



**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.
- 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 SLOPE
  - EXISTING TOPOGRAPHY AND DIRECTIONS OF SURFACE FLOW
  - TYPE OF EQUIPMENT USED
  - PROJECT TYPE
  - DURATION OF CONSTRUCTION ACTIVITIES
  - SEPARATION DISTANCE OF ON-SITE 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 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-CLAY 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 BASINS 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 SO, 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 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 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 ON-SITE SOIL MATERIALS AS DESCRIBED AND SPECIFIED BELOW. ALL DISCOVERED OR FUTURE FILLING OR MATERIAL REUSE WORK ON-SITE 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 ON-SITE 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 ON-SITE, 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.

- SITE DEMOLITION DEBRIS (SITE DEMOLITION DEBRIS, NOT GENERALLY CONSIDERED AN ENVIRONMENTAL/CONTAMINATION HAZARD, INCLUDES SUCH ITEMS AS WOOD PIECES, CONCRETE PIECES, PLASTIC PIPE PIECES, CERTAIN METAL/STEEL PIECES, OR SIMILAR. IF ANY SUCH DEBRIS OR OTHER DEMOLITION DEBRIS IS CONSIDERED AN ENVIRONMENTAL/CONTAMINATION HAZARD, OR IF BURIAL ON-SITE OF SUCH MATERIALS IS PROHIBITED BY THE GOVERNING ENVIRONMENTAL AGENCY, THEN ALL SUCH MATERIALS SHALL BE HAULED OFF-SITE BY THE CONTRACTOR FOR PROPER DISPOSAL, IN ACCORDANCE WITH ALL APPLICABLE GOVERNING ENVIRONMENTAL AGENCY REQUIREMENTS. IN NO CASE, SHALL ANY SUCH DEBRIS MATERIALS REMAIN, OR BE PLACED BY THE CONTRACTOR, BENEATH ANY TYPE OF STRUCTURE, PAVEMENT, ROADWAY, HOUSE, BUILDING, PIPELINE, SLAB, ETC.)
- 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 ON-SITE.)
- 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-8, 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 "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;
- 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 DEBRIS 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 MULCH) AND THEN REFILLING (WITH COMPACTION) TO REQUIRED DESIGN GRADES;
- 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;
- 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.

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 STORMWATER POND AREAS AND 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 STORMWATER PONDS, 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-8, 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:

- PLACED AS "PEAT/MUCK/ORGANIC MATTER" SURFACE LAYER IN NEW OR CREATED WETLANDS AND AREAS, STOCKPILING OF SUCH "SIGNIFICANT ORGANIC" MATERIALS (AMOUNTS/LOCATIONS), IF ACCEPTABLE, WILL BE DIRECTED BY THE OWNER/WETLAND CONSULTANT;
- 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 ADEQUATE SOIL MIXING (MIX SOIL WITH THE ORGANIC MATERIALS) AND THEN REFILLING (WITH COMPACTION) TO REQUIRED DESIGN GRADES;
- 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;
- 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 STORMWATER POND AREAS AND 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:

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

- 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:

- 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;
- 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;
- 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.
- 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.

- 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 ON-SITE 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 LIFT LEFT FOR ACCEPTANCE BY THE GEOTECHNICAL CONSULTANT, UPON CONTRACTOR REQUEST, PRIOR TO THE NEXT LIFT LEFT BEING PLACED.

**WETLAND NOTES:**

THERE ARE NO WETLAND IMPACTS PROPOSED AND THEREFORE, NO MITIGATION REQUIRED.

"CONSERVATION AREA" DESIGNATION IS GIVEN TO ALL PROTECTED WETLANDS PER PASCO COUNTY REQUIREMENTS. THEY ARE NOT DESIGNATED AS "CONSERVATION EASEMENTS" FOR SWFWMD COMPENSATION.

WETLAND LINES PERMITTED UNDER ERP NO. 4201 3843.008

**EARTHWORK NOTE:**

- ALL MATERIAL EXCAVATED FROM FLOODPLAIN AND STORMWATER DETENTION PONDS WILL BE REUSED AS FILL FOR PARCELS A-E.
- ALL EARTHWORK DEFICITS IN VILLAGE 2 PARCELS A - E WILL BE SATISFIED FROM EXCESS MATERIALS AVAILABLE FROM CONCURRENTLY CONSTRUCTED PONDS ASSOCIATED WITH SUNLAKE BOULEVARD (CONSTRUCTED BY SAME OWNER)
- THERE WILL BE NO NET EARTHWORK EXPORT FROM VILLAGE 2 PARCELS A - E.

**EARTHWORK:**

- ESTIMATED EARTHWORK QUANTITIES ARE AS FOLLOWS:
  - VILLAGE 2 PHASE 1A MASS GRADING CUT = 344,493 CU. YD
  - VILLAGE 2 PHASE 1A MASS GRADING FILL = 261,939 CU. YD.

NET EXCESS MATERIAL = 82,554 CU. YD.

ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GENERAL NOTES**

PREPARED FOR: **CENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: GNOTES  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

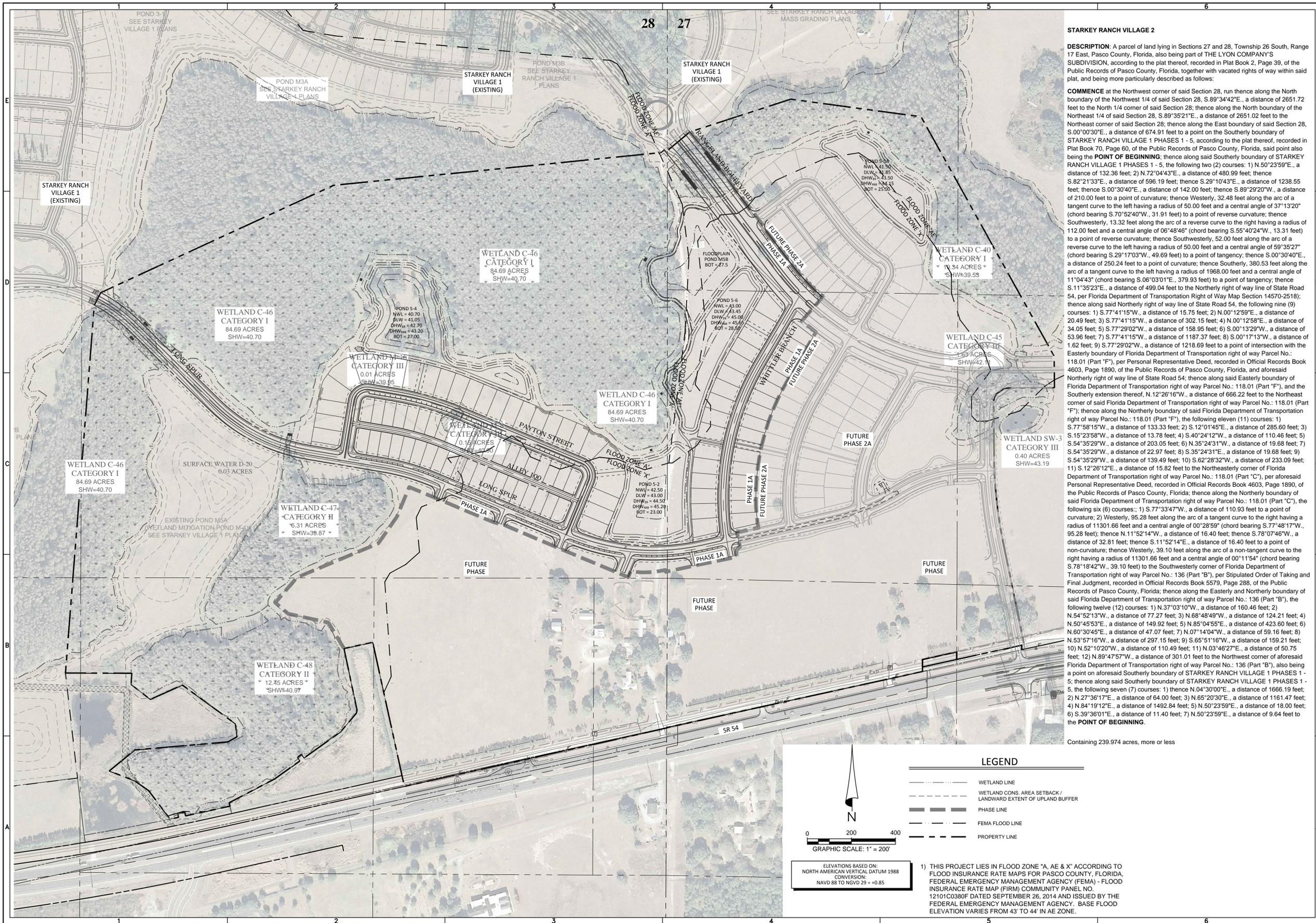
FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52177

**C-101**

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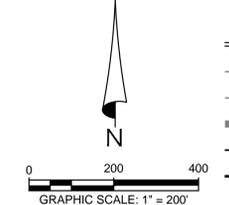


**STARKEY RANCH VILLAGE 2**

**DESCRIPTION:** A parcel of land lying in Sections 27 and 28, Township 26 South, Range 17 East, Pasco County, Florida, also being part of THE LYON COMPANY'S SUBDIVISION, according to the plat thereof, recorded in Plat Book 2, Page 39, of the Public Records of Pasco County, Florida, together with vacated rights of way within said plat, and being more particularly described as follows:

**COMMENCE** at the Northwest corner of said Section 28, run thence along the North boundary of the Northwest 1/4 of said Section 28, S.89°34'42"E., a distance of 2651.72 feet to the North 1/4 corner of said Section 28; thence along the North boundary of the Northeast 1/4 of said Section 28, S.89°35'21"E., a distance of 2651.02 feet to the Northeast corner of said Section 28; thence along the East boundary of said Section 28, S.00°00'30"E., a distance of 674.91 feet to a point on the Southerly boundary of STARKEY RANCH VILLAGE 1 PHASES 1 - 5, according to the plat thereof, recorded in Plat Book 70, Page 60, of the Public Records of Pasco County, Florida, said point also being the **POINT OF BEGINNING**; thence along said Southerly boundary of STARKEY RANCH VILLAGE 1 PHASES 1 - 5, the following two (2) courses: 1) N.50°23'59"E., a distance of 132.36 feet; 2) N.72°04'43"E., a distance of 480.89 feet; thence S.82°21'33"E., a distance of 596.19 feet; thence S.29°10'43"E., a distance of 1238.55 feet; thence S.00°30'40"E., a distance of 142.00 feet; thence S.89°29'20"W., a distance of 210.00 feet to a point of curvature; thence Westerly, 32.48 feet along the arc of a tangent curve to the left having a radius of 50.00 feet and a central angle of 37°13'20" (chord bearing S.70°52'40"W., 31.91 feet) to a point of reverse curvature; thence Southwesterly, 13.32 feet along the arc of a reverse curve to the right having a radius of 112.00 feet and a central angle of 06°48'46" (chord bearing S.55°40'24"W., 13.31 feet) to a point of reverse curvature; thence Southwesterly, 52.00 feet along the arc of a reverse curve to the left having a radius of 50.00 feet and a central angle of 59°35'27" (chord bearing S.29°17'03"W., 49.69 feet) to a point of tangency; thence S.00°30'40"E., a distance of 250.24 feet to a point of curvature; thence Southerly, 380.53 feet along the arc of a tangent curve to the left having a radius of 1968.00 feet and a central angle of 11°04'43" (chord bearing S.06°03'01"E., 379.93 feet) to a point of tangency; thence S.11°35'23"E., a distance of 499.04 feet to the Northerly right of way line of State Road 54, per Florida Department of Transportation Right of Way Map Section 14570-2518; thence along said Northerly right of way line of State Road 54, the following nine (9) courses: 1) S.77°41'15"W., a distance of 15.75 feet; 2) N.00°12'59"E., a distance of 20.49 feet; 3) S.77°41'15"W., a distance of 302.15 feet; 4) N.00°12'58"E., a distance of 34.05 feet; 5) S.77°29'02"W., a distance of 158.95 feet; 6) S.00°13'29"W., a distance of 53.96 feet; 7) S.77°41'15"W., a distance of 1187.37 feet; 8) S.00°17'13"W., a distance of 1.62 feet; 9) S.77°29'02"W., a distance of 1218.69 feet to a point of intersection with the Easterly boundary of Florida Department of Transportation right of way Parcel No.: 118.01 (Part "F"), per Personal Representative Deed, recorded in Official Records Book 4603, Page 1890, of the Public Records of Pasco County, Florida, and aforesaid Northerly right of way line of State Road 54; thence along said Easterly boundary of Florida Department of Transportation right of way Parcel No.: 118.01 (Part "F"), and the Southerly extension thereof, N.12°26'16"W., a distance of 666.22 feet to the Northeast corner of said Florida Department of Transportation right of way Parcel No.: 118.01 (Part "F"); thence along the Northerly boundary of said Florida Department of Transportation right of way Parcel No.: 118.01 (Part "F"), the following eleven (11) courses: 1) S.77°58'15"W., a distance of 133.33 feet; 2) S.12°01'45"E., a distance of 285.60 feet; 3) S.15°23'58"W., a distance of 13.78 feet; 4) S.40°24'12"W., a distance of 110.46 feet; 5) S.54°35'29"W., a distance of 203.05 feet; 6) N.35°24'31"W., a distance of 19.68 feet; 7) S.54°35'29"W., a distance of 22.97 feet; 8) S.35°24'31"E., a distance of 19.68 feet; 9) S.54°35'29"W., a distance of 139.49 feet; 10) S.62°28'32"W., a distance of 233.09 feet; 11) S.12°26'12"E., a distance of 15.82 feet to the Northeast corner of Florida Department of Transportation right of way Parcel No.: 118.01 (Part "C"), per aforesaid Personal Representative Deed, recorded in Official Records Book 4603, Page 1890, of the Public Records of Pasco County, Florida; thence along the Northerly boundary of said Florida Department of Transportation right of way Parcel No.: 118.01 (Part "C"), the following six (6) courses: 1) S.77°33'47"W., a distance of 110.93 feet to a point of curvature; 2) Westerly, 95.28 feet along the arc of a tangent curve to the right having a radius of 11301.66 feet and a central angle of 00°28'59" (chord bearing S.77°48'17"W., 95.28 feet); thence N.11°52'14"W., a distance of 16.40 feet; thence S.78°07'46"W., a distance of 32.81 feet; thence N.11°52'14"E., a distance of 16.40 feet to a point of non-curvature; thence Westerly, 39.10 feet along the arc of a non-tangent curve to the right having a radius of 11301.66 feet and a central angle of 00°11'54" (chord bearing S.78°18'42"W., 39.10 feet) to the Southwest corner of Florida Department of Transportation right of way Parcel No.: 136 (Part "B"), per Stipulated Order of Taking and Final Judgment, recorded in Official Records Book 5579, Page 288, of the Public Records of Pasco County, Florida; thence along the Easterly and Northerly boundary of said Florida Department of Transportation right of way Parcel No.: 136 (Part "B"), the following twelve (12) courses: 1) N.37°03'10"W., a distance of 160.46 feet; 2) N.54°52'13"W., a distance of 77.27 feet; 3) N.68°48'49"W., a distance of 124.21 feet; 4) N.50°45'53"E., a distance of 149.92 feet; 5) N.85°04'55"E., a distance of 423.60 feet; 6) N.60°30'45"E., a distance of 47.07 feet; 7) N.07°14'04"W., a distance of 59.16 feet; 8) N.53°57'16"W., a distance of 297.15 feet; 9) S.65°51'16"W., a distance of 159.21 feet; 10) N.52°10'20"W., a distance of 110.49 feet; 11) N.03°46'27"E., a distance of 50.75 feet; 12) N.89°47'57"W., a distance of 301.01 feet to the Northwest corner of aforesaid Florida Department of Transportation right of way Parcel No.: 136 (Part "B"), also being a point on aforesaid Southerly boundary of STARKEY RANCH VILLAGE 1 PHASES 1 - 5; thence along said Southerly boundary of STARKEY RANCH VILLAGE 1 PHASES 1 - 5, the following seven (7) courses: 1) thence N.04°30'00"E., a distance of 1666.19 feet; 2) N.27°36'17"E., a distance of 64.00 feet; 3) N.65°20'30"E., a distance of 1161.47 feet; 4) N.84°19'12"E., a distance of 1492.84 feet; 5) N.50°23'59"E., a distance of 18.00 feet; 6) S.39°36'01"E., a distance of 11.40 feet; 7) N.50°23'59"E., a distance of 9.64 feet to the **POINT OF BEGINNING**.

Containing 239.974 acres, more or less



**LEGEND**

- WETLAND LINE
- - - WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER
- PHASE LINE
- - - FEMA FLOOD LINE
- PROPERTY LINE

ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

1) THIS PROJECT LIES IN FLOOD ZONE "A, AE & X" ACCORDING TO FLOOD INSURANCE RATE MAPS FOR PASCO COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12101C0280F DATED SEPTEMBER 26, 2014 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. BASE FLOOD ELEVATION VARIES FROM 43' TO 44' IN AE ZONE.

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Landscape Architecture Certificate of Authorization No. LC26000405  
RIS STARKEY RANCH PARCEL 2 PHASE 1A ENGINEERING DWG-C-103 2016/12/01 2:00 PM MARK JONES

**STARKEY RANCH VILLAGE 2  
PHASE 1A  
AERIAL SITE PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

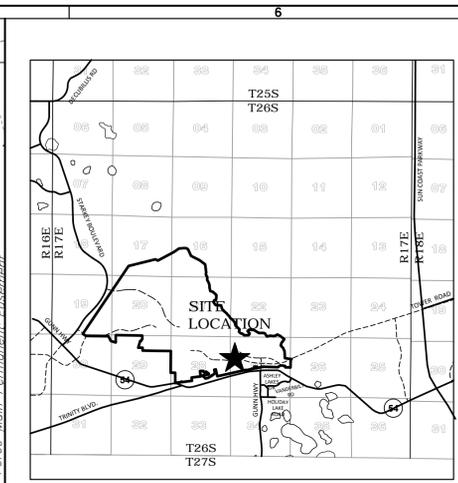
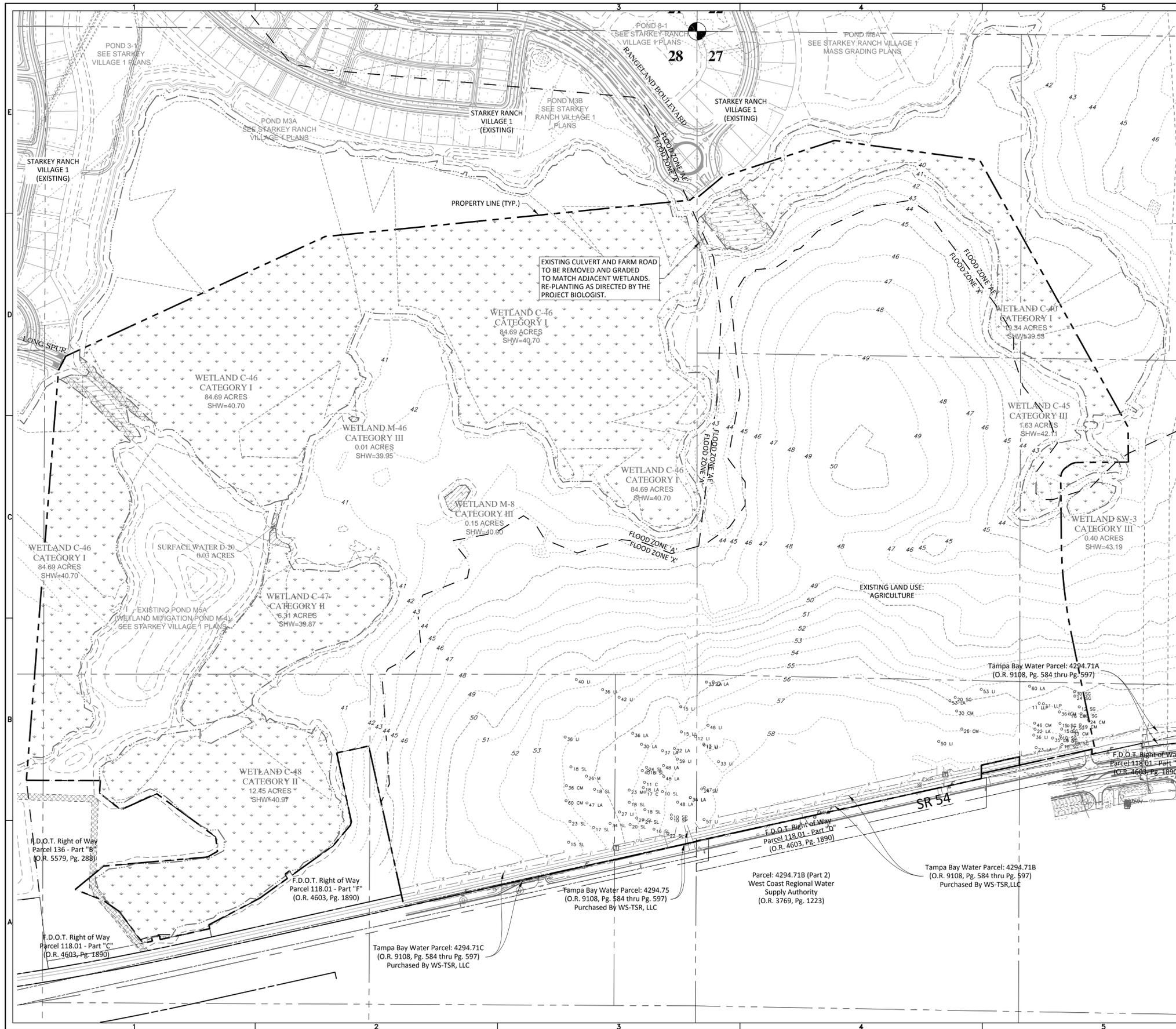
NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: ASP  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 62177

**C-103**

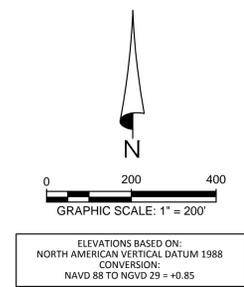


LOCATION MAP  
(NOT TO SCALE)

**LEGEND**

	WETLAND LINE
	WETLAND CONS. AREA SETBACK / LANDWARD EXTENT OF UPLAND BUFFER
	FEMA FLOOD LINE
	PROPERTY LINE
	SPOT ELEVATION GROUND
	CONTOUR
	EXISTING TREE LOCATION

1) THIS PROJECT LIES IN FLOOD ZONE "A, AE & X" ACCORDING TO FLOOD INSURANCE RATE MAPS FOR PASCO COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12101C0380F DATED SEPTEMBER 26, 2014 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. BASE FLOOD ELEVATION VARIES FROM 43 TO 44' IN AE ZONE.



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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
EXISTING SITE CONDITIONS**

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION

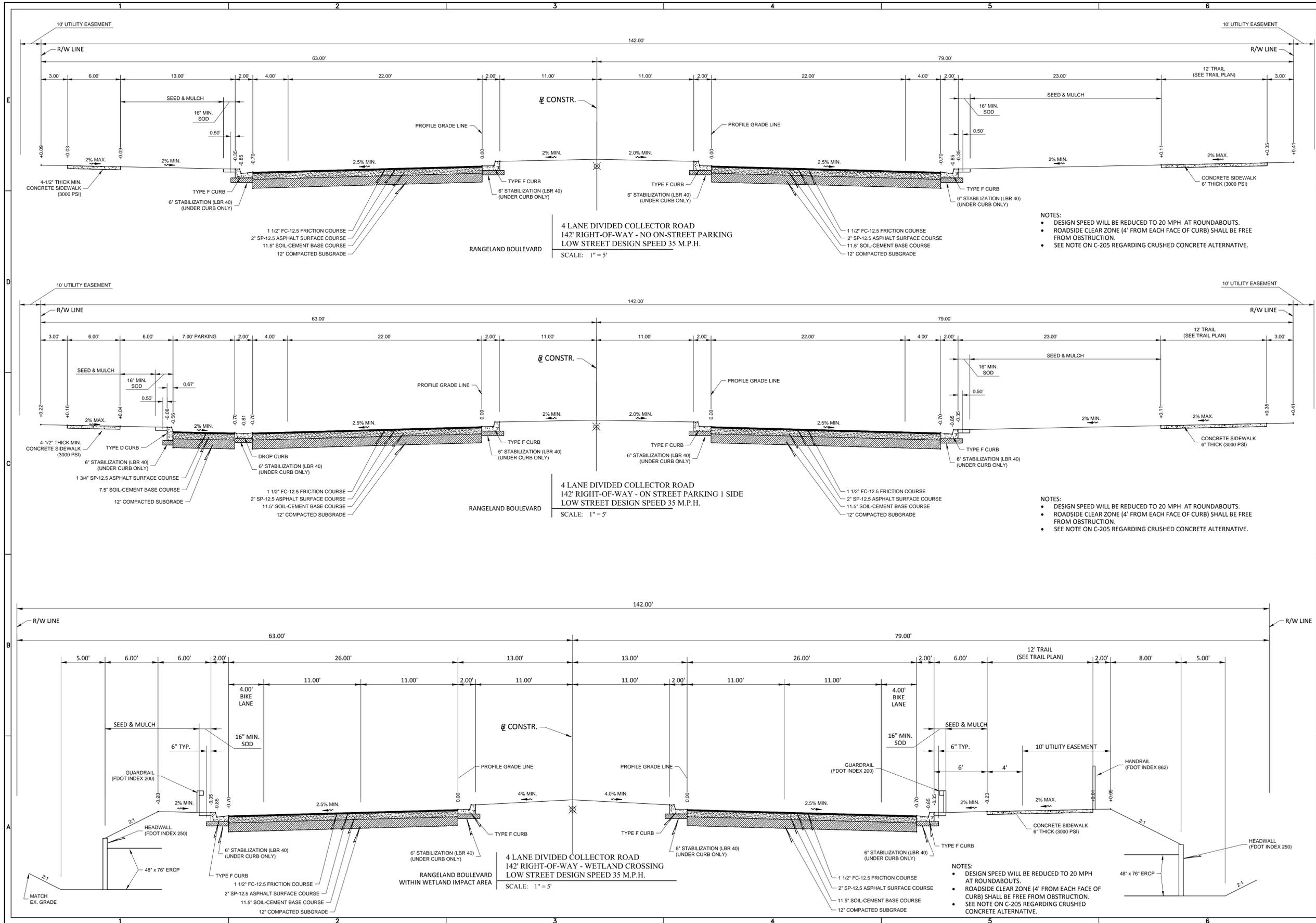
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PROJECT NO: PHC-SR-1002  
FILE: SITE-EX  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-104**

R:\STARKEY RANCH\PARCEL 2\PHASE 1A\ENGINEERING\SITE-EX\DWG-C-104-20160120 4:07 PM MARK JONES



- NOTES:
- DESIGN SPEED WILL BE REDUCED TO 20 MPH AT ROUNDABOUTS.
  - ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

- NOTES:
- DESIGN SPEED WILL BE REDUCED TO 20 MPH AT ROUNDABOUTS.
  - ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

- NOTES:
- DESIGN SPEED WILL BE REDUCED TO 20 MPH AT ROUNDABOUTS.
  - ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

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**STARKEY RANCH VILLAGE 2  
PHASE 1A**

**TYPICAL ROADWAY SECTIONS**

PREPARED BY: GENTRY LAND COMPANY

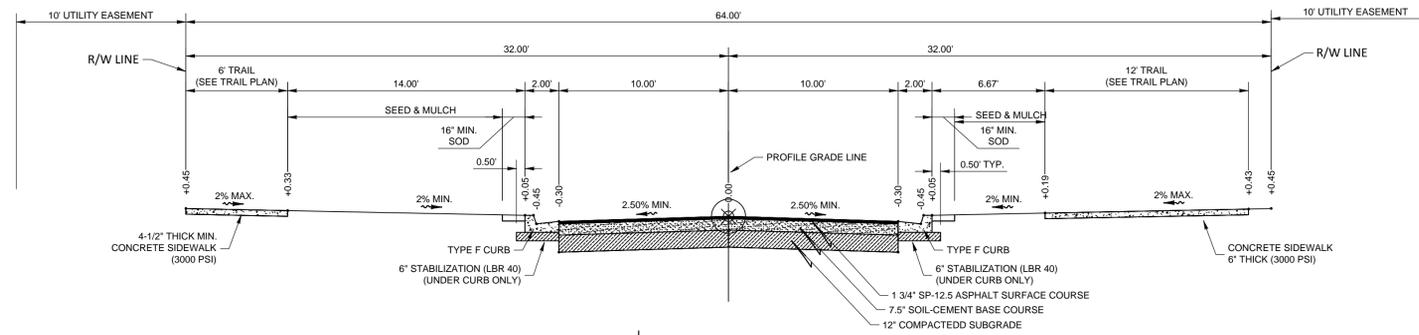
NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: R5  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS  
FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

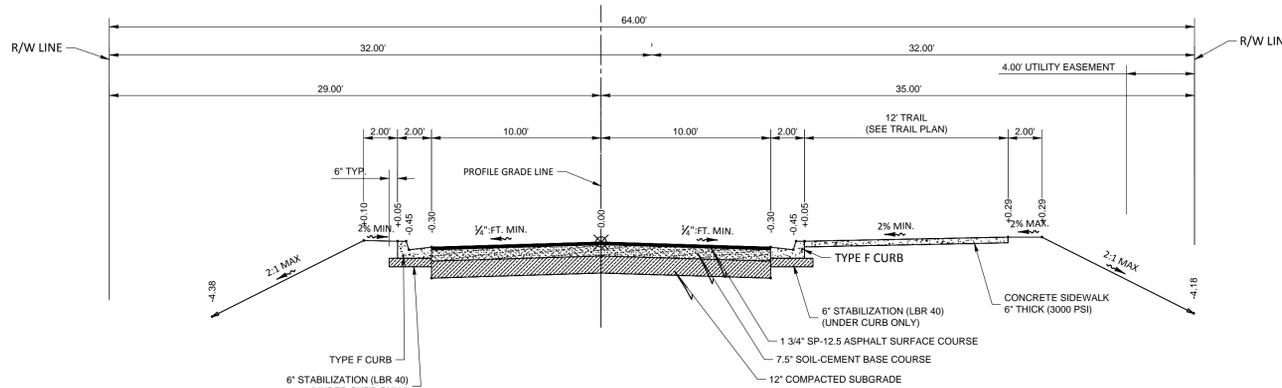
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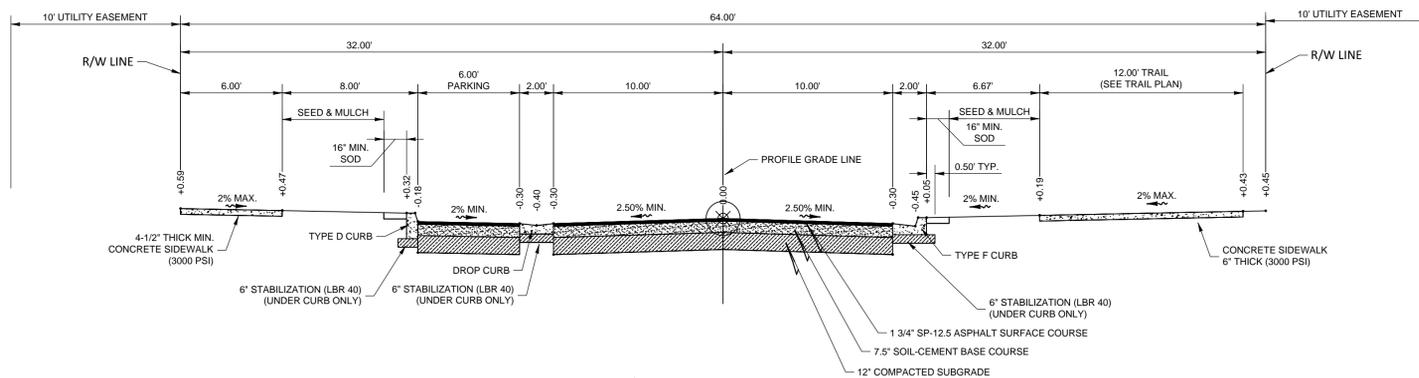
**TWO-WAY UNDIVIDED COLLECTOR ROAD**  
 64' RIGHT-OF-WAY - NO ON-STREET PARKING  
 SLOW STREET DESIGN SPEED 25 M.P.H.  
 SCALE: 1" = 5'

- NOTES:
- ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.



**2 LANE UNDIVIDED COLLECTOR ROAD**  
 64' RIGHT-OF-WAY - NO ON-STREET PARKING  
 SLOW STREET DESIGN SPEED 25 M.P.H.  
 SCALE: 1" = 5'

- NOTES:
- ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.



**TWO-WAY UNDIVIDED COLLECTOR ROAD**  
 64' RIGHT-OF-WAY - ON-STREET PARKING 1-SIDE (LEFT SIDE)  
 SLOW STREET DESIGN SPEED 25 M.P.H.  
 SCALE: 1" = 5'

- NOTES:
- ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

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 Landscape Architecture Certificate of Authorization No. LC26000405

**STARKEY RANCH VILLAGE 2**  
**PHASE 1A**  
**TYPICAL ROADWAY SECTIONS**

PREPARED FOR: **GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

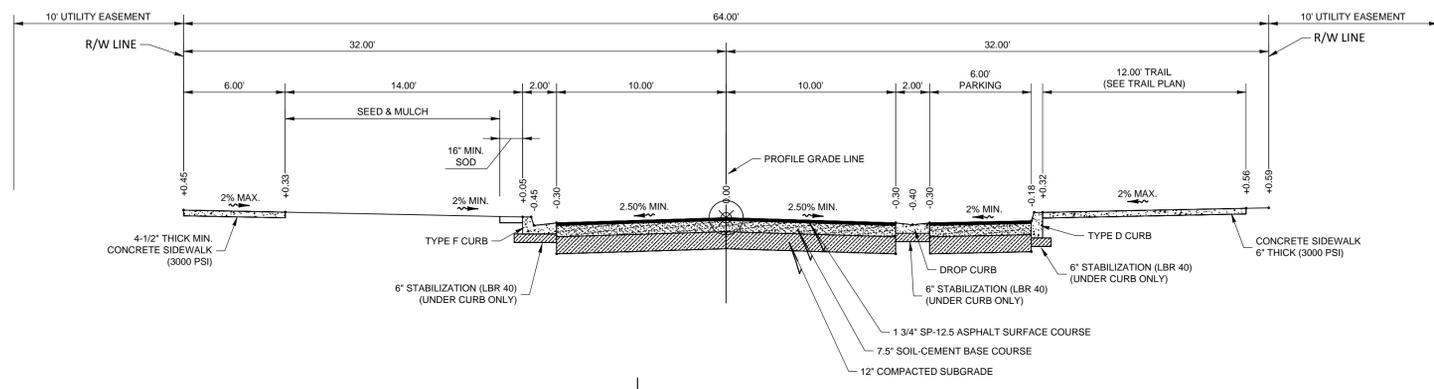
PROJECT NO: **PHC-SR-1002**  
 FILE: **R5**  
 DESIGN BY: **STOLLINGS**  
 DRAWN BY: **STOLLINGS**

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
 REGISTRATION NO. **52717**

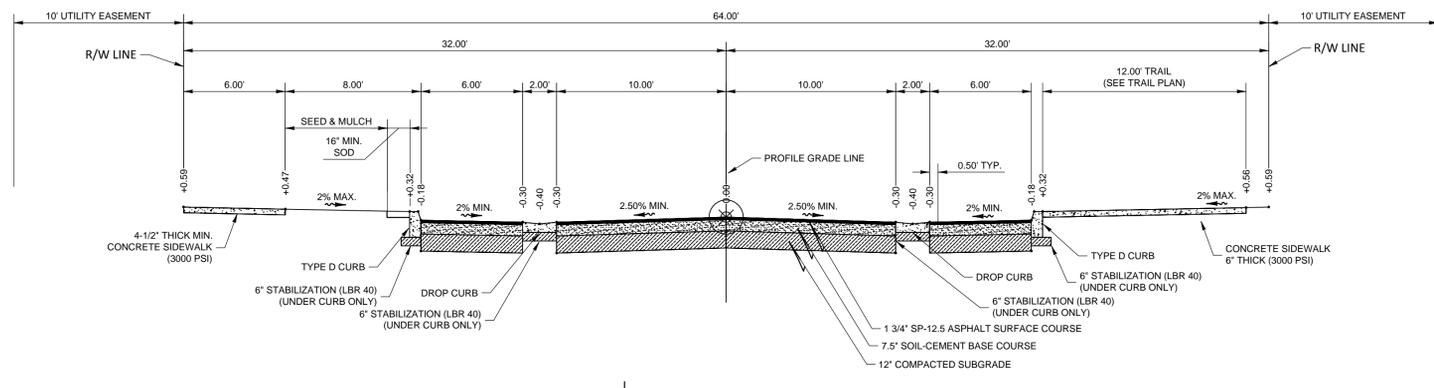
**C-202**

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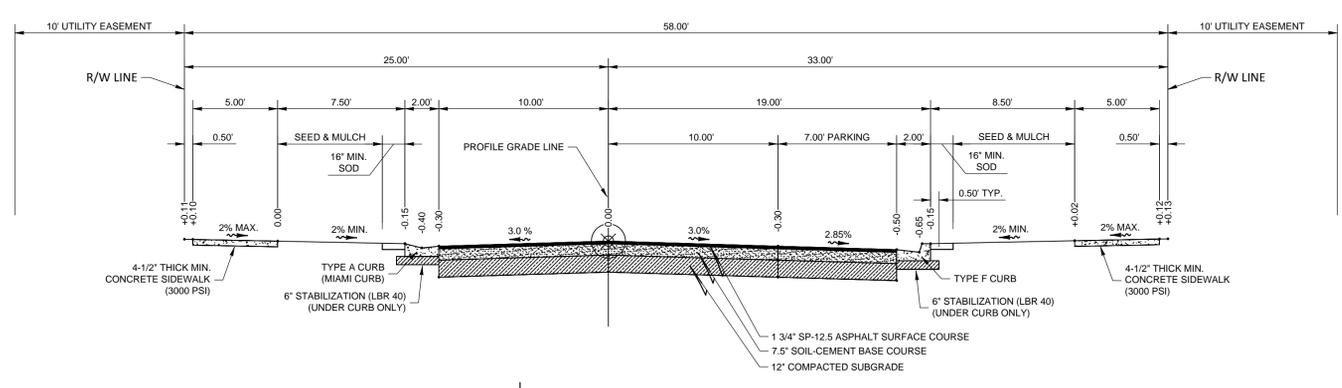
TWO-WAY UNDIVIDED COLLECTOR ROAD  
64' RIGHT-OF-WAY - ON-STREET PARKING 1-SIDE (RIGHT SIDE)  
SLOW STREET DESIGN SPEED 25 M.P.H.  
LONG SPUR  
SCALE: 1" = 5'

- NOTES:
- ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.



TWO-WAY UNDIVIDED COLLECTOR ROAD  
64' RIGHT-OF-WAY - ON-STREET PARKING BOTH SIDES  
SLOW STREET DESIGN SPEED 25 M.P.H.  
LONG SPUR  
SCALE: 1" = 5'

- NOTES:
- ROADSIDE CLEAR ZONE (4' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.



LOCAL TWO-WAY ROAD  
58' RIGHT-OF-WAY - ON-STREET PARKING 1 SIDE  
SLOW STREET DESIGN SPEED 25 M.P.H.  
PAYTON STREET  
SCALE: 1" = 5'

- NOTES:
- STREET OFFSET MAY BE EITHER SIDE OF RIGHTS-OF-WAY.
  - ROADSIDE CLEAR ZONE (6' FROM EACH FACE OF MIAMI CURB, 4' FROM EACH FACE OF TYPE F CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

**HEIDT DESIGN**  
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Engineering Business Certificate of Authorization No. 28782  
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STARKEY RANCH VILLAGE 2  
PHASE 1A  
TYPICAL ROADWAY SECTIONS

PREPARED FOR: GENTRY LAND COMPANY

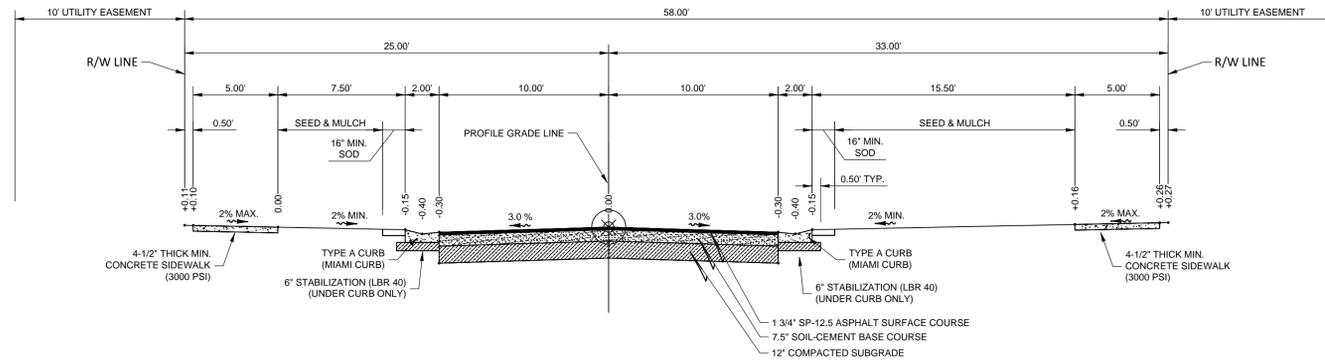
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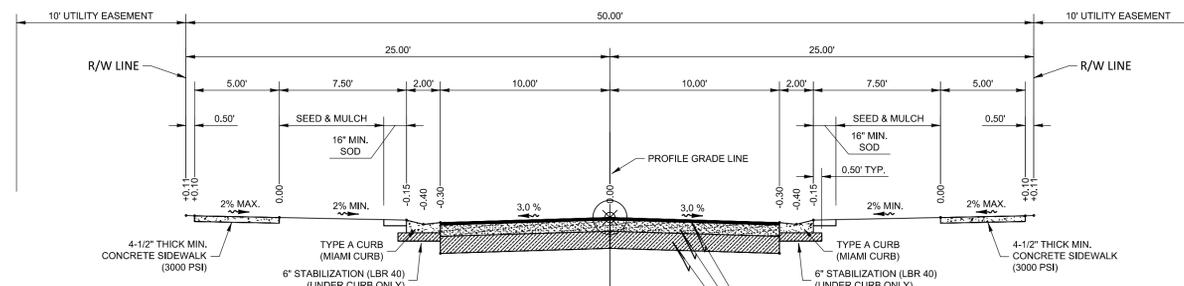
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**C-203**

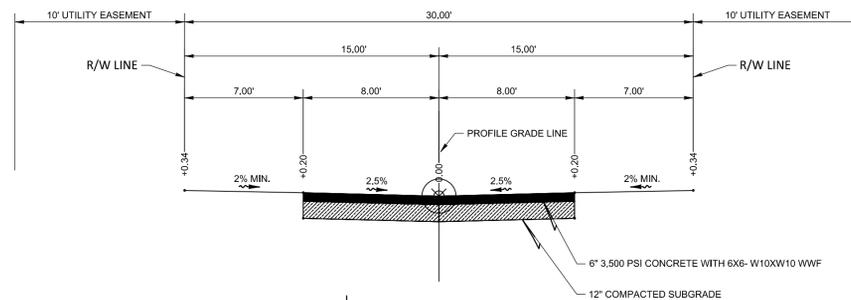
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**PAYTON STREET**  
 LOCAL TWO-WAY ROAD  
 58' RIGHT-OF-WAY NO ON-STREET PARKING  
 SLOW STREET DESIGN SPEED 25 M.P.H.  
 SCALE: 1" = 5'



**WHITTLER BRANCH**  
 LOCAL TWO-WAY ROAD  
 50' RIGHT-OF-WAY  
 SLOW STREET DESIGN SPEED 25 M.P.H.  
 SCALE: 1" = 5'



**ALLEY 100**  
 LOCAL ONE-WAY ALLEY  
 30' RIGHT-OF-WAY- 16' PAVEMENT  
 YIELD STREET DESIGN SPEED 15 MPH  
 SCALE: 1" = 5'

- NOTES:
- STREET OFFSET MAY BE EITHER SIDE OF RIGHTS-OF-WAY.
  - ROADSIDE CLEAR ZONE (6' FROM EACH FACE OF MIAMI CURB, 4' FROM EACH FACE OF TYPE F CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.

- NOTES:
- ROADSIDE CLEAR ZONE (6' FROM EACH FACE OF CURB) SHALL BE FREE FROM OBSTRUCTION.
  - SEE NOTE ON C-205 REGARDING CRUSHED CONCRETE ALTERNATIVE.



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 PHASE 1A

TYPICAL ROADWAY SECTIONS

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**EQUIPMENT, PLACEMENT AND SPREADING OF MATERIAL**

USE MECHANICAL ROCK SPREADERS EQUIPPED WITH CONE THAT STRIKES OFF THE ROCK UNIFORMITY TO LAYING THICKNESS AND CAPABLE OF PRODUCING EVEN DISTRIBUTION. FOR ROADWAY WIDTHS OF 20 FEET OR LESS, CROSSOVERS, INTERSECTIONS, KAMP AREAS OR WHERE THE USE OF A MECHANICAL SPREADER IS NOT PRACTICAL, THE CONTRACTOR MAY SPREAD THE CRUSHED CONCRETE BASE USING BULLDOZERS OR BACK GRADERS. TRANSPORT CRUSHED CONCRETE TO THE POINT OF USE, OVER THE BASE PROPOSED TO BE PLACED, AND DUMP IT ON THE END OF THE PRECEDING SPREAD. HAULING ON SUBGRADE TO DUMP CRUSHED CONCRETE BASE WILL BE PERMITTED ONLY WHEN, IN THE ENGINEER'S OPINION, THESE OPERATIONS WILL NOT BE DETRIMENTAL TO THE BASE AND SUBGRADE.

CRUSHED CONCRETE SHALL BE SPREAD UNIFORM WITHOUT SEGREGATION OF FINE OR COARSE MATERIALS. SEGREGATED AREAS SHALL BE REPLACED WITH PROPERLY GRADED CRUSHED CONCRETE AFTER REMOVAL.

THE MINIMUM THICKNESS OF THE CRUSHED CONCRETE BASE SHALL BE INDICATED ON THE PLANS. WHEN THE SPECIFIED COMPACTED THICKNESS OF THE CRUSHED CONCRETE BASE IS GREATER THAN SIX INCHES, CONSTRUCT THE BASE IN MULTIPLE COURSES OF EQUAL THICKNESS. INDIVIDUAL COURSES SHALL NOT BE LESS THAN THREE INCHES. PLACE CRUSHED CONCRETE MATERIAL TO ENSURE THE TOTAL THICKNESS SINGLE SOURCE INTEGRITY AT ANY SECTION LOCATION OF THE BASE.

**COMPACTING, FINISHING AND TESTING REQUIREMENTS**

AFTER SPREADING IS COMPLETED THE CRUSHED CONCRETE SHALL BE UNIFORMLY COMPACTED, WITH WATER BEING ADDED AS REQUIRED TO A DENSITY OF NOT LESS THAN ONE HUNDRED PERCENT (100%) OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99. FINISH FINAL CONSTRUCTION OPERATIONS, IF THE BLAGING OF ANY AREA IS NECESSARY TO OBTAIN THE TRUE GRADE AND CROSS SECTION, FREE OF SCABS AND LAMINATIONS, THE COMPACTING OPERATIONS FOR SUCH AREAS SHALL BE COMPLETED PRIOR TO THE PERFORMANCE OF DENSITY TESTS ON THE FINISHED BASE.

