

GENERAL EROSION AND TURBIDITY CONTROL NOTES

- THE SITE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF ALL EROSION AND TURBIDITY CONTROLS AND THE QUALITY AND QUANTITY OF OFFSITE OR WETLAND DISCHARGES.
- CONTRACTOR SHALL SECURE AN NPDES GENERIC CONSTRUCTION PERMIT / NOI PRIOR TO START OF WORK AND THE STORMWATER POLLUTION PREVENTION PLAN FOR THE PERMIT SHALL BE MADE AVAILABLE TO LAKE COUNTY FOR INSPECTION DURING CONSTRUCTION. LDR 9.06.09 (D).
- PRIOR TO CONSTRUCTION, THE SITE SUBCONTRACTOR IS RESPONSIBLE FOR HAVING HIS DEWATERING PLAN AND TURBIDITY CONTROL PLAN APPROVED BY THE APPLICABLE REVIEWING AGENCIES. REFER TO THE PROJECT'S PERMIT APPROVALS AND PERMIT CONDITIONS FOR AGENCIES REQUIRING SUCH REVIEW AND APPROVAL. QUESTIONS CONCERNING APPROPRIATE TECHNIQUES SHOULD BE ADDRESSED TO THOSE AGENCIES AND/OR DISCUSSED WITH THE PROJECT ENGINEER AND OWNER.
- THE APPROPRIATE TURBIDITY AND EROSION CONTROL METHODOLOGIES SELECTED BY THE SITE SUBCONTRACTOR FOR THIS PROJECT SHOULD BE MADE FOLLOWING ASSESSMENT OF THE PLANS AND PROJECT SITE SPECIFIC FACTORS AND AFTER CONSULTATIONS AS NEEDED WITH THE PROJECT ENGINEER AND APPROPRIATE AGENCIES. THE SITE SUBCONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ANY AND ALL NECESSARY PERMITS FOR SUCH ACTIVITY; SEVERAL FACTORS TO CONSIDER ARE LISTED BELOW:
 - CLAY CONTENT IN EXCAVATED MATERIALS AND/OR PERMEABILITIES RATES
 - DEPTH OF CUT IN PONDS, TRENCHES, OR UTILITY LINES
 - AMBIENT GROUND WATER LEVELS
 - ACTUAL RAINFALL AMOUNTS AND TIME OF YEAR RELATIVE TO NORMAL RAINY SEASON
 - PROXIMITY TO WETLANDS, WATER BODIES OR OFFSITE PROPERTIES
 - 'CLASS' DESIGNATION OF RECEIVING WATER BODIES (I.E., OUTSTANDING FLORIDA WATERS, SHELLFISH HARVESTING AREAS, ETC.)
 - DENSITY, TYPE, AND PROXIMITY OF UPLAND VEGETATION TO BE RETAINED DURING CONSTRUCTION (FOR USE AS POSSIBLE FILTRATION AREAS)
 - FILL HEIGHT RELATIVE TO NATURAL GRADE AND LENGTH AND STEEPNESS OF THE PROPOSED SLOPES
 - EXISTING TOPOGRAPHY AND DIRECTIONS OF SURFACE FLOW
 - TYPE OF EQUIPMENT USED
 - PROJECT TYPE
 - DURATION OF CONSTRUCTION ACTIVITIES
 - SEPARATION DISTANCE OF ONSITE PONDS
 - AMBIENT QUALITY OF SURFACE AND GROUNDWATER
 - TEMPORARY STOCKPILE LOCATIONS AND HEIGHTS
- AT THE ONSET OF CONSTRUCTION, THE SITE SUBCONTRACTOR, AS THE PARTY RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN, SHALL ASSESS THE ABOVE DESCRIBED CONDITIONS AND FACTORS WITH RESPECT TO RELATIVE COST EFFECTIVENESS AND SELECT THE APPROPRIATE METHODS OF PROTECTION. A FAIRLY EXTENSIVE LIST OF TECHNIQUES ARE PRESENTED BELOW BUT IT MUST BE STRESSED THAT ANY OR ALL OF THE FOLLOWING MAY BE NECESSARY TO MAINTAIN WATER QUALITY AND QUANTITY STANDARDS. THE CONSTRUCTION SEQUENCING SHOULD BE THOUGHT OUT IN ADVANCE OF INITIATION TO PROVIDE ADEQUATE PROTECTION OF WATER QUALITY.
- DISCHARGES WHICH EXCEED 29 N.T.U.'S OVER THE BACKGROUND LEVELS ARE IN VIOLATION OF STATE WATER QUALITY STANDARDS. DISCHARGES OF WATER QUANTITIES WHICH AFFECT OFFSITE PROPERTIES OR MAY DAMAGE WETLANDS ARE ALSO PROHIBITED BY REGULATING AGENCIES.
- THE EROSION AND TURBIDITY CONTROL MEASURES SHOWN HEREON ARE THE MINIMUM REQUIRED FOR AGENCY APPROVAL. ADDITIONAL CONTROL AND MEASURES MAY BE REQUIRED DUE TO THE SITE SUBCONTRACTOR'S CONSTRUCTION SEQUENCE & UNFORESEEN WEATHER CONDITIONS. ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE SITE SUBCONTRACTOR SHALL BE INCLUDED IN THE LUMP SUM BID WITH NO EXTRA CHARGE FOR MATERIALS AND LABOR.
- HAY BALES OR SILT SCREENS SHALL BE INSTALLED PRIOR TO LAND CLEARING TO PROTECT WATER QUALITY AND TO IDENTIFY AREAS TO BE PROTECTED FROM CLEARING ACTIVITIES AND MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL SOIL IS STABILIZED.
- FLOATING TURBIDITY BARRIERS SHALL BE IN PLACE IN FLOWING SYSTEMS OR IN OPEN WATER LAKE EDGES PRIOR TO INITIATION OF EARTHWORK AND MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL SOIL IS STABILIZED.
- NO CLAY MATERIAL SHALL BE LEFT EXPOSED IN ANY STORMWATER STORAGE FACILITY. IF CLAY OR SANDY-CLAYS ARE ENCOUNTERED DURING STORMWATER STORAGE EXCAVATION, THE SITE SUBCONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY BEFORE PROCEEDING WITH FURTHER EXCAVATION. IF THE ENGINEER OF RECORD HAS DETERMINED THAT SUCH SOILS ARE NON-CONFINING AND MUST BE EXCAVATED TO MEET PERMIT AND DESIGN CONDITIONS, EXCAVATION MAY PROCEED AFTER OBTAINING WRITTEN AUTHORIZATION FROM THE APPROPRIATE GOVERNING AGENCY. IF SAID SOILS ARE LEFT EXPOSED AT THE PERMITTED AND DESIGNED DEPTH, THE SITE SUBCONTRACTOR SHALL OVER-EXCAVATE THE POND'S BOTTOM AND SIDE SLOPES BY A MINIMUM OF TWELVE (12") INCHES AND BACKFILL WITH CLEAN SANDS TO HELP PREVENT SUSPENSION OF FINE PARTICLES IN THE WATER COLUMN.
- THE INSTALLATION OF TEMPORARY EROSION CONTROL BARRIERS SHALL BE COORDINATED WITH THE CONSTRUCTION OF THE PERMANENT EROSION CONTROL FEATURES TO THE EXTENT NECESSARY TO ASSURE EFFECTIVE AND CONTINUOUS CONTROL OF EROSION AND WATER POLLUTION THROUGHOUT THE LIFE OF THE CONSTRUCTION PHASE.
- THE TYPE OF EROSION CONTROL BARRIERS USED SHALL BE GOVERNED BY THE NATURE OF THE CONSTRUCTION OPERATION AND SOIL TYPE THAT WILL BE EXPOSED. SILTY AND CLAYEY MATERIAL MAY REQUIRE SOLID SEDIMENT BARRIERS TO PREVENT TURBID WATER DISCHARGE, WHILE SANDY MATERIAL MAY NEED ONLY SILT SCREENS OR HAY BALES TO PREVENT EROSION. FLOATING TURBIDITY CURTAINS SHOULD GENERALLY BE USED IN OPEN WATER SITUATIONS. DIVERSION DITCHES OR SWALES MAY BE REQUIRED TO PREVENT TURBID STORMWATER RUNOFF FROM BEING DISCHARGED TO WETLANDS OR OTHER WATER BODIES. IT MAY BE NECESSARY TO EMPLOY A COMBINATION OF BARRIERS, DITCHES, AND OTHER EROSION/TURBIDITY CONTROL MEASURES IF CONDITIONS WARRANT.
- WHERE PUMPS ARE TO BE USED TO REMOVE TURBID WATERS FROM CONSTRUCTION AREAS, THE WATER SHALL BE TREATED PRIOR TO DISCHARGE TO THE WETLANDS. TREATMENT METHODS INCLUDE, FOR EXAMPLE, TURBID WATER BEING PUMPED INTO GRASSED SWALES OR APPROPRIATE UPLAND VEGETATED AREAS (OTHER THAN UPLAND PRESERVATION AREAS AND WETLAND BUFFERS), SEDIMENT BASINS, OR CONFINED BY AN APPROPRIATE ENCLOSURE SUCH AS TURBIDITY BARRIERS OR LOW BERMS, AND KEPT CONFINED UNTIL TURBIDITY LEVELS MEET STATE WATER QUALITY STANDARDS.
- THE PERMITTEE SHALL SCHEDULE HIS OPERATIONS SUCH THAT THE AREA OF UNPROTECTED ERODIBLE EARTH EXPOSED AT ANY ONE TIME IS NOT LARGER THAN THE MINIMUM AREA NECESSARY FOR EFFICIENT CONSTRUCTION OPERATION, AND THE DURATION OF EXPOSED, UNCOMPLETED CONSTRUCTION TO THE ELEMENTS SHALL BE AS SHORT AS PRACTICABLE. CLEARING AND GRUBBING SHALL BE SO SCHEDULED AND PERFORMED SUCH THAT GRADING OPERATIONS CAN FOLLOW IMMEDIATELY THEREAFTER. GRADING OPERATIONS SHALL BE SO SCHEDULED AND PERFORMED THAT PERMANENT EROSION CONTROL FEATURES CAN FOLLOW IMMEDIATELY THEREAFTER IF CONDITIONS ON THE PROJECT PERMIT.
- WATER DERIVED FROM VARIOUS DEWATERING METHODS SHOULD BE PASSED THROUGH SUFFICIENTLY WIDE AREAS OF EXISTING UPLAND VEGETATION TO FILTER OUT EXCESS TURBIDITY. IF THIS IS NOT SUFFICIENT, THE WATER SHALL BE RETAINED IN PREVIOUSLY CONSTRUCTED PERMANENT STORMWATER PONDS OR ELSE RETAINED IN TEMPORARY SEDIMENTATION BASINS UNTIL THE CLARITY IS SUITABLE TO ALLOW FOR ITS DISCHARGE. PLUGGING THE OUTFALLS FROM COMPLETED STORMWATER PONDS MAY BE NEEDED TO AVOID DISCHARGE. HOWEVER, SUCH SITUATIONS SHOULD BE MONITORED CLOSELY TO PRECLUDE BERM FAILURE IF WATER LEVELS RISE TOO HIGH.
- WATER CAN BE TRANSPORTED AROUND THE SITE BY THE USE OF INTERNAL SWALES OR BY PUMPS AND PIPES.
- SHEET FLOW OF NEWLY FILLED OR SCRAPED AREAS MAY BE CONTROLLED OR CONTAINED BY THE USE OF BRUSH BARRIERS, DIVERSION SWALES, INTERCEPTOR DITCHES OR LOW BERMS. FLOW SHOULD BE DIRECTED TOWARD AREAS WHERE SEDIMENTS CAN SUFFICIENTLY SETTLE OUT.
- EXPOSED SOILS SHALL BE STABILIZED AS SOON AS POSSIBLE, ESPECIALLY SLOPES LEADING TO WETLANDS. STABILIZATION METHODS INCLUDE SOLID SOD, SEEDING AND MULCHING OR HYDROMULCHING TO PROVIDE A TEMPORARY OR PERMANENT GRASS COVER MULCH BLANKETS, FILTER FABRICS, ETC., CAN BE EMPLOYED TO PROVIDE VEGETATIVE COVER.
- ENERGY DISSIPATORS (SUCH AS RIP RAP, A GRAVEL BED, HAY BALES, ETC.) SHALL BE INSTALLED AT THE DISCHARGE POINT OF PIPES OR SWALES IF SCOURING IS OBSERVED.
- ATTEMPT TO INSTALL ROADWAY CURB AND GUTTERS AS SOON AS POSSIBLE TO REDUCE THE SURFACE AREA FOR EROSION TO OCCUR.
- IMPLEMENT STORM DRAIN INLET PROTECTION (HAY BALES OR GRAVEL) TO LIMIT SEDIMENTATION WITHIN THE STORMWATER SYSTEM. PERFORM INSPECTIONS AND PERIODIC CLEANING OF SEDIMENTS WHICH WASH OUT INTO THE STREETS UNTIL ALL SOIL IS STABILIZED.
- WATER DISCHARGE VELOCITIES FROM IMPOUNDED AREAS AND TEMPORARY SEDIMENTATION BASINS SHALL BE RESTRICTED TO AVOID SCOURING IN RECEIVING AREAS.
- IF WATER CLARITY DOES NOT REDUCE TO STATE STANDARDS RAPIDLY ENOUGH IN HOLDING PONDS, IT MAY BE POSSIBLE TO USE CHEMICAL AGENTS SUCH AS ALUM TO FLOCCULATE OR COAGULATE THE SEDIMENT PARTICLES.
- HAY BALES, SILT SCREENS, OR GRAVEL BEDS CAN BE ADDED AROUND THE PIPE OR SWALE DISCHARGE POINTS TO HELP CLARIFY DISCHARGES. SPREADER SWALES MAY HELP DISSIPATE CLOUDY WATER PRIOR TO CONTACT WITH WETLANDS.
- ALL FUEL STORAGE AREAS OR OTHER HAZARDOUS STORAGE AREAS SHALL CONFORM TO ACCEPTED STATE OR FEDERAL CRITERIA FOR SUCH CONTAINMENT AREAS.
- VEHICLE OR EQUIPMENT WASHDOWN AREAS WILL BE SUFFICIENTLY REMOVED FROM WETLANDS OR OFFSITE AREAS.
- FUGITIVE DUST CONTROLS (PRIMARILY BY USING WATER SPRAY TRUCKS) SHALL BE EMPLOYED AS NEEDED TO CONTROL WINDBORNE EMISSIONS.
- IF THE ABOVE CONTROLS REMAIN INEFFECTIVE IN PRECLUDING/RELEASING OF TURBID WATER, ESPECIALLY DURING POND OR UTILITY LINE DEWATERING, THEN THE CONTRACTOR MAY BE COMPELLED TO USE A VERTICAL DEWATERING SYSTEM SUCH AS WELL POINTS OR SOCK DRAINS TO WITHDRAW GROUNDWATER WHICH MAY ALREADY BE CLEAR ENOUGH TO ALLOW FOR DIRECT DISCHARGE TO WETLANDS.
- ONGOING INSPECTIONS AND PERIODIC MAINTENANCE BY THE SITE SUBCONTRACTOR SHALL OCCUR THROUGHOUT CONSTRUCTION AS NECESSARY TO INSURE THE ABOVE METHODS ARE WORKING SUITABLY. THIS MAY BE NEEDED DAILY, IF CONDITIONS SO WARRANT. SITE SUBCONTRACTORS ARE ENCOURAGED TO OBTAIN AND THOROUGHLY REVIEW THE FLORIDA DEVELOPMENT MANUAL: A GUIDE TO SOUND LAND AND WATER MANAGEMENT, WHICH WAS DEVELOPED BY THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION IN 1988. THIS PROVIDES FAIRLY IN-DEPTH DISCUSSIONS OF RECOMMENDED TECHNIQUES AND ALSO PROVIDES SPECIFIC DESIGN AND TECHNICAL STANDARDS. A COPY OF THIS DOCUMENT IS AVAILABLE FOR REVIEW AT HEIDT DESIGN, LLC.
- THE CONTRACTOR WILL PERFORM DAILY INSPECTIONS OF ALL ON-SITE WETLANDS WITHIN THE CONSTRUCTION AREA TO ENSURE THAT WATER LEVELS WITHIN THOSE WETLANDS ARE NOT EXCESSIVELY IMPOUNDED PRIOR TO THE TIME WHEN THE PERMITTED CONTROL STRUCTURE OR OUTFALL IS BUILT. WATER LEVELS SIGNIFICANTLY ABOVE NORMAL SHOULD BE CORRECTED AT A FREQUENCY THAT PREVENTS A CHANGE IN THE VEGETATIVE CHARACTER OR HEALTH OF ANY WETLANDS.

SOIL REUSE REQUIREMENTS

AT LEAST THE FOLLOWING SIX (6) TYPES OF MATERIALS ARE PRESENT ON-SITE THAT REQUIRE PROPER HANDLING/TREATMENT BY THE CONTRACTOR, DURING THE COURSE OF SITE DEVELOPMENT/CONSTRUCTION ACTIVITIES, IN ACCORDANCE WITH THE NOTED REUSE REQUIREMENTS FOR EACH TYPE. ALTHOUGH SOME SOIL MATERIAL QUALITY CONTROL TESTING WILL BE RANDOMLY AND PERIODICALLY PERFORMED BY THE PROJECT GEOTECHNICAL CONSULTANT, AS REQUIRED, WORKING FOR THE OWNER, IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO REUSE ONSITE SOIL MATERIALS AS DESCRIBED AND SPECIFIED BELOW. ALL DISCOVERED OR FUTURE FILLING OR MATERIAL REUSE WORK CONSIST NOT IN ACCORDANCE OR COMPLIANCE WITH THESE NOTES, OR ANY FUTURE ADVERSE IMPACTS OR CONSEQUENCES RESULTING FROM THE CONTRACTORS FAILURE TO PROPERLY REUSE SOIL MATERIALS ONSITE AS SPECIFICALLY DESCRIBED BELOW, WILL BE THE CONTRACTORS SOLE RESPONSIBILITY FOR REMEDY AND REPAIR AT HIS COST. IF THE CONTRACTOR HAS ANY QUESTIONS REGARDING ANY OF THE SOIL MATERIALS ONSITE, THE PROJECT GEOTECHNICAL REPORTS (WHICH HE NEEDS TO OBTAIN FROM THE OWNER OR GEOTECHNICAL CONSULTANT/ENGINEER), OR ANY QUESTIONS ASSOCIATED WITH THE NOTES BELOW, IT IS PRESUMED THAT THE CONTRACTOR WILL SATISFACTORILY RESOLVE SUCH QUESTIONS/CONCERNS PRIOR TO SITE DEMOLITION, CLEARING, GRUBBING, STRIPPING AND EXCAVATION OPERATIONS BEGIN.

PLEASE NOTE, LOCAL, STATE AND FEDERAL RULES, LAWS, AND REGULATIONS PROHIBITING SOIL REUSE AS DESCRIBED BELOW SHALL TAKE PRECEDENCE AND SHALL BE FOLLOWED TO THE FULLEST EXTENT.

- ALL SITE DEMOLITION DEBRIS SHALL BE REMOVED FROM THE SITE DEVELOPMENT AND DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE GOVERNING ENVIRONMENTAL AGENCY REQUIREMENTS.
- CLEARING AND GRUBBING DEBRIS (SITE CLEARING AND GRUBBING DEBRIS INCLUDES ALL LARGER ORGANIC MATERIALS, SUCH ITEMS AS TREES, STUMPS, LIMBS, BRUSH, VEGETATION, OR SIMILAR; ALL SUCH MATERIALS MUST BE EITHER "BURNED" OR "MULCHED" BY THE CONTRACTOR PRIOR TO REUSE OR DISPOSAL ONSITE.)

IF ACCEPTABLE TO THE GOVERNING ENVIRONMENTAL AGENCY, THEN ALL SUCH "BURNED" OR "MULCHED" SITE CLEARING/GRUBBING DEBRIS, IF APPROVED IN WRITING FIRST BY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER, COULD BE:

PLACED AS "MULCH" MATERIAL SURFACE DRESSING IN FUTURE LANDSCAPE AREAS, STOCKPILING OF SUCH "MULCHED" MATERIALS (AMOUNTS/LOCATIONS), IF ACCEPTABLE, WILL BE DIRECTED BY THE OWNER/GEOTECHNICAL CONSULTANT/LANDSCAPE ARCHITECT/ENGINEER;

IN ALL INSTANCES, THE MINIMUM POND DEPTH (INCLUDING FLOODPLAIN AND WETLAND MITIGATION AREAS) SHALL BE NO LESS THAN REQUIRED BY THE ENGINEER.

ALL ORGANIC DEBRIS BURIAL AREAS IN FLOODPLAIN MITIGATION POND AREAS WILL REQUIRE ADEQUATE SOIL COVER OF 18 - 24 INCHES (WITH COMPACTION) BY THE CONTRACTOR, MEANING AT LEAST AN ADEQUATE WEIGHT/THICKNESS OF SOIL MATERIAL OVERTOP THE BURIED ORGANIC DEBRIS, SUCH THAT THERE WILL BE NO FUTURE FLOATING UP OF DEBRIS; AND FOR ALL ORGANIC DEBRIS BURIAL AREAS IN LITTORAL SHELF AREAS, WETLAND MITIGATION POND AREAS, AND PASSIVE RECREATION/PARK AREAS, ADEQUATE SOIL/MULCH MIXING (WITH COMPACTION) WILL BE NECESSARY BY THE CONTRACTOR, SUCH THAT NO SIGNIFICANT FUTURE UNACCEPTABLE SETTLEMENT OF A LITTORAL SHELF AREA, CREATED WETLAND AREA, OR PARK/GRASSED AREA WILL OCCUR.

IF ANY OF THESE PROCEDURES ARE CONTEMPLATED BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL NOTIFY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER IN WRITING, AT THE START OF CONSTRUCTION, WITH SOME SPECIFIC INFORMATION, INCLUDING THE ESTIMATED QUANTITY AND TYPES OF MATERIALS, TO WHICH FLOODPLAIN MITIGATION PONDS, WETLAND MITIGATION PONDS, OR PASSIVE RECREATION/PARK AREAS THEY PROPOSE TO USE FOR THIS TYPE OF ORGANIC DEBRIS DISPOSAL, AND WHAT APPROXIMATE ELEVATIONS WILL BE THE TOP AND BOTTOM OF THE ORGANIC DEBRIS.
- MUCK/PEAT ORGANIC MATERIALS (TYPICALLY GENERATED FROM WETLAND OR LOWLAND AREAS, OR SIMILAR AREAS, PERMITTED FOR IMPACT OR DISPLACEMENT, INCLUDING EXCAVATION OF UNSUITABLE ORGANIC MATERIALS AND REFILLING WITH SUITABLE SANDY SOILS TO ACCOMMODATE DEVELOPMENT; INCLUDES SIGNIFICANT ORGANIC PEAT MATERIALS, ORGANIC SANDY MUCK MATERIALS, AND MUCKY OR ORGANIC SAND MATERIALS, DESIGNATED EITHER PT OR A-B, PER THE UNIFIED AND AASHTO SOIL CLASSIFICATION SYSTEMS, RESPECTIVELY; THOSE ORGANIC MATERIALS WHOSE PRESENCE, OR PLACEMENT BY THE CONTRACTOR, IS UNACCEPTABLE BENEATH ANY TYPE OF STRUCTURE, PAVEMENT, ROADWAY, HOUSE, BUILDING, PIPELINE, SLAB, ETC.)

IF ACCEPTABLE TO THE GOVERNING ENVIRONMENTAL AGENCY, THEN ALL SUCH MUCK/PEAT (SIGNIFICANT) ORGANIC MATERIALS, IF APPROVED IN WRITING FIRST BY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER, COULD BE:

A) PLACED AS "PEAT/MUCK/ORGANIC MATTER" SURFACE LAYER IN NEW OR CREATED WETLAND MITIGATION AREAS, STOCKPILING OF SUCH "SIGNIFICANT ORGANIC" MATERIALS (AMOUNTS/LOCATIONS), IF ACCEPTABLE, WILL BE DIRECTED BY THE OWNER/WETLAND CONSULTANT;

B) PLACED IN TEMPORARILY EXCAVATED SELECTED WETLAND MITIGATION PONDS, IN EITHER CASE NOT IN SIDE BANKS AND NOT BELOW THE PERMITTED DESIGN DEPTH OF THE POND, OR SUCH ORGANIC MATERIALS COULD BE BURIED IN TEMPORARILY EXCAVATED PASSIVE RECREATION/PARK AREAS (AT LEAST 30 FEET FROM ANY STRUCTURE) AT APPROVED DEPTHS/LOCATIONS, BUT ALL THESE DISPOSAL AREAS WILL REQUIRE ADEQUATE SOIL MIXING (MIX SOIL WITH THE ORGANIC MATERIALS) AND THEN REFILLING (WITH COMPACTION) TO REQUIRED DESIGN GRADES;

C) PLACED ALONG THE BOTTOM OF SELECTED FLOODPLAIN MITIGATION PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED EXCAVATION DEPTH OF THE POND, BUT WILL REQUIRE ADEQUATE SOIL COVER;

D) PLACED ALONG THE BOTTOM OF SELECTED DEEPER STORMWATER PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED DESIGN DEPTH, BUT WILL REQUIRE ADEQUATE SOIL COVER.

ALL ORGANIC DEBRIS BURIAL AREAS IN FLOODPLAIN MITIGATION POND AREAS WILL REQUIRE ADEQUATE SOIL COVER (WITH COMPACTION) BY THE CONTRACTOR, MEANING AT LEAST AN ADEQUATE WEIGHT/THICKNESS OF SOIL MATERIAL OVERTOP THE BURIED ORGANIC DEBRIS, SUCH THAT THERE WILL BE NO FUTURE FLOATING UP OF DEBRIS; AND FOR ALL ORGANIC DEBRIS BURIAL AREAS IN LITTORAL SHELF AREAS, WETLAND MITIGATION POND AREAS, AND PASSIVE RECREATION/PARK AREAS, ADEQUATE SOIL/ORGANICS MIXING (WITH COMPACTION) WILL BE NECESSARY BY THE CONTRACTOR, SUCH THAT NO SIGNIFICANT FUTURE UNACCEPTABLE SETTLEMENT OF A LITTORAL SHELF AREA, CREATED WETLAND AREA, OR PARK/GRASSED AREA WILL OCCUR.

IF ANY OF THESE PROCEDURES ARE CONTEMPLATED BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL NOTIFY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER IN WRITING, AT THE START OF CONSTRUCTION, WITH SOME SPECIFIC INFORMATION, INCLUDING THE ESTIMATED QUANTITY AND TYPES OF MATERIALS, TO WHICH STORMWATER PONDS, FLOODPLAIN MITIGATION PONDS, WETLAND MITIGATION PONDS, OR PASSIVE RECREATION/PARK/LANDSCAPE BERM AREAS THEY PROPOSE TO USE FOR THIS TYPE OF ORGANIC MATERIAL DISPOSAL, AND WHAT APPROXIMATE ELEVATIONS WILL BE THE TOP AND BOTTOM OF THE ORGANIC MATERIALS.
- TOPSOILS/SITE STRIPPINGS (TYPICALLY GENERATED FROM UPLAND AREAS, AFTER DEMOLITION/CLEARING/GRUBBING/DISCING OPERATIONS; STRIPPING OF SURFICIAL ORGANICS/TOPSOILS BEING A REQUIREMENT OVER AT LEAST ALL STRUCTURE, BUILDING, CONCRETE SLAB AND PAVEMENT AREAS PRIOR TO FILLING TO ACCOMMODATE DEVELOPMENT; INCLUDES TOPSOILS AND ORGANIC LADEN SANDS; THOSE TOPSOILS/ORGANIC SAND MATERIALS WHOSE PRESENCE, OR PLACEMENT BY THE CONTRACTOR, IS UNACCEPTABLE BENEATH ANY TYPE OF STRUCTURE, PAVEMENT, ROADWAY, HOUSE, BUILDING, PIPELINE, SLAB, ETC.)

IF ACCEPTABLE TO THE GOVERNING ENVIRONMENTAL AGENCY, ALL SUCH TOPSOILS/ORGANIC LADEN SAND MATERIALS, IF APPROVED IN WRITING FIRST BY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER, COULD BE:

A) PLACED AS FILL IN NEW (LARGER) LANDSCAPE/GRASS COMMON AREAS OR LANDSCAPE BERM AREAS (WITH COMPACTION), STOCKPILING OF SUCH "TOPSOILS/ORGANIC LADEN SAND MATERIALS" (AMOUNTS/LOCATIONS), IF ACCEPTABLE, WILL BE DIRECTED BY THE OWNER/LANDSCAPE CONSULTANT;

B) PLACED IN TEMPORARILY EXCAVATED LITTORAL SHELF AREAS IN SELECTED STORMWATER PONDS, OR IN TEMPORARILY EXCAVATED SELECTED WETLAND MITIGATION PONDS, IN EITHER CASE NOT IN SIDE BANKS AND NOT BELOW THE PERMITTED DESIGN DEPTH OF THE POND, OR SUCH TOPSOILS/ORGANIC LADEN SAND MATERIALS COULD BE BURIED IN TEMPORARILY EXCAVATED PASSIVE RECREATION/PARK AREAS (AT LEAST 30 FEET FROM ANY STRUCTURE) AT APPROVED DEPTHS/LOCATIONS, BUT ALL THESE DISPOSAL AREAS WILL REQUIRE REFILLING (WITH COMPACTION) TO REQUIRED DESIGN GRADES;

C) PLACED ALONG THE BOTTOM OF SELECTED FLOODPLAIN MITIGATION PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED EXCAVATION DEPTH OF THE POND;

D) PLACED ALONG THE BOTTOM OF SELECTED DEEPER STORMWATER PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED DESIGN DEPTH.

ALL TOPSOIL/ORGANIC LADEN SAND DISPOSAL AREAS IN LITTORAL SHELF AREAS, WETLAND MITIGATION POND AREAS, PASSIVE RECREATION/PARK AREAS, OR LANDSCAPE/BERM AREAS WILL REQUIRE ADEQUATE COMPACTION BY THE CONTRACTOR, SUCH THAT NO SIGNIFICANT FUTURE UNACCEPTABLE SETTLEMENT OF A LITTORAL SHELF AREA, CREATED WETLAND AREA, PARK/GRASSED AREA, OR LANDSCAPE BERM WILL OCCUR.

IF ANY OF THESE PROCEDURES ARE CONTEMPLATED BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL NOTIFY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER IN WRITING, AT THE START OF CONSTRUCTION, WITH SOME SPECIFIC INFORMATION, INCLUDING THE ESTIMATED QUANTITY AND TYPES OF MATERIALS, TO WHICH STORMWATER PONDS, FLOODPLAIN MITIGATION PONDS, WETLAND MITIGATION PONDS, PASSIVE RECREATION/PARK AREAS, OR LANDSCAPE BERM AREAS THEY PROPOSE TO USE FOR THIS TYPE OF ORGANIC DEBRIS DISPOSAL, AND WHAT APPROXIMATE ELEVATIONS WILL BE THE TOP AND BOTTOM OF THE ORGANIC DEBRIS.

5. NON-STRUCTURAL CLAYEY SAND/CLAY MATERIALS (TYPICALLY GENERATED FROM POND/LAKE EXCAVATIONS OR FROM UTILITY PIPELINE/MANHOLE EXCAVATIONS; SUCH CLAYEY SAND/CLAY MATERIALS, WITH TYPICALLY 40% FINES OR MORE PASSING THE NO. 200 SIEVE, DESIGNATED EITHER SC, CL, CH OR A-4 TO A-7, PER THE UNIFIED AND AASHTO SOIL CLASSIFICATION SYSTEMS, RESPECTIVELY; SUCH CLAYEY SAND/CLAY MATERIALS BEING UNSUITABLE OR UNACCEPTABLE FOR REUSE BY THE CONTRACTOR AS BUILDING PAD FILL, STRUCTURAL FILL, ROADWAY EMBANKMENT FILL, AND PIPELINE OR MANHOLE EXCAVATION BACKFILL.)

IF ACCEPTABLE TO THE GOVERNING ENVIRONMENTAL AGENCY, ALL SUCH CLAYEY SAND/CLAY MATERIALS, IF APPROVED IN WRITING FIRST BY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER, COULD BE:

A) PLACED AS FILL IN NEW (LARGER) LANDSCAPE/GRASS COMMON AREAS OR LANDSCAPE BERM AREAS (WITH COMPACTION), PROVIDE SOME SURFACE DRAINAGE RELIEF, USE WHERE INFILTRATION AND DRAINAGE IS NOT AN IMPORTANT ISSUE, PROVIDE SOME SURFACE SANDY SOILS (MIN. OF 18-INCHES) AS DIRECTED BY THE LANDSCAPE CONSULTANT FOR PLANTING; STOCKPILING OF SUCH "CLAYEY SAND/CLAY MATERIALS" (AMOUNTS/LOCATIONS), IF ACCEPTABLE, WILL BE DIRECTED BY THE OWNER/LANDSCAPE CONSULTANT;

B) PLACED IN TEMPORARILY EXCAVATED LITTORAL SHELF AREAS IN SELECTED STORMWATER PONDS, OR IN TEMPORARILY EXCAVATED SELECTED WETLAND MITIGATION PONDS, IN EITHER CASE NOT IN SIDE BANKS AND NOT BELOW THE PERMITTED DESIGN DEPTH OF THE POND, OR SUCH CLAYEY SAND/CLAY MATERIALS COULD BE BURIED IN TEMPORARILY EXCAVATED PASSIVE RECREATION/PARK AREAS (AT LEAST 30 FEET FROM ANY STRUCTURE) AT APPROVED DEPTHS/LOCATIONS, BUT ALL THESE DISPOSAL AREAS WILL REQUIRE REFILLING (WITH COMPACTION) TO REQUIRED DESIGN GRADES, AND THE TOP 2 FEET (MIN.) BEING SAND MATERIALS (NOT CLAYEY MATERIALS) FOR TURBIDITY CONTROL AND PLANTING;

C) PLACED ALONG THE BOTTOM OF SELECTED FLOODPLAIN MITIGATION PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED EXCAVATION DEPTH OF THE POND; HOWEVER, A 12-INCH LAYER (MIN.) OF SAND MATERIAL OVERTOP THE CLAYEY MATERIALS WILL BE NECESSARY FOR TURBIDITY CONTROL.

D) PLACED ALONG THE BOTTOM OF SELECTED DEEPER STORMWATER PONDS (NOT IN SIDE BANKS), NOT BELOW THE PERMITTED DESIGN DEPTH, HOWEVER, A 12-INCH LAYER (MIN.) OF SAND MATERIAL OVERTOP THE CLAYEY MATERIALS WILL BE NECESSARY FOR TURBIDITY CONTROL.

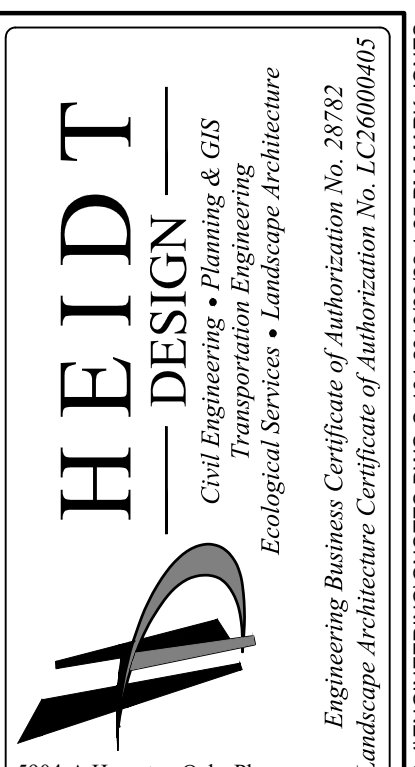
ALL CLAYEY SAND/CLAY DISPOSAL AREAS IN LITTORAL SHELF AREAS, WETLAND MITIGATION POND AREAS, PASSIVE RECREATION/PARK AREAS, OR LANDSCAPE/BERM AREAS WILL REQUIRE ADEQUATE COMPACTION BY THE CONTRACTOR, SUCH THAT NO SIGNIFICANT FUTURE UNACCEPTABLE SETTLEMENT OF A LITTORAL SHELF AREA, CREATED WETLAND AREA, PARK/GRASSED AREA, OR LANDSCAPE BERM WILL OCCUR.

IF ANY OF THESE PROCEDURES ARE CONTEMPLATED BY THE CONTRACTOR, THEN THE CONTRACTOR SHALL NOTIFY THE OWNER/GEOTECHNICAL CONSULTANT/ENGINEER IN WRITING, AT THE START OF CONSTRUCTION, WITH SOME SPECIFIC INFORMATION, INCLUDING THE ESTIMATED QUANTITY AND TYPES OF MATERIALS, TO WHICH STORMWATER PONDS, FLOODPLAIN MITIGATION PONDS, WETLAND MITIGATION PONDS, PASSIVE RECREATION/PARK AREAS, OR LANDSCAPE BERM AREAS THEY PROPOSE TO USE FOR THIS TYPE OF CLAYEY SAND/CLAY DISPOSAL, AND WHAT APPROXIMATE ELEVATIONS WILL BE THE TOP AND BOTTOM OF THE CLAYEY MATERIALS.

6.) STRUCTURAL SAND FILL MATERIALS (TYPICALLY GENERATED FROM POND/LAKE EXCAVATIONS, CUT FROM HIGHER ELEVATION AREAS, OR FROM UTILITY PIPELINE/MANHOLE EXCAVATIONS; SUCH SAND MATERIALS, WITH TYPICALLY 35% FINES OR LESS PASSING THE NO. 200 SIEVE, DESIGNATED EITHER SP, SP-SM, SM OR A-2-4, A-2-6 OR A-3, PER THE UNIFIED AND AASHTO SOIL CLASSIFICATION SYSTEMS, RESPECTIVELY; SUCH SAND MATERIALS BEING SUITABLE OR ACCEPTABLE FOR REUSE BY THE CONTRACTOR AS BUILDING PAD FILL, STRUCTURAL FILL, ROADWAY EMBANKMENT FILL, AND PIPELINE OR MANHOLE EXCAVATION BACKFILL.)

ALL SUCH SAND MATERIALS SHALL BE REUSED ONSITE BY THE CONTRACTOR, PER THE GEOTECHNICAL REPORTS, AS BUILDING PAD FILL, STRUCTURAL FILL, ROADWAY EMBANKMENT FILL, AND PIPELINE OR MANHOLE EXCAVATION BACKFILL; PLACED BY THE CONTRACTOR IN LOOSE LIFTS NOT EXCEEDING 12-INCHES, COMPACTED TO AT LEAST 95% OR 98% MODIFIED PROCTOR (PER ASTM D-1557 OR AASHTO T-180), WHICHEVER IS APPLICABLE DEPENDING UPON THE FUTURE USE OF THE FILLED AREA (SEE GEOTECHNICAL REPORTS); WITH DENSITY TESTING OF EACH FILL LIFT FOR ACCEPTANCE BY THE GEOTECHNICAL CONSULTANT, UPON CONTRACTOR REQUEST, PRIOR TO THE NEXT FILL LIFT BEING PLACED.

ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION:
NAVD 88 TO NGVD 29 = +0.86



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**SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
GENERAL NOTES**

DR. HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	05/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: GNOTES
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

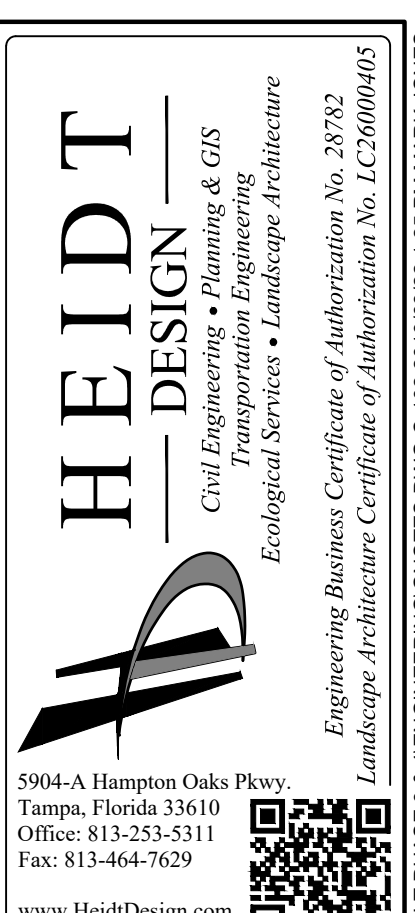
This item has been digitally signed and sealed by Gary D. Miller, P.E. on the date indicated here.

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GARY D. MILLER
DATE: _____
LICENSE NO. **52717**


C-101

<p>GENERAL PROJECT DATA</p> <p>FOR IDENTIFICATION OF CONTRACTUAL AGREEMENTS, THIS SET OF DRAWINGS IS DATED _____ ANY REVISIONS THEREAFTER WILL BE NOTED AND DATED ON THE AFFECTED DRAWING(S).</p> <p>EXISTING UTILITY LOCATION</p> <p>THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE VARIOUS UTILITIES AND TO MAKE THE NECESSARY ARRANGEMENTS FOR ANY RELOCATIONS TO THESE UTILITIES WITH THE OWNER OF THE UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THE PLANS OR LOCATED BY THE UTILITY COMPANY. ALL UTILITIES THAT INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED. ANY COST, DELAY OR INCONVENIENCE CAUSED TO THE CONTRACTOR BY THE RELOCATION OF VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED.</p> <p>A SINGLE POINT UTILITY LOCATION SERVICE HAS BEEN SET UP FOR PARTICIPATING UTILITIES. THE CONTRACTOR IS TO CONTACT THE SUNSHINE STATE ONE CALL CENTER AT LEAST TWO (2) AND NO MORE THAN FIVE (5) WORKING DAYS PRIOR TO THE SPECIFIC CONSTRUCTION ACTIVITY FOR FIELD LOCATION. NOTE THAT NOT ALL UTILITIES PARTICIPATE IN THIS PROGRAM. THE CONTRACTOR SHOULD CONTACT NON-PARTICIPATING UTILITIES SEPARATELY FOR THEIR FIELD LOCATION OF FACILITIES. PER FLORIDA STATUTE 553.851, THE CONTRACTOR OR EXCAVATOR IS REQUIRED TO NOTIFY THE GAS COMPANY TWO (2) WORKING DAYS PRIOR TO STARTING EXCAVATION.</p> <p>SOILS/ENVIRONMENTAL/PERMITS</p> <p>SOILS INVESTIGATIONS FOR THE SITE WERE PROVIDED BY FAULKNER ENGINEERING SERVICES, INC. THE CONTRACTOR IS TO OBTAIN A COPY OF THAT SOILS REPORT FOR REVIEW PRIOR TO CONSTRUCTION; AND THE CONSTRUCTION IS TO CONFORM TO THE RECOMMENDATIONS IN THAT REPORT.</p> <p>ENVIRONMENTAL/CONSERVATION INVESTIGATIONS: BIO-TECH CONSULTING INC. SURVEY INFORMATION PREPARED BY: GEOPPOINT SURVEYING, INC. PERMITS AVAILABLE TO CONTRACTOR: _____</p> <p>AS-BUILTS</p> <p>AS-BUILTS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER TWO WEEKS PRIOR TO FINAL INSPECTION. ALL AS-BUILT DATA SHALL BE PROVIDED BY A FLORIDA LICENSED SURVEYOR, SIGNED, SEALED, AND DATED BY THE RESPONSIBLE PARTY. SEE INDIVIDUAL SECTIONS (SEWER, WATER SYSTEM, ETC.) FOR ADDITIONAL AS-BUILT REQUIREMENTS. UTILITIES, INC. OF FLORIDA REQUIRES ASSET TABLES - NORTHING & EASTING USING STATE PLANE COORDINATES FOR ALL VALVES, FITTINGS, SERVICES, LATERALS, MHS, & PIPE INTERVALS AT 100' PERMITS AND PERMIT REQUIREMENTS</p> <p>THE CONTRACTOR SHALL OBTAIN FROM THE OWNER COPIES OF ALL REGULATORY AND LOCAL AGENCY PERMITS. THE CONTRACTOR SHALL BE EXPECTED TO REVIEW AND ABIDE BY ALL THE REQUIREMENTS AND LIMITATIONS SET FORTH IN THE PERMITS.</p> <p>THE CONTRACTOR SHALL BE FURNISHED A COPY OF THE N.P.D.E.S. NOTICE OF INTENT APPLICATION AND REPORT WHICH WAS FURNISHED TO EPA BY THE OWNER. THE CONTRACTOR SHALL REVIEW THE CONTENTS OF THAT SUBMITTAL INCLUDING CONSTRUCTION COMMENCEMENT AND CESSATION DATES AND ALL OTHER ELEMENTS OF THE SUBMITTAL. HE SHALL EXECUTE AND FILE AN N.O.I. TO EPA AS THE ENTITY RESPONSIBLE FOR OPERATING AND MAINTAINING THE EROSION PROTECTION SYSTEM DURING CONSTRUCTION, NOTING ANY CHANGES AND/OR MODIFICATIONS AND/OR AGREEING TO THE ELEMENTS OF THE ORIGINAL SUBMITTAL. HE SHALL SUBMIT THIS AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL KEEP ON-SITE A COPY OF THE WATER MANAGEMENT DISTRICT AND N.P.D.E.S. PERMITS ISSUED TOGETHER WITH THE INSPECTION REPORTS AND CURRENT PLANS, INCLUDING ANY MODIFICATIONS REQUIRED. HE SHALL ALSO PROVIDE A NOTICE OF TERMINATION TO THE N.P.D.E.S. PERMITTING AUTHORITY AT THE CONCLUSION OF THE PROJECT THAT THE DISCHARGE AND EROSION PROTECTION DEVICE AS SHOWN ON THE PLANS HAVE BEEN IMPLEMENTED AND MAINTAINED THROUGHOUT CONSTRUCTION.</p> <p>LAYOUT AND CONTROL</p> <p>UNLESS OTHERWISE NOTED ON THE PLANS, THE CONTRACTOR SHALL USE THE GEOMETRY PROVIDED ON THE SURVEY PLAT. BENCHMARK INFORMATION SHALL BE PROVIDED TO THE CONTRACTOR BY THE OWNER OR OWNER'S SURVEYOR. ANY DISCREPANCIES BETWEEN FIELD MEASUREMENTS AND CONSTRUCTION PLAN INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY. THE SURVEYOR WHO PRODUCED THE PLAT IS GEOPPOINT SURVEYING, INC., PHONE: 813-248-8888</p> <p>QUALITY CONTROL TESTING REQUIREMENTS</p> <p>ALL TESTING RESULTS SHALL BE PROVIDED TO THE OWNER/OPERATOR, COUNTY, AND THE ENGINEER. TESTING REQUIREMENTS ARE TO BE IN ACCORDANCE WITH THE OWNER/OPERATOR'S SPECIFICATIONS AND REQUIREMENTS. ALL TEST RESULTS SHALL BE PROVIDED (PASSING AND FAILING) ON A REGULAR AND IMMEDIATE BASIS. CONTRACTOR SHALL PROVIDE TESTING SERVICES THROUGH A FLORIDA LICENSED GEOTECHNICAL ENGINEERING FIRM ACCEPTABLE TO THE OWNER AND ENGINEER. NO TESTING TO BE SCHEDULED ON MONDAY OR FRIDAY.</p> <p>SHOP DRAWINGS</p> <p>SHOP DRAWINGS AND CERTIFICATIONS FOR ALL STORM DRAINAGE, WATER SYSTEM, AND PAVING SYSTEM MATERIALS AND STRUCTURES ARE REQUIRED. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER AND UTILITY FOR APPROVAL PRIOR TO ORDERING THE MATERIALS REQUIRED FOR CONSTRUCTION.</p> <p>EARTHWORK</p> <p>EARTHWORK QUANTITIES</p> <p>THE CONTRACTOR SHALL PERFORM HIS OWN INVESTIGATIONS AND CALCULATIONS AS NECESSARY TO ASSURE HIMSELF OF EARTHWORK QUANTITIES. THERE IS NO IMPLICATION THAT EARTHWORK BALANCES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY IMPORT FILL NEEDED, OR FOR REMOVAL AND DISPOSAL OF EXCESS MATERIALS.</p> <p>EROSION CONTROL</p> <p>EROSION AND SILTATION CONTROL MEASURES ARE TO BE PROVIDED AND INSTALLED PRIOR TO COMMENCEMENT OF CONSTRUCTION. THESE MEASURES ARE TO BE INSPECTED BY THE CONTRACTOR ON A REGULAR BASIS AND ARE TO BE MAINTAINED OR REPAIRED ON AN IMMEDIATE BASIS, AS REQUIRED. REFER TO ST. JOHNS RIVER WATER MANAGEMENT DISTRICT PERMIT FOR ADDITIONAL REQUIREMENTS FOR EROSION CONTROL AND SURFACE DRAINAGE.</p> <p>WETLAND PROTECTION</p> <p>THE LIMITS OF THE ON-SITE WETLANDS HAVE BEEN PROVIDED TO THE CONTRACTOR ON THE CONSTRUCTION PLANS OR ON PERMIT MATERIALS. THE WETLANDS AREAS ARE TO BE PROTECTED FROM DISTURBANCE AT ALL TIMES. CONTRACTOR SHALL PROVIDE EROSION, SILTATION, AND DIVERSION MEASURES PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN A COPY OF EACH PERMIT RELATING TO WETLANDS AND ADHERE TO ALL PROVISIONS AND CONDITIONS THERETO.</p>	<p>LIMITS OF DISTURBANCE</p> <p>AT NO TIME SHALL THE CONTRACTOR DISTURB SURROUNDING PROPERTIES OR TRAVEL ON SURROUNDING PROPERTIES WITHOUT WRITTEN CONSENT FROM THE PROPERTY OWNER. REPAIR OR RECONSTRUCTION OF DAMAGED AREAS ON SURROUNDING PROPERTIES SHALL BE PERFORMED BY THE CONTRACTOR ON AN IMMEDIATE BASIS. ALL COSTS FOR REPAIRS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NO EXTRA COMPENSATION SHALL BE PROVIDED.</p> <p>TREE REMOVAL</p> <p>THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER WHEN ALL WORK IS LAID OUT (SURVEY STAKED), SO THAT A DETERMINATION MAY BE MADE OF SPECIFIC TREES TO BE REMOVED. NO TREES SHOWN ON THE CONSTRUCTION PLANS AS BEING SAVED SHALL BE REMOVED WITHOUT PERMISSION FROM THE OWNER AND ENGINEER.</p> <p>CLEARING AND GRUBBING</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING AND GRUBBING FOR SITE CONSTRUCTION INCLUDING CLEARING FOR PAVING, UTILITIES, DRAINAGE FACILITIES AND BUILDING CONSTRUCTION. SEE PLANS FOR LIMITS OF CLEARING AND GRUBBING. ALL AREAS TO BE CLEARED SHALL BE FIELD STAKED AND REVIEWED BY THE OWNER AND ENGINEER PRIOR TO ANY CONSTRUCTION.</p> <p>MATERIAL STORAGE / DEBRIS REMOVAL</p> <p>ALL MATERIALS EXCAVATED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AT ON-SITE LOCATIONS AS SPECIFIED BY THE OWNER. MATERIALS SHALL BE STOCKPILED SEPARATELY AS TO USABLE (NON ORGANIC) FILL STOCKPILES AND ORGANIC (MUCK) STOCKPILES IF MUCK IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL UNSUITABLE FILL MATERIALS FROM THE SITE. ALL CLAY ENCOUNTERED SHALL BE EXCAVATED OUT AND REPLACED WITH CLEAN GRANULAR FILL MATERIALS.</p> <p>FILL MATERIAL</p> <p>ALL FILL MATERIALS SHALL NOT CONTAIN MUCK, STUMPS, ROOTS, BRUSH, VEGETATIVE MATTER, RUBBISH OR OTHER MATERIAL THAT WILL NOT COMPACT INTO A SUITABLE AND ENDURING BACKFILL. FILL SHALL BE CLEAN, NON-ORGANIC, GRANULAR MATERIAL WITH NOT MORE THAN 10% PASSING THE NO. 200 SIEVE.</p> <p>COMPACTION</p> <p>FILL MATERIALS PLACED UNDER ROADWAYS SHALL BE COMPACTED TO AT LEAST 98% OF THE MAXIMUM DENSITY AS SPECIFIED IN AASHTO T-180. ALL OTHER FILL AREAS ARE TO BE COMPACTED TO AT LEAST 95% MAXIMUM DENSITY AS SPECIFIED IN AASHTO T-180. FILL MATERIALS SHALL BE PLACED AND COMPACTED IN A MAXIMUM OF 12" LIFTS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER AND OWNER WITH ALL (PASSING AND FAILING) TESTING RESULTS. RESULTS SHALL BE PROVIDED ON A TIMELY AND REGULAR BASIS PRIOR TO CONTRACTOR'S PAY REQUEST SUBMITTAL FOR THE AFFECTED WORK.</p> <p>SANITARY SEWER SYSTEM</p> <p>OWNER/OPERATOR</p> <p>THE ENTITY THAT WILL OPERATE AND MAINTAIN THE SEWER SYSTEM SHOWN ON THESE PLANS IS UTILITIES, INC. OF FLORIDA CORPORATION. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.</p> <p>MATERIALS</p> <p>ALL SANITARY SEWER PIPE SHALL BE PVC SEWER PIPE CONFORMING TO ASTM D3034 SDR-26. INSTALLATION OF PVC SEWER PIPE SHALL CONFORM TO ASTM D2321. SEE ASTM C-12, LATEST EDITION, FOR CONSTRUCTION METHODS, EXCEPT FOR BACKFILLING, WHICH WILL BE AS SHOWN ON THE UTILITY DETAIL SHEET. A HORIZONTAL SEPARATION OF AT LEAST 10' SHALL BE MAINTAINED BETWEEN WATER AND SEWER LINES. WHEN WATER AND SEWER LINES CROSS WITH LESS THAN 18" VERTICAL SEPARATION, OR WHEN THE WATER LINE CROSSES BENEATH THE SEWER LINE AT ANY DEPTH, THE SEWER LINE SHALL BE ENCASED IN CONCRETE OR THE SEWER SHALL BE DUCTILE IRON PIPE FOR A DISTANCE OF 10' EITHER SIDE OF THE CROSSING. DUCTILE IRON SANITARY SEWER GRAVITY PIPE SHALL BE PRESSURE CLASS 350 DUCTILE IRON POLYETHYLENE LINED.</p> <p>ALL SEWER FITTINGS SHALL BE PVC MEETING THE REQUIREMENTS OF ASTM D3034. FITTINGS SHALL BE SUITABLE FOR USE WITH SDR-26 GRAVITY SEWER PIPE. ALL FITTINGS SHALL HAVE ELASTOMERIC SEALING GASKETS.</p> <p>JOINTS FOR GRAVITY SEWER PIPE AND ALL FITTINGS SHALL BE ELASTOMERIC RUBBER SEALS. GASKETS SHALL CONFORM TO ASTM F477.</p> <p>SANITARY SEWER MANHOLES SHALL BE PRECAST CONSTRUCTION. THE MINIMUM SIZE DIAMETER OF MANHOLES SHALL BE 48" FOR SEWER LINES 21" IN DIAMETER OR LESS. PRECAST REINFORCED MANHOLES SHALL BE IN ACCORDANCE WITH ASTM C-478 SPECIFICATIONS, WITH PREFORMED FLEXIBLE JOINT SEALS, RAINDEK, OR APPROVED EQUAL. THE INTERIOR SURFACES OF ALL MANHOLES SHALL BE PROTECTED BY THE APPLICATION OF TWO COATS KOPPERS BITUMASTIC 300 M, OR APPROVED EQUAL, APPLIED AT THE RATE OF 120 SQUARE FEET PER GALLON PER COAT MINIMUM. EXTERIOR SURFACES SHALL RECEIVE TWO COATS KOPPERS BITUMASTIC 300 M, OR APPROVED EQUAL, APPLIED AT THE RATE OF 120 SQUARE FEET PER GALLON PER COAT MINIMUM. FOR INSTALLATIONS <10', USE SDR 26.</p> <p>THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE A FLEXIBLE WATERTIGHT SEAL OF THE PIPE TO THE MANHOLE. NO ADHESIVES OR LUBRICANTS SHALL BE EMPLOYED IN THE INSTALLATION OF THE CONNECTOR INTO THE MANHOLE. THE RUBBER FOR CONNECTOR SHALL COMPLY WITH ASTM C443 AND ASTM C923 AND CONSIST OF EPDM AND ELASTOMERS DESIGNED TO BE RESISTANT TO OZONE, WEATHER ELEMENT, CHEMICALS, INCLUDING ACIDS, ALKALIS, ANIMAL AND VEGETABLE FATS, OILS AND PETROLEUM PRODUCTS FROM SPILLS. ALL STAINLESS STEEL ELEMENTS OF THE CONNECTOR SHALL BE TOTALLY NON-MAGNETIC SERIES 316 STAINLESS, EXCLUDING THE WORM SCREW FOR TIGHTENING THE STEEL BAND AROUND THE PIPE WHICH SHALL BE TORQUED BY A BREAKAWAY TORQUE WRENCH AVAILABLE FROM THE PRECAST MANHOLE SUPPLIER, AND SET FOR 60-70 INCH/LBS. THE CONNECTOR SHALL BE INSTALLED IN THE MANHOLE WALL BY ACTIVATING THE EXPANDING MECHANISM IN STRICT ACCORDANCE WITH THE RECOMMENDATION OF THE CONNECTOR MANUFACTURER.</p> <p>CONSTRUCTION METHODS</p> <p>INSTALLATION OF GRAVITY SANITARY SEWER SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND UTILITIES, INC. OF FLORIDA STANDARDS.</p> <p>IN LAYING OUT THE SANITARY SEWER IN THE FIELD, THE CONTRACTOR SHALL USE THE STREET C/L OR PROPERTY LINE OFFSETS FOR LOCATING THE SANITARY SEWER MANHOLES AND INVERT ELEVATIONS GIVEN ON THE PLAN AND PROFILE SHEET. IN THE EVENT OF ANY MINOR DIFFERENCES IN ACTUAL LENGTHS OF THE SANITARY SEWER LINES BETWEEN MANHOLES FOR THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL ADJUST THE MANHOLE INVERTS TO MAINTAIN A MINIMUM GRADE AS SHOWN. UNDER NO CIRCUMSTANCES WILL PIPE GRADES LESS THAN 0.30% FOR 8" PIPE OR 0.28% FOR 10" PIPE BE ACCEPTED.</p> <p>THE CONTRACTOR SHALL STAMP AN "S" IN THE CURB TOP AT EACH SANITARY SERVICE LOCATION. STAMPED "S" SHALL BE HIGHLIGHTED WITH GREEN OIL BASE PAINT. SEE ALSO SEWER DETAIL SHEET FOR SEWER LATERAL MARKING. "SAW" CUTS ARE NOT PERMISSIBLE.</p>	<p>DEWATERING</p> <p>IN THE EVENT THAT GROUNDWATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE SANITARY SEWER SYSTEM, DEWATERING SHALL BE CONDUCTED. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, OPERATION, AND SUBSEQUENT REMOVAL OF DEWATERING SYSTEMS AND THEIR SAFETY AND CONFORMITY WITH LOCAL COUNTY, STATE AND FEDERAL CODES AND REGULATIONS.</p> <p>AT ALL TIMES DURING CONSTRUCTION, KEEP EXCAVATIONS FREE FROM STANDING WATER. SUMPS, IF REQUIRED, SHALL BE LOCATED OUTSIDE OF LOAD BEARING AREAS SO THAT BEARING SURFACES WILL NOT BE DISTURBED. WATER PUMPED FROM THE EXCAVATION SHALL BE DISCHARGED TO PREVENT RE-ENTRY INTO THE SOIL STRATA BEING DEWATERED. WATER CONTAINING SILT IN SUSPENSION SHALL NOT BE PUMPED INTO SEWER LINES OR ADJACENT STREAMS. THE METHOD OF DISPOSING OF WATER PUMPED FROM THE EXCAVATION SHALL BE APPROVED BY THE ENGINEER, PRIOR TO ACTUAL DISPOSAL.</p> <p>PIPE EMBEDMENT</p> <p>SANITARY SEWER PIPE MUST BE BEDDED TRUE TO LINE AND GRADE WITH UNIFORM AND CONTINUOUS LONGITUDINAL SUPPORT FROM A FIRM BASE. BLOCKING MAY NOT BE USED TO BRING THE PIPE TO GRADE. PIPE BED SHALL BE UNDISTURBED EARTH AND, IN THE EVENT OF OVER-EXCAVATION, THE CONTRACTOR SHALL REPLACE OVER EXCAVATION WITH CLEAN GRANULAR BACKFILL, AS NOTED BELOW, AND COMPACTED TO A DENSITY OF 98% OF THE AASHTO T-180 MAXIMUM DENSITY AND SHAPED TO FIT THE PIPE SO AS TO GIVE IT CONTINUOUS AND UNIFORM LONGITUDINAL SUPPORT.</p> <p>AT ALL LOCATIONS WHERE PIPING IS TO BE INSTALLED IN AN AREA WHERE MUCK WAS NOTED IN THE SOILS TESTING OR AT ANY OTHER LOCATIONS WHERE MUCK OR ORGANIC SOILS ARE ENCOUNTERED, THE TRENCH SHALL BE OVER-EXCAVATED TO REMOVE ALL MUCK OR ORGANIC SOILS, GRANULAR BACKFILL OR AS NOTED BELOW, PLACED AND COMPACTED IN THE TRENCH BOTTOM TO THE ELEVATIONS AND LOCATIONS NOTED ON THE PLANS. BACKFILL NEEDED TO BRING TRENCH TO THE PROPER GRADE SHALL BE COMPACTED TO A MINIMUM DENSITY OF 98% OF THE AASHTO T-180 MAXIMUM DENSITY.</p> <p>TRENCH OR EXCAVATION BOTTOM STABILIZATION MATERIAL</p> <p>A. SAND</p> <p>SAND SHALL BE WELL GRADED, ORGANIC FREE, DURABLE, GRANULAR MATERIAL, AND SHALL PASS A NO. 4 SIEVE. NOT MORE THAN 10% SHALL PASS A NO. 200 SIEVE.</p> <p>B. PIT RUN GRAVEL</p> <p>PIT RUN GRAVEL SHALL BE ORGANIC FREE AND SHALL PASS A 3/4-INCH SIEVE.</p> <p>C. GRANULAR MATERIAL</p> <p>GRANULAR MATERIAL SHALL BE WELL GRADED, ORGANIC AND TOPSOIL FREE, DURABLE AGGREGATE AND SHALL PASS A 3/4-INCH SIEVE. NOT MORE THAN 10% SHALL PASS A NO. 200 SIEVE.</p> <p>TESTING</p> <p>INFILTRATION TESTING OF THE SANITARY SEWER SYSTEM WILL BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR. INFILTRATION SHALL NOT EXCEED 200 GALLONS PER DAY PER INCH OF DIAMETER PER MILE OF LENGTH. IN THE EVENT THAT GROUNDWATER IS NOT ENCOUNTERED DURING SANITARY SEWER CONSTRUCTION, OR IF THE GROUNDWATER ENCOUNTERED IS NOT 2" ABOVE THE TOP OF PIPE, EXFILTRATION TESTING OF THE SANITARY SEWER WILL BE NECESSARY. THE TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, BUT WILL BE WITNESSED BY THE ENGINEER AND THE UTILITY REPRESENTATIVES. EXFILTRATION SHALL NOT EXCEED 200 GALLONS PER DAY PER INCH OF DIAMETER PER MILE OF LENGTH, INCLUDING MANHOLES.</p> <p>LINE LAMPING WILL BE REQUIRED TO BE PERFORMED BY THE CONTRACTOR AND WITNESSED BY THE ENGINEER AND OWNER/OPERATOR.</p> <p>THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL TESTING. CONTRACTOR SHALL CONTACT THE ENGINEER AND OWNER/OPERATOR IN WRITTEN FORM, SEVENTY-TWO (72) HOURS IN ADVANCE OF PROPOSED TESTING. NO TESTING ON MONDAY OR FRIDAY. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION. UTILITIES INC. OF FLORIDA REQUIRES AIR TEST, VIDEO, & 5% MANDREL TESTING ACCORDING TO SDR OF PIPE.</p> <p>AS-BUILT DRAWINGS</p> <p>THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES. AS-BUILT INFORMATION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:</p> <ol style="list-style-type: none"> LOCATIONS AND INVERTS OF ALL GRAVITY SEWER LINES, MANHOLES, LIFT STATION WETWELLS AND SERVICE LATERALS AND RIM ELEVATION OF ALL MANHOLES. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING PLANS. DISTANCES OF SEWER LINE LAID FROM MANHOLE TO MANHOLE WITH DISTANCE TIES TO LATERALS. <p>TRENCH SAFETY</p> <p>THE CONTRACTOR SHALL RECOGNIZE AND ABIDE BY ALL OSHA EXCAVATION SAFETY STANDARDS, INCLUDING THE FLORIDA TRENCH SAFETY ACT (90-96, LAWS OF FLORIDA). ANY MATERIAL, CONSTRUCTION METHODS, OR MATERIAL COST TO COMPLY WITH THESE LAWS SHALL BE INCIDENTAL TO THE CONTRACT.</p> <p>MINIMUM COVER OVER ALL PIPES SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RESTRAINED JOINTS OR THRUST BLOCKS (RESTRAINED JOINTS PREFERRED). THRUST BLOCK CONSTRUCTION DETAILS, REFER TO UTILITY DETAIL SHEET.</p>	<p>FORCE MAIN</p> <p>OWNER/OPERATOR</p> <p>THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE FORCE MAIN SHOWN ON THESE PLANS IS UTILITIES INC OF FLORIDA, THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL REQUIREMENTS OF THAT ENTITY.</p> <p>MATERIALS</p> <p>SANITARY SEWER FORCE MAIN SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE (PVC) AND SHALL CONFORM TO ASTM D2241 PLASTIC PIPE (SD PR & CLASS T), ASTM 1784, TYPE I, 2000 PSI DESIGN STRESS. THE PIPE SHALL BE ANSI/AWWA C900, WITH MARKINGS ON EACH SECTION SHOWING CONFORMANCE WITH THE ABOVE SPECIFICATION. JOINTS SHALL BE ELASTOMERIC RUBBER GASKETED CONFORMING TO ASTM D3139 DR 18 PIPE.</p> <p>FITTINGS FOR FORCE MAIN SHALL BE MECHANICAL JOINT, DUCTILE IRON CONFORMING TO ANSI/AWWA C110/A21.10 350 PSI MINIMUM PRESSURE RATING. FITTINGS SHALL BE POLYETHYLENE LINED (MIN. 30 MILS CONFORMING TO ASTM D-1248). ALL FM FITTINGS SHALL BE PROTECTO 401 CERAMIC LINED.</p> <p>ALL PLUGS, CAPS, TEES, VALVES, BENDS, ETC., SHALL BE RESTRAINED JOINTS PER DETAILS ON UTILITY SHEETS. THREE FOOT MINIMUM COVER OVER FORCE MAIN.</p> <p>STANDARD PLUG VALVES SHALL BE MANUFACTURED BY DEZURIK CORP., PRATT, DRESSER, HOMESTEAD INDUSTRIES, OR APPROVED EQUAL.</p> <p>VALVES SHALL BE FURNISHED WITH A REPLACEABLE CHEVRON PACKING, CAPABLE OF BEING REPACKED WITH THE LINE UNDER PRESSURE.</p> <p>VALVES 4 INCHES IN DIAMETER AND SMALLER SHALL BE WRENCH NUT OPERATED. VALVES LARGER THAN 4 INCHES SHALL BE WORM GEAR OPERATED, EXCEPT WHERE AUTOMATIC OPERATION IS SPECIFIED.</p> <p>AIR RELEASE VALVE DESIGNED FOR SEWAGE SERVICE SHALL BE INSTALLED IN THE TOPS OF PIPES AS INDICATED ON THE DRAWINGS. VALVES SHALL BE DESIGNED TO PERMIT MANUAL RELEASE OF AIR FROM AN EMPTY PIPE DURING FILLING AND SHALL BE CAPABLE OF DISCHARGING ACCUMULATED AIR IN THE LINE WHILE THE LINE IS IN OPERATION AND UNDER PRESSURE. VALVES SHALL BE CAPABLE OF WITHSTANDING OPERATING PRESSURES OF 50 PSI. VALVES SHALL BE VENTED TO THE ATMOSPHERE. THE VALVES SHALL BE VALMATIC, OR APPROVED EQUAL.</p> <p>CHECK VALVES SHALL BE OF THE WEIGHT AND LEVER TYPE, RESILIENT DISK, GRAY IRON, BRONZE TRIM, HORIZONTAL MOUNTED. VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C508 WITH FLANGED CONNECTIONS. VALVES SHALL HAVE A WORKING PRESSURE OF 200 PSI FOR VALVES 2"-12". VALVES SHALL BE DEZURIK, MUELLER, OR APPROVED EQUAL.</p> <p>CONSTRUCTION METHODS</p> <p>TRENCHING SHALL BE IN ACCORDANCE WITH THE TRENCHING DETAILS PROVIDED ON THE CONSTRUCTION PLANS.</p> <p>COMPACTED BACKFILL FOR ALL PIPE SHALL BE TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 FOR UNDER ROADWAYS. OTHER COMPACTION OF BACKFILL SHALL BE TO THE 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.</p> <p>INSTALLATION OF THE SANITARY SEWER FORCE MAIN SHALL BE IN CONFORMANCE WITH ASTM D2774-72 (LATEST EDITION).</p> <p>MINIMUM COVER OVER ALL PIPES SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>THE FORCE MAIN SHALL BE INSTALLED AS NOTED ON THE PLANS. WHERE APPLICABLE, A LATERAL SEPARATION OF AT LEAST 10' SHALL BE MAINTAINED BETWEEN WATER AND SEWER LINES. WHEN WATER AND SEWER LINES CROSS WITH LESS THAN AN 18" VERTICAL SEPARATION, THE PVC SEWER LINE SHALL BE ENCASED IN CONCRETE OR DUCTILE IRON PIPE USED IN LIEU OF PVC PIPE FOR A DISTANCE OF 10' EITHER SIDE OF THE CROSSING.</p> <p>ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RESTRAINED JOINTS OR THRUST BLOCKS (RESTRAINED JOINTS PREFERRED) PER UTILITY DETAIL SHEET.</p> <p>GREEN MAGNETIC INDICATOR TAPE SHALL BE BURIED IN THE FORCE MAIN TRENCH 18" DIRECTLY ABOVE THE FORCE MAIN. A CONTINUOUS COPPER DETECTOR WIRE SHALL BE ATTACHED TO THE PIPE AND VALVES AS SHOWN ON THE UTILITY SHEETS USING VINYL TIE STRAPS. NO DUCT TAPE WIRE SHALL BE 10 GA. AND COLOR CODED.</p> <p>CONNECTIONS TO MANHOLE WITH FORCE MAINS SHALL BE MADE BY CORE BORE AND LINK SEAL OR OTHER APPROVED CONNECTION. CONNECTIONS SHALL BE MADE WATERTIGHT AND BE INSTALLED ACCORDING TO THE MANUFACTURERS' RECOMMENDATIONS.</p> <p>TESTING</p> <p>FORCE MAIN SHALL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD M23. FORCE MAIN SYSTEM SHALL BE TESTED FOR TWO (2) HOURS AT 100 PSI. SEVENTY-TWO (72) HOURS WRITTEN ADVANCE NOTIFICATION TO THE ENGINEER AND THE UTILITY COMPANY OF THE TESTING WILL BE REQUIRED. NO TESTING ON MONDAY OR FRIDAY. THE CONTRACTOR SHALL PERFORM SATISFACTORY PROTESTING PRIOR TO NOTIFICATION.</p> <p>AS-BUILT DRAWINGS</p> <p>THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES.</p> <p>AS-BUILT INFORMATION FOR THE FORCE MAIN SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING</p> <ol style="list-style-type: none"> LOCATION OF ALL VALVES, FITTINGS, ETC. LOCATION OF THE FORCE MAIN TIED HORIZONTALLY TO THE BACK OF CURB OR EDGE OF PAVEMENT. CERTIFICATION AS TO THE SYSTEM MEETING THE MINIMUM COVER REQUIREMENTS. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING DRAWINGS. 				
						<p>ELEVATIONS BASED ON: NORTH AMERICAN VERTICAL DATUM 1988 CONVERSION: NAVD 88 TO NGVD 29 = +0.86</p>	



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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
GENERAL NOTES

DR HORTON

NO.	REVISION	DATE	DESCRIPTION
1	05/22/2019		REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002

FILE: GNOTES

DESIGN BY: MWD

DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

This item has been digitally signed and sealed by Gary D. Miller, P.E. on the date indicated here.


