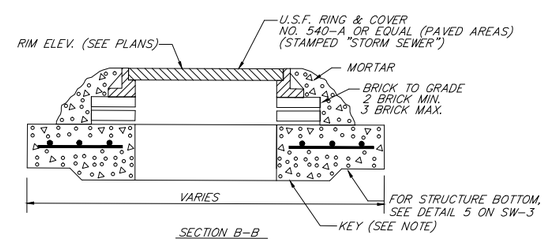
## 12 MAS TOP SLAB (CATCH BASIN) DETAIL

N.T.S




PLAN

KEY NOTE: KEY CUT IS REQUIRED W/PRECAST TOPS ONLY. IF TOP SLAB IS CAST IN PLACE, USE NO. 4-12" LONG BARS EQUALLY PLACED TO SECURE TOP SLAB TO SIDE WALLS



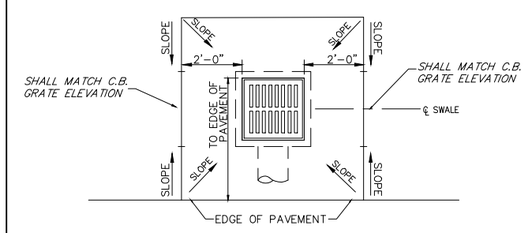

SECTION B-B

DRAINAGE NOTES:

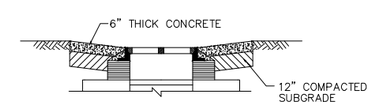
1. ALL TEMPORARY PLUGS INSIDE THE DRAINAGE PIPES SHALL BE REMOVED AFTER THE COMPLETION OF CONSTRUCTION.
2. WHERE BAFFLES ARE INSTALLED IN THE DRAINAGE STRUCTURES, THE MINIMUM DISTANCE BETWEEN THE BAFFLE AND THE OPPOSING WALL SHALL BE 2.0'.

## 13 MAS TOP SLAB (MANHOLE) DETAIL

N.T.S




PLAN




SECTION

NOTES:

1. PAVING AROUND CATCH BASIN TO BE 6" THICK CONCRETE ON COMPACTED SUBGRADE.
2. APRON TO BE 2' MINIMUM ON THREE SIDES, THE FOURTH SIDE EXTENDED TO EDGE OF PAVEMENT.

## 14 CATCH BASIN APRON

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TOWN OF LAUDERDALE BY THE SEA

JASON MCCLAIN, P.E.
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EB 0004593

LAUDERDALE BY THE SEA
HARBOR DRIVE

STORMWATER IMPROVEMENTS
SHEET SW-7

Date: 2/3/12

Sheet: 10 of 10

Drawing:

# Exhibit C – Technical Specifications

| SECTION | TECHNICAL SPECIFICATIONS (Volume I) | PAGES |
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| **DIVISION 1 - GENERAL REQUIREMENTS** | | |
| 01005 | Technical Provisions | 01005-1 - 01005-6 |
| 01010 | Summary of Work | 01010-1 - 01010-12 |
| 01025 | Measurement and Payment | 01025-1 - 01025-10 |
| 01031 | Alteration Project Procedures | 01031-1 - 01031-4 |
| 01045 | Cutting and Patching | 01045-1 - 01045-4 |
| 01050 | Field Engineering | 01050-1 - 01050-2 |
| 01060 | Regulatory Requirements & Permits | 01060-1 - 01060-2 |
| 01070 | Abbreviations of Institutions | 01070-1 - 01070-4 |
| 01090 | Reference Standards | 01090-1 - 01090-2 |
| 01200 | Project Meetings | 01200-1 - 01200-4 |
| 01311 | Schedules and Reports | 01311-1 - 01311-11 |
| 01340 | Shop Drawings, Product Data and Samples | 01340-1 - 01340-6 |
| 01380 | Construction Photographs | 01380-1 - 01380-2 |
| 01400 | Quality Control | 01400-1 - 01400-2 |
| 01505 | Mobilization | 01505-1 - 01505-2 |
| 01510 | Temporary Utilities | 01510-1 - 01510-2 |
| 01520 | Construction Aids | 01520-1 - 01520-2 |
| 01530 | Protection of Existing Facilities | 01530-1 - 01530-6 |
| 01550 | Site Access and Storage | 01550-1 - 01550-4 |
| 01560 | Temporary Controls | 01560-1 - 01560-4 |
| 01570 | Traffic Regulations | 01570-1 - 01570-2 |
| 01600 | Material and Equipment | 01600-1 - 01600-8 |
| 01700 | Contract Closeout | 01700-1 - 01700-4 |
| 01710 | Cleaning | 01710-1 - 01710-2 |
| 01720 | Project Record Documents | 01720-1 - 01720-4 |
| 01740 | Guarantees and Bonds | 01740-1 - 01740-2 |
| **DIVISION 2 - SITEWORK** | | |
| 02010 | Sub Surface Investigation | 02010-1 - 02010-2 |
| 02050 | Demolition | 02050-1 - 02050-6 |
| 02110 | Clearing | 02110-1 - 02110-2 |
| 02140 | Dewatering | 02140-1 - 02140-4 |
| 02200 | Earthwork | 02200-1 - 02200-18 |
| 02210 | Site Grading | 02210-1 - 02210-4 |
| 02221 | Excavation and Backfilling for Utilities | 02221-1 - 02221-4 |
| 02284 | Topsoil | 02284-1 - 02284-2 |
| 02400 | Storm Drainage Facilities | 02400-1 - 02400-6 |
| 02401 | Exfiltration Trench Drains | 02401-1 - 02401-2 |
| 02513 | Asphaltic Concrete Paving - General | 02513-1 - 02513-14 |
| 02515 | Portland Cement Concrete Paving | 02515-1 - 02515-8 |
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## PART 1 - GENERAL

### 1.01 SCOPE

Work under this contract includes furnishing materials, labor, tools equipment, supervision and incidentals necessary to construct infrastructure improvements.

### 1.02 GENERAL

A. The provisions of this Section shall amplify the "General Conditions", including updates through the bid date of this project, in specific instances and shall have full force and effect as if contained in those documents.

B. TECHNICAL SPECIFICATIONS consists of this section, Section 01005, described as TECHNICAL PROVISIONS, pages 01005-1 to 01005-5 and the applicable sections of Broward County Highway Construction and Engineering Services Division "Minimum Standards", October 2005.

C. In case of a conflict among Broward County Highway Construction and Engineering Services Division "Minimum Standards", the Project Drawings, these TECHNICAL PROVISIONS and the "General Conditions", the "General Conditions" will govern.

D. Broward County Highway Construction and Engineering Services Division "Minimum Standards" are not attached to the TECHNICAL SPECIFICATIONS but can be obtained for a nominal fee, from Broward County Highway Construction and Engineering Services Division, 1 University Drive, Building B, Suite 300, Plantation, Florida 33324.

### 1.03 ITEMS SPECIFIED ON DRAWINGS

A. Items of material, equipment, machinery and the like may be specified on the Drawings and not in the Technical Specifications. The CONTRACTOR in accordance with the General Notes on the Drawings shall provide such items.

### 1.04 FIELD LAYOUT OF THE WORK AND RECORD DRAWINGS

A. See "General Conditions", Paragraph 14.07.A.1.

B. After completion of construction, the CONTRACTOR shall provide four sets of Record Drawings with all the As-Built information; all locations, dimensions and elevations of the constructed facilities, certified, signed and sealed thereon by a Land Surveyor registered in the State of Florida. All elevations shall refer to N.A.V.D. (North American Vertical Datum). The cost of such field layout and recording work shall be the responsibility of the CONTRACTOR.

### 1.05 SALVAGE

A. Any existing equipment or material, including but not limited to valves, pipes, fittings, couplings, etc., which is removed as a result of construction under this project may be designated as salvage by the TOWN, and if so, shall be delivered clean to the TOWN at a location directed by the TOWN. Any equipment or material not worthy of salvaging shall be disposed of by the

CONTRACTOR at a suitable location in accordance with all applicable regulations, ordinances and laws at no additional cost to the TOWN.

1.06 POWER

A. The CONTRACTOR shall furnish and pay for all electrical power required for the construction, testing and trial operation, prior to final acceptance by the TOWN.

1.07 WATER SUPPLY

A. All water required for testing, flushing, and construction shall be furnished by the TOWN and paid for by the CONTRACTOR. The purchase price shall be the prevailing rate as published by the TOWN. The quantity of water used shall be determined by reading the meter at the start and at the finish of construction. The CONTRACTOR shall make all arrangements and incur all expense involved in having the TOWN furnish and install the necessary water meters. Each water service line shall be provided with a vacuum relief or backflow preventer which shall meet the requirements of ASA A40.6, latest revision, and the local administrative authority.

1.08 MAINTENANCE

A. The CONTRACTOR shall fully cooperate at all times with the TOWN in order to maintain the operation of the existing water and/or sewer system with the least amount of interference and interruption possible. The schedule, plans and work of the CONTRACTOR shall at all times be subject to alteration and revision if necessary for public health and safety considerations. The creation of a public nuisance will not be permitted.

B. It may be necessary to interrupt the operation of the existing water and/or sewer system. In all cases where the CONTRACTOR must cause an interruption, CONTRACTOR shall prepare and submit to the ENGINEER four (4) working days prior to commencing the work, a complete description of the proposed procedure and a time schedule, which CONTRACTOR will guarantee. At least forty-eight (48) hours prior to the time proposed for starting the work, the ENGINEER will notify the CONTRACTOR whether or not the work will be permitted as proposed.

1. The ENGINEER reserves the right to require the CONTRACTOR to work 24 hours per day in all cases where, in ENGINEER'S opinion, interference with operation of the system may result in dangerous health hazards or offensive conditions.

2. In no case will the CONTRACTOR be permitted to interfere with the existing system until all materials, supplies, equipment, tools and incidentals necessary to complete the work are on the site. Backup equipment on key equipment items shall be required on work necessitating interference with the existing system.

1.09 SITE RESTORATION

A. The CONTRACTOR shall remove all excess material and shall clean up and restore the site to its original condition or better. All damage, as a result of work under this Contract, done to existing structures, pavement, driveways, paved areas, curbs and gutters, sidewalks shrubbery, grass, trees, utility poles, utility pipe lines, conduits, drains, catch basins, flagstones, rocked, graveled,

or stabilized areas of driveways, and including all obstructions not specifically named herein, shall be repaired, or replaced, as determined by the ENGINEER. Site restoration shall be done in a timely manner as the work progresses.

1.10 SANITARY FACILITIES

A. The CONTRACTOR shall provide temporary facilities at the site as directed by the ENGINEER.

1.11 STANDARDS

A. Wherever in these TECHNICAL SPECIFICATIONS or in the drawings name and/or number refer to certain standards or regulations, the applicable publication shall be the latest revision thereof. Reference by abbreviation is made in accordance with the Section 01070, "Abbreviations of Institutions."

1.12 QUALITY OF ITEMS

A. All material furnished for this project shall be new and unused. Any material, which has become excessively weathered or damaged since manufacture, shall not be considered as new. ENGINEER shall be the sole judge as to what constitutes excessive weathering or damage.

1.13 TESTING

A. The Broward County Engineering Minimum Design and Construction Standards may require during shop drawing review that materials and equipment supplied meet given standards and testing to demonstrate conformance to the standards is a part of those standards. The cost of these tests shall be the obligation of the CONTRACTOR and no extra charge shall be made to the TOWN on account of such testing.

B. The CONTRACTOR will select a recognized, independent testing laboratory to make tests on concrete, reinforcing steel, soils and other materials for the construction phase, which the TOWN may decide to test for conformity with the TECHNICAL SPECIFICATIONS. The CONTRACTOR shall supply the necessary samples for this testing without cost to the TOWN. The costs for actual testing shall be included within the base bid price for each line item which requires testing.

C. Construction in areas where installation and restoration must satisfy the additional requirements of a local, state or federal authority may require testing to demonstrate conformance. The CONTRACTOR shall ascertain the extent of testing required by regulatory agencies within these areas. The CONTRACTOR is responsible for coordinating the performance such tests, including but not limited to, tests of compaction, and all costs for these tests shall be the obligation of the CONTRACTOR and no extra charge shall be made to the TOWN on account of such testing.

1.14 UTILITY CROSSINGS

A. It is intended that wherever existing utilities must be crossed that the pipe may be deflected up to 75% of the manufacturers recommended limits, but shall not exceed the allowable limits of the TOWN. Adequate cover shall be used to adequately clear the obstruction. However, when in the opinion of the ENGINEER, this procedure is not feasible ENGINEER may direct the use of

fittings to clear a utility crossing as detailed on the Drawings. The cost of such crossing including joint restraints shall be on the basis of the schedule of pay items applied.

B. Deflections and adjustments of the proposed pipelines to avoid all other existing utilities shall be verified/determined in the field during construction.

1.15 BASIS OF MEASUREMENT

A. Where mains are to be paid for on a unit price per linear foot basis, the number of linear feet will be determined by measurement along the centerline of the pipe in place, including fittings.

1.16 ADJUSTMENT AND RELOCATION OF EXISTING LINES

A. When the drawings indicate that existing lines must be deflected, the pipe may be deflected up to 75% of the manufacturer's recommended limits but shall not exceed the allowable limits of the TOWN. The CONTRACTOR will be so directed by the ENGINEER. If the ENGINEER determines that the use of new pipe and fittings is required for deflection, the CONTRACTOR will be directed to use this method. The price for either method shall be based upon the unit prices bid. This does not apply to connections to existing system (Paragraph 1.17, this Section).

1.17 CONNECTION TO EXISTING SYSTEM

A. The CONTRACTOR shall perform all work necessary to locate, excavate and prepare for connection to the existing mains as shown on the Drawings. The cost of this work and for the actual connection to the existing main shall be based upon the unit prices for installing the pipe and appurtenances and shall not result in any additional cost to the TOWN. The cost of ductile iron sleeves shall be included in the fittings unit price.

B. Additional valves used for the CONTRACTOR's convenience shall not be considered as an extra cost payable by the TOWN for the tie-in to the existing system.

C. During all phases of the work, (i.e. installation, testing and restoration), the CONTRACTOR shall ensure at all times the safe operation of the existing water and/or sewage systems. Service to the customers shall be maintained with the least amount of interference and interruption as possible.

1.18 RELOCATIONS

A. The CONTRACTOR shall be responsible for the relocation of structures that are shown on the drawings, including, but not limited to, light poles, signs, fences, piping, conduits and drains that interfere with the proposed positioning of the drainage. The cost of all such relocations shall be included in the prices bid for the appropriate items.

1.19 UTILITIES

A. Existing utilities are shown on the Drawings insofar as information is reasonably available; however, it will be the responsibility of the CONTRACTOR to preserve all existing utilities whether shown on the Drawings or not. If utility conflicts are encountered by the CONTRACTOR during construction, CONTRACTOR shall give sufficient notice to their owners so that they may make the necessary adjustments. Damage to any utility, which in the opinion of

the TOWN is caused by carelessness on the part of the CONTRACTOR shall be repaired at the expense of the CONTRACTOR.

1.20 GUARANTEE

A. The CONTRACTOR shall guarantee the equipment, material and labor performed under the Contract against any and all failures in proper use and operation for a period of one (1) year from date of written acceptance by the TOWN.

B. The CONTRACTOR shall also obtain warranties from manufacturers for each piece of equipment furnished so that the manufacturer's warranty fully covers the equipment for a period of one (1) year from the date of written acceptance by the TOWN.

1.21 PERFORMANCE OF WORK

A. The CONTRACTOR shall provide all personnel and equipment required to complete all work specified herein and on the Drawings. In an emergency situation, if the TOWN determines that it must provide staff and/or equipment to assist the CONTRACTOR in the satisfactory performance of the Contract terms and conditions, the CONTRACTOR at the applicable prevailing wage rates shall reimburse the TOWN. Any additional cost accrued by inspector overtime work (i.e. weekends and holidays) will be billed at an hourly rate of $70.00/hr.

B. CONTRACTOR shall provide forty-eight (48) hours advance written notice to the TOWN for approval of CONTRACTOR'S intention to work overtime on weekdays or to work on the weekends.

1.22 BARRICADING (SAFETY)

A. The CONTRACTOR shall be responsible for the furnishing and maintaining of all required barricades, either the lighted or the reflector type, to ensure the public's safety during open trench work or for any other potentially unsafe or hazardous construction activities. Barricades shall be located and displayed in conformance with the most stringent regulations required by the governing agencies. All costs for barricading, including any permits, shall be the responsibility of the CONTRACTOR.

B. All work in public rights-of-way shall be done in strict compliance with these specifications and Broward County Highway Construction and Engineering Services Division "Minimum Standards." Failure to so comply will result in cessation of operations and the removal of project related obstructions from the right-of-way until compliance is achieved.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01005

PART 1 - GENERAL

1.01 SCOPE

A. The WORK to be performed under this Contract shall consist of furnishing and installing all tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The WORK shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the TOWN.

B. The Harbor Drive Stormwater Improvements Project Contract Documents are comprised of two volumes and are summarized as follows:

| | |
|---|---|
| Volume I | Front End Documents and Technical Specifications |
| Volume II | General Drawings and Standard Details |

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. The work of this Contract comprises the construction of Stormwater Improvements on Harbor Drive for the Town of Lauderdale by the Sea. The work will include but not be limited to site preparation, earthwork, dewatering, drainage installation and improvements, roadway and driveway restoration, planting, and tree removal.

B. The general location of the project site is as follows:

The limits of the Harbor Drive Stormwater Improvements are bounded by Commercial Boulevard to the south, by West Tradewinds Avenue to the west and Sea Grape Drive to the east.

C. The contract time required to Substantial Completion for each project will be 120 day per project. The Final Completion is required to be completed within 30 days of Substantial Completion date.

1.03 NOTICE TO BIDDERS

A. The successful bidder, in order to be considered responsive, must possess the appropriate licenses.

B. It should also be noted that the successful bidder will, at the time of the pre-work conference, be required to show that each of the CONTRACTOR'S subcontractors must possess the appropriate licenses.

1.04 STANDARD SPECIFICATION

A. All materials and workmanship shall meet the requirements of "The Minimum Standards Applicable to Public Rights-of-Way under Broward County Jurisdiction", April 1, 1995 (to be referred to as "Minimum Standards") and the Florida Department of Transportation "Standard

Specifications for Road and Bridge Construction," dated 1991, and its supplements, and the Florida Department of Transportation "Roadway and Traffic Design Standards" dated January 1994, and "Structures Standards," dated 1992.

1. These Special Provisions are supplemental to the above Specifications and Standards.

1.05 SITE INVESTIGATION

A. The CONTRACTOR, by virtue of signing the Contract, acknowledges that CONTRACTOR and all subcontractors have satisfied themselves to the nature and location of the work, the general and local conditions including, but not restricted to: those bearing upon transportation; disposal, handling and storage of materials; access roads to the site; the conformation and conditions of the work area; and the character of equipment and facilities needed preliminary to and during the performance of the work. Failure on the part of the CONTRACTOR to completely or properly evaluate the site conditions shall not be grounds for additional compensation.

B. Soil boring information will not be furnished to the CONTRACTOR. The CONTRACTOR, by virtue of signing the Contract, acknowledges that CONTRACTOR and subcontractors have satisfied themselves as to the nature and extent of soil and (underground) water conditions on the project site. No additional payment will be made to the CONTRACTOR because of differences between actual conditions and those shown by the boring logs.

1.06 WORK BY OTHERS

A. Concurrent Work by Other Contractors. The CONTRACTOR'S attention is directed to the fact that other contractors may conduct work at the site during the performance of the WORK under this Contract. The CONTRACTOR shall conduct its operations so as to cause little or contractors to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts.

B. Interference With Work On Utilities. The CONTRACTOR shall cooperate fully with all utility forces of the TOWN or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.07 WORK SEQUENCE

A. The CONTRACTOR shall schedule and perform the work in such a manner as to result in the least possible disruption to the public's use of roadways, driveways, and utilities. Utilities shall include but not be limited to water, sewerage, drainage structures, ditches and canals, gas, electric, television and telephone. Prior to commencing with the WORK, CONTRACTOR shall perform a location investigation of existing underground utilities and facilities in accordance with Section 01530 entitled "Protection of Existing Facilities" and shall have obtained all required permits and permissions, CONTRACTOR shall also deliver written notice to the TOWN, ENGINEER, and property occupants (private and public) of all planned disruption to roadway, driveways, temporary displacement of fences, mailboxes, street signs and traffic signs, and utilities 72 hours in advance of disruption.

B. CONTRACTOR shall sequence the work so as to minimize impact on residents. CONTRACTOR shall notify Broward County Traffic Engineering School Coordinator, Broward Sheriff's Office, Fire Department and Post Office 14 days prior to disruption of roadway.

1.08 WORK SCHEDULE

A. The contract time required to Substantial Completion for each project will be 120 day per project. The Final Completion is required to be completed within 30 days of Substantial Completion date. Time is of the essence in completing this project. Because time is of the essence the CONTRACTOR shall commit the necessary resources to this project to complete it in a timely manner. Those resources may include multiple working crews, working over time, etc. Because time is of the essence, the CONTRACTOR'S construction progress will be monitored closely on a weekly basis. The Construction progress will be measured with the construction schedule submitted by the CONTRACTOR. If the ENGINEER determines that the CONTRACTOR does not meet the CPM as specified in Section 01311, the CONTRACTOR will be required to commit those resources necessary to ensure the completion of the project in a timely manner including working over time, adding other work crews, etc. All costs incurred to implement measure to complete the work in timely manner will be borne by the CONTRACTOR at no additional cost to the TOWN.

B. SCHEDULE

1. CONTRACTOR shall submit scheduling information for the work as required in Section 01311 "Schedules and Reports". No separate payment shall be made for preparation and/or revision of the schedule.

2. Contract time required to Substantial Completion for each project will be 120 day per project. The Final Completion is required to be completed within 30 days of Substantial Completion date.

3. CONTRACTOR will submit de-watering plan (if necessary) a minimum of 30 days before start-up of construction.

4. CONTRACTOR will submit shop-drawings a minimum of 10 days before start-up of construction.

1.09 COMPUTATION OF CONTRACT TIME

A. It is the CONTRACTOR'S responsibility to provide clear and convincing documentation to the ENGINEER as to the effect additional work will have with respect to additional contract time extension that may be justified. If additional quantities of work can be carried out concurrent with other existing construction activities without disrupting the critical path of the project then no contract time extension will be granted. The CONTRACTOR is obligated to provide documentation to the ENGINEER if additional elements of work affect the critical path of the project. If work set forth in the original scope of the project is deleted, the contract time may be reduced. This contract is a calendar day contract. While the CONTRACTOR may be granted time to suspend work operations for vacations or holidays, contract time will not be suspended. During suspensions, the CONTRACTOR shall be responsible for all maintenance of traffic and

liability without additional compensation from the TOWN. Any additional cost accrued by inspector overtime work (i.e. weekends and holidays) will be billed at an hourly rate of $70.00/hr.

1.10 CONTRACTOR USE OF PREMISES

A. The CONTRACTOR'S use of the project site shall be limited to its construction operations. The CONTRACTOR will arrange for storage of materials and a copy of an agreement for use of other property shall be furnished to the ENGINEER.

1.11 PRE-CONSTRUCTION CONFERENCE

A. After the award of Contract, a Pre-construction Work Conference will be held between the CONTRACTOR, the ENGINEER, the TOWN, other interested Agencies, representatives of Utility Companies and others affected by the work. The ENGINEER will set the time and place of this conference. The CONTRACTOR shall bring to the conference a copy of the proposed work schedule for the approval by the ENGINEER of the proposed methods and manner of executing the work including sequences of operation and time schedule. The work shall be performed in accordance with such schedule or approved amendments thereto.

1.12 UTILITY LOCATIONS

A. As far as possible, all existing utility lines in the project area have been shown on the plans. However, TOWN does not guarantee that all lines are shown, or that said lines are in their true location. It shall be the CONTRACTOR'S responsibility to identify and locate all underground or overhead utility lines or equipment affected by the project. No additional payment will be made to the CONTRACTOR because of discrepancies in actual and plan location of utilities and damages suffered as a result thereof.

B. The CONTRACTOR shall notify BCTE and each utility company involved at least thirty (30) days prior to the start of construction to arrange for positive underground location, relocation or support of its utility where that utility may be in conflict with or endangered by the proposed construction. The CONTRACTOR shall pay for relocation of water mains or other utilities for the convenience of the CONTRACTOR. The CONTRACTOR shall pay for all charges by utility companies for temporary support of its utilities. All costs of permanent utility relocations to avoid conflict shall be the responsibility of the CONTRACTOR and the utility company involved.

C. The CONTRACTOR shall schedule and coordinate their work in such a manner that they are not delayed by the utility companies relocating or supporting their utilities. No compensation will be paid to the CONTRACTOR for any loss of time or delay.

D. All overhead, surface, and underground structures and/or utilities encountered are to be carefully protected from damage or displacement. All damage to said structures and/or utilities is to be completely repaired within a reasonable time; needless delay will not be tolerated. The TOWN reserves the right to remedy any damage by ordering outside parties to make repairs at the expense of the CONTRACTOR. All repairs made by the CONTRACTOR are to be made to the satisfaction of the utility owner and shall be inspected by a representative of the utility owner and the ENGINEER.

E. The CONTRACTOR should be aware of the Sunshine State One Call Center, which has a free locating service for CONTRACTORS and excavators. Within forty-eight hours before excavating, dial toll free 1-800-432-4770, and a locator will be dispatched to the work location. CONTRACTOR shall reasonably notify other utility companies not notified by Sunshine State One Call Center.

F. The permits listed below will be obtained for the project by the TOWN prior to beginning construction. The CONTRACTOR is responsible for compliance with any and all permit conditions. In the event that the TOWN must obtain permits in addition to those listed below, the CONTRACTOR shall not have any claim for damages arising from any delay caused by the TOWN'S obtaining said additional permits.

1. Broward County Environmental Protection and Growth Management Department

G. The CONTRACTOR shall obtain construction permit and applicable building and other permits from the TOWN. There will be no charge for the TOWN Construction Permits.

1.13 LINE AND GRADE

A. The ENGINEER has provided vertical and horizontal control for layout of the work in the form of benchmarks and reference points located adjacent to the work. From these controls provided, the CONTRACTOR shall develop and make all detailed surveys needed for construction and shall establish all working points, lines and elevations necessary to perform the work. A Professional Land Surveyor registered in the State of Florida shall supervise this surveying work.

1.14 PROTECTION AND RESTORATION OF SURVEY MONUMENTS

A. The CONTRACTOR shall carefully protect from disturbance all survey monuments, stakes and bench marks, whether or not established by CONTRACTOR, and shall not remove or destroy any surveying point until it has been properly witnessed by the ENGINEER. All major survey monuments that have been damaged by the CONTRACTOR such as section corners, 1/4 section corners, property corners or block control points shall be replaced at the CONTRACTOR'S expense with markers of a size and type approved by the ENGINEER. The replacement shall be under the supervision of a Florida Registered Land Surveyor where directed by the ENGINEER.

1.15 EQUIPMENT

A. All equipment necessary and required for the proper construction of all facilities shall be on the construction site, in first-class working condition.

1.16 STORAGE SITES

A. The CONTRACTOR shall furnish, at CONTRACTOR’s expense, properly zoned areas suitable for material storage and equipment service and storage. No material may be stored in the public right of way without prior authorization by the agency having jurisdiction. The CONTRACTOR shall keep these areas in a clean and orderly condition so as not to cause a nuisance or sight obstruction to motorists or pedestrians.

1.17 OWNERSHIP OF EXISTING MATERIALS

A. All materials removed or excavated from the job site shall remain the property of TOWN until released by the TOWN, at which time it shall become the property of the CONTRACTOR, who shall dispose of it in a manner satisfactory to the ENGINEER.

1.18 EXCESS MATERIAL

A. Upon direction of the ENGINEER, all vegetation, debris, concrete or other unsuitable materials shall be disposed of in areas provided by the CONTRACTOR and approved by the ENGINEER. Any excess material desired to be retained by the TOWN shall be delivered by the CONTRACTOR to a designated area the town limits, at no extra cost to the TOWN.

1.19 AUDIO-VISUAL PRECONSTRUCTION RECORD

A. General:

1. Prior to beginning the work, the CONTRACTOR shall have a continuous color audio-video tape recording taken along the entire length of the project to serve as a record of preconstruction conditions. No construction shall begin prior to review and approval of the tapes covering the construction area by the ENGINEER.

B. Audio-Video Tapes:

1. CONTRACTOR shall provide the ENGINEER and the TOWN with one complete set of tapes for each of the project area.

C. Equipment:

1. All equipment, accessories, materials and labor to perform this service shall be furnished by the CONTRACTOR.

2. The total audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume and clarity and be free from distortion and interruptions.

3. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than twelve feet. In some instances audio-video tape coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance approved by the ENGINEER.

D. Recorded Information - Audio

1. Each tape shall begin with the current date, project name and municipality and be followed by the general location, i.e., name of street, house address, viewing side and direction of progress. The audio track shall consist of an original live recording. The recording shall contain the narrative commentary of the electrographer, recorded

simultaneously with the electrographer's fixed elevation video record of the zone of influence of construction.

E. Recorded Information - Video

1. All video recordings must, by electronic means, display continuously and simultaneously generated with the actual transparent digital information to include the date and time of recording, and station numbers as shown on the drawings. The date information shall contain the month, day and year. The time information shall contain the hour, minutes and seconds. Additional information shall be displayed periodically. Such information shall include, but not be limited to, project name, contract number, name of street, house address, direction of travel and the viewing side.

2. All taping shall be done during times of good visibility. No taping shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

3. The rate of speed of the vehicle used during taping shall not exceed 10 miles per hour. Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

4. Tape coverage shall include all surface features located within the zone influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, ditches, mailboxes, landscaping, culverts, fences, signs and headwalls within the area covered.

F. Payment:

1. Compensation for the audio-video preconstruction record shall be included in the lump sum price bid for Mobilization.

1.20 ADJUSTING EXISTING VALVES, METERS, CATCH BASINS, AND MANHOLES

A. It shall be the CONTRACTOR'S responsibility to coordinate and have all adjustments made to existing water meters, valves, and structures encountered during construction, in order to meet all final grades, unless otherwise instructed by the ENGINEER or the respective utility owner. All valves and manholes shall be accessible during all phases of the work for emergency access. Omission of such structures from the Contract Plans does not relieve the CONTRACTOR from making such adjustments as may be deemed necessary. The CONTRACTOR shall take this provision into account when personally investigating the site prior to bidding. No additional payment shall be made for these adjustments.

1.21 CONFLICT STRUCTURES

A. The CONTRACTOR shall abide by the following criteria concerning conflicts between new drainage, water, or sewer construction and existing utilities.

1. The CONTRACTOR shall verify the location of all utilities suspected of being potential conflicts prior to ordering drainage or sewer structures for these locations and inform the ENGINEER as to CONTRACTOR'S findings.

2. The ENGINEER shall have full authority to direct the placement of conflict structures, the relocation of structures shown in the plans, and the addition, deletion, or relocation of any pipe or structure shown in the plans in order to facilitate construction, expedite completion and avoid conflicts with existing utilities.

3. Where an existing utility is to pass through a conflict structure, the CONTRACTOR shall protect the utility from damage by whatever means the utility owner and the ENGINEER deem necessary.

4. In no case shall there be less than 6 inches between any two (2)-pipe lines within the structure or between pipelines and the structure.

1.22 ENVIRONMENTAL PROTECTION

A. The CONTRACTOR shall furnish all labor and equipment and perform all work required for the prevention of environmental pollution during and as a result of the work under this contract. For the purpose of this contract, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life, affect other species of importance to man, or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, land and involves noise, solid waste management and management of radiant energy and radioactive materials, as well as other pollutants.

B. The CONTRACTOR shall take all steps necessary to protect water quality in the connected waters around the project and shall utilize such additional measures as directed by the ENGINEER. Silt screens adjacent to outfall construction shall not be removed until the turbidity of the affected waters is equal to or lower than the ambient turbidity of undisturbed segments of the waterway. Any discharge into existing drainage facilities shall require the approval of the owner of the system. This may require an engineered plan to be furnished at no additional cost to the TOWN.

1.23 MAINTENANCE AND PROTECTION OF TRAFFIC

A. The CONTRACTOR shall provide all necessary traffic control devices in order to redirect, protect, warn or maintain existing vehicular and pedestrian traffic during the course of construction.

1. CONSTRUCTION PHASING REQUIREMENTS

Following are general requirements for construction phasing to minimize resident disruption, yet maximize cost effectiveness of the construction scheduling.

a. No two adjacent roadways may be under construction at the same time (i.e. construction shall be on alternating roadways, and every other roadway shall

remain open for access). In no case shall more than 50% of all roadways in a section be under construction at one time. At least 50% of all roadways shall have an asphalt surface, either original or new asphalt, at all times. The CONTRACTOR shall make every effort to provide access to driveways at the end of the working day. If a driveway is not accessible, the homeowner should have access to a neighboring swale area for temporary parking. When vehicular access to homes is not possible for parking of vehicles, an area for parking shall be provided within one block of the furthest home effected. This condition is to be avoided whenever possible and shall last no longer than five (5) working days. The CONTRACTOR, with the TOWN'S approval, shall coordinate the parking area location. The CONTRACTOR shall lease the property from the landowner, and will provide a compacted, graded parking surface acceptable to the ENGINEER.

1. The CONTRACTOR shall not begin construction on subsequent roadways until the initial roadways under construction are substantially complete. A roadway shall be considered substantially complete when all work is complete except for the last lift of asphalt. All work on private property and landscaping must also be complete before a road is considered substantially complete.

2. Site restoration work shall be complete on private property within fifteen (15) days after being disturbed.

b. Construction within the right of way of affected roads shall be scheduled so that all improvements are completed at once, and the residents are only disrupted for one time period.

c. All affected residents and property owners shall be notified by the contractor in writing a minimum of two (2) weeks, or earlier if required by the TOWN, prior to any disruption to or construction in road right-of-ways adjacent to their homes. The notification shall also indicate any special parking or traffic conditions that will affect residents.

d. All affected residents shall be notified by the contractor a minimum of forty eight (48) hours, or earlier if required by the TOWN, prior to a shut off of water supply. Any water supply interruptions shall be rescheduled to be as short as possible and not exceed twelve (12) hours.

e. Access for emergency vehicles shall be maintained at all times to all homes or businesses. Excavation must be back-filled or barricaded at the end of each workday to prevent hazardous conditions. If a trench, excavation or structure is to be left open, it must be covered with a steel plate and barricaded at the end of each workday or when work will be suspended for more than eight (8) hours.

f. Transportation provisions for handicapped or disabled residents shall be made by the CONTRACTOR if construction prevents access to homes.

g. The CONTRACTOR shall also make provisions with local bus, school bus, garbage collection, mail delivery and other agencies for continuation of service. A traffic maintenance plan indicating proposed street closings, schedules, and alternate routes, which have been approved by the ENGINEER and Broward County Traffic Engineering, should be submitted to all affected agencies for coordination and routing purposes.

h. Materials and equipment shall be stored in a fenced or otherwise enclosed area during non-working hours. Pipe and material shall not be strung out along installation routes for longer than one (1) week prior to installation.

B. TRAFFIC CONTROL

1. The CONTRACTOR is required to submit a conceptual Traffic Control Plan at the Pre-Construction Conference. This preliminary plan should identify the phases of construction that the CONTRACTOR plans to proceed with and identify traffic flows during each phase. The ENGINEER will have ten (10) days to notify the CONTRACTOR of any comments. Once the conceptual plan for maintaining traffic has been approved, the CONTRACTOR will be required to submit a detailed plan showing each phase's Maintenance and Protection Plan prior to starting construction of any phase.

2. The "Maintenance of Traffic" plan shall include pedestrian traffic as well as vehicular traffic.

   A safe walk route for all schools within the vicinity of the construction zone shall be maintained during the arrival and dismissal of school. CONTRACTOR shall not block bus access to schools during school hours.

   In the case that a designated crossing of any portion of the designated walk route can not be maintained, then the CONTRACTOR shall notify the "School Safety Coordinator" at Broward County Traffic Engineering Division, (954) 484-9600 a minimum of ten (10) working days prior to ceasing that route so that an alternate route can be established with the School and the Enforcing agency.

   It shall be the responsibility of the CONTRACTOR for any necessary Construction, Pavement Marking and Signage or any Pedestrian Signalization and/or Signal Modification to accommodate an alternate safe walk route.

   Thirty (30) days prior to the beginning of construction the CONTRACTOR shall notify the "School Safety Coordinator" at Broward County Traffic Engineering Division (954) 484-9600, to set up a pre-work meeting.

3. The CONTRACTOR, at all times, shall conduct the work in such a manner as to insure the least obstruction to traffic as is practical. Convenience of the general public and of the residents adjacent to the work shall be provided for in a satisfactory manner, as determined by the ENGINEER.

4. Sidewalks, gutters, drains, fire hydrants and private drives shall, insofar as practical, be kept in condition for their intended uses. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within twenty (20) feet of any such hydrant.

5. Construction materials stored upon the public street shall be placed so as to cause as little obstruction to the general public as is reasonably possible.

6. Streets may be closed only as permitted by the approved Maintenance of Traffic Plan, and as directed by the ENGINEER and, whenever the street is not closed, the work must be conducted with the provision for a safe passageway for traffic at all times. The CONTRACTOR shall make all necessary arrangements with the ENGINEER concerning maintenance of traffic and selection of detours required.

7. All existing stop and street name signs will be maintained as long as deemed necessary by the ENGINEER.

8. When permission has been granted to close an existing roadway, the CONTRACTOR shall furnish and erect signs, barricades, lights, flags and other protective devices, which shall conform to the requirements, and be subject to the approval of the ENGINEER. The CONTRACTOR shall furnish and maintain proper protective devices at such location for the entire time of closure as the ENGINEER may direct. Signage shall be affected one week before closure.

9. The CONTRACTOR shall furnish a sufficient number of protective devices to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the ENGINEER shutting down the work until the CONTRACTOR provides the necessary protection.

10. Any time traffic is diverted for a period of time that will exceed one-work day temporary pavement markings will be required. Existing pavement markings that conflict with the new work zone traffic pattern must be obliterated. Painting over existing pavement markings (black out) is not permitted.

11. The CONTRACTOR may be required to reposition existing traffic heads in order to maintain traffic flows at diverted intersections. If this should be necessary the CONTRACTOR must submit a plan for approval showing the course of work and the planned repositioning. The Broward County Traffic Engineering Division must approve the plan prior to implementation. No separate payment for repositioning the existing traffic signal heads will be made. The cost of this work shall be included in the bid item for Maintenance of Traffic.

1.24 <u>BASIS OF PAYMENT</u> (SEE SECTION 01152)

1.25 <u>APPLICATION FOR PAYMENT FOR STORED MATERIALS</u>

A. Application for payment for stored materials may not be made by the CONTRACTOR.

1.26 SPECIAL CONDITIONS FOR CONSTRUCTION BY OTHER AGENCIES

A. It will be the CONTRACTOR'S responsibility to coordinate construction schedules with other contractors so as to minimize disruptions, and inconveniences. The project site shall be safe at all times for construction workers and residents of the Project area.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01010

PART 1 - GENERAL

1.01 SCOPE

A. Payment for various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor operations and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenances needed to complete the items of work.

B. Payment for the various items of the Bid Schedule shall constitute full compensation for CONTRACTOR's superintendent at the job site full-time during construction, for furnishing and installing all pipe and structures complete in place including but not limited to bends, tees, outlets, fittings, blind flanges and specials, including connections to existing pipelines shown on the Drawings; including surveying both horizontal and vertical control for construction of the roadways, structures, pipeline and appurtenances; including protecting and replacing if necessary existing monuments, control points, found iron rods, valves; including all earthwork, trench excavation as shown on the Drawings, removal and disposal of waste, unsuitable and excess material, furnishing and installing pipe bedding material, all backfill and compaction of native material, and dewatering as required; the restoration of interfering portions of existing service and utility lines that are not included in other bid items and shown on the Drawings, including replacement of sewer lines with ductile iron pipe where the minimum vertical clearances are not met for the sewer line shown; restraint of pipe shown on the Drawings and grouting of pipe joints; including providing the water for pressure testing, cleaning the pipe and disinfection, and disposal of the water as required when completed; furnishing, installation, and removal of test heads, cleanup; and restoration of all improvements incidental to construction for which there are no other bid items; including but not limited to, existing sprinkler systems, and all other work not included in other bid items.

C. Payment shall also include providing the necessary equipment and labor power to pothole and verify depths and locations of existing utilities sufficiently ahead of construction to avoid conflicts with the design alignment and grade of structures, culverts, storm drains and exfiltration trenches. Conflicts with utilities shown on the Drawings which result from the Contractor's negligence to pothole sufficiently ahead of construction (a minimum of two days ahead of construction of the pipeline or as approved by the ENGINEER) shall be resolved by the Contractor at no additional cost to the TOWN.