MULTIPLE COURSE BASE: CLEAN THE FIRST COURSE OF FOREIGN MATERIAL, THEN BLADE AND BRING IT TO A SURFACE CROSS-SECTION APPROXIMATELY PARALLEL TO THE FINISHED BASE. BEFORE SPREADING ANY MATERIAL FOR THE UPPER COURSES, OBTAIN DENSITY TESTS FOR THE LOWER COURSES TO DETERMINE THAT THE REQUIRED CONSTRUCTION (NOT LESS THAN ONE HUNDRED PERCENT (100%) OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99) HAS BEEN OBTAINED. AFTER SPREADING THE CRUSHED CONCRETE FOR THE TOP COURSE, FINISH AND SHAPE ITS SURFACE TO PRODUCE THE REQUIRED GRADE AND CROSS-SECTION, FREE OF SCABS AND LAMINATIONS, AFTER CONSTRUCTION.

THE MINIMUM DENSITY SHALL BE ACCEPTED AT ANY LOCATION OUTSIDE THE TRAVELED ROADWAY SUCH AS INTERSECTIONS, CROSSOVERS, TURNOUTS, ETC. SHALL BE 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99.

**TESTING OF BASE COURSE**

THE MINIMUM FREQUENCY OF SAMPLING AND TESTING OF CRUSHED CONCRETE MATERIAL, LAB DENSITY, FIELD DENSITY AND THICKNESS SHALL ACCORD TO THE FREQUENCY OF TESTING FOR LIMEROCK BASE IN THE MOST CURRENT EDITION OF "PASCO COUNTY ENGINEERING SERVICES DEPARTMENT TESTING SPECIFICATIONS FOR CONSTRUCTION OF ROADS, STORM DRAINAGE AND UTILITIES". ONE POINT SIEVE DESIGN, ONE POINT GRADATION TEST FOR SEVE ANALYSIS OF FINE AND COARSE AGGREGATES (AASHTO T-27) (FM-1032) INCLUDING A PLASTICITY INDEX (FM-709) (AASHTO T-96) FROM THE APPROVED SOURCE SHALL BE SUBMITTED AT ONE PER CENT OF THE ROADWAY LENGTH, ONE ROADWAY FIELD TEST FOR SEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C-136) SHALL BE SUBMITTED PER 500 FEET OF ROADWAY PER MILE DESIGN, MINIMUM ONE PER ROAD.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING PERFORMED IN CONNECTION WITH CONSTRUCTION OF THE BASE.

**CORRECTION OF DEFECTS**

ALL SEGREGATED AREAS OF FINE OR COARSE CRUSHED CONCRETE SHALL BE REMOVED AND REPLACED WITH PROPERLY GRADED RECLAIMED CONCRETE AGGREGATE BASE MATERIAL. ALL DEFECTS OF MATERIALS AND CONSTRUCTION SHALL BE CORRECTED BY THE CONTRACTOR, AT HIS EXPENSE, AND TO THE SATISFACTION OF THE COUNTY ENGINEER.

**PRIMING AND MAINTENANCE**

APPLY THE PRIME COAT ONLY WHEN THE BASE MEETS THE SPECIFIED DENSITY REQUIREMENTS AND WHEN THE MOISTURE CONTENT, AT THE TIME OF PRIMING, MEETS THE BASE SPECIFICATIONS AND IN SUCH CONDITION THAT NO EXCESSIVE DISTURBANCE WILL OCCUR. MAINTAIN THE TRUE CROWN AND TEMPLATE, WITH NO KUTTING OR DISTURBANCE, WHILE APPLYING THE SURFACE COURSE.

EMBANKMENT MATERIAL UNDER CRUSHED CONCRETE PAVEMENT SHALL BE PER FOOT INDEX NO. 105.

**PASCO COUNTY TESTING SPECIFICATIONS ON CRUSHED CONCRETE BASE**

TESTS FOR BASE THICKNESS, AND DENSITY SHALL BE LOCATED NO MORE THAN THREE HUNDRED (300) FEET APART AND SHALL BE STAGGERED TO THE LEFT, RIGHT, AND ON THE CENTERLINE OF ROADWAYS. THERE SHALL BE NO LESS THAN ONE (1) TEST PER STREET BEARING VALUE, GRADATION AND FIELD TEST FOR SEVE ANALYSIS OF FINE AND COARSE AGGREGATES (ASTM C-136) SHALL BE SUBMITTED PER 500 FEET OF ROADWAY PER MILE DESIGN, MINIMUM ONE PER ROAD.

EXAMPLE: A SEVEN HUNDRED FEET ROAD WOULD REQUIRE TWO FIELD USE AND GRADATION TESTS, THREE FIELD DENSITY AND THICKNESS TESTS ALONG WITH THE APPROPRIATE LAB TESTING.

NOTE: NO DEVIATIONS TO THIS DETAIL WILL BE PERMITTED UNLESS APPROVED BY THE COUNTY ENGINEER. ANY PROPOSED ALTERATIONS SHALL BE CLEARLY IDENTIFIED AND HIGHLIGHTED ON DETAIL.

**PASCO COUNTY CRUSHED CONCRETE BASE SPECIFICATIONS**

THE WORK SPECIFIED UNDER THIS SECTION CONSISTS OF THE CONSTRUCTION OF ROADWAY BASE UTILIZING CRUSHED CONCRETE (RECLAIMED CONCRETE AGGREGATE BASE MATERIAL) ON A PREPARED STABILIZED SUBGRADE OF LBR 40 WITH A DENSITY OF 98% OF THE MODIFIED PROCTOR MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99. METHOD OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LINES, GRADATIONS AND TYPICAL CROSS SECTIONS SHOWN IN THE PLANS, AND AS DIRECTED BY THE COUNTY ENGINEER.

THE CONSTRUCTION OF CRUSHED CONCRETE BASE SHALL CONFORM TO THE REQUIREMENTS OF THIS SECTION, OR, IN LIEU THEREOF, SUCH REQUIREMENTS AS MAY BE ESTABLISHED BY THE COUNTY ENGINEER DURING CONSTRUCTION. THE COUNTY ENGINEER SHALL HAVE FULL AUTHORITY TO MODIFY THE PROVISIONS OF THIS SECTION AS DEEMED NECESSARY, IN HIS OPINION, TO MEET FIELD CONDITIONS AND REQUIREMENTS.

**MATERIALS**

CRUSHED CONCRETE MUST BE PRODUCED FROM A SOURCE APPROVED BY FLORIDA DEPARTMENT OF TRANSPORTATION OR THE COUNTY ENGINEER. THE SUPPLIER SHALL HAVE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) PERMIT REQUIREMENTS SECTION 620.700.000 BE QUALIFIED AS A CLEAN DEBRIS SOURCE UNDER DEP RULES. THE RECLAIMED CONCRETE AGGREGATE BASE SHALL CONSIST OF CRUSHED CONCRETE MATERIAL DERIVED FROM THE CRUSHING OF HARD PORTLAND CEMENT CONCRETE.

**COMPOSITION**

BASE MATERIAL SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEN SIZE	PERCENT BY WEIGHT PASSING
2 INCH	100
3/4 INCH	65 TO 95
3/8 INCH	40 TO 85
No. 4	25 TO 65
No. 10	20 TO 50
No. 50	5 TO 25
No. 100	0 TO 10

CRUSHED CONCRETE BASE SHALL NOT CONTAIN PLASTIC SUBSIDIARY THAT NO. 40 SIEVE MATERIAL SHALL BE NON-PLASTIC. LIQUID LIMIT (AS DETERMINED BY AASHTO T-90) SHALL BE 25 PER MATERIAL TYPE.

THE FINISHED IN PLACE CRUSHED CONCRETE BASE LIMEROCK BEARING RATIO SHALL HAVE A MINIMUM (LBR) OF 150.

CRUSHED CONCRETE BASE SHALL BE FREE OF ALL MATERIALS THAT FALL UNDER THE CATEGORY OF SOLID WASTE OR HAZARDOUS MATERIALS AS DEFINED BY THE STATE OR LOCAL JURISDICTION AND SHALL MEET ALL DEP PERMIT REQUIREMENTS WHICH PRELUD TO CONSTRUCTION, CONSTRUCTION AND RECORDING OF THESE MATERIALS. CRUSHED CONCRETE BASE SHALL BE ASBESTOS FREE. THE FOLLOWING LIMITS SHALL NOT BE EXCEEDED:

BITUMINOUS CONCRETE	0.1% BY WEIGHT
BRICKS	0.1% BY WEIGHT
WOOD AND OTHER ORGANIC SUBSTANCES	0.5% BY WEIGHT
HEAVY METALS (EXCEPT LEAD)	0.1% BY WEIGHT
LEAD	0.05 PARTS PER MILLION
REINFORCED STEEL AND WILLOW WIRE FABRIC	0.1% BY WEIGHT
PLASTER AND GYPSUM BOARD	0.1% BY WEIGHT

THE MATERIAL FOR CRUSHED CONCRETE BASE SHALL CONSIST ONLY OF CRUSHED CONCRETE PAVEMENT AND SUCH ADDITIVE MATERIAL AS MAY BE APPROVED BY THE COUNTY ENGINEER FOR THE PURPOSE OF FACILITATING CONSTRUCTION AND ACHIEVING THE DESIRED CHARACTERISTICS OF THE FINISHED PAVED PRODUCT. APPROVAL FROM THE COUNTY ENGINEER IS REQUIRED BEFORE PLACING MATERIAL FROM MORE THAN ONE SOURCE. ONCE APPROVED, A CHANGE IN THE SOURCE OF BASE MATERIAL SHALL REQUIRE ADDITIONAL ACCEPTANCE TESTING. THE MATERIAL SHALL NOT CONTAIN LUMPS, BALLS OR PIECES OF SAND OR CLAY MATERIAL IN EXCESS OF QUANTITY SUFFICIENT TO BE DETRIMENTAL TO THE PROPER BONDING, FINISHING, STRENGTH OF THE CONCRETE BASE. EXISTING BASE TO BE REMOVED TO CONSTRUCT THE NEW BASE.

**INSPECTION**

SUBGRADE AND BASE INSPECTIONS SHALL BE CONDUCTED BY THE ENGINEER OF RECORD AND THE COUNTY INSPECTOR PRIOR TO SURFACE COURSE CONSTRUCTION.

NOTE: NO DEVIATIONS TO THIS DETAIL WILL BE PERMITTED UNLESS APPROVED BY THE COUNTY ENGINEER. ANY PROPOSED ALTERATIONS SHALL BE CLEARLY IDENTIFIED AND HIGHLIGHTED ON DETAIL.

**SOIL - CEMENT BASE SPECIFICATIONS**

**DESCRIPTION**

CONSTRUCT A BASE COURSE COMPOSED OF A COMBINATION OF SOIL, PORTLAND CEMENT, AND WATER.

**MATERIALS**

MEET THE FOLLOWING REQUIREMENTS:

CEMENT: PORTLAND CEMENT, TYPE I, II, III, OR TYPE I-P OR TYPE I-S.....SECTION 921

WATER: USE WATER THAT IS FREE FROM SUBSTANCES DELETERIOUS TO HARDENING OF THE SOIL-CEMENT MORTAR.....916-4

USE EMULSIFIED ASPHALT GRADE SS, RS, OR MS AS APPROVED BY THE ENGINEER. DILUTE THESE AS RECOMMENDED BY MANUFACTURER.

SOIL: FOR BASE COURSE CONSTRUCTION, USE EITHER THE MATERIAL EXISTING IN THE LOCATION TO BE OCCUPIED BY BASE, A SUITABLY FRAGILE MATERIAL FURNISHED BY THE CONTRACTOR, OR A COMBINATION OF THESE; IF THE MATERIAL EXISTING IN THE LOCATION TO BE OCCUPIED BY THE BASE DOES NOT MEET THE REQUIREMENTS SPECIFIED BELOW, REMOVE AND REPLACE WITH SUITABLE SOIL.

OBTAIN APPROVAL OF THE MATERIAL PITS PRIOR TO USE. EXCAVATE MATERIAL PITS TO ACHIEVE A UNIFORMLY MIXED MATERIAL WITH REASONABLY CONSISTENT CHARACTERISTICS. BLEND STRATA OR DIFFERING MATERIALS IN ACCORDANCE WITH A PROCEDURE APPROVED BY THE ENGINEER. THE COUNTY WILL CONSIDER PROPOSED RECYCLED MATERIALS ON A CASE BY CASE BASIS.

**SPECIFIC REQUIREMENTS FOR SOIL:**

ORGANIC MATERIAL (AS PER FM 1-1267)	MAXIMUM 5%
TOTAL CLAY AND SILT CONTENT (MINUS NO. 200 [75 µ] SIEVE) (AS PER FM 1-1088, NO HYDROMETER TEST)	MAXIMUM 20%
PLASTIC INDEX (AS PER FM 1-1089)	MAXIMUM 10%
LIQUID LIMIT (AS PER FM 1-1089)	MAXIMUM 25%
PASSING 2 INCH [50 MM] SIEVE	MINIMUM 100%
PASSING NO. 4 [4.75 MM] SIEVE	MINIMUM 85%
PASSING NO. 10 [2.00 MM] SIEVE	MINIMUM 37%
(AS PER FM 1-1088)	

AS AN EXCEPTION TO THE ABOVE REQUIREMENTS, THE CONTRACTOR MAY USE ANY MATERIAL MEETING THE REQUIREMENTS FOR LIMEROCK.

NOTE: NO DEVIATIONS TO THIS DETAIL WILL BE PERMITTED UNLESS APPROVED BY THE COUNTY ENGINEER. ANY PROPOSED ALTERATIONS SHALL BE CLEARLY IDENTIFIED AND HIGHLIGHTED ON DETAIL.

**PROPOSED COLLECTOR ROADWAY DESIGN**

MIN STR. # REQUIRED FOR COLLECTOR ROADS = 3.7  
\* PER PASCO COUNTY LDC SECTION 610.3

LAYER COEFFICIENTS	THICKNESS
0.44 - TYPE FC-12.5 FRICTION COURSE	1.5"
0.44 - TYPE SP-12.5 ASPHALT SURFACE COURSE	2.00"
0.15 - SOIL CEMENT BASE COURSE	11.5"
0.04 - COMPACTED SUBGRADE (98% MOD. PROCTOR)	12"

SN = (0.44 x 1.5) + (0.44 x 2.00) + (0.15 x 11.5) + (0.04 x 12) = 3.75  
SN SN<sub>n</sub>  
3.75 ≥ 3.70

**ALTERNATE COLLECTOR ROADWAY DESIGN**

MIN STR. # REQUIRED FOR COLLECTOR ROADS = 3.7  
\* PER PASCO COUNTY LDC SECTION 610.3

LAYER COEFFICIENTS	THICKNESS
0.44 - TYPE FC-12.5 FRICTION COURSE	1.5"
0.44 - TYPE SP-12.5 ASPHALT SURFACE COURSE	2.00"
0.15 - CRUSHED CONCRETE BASE COURSE (LBR 150)	8"
0.08 - STABILIZED SUBGRADE (12" MIN.)	12"

SN = (0.44 x 1.5) + (0.44 x 2.00) + (0.15 x 8) + (0.08 x 12) = 3.70  
SN SN<sub>n</sub>  
3.70 ≥ 3.70

**PROPOSED LOCAL ROADWAY DESIGN**

MIN STR. # REQUIRED FOR RESIDENTIAL ROADS = 2.34  
\* PER PASCO COUNTY LDC SECTION 610.3

LAYER COEFFICIENTS	THICKNESS
0.44 - TYPE SP-12.5 ASPHALT SURFACE COURSE	1.75"
0.15 - SOIL CEMENT BASE COURSE	7.5"
0.04 - COMPACTED SUBGRADE (98% MOD. PROCTOR)	12"

SN = (0.44 x 1.75) + (0.15 x 7.5) + (0.04 x 12) = 2.38  
SN SN<sub>n</sub>  
2.38 ≥ 2.34

**ALTERNATE ROADWAY DESIGN**

MIN STR. # REQUIRED FOR RESIDENTIAL ROADS = 2.34  
\* PER PASCO COUNTY LDC SECTION 610.3

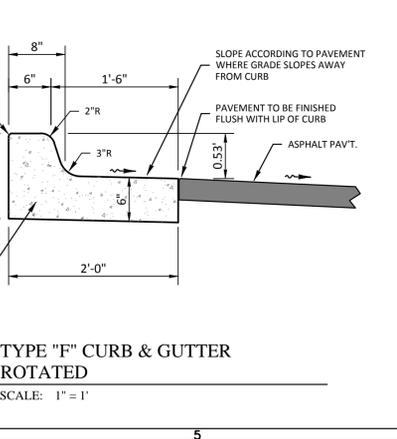
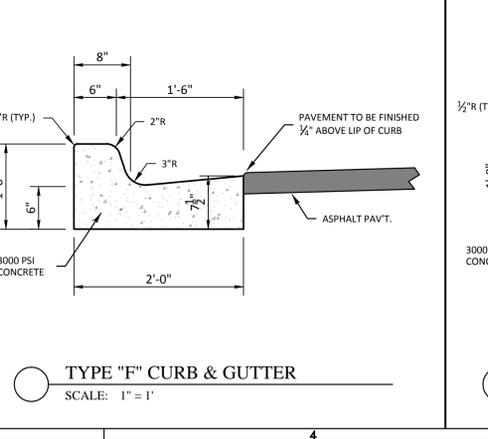
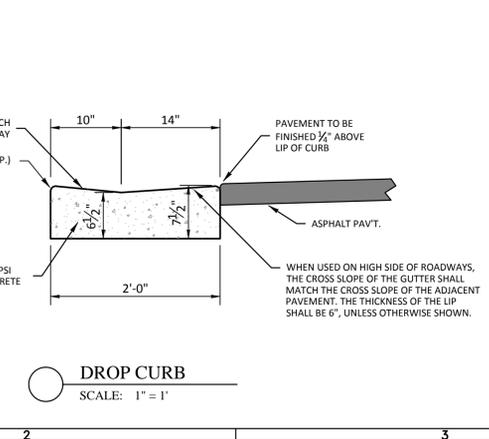
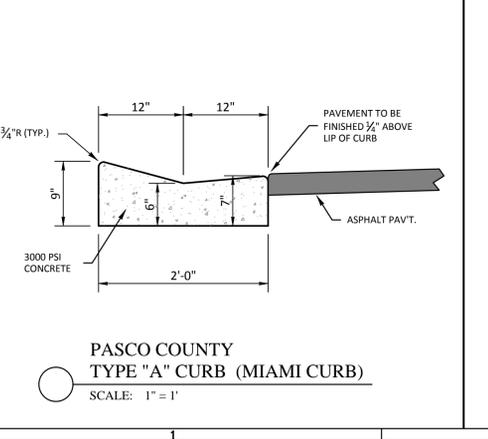
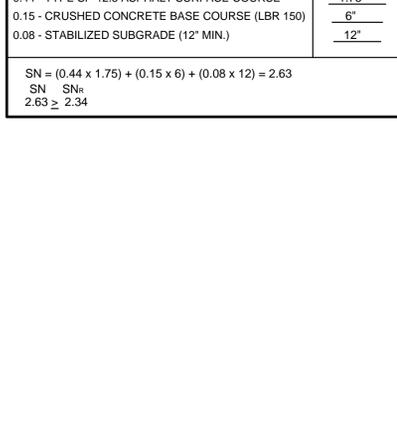
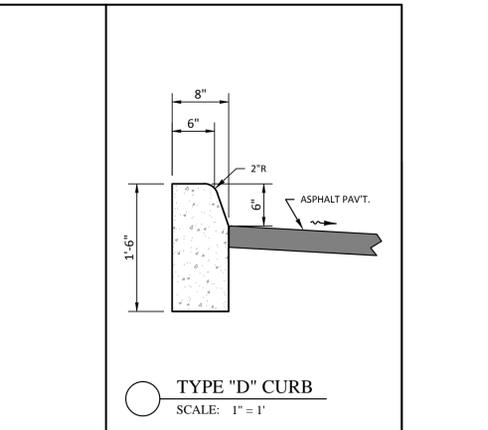
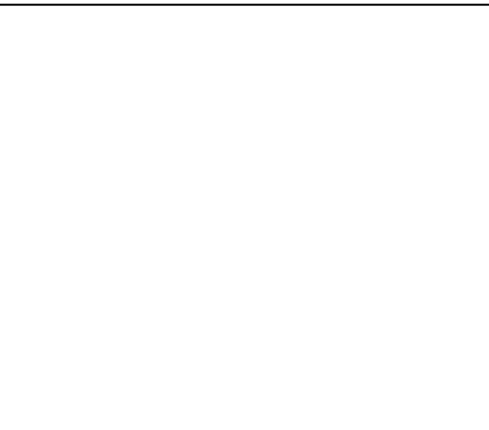
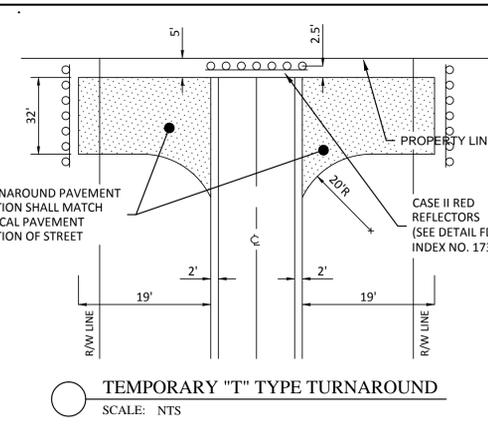
LAYER COEFFICIENTS	THICKNESS
0.44 - TYPE SP-12.5 ASPHALT SURFACE COURSE	1.75"
0.15 - CRUSHED CONCRETE BASE COURSE (LBR 150)	6"
0.08 - STABILIZED SUBGRADE (12" MIN.)	12"

SN = (0.44 x 1.75) + (0.15 x 6) + (0.08 x 12) = 2.63  
SN SN<sub>n</sub>  
2.63 ≥ 2.34

- PAVEMENT CONSTRUCTION NOTES: SOIL-CEMENT BASE**
- SOIL-CEMENT MIX DESIGN SHALL BE PROVIDED A MINIMUM 30 DAYS IN ADVANCE OF PLACEMENT OF BASE MATERIAL FOR APPROVAL BY THE ENGINEER. THE SOIL-CEMENT PRODUCT SHALL BE IN ACCORDANCE WITH PCA STANDARDS.
  - SOIL-CEMENT SURFACE SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO ANY PAVING OPERATION.
  - SUBGRADE FOR SOIL-CEMENT SHALL BE PREPARED IN ACCORDANCE WITH FDOT INDEX NO. 505, LATEST EDITION. EMBANKMENT FILLS OR NATURAL SANDS TO 24 INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE (IF NO STABILIZED SUBGRADE), OR TO 24 INCHES BELOW THE BOTTOM OF STABILIZED SUBGRADE, SHALL BE SANDY SOILS (A-3 OR SP/SP-SM) WITH TYPICALLY 15% FINES OR LESS PASSING THE NO. 200 SIEVE.
  - SUBGRADE UNDER A SOIL-CEMENT BASE SHALL BE PROOF-ROLLED TO GRADE, AS DIRECTED BY THE ENGINEER AND APPROVED BY THE ENGINEER WITH SUITABLE COMPACTION EQUIPMENT TO ACHIEVE A DENSITY OF NINETY-EIGHT (98%) PERCENT MODIFIED PROCTOR FOR A DEPTH OF TWELVE (12) INCHES PRIOR TO PLACING SOIL-CEMENT BASE.
  - SUBGRADE UNDER SOIL-CEMENT BASE SHALL NOT BE STABILIZED UNLESS OTHERWISE DIRECTED BY ENGINEER OF RECORD.

- ALTERNATE CRUSHED CONCRETE BASE MATERIAL**
- PAVEMENT WEARING SURFACE SHALL BE ASPHALTIC CONCRETE OF TYPE AND THICKNESS SHOWN IN DETAIL AND SHALL MEET CURRENT DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
  - PAVEMENT BASE SHALL BE CRUSHED CONCRETE, AS DESIGNATED IN PLANS, AND SHALL BE COMPACTED TO A MINIMUM THICKNESS AS SHOWN.
  - CRUSHED CONCRETE ROAD BASE MATERIAL SHALL BE OF UNIFORM QUALITY, FREE OF ALL ORGANICS, STEEL REBAR, ASPHALT DEBRIS, AND ANY OTHER DELETERIOUS MATERIALS.
  - CRUSHED CONCRETE ROAD BASE MATERIAL SHALL GENERALLY CONFORM TO THE GRADATION CHART FOR GRADED AGGREGATE BASE, FDOT SECTION 204 AND 90L, TESTED AT A FREQUENCY REQUIRED BY THE GOVERNING AGENCY HAVING JURISDICTION. IN ADDITION, CRUSHED CONCRETE SHALL CONFORM TO THE APPLICABLE SPECIFICATION CONTAINED WITHIN PASCO COUNTY DESIGN STANDARDS, "CRUSHED CONCRETE BASE SPECIFICATION - INDEX 104."
  - CRUSHED CONCRETE ROAD BASE MATERIAL SHALL HAVE A MINIMUM COMPACTED DRY DENSITY OF 114.0 PCF (PER AASHTO T-180), AND A MINIMUM LIMEROCK BEARING RATIO (LBR) OF 150 (UNDER-TOLERANCE +/- 5%), TESTED AT A FREQUENCY REQUIRED BY THE GOVERNING AGENCY HAVING JURISDICTION, OR IN THE ABSENCE THEREOF, BY MINIMUM FDOT STANDARDS.
  - BASE SINGLE-COURSE LIFTS SHALL NOT EXCEED 6 INCHES (COMPACTED, 8 INCHES LOOSE).
  - CRUSHED CONCRETE ROAD BASE SHALL BE COMPACTED TO A MINIMUM OF 100% OF MODIFIED PROCTOR PER AASHTO T-180, TESTED AT A FREQUENCY REQUIRED BY THE GOVERNING AGENCY HAVING JURISDICTION, OR IN THE ABSENCE THEREOF, BY MINIMUM FDOT STANDARDS.
  - CRUSHED CONCRETE BASE SHALL HAVE A 12-INCH THICK STABILIZED SUBGRADE, TYPE "B" STABILIZATION IN ACCORDANCE WITH FDOT SECTION 160 AND SHALL HAVE A MINIMUM LIMEROCK BEARING RATION (LBR) OF 40 OR GREATER. SUBGRADE SHALL BE COMPACTED TO THE MINIMUM THICKNESS AS SHOWN. SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 98% MODIFIED PROCTOR PER AASHTO T-180.
  - COMPACTED SUBGRADE (BENEATH STABILIZED SUBGRADE, IF REQUIRED, OR BENEATH BASE MATERIALS) SHALL BE PREPARED IN ACCORDANCE WITH FDOT INDEX 505, LATEST EDITION. EMBANKMENT FILLS OR NATURAL SANDS TO 24 INCHES BELOW THE BOTTOM OF THE PAVEMENT BASE (IF NO STABILIZED SUBGRADE), OR TO 24 INCHES BELOW THE BOTTOM OF STABILIZED SUBGRADE, SHALL BE SANDY SOILS (A-3 OR SP/SP-SM) WITH TYPICALLY 15% FINES OR LESS PASSING THE NO. 200 SIEVE.
  - ALL CURBS AND GUTTERS SHALL BE PLACED ON A FOUNDATION OF TYPE "B" STABILIZED SUBGRADE WITH A MINIMUM LBR VALUE OF 40 (OR A MINIMUM FBV OF 75) WHICH HAS BEEN COMPACTED TO A MINIMUM DENSITY OF NINETY-EIGHT PERCENT (98%) OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 FOR A MINIMUM DEPTH OF TWELVE (12) INCHES.
  - ALL PORTLAND CEMENT CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
  - ROADWAY UNDERDRAIN HAS BEEN LOCATED ON THESE PLANS TO ENSURE ADEQUATE BASE PROTECTION. PRIOR TO CURB CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHALL REVIEW THE PREDESIGN BORINGS AND, ALONG WITH THEIR FIELD INSPECTION, MAKE A RECOMMENDATION REGARDING ADDITIONAL UNDERDRAIN REQUIREMENTS.
  - SHOULD NO UNDERDRAIN BE SPECIFIED ON THE PLANS, THE CONTRACTOR SHALL INCLUDE 1,000 LINEAR FEET OF UNDERDRAIN AT UNIT PRICES FOR BID PURPOSES.
  - ALL TESTING REFERENCED ABOVE SHALL, AT A MINIMUM, BE AT THE FREQUENCY REQUIRED BY THE GOVERNING AGENCY HAVING JURISDICTION, OR IN THE ABSENCE THEREOF, BY MINIMUM FDOT STANDARDS.

Contractor may propose alternate pavement designs. Contractor shall submit any pavement alternatives to Engineer for approval prior to final subgrade preparations.



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Fax: 813-664-7629  
www.HeidtDesign.com

**STARKEY RANCH VILLAGE 2**  
**PHASE 1A**  
**TYPICAL ROADWAY SECTIONS**

PREPARED FOR: **GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	02/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: RS  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

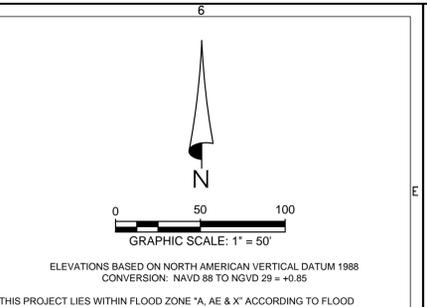
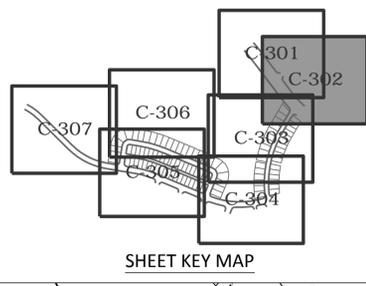
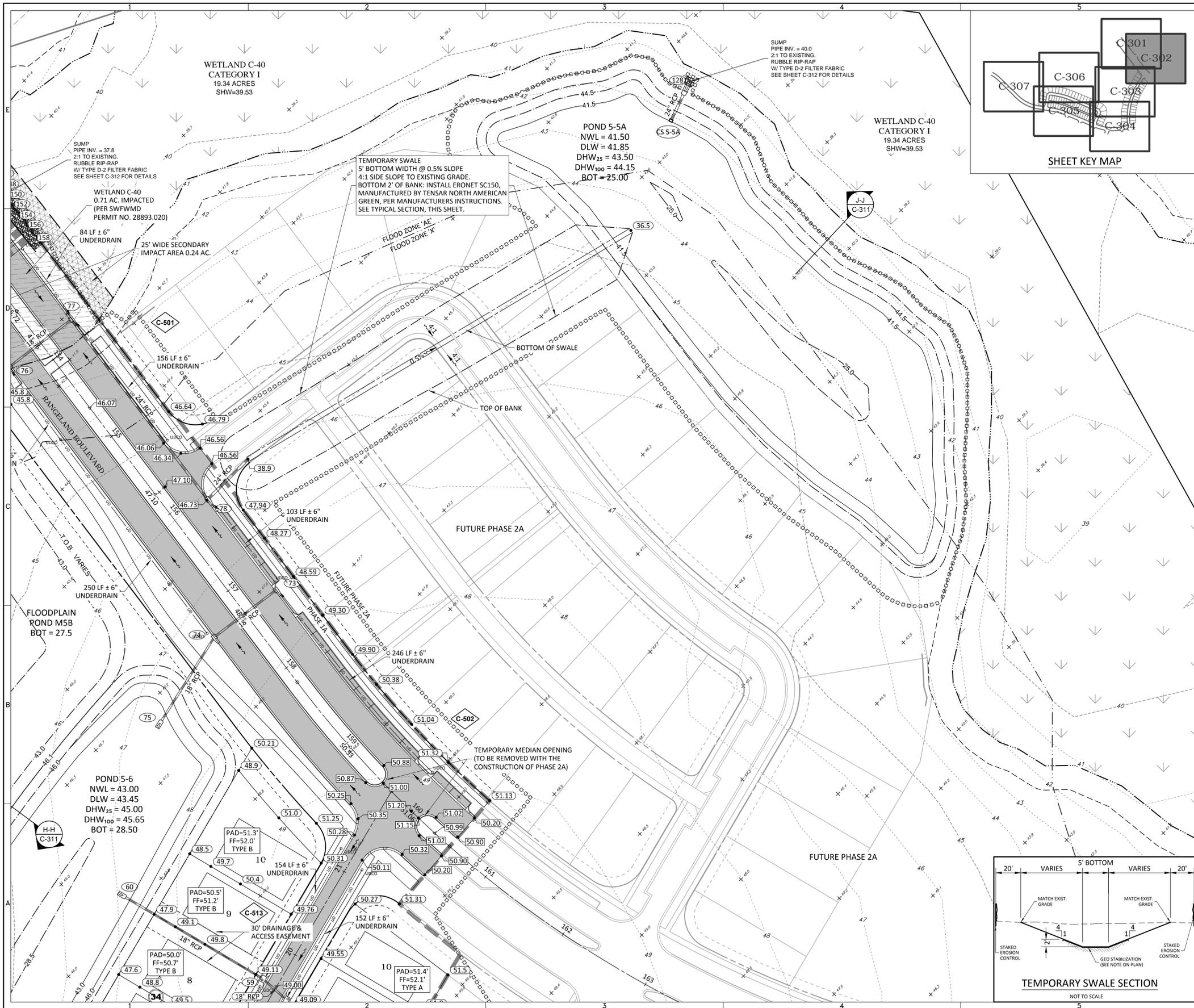
FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-205**

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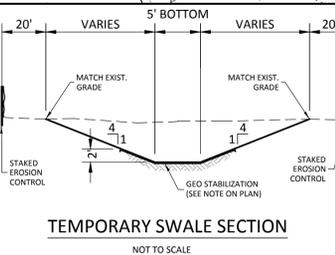
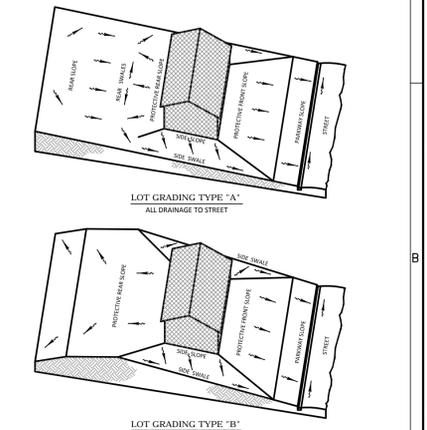




ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION: NAVD 88 TO NGVD 29 = +0.85

**DRAINAGE LEGEND**

EXISTING	PROPOSED	DESCRIPTION
		STORM DRAINAGE STRUCTURE & PIPE
		STRUCTURE NO.
		CONTROL STRUCTURE NO.
		SPOT ELEVATION GROUND
		SPOT ELEVATION PAVEMENT
		TOP OF WALL
		BOTTOM OF WALL
		ROADWAY PROFILE ELEVATION
		CONTOUR
		FINISH FLOOR ELEVATION
		DIRECTION OF SURFACE FLOW
		UNDERDRAIN WITH CLEANOUT
		STACKED EROSION CONTROL (SWFMD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
		BOTTOM OF POND/TOP OF BANK OF POND
		WETLAND LINE (EPCWL)
		WETLAND CONS. AREA SETBACK (WCAS)
		FEMA FLOOD LINE
		RIGHT-OF-WAY LINE
		PLAN & PROFILE SHEET NUMBER
		SECTION ID LABEL
		SECTION SHEET NUMBER



**NEIGHBORHOOD GRADING PLAN NOTES:**

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www.HeidtDesign.com

**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GRADING & DRAINAGE PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

DATE	DESCRIPTION
01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: GD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS  
FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 62171  
**C-302**

Engineering Business Certificate of Authorization No. 28792  
 Landscape Architecture Certificate of Authorization No. LC26000405  
 STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING DWG-C-302 20160120 4:10 PM MARK JONES





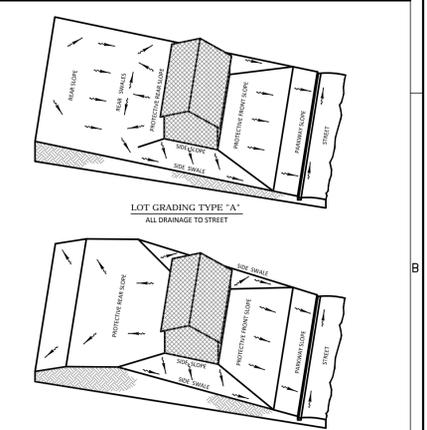
GRAPHIC SCALE: 1" = 50'

ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION: NAVD 88 TO NGVD 29 = +0.85

THIS PROJECT LIES WITHIN FLOOD ZONE 'A', 'AE' & 'X' ACCORDING TO FLOOD INSURANCE RATE MAPS FOR PASCO COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12101C03808 DATED SEPTEMBER 26, 2014 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. BASE FLOOD ELEVATION VARIES FROM 43 TO 44' IN AE ZONE.

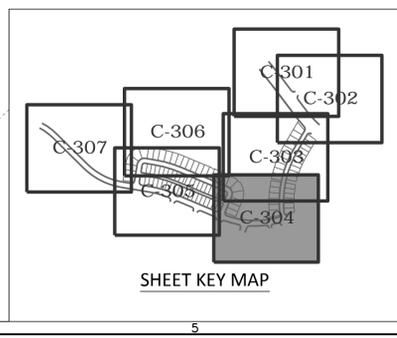
**DRAINAGE LEGEND**

EXISTING	PROPOSED	DESCRIPTION
10	10	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 BOTTOM OF WALL
	15.00	ROADWAY PROFILE ELEVATION
	15.00	CONTOUR
	FF=15.00	FINISH FLOOR ELEVATION
		DIRECTION OF SURFACE FLOW
		UNDERDRAIN WITH CLEANOUT
		STAKED EROSION CONTROL (SWFWD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
		BOTTOM OF POND/TOP OF BANK OF POND
		WETLAND LINE (EPCWL)
		WETLAND CONS. AREA SETBACK (WCAS)
		FEMA FLOOD LINE
		RIGHT-OF-WAY LINE
	C-505	PLAN & PROFILE SHEET NUMBER
	B	SECTION ID LABEL
	3	SECTION SHEET NUMBER



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Landscape Architecture Certificate of Authorization No. LC26000005  
REGISTERED PROFESSIONAL ENGINEER

**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GRADING & DRAINAGE PLAN**

PREPARED FOR: GENTRY LAND COMPANY

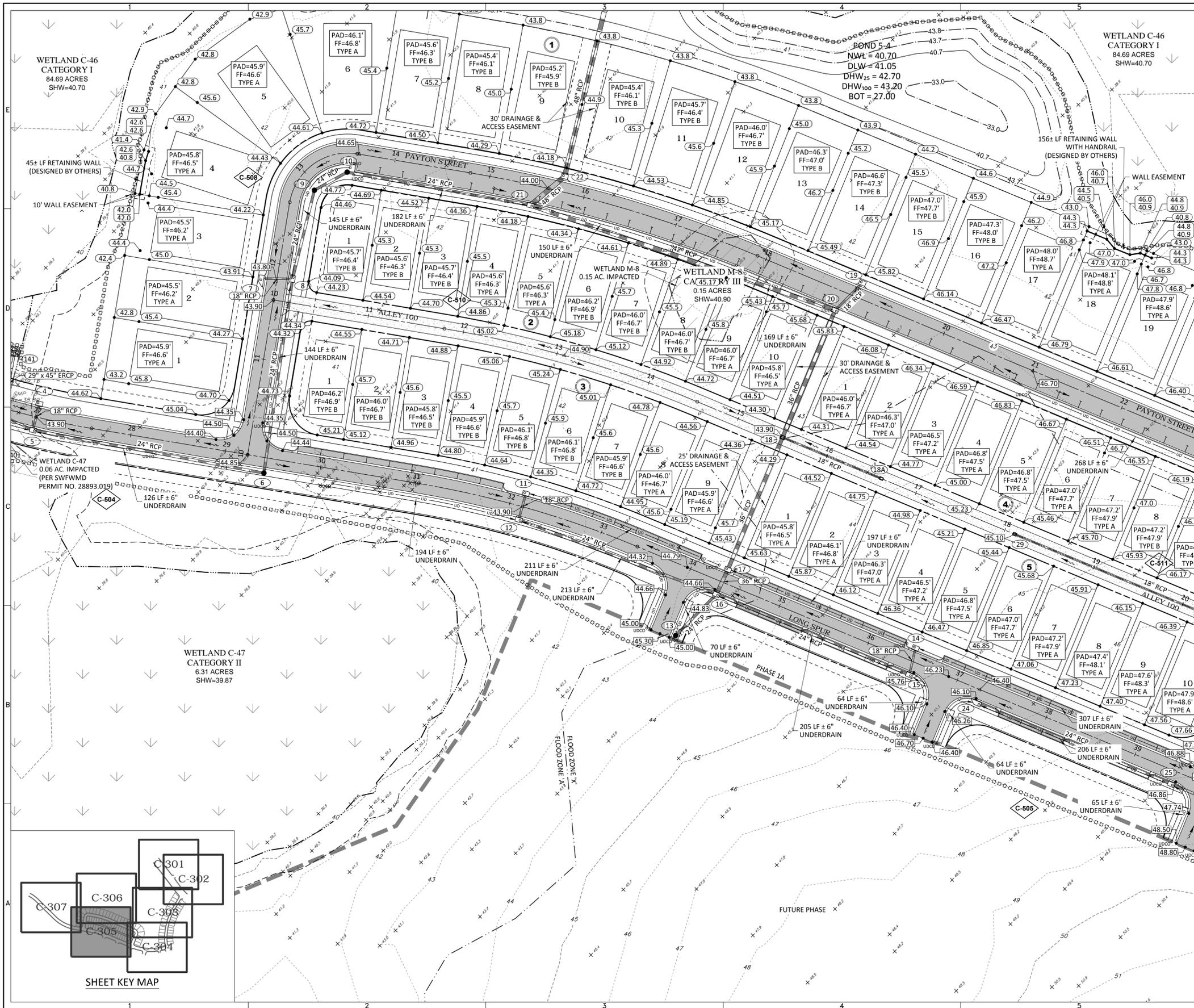
NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: GD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-304**



WETLAND C-46  
CATEGORY I  
84.69 ACRES  
SHW=40.70

WETLAND C-47  
CATEGORY II  
6.31 ACRES  
SHW=39.87

WETLAND M-8  
0.15 AC. IMPACTED  
CA 45.17 RY III  
SHW=40.90

POND 5-4  
NLWL = 40.70  
DLW = 41.05  
DHW<sub>25</sub> = 42.70  
DHW<sub>100</sub> = 43.20  
BOT = 27.00

156± LF RETAINING WALL WITH HANDRAIL (DESIGNED BY OTHERS)

WALL EASEMENT

30' DRAINAGE & ACCESS EASEMENT

25' DRAINAGE & ACCESS EASEMENT

14 PAYTON STREET

11 ALLEY 100

LONG SPUR

PHASE 1A

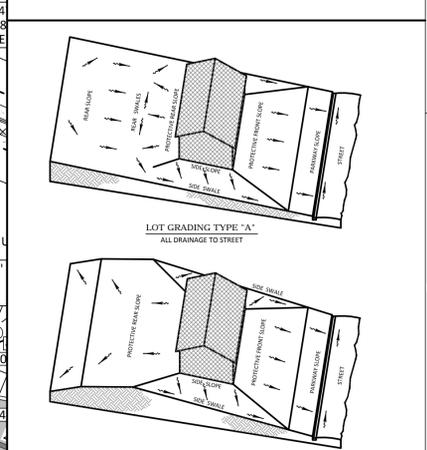
FUTURE PHASE

FLOOD ZONE 'X'

FLOOD ZONE 'A'

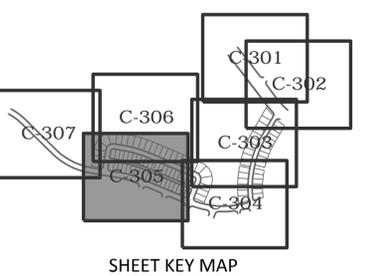
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	15.00	SPOT ELEVATION PAVEMENT
	60.2 58.9	TOP OF WALL BOTTOM OF WALL
	15.00	ROADWAY PROFILE ELEVATION
	15.00	CONTOUR
	FF=15.00	FINISH FLOOR ELEVATION
	→	DIRECTION OF SURFACE FLOW
	→ UDCO	UNDERDRAIN WITH CLEANOUT
	□□□□□□	STAKED EROSION CONTROL (SWFWD PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
	---	BOTTOM OF POND/TOP OF BANK OF POND
	---	WETLAND LINE (EPCWL)
	---	WETLAND CONS. AREA SETBACK (WCAS)
	---	FEMA FLOOD LINE
	---	RIGHT-OF-WAY LINE
	C-505	PLAN & PROFILE SHEET NUMBER
	B	SECTION ID LABEL
	C-501	SECTION SHEET NUMBER



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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GRADING & DRAINAGE PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

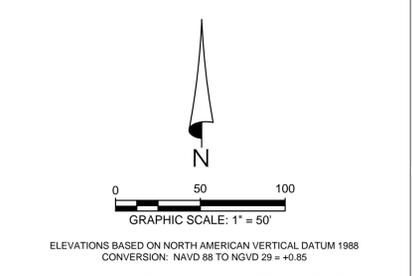
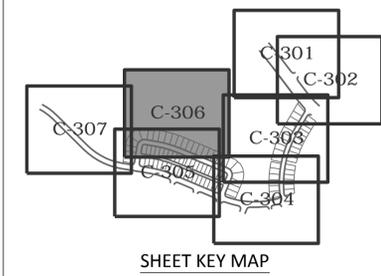
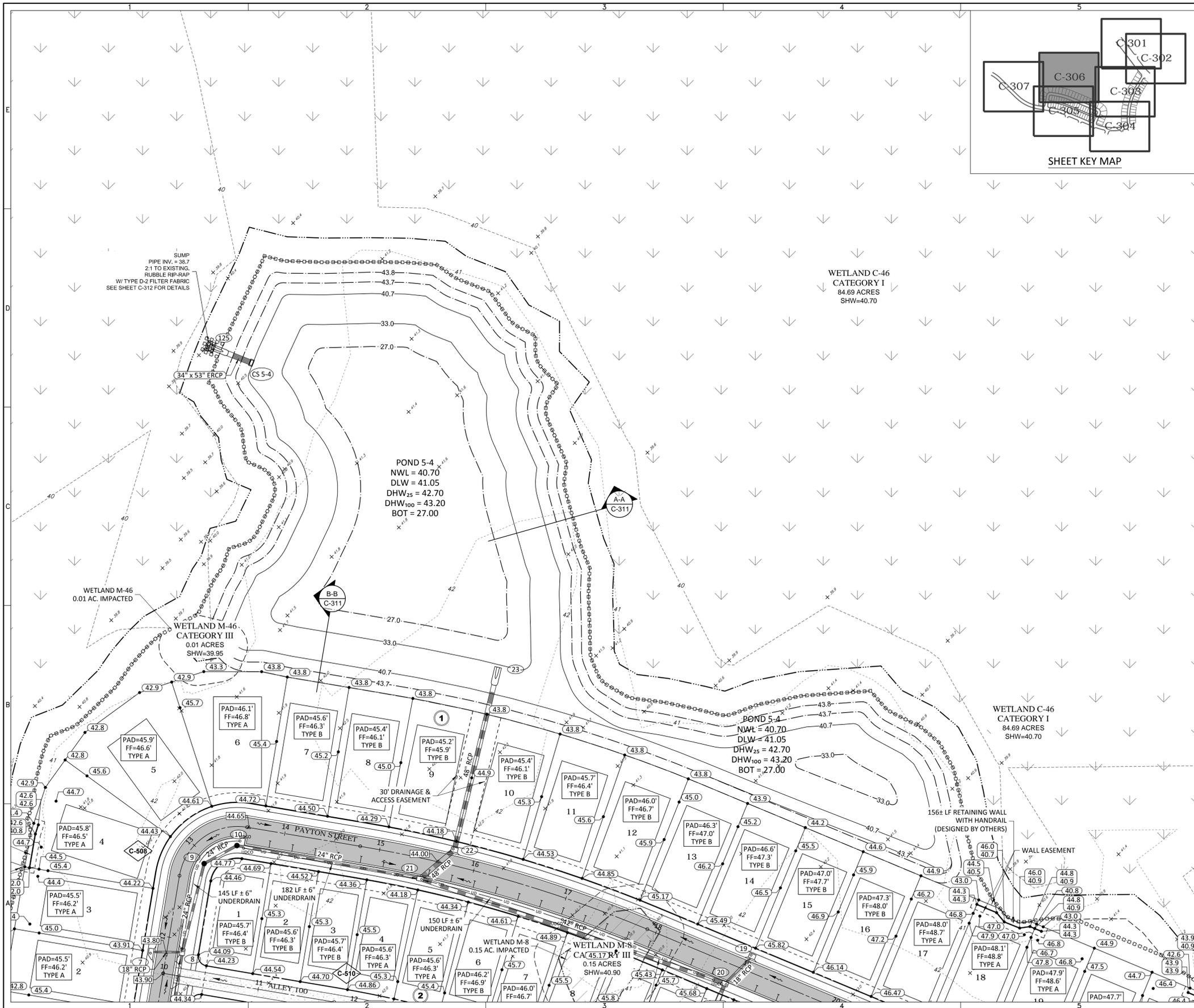
NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: GD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