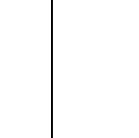
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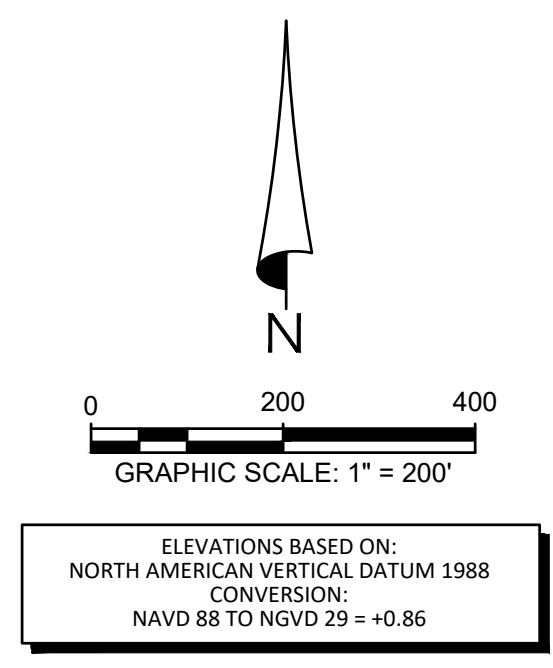
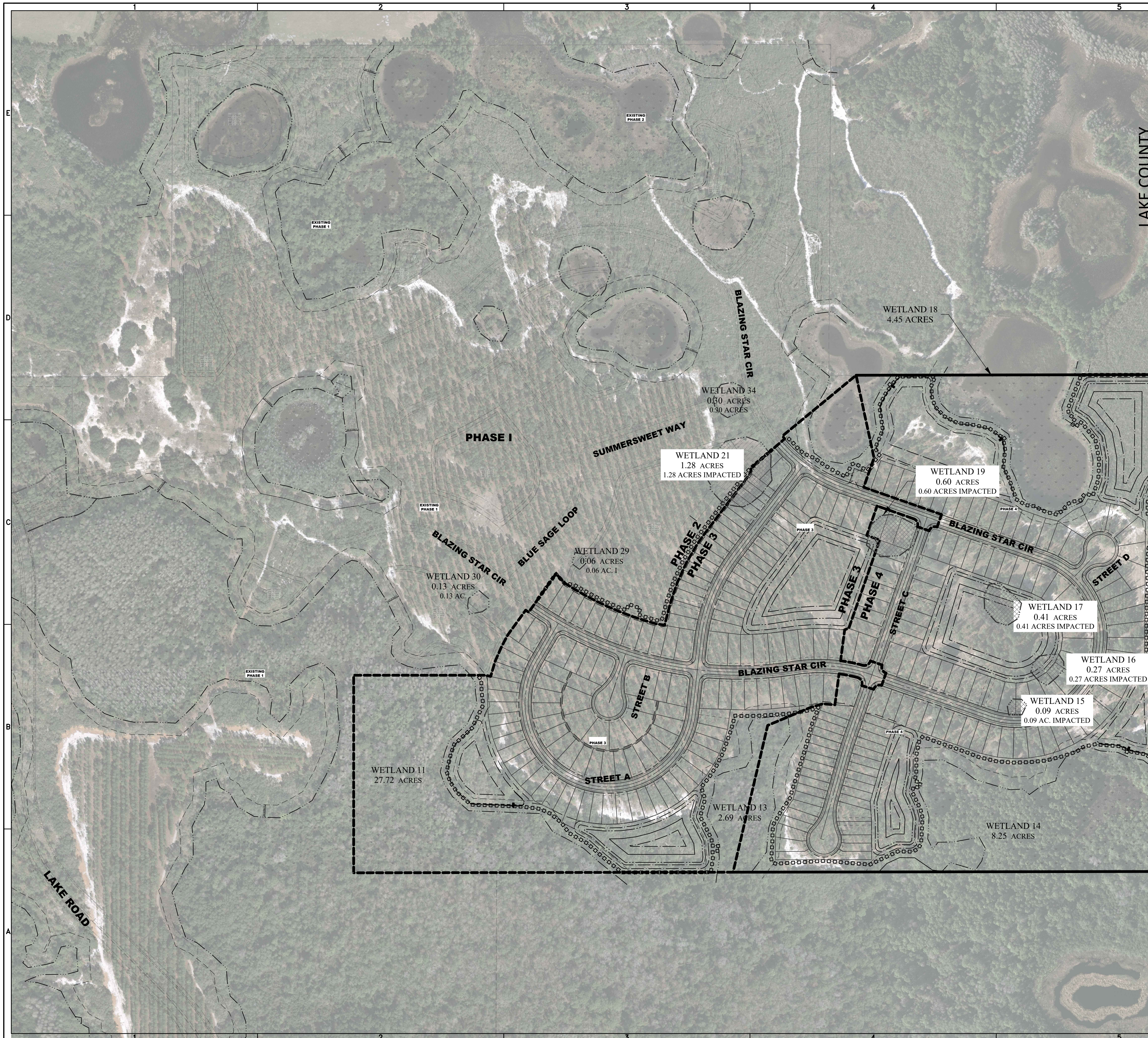
GARY D. MILLER

DATE: _____

LICENSE NO. 52717

C-102

<p>RECLAIMED WATER INFRASTRUCTURE SYSTEMS</p> <p><u>OWNER/OPERATOR</u></p> <p>THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE SYSTEM SHOWN ON THESE PLANS IS UTILITES, INC. OF FLORIDA. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.</p> <p><u>PIPE MATERIALS</u></p> <p>POLYVINYL CHLORIDE PLASTIC PIPE (PVC) 4" THROUGH 12" SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C900 (LATEST EDITION) AND SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI AND HAVE A DR (DIMENSION RATIO) OF 18. ALL PIPE SHALL BE LABELED "RECLAIMED WATER" OR "NON POTABLE WATER" PROMINENTLY ON EACH PIPE JOINT. JOINTS SHALL BE OF THE PUSH-ON TYPE AND COUPLINGS CONFORMING TO ASTM D3139 DR18 PIPE.</p> <p>DUCTILE IRON PIPE (DIP) SHALL BE STANDARD PRESSURE CLASS 350 IN SIZES 4" THROUGH 12" AND CONFORM TO ANSI/AWWA C150/A21.50 (LATEST EDITION). ALL DUCTILE IRON PIPE SHALL HAVE A STANDARD THICKNESS OF CEMENT MORTAR LINING AS SPECIFIED IN ANSI/AWWA C104/A21.4 (LATEST EDITION). PIPE JOINTS SHALL BE OF THE PUSH-ON RUBBER GASKET TYPE CONFORMING TO ANSI/AWWA C111/A21.11 (LATEST EDITION).</p> <p>PIPE SIZES GREATER THAN 12" IN BOTH PVC AND DUCTILE IRON SHALL BE SEPARATELY SPECIFIED ON THE PLANS; WITH THICKNESS CLASSES TO BE SHOWN BASED ON WORKING PRESSURES, PIPE DEPTH AND TRENCH CONDITIONS.</p> <p>FITTINGS FOR DUCTILE IRON PIPE AND PVC C900 PIPE SHALL BE DUCTILE IRON AND SHALL CONFORM TO ANSI/AWWA C110/A21.10 (LATEST EDITION) AND SHALL BE CEMENT LINED IN CONFORMANCE WITH ANSI/AWWA C104/A21.4 (LATEST EDITION).</p> <p>POLYETHYLENE WRAP USED FOR CORROSION PREVENTION ON DUCTILE IRON PIPE SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM D1248. THE MINIMUM NOMINAL THICKNESS SHALL BE 0.008 IN. (8 MILS). INSTALLATION OF POLY WRAP SHALL BE IN ACCORDANCE WITH AWWA C105.</p> <p><u>VALVES</u></p> <p>GATE VALVES SHALL BE RESILIENT SEAT AND SHALL CONFORM TO ANSI/AWWA C509.87 WITH HANDWHEEL OR WRENCH NUT, EXTENSION STEMS AND OTHER APPURTENANCES AS REQUIRED. MANUFACTURER'S CERTIFICATION OF THE VALVES' COMPLIANCE WITH AWWA SPECIFICATION C509 AND TESTS LISTED THEREIN WILL BE REQUIRED. VALVE BOX PADS SHALL BE 18" X 18" X 4" THICK CONCRETE WITH #4 REINFORCING BARS. PAD TO BE SET AT FINISHED GRADE. VALVES SHALL BE CLOW, MUELLER, KENNEDY, M&H, AMERICAN DARLING, OR APPROVED EQUAL.</p> <p><u>BUTTERFLY VALVES</u></p> <p>BUTTERFLY VALVES SHALL MEET OR EXCEED THE DESIGN STRENGTH TESTING AND PERFORMANCE REQUIREMENTS OF AWWA C504, CLASS 150. VALVES SHALL BE DUCTILE IRON, RESILIENT SEAT, AND BE MANUFACTURED BY KENNEDY, MUELLER, M&H, AMERICAN DARLING, OR APPROVED EQUAL. BUTTERFLY VALVES TO BE USED FOR SIZES GREATER THAN 12".</p> <p><u>AIR RELEASE VALVES</u></p> <p>AIR RELEASE VALVES SHALL BE PLACED AT HIGH POINTS OF THE TRANSMISSION MAIN TO PERMIT ESCAPE OF TRAPPED AIR. THE VALVE SIZE, LOCATION, AND METHOD OF INSTALLATION SHALL BE INDICATED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. AIR RELEASE VALVES SHALL BE VALMATIC OR APPROVED EQUAL.</p> <p><u>VALVE BOXES</u></p> <p>VALVE BOXES ON BURIED RECLAIMED WATER MAINS SHALL BE ADJUSTABLE, CAST IRON CONSTRUCTION, WITH A MINIMUM INTERIOR DIAMETER OF 5" WITH COVERS CAST WITH THE INSCRIPTION IN LEGIBLE LETTERING ON THE TOP: RECLAIMED WATER. BOXES SHALL BE SUITABLE FOR THE APPLICABLE SURFACE LOADING AND VALVE SIZE, AND SHALL BE MANUFACTURED BY MUELLER COMPANY, MODEL 10364, OR APPROVED EQUAL.</p> <p><u>PIPE INSTALLATION</u></p> <p>PIPE INSTALLATION OF PVC RECLAIMED WATER MAIN SHALL BE IN CONFORMANCE WITH ASTM D2774 (LATEST EDITION). INSTALLATION OF DUCTILE IRON PIPE RECLAIMED WATER MAIN SHALL BE IN CONFORMANCE WITH AWWA C600.87 (LATEST EDITION).</p> <p>COMPACTED BACKFILL SHALL BE TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 UNDER ALL PAVEMENTS WITH 12" MAXIMUM LIFT THICKNESS. OTHER COMPACTION OF BACKFILL SHALL BE TO 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 WITH 12" MAXIMUM LIFT THICKNESS. SEE PIPE TRENCHING DETAILS.</p> <p>MINIMUM COVER OVER ALL PIPE SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>RECLAIMED WATER MAINS ARE TO BE INSTALLED SO AS TO PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18" OR A MINIMUM HORIZONTAL CLEARANCE OF 5 FEET FROM ALL SANITARY HAZARDS INCLUDING STORM DRAINAGE PIPES AND STRUCTURES, AS WELL AS SEPTIC TANK DRAINFIELDS AND SEWER PIPING. IF CLEARANCE CANNOT BE ACHIEVED, THE PVC WATER MAIN SHALL BE ENCASED IN CONCRETE OR DUCTILE IRON PIPE USED IN LIEU OF PVC PIPE FOR 10' EACH SIDE OF WATER/STORM SEWER CROSSING. IF WATER/SANITARY SEWER CROSSING THEN SANITARY SEWER PIPE SHALL BE ENCASED OR D.I.P. USED FOR 10' EACH SIDE OF CROSSING.</p> <p>ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RODDED RESTRAINTS.</p> <p><u>PIPE IDENTIFICATION/LOCATION WIRE</u></p> <p>INDICATOR TAPE SHALL BE BURIED IN THE RECLAIMED WATER MAIN TRENCH 18" DIRECTLY ABOVE THE WATER MAIN. A CONTINUOUS COPPER DETECTOR WIRE SHALL BE ATTACHED AS SHOWN ON THE RECLAIMED WATER DETAIL SHEET. INDICATOR TAPE SHALL CALL OUT THAT A RECLAIMED OR NON POTABLE SYSTEM IS BELOW. PIPE SHALL BE COLOR CODED PURPLE IN ADDITION TO MARKING, IF AVAILABLE. COLOR CODED 10 GA. TRACKER WIRE MUST BE AFFIXED TO ALL PIPE AND SERVICES USING VINYL STRAPS. NO DUCT TAPE.</p> <p><u>DISINFECTION AND TESTING</u></p> <p>ALLOWABLE LEAKAGE FOR PVC PRESSURE MAINS WILL BE IN ACCORDANCE WITH AWWA M23. THE UTILITY DOES NOT ALLOW ANY LEAKAGE.</p> <p>THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL HYDROSTATIC AND LEAKAGE TESTING. CONTRACTOR SHALL CONTACT THE ENGINEER AND OWNER/OPERATOR IN WRITTEN FORM, FORTY-EIGHT (48) HOURS IN ADVANCE OF PROPOSED TESTING. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION. TESTING SHALL ONLY BE SCHEDULED ON A TUESDAY, WEDNESDAY OR THURSDAY.</p> <p>THE RECLAIMED WATER SYSTEM SHALL BE TESTED FOR LEAKAGE AT 150 PSI FOR TWO (2) HOURS, WITH ALLOWABLE LEAKAGE IN ACCORDANCE WITH ABOVE STANDARDS.</p>	<p><u>AS-BUILT DRAWINGS</u></p> <p>THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES.</p> <p>AS-BUILT INFORMATION FOR THE WATER SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:</p> <ol style="list-style-type: none"> 1. LOCATION OF ALL VALVES, FITTINGS AND SERVICES. 2. LOCATION OF THE WATER MAIN TIED HORIZONTALLY TO THE BACK OF CURB OR EDGE OF PAVEMENT. 3. CERTIFICATION AS TO THE SYSTEM MEETING THE MINIMUM COVER REQUIREMENTS. 4. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING PLANS. <p><u>POTABLE WATER / FIRE SYSTEMS</u></p> <p><u>OWNER/OPERATOR</u></p> <p>THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE WATER SYSTEM SHOWN ON THESE PLANS IS UTILITES, INC. OF FLORIDA. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.</p> <p><u>PIPE MATERIALS</u></p> <p>POLYVINYL CHLORIDE PLASTIC PIPE (PVC) 4" THROUGH 12" SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C900 (LATEST EDITION) AND SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI AND HAVE A DR (DIMENSION RATIO) OF 18. ALL PVC PIPE SHALL BEAR THE NSF LOGO FOR POTABLE WATER. JOINTS SHALL BE OF THE PUSH-ON TYPE AND COUPLINGS CONFORMING TO ASTM D3139 DR18 PIPE.</p> <p>DUCTILE IRON PIPE (DIP) SHALL BE STANDARD PRESSURE CLASS 350 IN SIZES 4" THROUGH 12" AND CONFORM TO ANSI/AWWA C150/A21.50 (LATEST EDITION). ALL DUCTILE IRON PIPE SHALL HAVE A STANDARD THICKNESS OF CEMENT MORTAR LINING AS SPECIFIED IN ANSI/AWWA C104/A21.4 (LATEST EDITION). PIPE JOINTS SHALL BE OF THE PUSH-ON RUBBER GASKET TYPE CONFORMING TO ANSI/AWWA C111/A21.11 (LATEST EDITION).</p> <p>PIPE SIZES GREATER THAN 12" IN BOTH PVC AND DUCTILE IRON SHALL BE SEPARATELY SPECIFIED ON THE PLANS; WITH THICKNESS CLASSES TO BE SHOWN BASED ON WORKING PRESSURES, PIPE DEPTH AND TRENCH CONDITIONS.</p> <p>FITTINGS FOR DUCTILE IRON PIPE AND PVC C900 PIPE SHALL BE DUCTILE IRON AND SHALL CONFORM TO ANSI/AWWA C110/A21.10 (LATEST EDITION) AND SHALL BE CEMENT LINED IN CONFORMANCE WITH ANSI/AWWA C104/A21.4 (LATEST EDITION).</p> <p>POLYETHYLENE WRAP USED FOR CORROSION PREVENTION ON DUCTILE IRON PIPE SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM D1248. THE MINIMUM NOMINAL THICKNESS SHALL BE 0.008 IN. (8 MILS). INSTALLATION OF POLY WRAP SHALL BE IN ACCORDANCE WITH AWWA C105.</p> <p><u>VALVES</u></p> <p>GATE VALVES SHALL BE RESILIENT SEAT AND SHALL CONFORM TO ANSI/AWWA C509.87 WITH HANDWHEEL OR WRENCH NUT, EXTENSION STEMS AND OTHER APPURTENANCES AS REQUIRED. MANUFACTURER'S CERTIFICATION OF THE VALVES' COMPLIANCE WITH AWWA SPECIFICATION C509 AND TESTS LISTED THEREIN WILL BE REQUIRED. VALVE BOX PADS SHALL BE 18" X 18" X 4" THICK CONCRETE WITH #4 REINFORCING BARS. PAD TO BE SET AT FINISHED GRADE. VALVES SHALL BE CLOW, MUELLER, KENNEDY, M&H, AMERICAN DARLING, OR APPROVED EQUAL.</p> <p><u>BUTTERFLY VALVES</u></p> <p>BUTTERFLY VALVES SHALL MEET OR EXCEED THE DESIGN STRENGTH TESTING AND PERFORMANCE REQUIREMENTS OF AWWA C504, CLASS 150. VALVES SHALL BE DUCTILE IRON, RESILIENT SEAT, AND BE MANUFACTURED BY KENNEDY, MUELLER, M&H, AMERICAN DARLING, OR APPROVED EQUAL. BUTTERFLY VALVES TO BE USED FOR MAIN SIZES GREATER THAN 12".</p> <p><u>AIR RELEASE VALVES</u></p> <p>AIR RELEASE VALVES SHALL BE PLACED AT HIGH POINTS OF THE TRANSMISSION MAIN TO PERMIT ESCAPE OF TRAPPED AIR. THE VALVE SIZE, LOCATION, AND METHOD OF INSTALLATION SHALL BE INDICATED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. AIR RELEASE VALVES SHALL BE CRISPIN PRESSURE AIR VALVE TYPE N, APCO, OR VALVE & PRIMER CORP. OR VAL-MATIC CORPORATION.</p> <p><u>VALVE BOXES</u></p> <p>VALVE BOXES ON BURIED POTABLE WATER MAINS SHALL BE ADJUSTABLE, CAST IRON CONSTRUCTION, WITH A MINIMUM INTERIOR DIAMETER OF 5" WITH COVERS CAST WITH THE INSCRIPTION IN LEGIBLE LETTERING ON THE TOP: WATER. BOXES SHALL BE SUITABLE FOR THE APPLICABLE SURFACE LOADING AND VALVE SIZE, AND SHALL BE MANUFACTURED BY MUELLER COMPANY, MODEL 10364, OR APPROVED EQUAL.</p> <p><u>FIRE HYDRANTS</u></p> <p>FIRE HYDRANTS SHALL CONFORM TO THE LATEST EDITION OF AWWA C502.85 AND SHALL BE FURNISHED COMPLETE WITH WRENCH AND OTHER APPURTENANCES. MANUFACTURER'S CERTIFICATION OF COMPLIANCE WITH AWWA C502 AND TESTS LISTED THEREIN WILL BE REQUIRED. ALL HYDRANTS SHALL BE OF BREAKABLE TYPE, WITH THE BREAKABLE SECTION LOCATED SLIGHTLY ABOVE THE FINISH GROUND LINE. HYDRANTS SHALL CONTAIN TWO, TWO AND ONE-HALF INCH (2-1/2") HOSE CONNECTIONS, AND ONE, FOUR AND ONE-HALF INCH (4-1/2") STEAMER CONNECTIONS WITH NATIONAL STANDARD FIRE HOSE COUPLING SCREW THREADS, FIVE AND ONE-QUARTER INCH (5-1/4") VALVE OPENING, SIX INCH (6") DIAMETER MECHANICAL JOINT INLET, ONE AND ONE-HALF INCH (1-1/2") PENTAGON OPERATING NUT. SHALL OPEN COUNTERCLOCKWISE, SHALL BE PAINTED IN CONFORMANCE WITH LOCAL FIRE DEPT. REQUIREMENTS (COLORS BASED ON DELIVERED FIRE FLOW) WITH THE PRIMER PAINT BEING KOPPER'S "GLAMORTEX" NO. 622 RUST PRIMER, AND THE FINISH BEING KOPPER'S "GLAMORTEX" AND SHALL BE AMERICAN DARLING B-84-B, NO SUBSTITUTES.</p> <ol style="list-style-type: none"> 1. BLUE PAVEMENT REFLECTORS (RPM'S) SHALL BE PLACED IN THE CENTERLINE OF THE DRIVING LANE DIRECTLY IN FRONT OF EACH FIRE HYDRANT. 2. CONTRACTOR SHALL PROVIDE A POST-CONSTRUCTION FIRE FLOW TEST WITNESSED AND APPROVED BY THE ENGINEER, OWNER/OPERATOR AND LOCAL FIRE OFFICIAL. 3. THERE SHALL BE NO TREES, SHRUBS, ETC., PLANTED AROUND THE FIRE HYDRANTS OR IN AREAS DESIGNATED AS FIRE LANES. 	<p><u>WATER SERVICES</u></p> <p>UNLESS OTHERWISE NOTED IN THE PLANS, THE UTILITY COMPANY SHALL PROVIDE AND INSTALL WATER METERS. CONTRACTOR SHALL CONSTRUCT WATER SERVICE THROUGH THE CURB STOP AS SHOWN ON THE CONSTRUCTION PLANS.</p> <p>POLYETHYLENE (PE) PRESSURE PIPE FOR WATER SERVICES 3/4" THROUGH 2" SHALL BE ENDOT, ENDOPURE, BLUE PIPE AND CONFORM TO AWWA C901.88, MIN 200 PSI.</p> <p>ALL SERVICES SHALL INCLUDE THE FOLLOWING: CURB STOPS, "U" BRANCHES, UNIONS AS REQUIRED, PE SERVICE PIPE AND CORPORATION STOPS AND METER BOX. THE SERVICE SHALL BE COMPLETE THROUGH THE CURB STOP AS SHOWN ON THE DETAIL SHEET, AND SHALL BE OF THE TYPE REQUIRED FOR COMPATIBILITY WITH THE SERVICE LINES SPECIFIED, AND FITTINGS SHALL BE AS MANUFACTURED BY THE MUELLER CORPORATION OR HAYS OR FORD.</p> <p>THE CONTRACTOR SHALL STAMP "W" IN THE CURB TOP AT EACH WATER SERVICE AND A "V" AT ALL VALVE LOCATIONS. STAMPED W'S AND V'S SHALL BE HIGHLIGHTED WITH BLUE OIL BASED PAINT. SEE WATER DETAIL SHEET FOR OTHER SERVICE LOCATION AND MARKING REQUIREMENTS. "SAW" CUTS ARE NOT PERMISSIBLE.</p> <p><u>PIPE INSTALLATION</u></p> <p>PIPE INSTALLATION OF PVC WATER MAIN SHALL BE IN CONFORMANCE WITH ASTM D2774 (LATEST EDITION). INSTALLATION OF DUCTILE IRON PIPE WATER MAIN SHALL BE IN CONFORMANCE WITH AWWA C600.87.</p> <p>COMPACTED BACKFILL SHALL BE TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 UNDER ALL PAVEMENTS WITH 12" MAXIMUM LIFT THICKNESS. OTHER COMPACTION OF BACKFILL SHALL BE TO 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 WITH 12" MAXIMUM LIFT THICKNESS. SEE PIPE TRENCHING DETAILS.</p> <p>MINIMUM COVER OVER ALL PIPE SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>WATER MAINS ARE TO BE INSTALLED SO AS TO PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18" OR A MINIMUM HORIZONTAL CLEARANCE OF 10 FEET FROM ALL SANITARY HAZARDS, INCLUDING STORM DRAINAGE PIPES AND STRUCTURES, AS WELL AS SEPTIC TANKS, DRAINFIELDS AND SEWER PIPING. IF CLEARANCE CANNOT BE ACHIEVED, THEN DUCTILE IRON WATER MAIN SHALL BE PROVIDED OR 10 FEET EITHER SIDE OF THE CROSSING OR WATER MAIN SHALL BE CONCRETE ENCASED IF A WATER STORM CROSSING, OR THE SEWER MAIN ENCASED IF A SANITARY SEWER WATER CROSSING.</p> <p>ALL PLUGS, CAPS, TEES, BENDS, FIRE HYDRANTS, VALVES, ETC., SHALL BE PROVIDED WITH THRUST BLOCKS/RODDED RESTRAINTS. FOR THRUST BLOCK CONSTRUCTION DETAILS, REFER TO THE UTILITY DETAIL SHEET.</p> <p><u>PIPE IDENTIFICATION/LOCATION WIRE</u></p> <p>BLUE INDICATOR TAPE SHALL BE BURIED IN THE WATER MAIN TRENCH 18" DIRECTLY ABOVE THE WATER MAIN. A CONTINUOUS COPPER DETECTOR WIRE SHALL BE ATTACHED AS SHOWN ON THE WATER DETAIL SHEET.</p> <p><u>DISINFECTION AND TESTING</u></p> <p>ALL PIPE SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651.86.</p> <p>ALLOWABLE LEAKAGE FOR PVC PRESSURE MAINS WILL BE IN ACCORDANCE WITH AWWA M23. THE UTILITY DOES NOT ALLOW ANY LEAKAGE.</p> <p>THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL HYDROSTATIC AND LEAKAGE TESTING. CONTRACTOR SHALL CONTACT THE ENGINEER AND OWNER/OPERATOR IN WRITTEN FORM, SEVENTY-TWO (72) HOURS IN ADVANCE OF PROPOSED TESTING. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION. 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PIPE JOINTS SHALL BE OF THE PUSH-ON RUBBER GASKET TYPE CONFORMING TO ANSI/AWWA C111/A21.11 (LATEST EDITION).</p> <p>PIPE SIZES GREATER THAN 12" IN BOTH PVC AND DUCTILE IRON SHALL BE SEPARATELY SPECIFIED ON THE PLANS; WITH THICKNESS CLASSES TO BE SHOWN BASED ON WORKING PRESSURES, PIPE DEPTH AND TRENCH CONDITIONS.</p> <p>FITTINGS FOR DUCTILE IRON PIPE AND PVC C900 PIPE SHALL BE DUCTILE IRON AND SHALL CONFORM TO ANSI/AWWA C110/A21.10 (LATEST EDITION) AND SHALL BE CEMENT LINED IN CONFORMANCE WITH ANSI/AWWA C104/A21.4 (LATEST EDITION).</p> <p>POLYETHYLENE WRAP USED FOR CORROSION PREVENTION ON DUCTILE IRON PIPE SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM D1248. THE MINIMUM NOMINAL THICKNESS SHALL BE 0.008 IN. (8 MILS). INSTALLATION OF POLY WRAP SHALL BE IN ACCORDANCE WITH AWWA C105.</p> <p><u>VALVES</u></p> <p>GATE VALVES SHALL BE RESILIENT SEAT AND SHALL CONFORM TO ANSI/AWWA C509.87 WITH HANDWHEEL OR WRENCH NUT, EXTENSION STEMS AND OTHER APPURTENANCES AS REQUIRED. MANUFACTURER'S CERTIFICATION OF THE VALVES' COMPLIANCE WITH AWWA SPECIFICATION C509 AND TESTS LISTED THEREIN WILL BE REQUIRED. VALVE BOX PADS SHALL BE 18" X 18" X 4" THICK CONCRETE WITH #4 REINFORCING BARS. PAD TO BE SET AT FINISHED GRADE. VALVES SHALL BE CLOW, MUELLER, KENNEDY, M&H, AMERICAN DARLING, OR APPROVED EQUAL.</p> <p><u>BUTTERFLY VALVES</u></p> <p>BUTTERFLY VALVES SHALL MEET OR EXCEED THE DESIGN STRENGTH TESTING AND PERFORMANCE REQUIREMENTS OF AWWA C504, CLASS 150. VALVES SHALL BE DUCTILE IRON, RESILIENT SEAT, AND BE MANUFACTURED BY KENNEDY, MUELLER, M&H, AMERICAN DARLING, OR APPROVED EQUAL. BUTTERFLY VALVES TO BE USED FOR SIZES GREATER THAN 12".</p> <p><u>AIR RELEASE VALVES</u></p> <p>AIR RELEASE VALVES SHALL BE PLACED AT HIGH POINTS OF THE TRANSMISSION MAIN TO PERMIT ESCAPE OF TRAPPED AIR. THE VALVE SIZE, LOCATION, AND METHOD OF INSTALLATION SHALL BE INDICATED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. 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SEE PIPE TRENCHING DETAILS.</p> <p>MINIMUM COVER OVER ALL PIPE SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>RECLAIMED WATER MAINS ARE TO BE INSTALLED SO AS TO PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18" OR A MINIMUM HORIZONTAL CLEARANCE OF 5 FEET FROM ALL SANITARY HAZARDS INCLUDING STORM DRAINAGE PIPES AND STRUCTURES, AS WELL AS SEPTIC TANK DRAINFIELDS AND SEWER PIPING. IF CLEARANCE CANNOT BE ACHIEVED, THE PVC WATER MAIN SHALL BE ENCASED IN CONCRETE OR DUCTILE IRON PIPE USED IN LIEU OF PVC PIPE FOR 10' EACH SIDE OF WATER/STORM SEWER CROSSING. IF WATER/SANITARY SEWER CROSSING THEN SANITARY SEWER PIPE SHALL BE ENCASED OR D.I.P. USED FOR 10' EACH SIDE OF CROSSING.</p> <p>ALL PLUGS, CAPS, TEES, BENDS, VALVES, ETC., SHALL BE PROVIDED WITH RODDED RESTRAINTS.</p> <p><u>PIPE IDENTIFICATION/LOCATION WIRE</u></p> <p>INDICATOR TAPE SHALL BE BURIED IN THE RECLAIMED WATER MAIN TRENCH 18" DIRECTLY ABOVE THE WATER MAIN. A CONTINUOUS COPPER DETECTOR WIRE SHALL BE ATTACHED AS SHOWN ON THE RECLAIMED WATER DETAIL SHEET. INDICATOR TAPE SHALL CALL OUT THAT A RECLAIMED OR NON POTABLE SYSTEM IS BELOW. PIPE SHALL BE COLOR CODED PURPLE IN ADDITION TO MARKING, IF AVAILABLE. COLOR CODED 10 GA. TRACKER WIRE MUST BE AFFIXED TO ALL PIPE AND SERVICES USING VINYL STRAPS. NO DUCT TAPE.</p> <p><u>DISINFECTION AND TESTING</u></p> <p>ALLOWABLE LEAKAGE FOR PVC PRESSURE MAINS WILL BE IN ACCORDANCE WITH AWWA M23. THE UTILITY DOES NOT ALLOW ANY LEAKAGE.</p> <p>THE CONTRACTOR SHALL PROVIDE AT HIS OWN EXPENSE ALL NECESSARY TEST PUMPING EQUIPMENT, WATER, WATER METERS, PRESSURE GAUGES, AND OTHER EQUIPMENT, MATERIAL AND FACILITIES REQUIRED FOR ALL HYDROSTATIC AND LEAKAGE TESTING. CONTRACTOR SHALL CONTACT THE ENGINEER AND OWNER/OPERATOR IN WRITTEN FORM, FORTY-EIGHT (48) HOURS IN ADVANCE OF PROPOSED TESTING. THE CONTRACTOR SHALL PERFORM SATISFACTORY PRETESTING PRIOR TO NOTIFICATION. 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HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING PLANS. <p><u>POTABLE WATER / FIRE SYSTEMS</u></p> <p><u>OWNER/OPERATOR</u></p> <p>THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE WATER SYSTEM SHOWN ON THESE PLANS IS UTILITES, INC. OF FLORIDA. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.</p> <p><u>PIPE MATERIALS</u></p> <p>POLYVINYL CHLORIDE PLASTIC PIPE (PVC) 4" THROUGH 12" SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C900 (LATEST EDITION) AND SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI AND HAVE A DR (DIMENSION RATIO) OF 18. ALL PVC PIPE SHALL BEAR THE NSF LOGO FOR POTABLE WATER. JOINTS SHALL BE OF THE PUSH-ON TYPE AND COUPLINGS CONFORMING TO ASTM D3139 DR18 PIPE.</p> <p>DUCTILE IRON PIPE (DIP) SHALL BE STANDARD PRESSURE CLASS 350 IN SIZES 4" THROUGH 12" AND CONFORM TO ANSI/AWWA C150/A21.50 (LATEST EDITION). 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BUTTERFLY VALVES TO BE USED FOR MAIN SIZES GREATER THAN 12".</p> <p><u>AIR RELEASE VALVES</u></p> <p>AIR RELEASE VALVES SHALL BE PLACED AT HIGH POINTS OF THE TRANSMISSION MAIN TO PERMIT ESCAPE OF TRAPPED AIR. THE VALVE SIZE, LOCATION, AND METHOD OF INSTALLATION SHALL BE INDICATED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. AIR RELEASE VALVES SHALL BE CRISPIN PRESSURE AIR VALVE TYPE N, APCO, OR VALVE & PRIMER CORP. OR VAL-MATIC CORPORATION.</p> <p><u>VALVE BOXES</u></p> <p>VALVE BOXES ON BURIED POTABLE WATER MAINS SHALL BE ADJUSTABLE, CAST IRON CONSTRUCTION, WITH A MINIMUM INTERIOR DIAMETER OF 5" WITH COVERS CAST WITH THE INSCRIPTION IN LEGIBLE LETTERING ON THE TOP: WATER. BOXES SHALL BE SUITABLE FOR THE APPLICABLE SURFACE LOADING AND VALVE SIZE, AND SHALL BE MANUFACTURED BY MUELLER COMPANY, MODEL 10364, OR APPROVED EQUAL.</p> <p><u>FIRE HYDRANTS</u></p> <p>FIRE HYDRANTS SHALL CONFORM TO THE LATEST EDITION OF AWWA C502.85 AND SHALL BE FURNISHED COMPLETE WITH WRENCH AND OTHER APPURTENANCES. MANUFACTURER'S CERTIFICATION OF COMPLIANCE WITH AWWA C502 AND TESTS LISTED THEREIN WILL BE REQUIRED. ALL HYDRANTS SHALL BE OF BREAKABLE TYPE, WITH THE BREAKABLE SECTION LOCATED SLIGHTLY ABOVE THE FINISH GROUND LINE. HYDRANTS SHALL CONTAIN TWO, TWO AND ONE-HALF INCH (2-1/2") HOSE CONNECTIONS, AND ONE, FOUR AND ONE-HALF INCH (4-1/2") STEAMER CONNECTIONS WITH NATIONAL STANDARD FIRE HOSE COUPLING SCREW THREADS, FIVE AND ONE-QUARTER INCH (5-1/4") VALVE OPENING, SIX INCH (6") DIAMETER MECHANICAL JOINT INLET, ONE AND ONE-HALF INCH (1-1/2") PENTAGON OPERATING NUT. SHALL OPEN COUNTERCLOCKWISE, SHALL BE PAINTED IN CONFORMANCE WITH LOCAL FIRE DEPT. REQUIREMENTS (COLORS BASED ON DELIVERED FIRE FLOW) WITH THE PRIMER PAINT BEING KOPPER'S "GLAMORTEX" NO. 622 RUST PRIMER, AND THE FINISH BEING KOPPER'S "GLAMORTEX" AND SHALL BE AMERICAN DARLING B-84-B, NO SUBSTITUTES.</p> <ol style="list-style-type: none"> 1. BLUE PAVEMENT REFLECTORS (RPM'S) SHALL BE PLACED IN THE CENTERLINE OF THE DRIVING LANE DIRECTLY IN FRONT OF EACH FIRE HYDRANT. 2. CONTRACTOR SHALL PROVIDE A POST-CONSTRUCTION FIRE FLOW TEST WITNESSED AND APPROVED BY THE ENGINEER, OWNER/OPERATOR AND LOCAL FIRE OFFICIAL. 3. THERE SHALL BE NO TREES, SHRUBS, ETC., PLANTED AROUND THE FIRE HYDRANTS OR IN AREAS DESIGNATED AS FIRE LANES. 	<p><u>WATER SERVICES</u></p> <p>UNLESS OTHERWISE NOTED IN THE PLANS, THE UTILITY COMPANY SHALL PROVIDE AND INSTALL WATER METERS. CONTRACTOR SHALL CONSTRUCT WATER SERVICE THROUGH THE CURB STOP AS SHOWN ON THE CONSTRUCTION PLANS.</p> <p>POLYETHYLENE (PE) PRESSURE PIPE FOR WATER SERVICES 3/4" THROUGH 2" SHALL BE ENDOT, ENDOPURE, BLUE PIPE AND CONFORM TO AWWA C901.88, MIN 200 PSI.</p> <p>ALL SERVICES SHALL INCLUDE THE FOLLOWING: CURB STOPS, "U" BRANCHES, UNIONS AS REQUIRED, PE SERVICE PIPE AND CORPORATION STOPS AND METER BOX. THE SERVICE SHALL BE COMPLETE THROUGH THE CURB STOP AS SHOWN ON THE DETAIL SHEET, AND SHALL BE OF THE TYPE REQUIRED FOR COMPATIBILITY WITH THE SERVICE LINES SPECIFIED, AND FITTINGS SHALL BE AS MANUFACTURED BY THE MUELLER CORPORATION OR HAYS OR FORD.</p> <p>THE CONTRACTOR SHALL STAMP "W" IN THE CURB TOP AT EACH WATER SERVICE AND A "V" AT ALL VALVE LOCATIONS. STAMPED W'S AND V'S SHALL BE HIGHLIGHTED WITH BLUE OIL BASED PAINT. SEE WATER DETAIL SHEET FOR OTHER SERVICE LOCATION AND MARKING REQUIREMENTS. "SAW" CUTS ARE NOT PERMISSIBLE.</p> <p><u>PIPE INSTALLATION</u></p> <p>PIPE INSTALLATION OF PVC WATER MAIN SHALL BE IN CONFORMANCE WITH ASTM D2774 (LATEST EDITION). INSTALLATION OF DUCTILE IRON PIPE WATER MAIN SHALL BE IN CONFORMANCE WITH AWWA C600.87.</p> <p>COMPACTED BACKFILL SHALL BE TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 UNDER ALL PAVEMENTS WITH 12" MAXIMUM LIFT THICKNESS. OTHER COMPACTION OF BACKFILL SHALL BE TO 95% MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 WITH 12" MAXIMUM LIFT THICKNESS. SEE PIPE TRENCHING DETAILS.</p> <p>MINIMUM COVER OVER ALL PIPE SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. SEE PLAN AND PROFILE SHEETS FOR REQUIRED DEPTH.</p> <p>WATER MAINS ARE TO BE INSTALLED SO AS TO PROVIDE A MINIMUM VERTICAL CLEARANCE OF 18" OR A MINIMUM HORIZONTAL CLEARANCE OF 10 FEET FROM ALL SANITARY HAZARDS, INCLUDING STORM DRAINAGE PIPES AND STRUCTURES, AS WELL AS SEPTIC TANKS, DRAINFIELDS AND SEWER PIPING. 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TESTING SHALL ONLY BE SCHEDULED ON A TUESDAY, WEDNESDAY OR THURSDAY.</p> <p>THE WATER SYSTEM SHALL BE TESTED FOR LEAKAGE AT 150 PSI FOR TWO (2) HOURS, WITH ALLOWABLE LEAKAGE IN ACCORDANCE WITH ABOVE STANDARDS.</p> <p>CONTRACTOR SHALL OBTAIN A COPY OF THE FDEP WATER SYSTEM PERMIT AND PULL BACTERIOLOGICAL TEST SAMPLES FROM THE SAMPLE POINTS SPECIFIED IN THAT PERMIT.</p> <p><u>CONNECTIONS TO EXISTING WATER MAINS</u></p> <p>PRIOR TO THE CONNECTION TO ANY EXISTING MAIN, THE PROPOSED WATER MAIN SHALL BE DISINFECTED, HAVE ENGINEER APPROVED PRESSURE TESTING AND HAVE FDEP CLEARANCE. REFER TO FDEP PERMIT FOR ANY ADDITIONAL REQUIREMENTS.</p>	<p><u>AS-BUILT DRAWINGS</u></p> <p>THE CONTRACTOR SHALL PROVIDE VERTICAL AND HORIZONTAL "AS-BUILT" INFORMATION RELATIVE TO ALL CONSTRUCTED UTILITIES AND STRUCTURES.</p> <p>AS-BUILT INFORMATION FOR THE WATER SYSTEM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:</p> <ol style="list-style-type: none"> 1. LOCATION OF ALL VALVES, FITTINGS, HYDRANTS AND SERVICES. 2. LOCATION OF THE WATER MAIN TIED HORIZONTALLY TO THE BACK OF CURB OR EDGE OF PAVEMENT. 3. CERTIFICATION AS TO THE SYSTEM MEETING THE MINIMUM COVER REQUIREMENTS. 4. HORIZONTAL AND VERTICAL DATA FOR ANY CONSTRUCTION WHICH DEVIATES FROM THE APPROVED ENGINEERING PLANS. 	<p>HEIDT DESIGN Civil Engineering • Planning & GIS Transportation Engineering Ecological Services • Landscape Architecture</p> <p>5904-A Hampton Oaks Pkwy. Tampa, Florida 33610 Office: 813-253-5311 Fax: 813-464-7629</p> <p>www.HeidtDesign.com</p>  <p>Engineering Business Certificate of Authorization No. 28792 Landscape Architecture Certificate of Authorization No. LC26000105</p>
<p><u>RECLAIMED WATER INFRASTRUCTURE SYSTEMS</u></p> <p><u>OWNER/OPERATOR</u></p> <p>THE ENTITY THAT WILL OWN, OPERATE AND MAINTAIN THE SYSTEM SHOWN ON THESE PLANS IS UTILITES, INC. OF FLORIDA. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THAT ENTITY.</p> <p><u>PIPE MATERIALS</u></p> <p>POLYVINYL CHLORIDE PLASTIC PIPE (PVC) 4" THROUGH 12" SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C900 (LATEST EDITION) AND SHALL HAVE A MINIMUM WORKING PRESSURE OF 150 PSI AND HAVE A DR (DIMENSION RATIO) OF 18. ALL PIPE SHALL BE LABELED "RECLAIMED WATER" OR "NON POTABLE WATER" PROMINENTLY ON EACH PIPE JOINT. JOINTS SHALL BE OF THE PUSH-ON TYPE AND COUPLINGS CONFORMING TO ASTM D3139 DR18 PIPE.</p> <p>DUCTILE IRON PIPE (DIP) SHALL BE STANDARD PRESSURE CLASS 350 IN SIZES 4" THROUGH 12" AND CONFORM TO ANSI/AWWA C150/A21.50 (LATEST EDITION). ALL DUCTILE IRON PIPE SHALL HAVE A STANDARD THICKNESS OF CEMENT MORTAR LINING AS SPECIFIED IN ANSI/AWWA C104/A21.4 (LATEST EDITION). PIPE JOINTS SHALL BE OF THE PUSH-ON RUBBER GASKET TYPE CONFORMING TO ANSI/AWWA C111/A21.11 (LATEST EDITION).</p> <p>PIPE SIZES GREATER THAN 12" IN BOTH PVC AND DUCTILE IRON SHALL BE SEPARATELY SPECIFIED ON THE PLANS; WITH THICKNESS CLASSES TO BE SHOWN BASED ON WORKING PRESSURES, PIPE DEPTH AND TRENCH CONDITIONS.</p> <p>FITTINGS FOR DUCTILE IRON PIPE AND PVC C900 PIPE SHALL BE DUCTILE IRON AND SHALL CONFORM TO ANSI/AWWA C110/A21.10 (LATEST EDITION) AND SHALL BE CEMENT LINED IN CONFORMANCE WITH ANSI/AWWA C104/A21.4 (LATEST EDITION).</p> <p>POLYETHYLENE WRAP USED FOR CORROSION PREVENTION ON DUCTILE IRON PIPE SHALL CONFORM TO THE REQUIREMENTS OF ANSI/ASTM D1248. THE MINIMUM NOMINAL THICKNESS SHALL BE 0.008 IN. (8 MILS). INSTALLATION OF POLY WRAP SHALL BE IN ACCORDANCE WITH AWWA C105.</p> <p><u>VALVES</u></p> <p>GATE VALVES SHALL BE RESILIENT SEAT AND SHALL CONFORM TO ANSI/AWWA C509.87 WITH HANDWHEEL OR WRENCH NUT, EXTENSION STEMS AND OTHER APPURTENANCES AS REQUIRED. MANUFACTURER'S CERTIFICATION OF THE VALVES' COMPLIANCE WITH AWWA SPECIFICATION C509 AND TESTS LISTED THEREIN WILL BE REQUIRED. VALVE BOX PADS SHALL BE 18" X 18" X 4" THICK CONCRETE WITH #4 REINFORCING BARS. PAD TO BE SET AT FINISHED GRADE. VALVES SHALL BE CLOW, MUELLER, KENNEDY, M&H, AMERICAN DARLING, OR APPROVED EQUAL.</p> <p><u>BUTTERFLY VALVES</u></p> <p>BUTTERFLY VALVES SHALL MEET OR EXCEED THE DESIGN STRENGTH TESTING AND PERFORMANCE REQUIREMENTS OF AWWA C504, CLASS 150. VALVES SHALL BE DUCTILE IRON, RESILIENT SEAT, AND BE MANUFACTURED BY KENNEDY, MUELLER, M&H, AMERICAN DARLING, OR APPROVED EQUAL. BUTTERFLY VALVES TO BE USED FOR SIZES GREATER THAN 12".</p> <p><u>AIR RELEASE VALVES</u></p> <p>AIR RELEASE VALVES SHALL BE PLACED AT HIGH POINTS OF THE TRANSMISSION MAIN TO PERMIT ESCAPE OF TRAPPED AIR. THE VALVE SIZE, LOCATION, AND METHOD OF INSTALLATION SHALL BE INDICATED ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER. AIR RELEASE VALVES SHALL BE VALMATIC OR APPROVED EQUAL.</p> <p><u>VALVE BOXES</u></p> <p>VALVE BOXES ON BURIED RECLAIMED WATER MAINS SHALL BE ADJUSTABLE, CAST IRON CONSTRUCTION, WITH A MINIMUM INTERIOR DIAMETER OF 5" WITH COVERS CAST WITH THE INSCRIPTION IN LEGIBLE LETTERING ON THE TOP:</p>				



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LEGEND

- SIRWMD WETLAND LINE
- SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- BOUNDARY LIMITS
- RIGHT-OF-WAY LINE
- FEMA FLOOD LINE
- PHASE LINE
- PREVIOUSLY WETLAND IMPACTED
- PROPOSED WETLAND IMPACTS

NOTE:
THIS EXHIBIT WAS PREPARED FOR ILLUSTRATIVE PURPOSES ONLY. THE LATEST AVAILABLE DIGITAL AERIAL FILES HAVE BEEN USED HOWEVER THIS MAY NOT ACCURATELY DEPICT CURRENT SITE CONDITIONS. ADDITIONAL ENGINEERING, ENVIRONMENTAL REVIEWS, FIELD SURVEYING AND DATA COLLECTION ARE NECESSARY TO CORRECTLY PORTRAY ACTUAL SITE CONDITIONS. THIS EXHIBIT IS SUBJECT TO CHANGE WITHOUT NOTICE BASED ON THE ABOVE.

DATE OF PHOTO: 2014

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Landscape Architecture Certificate of Authorization No. LC26000405

SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
AERIAL SITE PLAN

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: ASP
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

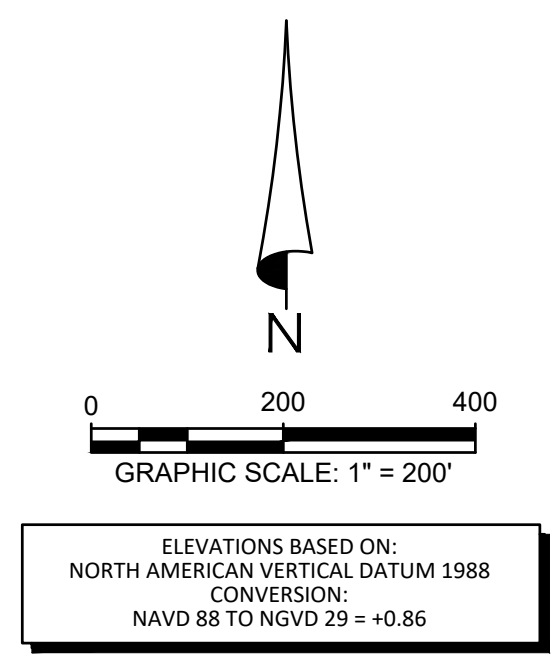
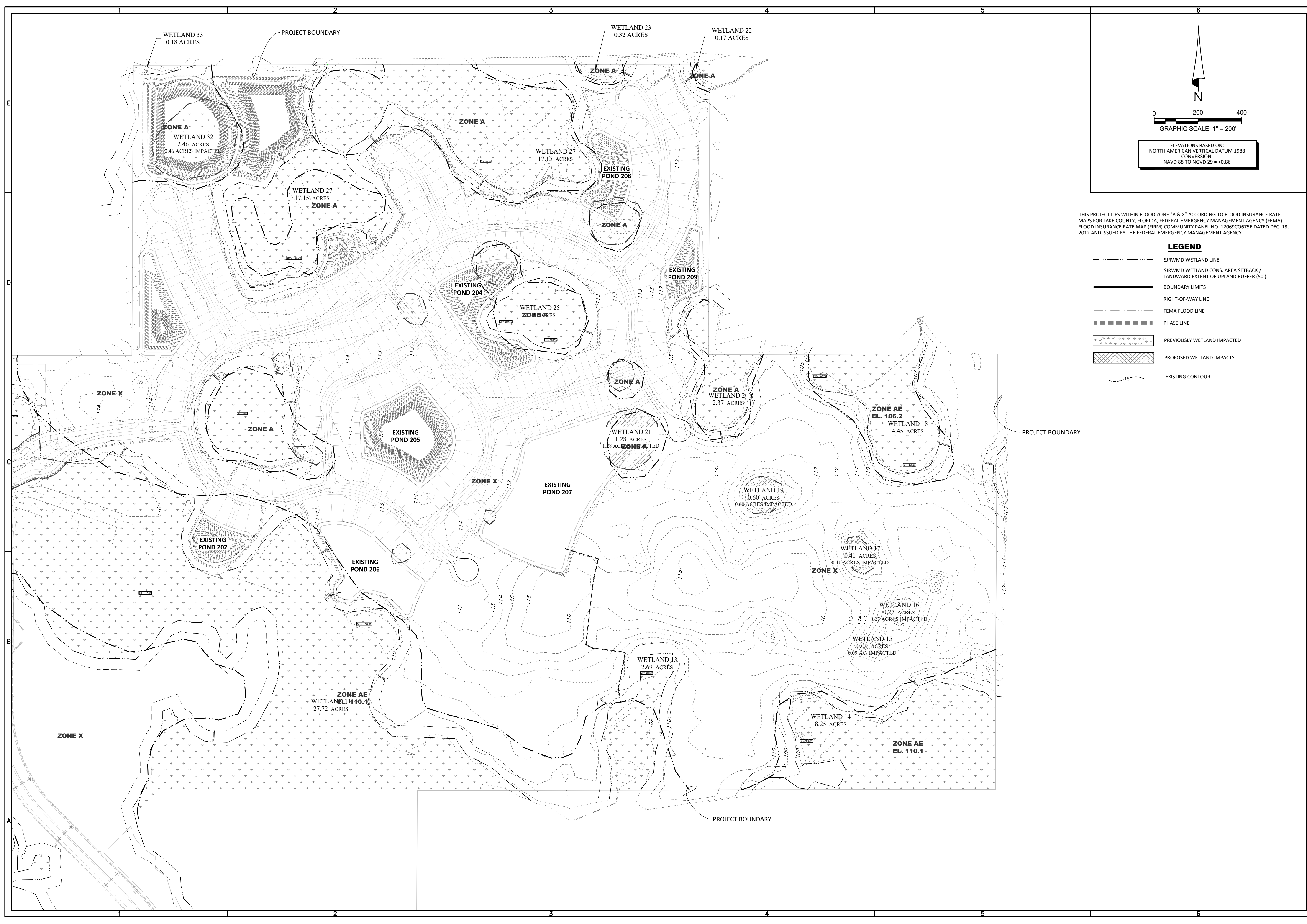
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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C-104



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- PROPOSED WETLAND IMPACTS
- EXISTING CONTOUR

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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4

EXISTING SITE CONDITIONS

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: EX-SITE
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

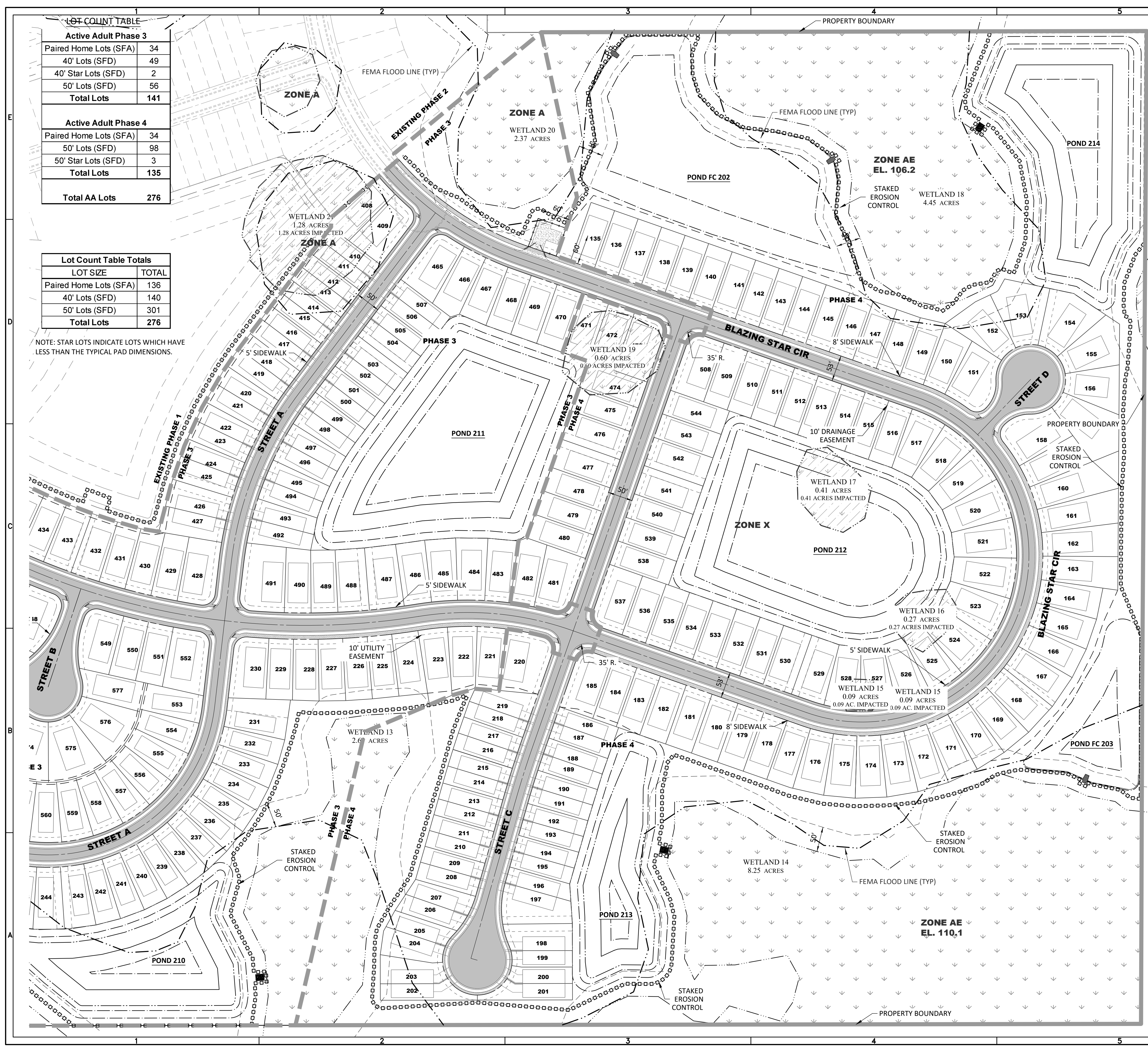
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C-105



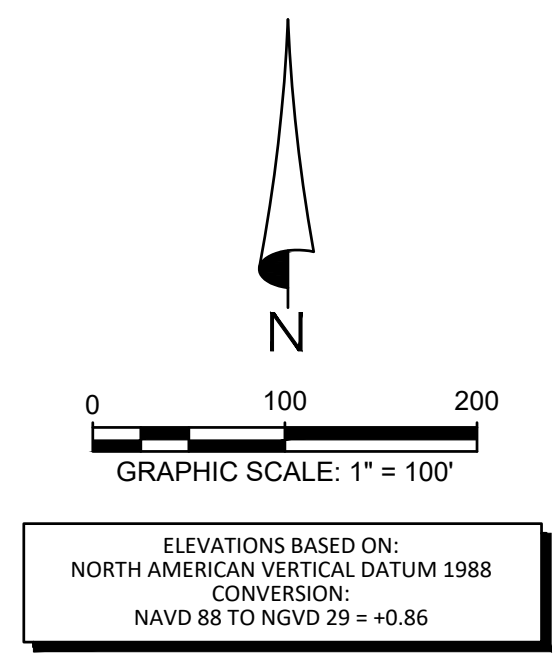
LOT COUNT TABLE

Active Adult Phase 3	
Paired Home Lots (SFA)	34
40' Lots (SFD)	49
40' Star Lots (SFD)	2
50' Lots (SFD)	56
Total Lots	141
Active Adult Phase 4	
Paired Home Lots (SFA)	34
50' Lots (SFD)	98
50' Star Lots (SFD)	3
Total Lots	135
Total AA Lots	276

Lot Count Table Totals

LOT SIZE	TOTAL
Paired Home Lots (SFA)	136
40' Lots (SFD)	140
50' Lots (SFD)	301
Total Lots	276

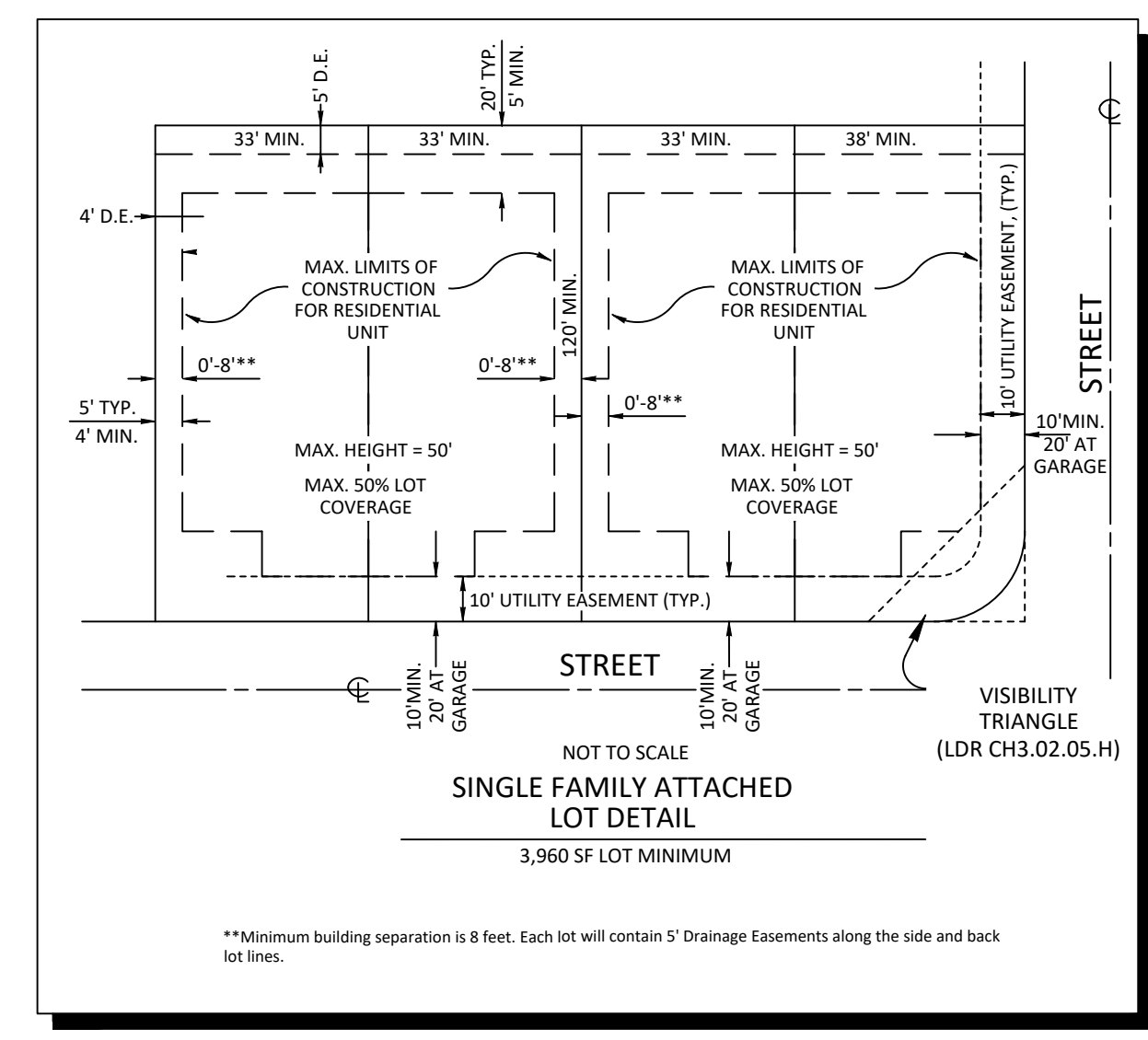
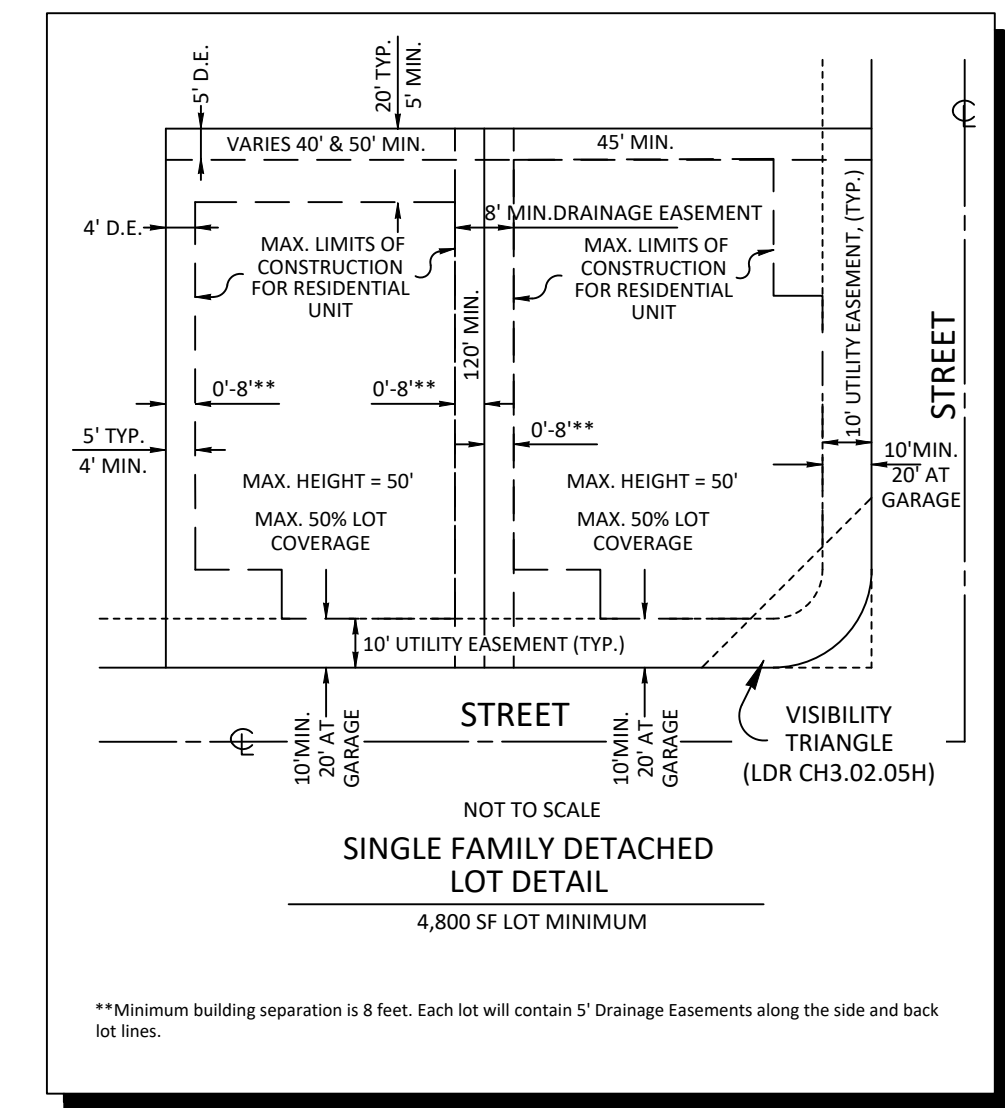
NOTE: STAR LOTS INDICATE LOTS WHICH HAVE LESS THAN THE TYPICAL PAD DIMENSIONS.



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 SITE PLAN

DR HORTON

PREPARED FOR

DATE	DESCRIPTION
10/22/2019 <td>REVIEW SUBMITTAL</td>	REVIEW SUBMITTAL
1	

PROJECT NO: FRE SN 1002
FILE: SITE
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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DATE: 10/22/2019
LICENSE NO. 52717

C-106

R-AVALON GROVES/ACTIVE ADULT PHASE 3 & 4/ENGINEERING SITE DWG-C-106-20190322 1:20 PM MARK LONES

Avalon Groves PUD - Min. Open Space Requirements

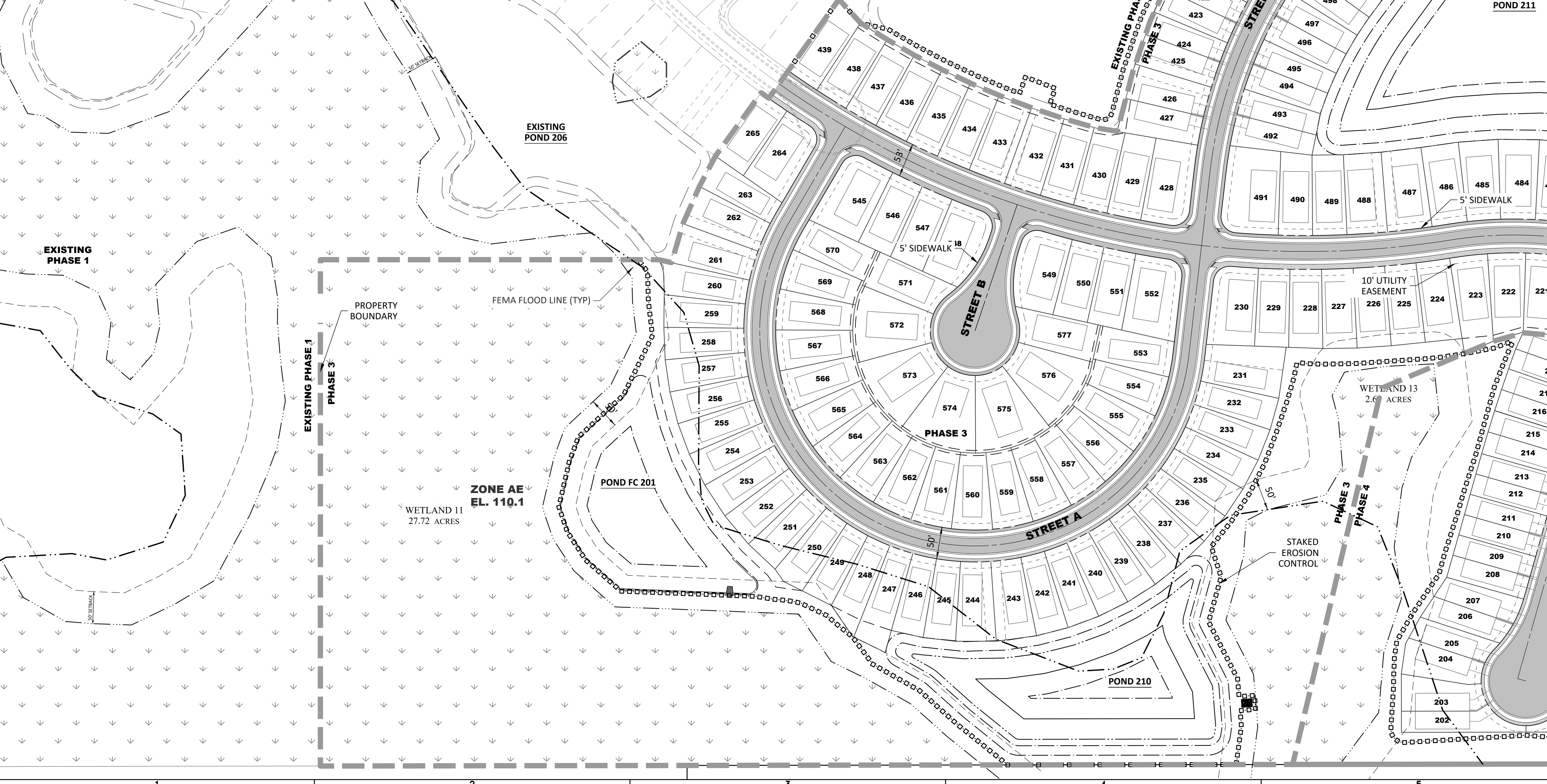
Tract Designation - FLU	Land Use	Acres	Min. O/S %	Min. O/S Required (Ac.)
North Tract - Rural Transition	Residential	188.98	50%	94.49
North Tract - Rural Transition	Wetlands	92.23	50%	46.12
South Tract - Urban Low	Residential	335.07	25%	83.77
South Tract - Urban Low	Village Center (Rec)	10	25%	2.50
South Tract - Urban Low	Wetlands	359.31	25%	89.83
TOTALS		985.59		316.70

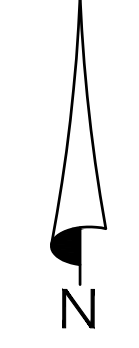
NOTE: Per Avalon Groves Special Master Agreement (SM-05-16), Open Space acreage may be distributed across the entirety of the project regardless of Future Land Use designation. Further, wetland acreage within the Avalon Groves PUD is eligible to be designated as Open Space.

Avalon Groves PUD - Open Space Provided

Tract Designation - Phase	Land Use	Acres	O/S Provided (Ac.)	O/S Remaining to be Provided
Villages 1 & 2 - Phase 1A	Residential	88.91	19.31	297.39
Villages 1 & 2 - Phase 1A	Wetlands	52.95	52.95	244.44
Serenoa Active Adult Parcel - Phase 1	Residential	100.63	42.39	202.05
Serenoa Active Adult Parcel - Phase 1	Wetlands	40.25	40.25	161.80
Serenoa Active Adult Parcel - Phase 2	Residential	27.58	8.35	153.45
Serenoa Active Adult Parcel - Phase 2	Wetlands	7.57	7.57	145.88
Serenoa Village 1 - Phase 1B-1	Residential	19.45	10.36	135.52
Serenoa Village 1 - Phase 1B-1	Wetlands	63.22	63.22	72.30
Serenoa Village 1 - Phase 1B-2	Residential	16.35	8.93	63.37
Serenoa Village 1 - Phase 1B-2	Wetlands	10.88	10.88	52.49
Serenoa Village 2 - Phase 1B-1	Residential	13.65	0.00	52.49
Serenoa Village 2 - Phase 1B-1	Wetlands	5.39	5.39	47.10
Serenoa Village 2 - Phase 1B-2	Residential	20.26	7.41	39.69
Serenoa Village 2 - Phase 1B-2	Wetlands	14.38	14.38	25.31
Serenoa Active Adult Parcel - Phase 3	Residential	45.30	11.98	13.33
Serenoa Active Adult Parcel - Phase 3	Wetlands	4.17	4.17	9.16
Serenoa Active Adult Parcel - Phase 4	Residential	47.52	22.07	-12.91
Serenoa Active Adult Parcel - Phase 4	Wetlands	13.31	13.31	-26.22
TOTALS		591.77	342.92	-26.22

Note: O/S Requirements for Serenoa have been met.




 0 100 200
 GRAPHIC SCALE: 1" = 100'
 ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86

THIS PROJECT LIES WITHIN FLOOD ZONE "A" & "X" ACCORDING TO FLOOD INSURANCE RATE MAPS FOR LAKE COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12069C0675E DATED DEC. 18, 2012 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SITE PLAN
 DR HORTON
 PREPARED FOR

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

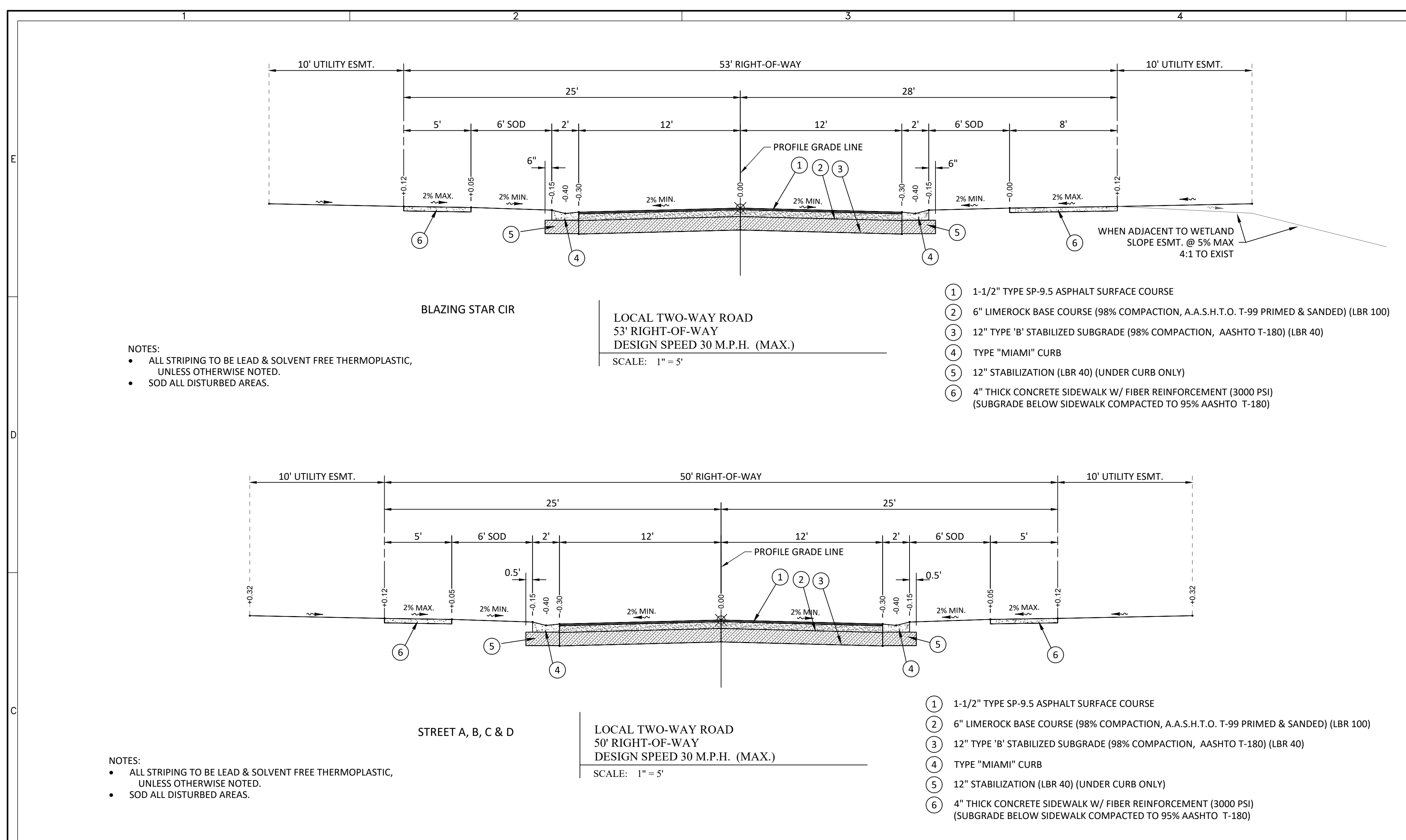
PROJECT NO: FRE SN 1002
 FILE: SITE
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717
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 DATE: _____
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C-107

R-AVALON GROVES ACTIVE ADULT PHASE 3 & 4 ENGINEERING SITE DWG-C-107 20190322 1:28 PM MARK LONES
 Engineering Business Certificate of Authorization No. 28792
 Landscape Architecture Certificate of Authorization No. LC26000005



PAVEMENT CONSTRUCTION NOTES:

1. SUBGRADE
THE FOLLOWING ARE MINIMUM STANDARDS FOR THE STABILIZED SUBGRADE:
WIDTH - THE SUBGRADE SHALL BE TWO (2) FEET WIDER THAN THE BASE COURSE (ONE (1) FOOT EACH SIDE) AND IN THE CASE OF CURB AND GUTTER SHALL EXTEND SIX (6) INCHES BEHIND THE CURB.
DEPTH - THE SUBGRADE SHALL HAVE A MINIMUM DEPTH OF 12-INCHES.
COMPACTION - THE SUBGRADE SHALL BE COMPACTED TO 98% DENSITY HAVING A MINIMUM LBR 40.
CARE OF SUBGRADE - TRUCKS WILL BE ALLOWED ON FINISHED SUBGRADE TO DUMP BASE COURSE, BUT CONTRACTOR WILL BE REQUIRED TO LEVEL OUT RUTS. IN THE EVENT THE TRUCKS CAUSE TOO MUCH DAMAGE TO THE SUBGRADE, THE COUNTY MANAGER OR DESIGNEE MAY REQUIRE DUMPING, SPREADING, AND HAULING ON THE BASE COURSE.

2. SHOULDERS
THE FOLLOWING ARE MINIMUM STANDARDS FOR SHOULDERS:
WIDTH - SHOULDERS SHALL BE EIGHT FEET WIDE. A REDUCTION IN THE WIDTH REQUIREMENT MAY BE ALLOWED IF APPROVED BY THE COUNTY MANAGER OR DESIGNEE.
DEPTH - SHOULDERS SHALL HAVE A MINIMUM DEPTH OF SIX INCHES.
COMPACTION - SHOULDERS SHALL BE COMPACTED TO 95% COMPACTION LBR 40.
GRADING - SHOULDERS SHALL BE GRADED WITH A MINIMUM CROSS-SLOPE OF 1/4" INCH/FOOT.

3. BASE COURSE
THE FOLLOWING ARE MINIMUM STANDARDS FOR THE BASE COURSE:
MATERIAL - SOIL CEMENT IS ACCEPTABLE MATERIAL TYPES FOR THE ROAD BASE. OTHER MATERIALS MAY BE USED IF APPROVED BY THE COUNTY MANAGER OR DESIGNEE.
WIDTH - ALL BASES SHALL BE ONE (1) FOOT WIDER (SIX (6) INCHES EACH SIDE) THAN THE FINISHED SURFACE.
DEPTH - THE BASE SHALL HAVE A MINIMUM DEPTH OF SIX INCHES. HEAVY DUTY ROADS SHALL HAVE A BASE WITH A MINIMUM DEPTH OF EIGHT INCHES PLACED IN TWO LIFTS.
STRENGTH - SOIL CEMENT BASE SHALL HAVE A SEVEN DAY DESIGN COMPRESSIVE STRENGTH OF AT LEAST 300 PSI.
COMPACTION - LIMEROCK BASE (IF USED) SHALL BE COMPACTED TO A MINIMUM 98% DENSITY AS DETERMINED BY AASHTO T-180. LBR 100
FORMS - NO FORM BOARDS WILL BE REQUIRED UNLESS, IN THE OPINION OF THE COUNTY MANAGER OR DESIGNEE, THE CONTRACTOR IS NOT TAKING PRECAUTIONS TO OBTAIN THE FULL DEPTH AT THE EDGES.
GRADING - THE BASE SHALL BE GRADED AND ROLLED TO CONFORM TO THE GRADE AND CROSS-SLOPE OF THE FINISHED ROADWAY.
PRIME COAT - PRIME COAT SHALL BE APPLIED TO ALL BASE COURSES, AND SAND SEALED.

NOTE: ROADWAYS DESIGNED WITH UNDERDRAINS SHALL UTILIZE BASE MATERIAL OF CRUSHED CONCRETE OR SOIL CEMENT AS NOTED IN THE GEOTECHNICAL REPORT.

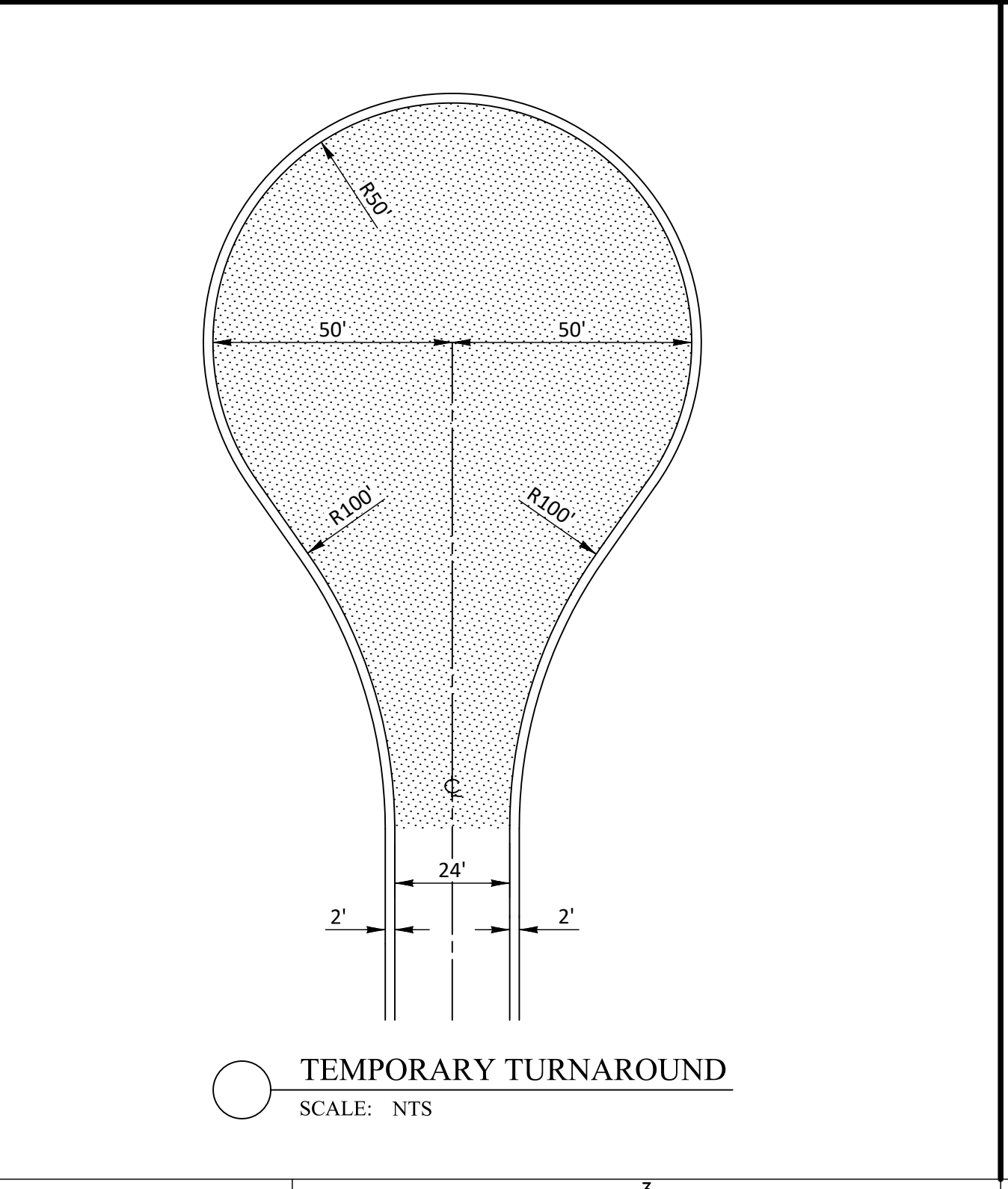
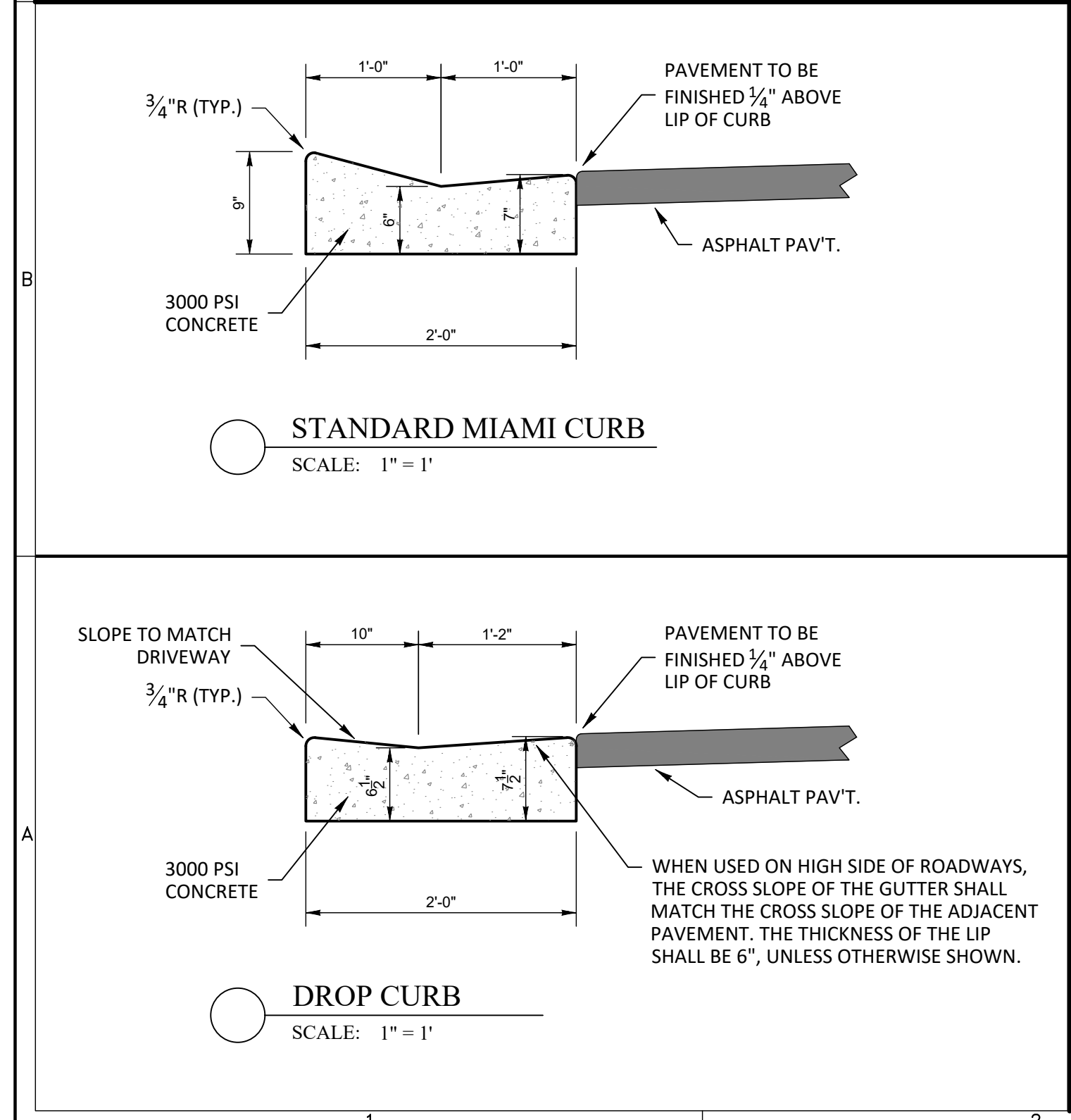
4. WEARING SURFACE
THE FOLLOWING ARE MINIMUM STANDARDS FOR PAVEMENT WEARING SURFACE:
MATERIAL - SP 9.5 ASPHALTIC CONCRETE SHALL BE USED FOR THE ROAD WEARING SURFACE. OTHER ASPHALT TYPES MAY BE USED IF REQUIRED BY THE COUNTY MANAGER OR DESIGNEE.
DEPTH - ROADS SHALL HAVE A MINIMUM 1 1/2" INCH DEPTH OF WEARING SURFACE. THE MINIMUM DEPTH MAY BE INCREASED IF REQUIRED BY THE COUNTY MANAGER OR DESIGNEE.
HEAVY DUTY ROADS - HEAVY DUTY SHALL HAVE A WEARING SURFACE CONSISTING OF MINIMUM OF TWO INCHES OF SP 12.5 ASPHALTIC CONCRETE OVERLAYED WITH A ONE INCH FRICTION COURSE. THE TYPE OF MATERIAL TO BE USED FOR THE FRICTION COURSE SHALL BE DETERMINED BY THE COUNTY MANAGER OR DESIGNEE.
GRADING - ROAD SURFACES SHALL BE GRADED WITH A MINIMUM CROSS-SLOPE OF 1/4" INCH/FOOT.

5. CURB AND GUTTER
THE WIDTH OF CURB AND GUTTER SHALL BE A MINIMUM OF TWENTY-FOUR (24) INCHES AND SHALL BE EITHER FLORIDA DEPARTMENT OF TRANSPORTATION TYPE F (STANDARD CURB AND GUTTER) OR MIAMI TYPE, DEPENDING UPON THE FLOW TO BE HANDLED. FOOT TYPE D (SIMPLE VERTICAL CURBING) WILL NOT BE ACCEPTABLE. FOOT TYPE A (MOUNTABLE MEDIAN CURB) MAY BE USED AROUND MEDIAN DIVIDERS ON THE HIGH SIDE OF PAVEMENT. THERE SHALL BE A STABILIZED SUBGRADE BENEATH ALL CURB AND GUTTER.
NO WATER VALVE BOXES, METERS, PORTIONS OF MANHOLES, OR OTHER APPURTENANCES OF ANY KIND RELATING TO ANY UNDERGROUND UTILITIES SHALL BE LOCATED IN ANY PORTION OF A CURB AND GUTTER SECTION.
THE CURB AND GUTTER FLOW LINE GRADES SHALL RUN PARALLEL TO THE ROAD CENTERLINE GRADE. THE MINIMUM ALLOWABLE FLOW LINE GRADE OF CURBS AND GUTTERS SHALL BE 0.30%, EXCEPT IN INTERSECTIONS WHERE FLATTER GRADES SHALL BE ALLOWABLE.
JOINTS SHALL BE SAWS (UNLESS AN ALTERNATE METHOD IS USED) AT INTERVALS OF TEN (10) FEET, EXCEPT WHERE SHORTER INTERVALS ARE REQUIRED FOR CLOSURES, BUT, IN NO CASE, LESS THAN FOUR (4) FEET. JOINTS SHALL BE CUT ON THE SAME DAY THAT THE CURB AND GUTTER IS POURED.
ALL CROSS-STREET VALLEY GUTTERS SHALL BE CONSTRUCTED OF CONCRETE.

6. DECORATIVE PAVEMENT
THE USE OF DECORATIVE PAVEMENT SHALL BE SUBJECT TO THE APPROVAL OF THE COUNTY MANAGER OR DESIGNEE. THE COUNTY SHALL NOT ASSUME THE MAINTENANCE OF DECORATIVE PAVEMENT SECTIONS. MAINTENANCE SHALL BE THE RESPONSIBILITY OF A HOMEOWNERS ASSOCIATION OR OTHER ACCEPTABLE ENTITY.
THE COUNTY SHALL HAVE THE RIGHT TO MODIFY, ALTER, OR REMOVE ALL OR A PORTION OF THE DECORATIVE PAVEMENT AS NECESSARY FOR ROADWAY IMPROVEMENTS OR IMPROVEMENTS FOR TRAFFIC SAFETY.
BOMANITE PAVEMENT - BOMANITE PAVEMENTS SHALL MEET THE REQUIREMENTS FOR CONCRETE PAVEMENT IN THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THE DEVELOPER SHALL SUBMIT TO THE COUNTY, FOR APPROVAL, MANUFACTURER SPECIFICATIONS CONFIRMING ADHERENCE TO THESE REGULATIONS.
PAVING BRICKS - THE USE OF PAVING BRICKS SHALL BE SUBJECT TO THE APPROVAL OF THE COUNTY. THE DEVELOPER SHALL SUBMIT TO THE COUNTY, FOR APPROVAL, MANUFACTURER'S LITERATURE AND TECHNICAL SPECIFICATIONS REGARDING THE STRUCTURAL STRENGTH, SKID RESISTANCE AND SUBGRADE REQUIREMENTS.

7. TESTING
TESTING SHALL BE PROVIDED AS PART OF CONSTRUCTION AND SHALL BE AT NO COST TO THE COUNTY. TESTING SHALL BE PERFORMED BY AN INDEPENDENT ENGINEERING TESTING LABORATORY CERTIFIED IN THE STATE OF FLORIDA.
THE FOLLOWING ARE MINIMUM TESTING REQUIREMENTS:
SUBGRADE - TESTING FOR THE SUBGRADE THICKNESS, BEARING VALUE AND DENSITY SHALL BE LOCATED NO MORE THAN FIVE HUNDRED (500) FEET APART AND SHALL BE STAGGERED TO THE LEFT, RIGHT AND ON THE CENTERLINE OF THE ROADWAY. THE COUNTY MAY ALSO REQUIRE ADDITIONAL TEST LOCATIONS AS DIRECTED BY THE COUNTY MANAGER OR DESIGNEE. THERE SHALL BE NO LESS THAN ONE (1) TEST PER ROAD. TESTING SHALL INCLUDE: MODIFIED PROCTOR MAXIMUM DENSITY, IN-PLACE FIELD DENSITY AND THICKNESS. TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE FDOT, AASHTO, OR ASTM STANDARDS. CERTIFIED TEST RESULTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL PRIOR TO PROCEEDING WITH THE BASE COURSE.
LIMEROCK BASE - TESTING FOR THE BASE THICKNESS AND DENSITY SHALL BE LOCATED NO MORE THAN 500-FEET APART AND SHALL BE STAGGERED TO THE LEFT, RIGHT AND ON THE CENTERLINE OF THE ROADWAY. THE COUNTY MAY ALSO REQUIRE ADDITIONAL TEST LOCATIONS AS DIRECTED BY THE COUNTY MANAGER OR DESIGNEE. THERE SHALL BE NO LESS THAN ONE TEST PER ROAD. TESTING SHALL INCLUDE: TEST CORES TAKEN AFTER SEVEN DAYS TO VERIFY THICKNESS AND TESTING TO VERIFY A MINIMUM SEVEN DAY COMPRESSIVE STRENGTH OF 300 PSI. TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE FDOT, AASHTO, OR ASTM STANDARDS. CERTIFIED TEST RESULTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL PRIOR TO PROCEEDING WITH THE WEARING SURFACE.
SOIL / CEMENT BASE - TESTING FOR THE BASE THICKNESS AND STRENGTH SHALL BE LOCATED NO MORE THAN 500-FEET APART AND SHALL BE STAGGERED TO THE LEFT, RIGHT AND ON THE CENTERLINE OF THE ROADWAY. THE COUNTY MAY ALSO REQUIRE ADDITIONAL TEST LOCATIONS AS DIRECTED BY THE COUNTY MANAGER OR DESIGNEE. THERE SHALL BE NO LESS THAN ONE TEST PER ROAD. TESTING SHALL INCLUDE: TEST CORES TAKEN AFTER SEVEN DAYS TO VERIFY THICKNESS AND TESTING TO VERIFY A MINIMUM SEVEN DAY COMPRESSIVE STRENGTH OF 300 PSI. TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE FDOT, AASHTO, OR ASTM STANDARDS. CERTIFIED TEST RESULTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL PRIOR TO PROCEEDING WITH THE WEARING SURFACE.
WEARING SURFACE - TESTING FOR WEARING SURFACE THICKNESS SHALL BE LOCATED NO MORE THAN 500-FEET APART AND SHALL BE STAGGERED TO THE LEFT, RIGHT AND ON THE CENTERLINE OF THE ROADWAY. THE COUNTY MAY ALSO REQUIRE ADDITIONAL TEST LOCATIONS AS DIRECTED BY THE COUNTY MANAGER OR DESIGNEE. THERE SHALL BE NO LESS THAN ONE TEST PER ROAD. TESTING SHALL INCLUDE: CERTIFIED DESIGN MIX SUBMITTED FOR APPROVAL PRIOR TO PLACING ASPHALT. EXTRACTIONS TAKEN IN FIELD AT LEAST ONE PER DAY AND CORINGS TO VERIFY THICKNESS. TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE FDOT, AASHTO, OR ASTM STANDARDS. CERTIFIED TEST RESULTS SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL.