D. Payment for all bid items shall constitute full compensation for the complete installation of each bid item including but not limited to excavation, dewatering, backfill and compaction. The work shall include for all bid items to be completed, tested and ready for acceptance by the appropriate government agency.

E. No separate payment for pavement restoration will be made unless specifically shown on the plans, called out in the bid schedule, or directed by the ENGINEER. All bid items shall include pavement restoration.

1.02 MOBILIZATION

A. See Section 01505, "Mobilization" for payment limitations. Payment for Mobilization will include any necessary SFWMD de-watering permit fees.

B. Payment for mobilization will be made at the lump sum price named in the Bid Schedule. Payment for mobilization will be made in equal monthly amounts during the duration of the original contract time.

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1.03 MAINTENANCE OF TRAFFIC

A. See Section 01570 "Traffic Regulation" and all other references to traffic control and maintenance in this document and any regulatory requirements.

B. Payment for maintenance of traffic will be made at the lump sum price named in the Bid Schedule. Payment for maintenance of traffic will be made in equal monthly amounts during the duration of the contract time.

1.04 BONDS AND INSURANCE

A. Payment for bonds and insurance will be made at the lump sum price named in the Bid Schedule. The CONTRACTOR may request payment for this bid item after the Initial Notice to Proceed has been issued.

B. Bonds and Insurance are limited to 2.5% of the Total Bid Price. Any amount in excess of 2.5% will be moved to Line Item No. 2, Page 01505-1, Mobilization. However, the total bid amount will not change. The 2.5% ceiling on Bonds and Insurance is not responsiveness, just an instruction on the amount the TOWN will pay for Bonds and Insurance.

1.05 CONSTRUCTION ALLOWANCE

A. The work included in this item is related to project work not identified or reasonably anticipated through the Contract Documents, which includes, but is not limited to, permit allowance to obtain all permits necessary, the relocation of certain existing utility structures and the removal and disposal of any existing utility infrastructure encountered that are deemed unnecessary by the governing utility company. This is an allowance, and any work to be completed under this item must be specifically approved in writing by the OWNER prior to completing the work, including the mutually agreed upon cost of said work.

1.06 FURNISH AND INSTALL DRAINAGE STRUCTURES, TOP SLABS, MAINTENANCE ACCESS STRUCTURES, FRAME AND GRATE OR CONCRETE APRONS

A. Measurement for payment to furnish and install drainage structures, frame and grate or top slabs will be based upon the actual quantity, each, of such structures constructed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing drainage structures will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the completed installation of the structure including but not limited to excavation, dewatering, backfill and compaction.

C. Payment for furnishing and installing inlets or frame and grates, if separated from the structures in the bid schedule, will be paid separately.

D. Payment for furnishing and installing concrete aprons for all catch basins will be paid separately based upon the actual quantity, each, of such aprons constructed, all in accordance with the requirements of the FDOT Standards.

1.07 FURNISH AND INSTALL DRAINAGE PIPE

A. Measurement for payment for furnishing and installing or removing and replacing drainage pipe will be based upon the number of linear feet of such pipe actually constructed as determined by measurement along the centerline of the pipe in place, not including through structures, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing drainage pipe will be made at the unit price per linear foot of pipe named in the Bid Schedule which price shall constitute full compensation for all pipes, connection to structures, excavation, dewatering, bedding, backfilling, compaction, exfiltration trenching and material costs associated.

C. Payment for removing and replacing drainage pipe will be made at the unit price per linear foot of pipe named in the Bid Schedule which price shall constitute full compensation for all pipe removal and disposal, installation of new pipes, connection to structures, excavation, dewatering, bedding, backfilling, compaction, exfiltration trenching, relocation of existing utilities as required and all material costs associated.

1.08 CONNECT TO EXISTING DRAINAGE PIPE

A. Measurement for payment for adjusting structures or connecting to plugged end of existing drainage pipe, or structures will be based upon the actual number, each, of such connections or adjustments completed, all in accordance with the Contract Documents.

B. Payment for adjusting or connecting to existing drainage pipes, or structures will be made at the unit price, each, named in the Bid Schedule and shall constitute full compensation for the complete installation of the said connection including adjusting of grates, structure rim elevations, removal of existing plugs, pipe, structures, and adjustment of pipe ends, excavation, backfill and compaction, dewatering, restoration and all related material.

1.09 REMOVE AND DISPOSE OF EXISTING DRAINAGE STRUCTURE AND PIPES

A. Measurement for payment to remove and dispose of existing drainage pipes and structures will be based upon the actual number of such structures or linear foot of such pipes actually removed and disposed of, all in accordance with the Contract Documents.

B. Payment for removing and disposing of existing drainage pipes and structures named in the Bid Schedule which price shall constitute full compensation for the excavation, removing and disposing of such pipe, including backfilling trench and all restoration work.

1.10 CLEAN EXISTING DRAINAGE PIPES AND STRUCTURES

A. Measurement for payment for cleaning the existing drainage pipes and structures will be based upon the actual number of such structures or linear feet of such pipe (determined by measurement along the centerline of the pipe in place) actually cleaned, all in accordance with the requirements of the Contract Documents.

B. Payment for cleaning drainage pipes and structures will be made at the unit price per linear foot of pipe or unit price for each existing structure, named in the Bid Schedule.

1.11 FURNISH AND INSTALL BAFFLE BOXES

A. Measurement for payment for furnishing and installing baffle boxes will be based upon the actual quantity, each, of such baffle boxes actually installed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing baffle boxes will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for furnishing and installing such baffle boxes.

1.12 OFFSET EXISTING SANITARY SEWER LATERAL

A. Measurement for payment for the offset for existing sanitary sewer lateral shall be based on the actual quantity, each, of deflections installed.

B. Payment for furnishing and installing an offset for existing sanitary sewer lateral shall be made at the unit price, each, named in the Bid Schedule, and shall constitute full compensation for the complete installation including, but not limited to, the excavation, backfilling, compaction, and material costs for all fittings and associated pipe.

1.13 REMOVE AND DISPOSE OF EXISTING ASPHALT PAVEMENT

A. Measurement for payment to remove and dispose of existing pavement will be based upon the actual number of square yards of such pavement actually removed, all in accordance with the Contract Documents.

B. Payment for removal and disposal of existing pavement will be made at the unit price per square yard of pavement named in the Bid Schedule which price shall constitute full compensation for the removal and disposal of such pavement and include the removal of asphalt sidewalks, reflective pavement markers, traffic loops (including coordination with Broward County Traffic Engineering), abandoned valves and valve boxes, the removal and salvage of brass valve tabs. Pavement removed during the installation of underground utility pipes will be paid under those pipe installation items and will not be compensated under this item.

1.14 FURNISH AND COMPACTION OF SUBGRADE

A. Measurement for payment for compaction of subgrade will be based upon the number of square yards of such materials actually compacted in place at the depth indicated, all in accordance with the requirements of the Contract Documents.

B. Payment for compacting of subgrade will be made at the unit price per square yard named in the Bid Schedule, which price shall constitute full compensation for handling, cleaning, positioning and compacting of said bedding to a LBR of 40, importing fill material as needed and disposal of excess waste or unsuitable material.

C. Existing limerock removed can be blended to be used for subgrade compaction if the CONTRACTOR elects to do so. If contractor elects to reuse limerock, stockpiling and blending of limerock shall be done at no cost to the TOWN.

1.15 FURNISH AND COMPACTION OF LIMEROCK BASE MATERIAL

A. Measurement for payment for furnishing and placing limerock base material will be based upon the number of square yards of such materials actually compacted in place at the depth indicated, all in accordance with the requirements of the Contract Documents. No reuse will be allowed.

B. Payment for furnishing and placing of limerock base material will be made at the unit price per square yard at the depth indicated and named in the Bid Schedule, which price shall constitute full compensation for applying prime coat and furnishing all such material, in place, including all transportation, handling, cleaning, positioning and compacting of said bedding and disposal of waste or unsuitable material.

1.16 FURNISH AND PLACE ASPHALT CONCRETE PAVEMENT

A. Measurement for payment of asphalt concrete pavement will be based upon the number of square yards of such asphalt concrete pavement actually constructed for streets with newly compacted subgrades and limerock bases, as detailed in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for placement of asphalt concrete pavement at the thickness indicated will be made at the unit price per square yard for such placement as named and at the thickness indicated in the Bid Schedule which price will constitute full compensation for applying a tack coat, and furnishing, placing and compacting all asphalt surface, complete in place to the cross section and thicknesses shown on the drawings; including replacing brass valve tabs, adjusting valve box and MAS rim elevations, milling and saw cutting of all pavement, temporary striping and all cleanup of the area disturbed by this construction.

1.17 FURNISH AND PLACE PAVEMENT MARKING

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of such markings actually constructed as determined by measurement along the centerline of the pavement markings in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing pavement markings will be made at the unit price per linear foot of pavement markings named in the Bid Schedule, which price shall constitute payment for all colors, widths and types. Pavement marking skip lines will be paid per the linear foot of pavement marking which will be measured as the distance from the beginning of the first painted stripe to the last stripe, including skipped intervals.

1.18 FURNISH AND INSTALL REFLECTIVE PAVEMENT MARKERS

A. Measurement for payment for furnishing and installing reflective pavement markers (RPM) will be based upon the actual number, each, of such RPM's installed, all in accordance with requirements of the Contract Document.

B. Payment for furnishing and installing RPM's will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the complete installation.

1.19 CONSTRUCT ASPHALT DRIVEWAYS

A. Measurement for payment for construction of asphalt driveways will be based upon the actual number of square yards of such driveways constructed as shown in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for reconstruction of asphalt driveways will be made at the unit price per square yard named in the Bid Schedule which price shall constitute full compensation for completing said work, including removal and disposal of existing pavement and lime rock base, all earthwork, subgrade compaction, limerock base, prime coat, and asphalt to the depth and thicknesses detailed and shown on the drawings, furnishing and setting for expansion joint material, disposal of excess material, and the appurtenant items for which separate payment is not specifically included in the Bid Schedule.

C. No payment will be made for reconstruction of driveways outside the limits shown on the drawings or not approved by the ENGINEER. Driveway must be approved and accepted by Broward County Highway Construction and Engineering Department to be eligible for payment.

1.20 CONSTRUCT CONCRETE DRIVEWAYS AND MISCELLANEOUS CONCRETE

A. Measurement for payment for construction of concrete driveways and miscellaneous concrete will be based upon the actual number of square yards of such driveways and aprons constructed as shown in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for reconstruction of driveways and miscellaneous concrete will be made at the unit price per square yard named in the Bid Schedule which price shall constitute full compensation for completing said work, including removing all existing concrete materials, all earthwork and grading, subgrade compaction, limerock base, construction of the concrete driveway to 6" deep, furnishing and setting for expansion joint material, disposal of excess material, and the appurtenant items for which separate payment is not specifically included in the Bid Schedule. Construction of concrete collars, retaining walls, fire hydrant concrete pad or any other miscellaneous concrete will be compensated for under this line item according to the requirements stated.

C. No payment will be made for reconstruction of driveways and aprons outside the limits shown on the drawings or not approved by the ENGINEER. Driveway must be approved and accepted by Broward County Highway Construction and Engineering Department to be eligible for payment.

1.21 CONSTRUCT SPECIALTY DRIVEWAY

A. Measurement for payment for construction of specialty driveways will be based upon the number of square yards of such driveways aprons actually constructed to repair open cuts made to install pipeline as detailed in the drawing, all in accordance with the requirements of the Contract Documents.

B. Payment for specialty driveway construction will be made at the unit price per square yard for such driveways aprons constructed as named in the Bid Schedule which price will constitute full compensation for furnishing and installing all materials necessary to restore driveway to conditions equal or better than pre-construction conditions and shall include the removal of existing material, all earthwork and grading, subgrade compaction, disposal of excess material and the appurtenant items for which separate payment is not specifically included in the Bid Schedule.

C. No payment will be made for reconstruction of driveways outside the limits shown on the drawings or not approved by the ENGINEER. Driveway must be approved and accepted by Broward County Highway Construction and Engineering Department to be eligible for payment.

1.22 CLEAR AND GRADE SWALE

A. Measurement for payment to clear and grade swale will be based upon the number of square yards of swale actually cleared and graded all in accordance with the Contract Documents. This work shall include but is not limited too the removal of all vegetation, shrubs and trees with diameter less than or equal to 8inches.

B. Payment for clearing and grading swales will be made at the unit price per square yards of clearing and grading named in the Bid Schedule which price shall constitute full compensation, including earthwork, removal of shrubs, removal of any protruding object, plugging of existing water wells within right of way, importing of fill material, disposal of excess material and protection of trees to remain.

1.23 FURNISH AND PLACE TOPSOIL

A. Measurement for payment for furnishing and placing topsoil will be based upon the number of square yards of topsoil actually installed to at least 1” of thickness, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing topsoil will be made at the unit price per square yards of topsoil named in the Bid Schedule which price shall constitute full compensation for furnishing and placing top soil.

1.24 FURNISH AND INSTALL SOD

A. Measurement for payment to furnish and install sod will be based on upon the number of square yards of such sod actually furnished and installed, all in accordance with the requirements of the Contract documents.

B. Payment for sod will be made at the unit price per square yards of sod named in the Bid schedule which price will constitute full compensation for furnishing and installing the sod, and shall include watering the sod. Further, new sod is to match previously existing type of grass. No additional compensations will be made for watering and maintaining sod for 30 days after installation.

1.25 EXISTING IRRIGATION SYSTEM RESTORATION

A. Measurement for payment for irrigation system restoration shall be completed on a per lot basis. This quantity has been estimated for every lot within the project boundaries. Irrigation restoration, however, will only be provided for lots with existing irrigation systems. As such, the actual quantity may not equal the estimated quantity and no additional compensation will be granted.

B. Irrigation systems shall be restored with pipe and sprinklers matching the size and type of the existing pipe and sprinkler heads, and necessary adapters, coupling at each end splicing the restored pipe in place and providing a sleeve underneath the sidewalk. If irrigation system is to be partially abandoned, then that which is being abandoned shall be removed, and the remaining exposed pipes shall be capped and protected. All work shall meet the approval of the ENGINEER.

1.26 FURNISH AND INSTALL VALLEY GUTTER

A. Measurement for payment for furnishing and installing valley gutter will be based upon the number of linear feet of such gutter actually constructed as determined by measurement along the centerline of the valley gutter in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing valley gutter will be made at the unit price per linear foot of valley gutter named in the Bid Schedule, which shall constitute full compensation for complete installation including, grading, forming, saw cutting of pavement and cleanup of all areas disturbed by this construction.

1.27 CONSIDERATION FOR INDEMNIFICATION (OWNER/ENGINEER)

A. Measurement for payment for consideration for indemnification of the OWNER and ENGINEER will based upon the allowance named for such work, all in accordance with the requirements of the Contract Documents.

B. Payment will be ten dollars for consideration for indemnification named in the bid schedule and shall constitute full compensation for indemnifying the OWNER and ENGINEER as specified on the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01025

PART 1 - GENERAL

1.01 REQUIREMENTS

A. Coordinate work of trades and schedule elements of alterations and renovation work by procedure and methods to expedite completion of the work.

B. In addition to demolition specified in Section 02050 and that specifically shown, cut, move or remove items necessary to provide access or to allow alterations and new work to proceed. Include such items as:

1. Repair or removal of hazardous or unsanitary conditions.

2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.

3. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete, shall be removed from the site expeditiously.

4. Cleaning of surfaces, and removal of surface finished as needed to install new work and finishes.

5. Protection as required for existing trees to remain.

6. For purposes of all existing underground utilities work, coordinate as required by use of special telephone number shown on engineering drawings.

7. Site storage for all existing benches, signals, light poles, fire hydrants, manhole covers and grates to be relocated.

C. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a professional transition to adjacent new items of construction.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting, patching and protection to trades qualified to perform the work in a manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work.

1. Cut finish surfaces such as paving, masonry, tile, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division.

C. Perform cutting and patching as specified in Section 01045.

D. Protect existing finishes, equipment, and adjacent work which are scheduled to remain, from damage.

1. Protect existing and new work from weather and extremes of temperature.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. General Requirements that work be complete:

1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work.

(a) Generally Contract Documents will not define products or standards of working conduct present in existing construction; CONTRACTOR shall determine products in inspection and any necessary testing by use of the existing as a sample of comparison.

2. Presence of a product, finish, or type of construction, requires that patching, extending or matching shall be performed as necessary to make work complete and consistent to existing identical standards of quality.

PART 3 - EXECUTION

3.01 PERFORMANCE

A. Patch and extend existing work using skilled mechanics who are capable of matching existing quality. Quality of patched or extended work shall be not less than that specified for new work.

3.02 DAMAGED SURFACES

A. Patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching material.

1. Provide adequate support of substrate prior to patching the finish.

2. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.

3. When existing surface finish cannot be matched, refinish entire surface to nearest intersections.

3.03 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or is finished flush with existing work, make a smooth transition. Patched work shall match existing adjacent work in texture and appearance so that the patch of transition is invisible at a distance of five feet.

1. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface.

3.04 CLEANING

A. Perform periodic and final cleaning as specified in Section 01710.

1. Clean TOWN occupied areas daily.

2. Clean spillage, overspray, and heavy collection of dust in TOWN occupied areas immediately.

B. At completion of work of each trade, clean area and make surfaces ready for work of successive trades.

C. At completion of alterations work in each area, provide final cleaning and return space to a condition suitable for use by TOWN.

3.05 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work in this section. Payment for work shall be included in all other work.

END OF SECTION 01031

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. CONTRACTOR shall be responsible for all cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

5. Remove samples of installed work as specified for testing.

6. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 SUBMITTALS

A. Submit a written request to ENGINEER well in advance of executing any cutting or alteration, which affects:

1. Work of the TOWN or any separate CONTRACTOR.

2. Structural value of integrity of any element of the project.

3. Integrity of effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Request shall include:

1. Identification of the project.

2. Description of the affected work.

3. The necessity for cutting, alteration or excavation.

4. Effect on work of TOWN or any separate CONTRACTOR, or on structural or weatherproof integrity of project.

5. Description of proposed work:

   a. Scope of cutting, patching, alteration, or excavation.
   b. Trades who will execute the work.
   c. Products proposed to be used.
   d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate CONTRACTOR whose work will be affected.

C. Should conditions of work or the schedule indicate a change of products from original installation, CONTRACTOR shall submit request for substitution as specified in Section 01600, paragraph 1.08.

D. Submit written notice to ENGINEER designating the date and time the work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering the work, inspect conditions affecting installation of products, or performance of work.

C. Report unsatisfactory or questionable conditions affecting installation of products, or performance of work.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

B. Provide devices and methods to protect other portions of project from damage.

C. Provide protection from elements for that portion of the project, which may be exposed by cutting and patching, work, and maintain excavations free from water.

3.03 PERFORMANCE

A. Execute cutting and demolition by methods, which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods, which will prevent settlement or damage to other work.

C. Employ original Installer or Fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified product, functions, tolerances and finishes.

E. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the unit price bid of any item requiring cutting and patching, including pavement restoration.

END OF SECTION 01045

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. CONTRACTOR shall provide and pay for field Engineering and Survey services, including Auto CAD 2005 (or approved equal) capabilities, required for the project except as noted below in paragraph 1.04.

B. ENGINEER will identify existing control points and property line corner stakes indicated on the drawings, as required.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified Engineer or registered Land Surveyor, acceptable to ENGINEER and TOWN.

1.04 SURVEY REFERENCE POINTS

A. CONTRACTOR will provide basic horizontal and vertical control points for the construction project including:

1. Permanent coordinate reference points with horizontal and vertical control, located and staked as shown on the plans.

B. Locate and protect control points prior to starting site construction work, and preserve all permanent reference points during construction.

1. Make no changes or relocations without prior written notice to TOWN's Representative.

2. Report to TOWN's Representative when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

3. CONTRACTOR's surveyor shall replace project control points which may be lost or destroyed at contractor’s expense.

a. Establish replacements based on original survey control.

1.05 PROJECT SURVEY REQUIREMENTS

A. CONTRACTOR's surveyor shall establish a minimum of two permanent benchmarks on site, referenced to data established by survey control points.

B. CONTRACTOR shall establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:

1. Stakes for grading and fill placement.

2. Controlling lines and levels as required.

C. From time to time, verify layouts by same methods.

1.06 RECORDS

A. Maintain a complete, accurate log and Auto CAD 2005 (or approved equal) electronic drawing of all control and survey work as it progresses.

B. On completion of construction work, prepare a certified survey showing all dimensions, locations and elevations of project.

1.07 SUBMITTALS

A. Submit name and address of Surveyor and Professional Engineer to TOWN's Representative at preconstruction conference.

B. Submit serial number of Auto CAD 2005 software (or approved equal) to TOWN's Representative at preconstruction conference.

C. Submit documentation to verify accuracy of field Engineering work on a monthly basis.

D. Submit certificate signed by Registered Engineer or Surveyor certifying that elevation and locations of work are in conformance, or non-conformance, with Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 01050

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. CONTRACTOR shall comply with all building codes appropriate to the project, including those of:

1. National Electric Code.

2. Unified Building Code.

B. CONTRACTOR shall comply with these codes, laws, regulations, rules, directives of all agencies, boards, districts, and governmental bodies having jurisdiction.

C. CONTRACTOR shall obtain and pay the cost of all building permits, fees, tie-in or connection charges associated with the project.

D. Any and all engineering permits have been obtained from the Agencies listed below by the TOWN. The CONTRACTOR is responsible for compliance with any and all permit conditions. In the event that the TOWN must obtain permits in addition to those listed below, the CONTRACTOR shall not have any claim for damages arising from any delay caused by the TOWN'S obtaining said additional permits.

1. Broward County Environmental Protection and Growth Management Department

E. The CONTRACTOR shall be responsible for obtaining the following permits as required:

1. TOWN Building Permit
2. SFWMD Dewatering Permit
3. FDEP NPDES Notice of Intent

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 MEASUREMENT AND PAYMENT

A. CONTRACTOR shall be reimbursed for permit fees as described in Section 01025.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01060

PART 1 GENERAL

1.01 GENERAL

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these Specifications, the following acronyms or abbreviations, which may appear in these Specifications, shall have the meanings indicated herein.

1.02 ABBREVIATIONS

| | |
|---|---|
| AAMA | Architectural Aluminum Manufacturer's Association |
| AAR | Association of American Railroads |
| AASHTO | American Association of State Highway and Transportation Officials |
| AATCC | American Association of Textile Chemists and Colorists |
| ACI | American Concrete Institute |
| AFBMA | Anti-Friction Bearing Manufacturer's Association, Inc. |
| AGA | American Gas Association |
| AGMA | American Gear Manufacturers Association |
| AHAM | Association of Home Appliance Manufacturers |
| AI | The Asphalt Institute |
| AIA | American Institute of Architects |
| AISC | American Institute of Steel Construction |
| AISI | American Iron and Steel Institute |
| AITC | American Institute of Timber Construction |
| AMCA | Air Moving and Conditioning Association |
| ANS | American Nuclear Society |
| ANSI | American National Standards Institute, Inc. |
| APA | American Plywood Association |
| API | American Petroleum Institute |
| APWA | American Public Works Association |
| ASA | American Standards Association |
| ASAE | American Society of Agricultural Engineers |
| ASCE | American Society of Civil Engineers |
| ASHRAE | American Society of Heating, Refrigerating, and Air Conditioning Engineers |
| ASLE | American Society of Lubricating Engineers |
| ASME | American Society of Mechanical Engineers |
| ASQC | American Society for Quality Control |
| ASSE | American Society of Sanitary Engineers |
| ASTM | American Society for Testing and Materials |
| AWPA | American Wood Preservers Association |
| AWPI | American Wood Preservers Institute |
| AWS | American Welding Society |
| AWWA | American Water Works Association |
| BBC | Basic Building Code, Building Officials and Code Administrators International |
| BCEED | Broward County Environmental Engineering Division |
| BCEPD | Broward County Environmental Protection Department |

| | |
|---|---|
| BCPHU | Broward County Public Health Unit |
| BCTED | Broward County Traffic Engineering Division |
| BCWRMD | Broward County Water Resource Management Division |
| BHMA | Builders Hardware Manufacturer's Association |
| BWWS | Broward County Bureau of Water and Wastewater Services |
| CBM | Certified Ballast Manufacturers |
| CEMA | Conveyors Equipment Manufacturer's Association |
| CGA | Compressed Gas Association |
| CLFMI | Chain Link Fence Manufacturer's Institute |
| CMA | Concrete Masonry Association |
| CRSI | Concrete Reinforcing Steel Institute |
| DIPRA | Ductile Iron Pipe Research Association |
| EIA | Electronic Industries Association |
| ETL | Electrical Test Laboratories |
| EPA | Environmental Protection Agency |
| FDEP | Florida Department of Environmental Protection |
| FDOT | Florida Department of Transportation |
| FM | Factory Mutual System |
| FPL | Florida Power & Light |
| FS | Federal Specifications |
| HI | Hydronics Institute |
| IAPMO | International Association of Plumbing and Mechanical Officials |
| ICBO | International Conference of Building Officials |
| IEEE | Institute of Electrical and Electronics Engineers |
| IES | Illuminating Engineering Society |
| IME | Institute of Makers of Explosives |
| IP | Institute of Petroleum (London) |
| IPC | Institute of Printed Circuits |
| IPCEA | Insulated Power Cable Engineers Association |
| ISA | Instrument Society of America |
| ISO | International Organization for Standardization |
| ITE | Institute of Traffic Engineers |
| MBMA | Metal Building Manufacturer's Association |
| MPTA | Mechanical Power Transmission Association |
| MSS | Manufacturers Standardization Society |
| MTI | Marine Testing Institute |
| NAAMM | National Association of Architectural Metal Manufacturer's |
| NACE | National Association of Corrosion Engineers |
| NBS | National Bureau of Standards |
| NCCLS | National Committee for Clinical Laboratory Standards |
| NEC | National Electrical Code |
| NEMA | National Electrical Manufacturer's Association |
| NFPA | National Fire Protection Association |
| NFPA | National Forest Products Association |
| NLGI | National Lubricating Grease Institute |
| NMA | National Microfilm Association |
| NSF | National Sanitation Foundation |
| NWMA | National Woodwork Manufacturers Association |

| | |
|---|---|
| OSHA | Occupational Safety and Health Administration |
| PCA | Portland Cement Association |
| PPI | Plastics Pipe Institute |
| RCRA | Resource Conservation and Recovery Act |
| RIS | Redwood Inspection Service |
| RVIA | Recreational Vehicle Industry Association |
| RWMA | Resistance Welder Manufacturer's Association |
| SAE | Society of Automotive Engineers |
| SAMA | Scientific Apparatus Makers Association |
| SB | Southern Bell |
| SFWMD | South Florida Water Management District |
| SMA | Screen Manufacturers Association |
| SMACCNA | Sheet Metal and Air Conditioning Contractors National Association |
| SPI | Society of the Plastics Industry, Inc. |
| SPIB | Southern Pine Inspection Bureau |
| SPR | Simplified Practice Recommendation |
| SSA | Swedish Standards Association |
| SSBC | Southern Standard Building Code, Southern Building Code Congress |
| SSPC | Steel Structures Painting Council |
| SSPWC | Standard Specifications for Public Works Construction |
| TAPPI | Technical Association of the Pulp and Paper Industry |
| TFI | The Fertilizer Institute |
| UBC | Uniform Building Code |
| UL | Underwriters Laboratories, Inc. |
| WCLIB | West Coast Lumber Inspection Bureau |
| WCRSI | Western Concrete Reinforcing Steel Institute |
| WEF | Water Environment Federation |
| WIC | Woodwork Institute of California |
| WRI | Wire Reinforcement Institute, Inc. |
| WWPA | Western Wood Products Association |

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01070

PART 1 GENERAL

1.01 GENERAL

A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.

B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.

C. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of the Specifications, all work specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents.

B. References herein to "Building Code" shall mean "Florida Building Code". Reference to "Uniform Building Code" shall mean Uniform Building Code of the International Conference of Building Officials (ICBO). Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarification and directions prior to ordering or providing any materials or furnishing labor. The CONTRACTOR shall bid for the most stringent requirements.

D. The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.

E. Applicable Standard Specifications: References in the Contract Documents to "Standard Specifications" or SSPWC shall mean the Standard Specifications for Public Works Construction, 1991 Edition.

F. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

G. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

H. References to "Minimum Standards" shall mean Broward County Highway Construction and Engineering Services Division, Department of Public Works-Minimum Standards and Broward County Bureau of Water and Wastewater Services, Department of Public Works-Minimum Design and Construction Standards.

1.03 REGULATIONS RELATED TO HAZARDOUS MATERIALS

A. The CONTRACTOR is responsible that all work included in the Contract Documents, regardless if shown or not, shall comply with all EPA, OSHA, RCRA, NFPA, and any other Federal, State, and Local Regulations governing the storage and conveyance of hazardous materials, including petroleum products.

B. Where no specific regulations exist, all chemical, hazardous, and petroleum product piping and storage in underground locations must be installed with double containment piping and tanks, or in separate concrete trenches and vaults, or with an approved lining which cannot be penetrated by the chemicals, unless waived in writing by the TOWN.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01090

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. TOWN's Representative shall schedule and administer a preconstruction meeting, progress meetings at a minimum of every two weeks on a day established by the TOWN's Representative and specially called meetings throughout progress of the work.

1. Prepare agenda for meetings.

2. Distribute written notice of each meeting five (5) days in advance of meeting date.

3. Make physical arrangements for meetings.

4. Preside at meetings.

5. Record the minutes; include significant proceedings and decisions.

6. Reproduce and distribute copies of minutes within three days after each meeting.

a. To participants in the meeting.
b. To parties affected by decisions made at the meeting.
c. Furnish three copies of minutes to TOWN's Representative.

B. Representative of CONTRACTOR, subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. ENGINEER shall attend all meetings.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 PRE-CONSTRUCTION MEETING

A. Schedule after date of Notice to Proceed.

B. Location: A central site, convenient for all parties, designated by TOWN's Representative.

C. Attendance:

1. The CONTRACTOR and its superintendent.

2. ENGINEER and ENGINEER'S professional consultants.

3. Resident Project Representative.

4. Representatives of the TOWN.

5. Major subcontractors.

6. Major Suppliers.

7. Governmental representatives as appropriate.

8. Others as requested by CONTRACTOR, TOWN or ENGINEER.

D. Suggested Agenda:

1. Distribution and discussion of:

   a. List of major subcontractors and suppliers.
   b. Projected Construction Schedules.
   c. Shop drawings and other submittals.
   d. Traffic maintenance plan.
   e. Community Public Relations.

2. Critical work sequencing.

3. Procurement of major equipment and materials requiring a long lead time.

4. Project Coordination

   a. Designation of responsible personnel.

5. Procedures and processing of:

   a. Field decisions.
   b. Proposal requests.
   c. Submittals.
   d. Change Orders.
   e. Applications for Payment

6. Adequacy of distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:

   a. Office, work and storage areas.
   b. TOWN's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Safety procedures.

12. Security procedures.

13. Housekeeping procedures.

1.04 PROGRESS MEETINGS

A. Schedule regular biweekly meetings on a day established by the TOWN's Representative as required.

B. Hold called meetings as required by progress of the work.

C. Location: A central site, convenient for all parties, designated by TOWN's Representative.

D. Attendance

1. TOWN's Representative and TOWN's professional consultants as needed.

2. Subcontractors as active on the site.

3. Suppliers as appropriate to the agenda.

4. Governmental representatives as appropriate.

5. Others, as requested by CONTRACTOR, TOWN or ENGINEER.

E. Suggested Agenda:

1. Review, approval of minutes of previous meeting.

2. Review of work progress since previous meeting.

3. Field observations, problems, and conflicts.

4. Problems, which impeded Construction Schedule.

5. Review of off-site fabrication, delivery schedules.

6. Corrective measures and procedures to regain projected schedule.

7. Revisions to Construction Schedule.

8. Progress, schedule, during succeeding work period.

9. Coordination of schedules.

10. Community Public Relations.

11. Review submittal schedules; expedite as required.

12. Maintenance of quality standards.

13. Pending changes and substitutions.

14. Review proposed changes for:

    a. Effect on Construction Schedule and on completion date.
    b. Effect on other contracts of the Project.

15. Other business.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Work under this Contract shall be planned, scheduled, executed, reported and accomplished using the Critical Path Method (hereinafter referred to as CPM), in calendar days, unless otherwise specifically provided in the Contract Documents.

B. The primary objectives of the CPM scheduling requirements are: (1) to insure adequate planning and execution of the Work by CONTRACTOR; (2) to assist TOWN and CONSULTANT in evaluating progress of the Work; (3) to provide for optimum coordination by CONTRACTOR of their trades, Subcontractors and Suppliers, and of their Work with the work or services provided by any separate Contractors; (4) to permit the timely prediction or detection of events or occurrences which may affect the timely prosecution of the Work; and (5) to provide a mechanism or tool for use by the TOWN, CONSULTANT and CONTRACTOR in determining and monitoring any actions of the CONTRACTOR which may be required in order to comply with the requirements of the Contract Documents relating to the completion of the various portions of the Work by the Specific Dates specified in the Contract Documents.

C. CONTRACTOR is responsible for determining the sequence of activities, the time estimates of the detailed construction activities and the means, methods, techniques and procedures to be employed. The construction Schedule shall represent the CONTRACTOR's best judgment of how they will prosecute the Work in compliance with the Contract requirements. CONTRACTOR shall ensure that the Construction Schedule is current and accurate and is properly and timely monitored, updated and revised as Project conditions and the Contract Documents may require.

D. CONTRACTOR shall consult with their principal Subcontractors and Suppliers relating to the preparation of their construction plan and Construction Schedule. Principal Subcontractors shall receive copies of those portions of CONTRACTOR's Construction Schedule, which relate to their work and shall be continually advised of any updates or revisions to the Construction Schedule as the Work progresses. When CONTRACTOR submits their Construction Schedule to the TOWN or makes any proposed updates or revisions to such Schedule, TOWN and CONSULTANT that CONTRACTOR has consulted with and has the concurrence of their principal Subcontractors and Suppliers will assume it. CONTRACTOR shall be solely responsible for ensuring that all Subcontractors and Suppliers comply with the requirements of the Construction Schedule for their portions of the Work.

E. CONTRACTOR will provide the basic data relating to activities, durations and sequences of construction and shall develop and deliver to the TOWN and CONSULTANT the draft of the Construction Schedule. This data shall reflect the CONTRACTOR's actual construction plan for the Project, and shall fully comply with all requirements of the Contract Documents.

F. When there are separate Contractors working concurrently on the Project whose work must interface or be coordinated with the Work of CONTRACTOR, CONTRACTOR shall coordinate their activities with the activities of the separate Contractors and shall, prior to the submission of their Construction Schedule to the TOWN and CONSULTANT, obtain written approval of their Construction Schedule by the separate Contractors. If CONTRACTOR is unable to obtain such written approval by the separate Contractors after their best efforts to do so, or if a conflict occurs

that cannot be resolved by mutual agreement between CONTRACTOR and any separate CONTRACTOR, the TOWN shall make a determination of the schedule, which shall be binding upon CONTRACTOR and the separate Contractors.

G. The CONTRACTOR shall be responsible for providing the services required for the basic drafting and computerization of CONTRACTOR's data for CONTRACTOR's initial Construction Schedule, in accordance with the requirements of this Contract. The CONTRACTOR shall use Primavera computer program for development and maintenance of the schedule.

H. To carry out the intent of this Section, CONTRACTOR agrees that the orientation session, as described in Subparagraph 1.02-B, shall not be grounds for any claim by CONTRACTOR or any of their Subcontractors or Sub-Subcontractors of alleged interference, lack of cooperation, delay disruption, negligence or hindrance by TOWN or CONSULTANT, and CONTRACTOR covenants not to sue therefore.

I. It is understood and agreed that the Construction Schedule is to represent CONTRACTOR's best plan and estimate for the Work; however, CONTRACTOR acknowledges that the Construction Schedule may have to be revised from time-to-time as progress proceeds. CONTRACTOR further acknowledges and agrees that the TOWN does not guarantee that: (1) CONTRACTOR can start work activities on the "early start" or "late start" dates or complete work activities on the "early finish" or "late finish" dates shown in the schedule, or as same may be updated or revised; (2) CONTRACTOR can proceed at all times in the sequence established by the utilization of only the resources and labor they initially plans for the performance of the work; (3) CONTRACTOR's Construction Schedule will not have to be modified in order to obtain the agreement of any separate Contractors to the schedule; or (4) CONTRACTOR's Construction Schedule will not have to be modified or changed by direction of the TOWN. Any changes, modifications or adjustments made by CONTRACTOR to the Construction Schedule shall be in full compliance with all requirements of the Contract Documents.

J. The CONTRACTOR acknowledges and agrees that their Construction Schedule must be flexible in order to accommodate and allow for their coordination with the operations of the TOWN and the work of separate contractors relating to the Project. The TOWN and CONSULTANT will review the CONTRACTOR's Construction Schedule for compatibility with TOWN operations and the work of separate contractors. CONTRACTOR agrees to hold meetings with the TOWN, CONSULTANT and separate contractors to resolve any conflicts between CONTRACTOR's Construction Schedule and the operations of the TOWN or work of separate contractors. CONTRACTOR agrees to fully cooperate with TOWN and separate contractors to resolve such conflicts and to revise their Construction Schedule as reasonable required.

K. In order to maintain the orderly progress of the work performed on the Project, the TOWN shall have the right to determine, in their sole discretion, the priority between the Work performed by CONTRACTOR and the work of any separate contractors or TOWN's operations; this decision shall be final and binding upon CONTRACTOR and shall not be a cause for extra compensation or an extension of time, except where an extension of time is granted because of a delay for which CONTRACTOR is otherwise entitled to an extension under the Contract Documents. Provided, however, that this right shall not be exercised by the TOWN unless: (1) the determination is necessary, in the opinion of the TOWN, because of Project conditions; and (2) CONTRACTOR and any separate contractors cannot otherwise agree upon such priority of

schedule construed as relieving the CONTRACTOR of their obligation to cooperate with any separate contractors on the Project.

L. If CONTRACTOR's Construction Schedule indicates that TOWN or a separate CONTRACTOR is to complete an activity or perform certain preceding work by a particular date, or within a certain duration, TOWN or any separate contractor shall not be bound to said date or duration unless TOWN expressly and specifically agrees in writing to same. The review and approval or acceptance by TOWN of the Construction Schedule or any other schedule or plan of construction of CONTRACTOR, does not constitute an agreement by TOWN of any start or finish date in the schedule or specific durations or sequences for activities of the TOWN or any separate contractor; provided, however, that nothing herein shall be construed as modifying or changing, or excusing the performance of CONTRACTOR of required portions of the Work by the Specific Dates as set forth in the Contract Documents.

M. The Specific Dates set forth in the Contract Documents represent only the major items of Work and may include interface dates with the operations of the TOWN, the work of separate contractors or others. Specific Dates are Contract requirements and are of the essence to this Contract and to the coordination of the Work by CONTRACTOR. Specific Dates represent the latest allowable start or completion time for those portions of the Work to which each Specific Date relates. The Specific Dates are not intended to be a complete listing of all Work under this Contract or of all interfaces with work performed by other separate contractors, the TOWN or others. CONTRACTOR shall determine the time requirements for all such interfaces and shall be responsible for planning, scheduling and coordinating the Work in order to complete in accordance with those requirements.

N. It is understood and agreed that should the TOWN and CONSULTANT provide CONTRACTOR, at CONTRACTOR's request, with any services, advice or counsel relating to the scheduling or coordination of the Work or any other matter that: (1) TOWN and CONSULTANT shall not be liable to CONTRACTOR for any errors, omissions, negligence or deficiencies which may in any way occur because of same; (2) such services, advice or counsel are provided solely as aids in the development by CONTRACTOR of a representation of CONTRACTOR's actual construction plan and schedule in accordance with the requirements of the Contact Documents, and TOWN and CONSULTANT shall not be liable to CONTRACTOR should CONTRACTOR rely on such services, advice or counsel to their detriment; (3) such services, advice or counsel shall not relieve CONTRACTOR of any responsibility under the Contract for all construction means, methods, techniques, coordinating all portions of the Work; and (4) any services provided by the TOWN and CONSULTANT or the lack or alleged untimeliness thereof will not in any way take the place of or relieve the CONTRACTOR of full responsibility for compliance with all requirements of the Contract Documents, including, but not limited to the obligation to complete the Work within the Specific Dates set forth in Contract Documents.

O. Approval or acceptance by the TOWN of the CONTRACTOR's Construction Schedule, or any revisions or updates thereto, is advisory only and shall not relieve the CONTRACTOR of the responsibility for accomplishing each portion of the Work within each and every applicable Specific Date. Omissions and errors in the approved or accepted Construction Schedule, or any revisions or updates shall not excuse performance, which is not in compliance with the Contract. Approval by the TOWN in no way makes the TOWN an insurer of the reliability, accuracy or feasibility of the Construction Schedule nor liable for time or cost overruns flowing from such

omissions or errors. It is understood and agreed that CONTRACTOR cannot rely upon any informal or constructive acquiescence or approval of the Construction Schedule by TOWN has any right or power to agree to any schedule commitment or obligation on the part of TOWN except as set forth expressly in the Contract Documents.