**FLORIDA PROFESSIONAL ENGINEER**

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 62171

**C-305**

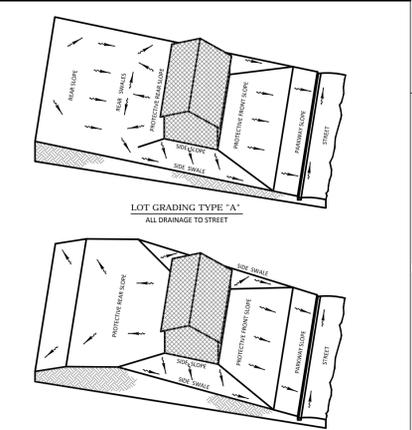


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CONVERSION: NAVD 88 TO NGVD 29 + 0.85

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		STRUCTURE NO.
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		SPOT ELEVATION PAVEMENT
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		BOTTOM OF WALL
		ROADWAY PROFILE ELEVATION
		CONTOUR
		FINISH FLOOR ELEVATION
		DIRECTION OF SURFACE FLOW
		UNDERDRAIN WITH CLEANOUT
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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GRADING & DRAINAGE PLAN**

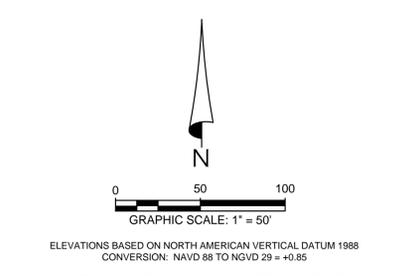
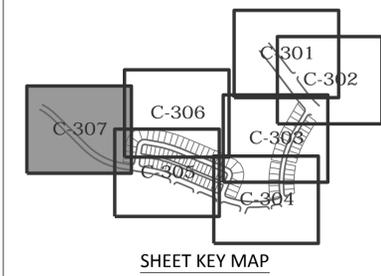
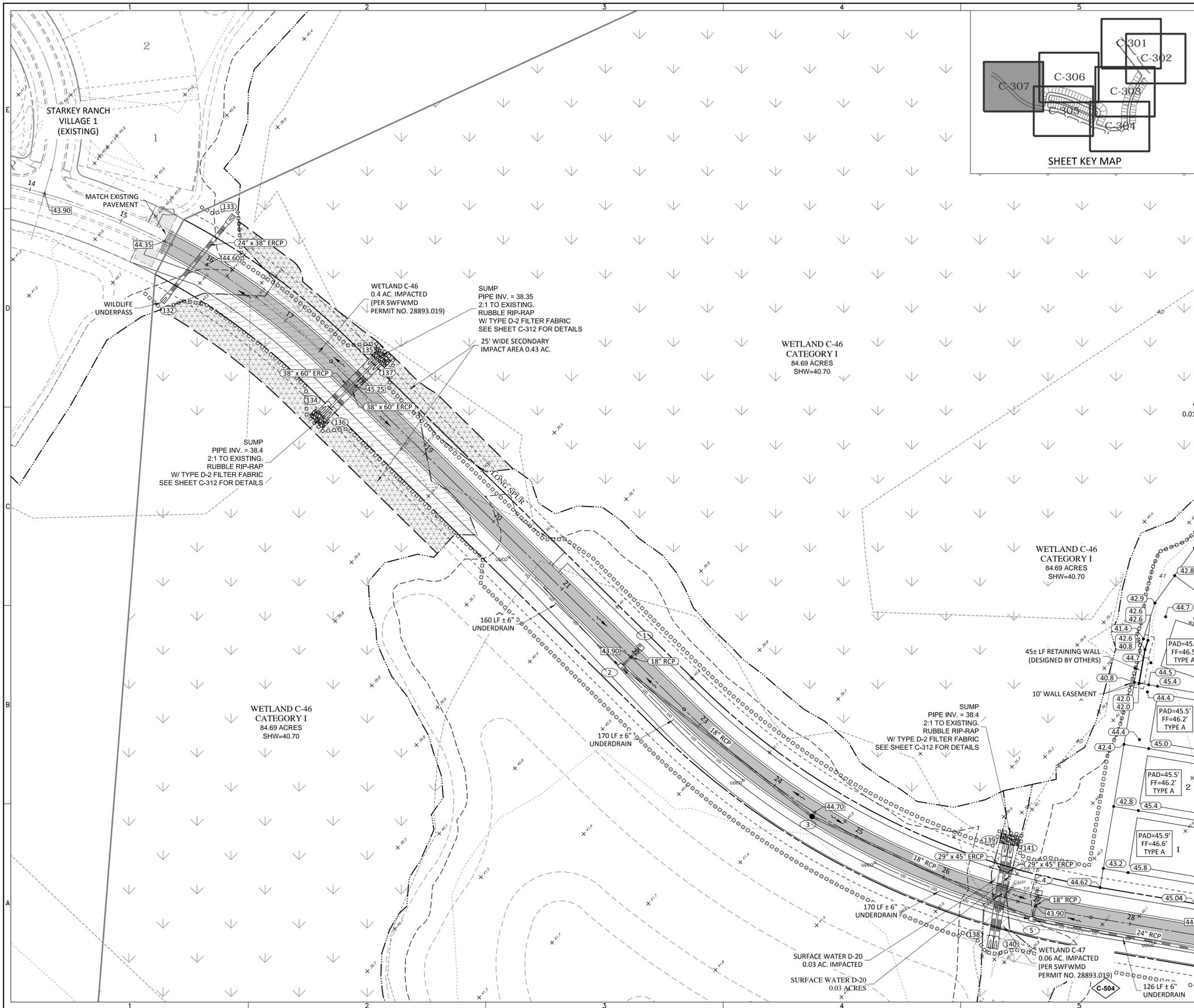
PREPARED FOR: GENTRY LAND COMPANY

DATE	DESCRIPTION

DATE	DESCRIPTION
01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: GD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS  
FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE: 01/21/2016  
REGISTRATION NO. 62171  
**C-306**

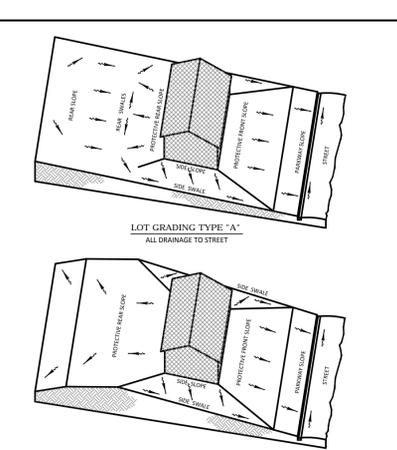
Engineering Business Certificate of Authorization No. 28792  
Landscape Architecture Certificate of Authorization No. LC26000005  
STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING DWG-C-306 01/21/2016 4:10 PM MARK JONES



THIS PROJECT LIES WITHIN FLOOD ZONE 'A, AE & X' ACCORDING TO FLOOD INSURANCE RATE MAPS FOR PASCO COUNTY, FLORIDA, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) - FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 12101C0380F DATED SEPTEMBER 26, 2014 AND ISSUED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. BASE FLOOD ELEVATION VARIES FROM 43 TO 44' IN AE ZONE.

**DRAINAGE LEGEND**

EXISTING	PROPOSED	DESCRIPTION
--- (10) ---	--- (10) ---	STORM DRAINAGE STRUCTURE & PIPE
	--- (10) ---	STRUCTURE NO.
	(C-S-F)	CONTROL STRUCTURE NO.
	(15.00)	SPOT ELEVATION GROUND
	(15.00)	SPOT ELEVATION PAVEMENT
	(60.2 / 58.9)	TOP OF WALL / BOTTOM OF WALL
	15.00	ROADWAY PROFILE ELEVATION
	15.00	CONTOUR
	FF=15.00	FINISH FLOOR ELEVATION
	---	DIRECTION OF SURFACE FLOW
---	---	UNDERDRAIN WITH CLEANOUT
---	---	STAKED EROSION CONTROL (SWFWM PROJECT LIMITS AND THE LIMITS OF CLEARING AND FILLING)
---	---	BOTTOM OF POND/TOP OF BANK OF POND
---	---	WETLAND LINE (EPCWL)
---	---	WETLAND CONS. AREA SETBACK (WCAS)
---	---	FEMA FLOOD LINE
---	---	RIGHT-OF-WAY LINE
	(C-505)	PLAN & PROFILE SHEET NUMBER
	(B / C-501)	SECTION ID LABEL / SECTION SHEET NUMBER



**NEIGHBORHOOD GRADING PLAN NOTES:**

- PAD GRADES 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.
- PAD ELEVATIONS DENOTE FINISH GROUND ELEVATION AT PERIMETER OF BUILDING.
- LOTS MARKED BY AN ASTERISK (\*) 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 ADJUTING TYPE "B" LOTS, ALL RUNOFF SHALL BE DIRECTED TO SIDE YARD SWALES.
- FOR TYPE "B" LOT GRADING ABUTTING TYPE "A" LOT GRADING, ALL REAR LOTS, ALL RUNOFF SHALL BE DIRECTED TO SIDE YARD SWALES.
- FOR TYPE "B" LOT GRADING NOT ABUTTING DETENTION 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%.
- THE MINIMUM HOUSE PAD SIZE = 50' X 80'



**STARKEY RANCH VILLAGE 2  
PHASE 1A  
GRADING & DRAINAGE PLAN**

PREPARED FOR: GENTRY LAND COMPANY

DATE	DESCRIPTION
01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
 FILE: GD  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS  
 FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
 REGISTRATION NO. 52717  
**C-307**

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STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
1	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
2	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
3	TYPE P MANHOLE 4'-0" DIA.	44.55	
4	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
5	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
6	TYPE P MANHOLE 4'-0" DIA.	44.92	
7	TYPE 2 CURB INLET	43.68	
8	TYPE 1 CURB INLET	43.63	
9	TYPE P MANHOLE 4'-0" DIA.	44.31	
10	TYPE P MANHOLE 4'-0" DIA.	44.46	
11	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
12	TYPE 1 CURB INLET	43.95	TYPE 'F' CURB
13	TYPE P MANHOLE 4'-0" DIA.	45.40	FUTURE 24" @ INV. 37.90 (SOUTH)
14	TYPE 1 CURB INLET	46.07	TYPE 'F' CURB
15	TYPE 2 CURB INLET	46.09	TYPE 'F' CURB
16	TYPE 1 CURB INLET	45.01	TYPE J STRUCTURE BOTTOM, TYPE 'F' CURB
17	TYPE 1 CURB INLET	45.04	TYPE J STRUCTURE BOTTOM, TYPE 'F' CURB
18	TYPE D GRATE INLET	43.90	
18A	TYPE C GRATE INLET	44.70	

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
19	TYPE 1 CURB INLET	45.59	
20	TYPE 1 CURB INLET	45.48	TYPE J STRUCTURE BOTTOM
21	TYPE 1 CURB INLET	43.80	TYPE J STRUCTURE BOTTOM
22	TYPE 1 CURB INLET	43.83	TYPE J STRUCTURE BOTTOM
23	MES	38.12	
24	TYPE 2 CURB INLET	46.45	TYPE 'F' CURB
25	TYPE 1 CURB INLET	47.19	TYPE 'F' CURB
26	TYPE 1 CURB INLET	47.46	TYPE 'F' CURB
27	TYPE 1 CURB INLET	47.50	TYPE 'F' CURB
28	TYPE P MANHOLE 4'-0" DIA.	46.95	
29	TYPE C GRATE INLET	45.10	
30	TYPE P MANHOLE 4'-0" DIA.	46.42	
31	TYPE 1 CURB INLET	45.65	
32	TYPE 1 CURB INLET	45.48	
33	TYPE 1 CURB INLET	45.43	TYPE J STRUCTURE BOTTOM
34	TYPE J MANHOLE 5'-0" DIA.	45.55	TYPE J STRUCTURE BOTTOM
34A	MES	40.83	
35	TYPE P MANHOLE 4'-0" DIA.	51.20	FUTURE 30" @ INV. 41.10 (SOUTH)
36	TYPE 1 CURB INLET	48.44	TYPE 'F' CURB

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
37	TYPE 1 CURB INLET	48.77	TYPE 'F' CURB
38	TYPE 1 CURB INLET	48.79	TYPE 'F' CURB
39	MES	40.88	
40	TYPE C GRATE INLET	52.00	FUTURE 18" @ INV. 41.00 (SOUTH)
41	TYPE P MANHOLE 4'-0" DIA.	50.14	
42	MES	40.85	
43	TYPE P MANHOLE 4'-0" DIA.	52.25	FUTURE 24" @ INV. 43.30 (SOUTH)
44	TYPE 1 CURB INLET	50.22	TYPE 'F' CURB
45	TYPE 1 CURB INLET	49.95	TYPE 'F' CURB
46	TYPE 1 CURB INLET	49.95	TYPE 'F' CURB
47	TYPE P MANHOLE 4'-0" DIA.	49.53	
48	TYPE 1 CURB INLET	48.41	
49	TYPE 1 CURB INLET	48.34	
51	TYPE 2 CURB INLET	48.48	FUTURE 18" @ INV. 41.00 (EAST)
52	TYPE 1 CURB INLET	47.96	
53	TYPE 1 CURB INLET	47.83	
54	TYPE 2 CURB INLET	47.03	TYPE J STRUCTURE BOTTOM
55	TYPE 1 CURB INLET	47.03	TYPE J STRUCTURE BOTTOM
56	TYPE J MANHOLE 5'-0" DIA.	46.00	

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
57	MES	43.00	
58	TYPE 1 CURB INLET	48.86	
59	TYPE 1 CURB INLET	48.88	
60	MES	41.49	
73	FDOT TYPE 5 CURB INLET	48.15	TYPE 'F' CURB
74	FDOT TYPE 5 CURB INLET	48.15	TYPE 'F' CURB
75	MES	41.21	
76	FDOT TYPE 6 CURB INLET	45.28	TYPE 'F' CURB
77	FDOT TYPE 6 CURB INLET	45.28	TYPE 'F' CURB
78	FDOT TYPE 5 CURB INLET	47.08	TYPE 'F' CURB
125	MES	41.95	
126	MES	44.18	
127	MES	44.28	
128	MES	42.25	
132	MES	43.11	
133	MES	43.11	
134	MES	42.03	
135	MES	41.98	
136	MES	42.02	

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
137	MES	41.98	
138	MES	41.89	
139	MES	41.79	
140	MES	41.89	
141	MES	41.79	
142	MES	44.92	
143	MES	46.45	
144	ENDWALL	42.84	
145	ENDWALL	42.74	
146	ENDWALL	42.84	
147	ENDWALL	42.74	
148	ENDWALL	42.84	
149	ENDWALL	42.74	
150	ENDWALL	42.84	
151	ENDWALL	42.74	
152	ENDWALL	42.84	
153	ENDWALL	42.74	
154	ENDWALL	42.84	
155	ENDWALL	42.74	

STRUCTURE TABLE			
STR. NO.	STR. TYPE	TOP ELEV.	COMMENTS
156	ENDWALL	42.84	
157	ENDWALL	42.74	
158	ENDWALL	42.84	
159	ENDWALL	42.74	
160	MES	42.60	
161	MES	42.50	
CS 5-2	CONTROL STRUCTURE	45.00	
CS 5-4	CONTROL STRUCTURE	43.20	
CS 5-5A	CONTROL STRUCTURE	44.00	
CS 5-6	CONTROL STRUCTURE	45.50	

ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

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Civil Engineering • Planning & GIS  
Transportation Engineering  
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STARKEY RANCH VILLAGE 2  
PHASE 1A  
STORM STRUCTURE DATA

PREPARED FOR:  
GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: ST  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER  
GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-308**

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PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
1	2	18" RCP	28	0.36%	39.50	39.40	0.10
2	3	18" RCP	251	0.18%	39.40	38.95	0.45
3	5	18" RCP	252	0.18%	36.30	35.85	0.45
4	5	18" RCP	28	0.36%	39.50	39.40	0.10
5	6	24" RCP	244	0.14%	35.35	35.00	0.34
6	8	24" RCP	203	0.14%	35.00	34.73	0.28
7	8	18" RCP	32	0.31%	36.80	36.70	0.10
8	9	24" RCP	94	0.15%	34.73	34.59	0.14
9	10	24" RCP	39	0.26%	34.59	34.49	0.10
10	21	24" RCP	194	0.14%	34.49	34.22	0.27
11	12	18" RCP	28	0.36%	39.60	39.50	0.10
12	16	24" RCP	219	0.14%	38.11	37.80	0.31
13	16	24" RCP	60	0.18%	37.90	37.79	0.11
14	15	18" RCP	28	0.36%	41.60	41.50	0.10
15	16	24" RCP	217	0.14%	41.00	40.69	0.30

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
16	17	36" RCP	28	0.36%	37.70	37.60	0.10
17	18	36" RCP	148	0.08%	37.40	37.28	0.12
18	20	36" RCP	142	0.08%	37.28	37.17	0.11
18A	18	18" RCP	111	0.18%	39.70	39.50	0.20
19	20	18" RCP	40	0.26%	41.10	41.00	0.10
20	21	42" RCP	335	0.06%	34.70	34.50	0.20
21	22	48" RCP	46	0.22%	34.00	33.90	0.10
22	23	48" RCP	177	0.06%	33.81	33.70	0.11
24	25	24" RCP	217	0.14%	41.50	41.20	0.30
25	26	24" RCP	77	0.14%	40.30	40.19	0.11
26	27	24" RCP	30	0.34%	40.19	40.09	0.10
27	28	24" RCP	68	0.16%	40.09	39.98	0.11
28	30	24" RCP	84	0.14%	39.98	39.87	0.12
29	30	18" RCP	311	0.18%	40.70	40.14	0.56
30	33	30" RCP	139	0.10%	39.14	39.00	0.14

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
31	32	18" RCP	46	0.22%	41.10	41.00	0.10
32	33	18" RCP	32	0.32%	41.00	40.90	0.10
33	34	36" RCP	150	0.08%	38.40	38.28	0.12
34	34A	36" RCP	34	0.30%	37.60	37.50	0.10
35	37	30" RCP	95	0.12%	41.10	40.99	0.11
36	37	18" RCP	78	0.18%	42.20	42.06	0.14
37	38	30" RCP	28	0.36%	40.99	40.89	0.10
38	39	30" RCP	73	0.16%	38.12	38.00	0.12
40	41	18" RCP	92	0.18%	41.00	40.83	0.17
41	42	18" RCP	95	0.18%	39.17	39.00	0.17
43	45	24" RCP	65	0.16%	43.30	43.20	0.10
44	45	18" RCP	77	0.18%	43.70	43.56	0.14
45	46	24" RCP	28	0.36%	43.06	42.96	0.10
46	47	30" RCP	57	0.18%	42.46	42.36	0.10
47	49	30" RCP	178	0.10%	42.36	42.18	0.18

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
48	49	18" RCP	34	0.30%	43.90	43.80	0.10
49	54	30" RCP	203	0.10%	40.10	39.90	0.20
51	54	24" RCP	262	0.14%	40.50	40.13	0.37
52	53	18" RCP	49	0.22%	43.50	43.39	0.11
53	54	18" RCP	203	0.18%	43.06	42.70	0.36
54	55	36" RCP	37	0.28%	39.13	39.03	0.10
55	56	36" RCP	173	0.06%	39.03	38.93	0.10
56	57	36" RCP	49	0.22%	38.11	38.00	0.11
58	59	18" RCP	33	0.32%	44.40	44.30	0.10
59	60	18" RCP	167	0.18%	39.80	39.50	0.30
73	74	18" RCP	80	0.18%	43.70	43.56	0.15
74	75	18" RCP	103	0.18%	39.69	39.50	0.19
76	77	18" RCP	81	0.18%	40.80	40.66	0.14
77	78	24" RCP	234	0.14%	40.16	39.83	0.33
78	*	24" RCP	59	0.14%	39.02	38.93	0.08

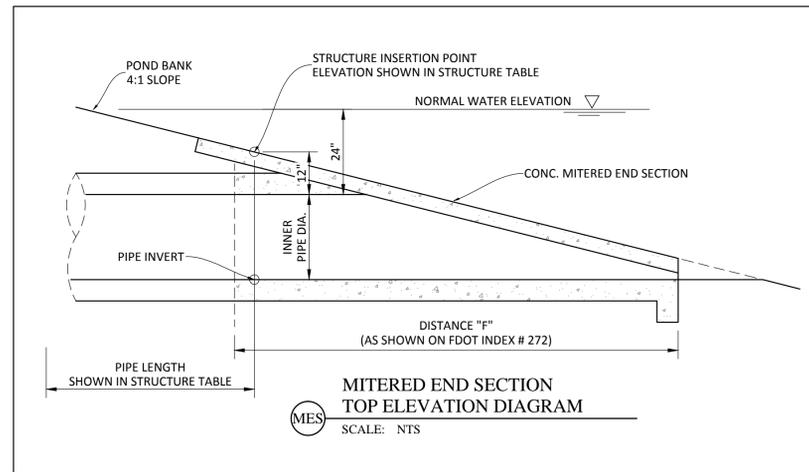
\* TEMPORARY SWALE

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
132	133	24 x 38" ERCP	97	0.00%	40.80	40.80	0.00
134	135	38 x 60" ERCP	54	0.09%	38.40	38.35	0.05
136	137	38 x 60" ERCP	54	0.09%	38.40	38.35	0.05
138	139	29 x 45" ERCP	85	0.12%	39.10	39.00	0.10
140	141	29 x 45" ERCP	85	0.12%	39.10	39.00	0.10
143	142	48" RCP	142	0.00%	39.60	39.60	0.00
144	145	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
146	147	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
148	149	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
150	151	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
152	153	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
154	155	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
156	157	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
158	159	48 x 76" ERCP	122	0.08%	37.80	37.70	0.10
160	161	36" RCP	19	0.52%	38.60	38.50	0.10

PIPE TABLE							
START STR.	END STR.	PIPE DIMENSION & MATERIAL	LENGTH	SLOPE	START INV.	END INV.	FALL IN FEET
CS 5-2	126	42" RCP	26	0.76%	40.50	40.30	0.20
CS 5-4	125	34 x 53" ERCP	28	0.72%	38.90	38.70	0.20
CS 5-5A	128	24" RCP	30	0.66%	40.20	40.00	0.20
CS 5-6	127	42" RCP	33	0.61%	40.60	40.40	0.20

NOTE:

- ALL INLET AND MANHOLE STRUCTURE BOTTOMS ARE SPECIFIED TYPE 'P' UNLESS OTHERWISE NOTED. REFER TO FDOT DESIGN STANDARDS INDEX #200 & #201.
- ALL FLARED END SECTIONS (FES) ARE SPECIFIED FDOT INDEX #270 UNLESS OTHERWISE NOTED.
- ALL MITERED END SECTIONS (MES) ARE SPECIFIED FDOT INDEX #272 UNLESS OTHERWISE NOTED.
- END SECTION TOP ELEVATION DENOTES THE ELEVATION ON POND SIDE SLOPE AS SHOWN ON DETAILS "FES" AND "MES", THIS SHEET.



ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

**HEIDT DESIGN**  
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Engineering Business Certificate of Authorization No. 28792  
Landscape Architecture Certificate of Authorization No. LC26000405

STARKEY RANCH VILLAGE 2  
PHASE 1A  
STORM STRUCTURE DATA

PREPARED FOR:  
GENTRY LAND COMPANY

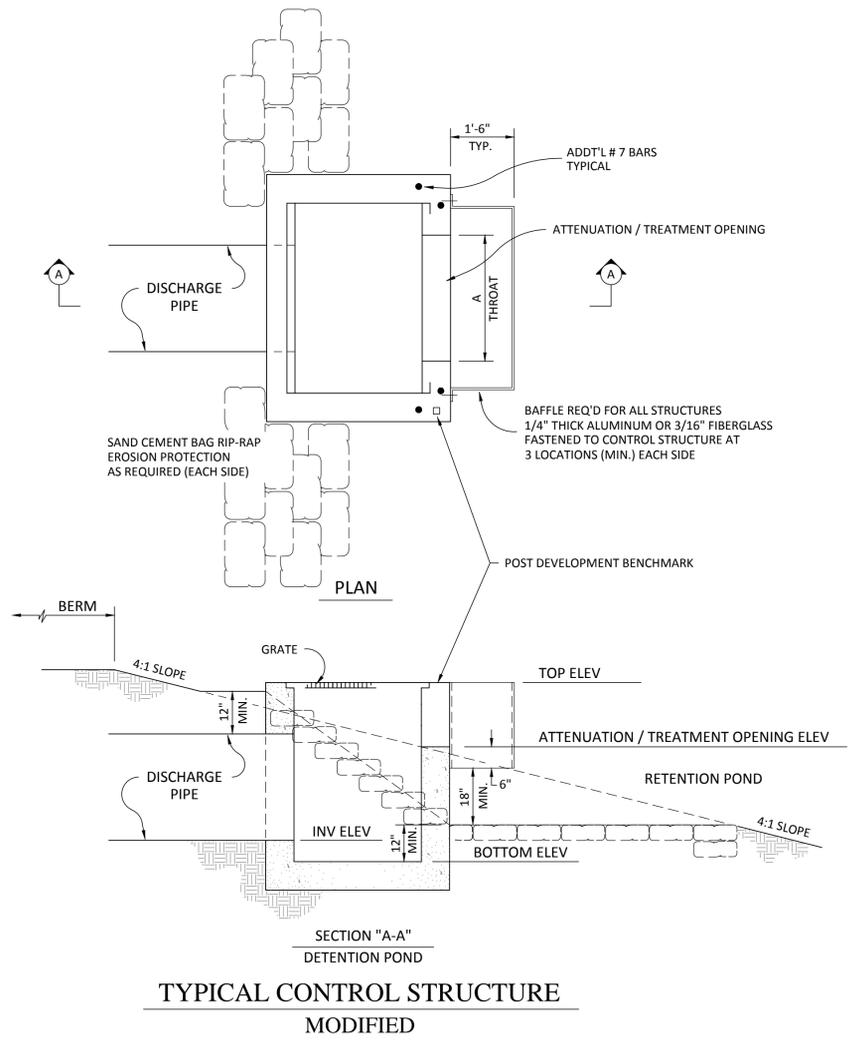
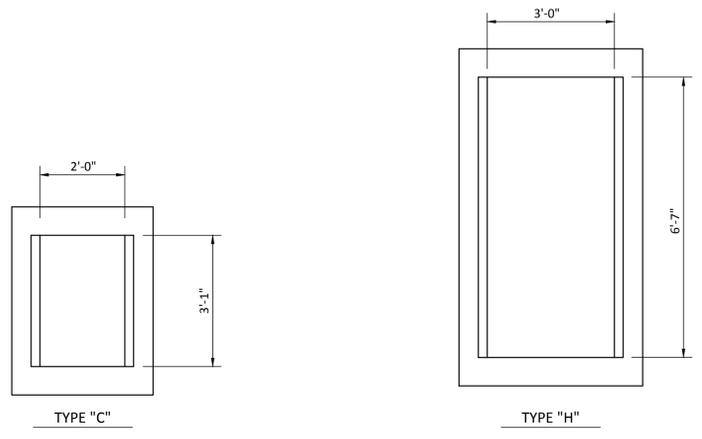
NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: ST  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE:  
REGISTRATION NO. 52717

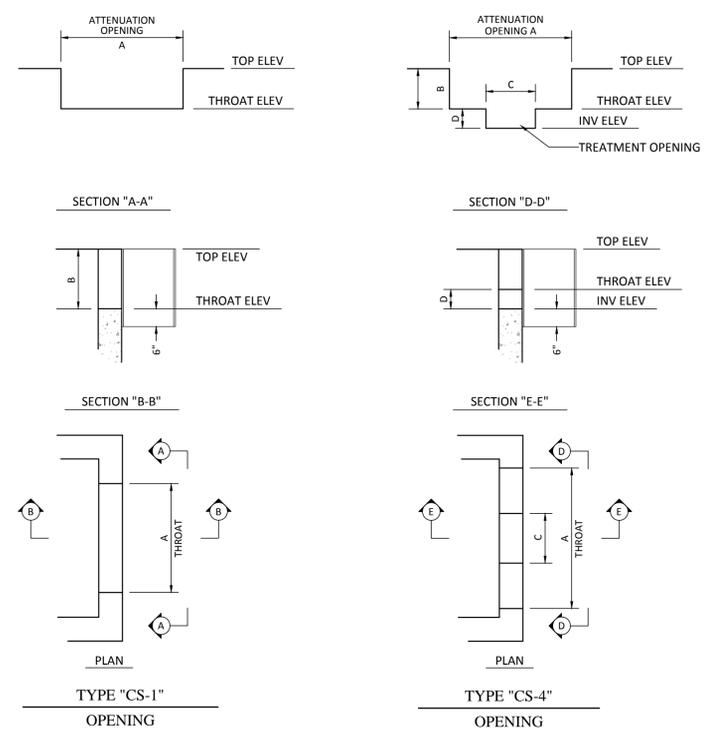
**C-309**

R:\STARKEY RANCH\VA\CEC\2\PHASE 1A\ENGINEERING\DWG-C-309-2016\01/20/16/11PM.MARK.JONES



TYPICAL CONTROL STRUCTURE  
MODIFIED

CONTROL STRUCTURE DATA															
STRNO.	FDOT BOX TYPE	TOP EL.	BOTTOM EL.	TYPE	SIZE (IN.)	INV. EL. (IN.)	STR. TYPE	ATTENUATION AND TREATMENT CONTROLS						REMARKS	
								ATTENUATION OPENING		ELEV. (FT.)	TREATMENT OPENING				ELEV. (FT.)
								A	B		C	D	F*		
CS 5-2	H	45.00	39.50	RCP	42	40.50	CS-4	3'-6"	2'-0"	43.00	1'-2 2/5"	0'-6"		42.50	POND 5-2
							CS-1	1'-0"	2'-0"	43.00					POND 5-2 SIDE OPENING
							CS-1	1'-0"	2'-0"	43.00					POND 5-2 SIDE OPENING
CS 5-4	H	43.20	37.70	ERCP	34 X 53	38.90	CS-4	3'-0"	2'-1 4/5"	41.05	1'-6"	0'-4 1/5"		40.70	POND 5-4
							CS-1	1'-0"	2'-1 4/5"	41.05					POND 5-4 SIDE OPENING
							CS-1	1'-0"	2'-1 4/5"	41.05					POND 5-4 SIDE OPENING
CS 5-5A	C	44.00	38.50	RCP	24	40.20	CS-4	2'-7"	2'-1 4/5"	41.85	1'-0"	0'-4 1/5"		41.50	POND 5-5A
CS 5-6	H	45.50	40.00	RCP	42	40.60	CS-4	3'-0"	2'-0 3/5"	43.45	1'-2 2/5"	0'-5 2/5"		43.00	POND 5-6
							CS-1	1'-3"	2'-0 3/5"	43.45					POND 5-6 SIDE OPENING
							CS-1	1'-3"	2'-0 3/5"	43.45					POND 5-6 SIDE OPENING



ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

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STARKEY RANCH VILLAGE 2  
PHASE 1A  
CONTROL STRUCTURE DATA

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	07/27/2016	REVIEW SUBMITTAL

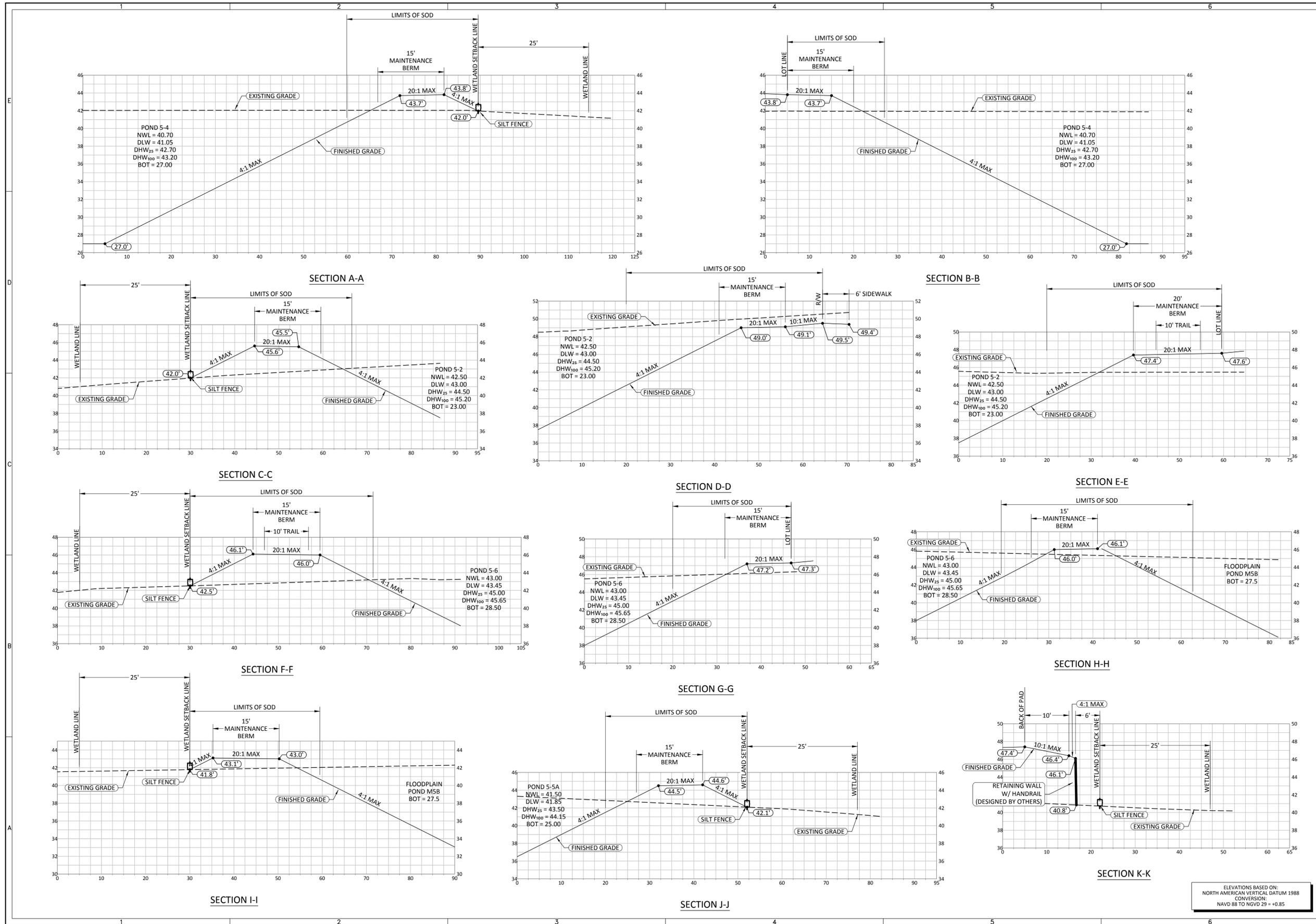
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DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: 07/27/2016  
REGISTRATION NO. 52717

**C-310**

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**STARKEY RANCH VILLAGE 2  
 PHASE 1A**

**GRADING & DRAINAGE SECTIONS**

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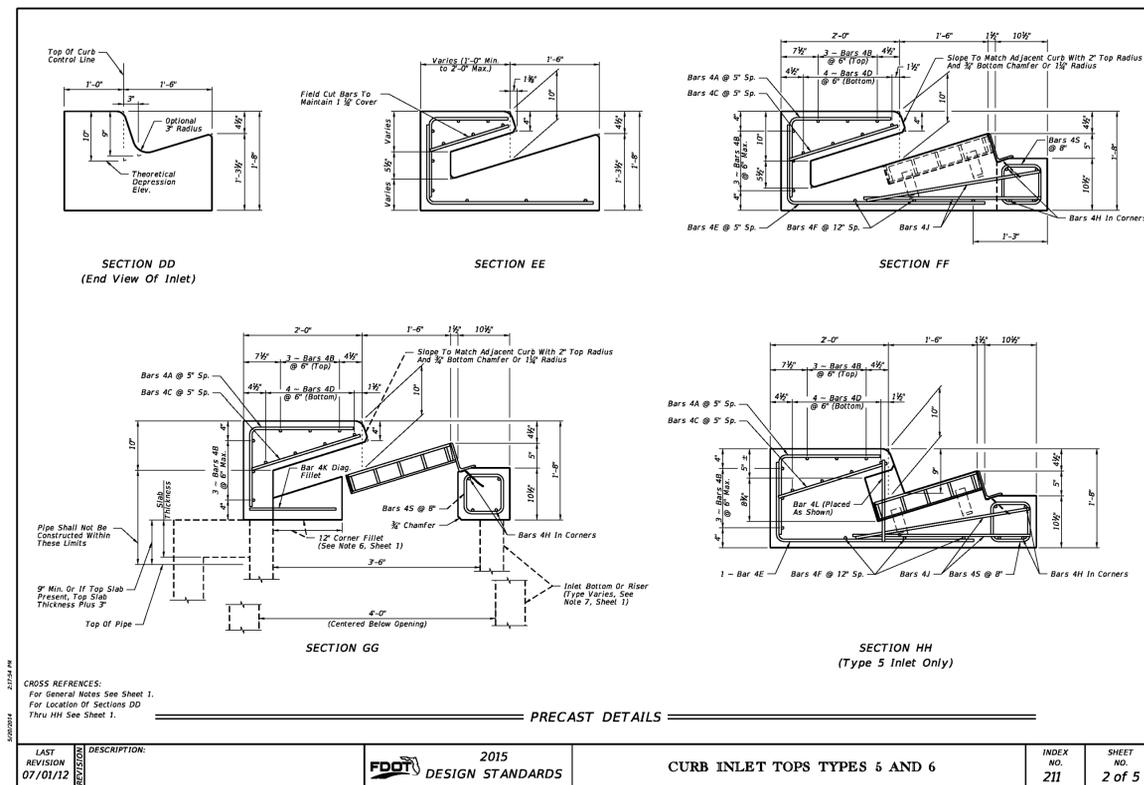
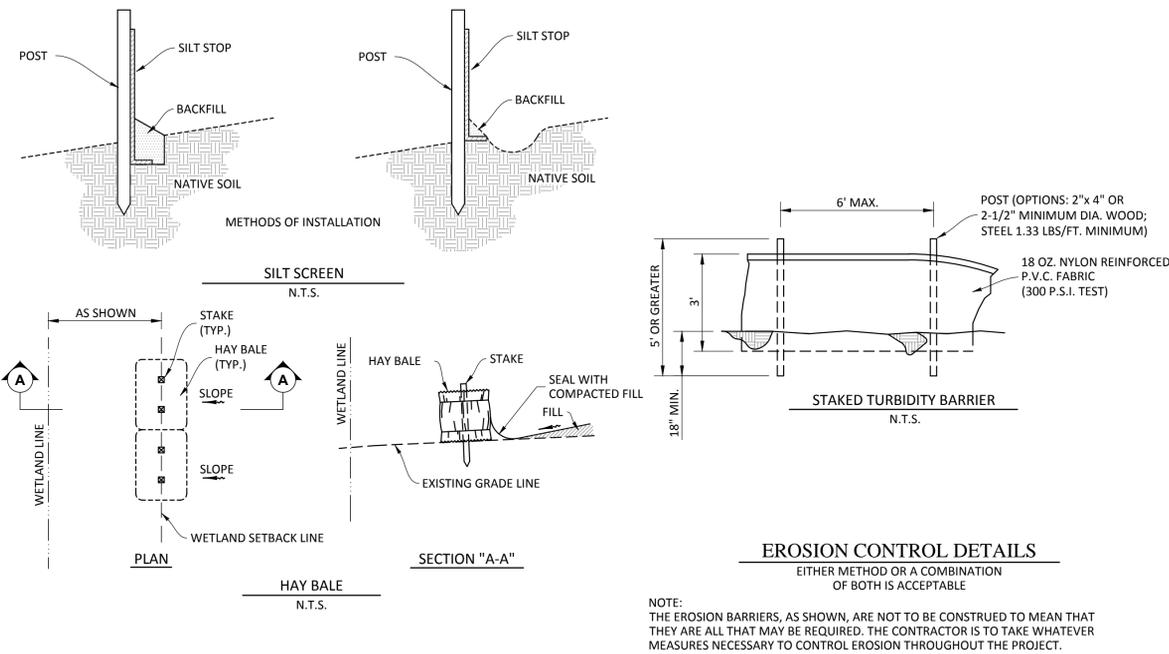
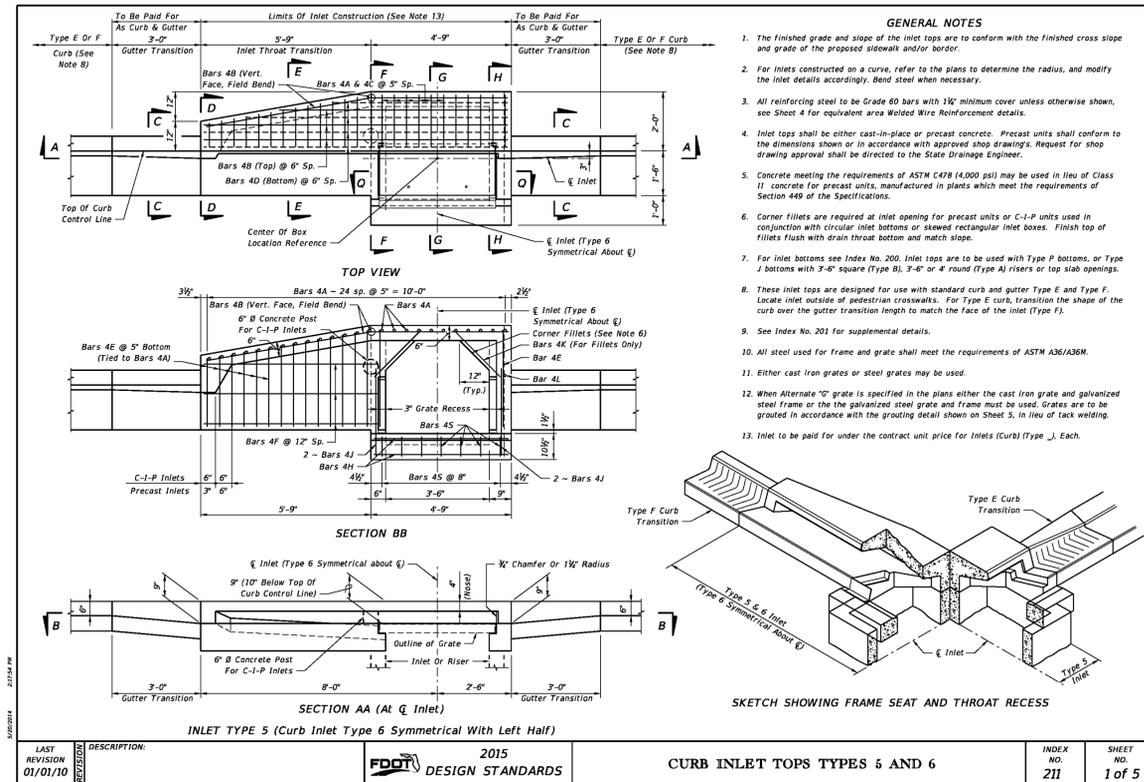
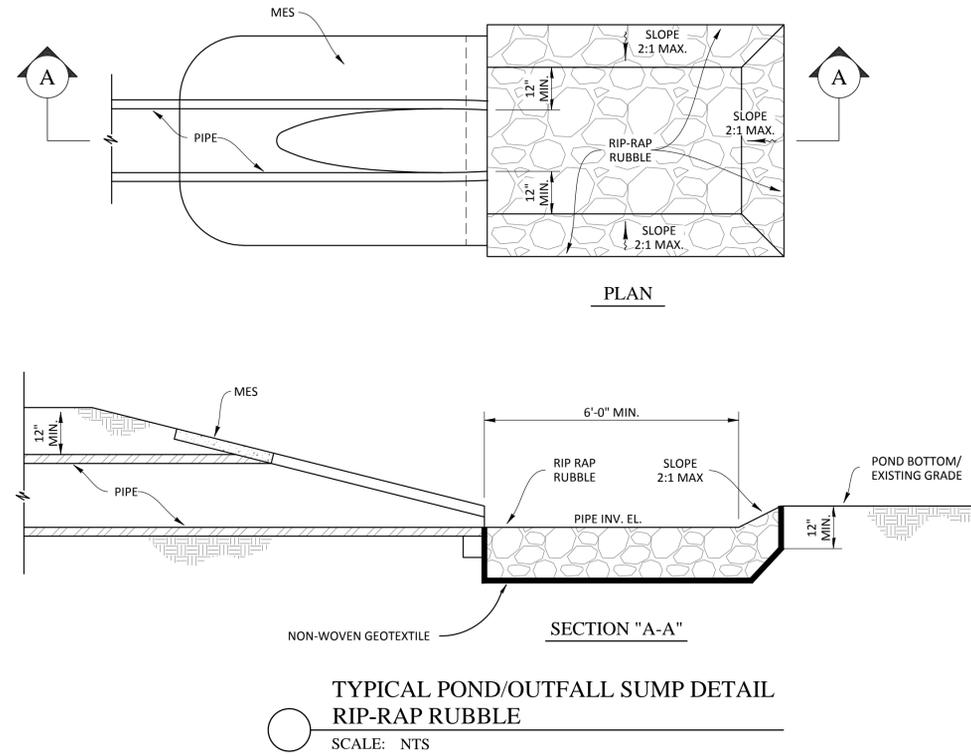
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**C-311**

I, STARKEY RANCH VILLAGE 2 PHASE 1A GRADING & DRAINAGE SECTIONS, C-311, 2016/01/20 4:12 PM MARK JONES  
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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
DRAINAGE DETAILS**

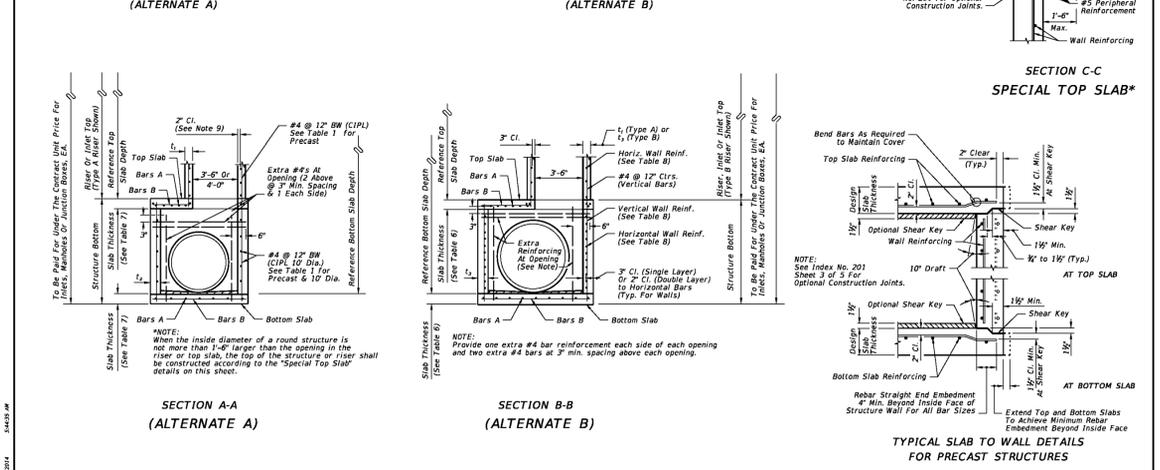
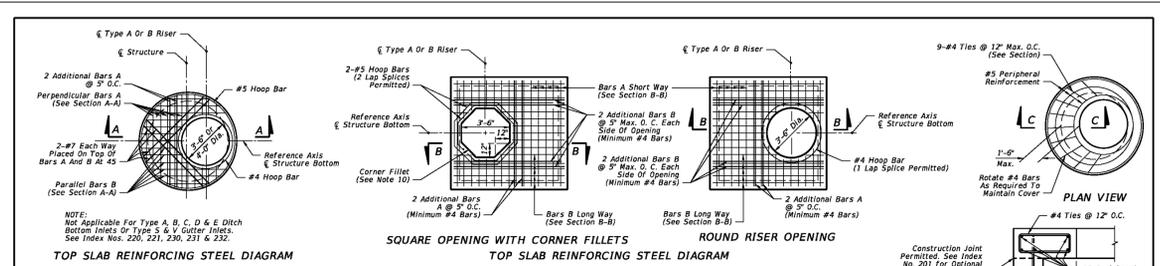
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LAST REVISION: 07/01/14	DESCRIPTION: 2015 DESIGN STANDARDS	INDEX NO: 200	SHEET NO: 1 of 5
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Type	Structure/Riser Diameter (ft)	Cast-In-Place Items Class II Concrete			Precast Concrete			ASTM C478		
		t <sub>1</sub> (in.)	t <sub>2</sub> (in.)	A <sub>1</sub> (in. <sup>2</sup> /ft.)	t <sub>1</sub> (in.)	t <sub>2</sub> (in.)	A <sub>1</sub> (in. <sup>2</sup> /ft.)	t <sub>1</sub> or t <sub>2</sub> (in.)	A <sub>1</sub> *** (in. <sup>2</sup> /ft.)	
P	3'-0"	6	8	0.20	6	8	0.20	6**	0.105	
J	4'-0"	6	8	0.20	6	8	0.20	6**	0.120	
J	5'-0"	8	10	0.20	8	10	0.20	6**	0.150	
J	6'-0"	8	10	0.20	8	10	0.20	6	0.180	
J	7'-0"	8	10	0.20	8	10	0.20	7	0.210	
J	8'-0"	8	10	0.20	8	10	0.20	8	0.240	
J	10'-0"	10	12	0.40#	10	12	0.40#	10	0.300	
J	12'-0"	10	12	0.40#	10	12	0.40#	12	0.360	

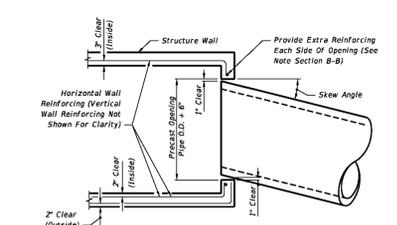
TABLE 1 NOTES:  
 #1 provides 0.20 sq. in./ft. at each face, 12" max. bar spacing.  
 \*\*Minimum wall thickness.  
 \*\*\*Min. total circumferential reinforcement for continuous steel hoops:  
 A<sub>1</sub> = 0.50 sq. in. for riser section height equal or less than 2'-0" (2 hoop min.)  
 A<sub>1</sub> = 0.75 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 reinforcement is allowed for welded wire fabric in Table 1.  
 Area of vertical reinforcing may be reduced in accordance with ASTM C478.