8. ALL CONCRETE DRIVEWAYS TO BE 6" FIBER REINFORCED, 3,000 PSI.



LOCAL ROAD PAVEMENT CALCULATIONS

LAYER	COEFFICIENT	THICKNESS	SN
STRUCTURAL COURSE	0.44	1.50"	0.66
LIMEROCK BASE/CRUSHED CONCRETE	0.18	6.00"	1.08
STABILIZED SUBGRADE	0.08	12.00"	0.96
		SN =	2.70

ALT. LOCAL ROAD PAVEMENT CALCULATIONS

LAYER	COEFFICIENT	THICKNESS	SN
STRUCTURAL COURSE	0.44	1.75"	0.77
SOIL CEMENT BASE	0.15	10.00"	1.50
COMPACTED SUBGRADE	0.04	12.00"	0.48
		SN =	2.75

CONTRACTOR MAY PROPOSE ALTERNATE PAVEMENT DESIGNS. CONTRACTOR SHALL SUBMIT ANY PAVEMENT ALTERNATIVES TO ENGINEER FOR APPROVAL PRIOR TO FINAL SUBGRADE PREPARATIONS.

REVIEW SUBMITTAL

NO.	DATE	DESCRIPTION
1	05/22/2019	

PROJECT NO: FRE SN 1002
FILE: RS
DESIGN BY: MWD
DRAWN BY: DD

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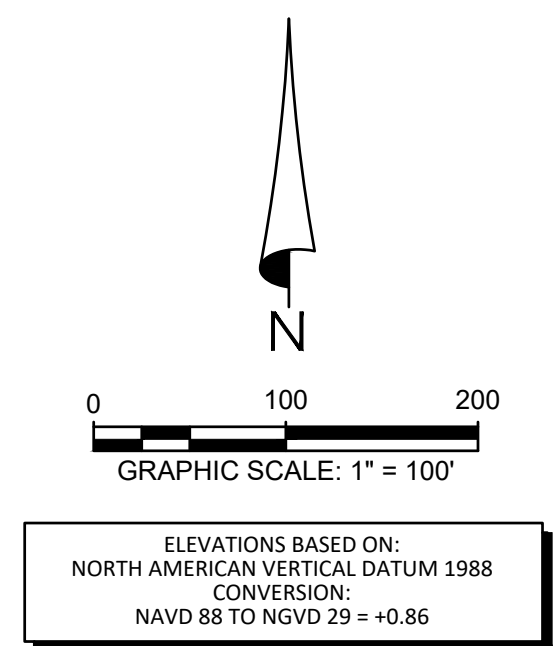
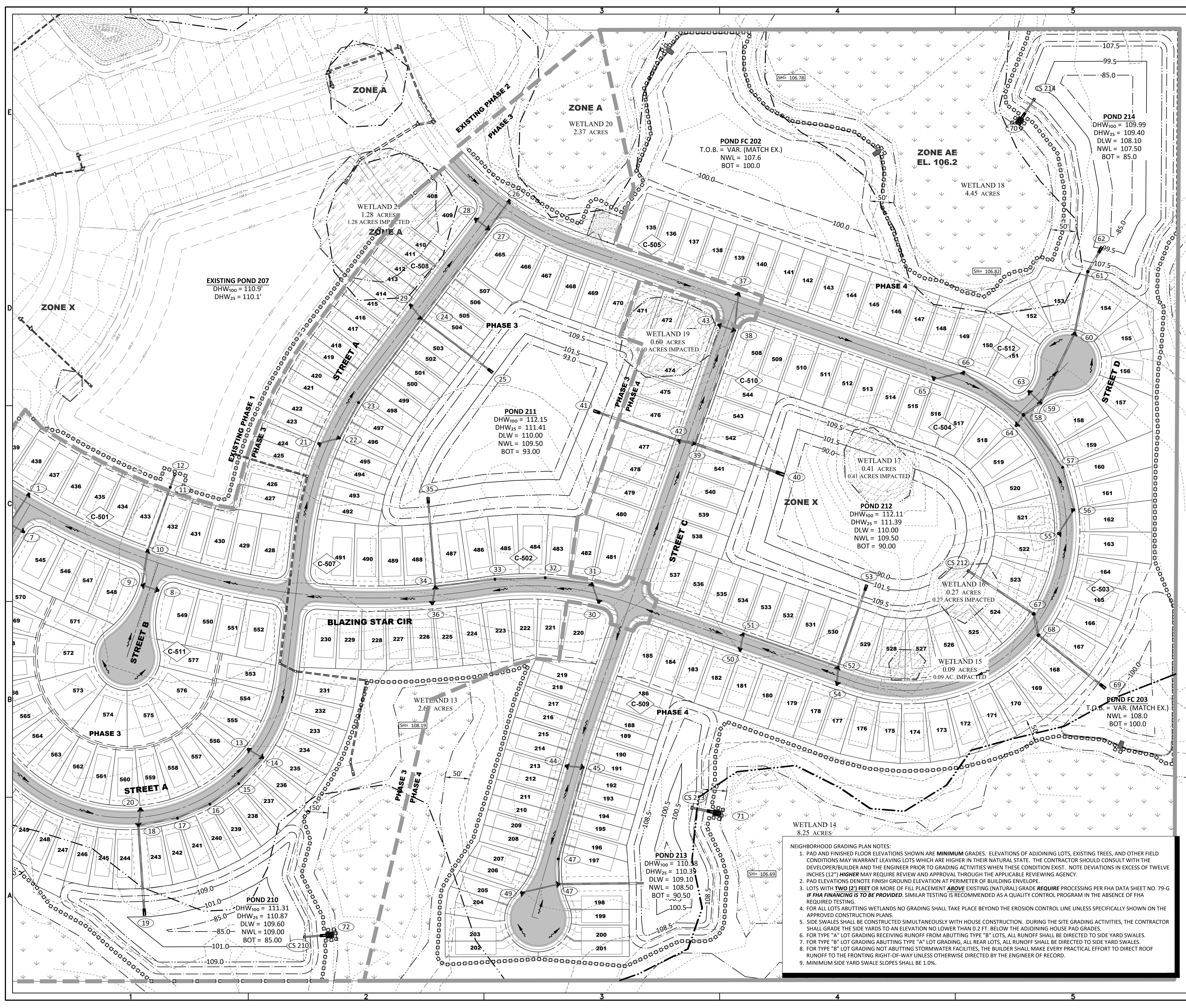
SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
TYPICAL ROADWAY SECTIONS

DR HORTON

PREPARED FOR:

RAVALON GROVE/ACTIVE ADULT PHASE 3 & 4 ENGINEERING DWG-C-200-201903022 1:20 PM MARK JONES

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CONVERSION: NAVD 88 TO NGVD 29 = +0.86

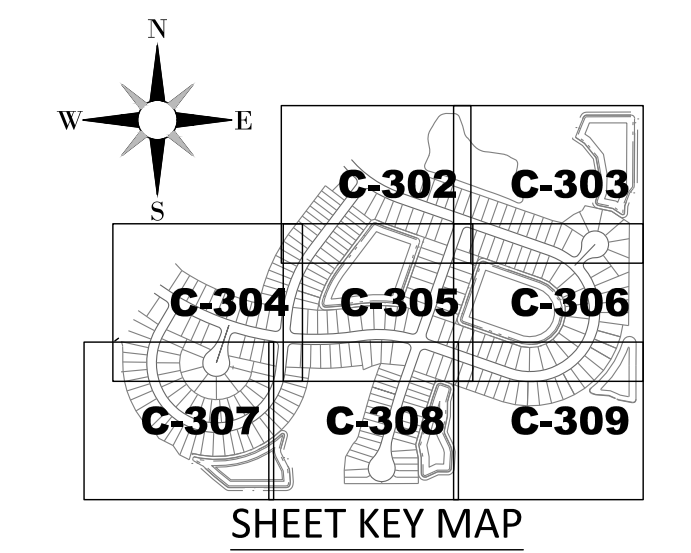
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- LEGEND**
- SJRWMD WETLAND LINE
 - SJRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - FEMA FLOOD LINE
 - BOUNDARY LIMITS
 - RIGHT-OF-WAY LINE

- DRAINAGE LEGEND**
- EXISTING
 - PROPOSED
 - STORM DRAINAGE STRUCTURE & PIPE
 - 10 STRUCTURE NO.
 - CS-F CONTROL STRUCTURE NO.
 - 15.00 SPOT ELEVATION GROUND
 - 15.00 SPOT ELEVATION PAVEMENT
 - 60.2 58.9 TOP OF WALL
 - 58.9 BOTTOM OF WALL (EXIST. ELEV.)
 - 15.00 ROADWAY PROFILE ELEVATION
 - 15.00 CONTOUR
 - FF=15.00 FINISH FLOOR ELEVATION
 - DIRECTION OF SURFACE FLOW
 - STAKED EROSION CONTROL (SJRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
 - FLOATING TURBIDITY BARRIER
 - BOTTOM OF POND/TOP OF BANK OF POND
 - C-505 PLAN & PROFILE SHEET NUMBER
 - A-A SECTION ID LABEL
 - C-317 SECTION SHEET NUMBER
 - P03 SOIL BORING

NEIGHBORHOOD GRADING PLAN NOTES:

- PAD AND FINISHED FLOOR ELEVATIONS SHOWN ARE MINIMUM GRADES. ELEVATIONS OF ADJOINING LOTS, EXISTING TREES, AND OTHER FIELD CONDITIONS MAY WARRANT LEAVING LOTS WHICH ARE HIGHER IN THEIR NATURAL STATE. THE CONTRACTOR SHOULD CONSULT WITH THE DEVELOPER/BUILDER AND THE ENGINEER PRIOR TO GRADING ACTIVITIES WHEN THESE CONDITIONS EXIST. NOTE DEVIATIONS IN EXCESS OF TWELVE INCHES (12") HIGHER MAY REQUIRE REVIEW AND APPROVAL THROUGH THE APPLICABLE REVIEWING AGENCY.
- PAD ELEVATIONS DENOTE FINISH GROUND ELEVATION AT PERIMETER OF BUILDING ENVELOPE.
- LOTS WITH TWO (2) FEET OR MORE OF FILL PLACEMENT ABOVE EXISTING NATURAL GRADE REQUIRE PROCESSING PER FHA DATA SHEET NO. 79-G IF FHA FINANCING IS TO BE PROVIDED. SIMILAR TESTING IS RECOMMENDED AS A QUALITY CONTROL PROGRAM IN THE ABSENCE OF FHA REQUIRED TESTING.
- FOR ALL LOTS ABUTTING WETLANDS NO GRADING SHALL TAKE PLACE BEYOND THE EROSION CONTROL LINE UNLESS SPECIFICALLY SHOWN ON THE APPROVED CONSTRUCTION PLANS.
- SIDE SWALES SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH HOUSE CONSTRUCTION. DURING THE SITE GRADING ACTIVITIES, THE CONTRACTOR SHALL GRADE THE SIDE YARDS TO AN ELEVATION NO LOWER THAN 0.2 FT. BELOW THE ADJOINING HOUSE PAD GRADES.
- FOR TYPE "A" LOT GRADING RECEIVING RUNOFF FROM ABUTTING TYPE "B" LOTS, ALL RUNOFF SHALL BE DIRECTED TO SIDE YARD SWALES.
- FOR TYPE "B" LOT GRADING ABUTTING TYPE "A" LOT GRADING, ALL RUNOFF SHALL BE DIRECTED TO SIDE YARD SWALES.
- FOR TYPE "B" LOT GRADING NOT ABUTTING STORMWATER FACILITIES, THE BUILDER SHALL MAKE EVERY PRACTICAL EFFORT TO DIRECT ROOF RUNOFF TO THE FRONTING RIGHT-OF-WAY UNLESS OTHERWISE DIRECTED BY THE ENGINEER OF RECORD.
- MINIMUM SIDE YARD SWALE SLOPES SHALL BE 1.0%.



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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
MASTER DRAINAGE PLAN

PREPARED FOR:	DATE	DESCRIPTION
DR HORTON		

PROJECT NO: FRE SN 1002
FILE: MD-KEY
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

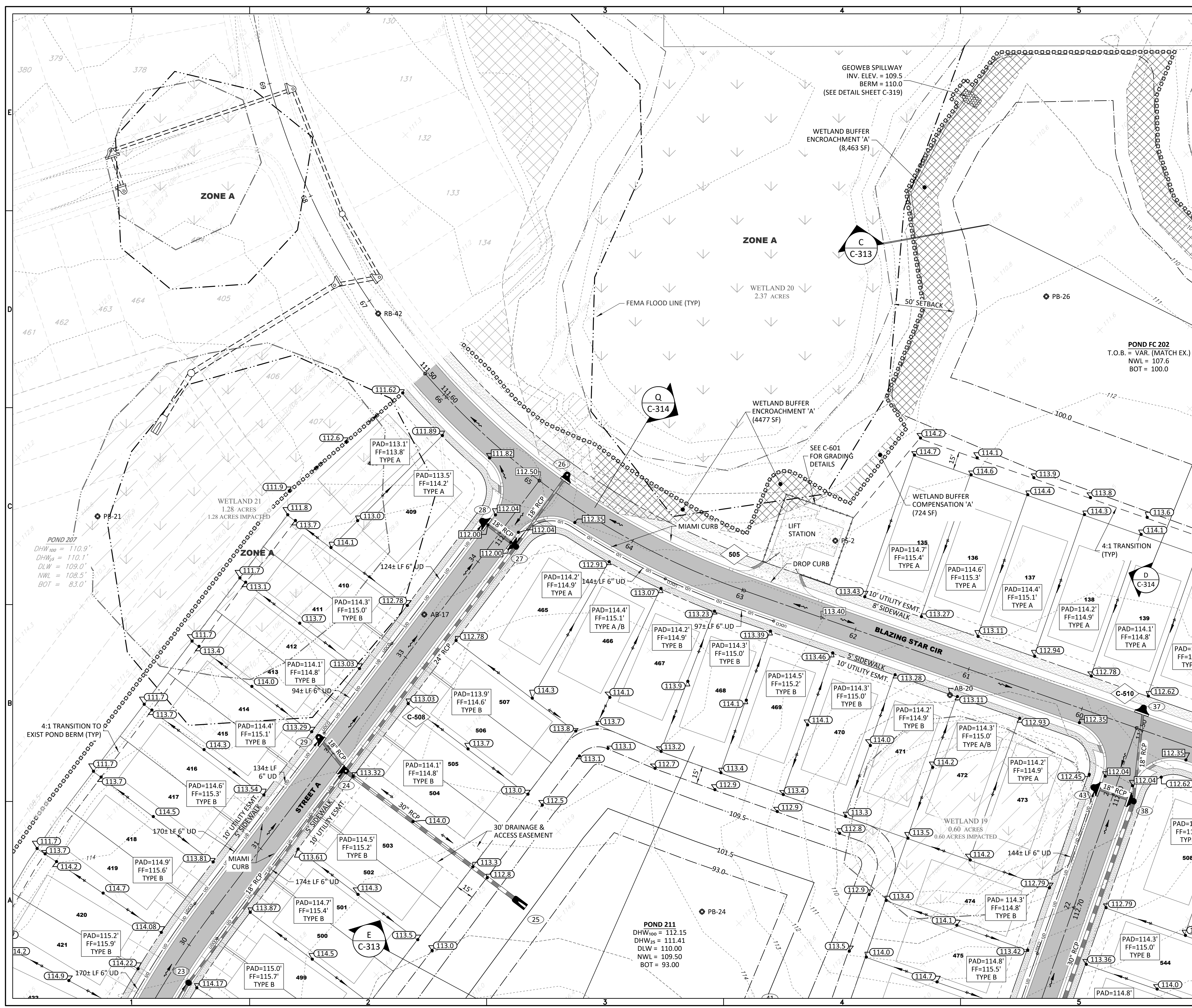
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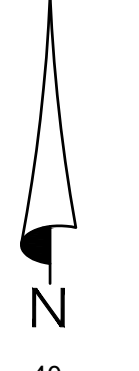
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DATE: 03/22/2019
LICENSE NO. 52177

C-301




 GRAPHIC SCALE: 1" = 40'
 ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86

ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION: NAVD 88 TO NGVD 29 = +0.86

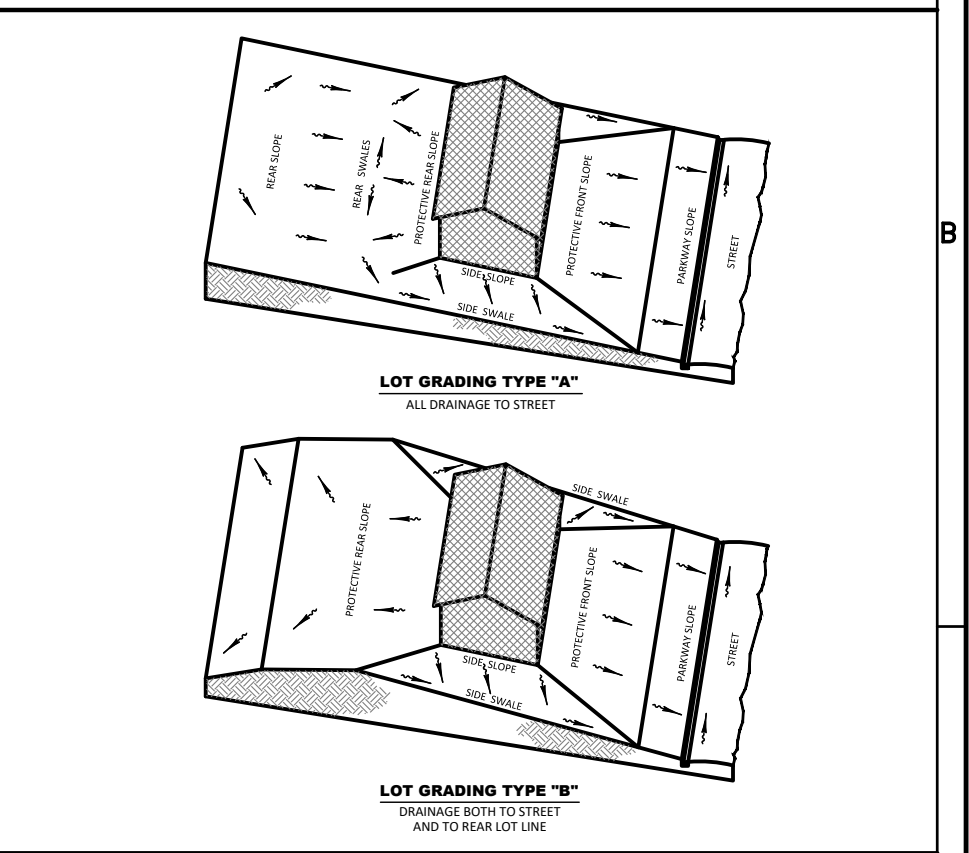
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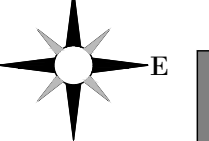
LEGEND

- SIRWMD WETLAND LINE
- SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- FEMA FLOOD LINE
- BOUNDARY LIMITS
- RIGHT-OF-WAY LINE
- PHASE LINE
- WETLAND BUFFER COMPENSATION
- WETLAND BUFFER ENCROACHMENT

DRAINAGE LEGEND

- STORM DRAINAGE STRUCTURE & PIPE
- STRUCTURE NO.
- CONTROL STRUCTURE NO.
- SPOT ELEVATION GROUND
- SPOT ELEVATION PAVEMENT
- TOP OF WALL
- BOTTOM OF WALL (EXIST. ELEV.)
- ROADWAY PROFILE ELEVATION
- CONTOUR
- FF=15.00 FINISH FLOOR ELEVATION
- DIRECTION OF SURFACE FLOW
- STAKED EROSION CONTROL (SIRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
- FLOATING TURBIDITY BARRIER
- BOTTOM OF POND/TOP OF BANK OF POND
- PLAN & PROFILE SHEET NUMBER
- SECTION ID LABEL
- SECTION SHEET NUMBER
- SOIL BORING




 SHEET KEY MAP
 C-302 C-303
 C-304 C-305 C-306
 C-307 C-308 C-309

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**SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 GRADING & DRAINAGE PLAN**

DR HORTON

PREPARED FOR	DATE	DESCRIPTION

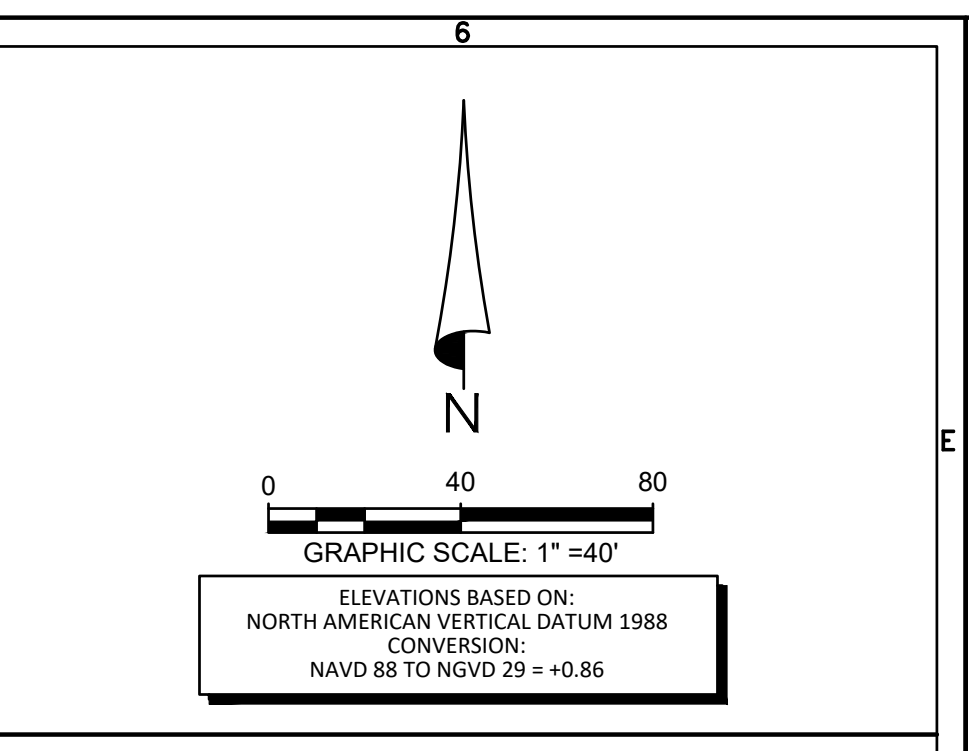
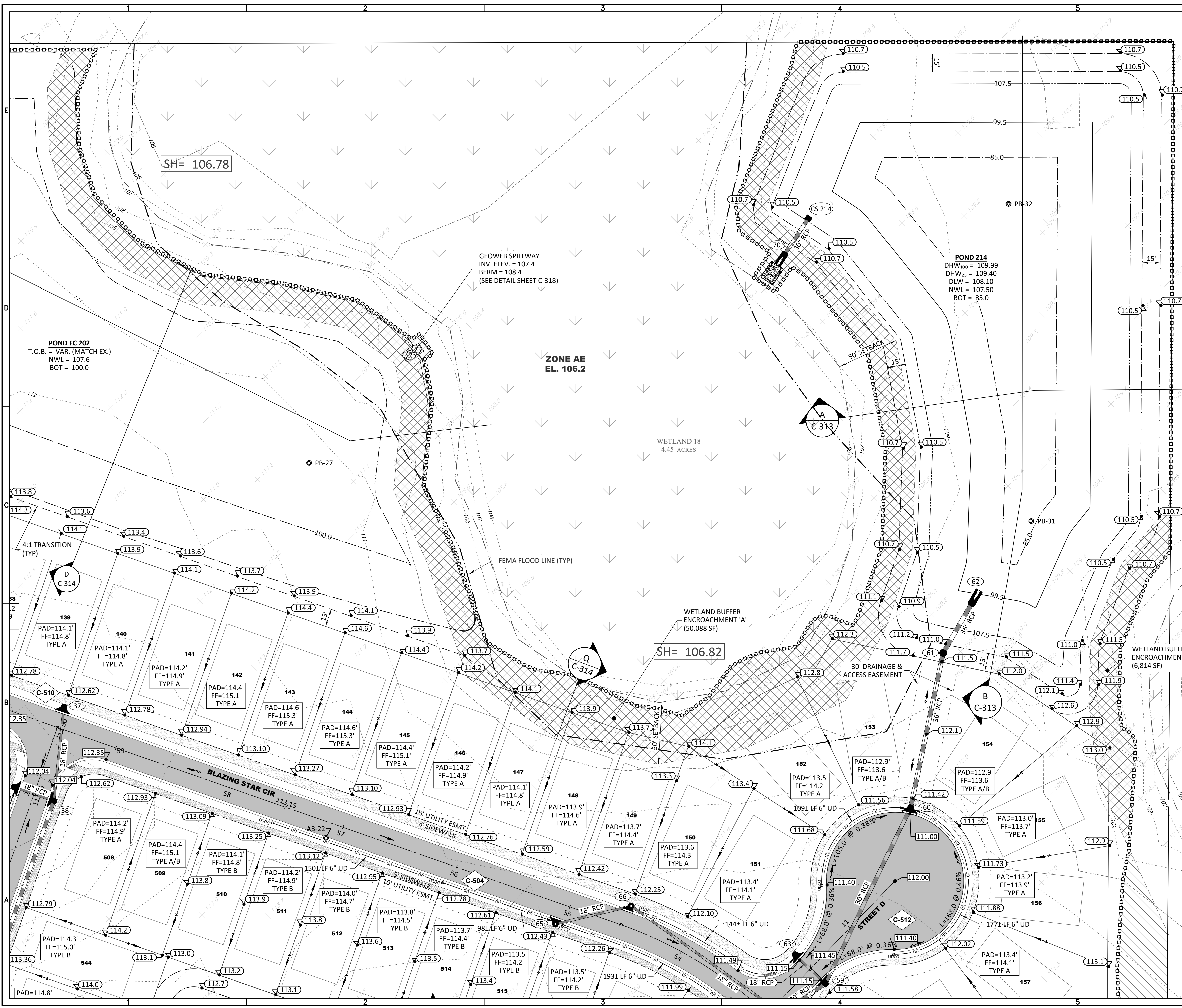
REVIEW SUBMITTAL	DATE	DESCRIPTION

PROJECT NO: FRE SN 1002
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 DRAWN BY: DD

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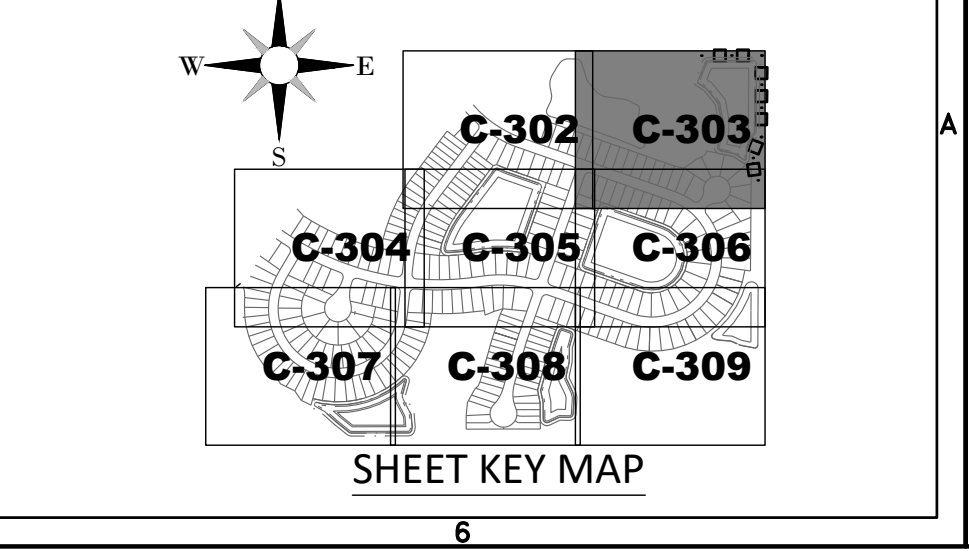
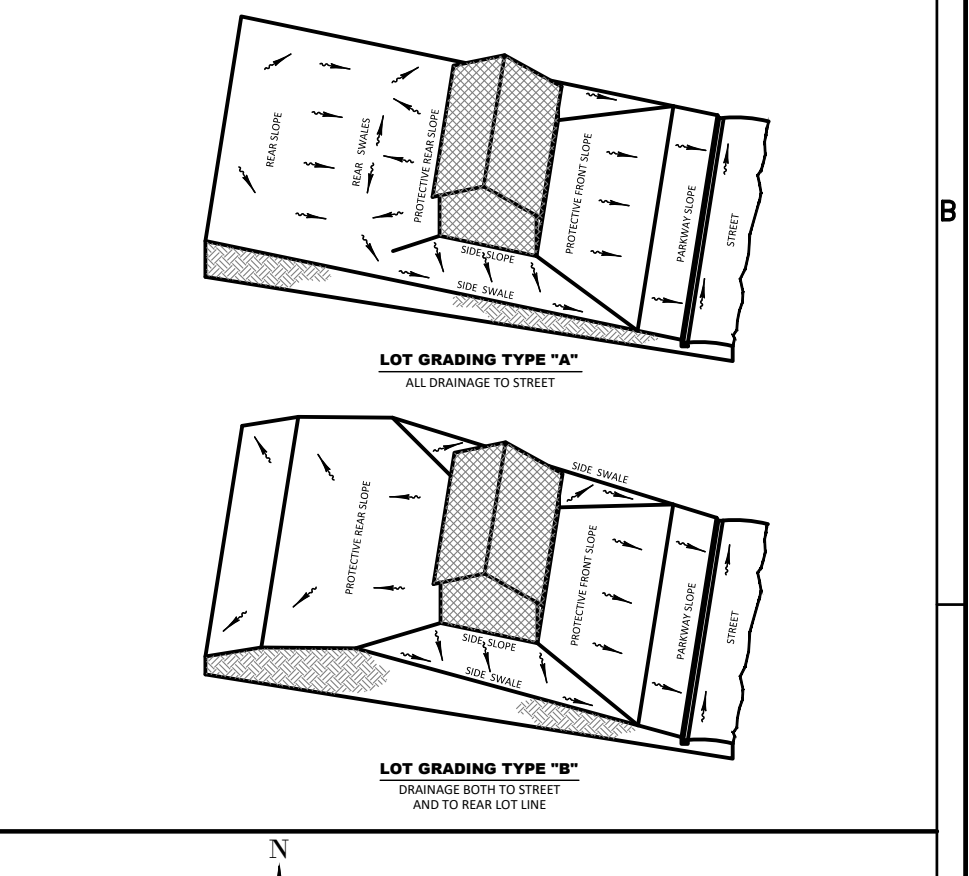


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 CONVERSION: NAVD 88 TO NGVD 29 = +0.86

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- LEGEND**
- SIRWMD WETLAND LINE
 - SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - FEMA FLOOD LINE
 - BOUNDARY LIMITS
 - RIGHT-OF-WAY LINE
 - PHASE LINE
 - WETLAND BUFFER COMPENSATION
 - WETLAND BUFFER ENCROACHMENT

- DRAINAGE LEGEND**
- EXISTING STORM DRAINAGE STRUCTURE & PIPE STRUCTURE NO.
 - PROPOSED STORM DRAINAGE STRUCTURE & PIPE STRUCTURE NO.
 - CONTROL STRUCTURE NO.
 - SPOT ELEVATION GROUND
 - SPOT ELEVATION PAVEMENT
 - TOP OF WALL
 - BOTTOM OF WALL (EXIST. ELEV)
 - ROADWAY PROFILE ELEVATION
 - CONTOUR
 - FINISH FLOOR ELEVATION
 - DIRECTION OF SURFACE FLOW
 - STAKED EROSION CONTROL (SIRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
 - FLOATING TURBIDITY BARRIER
 - BOTTOM OF POND/TOP OF BANK OF POND
 - PLAN & PROFILE SHEET NUMBER
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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 GRADING & DRAINAGE PLAN

DR HORTON

PREPARED FOR	DATE	DESCRIPTION

REVIEW SUBMITTAL	DATE	DESCRIPTION
1	09/27/2019	

PROJECT NO: FRE SN 1002
 FILE: GD
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

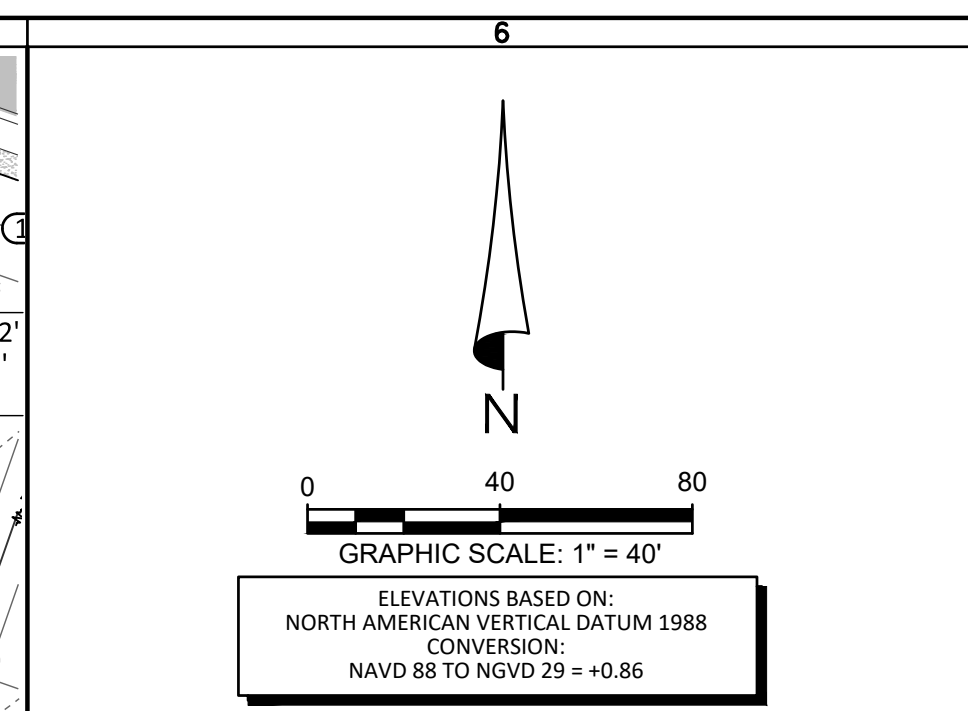
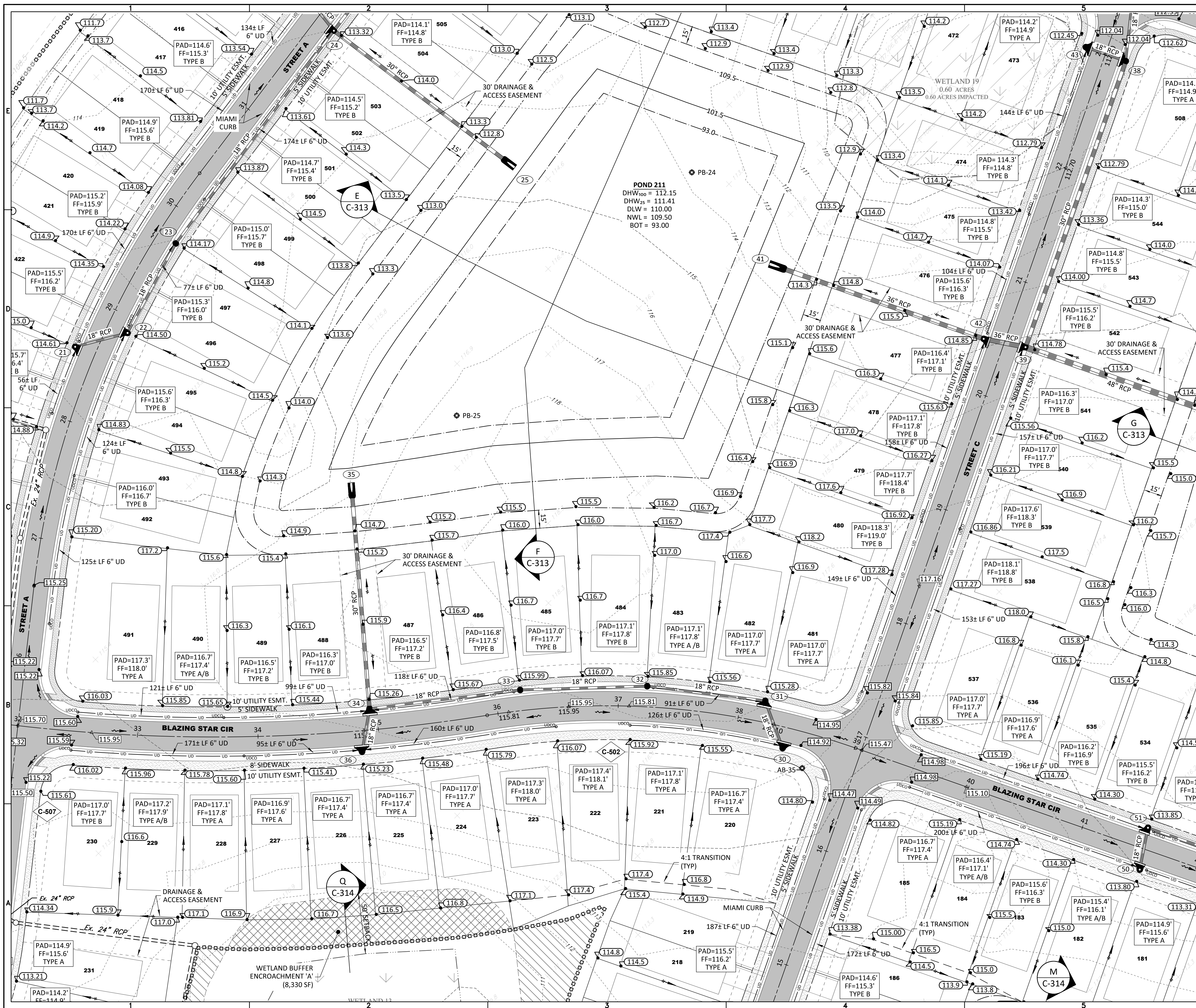
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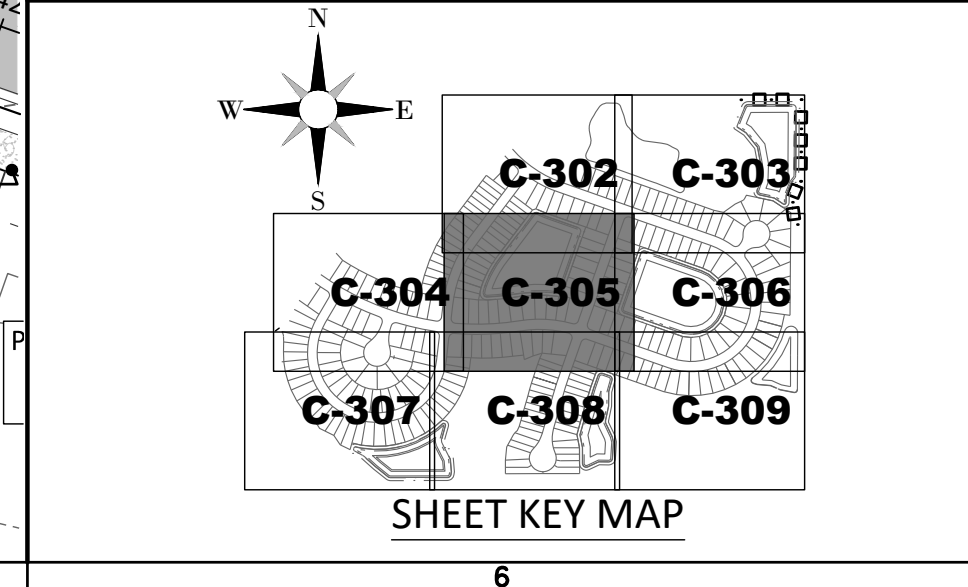
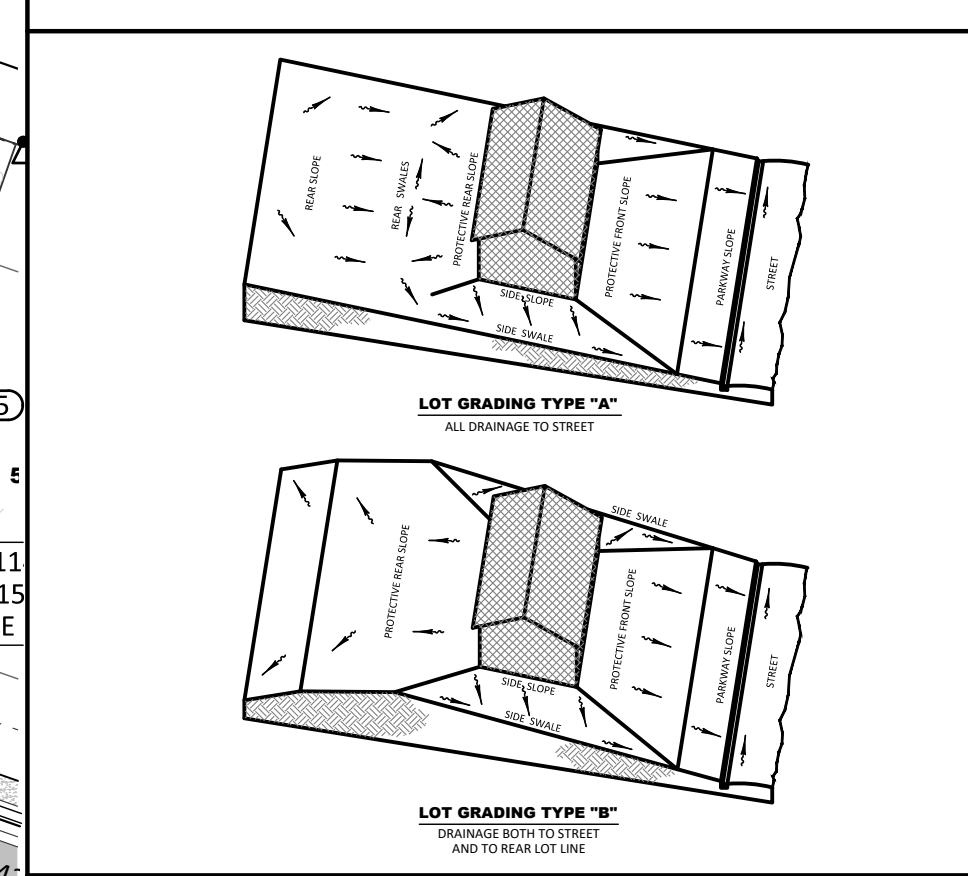


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- LEGEND**
- - - - - SJRWMD WETLAND LINE
 - - - - - SJRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - - - - - FEMA FLOOD LINE
 - - - - - BOUNDARY LIMITS
 - - - - - RIGHT-OF-WAY LINE
 - - - - - PHASE LINE
 - [Hatched Box] WETLAND BUFFER COMPENSATION
 - [Cross-hatched Box] WETLAND BUFFER ENCROACHMENT

- DRAINAGE LEGEND**
- [Symbol] EXISTING STORM DRAINAGE STRUCTURE & PIPE
 - [Symbol] PROPOSED STORM DRAINAGE STRUCTURE & PIPE
 - [Symbol] STRUCTURE NO.
 - [Symbol] CONTROL STRUCTURE NO.
 - [Symbol] SPOT ELEVATION GROUND
 - [Symbol] SPOT ELEVATION PAVEMENT
 - [Symbol] TOP OF WALL
 - [Symbol] BOTTOM OF WALL (EXIST. ELEV)
 - [Symbol] ROADWAY PROFILE ELEVATION
 - [Symbol] CONTOUR
 - [Symbol] FF=15.00 FINISH FLOOR ELEVATION
 - [Symbol] DIRECTION OF SURFACE FLOW
 - [Symbol] STAKED EROSION CONTROL (SJRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
 - [Symbol] FLOATING TURBIDITY BARRIER
 - [Symbol] BOTTOM OF POND/TOP OF BANK OF POND
 - [Symbol] PLAN & PROFILE SHEET NUMBER
 - [Symbol] SECTION ID LABEL
 - [Symbol] SECTION SHEET NUMBER
 - [Symbol] SOIL BORING



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
GRADING & DRAINAGE PLAN

DR. HORTON

DATE	DESCRIPTION
09/22/2019	REVIEW SUBMITTAL
	DATE
	DESCRIPTION

PROJECT NO: FRE SM 1002
FILE: GD
DESIGN BY: MWD
DRAWN BY: DD

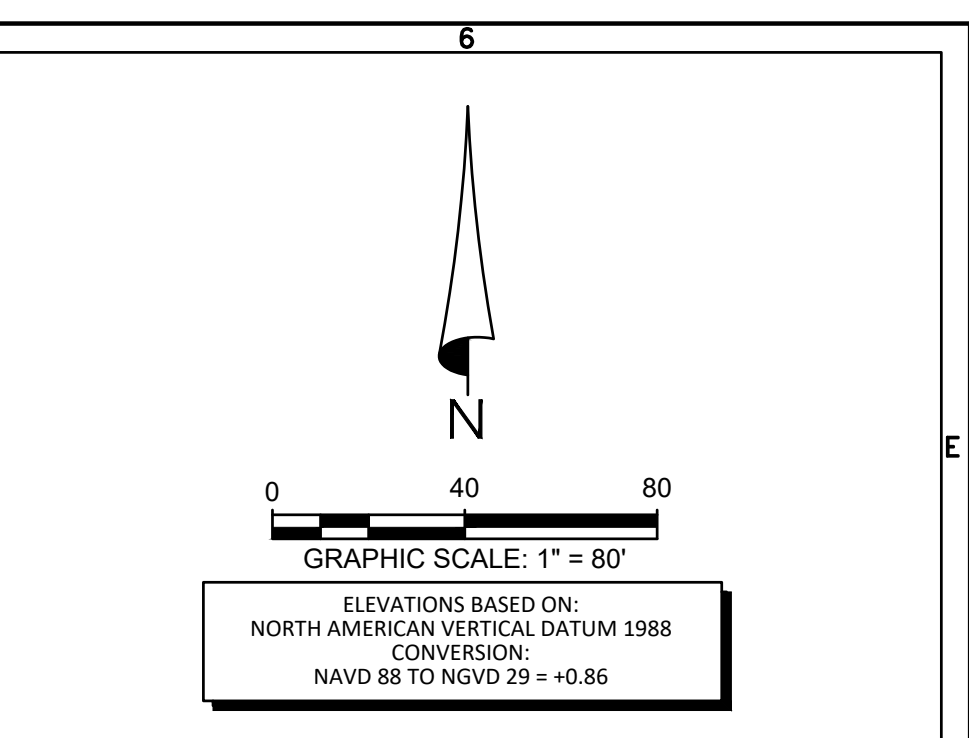
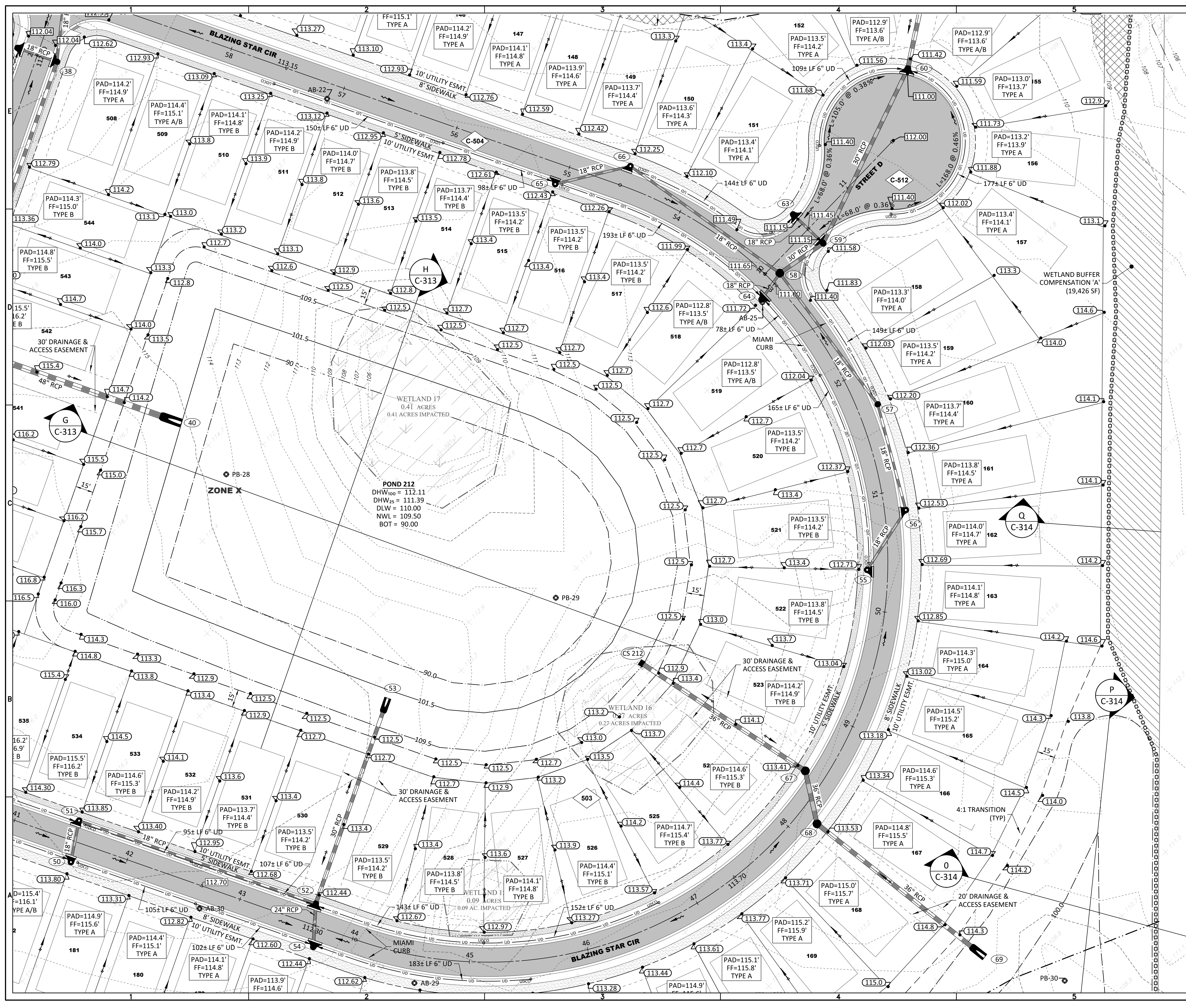
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PROFESSIONAL ENGINEER
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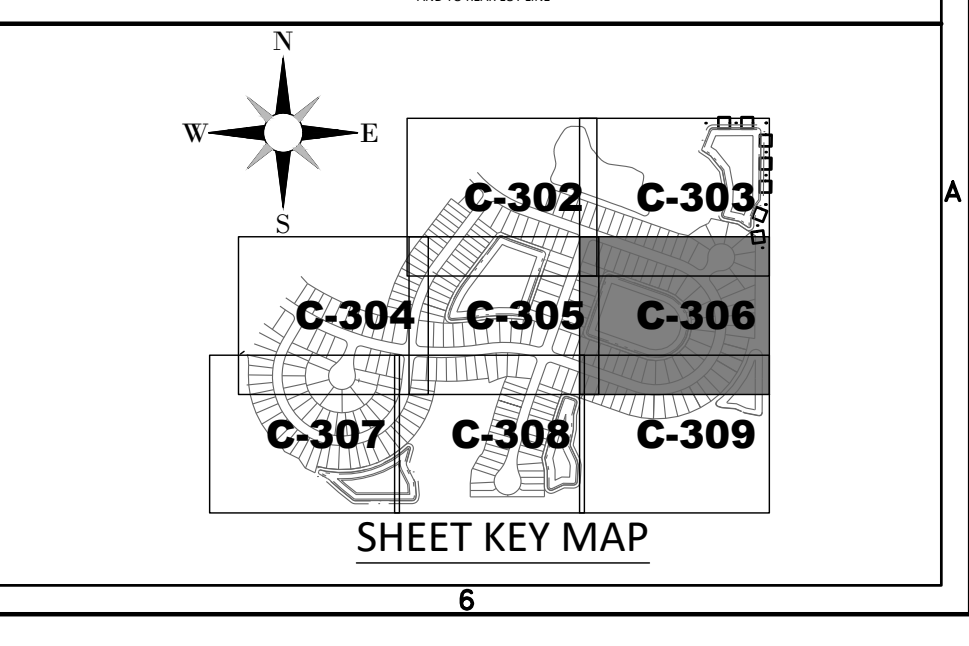
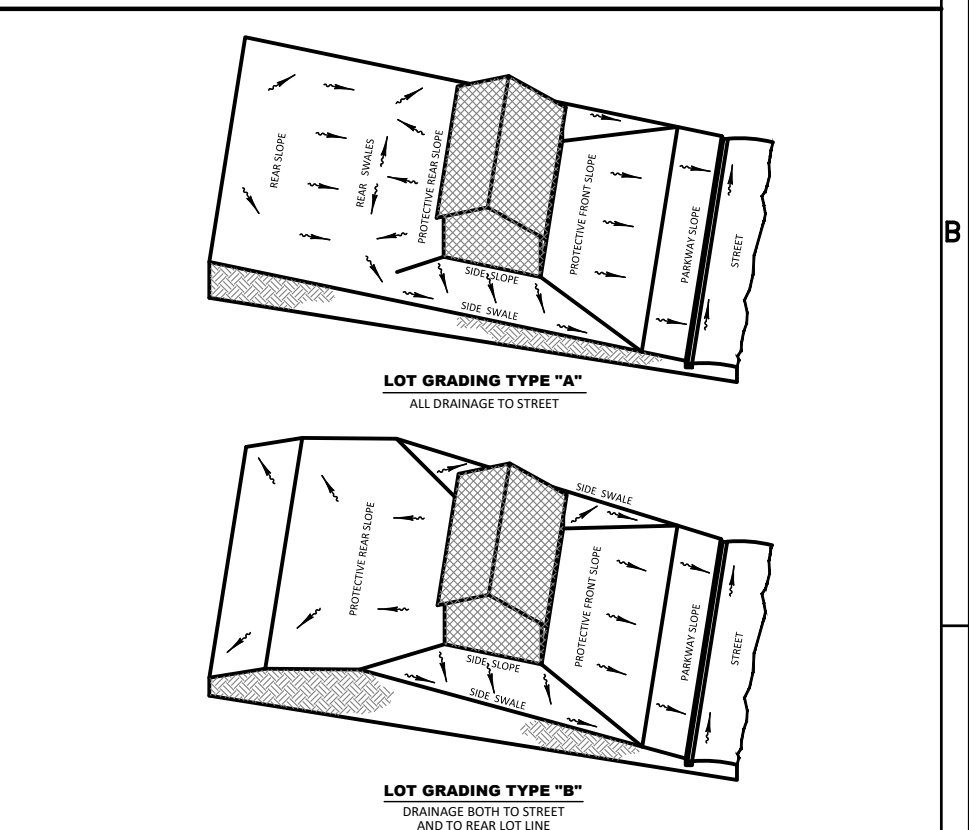


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CONVERSION: NAVD 88 TO NGVD 29 = +0.86

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- SIRWMD WETLAND LINE
 - SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - FEMA FLOOD LINE
 - BOUNDARY LIMITS
 - RIGHT-OF-WAY LINE
 - PHASE LINE
 - WETLAND BUFFER COMPENSATION
 - WETLAND BUFFER ENCROACHMENT

- DRAINAGE LEGEND**
- EXISTING STORM DRAINAGE STRUCTURE & PIPE
 - PROPOSED STORM DRAINAGE STRUCTURE & PIPE
 - STRUCTURE NO.
 - CONTROL STRUCTURE NO.
 - SPOT ELEVATION GROUND
 - SPOT ELEVATION PAVEMENT
 - TOP OF WALL
 - BOTTOM OF WALL (EXIST. ELEV)
 - ROADWAY PROFILE ELEVATION
 - CONTOUR
 - FINISH FLOOR ELEVATION
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 - SECTION SHEET NUMBER
 - SOIL BORING



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 GRADING & DRAINAGE PLAN

PREPARED FOR:	DATE:	DESCRIPTION:
DR HORTON		

REVIEW SUBMITAL	DATE	DESCRIPTION
1	03/22/2019	

PROJECT NO.:	FRE SN 1002
FILE:	GD
DESIGN BY:	MWD
DRAWN BY:	DD

STATE OF FLORIDA PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

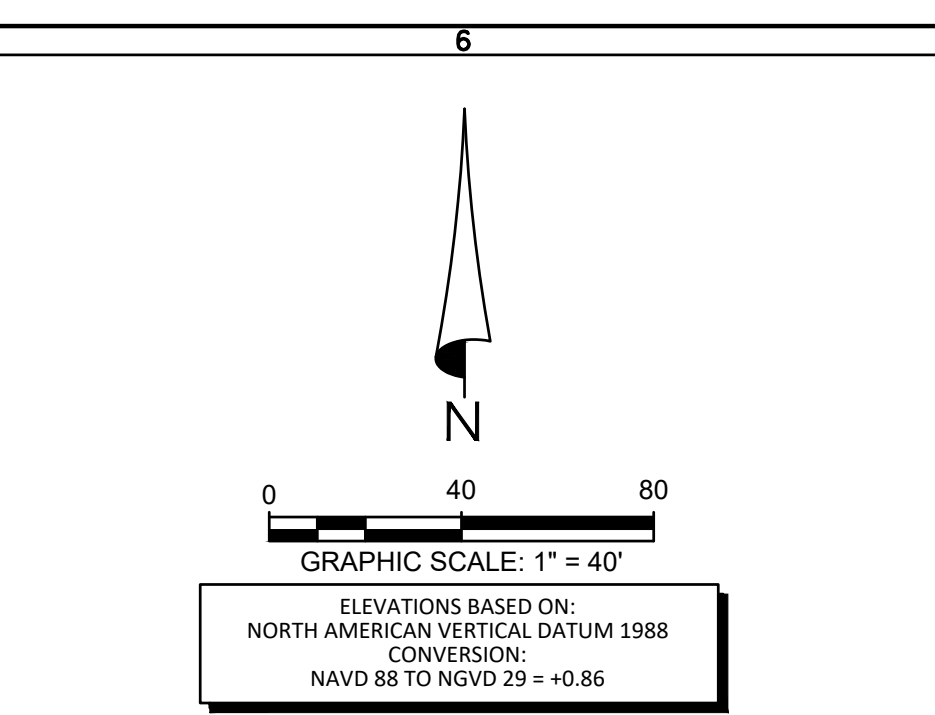
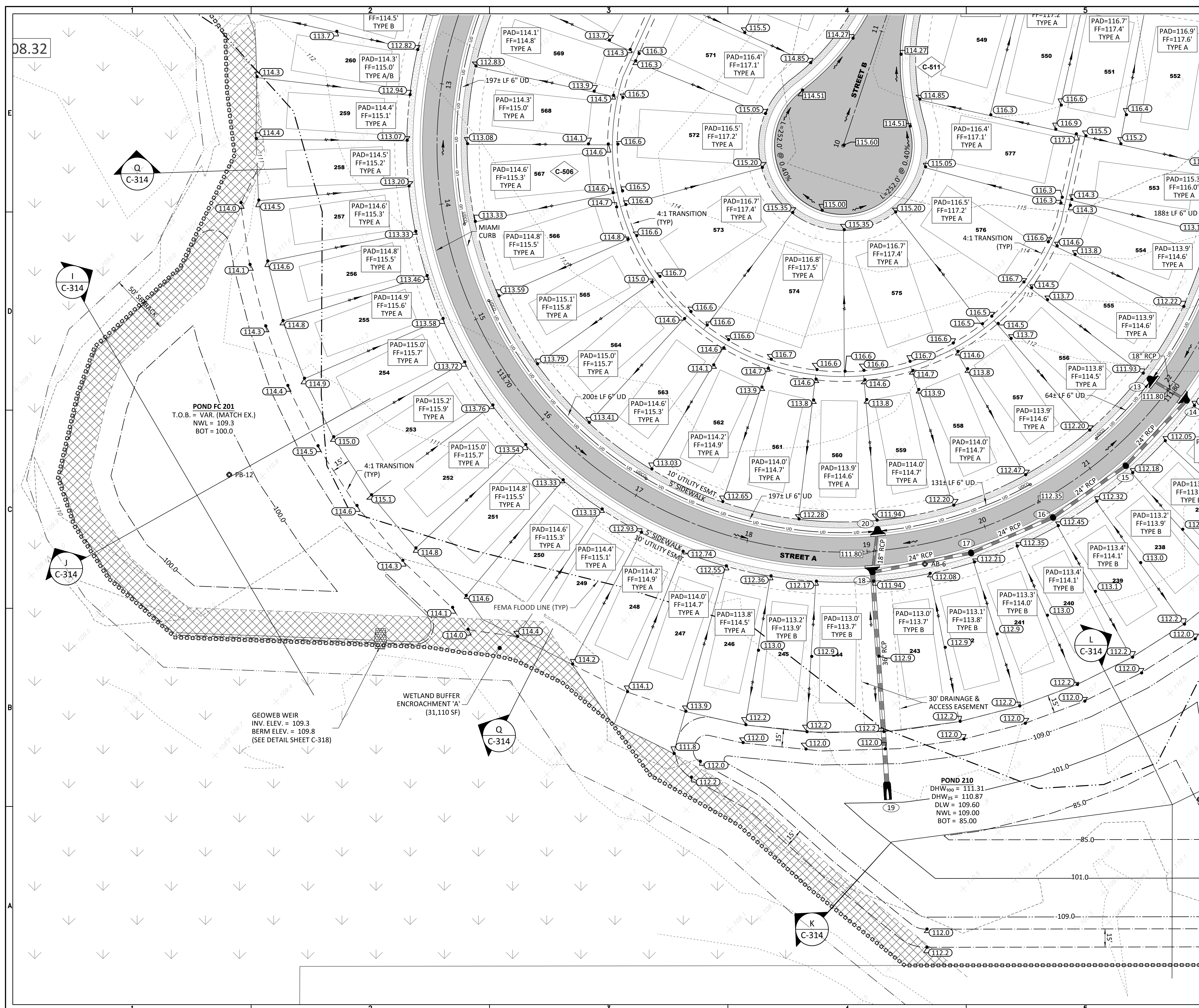
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GARY D. MILLER
DATE: 03/22/2019
LICENSE NO. 52717

C-306

REVISION GROVES/ACTIVE ADULT PHASE 3 & 4/ENGINEERING/GO DWG-C-306 20190322 1:29 PM MARK JONES

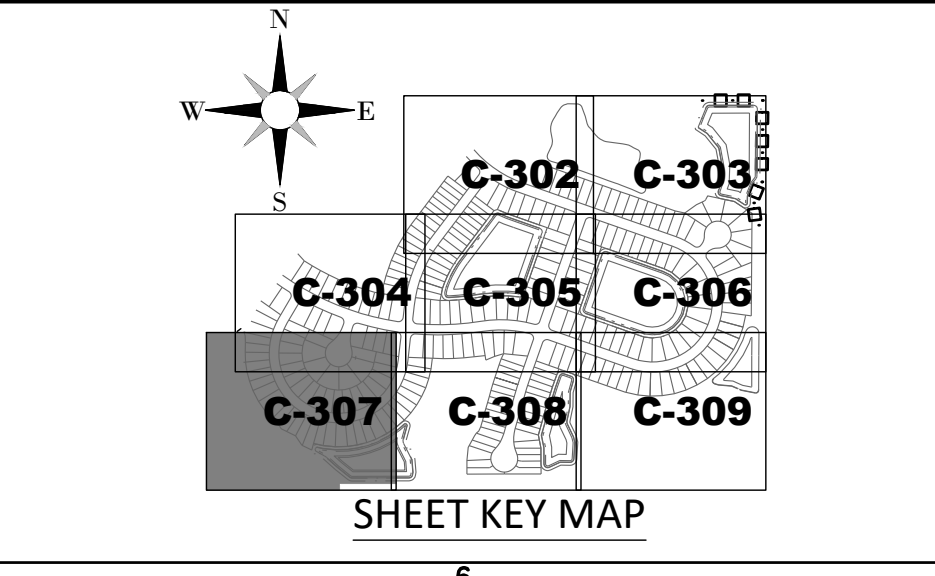
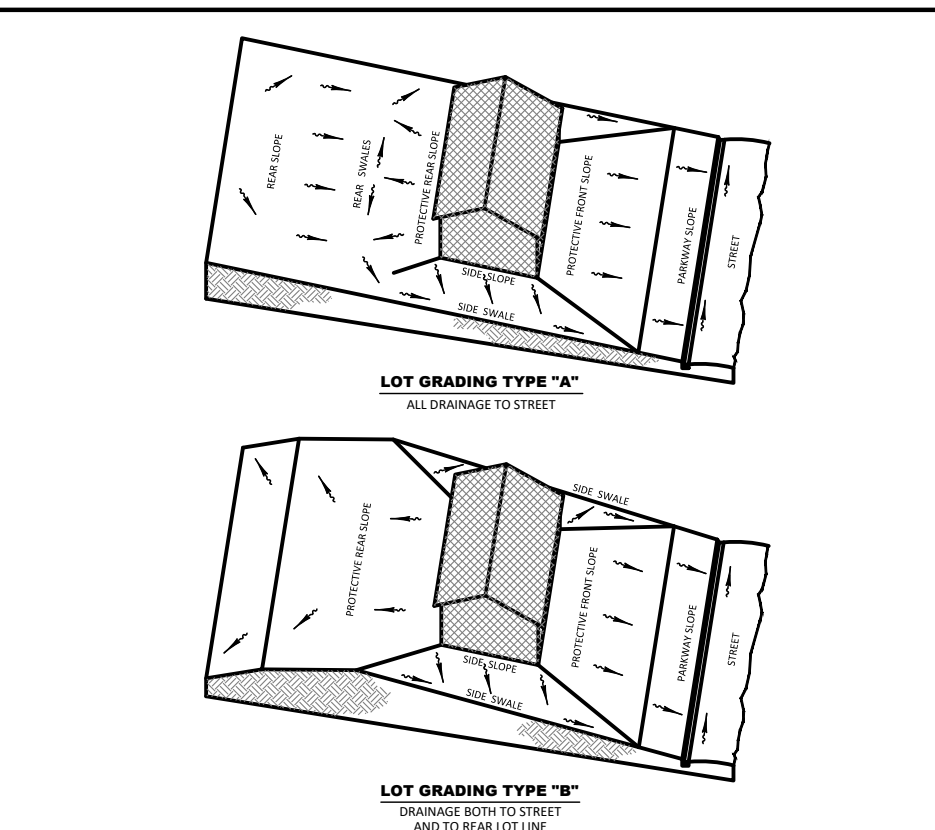


ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION: NAVD 88 TO NGVD 29 = +0.86

THIS PROJECT LIES WITHIN FLOOD ZONE "A & X" ACCORDING TO FLOOD INSURANCE RATE MAPS FOR LAKE COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12069C0675E DATED DEC. 18, 2012 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

- LEGEND**
- SIRWMD WETLAND LINE
 - SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - FEMA FLOOD LINE
 - BOUNDARY LIMITS
 - RIGHT-OF-WAY LINE
 - PHASE LINE
 - WETLAND BUFFER COMPENSATION
 - WETLAND BUFFER ENCROACHMENT

- DRAINAGE LEGEND**
- EXISTING STORM DRAINAGE STRUCTURE & PIPE
 - PROPOSED STORM DRAINAGE STRUCTURE & PIPE
 - STRUCTURE NO.
 - CONTROL STRUCTURE NO.
 - SPOT ELEVATION GROUND
 - SPOT ELEVATION PAVEMENT
 - TOP OF WALL
 - BOTTOM OF WALL (EXIST. ELEV)
 - ROADWAY PROFILE ELEVATION
 - CONTOUR
 - FINISH FLOOR ELEVATION
 - DIRECTION OF SURFACE FLOW
 - STAKED EROSION CONTROL (SIRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
 - FLOATING TURBIDITY BARRIER
 - BOTTOM OF POND/TOP OF BANK OF POND
 - PLAN & PROFILE SHEET NUMBER
 - SECTION ID LABEL
 - SECTION SHEET NUMBER
 - SOIL BORING



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Engineering Business Certificate of Authorization No. 28782
 Landscape Architecture Certificate of Authorization No. LC26000105

SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

GRADING & DRAINAGE PLAN

DR. HORTON

PREPARED FOR: _____

NO.	DATE	DESCRIPTION
1	09/27/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: GD
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

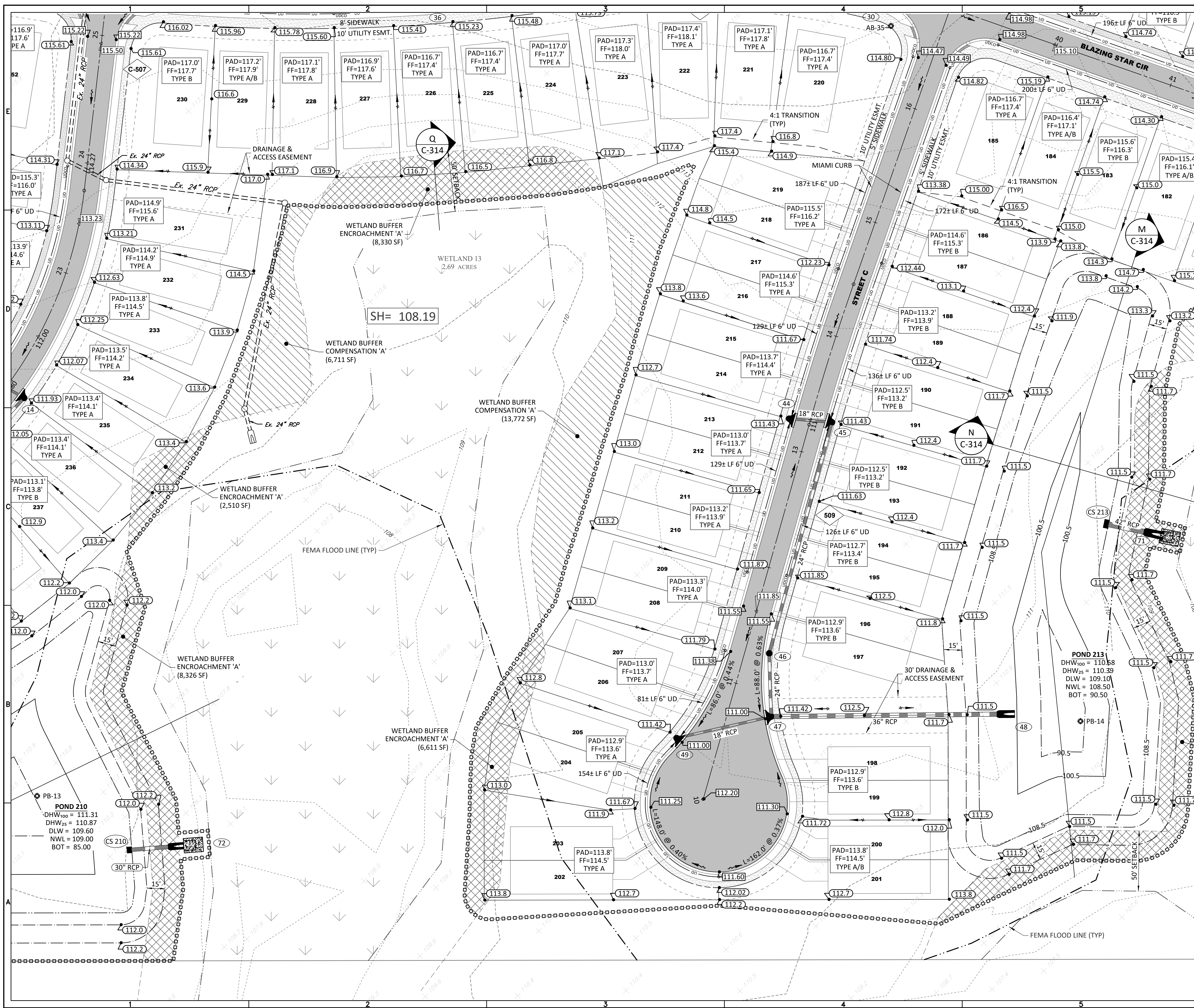
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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GARY D. MILLER
 DATE: _____
 LICENSE NO. 52717

C-307



GRAPHIC SCALE: 1" = 40'

ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION:
NAVD 88 TO NGVD 29 = +0.86

ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION: NAVD 88 TO NGVD 29 = +0.86

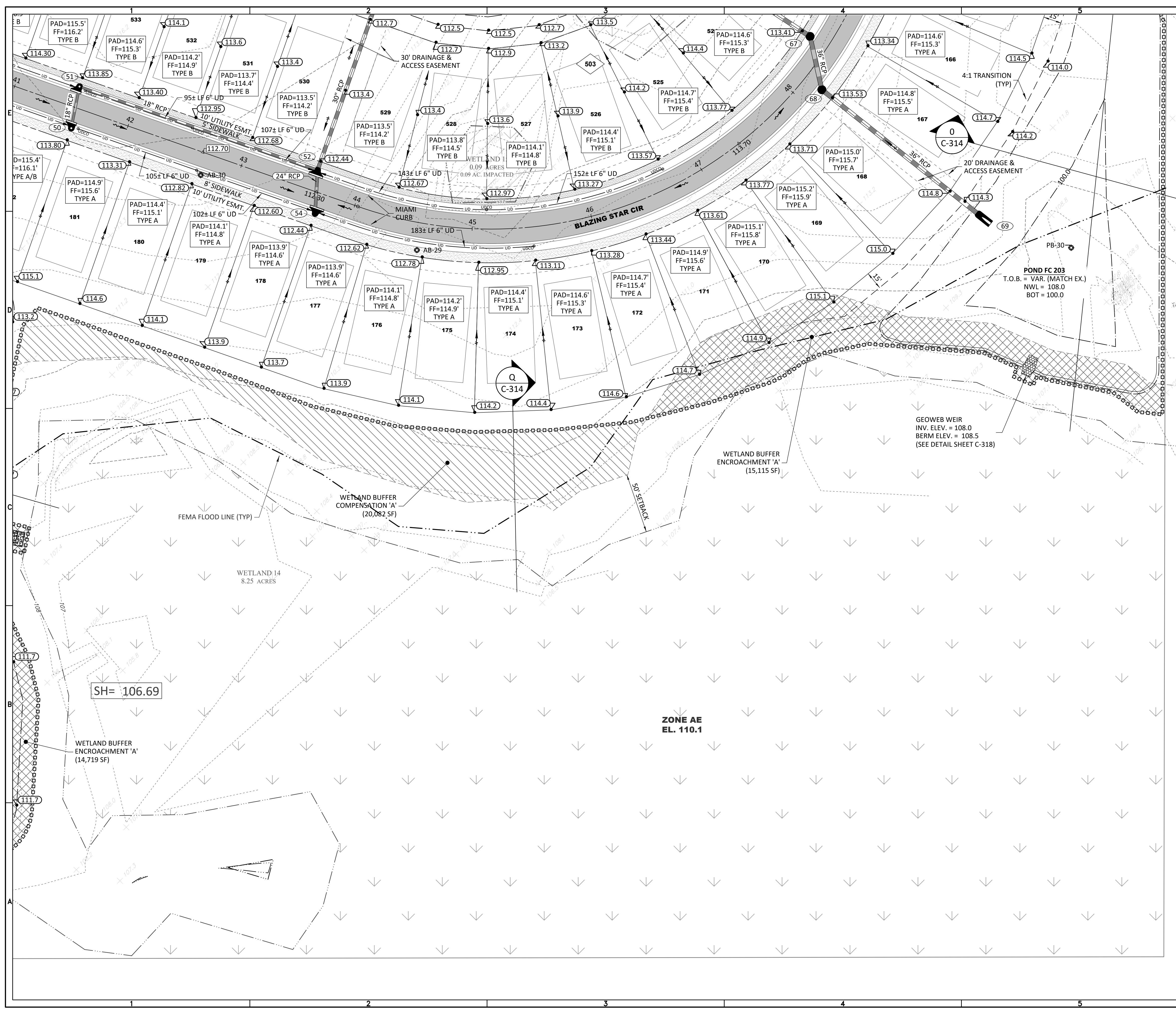
THIS PROJECT LIES WITHIN FLOOD ZONE "A & X" ACCORDING TO FLOOD INSURANCE RATE MAPS FOR LAKE COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12095C0675 DATED DEC. 18, 2012 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

LEGEND

- SIRWMD WETLAND LINE
- SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- FEMA FLOOD LINE
- BOUNDARY LIMITS
- RIGHT-OF-WAY LINE
- PHASE LINE
- WETLAND BUFFER COMPENSATION
- WETLAND BUFFER ENCROACHMENT

DRAINAGE LEGEND

- EXISTING: 10" RCP, 12" RCP, 15" RCP, 18" RCP, 24" RCP, 30" RCP, 36" RCP, 42" RCP, 48" RCP, 54" RCP, 60" RCP, 72" RCP, 84" RCP, 96" RCP, 108" RCP, 120" RCP, 144" RCP, 180" RCP, 216" RCP, 240" RCP, 270" RCP, 300" RCP, 360" RCP, 420" RCP, 480" RCP, 540" RCP, 600" RCP, 720" RCP, 840" RCP, 960" RCP, 1080" RCP, 1200" RCP, 1440" RCP, 1800" RCP, 2160" RCP, 2400" RCP, 2700" RCP, 3000" RCP, 3600" RCP, 4200" RCP, 4800" RCP, 5400" RCP, 6000" RCP, 7200" RCP, 8400" RCP, 9600" RCP, 10800" RCP, 12000" RCP, 14400" RCP, 18000" RCP, 21600" RCP, 24000" RCP, 27000" RCP, 30000" RCP, 36000" RCP, 42000" RCP, 48000" RCP, 54000" RCP, 60000" RCP, 72000" RCP, 84000" RCP, 96000" RCP, 108000" RCP, 120000" RCP, 144000" RCP, 180000" RCP, 216000" RCP, 240000" RCP, 270000" RCP, 300000" RCP, 360000" RCP, 420000" RCP, 480000" RCP, 540000" RCP, 600000" RCP, 720000" RCP, 840000" RCP, 960000" RCP, 1080000" RCP, 1200000" RCP, 1440000" RCP, 1800000" RCP, 2160000" RCP, 2400000" RCP, 2700000" RCP, 3000000" RCP, 3600000" RCP, 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14400000000000000000000000" RCP, 18000000000000000000000000" RCP, 21600000000000000000000000" RCP, 24000000000000000000000000" RCP, 27000000000000000000000000" RCP, 30000000000000000000000000" RCP, 36000000000000000000000000" RCP,



N

GRAPHIC SCALE: 1" = ##'

ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION: NAVD 88 TO NGVD 29 = +0.86

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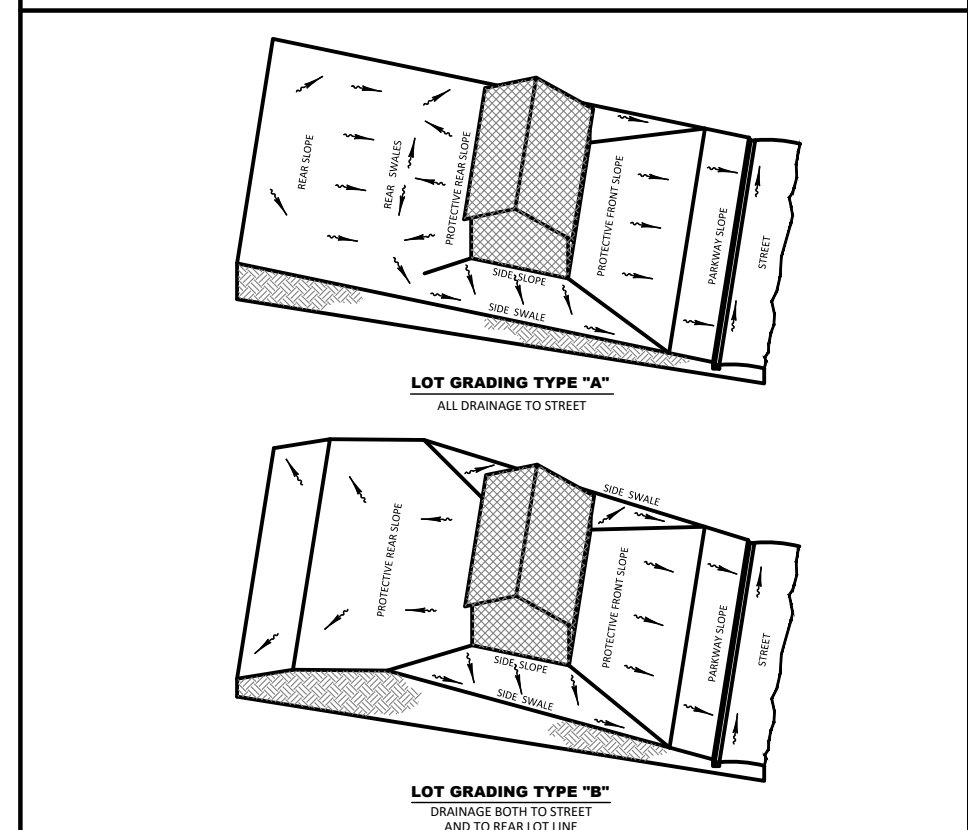
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LEGEND

- - - - - SIRWMD WETLAND LINE
- - - - - SIRWMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- - - - - FEMA FLOOD LINE
- - - - - BOUNDARY LIMITS
- - - - - RIGHT-OF-WAY LINE
- - - - - PHASE LINE
- ▨ WETLAND BUFFER COMPENSATION
- ▩ WETLAND BUFFER ENCROACHMENT

DRAINAGE LEGEND

EXISTING	PROPOSED	STORM DRAINAGE STRUCTURE & PIPE
10	10	STRUCTURE NO.
CS-F	CS-F	CONTROL STRUCTURE NO.
15.00	15.00	SPOT ELEVATION GROUND
15.00	15.00	SPOT ELEVATION PAVEMENT
60.2	60.2	TOP OF WALL
58.5	58.5	BOTTOM OF WALL (EXIST. ELEV.)
15.00	15.00	ROADWAY PROFILE ELEVATION
15.00	15.00	CONTOUR
FF=15.00	FF=15.00	FINISH FLOOR ELEVATION
→	→	DIRECTION OF SURFACE FLOW
□	□	STAKED EROSION CONTROL (SIRWMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
○	○	FLOATING TURBIDITY BARRIER
○	○	BOTTOM OF POND/TOP OF BANK OF POND
C-505	C-505	PLAN & PROFILE SHEET NUMBER
A-A	A-A	SECTION ID LABEL
C-317	C-317	SECTION SHEET NUMBER
P03	P03	SOIL BORING



N

SHEET KEY MAP

C-302 C-303
C-304 C-305 C-306
C-307 C-308 C-309

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

GRADING & DRAINAGE PLAN

DR. HORTON

NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: GD
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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GARY D. MILLER
DATE: _____
LICENSE NO. 52717

C-309

R:\VALON GROVES\ACTIVE ADULT PHASE 3 & 4\ENGINEERING\DWG-C-309-20190322-129 PM MARK JONES
 Engineering Business Certificate of Authorization No. 28792
 Landscape Architecture Certificate of Authorization No. LC26000005

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
1	FDOT TYPE 3 CURB INLET	113.29	PH 3; WING RT
2	TYPE J MANHOLE 5'-0" DIA.	113.05	PH 3
3	FDOT TYPE 4 CURB INLET	112.55	PH 3; W/ J BOTTOM
4	TYPE P MANHOLE 4'-0" DIA.	112.90	PH 3
5	FES		PH 3; EXIST. POND 206
6	FDOT TYPE 4 CURB INLET	112.55	PH 3
7	FDOT TYPE 3 CURB INLET	113.15	PH 3; WING LT
8	FDOT TYPE 4 CURB INLET	114.35	PH 3
9	FDOT TYPE 4 CURB INLET	114.35	PH 3
10	FDOT TYPE 3 CURB INLET	114.43	PH 3; WING RT
11	TYPE P MANHOLE 4'-0" DIA.	111.08	PH 3
12	FES		PH 3; EXIST. POND 207
13	FDOT TYPE 4 CURB INLET	111.51	PH 3
14	FDOT TYPE 4 CURB INLET	111.86	PH 3
15	TYPE P MANHOLE 4'-0" DIA.	112.01	PH 3
16	TYPE P MANHOLE 4'-0" DIA.	112.28	PH 3
17	TYPE P MANHOLE 4'-0" DIA.	112.04	PH 3
18	FDOT TYPE 4 CURB INLET	111.85	PH 3; W/ J BOTTOM

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
55	FDOT TYPE 3 CURB INLET	112.64	PH 4; WING LT
56	FDOT TYPE 3 CURB INLET	112.45	PH 4; WING RT
57	TYPE P MANHOLE 4'-0" DIA.	112.00	PH 4
58	TYPE J MANHOLE 6'-0" DIA.	111.51	
59	FDOT TYPE 4 CURB INLET	111.50	PH 4
60	FDOT TYPE 4 CURB INLET	111.35	PH 4; W/ J BOTTOM
61	TYPE J MANHOLE 5'-0" DIA.	111.25	
62	MES		PH 4; POND 214
63	FDOT TYPE 4 CURB INLET	111.50	PH 4; W/ J BOTTOM
64	FDOT TYPE 4 CURB INLET	111.65	PH 4
65	FDOT TYPE 3 CURB INLET	112.36	PH 4; WING RT
66	FDOT TYPE 3 CURB INLET	112.18	PH 4; WING LT
67	TYPE J MANHOLE 6'-0" DIA.	113.24	PH 3 TEMP CONC. TOP; ADJUST TOP PH 4
68	TYPE J MANHOLE 6'-0" DIA.	113.33	PH 3 TEMP CONC. TOP; ADJUST TOP PH 4
69	MES		PH 3; POND 212 OUTFALL
70	MES		PH 4; POND 214 OUTFALL W/ SUMP
71	MES		PH 4; POND 213 OUTFALL W/ SUMP
72	MES		PH 3; POND 210 OUTFALL W/ SUMP

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
19	MES		PH 3; POND 210
20	FDOT TYPE 4 CURB INLET	111.85	PH 3
21	FDOT TYPE 3 CURB INLET	114.54	PH 3; WING LT
22	FDOT TYPE 3 CURB INLET	114.43	PH 3; WING RT
23	TYPE P MANHOLE 4'-0" DIA.	114.00	PH 3
24	FDOT TYPE 3 CURB INLET	113.25	PH 3; WING RT W/ J BOTTOM
25	MES		PH 3; POND 211
26	FDOT TYPE 3 CURB INLET	112.61	PH 3; WING RT
27	FDOT TYPE 4 CURB INLET	112.35	PH 3
28	FDOT TYPE 4 CURB INLET	112.35	PH 3
29	FDOT TYPE 3 CURB INLET	113.22	PH 3; WING LT
30	FDOT TYPE 4 CURB INLET	115.15	PH 3
31	FDOT TYPE 4 CURB INLET	115.15	PH 3
32	TYPE P MANHOLE 4'-0" DIA.	115.67	PH 3
33	TYPE P MANHOLE 4'-0" DIA.	115.81	PH 3
34	FDOT TYPE 4 CURB INLET	115.15	PH3
35	MES		PH 3; POND 211
36	FDOT TYPE 4 CURB INLET	115.15	PH 3

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
CS 210	CONTROL STRUCTURE MODIFIED TYPE D GTI	111.50	PH 3; POND 210
CS 212	CONTROL STRUCTURE MODIFIED TYPE D GTI	112.00	PH 3; POND 212
CS 213	CONTROL STRUCTURE MODIFIED TYPE H GTI	111.00	PH 4; POND 213
CS 214	CONTROL STRUCTURE MODIFIED TYPE D GTI	110.00	PH 4; POND 214

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
37	FDOT TYPE 4 CURB INLET	112.55	PH 4
38	FDOT TYPE 4 CURB INLET	112.35	PH 4
39	FDOT TYPE 3 CURB INLET	114.71	PH 3 TEMP CONC. TOP; WING RT W/ J BOTTOM; COMPLETE TOP & THROAT PH 4
40	MES		PH 3; POND 212
41	MES		PH 3; POND 211
42	FDOT TYPE 3 CURB INLET	114.78	PH 3 TEMP CONC. TOP; WING LT W/ J BOTTOM; COMPLETE TOP & THROAT PH 4
43	FDOT TYPE 4 CURB INLET	112.35	PH 4
44	FDOT TYPE 4 CURB INLET	111.35	PH 4
45	FDOT TYPE 4 CURB INLET	111.35	PH 4
46	TYPE P MANHOLE 4'-0" DIA.	111.57	PH 4
47	FDOT TYPE 4 CURB INLET	111.35	
48	MES		PH 4; POND 213
49	FDOT TYPE 4 CURB INLET	111.35	PH 4
50	FDOT TYPE 3 CURB INLET	113.73	PH 4; WING RT
51	FDOT TYPE 3 CURB INLET	113.78	PH 4; WING LT
52	FDOT TYPE 4 CURB INLET	112.35	PH 3 TEMP CONC. TOP; W/ J BOTTOM; COMPLETE TOP & THROAT PH 4
53	MES		PH 3; POND 212
54	FDOT TYPE 4 CURB INLET	112.35	PH 4

NOTE:

- ALL INLET AND MANHOLE STRUCTURE BOTTOMS ARE SPECIFIED TYPE 'P' UNLESS OTHERWISE NOTED. REFER TO FDOT DESIGN STANDARD INDEX 425-010.
- ALL FLARED END SECTIONS (FES) ARE SPECIFIED FDOT STANDARD INDEX 430-020 UNLESS OTHERWISE NOTED.
- ALL MITERED END SECTIONS (MES) ARE SPECIFIED FDOT STANDARD INDEX 430-021 UNLESS OTHERWISE NOTED.