P. Should CONTRACTOR intend or plan to complete the Work, or any portion thereof, earlier than any applicable Specific Date or the Contract Time, CONTRACTOR shall give timely and reasonable notice of this fact to TOWN and CONSULTANT. TOWN shall have the sole discretion to agree to or reject such early completion plan by CONTRACTOR. TOWN shall have no duty or obligation to agree to, or to cooperate with CONTRACTOR regarding any early completion plan or proposal by CONTRACTOR and shall not be liable for any damages of CONTRACTOR because of the rejection by TOWN of said plan.

Q. Unless otherwise specifically provided in the Contract Documents, CONTRACTOR acknowledges that TOWN has contemplated in TOWN's planning and approval of the schedule, and in TOWN's budgeting for professional services, that the Work will be performed on a 5-day work week basis, utilizing a single 8-hour shift per day. TOWN shall have the sole discretion of approving or rejecting a variance in the workweek, number of shifts, or shift length. Unless otherwise agreed by TOWN, CONTRACTOR shall bear the cost of, and pay the TOWN, for additional staff and supervisory personnel, including but not limited to the services of CONSULTANT necessary to support any variance in the contemplated work week, number of shifts or shift length.

1.02 <u>POST AWARD ACTIVITIES</u>

A. Upon receipt by CONTRACTOR of the Notice to Proceed, and until the Construction Schedule is approved by the TOWN, CONTRACTOR shall proceed with CONTRACTOR's Work in accordance with the Provisional Preliminary Network of CONTRACTOR which was included as part of the CONTRACTOR's bid.

B. Orientation Session: CONTRACTOR shall, upon notification from the TOWN, attend an orientation session relating to the Schedules and Reports requirements for this Project. This orientation meeting is designed to assist the CONTRACTOR in planning the Work and in developing the Construction Schedule. This session will normally be held within three (3) days after the date of the Notice to Proceed or the Notice of Award of Contract by TOWN (whichever occurs first) and will be conducted by the TOWN. CONTRACTOR shall arrange for CONTRACTOR's project manager and Superintendent, major Subcontractors and Suppliers, and any scheduling engineers that CONTRACTOR may employ to attend the orientation session.

C. Among other things, the TOWN and CONSULTANT will review: the objectives of the Schedules and Reports requirements; the procedures and requirements for the preparation of the Construction Schedule and Schedule of Values by CONTRACTOR; how the requirements of the Contact Documents will be monitored and enforced by the TOWN; long-lead items and time requirements for work by Subcontractors will be identified. It is understood and agreed that the CONSULTANT has no authority to waive any requirements of the Contract Documents at this orientation meeting, and all requirements of the Contract Documents remain applicable to CONTRACTOR's work whether or not discussed at this session.

D. Should CONTRACTOR or CONTRACTOR's principal Subcontractors and Suppliers fail or refuse to attend this orientation session, TOWN shall have the right to terminate CONTRACTOR

for default pursuant to the provisions of the General Contracts.

1.03 DRAFT OF CONSTRUCTION SCHEDULE

A. Within fifteen (15) days of the orientation session, (even though CONTRACTOR may not have completed subcontractor negotiations and executed subcontracts) the CONTRACTOR, in consultation with the TOWN and CONSULTANT, shall complete a draft of CONTRACTOR's time-scaled network graphic and work schedule.

1. Except for procurement requirements, CONTRACTOR shall differentiate activities of the Schedule so that no single activity shown has a duration longer than fourteen (14) calendar days, unless the TOWN, in TOWN's sole discretion, shall approve a longer duration for certain activities.

2. The Construction Schedule shall represent the CONTRACTOR's best judgment and intended plan for completion of the Work in compliance with Specific Dates listed in the Contract Documents and the Contract Time. The Construction Schedule shall take into account all foreseeable activities to be accomplished by any separate contractors, and interface dates with utility TOWNs, the TOWN's operations and others. The Construction Schedule shall anticipate all necessary labor and resources to accomplish the activities within the durations set forth in the Construction Schedule.

B. TOWN shall have seven (7) days to approve the draft schedule information and shall have the right to require the CONTRACTOR to modify any CONTRACTOR data or any portion of the CONTRACTOR's Construction Schedule, Schedule of Values or Recovery Schedule, as herein required, with CONTRACTOR bearing the expense thereof, which the TOWN reasonably determines to be: (1) impracticable; (2) based upon erroneous calculations or estimates; (3) unreasonable; (4) required in order to ensure proper coordination by CONTRACTOR of the work of their Subcontractors and with the work or services being provided by any separate Contractors; (5) necessary to avoid undue interference with the TOWN's operations or those of any utility TOWNs or adjoining property TOWNs; (6) necessary to ensure completion of the Work by the Specific Dates set forth in the Contract Documents; (7) required in order for CONTRACTOR to comply with the requirements of the Contract Documents or (8) not in accordance with the CONTRACTOR's actual operations.

C. The TOWN and CONSULTANT will be available during normal working hours to consult with the CONTRACTOR should questions arise while the CONTRACTOR assembles the information required for the Construction Schedule. The TOWN will pay for the reasonable costs for the CONSULTANT's time for this consultation.

1.04 CONSTRUCTION SCHEDULE

A. Within ten (10) days after approval of the Construction Schedule draft by the TOWN, based on the data submitted by the CONTRACTOR, the CONTRACTOR will provide a final draft time-scaled graphic network of activities and computer listing of all activities included in the Construction Schedule. The graphic representation and computer printouts shall be carefully reviewed by the TOWN and CONSULTANT and discussed at a meeting with the CONTRACTOR for the purpose of finalizing the schedule. Any additions and/or deletions to these documents that are desired by the TOWN will be brought to the attention of the

CONTRACTOR within three (3) days. The CONTRACTOR shall, if consistent with the requirements of the Contract Documents, incorporate the TOWN's revisions and shall deliver the completed Construction Schedule and computer reports to the TOWN and CONSULTANT for review and acceptance within seven (7) days.

B. CONTRACTOR shall submit as a part of the data submitted to the TOWN and CONSULTANT a narrative report indicating anticipated allocation by CONTRACTOR of the following resources and work shifts for each activity which they proposes to be utilized on the Project:

1. Labor resources;

2. Equipment resources;

3. Whether CONTRACTOR proposes the Work to be performed on single, double or triple shifts, and whether it is to be done on a 5-, 6- or 7-day workweek basis. If the CONTRACTOR chooses any work schedule other than the 8-hour day, 5-day workweek, and approved by the TOWN, any overtime costs shall be borne by the CONTRACTOR.

1.05 SCHEDULE OF VALUES

A. Within ten (10) days after completion of the Construction Schedule the CONTRACTOR shall submit to the TOWN and CONSULTANT a Schedule of Values for review by the TOWN and CONSULTANT, allocating a dollar value for the activities on the Construction Schedule. The dollar value for the activity shall be the cost of the work of the activity including labor, materials, and pro rata contribution of General Conditions requirements, overhead and profit. The sum of all activity costs shall equal the total Contract Sum. The CONTRACTOR shall revise the Schedule of Values as necessary to gain the approval of the CONSULTANT and the TOWN.

B. The activity cost for the Schedule of Values shall be coded with a cost code corresponding to the trade, subcontractor or Supplier performing the work so that subtotals for each division of the Work can be prepared.

C. The Schedule of Values shall, in the best judgment of the CONTRACTOR, represent a fair, reasonable and equitable dollar (cost) allocation for each activity on the Construction Schedule.

D. The CONTRACTOR will provide, within seven (7) days after approval of the Schedule of Values, a computer listing of all cost-loaded activities for TOWN and CONSULTANT's review.

1.06 CONSTRUCTION SCHEDULE CONTENT

A. The Construction Schedule shall consist of a time-scaled, detailed network graphic representation of all activities that are part of the CONTRACTOR's construction plan and an accompanying computerized mathematical analysis of these activities. The graphic network shall include, but not be limited to, the following information:

1. Project Name

2. Activities of completed work ready for use by next trade, TOWN, etc.

3. Activities relating to different areas of responsibility, such as subcontracted work, which is distinctly separate from that being done by the CONTRACTOR directly;

4. Different categories of work as distinguished by craft or crew requirements;

5. Different categories of work as distinguished by equipment requirements;

6. Different categories of work as distinguished by materials;

7. Distinct and identifiable subdivisions of work such as structural slabs, beams, columns;

8. Locations of work within the Project that necessitates different times or crews to perform;

9. Outage schedules for existing utility services that will be interrupted during the performance of the Work;

10. Acquisition and installation of equipment and materials, supplies and/or installed by the TOWN or separate contractors;

11. Material to be sorted on site; and

12. Specific Dates.

B. For all major equipment and materials to be fabricated or supplied for the Project, the Construction Schedule shall show a sequence of activities including:

1. Preparation of Shop Drawings and sample submissions;

2. A reasonable time for review of Shop Drawings and samples or such time as specified in the Contract Documents:
3. Shop fabrication, delivery, and storage;

4. Erection or installation; and

5. Testing of equipment and materials.

C. The Construction Schedule shall include late completion dates for the Work that is no later than the required Specific Dates. The time-scaled graphic network shall be drawn based upon the early start dates of activities shown on the graphic.

D. All activity durations shall be given in calendar days.

1.07 CONTRACTOR APPROVAL AND CERTIFICATION

A. Approval by CONTRACTOR of the drafting and computerization of the Construction Schedule and the Schedule of Values shall be signified by the CONTRACTOR by signing the following certification:

"The undersigned CONTRACTOR certifies that the Construction Schedule which is comprised of the graphic network of activities displayed on the sheets dated _____ and of the computerized mathematical reports dated _____ is CONTRACTOR's Construction Schedule as required by the Contract document; and that said Schedule is a true and accurate representation of CONTRACTOR's plan of construction for the Work and fully complies with the requirements of the contract Documents. The CONTRACTOR further certifies that CONTRACTOR will prosecute the Work in accordance with this Schedule, subject to any change therein which is implemented in accordance with the Contract Documents; and the undersigned acknowledges that this Schedule shall be the instrument by which progress of the Work shall be monitored, and together with the dollar value assigned to each activity, shall be the basis of monthly payments in accordance with the Contract documents; and CONTRACTOR certifies they have fully complied with all of the requirements of the Contract Documents relating to coordination of said Schedule with separate contractors."

1.08 UPDATING OF CONSTRUCTION SCHEDULE/PROGRESS REPORTS

A. On or about the dates specified, CONTRACTOR shall arrange for CONTRACTOR's project manager and superintendent to meet at Project Site with the TOWN and CONSULTANT to review CONTRACTOR's report of actual progress prepared by CONTRACTOR. Said report shall set forth up-to-date and accurate progress data, shall be based upon CONTRACTOR's best judgment and shall be prepared by CONTRACTOR in consultation with all principal Subcontractors and suppliers.

B. The progress report of CONTRACTOR shall show the activities or portions of activities, completed during the reporting period, the actual start and finish dates for these activities, remaining durations and/or estimated completion dates for activities currently in progress.

C. The CONTRACTOR will produce a computerized update work sheet for approval by the TOWN as a part of this process.

D. CONTRACTOR shall submit a narrative report with the updated progress analysis which shall include, but not be limited to a description of problem areas, current and anticipated delaying factors and their impact, explanations of corrective actions taken or planned, any newly planned activities or changes in sequence, and proposed logic for a Recovery Schedule, if required, as further described herein. The report shall also include:

1. A narrative describing actual work accomplished during the reporting period;

2. A list of major construction equipment used on the Work during the reporting period and any construction equipment idle during the reporting period.

3. The total number of personnel by craft actually engaged in the Work during the reporting period, with such total stated separately as to office, supervisory, and field personnel;

4. A labor and equipment forecast for the succeeding thirty (30) days, stating the total number of personnel by craft, and separately stating such total as to office, supervisory and field personnel;

5. A list of CONTRACTOR supplied materials and equipment, indicating current availability and anticipated job site delivery dates;

6. Changes or additions to CONTRACTOR's supervisory personnel since the preceding progress report.

E. The CONTRACTOR will provide initial computer reports and monthly reports thereafter, in accordance with the following:

1. Schedule Reports: Initial and subsequent Schedule Reports will contain the following minimum information for each activity:

   a. Activity number, description and estimated duration in days.
   b. Early and late finish dates.
   c. Percentage of each activity competed as of each report.
   d. Remaining float/days behind schedule.
   e. Responsibility for activity. Actual start and finish dates shall be indicated for each activity, as appropriate. Dummies and completed activities will be omitted from remaining Float and Late Start Sorts.

2. Cost Reports: Initial and subsequent Cost Reports will include the following information for each activity, sorted by trade activity:

   a. Activity number and description;
   b. Percentage of value of Work in place against total value;
   c. Total cost of each activity;
   d. Value of Work in place since last report;
   e. Value of Work in place to date;
   f. Value of uncompleted Work.

3. As part of the updating process, the CONTRACTOR'S computer will calculate, based upon progress data provided by CONTRACTOR and agreed to by the TOWN, the value of work done for each activity based on percentage complete for each activity less the amount previously paid for past percentages completed. Summation of all values of each activity less the appropriate percent of retainage shall be the amount payable to the CONTRACTOR, provided that CONTRACTOR has complied with all requirements of the Contract Documents.

F. CONTRACTOR shall be solely responsible for expediting the delivery of all materials and equipment to be furnished by CONTRACTOR so that the progress of construction shall be maintained according to the currently approved Construction Schedule for the Work. CONTRACTOR shall notify the TOWN and CONSULTANT in writing, and in a timely and reasonable manner, whenever CONTRACTOR determines or anticipates that the delivery date of any material or equipment to be furnished by CONTRACTOR will be later than the delivery date indicated by the Construction Schedule, or required consistent with the completion requirements of this Contract, subject to schedule updates as herein provided.

G. CONTRACTOR shall ensure that the critical path runs through on-site activities and that off-site activities do not control the critical path of the Construction Schedule.

1.09 INITIAL PROGRESS PAYMENT

A. The completed Construction Schedule, including the Schedule of Values, will be required for each Application for Payment. However, one initial provisional progress payment may be payable in the sole discretion of TOWN if TOWN determines the CONTRACTOR is complying with these Schedules and Reports provisions during the development of the Construction Schedule and Schedule of Values as required herein and represented to be true by the CONSULTANT. However, no more than one Application for Payment will be approved until all of the requirements of these Schedules and Reports provisions have been met.

1.10 RECOVERY SCHEDULE

A. Should the updated Construction Schedule show at any time during CONTRACTOR's performance, in the sole opinion of the TOWN, that the CONTRACTOR is fourteen (14) or more days behind schedule for any Specific Date, or should CONTRACTOR be required to undertake actions under Paragraph 40 of the General Conditions hereof, the CONTRACTOR shall prepare a Recovery Schedule at no additional cost to the TOWN (unless the TOWN is solely responsible for the event or occurrence which has caused the schedule slippage) explaining and displaying how CONTRACTOR intends to reschedule the Work in order to regain compliance with the Construction Schedule during the immediate subsequent pay period.

B. If the CONTRACTOR believes that all of the time can be recovered during the subsequent pay period the CONTRACTOR will be permitted to prepare a Recovery Schedule as set forth below. However, if the CONTRACTOR believes it will take more than thirty (30) days to recover all of the lost time, CONTRACTOR shall prepare and submit a request for revision to the Construction Schedule and comply with all of the requirements for a Schedule Revision.

1. The CONTRACTOR shall prepare and submit to the TOWN and CONSULTANT a one-month maximum duration Recovery Schedule, incorporating best available information from Subcontractors and others, which will permit return to Construction Schedule at the earliest possible time. The CONTRACTOR shall prepare a Recovery Schedule to same level of detail as the Construction Schedule for a maximum duration of one month. This Recovery Schedule shall be prepared in coordination with other separate contractors on the Project.

2. Within two (2) days after submission of Recovery Schedule to the TOWN and CONSULTANT, CONTRACTOR shall participate in a conference with the TOWN and CONSULTANT to review and evaluate the Recovery Schedule. Within two (2) days of conference, the CONTRACTOR shall submit the revisions necessitated by the review for the TOWN and CONSULTANT's review and approval. The CONTRACTOR shall use the approved Recovery Schedule as their plan for returning to the Construction Schedule.

3. CONTRACTOR shall confer continuously with the TOWN and CONSULTANT to assess the effectiveness of the Recovery Schedule. As a result of this conference, the TOWN will direct the CONTRACTOR as follows:

a. If the TOWN determines the CONTRACTOR is still behind the schedule the TOWN will direct the CONTRACTOR to prepare a Schedule Revision and

comply with all of the requirements of a Schedule Revision as stated herein and the other requirements of the Contract Documents; provided, however, that nothing herein shall limit in any way the rights and remedies of the TOWN as provided elsewhere in the Contract Documents.

b. If the TOWN determines the CONTRACTOR has successfully complied with provisions of the Recovery Schedule, the TOWN will direct the CONTRACTOR to return to the use of the approved Construction Schedule.

1.11 SCHEDULE REVISIONS

A. Should CONTRACTOR desire to or otherwise be required under the Contract Documents to make modifications or changes in CONTRACTOR's method of operation, the sequence of Work or the durations of the activities in the Construction Schedule, CONTRACTOR shall do so in accordance with the requirements of the Contract Documents. The TOWN must approve revisions to the approved Construction Schedule in writing.

B. CONTRACTOR shall submit requests for revisions to the Construction Schedule to the TOWN and CONSULTANT, together with written rationale for revisions and description of logic for rescheduling work and maintaining the Specific Dates listed in the Contract Documents. Proposed revisions acceptable to the TOWN will be incorporated into next update of Construction Schedule. CONTRACTOR shall pay the TOWN for costs incurred by the TOWN for the revisions.

C. If there are separate contractors on the Project, prior to the submission by the CONTRACTOR of their proposed schedule revisions, CONTRACTOR shall meet with and gain written approval of the separate contractors to make the revisions which shall be evidenced by the signatures of said separate contractors on the proposed schedule revisions. If accepted by the TOWN the revisions shall be binding upon CONTRACTOR and all separate contractors on the Project.

D. In submitting any proposed schedule revisions to the TOWN and CONSULTANT, CONTRACTOR shall submit therewith the following certification:

"The undersigned CONTRACTOR certifies that the proposed schedule revision to the Construction Schedule which comprised of the graphic network of activities displayed on the sheets dated _____ and of the computerized mathematical reports dated _____ is CONTRACTOR's schedule revision to the Construction Schedule as required by the Contract Documents; and that said schedule revision is a true and accurate representation of CONTRACTOR's plan to complete the Work, including all Change Orders that are in the CONTRACTOR's possession as of the foregoing date, and fully complies with the requirements of the Contract Documents. The CONTRACTOR further certifies that CONTRACTOR will prosecute the Work in accordance with this schedule revision, subject to any change therein which is implemented in accordance with the Contract Documents; and CONTRACTOR further certifies that CONTRACTOR has met and coordinated with and obtained the approval of said schedule revision by all separate contractors, as evidenced by CONTRACTOR's signature thereon; and CONTRACTOR further certifies they have fully complied with all of the requirements of the Contract Documents relating to coordination of said Schedule with separate contractors."

1.12 FLOAT TIME

A. Float or slack time associated with one chain of activities is defined as amount of time between earliest start date and latest start date or between earliest finish date and latest finish date for such activities, as calculated as part of the Construction Schedule. Float or slack time shown on the Construction Schedule is not for exclusive use or benefit of either the TOWN, CONSULTANT or the CONTRACTOR and is available for use by either of them according to whichever first needs the use or benefit of the float to facilitate the effective use of available resources and to minimize the impact of project problems, delays or Changes in the Work which may arise during performance. CONTRACTOR specifically agrees that the TOWN or CONSULTANT may use float time in conjunction with their review activities or to resolve for any modification of the Specific Dates or an extension of the Contract Time or a claim for additional compensation as a result of any Project problem.

B. Float time shown on the Construction Schedule shall not be used arbitrarily by CONTRACTOR in a manner, which, in the opinion of the TOWN and CONSULTANT, unnecessarily delays separate contractors from proceeding with their work in a way which is detrimental to the interests of the TOWN. Any conflict between contractors, or schedules or available and/or necessary work of Contractors, which may result in a delay on that Contractor performing work on this Project, shall be referred to the TOWN for resolution. If CONTRACTOR refuses to perform Work which is available and necessary to be performed in order to not delay any separate contractors and the TOWN has provided resolution to any conflicts, the TOWN may, regardless of the float shown on the Construction Schedule to be available for the path of activities which encompasses said Work, terminate the CONTRACTOR for default pursuant to the General Conditions of this Contract.

1.13 CONTRACTOR'S ORGANIZATION

A. CONTRACTOR shall maintain as part of their organization, or hire a subcontractor with, a competent staff of sufficient size who are knowledgeable in the use, application and implementation of CPM as required by the Contract Documents. It shall be the responsibility of this staff to prepare input information for the Construction Schedule, monitor progress, provide input for updating and revising logic diagrams when necessary and otherwise assist the CONTRACTOR in fulfilling their obligations hereunder.

1.14 DEFAULT

A. Failure of the CONTRACTOR to substantially comply with the requirements of this Section shall constitute a default by CONTRACTOR of CONTRACTOR's obligations under this Contract sufficient for termination of CONTRACTOR under the General Conditions of this Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All work required in connection with Schedules and Reports shall be included in the bid price for all other

work.

END OF SECTION 01311

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit Shop Drawings, Product Data and Samples required by the Contract Documents.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

C. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed Shop Drawings, Product Data and Samples will be needed.

1.03 SHOP DRAWINGS

A. Drawings shall be presented in readable and thorough condition.

1. Drawing size shall be in standard sizes 8½" X 11" through 24" X 36" as appropriate for detail.

2. Details shall be identified by reference to TOWN Project Number, sheet, detail, specification section, equipment numbers, I. D. numbers and schedule numbers shown on Contract Drawings.

1.04 PRODUCT DATA

A. Preparation

1. Clearly mark each copy to identify pertinent products or models.

2. Show performance characteristics and capacities.

3. Show dimensions and clearances required.

4. Show wiring or piping diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information, which is not applicable to the work.

2. Supplement standard information to provide information specifically applicable to the work.

1.05 SAMPLES

A. Office samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product with integrally related parts and attachment devices.

2. Full range of color, texture and pattern.

1.06 CONTRACTOR RESPONSIBILITIES

A. Review Shop Drawings, Product Data and Samples prior to submission.

B. Determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with specifications.

C. Coordinate each submittal with requirements of the work and of the Contract Documents.

D. Notify the TOWN's Representative in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.

E. Begin no fabrication or work, which requires submittals until return of submittals with TOWN's Representative or ENGINEER's approval.

1.07 SUBMISSION REQUIREMENTS

A. CONTRACTOR shall furnish to the ENGINEER for review, 4 copies of each shop drawing submittal. The term "Shop Drawing" as used herein shall be understood to include detail design calculations, shop drawings, fabrication and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items.

B. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the ENGINEER. In any case, every separate item submitted for shop drawing approval will be uniquely numbered, between the submittal and transmittal for proper tracking.

C. Except as may otherwise be indicated herein, the ENGINEER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within ten (10) calendar days following their receipt by the ENGINEER. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the ENGINEER by the second submission of a submittal item. The TOWN reserves the right to withhold monies due the contractor to cover additional

costs of the ENGINEER's review beyond the second submittal. The ENGINEER's maximum review period for each submittal, including all resubmittals, will be 10 days per submittal. In other words, for a submittal that required two resubmittals before it is complete, the maximum review period for that submittal could be 30 days.

D. If a copy of a submittal is returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN", formal revision and resubmission of said submittal will not be required.

E. If a copy of a submittal is returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal revision and resubmission of said submittal will not be required.

F. If a submittal is returned to the CONTRACTOR marked "REVISE AND RESUBMIT" or "AMEND-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.

G. If a submittal is returned to the CONTRACTOR marked "REJECTED-RESUBMIT", the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.

H. Fabrication of an item shall be commenced only after the ENGINEER has reviewed the pertinent submittals and returned copies to the CONTRACTOR marked either 'NO EXCEPTIONS TAKEN" or 'MAKE CORRECTIONS NOTED." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the contract requirements.

I. All CONTRACTOR shop drawing submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR, prior to submission to the ENGINEER. Each submittal shall be dated, signed, and certified by the CONTRACTOR, as being correct and in strict conformance with the Contract Documents. In the case of shop drawings, each sheet shall be so dated, signed, and certified. No consideration for review by the ENGINEER of any CONTRACTOR submittals will be made for any items, which have not been so certified by the CONTRACTOR. All non-certified submittals will be returned to the CONTRACTOR without action taken by the ENGINEER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

J. The ENGINEER's review of CONTRACTOR shop drawing submittals shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in CONTRACTOR submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.

K. Shop Drawing Distribution: Shop drawings shall be reviewed by the ENGINEER and marked either as "NO EXCEPTIONS TAKEN, "MAKE CORRECTIONS NOTED," "AMEND - RESUBMIT", or "REJECTED-RESUBMIT." The distribution of processed shop drawings shall be as follows:

1. Shop drawings marked "NO EXCEPTIONS TAKEN" or 'MAKE CORRECTIONS NOTED".

1 copy returned to CONTRACTOR
2 copies transmitted to TOWN
1 copy to remain with ENGINEER

2. Shop drawings marked "AMEND-RESUBMIT" or 'REJECTED-RESUBMIT"

2 copies returned to CONTRACTOR
2 copies remain with the ENGINEER

L. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The Project title and Project number.

3. Contract identification.

4. The names of:

a. CONTRACTOR
b. Supplier
c. Manufacturer

5. Identification of the product, with the specification section number.

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Identification of deviations from Contract Documents.

10. Identification of revisions on resubmittals.

11. An 8" x 3" blank space for CONTRACTOR and TOWN's Representative ENGINEER's stamps.

12. CONTRACTOR's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

1.08 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in the submittals required by TOWN's Representative and resubmit until approved.

B. Shop Drawings and Product Data:

1. Revise initial drawings or data, and resubmit as specified for the initial submittal.

2. Indicate any changes which have been made other than those requested by the TOWN's Representative.

C. Samples: Submit new samples as required for initial submittal.

1.09 DISTRIBUTION

A. Distribute reproduction of Shop Drawings and copies of Product Data, which carry the TOWN's Representative or ENGINEER's stamp of approval to:

1. Job site file.

2. Record Documents file.

3. Other affected CONTRACTORS.

4. Subcontractors

5. Supplier or Fabricator.

B. Distribute samples which carry the TOWN's Representative or ENGINEER's stamp of approval as directed by the TOWN's Representative or ENGINEER.

1.10 TOWN'S REPRESENTATIVE OR ENGINEER DUTIES

A. Review submittals with reasonable promptness and in accord with schedule.

B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or approval of submittal.

C. Return submittals to CONTRACTOR for distribution, or for resubmission.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, shall be included in the price of all other work.

END OF SECTION 01340

PART 1 - GENERAL

1.01 GENERAL

A. Employ competent photographer to take construction record photographs before construction, periodically, monthly at a minimum, during course of the work.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01720: Project Record Documents.

1.03 PHOTOGRAPHY REQUIRED

A. Provide Pre-Construction photographs of each driveway.

B. Provide photographs taken on cutoff date for each scheduled application for Payment.

C. Provide photographs taken at each major stage of construction.

D. Provide photographs taken of change order work.

E. Provide five prints of each view.

F. Negatives:

1. Remain property of photographer.

2. Require that photographer maintain negatives for a period of two years from Date of Substantial Completion of entire Project.

3. Photographer shall agree to furnish additional prints to TOWN and the ENGINEER at commercial rates applicable at time of purchase.

1.04 COSTS OF PHOTOGRAPHY

A. CONTRACTOR shall pay costs for specified photography and prints.

1. Parties requiring additional photography or prints will pay photographer directly.

1.05 DIGITAL PHOTOGRAPHY

A. At TOWN and ENGINEER's discretion, digital photography may be used for all construction photographs.

PART 2 PRODUCTS

2.01 PRINTS

A. Color:

1. Paper: Single weight, color print paper.
2. Finish: Smooth surface, glossy.
3. Size: 8-inch x 10-inch.

B. Identify each print on back, listing:

1. Name of Project.
2. Specific Location.
3. Date and time of exposure.
4. Name and address of photographer.
5. Photographer's numbered identification of exposure.

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Factual presentation.

B. Correct exposure and focus.

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

3.02 VIEWS REQUIRED

A. Photograph from locations to adequately illustrate condition of construction and state of progress.

3.03 DELIVERY OF PRINTS

A. Deliver prints to the ENGINEER to accompany each Application for Payment.

B. Distribution of prints as soon as processed, is anticipated to be as follows:

1. TOWN (one set).
2. ENGINEER (two sets).
3. Project Record File (one set to be stored by CONTRACTOR).
4. CONTRACTOR (one set).

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of all other work.

END OF SECTION 01380

PART 1 - GENERAL

1.01 DEFINITION

A. Specific quality control requirements for the WORK are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the WORK beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.02 INSPECTION AT PLACE OF MANUFACTURE

A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the ENGINEER at the place of manufacture.

B. The presence of the ENGINEER at the place of manufacturer, however, shall not relieve the CONTRACTOR of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the ENGINEER.

1.03 SAMPLING AND TESTING

A. Unless otherwise indicated, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the TOWN reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the ENGINEER will insure the TOWN that the quality of the work is in full accord with the Contract Documents.

B. Any waiver by the TOWN of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, shall not be construed as a waiver of any requirements of the Contract Documents.

C. Notwithstanding the existence of such waiver, the ENGINEER reserves the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, shall be reasonable cause for the ENGINEER to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

1.04 INSPECTION AND TESTING LABORATORY SERVICE

A. Inspection and testing laboratory service shall comply with the following:

1. TOWN will approve of an independent firm to perform inspection and testing or will perform inspection and testing itself.

2. The TOWN or independent firm will perform inspections, testings, and other services specified in individual specification sections and as required by the ENGINEER.

3. Reports will be submitted to the ENGINEER in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

4. The CONTRACTOR shall cooperate with the TOWN or independent firm and furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.

5. The CONTRACTOR shall notify ENGINEER 48 hours prior to the expected time for operations requiring inspection and laboratory testing services.

6. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the ENGINEER. The CONTRACTOR shall bear all costs from such retesting at no additional cost to the TOWN.

7. For samples and tests required for CONTRACTOR'S use, the CONTRACTOR shall make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the CONTRACTOR'S use shall be included in the Contract Price.

8. CONTRACTOR shall bear all costs should materials for testing are not ready for testing at time specified by CONTRACTOR for test.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 INSTALLATION

A. Inspection: The CONTRACTOR shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation, and reject damaged and defective items.

B. Measurements: The CONTRACTOR shall verify measurements and dimensions of the WORK, as an integral step of starting each installation.

C. Manufacturer's Instructions: Where installations include manufactured products, the CONTRACTOR shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

END OF SECTION 01400

PART 1 GENERAL

1.01 GENERAL

A. Mobilization shall include the obtaining of all permits; moving onto the site of all equipment; temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the WORK. Mobilization shall include the following principal items:

1. Moving on to the site of all CONTRACTOR's equipment required for first month operations.

2. Installing temporary construction power, wiring, and lighting facilities.

3. Developing construction water supply.

4. Providing all on-site communication facilities, including telephones and radio pagers.

5. Arranging for and erection of CONTRACTOR's work, site access, and storage.

6. Obtaining all required permits, including SFWMD dewatering permit, if necessary.

7. Having all OSHA required notices and establishment of safety programs.

8. Having the CONTRACTOR's superintendent at the job site full time.

9. Submitting initial submittals.

10. Audio-Visual preconstruction record as described in Section 01010.

11. Project identification and signs.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 PAYMENT FOR MOBILIZATION

A. The CONTRACTOR's attention is directed to the condition that no payment for mobilization, or any part thereof will be approved for payment under the Contract until all mobilization items listed in Paragraph 1.01.A. above have been completed as specified.

END OF SECTION 01505

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Types: The types of utility services required for general temporary use at the project site include the following:

- Water service (potable for certain uses)
- Storm sewer
- Sanitary sewer
- Electric power service
- Telephone service
- Gas service

B. It shall be the CONTRACTOR's responsibility to provide equipment that is adequate for the performance of the WORK under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safety and efficiently performing the required WORK, and shall be subject to inspection and approval by the TOWN's representative at any time within the duration of the Contract. All work hereunder shall conform to the applicable requirements of the OSHA Standards for Construction.

1.02 JOB CONDITIONS

A. Scheduled Uses: The CONTRACTOR shall, in conjunction with establishment of job progress schedule, establish a schedule for implementation and termination of service for each temporary utility or facility; at earliest feasible time, and when acceptable to TOWN and ENGINEER change over from use of temporary utility service to permanent service.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 INSTALLATION OF POWER DISTRIBUTION SYSTEM

A. Power: The CONTRACTOR shall provide all necessary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the WORK in a safe and satisfactory manner.

3.02 INSTALLATION OF LIGHTING

A. Construction Lighting: All WORK conducted at night or under conditions of deficient daylight shall be suitable lighted to insure proper WORK and to afford adequate facilities for inspection and safe working conditions.

3.03 WATER SUPPLY

A. General: The TOWN will furnish reasonable quantities of water required by the CONTRACTOR in performance of the WORK under the Contract; however, the CONTRACTOR shall provide all facilities necessary to convey the water from the TOWN-designated source to the points of use in

accordance with the requirements of the Contract Document. The CONTRACTOR shall pay all permit and water charges.

B. Potable Water: All drinking water on the site during construction shall be furnished by the CONTRACTOR and shall be bottled water or water furnished in acceptable metal dispensers. Notices shall be posted conspicuously throughout the site warning the CONTRACTOR's personnel that piped water may be contaminated.

C. Water Connections: The CONTRACTOR shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the authority having jurisdiction over the use of said fire hydrant or pipeline and from the agency owning the affected water system. For each such connection made, the CONTRACTOR shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the said authority, of a size and type acceptable to said authority and agency. The CONTRACTOR shall pay all permit and water charges.

D. Removal of Water Connections: Before final acceptance of the WORK on the project, all temporary connections and piping installed by the CONTRACTOR shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the ENGINEER and to the agency owning the affected utility.

3.04 INSTALLATION OF SANITARY FACILITIES

A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of CONTRACTOR's employees. Toilets at construction job sites shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction.

B. Sanitary and Other Organic Wastes: The CONTRACTOR shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the CONTRACTOR or organic material wasted from any other source related to the CONTRACTOR's operations shall be disposed of away from the site in a manner satisfactory to the ENGINEER and in accordance with all laws and regulations pertaining thereto.

3.05 INSTALLATION OF FIRE PROTECTION

A. Fire Protection: The construction of the WORK shall be connected with the CONTRACTOR's water supply system and shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the temporary structures and other portions of the WORK, and responsible persons shall be designated and instructed in the operation such fire apparatus so as to prevent or minimize the hazard of fire. The CONTRACTOR's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction.

3.06 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the lump sum price for Mobilization.

END OF SECTION 01510

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain required construction aids, remove on completion of work.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 CONSTRUCTION AIDS

A. Provide construction aids and equipment required by personnel and to facilitate execution of the work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment.

1. Refer to respective sections for particular requirements for each trade.

2. Provide protective coverings for finished surfaces.

B. Maintain facilities and equipment in first-class condition.

PART 3 - EXECUTION

3.01 PREPARATION

A. Consult with TOWN's Representative, review site conditions and factors which affect construction procedures and construction aids including adjacent properties and public facilities which may be affected by execution of the work.

3.02 GENERAL

A. Comply with applicable requirements specified in sections of Division 2 through 4 (as applicable).

B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of TOWN and other Contractors employer at the site.

3.03 REMOVAL

A. Completely remove temporary materials, equipment and services:

1. When construction needs can be met by use of permanent construction.
2. At completion of project.

B. Clean, repair damage caused by installation or by use of temporary facilities.

1. Remove foundations and underground installations for construction aids.

2. Grade areas of site affected by temporary installations to required elevations and slopes, and clean the area.

C. Restore permanent facilities used for temporary purposes to specified condition.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of all other work.

END OF SECTION 01520

PART 1 - GENERAL

1.01 GENERAL

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents. Any utility damaged during construction will be replaced with a material approved by the ENGINEER and the TOWN.

B. The CONTRACTOR shall verify the exact locations and depths of all utilities shown and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the WORK. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's work. When such exploratory excavations show the utility location as shown to be in error, the CONTRACTOR shall so notify the ENGINEER.

C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.02 RIGHTS-OF-WAY

A. The CONTRACTOR shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified by the ENGINEER that the TOWN has secured authority therefore from the proper party. After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support or otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the TOWN shall determine the sequence and order of the WORK. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the TOWN to the CONTRACTOR so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the WORK or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the WORK in the General Conditions of the Contract.

1.03 PROTECTION OF STREET OR ROADWAY MARKERS

A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. All survey markers or points disturbed by the CONTRACTOR shall be accurately restored after all street or roadway resurfacing has been completed.

1.04 RESTORATION OF PAVEMENT

A. General: All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement TOWN. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.

B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

D. Restoration of Sidewalks or Private Properties: Wherever sidewalks or private properties and driveways have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or driveways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of times is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or driveways until the final restoration thereof has been made. The CONTRACTOR shall restore all private properties within thirty (30) days after a complaint is received by the TOWN.

1.05 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The CONTRACTOR shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary. The CONTRACTOR shall be required to TV the existing sewer lines both before and after work is done in the area to ensure that existing utilities are not damaged by construction.

B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the TOWN to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

C. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the TOWN of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

D. TOWN's Right of Access: The right is reserved to the TOWN and to the TOWNs of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this Contract.

E. Underground Utilities Indicated: Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR with material approved by the ENGINEER and the TOWN.

F. Underground Utilities Not Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra work contained in the General Conditions.

G. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the work which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the provisions of the General Conditions.

H. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement TOWN and the ENGINEER before being concealed by backfill or other work.

I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the TOWN of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

J. Existing Water Services: CONTRACTOR shall protect and provide temporary support for existing water services. Any water service damaged by the CONTRACTOR, shall be replaced at the CONTRACTOR's expense, with a new water service complete with new water main tap.

1.06 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

A. General: The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or TOWN. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a certified tree company under permit from the jurisdictional agency and/or the TOWN. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

B. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.

C. Replacement: The CONTRACTOR shall immediately notify the jurisdictional agency and/or the TOWN if any tree is damaged by the CONTRACTOR's operations. If, in the opinion of said agency or the TOWN, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree at CONTRACTOR’s own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the CONTRACTOR shall pay to the TOWN of said tree a compensatory payment acceptable to the tree TOWN, subject to the approval of the jurisdictional agency or TOWN. The size of the trees shall be not less than 1-inch diameter nor less than 6 feet in height.

1.07 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the CONTRACTOR shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can be present during such work if they so desire. The CONTRACTOR shall also notify the Sunshine State One Call Center 1-800-432-4770 at least 2 days, but no more than 14 days, prior to such excavation. The CONTRACTOR will also be required to notify BCTE and any utility companies of any conflict located within the project limits within 30 days.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 FENCING

A. Materials to CONTRACTOR's option, minimum fence height = 6 feet.

2.03 BARRIERS

A. Materials to CONTRACTOR's option, as appropriate to serve required purpose.

PART 3 - EXECUTION

3.01 GENERAL

A. Install facilities of a neat and reasonable uniform appearance, structurally adequate for required purposes.

B. Maintain barriers during entire construction period.

C. Relocate barriers as required by progress of construction.

3.02 TREE AND PLANT PROTECTION

A. Preserve and protect existing trees and plants adjacent to work areas.

B. Consult with TOWN's Representative and remove agreed-on roots and branches which interfere with work.

1. Employ qualified tree surgeon to remove branches, and to treat cuts.

C. Protect root zones of trees and plants.

1. Do not allow vehicular traffic and parking.

2. Do not store materials or products.

3. Prevent dumping of refuse or chemically injurious materials or liquids.

4. Prevent puddling or continuous running water.

D. Carefully supervise all work to prevent damage.

E. Replace trees and plants which are damaged or destroyed due to work operations under this contract.

3.03 REMOVAL

A. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by TOWN's Representative.

B. Clean and repair damage caused by installation, fill and grade areas of the site to required elevations and slopes, and clean the area.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of all other work.

END OF SECTION 01530

## PART 1 - GENERAL

### 1.01 HIGHWAY LIMITATIONS:

A. The CONTRACTOR shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the WORK. It shall be the CONTRACTOR's responsibility to construct and maintain any haul roads required for its construction operations.

### 1.02 TEMPORARY CROSSINGS:

A. General: Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 300 feet shall be provided. The CONTRACTOR shall cooperate with parties involved in the delivery of mail and removal of trash and garbage so as to maintain existing schedules for such services. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time.

B. Temporary Bridges: Wherever necessary, the CONTRACTOR shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the CONTRACTOR shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the ENGINEER prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the CONTRACTOR shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.