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

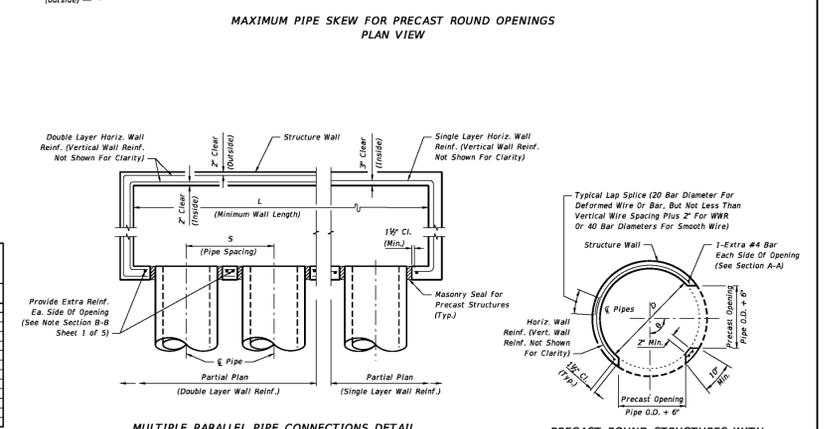
LAST REVISION: 07/01/14	DESCRIPTION: 2015 DESIGN STANDARDS	INDEX NO: 200	SHEET NO: 2 of 5
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PIPE SIZE	RECTANGULAR		ROUND	
	Single Pipe Side	Note	Single Pipe	2 to 4 Pipes
18"	3'-0"	1	3'-0"	3'-0"
24"	3'-0"	2	4'-0"	4'-0"
30"	4'-0"	3	5'-0"	5'-0"
36"	5'-0"	4	6'-0"	6'-0"
42"	6'-0"	5	7'-0"	7'-0"
48"	7'-0"	6	8'-0"	8'-0"
54"	8'-0"	7	9'-0"	9'-0"
60"	9'-0"	8	10'-0"	10'-0"
66"	10'-0"	9	11'-0"	11'-0"
72"	11'-0"	10	12'-0"	12'-0"
78"	12'-0"	11	13'-0"	13'-0"
84"	13'-0"	12	14'-0"	14'-0"



WALL THICKNESS (in.)	PIPE SIZE											
	18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM SKEW ANGLE (°)	15	17	16	15	14	13	12	11	10	9	8	7

TABLE 3 NOTES:  
 1. For Round Structures sizes with variable angles between pipes and variable pipe sizes, refer to the FDOT Storm Drain Handbook.  
 2. For 3'-0" Precast Square Structure Bottoms, 30" Pipes with similar invert elevations are not permitted in adjacent walls. Use 4'-0" Side Dimensions when 30" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".  
 3. For 4'-0" Precast Square Structure Bottoms, 36" Pipes with similar invert elevations are not permitted in adjacent walls. Use 5'-0" Side Dimensions when 36" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".  
 4. For 7'-0" Precast Square Structure Bottoms, 60" Pipes with similar invert elevations are not permitted in adjacent walls. Use 8'-0" Side Dimensions when 60" pipe openings are required on adjacent walls and the difference in flow lines is less than 4'-0".



PIPE SIZE	PIPE SPACING (in.)	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES	
		2	3
18"	2'-10"	8'-0"	11'-0"
24"	3'-0"	10'-0"	13'-0"
30"	3'-6"	12'-0"	16'-0"
36"	4'-0"	14'-0"	19'-0"
42"	4'-6"	16'-0"	22'-0"
48"	5'-0"	18'-0"	25'-0"
54"	5'-6"	20'-0"	28'-0"
60"	6'-0"	22'-0"	31'-0"
66"	6'-6"	24'-0"	34'-0"
72"	7'-0"	26'-0"	37'-0"
78"	7'-6"	28'-0"	40'-0"
84"	8'-0"	30'-0"	43'-0"

TABLE 4 NOTES:  
 1. Minimum wall lengths based on precast structures, using concrete pipe with maximum skew angles per Table 5.  
 2. Wall lengths exceeding 20'-0" require special designs.

TABLE 5 NOTES:  
 These values are based on 2" clearance for precast structures. Larger skews are possible for Cast-In-Place Structures or elliptical pipe openings when approved by the Engineer.

LAST REVISION: 07/01/14	DESCRIPTION: 2015 DESIGN STANDARDS	INDEX NO: 200	SHEET NO: 3 of 5
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SLAB DEPTH (in.)	SHORT-WAY SCHEDULE (Bars A)		LONG-WAY SCHEDULE (Bars B)	
	SLAB DEPTH (in.)	SCHEDULE (Bars A)	SLAB DEPTH (in.)	SCHEDULE (Bars B)
SIZE: 3'-0" x UNLIMITED	10.5 < B	B10	10.5 < B	B10
	8 < B	B5.5	24-40	B5.5
	19 < B	C6.5	18 < B	E5
SIZE: 4' x UNLIMITED	10.5 < B	B5.5	10.5 < B	B10
	7 < B	B5.5	17 < B	B5.5
	18 < B	D7	29-40	C6.5
SIZE: 5' x 5'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	7 < B	C6.5
	22 < B	D7	22 < B	D4.5
SIZE: 5' x 6'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5
SIZE: 5' x 7'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5
SIZE: 5' x 8'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5
SIZE: 5' x 9'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5
SIZE: 5' x 10'	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5
SIZE: 5' x UNLIMITED	10.5 < B	C6.5	10.5 < B	C6.5
	7 < B	B5.5	17 < B	D7
	22 < B	D7	22 < B	D4.5

SLAB DEPTH (in.)	SHORT-WAY SCHEDULE (Bars A)		LONG-WAY SCHEDULE (Bars B)	
	SLAB DEPTH (in.)	SCHEDULE (Bars A)	SLAB DEPTH (in.)	SCHEDULE (Bars B)
SIZE: 3'-0" DIAMETER	10.5 < B	D7	10.5 < B	D4.5
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 4'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 5'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 6'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 7'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 8'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 9'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 10'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5
SIZE: 12'-0" DIAMETER	10.5 < B	D7	10.5 < B	D7
	8 < B	E5	9 < B	E5
	19 < B	F5	18 < B	F5

SLAB AND WALL DESIGN TABLE NOTES  
 1. Size is the inside dimension(s) of a structure.  
 2. Slab reinforcement is appropriate for top, intermediate, and bottom slabs.  
 3. Bottom Slabs for precast 3'-0" x 3'-0" rectangular structures at 15' depth or less, may be 6" thick.  
 4. Slab depth is measured from finished grade to top of slab.  
 5. Wall depth is measured to the top of the bottom slab for boxes and to the top of the intermediate slab for risers.  
 6. Wall height is the distance between top of lower slab to bottom of upper slab. Maximum wall height is 12' for wall lengths exceeding 5' or 10' for wall lengths exceeding 12'.  
 7. 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.  
 8. Wall lengths exceeding the dimensions or depths shown in Table 9, or 12'-0" diameter require a special design.  
 9. Wall thickness and reinforcing for rectangular structures is the same for both long and short sides.  
 10. Reinforcing schedules with larger areas of steel may be substituted for schedules with smaller bar or wire spacing, except that Schedule B10 may not be substituted for Schedule A6. See Index 201, Sheet 4 for allowable bar spacing adjustments when larger areas of reinforcing are substituted.

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STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 DRAINAGE DETAILS

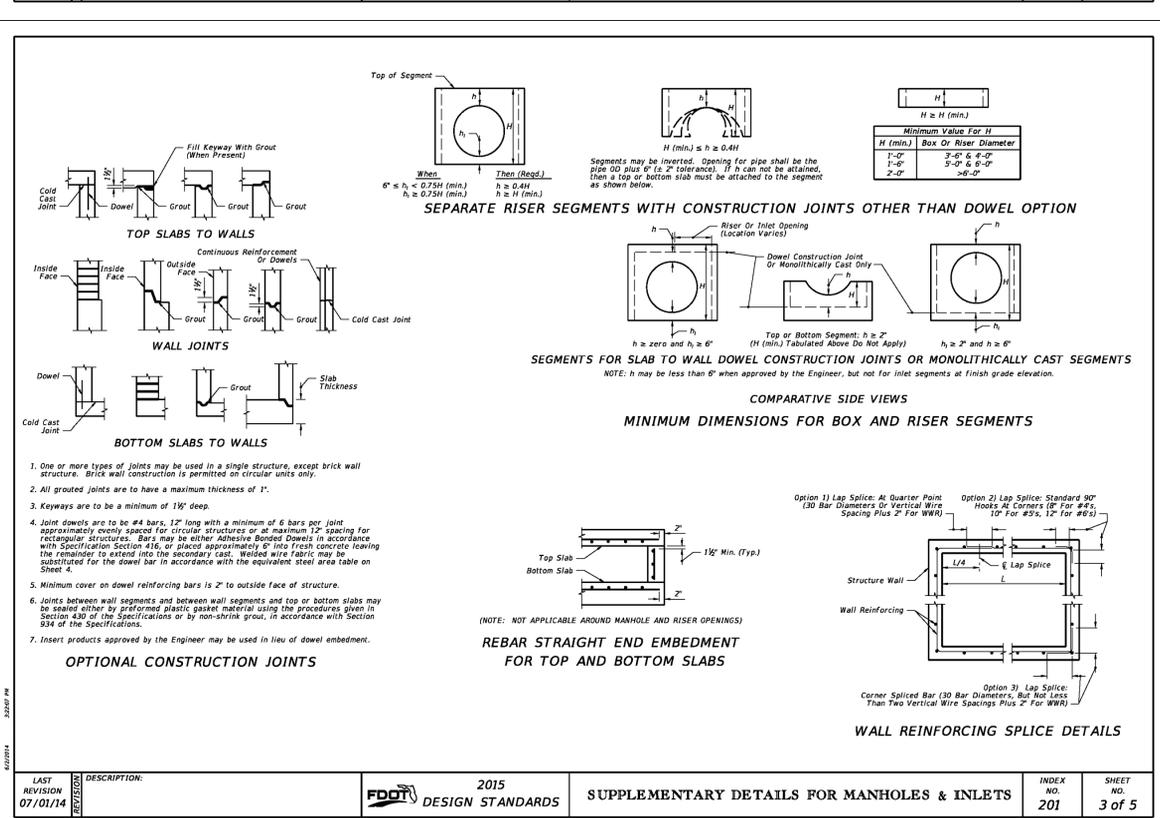
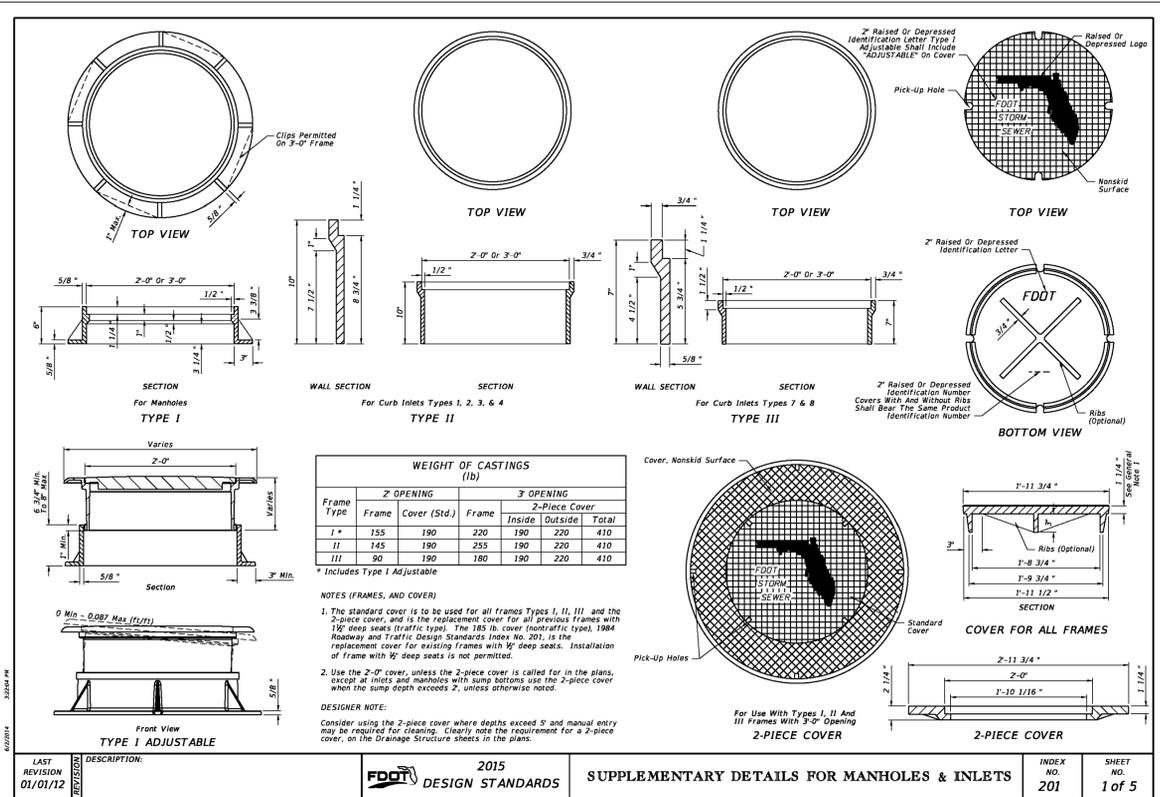
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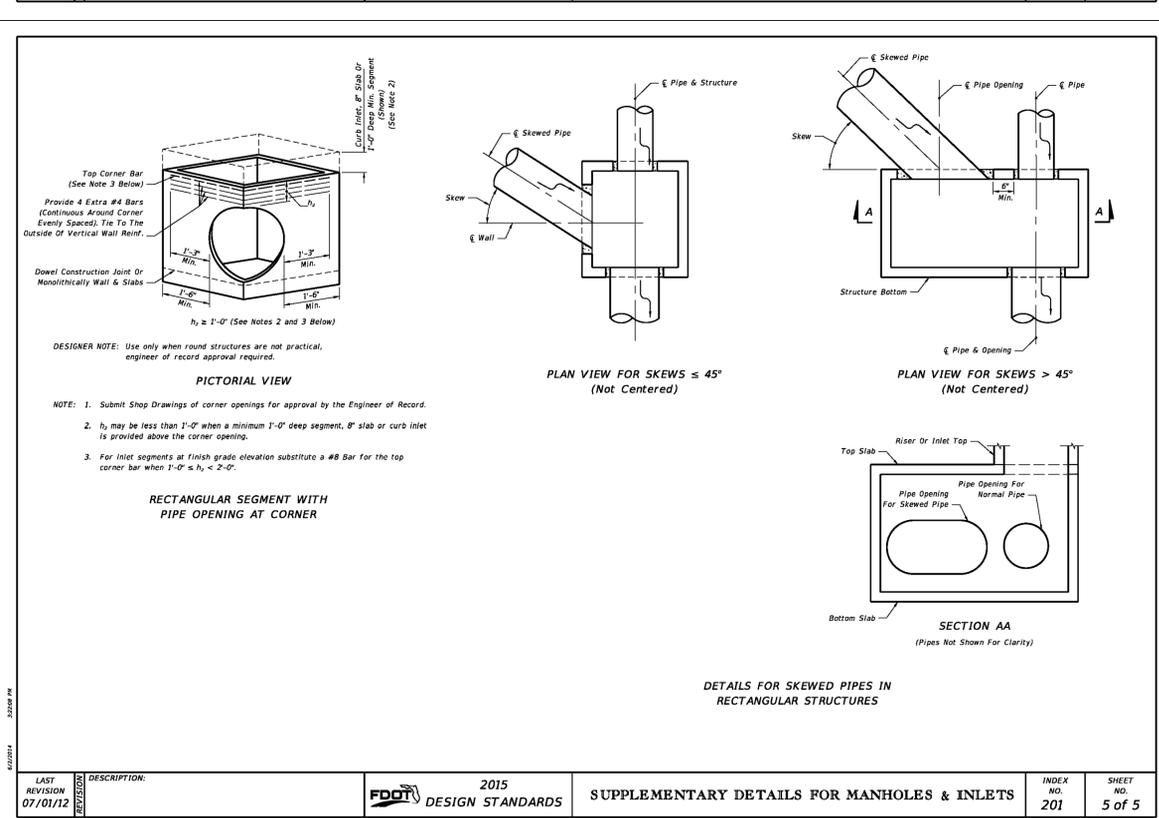
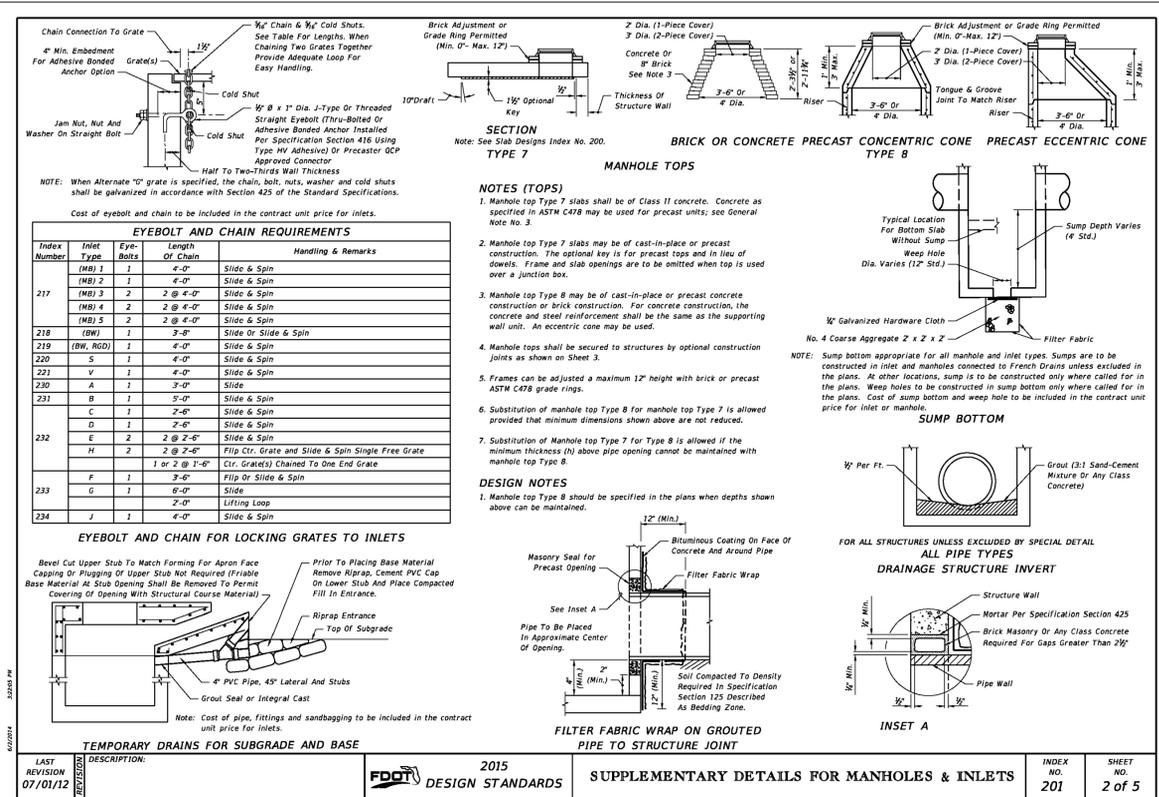
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LAST REVISION: 07/01/12	DESCRIPTION:	2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 3 of 5
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LAST REVISION: 07/01/12	DESCRIPTION:	2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 5 of 5
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STARKEY RANCH VILLAGE 2  
PHASE 1A  
DRAINAGE DETAILS

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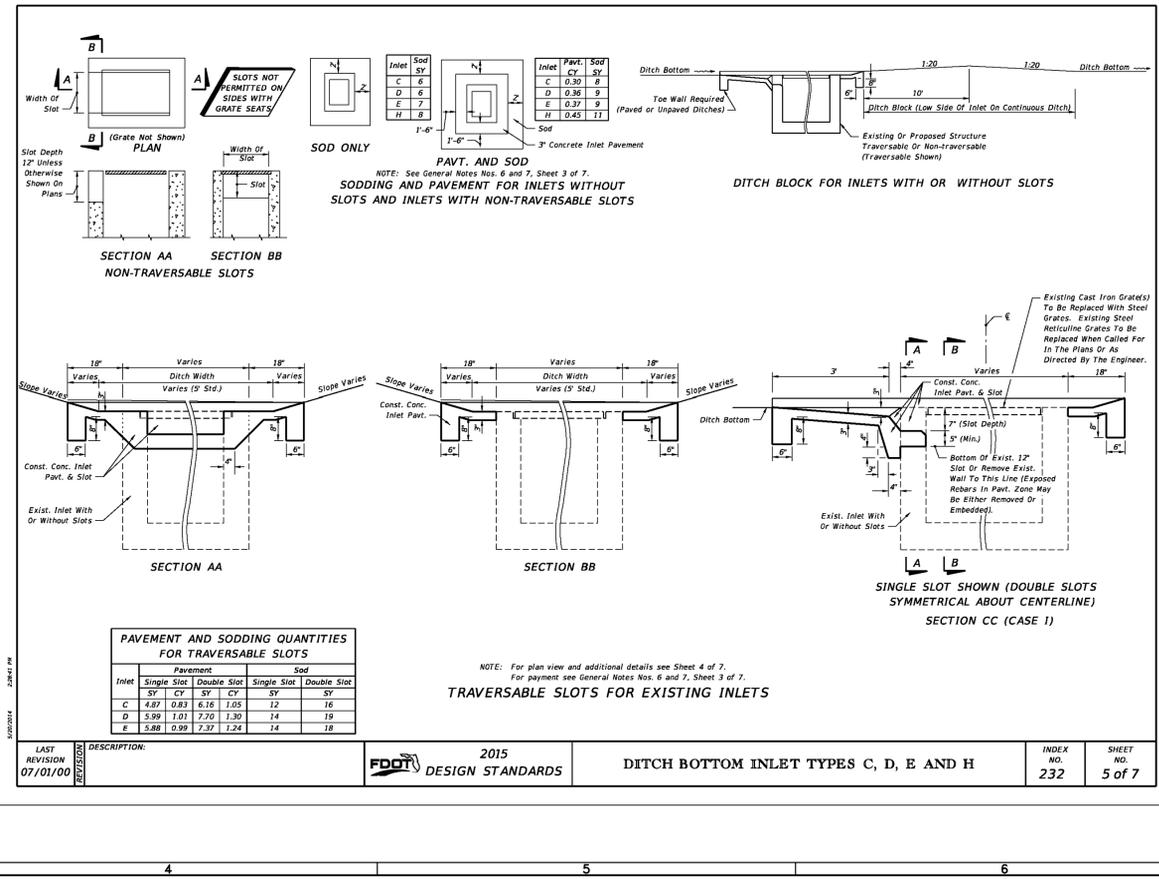
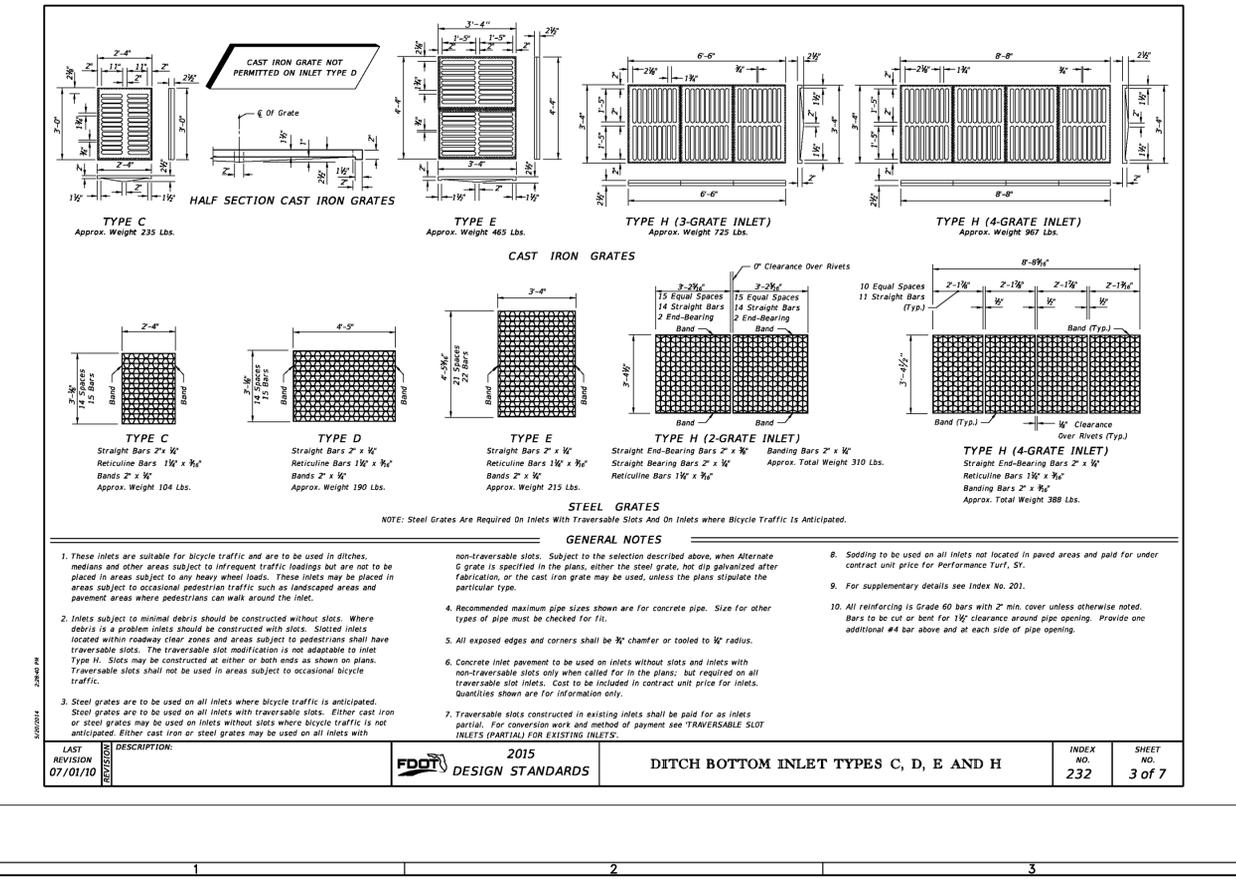
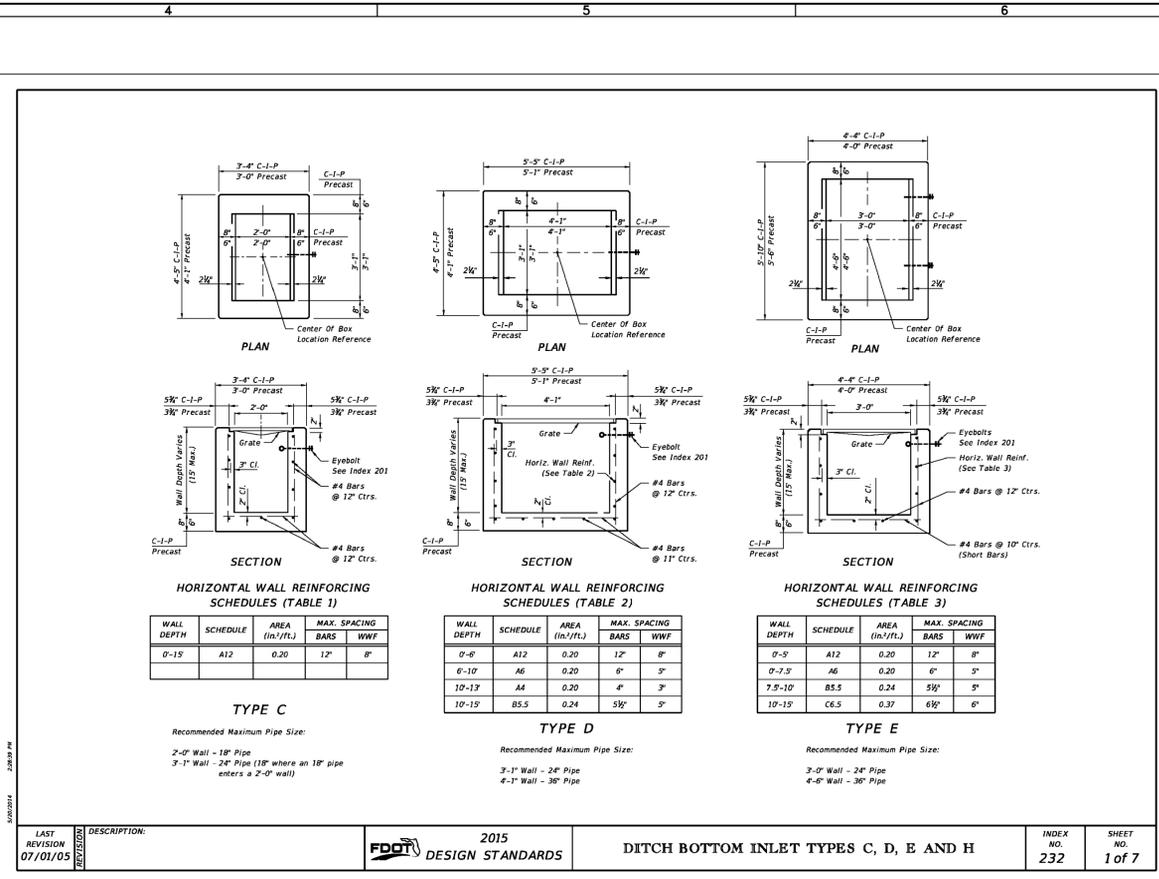
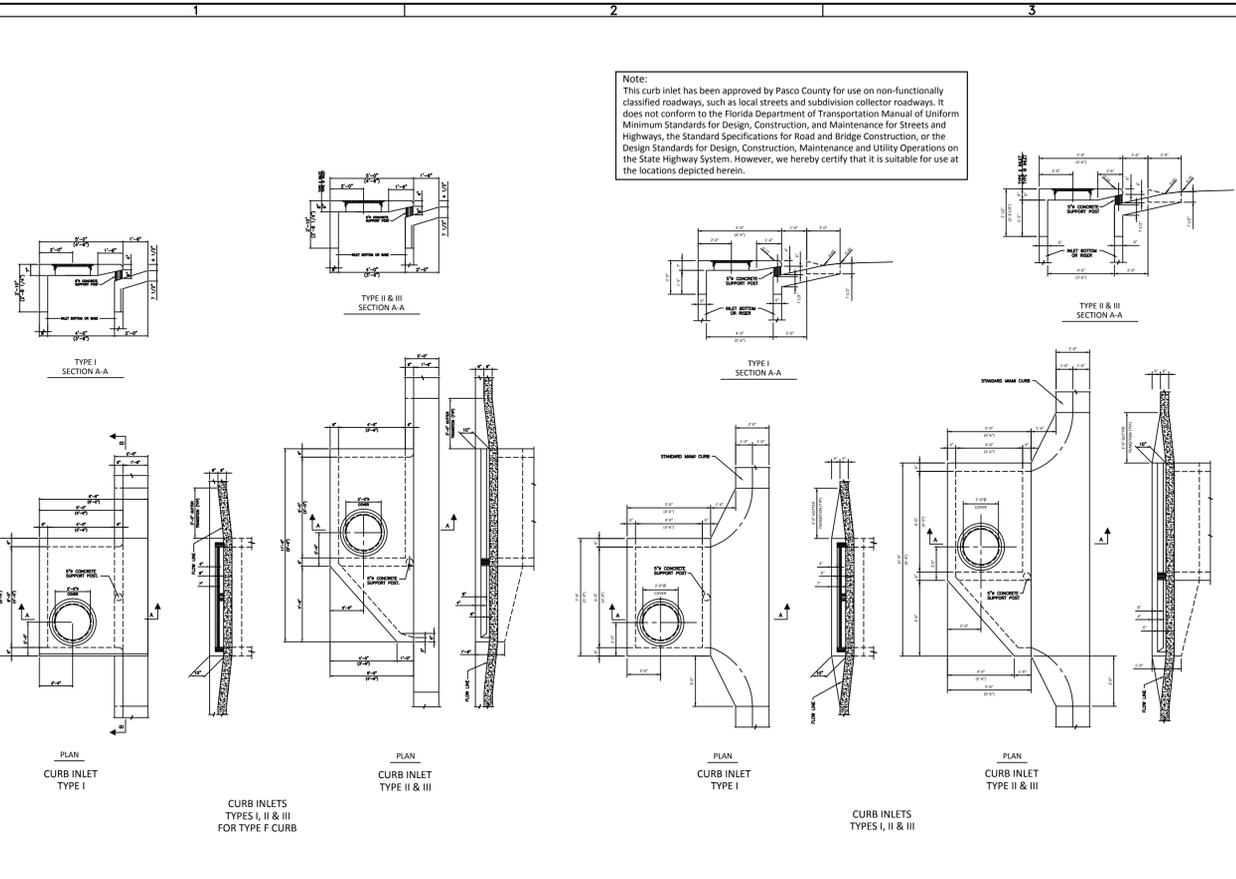
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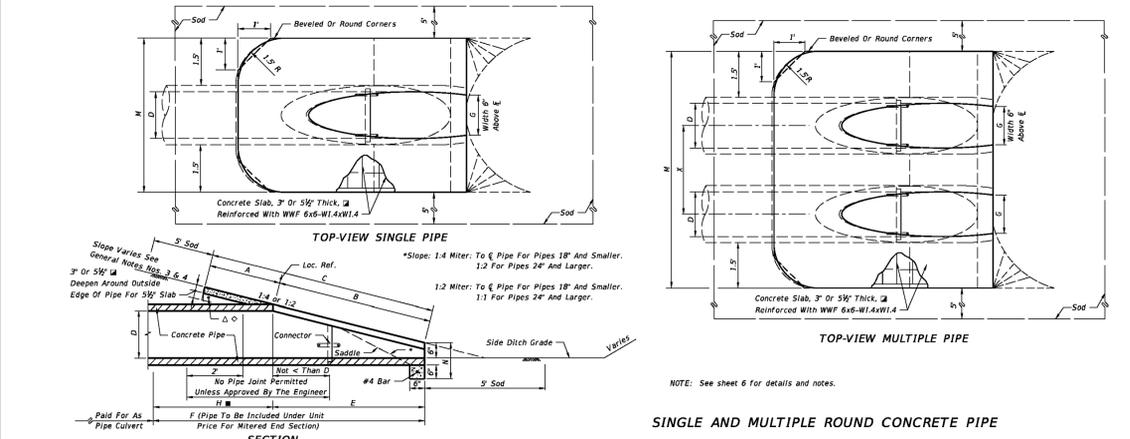
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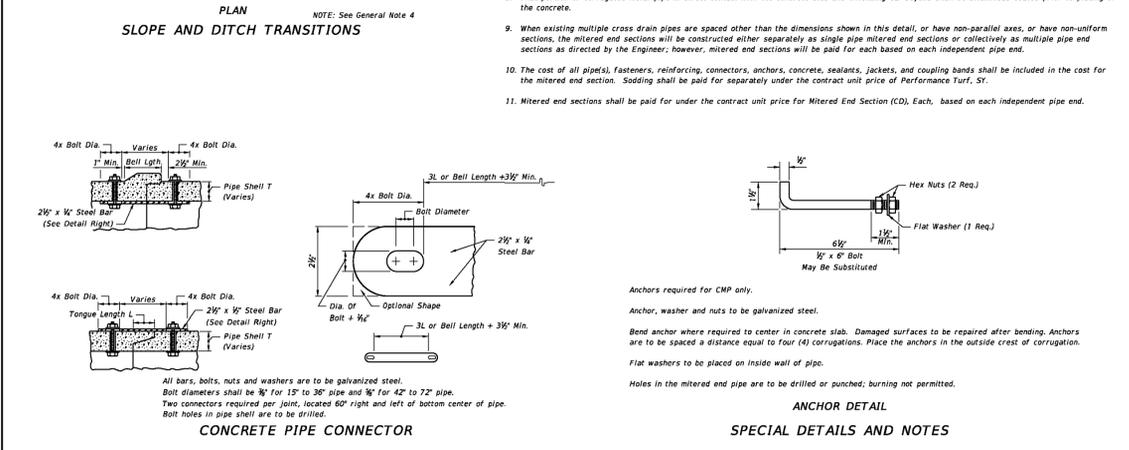
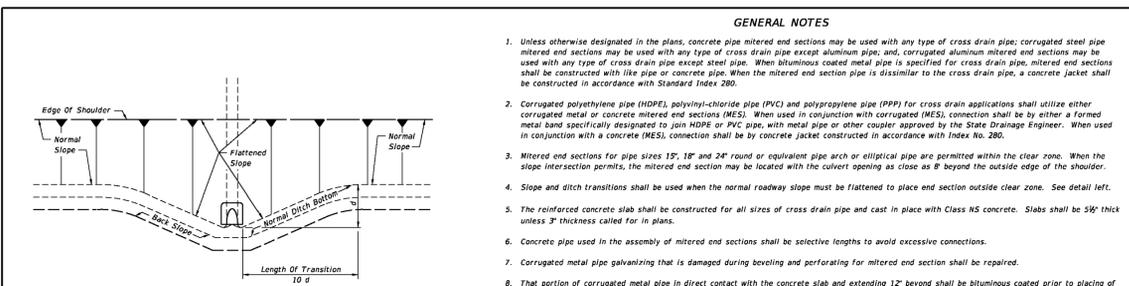
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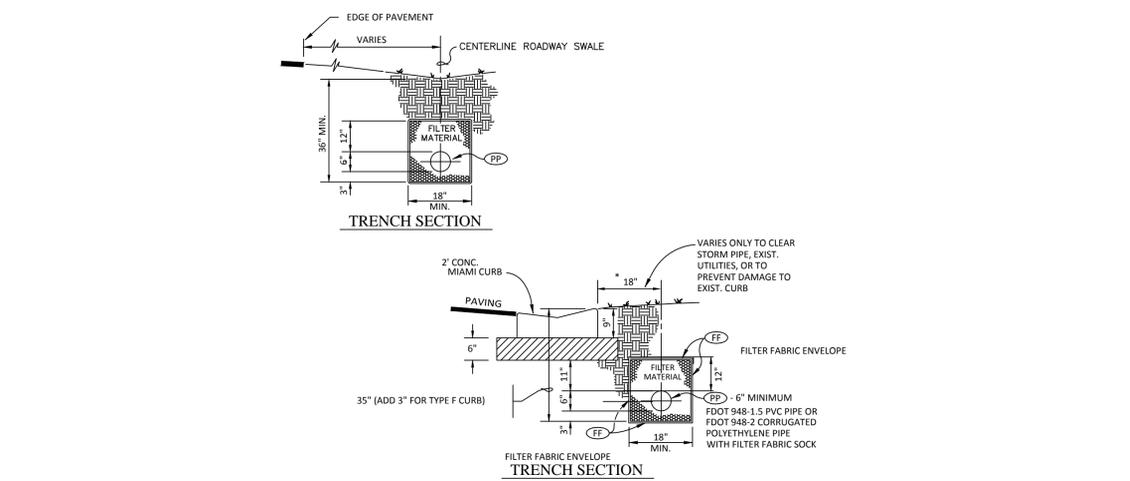
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			M				N				SODDING (SY)											
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	18'	2-10"	1.97	2.24	4.21	2.56	6	1.41	3.4	4.92	7.39	10.58	13.42	1.21	0.44	0.65	0.87	1.09	22	25	28	31
	24'	3-5"	2.60	3.60	5.91	3.56	7	1.73	3.4	5.50	8.92	13.37	17.79	1.25	0.54	0.83	1.12	1.42	24	28	32	35
	30'	4-3"	2.19	4.09	7.10	4.56	8	2.00	3.4	6.08	10.33	14.58	18.83	1.29	0.66	1.09	1.50	1.91	26	31	35	40
	36'	5-1"	2.29	6.09	8.33	5.56	9	2.24	3.4	6.67	11.75	16.83	21.92	1.32	0.81	1.38	1.95	2.51	28	34	39	45
	42'	6-9"	2.41	7.21	9.55	6.56	10	2.49	3.4	7.25	13.25	19.25	25.25	1.36	0.91	1.70	2.45	3.19	30	37	43	50
	48'	8-9"	2.47	8.37	10.76	7.56	11	2.65	3.4	7.83	14.58	21.33	28.08	1.42	1.13	2.04	2.93	3.84	32	39	47	54
	54'	7-9"	2.52	9.44	12.90	8.36	12	2.83	3.4	8.42	16.08	23.73	31.42	1.46	1.31	2.44	3.58	4.72	34	42	51	59
	60'	8-9"	2.62	10.50	13.18	9.56	14	3.00	4.4	9.00	17.50	26.00	34.50	1.50	1.51	2.89	4.28	5.68	36	45	55	64
	66'	9-2"	2.71	11.68	14.39	10.50	15	3.16	4.4	9.58	18.75	27.75	37.00	1.54	1.68	3.25	4.84	6.43	38	48	58	68
72'	10-0"	2.80	12.80	15.60	11.50	16	3.30	4.4	10.16	20.16	30.16	40.16	1.58	1.89	3.74	5.59	7.45	40	51	62	73	
1:4	15'	2-7"	2.27	4.09	6.36	4.03	8	1.22	4.0	4.63	7.21	9.79	12.37	1.19	0.37	0.67	1.15	1.44	23	26	29	32
	18'	2-10"	2.36	5.12	7.48	5.03	9	1.41	4.0	4.92	7.75	10.58	13.42	1.21	0.60	0.99	1.31	1.65	25	28	31	35
	24'	3-5"	2.53	7.18	9.71	7.03	11	1.73	4.0	5.50	8.92	13.37	17.79	1.25	0.85	1.30	1.75	2.20	28	32	36	40
	30'	4-3"	2.70	8.20	11.90	9.02	13	2.00	4.0	6.08	10.33	14.58	18.83	1.29	1.10	1.74	2.39	3.05	31	36	41	46
	36'	5-1"	2.80	11.31	14.16	11.03	15	2.24	4.0	6.67	11.75	16.83	21.92	1.32	1.21	2.08	2.86	3.66	34	40	46	52
	42'	6-9"	3.05	13.37	16.42	13.03	17	2.49	4.0	7.25	13.25	19.25	25.25	1.36	1.38	2.78	3.91	5.09	38	44	51	58
	48'	8-9"	3.22	15.43	18.65	15.03	19	2.65	4.0	7.83	14.58	21.33	28.08	1.42	1.83	3.30	4.73	6.17	41	48	56	63
	54'	7-9"	3.39	17.49	20.88	17.03	21	2.83	4.0	8.42	16.08	23.73	31.42	1.46	2.14	3.95	5.77	7.58	44	52	61	69
	60'	8-9"	3.56	19.55	23.11	19.03	23	3.00	4.0	9.00	17.50	26.00	34.50	1.50	2.45	4.68	6.87	9.07	47	56	65	75
	66'	9-2"	3.73	21.62	25.31	21.03	25	3.16	4.0	9.58	18.75	27.75	37.00	1.54	2.88	5.54	8.18	10.84	49	59	69	80
72'	10-0"	3.91	23.69	27.59	23.03	27	3.30	4.0	10.16	20.16	30.16	40.16	1.58	3.54	6.61	9.87	13.13	52	63	74	85	



LAST REVISION: 07/01/02	DESCRIPTION:	2015 DESIGN STANDARDS	CROSS DRAIN MITERED END SECTION	INDEX NO. 272	SHEET NO. 1 of 6
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LAST REVISION: 07/01/02	DESCRIPTION:	2015 DESIGN STANDARDS	CROSS DRAIN MITERED END SECTION	INDEX NO. 272	SHEET NO. 6 of 6
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**6" UNDERDRAIN DETAIL (FOR FINE AGGREGATE)**

**FINE AGGREGATE - NOTES**

- Minimum grade on underdrain pipe shall be 0.2%.
- Fine aggregate shall be quartz sand meeting the requirements of Sections 902-4 of the Standard Specifications.
- Non-perforated shall be used for all roadway crossings. Perforated pipe shall not be placed under street pavement.
- Filter fabric shall be Type D-3; in accordance with FDOT Index 199.
- All piping shall meet FDOT 948-1.5 Standards for PVC Pipe and FDOT 948-2 for Corrugated Polyethylene Pipe.
- When Corrugated Polyethylene tubing with slots or 360° perforations is used in conjunction with fine aggregate, a filter fabric sock meeting 948-3 is required.
- 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.
- Filter material (fine aggregate) shall be completely wrapped in filter fabric. All filter fabric shall overlap a minimum of 1" (12 inches).