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Engineering Business Certificate of Authorization No. 28752
 Landscape Architecture Certificate of Authorization No. LC26000405

SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4

STORM STRUCTURE DATA

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	02/22/2019	REVIEW SUBMITTAL

PROJECT NO:	FRE SN 1002
FILE:	ST
DESIGN BY:	MWD
DRAWN BY:	DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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GARY D. MILLER
 DATE: _____
 LICENSE NO. 52717

C-310

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
1	2	18" RCP	74	0.27%	105.80	105.60	0.20
2	3	24" RCP	180	0.22%	105.10	104.70	0.40
3	4	30" RCP	140	0.14%	104.20	104.00	0.20
4	5	30" RCP	31	0.32%	104.00	103.90	0.10
6	3	18" RCP	42	0.48%	108.60	108.40	0.20
7	2	18" RCP	34	0.29%	108.20	108.10	0.10
8	9	18" RCP	35	0.29%	109.40	109.30	0.10
9	10	24" RCP	74	0.27%	106.50	106.30	0.20
10	11	24" RCP	140	0.21%	106.30	106.00	0.30
11	12	30" RCP	24	0.21%	104.05	104.00	0.05
13	14	18" RCP	35	0.28%	106.90	106.80	0.10
14	15	24" RCP	74	0.27%	103.90	103.70	0.20
15	16	24" RCP	74	0.27%	103.70	103.50	0.20
16	17	24" RCP	74	0.27%	103.50	103.30	0.20
17	18	24" RCP	83	0.24%	103.30	103.10	0.20
18	19	36" RCP	176	0.11%	102.10	101.90	0.20
20	18	18" RCP	36	0.28%	107.90	107.80	0.10
21	22	18" RCP	45	0.45%	109.40	109.20	0.20

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
64	58	18" RCP	27	0.37%	106.80	106.70	0.10
65	66	18" RCP	65	0.31%	107.20	107.00	0.20
66	58	18" RCP	154	0.32%	101.60	101.10	0.50
67	68	36" RCP	45	0.22%	104.60	104.50	0.10
68	69	36" RCP	166	0.12%	104.50	104.30	0.20
CS 210	72	30" RCP	33	0.30%	108.00	107.90	0.10
CS 212	67	36" RCP	164	0.12%	104.80	104.60	0.20
CS 213	71	42" RCP	33	0.30%	106.50	106.40	0.10
CS 214	70	30" RCP	35	0.29%	106.10	106.00	0.10

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
22	23	18" RCP	84	0.36%	106.90	106.60	0.30
23	24	18" RCP	220	0.27%	106.60	106.00	0.60
24	25	30" RCP	176	0.17%	103.40	103.10	0.30
26	27	18" RCP	73	0.27%	105.10	104.90	0.20
27	24	24" RCP	235	0.21%	104.40	103.90	0.50
28	27	18" RCP	35	0.29%	107.40	107.30	0.10
29	24	18" RCP	36	0.28%	108.20	108.10	0.10
30	31	18" RCP	42	0.48%	110.20	110.00	0.20
31	32	18" RCP	99	0.30%	107.70	107.40	0.30
32	33	18" RCP	105	0.28%	107.40	107.10	0.30
33	34	18" RCP	126	0.32%	107.10	106.70	0.40
34	36	18" RCP	36	0.28%	111.20	111.10	0.10
34	35	30" RCP	176	0.17%	105.30	105.00	0.30
37	38	18" RCP	78	0.38%	105.10	104.80	0.30
38	39	30" RCP	251	0.12%	103.80	103.50	0.30
39	40	48" RCP	181	0.11%	102.00	101.80	0.20
41	42	36" RCP	175	0.17%	104.50	104.20	0.30
42	39	36" RCP	35	0.28%	104.20	104.10	0.10

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
43	38	18" RCP	35	0.29%	107.40	107.30	0.10
44	45	18" RCP	36	0.28%	107.40	107.30	0.10
45	46	24" RCP	199	0.20%	103.40	103.00	0.40
46	47	24" RCP	53	0.19%	103.00	102.90	0.10
47	48	36" RCP	189	0.11%	101.60	101.40	0.20
49	47	18" RCP	81	0.37%	103.40	103.10	0.30
50	51	18" RCP	35	0.28%	108.70	108.60	0.10
51	52	18" RCP	210	0.29%	105.50	104.90	0.60
52	53	30" RCP	171	0.18%	103.90	103.60	0.30
54	52	24" RCP	36	0.27%	107.90	107.80	0.10
55	56	18" RCP	60	0.34%	108.70	108.50	0.20
56	57	18" RCP	92	0.33%	104.90	104.60	0.30
57	58	18" RCP	137	0.29%	104.60	104.20	0.40
58	59	30" RCP	44	0.23%	100.10	100.00	0.10
59	60	30" RCP	163	0.18%	100.00	99.70	0.30
60	61	36" RCP	131	0.15%	99.20	99.00	0.20
61	62	36" RCP	47	0.21%	99.00	98.90	0.10
63	59	18" RCP	35	0.29%	107.50	107.40	0.10

NOTE:

- ALL INLET AND MANHOLE STRUCTURE BOTTOMS ARE SPECIFIED TYPE 'P' UNLESS OTHERWISE NOTED. REFER TO FDOT DESIGN STANDARD INDEX 425-010.
- ALL FLARED END SECTIONS (FES) ARE SPECIFIED FDOT STANDARD INDEX 430-020 UNLESS OTHERWISE NOTED.
- ALL MITERED END SECTIONS (MES) ARE SPECIFIED FDOT STANDARD INDEX 430-021 UNLESS OTHERWISE NOTED.



PREPARED FOR:
DR HORTON

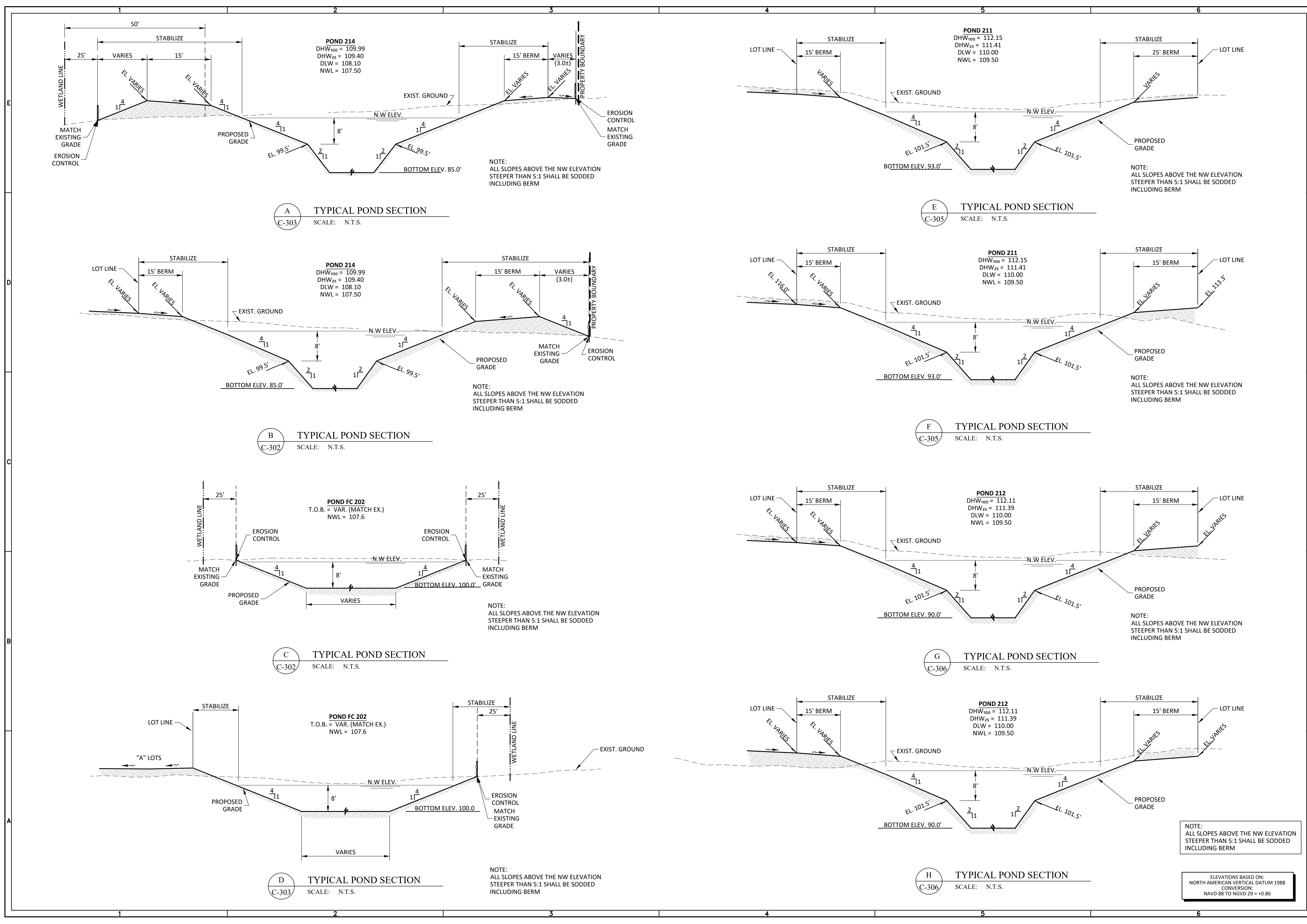
NO.	DATE	DESCRIPTION
1	02/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
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PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717
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C-311



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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4

TYPICAL GRADING SECTIONS

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
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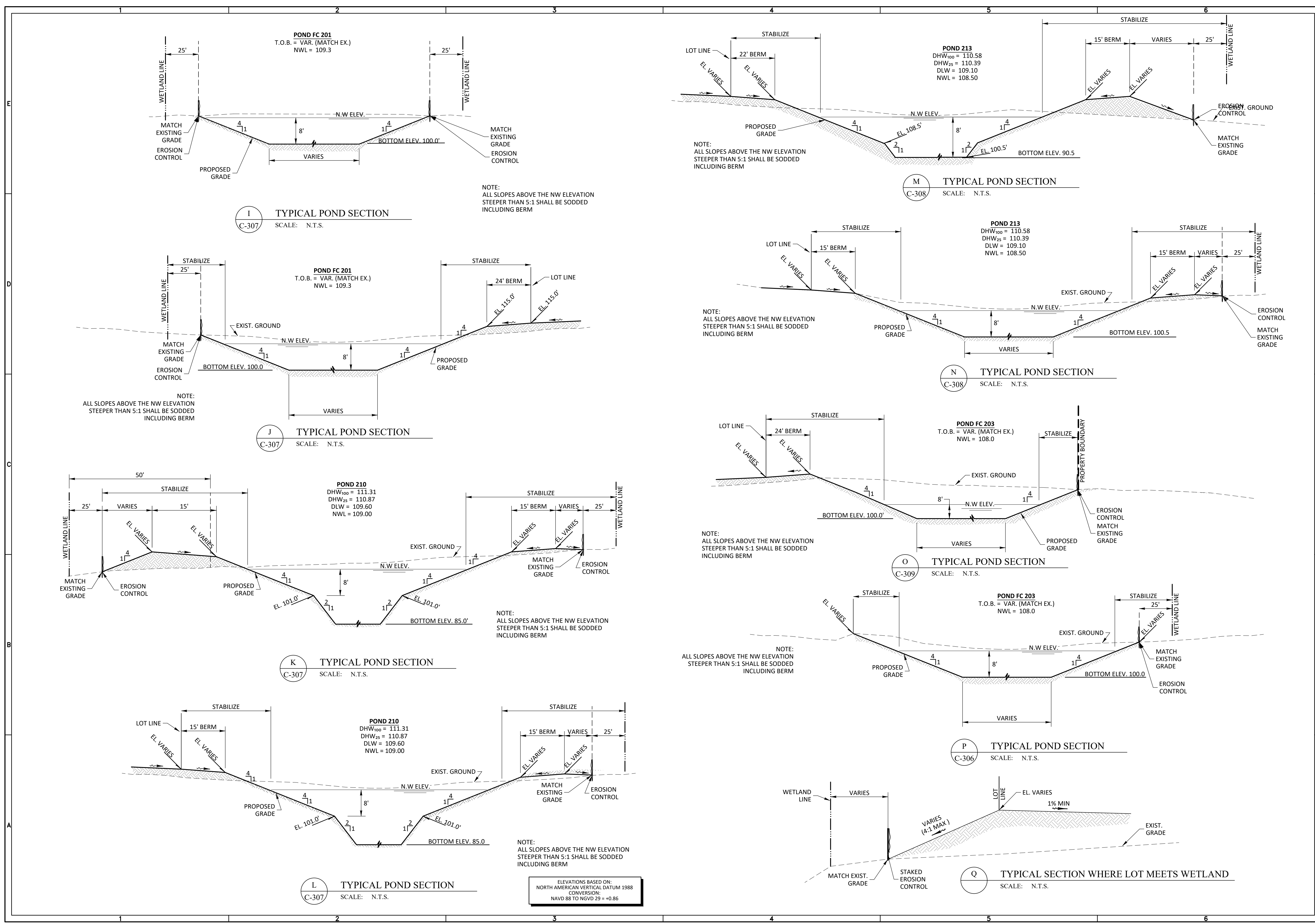
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C-313

ENGINEERING BUSINESS CERTIFICATE OF AUTHORIZATION No. 28792
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NOTE: ALL SLOPES ABOVE THE NW ELEVATION STEEPER THAN 5:1 SHALL BE SODDED INCLUDING BERM

ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86



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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4

TYPICAL GRADING SECTIONS

DR HORTON

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NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
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TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE A)

SQUARE OPENING WITH CORNER FILLETS TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE B)

ROUND RISER OPENING TOP SLAB REINFORCING STEEL DIAGRAM (ALTERNATE C)

SECTION C-C SPECIAL TOP SLAB*

SECTION A-A (ALTERNATE A)

SECTION B-B (ALTERNATE B)

TYPICAL SLAB TO WALL DETAILS FOR PRECAST STRUCTURES

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE

PIPE SIZE	RECTANGULAR (L)		ROUND (D)	
	Single Pipe	Double Pipe	Single Pipe	Double Pipe
18"	3'-0"	3'-0"	3'-0"	3'-0"
24"	3'-0"	3'-0"	3'-0"	3'-0"
30"	3'-0"	3'-0"	3'-0"	3'-0"
36"	3'-0"	3'-0"	3'-0"	3'-0"
42"	3'-0"	3'-0"	3'-0"	3'-0"
48"	3'-0"	3'-0"	3'-0"	3'-0"
54"	3'-0"	3'-0"	3'-0"	3'-0"
60"	3'-0"	3'-0"	3'-0"	3'-0"
66"	3'-0"	3'-0"	3'-0"	3'-0"
72"	3'-0"	3'-0"	3'-0"	3'-0"
78"	3'-0"	3'-0"	3'-0"	3'-0"
84"	3'-0"	3'-0"	3'-0"	3'-0"

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS

PIPE SIZE	SPACING	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES	
		3	4
18"	2'-0"	6'-0"	11'-0"
24"	3'-0"	6'-0"	13'-0"
30"	4'-0"	6'-0"	15'-0"
36"	5'-0"	6'-0"	17'-0"
42"	6'-0"	6'-0"	19'-0"
48"	7'-0"	6'-0"	21'-0"
54"	8'-0"	6'-0"	23'-0"
60"	9'-0"	6'-0"	25'-0"
66"	10'-0"	6'-0"	27'-0"
72"	11'-0"	6'-0"	29'-0"
78"	12'-0"	6'-0"	31'-0"
84"	13'-0"	6'-0"	33'-0"

TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS

WALL THICKNESS	PIPE SIZE											
	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
SKEW ANGLE	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°

TABLE 6 - MAXIMUM PIPE SKEW FOR PRECAST SQUARE OPENINGS

WALL THICKNESS	PIPE SIZE											
	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"
SKEW ANGLE	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°

TABLE 7 - MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR ROUND STRUCTURE BOTTOMS

PIPE SIZE	SPACING	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES	
		3	4
18"	2'-0"	6'-0"	11'-0"
24"	3'-0"	6'-0"	13'-0"
30"	4'-0"	6'-0"	15'-0"
36"	5'-0"	6'-0"	17'-0"
42"	6'-0"	6'-0"	19'-0"
48"	7'-0"	6'-0"	21'-0"
54"	8'-0"	6'-0"	23'-0"
60"	9'-0"	6'-0"	25'-0"
66"	10'-0"	6'-0"	27'-0"
72"	11'-0"	6'-0"	29'-0"
78"	12'-0"	6'-0"	31'-0"
84"	13'-0"	6'-0"	33'-0"

ROUND STRUCTURE BOTTOMS (ALTERNATE A) & ROUND RISERS- TABLE 1

Wall Thickness (t) & Vertical & Horizontal Areas of Reinforcement (A_v)

Type	Structure/Riser Diameter (ft)	Cast-In-Place Items Class II Concrete				Precast Items Class II Concrete				ASTM C478	
		t ₁	t ₂	A _v	A _h	t ₁	t ₂	A _v	A _h	t ₁ or t ₂	A _v ***
P	3'-0"	6	8	0.20	6	8	0.20	4**	0.105		
P	4'-0"	6	8	0.20	6	8	0.20	5**	0.120		
J	5'-0"	-	8	0.20	-	8	0.20	6**	0.150		
J	6'-0"	-	8	0.20	-	8	0.20	6	0.180		
J	7'-0"	-	8	0.20	-	8	0.20	7	0.210		
J	8'-0"	-	8	0.20	-	8	0.20	8	0.240		
J	10'-0"	-	10	0.40#	-	10	0.40#	10	0.300		
J	12'-0"	-	10	0.40#	-	12	0.40#	12	0.360		

TABLE 1 NOTES:

**Provide 0.20 eq. in./ft. at each face, 12" max. bar spacing.

***Modified minimum wall thickness.

****Minimum total circumferential reinforcement for continuous steel hoops.

A_v = 0.40 sq. in. for riser section height equal or less than 2'-0" (2 hoop min.)

A_h = 0.60 sq. in. for riser section height more than 2'-0" up to 4'-0" (3 hoop min.)

Areas of reinforcing for precast items are based on Grade 60 reinforcing.

No reduction in the area of reinforcing is allowed for welded wire fabric in Table 1.

Area of vertical reinforcing may be reduced in accordance with ASTM C478.

SQUARE & RECTANGULAR STRUCTURES (ALTERNATE B) - TABLE 2

Type	Wall Length (ft)	Max. Depth (ft)	Wall Thickness (t)	
			CIP (in.)	Precast (in.)
P	≤ 3'-6"	40	6 Riser 8 Bottom	6
J	4'-0"	40	6	6
J	5'-0"	22	6	6
J	6'-0"	15	6	6
J	5'-0" to 9'-0"	40	8	8
J	10'-0"	26	8	8
J	10'-0" to 12'-0"	40	10	9
J	16'-0"	35	10	9
J	16'-0"	40	10	10
J	20'-0"	25	10	9
J	20'-0"	30	10	10

TABLE 2 NOTES:

See Table 8 for Reinforcing Schedule.

GENERAL NOTES

- Standard structure bottoms 4'-0" diameter and smaller (Alt. A) and 3'-6" square (Alt. B) are designated Type P. Larger standard structure bottoms are designated Type J. Risers are permitted for all structures. Round risers are designated Type A. Square risers are designated Type B.
- Walls of circular structures (Alt. A) constructed in place may be of brick or reinforced concrete. Precast and rectangular structures (Alt. B) shall be constructed of reinforced concrete only.
- Wall thickness and reinforcement are for either reinforced cast-in-place or precast concrete units except that precast circular units may be furnished with walls in accordance with ASTM C478 (see modified wall thicknesses in Table 1).
- Top and bottom slab thickness and reinforcement are for precast and cast-in-place construction. All concrete shall be of Class II concrete, except use Class IV concrete when shown in the Plans. For special applications of structures located in extremely aggressive environments, concrete as specified in ASTM C478 (4000 psi) may be used in lieu of Class II concrete for precast items manufactured in accordance with Specifications Section 449.
- All reinforcement shown is Grade 60 steel, deformed bar. Equivalent area Grade 40 steel or equivalent area smooth or deformed welded wire reinforcement in accordance with Specification Section 931 may be substituted according to Index 425-001, unless otherwise noted.
- Alt. A or Alt. B structure bottoms may be used in conjunction with curb inlet tops Types 1, 2, 3, 4, 5, 6, 9, and 10, and any manhole or junction box unless otherwise shown in the plans or other standard drawings. Alt. B structure bottoms may be used in conjunction with curb inlet Types 7 & 8, or any ditch bottom inlet unless otherwise shown in the plans or other standard drawings.
- Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and storm sewer pipes.
- Except when A/CI hooks are specifically required, reinforcement in top and bottom slab shall be straight embedment.
- All reinforcement must have 2" minimum cover except for 3'-6" diameter precast circular units manufactured under ASTM C478, keyed construction otherwise shown. Additional bars used to restrain hole formers for precast structures with grouted pipe connections may be left flush with the hole surface. Cut or bend reinforcement at pipe openings to maintain cover. Exposed ends of reinforcing at precast pipe openings and grouted joints must be removed to 1" below the concrete surface and sealed with a Type F epoxy in accordance with Specification Section 926. Horizontal steel in rectangular structures shall be lapped a minimum of 30 bar diameters or by standard hooks at corners.
- The corner fillets shown are necessary for rectangular structures used with circular risers and inlet throats and when used on skew with rectangular risers, inlets and inlet throats. Fillets will be required in the top slab of the Alt. A structure bottoms when used with the Alt. B risers. Each fillet shall be reinforced with two #3 bars.
- Inlet walls, throats, risers or manhole tops shall be secured to structures as shown on Index 425-001 Optional Construction Joints.
- Structures with depths over 14' below the mean high water table are to be checked for flotation by the designer of the drainage project.
- Units larger than specified standards may be substituted at the contractor's option when these units will not cause or increase the severity of utility conflicts. Such larger units shall be furnished at no additional cost to the Department. Larger Alt. A units cannot replace Alt. B units without approval of the Engineer. This note applies to this index only.
- For manhole and junction box tops, for frames and covers, and, for supplementary details and notes see Index 425-001.
- Type J structure bottoms must have a minimum 6'-0" wall height when possible, for maintenance access.

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS

TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS

TABLE 6 - MAXIMUM PIPE SKEW FOR PRECAST SQUARE OPENINGS

TABLE 7 - MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR ROUND STRUCTURE BOTTOMS

TABLE 8 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 9 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 10 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 11 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 12 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 13 - STRUCTURE SIZES FOR PIPE CONNECTIONS

TABLE 14 - STRUCTURE SIZES FOR PIPE CONNECTIONS

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TABLE 100 - STRUCTURE SIZES FOR PIPE CONNECTIONS

SLAB DESIGNS - SQUARE AND RECTANGULAR STRUCTURES (TABLE 6)

(ALL SLABS 8" THICK EXCEPT AS NOTED - REINFORCING PARALLEL TO SHORT WAY AND LONG WAY)

SLAB DESIGNS - ROUND STRUCTURES (TABLE 7)

SLAB DESIGN TABLE NOTES

- Size is the inside dimension(s) of a structure.
- Wall reinforcement is appropriate for top, intermediate, and bottom slabs.
- Bottom Slabs for precast 3'-6" x 3'-6" rectangular structures at 15' depth or less, may be 6" thick.
- Slab depth is measured from finished grade to top of slab.
- Wall depth is measured to the top of the bottom slab for boxes and to the top of the intermediate slab for risers.
- Wall height is the distance between top of lower slab to bottom of upper slab. Maximum wall height is 12' for wall heights exceeding 5', or 10' for wall heights exceeding 12'.
- Wall lengths exceeding 6'-0" require two layers of reinforcing (See Table 8) with 2" of cover from the horizontal bars to the inside and outside faces for each layer.
- Wall lengths exceeding the dimensions or depths shown in Table 8, or 12'-0" diameter require a special design.
- Wall thickness and reinforcing for rectangular structures is based on the longer wall length.
- Reinforcing schedules with larger areas of steel may be substituted for schedules with smaller bar or wire spacing, except that Schedule #10 may not be substituted for Schedule #6. See Index 425-001 for allowable bar spacing adjustments when larger areas of reinforcing are substituted.

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 DRAINAGE DETAILS

DR HORTON

PREPARED FOR: DR HORTON

PROJECT NO: FRE SN 1002

FILE: DD

DESIGN BY: MWD

DRAWN BY: DD

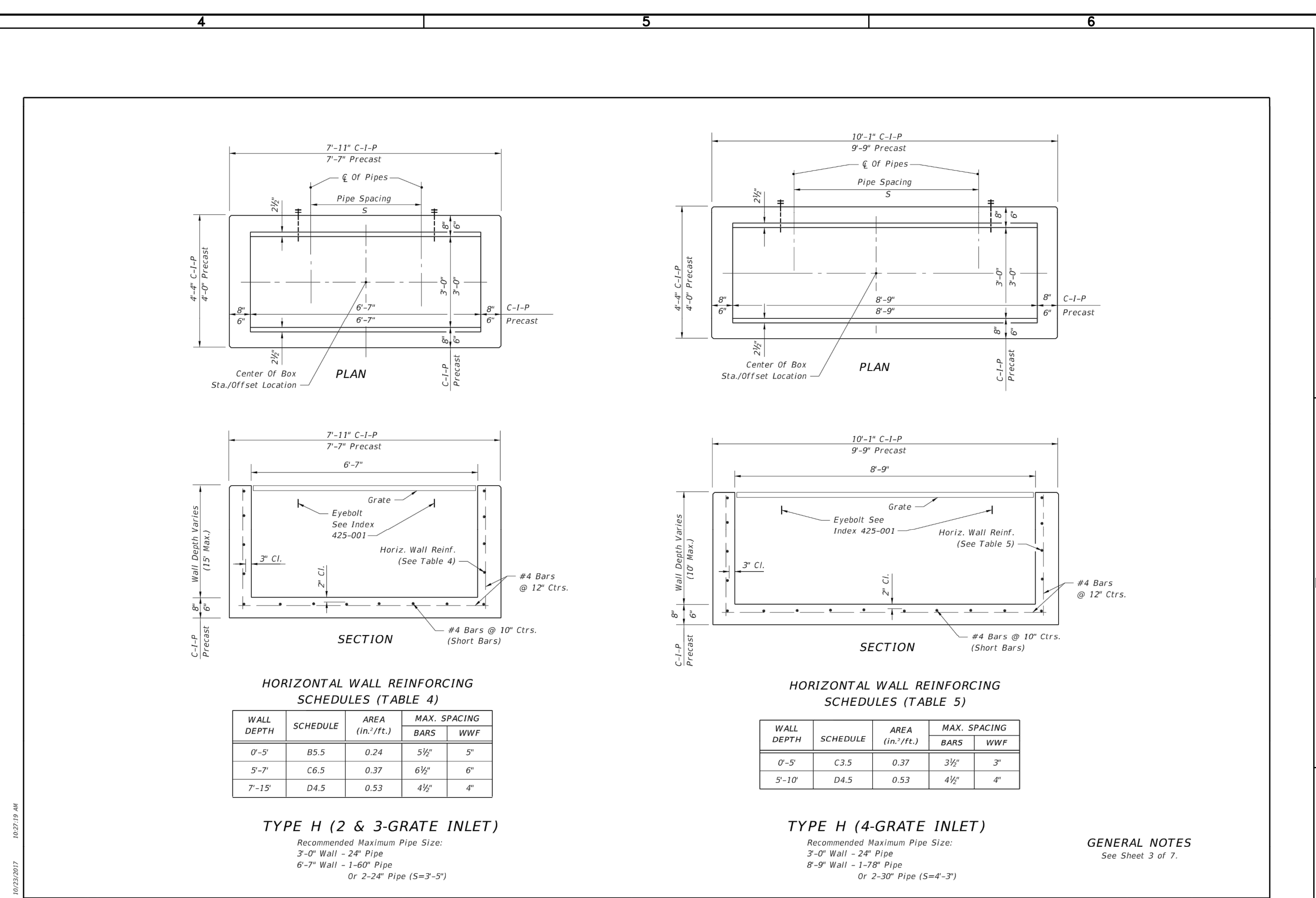
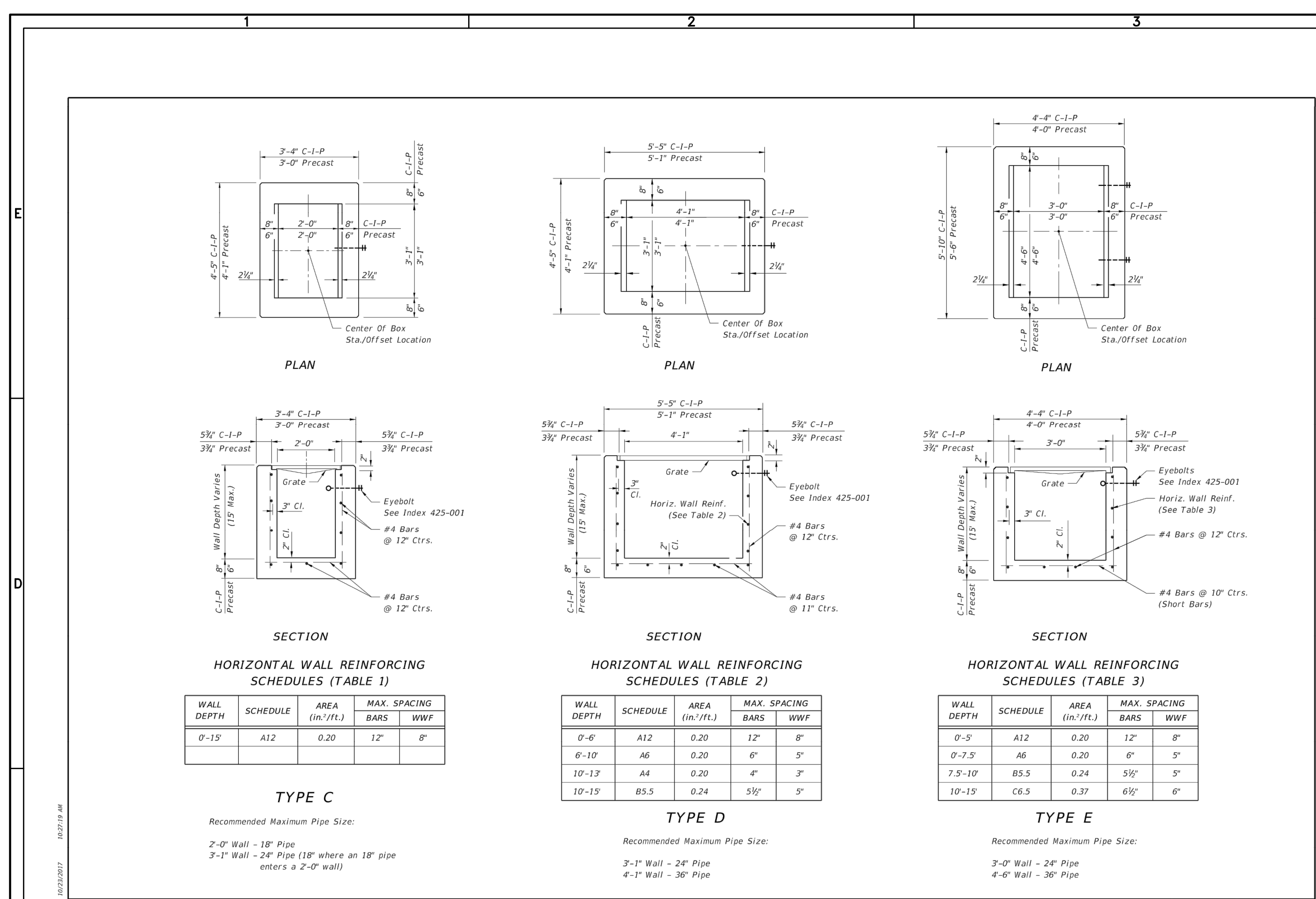
STATE OF FLORIDA PROFESSIONAL ENGINEER Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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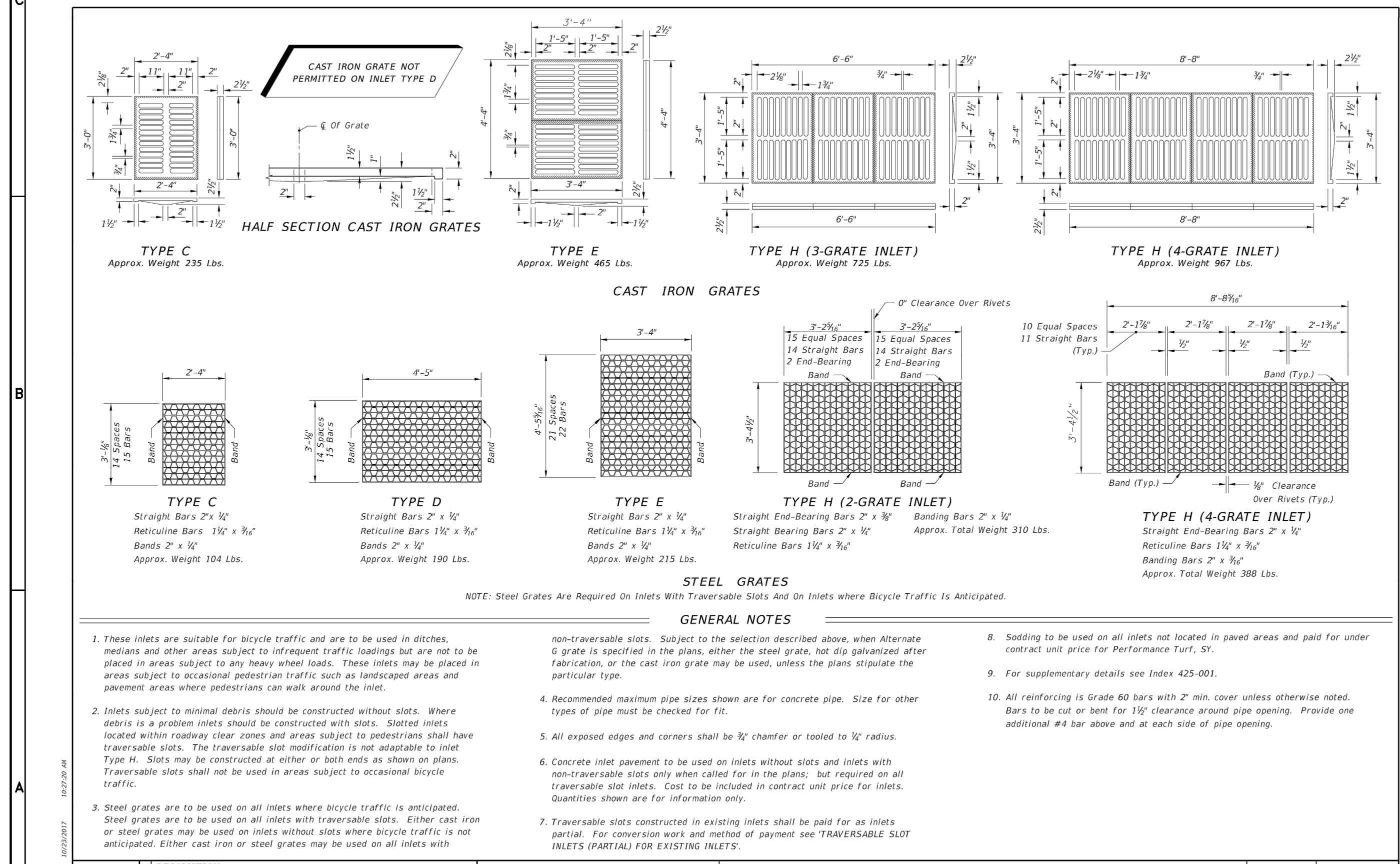
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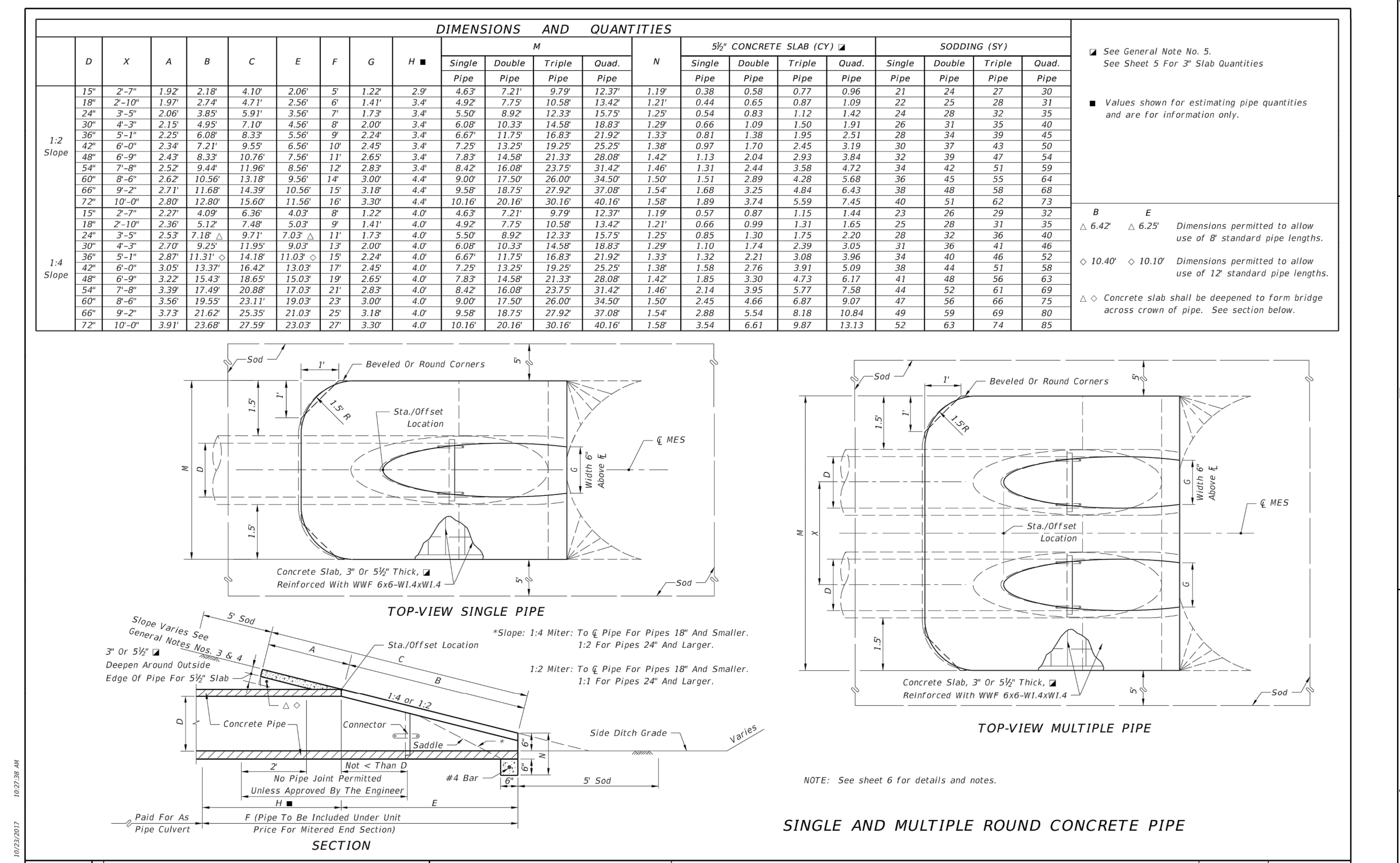


LAST REVISION	DESCRIPTION:	INDEX	SHEET
11/01/17		425-052	1 of 7

LAST REVISION	DESCRIPTION:	INDEX	SHEET
11/01/17		425-052	2 of 7



LAST REVISION	DESCRIPTION:	INDEX	SHEET
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LAST REVISION	DESCRIPTION:	INDEX	SHEET
11/01/17		430-021	1 of 6

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Engineering Business Certificate of Authorization No. 28792
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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

DRAINAGE DETAILS

DR HORTON

PREPARED FOR: DR HORTON

NO.	DATE	DESCRIPTION
1	02/22/09	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: DD
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER
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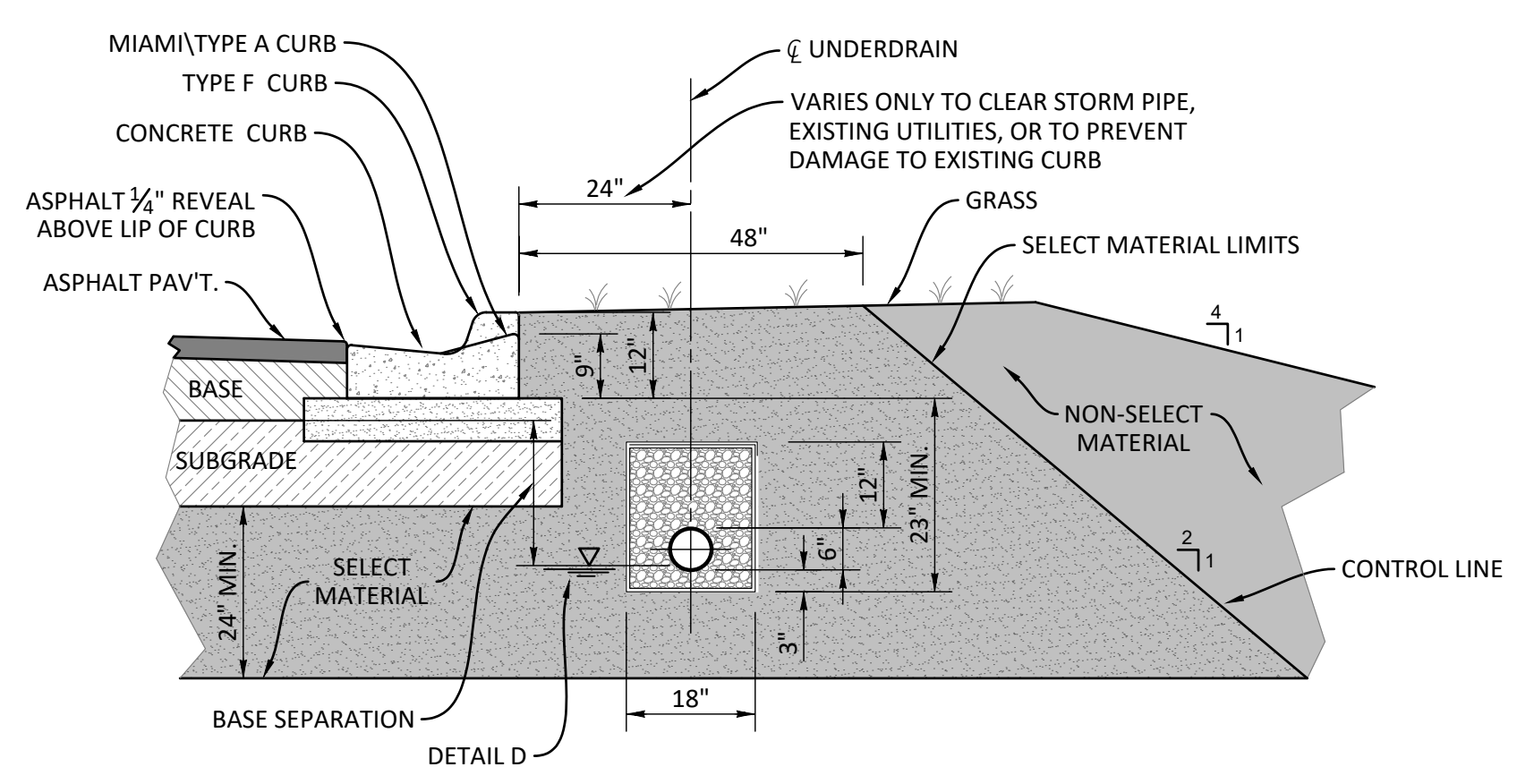
COARSE & FINE AGGREGATE UNDERDRAIN
 FOR URBAN SECTIONS WITH CURB & GUTTER (I.E., TYPE A, TYPE F, MIAMI CURB, ETC.)

- UNLESS OTHERWISE NOTED, REFERENCE TO "FDOT SECTION" REFERS TO FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. REFERENCES TO "FDOT INDEX" REFERS TO FDOT DESIGN STANDARDS, LATEST EDITION.
- UNLESS OTHERWISE SPECIFIED BELOW, ALL UNDERDRAIN SHALL BE IN ACCORDANCE WITH FDOT SECTION 440.
- THE UNDERDRAIN INVERT SHALL BE DESIGNED NO LOWER THAN 0.1 FEET ABOVE THE DSHWT ELEVATION.
- THE DSHWT ELEVATION SHALL BE ESTABLISHED BY THE DESIGN ENGINEER IN CONSIDERATION OF SOIL TYPES, EXISTING GROUNDWATER TABLE, LANDSLOPE, OUTFALL CONDITIONS AND STORMWATER MANAGEMENT SYSTEM. THE DSHWT SHALL BE ESTABLISHED NO LOWER THAN THE FOLLOWING WHERE UNDERDRAIN DISCHARGES INTO A STORMWATER MANAGEMENT SYSTEM:
 - FOR DETENTION PONDS WITH WET DETENTION WITH PERMANENT POOL VOLUME TREATMENT IS UTILIZED IN WHICH THE TREATMENT VOLUME IS VACATED WITHIN A 24 HOUR PERIOD, THE DSHWT SHALL BE ESTABLISHED 0.1 FEET ABOVE THE DESIGN NORMAL WATER ELEVATION (BOTTOM OF THE TREATMENT VOLUME)
 - FOR DETENTION POND WITH EXTENDED WETLAND TREATMENT IS UTILIZED IN WHICH THE TREATMENT VOLUME IS VACATED OVER 120 HOUR PERIOD, THE DSHWT SHALL BE ESTABLISHED AT THE 36 HOUR BLEED-DOWN LEVEL WITHIN THE STORMWATER POND AS DETERMINED BY THE ENGINEER OF RECORD.
- IN GENERAL, UNDERDRAIN PIPE SHALL BE LAID AT THE SAME SLOPE OF THE ADJACENT CURB. TO ACCOMMODATE FIELD CONDITIONS, THE MINIMUM ALLOWABLE SLOPE SHALL BE NO LESS THAN 0.20%.
- COARSE AGGREGATE SHALL BE NON-CALCAREOUS, NON-CEMENTING GRAVEL, OR STONE MEETING THE REQUIREMENTS OF FDOT SECTION 901-2.1, 901-2.2, OR 901-3 RESPECTIVELY. AGGREGATE GRADATION SHALL MEET SECTION 901-6, GRADES 4, 467, 5, 56 OR 57 STONE.
- FINE AGGREGATE SHALL BE IN ACCORDANCE WITH FDOT INDEX 286.
- UNDERDRAIN SHALL BE IN ACCORDANCE WITH FDOT SECTION 440 UNLESS OTHERWISE SPECIFIED HEREIN.
- COARSE AGGREGATE UNDERDRAIN PIPING FOR COLLECTOR ROADWAYS SHALL BE A MINIMUM DIAMETER OF 8-INCHES.
- ALL FINE AGGREGATE UNDERDRAIN PIPING SHALL BE A MINIMUM DIAMETER OF 6-INCHES.
- NON-PERFORATED (SOLID) PIPE SHALL BE USED FOR ALL ROADWAY CROSSINGS. PERFORATED PIPE SHALL NOT BE PLACED UNDER STREET PAVEMENT.
- FILTER FABRIC SHALL BE TYPE D-3 CLASS A (D-3A); IN ACCORDANCE WITH FDOT SECTION 985.
- ALL PIPING SHALL MEET FDOT SECTION 948-1.4 (NON-PERFORATED) AND SECTION 948-1.5 (PERFORATED) FOR PVC PIPE AND SECTION 948-2.1 FOR CORRUGATED POLYETHYLENE TUBING AND PIPE.
- ALL FILTER MATERIAL SHALL BE COMPLETELY WRAPPED IN FILTER FABRIC. ALL FILTER FABRIC SHALL HAVE AN OVERLAP OF A MINIMUM OF 1-FOOT (12-INCHES).
- SELECT SOIL (S) PER FDOT INDEX 500 AND 505 SHALL BE UTILIZED TO A MINIMUM DEPTH OF 24 INCHES (2 FEET) BELOW THE ROADWAY BASE AND SHALL EXTEND A MINIMUM OF 48 INCHES (4 FEET) BEHIND THE BACK OF CURB.
- NO IRRIGATION PIPELINES, PLANT MATERIALS, TREE MATERIALS OR LANDSCAPE PLANTS, CONDUITS, ETC. SHOULD BE DESIGNED OR INSTALLED WITHIN 36 INCHES (3 FEET) OF THE BACK OF CURB.

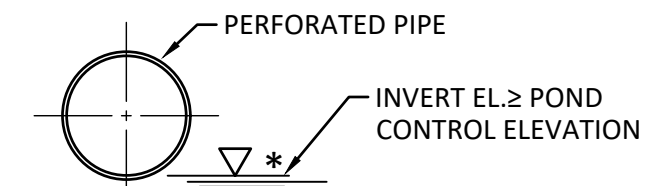
FDOT AND LOCAL GOVERNING AGENCIES MAY HAVE MINIMUM STANDARDS WHICH MAY EXCEED THOSE REFERENCED ABOVE. CONTRACTOR SHALL INSTALL UNDERDRAIN IN ACCORDANCE WITH FDOT AND LOCAL GOVERNING DISTRICTS' MINIMUM STANDARDS AND REGULATIONS AS APPLICABLE.

ROADWAY DESIGN CRITERIA
 FOR URBAN SECTIONS WITH CURB & GUTTER (I.E., TYPE A, TYPE F, MIAMI CURB, ETC.)

- UNLESS OTHERWISE NOTED, REFERENCE TO "FDOT SECTION" REFERS TO FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. REFERENCES TO "FDOT INDEX" REFERS TO FDOT DESIGN STANDARDS, LATEST EDITION.
- THE MINIMUM VERTICAL SEPARATION BETWEEN THE DESIGN SEASONAL HIGH WATER TABLE (DSHWT \geq LOW POND CONTROL ELEVATION) AND THE BOTTOM OF THE ROADWAY BASE AT THE LOWEST EDGE OF PAVEMENT SHALL BE AS FOLLOWS:
 - LIMEROCK BASE 24 INCHES
 - CRUSHED CONCRETE BASE 12 INCHES
 - ASPHALT BASE COURSE (ABC) 12 INCHES
- A MINIMUM OF TWO (2) FEET (24-INCHES) OF SELECT (S) MATERIAL IN ACCORDANCE WITH FDOT INDEX 500 AND 505 SHALL BE REQUIRED BELOW THE ROADWAY SUB-BASE (SUB-GRADE).
- IF THE VERTICAL SEPARATION BETWEEN THE DSHWT AND THE BOTTOM OF THE BASE IS LESS THAN 1.5 FEET (18 -INCHES), UNDERDRAINS SHALL BE INSTALLED ALONG BOTH SIDES OF THE ROAD.
- IF THE VERTICAL SEPARATION BETWEEN THE DSHWT AND THE BOTTOM OF THE BASE IS BETWEEN 1.5 - 2.5 FEET (18 - 30 INCHES), UNDERDRAINS SHALL BE INSTALLED ALONG ONE (1) SIDE OF THE ROAD.
- ROADWAYS CLASSIFIED AS COLLECTOR HAVING A PAVEMENT WIDTH IN EXCESS OF TWO (2) VEHICULAR TRAVEL LANES, COARSE AGGREGATE UNDERDRAINS SHALL BE INSTALLED. FOR COLLECTOR ROADWAYS WITH A NON-PAVED MEDIAN, A FINE AGGREGATE UNDERDRAIN SHALL BE INSTALLED WHEN UNDERDRAIN IS REQUIRED FROM THE CRITERIA ABOVE.
- LOCAL ROADWAYS INCLUDING THOSE WITH STREET PARKING AND NO MORE THAN TWO (2) VEHICULAR TRAVEL LANES WHEN UNDERDRAIN IS REQUIRED, SHALL INSTALL FINE AGGREGATE UNDERDRAINS AS A MINIMUM IN ACCORDANCE WITH THE CRITERIA ABOVE.
- FOR NON-COASTAL LOCAL ROADWAYS, THE LOW EDGE OF PAVEMENT ELEVATION SHALL BE DESIGNED NO LOWER THAN THE FOLLOWING:
 - A MINIMUM CLEARANCE OF SIX (6) INCHES (0.5 FEET) ABOVE THE 25-YEAR 24-HOUR PEAK STAGE WITHIN THE APPLICABLE RECEIVING STORMWATER MANAGEMENT SYSTEM.
 - NO LOWER THAN THE COMPUTED HYDRAULIC GRADE LINE FOR THE STORMWATER COLLECTION SYSTEM (10 YEAR RETURN).
 - NO LOWER THAN A MINIMUM OF THIRTY (30) INCHES (2.5 FEET) ABOVE THE CONTROLLED WATER ELEVATION WITHIN THE APPLICABLE RECEIVING STORMWATER MANAGEMENT SYSTEM.
- FOR NON-COASTAL COLLECTOR ROADWAYS, THE LOW EDGE OF PAVEMENT ELEVATION SHALL BE DESIGNED NO LOWER THAN THE FOLLOWING:
 - A MINIMUM CLEARANCE OF TWELVE (12) INCHES (1.0 FEET) ABOVE THE 25-YEAR 24-HOUR PEAK STAGE WITHIN THE APPLICABLE RECEIVING STORMWATER MANAGEMENT SYSTEM.
 - NO LOWER THAN THE COMPUTED HYDRAULIC GRADE LINE FOR THE STORMWATER COLLECTION SYSTEM (10 YEAR RETURN).
 - NO LOWER THAN A MINIMUM OF THIRTY (30) INCHES (2.5 FEET) ABOVE THE CONTROLLED WATER ELEVATION WITHIN THE APPLICABLE RECEIVING STORMWATER MANAGEMENT SYSTEM.
- TYPE 2 THRU TYPE 5 ROADWAYS SHALL CONTAIN A MINIMUM OF 1.5 INCHES OF SP ASPHALTIC CONCRETE. COLLECTOR ROADWAYS SHALL HAVE A MINIMUM OF THREE (3) INCHES OF SP ASPHALTIC CONCRETE. TYPE 1 ROADWAYS MAY BE COMPLETED IN STAGES, INITIALLY 2.25 INCHES OF SP 12.5 ASPHALT COURSE WITH REQUIRED PAVEMENT MARKINGS AND 0.75 INCHES OF SP 9.5 COURSE INSTALLED WITH ANY THERMOPLASTIC STRIPES, PRIOR TO RELEASE OF THE ASSURANCE FOR MAINTENANCE.
- THE ROAD DESIGN DRAWINGS SHALL CONTAIN SOIL BORING LOCATIONS WITH EXISTING SOIL DATA, OBSERVED WATER LEVEL AND DSHWT SURFACE. UNDERDRAIN OUTFALL POND DATA AND APPROXIMATE WETLAND HYDROPERIOD ELEVATIONS SHALL ALSO BE IDENTIFIED AS APPLICABLE.
- THE REQUIRED MINIMUM STRUCTURAL NUMBER (SN) SHALL BE:
 - 2.34 MIN. TYPE 2 ROADWAYS
 - 3.50 MIN. TYPE 1 ROADWAYS
 - 3.70 MIN. COUNTY COLLECTOR
 - 4.00 MIN. COUNTY ARTERIAL
- CURB DESIGN IS SITE SPECIFIC AND SHALL BE IDENTIFIED ON PLANS.

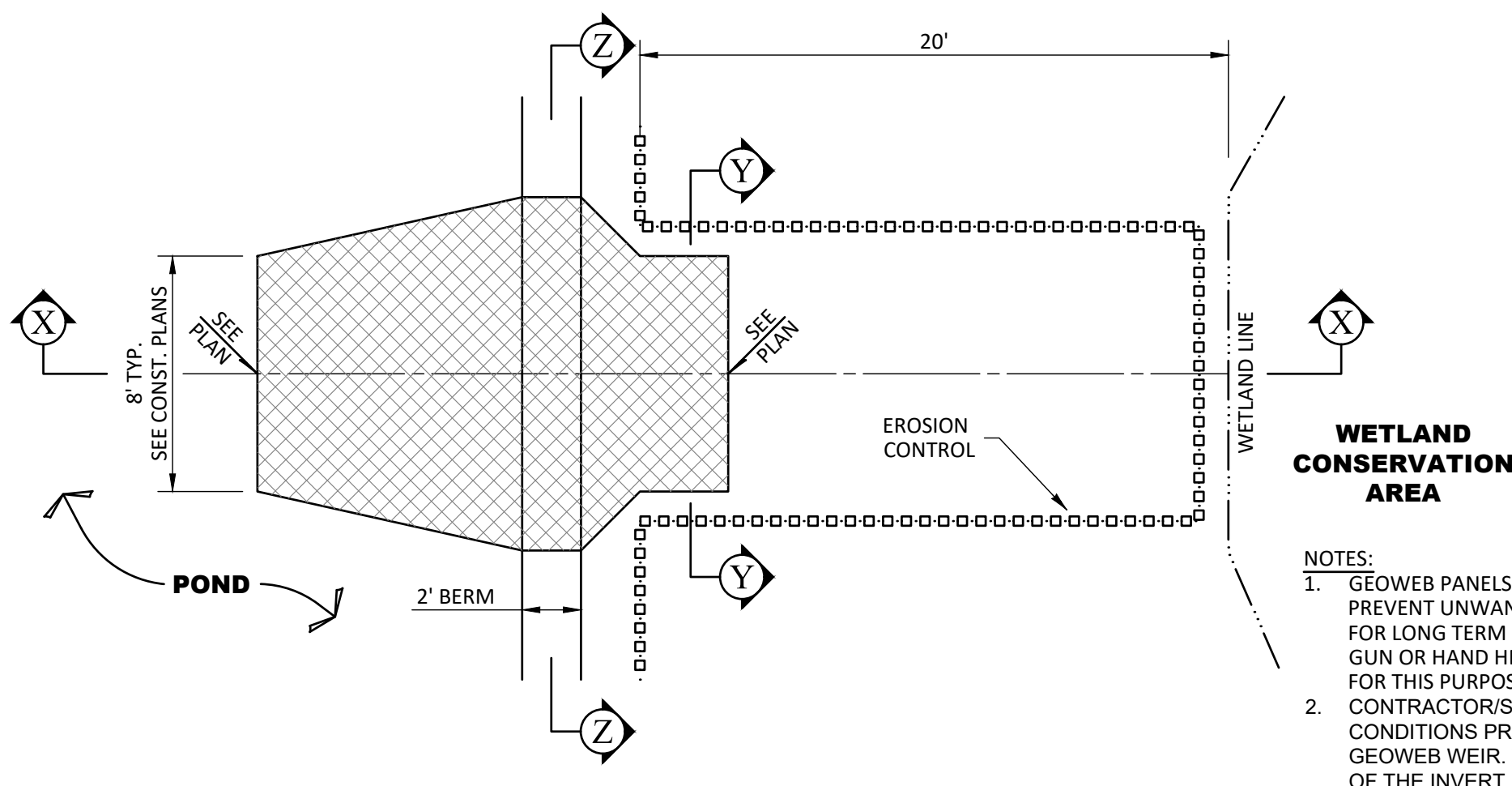
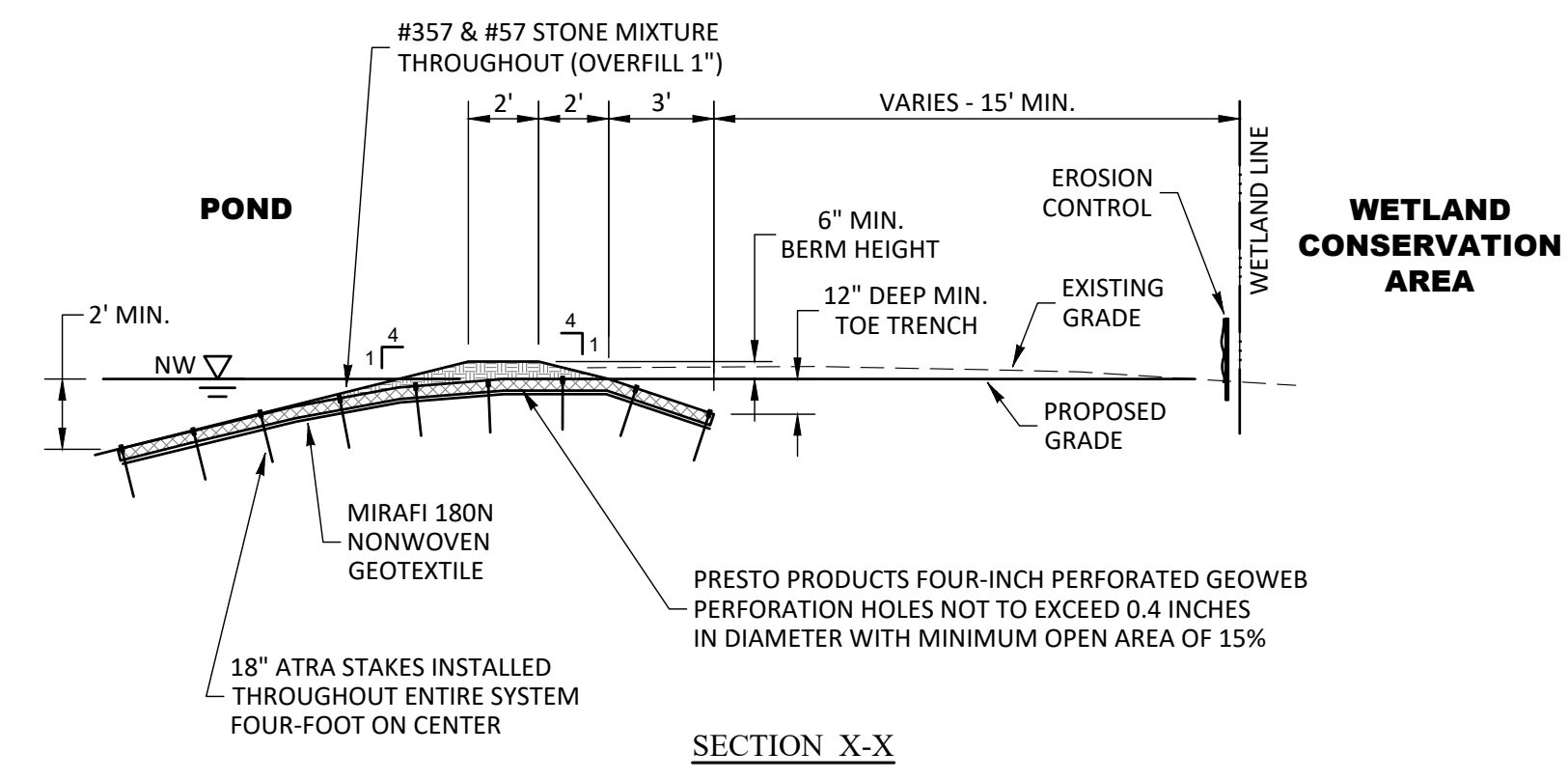
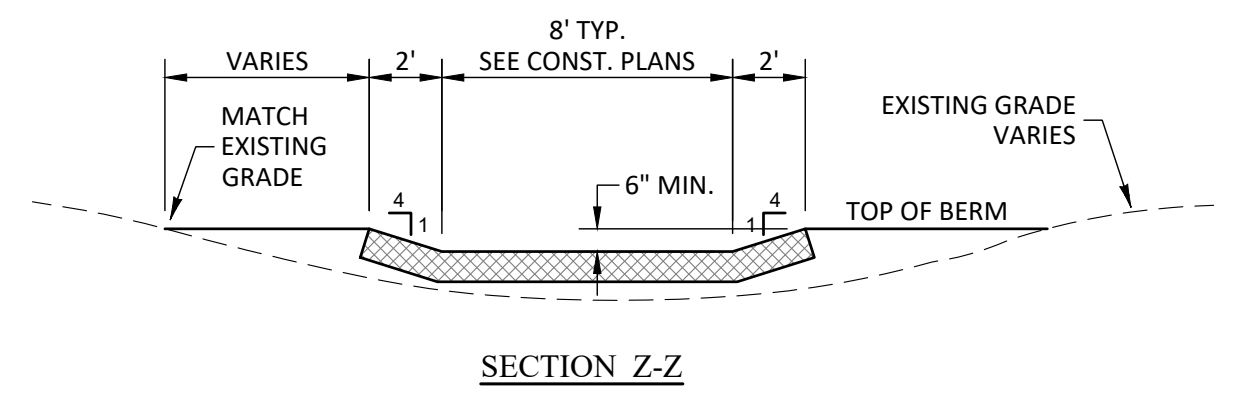
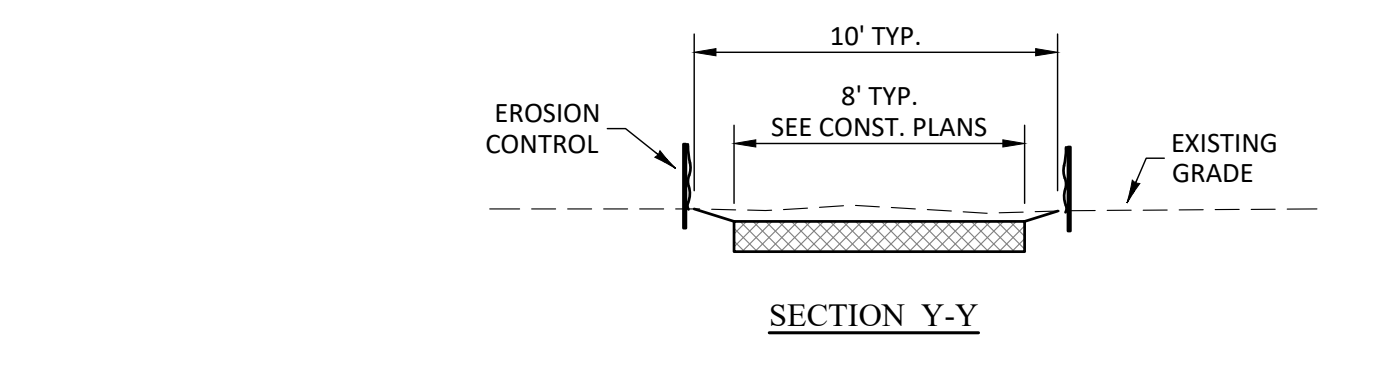


UNDERDRAIN FINE AGGREGATE
 SCALE: 1" = 2"



- * 32" BELOW BOC (MIAMI TYPE A CURB)
- * 35" BELOW BOC (TYPE F CURB)

DETAIL
 SCALE: 1" = 1"



- NOTES:**
- GEOWEB PANELS MUST BE FASTENED TOGETHER TO HELP PREVENT UNWANTED SEPARATION DURING IN-FILLING AND FOR LONG TERM SYSTEM INTEGRITY. A PNEUMATIC STAPLE GUN OR HAND HELD PLIERS AND LOC RINGS CAN BE USED FOR THIS PURPOSE. EACH CELL SHALL HAVE ONE FASTENER.
 - CONTRACTOR/SURVEYOR SHALL VERIFY IN-FIELD CONDITIONS PRIOR TO STAKING AND INSTALLING GEOWEB WEIR. WEIR ELEVATION SHALL BE THE LOWER OF THE INVERT DENOTED OR THE LOWEST NATURAL GROUND ELEVATION ADJUTTING OPEN WATER EXCAVATION AND ADJACENT WETLAND SYSTEM TO WHICH HYDRAULIC CONNECTION IS DESIRED.

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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4

DRAINAGE DETAILS

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	02/22/2019	REVIEW SUBMITTAL

PROJECT NO:	FRE SN 1002
FILE:	DD
DESIGN BY:	MWD
DRAWN BY:	DD

STATE OF FLORIDA PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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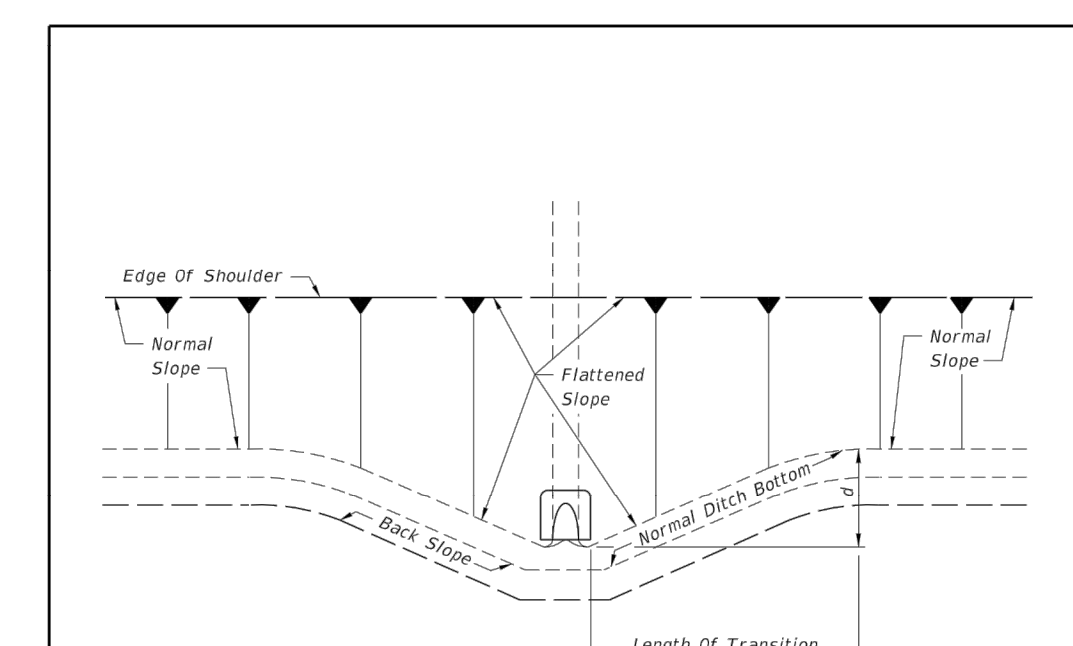
QUANTITIES FOR 3" THICK CONCRETE SLABS (CY)

Slope	ROUND-CONCRETE			
	D Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
1:2	0.27	0.41	0.54	0.67
18"	0.31	0.45	0.60	0.75
24"	0.39	0.59	0.79	1.00
30"	0.46	0.76	1.04	1.32
36"	0.55	0.94	1.33	1.71
42"	0.66	1.15	1.66	2.15
48"	0.76	1.37	1.96	2.57
54"	0.87	1.62	2.38	3.14
60"	0.99	1.90	2.81	3.73
66"	1.11	2.15	3.21	4.27
72"	1.24	2.46	3.68	4.90
1:4	0.40	0.61	0.80	1.00
18"	0.47	0.69	0.91	1.14
24"	0.60	0.90	1.21	1.52
30"	0.76	1.19	1.63	2.07
36"	0.89	1.48	2.05	2.63
42"	1.05	1.82	2.57	3.34
48"	1.21	2.15	3.07	4.00
54"	1.39	2.55	3.72	4.86
60"	1.59	3.02	4.44	5.86
66"	1.91	3.66	5.40	7.15
72"	2.12	4.18	6.24	8.30

Slope	ROUND-CMP			
	D Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
1:2	0.24	0.37	0.51	0.64
18"	0.26	0.43	0.61	0.78
24"	0.32	0.52	0.72	0.91
30"	0.38	0.64	0.91	1.18
36"	0.44	0.78	1.13	1.48
42"	0.51	0.96	1.41	1.87
48"	0.57	1.09	1.63	2.15
54"	0.65	1.32	1.99	2.66
60"	0.71	1.49	2.29	3.07
1:4	0.31	0.47	0.63	0.79
18"	0.34	0.53	0.71	0.90
24"	0.44	0.69	0.92	1.18
30"	0.53	0.88	1.25	1.60
36"	0.62	1.07	1.53	2.00
42"	0.71	1.30	1.92	2.52
48"	0.80	1.54	2.29	3.02
54"	0.91	1.83	2.74	3.67
60"	1.02	2.15	3.27	4.39

Slope	CMP-ARCH				
	Span Rise	Single Pipe	Double Pipe	Triple Pipe	
1:2	17" 13"	0.33	0.49	0.65	0.81
18"	21" 15"	0.33	0.50	0.67	0.83
24"	28" 20"	0.37	0.56	0.76	0.95
30"	35" 24"	0.40	0.62	0.84	1.07
36"	42" 29"	0.43	0.70	0.98	1.25
42"	49" 33"	0.49	0.82	1.15	1.48
48"	57" 38"	0.55	0.95	1.35	1.75
54"	64" 43"	0.62	1.10	1.57	2.05
60"	71" 47"	0.69	1.24	1.80	2.35
1:4	17" 13"	0.38	0.56	0.74	0.92
18"	21" 15"	0.39	0.59	0.80	0.95
24"	28" 20"	0.43	0.64	0.88	1.10
30"	35" 24"	0.49	0.77	1.05	1.33
36"	42" 29"	0.57	0.92	1.27	1.62
42"	49" 33"	0.65	1.08	1.50	1.93
48"	57" 38"	0.76	1.30	1.83	2.37
54"	64" 43"	0.87	1.55	2.18	2.83
60"	71" 47"	0.95	1.68	2.43	3.17

Slope	ELLIPTICAL-CONCRETE				
	Rise Span	Single Pipe	Double Pipe	Triple Pipe	
1:2	12" 18"	0.19	0.33	0.45	0.57
14"	21" 27"	0.25	0.40	0.55	0.69
18"	30" 36"	0.34	0.55	0.75	0.95
24"	38" 43"	0.43	0.71	1.00	1.28
29"	45" 52"	0.52	0.90	1.27	1.65
34"	53" 62"	0.62	1.11	1.60	2.09
38"	60" 70"	0.70	1.29	1.87	2.46
43"	68" 81"	0.81	1.54	2.26	2.99
48"	76" 89"	0.93	1.79	2.66	3.53
53"	83" 94"	1.04	2.04	3.03	4.02
58"	91" 117"	1.17	2.33	3.49	4.66
1:4	12" 18"	0.30	0.45	0.61	0.76
14"	21" 27"	0.36	0.56	0.76	0.95
18"	30" 36"	0.51	0.79	1.08	1.36
24"	38" 43"	0.68	1.10	1.53	1.96
29"	45" 52"	0.86	1.45	2.04	2.63
34"	53" 62"	1.02	1.81	2.60	3.39
38"	60" 70"	1.18	2.14	3.10	4.05
43"	68" 78"	1.38	2.59	3.79	4.99
48"	76" 87"	1.59	3.05	4.51	5.97
53"	83" 94"	1.80	3.50	5.19	6.88
58"	91" 104"	2.04	4.04	6.05	8.05



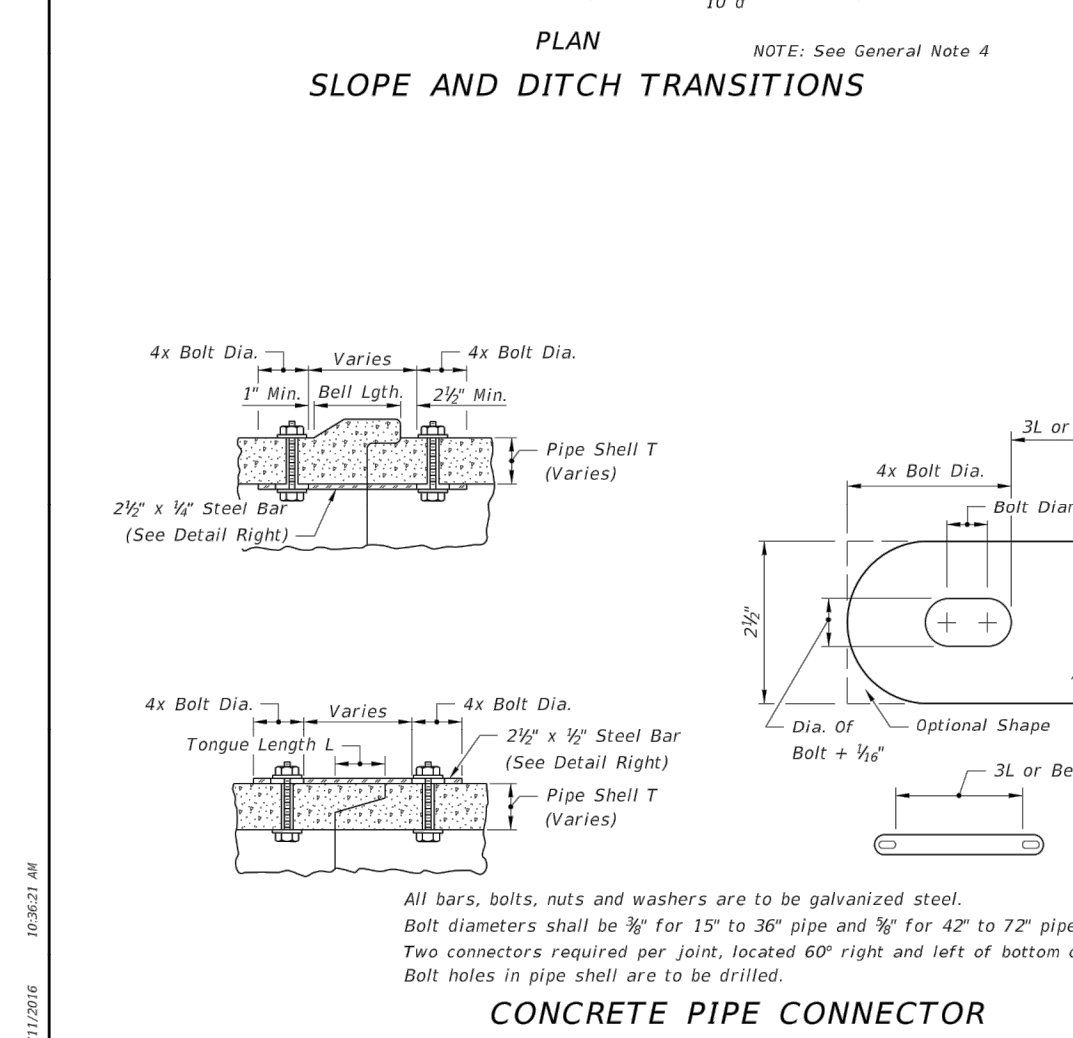
GENERAL NOTES

- Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of side drain pipe; corrugated steel pipe mitered end sections may be used with any type of side drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of side drain pipe except steel pipe. When bituminous coated metal pipe is specified for side drain pipe, construct the mitered end sections with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the side drain pipe, construct a concrete jacket in accordance with Index 280.
- Use either corrugated metal or concrete mitered end sections for corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC) and polypropylene pipe (PPR). When used in conjunction with corrugated mitered end sections, make connection using either a formed metal band specifically designed to join HDPE or PVC pipe, with metal pipe or other coupler approved by the State Drainage Engineer. When used in conjunction with a concrete mitered end sections, concrete jacket constructed in accordance with Index 280.
- Class NS concrete cast-in-place reinforced slabs are required for all sizes of side drain pipes. Unless 3" thickness called for in plans, construct slabs at 5 1/2" thick.
- Select lengths of concrete pipe that avoid excessive connections in the assembly of the mitered end section.
- Repair corrugated metal pipe galvanizing that is damaged during boring and perforating.
- Prior to placing concrete slab apply a bituminous coating to any portion of corrugated metal pipe in direct contact with concrete. Extend the coating 12" beyond the concrete slab.
- When existing multiple side drain pipes are spaced other than the dimensions shown in this Index, have nonparallel axes, or non-uniform sections, either construct the mitered end sections separately as single pipe or collectively as multiple pipe end sections as directed by the Engineer.

DESIGN NOTES

- Mitered end sections for pipe sizes 15", 18" and 24" round or equivalent pipe arch or elliptical pipe are permitted within the clear zone. When the slope intersection permits, the mitered end section may be located with the culvert opening as close as 8' beyond the outside edge of the shoulder.
- Include slope and ditch transitions when the normal roadway slope must be flattened to place end section outside clear zone. See Slope and Ditch Transitions detail.