C. Street Use: Nothing herein shall be construed to entitle the CONTRACTOR to the exclusive use of any public street, alleyway, or parking area during the performance of the WORK hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. No street shall be closed to the public without first obtaining permission of the ENGINEER and proper governmental authority. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the ENGINEER or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the WORK shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.

D. Traffic Control: For the protection of traffic in public or private streets and ways, the CONTRACTOR shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of Broward County and the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations," published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1).

The CONTRACTOR shall take all necessary precautions for the protection of the WORK and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The CONTRACTOR shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of the Florida Department of Transportation.

The CONTRACTOR shall submit 3 copies of a traffic control plan to the ENGINEER for approval a minimum of 2 weeks prior to construction. The ENGINEER reserves the right to observe these traffic control plans in use and to make any changes as field conditions warrant. Any changes shall supersede these plans and be done solely at the CONTRACTOR's expense.

The CONTRACTOR shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.

E. Temporary Driveway Closure: The CONTRACTOR shall notify the TOWN or occupant (if not TOWN-occupied) of the closure of the driveways to be closed more than one eight-hour work day at least 3 working days prior to the closure. The CONTRACTOR shall minimize the inconvenience and minimize the time period that the driveways will be closed. The CONTRACTOR shall fully explain to the TOWN/occupant how long the work will take and when closure is to start. Total closure time shall not exceed 5 days.

1.03 <u>CONTRACTOR'S WORK AND STORAGE AREA:</u>

A. The CONTRACTOR shall designate and arrange for the use of a portion of the property, adjacent to the WORK for its exclusive use during the term of the Contract as storage and shop area for its construction operations relative to this Contract.

B. The CONTRACTOR shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the WORK.

C. The CONTRACTOR shall construct and use a separate storage area for hazardous materials used in constructing the WORK.

1. For the purpose of this paragraph, hazardous materials to be stored in the separate area are all products labeled with any of the following terms: Warning, Caution, Poisonous, Toxic, flammable, Corrosive, Reactive, or Explosive. In addition, whether or not so labeled, the following materials shall be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints and paint thinners, two-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbent.

2. Hazardous materials shall be stored in groupings according to the Material Safety Data Sheets.

3. The CONTRACTOR shall develop and submit to the ENGINEER a plan for storing and disposing of the materials above.

4. The CONTRACTOR shall obtain and submit to the ENGINEER a single EPA number for wastes generated at the site.

5. The separate storage area shall meet all the requirements of all authorities having jurisdiction over the storage of hazardous materials.

6. All hazardous materials which are delivered in containers shall be stored in the original containers until use. Hazardous materials which are delivered in bulk shall be stored in containers which meet the requirements of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of Mobilization and of all other work.

END OF SECTION 01550

## PART 1 - GENERAL

### 1.01 REQUIREMENTS INCLUDED

A. Provide and maintain methods, equipment, and temporary construction, as necessary, to provide controls over environmental conditions at the construction site and related area under CONTRACTOR's control; remove physical evidence of temporary facilities at completion of work.

### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

### 1.03 NOISE CONTROL

A. Provide all necessary requirements for noise control during the construction period.

1. Noise procedures shall conform to all applicable OSHA requirements and local ordinances having jurisdiction on the work.

2. Noise levels during nighttime hours shall not exceed 55 db measured at the property line of a residence.

### 1.04 DUST CONTROL

A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

### 1.05 WATER CONTROL

A. Provide methods to control surface water to prevent damage to the project, the site, or adjoining properties.

1. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff.

B. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface and water.

C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas.

### 1.06 PEST CONTROL

A. Provide pest control as necessary to prevent infestation of construction or storage area.

1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

2. Should the use of pesticides be considered necessary, submit an informational copy of the proposed program to TOWN with a copy to ENGINEER. Clearly indicate:

   a. The area or areas to be treated.
   b. The pesticide to be used, with a copy of the manufacturer's printed instructions.
   c. The pollution preventative measures to be employed.

B. The use of any pesticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

1.07 RODENT CONTROL

A. Provide rodent control as necessary to prevent infestation of construction or storage area.

1. Employ methods and use materials, which will not adversely affect conditions at the site or on adjoining properties

2. Should the use of rodenticide be considered necessary, submit an informational copy of the proposed program to TOWN with a copy to TOWN's Representative. Clearly indicate:

   a. the area or areas to be treated.
   b. the rodenticide to be used, with a copy of the manufacturer's printed instructions.
   c. the pollution preventative measures to be employed.

B. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations.

1.08 DEBRIS CONTROL

A. Maintain all areas under CONTRACTOR's control free of extraneous debris.

B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking area, or along access roads and haul routes.

1. Provide containers for deposit of debris as specified in Section 01710 - Cleaning.

2. Prohibit overloading of trucks to prevent spillage on access and haul routes.

   a. Provide periodic inspection of traffic areas to enforce requirements.

C. Schedule periodic collections and disposal of debris as specified in Section 01710 - Cleaning.

1. Provide additional collections and disposal of debris whenever the periodic schedule is inadequate to prevent accumulation.

1.09 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

B. Provide equipment and personnel, perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids.

1. Excavate and dispose of any contaminated earth off-site and replace with suitable compacted fill and topsoil.

C. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.

2. Prevent harmful dispersal of pollutants into the atmosphere.

1.10 EROSION CONTROL

A. Plan and execute construction and earthwork, by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas to prevent erosion and sedimentation.

1. Hold the areas of bare soil exposed at one time to a minimum.

2. Provide temporary control measures such as berms, dikes and drains.

3. Provide silt screens as required preventing surface water contamination.

B. Construct fills and waste areas by selective placement to eliminate surface silts or clays, which will erode.

C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

D. All erosion control procedures must comply with the National Pollutant Discharge Elimination System (NPDES). The CONTRACTOR shall develop and implement a Stormwater Pollution Prevention Plan as outlined by NPDES.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 01560

## PART 1 - GENERAL

### 1.01 REQUIREMENTS INCLUDED

A. Provide, operate and maintain equipment, services and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas.

B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or specified conditions.

### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

### 1.03 TRAFFIC SIGNALS AND SIGNS

A. Provide and operate traffic control and directional signals or signs required to direct and maintain an orderly flow of traffic in all areas under CONTRACTOR's control, or affected by CONTRACTOR's operations.

### 1.04 FLAGPERSON

A. Provide qualified and suitably equipped flag person when construction operations encroach on traffic lanes, as required for regulation of traffic.

### 1.05 FLARES AND LIGHTS

A. Provide flares and lights during periods of low visibility:

1. To clearly delineate traffic lanes and to guide traffic.

2. For use of flag person in directing traffic.

B. Provide illumination of critical traffic and parking areas.

1. Maintain free vehicular access to and through parking areas.

2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

### 1.07 HAUL ROUTES

A. Consult with TOWN and governing authorities, establish public thoroughfares which will be used as haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to expedite traffic flow, to minimize interference with normal public traffic.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement and payment for work under the section, it shall be included in the lump sum price bid for Maintenance of Traffic.

END OF SECTION 01570

## PART 1 - GENERAL

### 1.01 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the work:

1. Conform to applicable specifications and standards.

2. Comply with size, make, type and quality specified, or as specifically approved in writing by the TOWN's Representative.

3. Manufactured and fabricated products:

a. Design, fabricate and assemble in accord with the best engineering and shop practices.

b. Manufacture like parts of duplicate units to standard sizes and gauges to be interchangeable.

c. Two or more items of the same kind shall be identical, by the same manufacturer.

d. Products shall be suitable for service conditions.

e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

### 1.03 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to TOWN's Representative. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with TOWN's Representative for further instructions.

2. Do not proceed with work without clear instructions.

C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site. Products shall be delivered to the job site on an "as needed" basis.

1. Deliver products in undamaged condition, in manufacturers' original containers or packaging, with identifying labels intact with legible markings.

2. Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.

3. Pipe and materials shall not be strung out along installation routes for longer than two (2) weeks prior to installation.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

C. Coordinate deliveries to avoid conflict with Work and conditions at site:

1. Work of other contractors, or TOWN.

2. Limitations of storage space.

3. Availability of equipment and personnel for handling products.

4. TOWN's use of premises.

D. Deliver products in undamaged condition in original containers or packaging, with identifying labels intact and legible.

E. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.

F. Immediately on delivery, inspect shipment to assure:

1. Product complies with requirements of Contract Documents and reviewed submittals.

2. Quantities are correct.

3. Containers and packages are intact, labels are legible.

4. Products are properly protected and undamaged.

G. Provide equipment and personnel necessary to handle products, including those provided by TOWN, by methods to prevent soiling or damage to products or packaging.

H. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

I. Handle products by methods to prevent bending or overstressing.

J. Lift heavy components only at designated lifting points.

1.05 STORAGE

A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weather-tight enclosures.

2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

3. Store unpacked products on shelves, in bins or in neat piles, accessible for inspection.

B. Exterior Storage

1. Provide substantial platforms, blocking or skids to support fabricating products above ground, prevent soiling or staining.

a. Cover products, subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.

2. Store loose granular materials on solid surface such as paved areas, or provide plywood or sheet materials to prevent mixing with foreign matter.

a. Provide surface drainage to prevent flow or ponding of rainwater.

b. Prevent mixing of refuse or chemically injurious materials or liquids.

1.06 MAINTENANCE OF STORAGE

A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.

2. Required environmental conditions are maintained on continuing basis.

3. Surfaces of products exposed to elements are not adversely affected.

a. Any weathering of products, coatings and finishes is not acceptable under requirements of Contract Documents.

B. Mechanical and electrical equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package.

1.07 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of work.

B. Control traffic to prevent damage to equipment and surfaces.

C. Provide coverings to protect finished surfaces from damage.

1. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent work.

2. Protect finished floors and stairs from dirt and damage.

a. In areas subject to foot traffic, secure heavy paper, sheet goods, or other materials in place.

b. For movement of heavy products, lay planking or similar materials in place.

c. Cover wall and floor surfaces in the vicinity of construction personnel activities and all finished surfaces used by construction personnel.

D. Waterproofed surfaces

1. Prohibit use of surfaces for traffic of any kind, and for storage of any products.

2. When some activity must take place in order to carry out the Contract, obtain recommendations of installer for protection of surface.

a. Install recommended protection; remove on completion of that activity.

b. Restrict use of adjacent unprotected areas.

E. Lawns and landscaping

1. Prohibit traffic of any kind across planted lawn and landscaped areas.

F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

1.08 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Limitations on substitutions.

1. During bidding period, Instructions to Bidders govern times for submitting requests for substitutions under requirements specified in this section.

2. Substitutions will not be considered when indicated on shop drawings or product data submittals without separate formal request, when requested directly by Subcontractor or supplier, or when acceptance will require substantial revision of Contract Documents.

3. Substitute products shall not be ordered or installed without written acceptance.

4. Only one (1) request for substitution for each product will be considered. When substitution is not accepted, provide specified product.

B. Products List

1. Within 15 days after Contract Date submit to ENGINEER a complete list of major products proposed to be used, with the name of the manufacturer and the installing Subcontractor.

C. Contractors Options

1. For products specified only by reference standard, select any product meeting that standard.

2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named or approved equal, which complies with the Specifications.

3. For products specified by naming one or more products or manufacturers and "or approved equal," CONTRACTOR must submit a request as for substitutions for any product or manufacturer not specifically named.

D. Substitutions

1. For a period of 15 days after Contract Date, ENGINEER will consider written request from CONTRACTOR for substitution of products.

2. Identify product by specification Section and Article Numbers. Provide manufacturer's name and address, trade name of product, and model of catalog number. List fabricators and suppliers as appropriate.

3. List similar projects using product, dates of installation, and names of ENGINEER and TOWN.

4. List availability of maintenance services and replacement materials.

5. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:

a. Comparison of the qualities and performance of the proposed substitution with that specified.

b. Changes required in other elements of the work because of the substitution.

c. Effect on the construction schedule.

d. Cost data comparing the proposed substitution with the product specified.

e. Any required license fees or royalties.

f. Availability of maintenance services, and source of replacement materials.

6. The burden of proof as to the type, function, and quality of any such substitute material or equipment shall be upon the CONTRACTOR.

7. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitute material or equipment and the ENGINEER's decision shall be final.

8. The ENGINEER may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed substitute.

9. The TOWN may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

10. Acceptance by the ENGINEER of a substitute item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item.

11. The CONTRACTOR shall be responsible for resultant changes and all additional costs which the accepted substitution requires in the CONTRACTOR work, the work of its Subcontractors and of other Contractors, and shall effect such changes without cost to the TOWN.

E. Contractors Representation:

1. A request for a substitution constitutes a representation that CONTRACTOR:

a. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.

b. Will provide the same guarantees or bonds for the substitution as for the product specified.

c. Will coordinate the installation of an accepted substitution into the work, and make such other changes as may be required to make the work complete in all respects.

d. Waives all claims for additional costs, under CONTRACTOR’S responsibility, which may subsequently become apparent.

F. Submittal Procedures

1. Submit three (3) copies of request for substitution.

2. ENGINEER will review requests for substitutions with reasonable promptness, and notify CONTRACTOR, in writing, of the decision to accept or reject the requested substitution.

3. During the bidding period, ENGINEER will record acceptable substitutions in Addenda.

4. After award of Contract, ENGINEER will notify CONTRACTOR, in writing, of decision to accept or reject requested substitutions in Addenda.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01600

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the work.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 SUBSTANTIAL COMPLETION

A. When CONTRACTOR considers the work is substantially complete, CONTRACTOR shall submit to TOWN's Representative:

1. A written notice that the work, or designated portion thereof is substantially complete.

2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, TOWN's Representative and ENGINEER will make an inspection to determine the status of completion.

C. Should TOWN's Representative determine that the work is not substantially complete:

1. TOWN's Representative will promptly notify the CONTRACTOR in writing, giving the reasons therefore.

2. CONTRACTOR shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the TOWN's Representative.

3. TOWN's Representative and ENGINEER will reinspect the work.

D. When TOWN's Representative and ENGINEER concur that the work is substantially complete, TOWN's Representative will:

1. Prepare a Letter of Substantial Completion accompanied by CONTRACTOR's list of items to be completed or corrected, as verified and amended by the TOWN's Representative.

1.04 FINAL INSPECTION

A. When CONTRACTOR considers the work is complete, CONTRACTOR shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the TOWN's Representative and are operational.

5. Work is completed and ready for final inspection.

B. TOWN's Representative and ENGINEER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should TOWN's Representative and ENGINEER consider that the work is incomplete and defective:

1. TOWN's Representative will promptly notify the CONTRACTOR, in writing, listing the incomplete or defective work.

2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to TOWN's Representative that the work is complete.

3. TOWN's Representative and ENGINEER will reinspect the work.

B. When the TOWN's Representative finds that the work is acceptable under the Contract Documents, TOWN's Representative shall request the CONTRACTOR to make closeout submittals.

1.05 REINSPECTION FEES

A. Should TOWN's Representative perform re-inspections due to failure of the work to comply with the claims of status of completion made by the CONTRACTOR:

1. TOWN will compensate TOWN's Representative and ENGINEER for such additional services.

2. TOWN will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO TOWN'S REPRESENTATIVE

A. Evidence of compliance with requirements of governing authorities.

1. Certificate of Occupancy.

2. Certificates of Inspection.

a. Mechanical
b. Electrical
c. Other, as may be required.

B. Project Record Documents: To requirements of Section 01720.

C. Guarantees and Bonds: To requirements of Section 01740.

D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary General Conditions.

E. Certificate of Insurance for Products and Completed Operations.

1.07 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to TOWN's Representative.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous Change Orders.
b. Allowances.
c. Unit Prices.
d. Deductions for uncorrected work.
e. Penalties and Bonuses.
f. Deductions for liquidated damages.
g. Deductions for reinspection payments.
h. Other adjustments.

3. Total Contract Sum, as required.

4. Previous payments.

5. Sum remaining due.

C. TOWN's Representative will prepare a final Change Order, reflecting approved adjustments to the Contract Sum, which were not previously made by Change Orders.

1.08 FINAL APPLICATION FOR PAYMENT

A. CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract. At minimum, final payment will be contingent upon the CONTRACTOR producing the following:

- As-Builts Record Drawings,
- Consent of Surity, and
- Release of Liens.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01700

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by the General Conditions.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the work, the site and adjacent properties free from accumulation of waste material, rubbish and windblown debris, resulting from Construction Work.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

C. The TOWN's Representative reserves the right to direct the CONTRACTOR to remove waste materials

D. Mechanical Sweeping: CONTRACTOR shall maintain on site a mechanical sweeping device for removing debris from existing, temporary and permanent pavement.

3.02 DUST CONTROL

A. Perform operations so that dust and other contaminants resulting from Construction Work operations will not cause any damages or maintenance problems to adjacent properties.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.03 FINAL CLEANING

A. Employ skilled workmen for final cleaning.

B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

C. Polish glossy surfaces to a clear shine.

D. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

E. Prior to final completion, or TOWN occupancy, CONTRACTOR shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify the entire work is clean.

F. All storage and staging areas shall be cleaned and returned to prior conditions or better as per requirements of this section.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 01710

## PART 1 - GENERAL

### 1.01 REQUIREMENTS INCLUDED

A. Maintain at the site of the TOWN a record copy of:

1. Drawings (Auto CAD 2005 or approved equal)
2. Specifications
3. Addenda
4. Change Orders and other modifications to the Contract.
5. Approved Shop Drawings, Product Data and Samples.
6. Field Test Records.

### 1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

### 1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in CONTRACTOR's office apart from documents used for construction.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by TOWN's Representative.

### 1.04 MARKING DEVICES

A. Provide felt tip-marking pens for recording information in the color code designated by TOWN's Representative.

### 1.05 RECORDING

A. Label each document, "PROJECT RECORD" in neat large printed letters, or by rubber stamp.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction: (in Auto CAD 2005 format or approved equal)

1. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

3. Field changes of dimension and detail.

4. Changes made by Field Order or by Change Order.

5. Details not on original Contract Drawings.

D. Specifications and Addenda; Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and supplier of each produce and item of equipment actually installed.

2. Changes made by field order or by Change Order.

1.06 AS-BUILT PLANS (RECORD DRAWINGS)

A. The CONTRACTOR shall maintain a full size (24"X36") field drawings and electronically in Auto CAD 2005 format (or approved equal) to reflect the "as-built" items of work as the work progresses. Upon completion of the work, the CONTRACTOR shall prepare a record set of "as-built" drawings on full-size, reproducible material. One set of full size design drawings on reproducible material will be furnished to the CONTRACTOR by the design ENGINEER at the current square foot price. No separate payment will be made for those "as-built" drawings.

B. The cost of maintaining record changes, and preparation of the Record Drawings shall be included in the unit prices bid for the affected items. Upon completion of the work, the CONTRACTOR shall furnish the ENGINEER the reproducible "as-built" Drawings. The completed Record drawings shall be delivered to the ENGINEER at least 48 hours prior to final inspection of the work. The Final Inspection will not be conducted unless the Record Drawings are in the possession of the ENGINEER.

C. The completed (or final) record drawings shall be certified by a Professional Land Surveyor registered in the State of Florida. This certification shall consist of the surveyor's embossed seal bearing registration number, the surveyor's signature and date on each sheet of the drawing set. In addition, the key sheet, cover sheet or first sheet of the plans set shall list the business address and telephone number of the surveyor.

D. Representative items of work that should be shown on the record drawings as verified, changed or added are shown below:

1. Plans:

a. Structure types, location with grade of rim and flow-line elevations.

b. Sewer type, length, size and elevations.
c. Utility type, length, size and elevation in conflict structures.
d. All manholes, valves and hydrants within right-of-way.
e. Spot (critical) elevations at plateaued intersections.
f. Sewer laterals shall be stationed between manholes.

2. Pavement Marking and Signing Plans: Sign location where installed if different from plans.

3. Sanitary Sewer, Water Main, and/or Draiange Plans: Location (horizontal and vertical) of all pipe lines, structures, fittings, valves and appurtenances.

E. The CONTRACTOR shall submit one set of progress record drawings with each application for payment. This drainage shall accurately depict the work completed and for which payment is being requested.

1.07 SUBMITTAL

A. At Contract closeout, deliver Record Documents including electronic file drawing in Auto CAD 2005 format (or approved equal) to TOWN's Representative, or presentation to the TOWN.

B. A complete set of "As-Built" Drawings shall be prepared in electronic (Auto CAD 2005 or approved equal) and hardcopy formats and delivered to the TOWN's Representative for the TOWN. Work shall be performed by a registered land surveyor and shall include, but not be limited to the following:

1. Valve boxes, splice boxes, pull boxes, all underground utilities-waterlines, electrical runs, irrigation system, storm drainage pipe and structures, finished necessary grades, benches, curbs, fences walls signs, light fixtures and other items as necessary.

C. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.

2. Project title and number.

3. CONTRACTOR's name and address.

4. Title and number of each Record Document.

5. Signature of CONTRACTOR or CONTRACTOR'S authorized representative.

1.08 "RED LINE" AS-BUILT INFORMATION

A. Submit with each progress payment application "red-line" "As-Built" Drawings current to the date of the submittal date with verification by the TOWN's Representative.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of all other work.

END OF SECTION 01720

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Compile specified guarantees and bonds.

B. Compile specified services and maintenance contracts.

C. Co-execute submittals when so specified.

D. Review submittals to verify compliance with Contract Documents.

E. Submit to TOWN's Representative for review and transmittal to TOWN.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 SUBMITTAL REQUIREMENTS

A. Assemble guarantees, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and Subcontractors.

B. Number of original signed copies required: Three each.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product or work item.

2. Firm, with name of principal, address and telephone number.

3. Scope.

4. Date of beginning warranty, bond or service and maintenance contract.

5. Duration of warranty, bond or service maintenance contract.

6. Provide information for TOWN's personnel:

a. Proper procedure in case of failure.
b. Instances, which might affect the validity of warranty or bond.

7. CONTRACTOR, name of responsible principal, address and telephone number.

1.04 FORM OF SUBMITTALS

A. Prepare in triplicate packets.

B. Format:

1. Size 8-1/2 in. x 11 in., punch sheets for standard 3-ring binder. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title "GUARANTEES AND BONDS". List:

a. Title of Project.
b. Name of CONTRACTOR.

C. Binders: Commercial quality, three-ring, with durable and cleanable plastic covers.

1.05 TIME OF SUBMITTALS

A. Make submittals within ten days after Date of Substantial Completion, prior to final request for payment.

B. For items of work, where acceptance is delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of guarantee period.

1.06 SUBMITTALS REQUIRED

A. Submit guarantees, bonds, and service and maintenance contracts for periods other than one year as specified in respective specific sections of the Specifications, (if applicable).

B. The General CONTRACTOR shall submit on the entire Project the one-year guarantee as per AIA, Document A-201 General Conditions, (except for certain portions of the work, where longer periods of time are specified in the specific applicable sections of the Specifications).

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 01740

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the subsurface investigation work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. The subsurface investigation for conditions of the project site is the sole responsibility of the CONTRACTOR. In preparing the Bid, the CONTRACTOR shall make all subsurface or surface investigations necessary to provide proper background and knowledge to determine the nature and extent of work required.

C. TOWN or TOWN's Representative provides no subsurface information, and makes no warranties or guarantees concerning the nature of materials to be encountered on the site.

1.03 RELATED WORK

A. Section 02110 - Clearing.

B. Section 02200 - Earthwork.

C. Section 02400 - Storm Drainage Facilities.

D. All applicable sections under Divisions 1, 2, 3, and 4.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section; it shall be included in the price of all other work.

END OF SECTION 02010

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the site demolition work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

1.03 RELATED WORK

A. Section 02200 - Earthwork.

B. All applicable Sections under Divisions 1, 2, 3, and 4.

1.04 QUALITY ASSURANCE

A. CONTRACTOR Qualifications: Minimum of five years experience in demolition of comparable nature.

B. Requirements of All Applicable Regulatory Agencies:

1. All applicable Building Codes and other Public Agencies having jurisdiction upon the work.

1.05 SUBMITTALS

A. Permits and notices authorizing building demolition.

B. Certificates of severance of utility services.

C. Permit for transport and disposal of debris.

D. Demolition procedures and operational sequence for review and acceptance by ENGINEER.

1.06 JOB CONDITIONS

A. Existing Conditions

1. The demolition work shall be done as indicated on the construction plans.

2. Remove all demolition debris from the site the same day the work is performed. Leave no deposits of demolished material on site over night.

3. Structural demolition, excavation, backfill and compaction as indicated in drawings.

B. Protection:

1. Erect barriers, fences, guardrails, enclosures, and shoring to protect personnel, structures, and utilities remaining intact.
2. Protect designated trees and plants from damages.

3. Use all means necessary to protect existing objects and vegetation designated to remain, and, in the event of damage, immediately make all repairs, replacements and dressings to damaged plants necessary, to the approval of the ENGINEER at no additional cost to the TOWN.

C. Maintaining Traffic:

1. Ensure minimum interference with roads, streets, driveways, sidewalks, and adjacent facilities.

2. Do not close or obstruct streets and sidewalks without written approval from the ENGINEER.

3. If required by governing authorities, provide alternate routes around closed or obstructed traffic ways.

D. Dust Control:

1. Use all means necessary for preventing dust from demolition operations from being a nuisance to adjacent property TOWNs. Methods used for dust control are subject to approval by the ENGINEER prior to use.

E. Burning:

1. On-site burning will not be permitted.

1.07 GENERAL ITEMS

A. Scope of work shall comprise the following: Provide all labor, materials, necessary equipment and services to complete the demolition and clearing work, as indicated on the contract plans, and as specified herein.

B. The CONTRACTOR shall provide references to the TOWN to demonstrate a minimum of five years experience in demolition of a comparable nature. Current occupational licenses held by CONTRACTOR shall be submitted to TOWN.

C. The CONTRACTOR shall be responsible for adherence to all applicable codes of all regulatory agencies having jurisdiction upon the works.

1.08 PRE-DEMOLITION MEETING

A. A meeting shall be held with the TOWN or TOWN's representative at the jobsite to describe intended demolition and cleaning procedures and schedules. This shall include identifying access routes for bringing necessary equipment in, removing debris from site, and designation of any trees, drives or other items to remain.

1.09 EXISTING CONDITIONS

A. The CONTRACTOR shall become thoroughly familiar with the site, and of existing utilities and their connections, and note all conditions, which may influence the work.

B. By submitting a bid, the CONTRACTOR affirms that CONTRACTOR has carefully examined the site and all conditions affecting work. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

C. The TOWN shall be responsible for removal of all hazardous materials such as asbestos, chemicals, etc., from the site prior to CONTRACTOR mobilizing on site. The TOWN shall be notified immediately should the CONTRACTOR discover any further hazardous materials during demolition.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 INSPECTION

A. Contractor shall verify that structures to be demolished are discontinued in use and ready for removal.

B. Contractor shall not commence work until all conditions and requirements of all applicable public agencies are complied with.

3.02 PREPARATION

A. Arrange for, and verify termination of utility services to include removing meters and capping lines.

B. Notification: Notify the TOWN at least three full working days prior to commencing the work of this Section.

3.03 CLARIFICATION

A. The drawings do not purport to show all objects existing on the site.

B. Before commencing the work of this Section, verify with the TOWN all objects to be removed and all objects to be preserved.

3.04 SCHEDULING

A. Schedule all work in a careful manner with all necessary consideration for the public and the TOWN.

B. Avoid interference with the use of, and passage to and from, adjacent facilities.

3.05 DISCONNECTION OF UTILITIES

A. Before starting site operations, disconnect or arrange for the disconnection of all affected utility service.

1. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Disconnect and stub off. Notify affected utility company in advance and obtain approval before starting this work.

2. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction.

3. Place markers to indicate location of disconnected services.

4. On-site drainage structures and drain fields shall be removed in their entirety by methods approved by the TOWN's representative.

3.06 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Utility Services: Maintain existing offsite utilities, keep in service, and protect against damage during demolition operations.

B. Prevent movement or settlement of adjacent structures. Provide and place bracing or shoring and be responsible for safety and support of structures. Assume liability for such movement, settlement, damage, or injury.

C. Cease operations and notify TOWN immediately if safety of adjacent structures appears to be endangered. Take precautions to properly support structures. Do not resume operations until safety is restored.

D. Prevent movement, settlement, damage, or collapse of adjacent services, sidewalks, driveways and trees. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the TOWN.

E. Ensure safe passage of persons around areas of demolition.

3.07 MAINTAINING TRAFFIC

A. Do not interfere with use of adjacent buildings and facilities. Maintain free and safe passage to and from. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed travel ways if required by governing authorities.

3.08 POLLUTION CONTROLS

A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

B. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations as directed by the TOWN or their representative or governing authorities. Return adjacent areas to condition existing prior to start of work.

3.09 INSPECTION AND PREPARATION

A. Verify that structures to be demolished are discontinued in use and ready for removal.

B. Do not commence work until all conditions and requirements of all applicable public agencies are complied with.

C. Arrange for, and verify termination of utility services to include removing meters and capping lines.

D. The drawings do not purport to show all objects existing on the site; at the pre-demolition meeting before commencement of the work, verify with the TOWN all objects to be removed and all objects to be preserved.

3.10 DEMOLITION

A. Pull out any existing utility lines designated for abandonment, irrigation, electrical lines, pull boxes and splice boxes, MAS'S and catch basins to be removed and all other objects designated to be removed or interfering with the work. Contact the utility company or agency involved for their requirements for performing this work. All removed equipment and materials shall be removed from the work area the same day as removed.

B. Remove all debris from the site and leave the site in a neat, orderly condition to the full acceptance of the ENGINEER, or the TOWN. No debris shall be left on the site over night.

C. Clear and Grub and dispose of all trees, shrubs and other organic matter not otherwise addressed on tree removal and relocation plans and specifications.

3.11 DEMOLITION OF SITE STRUCTURES

A. Demolish all site structure items designated to be removed or which are required to be removed to perform the work. This item does not include buildings.

3.12 REMOVAL OF DEBRIS AND DISPOSAL OF MATERIAL

A. Material resulting from demolition and not scheduled for salvaging shall become the property of the CONTRACTOR and shall be removed from site and legally disposed of off-site. Disposal

shall be timely, performed as promptly as possible and not left until the final cleanup. Material shall not be left on the job site for more than 60 days.

B. Remove from site contaminated, vermin infested, or dangerous materials encountered and disposed of by safe means so as not to endanger health of workers and public.

C. Burning of removed materials from demolished structures will not be permitted on-site.

3.13 COMPLETION OF WORK

A. Leave the site in a neat, orderly condition to the full acceptance of the TOWN.

B. Dirt remaining after demolition shall be graded level and compacted, in preparation for filling operations to follow demolition. Trenches shall be filled in layers of 12" maximum thickness and compacted in accordance with the technical specifications applicable to backfilling of trenches.

3.14 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the lump sum price bid for items associated with the demolition.

END OF SECTION 02050

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the clearing work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Under this section, the CONTRACTOR shall do all clearing, grubbing, root-raking, and necessary clean-up operations in connection with the construction of the work and its related site work.

C. The work shall consist of the removal and disposal of trees, stumps, roots, limbs, brush, fences, asphalt, etc. from all project areas as designated on the drawings as specified herein, and as directed by the ENGINEER on the site.

D. The CONTRACTOR shall remove all refuse, asphalt pavement, concrete pavement, glass, metal, stone, plaster, lumber, paper materials, and any and all trash found in clearing and adjacent areas as directed by the ENGINEER.

E. The CONTRACTOR shall furnish all services, labor, transportation, materials, and equipment necessary for the performance of these operations. All clearing and cleanup operations shall be accomplished to the complete satisfaction of the ENGINEER.

F. The CONTRACTOR shall strip all existing topsoil and stockpile it on-site in locations approved by the TOWN's Representative. All topsoil material shall be stockpiled within a haul distance of 3,000 feet.

1.03 RELATED WORK

A. Section 02010 - Subsurface Investigation

B. Section 02200 - Earthwork.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 TREE REMOVAL AND TREE PRESERVATION

A. No trees shall be removed if located outside of the right-of-way and dedicated easement.

B. Within the rights-of-way and easements, no trees with a trunk diameter of 3" or greater at 4-1/2" above grade shall be removed without the approval of the ENGINEER with the exception of Australian Pines, Meleleuca or Florida Holly. Trees shall be evaluated on an individual basis in accordance with following:

a. Type and size of tree.
b. Proximity to proposed and/or existing utility lines and/or exfiltration trench.
c. Change in adjacent grades for swale excavation.
d. Proximity to proposed sidewalk.
e. Proximity to proposed edge of roadway.
f. Living condition of the tree.

C. If trees are determined to remain, Biobarrier shall be installed in accordance with the Biobarrier detail as shown on the Landscape Plans.

3.02 MEASUREMENT AND PAYMENT

A. Measurement and payment for this item will be made per square yard and will include grading of swales per Section 02210.

END OF SECTION 02110

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the dewatering work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

### 1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02400 - Storm Drainage Facilities

C. Section 02401 - Exfiltration Trench Drains

D. Section 02221 - Excavation and Backfilling for Utilities

E. Section 02601 - Subterranean Structures

F. Section 02610 - Piping, General Section

## PART 2 - PRODUCTS

### 2.01 EQUIPMENT

Dewatering, where required, may include the use of temporary reservoirs and diking, well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means. Standby pumping equipment must be maintained on the job site and operate within any local noise ordinance limits. All safety requirements, fencing, etc. shall be installed and maintained by the CONTRACTOR.

## PART 3 - EXECUTION

### 3.01 GENERAL REQUIREMENTS

A. The CONTRACTOR shall provide all equipment necessary for dewatering. It shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent workmen for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

B. Dewatering for structures and pipelines shall commence when groundwater is first encountered, and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this Section or other requirements.

C. At all times, site grading shall promote drainage. Surface runoff shall be diverted from excavations, Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and be pumped or drained by gravity from the excavation to maintain a bottom free from standing water.

D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with pea rock at no additional cost to the TOWN.

F. The CONTRACTOR shall maintain the water level below the bottom of excavation in all work areas where groundwater occurs during excavation construction, backfilling, and up to acceptance.

G. The CONTRACTOR shall prevent flotation by maintaining a positive and continuous removal of water. The CONTRACTOR shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.

H. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the subsurface. A continual check by the CONTRACTOR shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

I. The CONTRACTOR is responsible for pot holing the sewer service laterals before well pointing. The TOWN will mark the general location; however CONTRACTOR must visually verify the location.

J. The CONTRACTOR shall dispose of water from the WORK in a suitable manner without damage to adjacent property. CONTRACTOR shall be responsible for obtaining any permits that may be necessary to dispose of water. No water shall be drained into work built or under construction without prior consent of the ENGINEER. Water shall be filtered using a silt box or another approved method to remove sand and fine-sized soil particles before disposal into any drainage system. The ENGINEER prior to being used shall approve dewatering disposal points. Storm drains used by the CONTRACTOR for dewatering shall be cleaned by a jet vac, or other method approved by the ENGINEER after dewatering is complete.

K. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, and sewers.

L. Dewatering of trenches and other excavations shall be considered, as incidental to the construction of the WORK and all costs thereof shall be included in the various contract prices in the Bid Forms, unless a separate bid item has been established for dewatering.

M. The CONTRACTOR shall submit a dewatering plan to the ENGINEER for review. The CONTRACTOR is advised that the Broward County Department of Planning and Environmental Protection (BCDPEP) and/or SFWMD may require that a dewatering plan, prepared by a State of Florida licensed Professional Engineer or Registered Professional Geologist. The CONTRACTOR will be responsible for obtaining any necessary dewatering permit including but not limited to Broward County Department of Planning and Environmental Protection (BCDPEP) and SFWMD.

N. The CONTRACTOR is advised that the BCDPEP may have identified contaminated sites within 1/4-mile radius of the project site. The CONTRACTOR may be required to provide testing and monitoring of the dewatering operations, and to institute dewatering methods and controls, as required by BCDPEP.

3.02 QUALITY CONTROL

A. It shall be the sole responsibility of the CONTRACTOR to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence.

B. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the CONTRACTOR.

C. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement, which may develop. The responsibility for conducting the dewatering operation in a manner, which will protect adjacent structures and facilities, rests solely with the CONTRACTOR. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the CONTRACTOR.

3.03 CONTRACTOR SUBMITTALS

Prior to commencement of excavation, the CONTRACTOR shall submit a detailed plan and operation schedule for dewatering of excavations. The CONTRACTOR may be required to demonstrate the system proposed and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times. The CONTRACTOR's dewatering plan is subject to review by the ENGINEER and regulatory agencies.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section. It shall be included in the appropriate unit price bid.

END OF SECTION 02140

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Earthwork, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

1. Excavation, including demucking

2. Backfilling

3. Filling

4. Grading, general site and building pads

5. Compaction

C. There shall be no classification of excavation for measurement of payment regardless of materials encountered.

D. The work of this Section includes all earthwork required for construction of the WORK. Such earthwork shall include, but not be limited to, the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work specified in the Contract Documents, which shall include, but not be limited to, the furnishing, placing, and removing of sheeting and bracing necessary to safely support the sides of all excavation; all pumping, ditching, draining, and other required measures for the removal or exclusion of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; the disposal of excess excavated materials; borrow of materials to makeup deficiencies for fills; and all other incidental earthwork, all in accordance with the requirement of the Contract Documents.

1.03 RELATED WORK

A. Section 02050 - Demolition.

B. Section 02210 - Site Grading.

C. All applicable sections of Division 1, 2, 3, and 4.

1.04 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".

B. Commercial Standards:

| | |
|---|---|
| ASTM D 422 | Method for Particle-Size Analysis of Soils. |
| ASTM D 698 | Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop. |
| ASTM D 1556 | Test Method for Density of Soil in Place by the Sand Cone Method. |
| ASTM D 1557 | Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in (457-mm) Drop. |
| ASTM D 1633 | Test Method for Compressive Strength of Molded Soil-Cement Cylinders. |
| ASTM D 2419 | Test Method for Sand Equivalent Value of Soils and Fine Aggregate. |
| ASTM D 2487 | Classification of Soils for Engineering Purposes. |
| ASTM D 2901 | Test Method for Cement Content of Freshly-Mixed Soil-Cement. |
| ASTM D 2922 | Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth). |
| ASTM D 4253 | Test Methods for Maximum Index Density of Soils Using a Vibratory Table. |
| ASTM D 4254 | Test Methods for Minimum Index Density of Soils and Calculation of Relative Density. |

1.05 SUBSOIL INFORMATION

A. There are no representations of any type made as to subsurface conditions.

1.06 SITE INSPECTION

A. CONTRACTOR shall visit the site and acquaint with all existing conditions. CONTRACTOR shall investigate the site and subsurface conditions with no cost to the TOWN if CONTRACTOR chooses to. Such subsurface investigations shall be performed only under time schedules and arrangements approved in advance by the TOWN's Representative and ENGINEER.

1.07 TOPOGRAPHIC INFORMATION

A. The existing grades shown on the drawings are approximate only and no representation is made as to their accuracy or consistency. The CONTRACTOR shall verify all existing grades to the extent necessary to insure completion of the job to the proposed grades indicated on the drawings.

1.08 DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL

A. Unsuitable material encountered during the course of construction shall be removed from the construction site at the expense of the CONTRACTOR. Unsuitable material shall not be stockpiled on-site. All suitable material shall be stockpiled on-site at areas designated by the ENGINEER.

1.09 BENCH MARKS AND MONUMENTS

A. CONTRACTOR shall employ a registered surveyor to lay out lines and grades as indicated. A surveyor registered in the State of Florida shall establish benchmarks. Benchmarks shall be permanent and easily accessible and maintained and replaced if disturbed or destroyed. All benchmarks shall be NAVD.

1.10 UTILITIES

A. Before starting site operations, disconnect or arrange for the disconnection of all utility services designated to be removed in accordance with Section 02050 "Demolition".

B. Locate all existing active utility lines traversing the site and determine the requirements for their protection. Preserve in operating condition all active utilities adjacent to or traversing the site and/or designated to remain.

C. Observe rules and regulations governing respective utilities in working under requirements of this section. Adequately protect utilities from damage, remove or replace as indicated, specified or required. Remove, plug or cap inactive or abandoned utilities encountered in excavation. Record the location of all utilities.

1.11 QUALITY ASSURANCE

A. A SOILS ENGINEER may be retained by the TOWN to observe performance of work in connection with excavating, filling, grading, and compaction. The CONTRACTOR shall re-adjust all work performed that does not meet technical or design requirements but make no deviations from the Contract documents without specific and written acceptance of the ENGINEER.

B. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556, ASTM D 2922, or by such other means acceptable to the ENGINEER.

C. In case the tests of the fill or backfill show non-compliance with the required density, the CONTRACTOR shall accomplish such remedy as may be required to insure compliance. Subsequent testing to show compliance shall be by a testing laboratory selected by the TOWN and shall be at the CONTRACTOR's expense.

D. Particle size analysis of soils and aggregates will be performed using ASTM D 422.

E. Determination of sand equivalent value will be performed using ASTM D 2419.

F. Unified Soil Classification System: References in these specifications to soil classification types and standards are set forth in ASTM D 2487. The CONTRACTOR shall be bound by all applicable provisions of said ASTM D 2487 in the interpretation of soil classifications.