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STARKEY RANCH VILLAGE 2  
PHASE 1A  
DRAINAGE DETAILS

GENTRY LAND COMPANY

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	01/21/2015	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: DD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

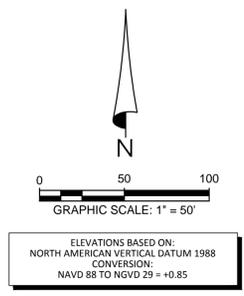
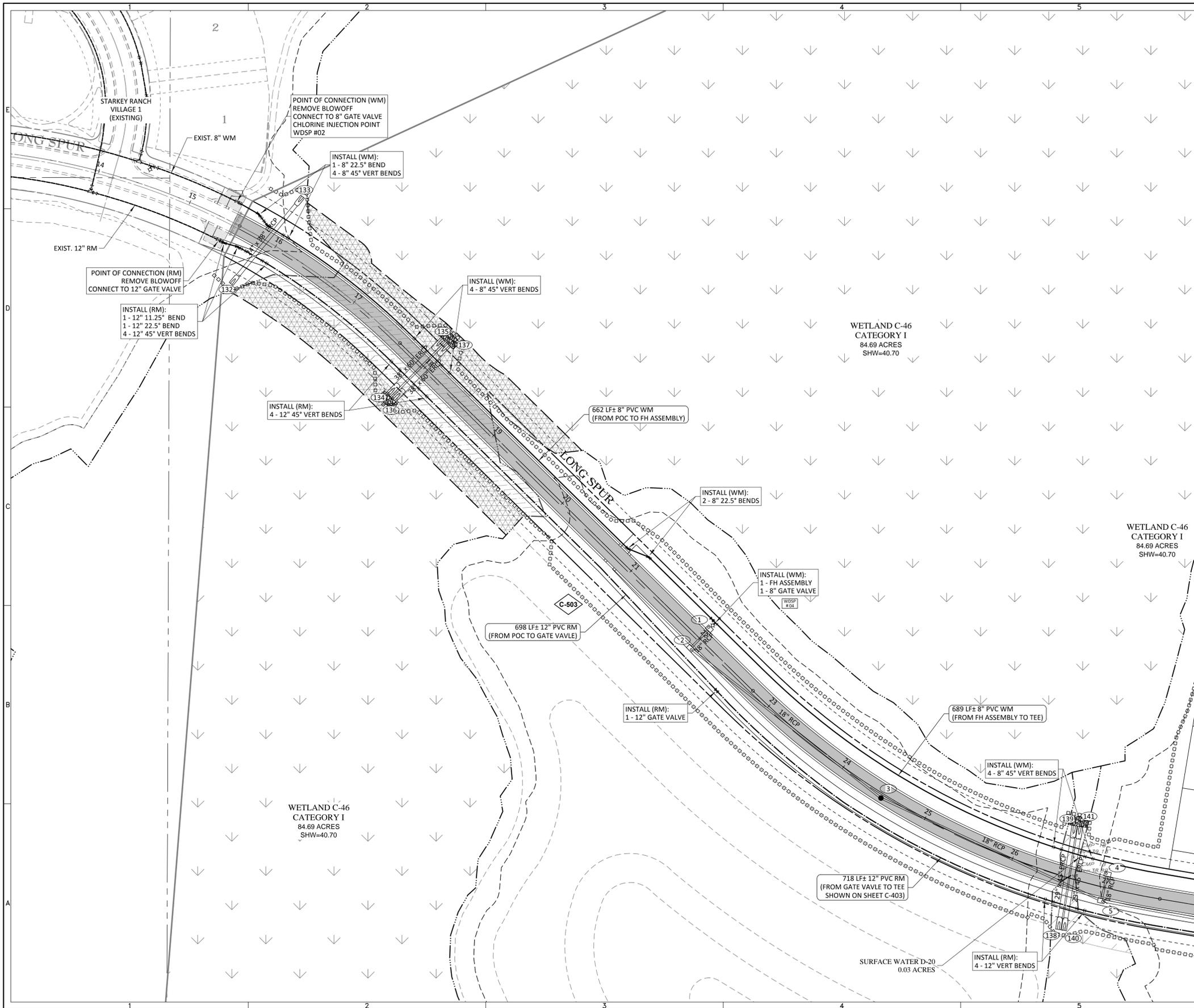
GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-316**

I, GARY D. MILLER, LICENSED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA, NUMBER 52717, HEREBY CERTIFY THAT I AM THE DESIGNER OF THE ABOVE TITLED PROJECT AND THAT I AM A MEMBER IN GOOD STANDING OF THE FLORIDA SOCIETY OF PROFESSIONAL ENGINEERS. I HEREBY GRANTED SPECIFICALLY TO GOVERNMENTAL AGENCIES TO REPRODUCE THE DOCUMENTATION IN COMPLIANCE WITH F.S. CHAPTER 119.

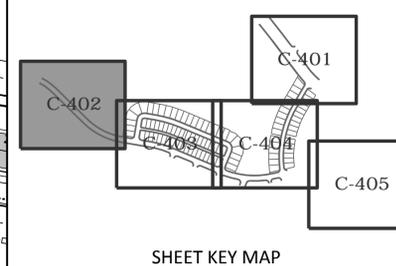






- GENERAL LEGEND**
- EPCWL --- EPC WETLAND LINE
  - WCAS --- WETLAND CONS. AREA SETBACK
  - COE --- COE WETLAND LINE
  - SWFWMD PROJECT LIMITS (0.0 AC.)
  - 12" Oak ○ EXISTING TREE TO BE REMOVED
  - 12" Oak ○ EXISTING TREE TO BE PROTECTED
  - ◇ PROPOSED TREE BARRICADE
  - STAKED EROSION CONTROL
  - ◇ C-510 ◇ PLAN & PROFILE SHEET NUMBER

- WATER & SEWER LEGEND**
- |              |              |                                    |
|--------------|--------------|------------------------------------|
| EXISTING     | PROPOSED     |                                    |
| --- (10) --- | --- (10) --- | STORM STRUCTURE NUMBER             |
| --- (10) --- | --- (10) --- | STORM DRAINAGE STRUCTURE           |
| --- (10) --- | --- (10) --- | WATER MAIN (WM)                    |
| --- (10) --- | --- (10) --- | RECLAIMED WATER MAIN (RM)          |
| --- (10) --- | --- (10) --- | FIRE HYDRANT                       |
| --- (10) --- | --- (10) --- | VALVE & BOX                        |
| --- (10) --- | --- (10) --- | REDUCER                            |
| --- (10) --- | --- (10) --- | PLUG                               |
| --- (10) --- | --- (10) --- | BLOW-OFF                           |
| --- (10) --- | --- (10) --- | BENDS                              |
| --- (10) --- | --- (10) --- | VERTICAL BENDS                     |
| --- (10) --- | --- (10) --- | WATER DISTRIBUTION SAMPLING POINT  |
| --- (10) --- | --- (10) --- | WATER SERVICE DOUBLE               |
| --- (10) --- | --- (10) --- | WATER SERVICE SINGLE               |
| --- (10) --- | --- (10) --- | WATER SERVICE CASING               |
| --- (10) --- | --- (10) --- | RECLAIMED WATER SERVICE DOUBLE     |
| --- (10) --- | --- (10) --- | RECLAIMED WATER SERVICE SINGLE     |
| --- (10) --- | --- (10) --- | RECLAIMED WATER SERVICE SLEEVE     |
| --- (10) --- | --- (10) --- | SANITARY SEWER (SM)                |
| --- (10) --- | --- (10) --- | SANITARY FORCE MAIN (FM)           |
| --- (10) --- | --- (10) --- | SANITARY SERVICE DOUBLE W/CLEANOUT |
| --- (10) --- | --- (10) --- | SANITARY SERVICE SINGLE W/CLEANOUT |



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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 WATER & SEWER PLAN**

PREPARED FOR:  
**GENTRLY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

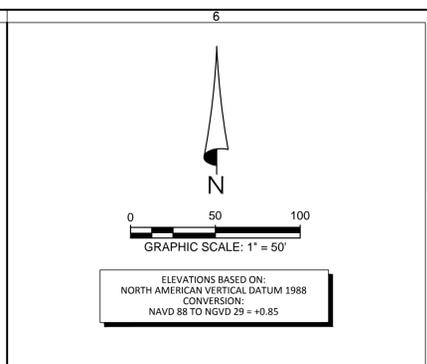
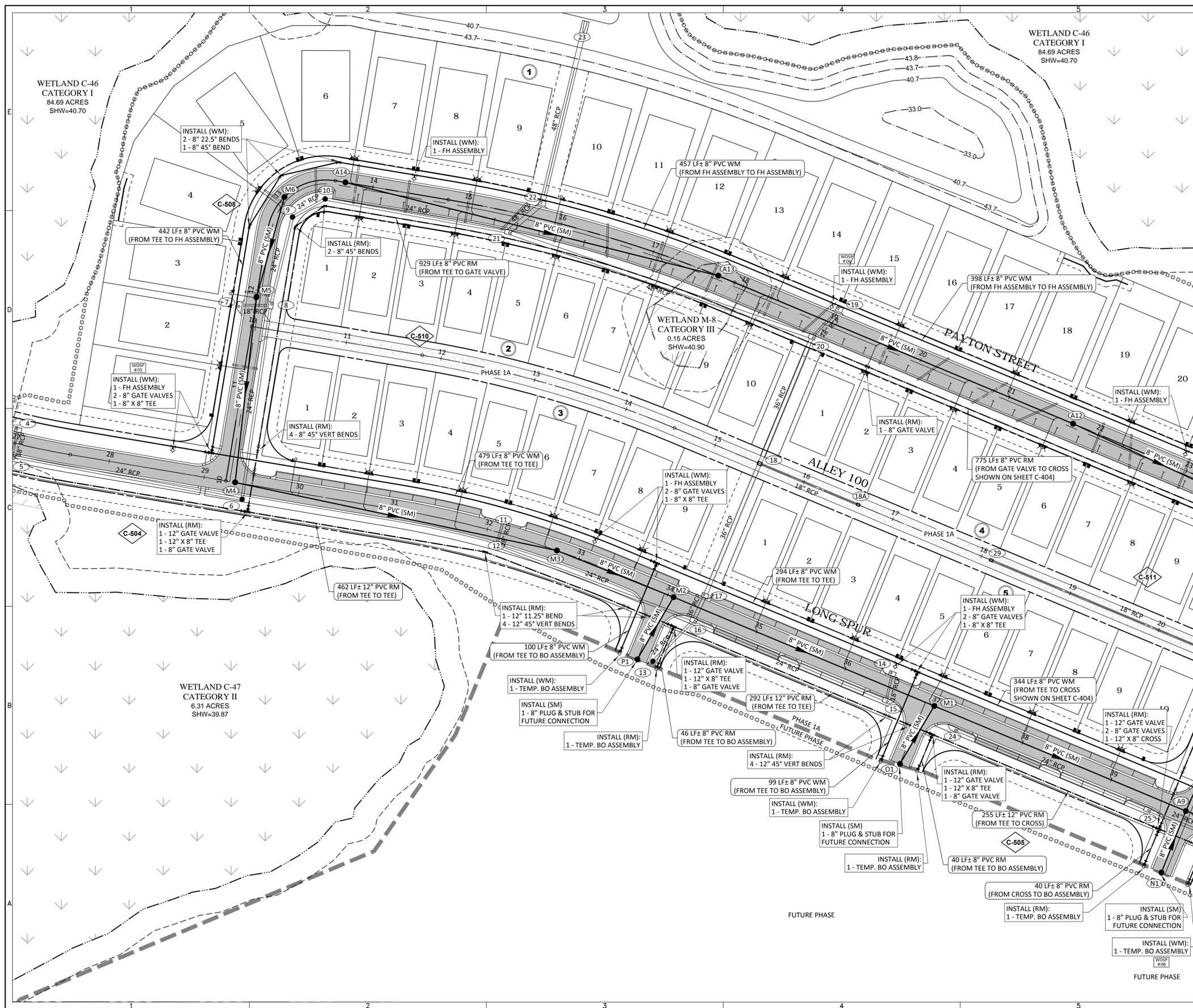
PROJECT NO: PHC-SR-1002  
 FILE: WS  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
 REGISTRATION NO. 62717

**C-402**

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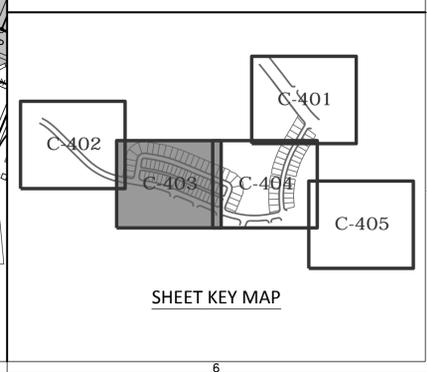
### GENERAL LEGEND

	EPCWETLAND LINE
	WETLAND CONS. AREA SETBACK
	COE WETLAND LINE
	SWFWM PROJECT LIMITS (0.0 AC.)
	EXISTING TREE TO BE REMOVED
	EXISTING TREE TO BE PROTECTED
	PROPOSED TREE BARRICADE
	STAKED EROSION CONTROL
	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



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

STARKEY RANCH VILLAGE 2  
PHASE 1A  
WATER & SEWER PLAN

PREPARED FOR:  
GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

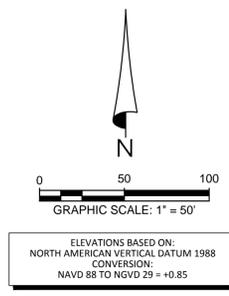
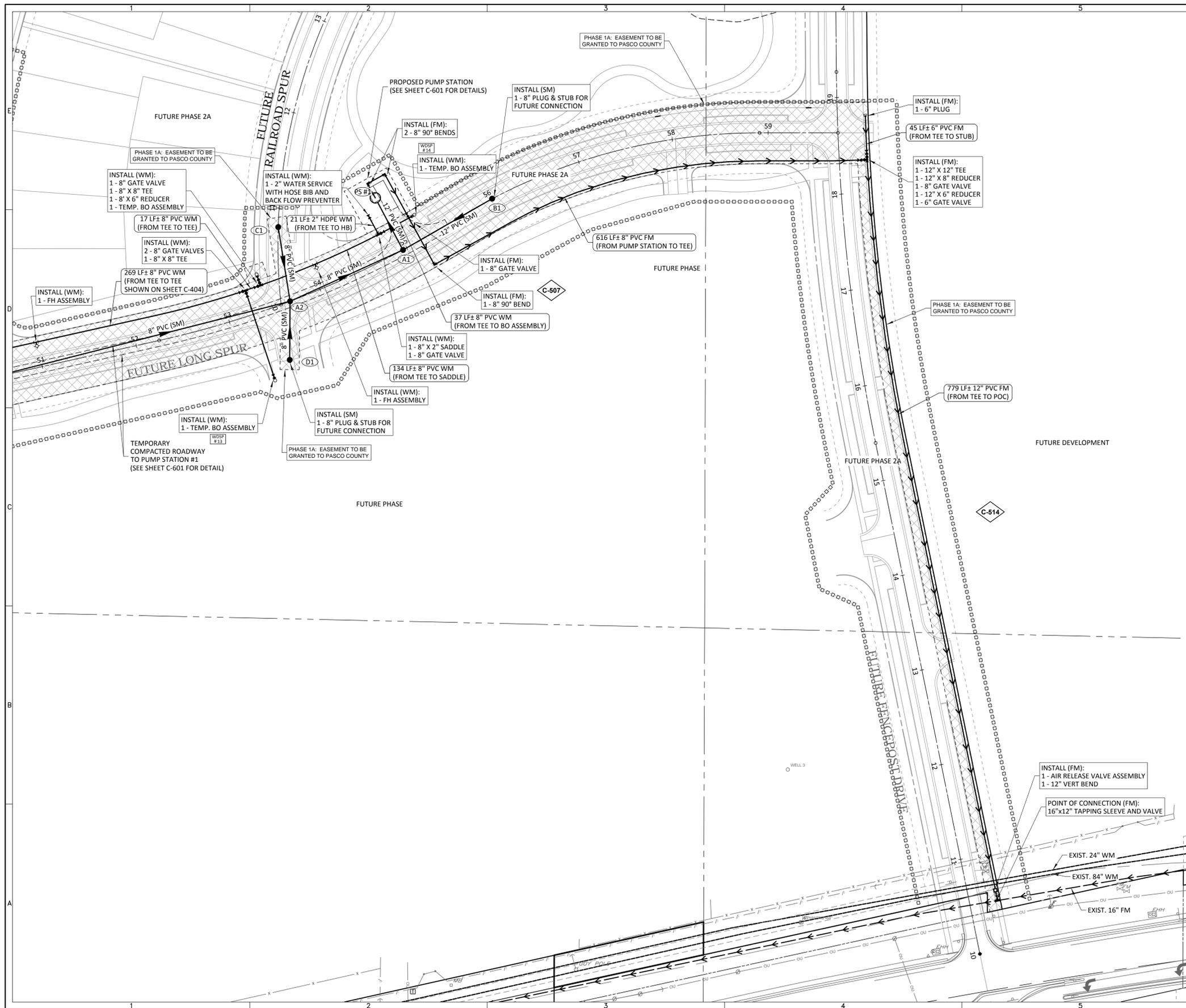
PROJECT NO: PHC-SR-1002  
FILE: WS  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

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GARY D. MILLER  
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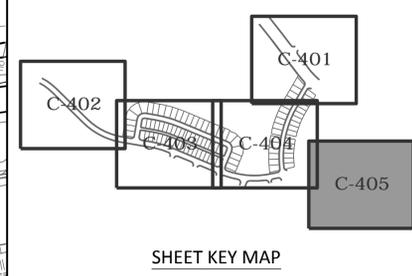
**C-403**





- GENERAL LEGEND**
- EPCWL --- EPC WETLAND LINE
  - WCAS --- WETLAND CONS. AREA SETBACK
  - COE --- COE WETLAND LINE
  - SWFWMD PROJECT LIMITS (0.0 AC.)
  - EXISTING TREE TO BE REMOVED
  - EXISTING TREE TO BE PROTECTED
  - ◇ PROPOSED TREE BARRICADE
  - STAKED EROSION CONTROL
  - ◇ PLAN & PROFILE SHEET NUMBER

- WATER & SEWER LEGEND**
- |              |              |                                    |
|--------------|--------------|------------------------------------|
| EXISTING     | PROPOSED     |                                    |
| --- (10) --- | --- (10) --- | STORM STRUCTURE NUMBER             |
| --- (10) --- | --- (10) --- | STORM DRAINAGE STRUCTURE           |
| --- (10) --- | --- (10) --- | WATER MAIN (WM)                    |
| --- (10) --- | --- (10) --- | RECLAIMED WATER MAIN (RM)          |
| --- (10) --- | --- (10) --- | FIRE HYDRANT                       |
| --- (10) --- | --- (10) --- | VALVE & BOX                        |
| --- (10) --- | --- (10) --- | REDUCER                            |
| --- (10) --- | --- (10) --- | PLUG                               |
| --- (10) --- | --- (10) --- | BLOW-OFF                           |
| --- (10) --- | --- (10) --- | BENDS                              |
| --- (10) --- | --- (10) --- | VERTICAL BENDS                     |
| WDSP #       | WDSP #       | 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)           |
| Y            | Y            | SANITARY SERVICE DOUBLE W/CLEANOUT |
| Y            | Y            | SANITARY SERVICE SINGLE W/CLEANOUT |



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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
WATER & SEWER PLAN**

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	07/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: WS  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

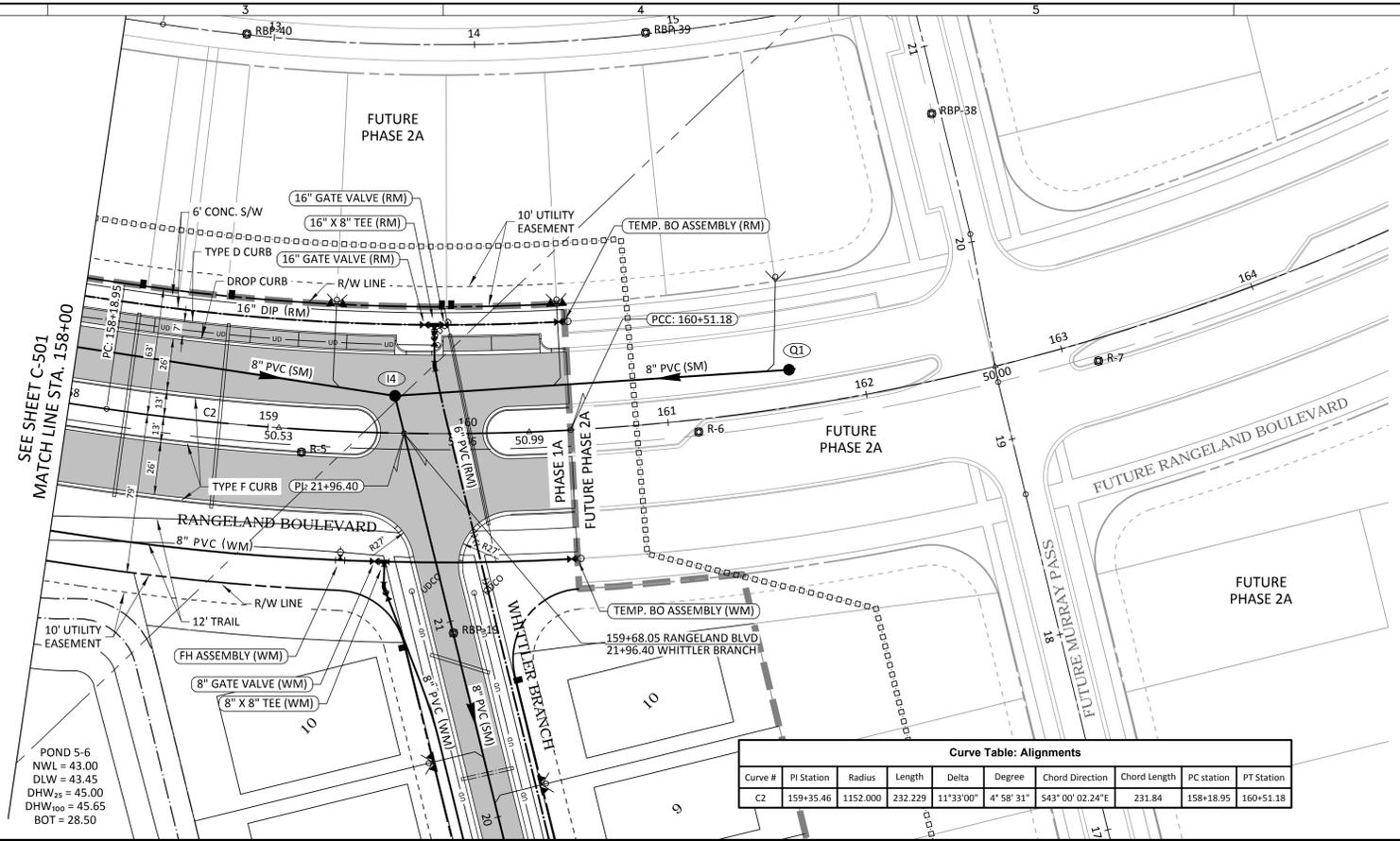
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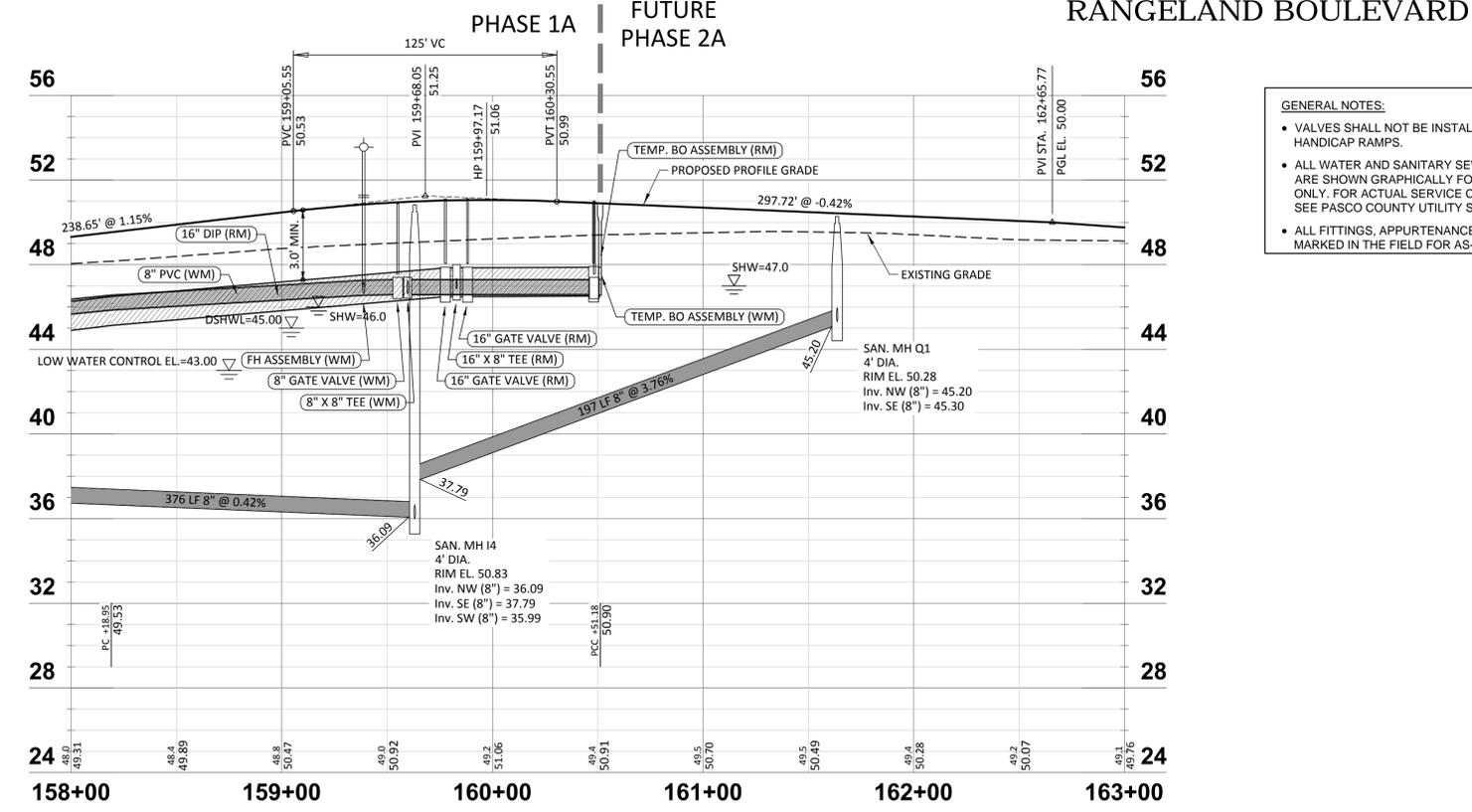
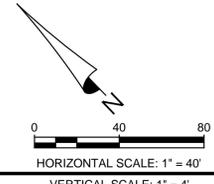


ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85



POND 5-6  
NW1 = 43.00  
DLW = 43.45  
DHW<sub>25</sub> = 45.00  
DHW<sub>100</sub> = 45.65  
BOT = 28.50

Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C2	159+35.46	1152.000	232.229	11°33'00"	4°58'31"	S43°00'02.24"E	231.84	158+18.95	160+51.18



**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.

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STARKEY RANCH VILLAGE 2  
PHASE 1A  
RANGELAND BOULEVARD - PLAN &  
PROFILE

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	REVISION SUBMITTAL	DESCRIPTION
1	07/27/2016		

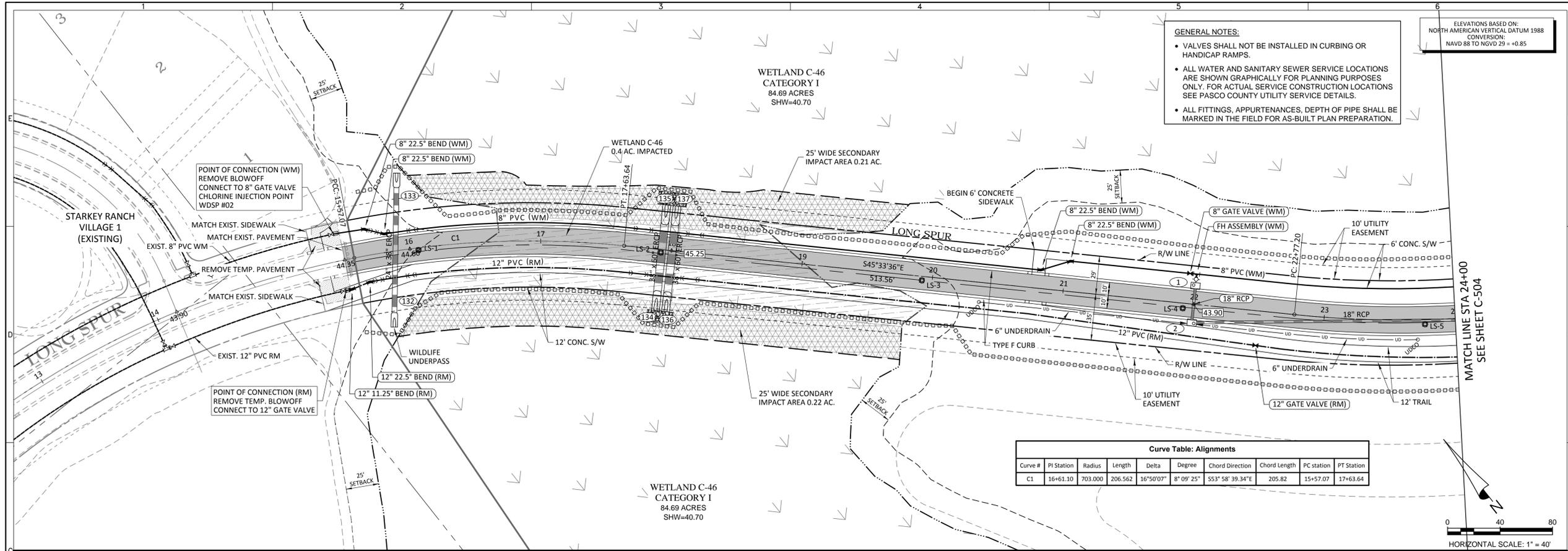
PROJECT NO: PHC-SR-1002  
FILE: RP-01  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
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- ALL FITTINGS, APPURTENANCES, DEPTH OF PIPE SHALL BE MARKED IN THE FIELD FOR AS-BUILT PLAN PREPARATION.

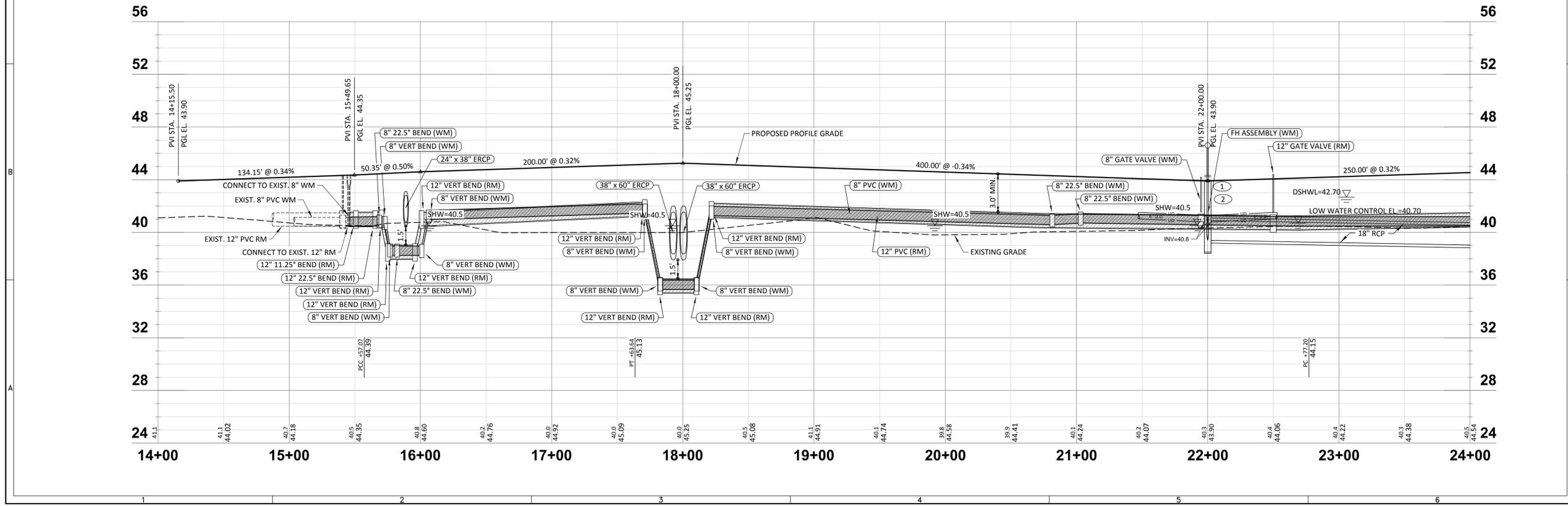
ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

**Curve Table: Alignments**

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C1	16+61.10	703.000	206.562	16°50'07"	8° 09' 25"	S53°58'39.34"E	205.82	15+57.07	17+63.64

**LONG SPUR**

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



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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
LONG SPUR - PLAN & PROFILE**

PREPARED FOR:  
**GENTRLY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

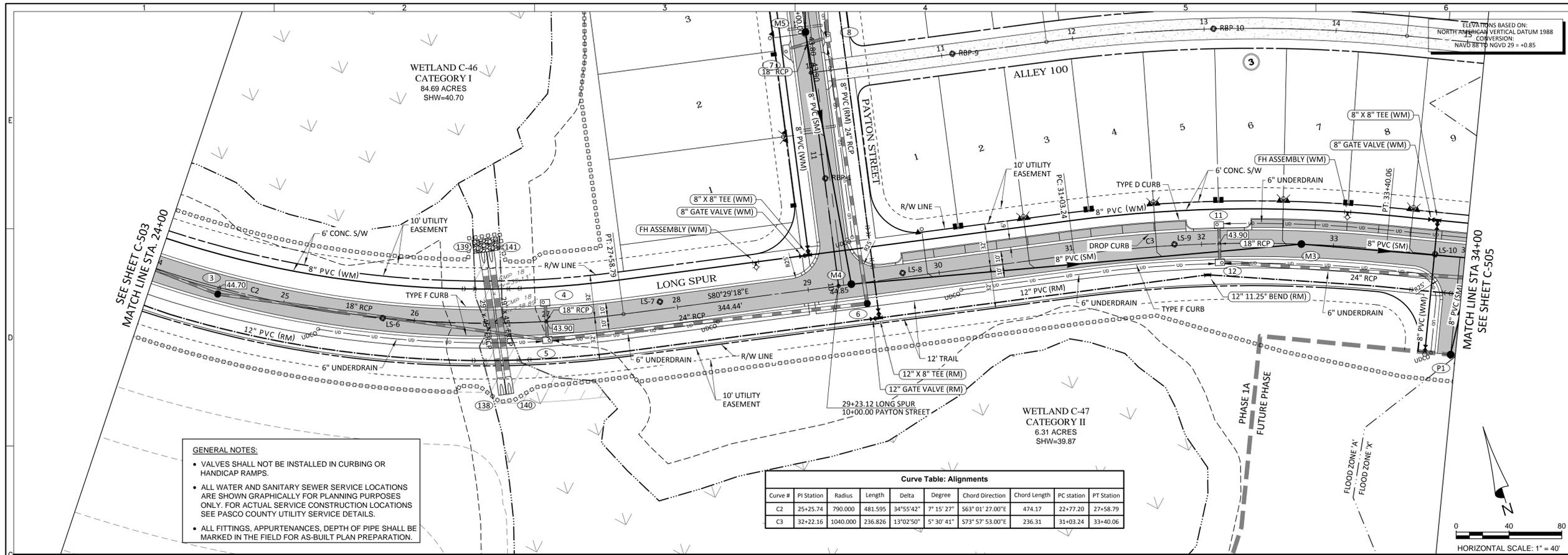
PROJECT NO: PHC-SR-1002  
FILE: RP-02  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 62717

**C-503**

R:\STARKEY RANCH\PARCEL 2\PHASE 1A\ENGINEERING\RP-02\DWG-C-503-20160120 4.18 PM MARK JONES  
 Engineering Business Certificate of Authorization No. 23752  
 Landscape Architecture Certificate of Authorization No. LC26000405

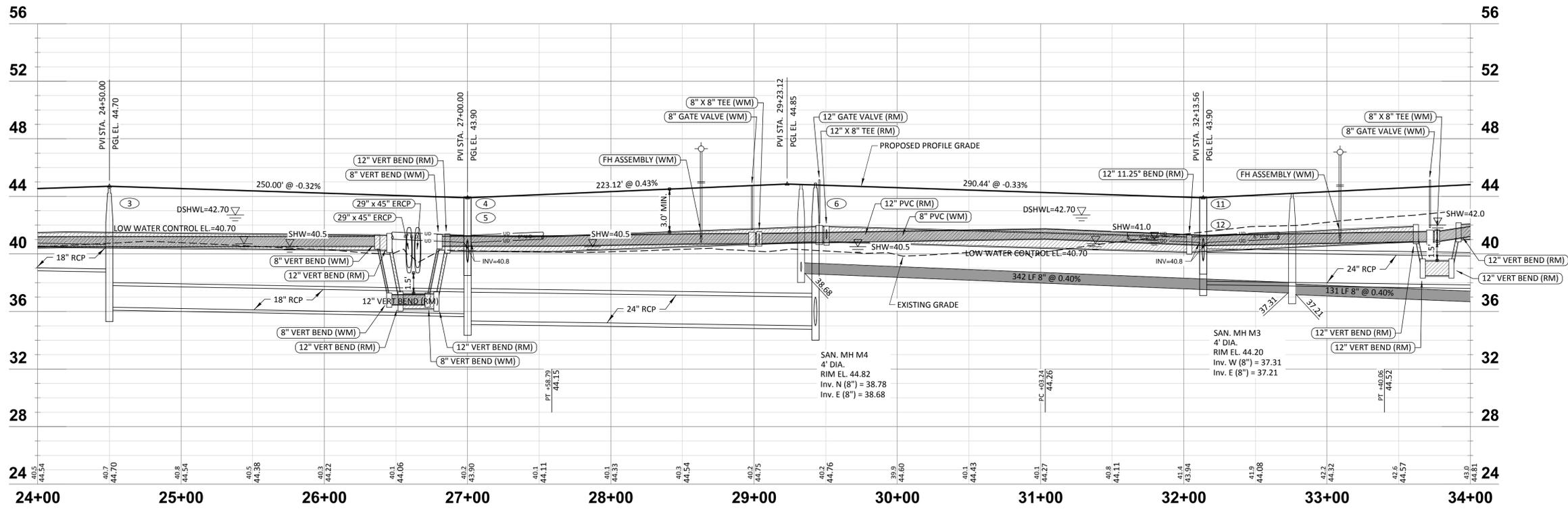


- GENERAL NOTES:**
- VALVES SHALL NOT BE INSTALLED IN CURBING OR HANDICAP RAMPS.
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Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C2	25+25.74	790.000	481.595	34°55'42"	7° 15' 27"	S63°01'27.00"E	474.17	22+77.20	27+58.79
C3	32+22.16	1040.000	236.826	13°02'50"	5° 30' 41"	S73°57'53.00"E	236.31	31+03.24	33+40.06

**LONG SPUR**

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



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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
LONG SPUR - PLAN & PROFILE**

PREPARED FOR:  
**GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

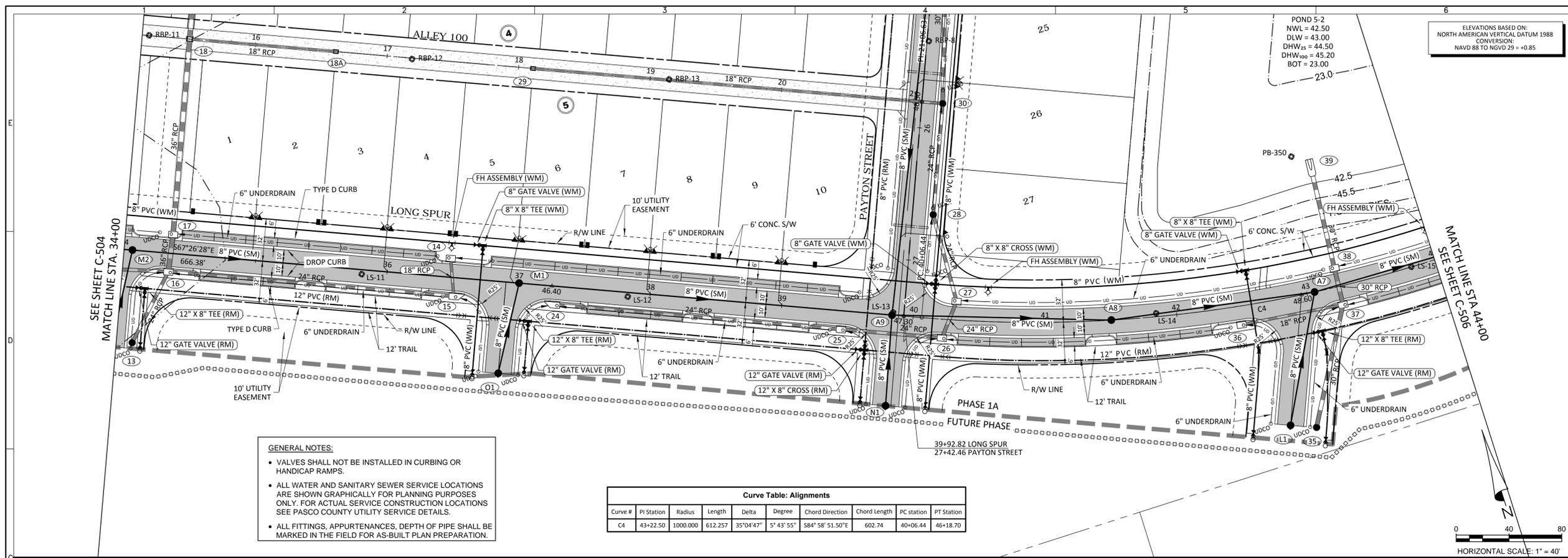
PROJECT NO: PHC-SR-1002  
FILE: RP-02  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-504**

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**Curve Table: Alignments**

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C4	43+22.50	1000.000	612.257	35°04'47"	5°43'55"	S84°58'51.50"E	602.74	40+06.44	46+18.70

ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

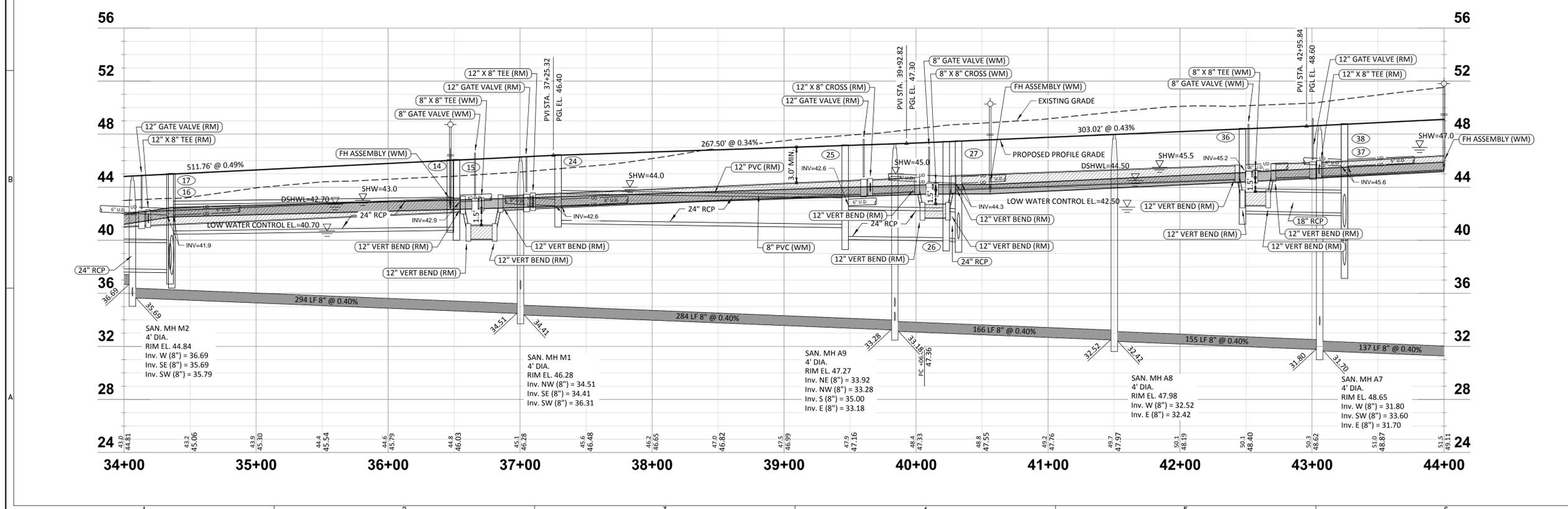


STARKEY RANCH VILLAGE 2  
PHASE 1A  
LONG SPUR - PLAN & PROFILE

PREPARED FOR:  
GENTRY LAND COMPANY

**LONG SPUR**

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



DATE	DESCRIPTION
01/21/2016	REVIEW SUBMITTAL

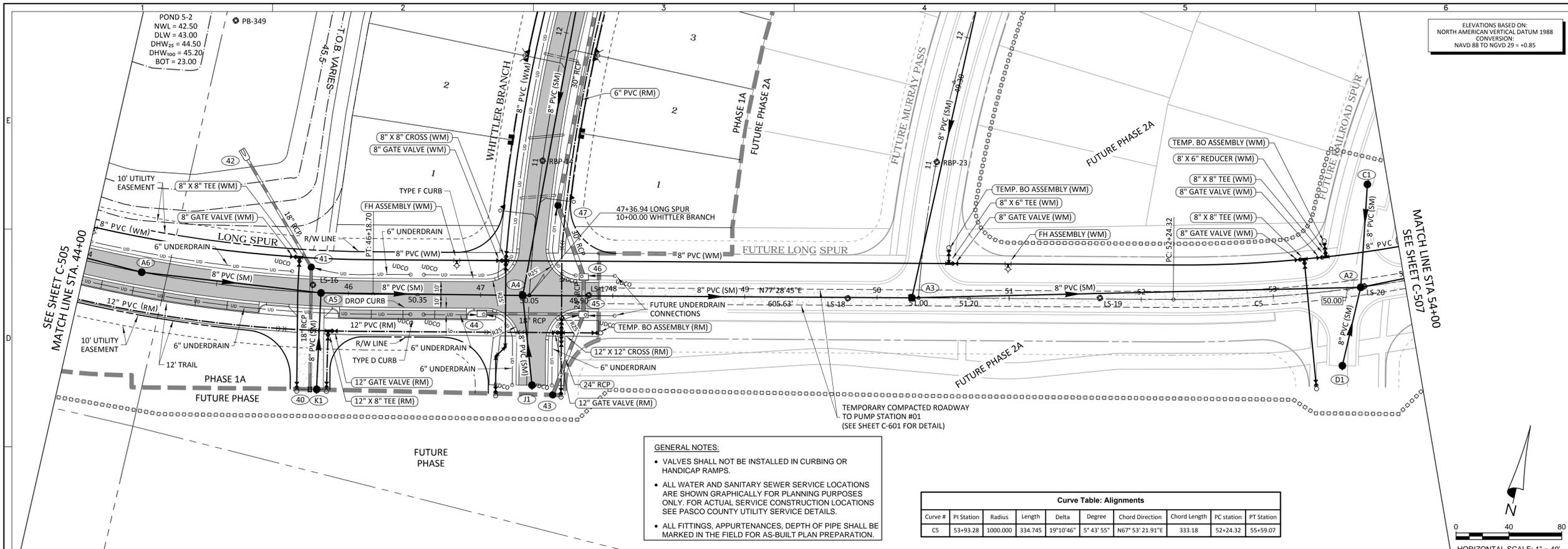
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FILE: RP-02  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 62717