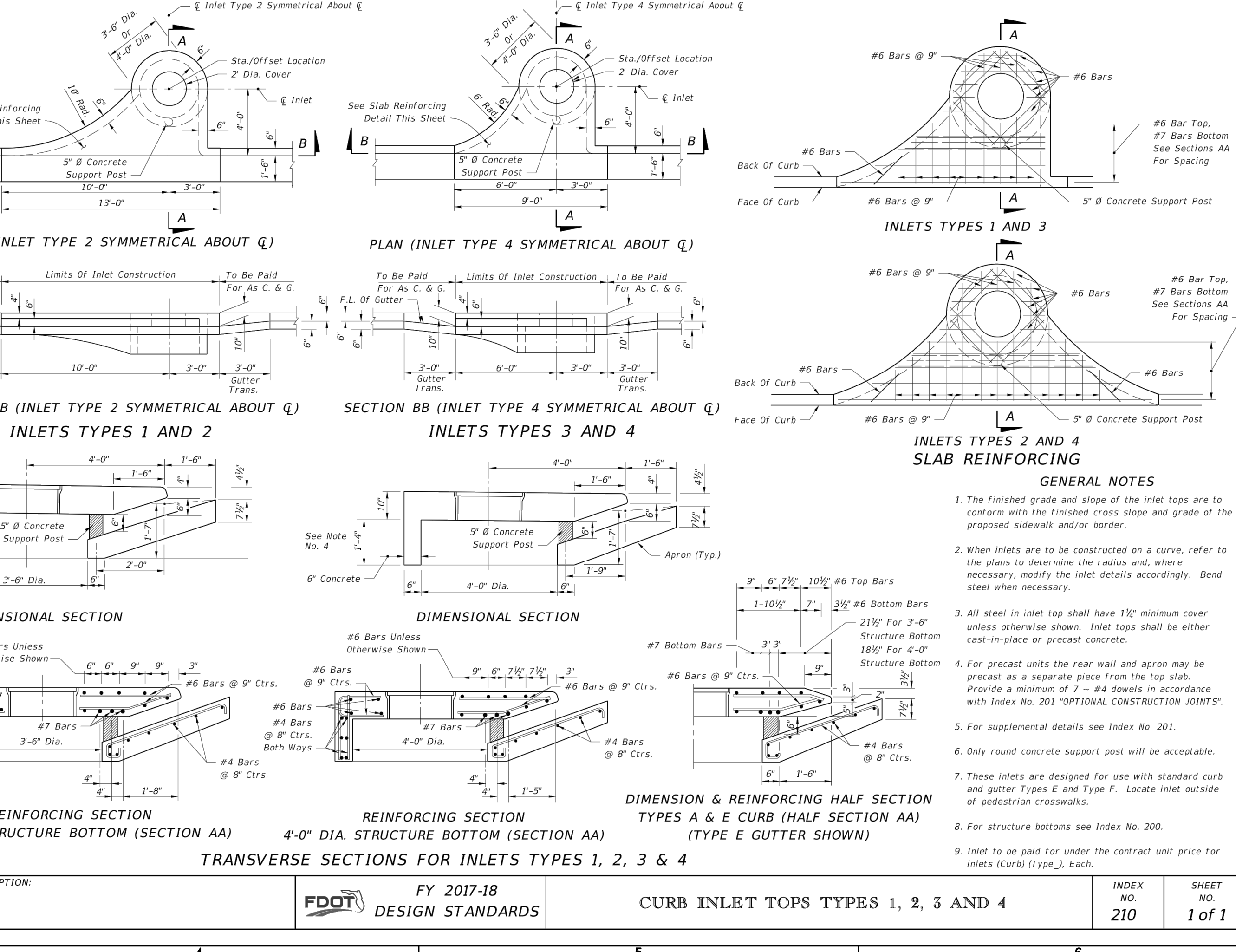
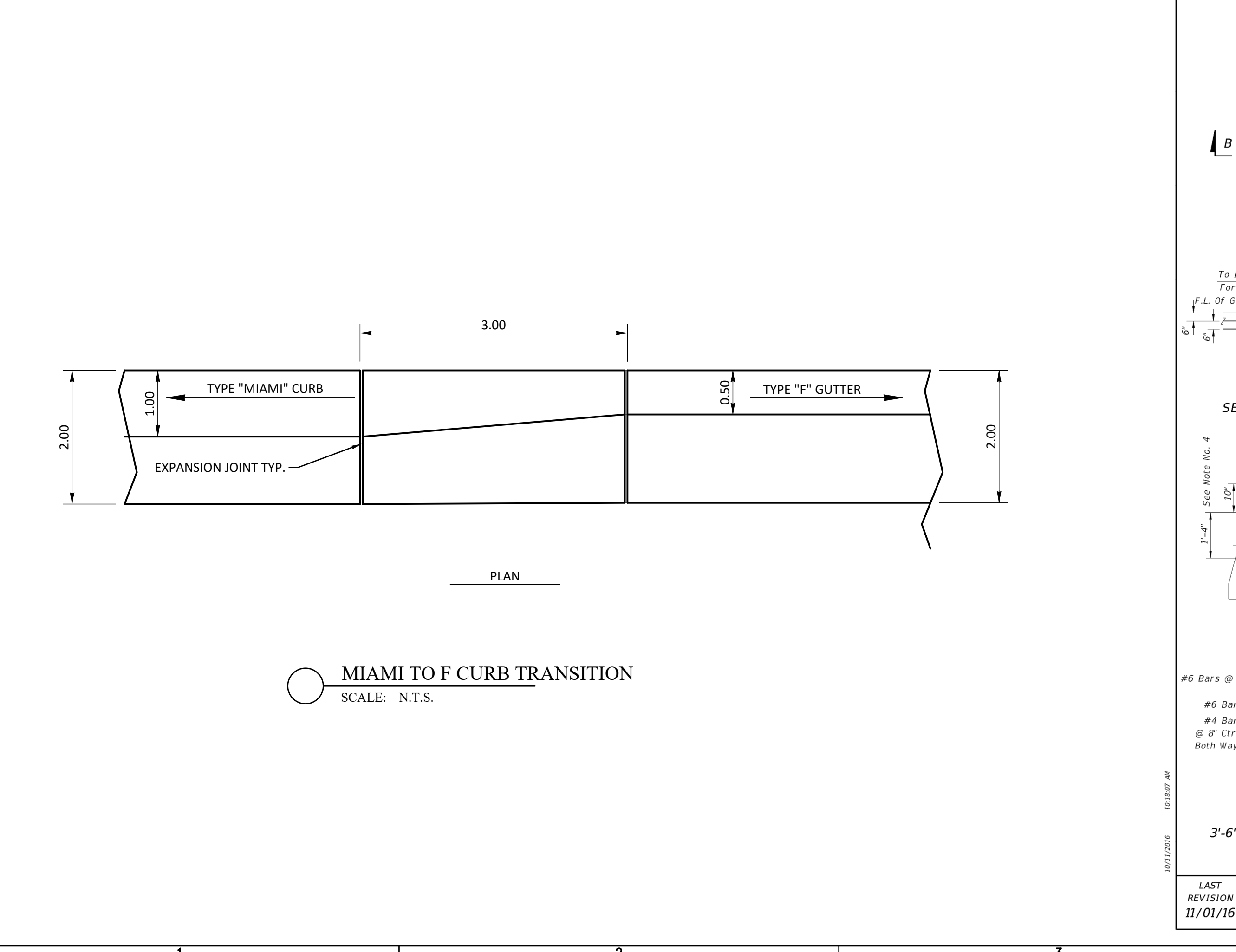
LAST REVISION 07/01/00	DESCRIPTION: FDOT FY 2017-18 DESIGN STANDARDS	CROSS DRAIN MITERED END SECTION	INDEX NO. 272	SHEET NO. 5 of 6
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ANCHOR DETAIL SPECIAL DETAILS AND NOTES

Notes in the mitered end pipe are to be drilled or punched; burning not permitted.

LAST REVISION 11/01/16	DESCRIPTION: FDOT FY 2017-18 DESIGN STANDARDS	CROSS DRAIN MITERED END SECTION	INDEX NO. 272	SHEET NO. 6 of 6
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LAST REVISION 11/01/16	DESCRIPTION: FDOT FY 2017-18 DESIGN STANDARDS	CURB INLET TOPS TYPES 1, 2, 3 AND 4	INDEX NO. 210	SHEET NO. 1 of 1
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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 DRAINAGE DETAILS

DR HORTON

PREPARED FOR: DR HORTON

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FILE: DD
DESIGN BY: MWD
DRAWN BY: DD

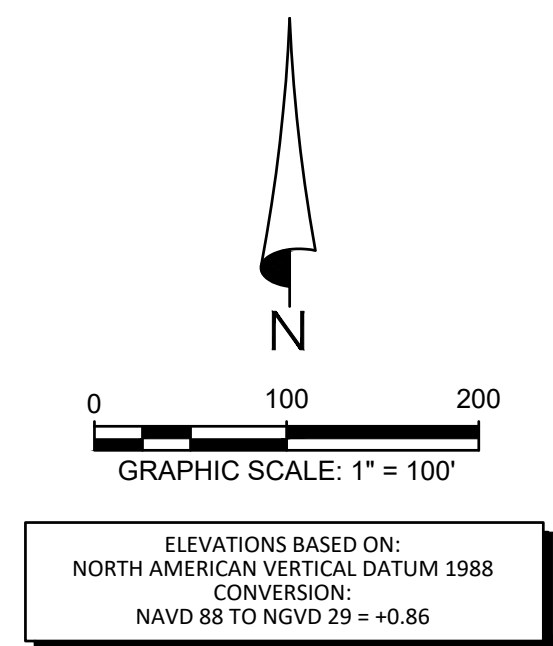
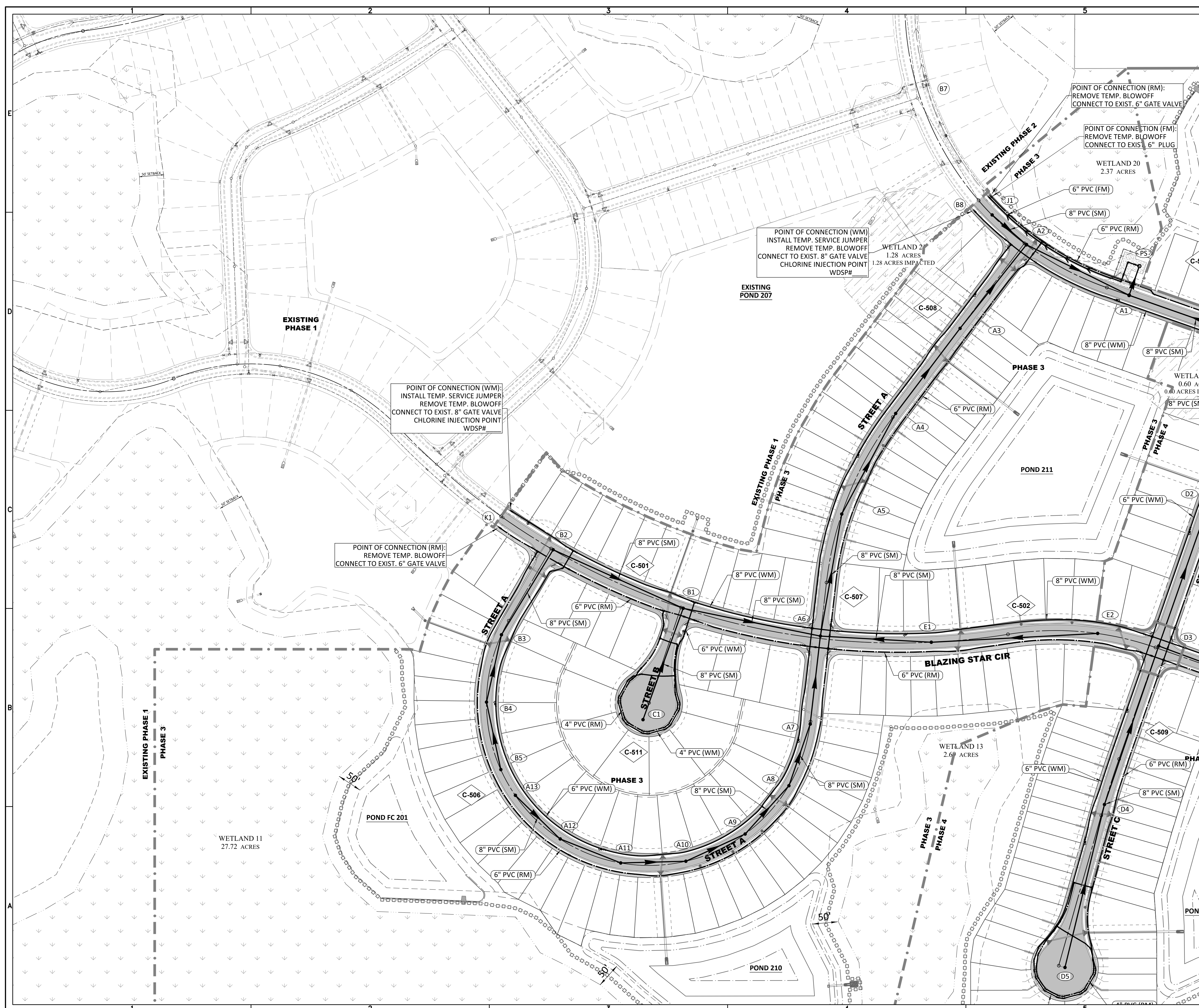
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PROFESSIONAL ENGINEER
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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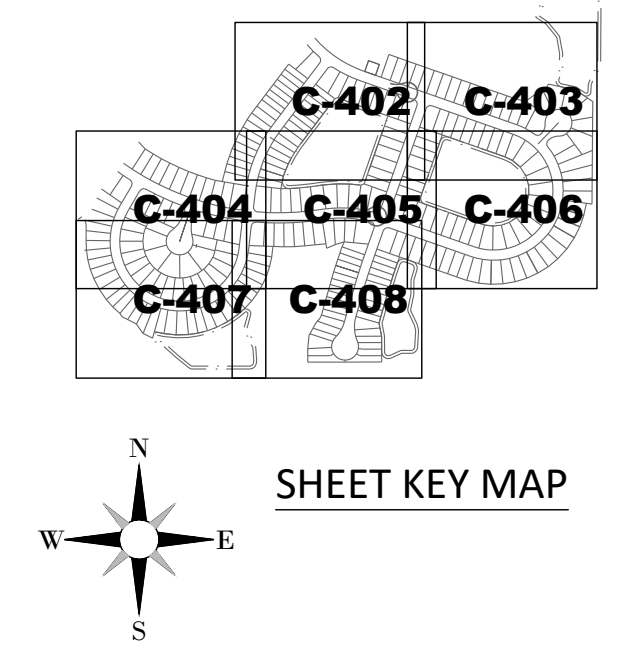
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GARY D. MILLER
DATE: 11/02/2019
LICENSE NO. 52717

C-319



- ### GENERAL LEGEND
- SWFMWD WETLAND LINE
 - SWFMWD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - STAKED EROSION CONTROL
 - PHASE LINE
 - PLAN & PROFILE SHEET NUMBER
- ### WATER & SEWER LEGEND
- | EXISTING | PROPOSED | DESCRIPTION |
|----------|----------|------------------------------------|
| | | STORM STRUCTURE NUMBER |
| | | STORM DRAINAGE STRUCTURE |
| | | WATER MAIN (WM) |
| | | RECLAIMED WATER MAIN (RM) |
| | | FIRE HYDRANT |
| | | VALVE & BOX |
| | | REDUCER |
| | | PLUG |
| | | BLOW-OFF |
| | | BENDS |
| | | VERTICAL BENDS |
| | | WATER DISTRIBUTION SAMPLING POINT |
| | | WATER SERVICE DOUBLE |
| | | WATER SERVICE SINGLE |
| | | WATER SERVICE CASING |
| | | RECLAIMED WATER SERVICE DOUBLE |
| | | RECLAIMED WATER SERVICE SINGLE |
| | | RECLAIMED WATER SERVICE SLEEVE |
| | | SANITARY SEWER (SM) |
| | | SANITARY FORCE MAIN (FM) |
| | | SANITARY SERVICE DOUBLE W/CLEANOUT |
| | | SANITARY SERVICE SINGLE W/CLEANOUT |
| | | DENOTES SLEEVE SIZE & LOCATION |



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R-AVALON GROVES/ACTIVE ADULT PHASE 3 & 4/ENGINEERING/KEY DWG-C-400-2010/03/22 1:31 PM MARK JONES

SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
MASTER WATER AND SEWER PLAN

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2009	REVIEW SUBMITTAL

PROJECT NO.: FRE SN 1002
FILE: WS-KEY
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

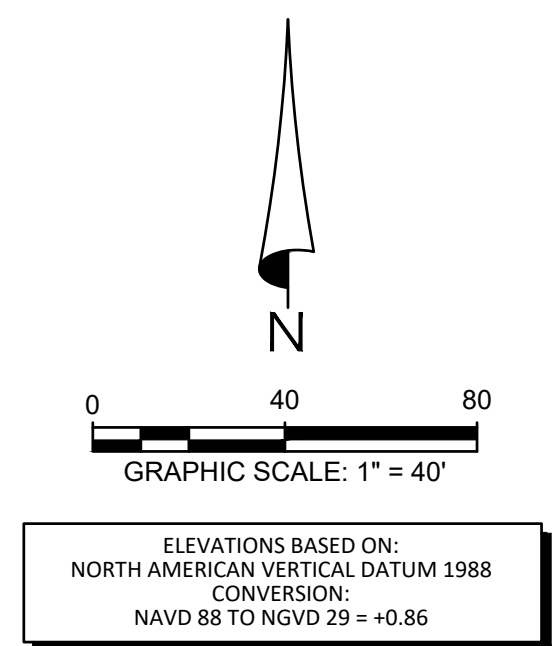
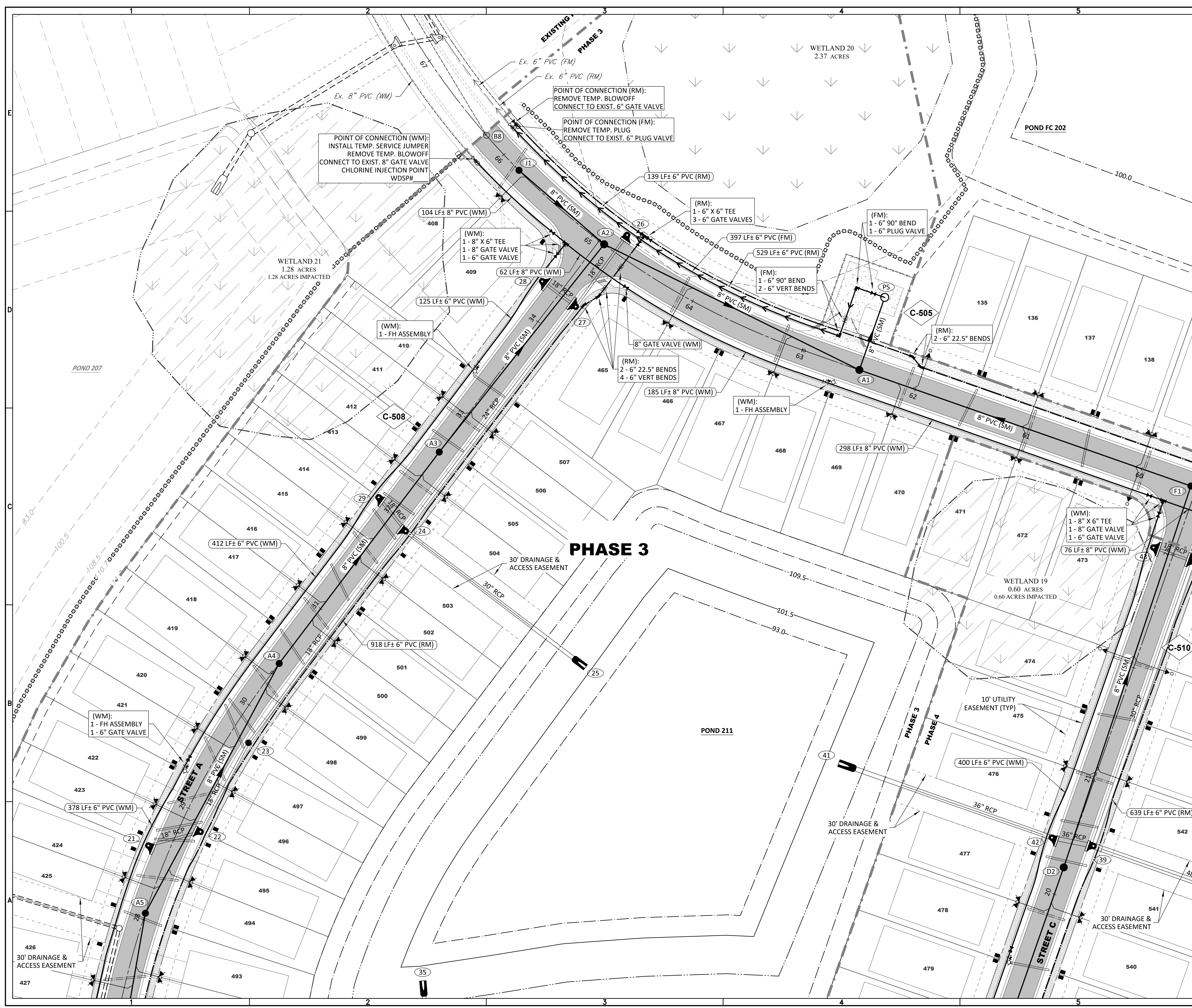
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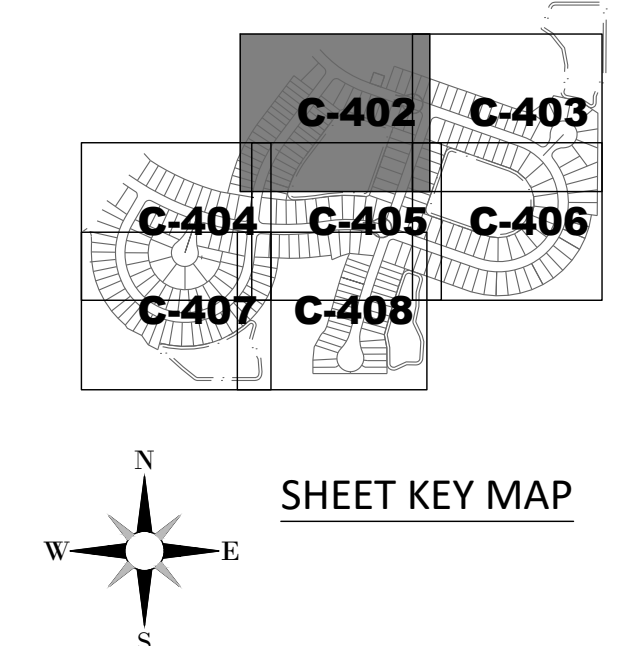
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DATE: 09/22/09
LICENSE NO. 52717

C-400



- ### GENERAL LEGEND
- SWFMD WETLAND LINE
 - SWFMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - STAKED EROSION CONTROL
 - PHASE LINE
 - PLAN & PROFILE SHEET NUMBER
- ### WATER & SEWER LEGEND
- | EXISTING | PROPOSED | DESCRIPTION |
|----------|----------|------------------------------------|
| (10) | (10) | STORM STRUCTURE NUMBER |
| (10) | (10) | STORM DRAINAGE STRUCTURE |
| --- | --- | WATER MAIN (WM) |
| --- | --- | RECLAIMED WATER MAIN (RM) |
| --- | --- | FIRE HYDRANT |
| --- | --- | VALVE & BOX |
| --- | --- | REDUCER |
| --- | --- | PLUG |
| --- | --- | BLOW-OFF |
| --- | --- | BENDS |
| --- | --- | VERTICAL BENDS |
| --- | --- | WATER DISTRIBUTION SAMPLING POINT |
| --- | --- | WATER SERVICE DOUBLE |
| --- | --- | WATER SERVICE SINGLE |
| --- | --- | WATER SERVICE CASING |
| --- | --- | RECLAIMED WATER SERVICE DOUBLE |
| --- | --- | RECLAIMED WATER SERVICE SINGLE |
| --- | --- | RECLAIMED WATER SERVICE SLEEVE |
| --- | --- | SANITARY SEWER (SM) |
| --- | --- | SANITARY FORCE MAIN (FM) |
| --- | --- | SANITARY SERVICE DOUBLE W/CLEANOUT |
| --- | --- | SANITARY SERVICE SINGLE W/CLEANOUT |
| --- | --- | DENOTES SLEEVE SIZE & LOCATION |



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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 WATER AND SEWER PLAN

DR HORTON

PREPARED FOR

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: WS
 DESIGN BY: MWD
 DRAWN BY: DD

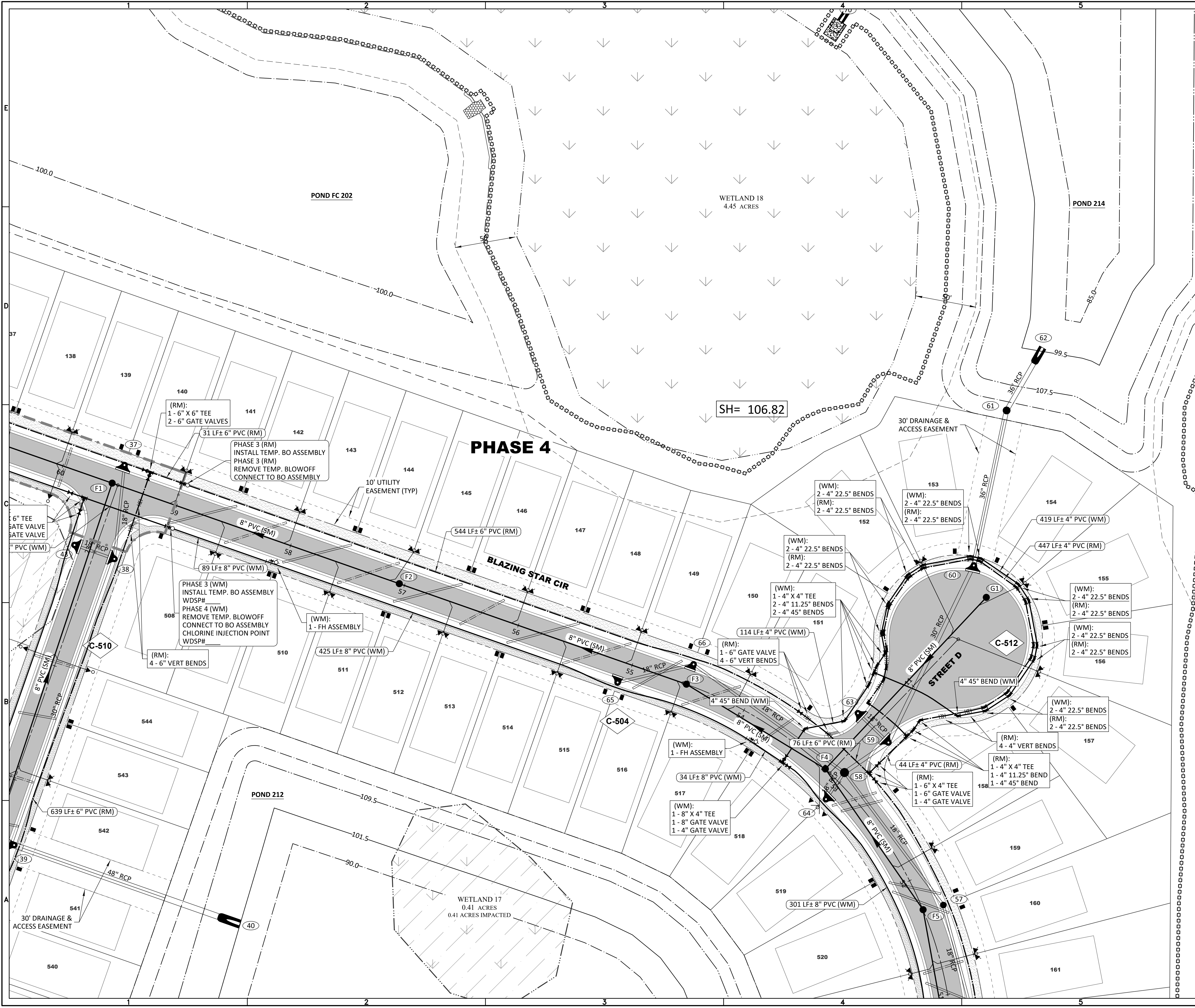
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C-402



N

0 40 80

GRAPHIC SCALE: 1" = 40'

ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION:
NAVD 88 TO NGVD 29 = +0.86

GENERAL LEGEND

- SWFMWD WETLAND LINE
- - - SWFMWD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- o-o-o-o-o-o-o-o STAKED EROSION CONTROL
- PHASE LINE
- C-510 PLAN & PROFILE SHEET NUMBER

WATER & SEWER LEGEND

		STORM STRUCTURE NUMBER
		STORM DRAINAGE STRUCTURE
		WATER MAIN (WM)
		RECLAIMED WATER MAIN (RM)
		FIRE HYDRANT
		VALVE & BOX
		REDUCER
		PLUG
		BLOW-OFF
		BENDS
		VERTICAL BENDS
		WATER DISTRIBUTION SAMPLING POINT

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

WATER AND SEWER PLAN

DR HORTON

PREPARED FOR

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: WS
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

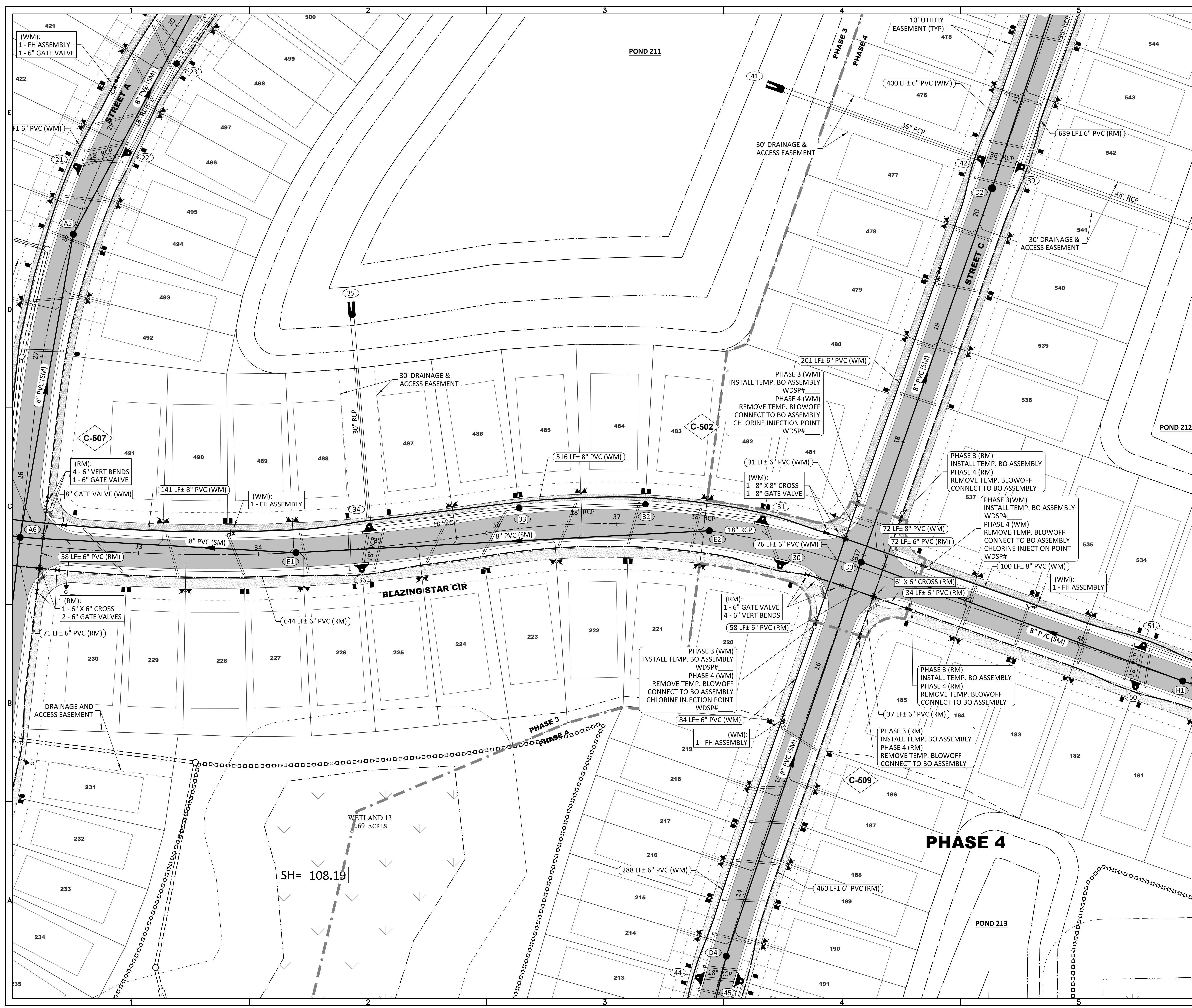
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SHEET KEY MAP

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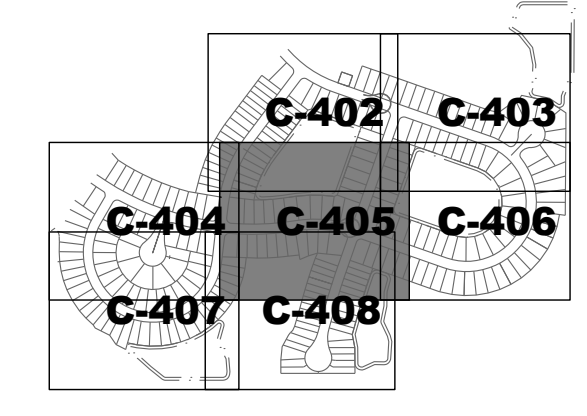
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CONVERSION:
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GENERAL LEGEND

- SWFMWD WETLAND LINE
- SWFMWD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- STAKED EROSION CONTROL
- PHASE LINE
- PLAN & PROFILE SHEET NUMBER

WATER & SEWER LEGEND

- | | | | |
|--|--|------------------------------------|--------------------------------------|
| | | EXISTING
STORM STRUCTURE NUMBER | PROPOSED
STORM DRAINAGE STRUCTURE |
| | | WATER MAIN (WM) | RECLAIMED WATER MAIN (RM) |
| | | FIRE HYDRANT | VALVE & BOX |
| | | REDUCER | PLUG |
| | | BLOW-OFF | BENDS |
| | | VERTICAL BENDS | WATER DISTRIBUTION SAMPLING POINT |
| | | WATER SERVICE DOUBLE | WATER SERVICE SINGLE |
| | | WATER SERVICE CASING | RECLAIMED WATER SERVICE DOUBLE |
| | | RECLAIMED WATER SERVICE SINGLE | RECLAIMED WATER SERVICE SLEEVE |
| | | SANITARY SEWER (SM) | SANITARY FORCE MAIN (FM) |
| | | SANITARY SERVICE DOUBLE W/CLEANOUT | SANITARY SERVICE SINGLE W/CLEANOUT |
| | | DENOTES SLEEVE SIZE & LOCATION | |



N

E

S

W

SHEET KEY MAP

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

WATER AND SEWER PLAN

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO.: FRE SN 1002
FILE: WS
DESIGN BY: MWD
DRAWN BY: DD

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PROFESSIONAL ENGINEER

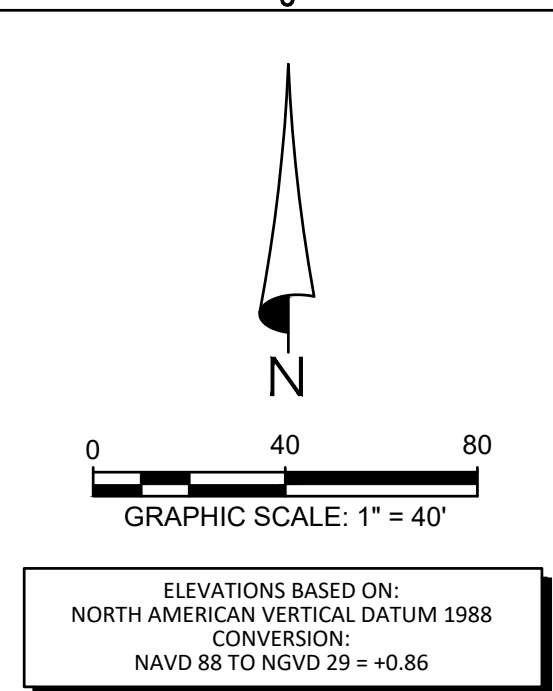
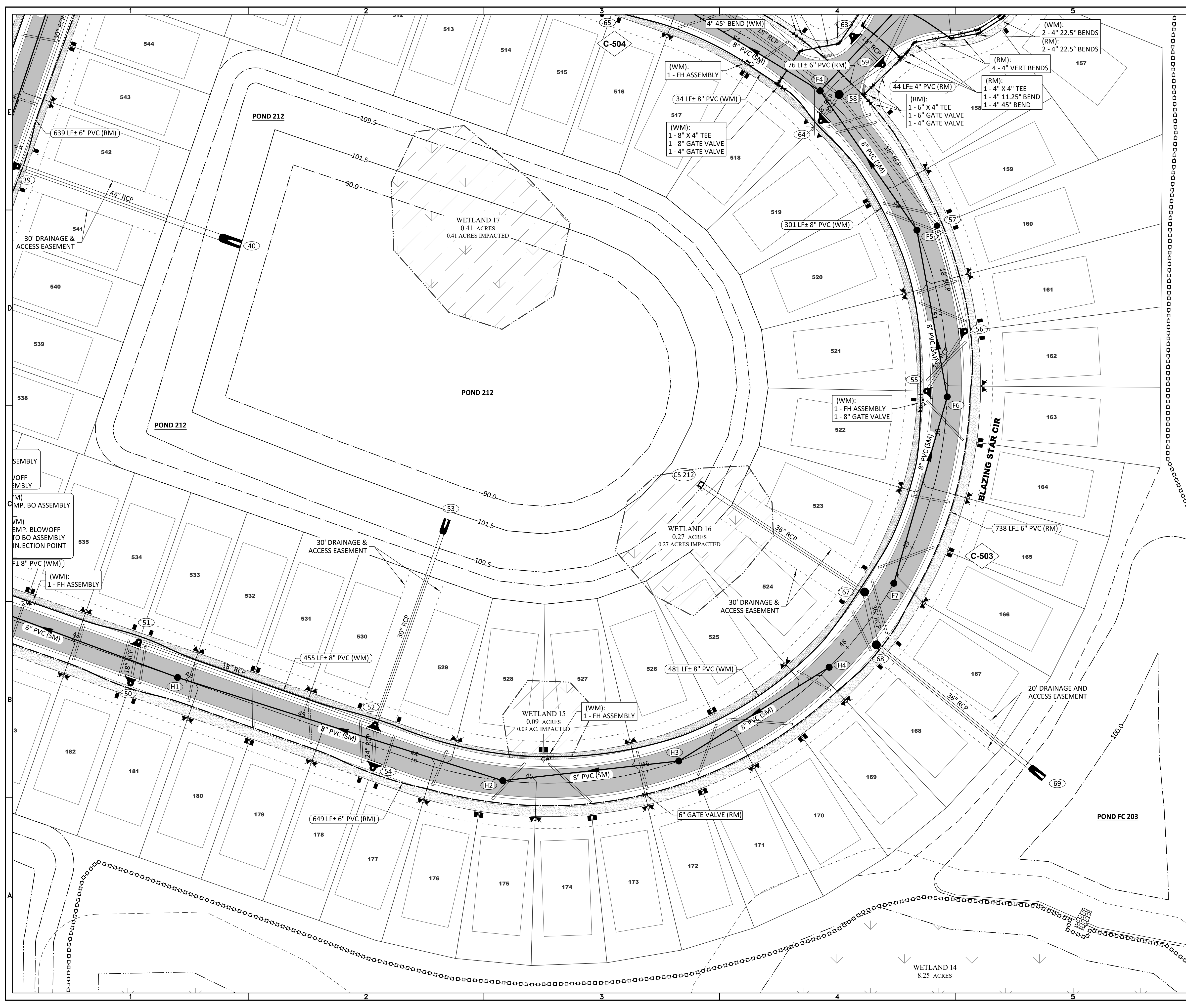
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DATE: 09/22/2019
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C-405

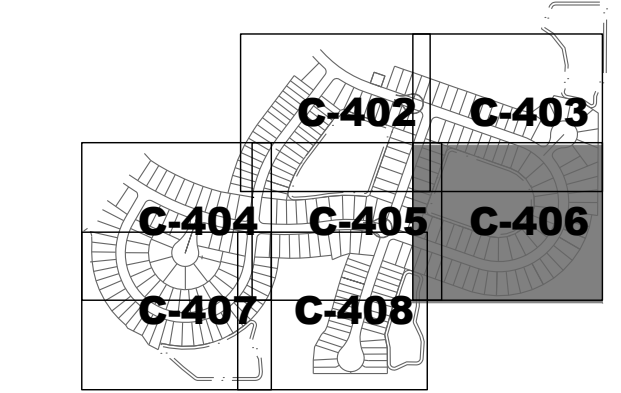


GENERAL LEGEND

- SWFMWD WETLAND LINE
- - - SWFMWD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
- STAKED EROSION CONTROL
- PHASE LINE
- ◊ PLAN & PROFILE SHEET NUMBER

WATER & SEWER LEGEND

- | | | |
|----------|----------|------------------------------------|
| EXISTING | PROPOSED | |
| ⊙ | ⊙ | STORM STRUCTURE NUMBER |
| ⊙ | ⊙ | STORM DRAINAGE STRUCTURE |
| --- | --- | WATER MAIN (WM) |
| --- | --- | RECLAIMED WATER MAIN (RM) |
| --- | --- | FIRE HYDRANT |
| --- | --- | VALVE & BOX |
| --- | --- | REDUCER |
| --- | --- | PLUG |
| --- | --- | BLOW-OFF |
| --- | --- | BENDS |
| --- | --- | VERTICAL BENDS |
| --- | --- | WATER DISTRIBUTION SAMPLING POINT |
| --- | --- | WATER SERVICE DOUBLE |
| --- | --- | WATER SERVICE SINGLE |
| --- | --- | WATER SERVICE CASING |
| --- | --- | RECLAIMED WATER SERVICE DOUBLE |
| --- | --- | RECLAIMED WATER SERVICE SINGLE |
| --- | --- | RECLAIMED WATER SERVICE SLEEVE |
| --- | --- | SANITARY SEWER (SM) |
| --- | --- | SANITARY FORCE MAIN (FM) |
| --- | --- | SANITARY SERVICE DOUBLE W/CLEANOUT |
| --- | --- | SANITARY SERVICE SINGLE W/CLEANOUT |
| --- | --- | DENOTES SLEEVE SIZE & LOCATION |



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
WATER AND SEWER PLAN

DR HORTON

NO.	DATE	DESCRIPTION
1	03/27/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: WS
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

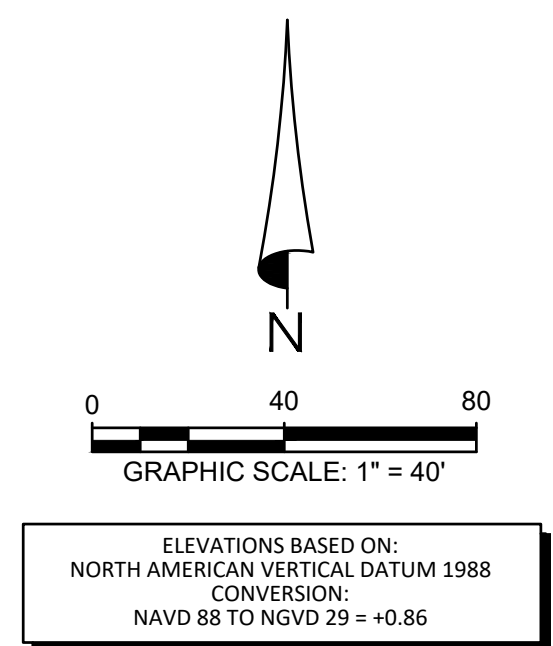
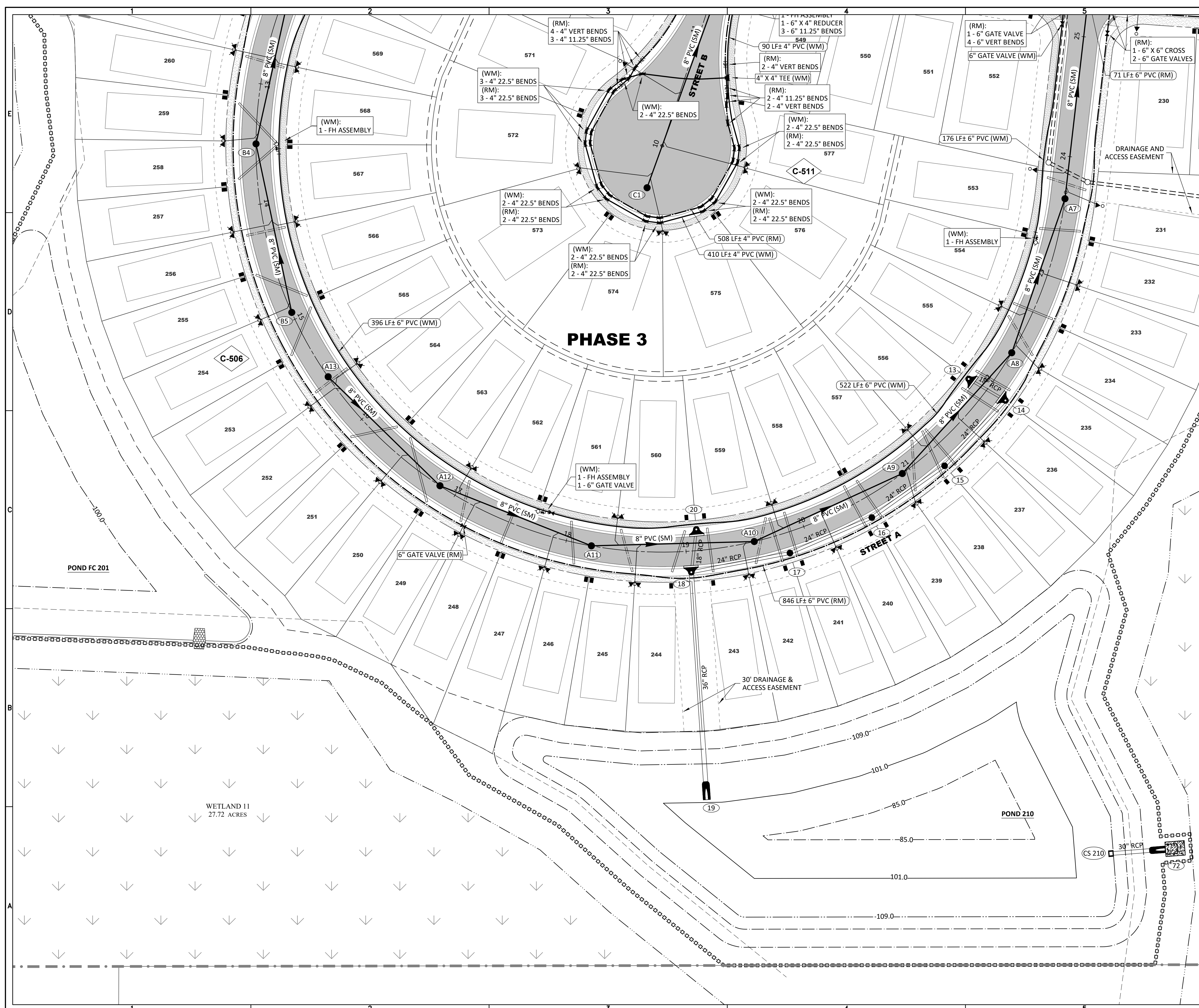
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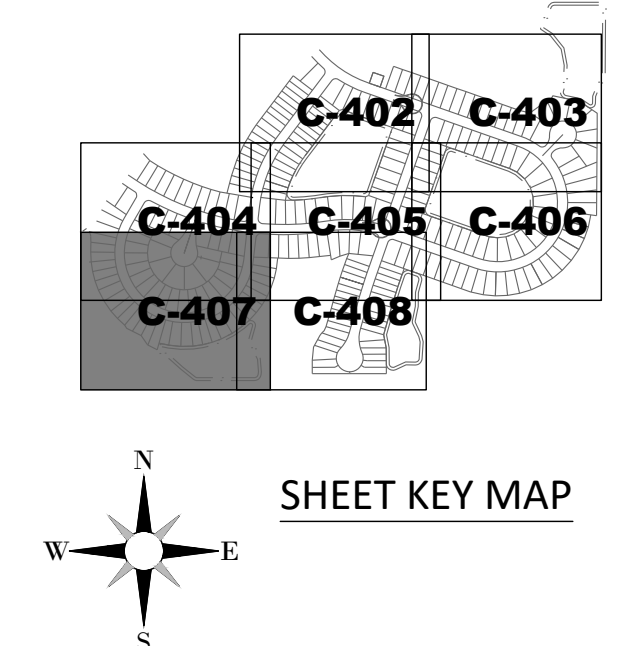
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C-406

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- GENERAL LEGEND**
- SWFMD WETLAND LINE
 - SWFMD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - STAKED EROSION CONTROL
 - PHASE LINE
 - PLAN & PROFILE SHEET NUMBER
- WATER & SEWER LEGEND**
- | | | | | |
|--|----------|--|----------|------------------------------------|
| | EXISTING | | PROPOSED | STORM STRUCTURE NUMBER |
| | | | | STORM DRAINAGE STRUCTURE |
| | | | | WATER MAIN (WM) |
| | | | | RECLAIMED WATER MAIN (RM) |
| | | | | FIRE HYDRANT |
| | | | | VALVE & BOX |
| | | | | REDUCER |
| | | | | PLUG |
| | | | | BLOW-OFF |
| | | | | BENDS |
| | | | | VERTICAL BENDS |
| | | | | WATER DISTRIBUTION SAMPLING POINT |
| | | | | WATER SERVICE DOUBLE |
| | | | | WATER SERVICE SINGLE |
| | | | | WATER SERVICE CASING |
| | | | | RECLAIMED WATER SERVICE DOUBLE |
| | | | | RECLAIMED WATER SERVICE SINGLE |
| | | | | RECLAIMED WATER SERVICE SLEEVE |
| | | | | SANITARY SEWER (SM) |
| | | | | SANITARY FORCE MAIN (FM) |
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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

WATER AND SEWER PLAN

DR HORTON

NO.	DATE	REVISION SUBMITTAL	DESCRIPTION
1	03/22/2019		

PROJECT NO: FRE SN 1002
FILE: WS
DESIGN BY: MWD
DRAWN BY: DD

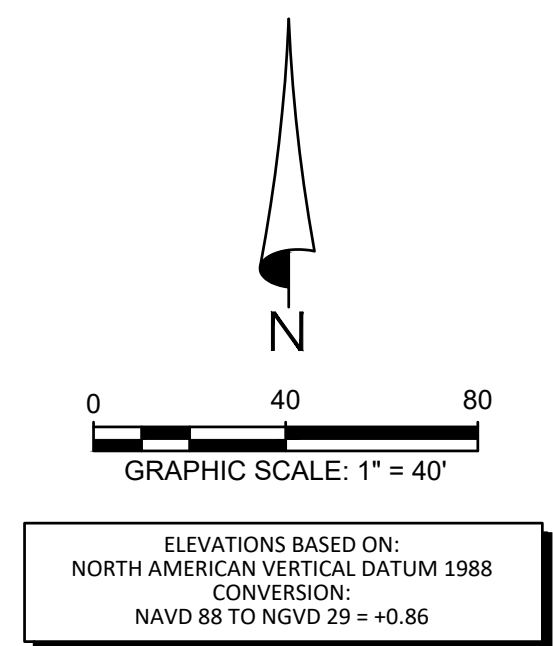
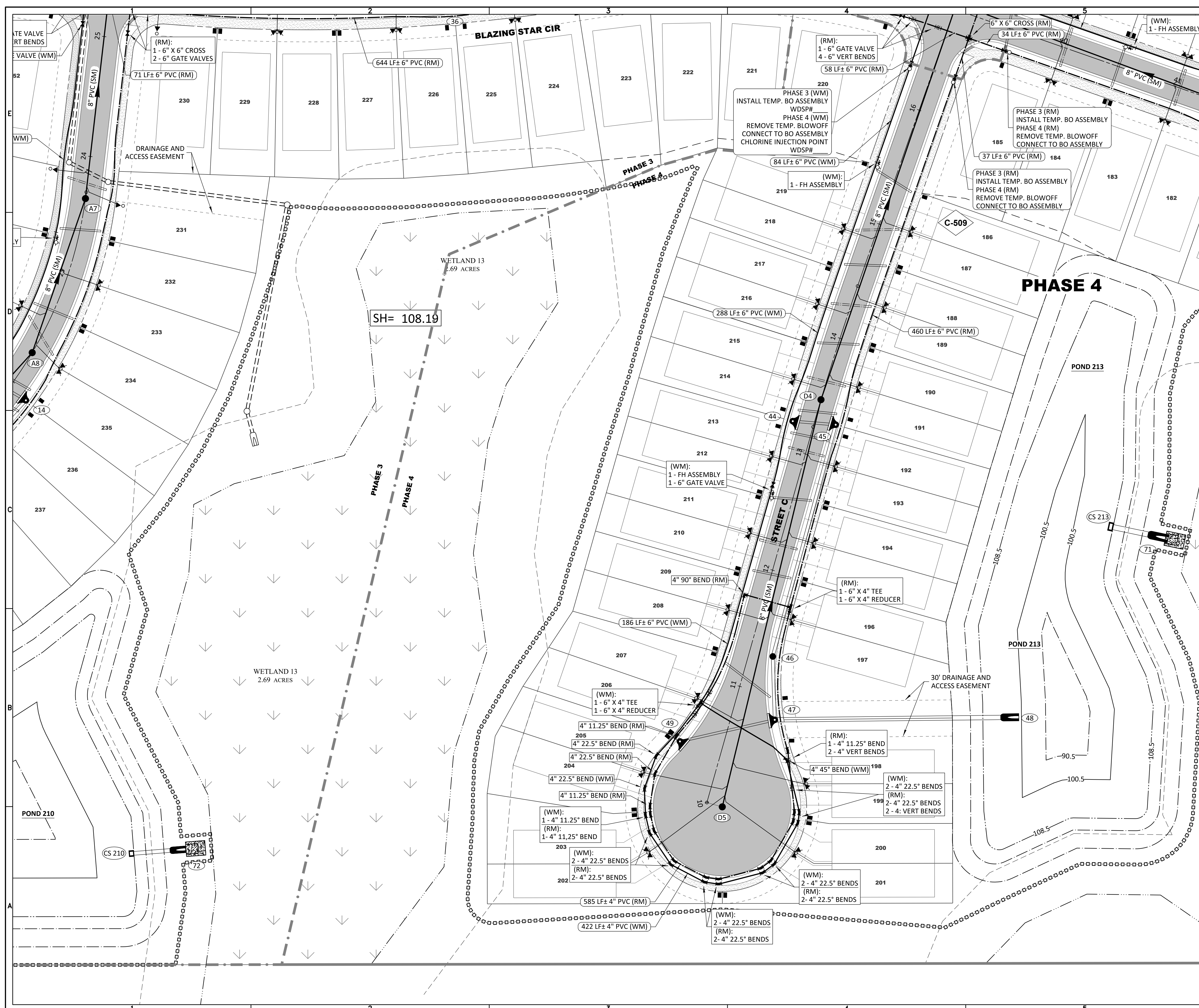
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PROFESSIONAL ENGINEER
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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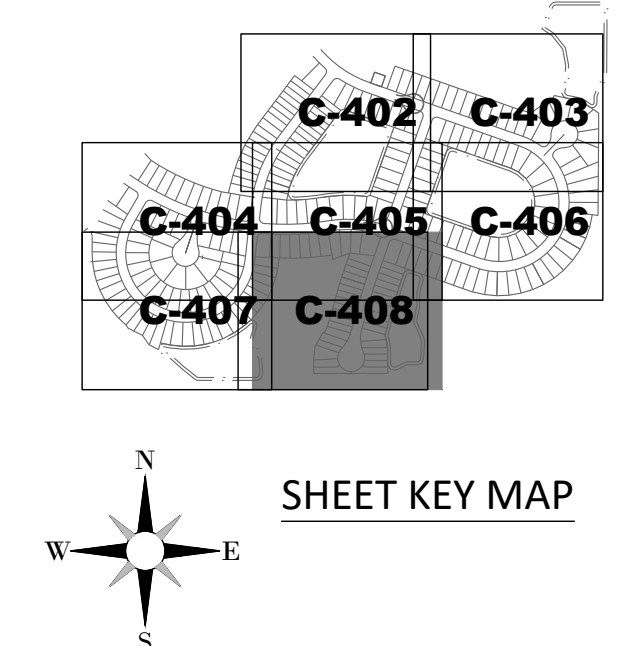
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DATE: _____
LICENSE NO. 52717

C-407



- ### GENERAL LEGEND
- SWFMWD WETLAND LINE
 - - - SWFMWD WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER (50')
 - o-o-o-o-o-o-o-o-o-o STAKED EROSION CONTROL
 - PHASE LINE
 - ◇ C-510 PLAN & PROFILE SHEET NUMBER
- ### WATER & SEWER LEGEND
- | EXISTING | PROPOSED | DESCRIPTION |
|----------|----------|------------------------------------|
| ⊖ | ⊖ | STORM STRUCTURE NUMBER |
| ⊖ | ⊖ | STORM DRAINAGE STRUCTURE |
| --- | --- | WATER MAIN (WM) |
| --- | --- | RECLAIMED WATER MAIN (RM) |
| --- | --- | FIRE HYDRANT |
| --- | --- | VALVE & BOX |
| --- | --- | REDUCER |
| --- | --- | PLUG |
| --- | --- | BLOW-OFF |
| --- | --- | BENDS |
| --- | --- | VERTICAL BENDS |
| --- | --- | WATER DISTRIBUTION SAMPLING POINT |
| --- | --- | WATER SERVICE DOUBLE |
| --- | --- | WATER SERVICE SINGLE |
| --- | --- | WATER SERVICE CASING |
| --- | --- | RECLAIMED WATER SERVICE DOUBLE |
| --- | --- | RECLAIMED WATER SERVICE SINGLE |
| --- | --- | RECLAIMED WATER SERVICE SLEEVE |
| --- | --- | SANITARY SEWER (SM) |
| --- | --- | SANITARY FORCE MAIN (FM) |
| --- | --- | SANITARY SERVICE DOUBLE W/CLEANOUT |
| --- | --- | SANITARY SERVICE SINGLE W/CLEANOUT |
| --- | --- | DENOTES SLEEVE SIZE & LOCATION |



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

WATER AND SEWER PLAN

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: WS
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

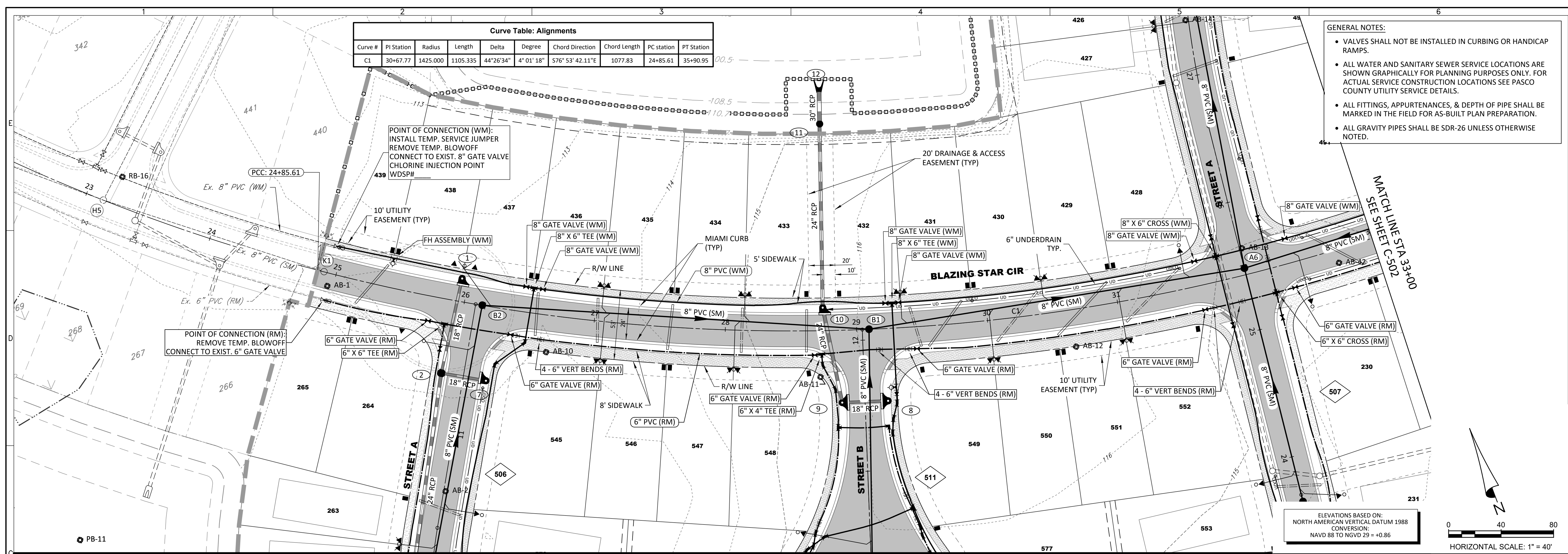
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C-408



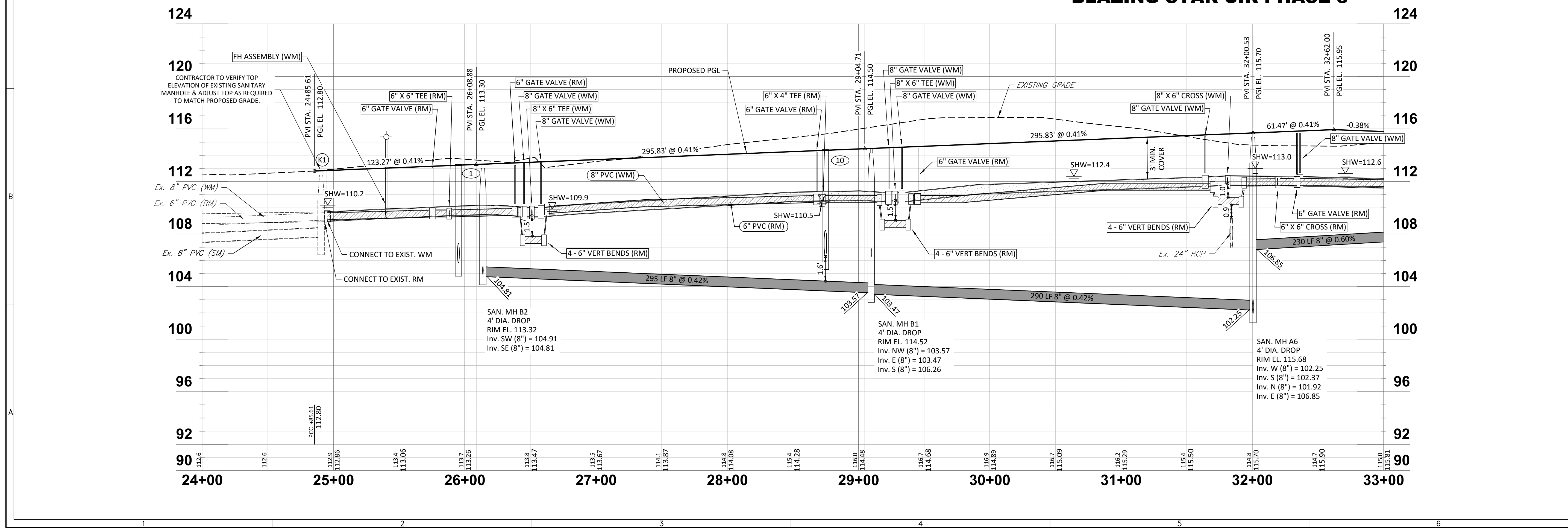
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C1	30+67.77	1425.000	1105.335	44°26'34"	4°01'18"	S76°53'42.11"E	1077.83	24+85.61	35+90.95

- GENERAL NOTES:**
- VALVES SHALL NOT BE INSTALLED IN CURBING OR HANDICAP RAMPS.
 - ALL WATER AND SANITARY SEWER SERVICE LOCATIONS ARE SHOWN GRAPHICALLY FOR PLANNING PURPOSES ONLY. FOR ACTUAL SERVICE CONSTRUCTION LOCATIONS SEE PASCO COUNTY UTILITY SERVICE DETAILS.
 - ALL FITTINGS, APPURTENANCES, & DEPTH OF PIPE SHALL BE MARKED IN THE FIELD FOR AS-BUILT PLAN PREPARATION.
 - ALL GRAVITY PIPES SHALL BE SDR-26 UNLESS OTHERWISE NOTED.

ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION:
NAVD 88 TO NGVD 29 = +0.86

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BLAZING STAR CIR-PHASE 3



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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
ROADWAY PLAN & PROFILE

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	02/27/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: RP-01
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

GARY D. MILLER, State of Florida, Professional Engineer.
License No. 52717

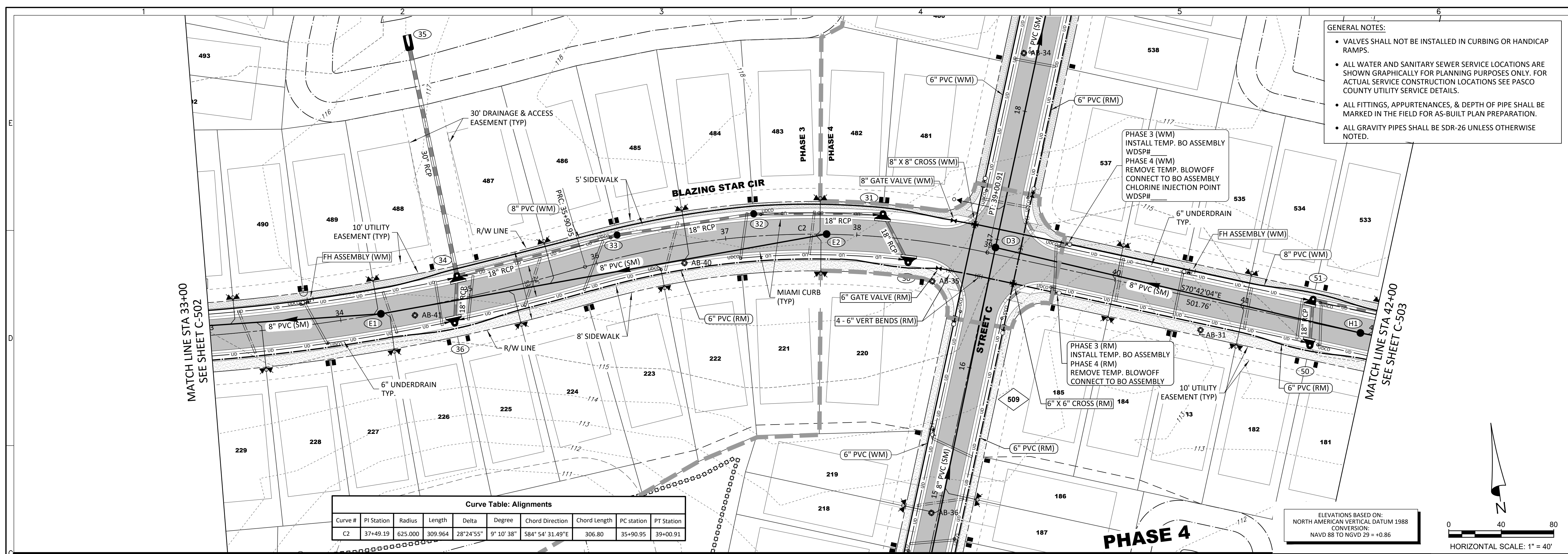
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GARY D. MILLER
DATE: _____
LICENSE NO. 52717

C-501

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
ROADWAY PLAN & PROFILE

DR HORTON

PREPARED FOR:

DATE: 09/22/2019
DESCRIPTION: REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: RP-01
DESIGN BY: MWD
DRAWN BY: DD

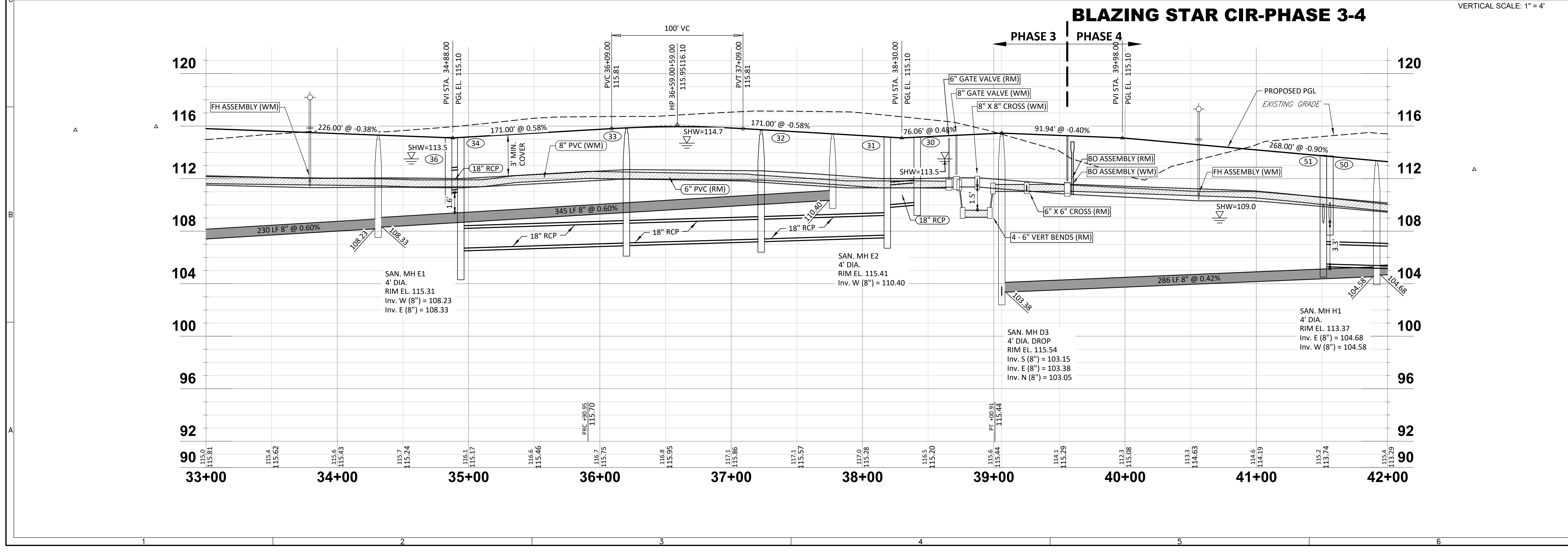
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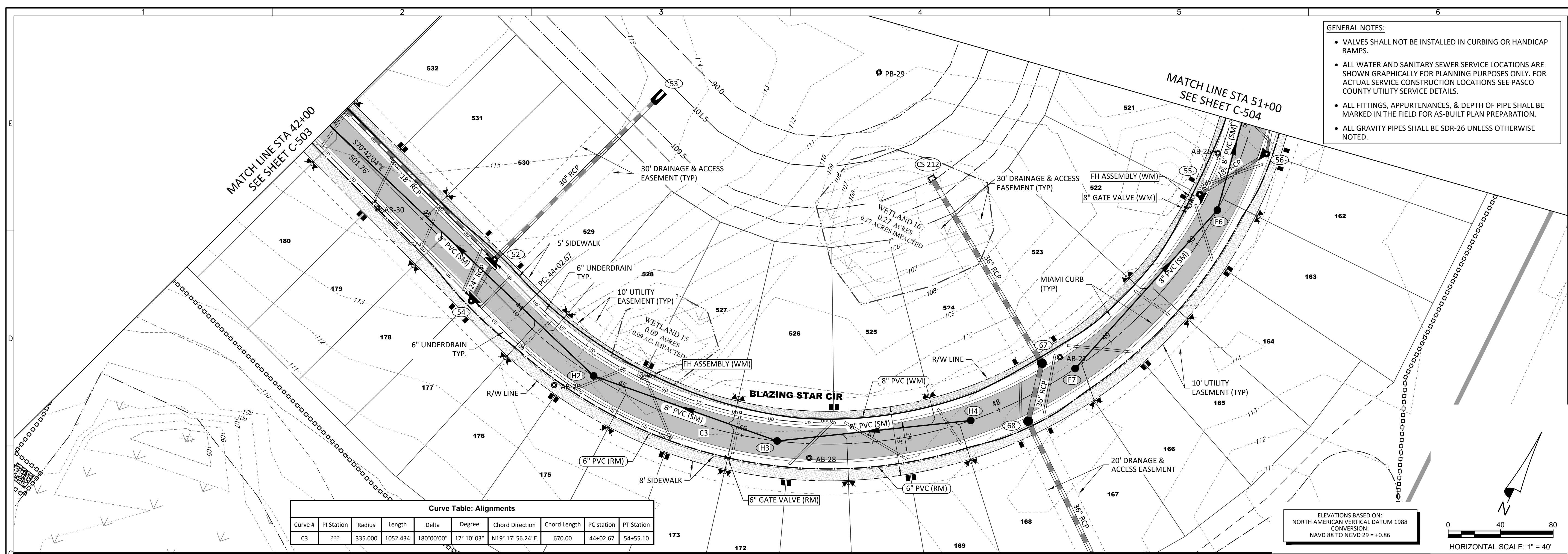
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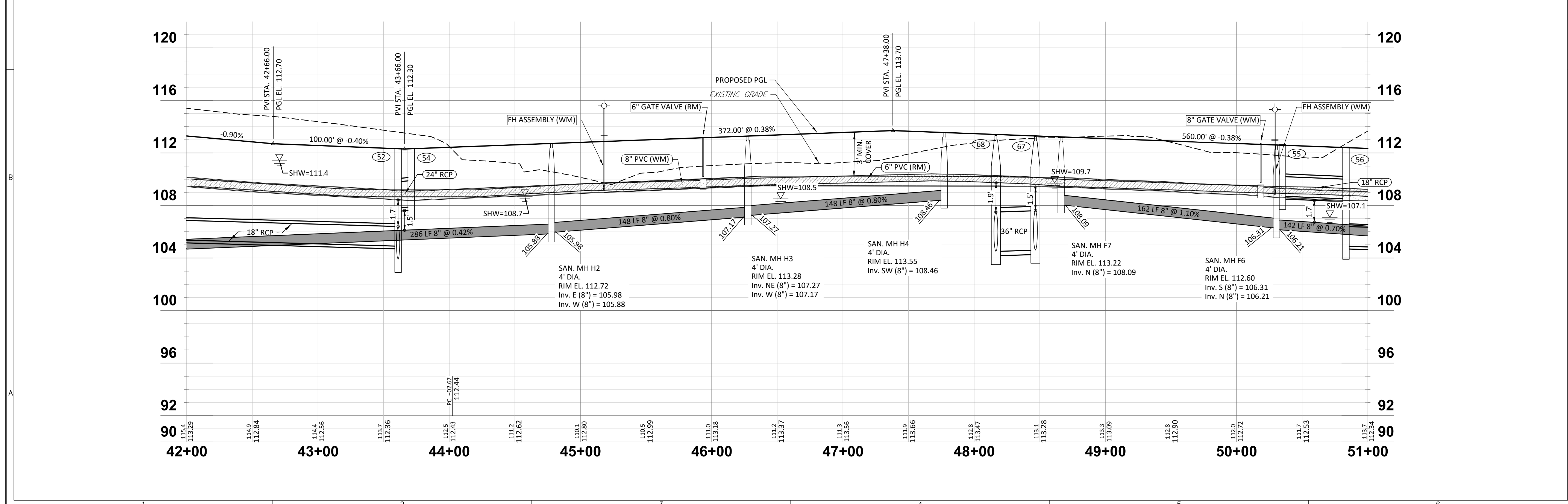


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Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C3	???	335.000	1052.434	180°00'00"	17° 10' 03"	N19° 17' 56.24"E	670.00	44+02.67	54+55.10

BLAZING STAR CIR-PHASE 4



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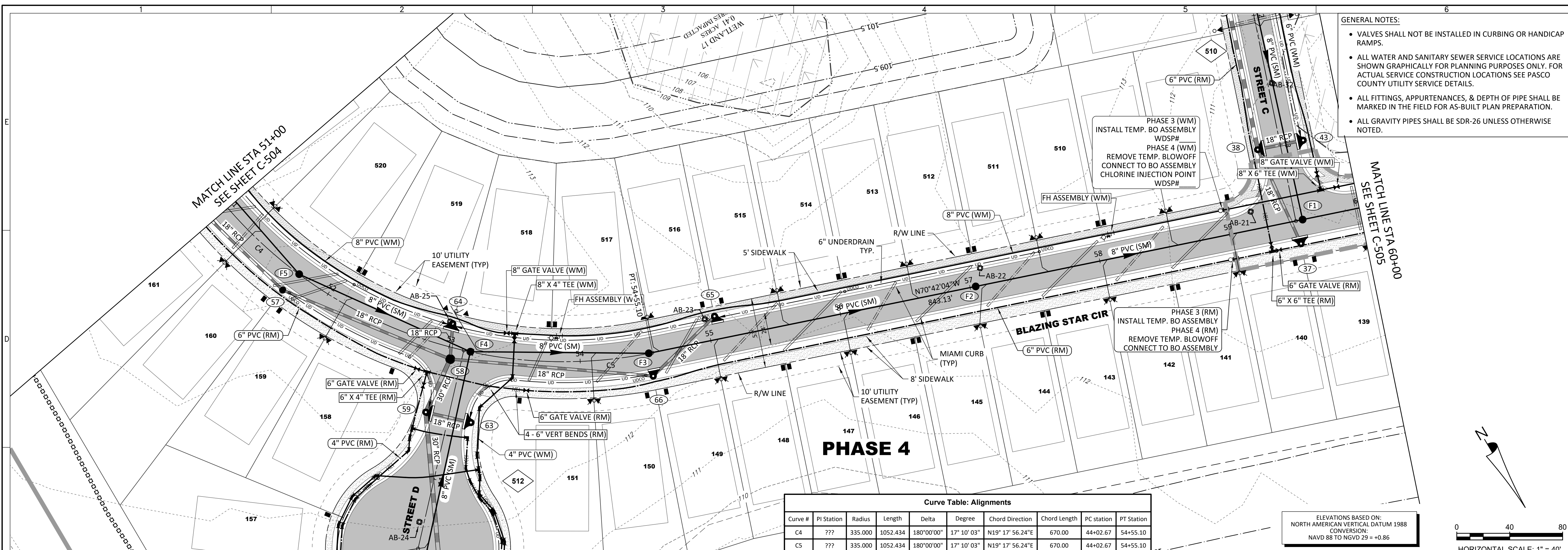
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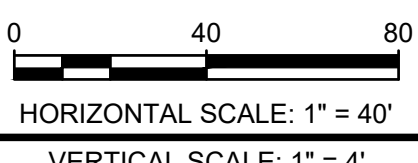


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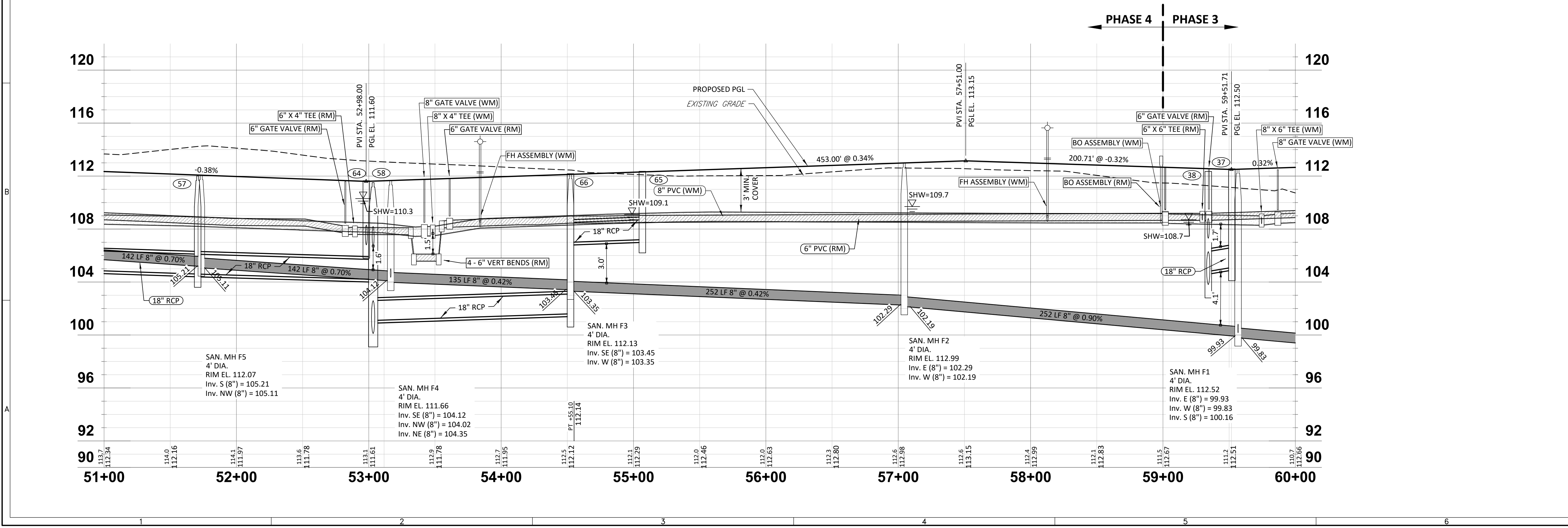
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CS	???	335.000	1052.434	180°00'00"	17°10'03"	N19°17'56.24"E	670.00	44+02.67	54+55.10