G. Requirements of all applicable building codes and other public agencies having jurisdiction upon the work.

PART 2 - PRODUCTS

2.01 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENTS

A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, free from grass, roots, brush, or other vegetation.

B. Fill and backfill materials to be placed within 6 inches of any structure or pipe shall be free of rocks or unbroken masses of earth materials having a maximum dimension larger than 3 inches.

C. Suitable Materials: Soils not classified as unsuitable as defined in Paragraph entitled, "Unsuitable Material" herein, are defined as suitable materials and may be used in fills, backfilling, and embankment construction subject to the specified limitations. In addition, when acceptable to the ENGINEER, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.

D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the requirements of this Section or to meet the quantity requirements of the project the CONTRACTOR shall provide the imported materials at no additional expense to the TOWN, unless a unit price item is included for imported materials in the bidding schedule.

E. The following types of suitable materials are designated and defined as follows:

1. Type A (one inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1-inch sieve and a sand equivalent value not less than 50.

2. Type B (one half inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1/2-inch sieve and a sand equivalent value not less than 50.

3. Type C (sand backfill): Sand with 100 percent passing a 3/8-inch sieve, at least 90 percent passing a number 4 sieve, and a sand equivalent value not less than 30.

4. Type D (coarse rock backfill): Crushed rock or gravel with 100 percent passing a 1-inch sieve and not more than 10 percent passing a Number 4 sieve.

5. Type E (pea gravel backfill): Crushed rock or gravel with 100 percent passing a 1/2-inch sieve and not more than 10 percent passing a Number 4 sieve.

6. Type F (coarse drainrock): Crushed rock or gravel meeting the following gradation requirements:

| Sieve Size | Percentage Passing |
|---|---|
| 2-inch | 100 |
| 1-1/2-inch | 90-100 |
| 1-inch | 20-55 |
| 3/4-inch | 0-15 |
| No. 200 | 0-3 |

7. Type G (aggregate base): Crushed rock aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base for pavements. At the option of the CONTRACTOR, the grading for either the 1-1/2-inch maximum size or 3/4-inch maximum size shall be used. The sand equivalent value shall be not less than 22, and the material shall meet the following gradation requirements.

| | Percentage Passing | |
|---|---|---|
| Sieve Size | 1-1/2 inch Max. | 3/4-inch Max. |
| 2-inch | 100 | - |
| 1-1/2 inch | 90-100 | - |
| 1-inch | - | 100 |
| 3/4-inch | 50-85 | 90-100 |
| No. 4 | 25-45 | 35-55 |
| No. 30 | 10-25 | 10-30 |
| No. 200 | 2-9 | 2-9 |

8. Type H (graded drainrock): Drainrock shall be crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following gradation requirements.

| Sieve Size | Percentage Passing |
|---|---|
| 1-inch | 100 |
| 3/4-inch | 90-100 |
| 3/8-inch | 40-100 |
| No. 4 | 25-40 |
| No. 8 | 18-33 |
| No. 30 | 5-15 |
| No. 50 | 0-7 |
| No. 200 | 0-3 |

The drainrock shall have a sand equivalent value not less than 75. The finish-graded surface of the drainrock immediately beneath hydraulic structures shall be stabilized to provide a firm, smooth surface upon which to construct reinforced concrete floor slabs. The CONTRACTOR shall use, at its option, one of the asphalt types listed below:

| | Type 1 | Type 2 | Type 3 |
|---|---|---|---|
| Designation | SC-70 | SC-250 | RS-1 |
| Spray Temperature (°F) | 135-175 | 165-200 | 70-120 |
| Coverage (gal/ sq yd) | 0.50 | 0.50 | 0.50 |

If the surface remains tacky, sufficient sand shall be applied to absorb the excess asphalt.

9. Type I: Any other suitable material as defined herein.

10. Type J (cement-treated backfill): Material which consists of Type H material, or any mixture of Types B, C, G and H materials which has been cement-treated so that the cement content of the material is not less than 5 percent by weight when tested in accordance with ASTM D 2901. The ultimate compressive strength at 28 days shall be not less than 400 psi when tested in accordance with ASTM D 1633.

11. Type K (topsoil): Stockpiled topsoil materials, which have been obtained at the site by removing soil to a depth not exceeding 2 feet. Removal of the topsoil shall be done after the area has been stripped of vegetation and debris as specified.

12. Type L (Class I crushed stone): Manufactured angular, granular crushed stone, rock, or slag, with 100 percent passing a 1-inch sieve and less than 5 percent passing a Number 4 sieve.

13. Type M (aggregate subbase): Crushed rock aggregate subbase material that can be compacted readily by watering and rolling to form a firm stable base. The sand equivalent value shall be not less than 18 and shall meet the following gradation requirements.

| Sieve Size | Percentage Passing |
|---|---|
| 3-inch | 100 |
| 2-1/2 inch | 87-100 |
| No. 4 | 35-95 |
| No. 200 | 0-29 |

14. Type N (trench plug): Low permeable fill material, a non-dispersible clay material having a minimum plasticity index of 10.

2.02 UNSUITABLE MATERIAL

A. Unsuitable soils for fill material shall include soils which, when classified under ASTM D 2487, fall in the classifications of Pt, OH, CH, MH or OL.

B. In addition, any soil, which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

2.03 USE OF FILL, BACKFILL, AND EMBANKMENT MATERIAL TYPES

A. The CONTRACTOR shall use the types of materials as designated herein for all required fill, backfill, and embankment construction hereunder.

B. Where these Specifications conflict with the requirements of any local agency having jurisdiction, or with the requirements of a material manufacture, the ENGINEER shall be immediately notified. In case of conflict therewith, the CONTRACTOR shall use the most stringent requirement, as determined by the ENGINEER.

C. Fill and backfill types shall be used in accordance with the following provisions:

1. Embankment fills shall be constructed of Type I material, as defined herein, or any mixture of Type I and Type A through Type H materials.

2. Pipe zone backfill, as defined under "Pipe and Utility Trench Backfill" herein, shall consist of the following materials for each pipe material listed below. Where pipelines are installed on grades exceeding 4 percent, and where backfill materials are graded such that there is less than 10 percent passing a Number 4 sieve, trench plugs of Type J or N material shall be provided at maximum intervals of 200 feet or as shown on the Drawings.

   a. Mortar coated pipe, concrete pipe, and uncoated ductile iron pipe shall be provided Type A, B, C, D, E, or L pipe zone backfill material.

   b. Coal tar enamel coated pipe, polyethylene encased pipe, tape wrapped pipe, and other non-mortar coated pipe shall be backfilled with Type C pipe zone backfill material.

   c. Plastic pipe and vitrified clay pipe shall be backfilled with Type L pipe zone backfill material.

3. Trench zone backfill for pipelines as defined under "Pipe and Utility Trench Backfill" shall be Type I backfill material or any of Types A through H backfill materials or any mixture thereof, except that Type K material may be used for trench zone backfill in agricultural areas unless otherwise shown or specified.

4. Final backfill material for pipelines under paved area, as defined under "Pipe and Utility Trench Backfill" shall be Type G backfill material. Final backfill under areas not paved shall be the same material as that used for trench backfill, except that Type K material shall be used for final backfill in agricultural areas unless otherwise shown or specified.

5. Trench backfill and final backfill for pipelines under structures shall be the same material as used in the pipe zone, except where concrete encasement is required by the Contract Documents.

6. Aggregate base materials under pavements shall be Type G material constructed to the thickness shown or specified. Where specified or shown, aggregate subbase shall be Type M Material.

7. Backfill around structures shall be Type I material, or Types A through Type H materials, or any mixture thereof.

8. Backfill materials beneath structures shall be as follows:

   a. Drainrock materials under hydraulic structures or other water retaining structure with underdrain systems shall be Type H material.

   b. Under concrete hydraulic structures or other water retaining structures without underdrain systems, Types G or H materials shall be used.

   c. Under structures where groundwater must be removed to allow placement of concrete, Type F material shall be used.

   d. Under all other structures, Type D, E, G, or H material shall be used.

9. Backfill used to replace pipeline trench over-excavation shall be a layer of Type F material with a 6-inch top filter layer of Type E material or filter fabric to prevent migration of fines for wet trench conditions or the same material as used for the pipe zone backfill if the trench conditions are not wet. Filter fabric shall be Mirafi 140 N, Mirafi 700X, or equal.

10. The top 6 inches of fill on reservoir roofs, embankment fills around hydraulic structures, and all other embankment fills shall consist of Type K material, topsoil.

2.04 EMBANKMENT

A. The maximum sizes of rock, which will be permitted in the completed fill areas, are as follows:

| Depth Below Finish Grade | Maximum Allowable Diameter |
|---|---|
| Top 4 inches | 1 inch |
| 4 inches to 12 inches | 3-1/2 inches |
| 12 inches to 2 feet | 6 inches |
| 2 feet to 4 feet | 12 inches |
| 4 feet to 8 feet | 24 inches |
| Below 8 feet | 36 inches |

B. Embankments shall be constructed of material containing no muck, stumps, roots, brush, vegetable matter, rubbish or other material that will not compact into a suitable and enduring roadbed, and material designated as undesirable shall be removed from the site. Where embankments are constructed adjacent to bridge end bents or abutments, rock larger than 3-1/2 inches in diameter shall not be placed within three feet of the location of any abutment.

C. Fill material containing debris, sod, and biodegradable materials shall not be used as fill in construction areas.

D. Fill material required for the building pads and for pavement subgrade shall be granular fill, free of organic material.

E. Fill material required for pervious and sodded areas shall have a maximum organic component of 10%. CONTRACTOR shall provide, at CONTRACTOR'S cost, organic content test results for approval by the ENGINEER.

PART 3 - EXECUTION

3.01 JOB CONDITIONS

A. Protection: Use all means necessary to protect existing objects and vegetation. In the event of damage, immediately make all repairs, and replacements necessary to the acceptance of the TOWN's Representative and ENGINEER at no cost to the TOWN.

3.02 BACKFILL, FILLING & GRADING

A. Grades:

1. Cut, backfill, fill and grade to proper grade levels indicated. The proposed grades shown on the drawings are for establishing a finished grade over the site.

B. Filling:

1. Fill material shall be placed in horizontal layers and spread to obtain a uniform thickness.

2. After compaction, layers of fill are not to exceed twelve (12) inches for cohesive soils or eight (8) inches for non-cohesive soils.

3.03 STRUCTURE, ROADWAY, AND EMBANKMENT EXCAVATION

A. General: Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grades shown or ordered. Unless otherwise provided, the entire construction site shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The CONTRACTOR shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other measure for the removal or exclusion of water, including taking care of storm water, groundwater, and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

B. Excavation Beneath Structures and Embankments: Except where otherwise specified for a particular structure or ordered by the ENGINEER, excavation shall be carried to the grade of the bottom of the footing or slab. Where shown or ordered, areas beneath structures or fills shall be over-excavated. The subgrade areas beneath embankments shall be excavated to remove not less than the top [6 inches] of native material and where such subgrade is sloped, the native material shall be benched. When such over excavation is shown, the CONTRACTOR shall perform both over-excavation and subsequent backfill to the required grade. When such over-excavation is not shown but is ordered by the ENGINEER, such over-excavation and any resulting backfill will be paid for under a separate unit price bid item if such bid item has been established; otherwise payment will be made in accordance with a negotiated price. After the required excavation or over-excavation has been completed, the exposed surface shall be scarified to a depth of 6 inches, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I.

C. Excavation Beneath Paved Areas: Excavation under areas to be paved shall extend to the bottom of the aggregate base or subbase, if such base is called for; otherwise it shall extend to the paving thickness. After the required excavation has been completed, the top 12 inches of exposed surface shall be scarified, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I. The finished subgrade shall be even, self-draining, and in conformance with the slope of the finished pavement. Areas that could accumulate standing water shall be regraded to provide a self-draining subgrade.

D. Notification of ENGINEER: The CONTRACTOR shall notify the ENGINEER at least 3 days in advance of completion of any structure excavation and shall allow the ENGINEER a review period of at least one day before the exposed foundation is scarified and compacted or is covered with backfill or with any construction materials.

3.04 PIPELINE AND UTILITY TRENCH EXCAVATION

A. General: Unless otherwise shown or ordered, excavation for pipelines and utilities shall be open-cut trenches. Trench widths shall be kept as narrow as is practical for the method of pipe zone densification selected by the CONTRACTOR, but shall have a minimum width at the bottom of the trench equal to the outside diameter of the pipe plus 24 inches for mechanical compaction methods and 18 inches for water consolidation methods. The maximum width at the top of the pipe shall be equal to the outside diameter of the pipe plus 36 inches for pipe diameters 18 inches and larger and to the outside diameter of the pipe plus 24 inches for pipe diameters less than 18 inches, or as shown on the Drawings.

B. Trench Bottom: Except when pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. The trench bottom shall be given a final trim, using a string line for establishing grade, such that each pipe section when first laid will be continually in contact with the ground along the extreme bottom of the pipe. Rounding out the trench to form a cradle for the pipe will not be required. Excavations for pipe bells and welding shall be made as required.

C. Open Trench: The maximum amount of open trench permitted in any one location shall be 300 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, shall be covered by heavy steel plates adequately braced and capable of supporting

vehicular traffic in those locations where it is impractical to backfill at the end of each day. The above requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100 feet from any traveled roadway or occupied structure. In such cases, however, barricades and warning lights meeting OSHA requirements shall be provided and maintained.

D. Trench Over-Excavation: Where the Drawings indicate that trenches shall be over-excavated, they shall be excavated to the depth shown, and then backfilled to the grade of the bottom of the pipe.

E. Over-Excavation: When ordered by the ENGINEER, whether indicated on the Drawings or not, trenches shall be over-excavated beyond the depth shown. Such over-excavation shall be to the depth ordered. The trench shall then be backfilled to the grade of the bottom of the pipe. All work specified in this Section shall be performed by the CONTRACTOR when the over-excavation ordered by the ENGINEER is less than 6 inches below the limits shown. When the over-excavation ordered by the ENGINEER is 6 inches or greater below the limits shown, additional payment will be made to the CONTRACTOR for that portion of the work which is located below said 6-inch distance. Said additional payment will be made under separate unit price bid items for over-excavation and bedding if such bid items have been established; otherwise payment will be made in accordance with a negotiated price.

F. Where pipelines are to be installed in embankment or structure fills, the fill shall be constructed to a level at least one foot above the top of the pipe before the trench is excavated.

3.05 OVER-EXCAVATION NOT ORDERED, SPECIFIED, OR SHOWN

A. Any over-excavation carried below the grade ordered, specified, or shown, shall be backfilled to the required grade with the specified material and compaction. The CONTRACTOR at its own expense shall perform such work.

3.06 EXCAVATION IN LAWN AREAS

A. Where excavation occurs in lawn areas, the sod shall be carefully removed, kept damp, and stockpiled to preserve it for replacement. Excavated material may be placed on the lawn; provided that a drop cloth or other suitable method is employed to protect the lawn from damage. The lawn shall not remain covered for more than 72 hours. Immediately after completion of backfilling and testing of the pipeline, the sod shall be replaced and lightly rolled in a manner so as to restore the lawn as near as possible to its original condition. CONTRACTOR shall provide new sod if stockpiled sod has not been replaced within 72 hours.

3.07 EXCAVATION IN VICINITY OF TREES

A. Except where trees are shown to be removed, trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the ENGINEER. Trees shall be supported during excavation by any means previously reviewed and approved by the ENGINEER.

3.08 ROCK EXCAVATION

A. Rock is defined as follows:

1. Rock shall be classified as material having a blow count in excess of 30 blows per foot from a Standard Penetration Test (ASTM D-1586) and exceeding 1000 psi from an Unconfined Compression Strength Test (ASTM D-2938); and,
2. General Excavation - Any material that cannot be excavated with a single-toothed ripper drawn by a crawler tractor having a minimum draw bar pull rated at not less than 71,000 lbs. (Caterpillar D9N or equivalent), and occupying an original volume of at least 2 cubic yards or more; and,

3. Trench Excavation - Any material that cannot be excavated with a backhoe having a break out force rated at not less than 44,000 lbs. (Caterpillar 235D or equivalent), and occupying an original volume of at least 2 cubic yards.

B. Rock excavation shall include removal and disposal of the following: (1) all boulders measuring 1/3 of a cubic yard or more in volume; (2) all rock material in ledges, bedding deposits, and unstratified masses which cannot be removed without systematic drilling and blasting; (3) concrete or masonry structures which have been abandoned; and (4) conglomerate deposits which are so firmly cemented that they possess the characteristics of rock as described in Paragraph 3.09(A).

C. Said rock excavation shall be performed by the CONTRACTOR; provided, that should the quantity of rock excavation be affected by any change in the scope of the work, an appropriate adjustment of the contract price will be made under a separate bid item if such bid item has been established; otherwise payment will be made in accordance with a negotiated price.

D. Explosives and Blasting: Blasting will not be permitted, except by express permission of the ENGINEER on a case-by-case basis. The use of explosives will be subject to the approval and regulations of all agencies having jurisdiction. If blasting is utilized at the site of the WORK, the CONTRACTOR shall take all precautions and provide all protective measures necessary to prevent damage to property and structures or injury to person. Prior to blasting, the CONTRACTOR shall secure all permits required by law for blasting operations and shall provide any additional hazard insurance required by the TOWN. The CONTRACTOR shall have a fully qualified and experienced blasting foreman in charge of all blasting operations.

E. The CONTRACTOR will be held responsible for all and shall make good any damage caused by blasting or resulting from its possession or use of explosives on the WORK.

F. All operations involving the handling, storage, and use of explosives shall be conducted in accordance with the requirements of the OSHA Standards for Construction, and in accordance with all local laws and regulations.

3.09 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. The CONTRACTOR shall remove and dispose of all excess excavated material at a site within the town limits, selected by the CONTRACTOR and reviewed by the ENGINEER.

3.10 DISPOSAL OF UNSUITABLE EXCAVATED MATERIAL

A. The CONTRACTOR shall remove and dispose of all unsuitable excavated material. This shall include muck, tree roots, rocks, garbage, debris, or any other material designated as unsuitable by Paragraph 2 of this Section. Disposal shall be at a site selected by the CONTRACTOR that is designated as an approved disposal site for the unsuitable material.

3.11 BACKFILL - GENERAL

A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed. Backfill around water retaining structures shall not be placed until the structures have been tested, and the structures shall be full of water while backfill is being placed.

B. Except for drainrock materials being placed in over-excavated areas or trenches, backfill shall be placed after all water is removed from the excavation.

3.12 PLACING AND SPREADING OF BACKFILL MATERIALS

A. Backfill materials shall be placed and spread evenly in layers. When compaction is achieved using mechanical equipment the layers shall be evenly spread so that when compacted each layer shall not exceed 6 inches in thickness.

B. During spreading each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer. Pipe zone backfill materials shall be manually spread around the pipe so that when compacted the pipe zone backfill will provide uniform bearing and side support.

C. Where the backfill material moisture content is below the optimum moisture content water shall be added before or during spreading until the proper moisture content is achieved.

D. Where the backfill material moisture content is too high to permit the specified degree of compaction the material shall be dried until the moisture content is satisfactory.

3.13 COMPACTION - GENERAL

A. Compact each layer of fill in designated areas with approved equipment to achieve a maximum density at optimum moisture, AASHTO T 180 - latest edition.

1. Building Pads: compaction shall be to 98% of maximum density, unless otherwise shown on the drawings or specifications. Building pads shall be within plus or minus one-tenth (0.1) of a foot of the elevations shown on the plans.

2. Refer to Sections 02513 Asphaltic Concrete Paving and 02515 Portland Cement Concrete Paving for compaction requirements in the affected areas.

3. Under landscaped area, compaction shall be to density as specified in Paragraph 3.14.I., unless otherwise shown on the Drawings.

B. No backfill shall be placed against any masonry or other exposed building surface until permission has been given by the TOWN's Representative, and in no case until the masonry has been in place seven days.

C. Heavy construction equipment will not be permitted within ten (10) feet of any masonry or other exposed building surface.

D. Compaction in limited areas shall be obtained by the use of mechanical tampers or approved hand tampers. When hand tampers are used, the materials shall be deposited in layers not more than four inches thick. The hand tampers used shall be suitable for this purpose and shall have a face area of not more than 100 square inches. Special precautions shall be taken to prevent any wedging action against masonry, or other exposed building surfaces.

3.14 COMPACTION OF FILL, BACKFILL, AND EMBANKMENT MATERIALS

A. Each layer of Types, A, B, C, G, H, I, and K backfill materials as defined herein, where the material is graded such that at least 10 percent passes a No. 4 sieve, shall be mechanically compacted to the specified percentage of maximum density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content.

B. Each layer of Type D, E, F, and J backfill materials shall be compacted by means of at least 2 passes from a flat plate vibratory compactor. When such materials are used for pipe zone backfill, vibratory compaction shall be used at the top of the pipe zone or at vertical intervals of 24 inches, whichever is the least distance from the subgrade.

C. Type L material requires mechanical spreading and placement to fill voids but does not require mechanical compaction or vibration.

D. Fill on reservoir and structure roofs shall be deposited at least 30 days after the concrete roof slab has been placed. Equipment weighing more than 10,000 pounds when loaded shall not be used on a roof. A roller weighing not more than 8,000 pounds shall be used to compact fill on a roof.

E. Flooding, ponding, or jetting shall not be used for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate base materials.

F. Pipe zone backfill materials that are granular may be compacted by a combination of flooding and vibration using concrete vibrators or by jetting, when acceptable to the ENGINEER.

G. Pipeline trench zone backfill materials, containing 5 percent or less of material passing a No. 200 sieve, may be compacted using flooding and jetting or vibration if the CONTRACTOR uses effective procedures that yield the specified compaction test results. Flooding and jetting shall not be done in such a manner that the pipe or nearby utilities are damaged, in areas of poorly draining or expansive soils, or where the use of the procedure is prohibited by any agency having jurisdiction over the street or right-of-way. Approved jet pipes or immersible vibrators shall be used so that each backfill layer is saturated and consolidated to its full depth before the next layer is placed. Jet pipes shall be kept at least 6 inches away from the pipe where the backfills being consolidated and 2 feet away from other pipes or utilities.

H. Equipment weighing more than 10,000 pounds shall not be used closer to walls than a horizontal distance equal to the fill at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.

I. Compaction Requirements: The following compaction test requirements shall be in accordance with AASHTO T-180. Where agency or utility company requirements govern, the highest compaction standards shall apply.

| Location or Use of Fill | Percentage of Maximum Density |
|---|---|
| Pipe zone backfill portion above bedding for flexible pipe. | 98 |
| Pipe zone backfill bedding and over-excavated zones under bedding/pipe for flexible pipe, including trench plugs. | 98 |
| Pipe zone backfill portion above bedding for rigid pipe. | 98 |
| Pipe zone backfill bedding and over-excavated zones under bedding/pipe for rigid pipe. | 98 |
| Final backfill, beneath paved areas or structures | 98 |
| Final backfill, not beneath paved areas or structures | 95 |
| Trench zone backfill, not beneath paved areas or structures, including trench plugs | 95 |
| Embankments | 98 |
| Embankments, beneath paved areas or structures | 98 |
| Backfill beneath structures, hydraulic structures | 98 |
| Backfill around structures | 98 |

| Location or Use of Fill | Percentage of Maximum Density |
|---|---|
| Topsoil (Type K material) | 80 |
| Aggregate base or subbase Type G or M material) | 98 |

J. Trench Backfill Requirements: the pipe has been structurally designed based upon the trench configuration specified herein.

K. The CONTRACTOR shall maintain the indicated trench cross section up to a horizontal plane lying 6 inches above the top of the pipe.

L. If, at any location under said horizontal plane, the CONTRACTOR slopes the trench walls or exceeds the maximum trench widths indicated in the Contract Documents, the pipe zone backfill shall be "improved" or the pipe class increased as specified herein, at no additional cost to the TOWN. "Improved" backfill shall mean sand-cement backfill or other equivalent materials acceptable to the ENGINEER.

M. If the allowable deflection specified for the pipe is exceeded, the CONTRACTOR shall expose and reground or replace the pipe, repair all damaged lining and coating, and reinstall the pipe zone material and trench backfill as specified at no additional expense to the TOWN.

3.15 PIPE AND UTILITY TRENCH BACKFILL

A. Pipe zone Backfill: The pipe zone is defined as that portion of the vertical trench cross-section lying between a plane 6 inches below the bottom surface of the pipe, i.e., the trench subgrade, and a plane at a point 6 inches above the top surface of the pipe. The bedding for flexible pipe is defined as that portion of pipe zone backfill material between the trench subgrade and the bottom of the pipe. The bedding for rigid pipe is defined as that portion of the pipe zone backfill material between the trench subgrade and a level line which varies from the bottom of the pipe to the springline as shown.

B. Bedding shall be provided for all sewers, drainage pipelines, and other gravity flow pipelines. Unless otherwise specified or shown, for other pipelines the bedding may be omitted if all the following conditions exist.

1. The pipe bears on firm, undisturbed native soil, which contains only particles that will pass a one-inch sieve.

2. The trench excavation is not through rock or stones.

3. The trench subgrade soils are classified as suitable fill and backfill materials per Paragraph 2.01.

4. The trench subgrade soils have, as a maximum, a moisture content that allows compaction.

C. Where bedding is required, after compacting the bedding the CONTRACTOR shall perform a final trim using a stringline for establishing grade, such that each pipe section when first laid will be continually in contact with the bedding along the extreme bottom of the pipe. Excavation for pipe bells and welding shall be made as required.

D. The pipe zone shall be backfilled with the specified backfill material. The CONTRACTOR shall exercise care to prevent damage to the pipeline coating, cathodic bonds, or the pipe itself during the installation and backfill operations.

E. Trench Zone Backfill: After the pipe zone backfill has been placed as specified above, and after all excess water has completely drained from the trench, backfilling of the trench zone may proceed. The trench zone is defined as that portion of the vertical trench cross-section lying between a plane 6 inches above the top surface of the pipe and a plane at a point 18 inches below the finished surface grade, or if the trench is under pavement, 18 inches below the roadway subgrade. If flooding, ponding, or jetting is used the pipe shall be filled with water to prevent flotation.

F. Final Backfill: Final backfill is all backfill in the trench cross-sectional area within 18 inches of finished grade, of if the trench is under pavement, all backfill within 18 inches of the roadway subgrade.

3.16 EMBANKMENT CONSTRUCTION

A. The area where an embankment is to be constructed shall be cleared of all vegetation, roots and foreign material. Following this, the surface shall be moistened, scarified to a depth of 6 inches, and rolled or otherwise mechanically compacted as specified in Paragraph 3.14.I. Embankment fill material shall be placed and spread evenly in approximately horizontal layers. Each layer shall be moistened or aerated, as necessary. Unless otherwise approved by the ENGINEER, each layer shall not exceed 6 inches of compacted thickness. The embankment fill and the scarified layer of underlying ground shall be compacted to 95 percent of maximum density under structures and paved areas, and 90 percent of maximum density elsewhere.

B. When an embankment fill is to be made and compacted against hillsides or fill slopes steeper than 4:1, the slopes of hillsides or fills shall be horizontally benched to key the embankment fill to the underlying ground. A minimum of 12 inches normal to the slope of the hillside or fill shall be removed and recompacted as the embankment fill is brought up in layers. Material thus cut shall be recompacted along with the new fill material at the CONTRACTOR's expense. Hillside of fill slopes 4:1 or flatter shall be prepared in accordance with Paragraph A, above.

C. Where embankment or structure fills are constructed over pipelines, the first 4 feet of fill over the pipe shall be constructed using light placement and compaction equipment that does not damage the pipe. Heavy construction equipment shall maintain a minimum distance from the edge of the trench equal to the depth of the trench until at least 4 feet of fill over the pipe has been completed.

3.17 CORRECTION OF GRADE

A. Bring to required grade levels areas where settlement, erosion or other grade changes occur.

3.18 MAINTENANCE AND PROTECTION OF WORK

A. While construction is in progress adequate drainage for the roadbed shall be maintained at all times.

The CONTRACTOR shall maintain all earthwork construction throughout the life of the contract, unless otherwise provided, and shall take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. CONTRACTOR shall repair at

CONTRACTOR'S expense, except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work.

All channels excavated as a part of the contract work shall be maintained against natural shoaling or other encroachments to the lines, grades, and cross sections shown on the plans, until final acceptance of the project.

3.19 AS-BUILT SURVEY

A. At the completion of the work and prior to final inspection of the area, the CONTRACTOR shall provide the ENGINEER with an as-built topographic survey made by a registered Surveyor, of the State of Florida.

B. The surveyor is to certify on the survey whether or not the as-built conditions conform to the elevations shown on the Drawings to within plus or minus two-hundredth (0.02) of a foot.

3.20 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the unit price per square yard bid for compaction of subgrade when constructing new roads and shall be included in the cost of all other work called out in the bid schedule requiring earth work.

END OF SECTION 02200

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

1.02 WORK INCLUDED

A. The work covered by this section shall include all labor, equipment, services and materials necessary for bringing the entire site to elevations shown in the plans. The work included in this section shall include all necessary excavations for streets, ditches and swales. It shall include the construction of embankments and fills by the loading, movement, deposition and compaction of suitable fill materials resulting from above listed excavations. It shall include stockpiling of any excess material to an on-site location as specified by the TOWN.

B. It shall include rough grading within the roadways and parking lots to the elevations or cross-section details shown on the drawings.

C. It shall include the erection and maintenance of any barricades that are required for accident prevention and property protection.

D. It shall include removal and legal disposal of muck, rock boulders or any foreign material interfering with construction.

1.03 RELATED WORK

A. Section 02110 - Clearing

B. Section 02200 - Earthwork

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall be familiar with all work to be performed as specified and shown on the Drawings. CONTRACTOR shall ascertain where all excavation will be required and shall be solely responsible for all excavating to complete the Contract.

3.02 PAYMENT

A. No extra payment will be allowed for type or classification of material in excavation.

3.03 MATCHING EXISTING GRADES

A. Where existing roadbed surfaces are not at the elevation required prior to subgrade compaction, the CONTRACTOR shall perform any such excavation, filling, earthmoving and grading as may

be necessary to attain the proper compacted subgrade elevation before proceeding with base course construction.

3.04 UNSUITABLE MATERIAL

A. All muck, large rocks and boulders encountered during the work under this Contract shall be removed and legally disposed of in a manner approved by the TOWN's Representative.

3.05 EXCAVATION

A. All excavation shall be unclassified regardless of material encountered.

B. The CONTRACTOR shall make probings or sounding for subsurface rock to ascertain its location and depth.

C. It shall be the CONTRACTOR's responsibility to be familiar with soil conditions on the site. Borings, in addition to those provided by others, if any, shall be acquired by the CONTRACTOR, at the CONTRACTOR's expense.

D. Any wet excavated materials shall be drained before hauling or moving.

3.06 EMBANKMENT (FILL)

A. Embankment shall be constructed from suitable materials resulting from roadway or site excavation or approved materials furnished from off-site borrow areas.

B. Embankments shall be placed in successive layers of not more than eight inches in thickness, measured loose, for the full width of the embankment.

C. Each layer of the material used in the formation of roadbed embankments shall be compacted at optimum moisture content to a density as specified in Section 02200, Paragraph 3.14.I.

D. The existing material on the site may vary as to stability. The CONTRACTOR shall be familiar with the soil characteristics by site inspection borings, probings, etc., prior to bidding, as to the subsurface character of the material.

E. All unstable soil shall be removed and shall be replaced by material approved by the ENGINEER.

3.07 GRADING

A. The material excavated shall be transported and spread over the entire work site and shall be graded so that the finished grade shall be within $\pm$0.1 feet of the grades indicated by the grade stakes and control point elevations shown on the plans and by the cross-sections. Due to the minimal slope of the roadways, swale grades shall be within $\pm$0.05 feet of the grades indicated on the plans.

B. The disposal of large rocks in excess of 8", within roadways and parking areas is prohibited. Where allowable, the disposal of large rocks by burial in areas designated by the ENGINEER shall have a minimum 30 inches of cover below finished grade elevation.

3.08 FINISH GRADING

A. Following completion of the paving work, all swales, etc., adjacent to the roadway shall be shaped and graded to the elevations and cross-sections shown on the drawings. The finished surface shall be maintained until seeding and mulching work is completed.

3.09 SURVEYS

A. All initial surveys, including detail construction stakes, will be furnished by the CONTRACTOR.

B. The CONTRACTOR will carefully maintain bench marks, monuments, stakes and other reference points, and if disturbed or destroyed, be replaced as directed at the CONTRACTOR's expense.

3.10 MEASUREMENT AND PAYMENT

A. Measurement and payment for this item will be made per square yard and will include clearing of the swales per Section 02110.

END OF SECTION 02210

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

1.02 WORK INCLUDED

A. The work shall consist of furnishing all materials, labor and equipment for excavation, trenching and backfilling for utilities. "Utilities" shall include storm water drains, culverts, water mains, gravity sewers, sewage force mains and appurtenant structures.

1.03 RELATED WORK

A. 02050 - Demolition

B. 02200 - Earthwork

C. 02210 - Site Grading

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 EXCAVATION

A. General: This work shall consist of the excavation of whatever substances shall be encountered to the depths as shown on the plans. Excavated materials not required for fill or backfill shall be removed from the work site as directed by the ENGINEER and shall be considered to be a part of the bid price of the utility pipe for which excavation and backfill is required.

B. Excavation for structures and other accessories shall have a minimum clearance of twelve inches and a maximum clearance of twenty-four inches on all sides.

C. Excavation shall not be carried below the required depths as indicated by the plans. Excess excavation below the required level shall be backfilled at the CONTRACTOR's expense with sharp sand, gravel or other suitable material thoroughly compacted and approved by the ENGINEER.

D. Any unstable soil shall be removed and shall be replaced by material acceptable to the ENGINEER. The removal and replacement of such unstable soil shall be considered to be part of the bid price of the pipe for which excavation and backfill is required.

E. Water shall not be permitted to accumulate in the excavated area. It shall be removed by pumping or other means as approved by the ENGINEER. The removal of water shall be considered to be a part of the bid price of the pipe for which excavation and backfill is required.

Well points, pumps or other approved means shall be used to keep the ground water sufficiently low in the opinion of the ENGINEER to permit the placing of concrete, masonry or pipe in first class condition, and sufficiently long thereafter to protect the concrete, masonry or joints against washing or damage.
The CONTRACTOR shall also use such other means as may be necessary to keep the excavation in satisfactory condition for the construction of the work, and the use of well points, or other approved method, will not relieve the CONTRACTOR of CONTRACTOR'S responsibility to make structures water tight.

F. Banks and trenches shall be vertical unless shown otherwise on plans. The width of the trench shall be no less than 8" and no more than twelve inches, or as approved by the ENGINEER, on each side of the pipe bell for pipe up to 16" diameter. Bell holes shall be accurately excavated by hand.

G. If the bottom of the trench is rock, the excavation shall be carried eight inches below the invert of the pipe and backfilled with thoroughly compacted sharp sand, gravel or other suitable material approved by the ENGINEER.

H. Rock excavation shall include any rock encountered, which cannot be removed with a 3/4-yard backhoe under normal operating conditions. Rock excavation shall be incidental to construction of all piping systems and no separate payment will be made.

I. Whenever it is necessary, in the interest of safety, to brace or shore the sides of the trench, such bracing or shoring shall be considered to be part of the bid price of the pipe for which excavation and backfill is required.

The CONTRACTOR shall furnish, put in place and maintain such sheeting, bracing, as may be required to support the side of the excavation, and to prevent any movement which can in any way damage the work or endanger adjacent structures. If the ENGINEER is of the opinion that supports are insufficient, the ENGINEER may order additional supports. The compliance with such order shall not release the CONTRACTOR from CONTRACTOR'S responsibility for the sufficiency of the sheeting. The CONTRACTOR shall leave all sheeting in place. The ENGINEER may require sheeting to be cut off at any specified elevation, but in no case will any sheeting be left closer than two (2) feet below the natural surface, nor cut off below the elevation of the top of the pipe.

3.02 BACKFILLING

A. After pipes, structures and other appurtenances have been installed, the trench or opening shall be backfilled with material free from large stones or clods of a quality acceptable to the ENGINEER.

B. Backfill around the pipe and to a point twelve inches above the top of the pipe shall be placed in six inch layers compacted with 20 pound hand tampers or mechanical tampers suitable for this purpose. Backfilling shall follow lying closely, and shall not be more than one hundred (100) feet behind completed lying. Backfill over pipe shall be carefully placed by experienced labor and thoroughly consolidated without shock to the pipe, and carried up uniformly on both sides of the pipe. No backfilling with bulldozers will be permitted adjacent to pipe line.

C. Within roadway right-of-ways, or within areas where pavements are to be constructed over the pipe, the remainder of the trench shall be placed in six-inch layers (compacted thickness) and shall be compacted to that as noted in Section 02200. CONTRACTOR will be responsible for correcting settlement in all backfilled areas whether under the pavement or otherwise.

D. In areas where no pavement is to be constructed, the backfill above the twelve inch line above the pipe shall be compacted to a firmness approximately equal to that of the soil adjacent to the pipe trench or to that as noted in Section 02200. Backfill below the 12-inch line shall be compacted in 6-inch layers (compacted thickness) and shall be compacted to 98% of maximum density as determined by AASHTO T-180.

3.03 EXPLOSIVES

A. The use of explosives will not be permitted.

3.04 PAYMENT AND MEASUREMENT

A. No separate payment is provided for work covered by this Section. All costs in connection with Excavation and Backfilling, including testing, shall be included in the bid price of any item for which excavation and backfilling is required.

END OF SECTION 02221

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the work, as indicated on the drawings, as specified herein or both.

B. Including but not necessarily limited to the following:

1. Topsoil Stripping.

2. Topsoil Mixing and Spreading.

C. There shall be no classification of excavation for measurement of payment regardless of materials encountered.

### 1.03 RELATED WORK

A. Section 02110 - Clearing.

B. Section 02200 - Earthwork.

C. Section 02210 - Site Grading.

## PART 2 - PRODUCTS

### 2.01 TOPSOIL

A. Topsoil shall be obtained from any previously established stockpile on site, to the extent that suitable material is available.

B. Additional topsoil, if required, shall be obtained by mixing existing on-site sandy fill with imported muck or compost.

C. Topsoil, whether obtained from stockpile, or mixed as described in "B" above, shall be sandy loam, and shall have the following characteristics:

1. 95% of topsoil shall pass a 2-mm. sieve.

2. Topsoil shall be free of stones 1" in longest dimensions, earth clods, plant parts, and debris.

3. Organic matter content shall be 4% to 12% of total dry weight.

4. pH and nutrient content shall be adjusted as necessary to conform to recommendations made by testing laboratory. (See 2.01 (D))

D. Samples shall be submitted to TOWN for testing. Test shall indicate compliance with the specifications and recommendations as to the type and quantity of soil additives required to bring the nutrient content and pH to satisfactory levels for planting specified plant material. Tests shall be required at a rate of one per 500 cubic yards of material placed, for the first 5,000 cubic yards of material, and may be reduced at the ENGINEER discretion thereafter. Sampling shall be done in the presence of the ENGINEER. The CONTRACTOR shall be responsible for the cost of testing.

PART 3 - EXECUTION

3.01 JOB CONDITIONS

A. Protection: Use all means necessary to protect existing objects and vegetation. In the event of damage, immediately make all repairs, and replacements necessary to the acceptance of the ENGINEER.

3.02 FILLING AND GRADING:

A. Topsoil shall be spread in a uniform 2" layer after compaction, over all sodded and pervious areas, and finished to grades shown on the plans, making allowance, where necessary, for sod. Grades shown include 0.2' for thickness of sod in all sodded areas.

3.03 MEASUREMENT AND PAYMENT

A. Topsoil shall be measured and paid for by the square yard of actual top soil in place as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02284

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the "INFORMATION TO BIDDERS", "STANDARD FORM OF AGREEMENT", and Division 1 - General Requirements shall govern the work under this section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Storm Drainage Facilities work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

### 1.03 RELATED WORK

A. Section 02110 - Clearing

B. Section 02200 - Earthwork

C. Section 02601 - Subterranean Structures

### 1.04 CLEARING

A. Clearing or installation of pipe and all drainage structures shall be confined within the working limits of the trenches. Trees, utility poles, survey monuments, underground and overhead utilities shall be suitably protected and preserved.

### 1.05 EXISTING UTILITIES

A. Furnish temporary support, adequate protection and maintenance of all underground and surface utility structures, drains, sewers, cables, etc., and other obstructions encountered in the progress of the work.

B. When the grade of alignment of the pipe is obstructed by existing utility structures, such as conduits, ducts, pipes, branch connections to water or sewer mains, and other obstructions, the obstructions shall be permanently supported, relocated, removed or reconstructed by the CONTRACTOR in cooperation with the owners of such structures. The ENGINEER shall make no deviation from the required line or grade except as directed in writing.