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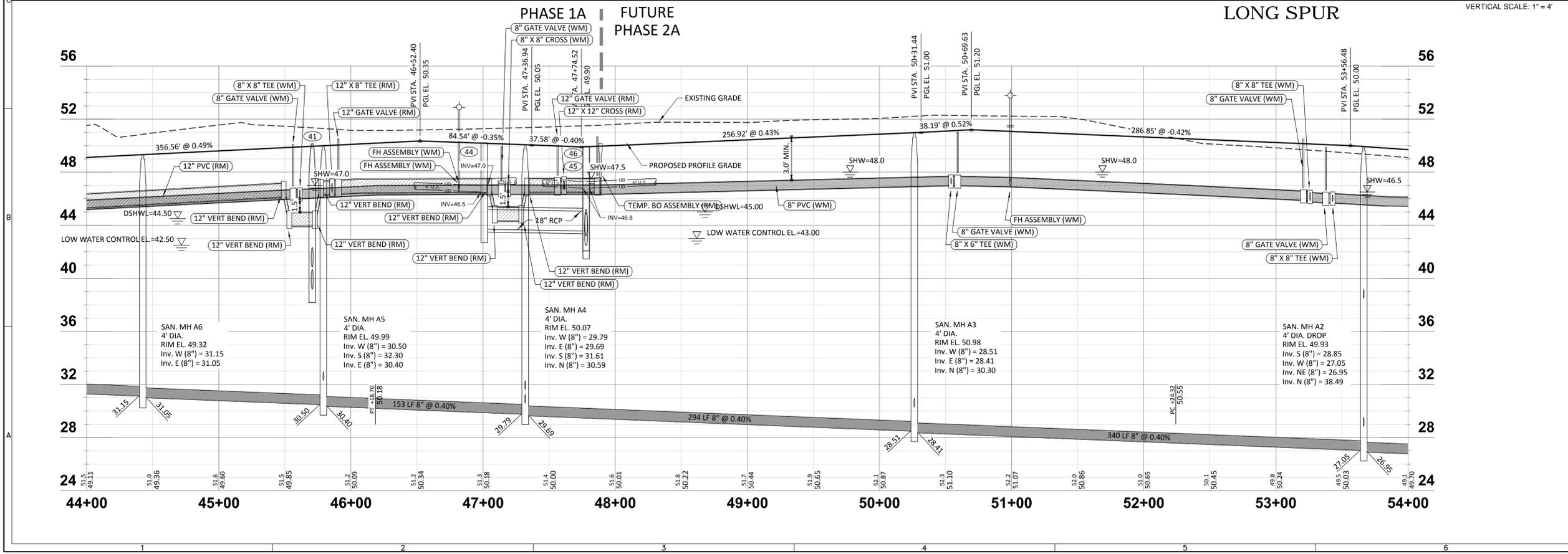


ELEVATIONS BASED ON:  
 NORTH AMERICAN VERTICAL DATUM 1988  
 CONVERSION:  
 NAVD 88 TO NGVD 29 = +0.85

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

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Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C5	53+93.28	1000.000	334.745	19°10'46"	5° 43' 55"	N67° 53' 21.91"E	333.18	52+24.32	55+59.07



STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 LONG SPUR - PLAN & PROFILE

PREPARED FOR:  
 GENTRY LAND COMPANY

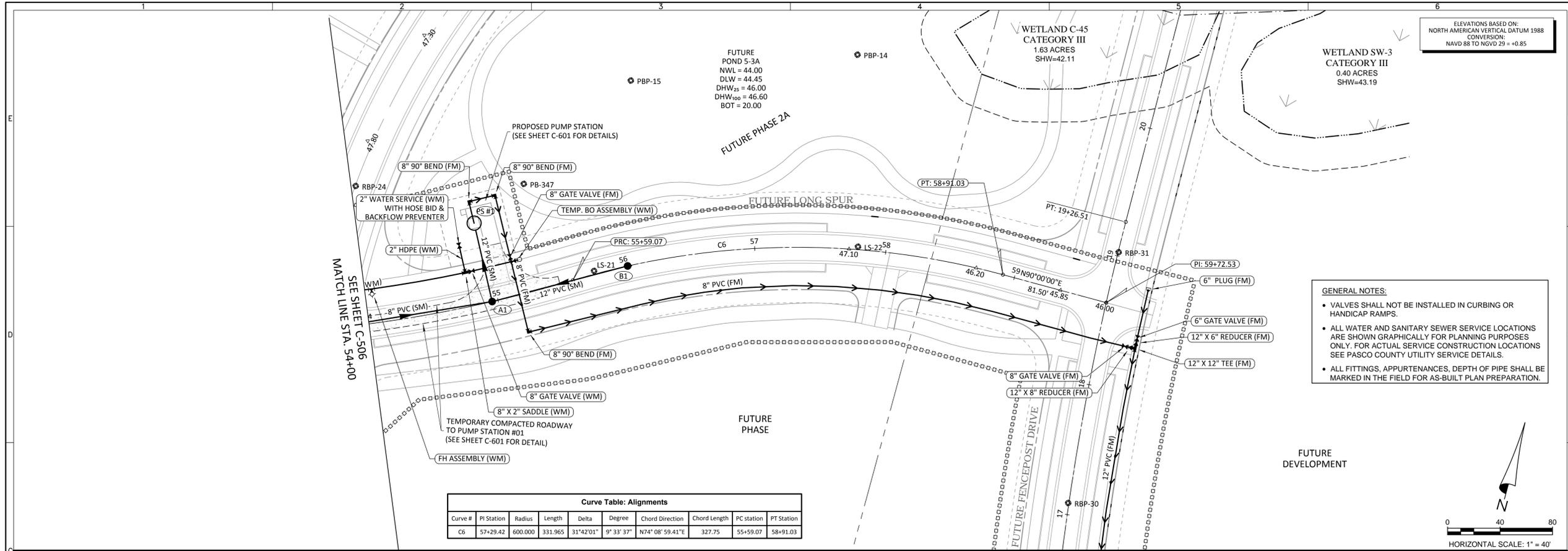
DATE	DESCRIPTION
01/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
 FILE: RP-02  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
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**C-506**

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 Engineering Business Certificate of Authorization No. 28792  
 Landscape Architecture Certificate of Authorization No. LC26000405



ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

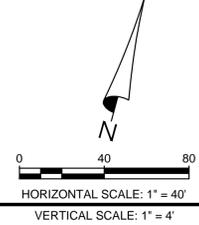
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DLW = 44.45  
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WETLAND C-45  
CATEGORY III  
1.63 ACRES  
SHW=42.11

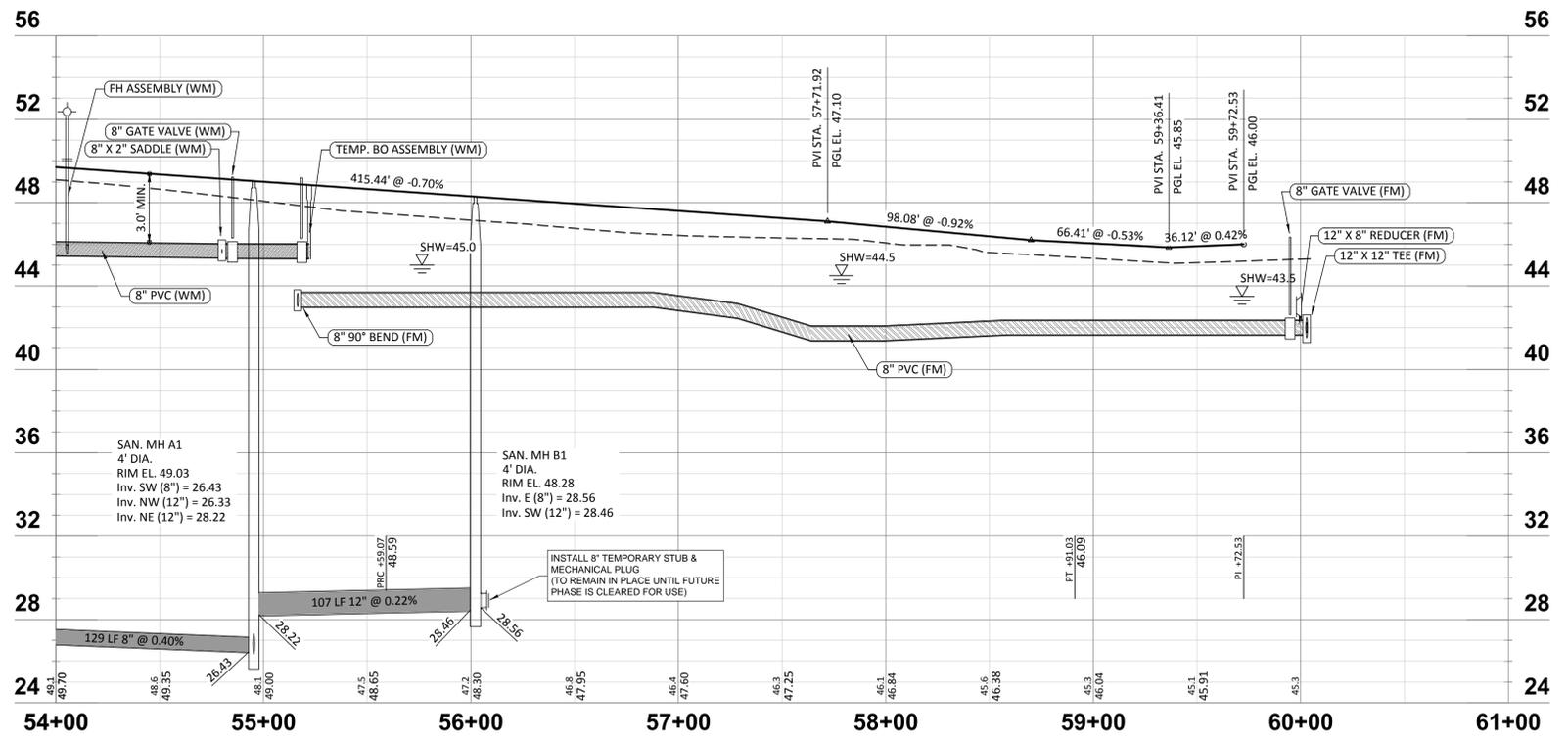
WETLAND SW-3  
CATEGORY III  
0.40 ACRES  
SHW=43.19

Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C6	57+29.42	600.000	331.965	31°42'01"	9°33'37"	N74°08'59.41"E	327.75	55+59.07	58+91.03

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**LONG SPUR**



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www.HeidtDesign.com

**STARKEY RANCH VILLAGE 2  
PHASE 1A  
LONG SPUR - PLAN & PROFILE**

PREPARED FOR: **GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	07/27/2016	REVIEW SUBMITTAL

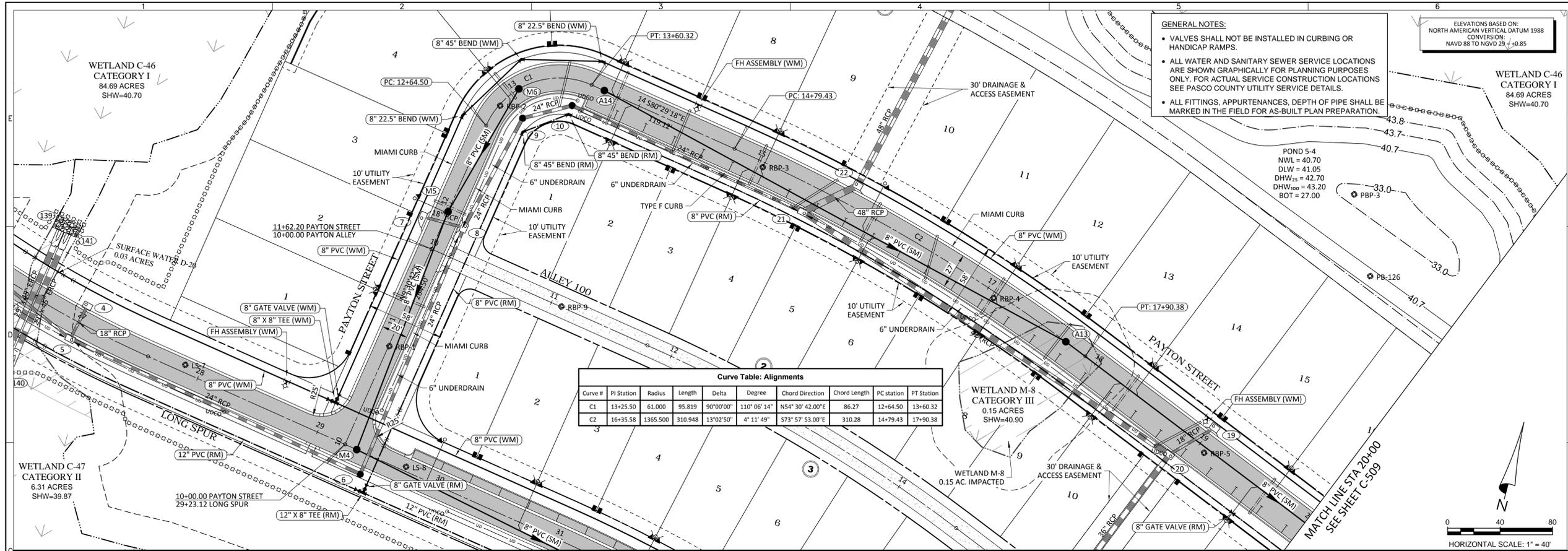
PROJECT NO: PHC-SR-1002  
FILE: RP-02  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

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NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

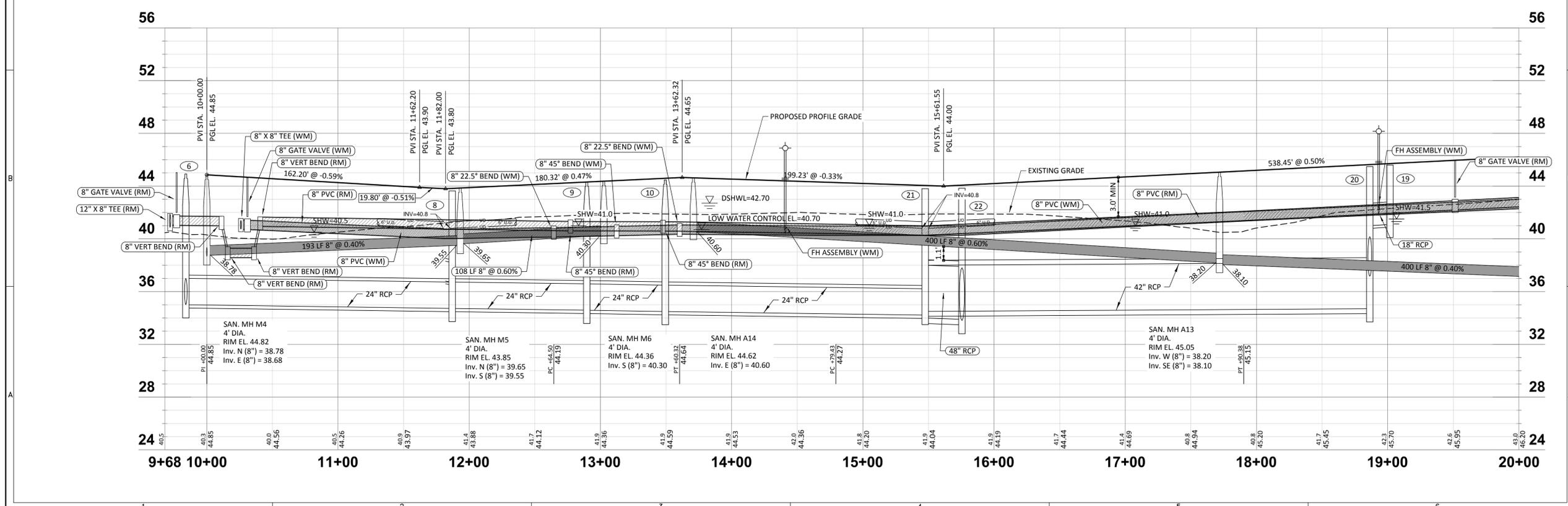
**Curve Table: Alignments**

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C1	13+25.50	61.000	95.819	90°00'00"	110°06'14"	N54°30'42.00"E	86.27	12+64.50	13+60.32
C2	16+35.58	1365.500	310.948	13°02'50"	4°11'49"	S73°57'53.00"E	310.28	14+79.43	17+90.38



**PAYTON STREET**

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



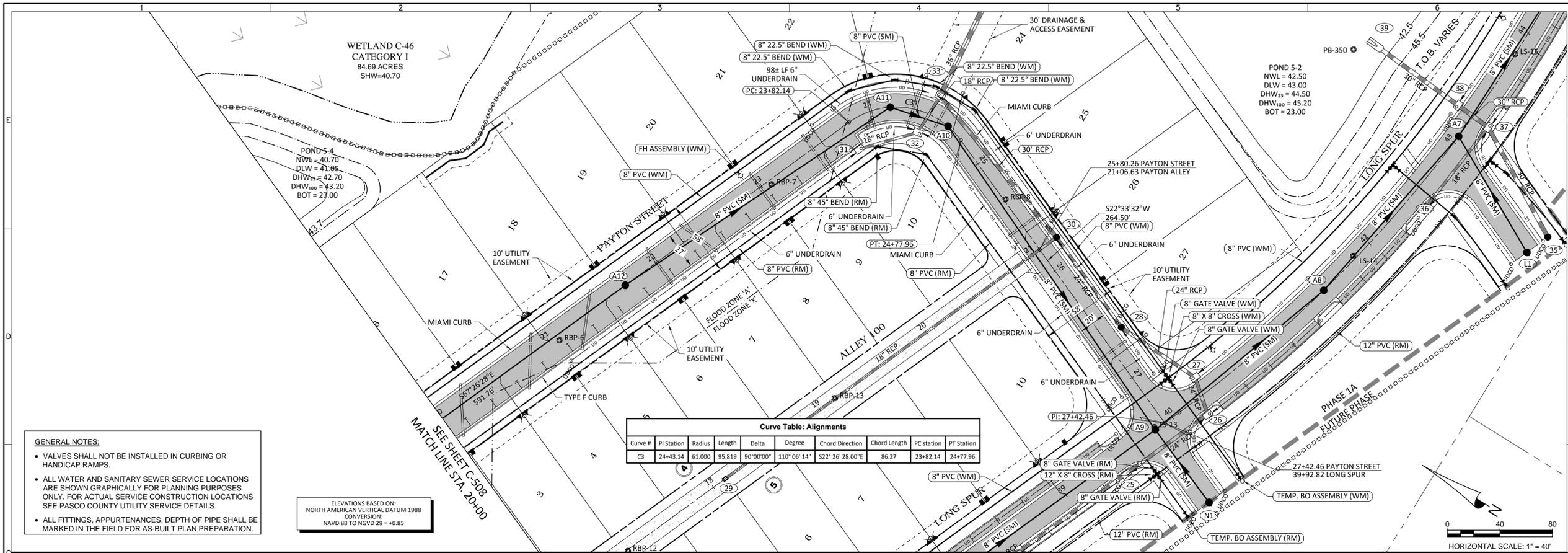
NO.	DATE	DESCRIPTION
1	01/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: RP-03  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-508**



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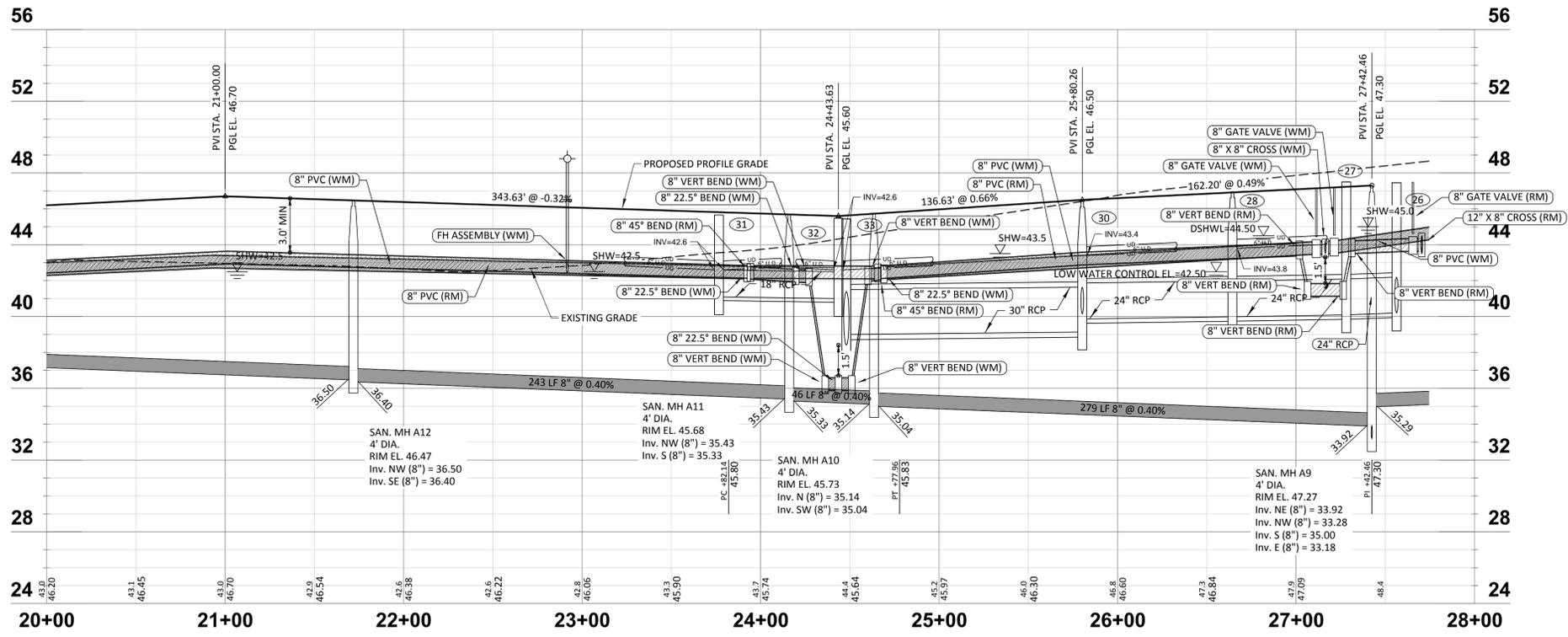
ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85

**Curve Table: Alignments**

Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC station	PT Station
C3	24+43.14	61.000	95.819	90°00'00"	110°06'14"	S22°26'28.00"E	86.27	23+82.14	24+77.96

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

**PAYTON STREET**



STARKEY RANCH VILLAGE 2  
PHASE 1A  
PAYTON STREET - PLAN & PROFILE

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

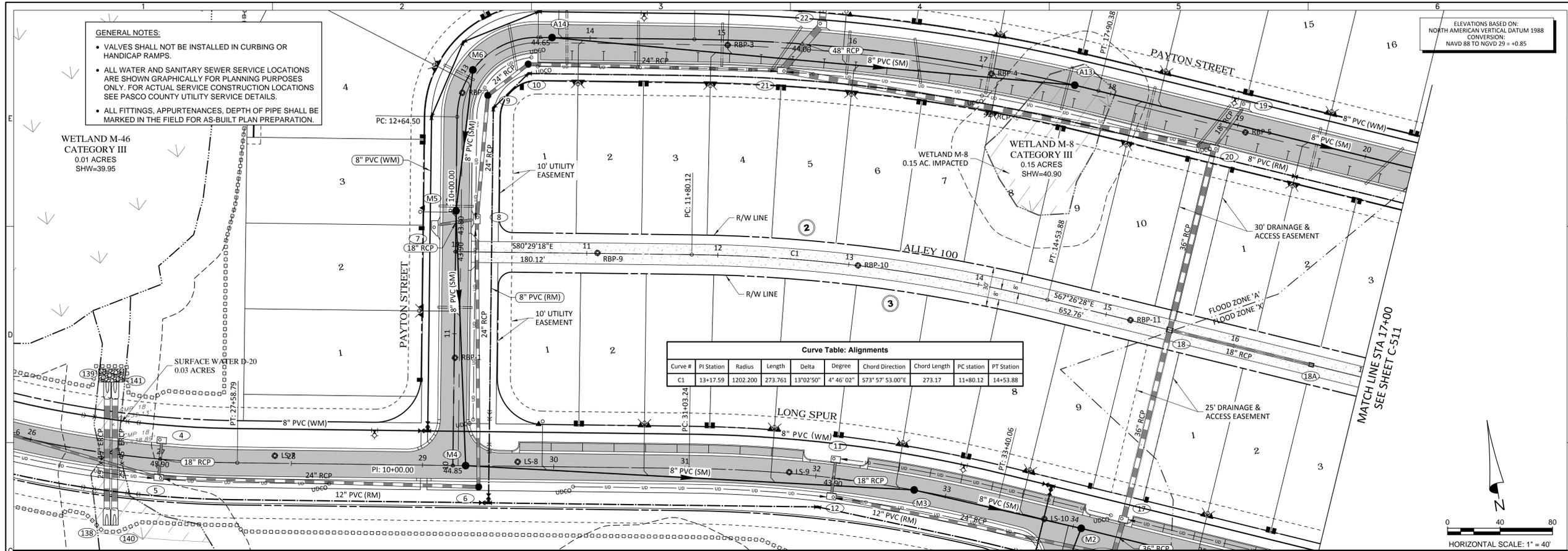
PROJECT NO: PHC-SR-1002  
FILE: RP-03  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
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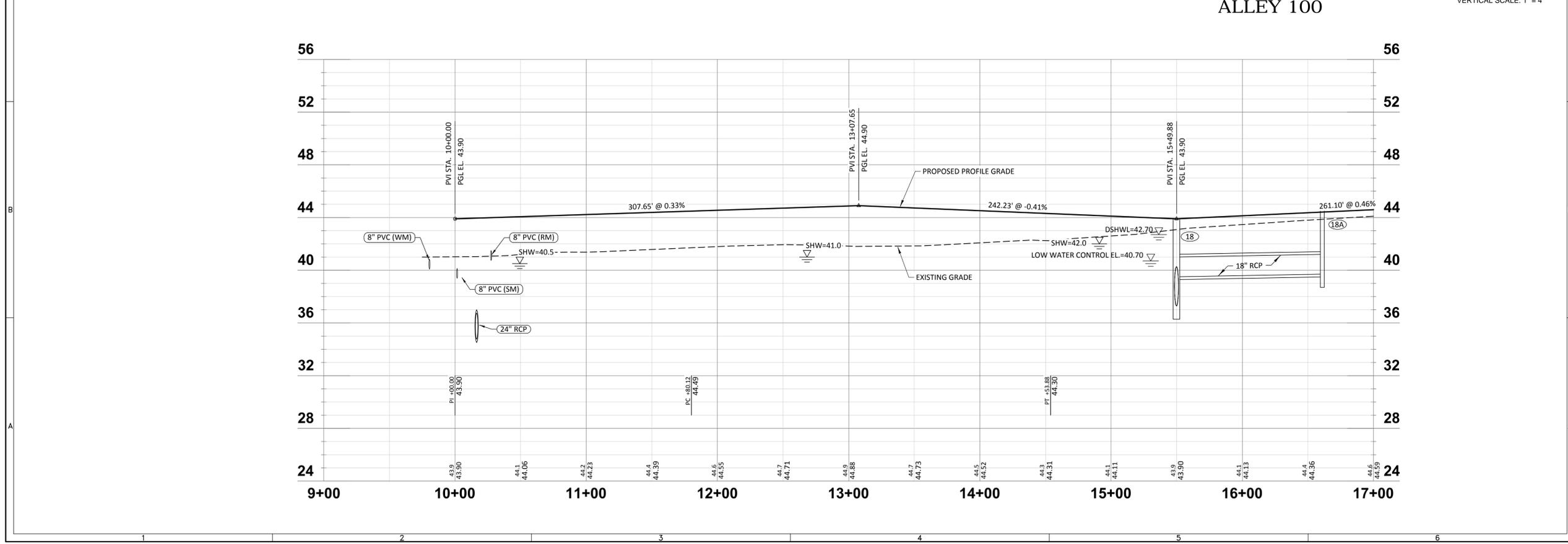
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CONVERSION:  
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Curve Table: Alignments									
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length	PC Station	PT Station
C1	13+17.59	1202.200	273.761	13°02'50"	4°46'02"	S73°57'53.00"E	273.17	11+80.12	14+53.88

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VERTICAL SCALE: 1" = 4'



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STARKEY RANCH VILLAGE 2  
PHASE 1A  
ALLEY 100 - PLAN & PROFILE

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

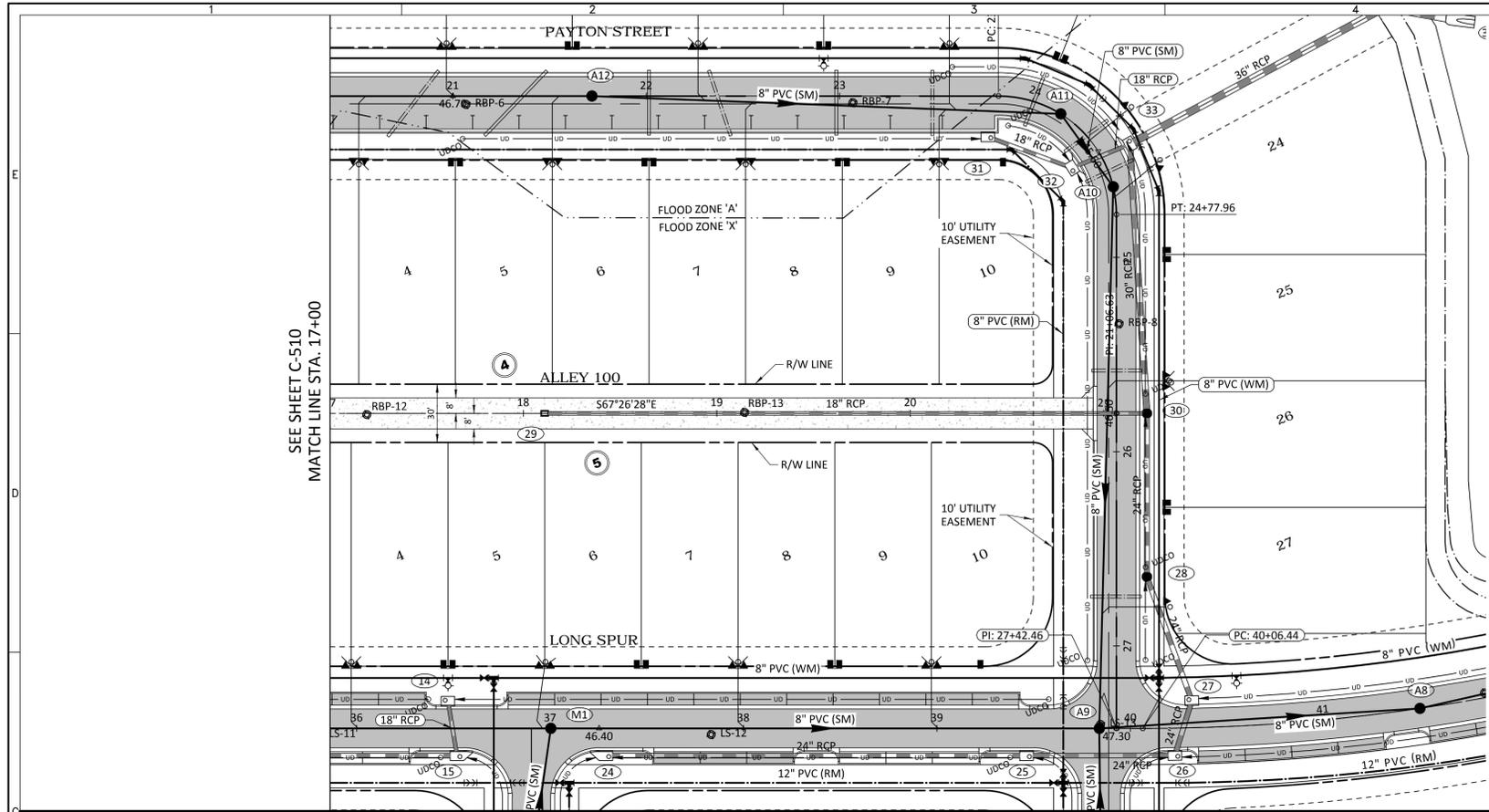
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FILE: RP-05  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

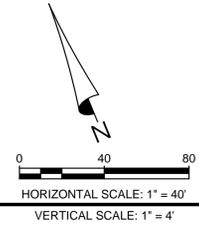
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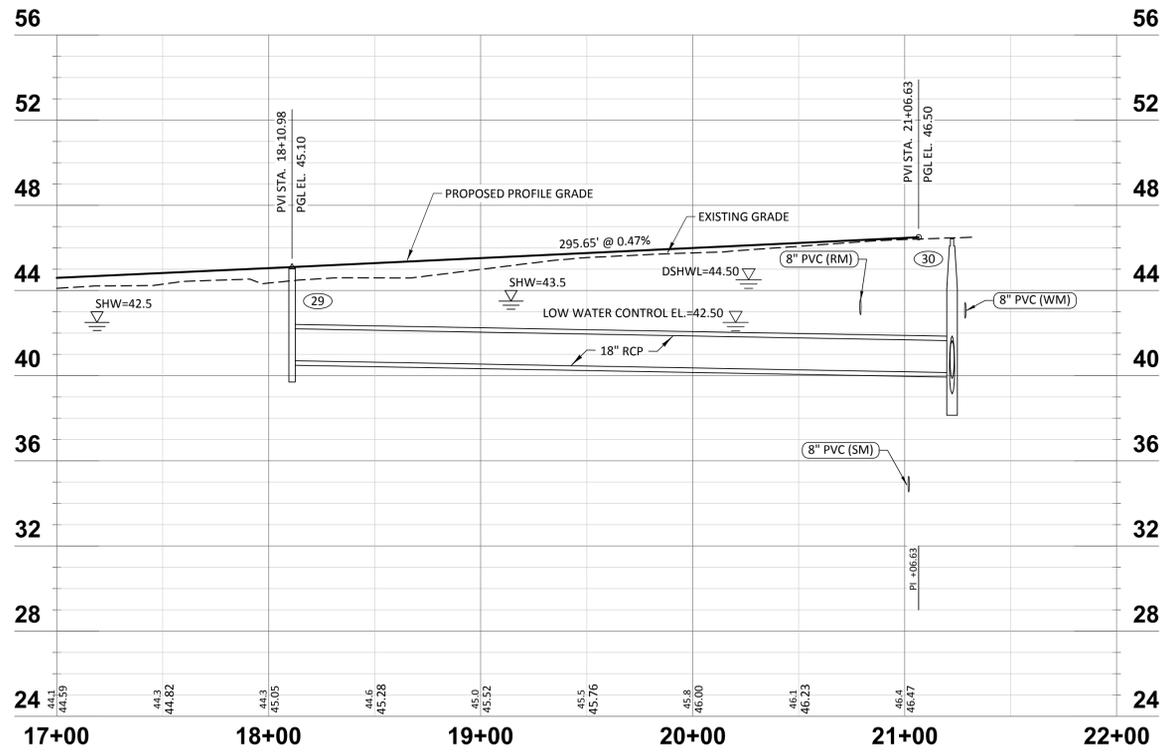


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ALLEY 100



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STARKEY RANCH VILLAGE 2  
PHASE 1A  
ALLEY 100 - PLAN & PROFILE

PREPARED FOR:  
GENTRY LAND COMPANY

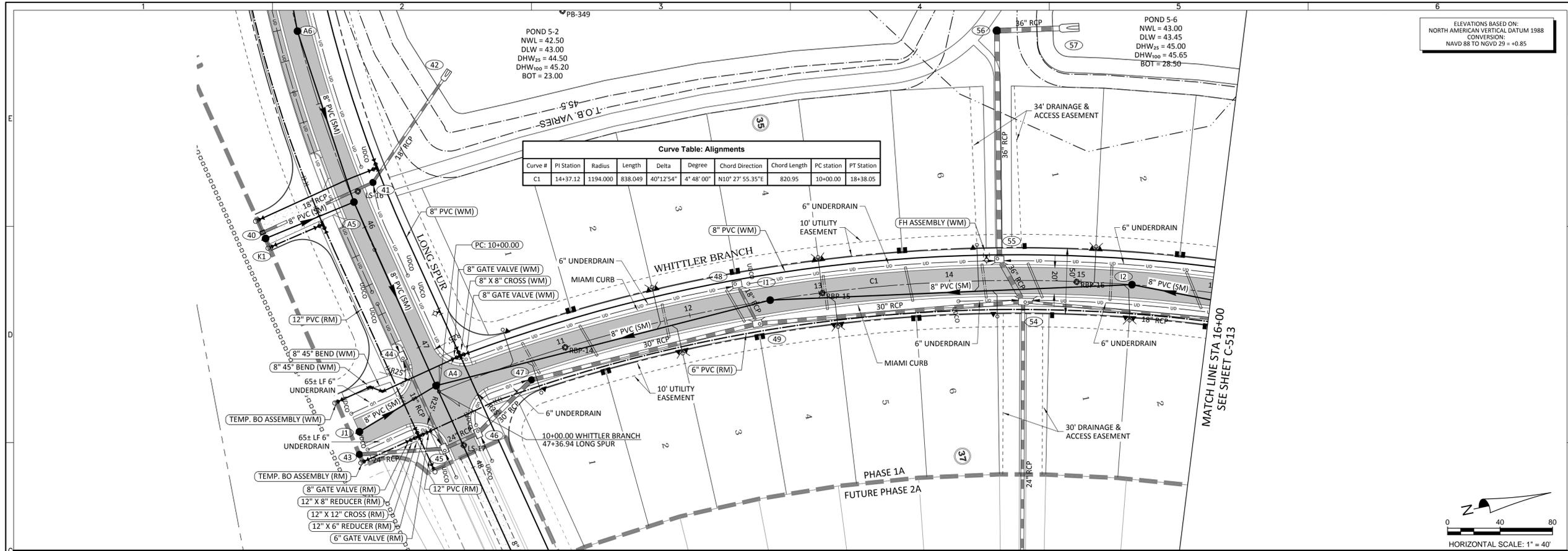
DATE	DESCRIPTION
07/27/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: RP-05  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

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GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

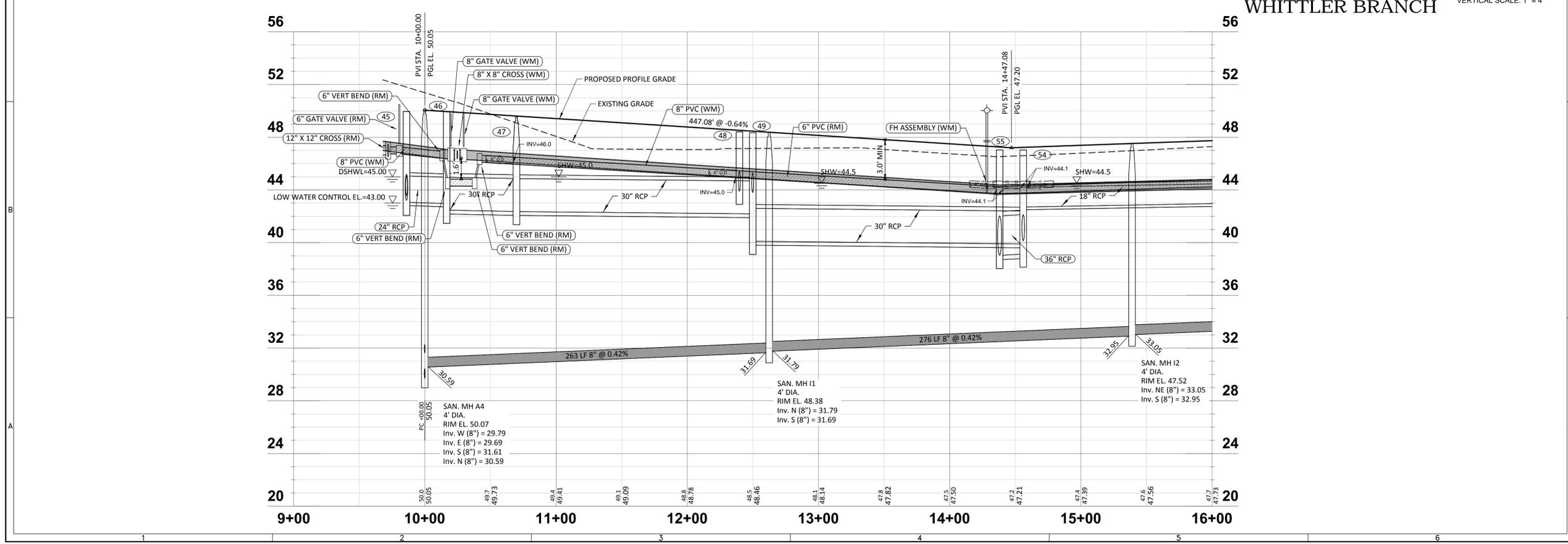
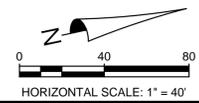
**C-511**

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Curve Table: Alignments							
Curve #	PI Station	Radius	Length	Delta	Degree	Chord Direction	Chord Length
C1	14+37.12	1194.000	838.049	40°12'54"	4° 48' 00"	N10° 27' 55.35"E	820.95

ELEVATIONS BASED ON:  
NORTH AMERICAN VERTICAL DATUM 1988  
CONVERSION:  
NAVD 88 TO NGVD 29 = +0.85



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STARKEY RANCH VILLAGE 2  
PHASE 1A  
WHITTler BRANCH - PLAN &  
PROFILE

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	07/27/2016	REVIEW SUBMITTAL

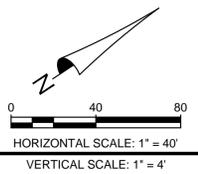
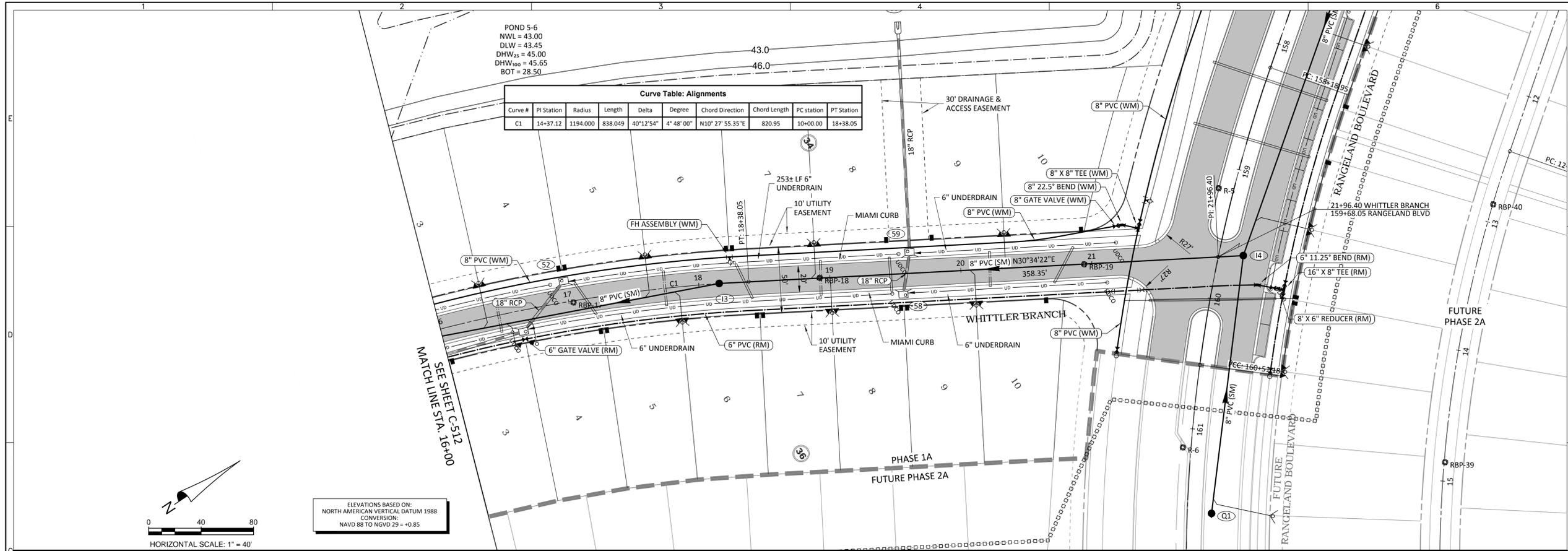
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FILE: RP-04  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

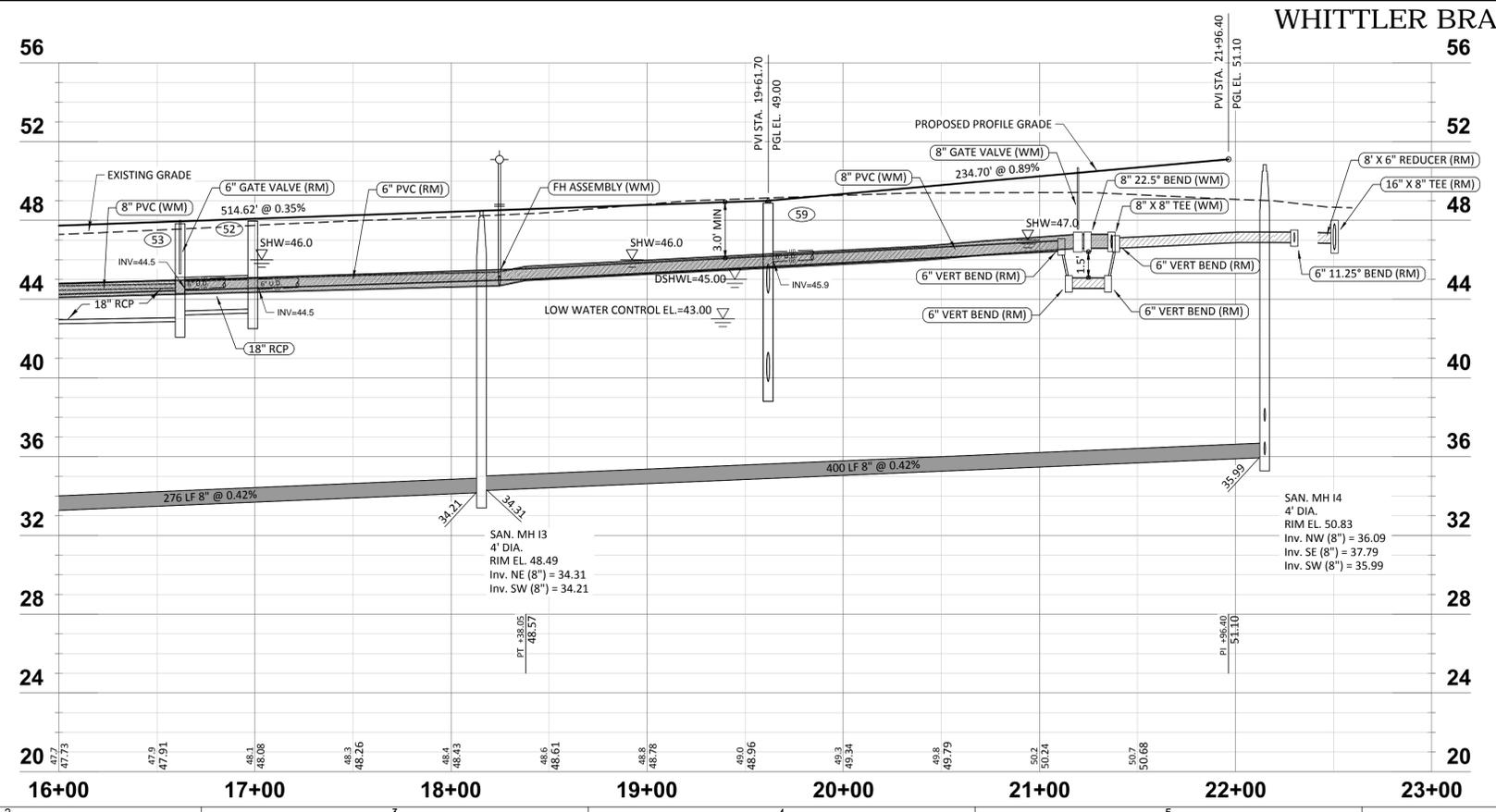
GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-512**