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BLAZING STAR CIR-PHASE 4



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ROADWAY PLAN & PROFILE

DR HORTON

PREPARED FOR

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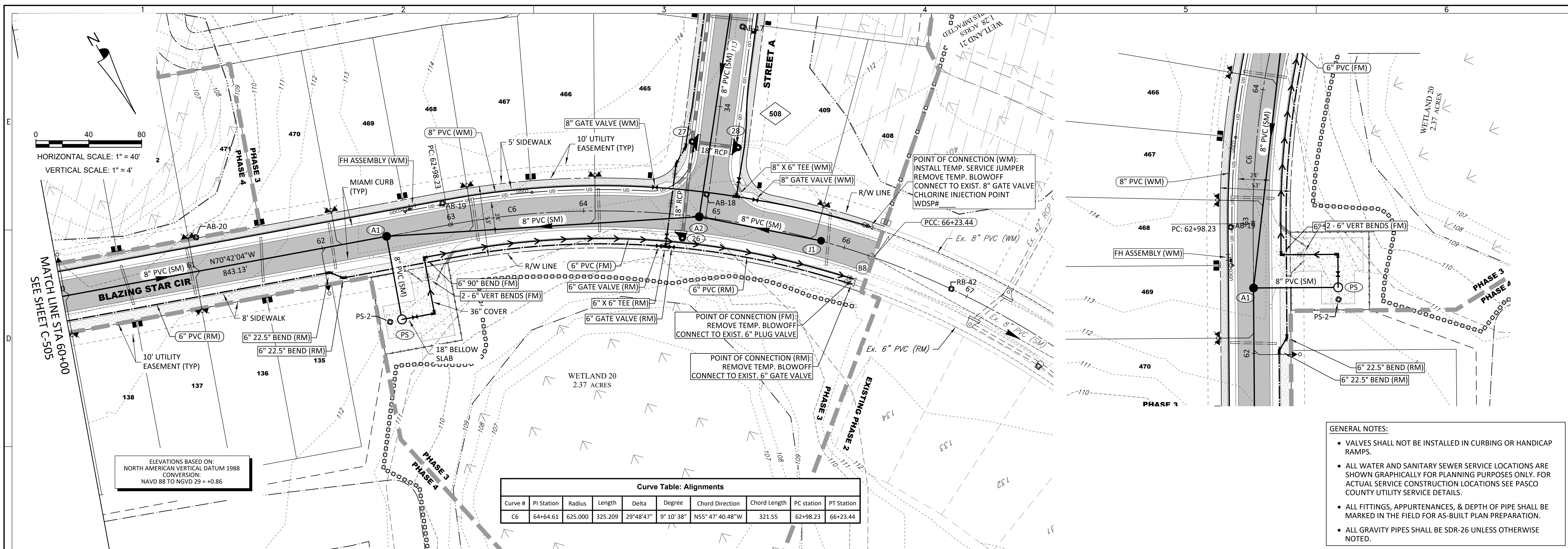
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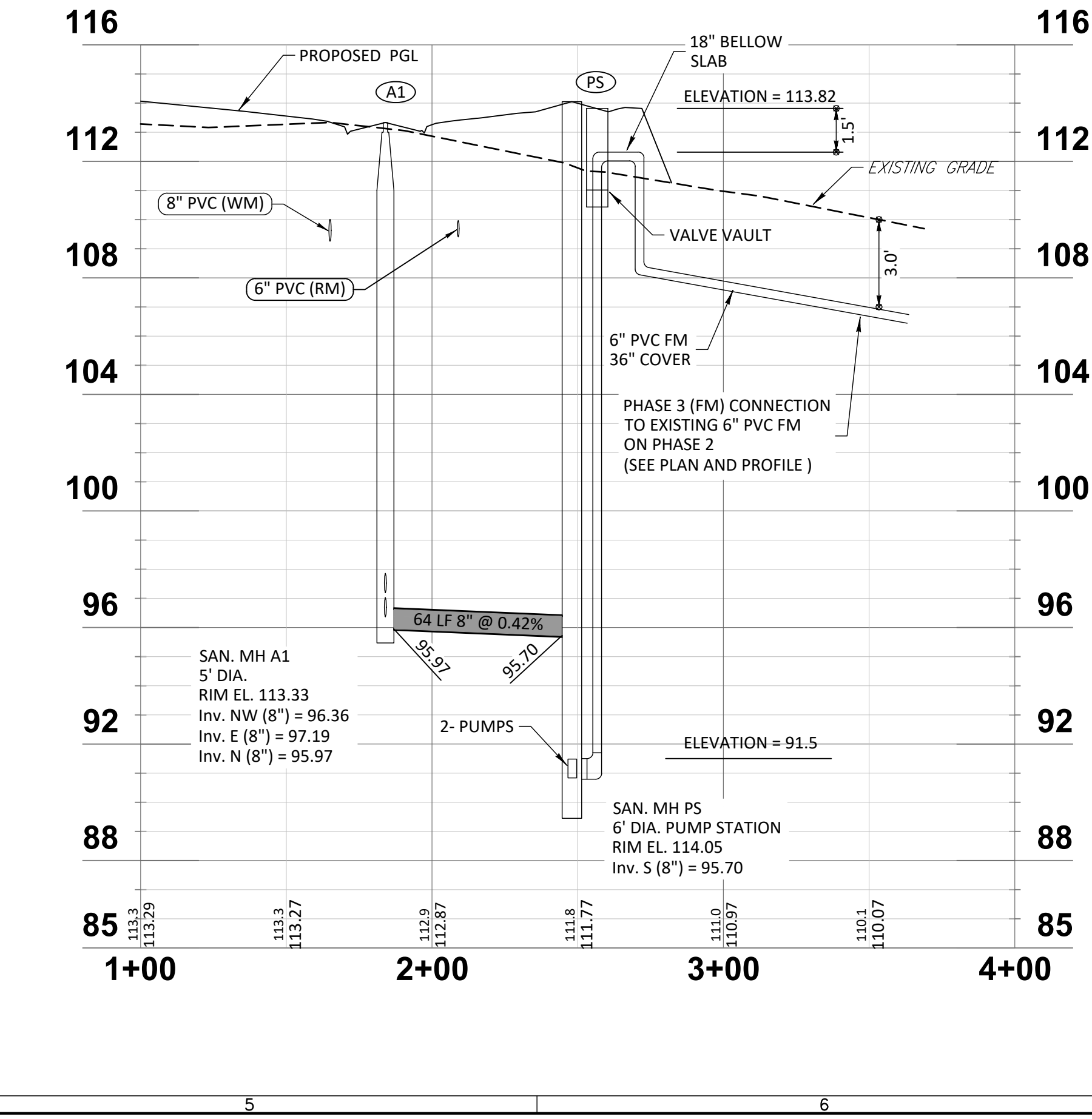
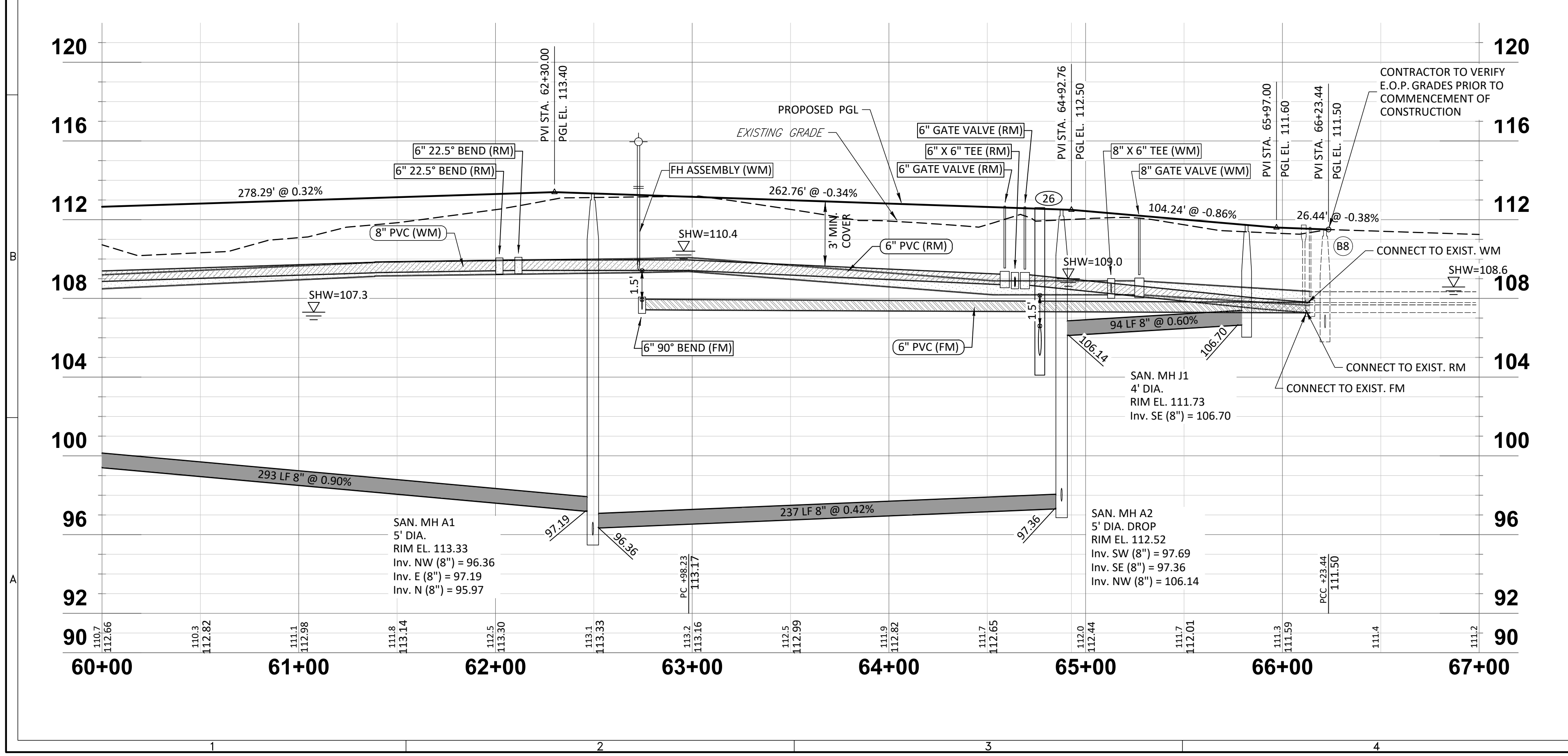
Curve Table: Alignments

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C6	64+64.61	625.000	325.209	29°48'47"	9° 10' 38"	N55° 47' 40.48"W	321.55	62+98.23	66+23.44

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BLAZING STAR CIR-PHASE 3-4

PROFILE VIEW OF A1 TO PUMP STATION



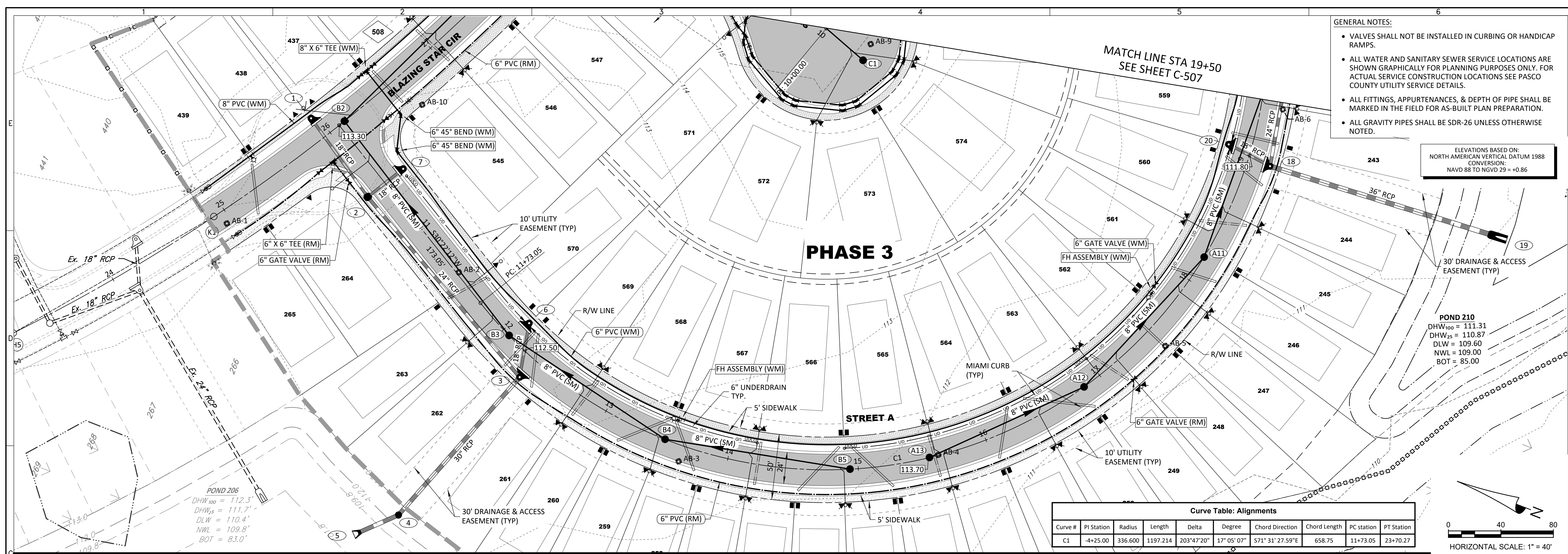
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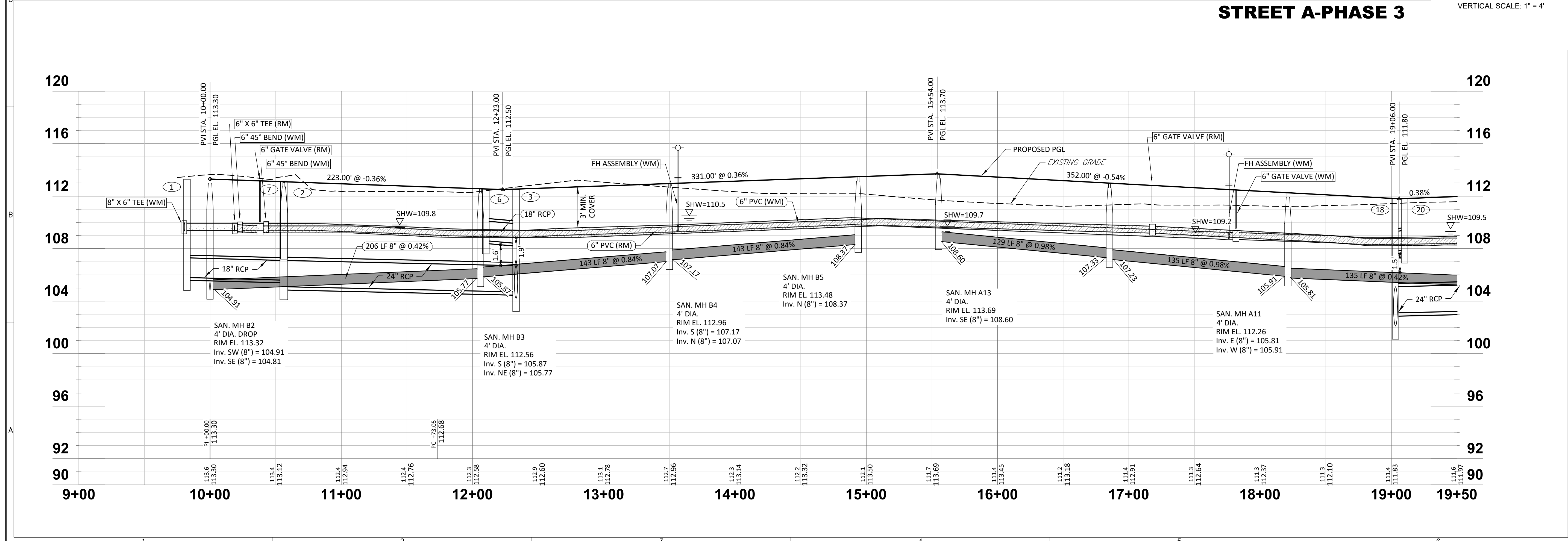
POND 210
DHW₁₀₀ = 111.31
DHW₅ = 110.87
DLW = 109.60
NWL = 109.00
BOT = 85.00

POND 206
DHW₁₀₀ = 112.3'
DHW₅ = 111.7'
DLW = 110.4'
NWL = 109.8'
BOT = 83.0'

Curve Table: Alignments

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C1	-4+25.00	336.600	1197.214	203°47'20"	17°05'07"	S71°31'27.59"E	658.75	11+73.05	23+70.27

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



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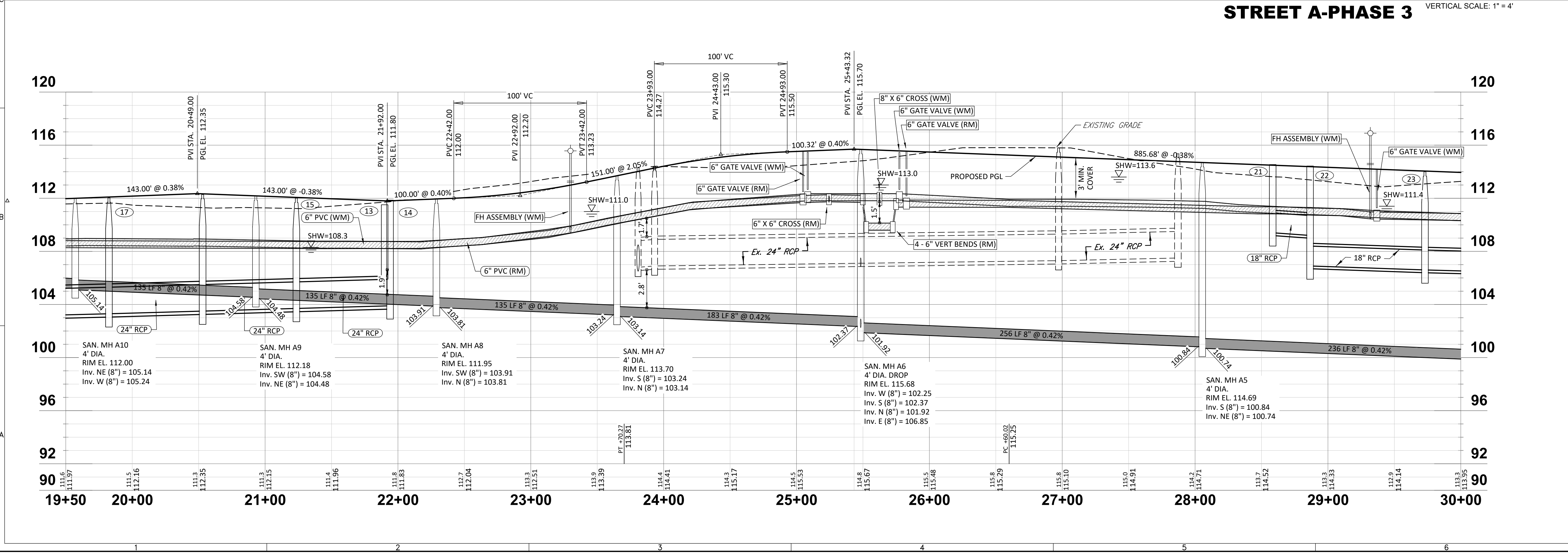
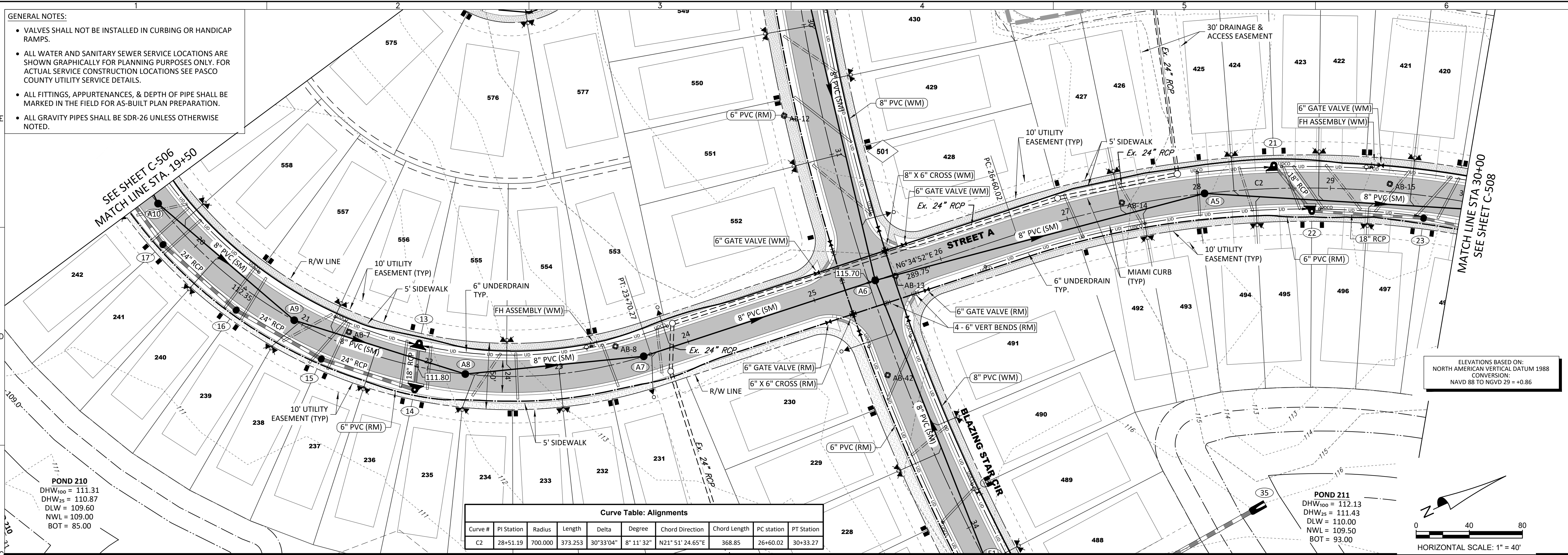
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FILE: RP-02
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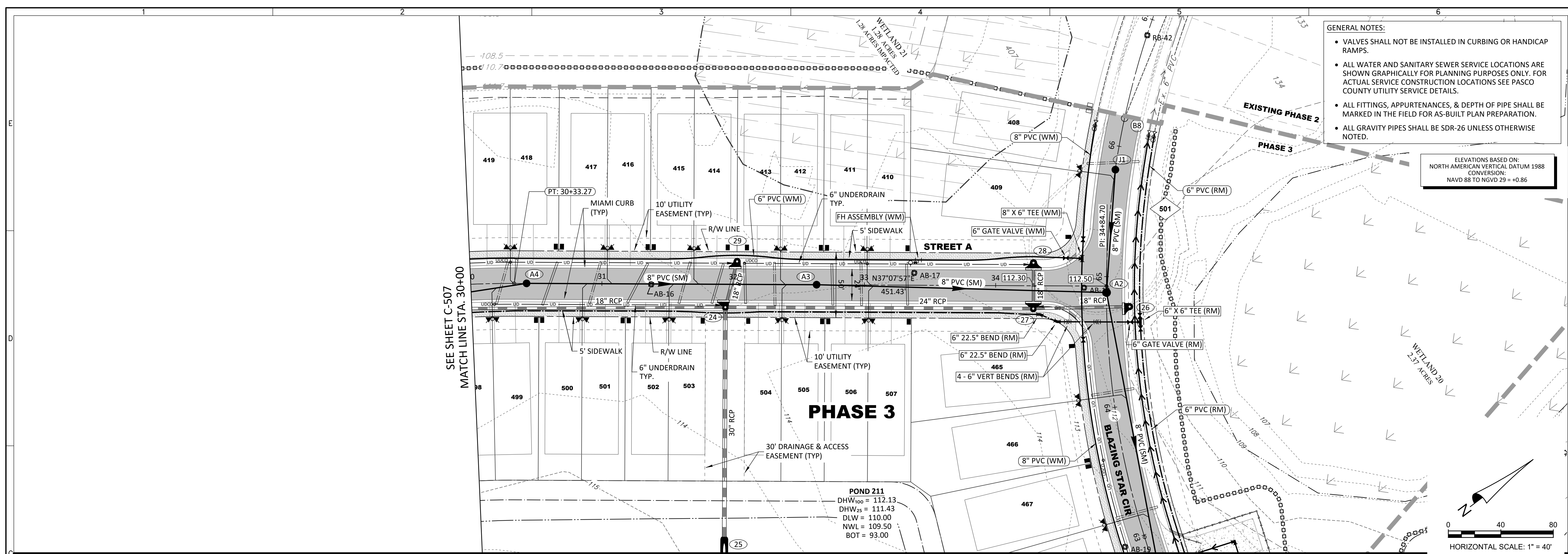
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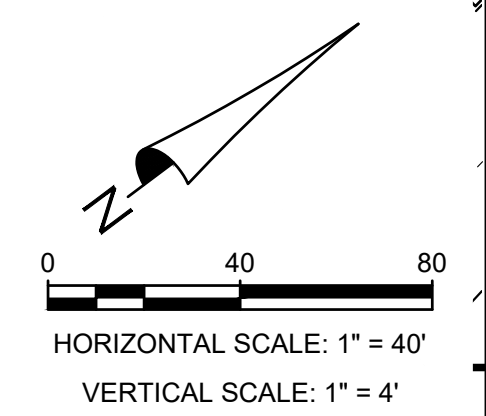
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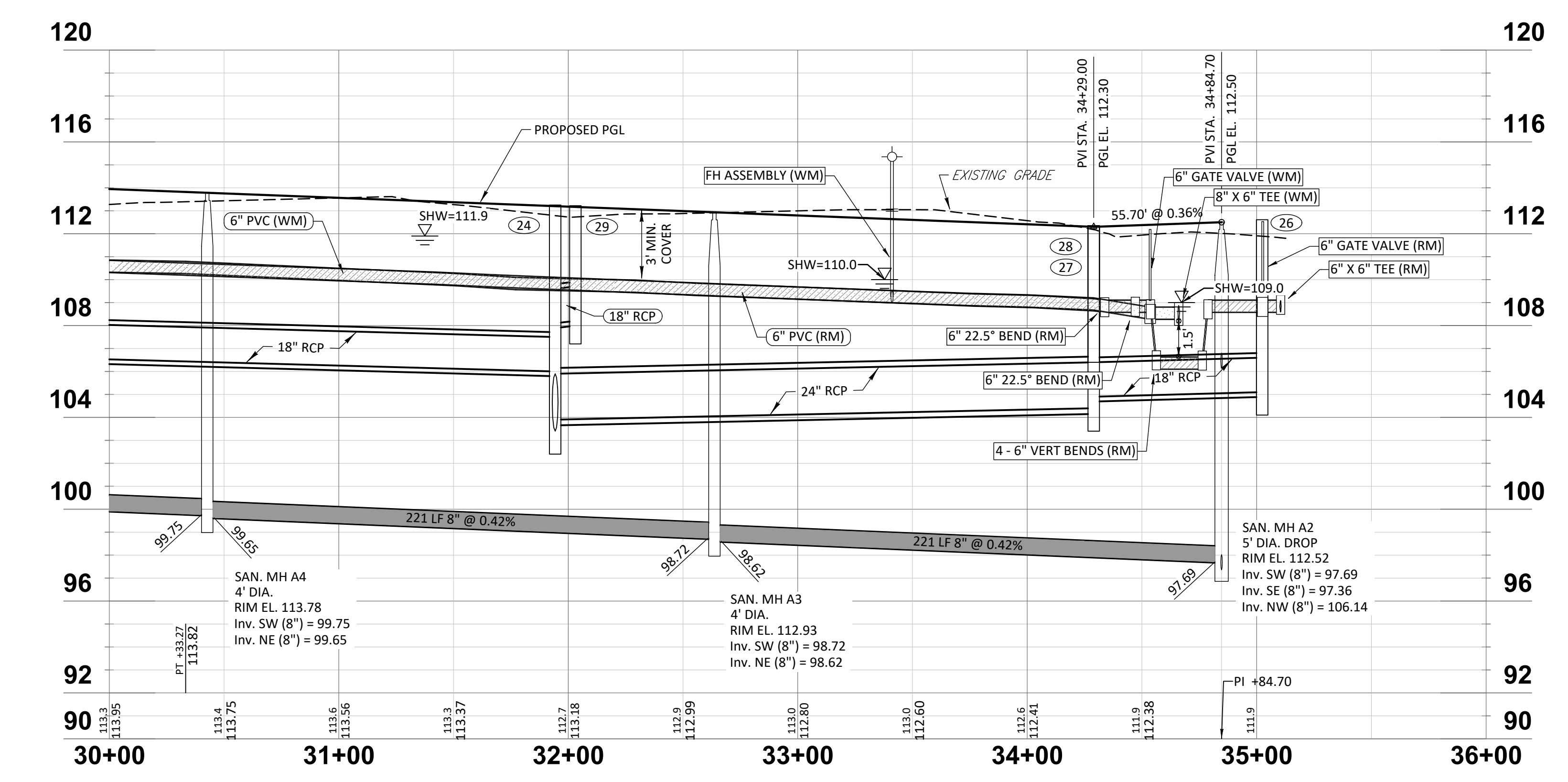


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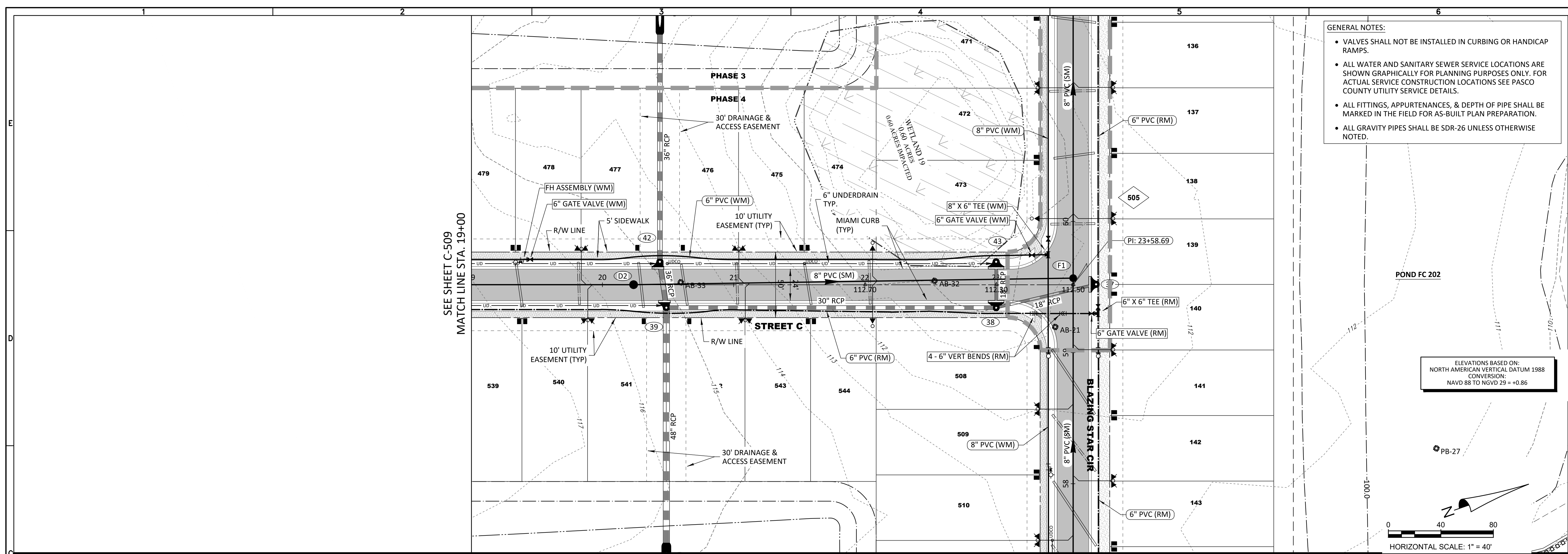
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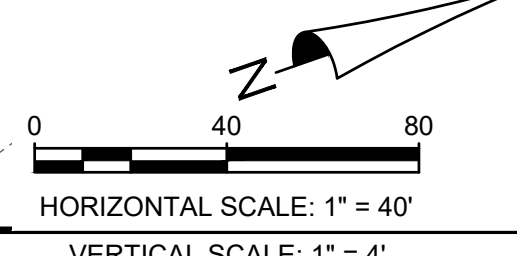
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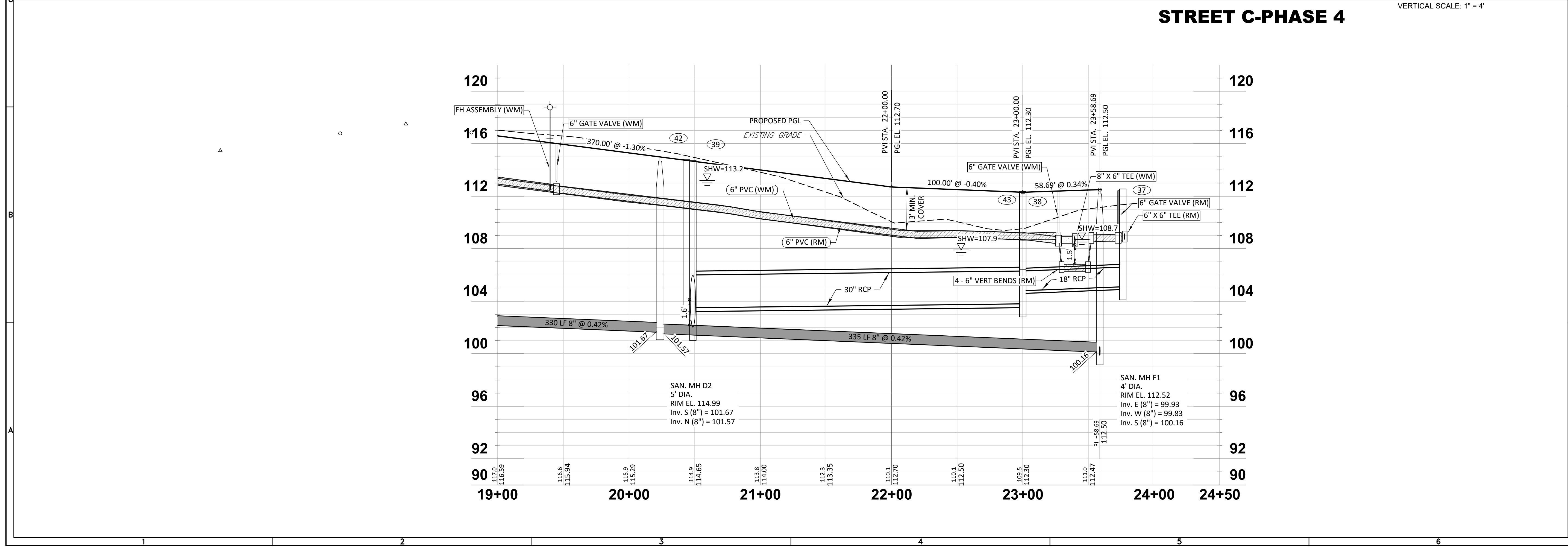
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FILE: RP-03
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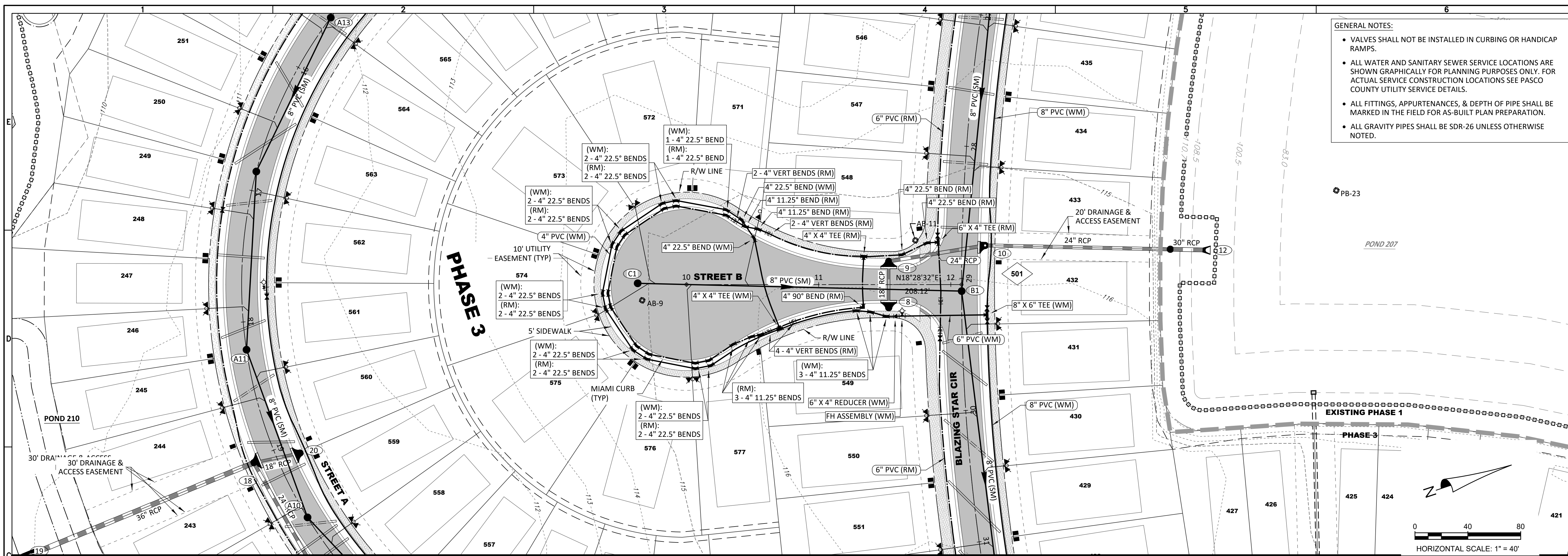
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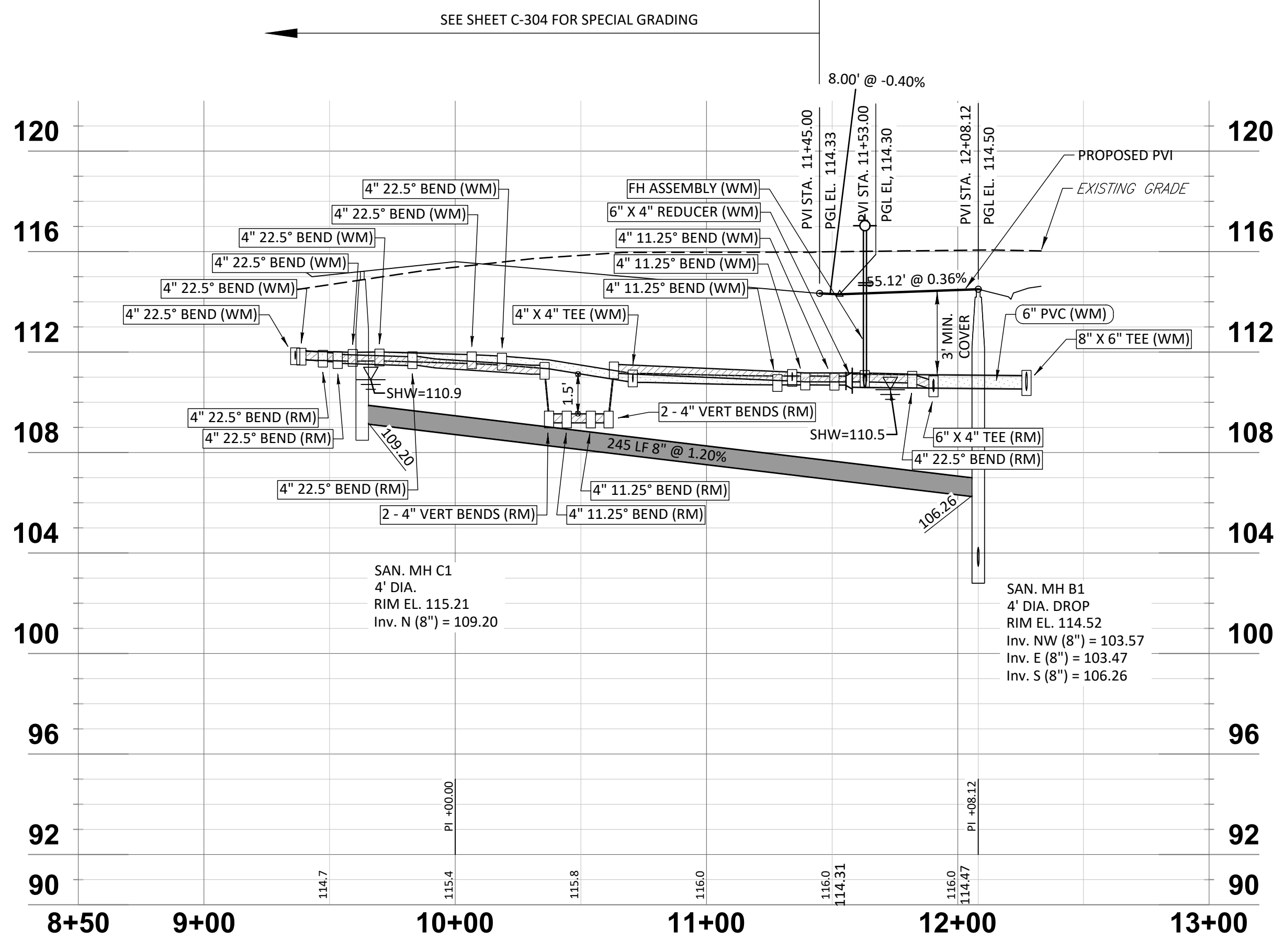
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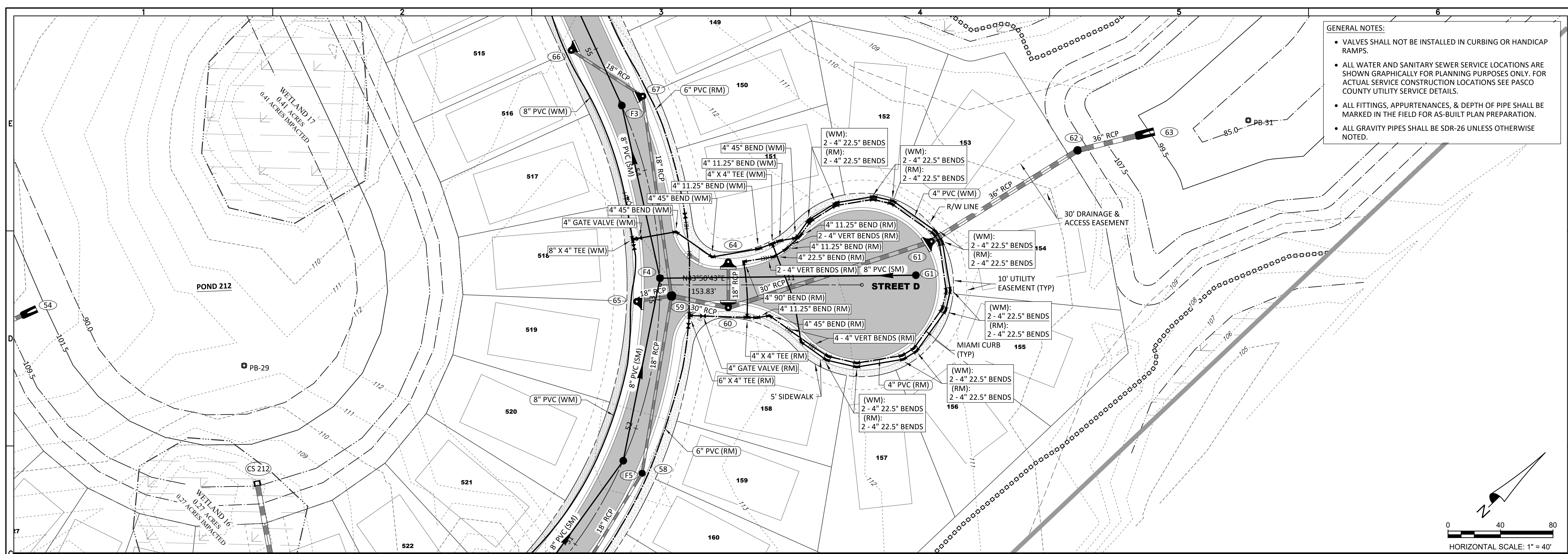
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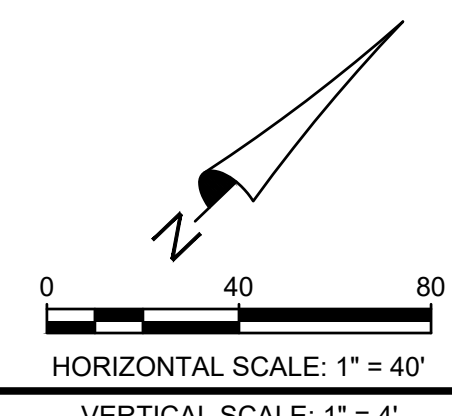
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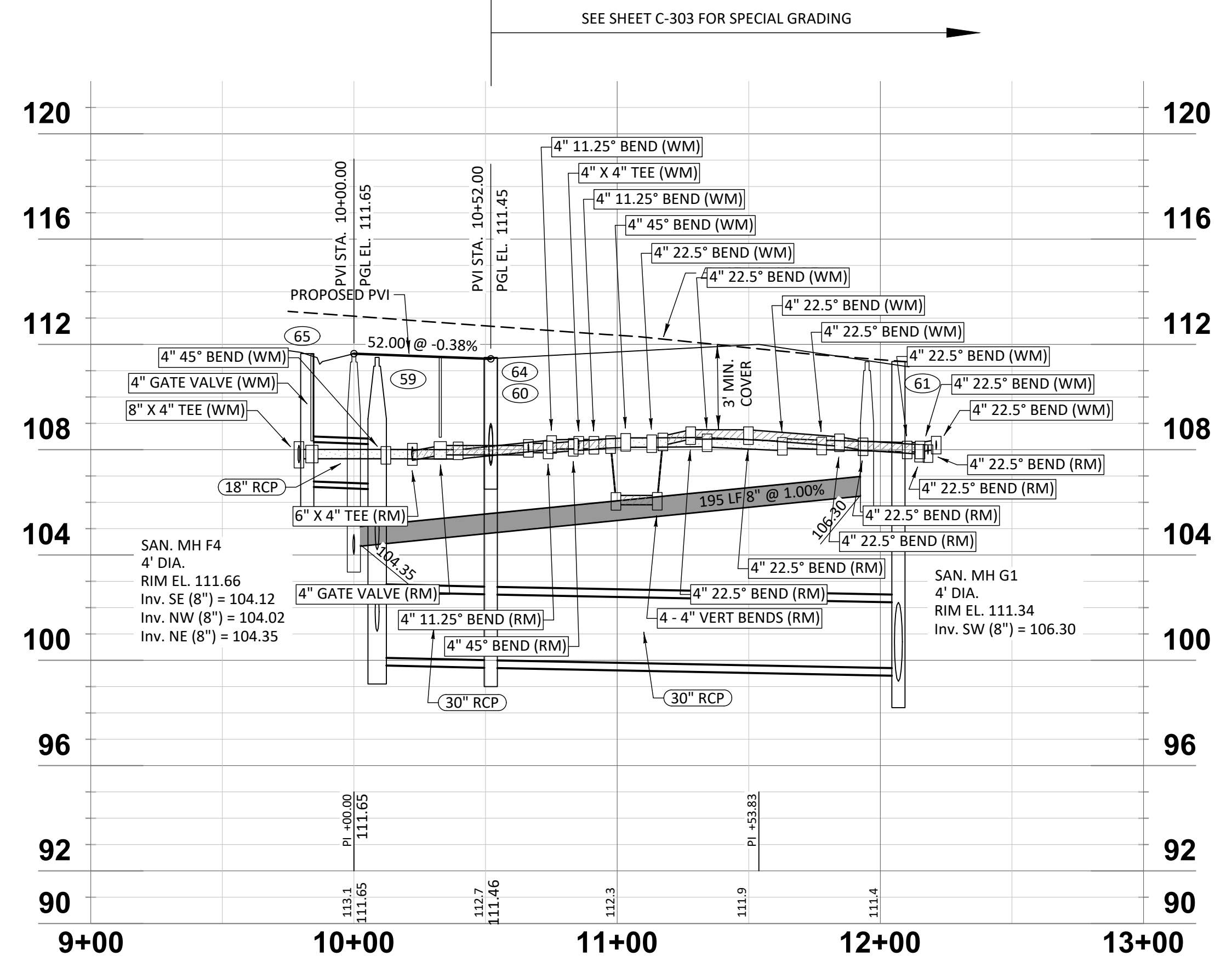
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C-512

WASTEWATER PUMPING STATION DESIGN PARAMETERS

DESIGN CAPACITY:

A. Average Daily Flow (ADF):

276	x 200 GPD/UNIT (Single Family Units)=	55,200.0	GPD
0	x 140 GPD/UNIT (Multi Family Units)=		GPD
0	x 0.15 GPD per Square Foot (Office/Retail)=		GPD
		ADF Total=	55,200.0 GPD

B. Peak Influent Rate:

Peak Factor 3.00 Per Municipality- Consult references
 Peak Flow = (ADF x Peak Factor) / 1440 = **115.0 GPM**

C. Design Minimum Flow:

(ADF x 0.20) / 1440 = **7.7 GPM**

D. Design Pump Capacity (Minimum Required): **180.0 GPM**

E. Velocity in Force Main at Max. Pumping Rate: **2.00 fps**

PUMP DATA

MAKE/MODEL: FLYGT NP 3171 SH-275

PUMP HP: 35 PHASE: 3~

PUMP IMP. NO.: 195mm

PUMP VOLTS: 460

PUMP SPEED 3520 RPM

SYSTEM CURVE CALCULATIONS:

A. Friction Loss

1. Pump Station Piping

Item	Size (in)	Quantity	Friction Loss (ea.)	Total
Tee	4	1	22	22
22.5° Bend	4	0		
45° Bend	4	0		
90° Bend	4	2	22	44
Check Valve	4	2	25	50
Gate Valve	4	0		
			Total=	116.00
			Pipe Length=	100.00
			Total Equivalent Length=	216.00
				Design For: 250.0

2. Force Main Piping

Item	Size (in)	Quantity	Friction Loss (ea.)	Total
Tee	6	1	33	33
22.5° Bend	6	0		
45° Bend	6	10	8	80
90° Bend	6	2	33	66
Cross	6	0		
Gate Valve	6	5	3.5	17.5
			Total=	196.50
			Pipe Length=	1673.00
			Total Equivalent Length=	1869.50
				Design For: 1900.0

B. Static Head

1. Pipe Center Line at Discharge Point:	112.60 ft.
2. Low Water Level (All Pumps Off):	92.50 ft.
3. Total Static Head (B.1-B.2.):	20.10 ft.

WETWELL DESIGN

A. Design Criteria:

- Maximum Pump Motor Cycle Rate = 6 Starts Per Hour
- Maximum Detention Time at Minimum Flow = 30 Minutes

B. Pump Control Level Settings:

- Pump Cycling Rates are at a minimum when inflow equals one-half the design pumping rate of **180.0 gpm**.
- Wetwell volume required between Lead Pump Start and Pump Shut Off Level = 0.5 x Cycle Period x 1/2 Pumping Rate = **450.00 Gallons**
- Wetwell Diameter (D) = **6 feet**
- Wetwell Volume = **21149 gals / ft. depth**
- Wetwell level change between pump stop and lead pump start = **2.13 feet**
Design For: **2.20 feet**

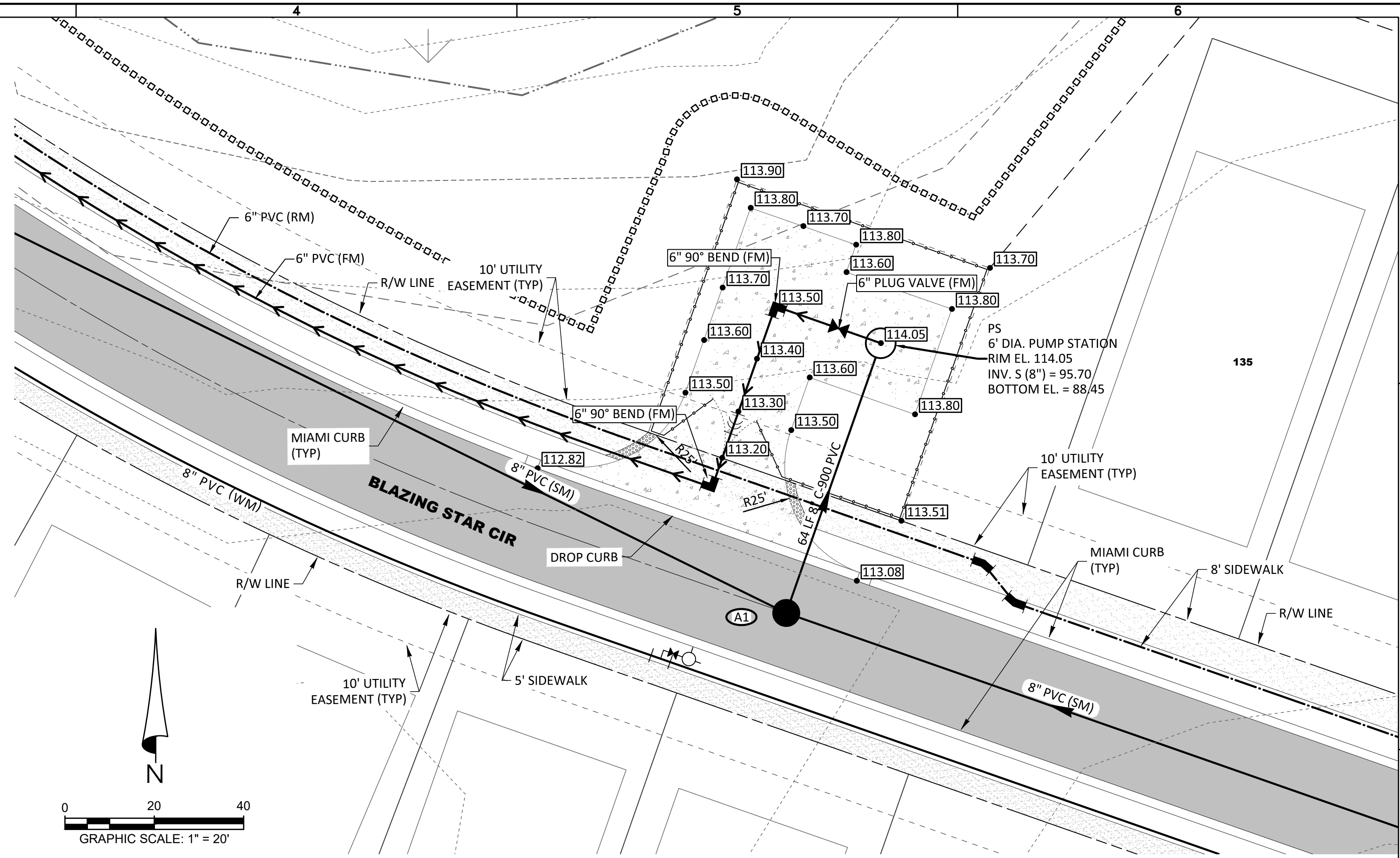
5. Control Elevations:

Top of Slab:	114.05
Influent Invert:	95.70
High Water Alarm:	95.70
Lag Pump On:	95.20
Lead Pump On:	94.70
All Pumps Off:	92.50
Bottom**:	89.45

Pump Height = **3.05 feet**

SYSTEMS HEAD COMPUTATIONS - TOTAL FRICTION LOSSES IN FEET

Item	Flow (GPM)										
	0	50	100	150	180	200	250	300	350	400	500
Pump Station Piping (Equivalent Length) 250 LF 4" DIP	0.00	0.85	3.05	6.47	9.07	11.02	16.66	23.35	31.07	39.79	60.15
Force Main Piping (Equivalent Length) 1900 LF 6" PVC	0.00	0.64	2.30	4.87	6.82	8.30	12.54	17.58	23.39	29.95	45.27
Static Head	20.10	20.10	20.10	20.10	20.10	20.10	20.10	20.10	20.10	20.10	20.10
Low (From Model) (Design Pressure @ POC)	102.30	102.30	102.30	102.30	102.30	102.30	102.30	102.30	102.30	102.30	102.30
High (From Model)	168.30	168.30	168.30	168.30	168.30	168.30	168.30	168.30	168.30	168.30	168.30
Low System Losses (System Curve)	122.40	123.88	127.75	133.74	138.29	141.72	151.60	163.33	176.86	192.13	227.82
High System Losses	188.40	189.88	193.75	199.74	204.29	207.72	217.60	229.33	242.86	258.13	293.82



ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86



SITE PLAN

NOTES:

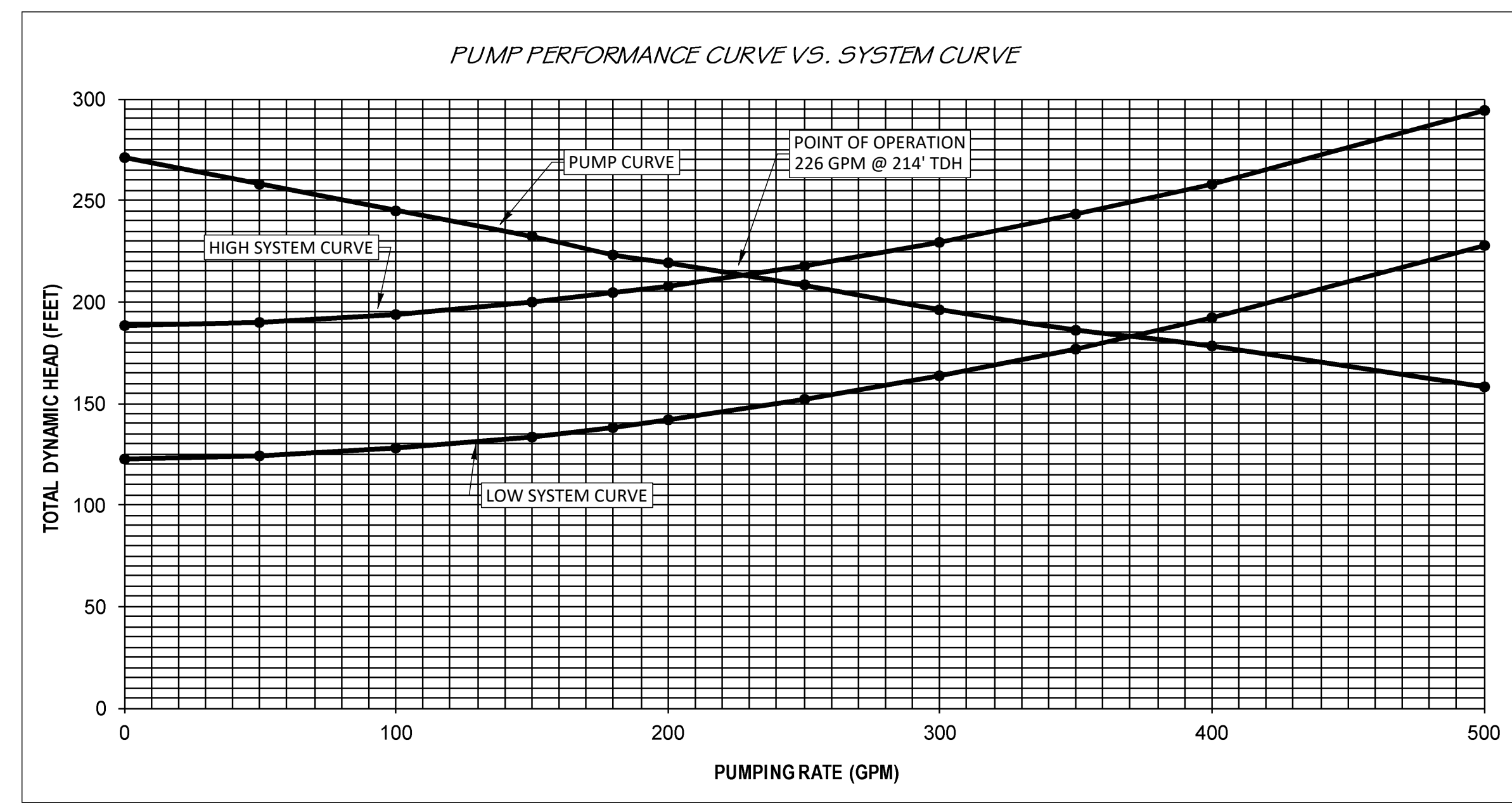
- PUMP STATION IS TO BE EQUIPPED WITH ALARM BATTERY-BACKUP SYSTEM (1 HR).
- PUMP STATION IS TO BE EQUIPPED WITH A WASH-DOWN WATER SUPPLY, INCLUDING A REDUCED PRESSURE ZONE BACKFLOW PREVENTER, WITH A 3/4" WATER METER.
- SYSTEM HEAD VERSUS PUMP PERFORMANCE CURVES ARE TO BE SHOWN TO DETERMINE THE SYSTEM PERFORMANCE CAPABILITY AT THE FOLLOWING CONDITIONS:
 - (A) CONVENTIONAL PUMPING STATION - FORCE MAIN (NON-MANIFOLD)
 - ONE PUMP RUNNING, IF DUPLEX STATION
 - ONE PUMP AND TWO PUMP RUNNING, IF TRIPLEX STATION, ETC.
 - IF FORCE MAIN PROFILE RESULTS IN SIPHON, CURVES SHALL SHOW OPERATION AT START-UP (TO HIGH POINT OF PIPING) AS WELL AS FULL FLOW CONDITIONS.
 - (B) MANIFOLDED PUMPING STATIONS

ALL CONDITIONS OUTLINED UNDER (A) ABOVE, AND THE FOLLOWING ADDITIONAL CONDITIONS

 - SIMULTANEOUS OPERATION OF ALL PUMPING STATIONS ON SYSTEM (WORST CASE)
 - OPERATION WHILE ALL REMAINING STATIONS ARE OFF (BEST CASE)
 - (C) VARIABLE SPEED PUMPING STATIONS

ALL APPLICABLE CONDITIONS UNDER (A) AND (B) ABOVE AND IN ADDITION:

 - OPERATING POINT, INCLUDING SPEED, AT PEAK, AVERAGE, AND MINIMUM FLOW



SYSTEM CURVE vs. PUMP CHARACTERISTIC CURVE

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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

PUMP STATION DETAILS

DR HORTON

REVIEW SUBMITTAL	DATE	DESCRIPTION

PROJECT NO: **FRE SN 1002**
 FILE: **PSD**
 DESIGN BY: **MWD**
 DRAWN BY: **DD**

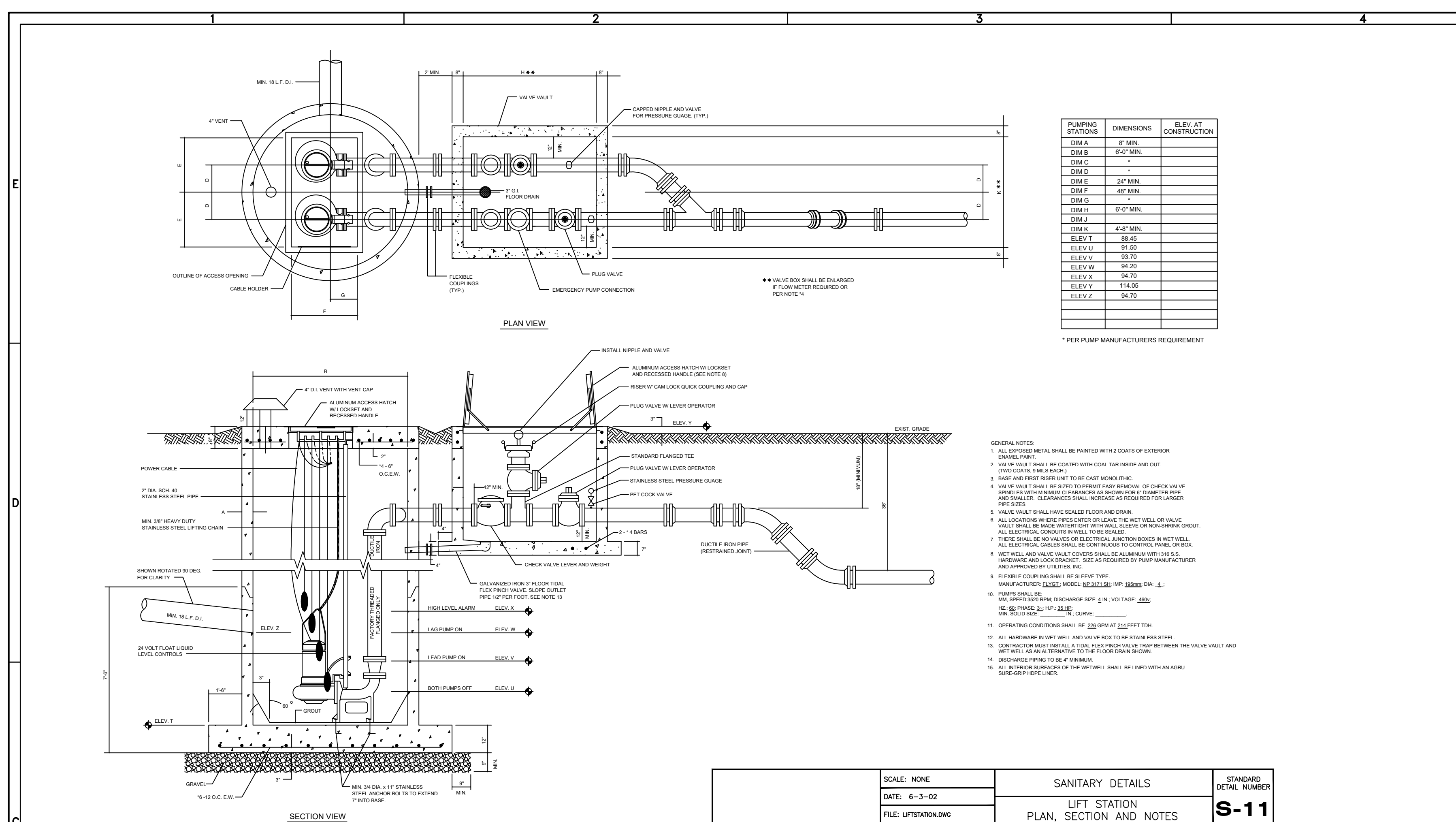
STATE OF FLORIDA
PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

This item has been digitally signed and sealed by Gary D. Miller, P.E. on the date indicated here.

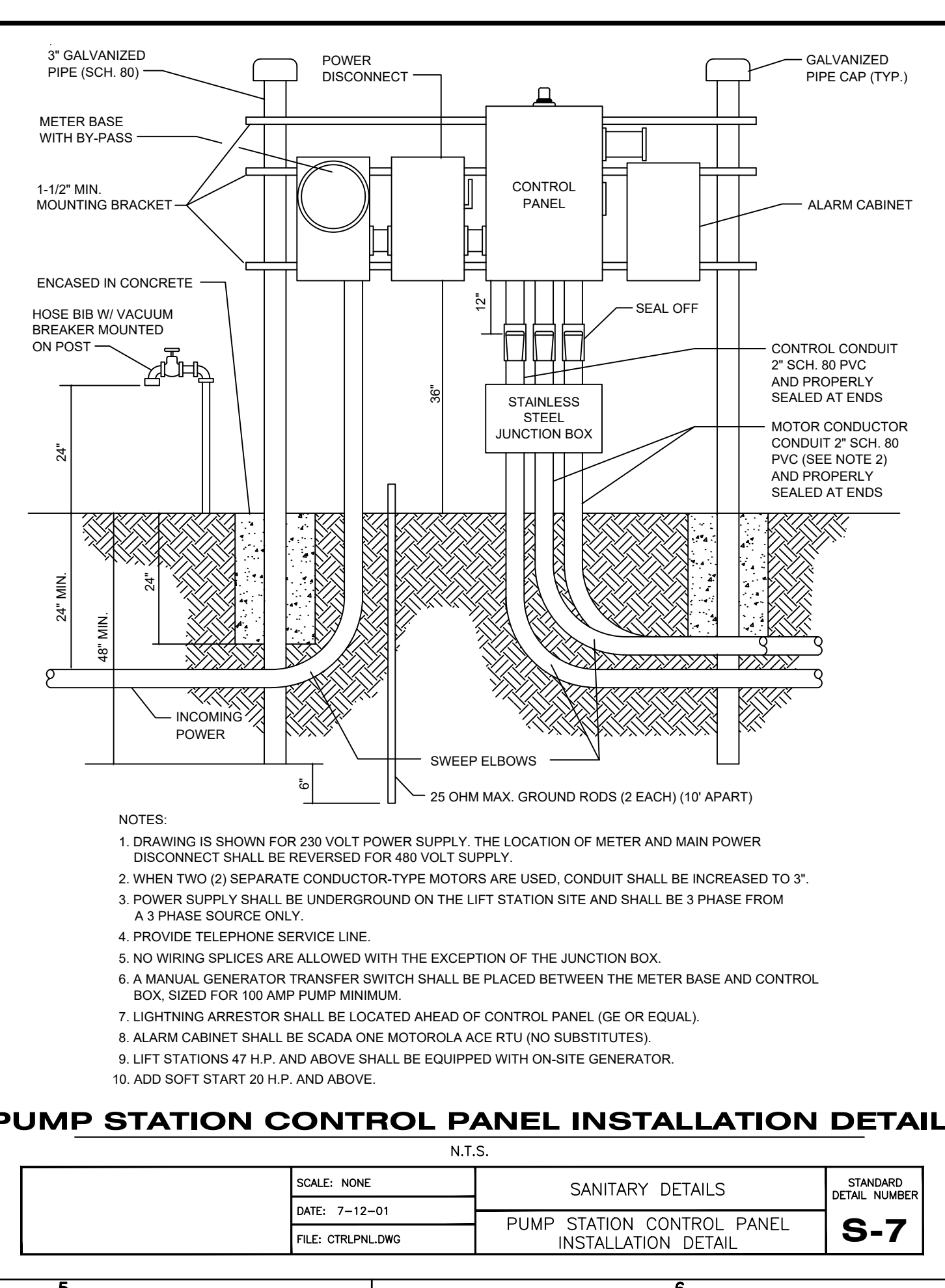
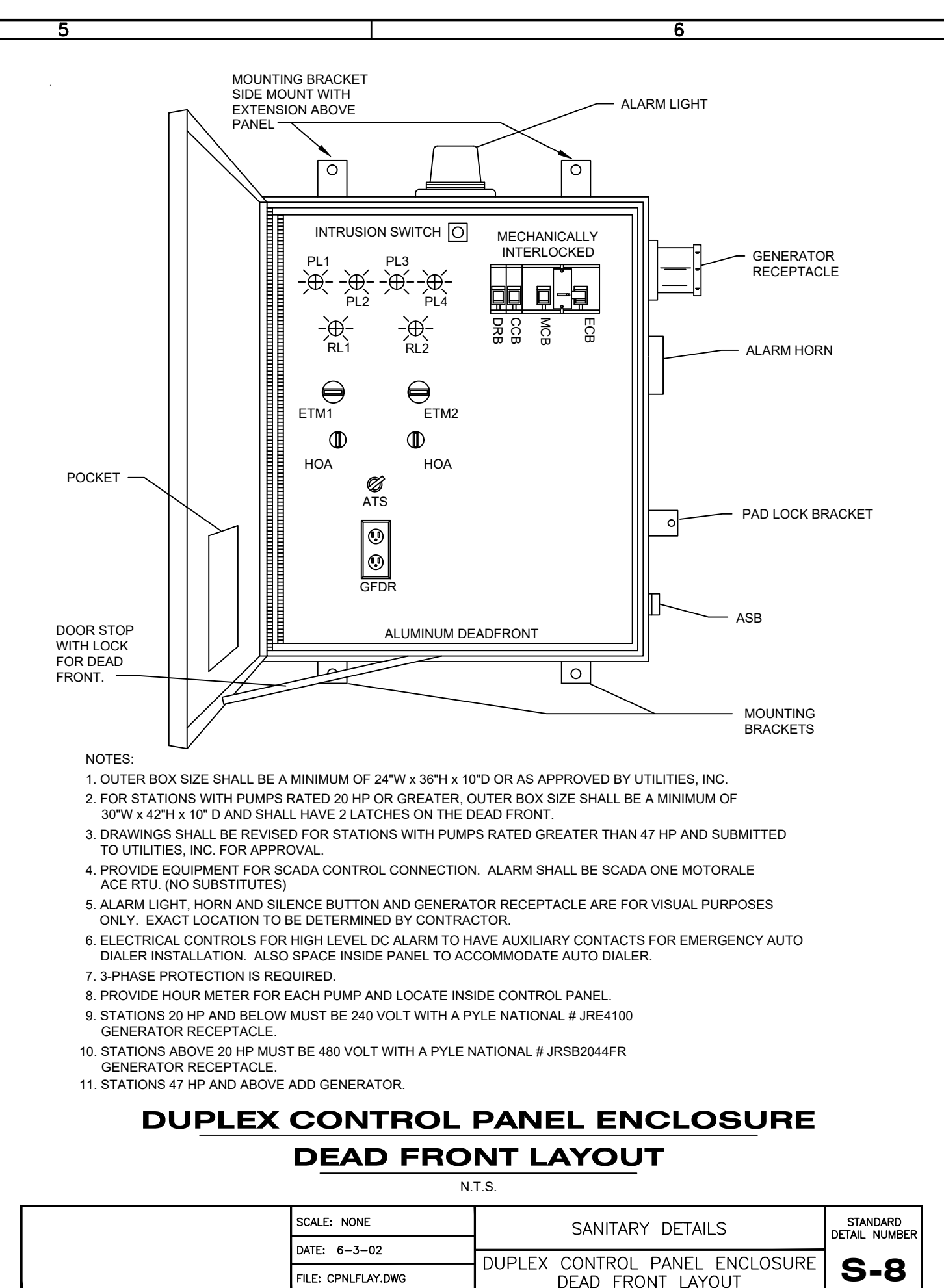
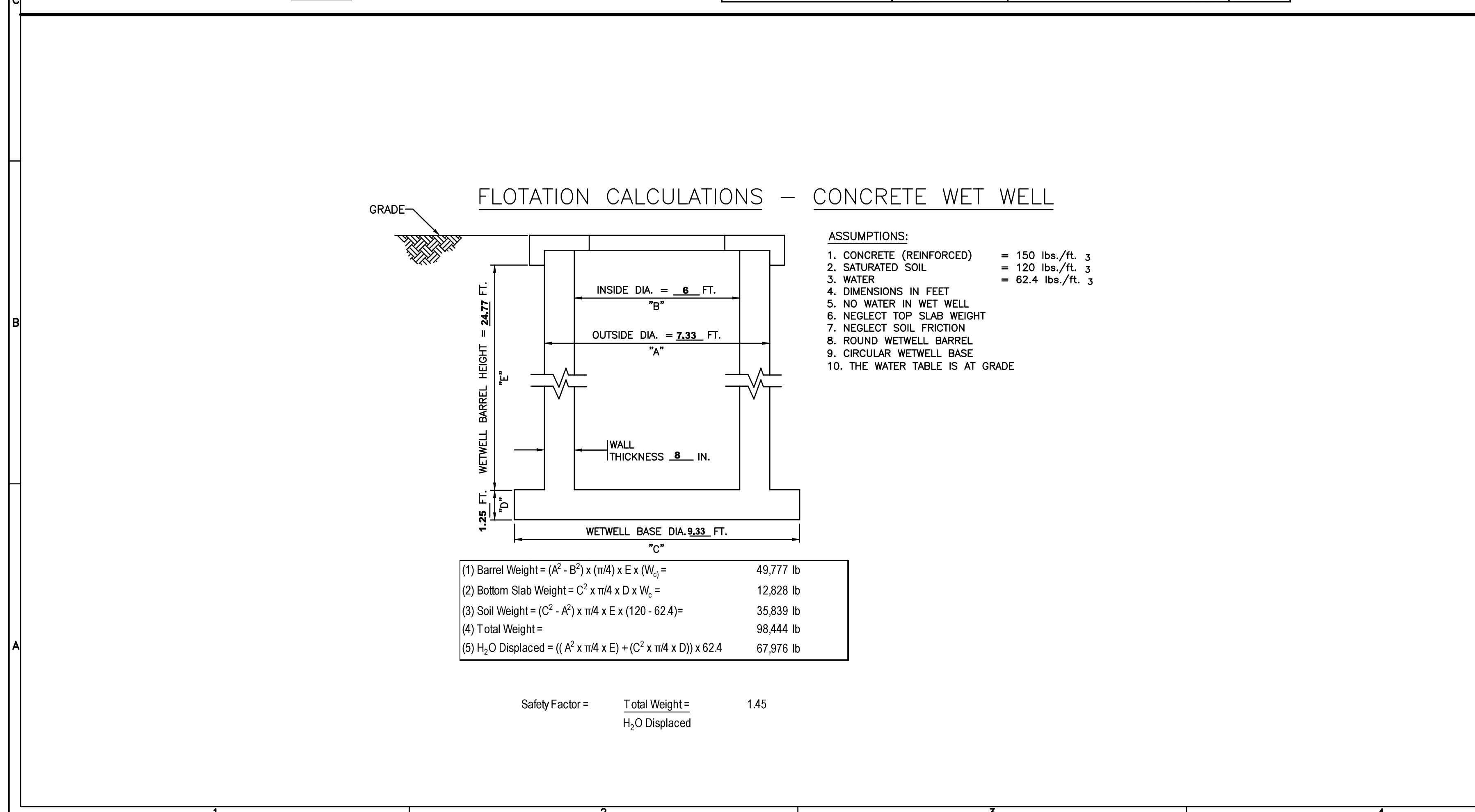
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GARY D. MILLER
 DATE:
 LICENSE NO. **52717**

C-601



SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
DATE: 6-3-02	LIFT STATION PLAN, SECTION AND NOTES	S-11
FILE: LIFTSTATION.DWG		



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4

PUMP STATION DETAILS

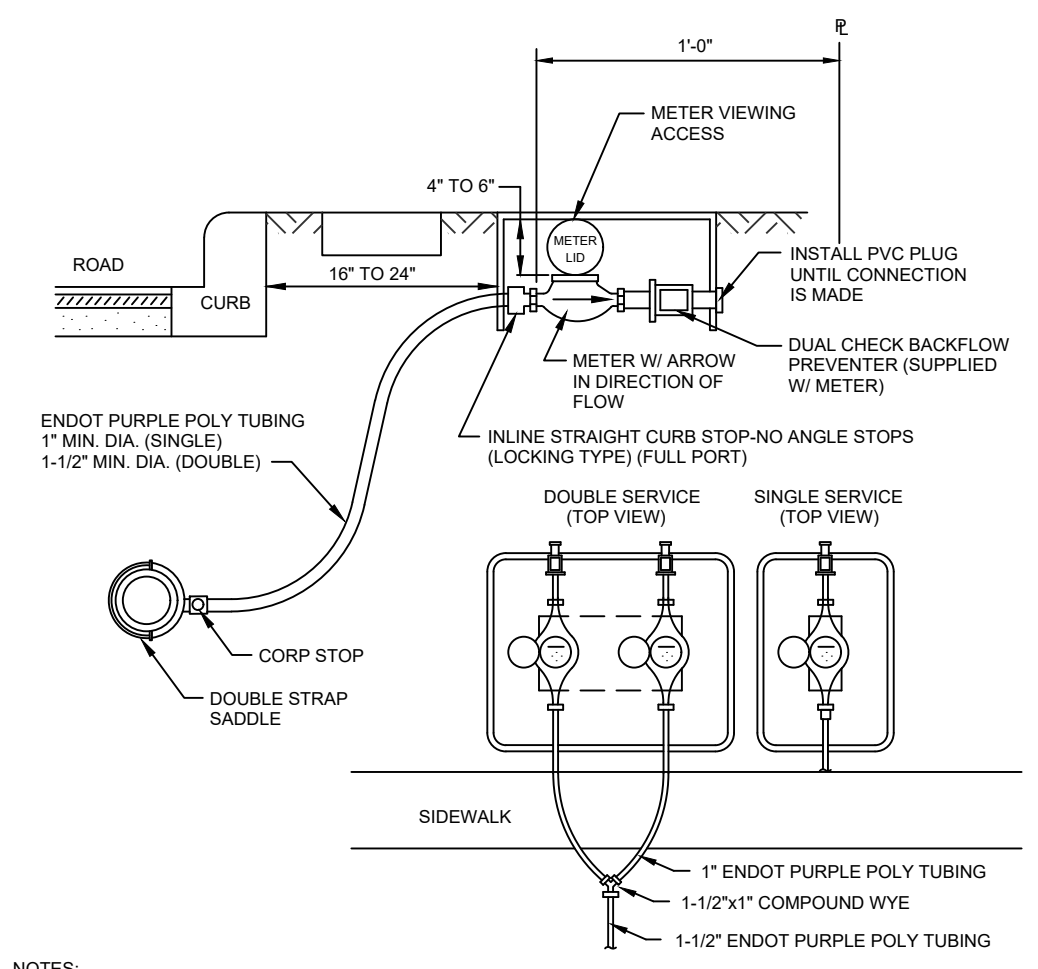
DR HORTON

NO.	DATE	DESCRIPTION
1	02/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: PSD
 DESIGN BY: MWD
 DRAWN BY: DD

GARY D. MILLER
 DATE: _____
 LICENSE NO: 52717

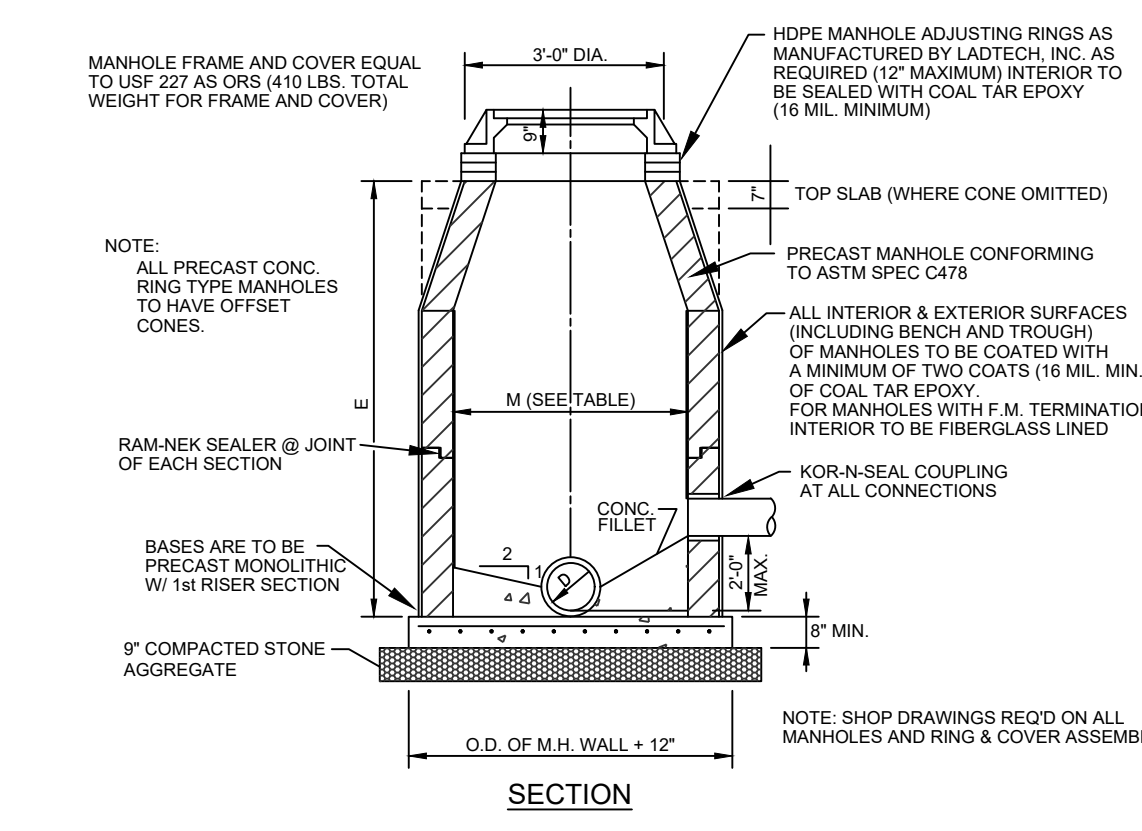
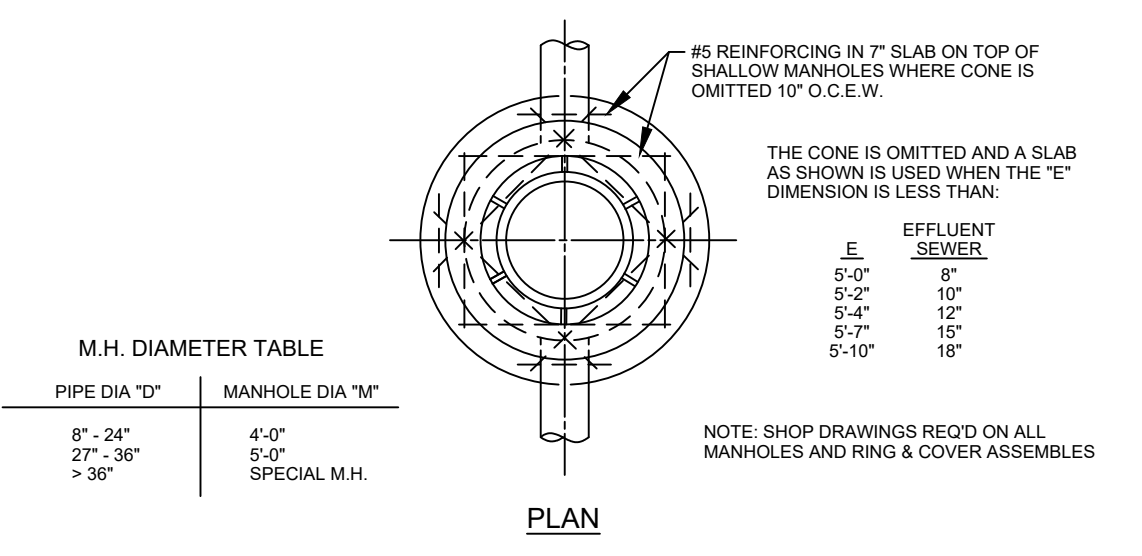
C-602



- NOTES:
1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
 2. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY OR A SIDEWALK.
 3. EACH SERVICE LINE SHALL TERMINATE AT A CURB STOP(S) WHICH SHALL BE BURIED APPROXIMATELY 3" BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2"x2"x18" STAKE WITH THE TOP PAINTED PURPLE AND MARKED WITH THE NUMBER OF THE LOT(S) TO BE SERVED.
 4. ALL RECLAIMED WATER SERVICES AND METER BOXES SHALL BE LOCATED AT THE LOT LINE, ON THE RESIDENT'S SIDE OF THE SIDEWALK.
 5. SERVICE LINES SHALL BE CONTINUOUS FROM CORPORATION STOP TO CURB STOP.
 6. ALL SERVICE LINES SHALL BE DRISCO D.R.-9 TYPE "P" POLYETHYLENE TUBING (PURPLE).
 7. CURB STOPS AND CURB STOPS SHALL BE BRASS EQUIPPED WITH CONNECTION COMPATIBLE TO CONNECTING SERVICE TYPE AS MANUFACTURED BY MUELLER CO. OR APPROVED EQUAL.
 8. RECLAIMED WATER METER VALVES AND RECLAIMED WATER METER BOXES SHALL BE INSTALLED BY THE CONTRACTOR. RECLAIMED WATER METERS SHALL BE INSTALLED BY THE UTILITY.
 9. LONG SERVICES UNDER PAVEMENT TO BE INSTALLED IN 3" PVC SLEEVE, MINIMUM 3" DEEP.
 10. DOUBLE SERVICE METER BOXES SHALL BE HEFCO PLASTIC JUMBO (PURPLE) W/ CAST IRON LID OR APPROVED EQUAL (MINIMUM DIMENSIONS: LENGTH x WIDTH = 21.5"x15"). SINGLE SERVICE METER BOXES SHALL BE HEFCO PLASTIC (PURPLE) W/ CAST IRON LID (MINIMUM DIMENSIONS: LENGTH x WIDTH 21.5"x10").