C. It shall be the responsibility of the CONTRACTOR to notify the owners of existing utilities in the area of construction a minimum of 48 hours prior to any excavation adjacent of such utilities, so that field locations of said utilities may be established.

D. It shall be the responsibility of the contractor to maintain positive drainage on the surface and to ensure that the existing under ground drainage system continues to function as intended during the construction of the new drainage system. The contractor shall submit a plan to maintain the existing drainage patterns and under ground system for the approval of the ENGINEER prior to beginning any work on the existing or new drainage systems.

PART 2 - PRODUCTS

2.01 PIPE

A. REINFORCED CONCRETE CULVERT PIPE:

1. A reputable manufacturer, engaged in the full time business of manufacturing concrete pipe, shall produce the concrete pipe. Pipe manufacturer shall produce the pipe from an approved, permanent plant acceptable to the ENGINEER.

2. All concrete pipe shall be reinforced and shall conform to the requirements of A.S.T.M. C-76. Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe." Pipe shall be Class III. Pipe shall have an interior surface, which is smooth, uniform and free from rough spots, irregularities and projections. Nominal pipe lengths shall be 8' unless authorized otherwise by the TOWN'S Representative. Lifting holes will not be permitted.

3. Concrete pipe shall be either bell or spigot, unless approved by ENGINEER.

4. Internal rubber gasket joints will be used at CONTRACTOR'S option. The internal rubber gasket joint shall be supplied by the pipe manufacturer and shall be completely compatible in every respect with the pipe furnished. The pipe manufacturer shall install the rubber gasket on the inside of the bell or groove on the pipe at the plant. All materials and accessories for the rubber gasket joint and the methods of jointing shall be in strict conformance with the pipe manufacturer's direction and recommendation. Joint must be completely watertight.

5. Cement grout joints shall be completely water tight and acceptable to the TOWN'S Representative. A full bed of mortar shall be placed in the bell and/or groove and on the tongue and/or spigot. The annular space in the pipe joint shall be wiped with cement mortar to insure the joint is filled and to present a smooth surface. The complete exterior periphery of the joint shall have a standard cement grout diaper joint. Diaper shall be installed within the aid of an approved cloth ring. Cement mortar joints shall be made in the dry. Mortar and grout shall be one part Portland Cement to two parts by weight of sand. Mortar shall have enough water to make a stiff mixture that can be molded and worked. Cement mortar joints shall not be covered until inspected and approved by the TOWN'S Representative.

2.02 SUBMITTALS.

A. Submit copies of product and material information and data.

PART 3 - EXECUTION

3.01 EXCAVATIONS

A. Trenches shall be kept as nearly vertical as possible and, if required, shall be properly sheeted and braced. Where, in the opinion of the ENGINEER, damage could result from withdrawing

sheeting, the sheeting shall be left in place. Not more than 100 feet of trench shall be opened at any one time or in advance of pipe laying unless permitted by the ENGINEER.

1. Except in rock, water-bearing earth or where a granular or concrete base is to be used, mechanical excavation of trenches shall be stopped above the final grade elevation so that the pipe may be laid on a firm, undisturbed native earth bed. If over digging occurs, all loosened earth shall be removed and the trench bottom brought back to grade with granular material.

2. Excavations and trenches in rock shall be carried to a depth of not less than 12" below the pipe bottom. This space shall be filled with granular material or washed rock.

3. Width of trenches shall be such as to provide adequate space for placing and jointing pipe properly, but in every case the trench shall be kept to a minimum width.

4. Any unstable soil encountered shall be removed and replaced with gravel, crushed rock or rock and sand suitably compacted.

3.02 PREPARATION TO TRENCH BOTTOM

A. Water shall not be allowed in the trenches while the trench bottom is being prepared or while pipe is being installed, unless directed by the ENGINEER.

B. A continuous trough shall be shaped to receive the bottom quadrant of the pipe barrel. Bell holes shall be excavated so that after placement, only the barrel of the pipe receives bearing pressure from the trench bottom.

C. Preparation of the trench bottom and placement of the pipe shall be placed in the trench bottom a minimum of 8" below the bottom of the pipe, and a trough as described above shall be formed to uniformly support the bottom quadrant of the pipe barrel.

3.03 INSTALLATION OF DRAINAGE PIPE

A. Pipe shall be protected during handling against impact shocks and free falls. Pipe shall be kept clean at all times and no pipe shall be used that does not conform to the Specifications.

B. The laying of the pipe shall be commenced at the lowest point with spigot ends pointing in the direction of flow. All pipes shall be laid with ends abutting and true to line and grade. They shall be laid in accordance with manufacturer's requirements as approved by the ENGINEER.

C. Pipe shall be laid accurately to the line and grade as designated on the plans. Preparatory to making pipe joints, all surfaces of the portions of the pipe to be jointed or of the factory made jointing material shall be clean and dry. Lubricant, primers, adhesive, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory-fabricated joints shall then be placed, fitted, joined and adjusted in such a manner as to obtain a water tight line. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of pipe off line and grade.

D. The exposed ends of all pipes shall be suitably plugged to prevent earth, water, or other substances from entering the pipe when construction is not in progress.

3.04 BACKFILLING TRENCHES

A. No trenches or excavations shall be backfilled until the trench and installation has been inspected and written approval given by the TOWN'S Representative. Under no circumstances shall water be permitted to rise in unbackfilled trenches after pipe has been placed. Trenches shall be backfilled with approved material, free of large clods, stones or rocks and carefully deposited in layers not to exceed 6 inches until enough fill has been placed to provide a cover of not less than 1' above the pipe. Each layer shall be placed, then carefully and uniformly tamped, so as to eliminate the possibility of pipe displacement. The remainder of backfill materials shall then be placed, moistened and compacted in 6 inch layers to density as specified in Section 02200, Paragraph 3.14.I.

B. Whenever the trenches have been improperly filled or if settlement occurs, they shall be refilled, compacted, smoothed off and made to conform to grade. Unless otherwise directed or shown on the plans, backfill in trenches in or through roadways shall be made as specified above, except that the entire fill above 1' over the pipe shall be deposited in layers not to exceed 8" in thickness, moistened, and compacted to density equal to or greater than that of adjacent material so that pavement can be placed immediately.

3.05 CONCRETE ENCASEMENT OF DRAINAGE PIPE

A. Trenches in which encasement for pipe are to be placed, may be excavated completely with mechanical equipment. Prior to formation of the encasement, temporary supports consisting of timber wedges or masonry shall be used to support the pipe in place. Temporary supports shall have minimum dimensions and shall support the pipe at no more than two places, one at the bottom of the barrel of the pipe adjacent to the shoulder of the socket and the other near the spigot end.

3.06 DRAINAGE STRUCTURES

A. All structures shall be built to the line and grade shown on drawings. All reinforced concrete work shall be in strict conformance with the concrete specifications contained herein. After erection of the forms and placing of the steel, the CONTRACTOR must have inspection and approval from the ENGINEER before placing any concrete. After removal of the forms, the CONTRACTOR shall backfill around each structure with approved granular fill. The fill shall be placed in layers not exceeding 8" in depth measured loose and compacted to density as specified in Section 02200, Paragraph 3.14.I. No defects of any kind in the pipe section will be accepted. All pipe stubs shall be made of the same type of pipe. Pipe stubs shall be sealed with a concrete plug, water tight. The ends of the pipes, which enter masonry, shall be neatly cut to fit the inner face of the masonry. Cutting shall be done before the pipes are built in.

3.07 INSPECTION

A. All storm sewers shall be lamped and physically inspected by the ENGINEER prior to acceptance of the work. Repairs or misalignment shown necessary by the tests shall be corrected at the

CONTRACTOR'S expense. All sewers shall be thoroughly cleaned before being placed into use and shall be kept clean until final acceptance by the ENGINEER.

3.08 RESTORATION OF SURFACES AND/OR STRUCTURES

A. The CONTRACTOR shall restore and/or replace paving, curbing, sidewalks, fences and survey points, or any other disturbed surfaces or structures to a condition equal to that before the work was begun and to the satisfaction of the ENGINEER. Relative to restoration of surfaces and/or structures, the CONTRACTOR shall comply with all requirements of governing agencies including TOWN, county and state.

3.09 ABANDONMENT OF PIPELINE IN PLACE

A. All drainage pipelines or structures shown on the drawings to be abandoned in place shall be properly cut and plugged after new mains and provisions for proper drainage are installed. The pipeline shall be filled with concrete one foot from end of pipe as specified in Division 3 - Concrete, and section 03010. Excavation, backfill, and restoration shall be executed in accordance with requirements for removing existing and installing new pipelines.

3.10 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02400

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Exfiltration Trench System work, as indicated on the Drawings,, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

### 1.03 RELATED WORK

A. Section 02221 - Excavation and Backfilling for Utilities

B. Section 02400 - Storm Drainage Facilities

C. Section 02601 - Subterranean Structures

### 1.04 EXISTING UTILITIES

A. Locate and stake all existing underground utilities that may be in the area of the Drainage System.

### 1.05 SUBMITTALS

A. Submit Plan Drawings showing the locations of all piping and underground utilities that may be in conflict with the Drainage System.

B. Submit samples of the 3/4" washed rock for approval.

C. Submit samples and product data of filter fabric.

## PART 2 - PRODUCTS

### 2.01 DRAINAGE PIPE AND BALLAST ROCK

A. Drainage pipe shall be in conformance with material as specified in Section 02400 and have the maximum number of perforations allowable per the manufacturers recommendations.

B. Ballast rock shall be from fresh water and washed free of deleterious matter.

### 2.02 FILTER FABRIC

A. Filter fabric shall be a non woven fabric consisting of polypropylene fibers treated to resist biological degradation.

B. Manufacturers or Equal
   1. Amoco Propox 4545

2. Trevira 1115
3. Mirafi 140 NC

PART 3 - EXECUTION

3.01 INSTALLATION

A. Lay out Exfiltration Trench System as shown on the Plans.

B. The bottom of the trench shall provide a minimum of 12" of ballast rock below the drain pipe.

C. Drain pipes shall terminate a minimum of two feet beyond the end of the trench.

D. Cover temporary pipe ends with No. 10 galvanized or aluminum screen with openings no larger than 1/2" x 1/2".

E. Bottom, sides and top of trench to be lined with trench lining material with a minimum of 2 feet of overlap at the top of the trench.

F. A minimum of 4 feet of solid drain pipe shall be installed between drainage structures and the beginning of the trench.

3.02 CLEANUP

A. Remove all excess rock, liner and pipe from the site.

3.03 MEASUREMENT AND PAYMENT

Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02401

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

### 1.02 WORK INCLUDED

A. This section of the specifications covers the control and general conduct of asphalt paving construction for roads, parking, walks and court areas.

B. All work within the right-of-way shall be constructed using materials and methods in accordance with the drawings, Broward County and Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

C. Provide all labor, materials, necessary equipment and services to complete the Asphaltic Concrete Paving work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

D. Including, but not necessarily limited to the following:

1. Preparation of subgrade.
2. Installation and compaction of base course.
3. Spreading of asphalt surface course.

### 1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02400 - Storm Drainage Facilities

C. Section 02515 - Portland Cement Concrete Paving

### 1.04 TRAFFIC CONTROL

A. The CONTRACTOR shall provide and maintain access to and from all properties along the line of CONTRACTOR'S work. The CONTRACTOR shall also provide temporary bypasses and maintain them in a safe and usable condition whenever the public cannot do detouring of traffic to parallel routes without hardship or excessive increases in travel.

### 1.05 SPECIAL SUBGRADE CONDITIONS

A. When special subgrade conditions are encountered for which these "Asphaltic Concrete Paving Specifications" are not applicable, portions of these specifications shall be deleted or revised to provide a properly finished paved surface. A requested revision or deletion of the specifications shall be accompanied with reports and laboratory tests on existing field conditions. Any change from these "Asphaltic Concrete Paving Specifications" shall be approved by the ENGINEER and shall be in effect only for a specified area or paving project.

1.06 QUALITY ASSURANCE

A. D.O.T. Standard Specifications.

1. Work and materials shall conform to all applicable requirements of Florida Department of Transportation "Standard Specifications for Road and Bridge Construction - 1982" (referred to herein as D.O.T.).

B. American Society for Testing and Materials.

1. ASTM 3515-80 "Standard Specification for Hot-Mixed, Job Laid, Bituminous Paving mixtures."

1.07 SUBMITTALS

A. Provide copies of materials, notarized certificates of compliance signed by material producer and CONTRACTOR, certifying that each material item complies with, or exceeds, specified requirements.

1.08 JOB CONDITIONS

A. Apply prime and tack coats when ambient temperature is above 50 degrees, and when temperature has not been below 35 degrees for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct asphalt concrete surface course only when atmospheric temperature is above 40 degrees, and when base is dry. Base course may be placed when air temperature is above 30 degrees, and rising.

1.09 LOCATIONS, LAYOUT AND GRADES

A. Locate and layout paved areas and right-of-ways with reference to benchmarks, property lines or buildings according to the drawings and as accepted by the ENGINEER.

B. Determine locations of paved edges and right-of-way line from surveyor's permanent reference monuments and information on the drawings.

C. Where permanent reference monuments are not available, obtain proper line locations from authorities having jurisdiction.

D. Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

2.01 FILL

A. All fill shall be clean rock and sand (maximum rock size = 1 inch).

B. Fill shall be compacted thoroughly as per Section 02200 - Earthwork.

2.02 LIMEROCK

A. Limerock shall be obtained from pits for which all overburden has been removed previous to blasting and shall show no tendency to air slake and must undergo the following chemical requirements.

| | | Percent |
|---|---|---|
| 1. | Carbonates of Calcium | Min.70.0 (Miami Limerock) and Magnesium.<br>95.0 (Ocala Limerock) |
| 2. | Oxides of Iron and Aluminum | Max. 2.0 |
| 3. | Organic Matter | Max. 0.5 |

4. Any constituents of other than the above shall be silica or inert material.

5. The material shall be crushed to such size that not less than 97% shall pass a 3-1/2" sieve and it shall be graded uniformly down to dust. All fine material shall consist entirely of dust of fracture.

6. Limerock from on-site may be used if the material meets the requirements of this section of the specifications.

B. All limerock shall comply with requirements set forth under D.O.T. Section 911.

C. Equipment: The equipment for constructing the rock base shall be in first class working condition and shall include:

1. Three wheel roller weighing not less than ten tons.

2. Self-propelled blade grader weighing not less than three tons. The wheelbase shall be not less than fifteen feet and blade length not less than ten feet.

3. Scarifiers shall have teeth space not to exceed 4-1/2 inches.

   a. Provision for furnishing water at the construction site by tank or hose at a rate not less than 50 gallons per minute.

2.03 PRIME COAT

A. Prime coat shall be Grade RC-70, cut-back asphalt, D.O.T. Section 916-2.

B. Prime coat shall have full compatibility with surface treatment asphalt.

C. The bituminous material shall conform to the requirements of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 300-2.

D. The sand for cover shall be clean dry sand.

2.04 TACK COAT

A. The bituminous material to be used for the tack coat shall conform to the requirements of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 300-2.

2.05 ASPHALT

A. The asphaltic concrete surface course shall be in accordance with Broward County, Florida Department of Transportation Standard Specifications for Type S-1 and Type S-3 Asphaltic Concrete Surface Course.

B. Pavement within public road right-of-way, which has been disturbed by this construction, shall be replaced with the same type and thickness to match the existing pavement section.

C. General composition of mixtures:

1. The aggregate in the asphaltic concrete shall be crushed stone and manufactured sand screening of natural sand or combination of both when necessary to meet requirements of composition of mix. All aggregate shall have a Los Angeles abrasion loss of less than 40%.

2. The mineral aggregate shall be so graded, and the prescribed constituents, prepared as hereinafter set out, shall be combined in such proportions as to produce a mixture conforming to the following general composition limits by weight:

| Constituent | Passing Sieve | S-1 Percent by Weight | S-3 Percent by Weight |
|---|---|---|---|
| Course Aggregate | 3/4" | 100 | 100 |
| | 1/2" | 80-100 | 100 |
| | 3/8" | 75-93 | 88-100 |
| | No. 4 | 47-75 | 60-90 |
| Total Course Aggregate | No. 10 | 31-53 | 40-70 |
| Fine Aggregate | No. 40 | 19-35 | 20-45 |
| | No. 80 | 7-21 | 10-30 |
| Filler | No. 200 | 2-6 | 2-6 |

| | Percent Constituent | by Weight |
|---|---|---|
| Total Fine Aggregate and Filler No. 10 | 100 | 100 |
| Total Mineral Aggregate | 100 | 100 |
| Total Mix | 100 | 100 |
| Total Mineral Aggregate | 91-95 | |
| Asphalt Cement | 5-9* | |
| (Bitumen) Total Mix | 100 | |

*For highly absorptive aggregates the upper limit may be raised.

2.06 SEAL COATING

A. Homogeneous mixture of emulsified coal tar pitch, asbestos, sand and other inert fillers. It shall be easily remixed if settlement occurs in storage (except in the case of freezing). It shall be capable of application and complete coverage by rubber squeegee, brush, or approved mechanical method, to the surface of bituminous pavements at the spreading rate of point two (.2) to point three (.3) gallons per square yard in two (2) coats.

B. Approved product: "TARFEX" manufactured by Bitucote Products Co. or approved equal.

PART 3 - EXECUTION

3.01 BARRICADES

A. Provide substantial temporary barricades around all areas of operation and maintain until work under this section is completed and approved.

B. Install temporary traffic markers, signals, and signs as per Broward County Highway Construction and Engineering Services Division Standard Specification to:

1. Eliminate potentially hazardous conditions.

2. Maintain adequate traffic patterns free of conflict with work under this Contract.

3.02 PREPARATION OF SUBGRADE

A. This work consists of bringing the bottom of excavations and top of embankments of the roadway between the outer limits of the shoulders or base course to a surface conforming to the grades, lines, and cross sections shown on the plans. The subgrade shall be of uniform density ready to receive the rock base of the paving course.

B. All soft and yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the entire subgrade brought to line and grade to provide a foundation of uniform compaction and supporting power.

C. Stumps, roots, and other deleterious organic matter encountered in the preparation of the subgrade shall be removed.

D. Where fills are required on areas covered or partly covered by existing paving, the entire area of such existing paving shall be scarified to a depth of at least six inches, and the scarified material spread evenly over the area to be filled to a width not less than that of the proposed paving.

E. Material for fills shall consist of sand or other suitable material approved by the ENGINEER free from stumps, roots, brushes, and other deleterious organic matter.

F. Where fill is more than one foot (1') in depth, the backfill material above the ground water table shall be compacted on one (8") depth lifts. Each individual layer of fill under the rock base shall have a density as specified in Section 02200, Paragraph 3.14.I. unless shown otherwise on the plans. Each individual layer of fill under the shoulder area shall have a density as specified in Section 02200, Paragraph 3.14.I., unless shown otherwise on the plans.

G. The bottom of all excavated areas and the top of all fills where rock base is to be constructed shall be thoroughly compacted by rolling. Water shall be used to insure thorough compaction. The stability of the top 12 inch thickness of the subgrade immediately under the base, for the full base width plus one foot (1') on each side, shall be at least LBR 40 as determined by AASHTO T-180.

H. Bring subgrade, which has been properly filled and shaped to a firm unyielding surface, by rolling an entire area with an approved vibratory power roller weighing a minimum of 10 tons.

   1. Thoroughly compact area inaccessible to the roller with approved hand tamper.

   2. Apply water sufficiently to compact the subgrade where the subgrade is of a dry, sandy nature and cannot be rolled.

I. The subgrade shall be maintained free from ruts, depressions or other irregularities until rock base material is spread.

J. For all roads and streets other than State Highway, the stabilized subgrade shall have a minimum Limerock Bearing Ratio (LBR) of 40, unless otherwise noted on the plans.

K. Where the bearing value of the existing subgrade is adequate without addition of stabilizing material, the subgrade shall be scarified and disked, harrowed, bladed or tilled for removal of boulders, roots, etc. to assure uniformity and thorough mixing of material to the full width and depth of required stabilization. The compacted subgrade shall conform to the lines, grades and cross-section shown on the plans.

L. Test subgrade for crown and elevation after preparation and immediately before base of paving course is laid.

1. Remove or add material and compact to bring to a correct elevation and uniform bearing if the subgrade is found not to be at the specified elevation at all points.

2. Adjust the manhole rims, catch basin frames and valve boxes where necessary to match proposed finish grade.

3.03 CONSTRUCTION OF BASE COURSE

A. This work consists of construction of lime rock base course for the asphaltic concrete wearing surface. The base course shall be constructed on the prepared subgrade in a 8" thick limerock bases constructed in two four inch lifts as shown on the drawings. Twelve (12) inch thick limerock bases shall be constructed in two six-inch lifts. The limerock base shall be a minimum LBR of 100.

B. Spreading Rock: The rock shall be transported to the points where it is to be used over rock previously placed, and dumped on the end of the preceding spread. It shall then be spread uniformly with hand tools, or mechanical equipment. In no case shall rock be dumped directly on the subgrade. No hauling shall be done over the subgrade.

C. Compacting Rock

1. Following spreading, the rock shall be rolled with a three wheel roller weighing not less than ten tons, water being added as required, until the entire depth of base is compacted into a dense unyielding mass.

2. No greater area of rock base shall be placed during any one day than that which can be rolled and compacted on the same day.

D. Finishing Base

1. After watering and rolling, the entire surface shall be thoroughly scarified to a depth not less than four inches (4") and shaped to exact crown and cross section, re-watered and again thoroughly rolled. Rolling shall continue until the entire depth of base is bonded and compacted into a dense, unyielding mass, true to grade and cross section.

a. Any irregularities, which may develop in the surface during such finishing, shall be corrected by the removal or addition of rock as the case may be.

b. If at any time the subgrade material becomes churned up and mixed with the base rock, the CONTRACTOR shall dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean rock which shall be watered and rolled until satisfactorily compacted.

c. Where cracks or checks appear in the base either before or after priming, which in the opinion of the ENGINEER would impair the structural efficiency of the base course, the CONTRACTOR shall remove such cracks or checks by re-scarifying, reshaping, watering, rolling and adding rock where necessary.

d. During final compacting operations, if grading of any areas is necessary to obtain the true grade and cross section, the compacting operations for such areas shall be completed prior to making the density tests on the finished base.

E. Inferior Rock: If in the opinion of the ENGINEER at any time during the progress of the work, rock of inferior quality is being delivered to the construction site, a laboratory analysis of the rock shall be made. Should the results of such tests indicate that the rock does not conform to specifications, the CONTRACTOR shall, at CONTRACTOR's own expense, remove such inferior material from the area indicated and deliver and spread satisfactory rock on said area.

F. Testing Surface: The finished surface of the rock base shall be true to the required cross section. Any irregularities in the grade greater than 1/4", as determined by placing a ten foot straight edge parallel with the centerline, shall be corrected by scarifying to a depth of three inches (3"), removing or adding rock as may be required and again watering, rolling, and compacting the scarified area. In testing the surface for irregularities, the measurements under the straight edge shall not be taken in small holes caused by individual pieces of rock having been pulled out by the road grader.

G. Thickness Determination: Thickness of the base shall be measured by intervals as required by the ENGINEER. Measurements shall be taken at various points on the cross section. The measurements shall be taken in holes through the base of not less than three inches (3") in diameter. Where the base is more than 1/2" less than the required compacted thickness, the CONTRACTOR shall correct such areas by scarifying and adding rock. The affected areas shall then be watered, rolled and brought to a satisfactory state of completion, and of required thickness and cross section.

H. Density: Density determinations shall be made by the CONTRACTOR or at intervals required by the ENGINEER. An average required density shall be as specified in Section 02200, Paragraph 3.14.I. No section of base shall be accepted when more than 10% of tests fall below 98% of maximum density and in no case shall a density of less than 96% of maximum be accepted.

I. Testing: The CONTRACTOR shall coordinate with ENGINEER for all testing. One test shall be made in accordance with AASHTO, T-180 for each class of material in the subgrade and base.

1. In place density tests in accordance with AASHTO T-147 shall be made in the locations shown on the plans. Two copies of the test reports will be sent directly to the ENGINEER for evaluation.

2. Any material, which fails to meet these specifications, shall be removed, replaced, and retested, all at the CONTRACTOR's expense.

3. Tests shall be taken at least every 1,000 square yards and taken at locations and lifts as directed by the ENGINEER.

3.04 <u>PRIME COAT FOR BASE COURSE</u>

A. Cleaning the prepared base:

1. Before any bituminous material is applied, all loose material: dust, dirt, caked clay and foreign matter which might prevent proper bond with the existing surface shall be moved to the shoulders, to the full width of the treatment, by means of revolving brooms or approved mechanical sweepers and by mechanical blowers, of approved types, supplemented by hand sweeping. Dust and other loose materials not removed by mechanical means shall be removed with hand brooms. Particular care shall be taken to clean the outer edges of the strip to be treated in order to insure that the prime coat will adhere. Sweeping and blowing shall be continued until all the loose dust and dirt is removed from the surfaces.

2. Application of bituminous material shall be made during the same day surface has been swept and as soon as practical thereafter.

B. Application for prime coat:

1. The bituminous material shall be applied to the clean dry surface of the rock base at such temperature as will insure uniform distribution. The amount applied will be at the rate of approximately 0.10 to 0.20 gallons per square yard of base area. The application shall be made by means of self-propelled pressure distributor operating under a pressure not less than 20 pounds per square inch. Application of bituminous material shall be made on only one-half of the width of base at one time.

2. The primed base shall then be covered with a uniform layer of clean sand, and kept thoroughly and uniformly covered by additional sand or sweeping until it shows no signs of picking up under traffic. For a period of one week after priming, the CONTRACTOR shall again broom any area where insufficient cover sand or excess of bituminous material causes "bleeding" and, if necessary, spread additional sand on such area.

C. Prime coat finish: After prime has cured or sat and been sanded, the shoulder shall be shaped to conform to all grade lines and cross sections and the entire area shall be rolled and compacted with a rubber tired roller or a power roller before asphalt surface is laid on the finished base.

3.05 BITUMINOUS TACK COAT

A. Before applying any bituminous material, all loose material: dust, dirt and foreign material, which might prevent proper bond with the existing surface, shall be removed for the full width of the application.

B. Application for tack coat:

1. The surface to receive the tack coat shall be clean and dry. The tack coat shall be clean and dry. The tack coat shall be applied with a pressure distributor except that on small jobs, if approved by the ENGINEER, the application may be made by other approved mechanical methods or by hand methods. The pressure distributor shall operate at a pressure not less than 20 pounds per square inch and at a consistency such that it can be properly pumped and sprayed uniformly over the surface.

2. The bituminous material shall be applied in a thin uniform layer. The rate of application shall be between 0.02 and 0.10 gallon per square yard. The tack coat shall be applied

sufficiently in advance of the laying of the wearing surface to permit drying, but shall not be applied so far in advance that it might lose adhesiveness as a result of being covered with dust or other foreign material. The tack coat surface shall be kept free from traffic until the wearing surface is laid.

3.06 ASPHALTIC CONCRETE WEARING SURFACE COURSE

A. Cleaning and preparing base:

1. Prior to the laying of the asphaltic concrete, the base of pavement to be covered shall be cleaned of all loose deleterious material by the use of power brooms or blowers. A tack coat shall be applied on all pavements. The tack coat shall not be applied so far in advance of laying operations as to allow shifting and sand or weather conditions to nullify its effectiveness.

2. After the surface has been thoroughly cleaned, all holes shall be filled with asphaltic concrete, if necessary, and thoroughly compacted to conform to the existing surface and to form a smooth surface.

B. Placing asphaltic concrete: The asphaltic concrete surface course shall be applied after the tack coat may be permitted a reasonable time for drying but not to an extent that the tack coat is allowed to lose its adhesiveness.

1. Machine spreading: Upon arrival the mixture shall be dumped into the approved mechanical spreader and immediately spread and struck off to the full width required and to such appropriate loose depth for each successive course that when the work is completed the required weight of the mixture per square yard or the specified thickness will be secured. An excessive amount of mixture shall be carried ahead of the screen at all times. Hand raking shall be done behind the machine as required.

2. Hand spreading: In limited areas, where, on account of irregularities or unavoidable obstacles, the use of mechanical spreading and finishing equipment is impractical, the mixture may be spread by hand, when so authorized by the ENGINEER.

3. The mixture shall be laid only when the surface to be covered is dry and only when weather conditions are suitable.

4. All structures which will be in actual contact with asphaltic mixture, including the face or surface of curbs or gutters and their vertical faces of existing pavements, shall be painted with a uniform coating of asphalt material to provide a closely bonded, watertight joint.

5. Where necessary, due to the traffic requirements, the mixture shall be laid in strips in such manner as to provide for the passage of traffic.

6. Any mixtures caught in transit by a sudden rain may be laid at the CONTRACTOR's risk. In no case shall the mixture be laid while rain is falling or when there is water on the surface to be covered.

7. The depth of the layer being spread shall be gauged as directed, and where the thickness fails to average the specified thickness, immediate steps shall be taken to correct the depth.

8. Before any rolling is started, the course surface shall be checked, any inequalities adjusted, and all drippings, fat sand accumulations from the screed and fat spots from any source shall be removed and replaced with satisfactory material.

9. Straight-edging and back patching shall be done after initial completion has been obtained and while the material is still hot. Any irregularity greater than 1/4" either longitudinally or traversely shall be corrected at this time.

10. No skin patching shall be done. When a depression is to be corrected while the mixture is hot, the surface shall be well scarified before the addition of fresh mixture. If irregularities occur and are not corrected while the mixture is still hot, the irregularities shall be cut out the full depth of the layer and replaced with fresh mixture.

C. Compacting mixture: After the spreading, the mixture shall be rolled when it has set sufficiently or come to the proper condition to be rolled, and when the rolling does not cause undue displacement or shoving.

1. The motion of the roller shall at all times be slow enough to avoid displacement and shall at once be corrected by the use of rakes and fresh mixture where required. The rolling shall include all transverse, longitudinal, and diagonal rolling, as may be necessary to obtain the maximum density.

2. The seal rolling with tandem steel rollers weighing from five to eight tons shall follow as close behind the spreader as is possible without picking up, or displacing or blistering the material.

3. Rolling with the self-propelled pneumatic-tired rollers shall follow as soon as possible and as close behind the seal rolling as the heat of the mixture will permit. The rolling shall be done while pavement temperature is between 175$^{o}$ and 240$^{o}$F, and to such an extent that the self-propelled traffic roller shall cover every area of the surface with at least ten passes. Final rolling with tandem steel rollers shall be done after the rolling with self-propelled pneumatic tired rollers is completed. This final rolling shall be done before the pavement temperature is lower than 175$^{o}$F., and shall be continued until all roller marks or tire marks are eliminated.

4. Self-propelled pneumatic rollers shall be used for the rolling of patching and leveling courses. At the option of the CONTRACTOR, a steel-wheeled roller may be used to supplement the self-propelled pneumatic-tired rollers but not more than one steel-wheeled roller may be used in conjunction with the necessary number of self-propelled pneumatic-tired rollers. After final completion, the finished pavement shall at no point have a density less than 95% of the laboratory compacted density.

5. Rolling with the self-propelled pneumatic-tired roller shall proceed at a speed from six to twelve miles per hour and the rate of rolling shall not exceed 3,000 square yards per hour per roller. A sufficient number of self-propelled pneumatic-tired rollers shall be used so

that the rolling of the surface for the required number of 10 passes within this maximum rolling rate shall not delay any other phase of the placing operation and not result in excessive cooling of the mixture before the rolling is complete. In the event that the rolling is not properly maintained to schedule as outlined above, the laying operation shall be discontinued until the rolling operations are sufficiently caught up.

6. In all places inaccessible to a roller, such as adjacent to curbs, headers, gutters, bridges, MAS'S, etc., the required compaction shall be secured with tamps. Depressions, which may develop before the completion of the rolling, shall be remedied by loosening the mixture laid and adding new material to bring such depressions to a true surface.

7. Should any depressions remain after final compaction has been obtained, the mixture shall be removed sufficiently and new material added to form a true and even surface. All high spots, high joints and honeycombs shall be adjusted as directed by the ENGINEER.

8. The mixture, after compaction, shall be of the thickness shown on the plans. The surface, after compactions, at no place shall snow an excess of asphalt and any area showing such excess or other defect, shall be cut out and replaced with fresh mixture and immediately compacted to conform with the surrounding area. Any mixture which becomes loose or broken, mixed with dirt in the wearing course shall be removed and replaced with fresh mixture which shall be immediately compacted to conform with surrounding areas.

9. Gasoline or oil from rollers shall not be allowed to deposit on the pavement and any pavement damaged by such deposits shall be removed and replaced as directed by the ENGINEER.

10. Any mixture remaining unbonded after rolling shall be removed and replaced.

D. Protection of pavement: After the completion of the pavement, no vehicular traffic of any kind shall be permitted on the pavement until it has set sufficiently as approved by the ENGINEER.

3.07 ABUTTING EXISTING PAVING

A. Meet elevation of existing paving and structures, facilities and utilities where applicable by sawcutting and removing no less than two (2) feet from abuttment. Milling of asphalt for a width of two (2) feet is an alternative if approved by engineer. Do not cover access covers, manhole tops, water meters or other similar devices.

3.08 PAVEMENT EDGES

A. Make edges of paved area conform to details and sections as shown on drawings.

3.09 SEAL COATING

A. Preparation of surface: Pavement to be sealed must be sound and free of loose dust, dirt, stones, or other foreign matter:

1. Repair any breaks or holes.

2. Scrape off accumulations of oil or fuel drippings and scrub with detergent and water. Remove all traces of detergent.

3. Soft or damaged spots must be repaired.

4. Flush entire area with clean water.

5. Pavement should be damp (no puddles or excess water) when seal coating is applied.

B. MIXING: Stir seal coating to a uniform consistency, use no solvents for thinning. Dilute seal coating with ten (10) percent to twenty (20) percent clean water, stirring to uniform consistency.

C. Application:

1. Seal coat may be applied to dampened surface with a rubber squeegee, soft bristled push broom, or approved mechanized equipment.

2. Seal coating may be poured directly onto pavement in a ribbon or windrow. Squeegee is placed on pavement at a slight angle to edge line of pavement and pulled in a window along pavement in parallel lines, always working excess material toward bottom edge of squeegee.

3. Seal coating should be applied in two (2) thin coats. After first coat is completely dry to touch, a second coat may be applied at right angles to the first. Rate of application will depend on porosity of surface.

4. Allow to cure for twenty-four (24) hours before opening to traffic.

5. Do not apply seal coating when temperature is below fifty (50) degrees Fahrenheit, or falling, before sealer is dry, or rain appears imminent or forecast.

6. Apply in strict accord with manufacturers published instructions.

3.10 FIELD QUALITY CONTROL

A. Test in place asphalt concrete course for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by TOWN's Representative and ENGINEER.

1. In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

a. Base Course: Not greater than 1/2" of specified thickness.
b. Surface Course: Not greater than 1/4" of specified thickness.

2. Test finished surface of each asphalt concrete course for smoothness, using 10' straight edge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.

a. Base Course Surface: 1/4".
b. Wearing Course Surface: 1/8".

B. Check surface area at intervals as directed by the ENGINEER.

C. Finish grade shall be within ±0.01 feet of the grades indicated on the plans or ± 0.05 feet as long as no ponding of water is observed after final paving.

3.11 CLEAN UP

A. Remove all debris and excess material immediately from project site.

B. Take down all barricades and temporary traffic markers, signals and signs only after all work included in this section is finished and inspected, and only after so directed by the ENGINEER.

C. Leave project area clean, orderly and free of any hazardous conditions.

3.12 CONSTRUCTION OF SWALES

A. This work consists of regrading existing swales and construction of new swales adequate for conveying storm water along the right-of-way to catch basins. The swale shall be shaped according to the cross section shown on the plan. In areas adjacent to existing roadways all swales shall be regraded to match their existing condition prior to construction, unless otherwise noted.

B. Requirements: All soft and yielding material and other portions of the swale which will not compact readily shall be removed and replaced with suitable material and the entire swale area brought to the proper grade. Stumps, roots, and other deleterious organic matter encountered during the shaping for the swale shall be removed.

C. The bottom of all excavated areas and the top of all fills of swale areas shall be thoroughly compacted by rolling. Water shall be used as necessary to insure thorough compaction. The stability of the top 12" thickness of swale area shall be at least LBR 40 as determined by ASSHTO T-180. Sufficient stabilizing material shall be added to swale area soil as required to provide the specified stability.

D. The CONTRACTOR shall place sod over existing areas damaged by construction. The sod shall match the existing sod type in the affected areas.

3.13 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02513

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Portland Cement Concrete Paving work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including, but not necessarily limited to the following:

1. Fill, subgrade, and limerock base.

2. Concrete formwork.

3. Concrete reinforcement.

4. Expansion and contraction joints.

5. Concrete paving.

### 1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02513 - Asphaltic Concrete Paving - General

### 1.04 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Perform work in accordance with local building and other applicable codes.

B. Applicator Qualifications: Minimum of five years experience on 5 comparable concrete projects.

C. Inspection and Testing: Performed in accordance with Section 01410 unless otherwise specified.

1. Test cylinders - as per ASTM C-39.

a. Minimum of three (3) concrete test cylinders shall be taken for every 75 or less cubic yards of concrete placed.

b. Minimum of one (1) additional test cylinder shall be taken during any cold weather concreting, and be cured on job site under same conditions as the concrete it represents.

2. Slump test - as per ASTM C-143:

   a. Minimum of one (1) slump test shall be taken for each set of test cylinders taken.

1.05 SUBMITTALS

A. Test Reports: Reports of concrete compression, yield, air content, and slump tests.

B. Certificates:

1. Manufacturer's certification that materials meet specification requirements.

2. Material content per cubic yard of each class of concrete furnished.

   a. Dry weights of cement.
   b. Saturated surface-dried weights of fine and coarse aggregate.
   c. Quantities, type and name of admixtures.
   d. Weight of water.

3. Ready-mix delivery tickets, ASTM C-94.

C. Shop Drawings:

1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.

2. Indicate bar schedules, stirrup spacing, and diagrams of bend bars.

3. Detail items of form systems affecting appearance of Architectural concrete surfaces such as joints, tie holes liners, patterns and textures. Show items in relation to entire form system.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.

B. Handle and store materials to prevent contamination.

1.07 JOB CONDITIONS

A. Allowable concrete temperatures:

1. Hot weather: Maximum 90 degrees F as per ASTM C-94.

B. Do not place concrete during rain, unless protection is provided.

PART 2 - PRODUCTS

2.01 FILL

A. As specified in Section 02513 - Asphaltic Concrete Paving - general.

2.02 SUBGRADE

A. As specified in Section 02513 - Asphaltic Concrete Paving – general.

2.03 LIMEROCK BASE

A. As specified in Section 02513 - Asphaltic Concrete Paving - general.

2.04 READY-MIXED CONCRETE

A. Cement: ASTM C-150, normal Type 1.

B. Admixtures:

1. Air entraining: ASTM C-260.
2. Chemical: Type (as required) ASTM C-494.
3. Fly ash and pozzolans: ASTM C-618.

C. Coarse aggregate: Not less than 50% clean, hard, crushed stone conforming to requirements of Table 2, size number 467 ASTM C-33.

D. Slump Range: 2-4 inches - tested according to ASTM designation C143 (AASHTO T119).

E. Air content: 5% + 1%.

F. Mix proportioning:

1. 28 day compressive strength of cured laboratory samples 3,000 psi.
2. Minimum cement content 5-sacks/cubic yard.

G. Curing Material: Liquid membrane, ASTM C-309, Type 1.

H. Mixes:

1. ASTM C-94.
2. Mix concrete only in quantities for immediate use.
3. Do not retemper or use set concrete.

2.05 REINFORCEMENT

A. Reinforcing Steel Bars: 60 psi yield strength; deformed billet steel bars; ASTM A-615, plain finish.

B. Welded Steel Wire Fabric: Plain type, ASTM A-185, hot dip galvanized, plain finish.

C. Tie Wire: FS QQ-W-461-G, annealed steel, black, 16-gage minimum.

D. Bar Supports: Conform to "Bar Support Specifications," CRSI Manual of Standard Practice.

2.06 FORMWORK AND ACCESSORIES

A. Formwork: Matched, tight fitting and adequately stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of concrete, conform with ACU 347, Chapter 3, Material and Form Work.

B. Lumber:

1. Softwood framing lumber: Kiln dried, PS-20.

2. Boards less than 1-1/2 inch thick and 2 inches wide, used for basic forms and form liners: Kiln dried.

3. Grade marked by grading rules agency approved by American Lumber Standards Committee.

4. Light framing or studs for board or plywood forms, 2 inches to 4 inches width and thickness, construction standard grade.

5. Boards for basic forms, construction standard grade.

6. Board surface: Smooth.

C. Plywood:

1. Exterior type softwood plywood, PS 1-66.

2. Each panel stamped or branded indicating veneer grades, species, type and identification.

3. Wood faced plywood for Architectural concrete surfaces.

a. Panel veneer grades: B-C.
b. Mill-oiled sides and mill-sealed edges of panels.