Engineering Business Certificate of Authorization No. 28792  
 Landscape Architecture Certificate of Authorization No. LC26000405  
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ELEVATIONS BASED ON:  
 NORTH AMERICAN VERTICAL DATUM 1988  
 CONVERSION:  
 NAVD 88 TO NGVD 29 = +0.85



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Engineering Business Certificate of Authorization No. 23752  
 Landscape Architecture Certificate of Authorization No. LC26000405

**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 WHITTler BRANCH - PLAN &  
 PROFILE**

PREPARED FOR: GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	07/27/2016	REVIEW SUBMITTAL

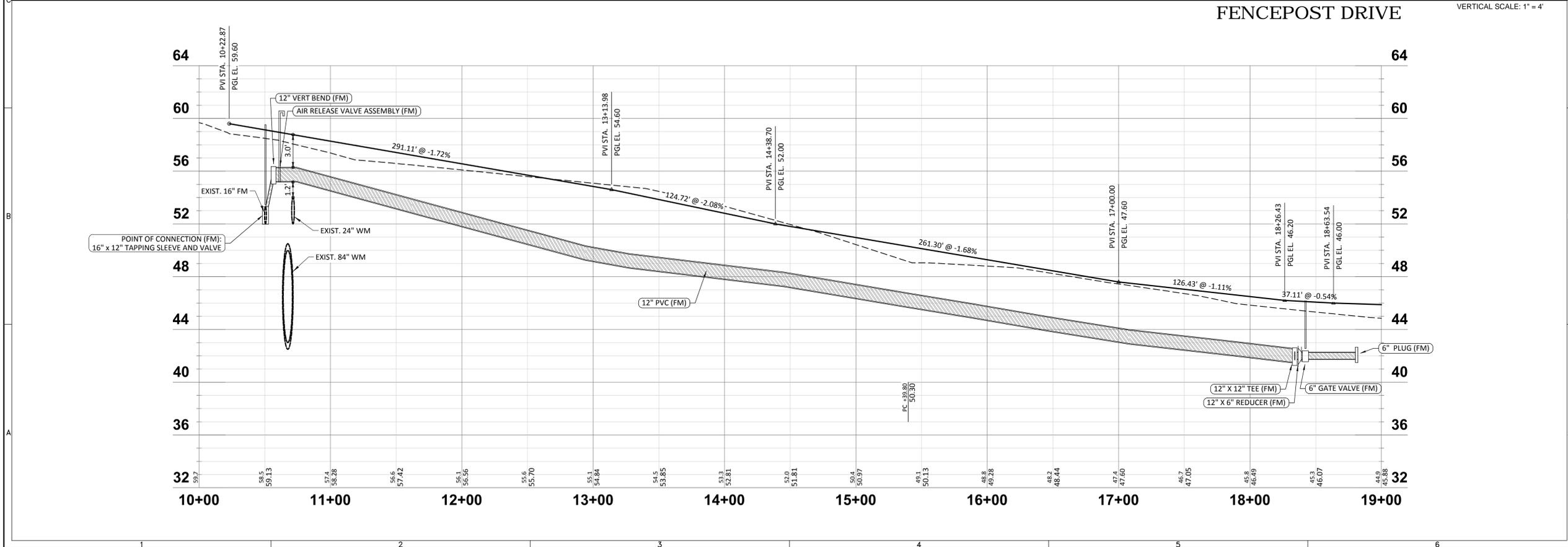
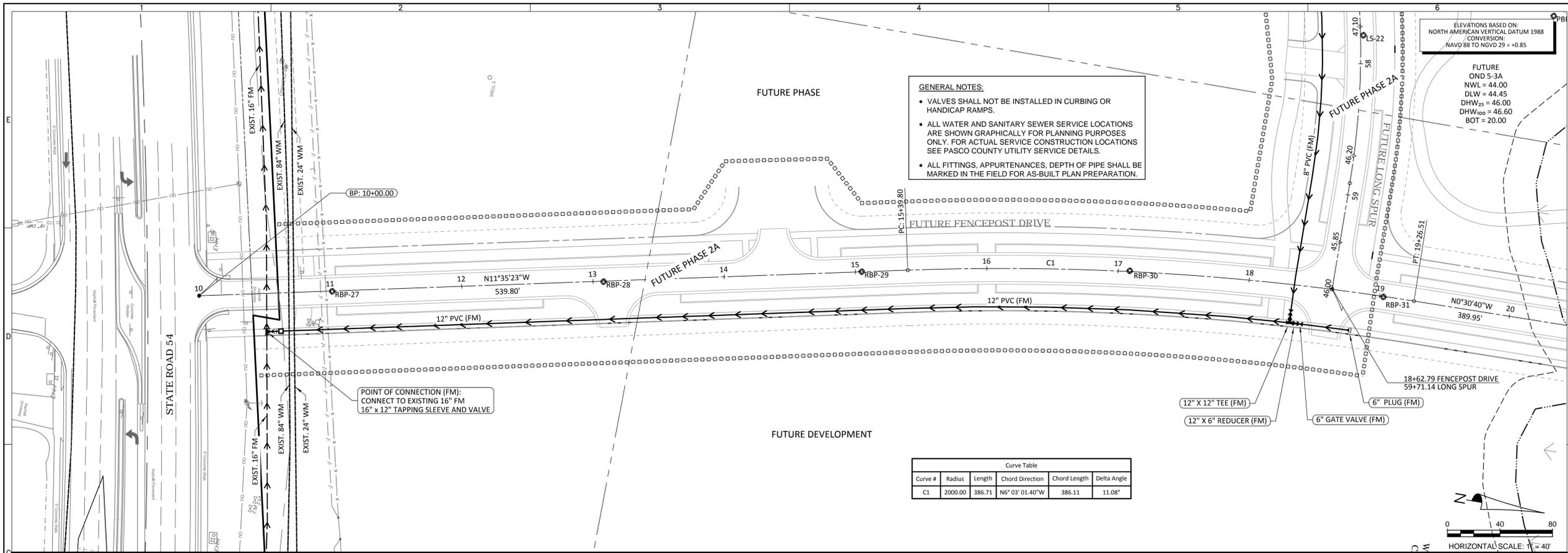
PROJECT NO: PHC-SR-1002  
 FILE: RP-04  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
 DATE: 07/27/2016  
 REGISTRATION NO. 62717

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**STARKEY RANCH VILLAGE 2  
PHASE 1A**

**FENCEPOST DRIVE - PLAN & PROFILE**

PREPARED FOR: **GENTRY LAND COMPANY**

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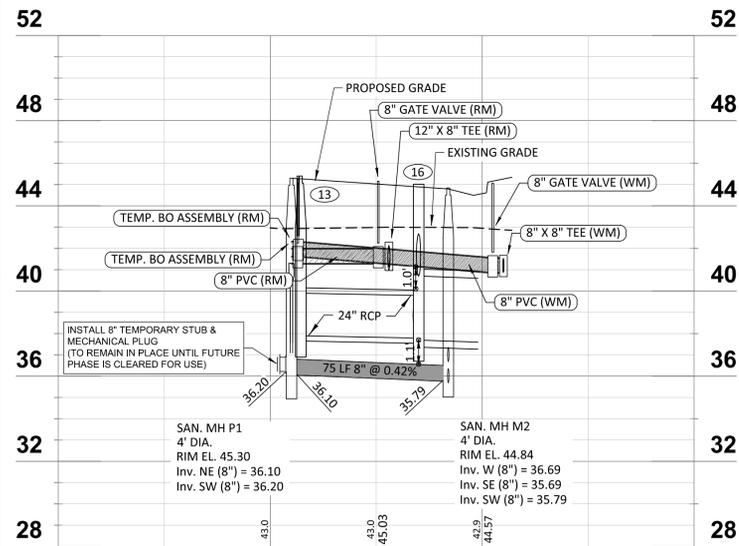
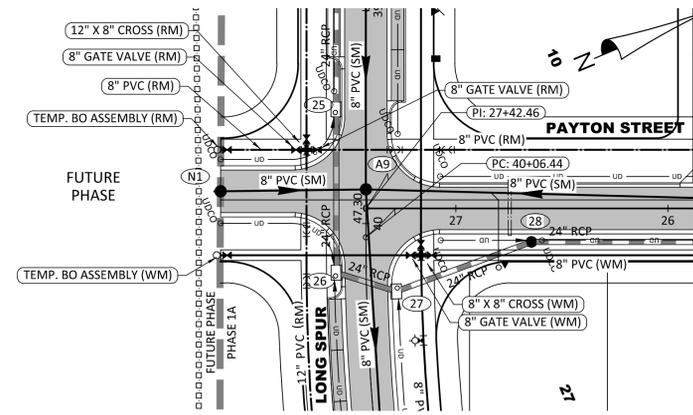
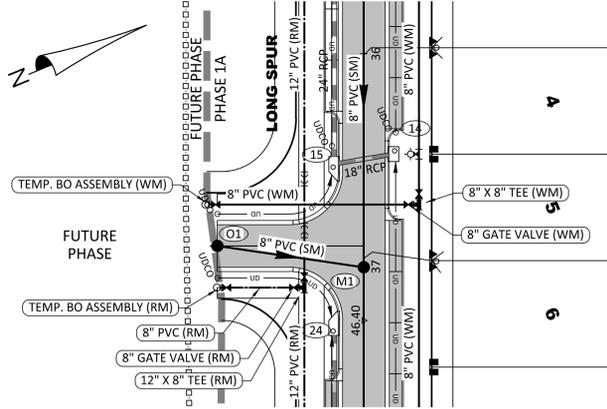
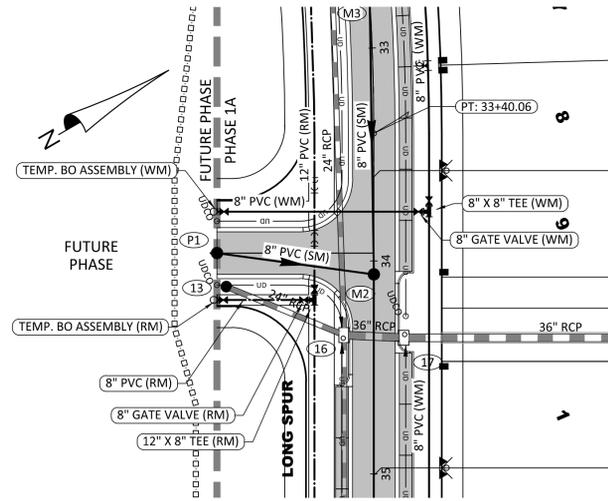
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DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

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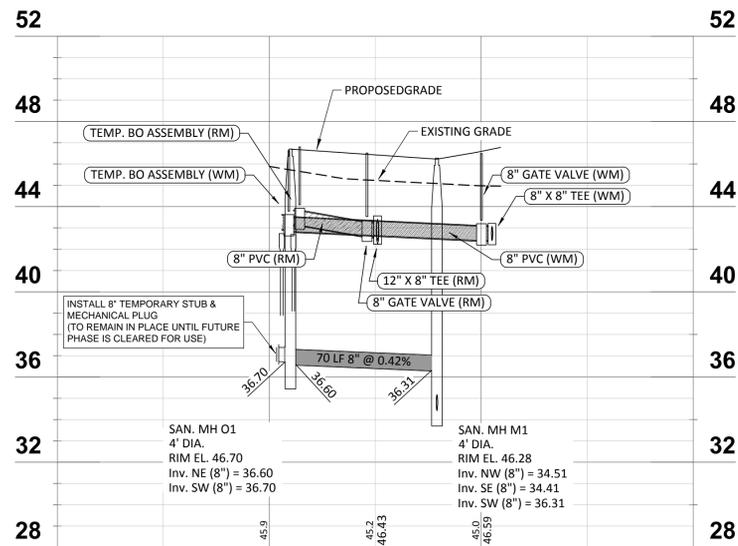
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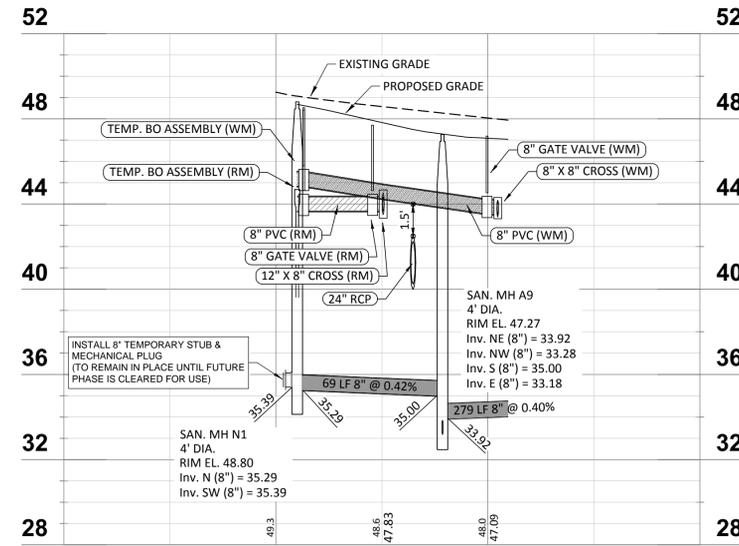
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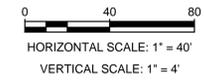
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STA. 33+96±  
SAN. MH P1 TO SAN. MH M2**



**LONG SPUR  
STA. 36+90±  
SAN. MH O1 TO SAN. MH M1**



**LONG SPUR  
STA. 39+89±  
SAN. MH N1 TO SAN. MH A9**



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PHASE 1A  
SANITARY SEWER PROFILES**

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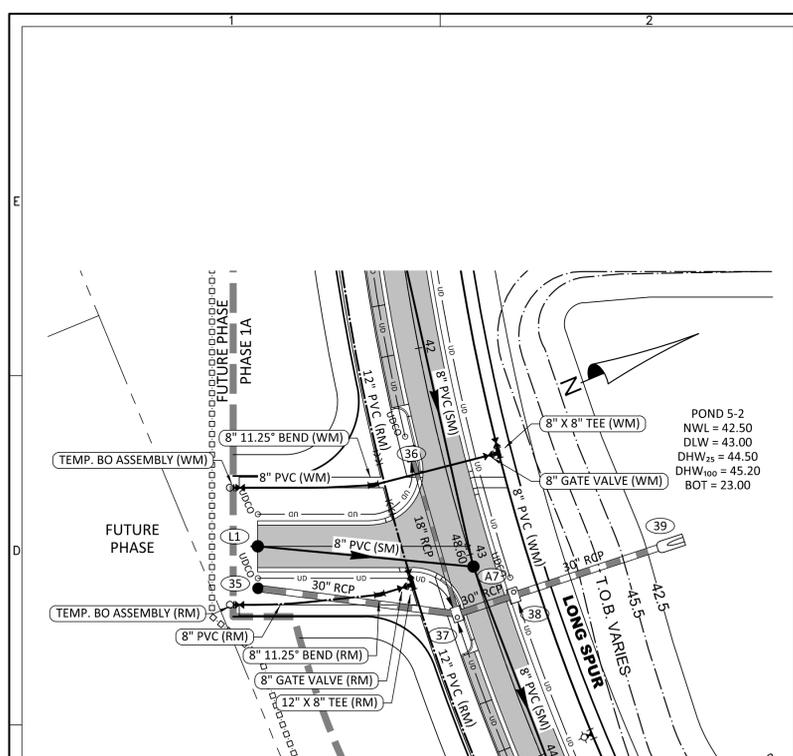
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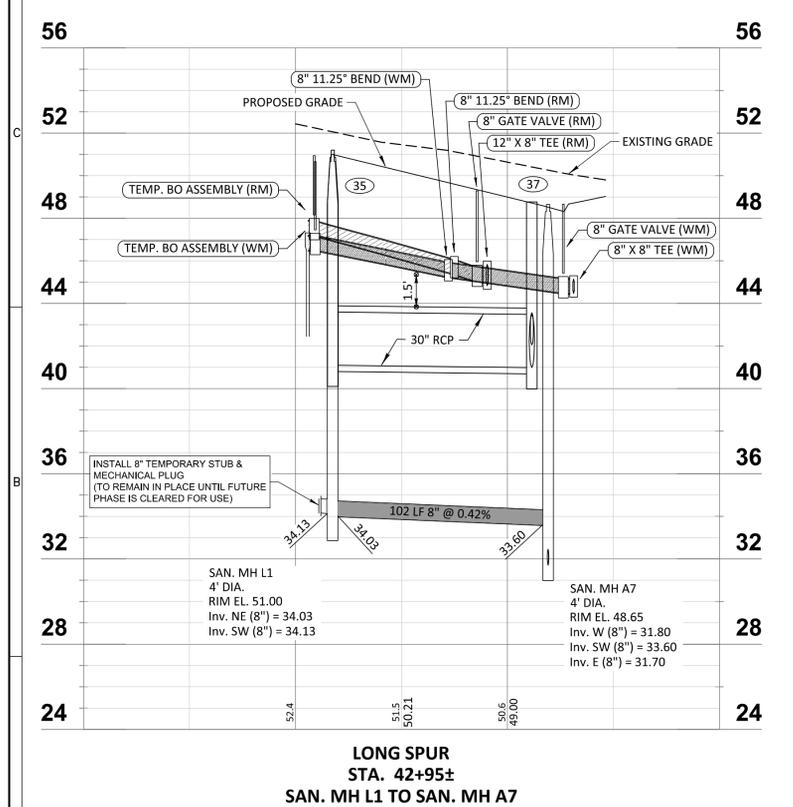
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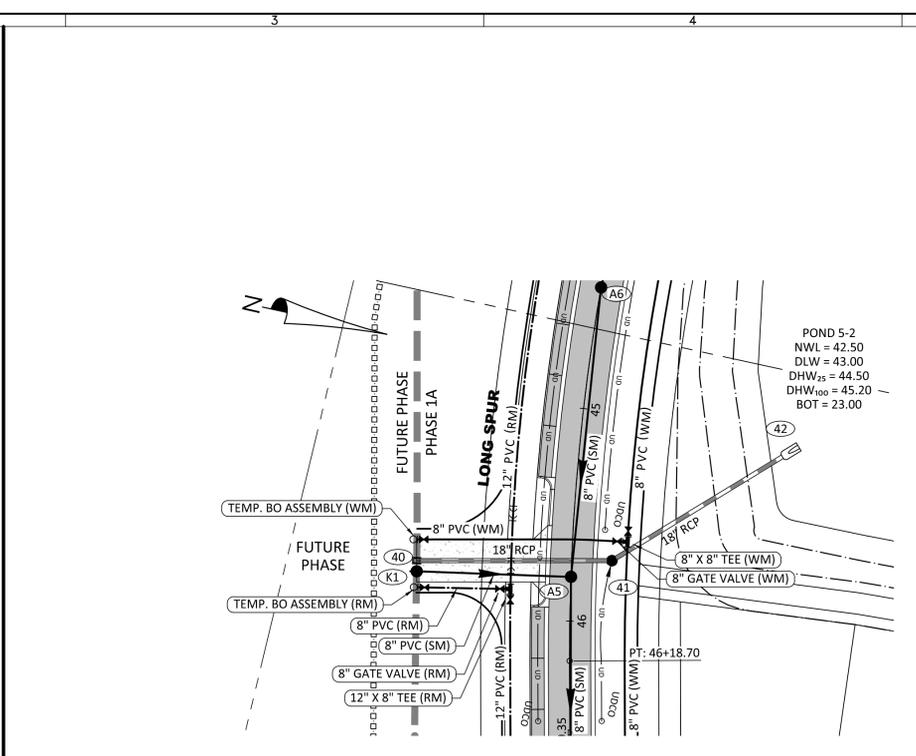
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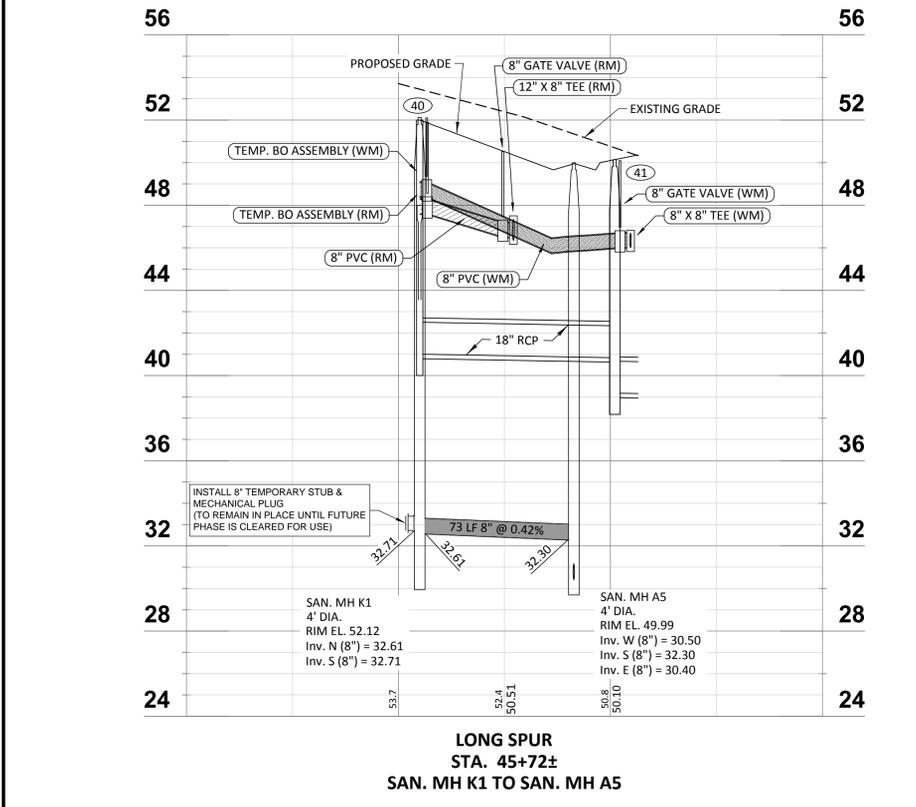
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 DHW<sub>25</sub> = 44.50  
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 BOT = 23.00



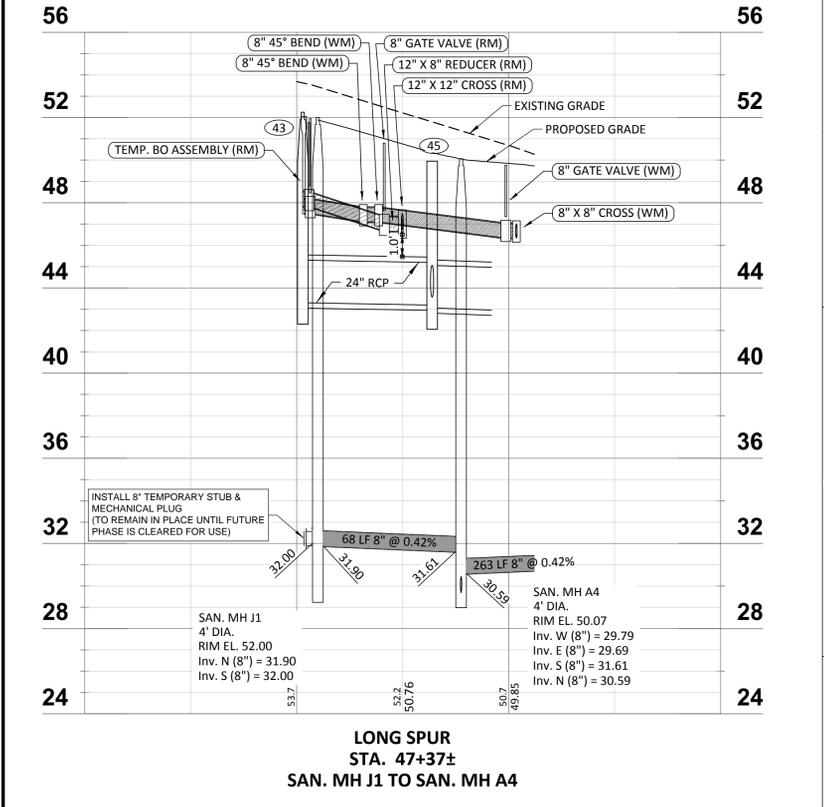
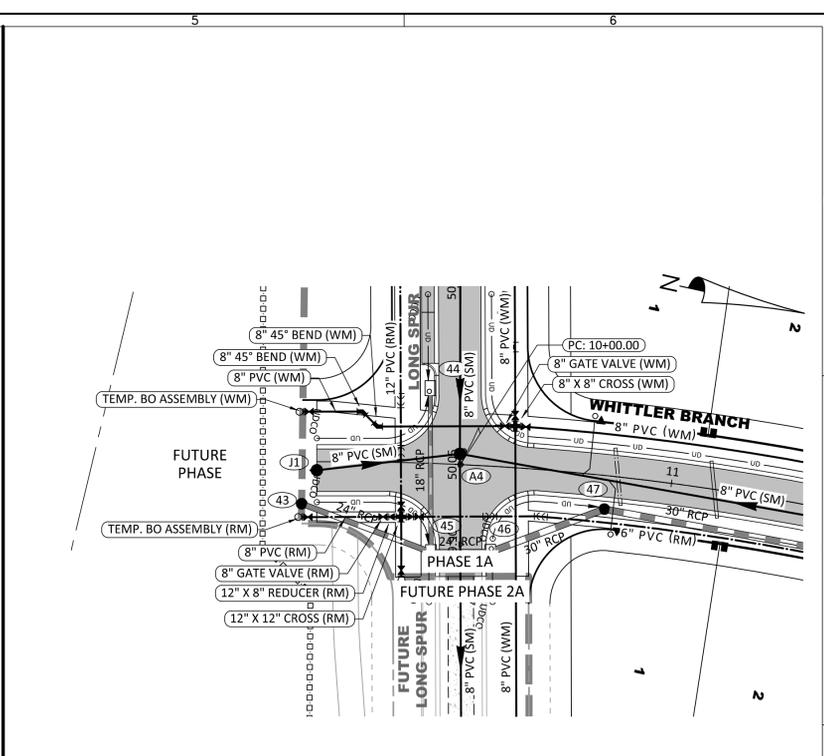
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 SAN. MH L1 TO SAN. MH A7**



POND 5-2  
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 DLW = 43.00  
 DHW<sub>25</sub> = 44.50  
 DHW<sub>100</sub> = 45.20  
 BOT = 23.00



**LONG SPUR  
 STA. 45+72±  
 SAN. MH K1 TO SAN. MH A5**



**LONG SPUR  
 STA. 47+37±  
 SAN. MH J1 TO SAN. MH A4**

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

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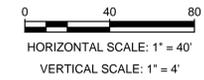
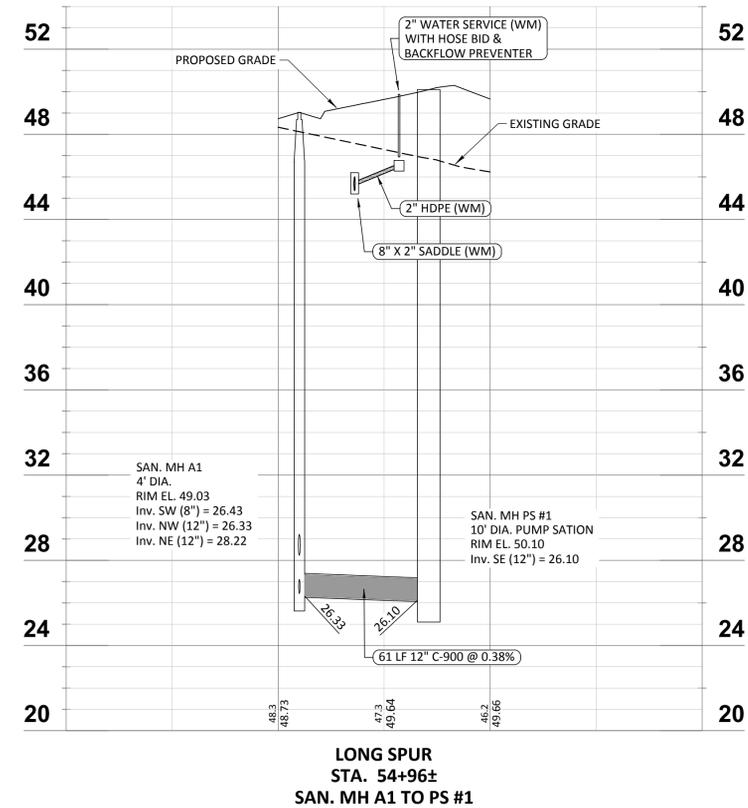
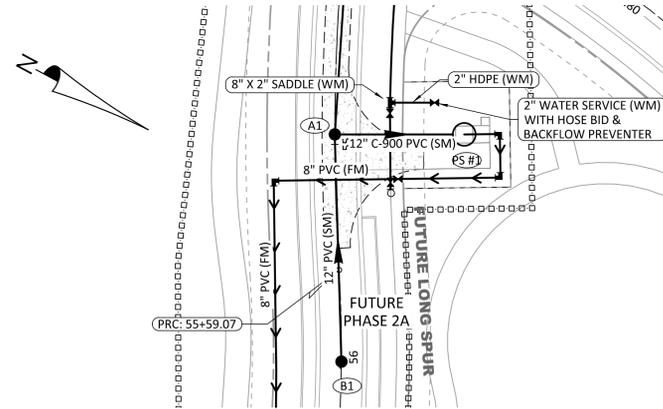
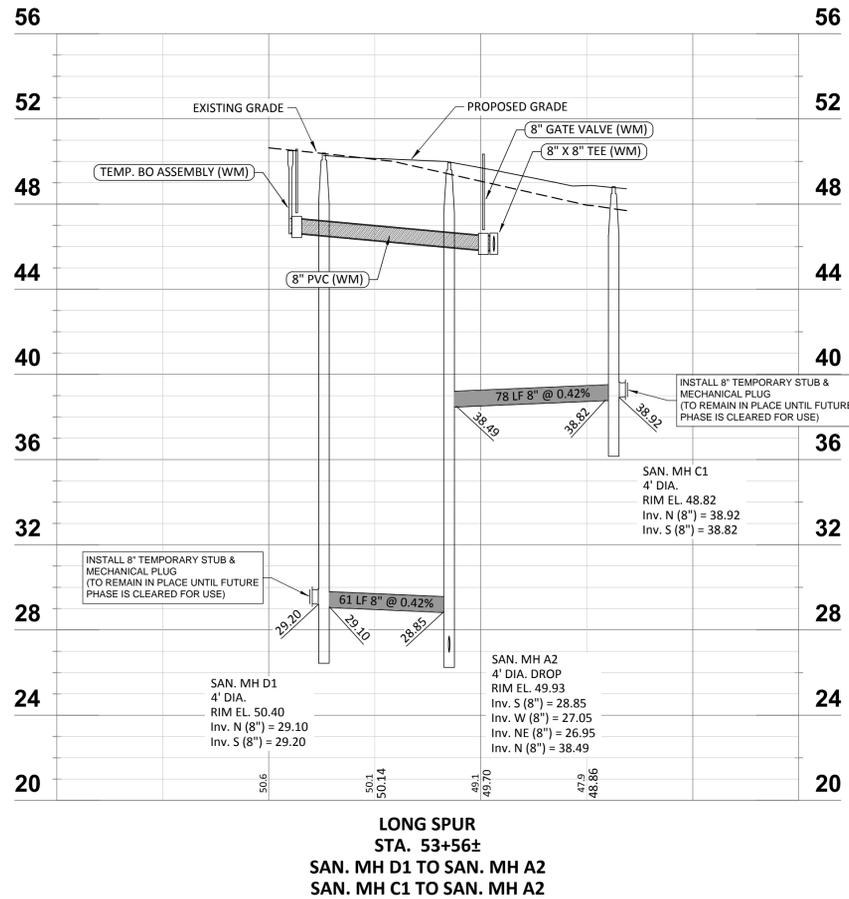
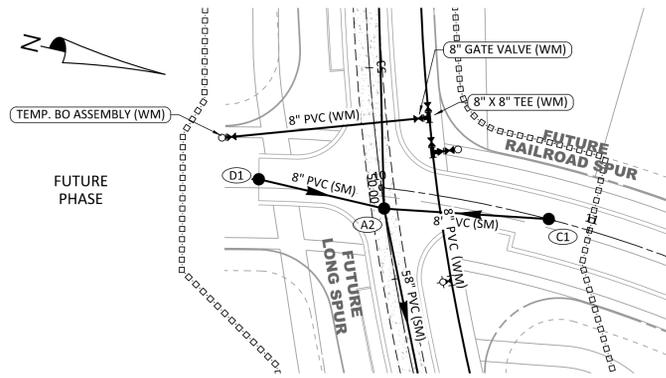
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SANITARY SEWER PROFILES

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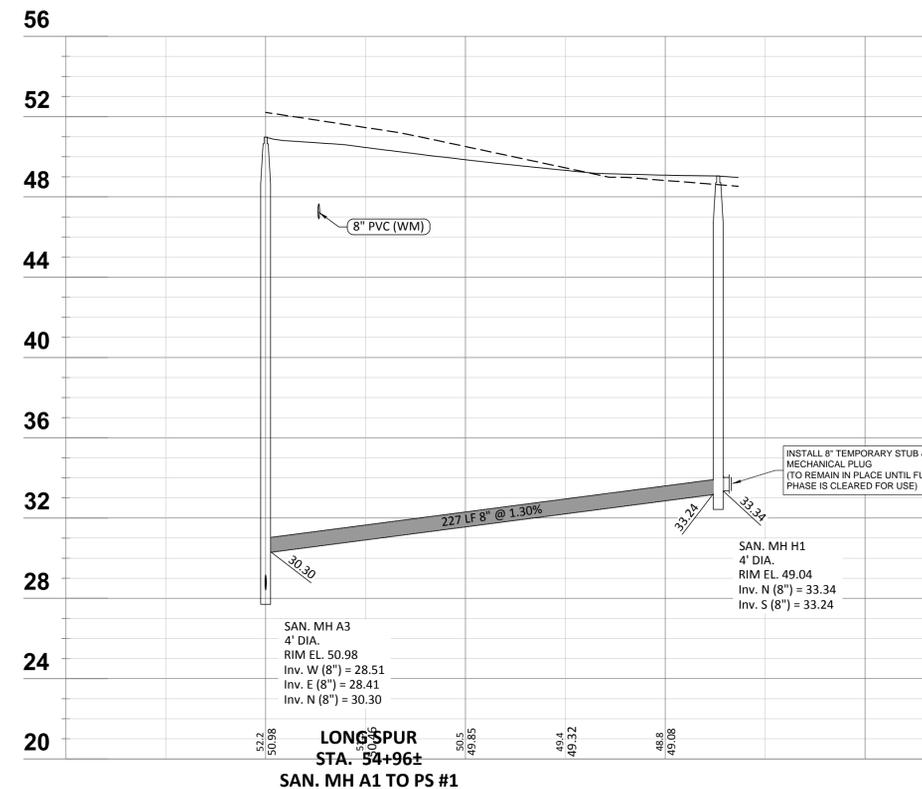
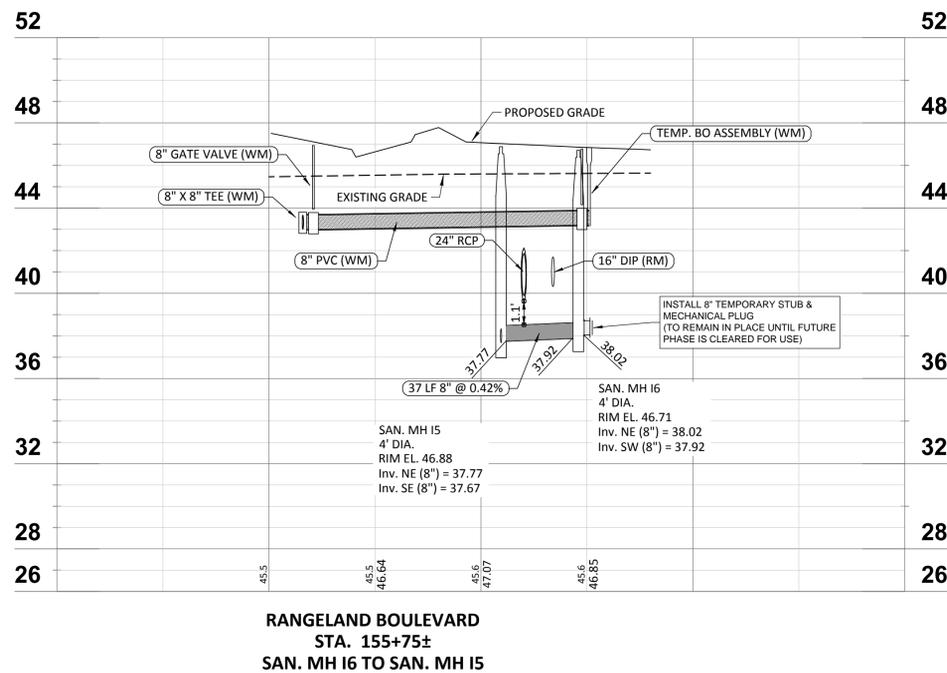
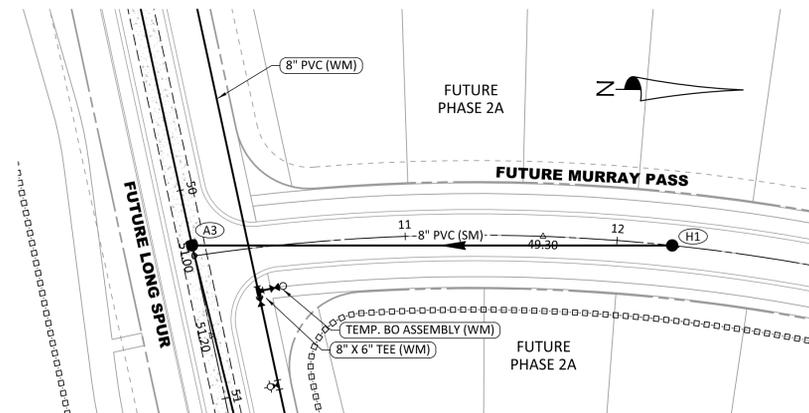
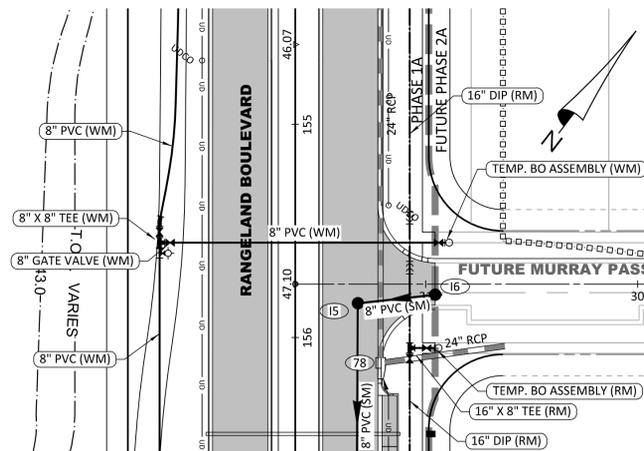
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0 40 80  
HORIZONTAL SCALE: 1" = 40'  
VERTICAL SCALE: 1" = 4'

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PHASE 1A  
SANITARY SEWER PROFILES**

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# WASTEWATER PUMPING STATION DESIGN PARAMETERS

WASTEWATER PUMPING STATION: STARKEY RANCH PARCEL 2 - PUMP STATION  
(FACILITY NAME)

LOCATION: SR 54 & GUNN HWY SECTION: 27 TOWNSHIP: 28 S RANGE: 17 E  
(NEAREST CROSS STREET)

## I. SERVICE AREA

NORTHWEST  
 CENTRAL  
 SOUTH

NAME OF WWTP SERVING THIS DEVELOPMENT: DEER PARK WWTP

## II. DESIGN CAPACITY

### A. Average Daily Flow (ADF):

555	x 200 GPD/UNIT (Single Family Units)=	111,000.0	GPD
748	x 170 GPD/UNIT (Multi Family Units)=	127,160.0	GPD
90,000	x 0.15 GPD per Square Foot (Office/Retail)=	13,500.0	GPD
50,000	x 1.5 GPD per Square Foot (Restaurant)=	75,000.0	GPD
ADF Total=		326,660.0	GPD

### B. Peak Influent Rate:

Peak Factor 3.00 (Per Utility Manual, Appendix 5)  
Peak Flow = (ADF x Peak Factor) / 1440 = **680.5 GPM**

### C. Design Minimum Flow:

(ADF x 0.20) / 1440 = **45.4 GPM**

### D. Design Pump Capacity (Minimum Required):

**680.5 GPM**

### E. Velocity in Force Main at Max. Pumping Rate:

**4.34 fps**

## III. WETWELL DESIGN (DUPLIX SYSTEM)

### 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 **680.5 gpm**.
- Wetwell volume required between Lead Pump Start and Pump Shut Off Level =  $0.25 \times \text{Cycle Period} \times 1/2 \text{ Pumping Rate} = 850.68$  Gallons
- Wetwell Diameter (D) = **10** feet  
Wetwell Volume = **587.48** gals / ft. depth
- Wetwell level change between pump stop and lead pump start = **1.45** feet  
Design For: **1.50** feet (2.00' max)

### 5. Control Elevations:

Top of Slab	50.10
Influent Invert	26.10
High Water Alarm	26.10
Lag Pump On	26.10
Lead Pump On	25.60
All Pumps Off	24.10
Bottom**	21.85

## IV. SYSTEM CURVE CALCULATIONS

### A. FRICTION LOSSES

#### 1. Pump Station Piping

Item	Size (in)	Quantity	Friction Loss (ea.)	Total
Tee	4	0		
22.5" Bend	4	0		
45" Bend	4	2	5	10
90" Bend	4	1	22	22
Check Valve	4	0		
Gate Valve	4	0		
Total=				32.00
Pipe Length=				10.00
Total Equivalent Length=				42.00

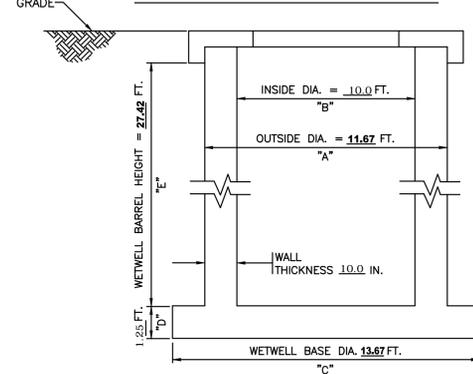
Design For: 50.0

#### 2. Force Main Piping

Item	Size (in)	Quantity	Friction Loss (ea.)	Total
Tee	8	1	43	43
22.5" Bend	8	0		
45" Bend	8	0		
90" Bend	8	3	43	129
Cross	8	0		
Gate Valve	8	1	4.5	4.5
Total=				176.50
Pipe Length=				630.00
Total Equivalent Length=				806.50

Design For: 850.0

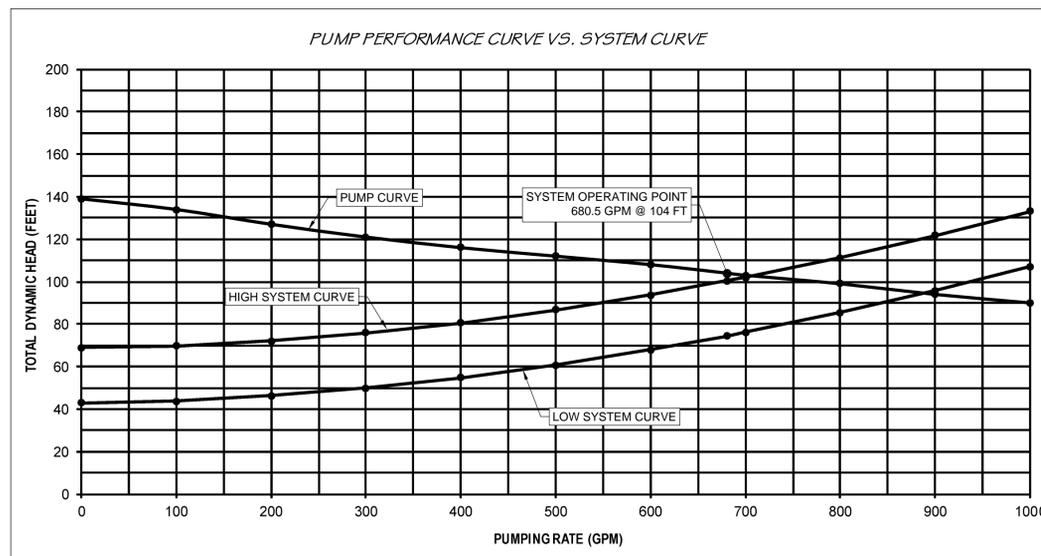
## FLOTATION CALCULATIONS - CONCRETE WET WELL



- ASSUMPTIONS:
- CONCRETE (REINFORCED) = 150 lbs./ft. <sup>3</sup>
  - SATURATED SOIL = 120 lbs./ft. <sup>3</sup>
  - WATER = 62.4 lbs./ft. <sup>3</sup>
  - DIMENSIONS IN FEET
  - NO WATER IN WET WELL
  - NEGLECT TOP SLAB WEIGHT
  - NEGLECT SOIL FRICTION
  - ROUND WETWELL BARREL
  - CIRCULAR WETWELL BASE
  - THE WATER TABLE IS AT GRADE

## SYSTEM vs. PUMP PERFORMANCE CURVE

PUMP MANUFACTURER:	FLYGT	PUMP MODEL:	N3202.180	RPM:	1775	HP:	45
GPM:	680.5	TDH:	104	IMPELLER DIA./NO.: PHASE:	10-15/16" 3	VOLTS:	460
						AMPS:	52

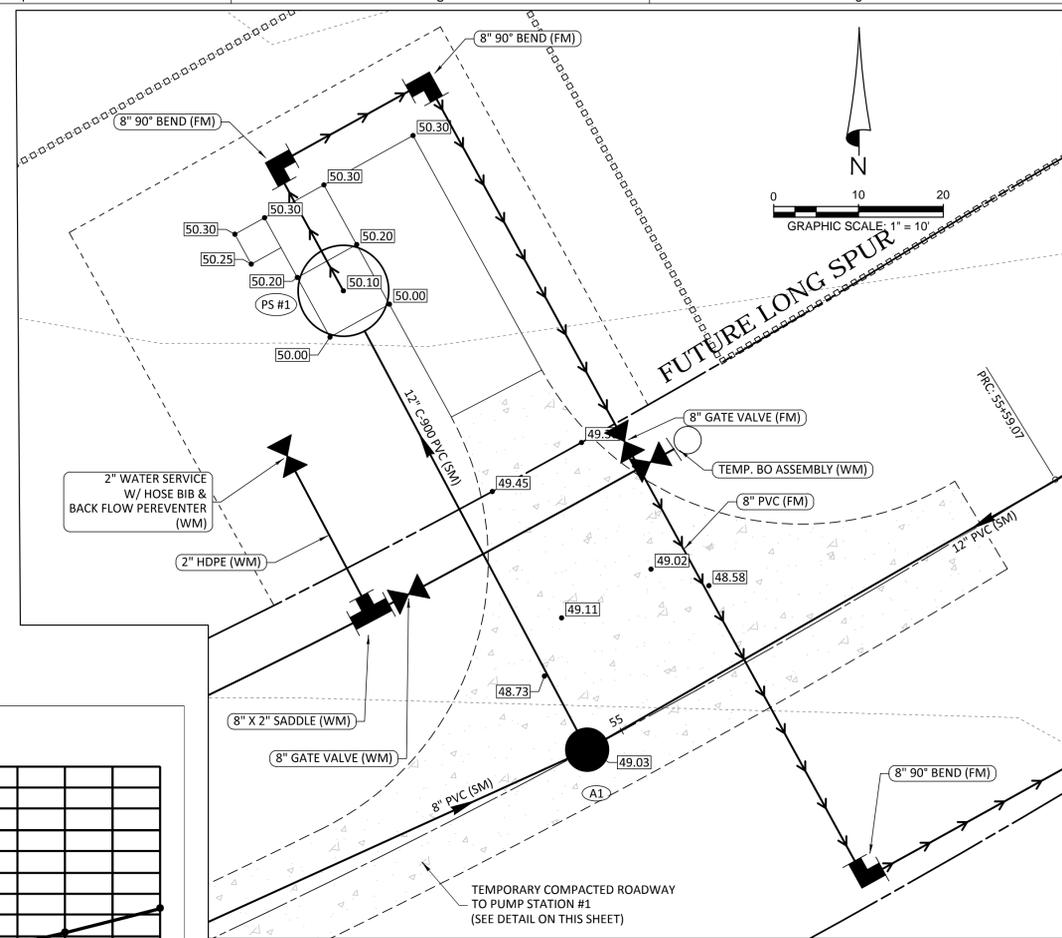


SYSTEM HEAD COMPUTATION - TOTAL LOSSES IN FEET  
FLOW RATE IN GPM

Item	0	100	200	300	400	500	600	680.5	700	800	900	1000
Pump Station Piping (Equivalent Length) 50 LF 4" DIP	0.00	0.61	2.20	4.67	7.96	12.03	16.86	21.26	22.43	28.73	35.73	43.43
Force Main Piping (Equivalent Length) 850 LF 8" PVC 920 LF 12" PVC LF *PVC	0.00	0.25	0.91	1.94	3.30	4.99	6.99	8.82	9.30	11.91	14.82	18.01
Static Head	29.90	29.90	29.90	29.90	29.90	29.90	29.90	29.90	29.90	29.90	29.90	29.90
Low (County Provided) (Design Pressure @ POC)	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
High (County Provided)	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00	39.00
Low System Losses (System Curve)	42.90	43.80	46.16	49.80	54.65	60.67	67.81	74.30	76.03	85.33	95.67	107.04
High System Losses	68.90	69.80	72.16	75.80	80.65	86.67	93.81	100.30	102.03	111.33	121.67	133.04