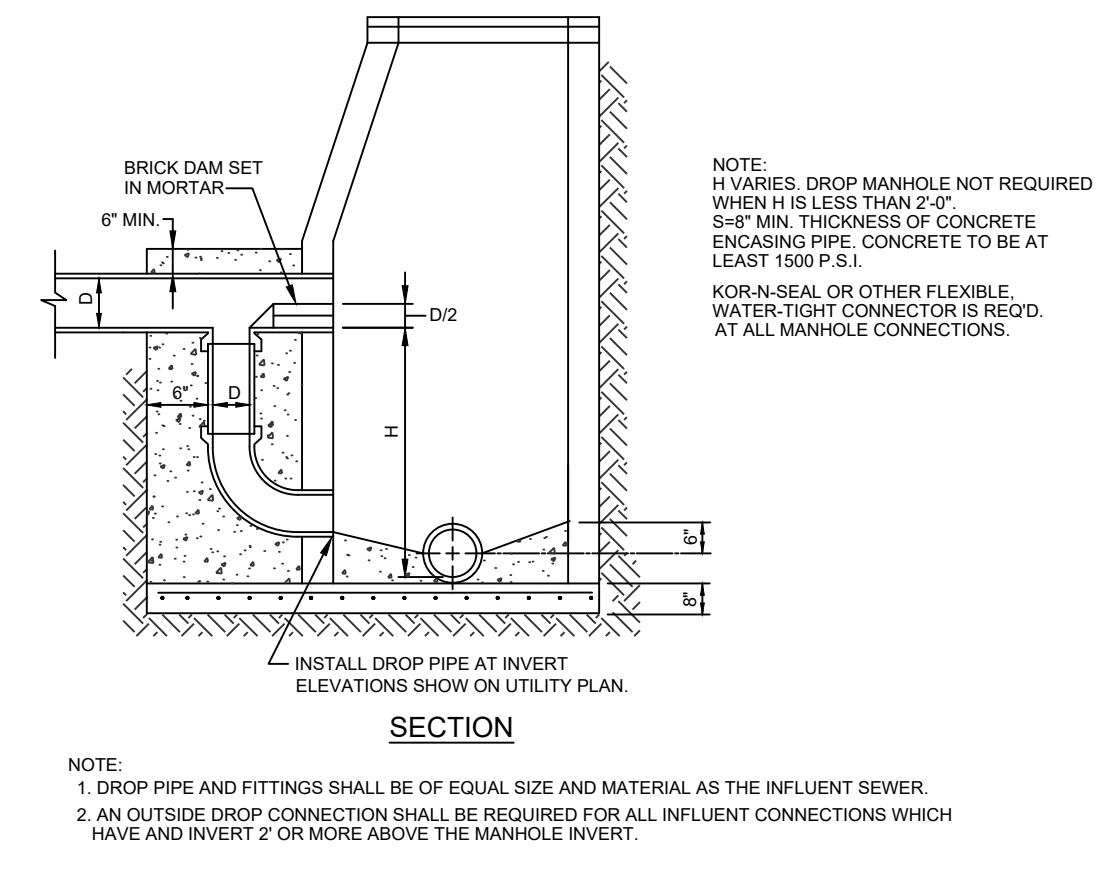
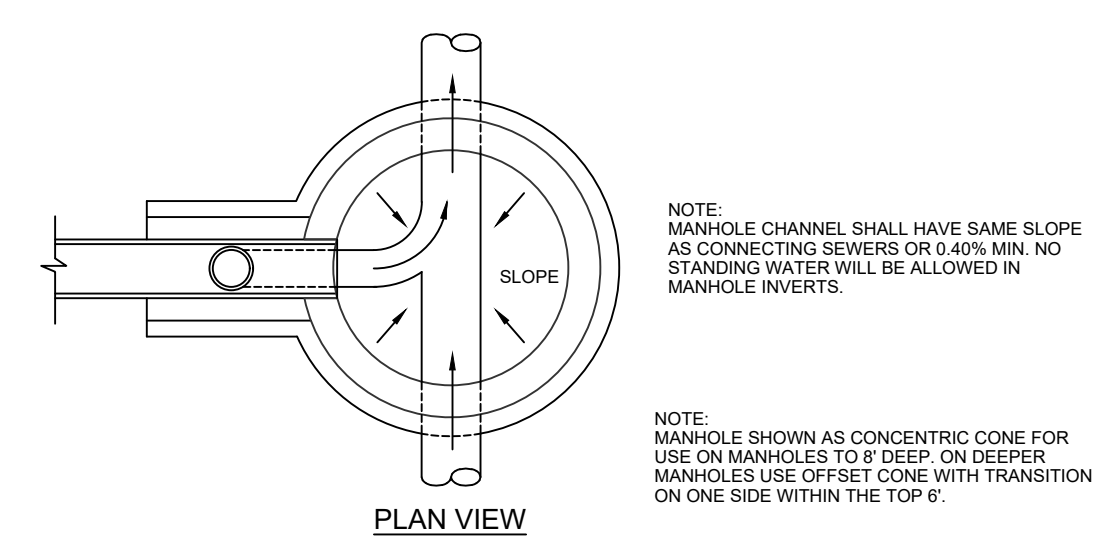
RECLAIMED WATER SERVICE CONNECTION
N.T.S.

Utilities, Inc.	SCALE: NONE	RECLAIMED WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	RECLAIMED WATER SERVICE CONNECTION	RW-1
	FILE: RWSERVICE.DWG		



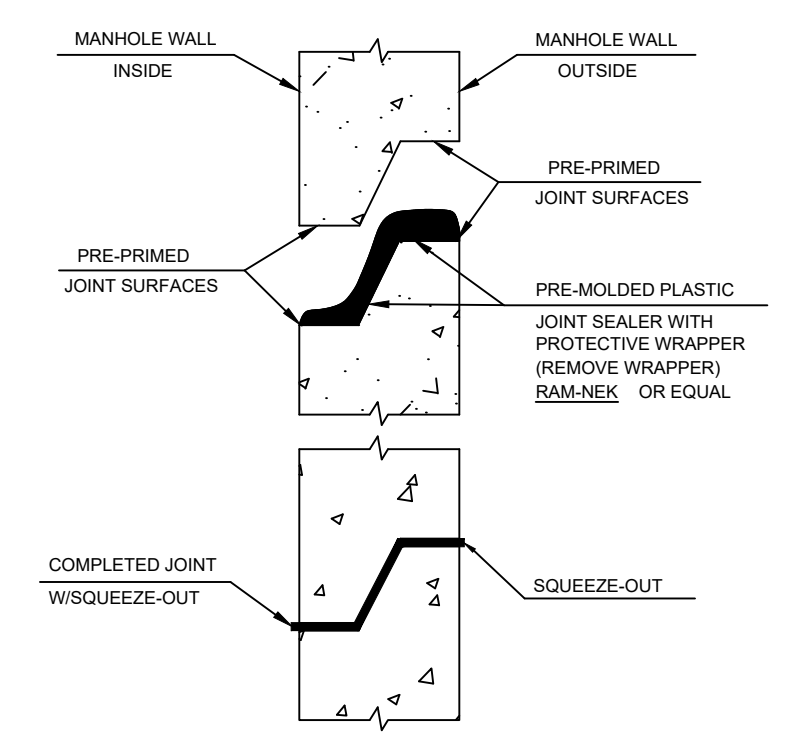
TYPICAL MANHOLE
N.T.S.

Utilities, Inc.	SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	TYPICAL MANHOLE	S-1
	FILE: MANHOLE.DWG		



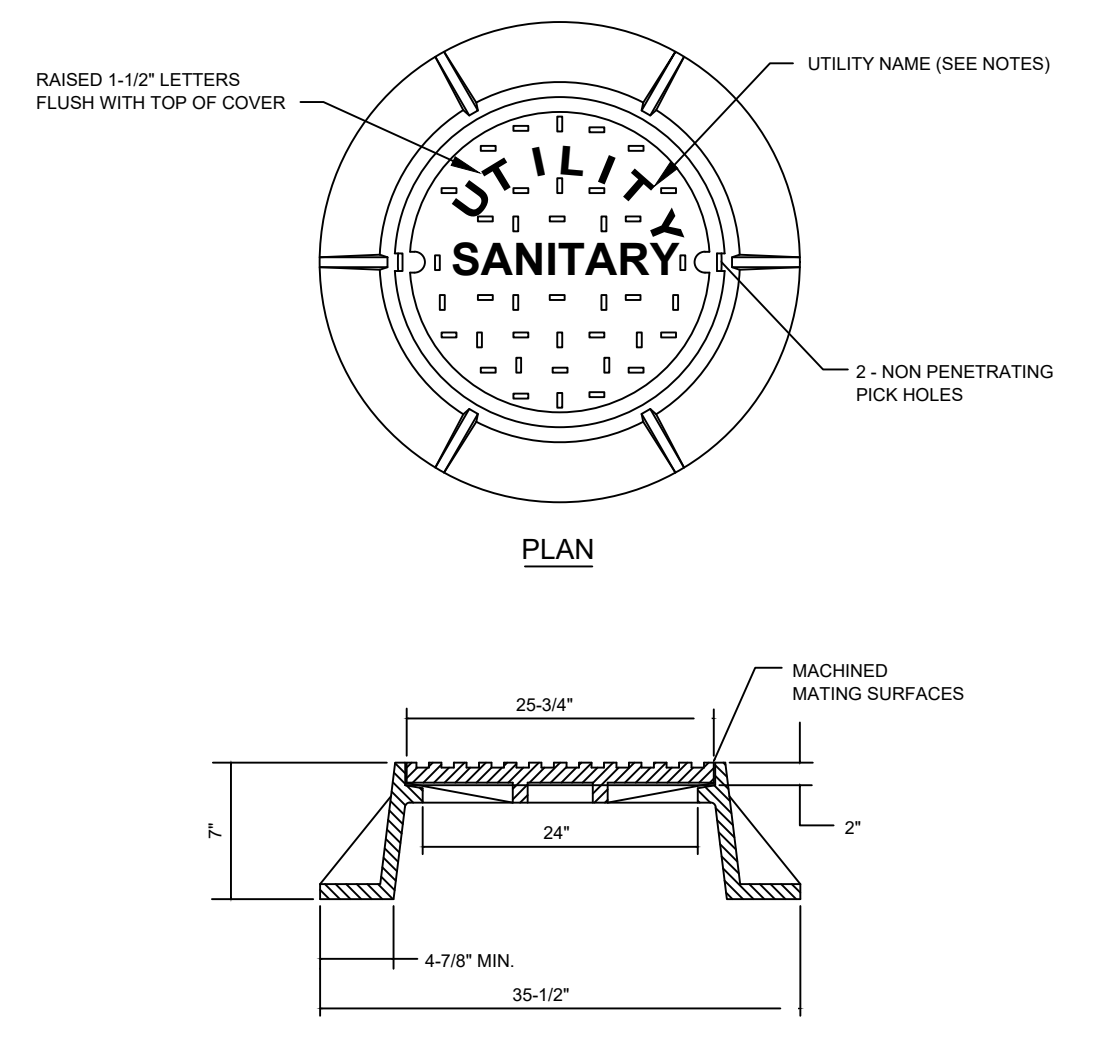
DETAIL OF OUTSIDE DROP MANHOLE
N.T.S.

Utilities, Inc.	SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-13-01	DETAIL OF OUTSIDE DROP MANHOLE	S-2
	FILE: DROPHOLE.DWG		



TYPICAL PRECAST STRUCTURE JOINT DETAIL
N.T.S.

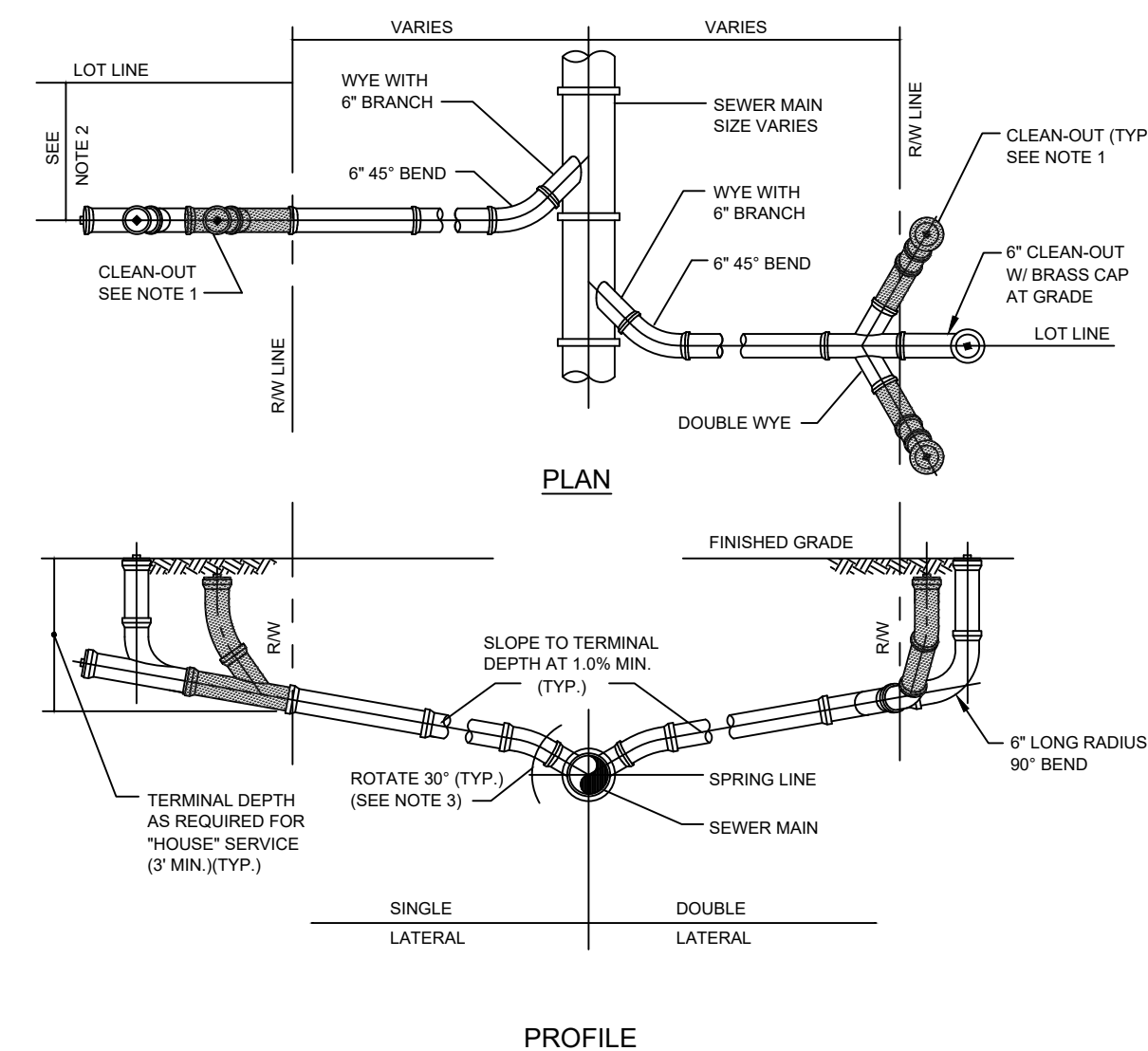
Utilities, Inc.	SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-13-01	TYPICAL PRECAST STRUCTURE JOINT DETAIL	S-3
	FILE: CONJ.DWG		



- NOTES:
1. MANHOLE FRAME AND COVER SHALL BE USF 227 AS ORS (410 LBS. TOTAL WEIGHT FOR FRAME AND COVER) OR APPROVED EQUAL.
 2. UTILITY NAME SHALL BE THE NAME OF THE UTILITY PROVIDING SERVICE. DETAIL SHALL BE SUBMITTED WITH SHOP DRAWINGS FOR UTILITY APPROVAL.

STANDARD MANHOLE FRAME AND COVER
N.T.S.

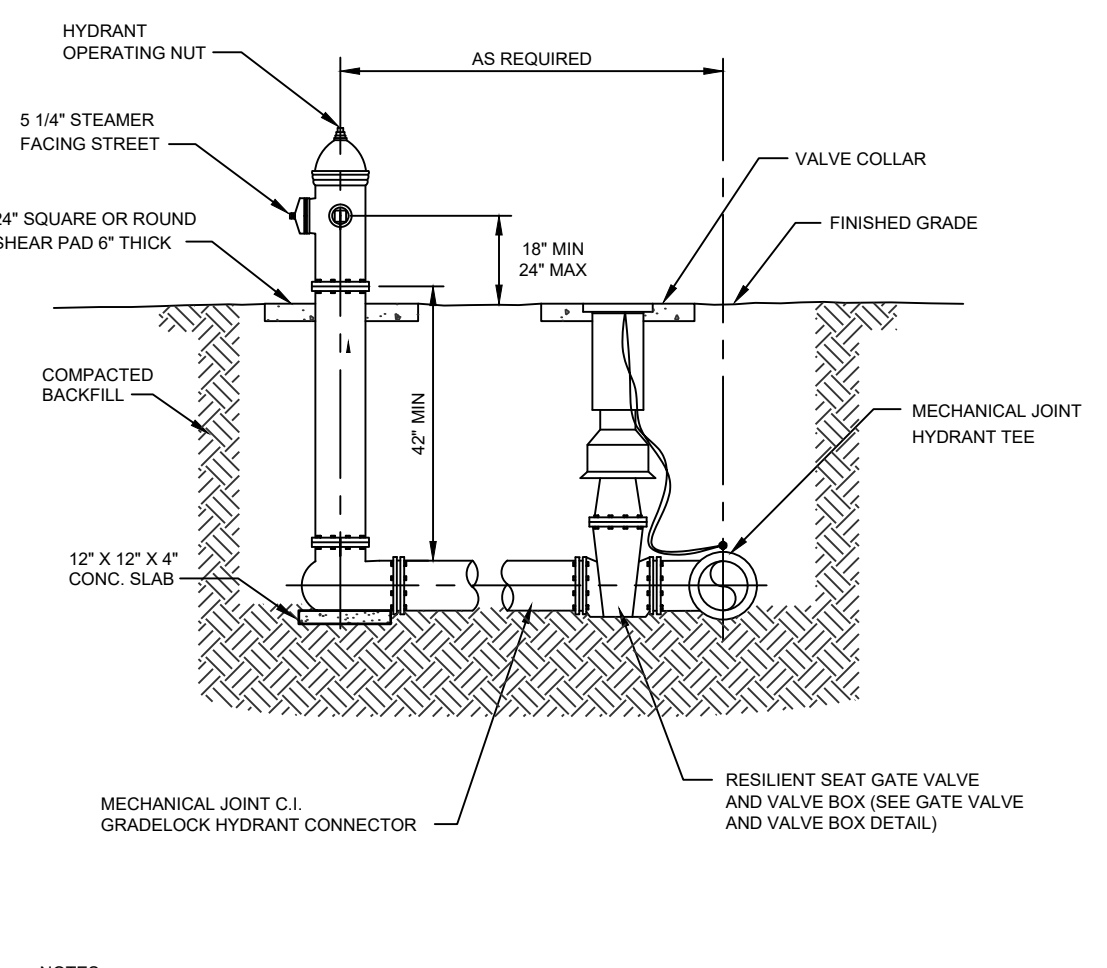
Utilities, Inc.	SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	STANDARD MANHOLE FRAME AND COVER	S-4
	FILE: MHCOVER.DWG		



- NOTES:
1. ELDER VALVE CLEAN-OUT (SHOWN SHADED) SHALL BE INSTALLED BY THE BUILDER IN ACCORDANCE WITH STANDARD PLUMBING CODE.
 2. LOCATE SINGLE LATERAL AS CLOSE TO LOT LINE AS POSSIBLE, 25" MAXIMUM.
 3. INVERT OF SERVICE LATERAL SHALL NOT ENTER SEWER MAIN BELOW SPRING LINE.
 4. WYE BRANCH CONNECTIONS ON DOUBLE SERVICE CONNECTIONS TO BE CAPPED WITH REMOVABLE STOPPER AND SEALED WITH JOINT COMPOUND.
 5. SERVICE LINES SHALL BE EXTENDED 18" ABOVE GRADE PRIOR TO VIDEO TAPING THE SANITARY SYSTEM. UPON ACCEPTANCE BY THE UTILITY, THE CONTRACTOR SHALL CUT THE CLEANOUT TO FINISHED GRADE AND THE SERVICE CONNECTIONS TO WITHIN 3 FEET OF FINISHED GRADE.

SANITARY SERVICE LATERAL DETAIL
N.T.S.

Utilities, Inc.	SCALE: NONE	SANITARY DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	SANITARY SERVICE LATERAL DETAIL	S-5
	FILE: SANLAT.DWG		



- NOTES:
1. FIRE HYDRANT SHALL BE AMERICAN DARLING 5-84-B, WITHOUT WEEP HOLE, OR APPROVED EQUAL.
 2. PROVIDE A BLUE REFLECTORIZED MARKER IN THE PAVEMENT.
 3. THE SHEAR PAD MAY BE INSTALLED UP TO 4" BELOW FINISH GRADE.
 4. CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE 6-INCH MINIMUM.
 5. FIRE HYDRANT LOCATED 4' FROM WATER MAIN, BETWEEN SIDEWALK AND BACK OF CURB. SEE DETAIL SHEET C-605.
 6. ALL JOINTS SHALL BE FULLY RESTRAINED IN ACCORDANCE WITH NFPA 24 10.8.3 AND UTILITIES, INC. REQUIREMENTS.

FIRE HYDRANT ASSEMBLY DETAIL
N.T.S.

Utilities, Inc.	SCALE: NONE	WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	FIRE HYDRANT ASSEMBLY DETAIL	W-1
	FILE: FIREHYD.DWG		

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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
WATER & SEWER DETAILS

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	05/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: WSD
DESIGN BY: MWD
DRAWN BY: DD

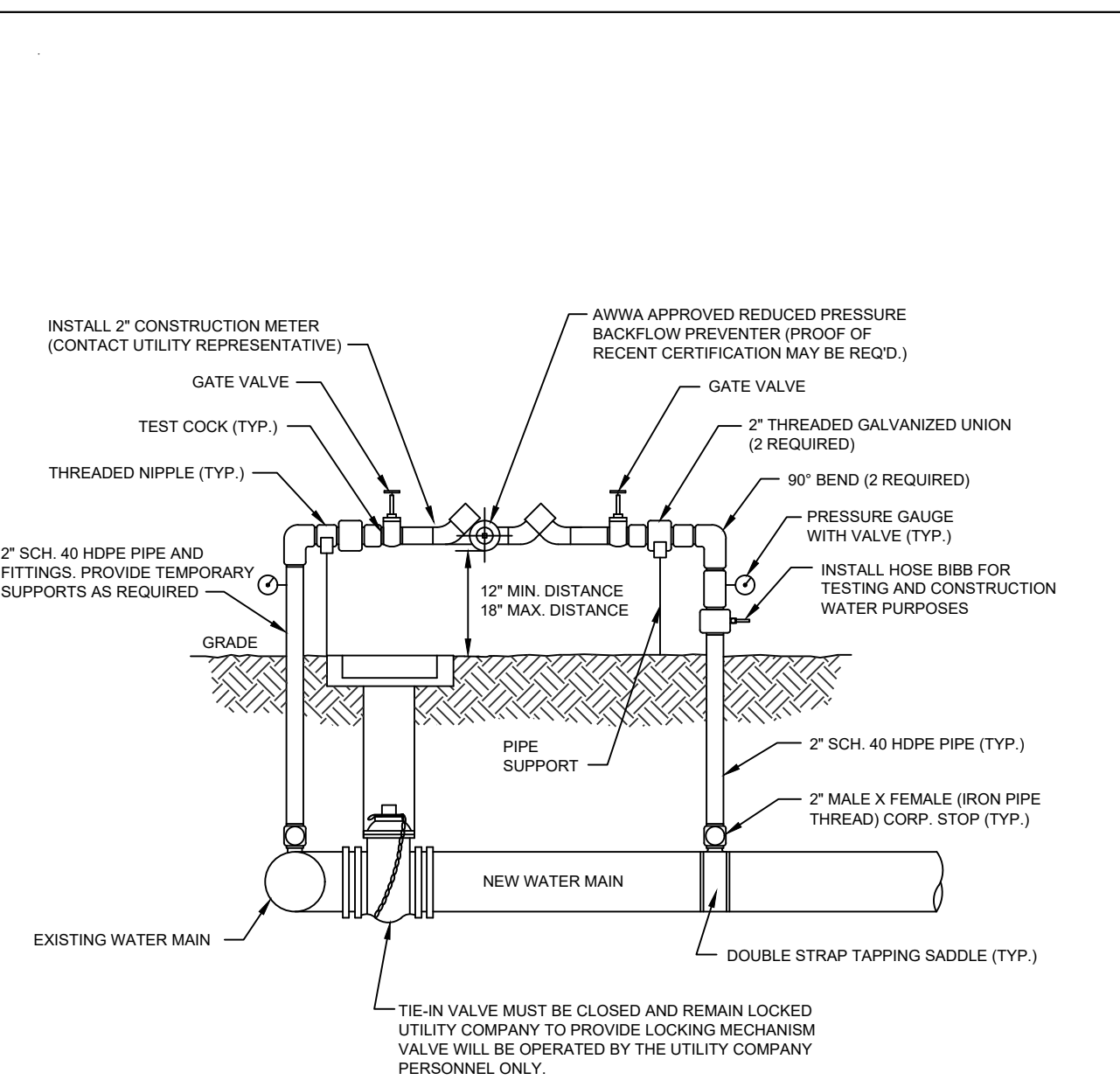
STATE OF FLORIDA
PROFESSIONAL ENGINEER
Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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GARY D. MILLER
DATE: 5/22/2019
LICENSE NO. 52717

C-603



TEMPORARY JUMPER CONNECTION
N.T.S.

	SCALE: NONE	WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	TEMPORARY JUMPER CONNECTION	W-2
	FILE: JUMPER.DWG		

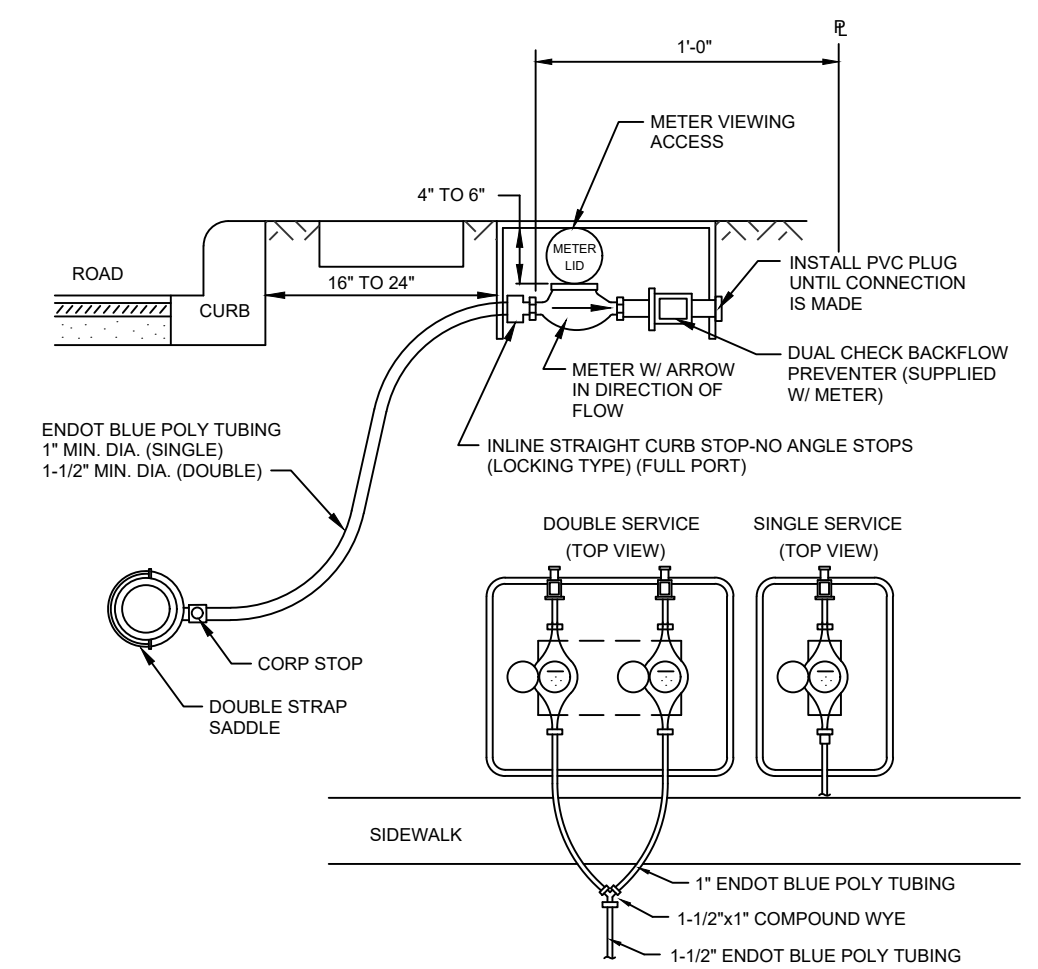
- TEMPORARY JUMPER NOTES:**
- A TEMPORARY JUMPER CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE WATER MAINS AND PROPOSED NEW WATER MAIN IMPROVEMENTS.
 - THE DETAIL ABOVE IS TO BE USED FOR FILLING ANY NEW WATER MAIN OF ANY SIZE FROM EXISTING ACTIVE WATER MAINS AND FOR FLUSHING OF NEW MAINS UP TO 8" IN DIAMETER (2.5 FPS MINIMAL VELOCITY) AND FOR FILLING BACTERIOLOGICAL SAMPLES FROM ANY NEW WATER MAIN OF ANY SIZE. THE JUMPER CONNECTION SHALL BE MAINTAINED UNTIL AFTER FILLING, FLUSHING, TESTING, AND DISINFECTION OF THE NEW MAIN HAS BEEN SUCCESSFULLY COMPLETED AND CLEARANCE FOR USE FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) & OTHER PERTINENT AGENCIES HAS BEEN RECEIVED BY UTILITIES, INC. THIS JUMPER CONNECTION SHALL ALSO BE USED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI IN THE NEW MAINS ALL THE TIME AFTER DISINFECTION AND UNTIL THE FDEP CLEARANCE LETTER IS OBTAINED. ADEQUATE TRUST BLOCKING AND/OR RESTRAINTS SHALL BE PROVIDED TEMPORARILY AS REQUIRED. PIPE AND FITTINGS USED FOR CONNECTING THE NEW PIPE TO THE EXISTING PIPE SHALL BE DISINFECTED PRIOR TO INSTALLATION IN ACCORDANCE WITH AWWA C651, 1992 EDITION. THIS TAPPING SLEEVE AND THE EXTERIOR OF THE MAIN TO BE TAPPED SHALL BE DISINFECTED BY SPRAYING OR SWABBING PER SECTION II OF AWWA C651-92.

CONTINUED ON PAGE W-3A

	SCALE: NONE	WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-12-01	TEMPORARY JUMPER NOTES	W-3
	FILE: JUMPNOTES.DWG		

CONTINUED FROM PAGE W-3

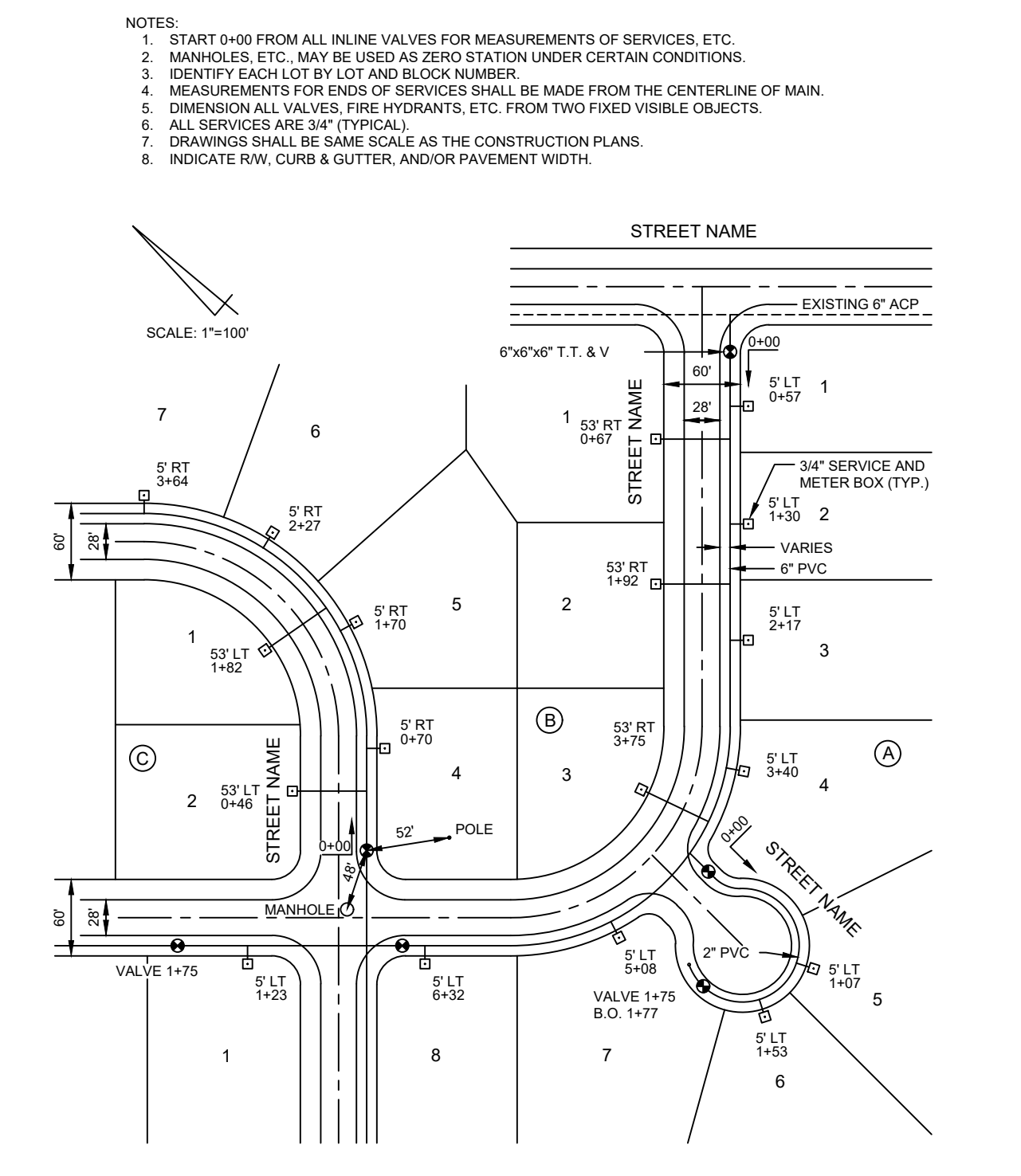
- FLUSHING OF 10" DIAMETER AND LARGER WATER MAINS MAY BE DONE THROUGH THE TIE-IN VALVE UNDER VERY CONTROLLED CONDITIONS.
THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:
 A. THE TIE-IN VALVES SHALL BE OPERATED AND PRESSURE TESTED IN THE PRESENCE OF THE UTILITY COMPANY AND ENGINEER TO VERIFY WATER TIGHTNESS PRIOR TO TIE-IN. VALVES WHICH ARE NOT WATER TIGHT SHALL BE REPLACED OR A NEW VALVE INSTALLED IMMEDIATELY ADJACENT TO THE LEAKING VALVE.
 B. THE TEMPORARY JUMPER CONNECTION SHALL BE CONSTRUCTED AS DETAILED. THE JUMPER CONNECTION SHALL BE USED TO FILL THE NEW WATER MAIN AND FOR PROVIDING WATER FOR BACTERIOLOGICAL SAMPLING OF THE NEW MAIN AS REQUIRED BY THE FDEP PERMIT.
 C. FLUSHING SHALL NOT BE ATTEMPTED DURING PEAK DEMAND HOURS OF THE EXISTING WATER MAINS.
 D. ALL DOWNSTREAM VALVES IN THE NEW SYSTEM MUST BE OPEN PRIOR TO OPENING THE TIE-IN VALVE.
 E. PROVIDE FOR AND MONITOR THE PRESSURE AT THE TIE-IN POINT. THE PRESSURE ON THE EXISTING MAIN MUST NOT DROP BELOW 35 PSI.
 F. TIE-IN VALVE SHALL BE OPENED A FEW TURNS ONLY, ENSURING A PRESSURE DROP ACROSS THE VALVE ALWAYS GREATER THAN 10 PSI.
 G. THE TIE-IN VALVE SHALL BE LOCKED CLOSED BY THE UTILITY COMPANY UNTIL FLUSHING BEGINS.
 H. THE TIE-IN VALVE SHALL BE OPENED ONLY FOR FLUSHING OF THE NEW MAIN. THE PROCEDURE SHALL BE DIRECTED BY THE UTILITY COMPANY AND OBSERVED BY THE ENGINEER.
 I. AFTER FLUSHING, THE TIE-IN VALVE SHALL BE CLOSED AND LOCKED, THEN VERIFIED BY THE UTILITY.
- THE CONTRACTOR SHALL PROVIDE DOCUMENTATION DEMONSTRATING THAT THE DOUBLE CHECK BACKFLOW PREVENTION DEVICE HAS BEEN TESTED WITHIN ONE YEAR AT THE TIME OF INSTALLATION, & IS IN GOOD WORKING ORDER AT THE TIME OF INSTALLATION. THE TEST SHALL BE PERFORMED BY A QUALIFIED BACK FLOW PREVENTION TECHNICIAN AS APPROVED BY THE UTILITIES CROSS-CONNECTION CONTROL PROGRAM.
- EXCEPT AS REQUIRED TO FLUSH LINES OF GREATER THAN 8" IN DIAMETER, THE TIE-IN VALVE SHALL REMAIN CLOSED, LOCKED, AND VERIFIED BY THE UTILITY COMPANY. THE TIE-IN VALVE SHALL REMAIN LOCKED UNTIL THE NEW SYSTEM HAS BEEN CLEARED FOR USE BY FDEP AND ALL OTHER PERTINENT AGENCIES.
- UPON RECEIPT OF CLEARANCE FOR USE FROM FDEP AND ALL OTHER PERTINENT AGENCIES, THE CONTRACTOR SHALL REMOVE THE TEMPORARY JUMPER CONNECTION. THE CONNECTION STOPS ARE TO BE CLOSED AND PLUGGED WITH 2" BRASS PLUGS.
- ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE, FITTINGS, VALVE, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.



- NOTES:**
- ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
 - NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY OR A SIDEWALK.
 - EACH SERVICE SHALL TERMINATE AT A CURB STOPS WHICH SHALL BE BURIED APPROXIMATELY 3" BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2"x2" 16" STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE NUMBER OF THE LOT(S) TO BE SERVED.
 - ALL WATER SERVICES AND METER BOXES SHALL BE LOCATED AT THE LOT, ON THE RESIDENT'S SIDE OF SIDEWALK.
 - CURB STOPS AND CURB STOPS SHALL BE BRASS EQUIPPED WITH CONNECTION COMPATIBLE TO CONNECTING SERVICE TYPE AS MANUFACTURED BY MUELLER CO. B25170 WITH A 1" x 3/4" BRASS BUSHING OR APPROVED EQUAL.
 - DOUBLE SERVICE METER BOXES SHALL BE HEFCO PLASTIC JUMBO W/ CAST IRON LID OR APPROVED EQUAL. (MINIMUM DIMENSIONS: LENGTH x WIDTH = 21.5"x15.5").
 - WATER METER VALVES AND WATER METER BOXES SHALL BE INSTALLED BY THE CONTRACTOR. WATER METERS SHALL BE INSTALLED BY THE UTILITY.
 - LONG SERVICES UNDER PAVEMENT TO BE INSTALLED IN 3" PVC SLEEVE, MINIMUM 3" DEEP.
 - SINGLE SERVICE METER BOXES SHALL BE HEFCO PLASTIC W/ CAST IRON LID OR APPROVED EQUAL. (MINIMUM DIMENSIONS: LENGTH x WIDTH = 21.5"x10").

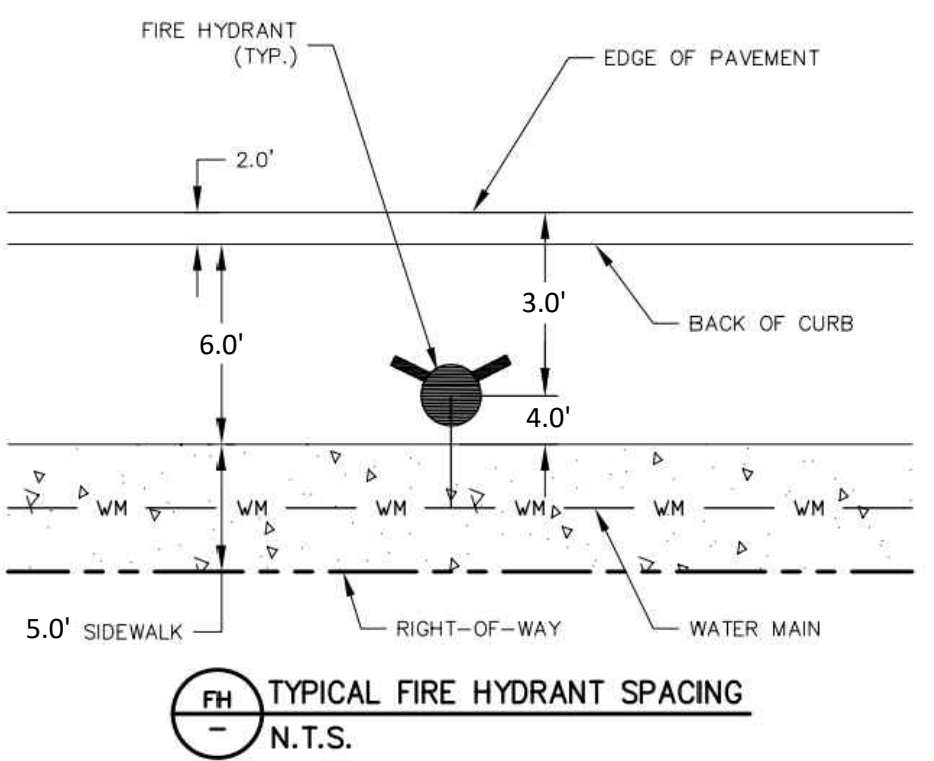
WATER SERVICE CONNECTION
N.T.S.

	SCALE: NONE	WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02	WATER SERVICE CONNECTION	W-4
	FILE: WSERV.DWG		



APPLICABLE ALL UTILITIES
TYPICAL UTILITY "AS-BUILT"
N.T.S.

	SCALE: NONE	APPLICABLE ALL UTILITIES	STANDARD DETAIL NUMBER
	DATE: 7-12-01	TYPICAL UTILITY "AS-BUILT"	AB-1
	FILE: ASBUILT.DWG		



TYPICAL FIRE HYDRANT SPACING
N.T.S.

	SCALE: NONE	WATER DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-12-01	TEMPORARY JUMPER NOTES	W-3A
	FILE: JUMPNOTES.DWG		

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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
WATER & SEWER DETAILS

DR HORTON

PREPARED FOR:

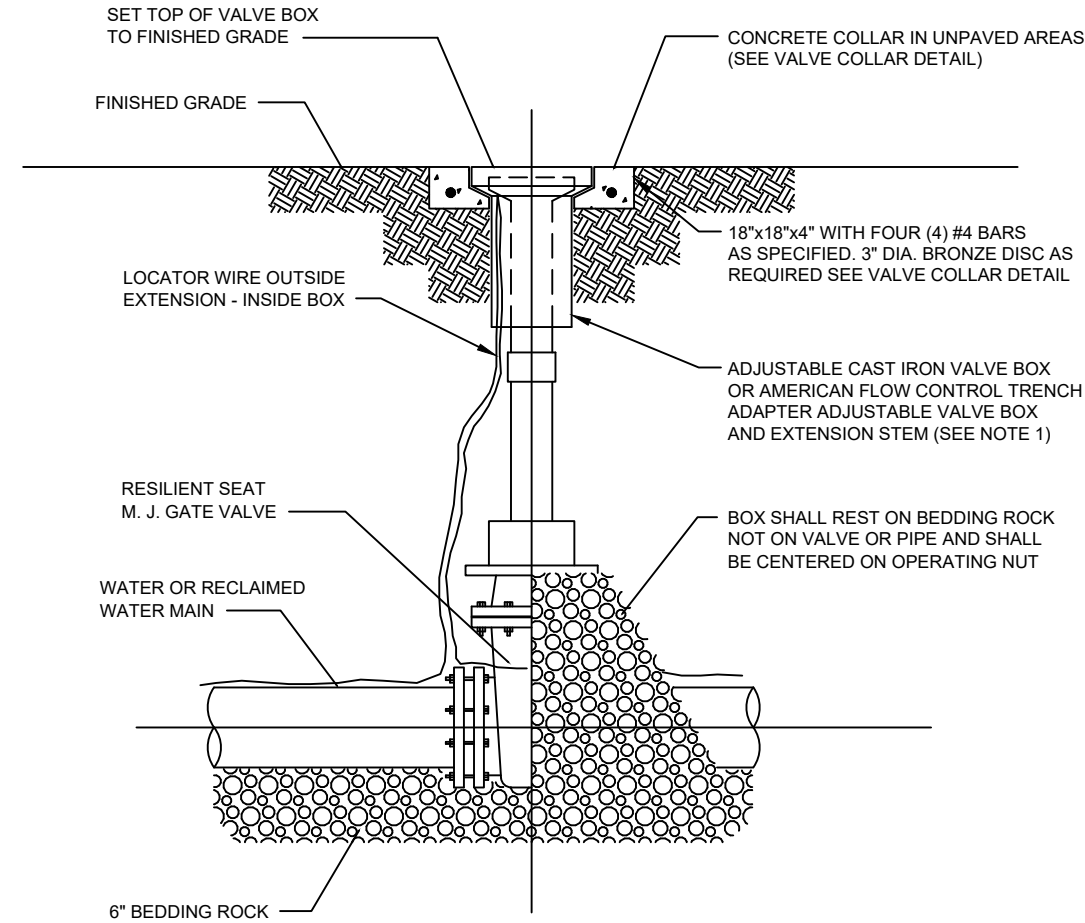
NO.	DATE	DESCRIPTION
1	05/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: WSD
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER
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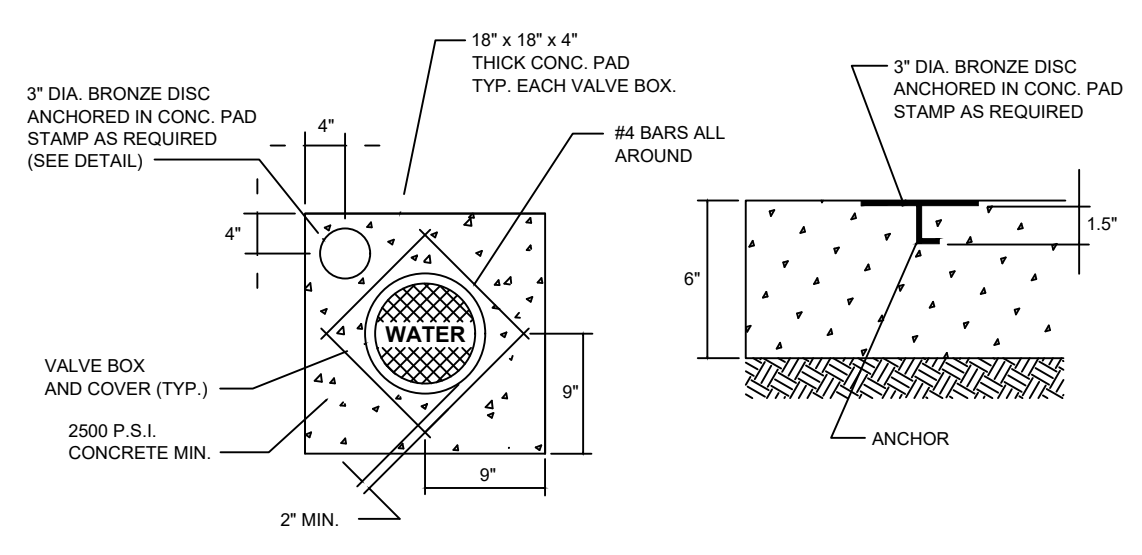
C-604



- NOTES:
1. PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION, EXCEPT FOR THE AMERICAN FLOW CONTROL TRENCH ADAPTER WITH 2" SQUARE NUT WRENCH AND EXTENSION STEM SPACER AND STOP.
 2. COVER TO BE MARKED "WATER", "RECLAIMED", "NPW", OR "SEWER" AS APPROPRIATE.
 3. VALVES SHALL NOT BE LOCATED IN STREET CURBS.

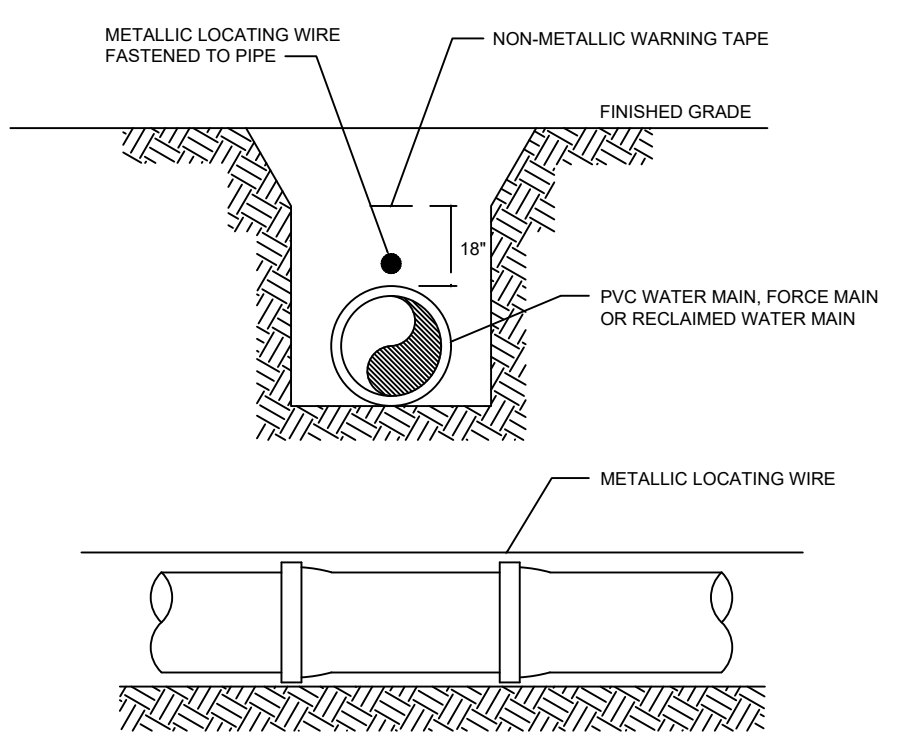
VALVE AND VALVE BOX DETAIL
N.T.S.

Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-26-02		
	FILE: VALVBOX.DWG		
VALVE AND VALVE BOX DETAIL		G-1	



VALVE COLLAR DETAIL
N.T.S.

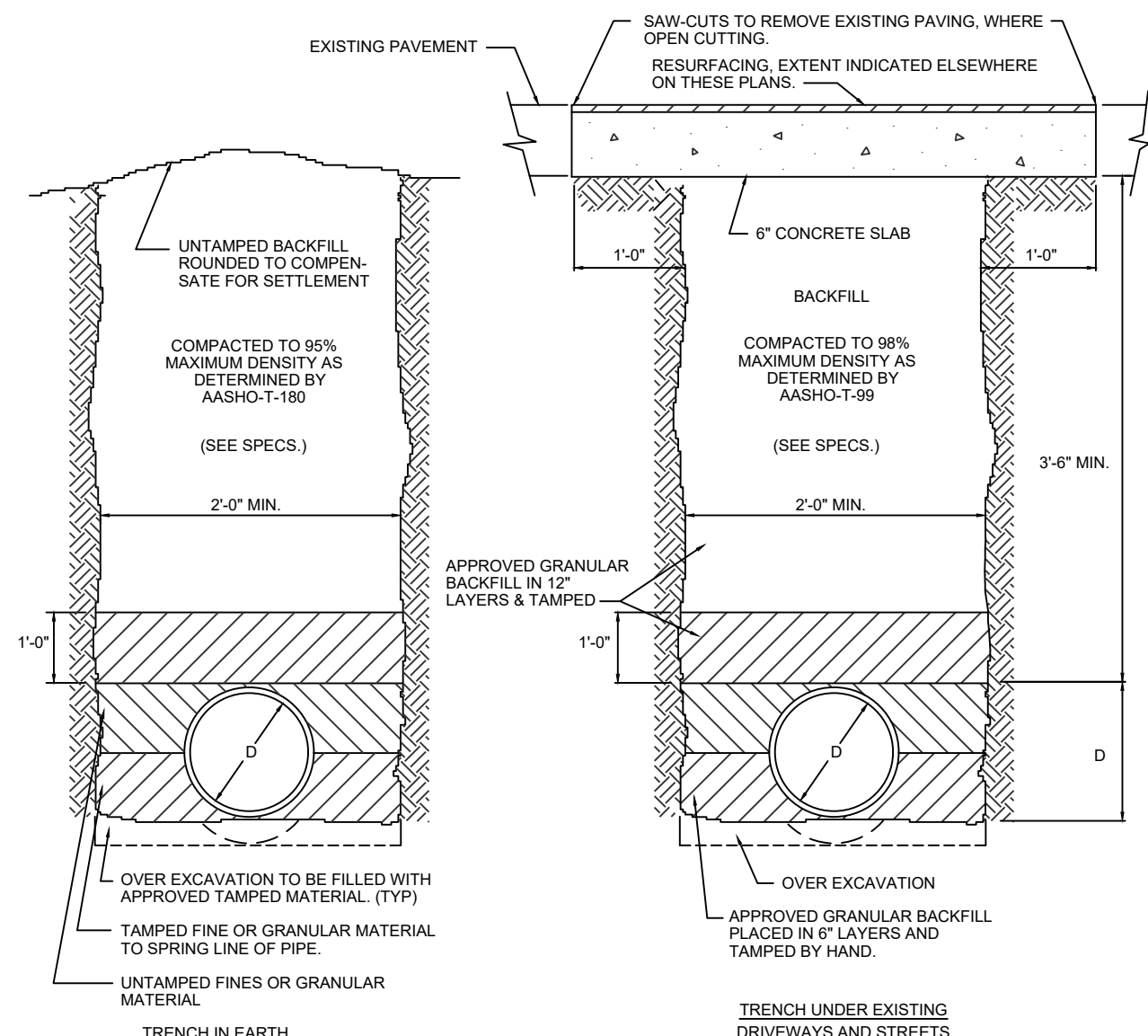
Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 2-24-04		
	FILE: VCOLLAR.DWG		
VALVE COLLAR DETAIL		G-3	



- NOTES:
1. ALL NON-METALLIC PIPE SHALL REQUIRE CONTINUOUS INSULATED METALLIC LOCATING WIRE (14 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
 2. THE TRACING WIRE SHALL BE CENTERED ON ALL PIPE (INCLUDING SERVICES) AND TIED INTO ALL HYDRANTS, VALVE BOXES AND METER BOXES. TESTING FOR CONTINUITY IS REQUIRED.
 3. USE VINYL TIE-STRAPS AS NECESSARY TO HOLD WIRE DIRECTLY ON THE TOP OF THE PIPE. DUCT TAPE SHALL NOT BE USED.
 4. WIRE CONNECTIONS MUST BE CLAMPED TOGETHER AND SEALED FOR MOISTURE.
 5. ALL WIRE SPlice LOCATIONS SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.
 6. WIRE AND WARNING TYPE SHALL BE COLOR CODED AS FOLLOWS:
WATER: BLUE
SEWER: GREEN
RECLAIMED: PURPLE

PIPE LOCATING WIRE DETAIL
N.T.S.

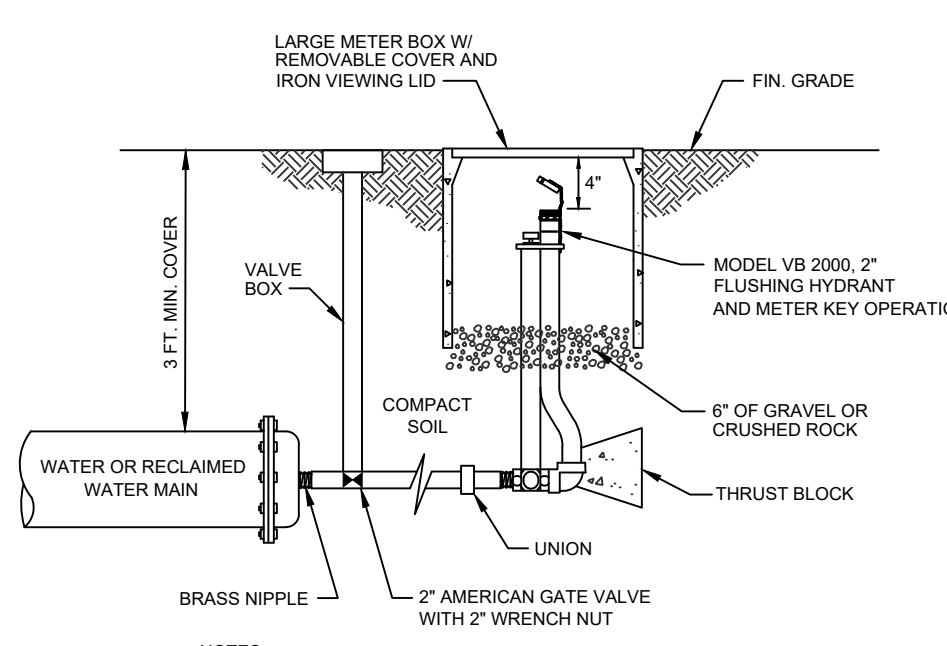
Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02		
	FILE: PIPE-LOC.DWG		
PIPE LOCATING WIRE DETAIL		G-10	



- NOTE:
1. TRENCHES SHALL BE AS NARROW AS POSSIBLE TO ALLOW FOR SAFE AND PROPER PIPE INSTALLATION. TRENCH SIDES SHALL BE VERTICAL TO A POINT 1'-0" ABOVE THE TOP OF THE PIPE. ABOVE THIS POINT SLOPED SIDES MAY BE USED IF CONDITIONS PERMIT, BUT SHOULD BE KEPT AS NEARLY VERTICAL AS POSSIBLE.
 2. FOR TRENCH IN CINDER FILLS, GARBAGE DUMPS, SALT MARSHES, MUCK SOILS OR PLACES WHERE HARMFUL CORROSIVE CONDITIONS EXIST, PIPE SHALL BE PROTECTED WITH AT LEAST 10" OF SAND OR LIMESTONE SCREENINGS ON ALL SIDES AND TAMPED BY HAND IN 4" LAYERS. SEE SPECIFICATIONS. NO ADDITIONAL COMPENSATION FOR CORROSION PROTECTION OF A PIPE WILL BE ALLOWED.

TRENCH DETAILS
N.T.S.

Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-12-01		
	FILE: TRENCH.DWG		
TRENCH DETAILS		G-11	



- NOTES:
1. NO GALVANIZED FITTINGS PERMITTED.
 2. ALL BRASS FITTINGS SHALL BE 2" IPT INLET AND 2 1/2" NST OUTLET.
 3. FLUSHING HYDRANT ASSEMBLY SHALL BE WATER PLUS CORPORATION, PENSECOLA, FL (800) 842-9979
 4. CONTRACTOR SHALL PROVIDE DIFFUSER DESIGNED FOR FLUSHING.

BLOW-OFF (FLUSH HYDRANT) DETAIL
N.T.S.

Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02		
	FILE: BLOWOFF.DWG		
BLOW-OFF (FLUSH HYDRANT) DETAIL		G-15	

PROPOSED UTILITY	MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS		MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS	
	POTABLE WATER	RECLAIMED WATER	POTABLE WATER	RECLAIMED WATER
POTABLE WATER	HORIZONTAL	3'	HORIZONTAL	3'
	VERTICAL	12"	VERTICAL	12"
RECLAIMED WATER	HORIZONTAL	3'	HORIZONTAL	3'
	VERTICAL	12"	VERTICAL	12"
SANITARY SEWER FORCE MAIN	HORIZONTAL	6"	HORIZONTAL	6"
	VERTICAL	12"	VERTICAL	12"
SANITARY SEWER GRAVITY MAIN	HORIZONTAL	6"	HORIZONTAL	6"
	VERTICAL	12"	VERTICAL	12"
UNDERGROUND INTERFERING UTILITIES	HORIZONTAL	3'	HORIZONTAL	3'
	VERTICAL	12"	VERTICAL	12"

1. THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN D.P.E. RULES PER THE FLORIDA ADMINISTRATION. SEPARATION SHALL BE MEASURED FROM THE CENTERLINE OF THE UTILITY TO THE CENTERLINE OF THE OTHER UTILITY. SEPARATION SHALL BE MEASURED BETWEEN NEARLY PROPOSED UTILITY LINES AND EXISTING OR RECLAIMED UTILITY LINES.

2. FOR THE PURPOSE OF THIS TABLE RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 62B.02(1) AND UNRESTRICTED PUBLIC ACCESS REUSE WATER. UNRESTRICTED PUBLIC ACCESS REUSE WATER AND SEPARATION LISTED FOR SANITARY SEWERS SHALL APPLY TO ALL TYPES OF SEWERS.

3. ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.

4. AT UTILITY CROSSINGS ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER UTILITY. PIPE LINE MARKING SHALL BE AS FOLLOWS: (1) PAVEMENT MARKING: (A) WATER MAIN: WHITE MARKING JOINTS MUST BE.

5. AT UTILITY CROSSINGS ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER UTILITY. PIPE LINE MARKING SHALL BE AS FOLLOWS: (1) PAVEMENT MARKING: (A) WATER MAIN: WHITE MARKING JOINTS MUST BE.

6. NO WATER PIPE SHALL PASS THROUGH OR BE CONSTRUCTED UNDER ANY OTHER UTILITY. ALL WATER MAINS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET IF THE UTILITY IS RECLAIMED WATER, AND ALL OTHER TYPES OF RECLAIMED WATER. ALL OTHER TYPES OF RECLAIMED WATER SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

7. NEW OR RELOCATED FIRE HYDRANTS WITH UNDERGROUND DRAINS MUST BE AT LEAST 10 FEET FROM ANY EXISTING OR PROPOSED UTILITY. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET. ALL FIRE HYDRANTS SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

8. THE FOLLOWING ARE ACCEPTABLE METHODS OF CONSTRUCTION VARIANCES WHERE IT IS NOT POSSIBLE TO MEET THE SEPARATION REQUIREMENTS LISTED IN THIS TABLE. THE ENGINEER SHALL BE NOTIFIED OF EXPRESSED WRITTEN CONSENT FROM THE ENGINEER. THE SEPARATION DISTANCE SHALL BE LESS THAN THE MINIMUM REQUIRED DISTANCE BETWEEN JOINTS:

A. WHERE A WATER MAIN IS BEING LAD LESS THAN THE REQUIRED DISTANCE FROM ANOTHER UTILITY, THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

B. WHERE A WATER MAIN IS BEING LAD LESS THAN THE REQUIRED DISTANCE FROM ANOTHER UTILITY, THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

9. USE OF PRESSURE RATED PIPE CONFORMING TO AWWA C900/C905 IS PERMITTED.

10. JOINTS FOR EITHER PIPE.

11. USE OF WELDED, FUSED OR OTHERWISE RESTRAINED JOINTS FOR EITHER PIPE.

12. USE OF WATER TIGHT CASING PIPE OR CONCRETE CASING PIPE.

13. WHERE A WATER MAIN IS BEING LAD LESS THAN THE REQUIRED DISTANCE FROM ANOTHER UTILITY, THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

14. WHERE A WATER MAIN IS BEING LAD LESS THAN THE REQUIRED DISTANCE FROM ANOTHER UTILITY, THE WATER MAIN SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

15. USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH SHALL BE PERMITTED. THE PIPE SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

16. USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH SHALL BE PERMITTED. THE PIPE SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

17. USE OF PIPE OR CASING PIPE, HAVING HIGH IMPACT STRENGTH SHALL BE PERMITTED. THE PIPE SHALL BE CONSTRUCTED WITH A MINIMUM COVER OF 3 FEET.

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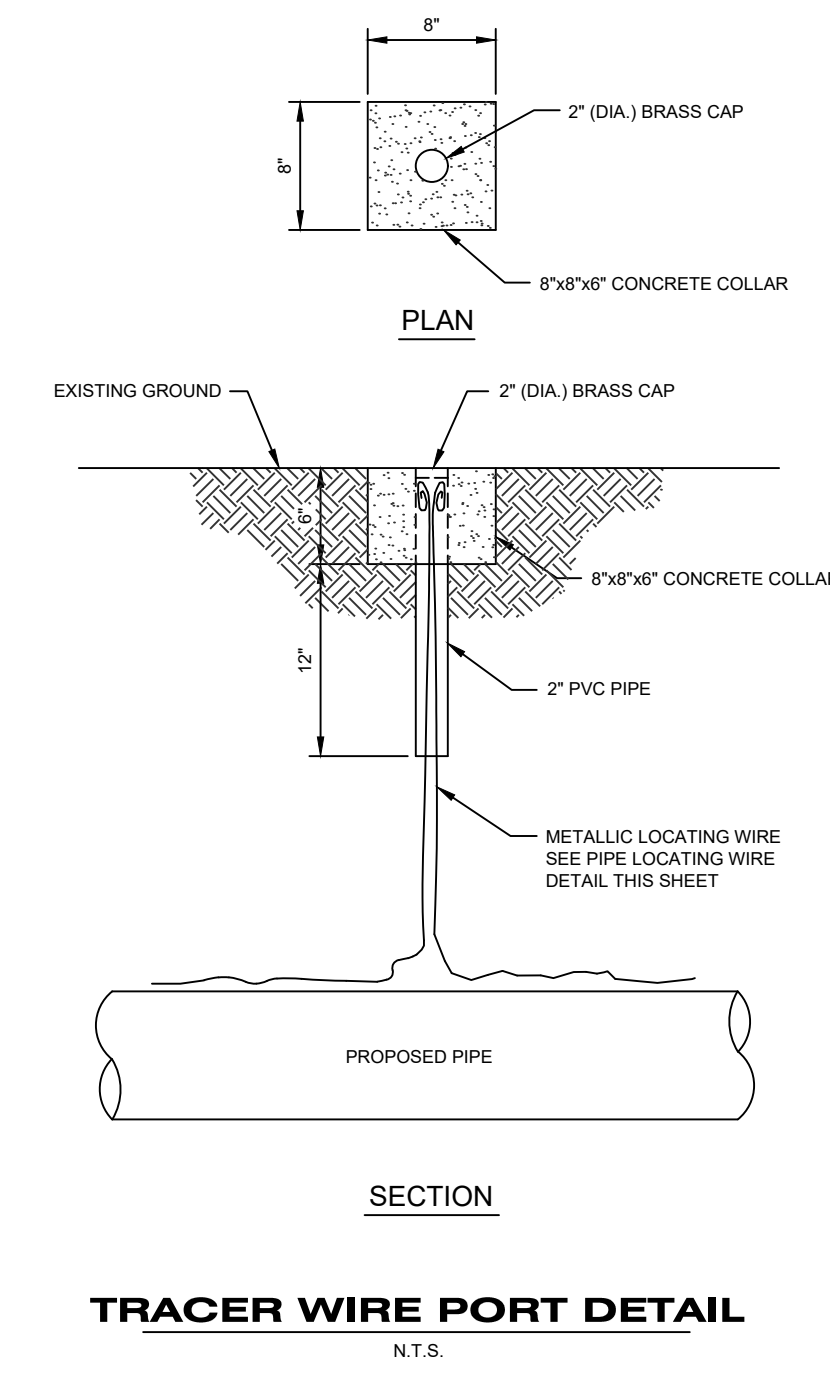
Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 11-3-2003		
	FILE: CLEAR.DWG		
MINIMUM HORIZONTAL AND VERTICAL SEPARATION REQUIREMENTS		G-17	

FITTING TYPE	PIPE RESTRAINT FOR PVC PIPE (C900/C905 DR 18)																			
	MINIMUM RESTRAINED LENGTH (FT) - EACH SIDE OF FITTING																			
	4	6	8	10	12	14	16	18	20	24	4	6	8	10	12	14	16	18	20	24
VERT. UP OR HORIZ.	2	3	4	5	6	6	7	8	9	10	2	3	4	5	6	6	7	8	9	10
11-14 BEND	5	6	8	10	12	13	15	16	17	20	5	6	8	10	12	13	15	16	17	20
22-12 BEND	10	13	17	21	24	27	30	33	36	41	10	13	17	21	24	27	30	33	36	41
45 BEND	23	32	42	50	58	66	73	80	87	100	23	32	42	50	58	66	73	80	87	100
90 BEND	46	64	84	100	116	132	147	163	178	200	46	64	84	100	116	132	147	163	178	200
VERTICAL DOWN	6	8	10	12	14	16	18	20	22	25	6	8	10	12	14	16	18	20	22	25
11-14 BEND	11	16	20	24	28	32	36	40	43	50	11	16	20	24	28	32	36	40	43	50
22-12 BEND	23	33	42	51	59	67	75	83	91	105	23	33	42	51	59	67	75	83	91	105
45 BEND	56	79	102	122	143	163	182	201	219	253	56	79	102	122	143	163	182	201	219	253
90 BEND	112	158	204	246	286	326	366	406	446	506	112	158	204	246	286	326	366	406	446	506
BRANCH OF TEE	20	41	63	85	103	129	141	159	177	210	20	41	63	85	103	129	141	159	177	210
DEAD END	56	79	102	122	143	163	182	201	219	253	56	79	102	122	143	163	182	201	219	253
REDUCERS																				
SIZE	6X4	8X4	8X6	10X8	10X8	12X8	12X10	14X8	14X8		6X4	8X4	8X6	10X8	10X8	12X8	12X10	14X8	14X8	
RESTR. LENGTH	41	74	43	76	41	106	77	42	133	108	41	74	43	76	41	106	77	42	133	108
SIZE	16X8	18X8	18X12	18X8	18X12	18X18	20X12	20X18	24X18		16X8	18X8	18X12	18X8	18X12	18X18	20X12	20X18	24X18	
RESTR. LENGTH	159	137	79	163	111	41	141	78	194	142	159	137	79	163	111	41	141	78	194	142

- NOTES:
1. SAND-SILT SOIL (COHESIONLESS SOIL WITH 30" INTERNAL FRICTION ANGLE. PIPE FRICTION/SOIL FRICTION RATIO = 0.6, SOIL DENSITY 98 PCF).
 2. PIPE LAYING CONDITION 3 (NO SELECT BEDDING OR BACKFILL).
 3. 150 PSI DESIGN PRESSURE. FOR 200 PSI DESIGN PRESSURE (FIRE LINES), INCREASE RESTRAINED LENGTH BY 30%.
 4. 3 FOOT MINIMUM COVER ON THE PIPE.
 5. ALL RESTRAINED JOINT LENGTHS IN FEET.

RESTRAINED JOINT PIPE LENGTHS C900 PVC PIPE
N.T.S.

Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 7-12-01		
	FILE: RJL_PVC.DWG		
RESTRAINED JOINT PIPE LENGTHS C900 PVC PIPE		G-18	



TRACER WIRE PORT DETAIL
N.T.S.

Utilities, Inc.	SCALE: NONE	GENERAL DETAILS	STANDARD DETAIL NUMBER
	DATE: 6-3-02		
	FILE: WIREPORT.DWG		
TRACER WIRE PORT DETAIL		G-23	

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SERENOVA ACTIVE ADULT PARCEL PHASES 3 & 4

WATER & SEWER DETAILS

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2009	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: WSD
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

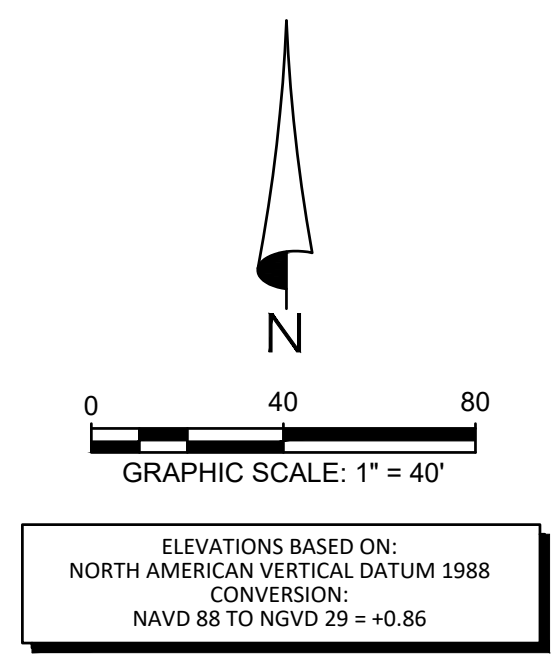
GARY D. MILLER, State of Florida, Professional Engineer, License No. SC1717

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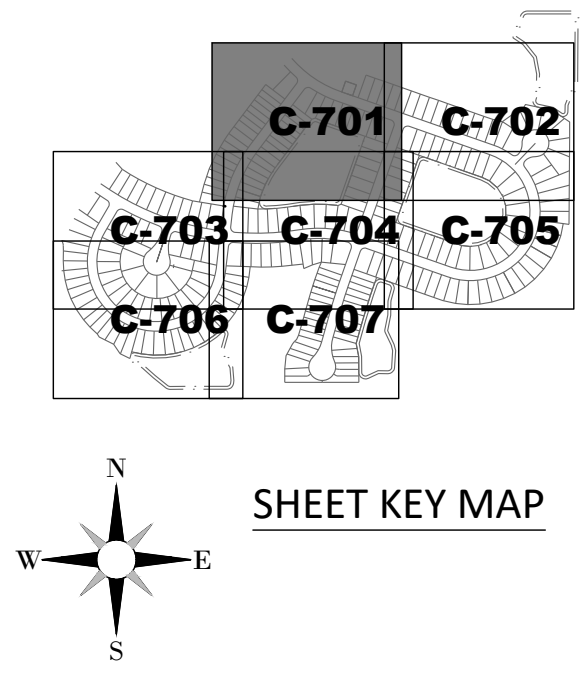
GARY D. MILLER
DATE: _____
LICENSE NO. 62717

C-605



- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8" CONCRETE SIDEWALK
 - PROPOSED 6" CONCRETE SIDEWALK
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6" THICK WHERE SIDEWALK IS CROSSED BY A DRIVEWAY.
 4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

- NOTES:**
- INSTALL 2' DETECTABLE WARNING STRIP AT ALL SIDEWALK CROSSINGS. SEE FDOT STANDARD SPECIFICATIONS SECTION 527.
 - INSTALL DROP CURB WITH 3' TRANSITIONS AT ALL SIDEWALK CROSSINGS.



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Engineering Business Certificate of Authorization No. 28792
 Landscape Architecture Certificate of Authorization No. LC26000015

SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

DR HORTON
 PREPARED FOR:

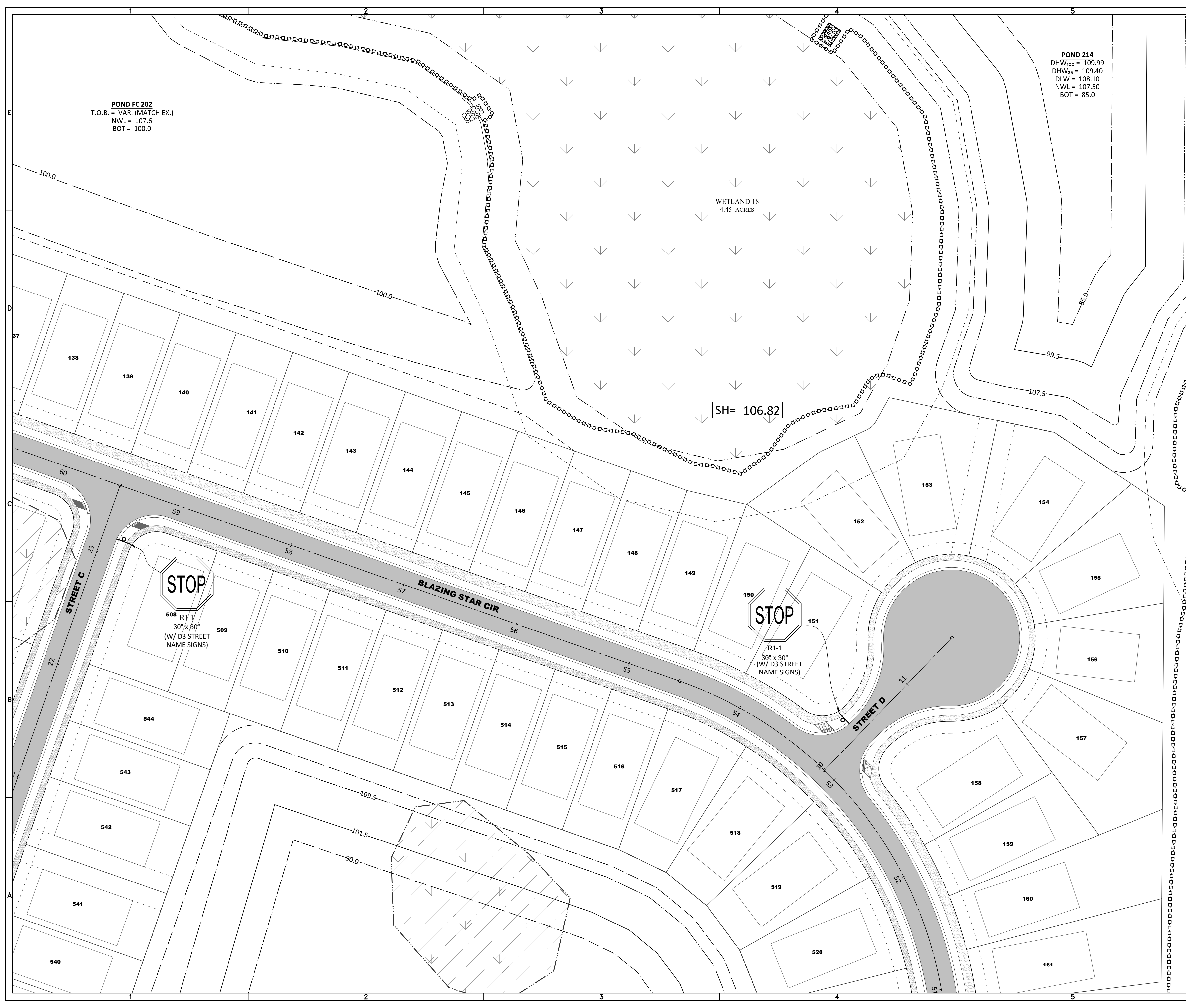
NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. SC217
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C-701

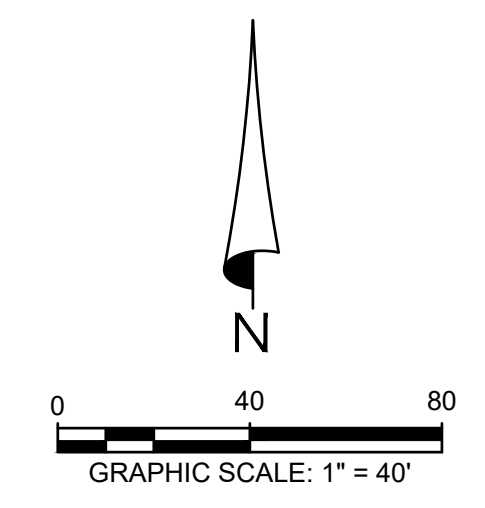


POND FC 202
 T.O.B. = VAR. (MATCH EX.)
 NWL = 107.6
 BOT = 100.0

POND 214
 DHW₁₀₀ = 109.99
 DHW₂₅ = 109.40
 DLW = 108.10
 NWL = 107.50
 BOT = 85.0

WETLAND 18
 4.45 ACRES

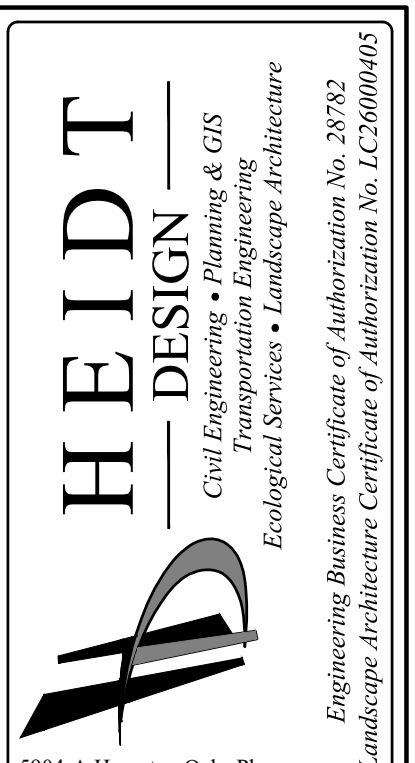
SH= 106.82



ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86

- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8" CONCRETE SIDEWALK
 - PROPOSED 6" CONCRETE SIDEWALK
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6" THICK WHERE SIDEWALK IS CROSSED BY A DRIVEWAY.
 4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

- NOTES:**
- INSTALL 2' DETECTABLE WARNING STRIP AT ALL SIDEWALK CROSSINGS. SEE FDOT STANDARD SPECIFICATIONS SECTION 527.
 - INSTALL DROP CURB WITH 3' TRANSITIONS AT ALL SIDEWALK CROSSINGS.



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

DR HORTON

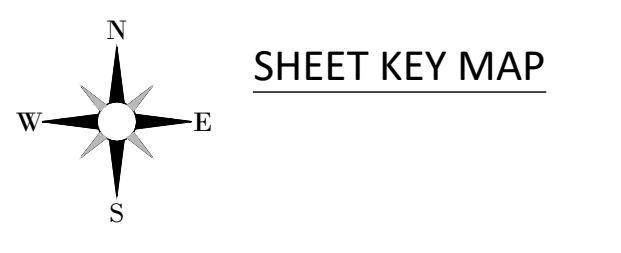
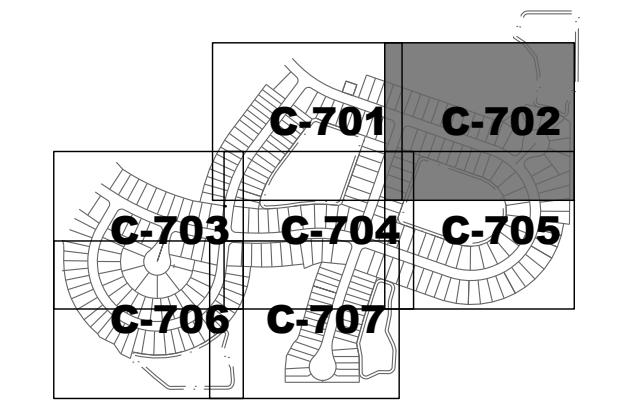
NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

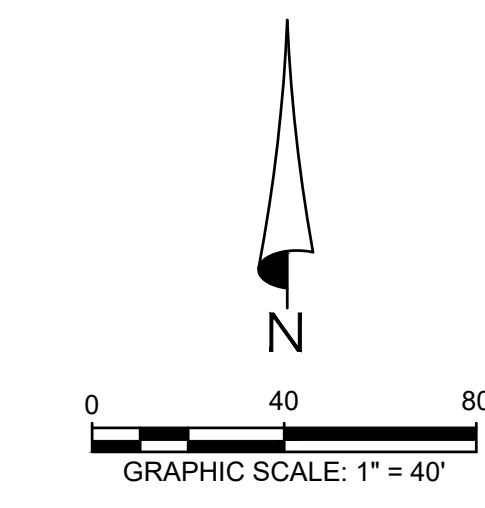
PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717
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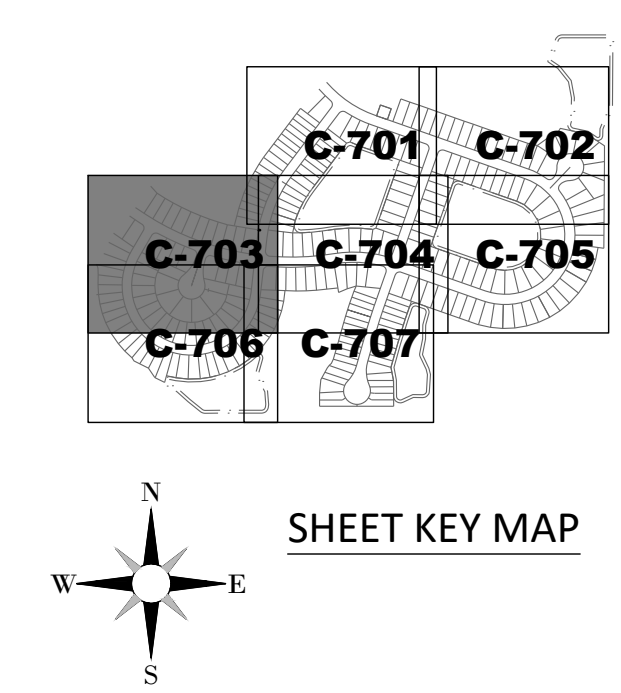
C-702





- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8\"/>
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6\"/>

- NOTES:**
- INSTALL 2\"/>



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4 SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

DR HORTON
 PREPARED FOR:

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

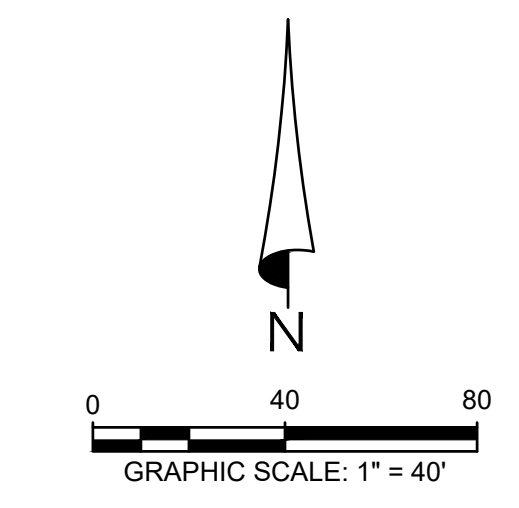
STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

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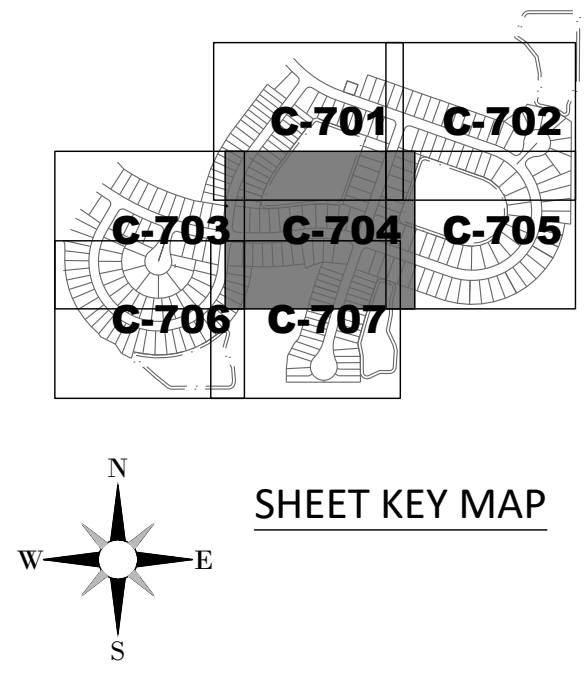
GARY D. MILLER
 DATE: _____
 LICENSE NO. 52717

C-703



- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8" CONCRETE SIDEWALK
 - PROPOSED 6" CONCRETE SIDEWALK
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
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 3. ALL SIDEWALKS SHALL BE 6" THICK WHERE SIDEWALK IS CROSSED BY A DRIVEWAY.
 4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

- NOTES:**
- INSTALL 2" DETECTABLE WARNING STRIP AT ALL SIDEWALK CROSSINGS. SEE FDOT STANDARD SPECIFICATIONS SECTION 527.
 - INSTALL DROP CURB WITH 3' TRANSITIONS AT ALL SIDEWALK CROSSINGS.