D. Ties:

1. Material: Steel
2. Type: Snap ties
3. Depth of breakback: 1 in.
4. Maximum diameter, 1/4 in.

E. Form coatings:

1. Non-staining type.
2. Agent: Pine oil derivative.

2.07 EXPANSION AND CONTRACTION JOINTS

A. Minimum 3/4-inch thick asphaltic impregnated fiberboard as per ASTM D-1751.

2.08 OTHER

A. Water: Clean and potable.

PART 3 - EXECUTION

3.01 BARRICADES

A. Provide substantial temporary barricades around all areas of operation and maintain until work under this section is completed and approved.

B. Install temporary traffic, markers, signals, and signs as per D.O.T. Standard Specifications to:

1. Eliminate potentially hazardous conditions.

2. Maintain adequate traffic patterns free of conflict with work under this Contract.

3.02 PREPARATION OF SUBGRADE

A. Ensure rough grading has brought subgrade to required elevations.

B. Fill soft spots and hollows with additional fill.

C. Level and compact subgrade, to receive limerock base for concrete walks, curbs and gutters, to a density as specified in Section 02200, Paragraph 3.14.I.

3.03 FORMWORK

A. CONTRACTOR is responsible for the design, construction, removal and complete safety of formwork and shoring.

B. Form construction shall be provided to shape, lines dimensions of members shown: substantial, tight enough to prevent leakage, and properly braced or tied to maintain position and size, form sides and bottoms of members unless specifically excepted.

C. Fill voids of plywood joints with sealant and tool smooth.

D. Form vertical surfaces to full depth and securely position to required lines and levels. Ensure form ties are not placed so as to pass through concrete.

E. Arrange and assemble formwork to permit easy dismantling and stripping, and to prevent damage to concrete during formwork removal.

3.04 REINFORCING

A. Reinforce concrete curbs and gutters. Allow for minimum 1-1/2 inch concrete cover.

B. Do not extend reinforcing through expansion and contraction of joints. Provide dowelled joints through expansion and contraction joints, with one end of dowels fitted with capping sleeve to allow free movement.

3.05 FORMING EXPANSION AND CONTRACTION JOINTS

A. Place expansion and contraction joints at 20 foot intervals or as indicated on drawings. Where possible, make joints of curbs coincide with joints in paving slabs. When sidewalks abut building, provide continuous joint filled.

B. Fill joints with filler of required profiles set perpendicular to longitudinal axis of walks, curbs and gutters. Recess 1/2 inch below finished concrete surface.

3.06 INSPECTION

A. Assure that excavation and formwork are completed, and excess water is removed.

B. Check that reinforcement is secured in place.
C. Verify that expansion joint material, anchors, and other embedded items are secured in position.

3.07 PREPARATION FOR PLACEMENT

A. Notify the ENGINEER and other inspectors at least 36 hours prior to inspection.

B. Equipment forms, and reinforcing shall be clean and wet down, reinforcing firmly secured in place, runways set up and not resting on or displacing reinforcing.

3.08 PLACING CONCRETE

A. Place concrete, screed and wood float surfaces to a smooth and uniform finish, free of open texturing and exposed aggregate.

B. Avoid working mortar to surface.

C. Round all edges, including edges of expansion and contraction joints, with 1/2 inch of radius edging tool.

D. Where concrete curbs are adjacent to pavement slabs, make concrete curbs and gutters integral with slabs. Make expansion and contraction joints of curbs coincide with slab joints.

E. Ensure finished surfaces do not vary from true lines, levels or grade by more than 1/8 inch in 10 feet when measured with straightedge.

F. Apply curing compound on finished surfaces immediately after finishing. Apply in accordance with manufacturer's recommendations.

3.09 PROTECTION OF COMPLETED WORK

A. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shock, and vibration.

3.10 CLEAN UP

A. Remove all debris and excess material immediately from project site.

B. Take down all barricades and temporary traffic markers, signals and signs only after all work included in this section is finished and inspected, and only after so directed by TOWN's Representative.

C. Leave project area neat, orderly and free of any hazardous conditions.

3.11 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02515

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

### 1.02 WORK INCLUDED

A. The work covered by this section shall include the furnishing of all labor, equipment and materials necessary to construct and install all pavement marking, striping and car stops in accordance with the plans and these specifications.

### 1.03 RELATED WORK

A. Section 02513 - Asphaltic Concrete Paving - General

B. Section 02515 - Portland Cement Concrete Paving

### 1.04 QUALITY ASSURANCE

A. Perform all work in accordance with the requirements of local agencies.

### 1.05 SUBMITTALS

A. Submit copies of product and material information and data..

## PART 2 - PRODUCTS

2.01 Chlorinated rubber-alkyd type, as per Fed Spec. No. TT-P-115, Type III, or shall be Code T-1, conforming to Section 971-12.2 of the Florida Department of Transportation Standard Specifications.

1. Paint shall be factory mixed, quick drying and non-bleeding type.

2. Color shall be as per D.O.T. requirements.

3. Striping, arrows, lane markers and stop bars shall be provided with paint containing reflective additive.

2.02 Thermoplastic paint shall conform to the applicable Technical Specifications (Section 711) of the Florida Department of Transportation and Broward County Standards

2.03 Traffic paint shall conform to the applicable Technical Specifications (Section 710) of the Florida Department of Transportation and Broward County Standards

2.04 Car stops shall be of the size and dimensions shown on the plans. Concrete for car stops shall have a minimum compressive strength of 2,500 psi.

2.05 Reflectors shall be in accordance with Broward County Minimum Standards.

PART 3 - EXECUTION

3.01 TRAFFIC AND LANE MARKINGS

A. Sweep dust and loose material from the sealed surface.

B. Apply paint striping as indicated on the drawings, with suitable mechanical equipment to produce uniform straight edges.

1. Apply in not less than (2) two coats as per manufacturer's recommended rates of applications.

C. Protect pavement markings until completely dry in accordance with manufacturers recommendations.

3.02 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02577

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

### 1.02 WORK INCLUDED

A. The work covered by this section shall include the furnishing of all labor, equipment, services, materials, products and tests to perform all operations in connection with the construction of all new structures or modifications or abandonment of existing structures as shown on the plans, defined in these specifications and subject to the terms and conditions of this contract, including, but not limited to, maintenance access structure's (MAS's), catch basins, and inlets.

### 1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02221 - Excavation and Backfilling for Utilities

C. Section 02400 - Storm Drainage Facilities

### 1.04 SUBMITTALS

A. The CONTRACTOR shall furnish the ENGINEER shop drawings of the precast drainage structures and MAS's for approval. Shop drawings should illustrate all dimensions, reinforcements and specifications for the complete manual.

## PART 2 - PRODUCTS

### 2.01 MORTAR

A. Mortar for use in constructing and plastering sewer structures shall conform to ASTM C-270, "Specifications for Mortar for Unit Masonry". A Portland cement-hydrated lime mixture or a masonry cement may be used provided that the same materials are used throughout the project.

B. Mortar materials shall be proportioned by volume and shall consist of one part Type II Portland Cement to two parts aggregate (sand). Portland Cement shall conform to ASTM C-150, "Specifications for Portland Cement". Aggregate shall conform to ASTM C-144, "Specifications for Aggregate for Masonry Units."

### 2.02 PRECAST CONCRETE MANHOLES

A. Precast manhole sections shall conform to ASTM C-478, Specifications for Precast Reinforce Concrete Manhole Sections as modified thereto. Concrete shall attain a minimum compressive strength of 4,000 psi at 28 days. Minimum wall thickness shall be 8 inches.

B. Unless otherwise specified on the plans, all joints shall be made with neoprene or rubber "O" ring compression joints; mastic joint sealing compound, or approved equal. After assembly, all joints shall be filled with mortar and pointed to provide a smooth surface without joint voids.

C. The base and walls that compose the bottom section of precast manholes shall be of monolithic construction, minimum 8 inches thick, and the edge of the base slab shall project a minimum 4 inches beyond the outside diameter of the wall.

D. Holes for piping shall be 6" inches larger than the outside diameter of the respective pipe. After the pipe is set, the void space between the pipe and the hole perimeter shall be completely filled with non-shrinking, quick-setting, waterproof cement mortar and struck smooth.

E. The minimum height of precast base section shall be 36 inches from the bottom of the base slab; however, no holes for piping shall be cast less than 8 inches from the top of the base section or less than 2 inches from the top of the base slab.

2.03 ENDWALLS, CATCH BASINS, INLETS AND JUNCTIONS BOXES

A. Endwalls, valve vaults, catch basins, inlets and junction boxes shall be constructed at the locations shown and to the dimensions indicated on site plans. Unless otherwise specified on the plans, inlets, junction boxes, catch basins, valve vaults and similar structures may be constructed of brick, concrete block, poured concrete or precast concrete. Precast catch basins shall conform to latest A.C.H.A. and P.C.A. specifications. Concrete shall have not less than 4,000-PSI compressive strength at 28 days.

B. Unless otherwise specified on the plans, all concrete for these structures shall be Class I concrete as specified in the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", latest revision, Section 345. Mortar for use in constructing and plastering shall be as previously set forth in this section.

C. Brick shall be solid hard-burned clay conforming to ASTM Serial C-32-73, Grade MA. Concrete brick shall conform to ASTM Serial C-55-75, Grade P-I. Concrete block shall conform to ASTM Serial C-90-78, Grade PI.

D. All brick or concrete block structures covered in this Section shall be plastered inside and outside with 1/2 inch of cement mortar. Inside surfaces shall be smooth and even.

E. Base slabs and walls of concrete structures shall be constructed in a continuous pour between expansion joints.

F. For each grate type inlet, two layers of Mirafi 140 fabric of "Poly Filter X" polypropylene material or approved equal, shall be sandwiched between 2 x 2 x 10/10 welded wire fabric cut to the grate size and attached to the underside of the grate. The sandwiched filter material shall be wired to the cross members of the grate each way on 4-inch centers. After inlet construction and the roadway construction is completed and the project site work (including landscaping) has been established, the filter material and fabric shall be removed with any retained silt or sand.

2.04 CASTINGS (INCLUDING FRAMES, COVERS AND GRATINGS)

A. Iron castings shall conform to ASTM A-48, "Specifications for Gray Iron Castings", and shall be Class 30. Frames and grates may be Class 20.

B. All castings shall be made of clean, even grain, tough grey cast iron. The castings shall be smooth, true to pattern and free from projections, san holes, warp and other defects. The horizontal surface of the frame cover seats and the under surface of the frame cover seat which rests upon the cover seat shall be machined. After machining, it shall not be possible to rock any after it has been seated in any position in its associated frame. Machining shall be required only on those frames and covers intended for vehicular traffic.

C. Bearing surfaces between cast frames, covers and grates shall be machined and fitted together to assure a true and even fit. Within areas of vehicular traffic, the frames, covers and gratings shall be machined-ground so that irregularity of contact will be reduced to a minimum and will be rattle-proof.

D. All manhole covers shall be provided with concealed pick holes. Manufacturer's name and catalog number shall be cast on all frames, covers, grates, etc. Covers shall be lettered "Storm Sewer" or "Sanitary Sewer" as applicable and shall be plainly visible. The manhole frames and covers shall be flush with finished grade.

E. Grates and covers for inlets shall be as shown on the plans, set to the grades indicated and conforming with the requirements of the castings described above. Grates shall be furnished complete with frames specifically constructed to provide full bearing at all points of contract.

## PART 3 - EXECUTION

### 3.01 CHANNELS

A. Channels shall be accurately and smoothly formed in accordance with the plans. Channels shall be constructed of concrete with trowel-finished surfaces. The upper surface of the manhole shall be sloped toward the channels as shown.

B. Drop pipe at sanitary sewer MAS's shall be installed when the difference in elevation between the pipe invert and the invert at the center of the manhole exceeds two feet (2'), or where directed by the ENGINEER. The drop manhole structure shall be built according to the plans and specifications.

C. After channels are formed and section joints are pointed, the interior of the sanitary sewer manhole shall be painted with two coats of Koppers Bitumastic 300-M (7 mils per coat) or approved equal. The exterior shall be painted in a similar manner, if required by local regulations.

D. Storm drainage structures are not required to be painted inside or outside. Provide finish and water proofing as specified in 3.02 and 3.03 below.

### 3.02 BRICKS

A. All bricks shall be thoroughly wetted before being laid. Brick shall be laid by the above shove joint method so as to bond them thoroughly into the mortar. Headers and stretcher courses shall

be so arranged as to bond and mass thoroughly. Joints shall be finished smooth and shall be not less than 1/4 inch or more than 1/2 inch in thickness.

3.03 MANHOLES AND OTHER STRUCTURES

A. All joints shall be finished watertight; all openings for sewers, frames, etc., in precast manhole access structures and catch basins shall be cast at time of manufacture. Spaces around all piping entering or leaving manhole access structures shall be completely filled with Embeco mortar or approved equal.

B. All mas's shall be set plumb to line and grade and shall rest on a firm carefully graded subgrade which shall provide uniform bearing under base.

C. Grout for manhole bottoms shall consist of broken block, brick and 2:1 cement mortar.

3.04 CLEANING AND MAINTENANCE

A. All structures shall be cleaned and maintained in workable condition until accepted by the ENGINEER

3.05 ABANDONMENT OF EXISTING STRUCTURES IN PLACE

A. All structures shown on the drawings to be abandoned in place shall be removed to a minimum of 3 feet below existing grade and properly filled with material as in section 02200 paragraph 3.14. Excavation, backfill, and restoration shall be executed in accordance with requirements for removing existing and installing new structures.

3.06 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02601

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. The CONTRACTOR shall furnish and install all piping systems shown and specified, in accordance with the requirements of the Contract Documents. Each system shall be complete with all necessary fittings, hangers, supports, anchors, expansion joints, flexible connectors, valves, accessories, heat tracing, insulation, lining and coating, testing, disinfection, excavation, backfill and encasement, to provide a functional installation.

B. The piping shown is intended to define the general layout, configuration, routing, method of support, pipe size, and pipe type. The mechanical drawings are not pipe construction or fabrication drawings. It is the CONTRACTOR's responsibility to develop the details necessary to construct all mechanical piping systems, to accommodate the specific equipment provided, and to provide and install all spools, spacers, adapters, connectors, etc., for a complete and functional system.

### 1.03 RELATED WORK

A. Division 2 as applicable.

B. Section 02200 - Earthwork.

C. Section 02221 - Excavation and Backfilling Utilities

D. Section 02400 - Storm Drainage Facilities

E. Section 02601 - Subterranean Structures

### 1.04 REFERENCE STANDARDS

A. Codes: All codes, as referenced herein are specified in Section 01090, "Reference Standards".

B. Commercial Standards:

| | |
|---|---|
| ANSI/ASME B1.20.1 | Pipe Threads, General Purpose (inch). |
| ANSI B16.5 | Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys. |
| ANSI/AWWA C207 | Steel Pipe Flanges for Water Works Service, Sizes 4 in through 144 in. |
| ANSI/AWWA C606 | Grooved and Shouldered Joints. |

| | |
|---|---|
| ANSI/AWS D1.1 | Structural Welding Code. |
| ASTM A 307 | Specification for Carbon Steel Bolts and Studs, 6,000 PSI Tensile. |
| ASTM A 325 | Specification for High-Strength Bolts for Structural Steel Joints. |
| ASTM D 792 | Test Methods for Specific Gravity and Density of Plastics by Displacement. |
| ASTM D 2000 | Classification System for Rubber Products in Automotive Applications. |

1.05 SUBMITTALS

A. The CONTRACTOR shall submit complete shop drawings and certificates, test reports, affidavits of compliance, of all piping systems, in accordance with the requirements in Section 01340, "Shop Drawings, Product Data and Samples", and as specified in the individual sections. The shop drawings shall include all necessary dimensions and details on pipe joints, fittings, fitting specials, valves, appurtenances, design calculations, and material lists. The submittals shall include detailed layout, spool, or fabrication drawings which show all pipe spools, spacers, adapters, connectors, fittings, and pipe supports necessary to accommodate the equipment and valves provided in a complete and functional system.

B. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.

C. The CONTRACTOR shall submit as part of the shop drawings a certification from the pipe fabricator stating that all pipes will be fabricated subject to a recognized Quality Control Program. An outline of the program shall be submitted to the ENGINEER for review prior to the fabrication of any pipe

1.06 QUALITY ASSURANCE

A. Inspection: All pipes shall be subject to inspection at the place of manufacture. During the manufacture of the pipe, the ENGINEER shall be given access to all areas where manufacturing is in progress and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.

B. Tests: Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards. [Welds shall be tested as specified.] The CONTRACTOR shall perform all tests at no additional cost to the TOWN.

C. Welding Requirements: All welding procedures used to fabricate pipe shall be pre-qualified under the provisions of ANSI/AWS D1.1. Welding procedures shall be required for, but not necessarily limited to, longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds, and plates for lug connections.

D. Welder Qualifications: skilled welders, welding operators, and tackers who have had adequate experience in the methods and materials to be used shall do all welding. Welders shall be qualified under the provisions of ANSI/AWS D1.1 by an independent local, approved testing agency not more than 6 months prior to commencing work on the pipeline. Machines and electrodes similar to those used in the WORK shall be used in qualification tests. The CONTRACTOR shall furnish all material and bear the expense of qualifying welders.

1.07 MANUFACTURER'S SERVICE REPRESENTATIVE

A. Where the assistance of a manufacturer's service representative is advisable, in order to obtain perfect pipe joints, supports, or special connections, the CONTRACTOR shall furnish such assistance at no additional cost to the TOWN

1.08 MATERIAL DELIVERY, STORAGE, AND HANDLING

A. All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground, to provide protection against oxidation caused by ground contact. All defective or damaged materials shall be replaced with new materials.

1.09 CLEANUP

A. After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

PART 2 - PRODUCTS

2.01 GENERAL

A. All pipes, fittings, and appurtenances shall be furnished in accordance with the requirements of the applicable Sections of Division 2 and as specified herein.

B. Lining: All requirements pertaining to thickness, application, and curing of pipe lining, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified.

C. Coating: All requirements pertaining to thickness, application, and curing of pipe coating, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified. Pipes above ground or in structures shall be field-painted as directed by the ENGINEER.

D. Grooved Piping Systems: Piping systems with grooved joints and fittings may be provided in lieu of screwed, flanged, welded, or mechanical joint systems for ductile iron yard piping. (All piping above and below ground within the property limits of treatment plants, pump stations, and similar installations). All grooved couplings on buried piping must be bonded. To assure uniform and compatible piping components, all grooved fittings, couplings, and valves shall be from the same manufacturer. The CONTRACTOR shall make the coupling manufacturer

responsible for the selection of the correct style of coupling and gasket for each individual location.

2.02 PIPE FLANGES

A. Flanges: Where the design pressure is 150 psi or less, flanges shall conform to either ANSI/AWWA C207 Class D or ANSI B16.5 150-lb class. Where the design pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to ANSI/AWWA C207 Class E, Class F, or ANSI B16.5 150-lb class. However, AWWA flanges shall not be exposed to test pressure greater than 125 percent of rated capacity. For higher test pressures, the next higher rated AWWA flange or an ANSI-rated flange shall be selected. Where the design pressure is greater than 275 psi up to a maximum of 700 psi, flanges shall conform to ANSI B16.5 300-lb class. Flanges shall have flat faces and shall be attached with boltholes straddling the vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of ANSI/AWWA C207. Flanges for miscellaneous small pipes shall be in accordance with the standards specified for these pipes.

B. Blind Flanges: Blind flanges shall be in accordance with ANSI/AWWA C207, or with the standards for miscellaneous small pipes. All blind flanges for pipe sizes 12 inches and over shall be provided with lifting eyes in form of welded or screwed eyebolts.

C. Flange Coating: All machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.

D. Flange Bolts: All bolts and nuts shall conform to pipe manufacturers recommendations. Studs and bolts shall extend through the nuts a minimum of 1/4-inch. All-thread studs shall be used on all valve flange connections, where space restrictions preclude the use of regular bolts.

E. Insulating Flanges: Insulated flanges shall have boltholes 1/4-inch diameter greater than the bolt diameter.

F. Insulating Flange Sets: Insulating flange sets shall be provided where shown. Each insulating flange set shall consist of an insulating gasket, insulating sleeves and washers and a steel washer. Insulating sleeves and washers shall be one piece when flange bolt diameter is 1-1/2-inch or smaller and shall be made of acetal resin. For bolt diameters larger than 1-1/2-inch, insulating sleeves and washers shall be 2-piece and shall be made of polyethylene or phenolic. Steel washers shall be in accordance with ASTM A 325. Insulating gaskets shall be full-face.

G. Insulating Flange Manufacturers, or equal:

1. JM Red Devil, Type E;
2. Maloney Pipeline Products Co., Houston;
3. PSI Products, Inc., Burbank, California.

H. Flange Gaskets: Gaskets for flanged joints shall be full-faced, 1/16-inch thick compressed sheets of aramid fiber base, with nitrile binder and non-stick coating, suitable for temperatures to 700 degrees F, a pH of one to eleven, and pressures to 1000 psig. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted.

I. Flange Gasket Manufacturers, or equal:

1. John Crane, style 2160;
2. Garlock, style 3000.

J. Water Stop Gasket: Water stop gaskets for HDPE pipe are to be used to seal and prevent the infiltration and exfiltration of water at manhole connections. The recommended minimum concrete structure hole diameter for a 18" pipe is to be 26.50". The pipe is to be cleaned prior to attaching the gasket which is to be positioned on the valley of the corrugation. The take up clamp screws are to be positioned 180 degrees from each other. A good quality bonding agent is required at the structures opening. Water stop gasket is to meet the requirements of ASTM C923.

2.03 THREADED INSULATING CONNECTIONS

A. General: Threaded insulating bushings, unions, or couplings, as appropriate, shall be used for joining threaded pipes of dissimilar metals and for piping systems where corrosion control and cathodic protection are involved.

B. Materials: Threaded insulating connections shall be of nylon, Teflon, polycarbonate, polyethylene, or other non-conductive materials, and shall have ratings and properties to suit the service and loading conditions.

2.04 MECHANICAL-TYPE COUPLINGS (GROOVED OR BANDED PIPE)

A. General: Cast mechanical-type couplings shall be provided where shown. The couplings shall conform to the requirements of ANSI/AWWA C606. All gaskets for mechanical-type couplings shall be compatible with the piping service and fluid utilized, in accordance with the coupling manufacturer's recommendations. The wall thickness of all grooved piping shall conform with the coupling manufacturer's recommendations to suit the highest expected pressure. To avoid stress on equipment, all equipment connections shall have rigid-grooved couplings, or harness sets in sizes where rigid couplings are not available, unless thrust restraint is provided by other means. The CONTRACTOR shall have the coupling Manufacturer's service representative verify the correct choice and application of all couplings and gaskets, and the workmanship, to assure a correct installation.

B. Couplings for Steel Pipe, Manufacturers, or equal:

1. Gustin-Bacon (banded or grooved);
2. Victaulic Style 41 or 44 (banded, flexible);
3. Victaulic Style 77 or 07 (grooved).

C. Ductile Iron Pipe Couplings, Manufacturers, or equal:

1. Gustin-Bacon;
2. Victaulic Style 31.

Note: Ductile iron pipe couplings shall be furnished with flush seal gaskets.

2.05 SLEEVE-TYPE COUPLINGS

A. Construction: Sleeve-type couplings shall be provided where shown, in accordance with ANSI/AWWA C219 unless otherwise specified, and shall be of steel with steel bolts, without pipe stop, and shall be of sizes to fit the pipe and fittings shown. The middle ring shall be not less than 1/4-inch in thickness and shall be either 5 or 7 inches long for sizes up to and including 30 inches and 10 inches long for sizes greater than 30 inches, for standard steel couplings, and 16 inches long for long-sleeve couplings. The followers shall be single-piece contoured mill section welded and cold expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to provide positive confinement of the gasket. Buried sleeve-type couplings shall be epoxy-coated at the factory as specified.

B. Pipe Preparation: The ends of the pipe, where specified or shown, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.

C. Gaskets: Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N," grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications:

1. Color - Jet Black
2. Surface - Non-blooming
3. Durometer Hardness - 74 ± 5
4. Tensile Strength - 1000 psi Minimum
5. Elongation - 175 percent Minimum

The gaskets shall be immune to attack by impurities normally found in water or wastewater. All gaskets shall meet the requirements of ASTM D 2000, AA709Z, meeting Suffix B13 Grade 3, except as noted above. All gaskets shall be compatible with the piping service and fluid utilized.

D. Insulating Couplings: Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket which assembles over a rubber sleeve of an insulating compound in order to obtain insulation of all coupling metal parts from the pipe.

E. Restrained Joints: All sleeve-type couplings on pressure lines shall be harnessed unless thrust restraint is provided by other means. Harnesses shall be in accordance with the requirements of the appropriate reference standard, or as shown.

F. Manufacturers or Equal:

1. Dresser, Style 38;
2. Ford Meter Box Co., Inc., Style FC1 or FC3;
3. Smith-Blair, Style 411.

## 2.06 FLEXIBLE CONNECTORS

A. Flexible connectors shall be installed in all piping connections to engines, blowers, compressors, and other vibrating equipment, and where shown. Flexible connectors for service temperatures up to 180 degrees F shall be flanged, reinforced Neoprene or Butyl spools, rated for a working pressure of 40 to 150 psi, or reinforced, flanged duck and rubber, as best suited for the application. Flexible connectors for service temperatures above 180 degrees F shall be flanged braided stainless steel spools with inner, annular, corrugated stainless steel hose, rated for minimum 150 psi working pressure, unless otherwise shown. The connectors shall be 9 inches long, face-to-face flanges, unless otherwise shown. The manufacturer shall approve the final material selection. The CONTRACTOR shall submit manufacturer's shop drawings and calculations.

2.07 EXPANSION JOINTS

A. All piping subject to expansion and contraction shall be provided with sufficient means to compensate for such movement, without exertion of undue forces to equipment or structures. This may be accomplished with expansion loops, bellow-type expansion joints, or sliding-type expansion joints. Expansion joints shall be of stainless steel, monel, rubber, or other materials, best suited for each individual service. The CONTRACTOR shall submit detailed calculations and manufacturer's shop drawings, guaranteeing satisfactory performance of all proposed expansion joints, piping layouts showing all anchors and guides, and information on materials, temperature and pressure ratings.

2.08 PIPE THREADS

A. All pipe threads shall be in accordance with ANSI/ASME B1.20.

PART 3 - EXECUTION

3.01 GENERAL

A. All pipes, fittings, and appurtenances shall be installed in accordance with the requirements of the applicable Section of Divisions 2. The lining manufacturer shall take full responsibility for the complete, final product and its application. All pipe ends and joints at screwed flanges shall be epoxy-coated, to assure continuous protection.

B. Where core drilling is required for pipes passing through existing concrete, core drilling locations shall be determined by radiograph of concrete construction to avoid damage to embedded raceways and rebars.

C. All exposed piping shall be painted. All piping to be painted shall be color coded in accordance with TOWN's standard color code. Color samples shall be submitted to ENGINEER for final color selection.

3.02 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for measurement and payment.

END OF SECTION 2610

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. The work included in this section consists of furnishing all labor, supplies equipment and materials necessary to complete the installation of all landscaping as shown on the Plans as base bid including the installation of sod and seeding as shown, as well as all other related responsibilities as described in these Specifications and accompanying plans.

B. Installation: All plant materials included shall be of the specific size and quality indicated on the plans and in these specifications and shall be installed in strict accordance with sound nursery practices and shall include maintenance and watering for all work outlined on the plans and specifications until final acceptance.

C. Quantities and Locations: The ENGINEER reserves the right to adjust the number and locations of the designated types and species to be used at any of the locations shown in order to provide for any modifications which might become necessary.

1.03 RELATED WORK

A. Section 02050 - Demolition

B. Section 02210 - Site Grading

C. Section 02284 - Topsoil

D. Section 02910 - Sodding

1.04 QUALITY ASSURANCE

A. Responsibility for Assuring Quality Work: The CONTRACTOR'S Superintendent shall be well versed in Florida plant material, planting operations, blue print reading, and coordination with other performing contracts or services in the job area.

All employees shall be competent and highly skilled in their particular job in order to properly perform the work assigned to them. The CONTRACTOR shall be responsible for maintaining the quality of the material on the job throughout the duration of the CONTRACT.

B. Correct Grade of Plants: In the event that it becomes apparent that any nursery supplying plants for this work has knowingly and consistently represented the grade of plants as being higher than their actual grades as determined under these provisions, all plants already delivered from such sources shall be removed from the job at the CONTRACTOR'S expense, and no further plants will be accepted from such nursery until written evidence is submitted and confirmed that all

material for delivery has been inspected and approved by inspectors of the State Plant Board as being of the grade as represented.

C. Authority for Nomenclature, Species, Etc.: All plant material shall conform to the names given in Hortus Third, 1976 edition. Names of varieties not included therein conform generally with names accepted in the nursery trade.

D. Grade Standards: All plant materials shall be nursery grown except where specified as collected material, and shall comply with all required inspections, grading standards and plant regulations as set forth by the Florida Department of Agriculture's "Grades and Standards for Nursery Plants" revised 1973, or with any superseding specifications that may be called for on the Plans or in the Specifications. ALL PLANTS NOT LISTED IN THE GRADES AND STANDARDS FOR NURSERY PLANTS, shall conform to a Florida No. 1 as to: (1) Health and Vitality, (2) Condition of Foliage, (3) Root System, (4) Freedom from Pest or Mechanical Damage, (5) Heavily Branched and Densely Foliated according to the accepted normal shape of the species, or sport, (6) Form and branching habit.

E. Balled and Burlapped (B&B) and Wire Balled and Burlapped (WB&B) Plants: These plants shall be properly protected until they are planted. The plant shall be handled only by the earth ball and not be the plant itself.

Any (B&B) or (WB&B) plant which shows evidence of having handled by a method other than the method outlined above, and resulting in a cracked or broken ball or of the roots being loosened within the ball shall be rejected.

For plants grown in soil of loose texture, which does not readily adhere to the root system, (especially in the case of large plant material), WB&B plants may be specified. For WB&B plants, before plant is removed from the hole, sound hog wire shall be placed around the burlapped ball and looped and tensioned until the burlapped ball is substantially packaged by the tightened wire netting, such as to prevent disturbing of the loose soil around the roots during handling. Any wire, synthetic material or chemically treated material will be removed from the rootball at planting time, all ties shall be removed from the rootball and around the trunk at planting.

F. Container Grown Plants (CG): Any Container Grown (CG) plants, which have became "pot bound" or for which the top system is out of proportion (larger) to the size of the container, will not be acceptable.

With metal containers, unless the root-ball system slips easily and unbroken from the can, a nursery can-cutter shall be used to slit the can in such a way that the can may be opened fully.

CG plants shall not be removed from the can until immediately before planting, and with all due care to prevent damage to the root system.

G. Submit to the ENGINEER the names and locations of nurseries proposed as sources of acceptable plant material. The ENGINEER reserves the right to visit the nursery to inspect and/or select the specified material.

H. The ENGINEER will be included in the hand selecting of all Live Oaks for the project.

1.05 DELIVERY, STORAGE AND HANDLING

A. Inspection and Transporting: Movement of nursery stock shall comply with all Federal, State, and local laws and regulations. Therefore, required inspection certificates shall accompany each shipment, and shall be filed with the ENGINEER.

Wrap root balls with burlap. Wire wraps burlap if root ball is not sufficiently compacted. Palms will not require burlap wrapping if the following requirements are met:

1. Dug from marl or heavy soil that adheres to roots and retains shape without shattering.

2. Moistened material used to cover ball and roots not exposed to wind and sun.
3. Transport material on vehicles large enough to allow plants not to be crowded. Plants shall be covered to prevent wind damage during transit and shall be kept moist, fresh and protected at all times. Such protection shall encompass the entire period, which the plants are in transit, being handled, or are in temporary storage.

B. All plant material shall not remain on the work site longer than two (2) days prior to being installed.

1.06 SUBSTITUTIONS

A. Substitutions of plant types or change in the size of plant material will only be permitted upon submission of documented proof that the particular plant type and size specified is not obtainable.

B. Where B&B or WB&B plants are specified, CG plants of the same species, etc., will not be accepted. Where a B&B or WB&B is not specified on a particular plant material, B&B, WB&B or CG plants may be used provided they meet all specifications.

1.07 GUARANTEE

A. All plant material shall be guaranteed for a minimum of one (1) calendar year from the time of final acceptance.

1.08 REPLACEMENT

A. The guaranteeing of plant material shall be construed to mean the complete and immediate replacement of plant material if it is:

1. Not in a healthy growing condition.

2. There is a question to its survival ability at the end of the guarantee period.

3. It is dead.

1.09 SIZE, QUALITY AND GRADE OF REPLACEMENT

A. Replacement plant material shall be of the same species, quality and grade as that of the plant to be replaced. The size of the replacement shall not necessarily be the same size as the original specified plant at its initial planting but shall closely match specimens of the same species. Replacements shall be guaranteed for a period equal to the originally specified guarantee. This guarantee period shall begin at time of plant replacement.

1.10 GUARANTEE NULL AND VOID

A. The guarantee shall be null and void for plant material which is damaged or dies as a result of "Act of God" limited to hail, freeze, lightening, winds which exceed hurricane force, and lethal yellowing, providing the plant was in a healthy growing condition prior to these "Acts of God".

PART 2 - MATERIALS

2.01 PLANT MATERIAL

A. Florida No. 1: Except where another grade is specifically called for in the Plans, all plant material shall be no less than Florida No. 1 at the time of final inspection immediately prior to the acceptance by the TOWN.

B. Habit of Growth: All plant material shall have a habit of growth that is normal for that species and shall be sound, healthy, vigorous and free from insects, plant diseases, injuries, and dead limbs.

C. Branching, Leafing, Measurements and Ball Sizes:

1. Trees and Shrubs: Requirements for the measurement, branching character, ball diameter, depth and other standards shall follow the Code of Standards recommended by the American Association of Nursery Stock, Bulletin Z-60.1-1973 and as revised.

2. Palms: Requirements for the measurement of clear trunk, clear wood and graywood ball diameter and depth shall comply with requirements as set forth by the Florida department of Agriculture's "Grades and Standards for Nursery Plants, Part II for Palms and Trees".

D. Die-Back and Leaf-Drop: Plant material showing signs of die-back or leaf-drop will not be accepted and must be removed from the job immediately if so directed by the ENGINEER. Therefore, any plant material with tendencies toward leaf-drop or dieback must be root pruned early enough to provide a sound network of hair roots prior to relocation to the job site.

E. Mechanical Destruction of Foliage: Mechanical destruction of foliage resulting from root pruning shall not effect more than 10% of the total foliage prior to planting on the job site. Loss of foliage caused by seasonal change will be accepted.

F. Spanish Moss: If Spanish Moss (Tillandsia usneoides) exists on plant material, it shall be completely removed prior to planting on the job site.

G. Palms: Before transporting, see Delivery, Storage and Handling; for requirements related to wrapping of root balls.

1. Remove a minimum of fronds from the crown of the palms to facilitate transporting and handling.

2. Palms with burn marks, nail holes, and frond boots on trunk shall not be accepted.

3. Using untreated burlap strip or untreated cotton twine, tie Sabal Palmetto buds and leave in place until Palmetto is established. Tying shall be as set forth in Florida Department of Agriculture's "Grades and Standards for Nursery Plants". Tying of other palms shall be at the option of the CONTRACTOR.

4. To reduce head volume, Palm fronds may be taper trimmed by not more than one-third (1/3).

5. Palm trees showing cable or chain marks and equipment scars shall be rejected.

H. Chlorosis: The allowable level of Chlorosis in foliage shall be as set forth in the Florida Department of Agriculture's "Grades and Standards for Nursery Plants".

2.02 PLANTING SOILS

A. General Type: All plant material with the exception of Sabal palmetto shall be planted with planting soil mixed with 50% original soil, if the soil is of good quality, as determined by the ENGINEER. The planting soils shall be sandy loam (50% sand, and 50% muck) typical of the locality. The soil must be taken from ground that has never been stripped, with a slight acid reaction (5.5 to 6.5 ph) and without an excess of calcium or carbonate. Soil shall be delivered in a loose friable condition.

B. Special Type: Planting soil for palms shall be a good grade of salt free sand, which is free of all weeds.

2.03 WATER

A. Water shall be potable, from municipal water supplies or other sources, which are approved by a public health department.

2.04 MULCH

A. Mulch shall be Eucalyptus mulch or other approved non-native tree bark mulch. It must be uniformly shredded and be free from pieces of bark larger than 1", foreign matter, weed seeds and any other organic or inorganic material. Submit sample for approval. CONTRACTOR shall apply one application at initial installation and a second application prior to final acceptance.

2.05 FERTILIZER

A. New Plant Material: Trees, palms and shrubs, fertilize with Agriform planting tablets, 20-20-5 formula, 21 gram or approved equal.

B. New Ground Covers: Fertilize with an approved fertilizer of fifty percent (50%) or greater organic 6-6-6 or 8-8-8 with minor elements including, but not limited to, iron zinc and manganese.

C. Composition of Quality: All fertilizer shall be uniform in composition and dry. Granular fertilizer shall be free flowing and delivered in manufacturers standard container with name of material, weight and guaranteed analysis printed on container. Tabletized fertilizer shall be delivered in unopened containers or boxes. All bags, containers or boxes shall be fully labeled with the manufacturer's analysis. Submit labels to ENGINEER for approval prior to placement of fertilizer.

D. All shall comply with the State of Florida fertilizer laws.

2.06 PRUNING PAINT

A. Pruning Paint shall be commercial tree paint, which is waterproof, antiseptic, adhesive, elastic and free of kerosene, water, cresol and any other substances harmful to plant material.

2.07 VEGETATIVE ROOT INHIBITOR

A. A vegetative root inhibitor shall consist of a polypropylene fabric with root control time-release modules of Trifluralin with an effective life of 100 years or approved equal.

B. Vegetative root inhibitor shall Bio-Barrier as manufactured by Reemay, Inc. or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

A. Utilities: The location and existence of utilities (overhead and underground) shall be thoroughly investigated and verified by the CONTRACTOR before the work begins in the area of said utilities. The CONTRACTOR shall exercise care in digging and work so as not to damage existing utilities in said areas, such as underground pipes, cables, wires, etc. Should such overhead or underground obstructions be encountered which interfere with planting, the ENGINEER shall be consulted immediately in order for a decision to made on the relocations of plant material to clear such obstruction. The CONTRACTOR shall be responsible for the immediate repair of any damage to utilities caused by CONTRACTOR’s work.

3.02 PREPARATION

A. Staking Plant Locations: Plant locations must be staked or marked prior to plant hole excavation or placing on deck, by scaling the plants from existing features found on-site and shown on the plans or by given dimensions if shown.

B. Spacing of Shrubs: Shrub beds located next to another bed, walkway, structure, etc., shall have the plants along the perimeter spaced so that the plants can mature properly without growing into the other bed, walkway, structure, etc.

C. Excavation of Plant Holes: Excavation of plant holes shall be roughly cylindrical in shape with the sides approximately vertical. The ENGINEER reserves the right to adjust the size and shape of the plant hole and the location of the plant in the hole to compensate for unanticipated structures or unanticipated factors. All plant holes shall be sufficiently deep to allow the rootball to set on existing soil and have root collar at grade level. Plants shall be centered in the holes with the tree trunk locations scaled from existing permanent structures as shown on the drawings. Plants shall be set straight or plumb in locations. All plant holes to accommodate plants with ball sizes less than 24" in diameter shall be at least 18" greater than the diameter of the ball. All plants holes to accommodate plants with ball sizes two feet (2') and larger in diameter shall be at least twice the diameter of the ball. The excavated material from the plant holes may not be used to back-fill around the plant material. Such material shall be disposed of either on the project site or off the site as directed by the ENGINEER. Plant holes for shrub material planted in mass shall meet all requirements listed above for plant holes. However, they shall not be individual holes but one continuous hole or excavation. Plant holes for hedge material shall also meet all requirements listed above for plant holes, however, a continuous trench shall be used in lieu of individual holes.

3.03 INSTALLATION

A. Setting of Plants:

1. When lowered into the hole the plant shall rest on the prepared hole bottom such that the roots after settlement are level, or slightly above the level of its previous growth condition and the final level of the ground around the plant shall conform to the surrounding grade. The plants shall be set straight or plumb or normal to the relationship of their growth prior to transplanting. The ENGINEER reserves the right to realign any plant material after it has been set.

2. Palms of the Sabal species may be set deeper than the depth of their original growth condition in order to lessen the necessity for support or bracing. For such deeper planting however, it will be required that the underlying soil be friable and that the clear trunk requirements set forth in the plant list be maintained from the finished grade and NOT from the previous grade of the palm trees before it was transplanted.

3. Plant material of the shrub category and smaller must be handled by the ball only. Plant material too large for hand handling, if moved by winch or crane, must be thoroughly protected from chain, rope or cable marks, girdling, bark slippage, limb breakage and any other damage that might occur by improper handling or negligence.