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Engineering Business Certificate of Authorization No. 28792
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 R-AVALON GROVES/ACTIVE ADULT PHASE 3 & 4-ENGINEERING/SPM/DWG-C-704-2010/03/22 1:38 PM MARK LONES

SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

PREPARED FOR: DR HORTON

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

STATE OF FLORIDA
 PROFESSIONAL ENGINEER

Gary D. Miller, State of Florida, Professional Engineer, License No. 52717

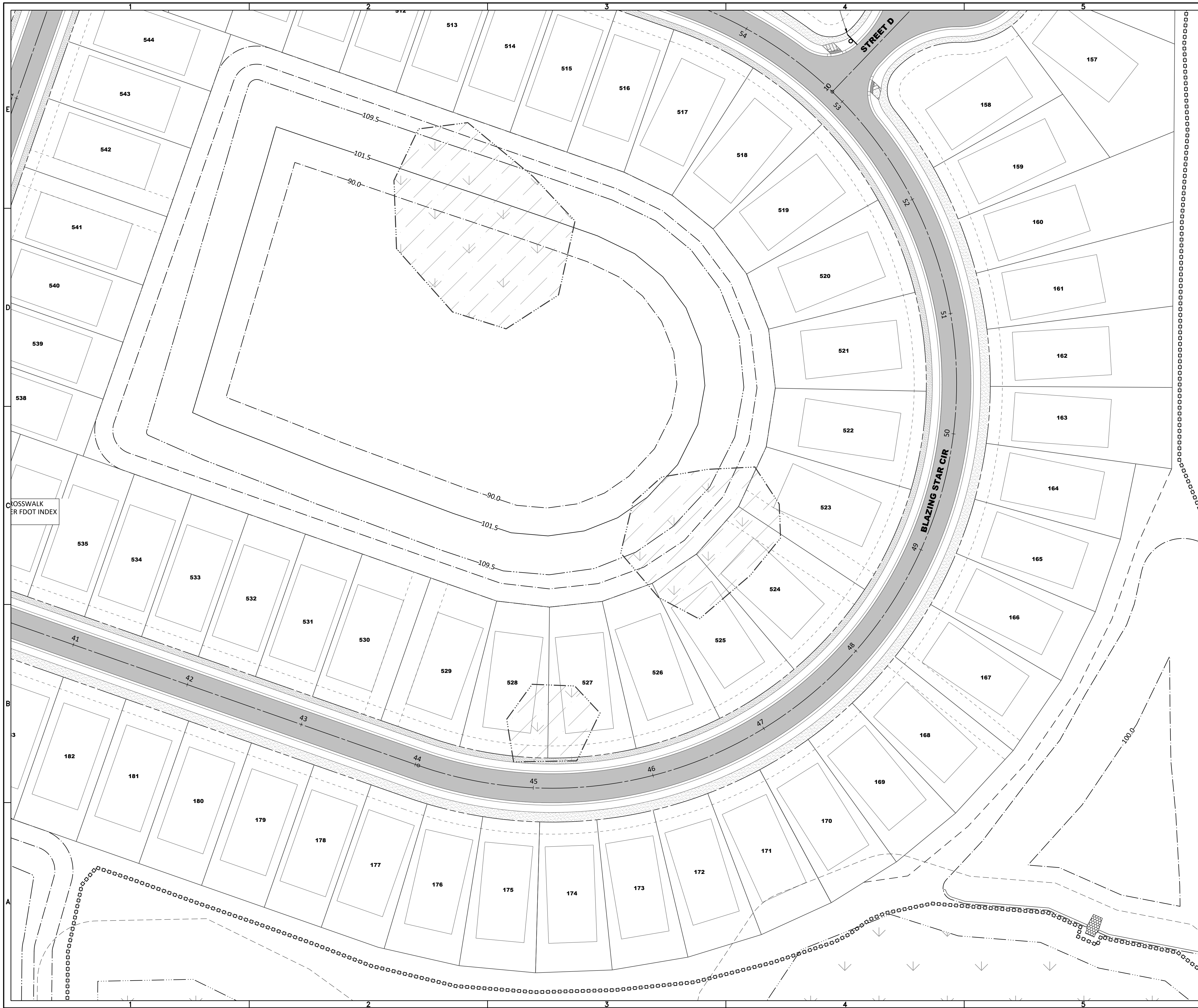
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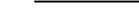

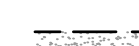

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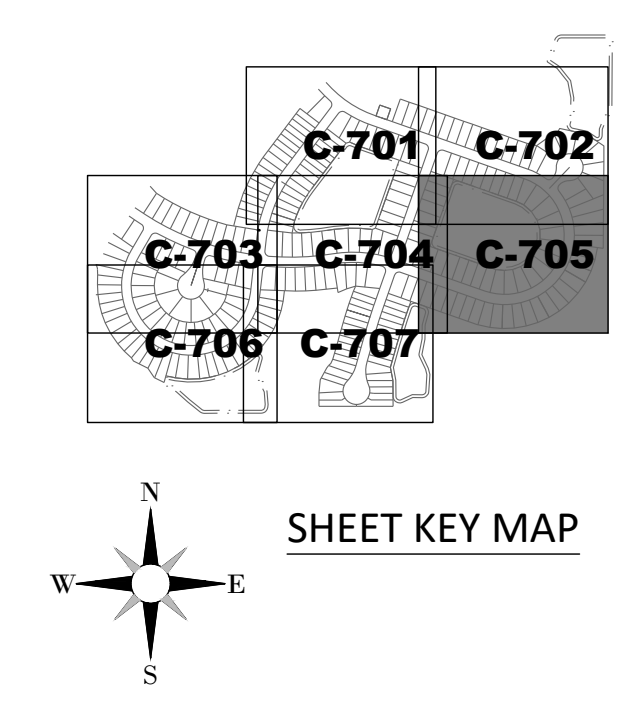
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 0 40 80
 GRAPHIC SCALE: 1" = 40'
 ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86

- SIDEWALK LEGEND**
-  PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 -  PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 -  PROPOSED 8" CONCRETE SIDEWALK
 -  PROPOSED 6" CONCRETE SIDEWALK
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6" THICK WHERE SIDEWALK IS CROSSED BY A DRIVEWAY.
 4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

- NOTES:**
- INSTALL 2' DETECTABLE WARNING STRIP AT ALL SIDEWALK CROSSINGS. SEE FDOT STANDARD SPECIFICATIONS SECTION 527.
 - INSTALL DROP CURB WITH 3' TRANSITIONS AT ALL SIDEWALK CROSSINGS.



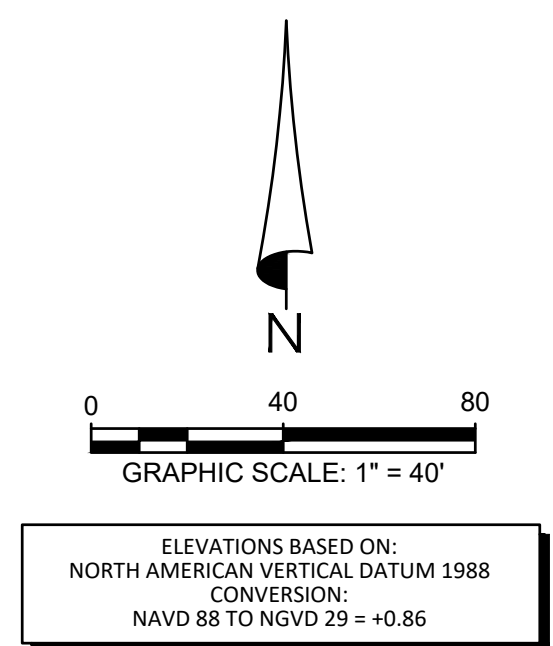
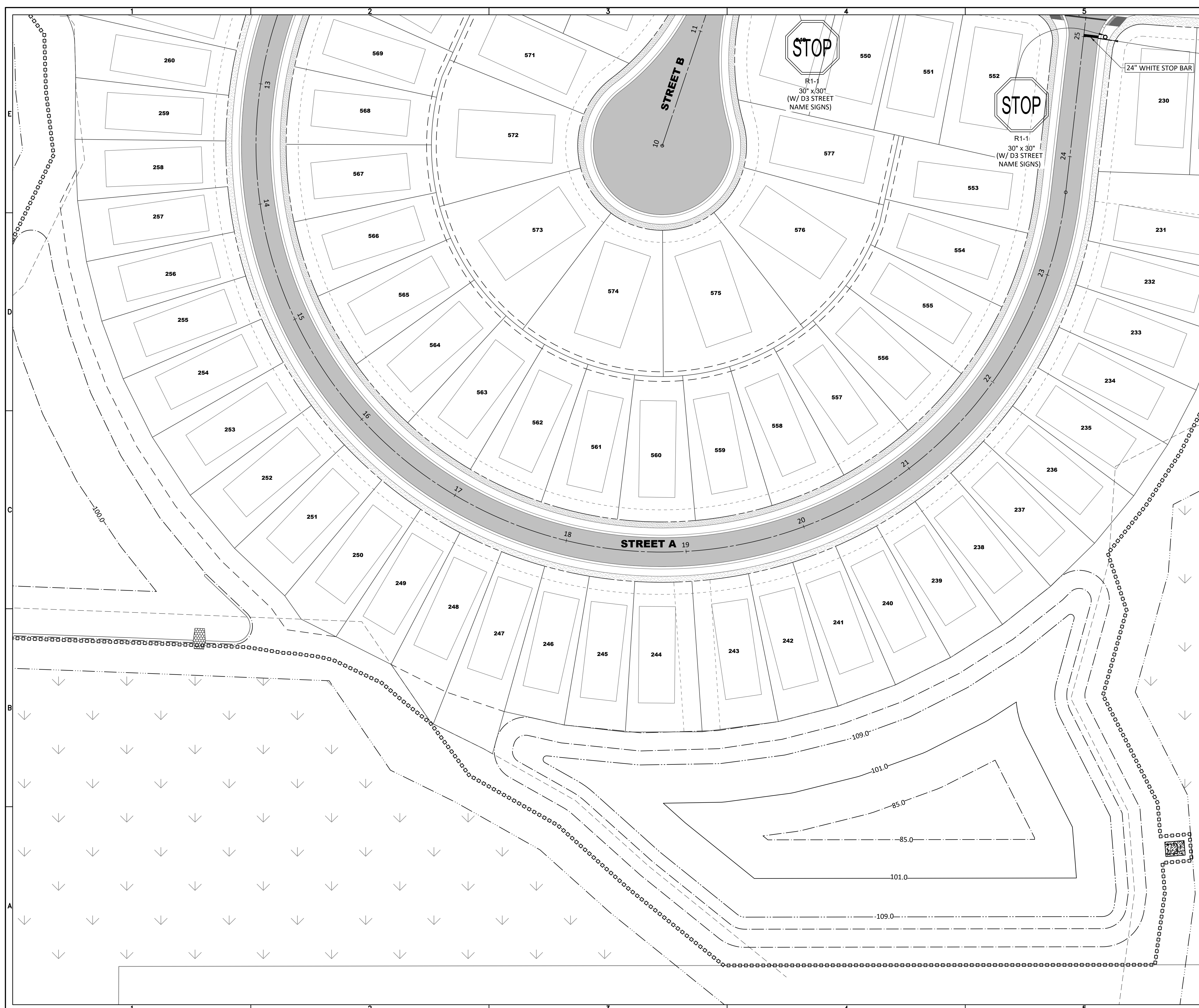
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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SIGNING, PAVEMENT MARKING & SIDEWALK PLAN
 PREPARED FOR: DR HORTON

NO.	DATE	REVIEW SUBMITTAL	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL	

PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

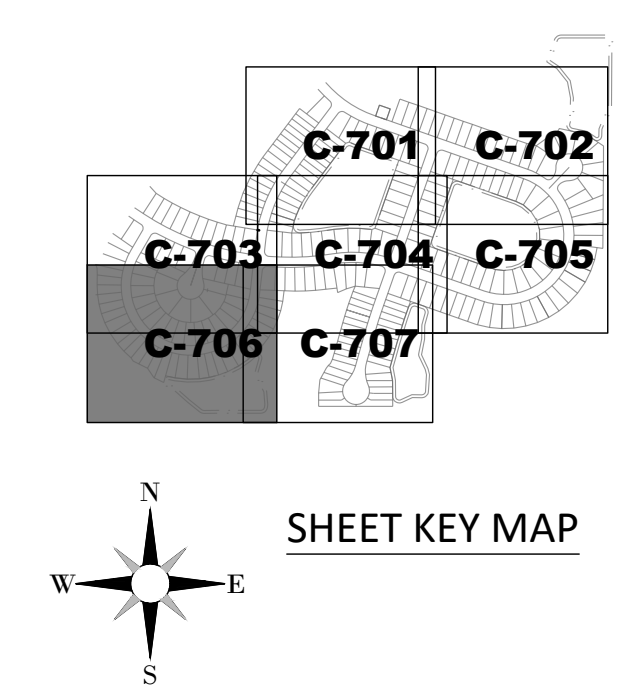
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ELEVATIONS BASED ON:
NORTH AMERICAN VERTICAL DATUM 1988
CONVERSION:
NAVD 88 TO NGVD 29 = +0.86

- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8" CONCRETE SIDEWALK
 - PROPOSED 6" CONCRETE SIDEWALK
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6" THICK WHERE SIDEWALK IS CROSSED BY A DRIVEWAY.
 4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

- NOTES:**
- INSTALL 2' DETECTABLE WARNING STRIP AT ALL SIDEWALK CROSSINGS. SEE FDOT STANDARD SPECIFICATIONS SECTION 527.
 - INSTALL DROP CURB WITH 3' TRANSITIONS AT ALL SIDEWALK CROSSINGS.



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

DR HORTON

NO.	DATE	DESCRIPTION
1	05/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
FILE: SPM
DESIGN BY: MWD
DRAWN BY: DD

STATE OF FLORIDA
PROFESSIONAL ENGINEER

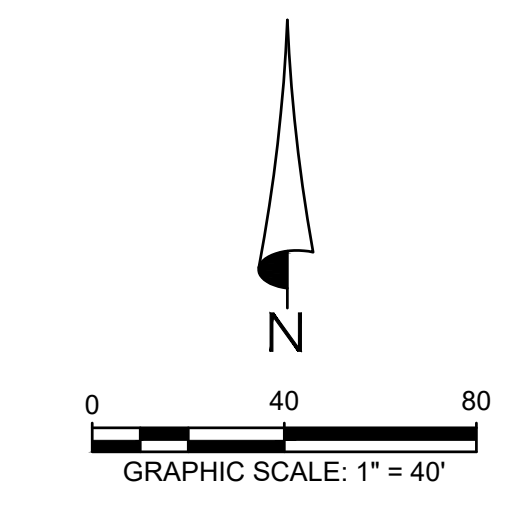
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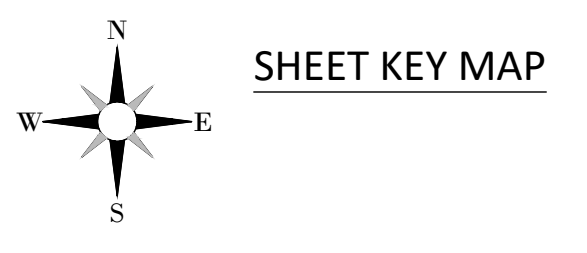
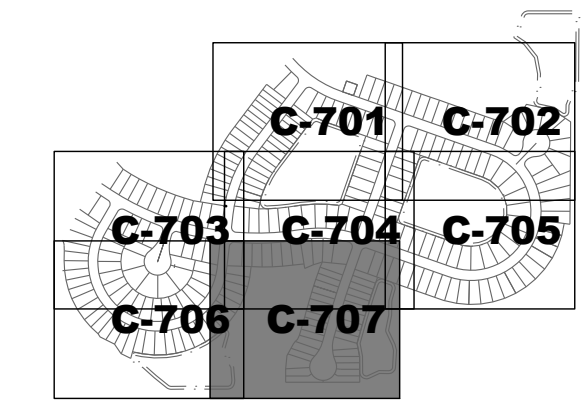
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C-706



- SIDEWALK LEGEND**
- PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
 - PROPOSED CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
 - PROPOSED 8\"/>
- SIDEWALK NOTES:**
1. SIDEWALK INDICATED AS INSTALLED BY DEVELOPER SHALL BE COMPLETED PRIOR TO FINAL INFRASTRUCTURE INSPECTION OR SHALL BE SUBJECT TO COVERAGE UNDER A PERFORMANCE GUARANTEE.
 2. SIDEWALKS INSTALLED BY BUILDERS SHALL BE COMPLETED PRIOR TO CERTIFICATE OF OCCUPANCY OF ITS CORRESPONDING DWELLING UNIT.
 3. ALL SIDEWALKS SHALL BE 6\"/>

- NOTES:**
- INSTALL 2\"/>



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SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
SIGNING, PAVEMENT MARKING & SIDEWALK PLAN

DR HORTON
 PREPARED FOR:

NO.	DATE	REVIEW SUBMITTAL	DESCRIPTION
1	03/22/2019		

PROJECT NO: FRE SN 1002
 FILE: SPM
 DESIGN BY: MWD
 DRAWN BY: DD

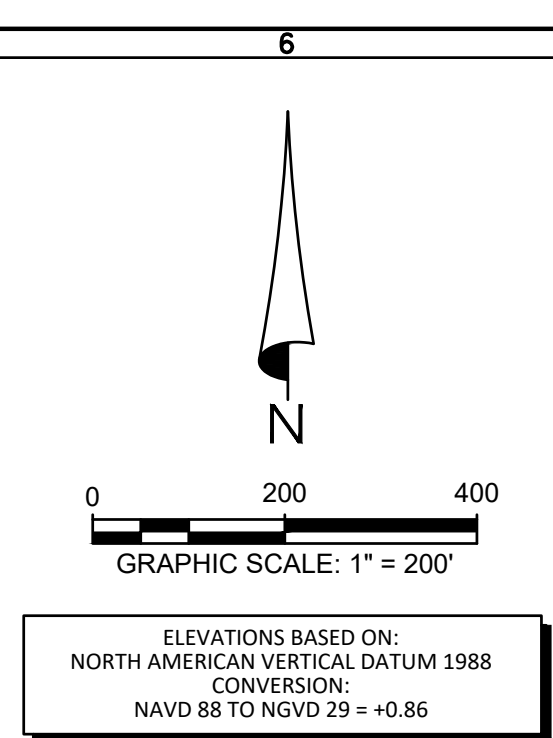
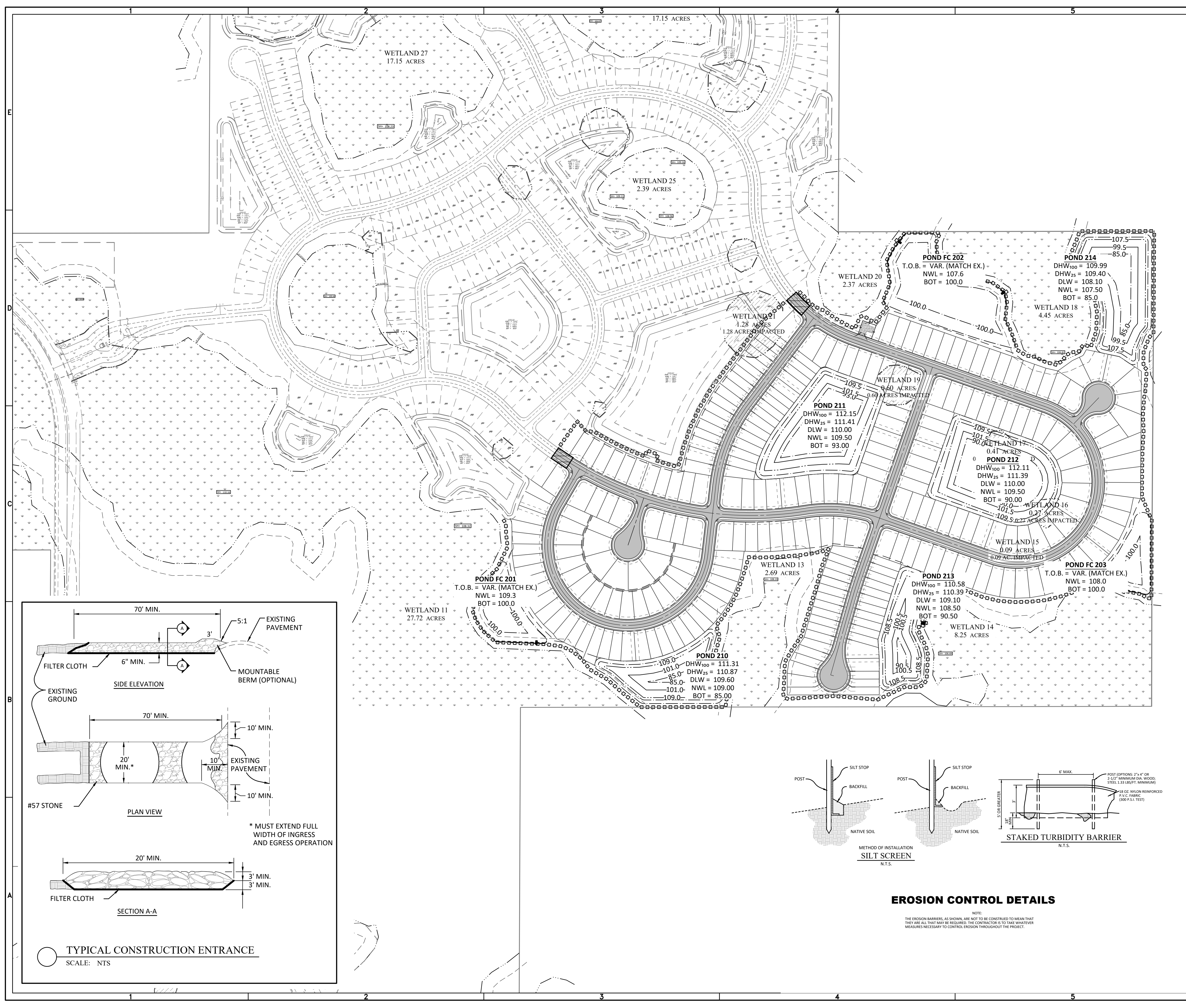
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C-707



GENERAL LEGEND

	PROPERTY LINE
	PHASE LINE
	WETLAND LINE
	WETLAND CONS. AREA SETBACK (WCAS) (50')
	STAKED EROSION CONTROL
	SEE PROPOSED ENTRANCE DETAIL

- NOTE:**
1. PONDS TO BE EXCAVATED PRIOR TO EARTHWORK.
 2. CONTRACTOR TO DIRECT RUNOFF TO PONDS DURING CONSTRUCTION ACTIVITIES.
 3. NOTE DOUBLE ROW SILT FENCE ALONG WETLAND BOUNDARIES.

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**SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 CONSTRUCTION SURFACE WATER
 MANAGEMENT PLAN**

DR HORTON
 PREPARED FOR

NO.	DATE	DESCRIPTION
1	03/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: CSWMP
 DESIGN BY: MWD
 DRAWN BY: DD

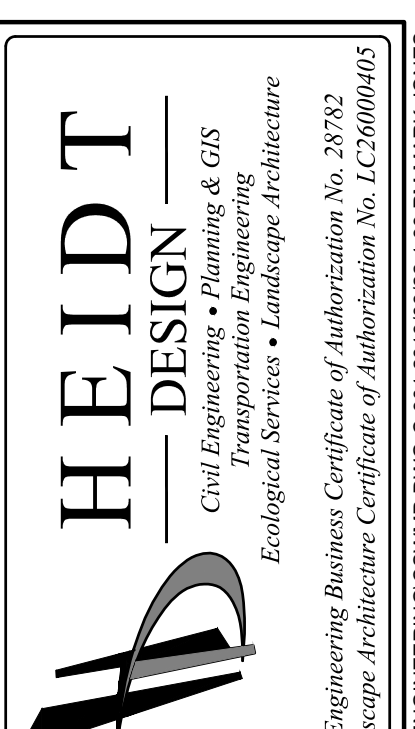
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C-900

R-AVALON GROVES/ACTIVE ADULT PHASE 3 & 4/ENGINEERING/CSWMP DWG-C-900-20190322 1:39 PM MARK JONES

<p>STORM WATER POLLUTION PREVENTION PLAN</p> <p>CONTAINED ON THESE PLANS AND WITHIN THE FOLLOWING NOTES IS A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TEMPLATE WHICH HAS BEEN DEVELOPED BY HEIDT DESIGN, LLC IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (FDEP) "NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM" (NPDES) GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES. CONTRACTOR IS RESPONSIBLE FOR COMPLETING, IMPLEMENTING, AND MAINTAINING SWPPP THROUGHOUT CONSTRUCTION.</p> <p>THE FOLLOWING ENTITIES ARE IDENTIFIED AS TEAM MEMBERS OF "SWPPP": HEIDT DESIGN, LLC, THE DEVELOPER AS IDENTIFIED IN THE TITLE BOX OF THESE PLANS, AND THE SITE CONTRACTOR AND HIS SUB-CONTRACTORS. EACH TEAM MEMBER HAS SPECIFIC RESPONSIBILITIES AND OBLIGATIONS. IN GENERAL, ALL TEAM MEMBERS, WITH REGARD TO THEIR INVOLVEMENT AND RESPONSIBILITIES ON THE PROJECT, ARE TO IMPLEMENT ALL NECESSARY STORM WATER MANAGEMENT CONTROLS TO ASSURE COMPLIANCE WITH THE NPDES GENERIC PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES, THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT PERMIT, THE APPLICABLE LOCAL GOVERNING AGENCY (I.E. PASCO COUNTY) AND THE GUIDELINES LISTED IN THE SWPPP. THE DUTIES AND RESPONSIBILITIES OF THE TEAM MEMBERS AS THEY PERTAIN TO THE SWPPP ARE AS FOLLOWS:</p> <p>HEIDT DESIGN, LLC:</p> <p>A. DEVELOP SWPPP SITE MAP AND GUIDELINES INCLUDING, BUT NOT LIMITED TO, RETENTION/DETENTION PONDS, CONTROL STRUCTURES, EROSION CONTROL METHODS AND LOCATIONS AND STABILIZATION CRITERIA. THIS DESIGN IS INCLUDED WITHIN THESE CONSTRUCTION PLANS AND THE FOLLOWING NOTES AND INSTRUCTIONS.</p> <p>B. SUBMIT AND OBTAIN THE NECESSARY DESIGN RELATED STORM WATER PERMITS FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT AND OTHER APPLICABLE GOVERNMENTAL BODIES.</p> <p>C. UPON NOTIFICATION BY THE DEVELOPER OF HIS INTENT TO COMMENCE CONSTRUCTION, SUBMIT A NOTICE OF INTENT TO THE FDEP ON BEHALF OF THE DEVELOPER AND COPY THE CONTRACTOR INCLUDING SWPPP CERTIFICATION AND COPY OF THE PERMIT.</p> <p>D. SUBMIT TO SWFWMD AND THE OPERATOR OF THE MUNICIPAL SEPARATE STORM WATER SYSTEM, IF APPLICABLE, A LETTER OF CONSTRUCTION COMMENCEMENT.</p> <p>CONTRACTOR:</p> <p>A. SIGN AND RETURN TO HEIDT A CONTRACTORS CERTIFICATION FORM CERTIFYING YOUR UNDERSTANDING OF AND WILLINGNESS TO COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN NO LATER THAN 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALSO, EACH SUBCONTRACTOR AFFECTED BY THE SWPPP MUST CERTIFY TO THE CONTRACTOR THAT THEY UNDERSTAND AND SHALL COMPLY WITH THE NPDES PERMIT AND SWPPP. A RECORD OF THESE CERTIFICATIONS SHALL BE MAINTAINED BY THE CONTRACTOR ON SITE.</p> <p>B. DURING CONSTRUCTION, ASSURE COMPLIANCE WITH THE DESIGNED STORM WATER POLLUTION PREVENTION PLAN GUIDELINES PREPARED BY HEIDT DESIGN, LLC AND THE NPDES GENERIC PERMIT FOR STORM WATER DISCHARGES FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES.</p> <p>C. MAINTAIN A COPY OF THE CONSTRUCTION PLANS, WHICH INCLUDE THE STORM WATER POLLUTION PREVENTION PLAN, THE NOI, AND ALL INSPECTION REPORTS AND CERTIFICATIONS ON SITE. DEVELOP A SITE SPECIFIC SWPPP NARRATIVE TO IDENTIFY CONSTRUCTION MEANS AND METHODS AND LIST SUBCONTRACTORS.</p> <p>D. UNDERTAKE ALL REASONABLE BEST MANAGEMENT PRACTICES (BMP'S) TO ASSURE THAT Silted OR OTHERWISE POLLUTED STORM WATER IS NOT ALLOWED TO DISCHARGE FROM THE SITE DURING ALL PHASES OF CONSTRUCTION. STABILIZATION BMP'S THAT MAY BE USED INCLUDE:</p> <p>TEMPORARY OR PERMANENT SEEDING, MULCHING, GEOTEXTILES, SODDING, VEGETATIVE BUFFER STRIPS, PROTECTION OF TREES AND PRESERVATION OF MATURE VEGETATION. STRUCTURAL EROSION AND SEDIMENT CONTROL BMP'S THAT MAY BE USED INCLUDE: STRAW BALE DIKES, SILT FENCES, EARTH DIKES, BRUSH BARRIERS, DRAINAGE SWALES, CHECK DAMS, SUBSURFACE DRAIN, PIPE SLOPE DRAIN, LEVEL SPREADERS, STORM DRAIN INLET PROTECTION, OUTLET PROTECTION, SEDIMENT TRAPS, AND TEMPORARY SEDIMENT BASINS. DETENTION PONDS MAY ALSO BE USED AS TEMPORARY SEDIMENT BASINS. ADDITIONAL BMP'S THAT MAY NEED TO BE IMPLEMENTED INCLUDE: PROVIDING PROTECTED STORAGE AREAS FOR CHEMICALS, PAINTS, SOLVENTS, FERTILIZERS, AND OTHER POTENTIALLY TOXIC MATERIALS. PROVIDING WASTE RECEPTACLES AT CONVENIENT LOCATIONS AND PROVIDING REGULAR COLLECTION OF WASTES, INCLUDING BUILDING MATERIAL WASTES. MINIMIZING OFF-SITE TRACKING OF SEDIMENTS, MAKING ADEQUATE PREPARATIONS, INCLUDING TRAINING, AND EQUIPMENT TO CONTAIN SPILLS OF OIL AND HAZARDOUS MATERIALS. COMPLYING WITH APPLICABLE STATE OR LOCAL WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS AND THE USE OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR ALLOWABLE NON-STORM WATER COMPONENTS OF DISCHARGE.</p> <p>E. NOTIFY HEIDT DESIGN, LLC AND THE DEVELOPER IN WRITING OF ANY NON-STORM WATER POLLUTION SOURCES WHICH ARE BEING STORED, OR OTHERWISE USED DURING THE CONSTRUCTION OF THE PROJECT, I.E., FERTILIZERS, FUELS, PESTICIDES, OTHER CHEMICALS. THIS NOTIFICATION SHOULD BE ACCOMPANIED WITH THE CONTRACTOR'S DESIGN AND METHODS TO PREVENT POLLUTION RUN-OFF FROM THESE SOURCES.</p> <p>F. DEVELOP A MAINTENANCE AND INSPECTION PLAN WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:</p> <p>THE SPECIFIC AREAS TO BE INSPECTED AND MAINTAINED THAT INCLUDES ALL THE DISTURBED AREAS AND MATERIAL STORAGE AREAS OF THE SITE.</p> <ol style="list-style-type: none"> THE EROSION AND SEDIMENT CONTROLS IDENTIFIED IN THE SWPPP TO BE MAINTAINED AND INSPECTED AND THOSE ADDITIONAL CONTROLS THAT THE CONTRACTOR DEEMS NECESSARY. MAINTENANCE PROCEDURES. THE PROCEDURE TO FOLLOW IF ADDITIONAL WORK IS REQUIRED OR WHOM TO CALL. INSPECTIONS AND MAINTENANCE FORMS. THE PERSONNEL ASSIGNED TO EACH TASK. <p>THE FOLLOWING SHALL BE INSPECTED A MINIMUM OF ONCE A WEEK OR WITHIN 24 HOURS AFTER 0.50 INCHES OF RAINFALL:</p> <ul style="list-style-type: none"> STABILIZATION MEASURES (ONCE A MONTH IF FULLY STABILIZED). STRUCTURAL CONTROLS. DISCHARGE POINTS. CONSTRUCTION ENTRANCES AND EXITS. AREAS USED FOR STORAGE OF EXPOSED MATERIALS. <p>G. AN INSPECTION FORM SHALL BE COMPLETED FOR EACH INSPECTION. ANY PERMIT VIOLATIONS SHOULD BE NOTED AND CORRECTIVE MEASURES SHALL BE TAKEN NO LATER THAN 7 DAYS AFTER THE INSPECTION OCCURRED. IF REVISIONS TO THE SWPPP ARE NEEDED, A REPORT FORM FOR CHANGES IN THE SWPPP SHALL BE COMPLETED AND A COPY SENT TO HEIDT DESIGN, LLC THE ORIGINAL SHALL BE KEPT ON-SITE AS DOCUMENTATION OF THE CHANGE. IF THE INSPECTION PASSES, A CERTIFICATION THAT THE FACILITY IS IN COMPLIANCE WITH THE SWPPP AND THE NPDES PERMIT MUST BE SIGNED BY A DULY AUTHORIZED REPRESENTATIVE OF THE PRINCIPAL EXECUTIVE OFFICIAL OF THE OPERATOR OF THE SWPPP WITH ONE OF THE FOLLOWING QUALIFICATIONS:</p> <ol style="list-style-type: none"> HAS SUCCESSFULLY COMPLETED THE FLORIDA STORMWATER, EROSION AND SEDIMENT CONTROL INSPECTOR TRAINING PROGRAM. SUCCESSFULLY COMPLETED A SIMILAR TRAINING PROGRAM. HAS ENOUGH PRACTICAL ON THE JOB TRAINING TO BE QUALIFIED TO PERFORM THE INSPECTIONS. RETAIN INSPECTION REPORTS AND CERTIFICATIONS FOR AT LEAST THREE YEARS. <p>H. SITE STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL BUT IN NO CASE MORE THAN 7 DAYS, IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED.</p> <p>I. RELEASES IN EXCESS OF REPORTABLE QUANTITIES.</p> <ol style="list-style-type: none"> THE DISCHARGE OF HAZARDOUS SUBSTANCES OR OIL IN THE STORMWATER DISCHARGE(S) FROM A FACILITY OR ACTIVITY SHALL BE PREVENTED OR MINIMIZED IN ACCORDANCE WITH THE APPLICABLE STORMWATER POLLUTION PREVENTION PLAN FOR THE FACILITY OR ACTIVITY. THIS PERMIT DOES NOT RELIEVE THE OPERATOR OF THE REPORTING REQUIREMENTS OF 40 CFR PART 117 AND 40 CFR PART 302. WHERE A RELEASE CONTAINING A HAZARDOUS SUBSTANCE IN AN AMOUNT EQUAL TO OR IN EXCESS OF A REPORTING QUANTITY ESTABLISHED UNDER EITHER 40 CFR 117 OR 40 CFR 302, OCCURS DURING A 24 HOUR PERIOD: 	<ol style="list-style-type: none"> THE OPERATOR IS REQUIRED TO NOTIFY THE STATE WARNING POINT (800-210-0519 OR 850-413-9911) AS SOON AS HE OR SHE HAS KNOWLEDGE OF THE DISCHARGE; THE OPERATOR SHALL SUBMIT WITHIN 14 CALENDAR DAYS OF KNOWLEDGE OF THE RELEASE A WRITTEN DESCRIPTION OF THE RELEASE (INCLUDING THE TYPE AND ESTIMATE OF THE AMOUNT OF MATERIAL RELEASED), THE DATE THAT SUCH RELEASE OCCURRED, THE CIRCUMSTANCES LEADING TO THE RELEASE, AND REMEDIAL STEPS TO BE TAKEN, TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, NPDES STORMWATER SECTION, MAIL STATION 2500, 2600 BLAIR STONE ROAD, TALLAHASSEE, FLORIDA 32399-2400; AND THE STORMWATER POLLUTION PREVENTION PLAN REQUIRED UNDER PART V OF THIS PERMIT MUST BE MODIFIED WITHIN 14 CALENDAR DAYS OF KNOWLEDGE OF THE RELEASE TO: PROVIDE A DESCRIPTION OF THE RELEASE, THE CIRCUMSTANCES LEADING TO THE RELEASE, AND THE DATE OF THE RELEASE. IN ADDITION, THE PLAN MUST BE REVIEWED TO IDENTIFY MEASURES TO PREVENT THE REOCCURRENCE OF SUCH RELEASES AND TO RESPOND TO SUCH RELEASES, AND THE PLAN MUST BE MODIFIED WHERE APPROPRIATE. THIS PERMIT DOES NOT AUTHORIZE THE DISCHARGE OF HAZARDOUS SUBSTANCES OR OIL RESULTING FROM AN ON-SITE SPILL. <p>DEVELOPER:</p> <ol style="list-style-type: none"> NOTIFY HEIDT OF YOUR INTENT TO COMMENCE CONSTRUCTION. SIGN THE NOTICE OF INTENT FORM AS OPERATOR OF THE STORM WATER DISCHARGE FACILITY AND PERMITTEE AND RETURN TO HEIDT DESIGN, LLC. SIGN A CERTIFICATION OF STORM WATER POLLUTION PREVENTION PLAN AND RETURN TO HEIDT DESIGN, LLC. COMPLETE AND SUBMIT A NOTICE OF TERMINATION (NOT) AND CERTIFICATION. THE NOT SHALL BE SUBMITTED NO MORE THAN 14 DAYS AFTER: <ol style="list-style-type: none"> COMPLETION OF THE PROJECT AND FINAL STABILIZATION OF THE SITE OR WHEN RESPONSIBILITY FOR THE SITE HAS ENDED. FINAL STABILIZATION AS DEFINED BY EPA IS WHEN ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM (E.G. EVENLY DISTRIBUTED, WITHOUT LARGE BARE AREAS) PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OF THE NATIVE BACKGROUND VEGETATIVE COVER FOR THE AREA HAS BEEN ESTABLISHED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES. AS AN ALTERNATIVE, EQUIVALENT PERMANENT STABILIZATION MEASURES (SUCH AS RIPRAP, GRASSES, OR GEOTEXTILES) MAY BE EMPLOYED. THE CLIENT SHALL NOTIFY HEIDT DESIGN, LLC WHEN ONE OF THESE CRITERIA HAS BEEN MET. <p>PRE-DEVELOPED SITE INFORMATION:</p> <p>TOTAL SITE ACREAGE: <u>104.29 AC ±</u></p> <p>LAND USE: <u>UNDEVELOPED - AGRICULTURAL</u></p> <p>VEGETATION: <u>RANGE LAND, BAHIA GRASS PASTURE</u></p> <p>RECEIVING WATERS OR MUNICIPAL SEPARATE STORM WATER SYSTEM: <u>HANCOCK BAYS AND SAWGRASS BAYS</u></p> <p>SOIL TYPES: <u>CHANDLER, IMMOKALEE, LAKE, MYAKKA, POMELLO, POMPANO, AND TAVARES SANDS</u></p> <p>PROJECT INFORMATION:</p> <ol style="list-style-type: none"> PROJECT TYPE - <u>ROADWAY or SUBDIVISION</u> ANTICIPATED CONSTRUCTION SEQUENCE IS AS FOLLOWS: <ul style="list-style-type: none"> COMPLETE EROSION CONTROL INSTALLATION CLEARING AND GRUBBING EARTHWORK ACTIVITIES STORM WATER SYSTEM CONSTRUCTION UTILITY CONSTRUCTION BASE AND PAVEMENT CONSTRUCTION FINAL STABILIZATION <p>THE BMP'S LISTED IN PART D OF THE CONTRACTOR SECTION OF THE SWPPP SHALL BE CONSIDERED DURING ALL PHASES OF CONSTRUCTION.</p> <ol style="list-style-type: none"> ANTICIPATED START DATE: <u>JULY 2019</u> ANTICIPATED COMPLETION DATE: <u>DEC. 2019</u> TOTAL ACRES DISTURBED: <u>93.9± AC</u> PRE-DEVELOPED "C" FACTOR: <u>0.3</u> POST-DEVELOPED "C" FACTOR: <u>0.5</u> THE STORM WATER MANAGEMENT SYSTEM, UPON COMPLETION OF CONSTRUCTION AND APPROPRIATE CERTIFICATION AND AS-BUILT SUBMITTALS WILL BE OPERATED AND MAINTAINED BY AVALON GROVES CDD. THE POTENTIAL SOURCE OF POLLUTION FROM THIS PROJECT IS ON-SITE DEVELOPMENT AND CONSTRUCTION ACTIVITY. 	<p>GENERAL EROSION AND TURBIDITY CONTROL NOTES</p> <ol style="list-style-type: none"> THE SOIL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO CONSTRUCTION, MAINTAINED THROUGHOUT CONSTRUCTION AND UNTIL THE SITE IS PERMANENTLY STABILIZED. ANY OFF SITE DISTURBANCE SHALL BE RESTORED TO THE PRE OR BETTER CONDITION. THE SITE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF ALL EROSION AND TURBIDITY CONTROLS AND THE QUALITY AND QUANTITY OF OFFSITE OR WETLAND DISCHARGES. PRIOR TO CONSTRUCTION, THE SITE SUBCONTRACTOR IS RESPONSIBLE FOR HAVING HIS DEWATERING PLAN AND TURBIDITY CONTROL PLAN APPROVED BY THE APPLICABLE REVIEWING AGENCIES. REFER TO THE PROJECT'S PERMIT APPROVALS AND PERMIT CONDITIONS FOR AGENCIES REQUIRING SUCH REVIEW AND APPROVAL. QUESTIONS CONCERNING APPROPRIATE TECHNIQUES SHOULD BE ADDRESSED TO THOSE AGENCIES AND/OR DISCUSSED WITH THE PROJECT ENGINEER AND OWNER. THE APPROPRIATE TURBIDITY AND EROSION CONTROL METHODOLOGIES SELECTED BY THE SITE SUBCONTRACTOR FOR THIS PROJECT SHOULD BE MADE FOLLOWING ASSESSMENT OF THE PLANS AND PROJECT SITE SPECIFIC FACTORS AND AFTER CONSULTATIONS AS NEEDED WITH THE PROJECT ENGINEER AND APPROPRIATE AGENCIES. THE SITE SUBCONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ANY AND ALL NECESSARY PERMITS FOR SUCH ACTIVITY; SEVERAL FACTORS TO CONSIDER ARE LISTED BELOW: <ol style="list-style-type: none"> CLAY CONTENT IN EXCAVATED MATERIALS AND/OR PERMEABILITIES RATES DEPTH OF CUT IN PONDS, TRENCHES, OR UTILITY LINES AMBIENT GROUND WATER LEVELS ACTUAL RAINFALL AMOUNTS AND TIME OF YEAR RELATIVE TO NORMAL RAINY SEASON PROXIMITY TO WETLANDS, WATER BODIES OR OFFSITE PROPERTIES "CLASS" DESIGNATION OF RECEIVING WATER BODIES (I.E., OUTSTANDING FLORIDA WATERS, SHELLFISH HARVESTING AREAS, ETC.) DENSITY, TYPE, AND PROXIMITY OF UPLAND VEGETATION TO BE RETAINED DURING CONSTRUCTION (FOR USE AS POSSIBLE FILTRATION AREAS) FILL HEIGHT RELATIVE TO NATURAL GRADE AND LENGTH AND STEEPNESS OF THE PROPOSED SLOPES EXISTING TOPOGRAPHY AND DIRECTIONS OF SURFACE FLOW TYPE OF EQUIPMENT USED PROJECT TYPE DURATION OF CONSTRUCTION ACTIVITIES SEPARATION DISTANCE OF ONSITE PONDS AMBIENT QUALITY OF SURFACE AND GROUNDWATER TEMPORARY STOCKPILE LOCATIONS AND HEIGHTS AT THE ONSET OF CONSTRUCTION, THE SITE SUBCONTRACTOR, AS THE PARTY RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN, SHALL ASSESS THE ABOVE DESCRIBED CONDITIONS AND FACTORS WITH RESPECT TO RELATIVE COST EFFECTIVENESS AND SELECT THE APPROPRIATE METHODS OF PROTECTION. A FAIRLY EXTENSIVE LIST OF TECHNIQUES ARE PRESENTED BELOW BUT IT MUST BE STRESSED THAT ANY OR ALL OF THE FOLLOWING MAY BE NECESSARY TO MAINTAIN WATER QUALITY AND QUANTITY STANDARDS. THE CONSTRUCTION SEQUENCING SHOULD BE THOUGHT OUT IN ADVANCE OF INITIATION TO PROVIDE ADEQUATE PROTECTION OF WATER QUALITY. DISCHARGES WHICH EXCEED 29 M.T.U.'S OVER THE BACKGROUND LEVELS ARE IN VIOLATION OF STATE WATER QUALITY STANDARDS. DISCHARGES OF WATER QUANTITIES WHICH AFFECT OFFSITE PROPERTIES OR MAY DAMAGE WETLANDS ARE ALSO PROHIBITED BY REGULATING AGENCIES. THE EROSION AND TURBIDITY CONTROL MEASURES SHOWN HEREON ARE THE MINIMUM REQUIRED FOR AGENCY APPROVAL. ADDITIONAL CONTROL AND MEASURES MAY BE REQUIRED DUE TO THE SITE SUBCONTRACTOR'S CONSTRUCTION SEQUENCE & UNFORESEEN WEATHER CONDITIONS. ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE SITE SUBCONTRACTOR SHALL BE INCLUDED IN THE LUMP SUM BID WITH NO EXTRAS FOR MATERIALS AND LABOR ALLOWED. HAY BALES OR SILT SCREENS SHALL BE INSTALLED PRIOR TO LAND CLEARING TO PROTECT WATER QUALITY AND TO IDENTIFY AREAS TO BE PROTECTED FROM CLEARING ACTIVITIES AND MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL SOIL IS STABILIZED. FLOATING TURBIDITY BARRIERS SHALL BE IN PLACE IN FLOWING SYSTEMS OR IN OPEN WATER LAKE EDGES PRIOR TO INITIATION OF EARTHWORK AND MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL SOIL IS STABILIZED. NO CLAY MATERIAL SHALL BE LEFT EXPOSED IN ANY STORMWATER STORAGE FACILITY. IF CLAY OR SANDY-CLAYS ARE ENCOUNTERED DURING STORMWATER STORAGE EXCAVATION, THE SITE SUBCONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY BEFORE PROCEEDING WITH FURTHER EXCAVATION. IF THE ENGINEER OF RECORD HAS DETERMINED THAT SUCH SOILS ARE NON-CONFINING AND MUST BE EXCAVATED TO MEET PERMIT AND DESIGN CONDITIONS, EXCAVATION MAY PROCEED AFTER OBTAINING WRITTEN AUTHORIZATION FROM THE APPROPRIATE GOVERNING AGENCY. IF SAID SOILS ARE LEFT EXPOSED AT THE PERMITTED AND DESIGNED DEPTH, THE SITE SUBCONTRACTOR SHALL OVER-EXCAVATE THE POND'S BOTTOM AND SIDE SLOPES BY A MINIMUM OF TWELVE (12") INCHES AND BACKFILL WITH CLEAN SANDS TO HELP PREVENT SUSPENSION OF FINE PARTICLES IN THE WATER COLUMN. THE INSTALLATION OF TEMPORARY EROSION CONTROL BARRIERS SHALL BE COORDINATED WITH THE CONSTRUCTION OF THE PERMANENT EROSION CONTROL FEATURES TO THE EXTENT NECESSARY TO ASSURE EFFECTIVE AND CONTINUOUS CONTROL OF EROSION AND WATER POLLUTION THROUGHOUT THE LIFE OF THE CONSTRUCTION PHASE. THE TYPE OF EROSION CONTROL BARRIERS USED SHALL BE GOVERNED BY THE NATURE OF THE CONSTRUCTION OPERATION AND SOIL TYPE THAT WILL BE EXPOSED. SILTY AND CLAYEY MATERIAL MAY REQUIRE SOLID SEDIMENT BARRIERS TO PREVENT TURBID WATER DISCHARGE, WHILE SANDY MATERIAL MAY NEED ONLY SILT SCREENS OR HAY BALES TO PREVENT EROSION. FLOATING TURBIDITY CURTAINS SHOULD GENERALLY BE USED IN OPEN WATER SITUATIONS. DIVERSION DITCHES OR SWALES MAY BE REQUIRED TO PREVENT TURBID STORMWATER RUNOFF FROM BEING DISCHARGED TO WETLANDS OR OTHER WATER BODIES. IT MAY BE NECESSARY TO EMPLOY A COMBINATION OF BARRIERS, DITCHES, AND OTHER EROSION/TURBIDITY CONTROL MEASURES IF CONDITIONS WARRANT. 	<ol style="list-style-type: none"> WHERE PUMPS ARE TO BE USED TO REMOVE TURBID WATERS FROM CONSTRUCTION AREAS, THE WATER SHALL BE TREATED PRIOR TO DISCHARGE TO THE WETLANDS. TREATMENT METHODS INCLUDE, FOR EXAMPLE, TURBID WATER BEING PUMPED INTO GRASSSED SWALES OR APPROPRIATE UPLAND VEGETATED AREAS (OTHER THAN UPLAND PRESERVATION AREAS AND WETLAND BUFFERS), SEDIMENT BASINS, OR CONFINED BY AN APPROPRIATE ENCLOSURE SUCH AS TURBIDITY BARRIERS OR LOW BERMS, AND KEPT CONFINED UNTIL TURBIDITY LEVELS MEET STATE WATER QUALITY STANDARDS. THE PERMITTEE SHALL SCHEDULE HIS OPERATIONS SUCH THAT THE AREA OF UNPROTECTED ERODIBLE EARTH EXPOSED AT ANY ONE TIME IS NOT LARGER THAN THE MINIMUM AREA NECESSARY FOR EFFICIENT CONSTRUCTION OPERATION, AND THE DURATION OF EXPOSED, UNCOMPLETED CONSTRUCTION TO THE ELEMENTS SHALL BE AS SHORT AS PRACTICABLE. CLEARING AND GRUBBING SHALL BE SO SCHEDULED AND PERFORMED SUCH THAT GRADING OPERATIONS CAN FOLLOW IMMEDIATELY THEREAFTER. GRADING OPERATIONS SHALL BE SO SCHEDULED AND PERFORMED THAT PERMANENT EROSION CONTROL FEATURES CAN FOLLOW IMMEDIATELY THEREAFTER IF CONDITIONS ON THE PROJECT PERMIT. WATER DERIVED FROM VARIOUS DEWATERING METHODS SHOULD BE PASSED THROUGH SUFFICIENTLY WIDE AREAS OF EXISTING UPLAND VEGETATION TO FILTER OUT EXCESS TURBIDITY. IF THIS IS NOT SUFFICIENT, THE WATER SHALL BE RETAINED IN PREVIOUSLY CONSTRUCTED PERMANENT STORMWATER PONDS OR ELSE RETAINED IN TEMPORARY SEDIMENTATION BASINS UNTIL THE CLARITY IS SUITABLE TO ALLOW FOR ITS DISCHARGE. PLUGGING THE OUTFALLS FROM COMPLETED STORMWATER PONDS MAY BE NEEDED TO AVOID DISCHARGE. HOWEVER, SUCH SITUATIONS SHOULD BE MONITORED CLOSELY TO PRECLUDE BERM FAILURE IF WATER LEVELS RISE TOO HIGH. WATER CAN BE TRANSPORTED AROUND THE SITE BY THE USE OF INTERNAL SWALES OR BY PUMPS AND PIPES. SHEET FLOW OF NEWLY FILLED OR SCRAPED AREAS MAY BE CONTROLLED OR CONTAINED BY THE USE OF BRUSH BARRIERS, DIVERSION SWALES, INTERCEPTOR DITCHES OR LOW BERMS. FLOW SHOULD BE DIRECTED TOWARD AREAS WHERE SEDIMENTS CAN SUFFICIENTLY SETTLE OUT. EXPOSED SOILS SHALL BE STABILIZED AS SOON AS POSSIBLE, ESPECIALLY SLOPES LEADING TO WETLANDS. STABILIZATION METHODS INCLUDE SOLID SOD, SEEDING AND MULCHING OR HYDROMULCHING TO PROVIDE A TEMPORARY OR PERMANENT GRASS COVER MULCH BLANKETS, FILTER FABRICS, ETC., CAN BE EMPLOYED TO PROVIDE VEGETATIVE COVER. ENERGY DISSIPATORS (SUCH AS RIP RAP, A GRAVEL BED, HAY BALES, ETC.) SHALL BE INSTALLED AT THE DISCHARGE POINT OF PIPES OR SWALES IF SCOURING IS OBSERVED. ATTEMPT TO INSTALL ROADWAY CURBS AND GUTTERS AS SOON AS POSSIBLE TO REDUCE THE SURFACE AREA FOR EROSION TO OCCUR. IMPLEMENT STORM DRAIN INLET PROTECTION (HAY BALES OR GRAVEL) TO LIMIT SEDIMENTATION WITHIN THE STORMWATER SYSTEM. PERFORM INSPECTIONS AND PERIODIC CLEANING OF SEDIMENTS WHICH WASH OUT INTO THE STREETS UNTIL ALL SOIL IS STABILIZED. WATER DISCHARGE VELOCITIES FROM IMPOUNDED AREAS AND TEMPORARY SEDIMENTATION BASINS SHALL BE RESTRICTED TO AVOID SCOURING IN RECEIVING AREAS. IF WATER CLARITY DOES NOT REDUCE TO STATE STANDARDS RAPIDLY ENOUGH IN HOLDING PONDS, IT MAY BE POSSIBLE TO USE CHEMICAL AGENTS SUCH AS ALUM TO FLOCCULATE OR COAGULATE THE SEDIMENT PARTICLES. HAY BALES, SILT SCREENS, OR GRAVEL BEDS CAN BE ADDED AROUND THE PIPE OR SWALE DISCHARGE POINTS TO HELP CLARIFY DISCHARGES. SPREADER SWALES MAY HELP DISSIPATE CLOUDY WATER PRIOR TO CONTACT WITH WETLANDS. ALL FUEL STORAGE AREAS OR OTHER HAZARDOUS STORAGE AREAS SHALL CONFORM TO ACCEPTED STATE OR FEDERAL CRITERIA FOR SUCH CONTAINMENT AREAS. VEHICLE OR EQUIPMENT WASHDOWN AREAS WILL BE SUFFICIENTLY REMOVED FROM WETLANDS OR OFFSITE AREAS. FUGITIVE DUST CONTROLS (PRIMARILY BY USING WATER SPRAY TRUCKS) SHALL BE EMPLOYED AS NEEDED TO CONTROL WINDBORNE EMISSIONS. IF THE ABOVE CONTROLS REMAIN INEFFECTIVE IN PRECLUDING RELEASE OF TURBID WATER, ESPECIALLY DURING POND OR UTILITY LINE DEWATERING, THEN THE CONTRACTOR MAY BE COMPELLED TO USE A VERTICAL DEWATERING SYSTEM SUCH AS WELL POINTS OR SOCK DRAINS TO WITHDRAW GROUNDWATER WHICH MAY ALREADY BE CLEAR ENOUGH TO ALLOW FOR DIRECT DISCHARGE TO WETLANDS. ONGOING INSPECTIONS AND PERIODIC MAINTENANCE BY THE SITE SUBCONTRACTOR SHALL OCCUR THROUGHOUT CONSTRUCTION AS NECESSARY TO INSURE THE ABOVE METHODS ARE WORKING SUITABLY. THIS MAY BE NEEDED DAILY, IF CONDITIONS SO WARRANT. SITE SUBCONTRACTORS ARE ENCOURAGED TO OBTAIN AND THOROUGHLY REVIEW THE FLORIDA DEVELOPMENT MANUAL: A GUIDE TO SOUND LAND AND WATER MANAGEMENT, WHICH WAS DEVELOPED BY THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION IN 1998. THIS PROVIDES FAIRLY IN-DEPTH DISCUSSIONS OF RECOMMENDED TECHNIQUES AND ALSO PROVIDES SPECIFIC DESIGN AND TECHNICAL STANDARDS. A COPY OF THIS DOCUMENT IS AVAILABLE FOR REVIEW AT HEIDT DESIGN, LLC. THE CONTRACTOR WILL PERFORM DAILY INSPECTIONS OF ALL ON-SITE WETLANDS WITHIN THE CONSTRUCTION AREA TO ENSURE THAT WATER LEVELS WITHIN THOSE WETLANDS ARE NOT EXCESSIVELY IMPOUNDED PRIOR TO THE TIME WHEN THE PERMITTED CONTROL STRUCTURE OR OUTFALL IS BUILT. WATER LEVELS SIGNIFICANTLY ABOVE NORMAL SHOULD BE CORRECTED AT A FREQUENCY THAT PREVENTS A CHANGE IN THE VEGETATIVE CHARACTER OR HEALTH OF ANY WETLANDS. PRIOR TO COMMENCEMENT OF CLEARING & GRUBBING OR ANY SOIL DISTURBANCE, CONTRACTOR SHALL COORDINATE WITH HEIDT DESIGN TO SCHEDULE A PRE-CONSTRUCTION SOIL EROSION AND SEDIMENT CONTROL INSPECTION WITH THE LAKE COUNTY STORMWATER MANAGEMENT DIVISION. THE REQUIREMENTS LISTED ABOVE SHALL BE CONSIDERED MINIMUM REQUIREMENTS AND THE CONTRACTOR SHALL USE WHATEVER METHODS HE DEEMS NECESSARY TO PREVENT TURBIDITY AND SILTATION AS MAY BE REQUIRED FOR THE PROJECT.
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SERENOVA ACTIVE ADULT PARCEL
PHASES 3 & 4
CONSTRUCTION SURFACE WATER
MANAGEMENT PLAN NOTES

DR HORTON

NO.	DATE	DESCRIPTION
1	02/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: CSWMP
 DESIGN BY: MWD
 DRAWN BY: DD

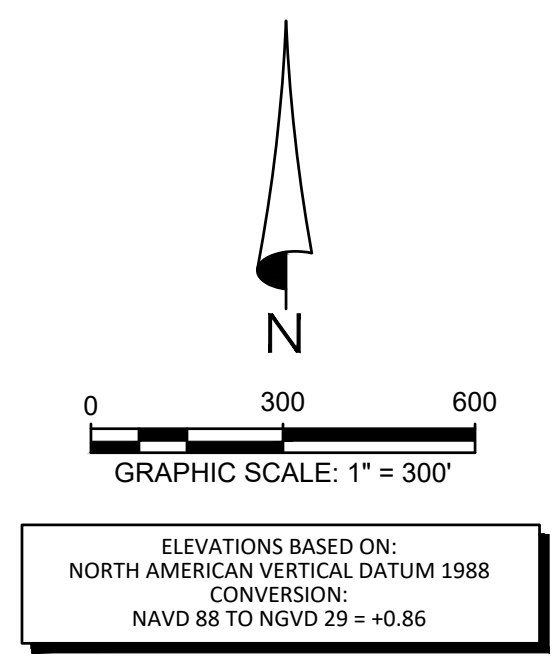
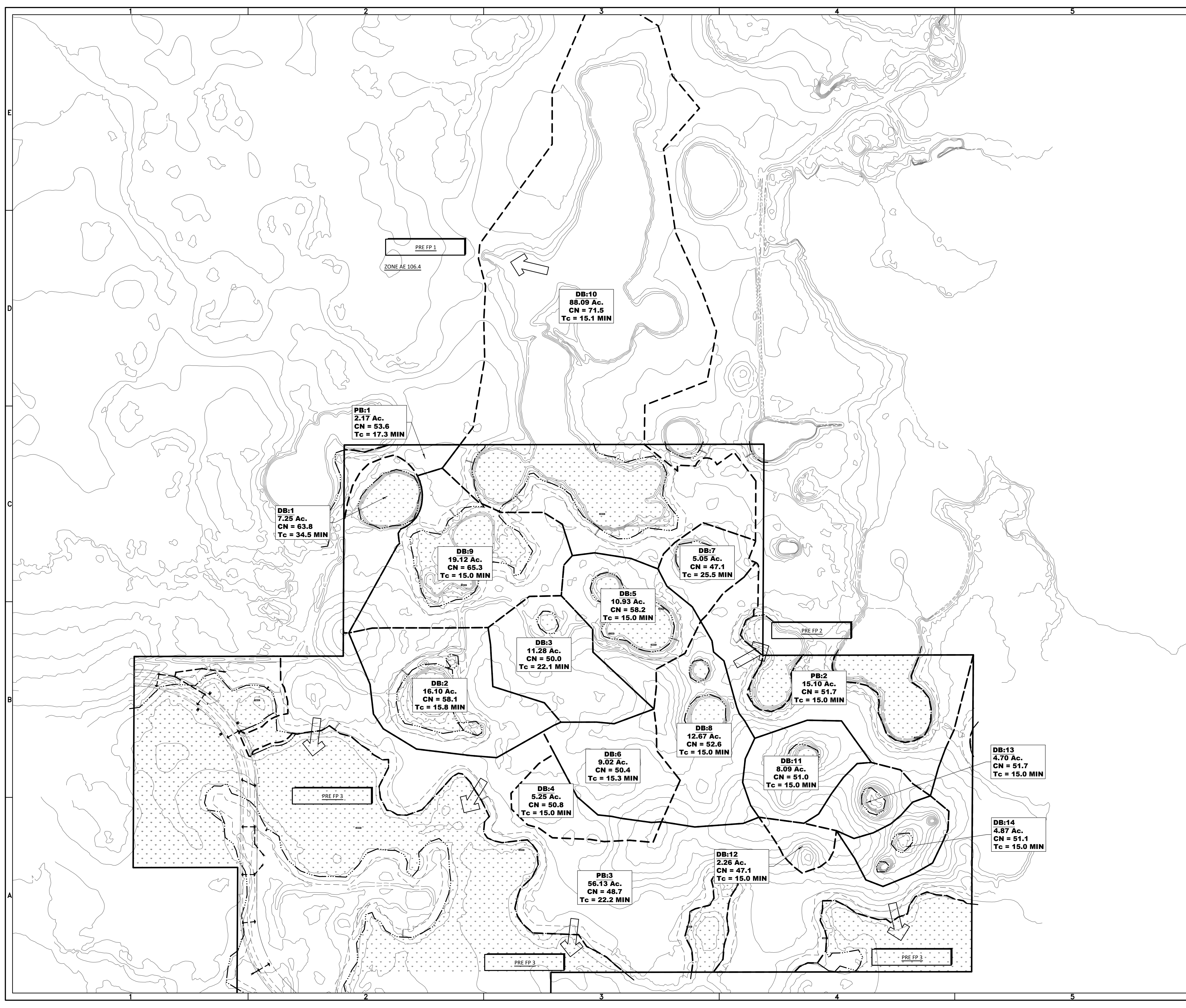
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DRAINAGE LEGEND

----- MAJOR DRAINAGE AREA

0.50 Ac. MAJOR DRAINAGE ACREAGE

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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 EXISTING CONDITIONS DRAINAGE
 AREA MAP

DR HORTON

NO.	DATE	DESCRIPTION
1	05/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: DA-EXIST
 DESIGN BY: MWD
 DRAWN BY: DD

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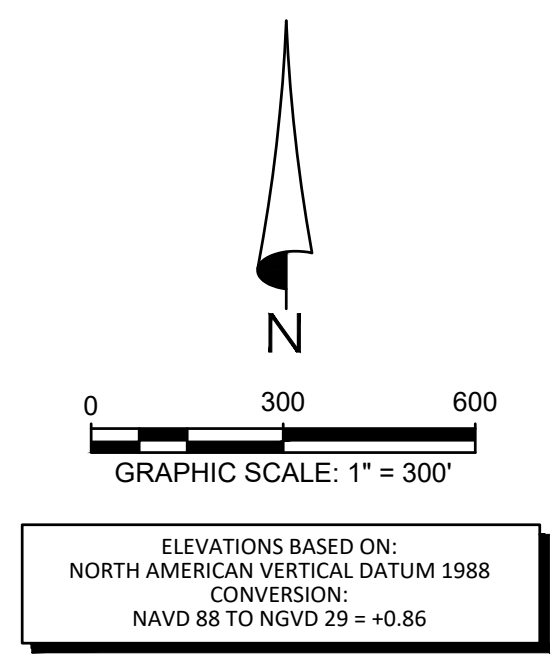
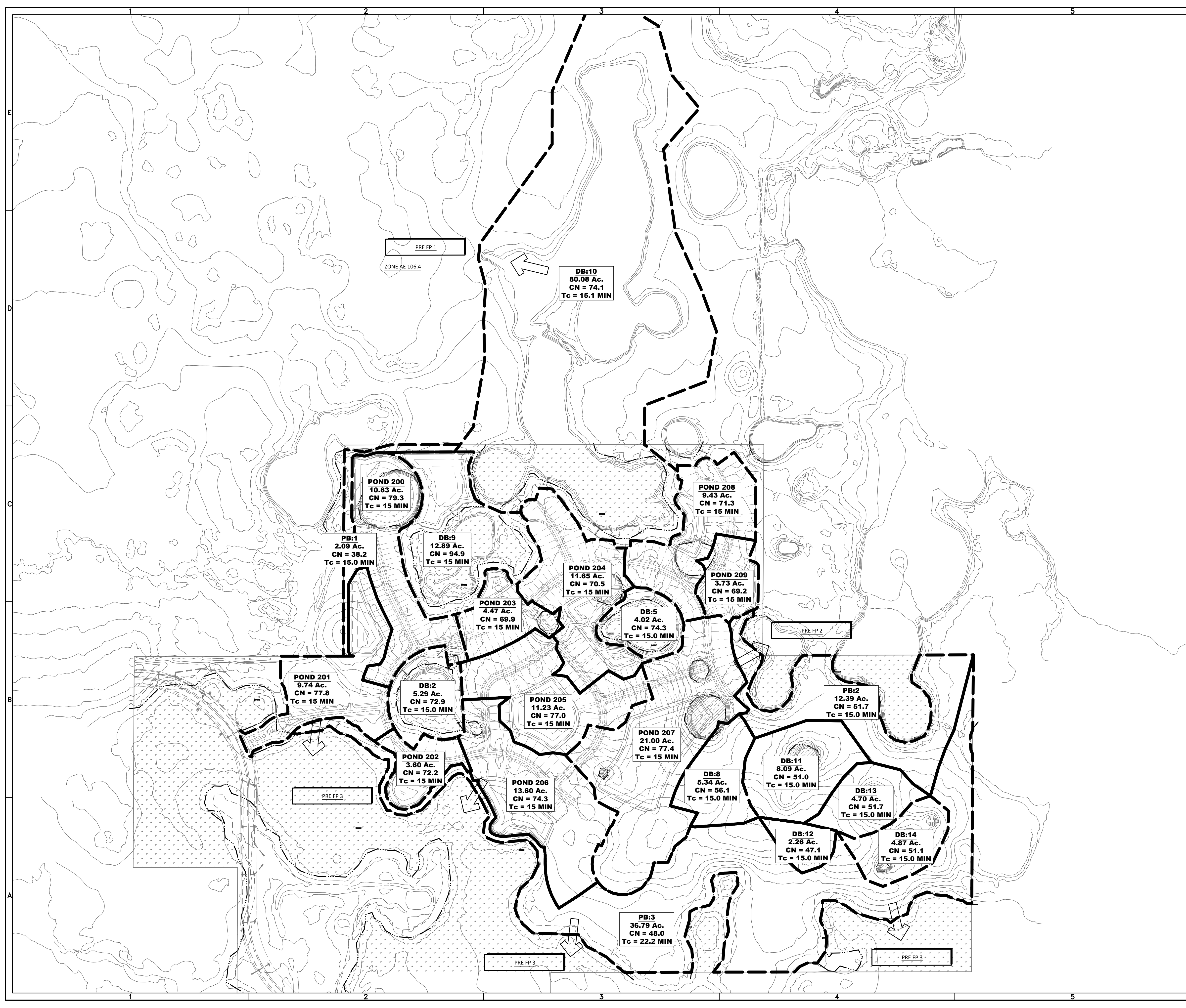
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DRAINAGE LEGEND

----- MAJOR DRAINAGE AREA

0.50 Ac. MAJOR DRAINAGE ACREAGE

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SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 PRE-DEVELOPMENT DRAINAGE
 AREA MAP

DR HORTON

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
 FILE: DA-PRE
 DESIGN BY: MWD
 DRAWN BY: DD

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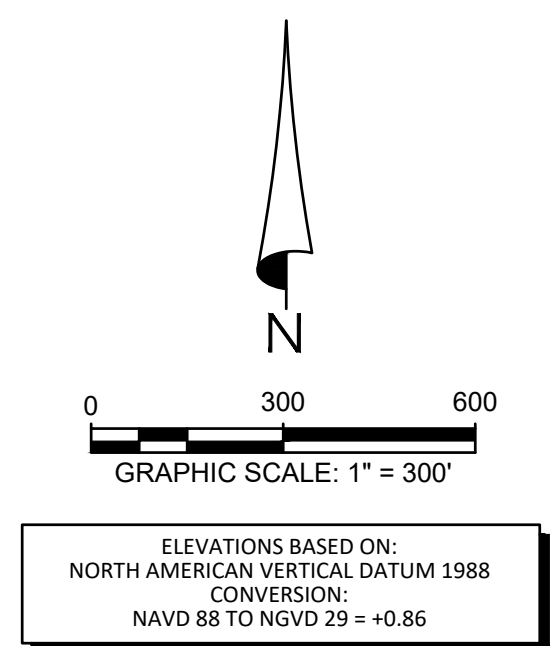
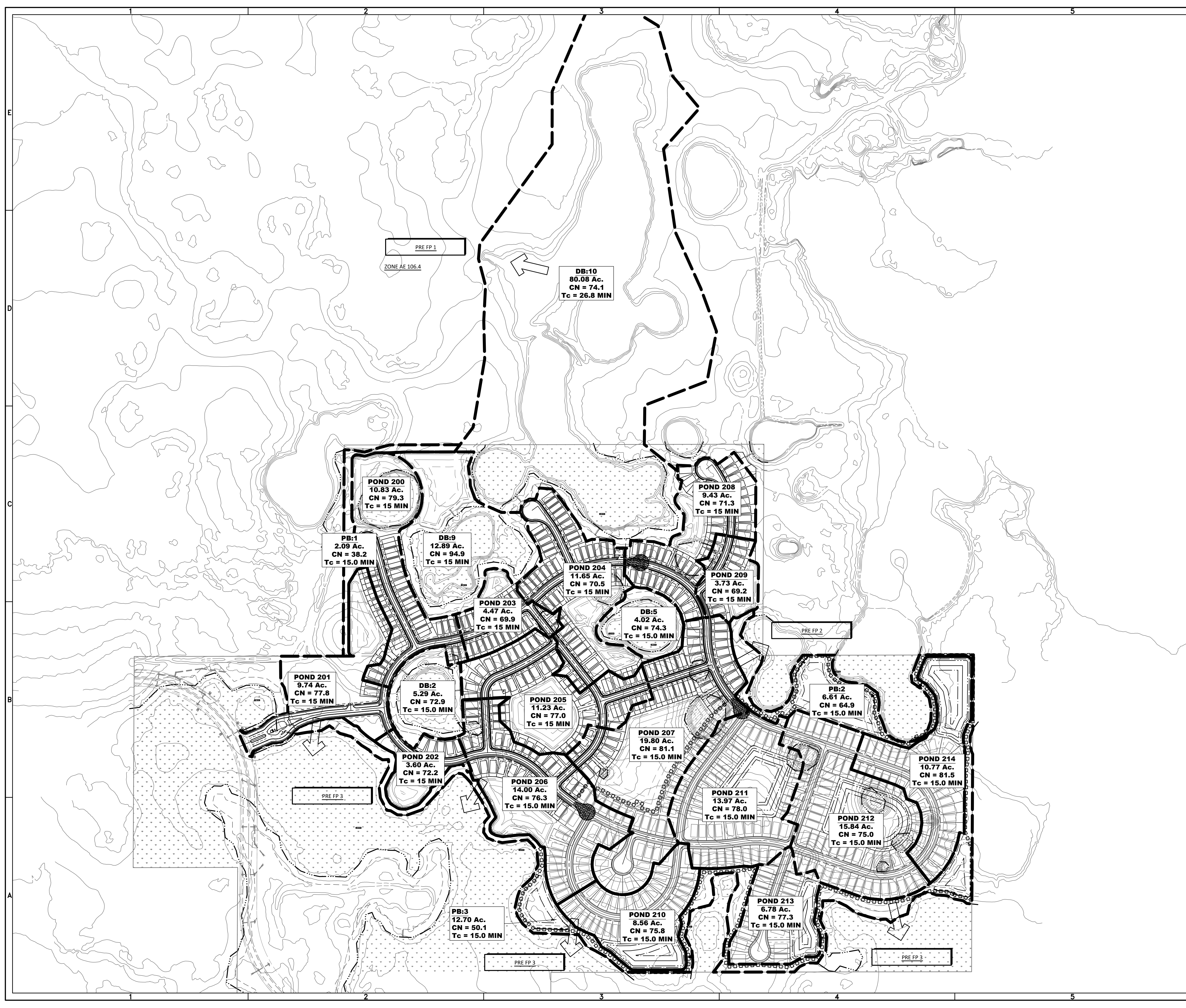
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DRAINAGE LEGEND

----- MAJOR DRAINAGE AREA
0.50 Ac. MAJOR DRAINAGE ACREAGE

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SERENOA ACTIVE ADULT PARCEL
PHASES 3 & 4
POST-DEVELOPMENT DRAINAGE
AREA MAP

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DATE	DESCRIPTION
05/22/2019	REVIEW SUBMITTAL

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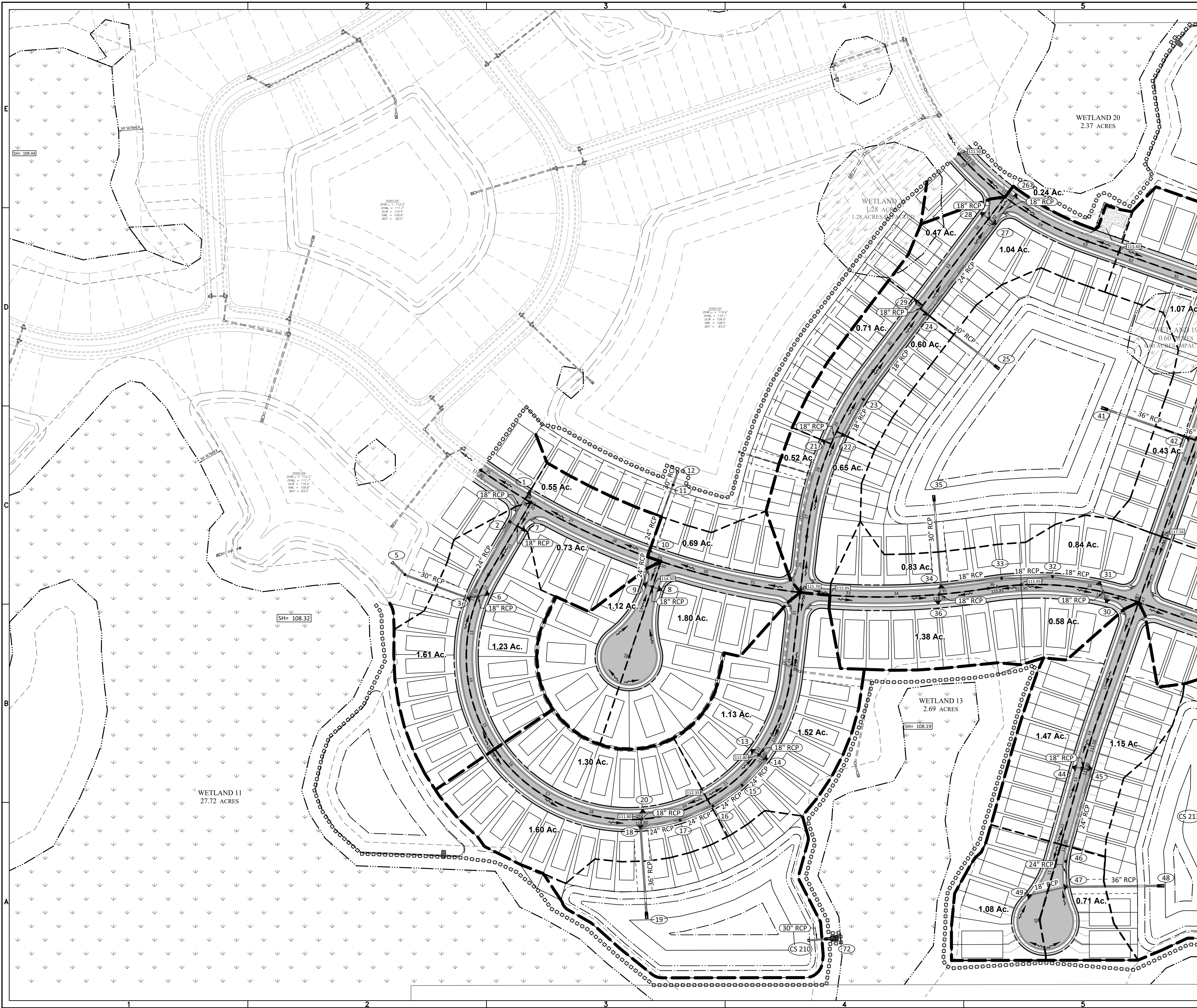
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C-904




 0 100 200
 GRAPHIC SCALE: 1" = 100'
 ELEVATIONS BASED ON:
 NORTH AMERICAN VERTICAL DATUM 1988
 CONVERSION:
 NAVD 88 TO NGVD 29 = +0.86

DRAINAGE LEGEND

- - - - - CATCH BASIN LIMITS
 0.50 Ac. CATCH BASIN AGERAGE
 (1) STORM STRUCTURE NUMBER

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**SERENOA ACTIVE ADULT PARCEL PHASES 3 & 4
 SUB-BASIN DRAINAGE AREA MAP**

DR HORTON

PREPARED FOR:

DATE	DESCRIPTION

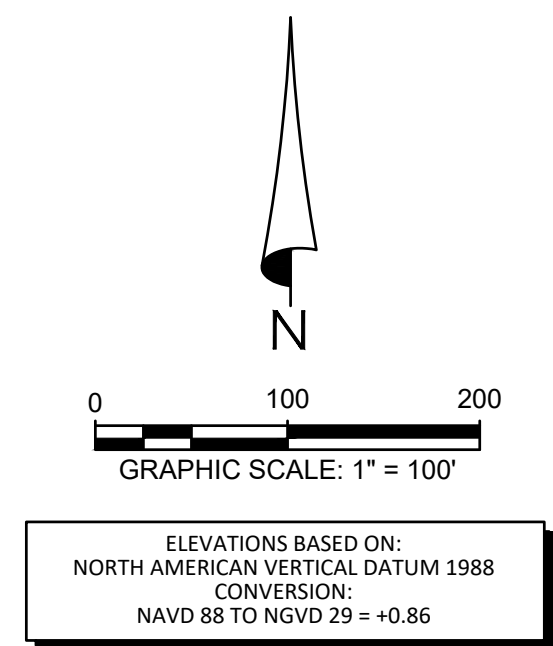
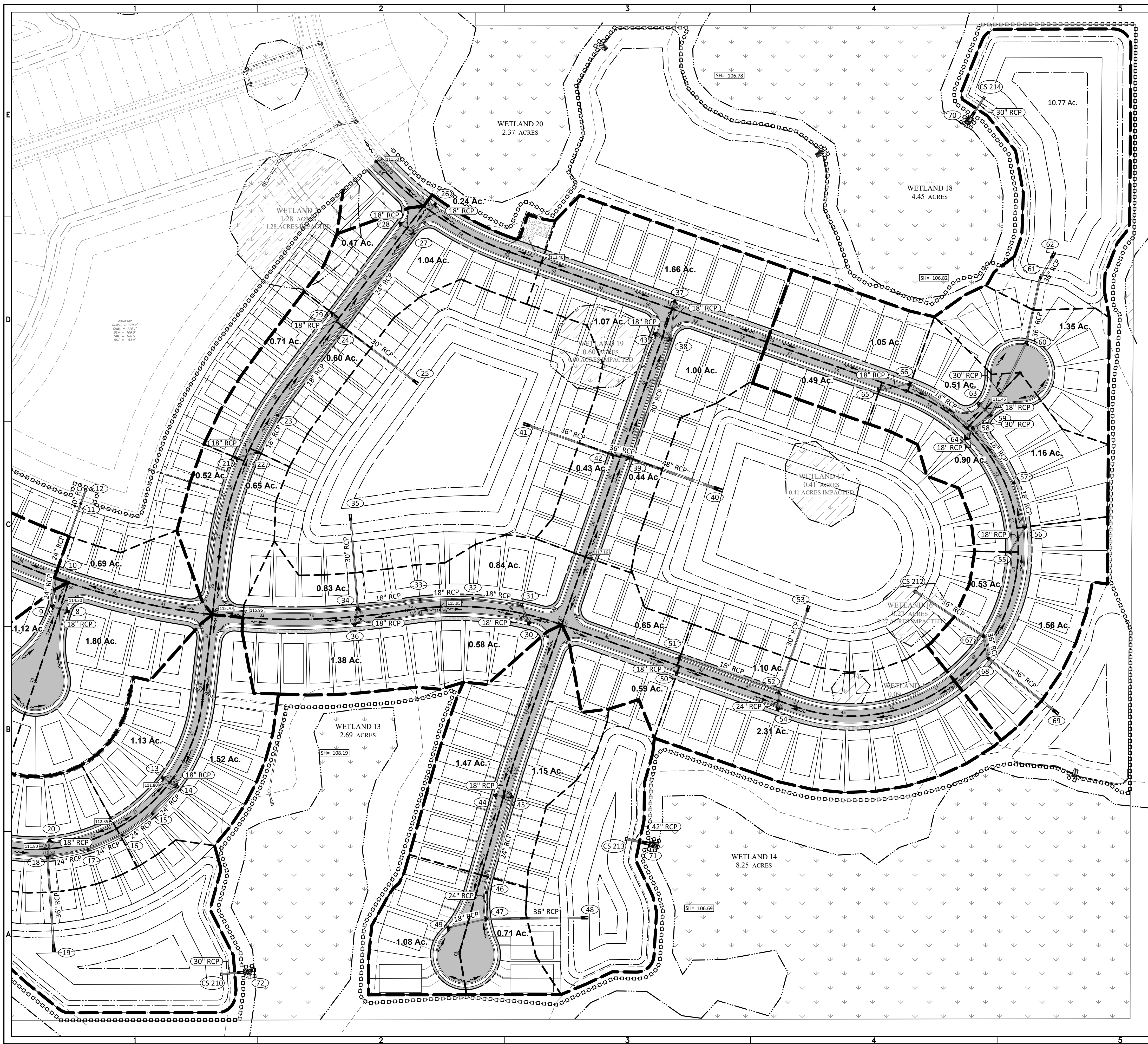
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DRAINAGE LEGEND

	CATCH BASIN LIMITS
	CATCH BASIN ACERAGE
	STORM STRUCTURE NUMBER

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 RAVALON GROVES/ACTIVE ADULT PHASE 3 & 4/ENGINEERING/DA/SUB DWG-C-008-2018/0322 1:40 PM MARK JONES

**SERENOA ACTIVE ADULT PARCEL
 PHASES 3 & 4
 SUB-BASIN DRAINAGE AREA MAP**

DR. HORTON

PREPARED FOR:

DATE	DESCRIPTION
1 09/22/2019	REVIEW SUBMITTAL

PROJECT NO: FRE SN 1002
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