4. All palm trees handled by the trunks must be wrapped with burlap and wood battens, held in place by banding strips as called for in the details.

B. Backfilling:

1. Use planting soils specified in Article 2.02, Planting Soil. Backfill to the bottom two thirds of the planting hole and firmly tamp and settle by watering as backfilling progresses. After having tamped and settled the bottom two thirds (2/3) of the hole, thoroughly puddle with water and fill remaining one third (1/3) of the hole with planting soil, tamping and watering to eliminate air pockets.

C. Application of Fertilizer:

1. Fertilize New Planting (Trees, Palms and Shrubs) as follows:

a.

| Specified Container Size | Application Rate |
|---|---|
| 1 gallon container | 1 tablet |
| 3 gallon container | 2 tablets |
| 5 gallon container | 3 tablets |
| 7 gallon container | 5 tablets |

b. Large tubs or boxes and B&B material shall receive one (1) tablet for each one-half (1/2) inch of trunk diameter (measured three (3) feet from ground). For large shrubs, one (1) tablet for each one (1) foot of height or spread.

D. Mulch: Within 24 hours after planting, planting areas must be mulched as called for in these specifications. The mulch shall be uniformly applied to a depth of two (2) inches over all shrub, tree and groundcover areas and any areas indicated on the plans.

E. Staking and Guying shall be installed within 24 hours; in accordance with details.

F. Initial Watering: Initially, water the plant material to develop uniform coverage and deep-water penetration of at least six inches (6"). Avoid erosion, puddling, and washing soil away from plant roots.

G. Hand Watering: Provide hand watering of plant material as necessary subject to weather conditions, to maintain healthy growing conditions until final acceptance. This shall be in addition to water received from irrigation system, if any.

H. Pruning:

1. The amount of general pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of transplanting operations. Pruning shall be done in such a manner as not to change the natural habit of shape of a plant, and in accordance with National Arborist Association standards for pruning.

2. All broken or damaged roots shall be cut off smoothly. The tops of all trees shall be pruned in a manner complying with standard horticultural practices. All cut surfaces of one-half inch (1/2") or more in diameter above ground level shall be treated with approved commercial tree paint.

I. Weeding: In the event that weeds or undesirable vegetation becomes prevalent to such an extent that they threaten plant material, they shall be removed as directed by the ENGINEER. If necessary, the plant material and/or planting soil shall be replaced as needed to eliminate the weeds at the expense of the CONTRACTOR.

3.04 <u>CLEANING AND PROTECTION</u>

A. Disposal of Trash: All debris and other objectionable material created through planting operations and landscape construction shall be removed completely on a daily basis from the job or as directed by the ENGINEER. Excess soil shall be disposed of as directed by the ENGINEER.

B. Responsibility for Protection and Restoration of Property: The CONTRACTOR shall be responsible for all damage to property whether it is accidental or necessary for the completion of the contract.

C. Protection Against Mechanical Damage: The CONTRACTOR's responsibility for protection against mechanical damage shall include providing protection from vehicles and providing warning signs and barricades as might be necessary and CONTRACTOR shall repair, restore and replace any planting areas which become damaged as a result of any negligence of the CONTRACTOR or CONTRACTOR's employees in complying with these requirements. Coordination shall be with the TOWN and the ENGINEER.

D. Responsibility Prior to Final Acceptance:

1. Maintenance shall begin immediately after each plant is planted and continue until final acceptance.

2. Plants shall be watered by hose, soaking thoroughly each day for the first two weeks (14 calendar days) and every other day for the following two week period. Soaking then shall continue on a twice weekly basis for another period of three (3) weeks for material over five feet (5') height, amounting to a total of 28 days after installation of planting under five feet (5') and a total of 45 days for plants over five feet (5'). All watering is required without regard to an irrigation system.

3. Plant maintenance shall include watering, pruning, weeding, cultivating, mulching, tightening and repairing of guys, stakes, braces, etc., replacement of sick or dead plants, resetting plants to proper grades or upright position and maintenance of the watering saucer, and all other care needed for proper growth of the plants. Plant material rejected during the course of the construction shall be removed within five (5) working days and replaced before the inspection for completion will be scheduled.

4. During the maintenance period and up to the issuance of Certificate of Final Acceptance, the CONTRACTOR shall do all seasonal spraying and/or dusting of all planting. The materials and methods shall be in accordance with the highest standard nursery practices and as recommended by the TOWN, or Horticultural Engineer and approved by the ENGINEER, prior to implementation.

5. Planting areas and plants shall be protected against trespassing and damage. If any plants become damaged or injured they shall be treated or replaced, as directed and in compliance with this specification. No work shall be done within or over planting areas or adjacent to plants without proper safeguards and protection.

3.05 <u>MEASUREMENT AND PAYMENT</u>

A. Measurement and payment will be based on actual quantities installed as more specifically discussed and described in SECTION 01025 of MEASUREMENT AND PAYMENT.

END OF SECTION 02900

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. The work included in this section consists of furnishing all labor, supplies, equipment and materials necessary to complete the installation of sod and associated materials herein after listed and as shown on the plans.

### 1.03 RELATED WORK

A. Section 02200 - Earthwork.

B. Section 02210 - Site Grading.

C. Section 02284 - Top Soil.

D. Section 02900 - Landscape Work.

### 1.04 QUALITY ASSURANCE

A. Sodding work shall be performed by a firm specializing in sodding.

B. Source Quality Control: Ship sod with certificates of inspection as required by governing authorities.

Do not make substitutions. If specified sod is not obtainable, submit proof of non-availability to ENGINEER, together with proposal for use of equivalent material.

C. Analysis and Standards: Package standard products with manufacturer have certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

### 1.05 SUBMITTALS

A. Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Plant and Material Certifications:

1. Certificate of inspection as required by governmental authorities.
2. Manufacturer's or vendor's certified analysis for soil amendments or fertilizer materials.

### 1.06 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.

B. Sod: Time delivery so that sod will be placed within 24 hours after stripping. Protect sod against drying.

C. Transporting:

1. Sod transported to the project in open vehicles shall be covered with tarpaulin or other suitable covers securely fastened to the body of the vehicle to prevent injury to the sod material. Closed vehicles shall be adequately ventilated to prevent overheating of the sod. Evidence of inadequate protection against drying out in transit shall be cause for rejection.

2. Sod shall be kept moist, fresh and protected at all times. Such protection shall encompass the entire period during which the sod is in transit, being handled, or in temporary storage.

3. Upon arrival at the temporary storage location or the site of work, sod shall be inspected for proper shipping procedures. Should the roots be dried out, the ENGINEER will reject the sod. When sod has been rejected, the CONTRACTOR shall remove it at once from the area of the work and replace it.

4. Unless otherwise authorized by the ENGINEER, the CONTRACTOR shall notify the ENGINEER at least 48 hours in advance of the anticipated delivery date of sod material. A legible copy of the invoice, showing species and variety of sod included for each shipment shall be submitted to the ENGINEER. Certificate of Inspection must accompany each sod shipment.

1.07 JOB CONDITIONS

A. Begin installation of sod after preceding related work is accepted.

B. Environmental Requirements:

1. Install sod during months acceptable to the ENGINEER.
2. Do not install sod on saturated soil.

C. Protection: Erect signs and barriers to control vehicular traffic.

D. Utilities: Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until parties concerned mutually agree upon removal.

1.08 SEQUENCING AND SCHEDULING

A. Correlate planting with specified maintenance periods to provide maintenance from date of substantial completion.

B. Coordination with sodding: Plant trees, palms and shrubs after final grades are established and prior to planting of sod, unless otherwise acceptable to ENGINEER. If planting of trees, palms and shrubs occurs after sod work, protect sod areas and promptly repair damage to lawns resulting from planting operations.

1.09 SPECIAL PROJECT WARRANTY

A. Warranty sod through specified lawn maintenance period, and until final acceptance.

PART 2 - PRODUCTS

2.01 PLANTING SOIL

A. Provide new planting soil that is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 1 inch in any dimension, and other extraneous or toxic matter harmful to plant growth.

B. Obtain planting soil from local sources or from areas having similar soil characteristics to that found at project site.

C. Refer to Section 162 of the "FDOT Standard Specifications for Road and Bridge Construction" dated 1991 for Topsoil Specifications.

2.02 COMMERCIAL FERTILIZER

A. For sod, provide fertilizer with percentage of nitrogen required to provide not less than 1 pound of actual nitrogen per 1,000 sq. ft. of lawn area and not less than 4 percent phosphoric acid and 2 percent potassium. Provide nitrogen in a form that will be available to sod during initial period of growth; at least 50 percent of nitrogen to be organic form.

2.03 SOD

A. Provide strongly rooted sod, not less than 2 years old, free of weeds and undesirable native grasses, and machine cut to pad thickness of 1-1/2 inch (plus or minus 1/4 inch), excluding top growth and thatch. Provide only sod capable of vigorous growth and development when planted (viable, not dormant).

B. Provide sod uniform pad sizes with maximum 5 percent deviation in either length or width. Broken pads with uneven ends will not be acceptable. Sod pads incapable of supporting their own weight when suspended vertically with a firm grasp on upper 10 percent of pad will be rejected.

C. Provide sod composed of the following:

1. Bahia sod
2. St. Augustine

D. Sod shall be nursery grown on cultivated mineral agricultural soils. Sod shall have been mowed regularly and carefully maintained from planting to harvest.

E. American Sod Producers Association (ASPA) Grade: Nursery Grown or Approved. Field grown sod is not acceptable.

F. Furnished in pads:

1. Size:

a. Length: 24 inches plus or minus 5%.
b. Width: 18 inches plus or minus 5%
c. Thickness: 1-1/2 inches excluding top growth and thatch.

2. Not stretched, broken or torn.

G. Uniformly mowed height when harvested: 2 inches.

H. Thatch: Maximum 1/2 inch uncompressed.

I. Inspected and found free of disease, nematodes, pests, and pest larvae, by entomologist of State Department of Agriculture.

J. Weeds:

1. Free of Bermuda grass, nut grass or other objectionable weeds.

K. Uniform in color, leaf texture, and density.

2.04 WATER

A. Water shall be potable, from municipal water supplies or other sources which are approved by a public health department.

2.05 FERTILIZER

A. FS O-F-241c (1), Grade A or B.

B. The chemical designation shall be 1-8-8, with at least 50 percent of the nitrogen from a non-water-soluble organic source.

2.06 HERBICIDES

A. As recommended by the State Department of Agriculture.

2.07 STAKES

A. Softwood, 3/4-inch diameter, 8-inch length.

PART 3 - EXECUTION

3.01 PREPARATION OF GROUND SURFACE

A. Before mixing, clean planting soil of roots, plants, sods, stones, clay lumps, and other extraneous material harmful or toxic to plant growth.

B. Mix specified fertilizers with planting soil as necessary at rates specified. Delay mixing fertilizer if planting will not allow placing of planting soil within a few days.

C. For sod, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.

3.02 PREPARATION OF PLANTING BEDS

A. Loosen subgrade of lawn areas to a minimum depth of 4 inches. Remove stones measuring over 1 1/2 inches in any dimension. Remove sticks, stones, rubbish, and other extraneous matter. Limit preparation to areas, which will be planted promptly after preparation.

B. Spread planting soil to minimum depth of 2" or as required meeting lines, grades, and elevations shown, after light rolling and natural settlement. Add specified fertilizer and mix thoroughly into upper 4 inches of topsoil.

C. Place approximately 1/2 of total amount of topsoil required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil. Add specified soil amendments and mix thoroughly into upper 4 inches.

D. Where sod is to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows: Till to a depth of not less than 6 inches. Apply fertilizers as specified. Remove high areas and fill in depressions. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots and other extraneous matter.

E. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such material outside of TOWN's property. Do not turn existing vegetation over into soil being prepared for lawns.

F. Allow for sod thickness in areas to be sodded.

G. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2 inches of topsoil. Delay application of fertilizer if lawn planting will not follow within a few days.

H. Fine grade sod areas to smooth, even surface with loose, uniformly fine texture. Roll, rake, and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades. Limit fine grading to areas, which can be planted immediately after grading.

I. Moisten prepared sod areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting lawns. Do not create a muddy soil condition.

J. Restore sod areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

3.03 SODDING NEW LAWNS

A. Lay sod within 24 hours from time of stripping.

B. Lay sod to form solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.

C. Anchor sod on slopes with wood pegs to prevent slippage.

D. Water sod thoroughly with a fine spray immediately after planting.

3.04 MAINTENANCE

A. Begin maintenance immediately after planting.

B. Maintain lawns for not less than 30 days after substantial completion, and longer as required to establish an acceptable lawn.

C. Maintain sod by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas.

D. Mowing:

1. Whenever grass reaches a height of 3 inches, it shall be cut back to 2" with all clippings removed.

2. After two mowings, CONTRACTOR shall topdress the sod with an application of fertilizer at the rate of 1 pound of actual nitrogen per 1,000 square feet.

3.05 CLEANUP AND PROTECTION

A. During sodding work, keep pavements clean and work area in an orderly condition.

B. Protect sodding work and materials from damage due to landscape operations, operations by other CONTRACTORs and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged sod work as directed.

3.06 INSPECTION AND ACCEPTANCE

A. Sod areas will be accepted when in compliance with all the following conditions:

1. The roots are thoroughly attached to the soil.

2. Absence of visible joints.
3. All areas show a uniform stand of specified grass in healthy condition.
4. At least 60 days have elapsed since the completion of the work in this section.

B. When inspected sod work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by ENGINEER and found to be acceptable. Remove rejected plants and materials promptly from project site.

C. Procedure:

1. The CONTRACTOR shall submit a request for acceptance in writing to the ENGINEER. Request must be received not less than 10 days before the anticipated date for final inspection.

2. Upon completion of all repairs and/or renewals required by ENGINEER at the inspection, the ENGINEER will verify the completeness of the work and then notify the TOWN in writing that the work is accepted.

3. Upon completeness, the TOWN will assume maintenance of all sod areas.

3.07 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on actual quantities installed as more specifically discussed and described in SECTION 01025 of MEASUREMENT AND PAYMENT.

END OF SECTION 02910

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the concrete work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

1. Form work, shoring, bracing and anchorage.

2. Concrete reinforcement and accessories.

3. Cast-in-place concrete.

4. Plugging abandoned pipelines and/or structures in place.

### 1.03 RELATED WORK

A. Section 02510 - Concrete sidewalk

B. Section 02513 - Asphaltic Concrete Paving - General

C. Section 02515 - Portland Cement Concrete Paving.

D. Section 03300 - Cast-in-Place Concrete.

E. All applicable sections of Division 1, 2, 3 and 4.

### 1.04 QUALITY ASSURANCE

A. All work shall be in accordance with ACI 301, latest edition, a copy of which shall be maintained on site.

B. Requirements of Regulatory Agencies: perform work in accordance with local building and other applicable codes.

C. Installation: Performed only by skilled workmen with satisfactory record of performance on completed projects of comparable size and quality.

D. Inspection and Testing:

1. Test Cylinders - As per ASTM C-39.

a. Minimum of three (3) concrete test cylinder shall be taken for every 75 or less cubic yards of concrete placed each day.

b. Minimum of one (1) slump test shall be taken during any cold weather concreting, and be cured on job site under same conditions as the concrete it represents.

2. Slump Test - As per ASTM C-143.

a. Minimum of one (1) slump test shall be taken for each set of test cylinders taken.

1.05 SUBMITTALS

A. Test Reports: Reports of concrete compression, yield, air content and slump tests.

B. Certificates:

1. Manufacturer's certification that materials meet specification requirements.

2. Material content per cubic yards of each class of concrete furnished.

a. Dry weights of cement.
b. Saturated surface-dried weights of fine and course aggregate.
c. Quantities, type and name of all mixtures.
d. Weight of water.

3. Ready-mix delivery tickets as per ASTM C-94.

C. Shop Drawings:

1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.

2. Indicate reinforcement sizes, spaces, locations and quantities or reinforcing steel, and wire fabric, bending and cutting schedules, splicing and supporting and spacing devices.

3. Indicate formwork dimensioning, materials, arrangement of joints and ties.

4. Shop drawings shall be prepared under seal of a Professional Structural Engineer, registered in the State of Florida.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.

B. Handle and store materials to prevent contamination.

1.07 JOB CONDITIONS

A. Allowable concrete temperatures:

1. Hot weather: Maximum 90 degrees F as per ASTM C-94.

B. Do not place concrete during rain, unless protection is provided.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Materials shall conform to ACI 301, latest edition.

B. Plywood forms: Douglas Fir Species, solid one side, form grade, sound undamaged sheets.

C. Lumber: Southern Pine Species, No. 2 Grade, with grade stamp clearly visible.

D. Form Ties: Removable, snap-off metal, of fixed and adjustable length, cone ends.

E. Tubular Column Type: Round, spirally wound laminated fiber material, clearly visible.

2.02 REINFORCING STEEL

A. Reinforcing steel shall conform to ASTM A615, 60 ksi yield grade billet steel reformed bars; uncoated finish.

B. Welded steel wire fabric shall conform to ANSI/ASTM A185, plain type; coiled rolls, uncoated finish.

2.03 CONCRETE MATERIALS

A. Cement: shall conform to ASTM C150, normal Type II Portland, gray color.

B. Fine and coarse aggregate shall conform to ASTM C33.

C. Water: clean and not detrimental to concrete.

2.04 ADMIXTURES

A. Air Entraining: ASTM C-260

B. Chemical: Type (as required) ASTM C-494.

C. Fly Ash and Pozzolans: ASTM C-618

D. Color - Conditioned Concrete: ASTM C-494 and ASTM C-979

2.05 ACCESSORIES

A. Non-shrink grout: pre-mixed compound with non-metallic aggregate, cement, water reducing and plasticing agents; capable of minimum compressive strength of 3500 psi.

B. Construction joints: locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to the ENGINEER. Place construction joints perpendicular to the main reinforcement, continue reinforcement across construction joints.

C. Expansion joints: shall be a minimum of 3/4-inch thick asphalt impregnated fiberboard as per ASTM D-1751.

D. Form release agent shall be a colorless material, which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.

E. Water shall be clear and potable.

2.06 CURING MATERIALS

A. Water shall be clean and potable.

B. Absorptive mat shall be burlap fabric of 9 oz./sq. yd. clean, roll goods complying with AASHTO M182, Class 3.

C. Membrane curing compound shall conform to ASTM C309.

D. Clear Sealer: "Clear Bond" as manufactured by Guardian Chemical Co., Dayton Day-Chem Cure-W (J-9-A) or approved equal.

E. Color curing compound shall be liquid membrane-forming conforming to ASTM C 309 two-component Lithochrome Colorwax by L.M. Scofield Company, or approved equal, color to match admixture for color-conditioned concrete.

2.07 CONCRETE MIX

A. Mix concrete in accordance with ASTM C94.

B. Concrete:

1. Compressive strength (28 days): 3000 psi.

2. Slump: 4(±) 1 inch.

C. Concrete / Flowable fill for grouting and plugging:

1. Compressive strength (28 days) 2000 psi.

2. Slump: as required to grout and plug.

PART 3 - EXECUTION

3.01 FORMWORK ERECTION

A. Verify lines, levels, and measurement before proceeding with formwork.

B. Hand trimed sides and bottom of earth forms; remove loose dirt.

C. Align form joints.

D. Do not apply form release agent where concrete surfaces receive special finishes or applied coatings, which may be affected by agent.

E. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

3.02 REINFORCING

A. Place, support and secure reinforcement against displacement.

3.03 PLACING CONCRETE

A. Color Conditioned concrete, when batching, shall not be less than one-third of the capacity of the mixing drum (a minimum of four yards for a ten yard mixer) and will be in full cubic yard increments.

B. Notify ENGINEER minimum 24-hours prior to commencement of concreting operations.

C. Scratch, float, trowel, broom or belt finish surfaces, as scheduled or indicated on the Drawings.

D. Place 2000 psi concrete for pugging and grouting pipelines and structures in-place as required after proper connection to new service and function of system is complete.

3.04 TOLERANCES

A. Provide Class B tolerance to floor slabs according to ACI 301. Pitch to drains 1/4 inch per foot.

3.05 FINISHES FOR EXPOSED SURFACES

A. Provide exposed surfaces with finishes as called for on the Drawings.

3.06 CONCRETE CURING

A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.

B. Apply a liquid membrane-forming compound, conforming with ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturers recommendations.

3.07 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All costs in connection with concrete work shall be included in the bid price of any item in the bid schedule for which concrete products, materials, or appurtenances are required.

END OF SECTION 03010

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Formwork for Cast-In-Place Concrete, with shoring, bracing, and anchorage.

B. Openings for other affected work.

C. Form accessories.

D. Stripping forms.

### 1.03 RELATED WORK

A. Section 03010 - Concrete.

B. Section 03200 - Concrete Reinforcement.

C. Section 03300 - Cast-In-Place Concrete.

### 1.04 SYSTEM DESCRIPTION

A. Design, engineer and construct formwork, shoring and bracing to meet design code requirements, so that resultant concrete conforms to required shapes, lines, and dimensions.

### 1.05 QUALITY ASSURANCE

A. Construct and erect concrete formwork in accordance with ACI 301 and 347.

### 1.06 SUBMITTALS

A. Indicate pertinent dimensions, materials, and arrangement of joints and ties.

B. Prepare shop drawings under seal of Professional Structural Engineer registered in the State of Florida.

C. Manufacturers certification that materials meet specification requirements.

### 1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials in accordance with manufacturers recommendations.

B. Deliver form materials in manufacturer's packaging with installation instructions.

C. Store off ground in ventilated and protected area to prevent deterioration from moisture or damage.

D. Remove packaging from void forms.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Plywood: Douglas Fir Species; medium density overlaid one side grade; sound, undamaged sheets with straight edges.

B. Lumber: Southern Pine Species; No. 2 grade; with grade stamp clearly visible.

C. Tubular Column: Round, of spirally wound laminated fiber type; surface treated with release agent; of size required.

2.02 FORMWORK ACCESSORIES

A. Form Ties: Snap-off metal of adjustable length; cone type; 1 1/2 inch break back dimension; free of defects that will leave holes no larger than 1-1/4 inches diameter in concrete surface.

B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding in color characteristics of coating intended for use on concrete.

C. Fillets for Chamfered Corners: Wood strips or rigid PVC plastic in maximum possible lengths.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; or strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify lines, levels, and measurements before proceeding with formwork.

3.02 PREPARATION

A. Hand-trim sides and bottoms of earth forms; remove loose dirt prior to placing concrete.

B. Minimize form joints. Symmetrically align joints and make weathertight to prevent leakage of mortar.

C. Arrange and assemble formwork to permit dismantling, stripping, so that concrete is not damaged during its removal.

D. Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

3.03 ERECTION

A. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.

B. Camber slabs and beams to achieve ACI 301 tolerances.

C. Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly lifted so that joints will be apparent in exposed concrete surfaces.

D. Provide expansion strips on external corners of beams and columns, where exposed.

E. Install void forms. Protect from moisture before concrete placement. Protect from crushing during concrete placement.

F. Construct formwork to maintain tolerances in accordance with ACI 301.

3.04 APPLICATION OF FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

B. Do not apply form release agent where concrete surfaces are scheduled to receive special finishes or applied coverings, which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for work embedded in or passing through concrete.

B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

C. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM REMOVAL

A. Notify ENGINEER prior to removing formwork.

B. Do not remove forms and shoring until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed upon it. Remove load-supporting forms when concrete has attained 75 percent of required 28-day compressive strength, provided construction is reshored.

C. Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F for 24-

hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

D. Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28-days. Determine potential compressive strength of inplace concrete by testing field-cured specimens representative of concrete location of members.

E. Reshore structural members due to design requirements or construction conditions to permit successive construction.

F. Remove formwork progressively so no unbalanced loads are imposed on structure.

G. Do not damage concrete surfaces during form removal.

H. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces.

I. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.

3.07 CLEANING

A. Clean forms to remove foreign matter as erection proceeds.

B. Ensure that water and debris drain to exterior through clean-out ports.

3.08 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All costs in connection with concrete formwork shall be included in the bid price of any item in the bid schedule for which concrete formwork is required.

END OF SECTION 03100

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Reinforcing steel bars, welded steel wire fabric, fabricated steel bar or rod mats for cast-in-place concrete.

B. Support chairs, bolsters, bar supports, spaces, for supporting reinforcement.

### 1.03 RELATED WORK

A. Section 03010 - Concrete.

B. Section 03100 - Concrete Formwork.

C. Section 03300 - Cast-In-Place Concrete.

### 1.04 QUALITY ASSURANCE

A. Perform concrete reinforcement work in accordance with CRSI Manual and Standard Practice, and Documents 63 and 65.

B. Conform to ACI 301.

### 1.05 SUBMITTALS

A. Indicate sizes, spacings, locations and quantities of reinforcing steel, bending and cutting schedules, splicing, stirrup spacing, supporting and spacing devices.

B. Prepare shop drawings under seal of Professional Structural ENGINEER registered in the State of Florida.

C. Submit mill test certificates and supplied concrete reinforcing, indicating physical and chemical analysis.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Reinforcing Steel: ASTM A615, 60-ksi-yield grade billet-steel, deformed bars, uncoated finish.

B. Welded Steel Wire Fabric: ANSI/ASTM A185 plain type; in coiled rolls; uncoated finish.

C. Stirrup Steel: ANSI/ASTM A82.

2.02 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gauge annealed type.
B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete, including load bearing pad on bottom to prevent vapor barrier puncture.

C. Chairs, Bolsters, Bar Supports, Spacers Adjacent to Architectural Concrete Surfaces: Plastic coated or stainless steel type; sized and shaped as required.

2.03 FABRICATION

A. Fabricate in accordance with ACI 315, providing concrete cover specified in Section 03300.

B. Locate reinforcing splices not indicated on Drawings at points of minimum stress. Indicate location of splices on shop drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Before placing concrete, clean reinforcement of foreign particles or coatings.

B. Place, support, and secure reinforcement against displacement. Do not deviate from alignment or measurement.

C. Do not dispose or damage vapor barrier required by Section 03300.

3.08 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All costs in connection with concrete reinforcement work shall be included in the bid price of any item in the bid schedule for which concrete reinforcement is required.

END OF SECTION 03200

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Cast-In-Place Concrete Work, as indicated on the drawings, as specified herein or both except as for items specifically indicated as "NIC ITEMS".

B. Including but not necessarily limited to the following:

1. Cast-In-Place concrete walls, footings, foundation walls, paving, walks, slabs, formwork, reinforcing and all other components as indicated on the Drawings.

### 1.03 RELATED WORK

A. Section 03010 - Concrete.

B. Section 03100 - Concrete Form work.

C. Section 03200 - Concrete Reinforcement.

D. Section 03370 - Concrete Curing.

E. Section 02510 - Concrete Sidewalk

### 1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum of five years experience on 5 comparable concrete projects.

B. Requirements of Regulatory Agencies: Perform work in accordance with local building codes.

C. Allowable Tolerances: Flat work true to plane 1/8 inch in 10 feet.

D. Slump tests as per ASTM C-143, and test cylinders as per ASTM C-39.

### 1.05 TESTS

A. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of work.

B. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301.

C. Tests of cement and aggregates will be performed to ensure conformance with requirements stated herein.

D. Three (3) concrete test cylinders will be taken for every 75 cu. yds. or less of each class of concrete placed each day.

E. One (1) slump test will be taken for each set of test cylinders taken.

F. All testing shall be at the expense of the CONTRACTOR.

1.06 SUBMITTALS

A. Provide product data for specified products.

B. Test Reports: Reports of concrete compression, yield, air content, and slump tests.

C. Certificates:

1. Manufacturer's certification that materials meet specification requirements.

2. Material content per cubic yard of each class of concrete furnished.

a. Dry weights of cement.
b. Saturated surface-dried weights of fine and coarse aggregate.
c. Quantities, type and name of admixtures.
d. Weight of water.

3. Ready-mix delivery tickets, ASTM C-94.

D. Shop Drawings:

1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.

2. Indicate bar schedules, stirrup spacing, and diagrams of bend bars.

3. Detail items of form systems affecting appearance of architectural concrete surfaces such as joints, tie holes, liners, patterns and textures. Show items in relation to entire form system.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.

B. Handle and store materials to prevent contamination.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Allowable concrete temperatures:
- Hot Weather: Maximum 90□ as per after C-94.

B. Do not place concrete during rain, unless protection is provided.

PART 2 - PRODUCTS

2.01 MATERIALS & MANUFACTURERS

A. Concrete Ready-Mix concrete ASTM C-94.

1. Cement:

a. ASTM C 150, Type II

2. Admixtures:

a. Air entraining: ASTM C-260
b. Chemical: Type (as required) ASTM C-494.
c. Fly ash and pozzolans: ASTM C-618
d. Vapor Barrier: 6-mil thick film of type recommended for below grade application.

3. Coarse aggregate: Not less than 50% clean, hard, crushed stone conforming to requirements of Table 2, size number 467 ASTM C-33.

4. Slump 4 in. maximum; plus tolerance 0, minus tolerance 1 in.

5. Air content: 5% + 1%.

6. Mix proportioning:

a. In accordance with ASTM C-94.
b. 28 day compressive strength of moist cured laboratory samples 3,000 PSI.
c. Use set retarding admixtures during hot weather only when approved by ENGINEER.
d. Minimum cement contents 5 sacks/cubic yards.
e. Add air-entraining agent to concrete work exposed to exterior.

7. Curing Material: Liquid membrane, ASTM C-309, Type 1.

8. Mixes:

a. ASTM C-94.
b. Mix concrete only in quantities for immediate use.
c. Do not retemper or use set concrete.

B. Bars.

1. Deformed billet steel: ASTM A 615, Grade 60.

C. Wire Fabric:

1. Welded Wire Fabric Steel: ASTM A 185

D. Tie Wire: FS QQ-W-461-G, annealed steel, black 16 ga. minimum.

E. Bar supports: Conform to "Bar Support Specification," CRSI Manual of Standard Practice.

F. Forms:

1. Conform with ACI 347, Chapter 3, Material and Form Work.

2. Lumber:

a. Softwood framing lumber: Kiln dried, PS-20.
b. Boards less than 1 1/2 in. thick and 2 in. wide, used for basic forms and form liners: Kiln dried.
c. Grade marked by grading rules agency approved by American Lumber Standards Committee.
d. Light framing or studs for board or plywood forms, 2 in. to 4 in. width and thickness Construction Standard grade.
e. Boards for basic forms Construction Standard grade.
f. Board surface: Smooth.

3. Plywood:

a. Exterior type softwood plywood, PS 1-66.
b. Each panel stamped or branded indicating veneer grades, species, type and identification.
c. Wood faced plywood for architectural concrete surfaces.
(1). Panel veneer grades: B - C.
(2). Mill-oiled sides and mill-sealed edges of panels.

4. Ties:

a. Materials: Stainless Steel.
b. Type: Snap Ties.
c. Depth of breakback: 1 in.
d. Maximum diameter 1/4 in.

5. Form coatings:

a. Non-staining type.
b. Agent: Pine oil derivative.

G. Water: Clean and potable.

PART 3 - EXECUTION

3.01 FORMWORK

A. Conform to ACI 347, Chapter 2, Construction; and Article 4.2, architectural Concrete.

B. Framing, Bracing and Plywood Form Liners: APA Form V 345-72.

C. Provide temporary openings in framework for concrete placement.

D. Fill voids of plywood joints with sealant and tool smooth.

E. CONTRACTOR is responsible for the design, construction, removal and complete safety of formwork and shoring.

F. Form construction shall be provided to shape, lines dimensions of members shown; substantial, tight enough to prevent leakage, and properly braced or tied to maintain position and size, form sides and bottoms of members unless specifically excepted.

3.02 REINFORCING

A. Fabrication shall be provided to latest ACI Manual of Practice ACI-315.

B. Reinforcing free from excessive rust, scale or coating reducing bond. Bars bent cold in fabrication plant. Chairs, support bars, and other accessories furnished to carry and provide coverage as required by ACI Manual.

C. Unless otherwise indicated the minimum coverage is 3 in. for footings (slabs to have 3/4 in. minimum). Call any "crowding" of reinforcement to ENGINEERs attention during placing.

D. Splices shall be Mesh 6 in. lap, bars 30 diameter minimum.

E. Conduit or pipes embedded in concrete must have specific approval and be located to avoid cracking or reduction in strength. Provide extra strong pipe sleeves where pipes are allowed to pierce concrete beams or walls.

F. Placement:

1. Bar supports: CRSI 65.

2. Reinforcing bars: CRSI 63.

G. Steel Adjustment:

1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, expansion joints, or embedded items.

2. Do not move bars beyond allowable tolerances without concurrence of ENGINEER.

3. Do not heat, bend or cut bars without concurrence of ENGINEER.

H. Splices:

1. Lap splices: Tie securely with wire to prevent displacement of splices during placement of concrete.

2. Splice devices: Install in accordance with manufacturer's written instructions.

3. Welding: Perform in accordance with AWS Standards.

4. Do not splice bars except at locations shown on drawings without concurrence of ENGINEER.

I. Wire Fabric:

1. Install in longest practicable length.

2. Lap adjoining pieces one full mesh minimum, and lay splices with 16-gage wire.

3. Offset end laps in adjacent widths to prevent continuous laps.

J. Cleaning: Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that will reduce bond with concrete.

K. Protection During Concreting: Keep reinforcing steel in proper position during concrete placement.

3.03 JOINTS

A. Construction pours shall be continuous pours except where joints are indicated. No additional joints except by special acceptance in writing by the ENGINEER. Allow no construction or interrupted pour joints in any exposed surface, unless treated as part of design.

1. Where indicated and as detailed, provide saw cut type construction joints of sizes as called for on the drawings.

B. Expansion joints shall be constructed as shown on drawings.

1. Expansion material shall be 1/2" continuous full depth strips set 1/2" below finish surface with 1/2" x 1/2" joint sealant filler above.

3.04 BUILT-IN ANCHORING DEVICES, FIXTURES, PIPE SLEEVES AND OTHER INSERTS

A. Build-in and coordinate as required and called for on the drawings all items to be constructed into concrete such as anchoring devices, fixtures, piping, sleeves and other inserts and items as required for a complete installation.

3.05 INSPECTION

A. Assure that excavation and formwork are completed, with smooth rubbed finish, and that excess water is removed.

B. Check that reinforcement is secured in place.

C. Verify that expansion joint material, anchors, and other embedded items are secured in position.

D. Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

3.06 CONCRETE QUALITY

A. Design of mix shall be a laboratory designed mix to satisfy the following requirements and shall be approved by the ENGINEER.

1. Ready mixed concrete as per ASTM C-94 with 28 day strength 3,000 PSI minimum, for all standard grey concrete work.

2. Proportion the concrete to work readily into forms and around reinforcement, without excessive manipulation, segregation or water gain. Approved additives may be used to achieve the above results.

3. Slump shall be maximum 3 in. for footings, and for all other concrete shall be 3 in. to 5 in.

4. Submit for approval representative test results by independent laboratory to substantiate proposed mix design.

3.07 PREPARATION FOR POURS

A. Notify the TOWN's Representative, ENGINEER and other inspectors at least 36 hours prior to inspection.

B. Equipment forms, and reinforcing shall be clean and wet down, reinforcing firmly secured in place, runways set up and not resting on or displaying reinforcing.

C. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's instruction.

D. At locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with non-shrink grout.

3.08 PLACING

A. Mixing and conveying shall be as per ASTM C-94 and as follows:

1. Maximum elapsed time from addition of water to placing in forms -60 minutes, (total mixing time).

2. Concrete handled and placed by methods, which keep concrete plastic, prevent separation of materials, and do not displace reinforcement.

B. Deposit as close as possible to final position to avoid segregation of materials. Restrict drop to 3 foot maximum (less for exposed concrete), using tremie if necessary.

1. Compact by mechanical vibration to thoroughly work around reinforcing and eliminate honeycomb.

C. Place concrete in accordance with ACI 301.

D. Hot Weather Placement: ACI 301.

E. Cold Weather Placement: ACI 301.

F. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

G. Maintain concrete cover around reinforcing as follows:

| Item | Coverage |
|---|---|
| Beams | 1 1/2 inch |
| Supported Slabs | 3/4 inch |
| Column Ties | 1 1/2 inch |
| Walls (exposed to weather or backfill) | 2 inch |
| Footings and Concrete Formed Against Earth | 3 inch |
| Slabs on Fill | 2 inch |

H. Place concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.

I. Saw cut control joints at an optimum time after finishing. Use 3/16 inch thick blade, cutting 1/3 depth of slab thickness.

J. Separate exterior slabs on fill from vertical surfaces with joint filler. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.

K. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify ENGINEER upon discovery.

3.09 CONCRETE CURING

A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing

requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.

B. Apply a liquid membrane-forming compound, conforming to ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturers recommendations.

3.10 CONCRETE FINISHING

A. Unexposed concrete work shall be patched and repaired immediately after removal of forms.

1. Cut off metal ties a minimum of 1 in. back from surface of concrete.

2. Moderate honeycomb cut out and prepared for patching. Severe honeycomb with exposed steel reinforcing is to be removed or "united" at the discretion of the ENGINEER.

3. Wet areas for patching and pack carefully with rich mortar rubbed to match surface.

B. Provide concrete surfaces to be left exposed, walls, columns, beams, with smooth rubbed finish.

C. Provide Class B tolerances to floor slabs and toppings according to ACI 301.

D. Pitch to drains 1/4 inch per foot.

E. Exposed concrete work shall be patched and repaired as accepted by ENGINEER after consultation. Patching and rubbing will be kept to a minimum if possible, but when necessary will be done with great care to obtain maximum degree of matching in color and texture to adjacent finished concrete surfaces.

F. Monolithic finish using care to obtain a level surface; floors out of level or with variation greater than 1/8 in. in 10 feet shall be corrected.

G. All finishes shall be as called for on the drawings.

3.11 SEPARATE FLOOR TOPPINGS

A. Prior to placing, roughen concrete base course and remove foreign materials. Broom and vacuum clean.

B. Place dividers, edge strips, reinforcing and other items to be cast in.

C. Apply bonding agent on base course in accordance with manufacturer's instructions. Apply sand and cement slurry coat on base course immediately prior to placing toppings.

D. Place concrete floor toppings to required lines and levels.

3.12 PATCHING

A. Notify ENGINEER immediately upon removal of forms.

B. Patch imperfections.

3.13 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required levels and lines, details, and elevations.

B. Repair or replace concrete not properly placed or of the specified type.

3.14 FIELD QUALITY CONCRETE

A. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.15 PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shocking, and vibration.

3.16 APPLICATION OF BOND COAT FOR CONCRETE LEVELING COAT FOR PAVERS AND TEXTURED SURFACES

A. Provide installation as per manufacturer's standard printed specifications, instructions and recommendations.

3.17 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All cast in place concrete shall be included in the bid price of the relevant item in the bid schedule.

END OF SECTION 03300

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

### 1.02 WORK INCLUDED

A. Maintenance of conditions for proper concrete curing.

### 1.03 RELATED WORK

A. Section 02510 - Concrete Sidewalk

B. Section 03010 - Concrete

C. Section 03300 - Cast-in-Place Concrete

### 1.04 QUALITY ASSURANCE

A. Conform to requirements of ACI 301.

### 1.05 REFERENCES

A. ACI 301 - Specifications for Structural Concrete for Buildings.

B. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

### 1.06 SUBMITTALS

A. Provide product data for specified products.

### 1.07 ENVIRONMENTAL REQUIREMENTS

A. Maintain ambient temperature at 70 degrees F. for three (3) days.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. Water: Clean and not detrimental to concrete.

B. Absorptive Mat: Burlap fabric of 9 oz./sq. yd. clean, roll goods.

C. Curing Compound: As per ASTM C309.

## PART 3 - EXECUTION

3.01 INSPECTION

A. Verify concrete surfaces are ready for curing.

3.02 CURING COMPOUND

A. Apply curing compound in two (2) coats with second coat at right angles to first.

B. Apply in accordance with manufacturer's instructions.

3.03 SPRAYING

A. Spray water over slab areas; maintain wet for three (3) days.

3.04 ABSORPTIVE MAT

A. Saturate burlap side of burlap fabric mat. Place over slab areas, burlap side down; lap edges and ends 12 inches. Maintain in place for seven (7) days.

3.05 CONCRETE CURING

A. Curing for standard grey work after finishing, cure concrete by keeping moist for one (1) week after placement. Floors and vertical surfaces may be sprayed with an approved curing compound to retard evaporation of water, if spraying is not objectionable because of future finishing requirements. Begin curing operations as soon as concrete has attained its initial set. Keep exposed concrete surface moist for at least one (1) week.

B. Apply a liquid membrane-forming compound, conforming with ASTM C 309, color to match that of the color condition concrete. Apply on flat work immediately after the finishing operation pursuant to the manufacturers recommendations.

C. Cure concrete as scheduled or indicated.

D. Remove absorptive mat after curing.

3.06 MEASUREMENT AND PAYMENT

A. No separate measurement and payment is provided for work covered by this Section. All costs in connection with concrete curing shall be included in the bid price of any item in the bid schedule for which concrete curing is required.

END OF SECTION 03370