Item	Size (in)	Quantity	Friction Loss (ea.)	Total
Tee	12	2	58	116
22.5" Bend	12	0		
45" Bend	12	0		
90" Bend	12	0		
Cross	12	0		
Gate Valve	12	2	7	14
Total=				130.00
Pipe Length=				790.00
Total Equivalent Length=				920.00

Design For: 920.0



## SITE PLAN

### NOTES:

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

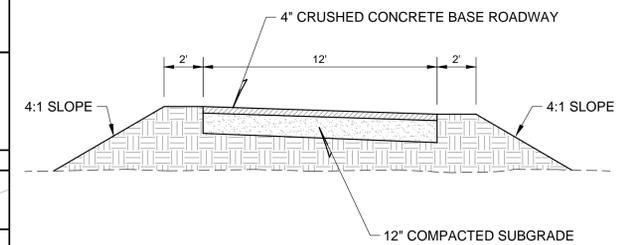
- SIMULTANEOUS OPERATION OF ALL PUMPING STATIONS ON SYSTEM (WORST CASE)
- OPERATION WHILE ALL REMAINING STATIONS ARE OFF (BEST CASE)

#### (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

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## TEMPORARY COMPACTED ROADWAY

SCALE: NTS

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STARKEY RANCH VILLAGE 2  
PHASE 1A  
PUMP STATION DETAILS

PREPARED FOR:  
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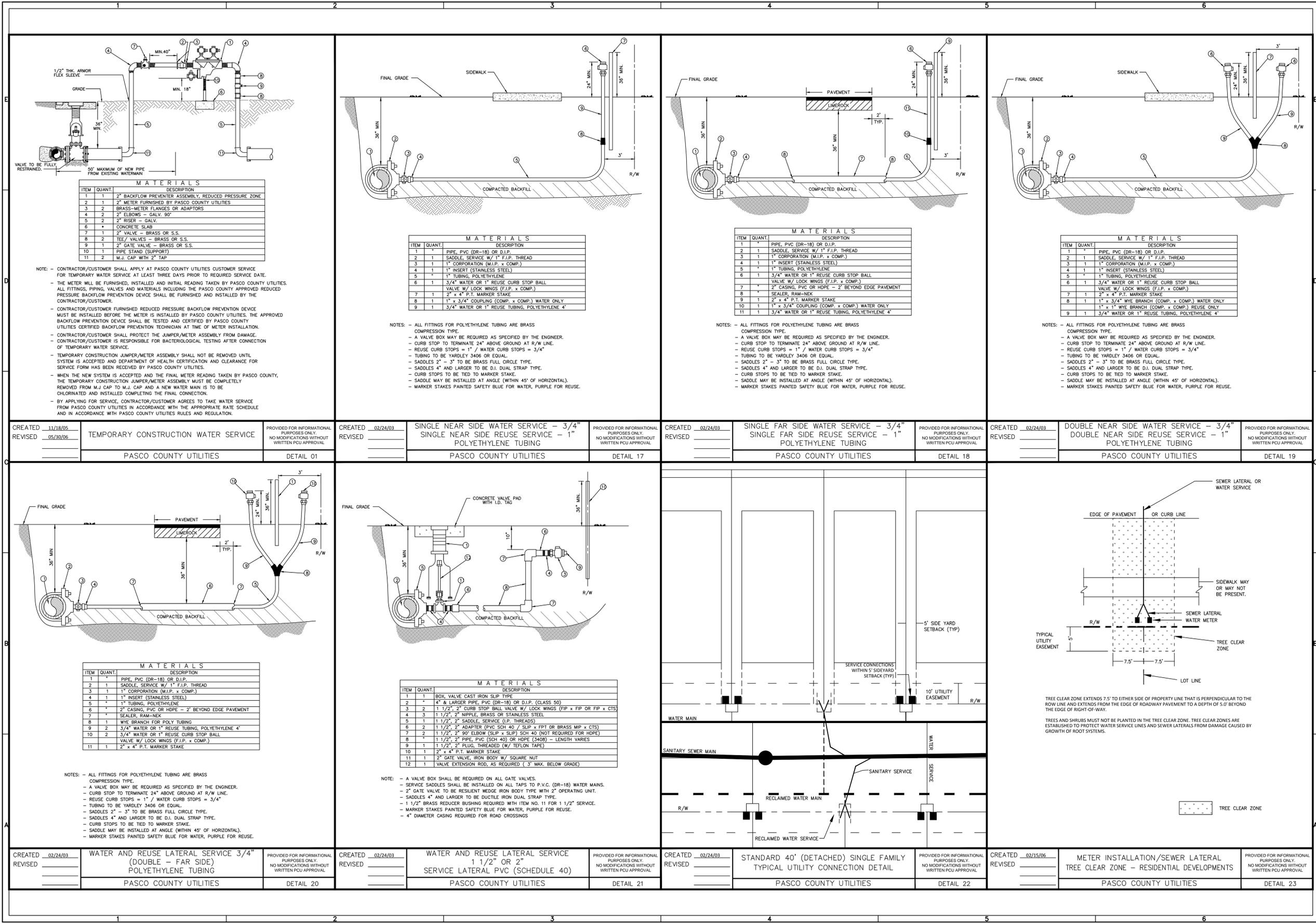
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STARKEY RANCH VILLAGE 2  
 PHASE 1A

WATER & SEWER DETAILS

GENTRY LAND COMPANY

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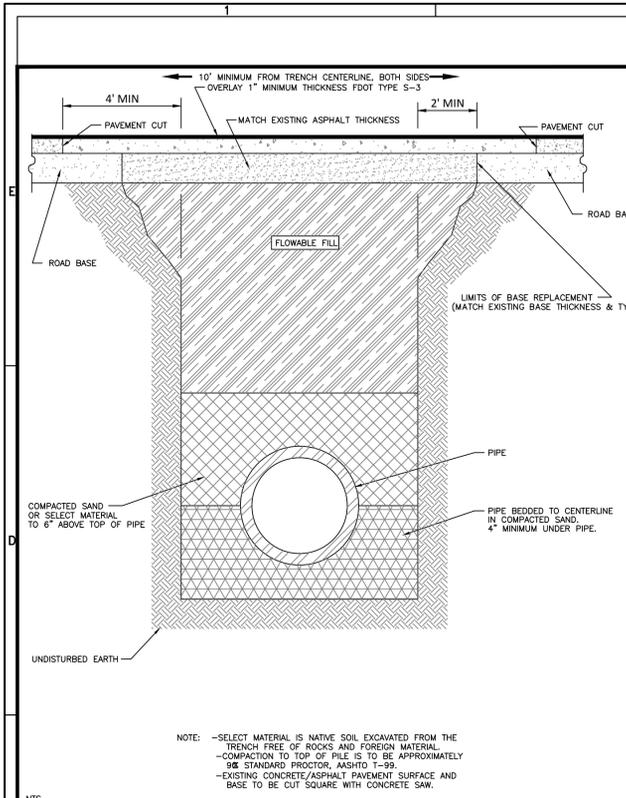
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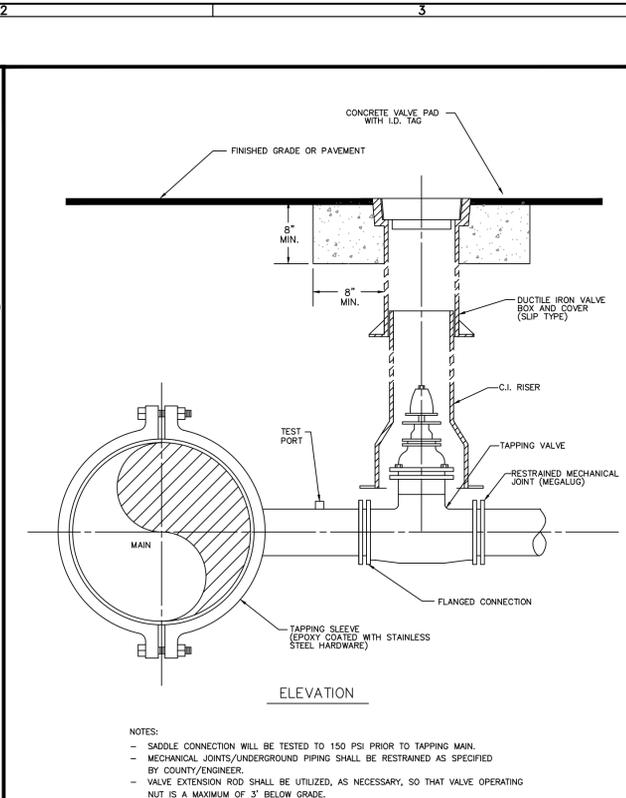




CREATED 03/06/03  
REVISED \_\_\_\_\_

PIPE LAYING CONDITIONS  
FLOWABLE FILL BACKFILL  
STANDARD EXISTING PAVED AREAS & ROADWAYS  
PASCO COUNTY UTILITIES

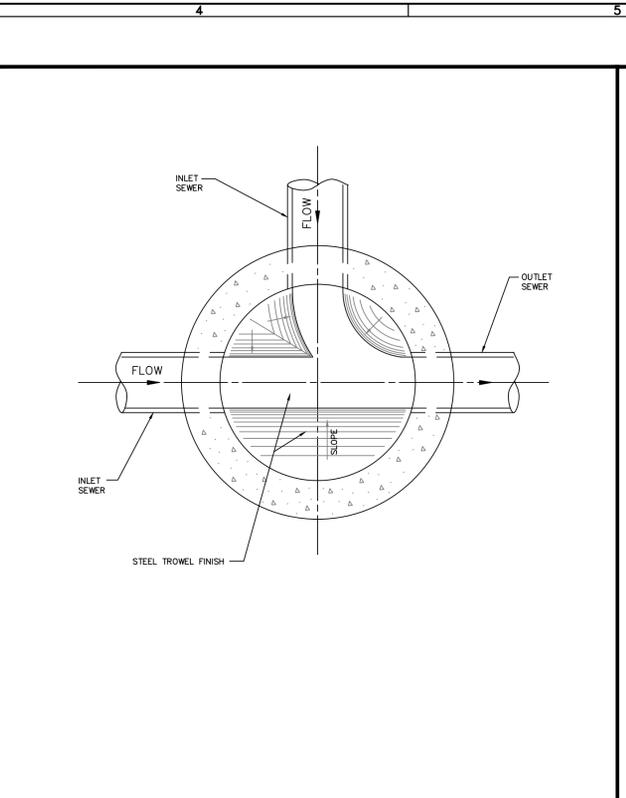
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DETAIL 36



CREATED 02/24/03  
REVISED \_\_\_\_\_

WATER, REUSE, AND FORCE MAIN  
TAPPING DETAIL W/ VALVE LOCATION  
PASCO COUNTY UTILITIES

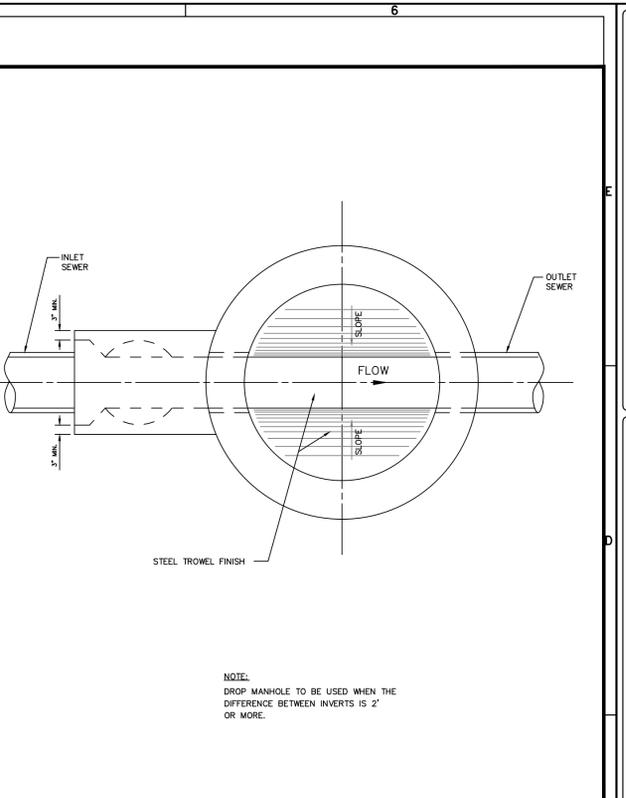
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DETAIL 37



CREATED 02/24/03  
REVISED \_\_\_\_\_

STANDARD MANHOLE  
(BENCH AND INVERTS)  
PASCO COUNTY UTILITIES

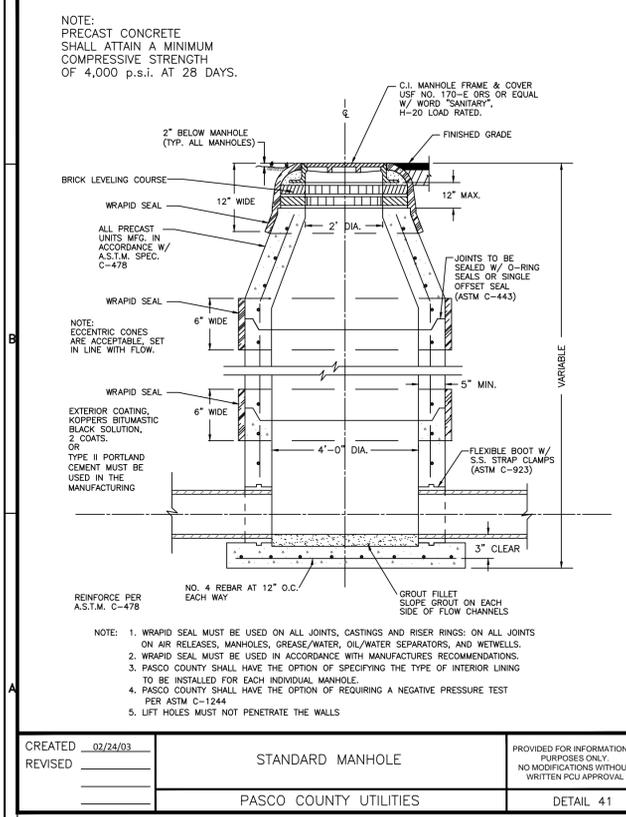
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DETAIL 39



CREATED 02/24/03  
REVISED \_\_\_\_\_

DROP MANHOLE  
(BENCH AND INVERTS)  
PASCO COUNTY UTILITIES

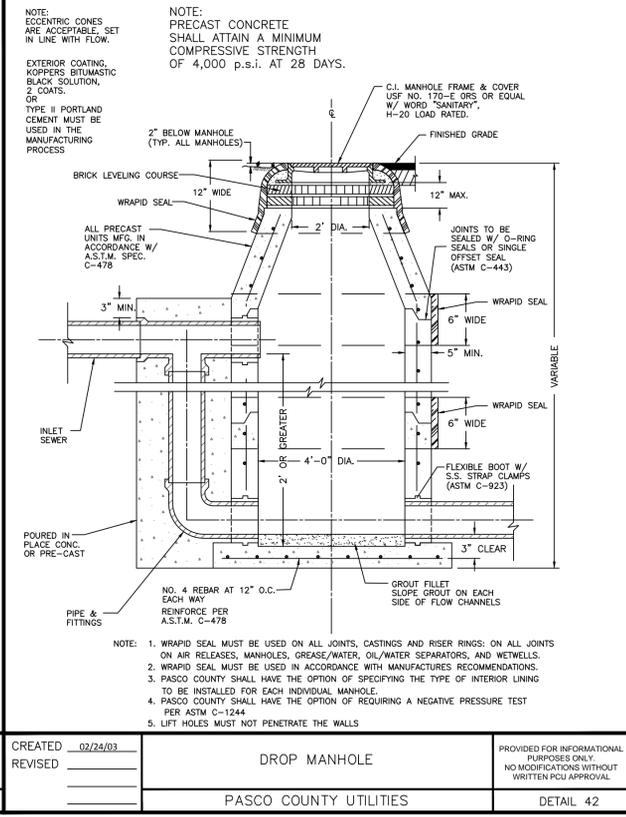
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DETAIL 40



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STANDARD MANHOLE  
PASCO COUNTY UTILITIES

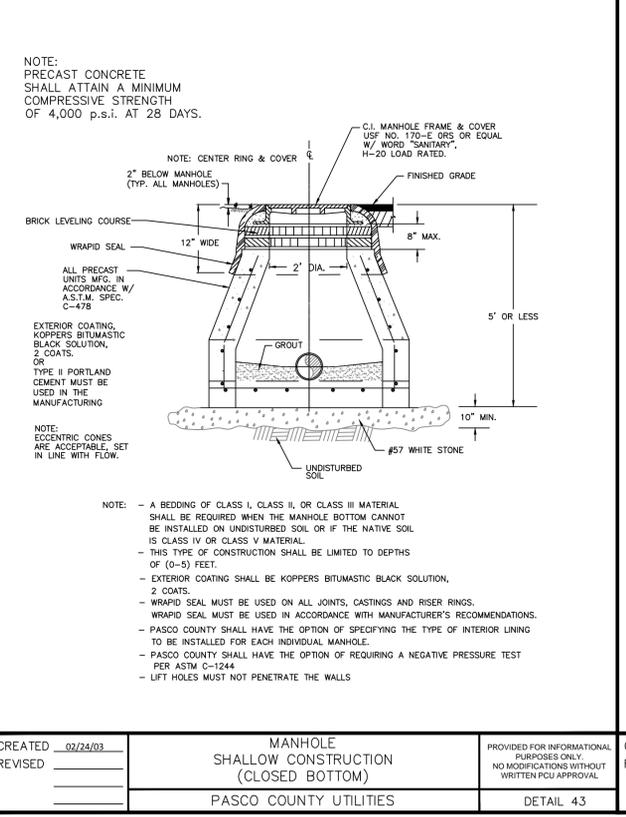
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DETAIL 41



CREATED 02/24/03  
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DROP MANHOLE  
PASCO COUNTY UTILITIES

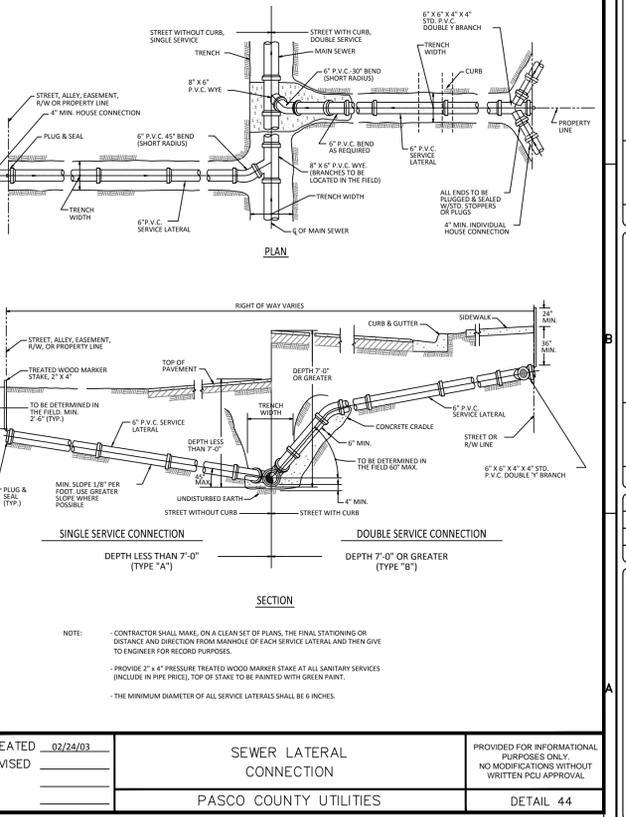
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DETAIL 42



CREATED 02/24/03  
REVISED \_\_\_\_\_

MANHOLE  
SHALLOW CONSTRUCTION  
(CLOSED BOTTOM)  
PASCO COUNTY UTILITIES

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DETAIL 43



CREATED 02/24/03  
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SEWER LATERAL  
CONNECTION  
PASCO COUNTY UTILITIES

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DETAIL 44

**HEIDT DESIGN**  
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www.HeidtDesign.com

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STARKEY RANCH VILLAGE 2  
PHASE 1A  
WATER & SEWER DETAILS

GENTRY LAND COMPANY

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

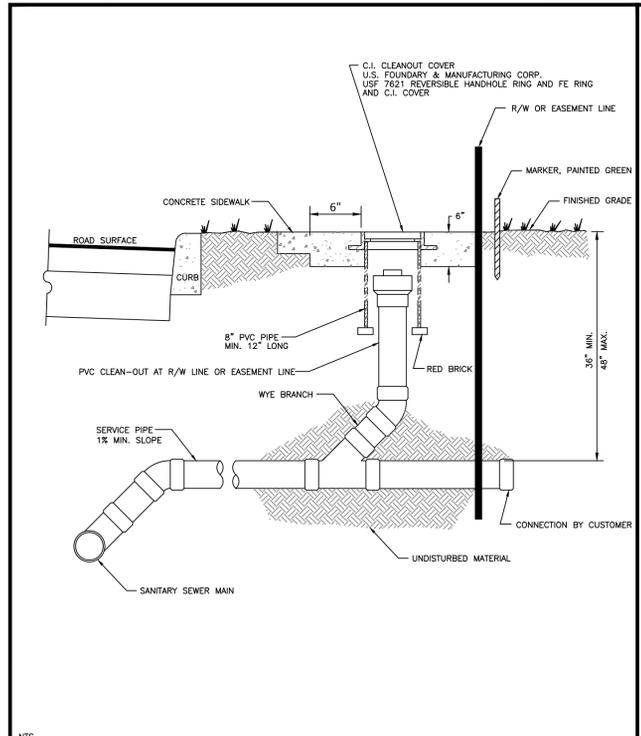
PROJECT NO: PHC-SR-1002  
FILE: WSD  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-605**

STARKEY RANCH VILLAGE 2 PHASE 1A WATER & SEWER DETAILS  
 10/20/2015 10:29 AM MARK JONES



NTS

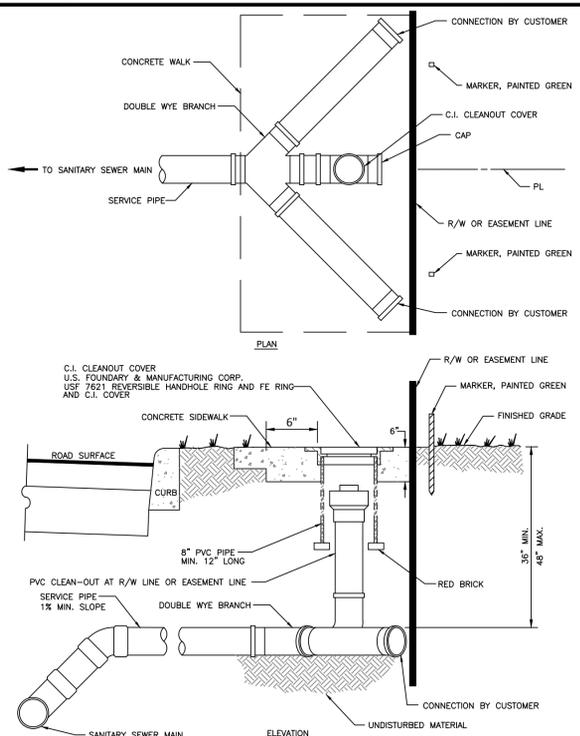
CREATED 02/24/03  
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SANITARY SEWER – SINGLE WYE CONNECTION  
 AND TYPICAL CLEAN-OUT

PASCO COUNTY UTILITIES

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DETAIL 45



NTS

CREATED 02/24/03  
 REVISED \_\_\_\_\_  
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SANITARY SEWER – DOUBLE WYE CONNECTION  
 AND TYPICAL CLEAN-OUT

PASCO COUNTY UTILITIES

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DETAIL 46

### PIPE RESTRAINT LENGTHS IN FEET COMMON FITTINGS

WATER MAINS - TEST PRESSURE 150 PSI					
PIPE SIZE	FITTING TYPE				
	11-1/4°	22-1/2°	45°	90°	DEAD END
4"	2'	4'	8'	20'	45'
6"	3'	6'	12'	28'	63'
8"	4'	7'	15'	36'	82'
10"	4'	9'	18'	43'	98'
12"	5'	10'	21'	50'	116'
16"	6'	13'	26'	63'	148'
20"	7'	15'	31'	76'	179'
24"	9'	17'	36'	87'	208'

FORCE MAINS - TEST PRESSURE 100 PSI					
PIPE SIZE	FITTING TYPE				
	11-1/4°	22-1/2°	45°	90°	DEAD END
4"	1'	3'	6'	13'	30'
6"	2'	4'	8'	19'	42'
8"	2'	5'	10'	24'	55'
10"	3'	6'	12'	29'	66'
12"	3'	7'	14'	34'	77'
16"	4'	8'	18'	42'	99'
20"	5'	10'	21'	50'	119'
24"	6'	11'	24'	58'	139'

RESTRAINT LENGTHS ARE MEASURED FROM THE CENTER LINE OF THE FITTING ALONG THE PIPE IN BOTH DIRECTIONS (EXCEPT DEAD ENDS).

CREATED 02/24/03  
 REVISED \_\_\_\_\_  
 \_\_\_\_\_

RESTRAINED JOINT TABLE  
 COMMON FITTINGS

PASCO COUNTY UTILITIES

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DETAIL 31

### PIPE RESTRAINT LENGTHS IN FEET TEES (BRANCH SIDE)

WATER MAINS - TEST PRESSURE 150 PSI										
RUN SIZE	BRANCH SIZE									
	3"	4"	6"	8"	10"	12"	16"	20"	24"	
3"	6'	14'	30'	—	—	—	—	—	—	—
4"	2'	11'	28'	44'	—	—	—	—	—	—
6"	1'	2'	22'	40'	52'	—	—	—	—	—
8"	1'	1'	16'	35'	48'	62'	—	—	—	—
10"	1'	1'	10'	30'	44'	58'	83'	—	—	—
12"	1'	1'	3'	25'	40'	55'	80'	103'	—	—
16"	1'	1'	1'	14'	31'	48'	75'	98'	119'	—
20"	1'	1'	1'	2'	22'	40'	69'	94'	116'	—
24"	1'	1'	1'	1'	11'	31'	63'	89'	111'	—

RESTRAINT LENGTHS ARE MEASURED FROM THE CENTER LINE OF THE TEE ALONG THE BRANCH FOR THE DISTANCE INDICATED. A MINIMUM OF 5 FEET OF RESTRAINED PIPE MUST BE INSTALLED ON BOTH RUNS OF THE TEE. MEGALUG TYPE RESTRAINERS ARE REQUIRED ON ALL JOINTS.

CREATED 02/24/03  
 REVISED \_\_\_\_\_  
 \_\_\_\_\_

RESTRAINED JOINT TABLE  
 TEES (BRANCH SIDE)

PASCO COUNTY UTILITIES

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DETAIL 32

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 Landscape Architecture Certificate of Authorization No. LC26060405

STARKEY RANCH VILLAGE 2  
 PHASE 1A

WATER & SEWER DETAILS

GENTRY LAND COMPANY

PREPARED FOR:

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
 FILE: WSD  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

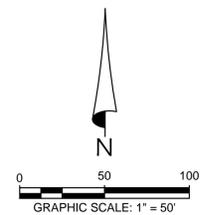
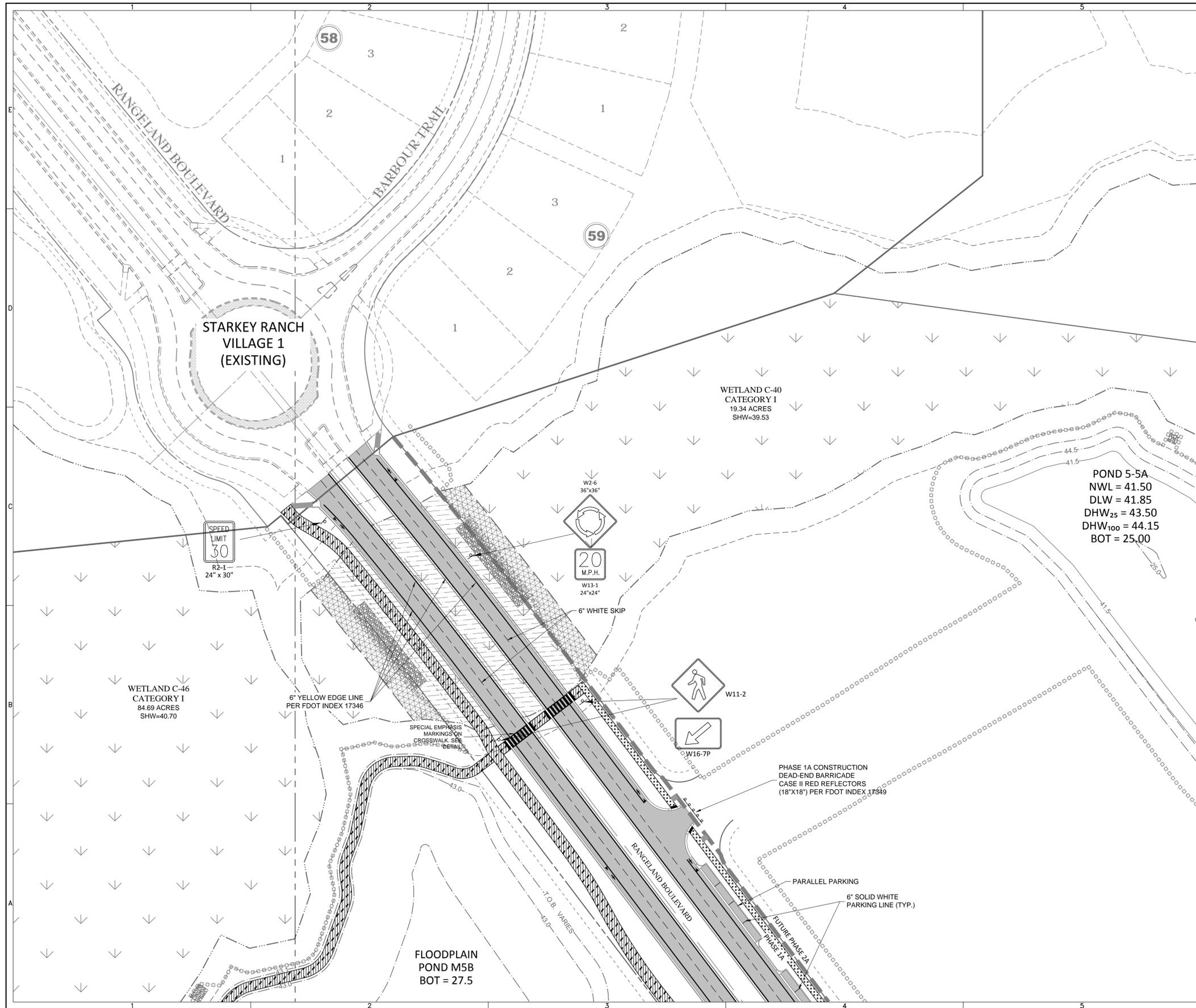
FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**

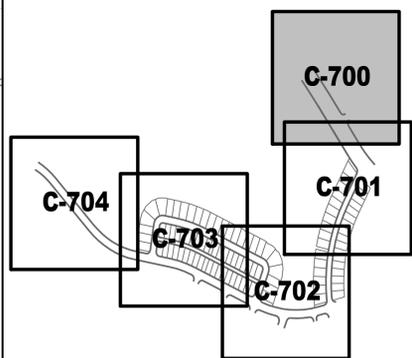
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**C-606**

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- SIDEWALK LEGEND**
- PROPOSED 5' WIDE x 4.5" THICK CONCRETE SIDEWALK TO BE INSTALLED BY INDIVIDUAL HOUSE CONTRACTOR
  - PROPOSED 6' WIDE x 4.5" THICK CONCRETE SIDEWALK TO BE INSTALLED BY SITE DEVELOPER
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  - SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.



**SHEET INDEX KEY MAP**

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**STARKEY RANCH VILLAGE 2**  
**PHASE 1A**  
**SIGNING, PAVEMENT MARKING & SIDEWALK PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

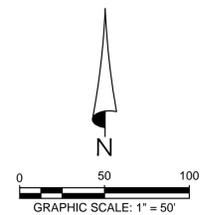
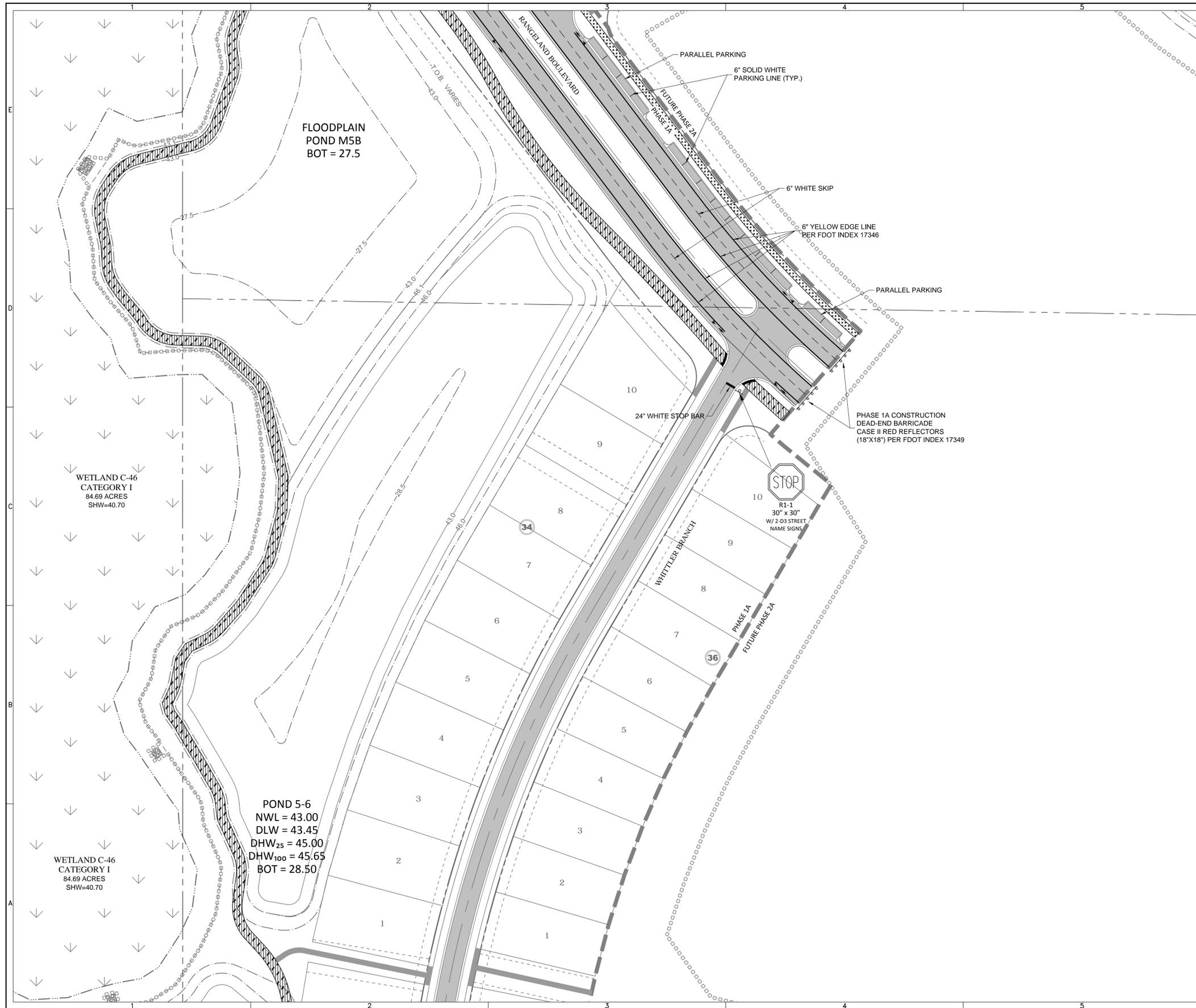
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DRAWN BY: STOLLINGS

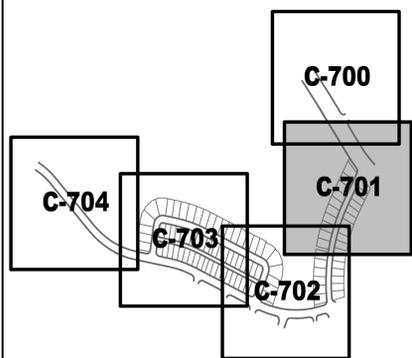
FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
DATE:  
REGISTRATION NO. 52717

**C-700**

STARKEY RANCH VILLAGE 2 PHASE 1A SIGNING, PAVEMENT MARKING & SIDEWALK PLAN SHEET C-700 (1/21/2016) 10:43:30 AM MARK JONES



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  4. SIDEWALK DETECTABLE WARNING SURFACES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.



SHEET INDEX KEY MAP

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 Transportation Engineering  
 Ecological Services • Landscape Architecture

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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 SIGNING, PAVEMENT MARKING &  
 SIDEWALK PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	07/21/2016	REVIEW SUBMITTAL

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 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

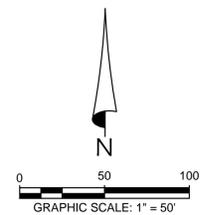
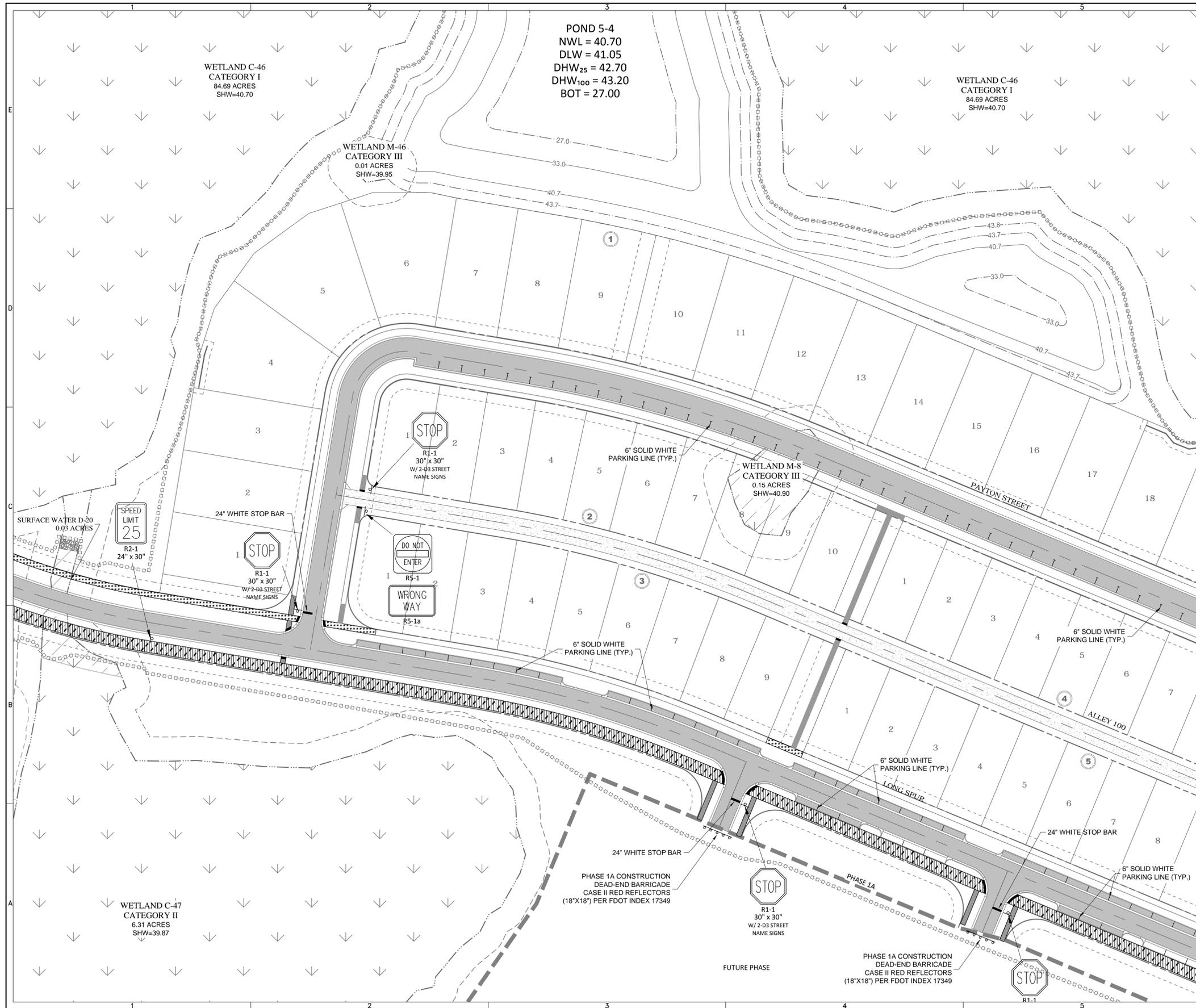
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**GARY D. MILLER**  
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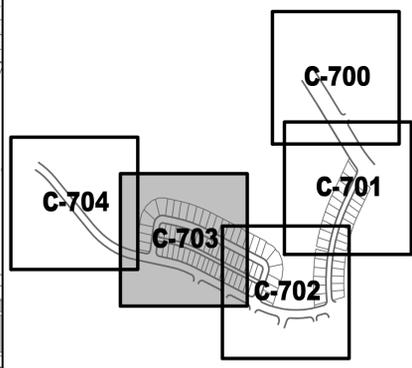
**C-701**

STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING/PAVING-C-701 2016/07/20 4:30 PM MARK JONES





- SIDEWALK LEGEND**
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SHEET INDEX KEY MAP

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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 SIGNING, PAVEMENT MARKING &  
 SIDEWALK PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

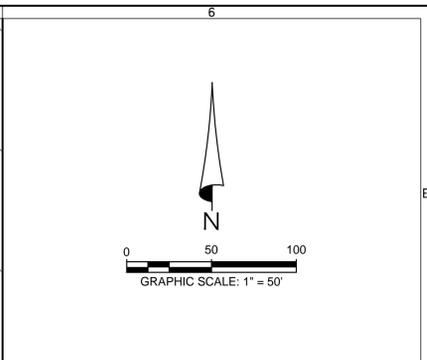
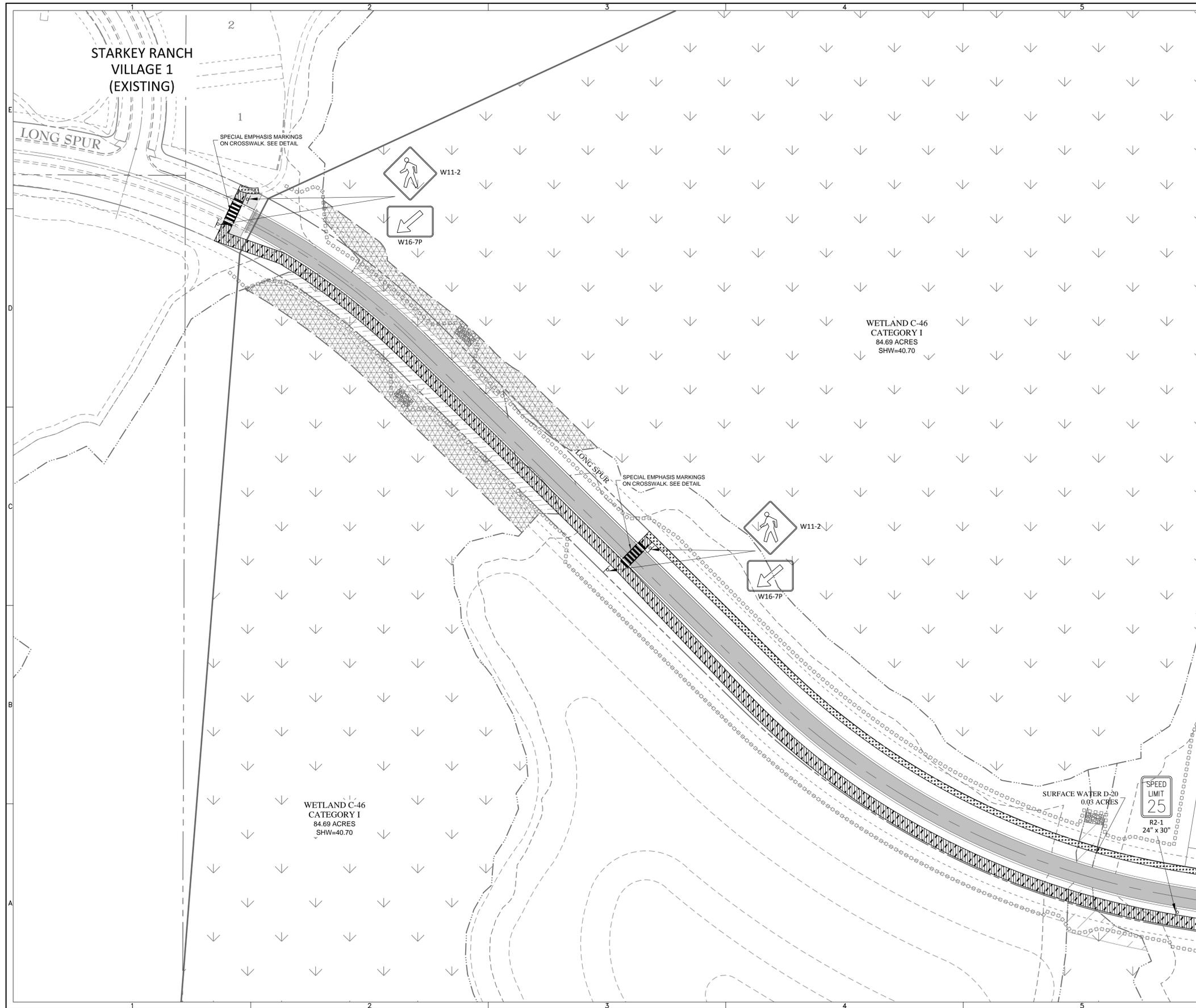
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PROJECT NO: PHC-SR-1002  
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FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
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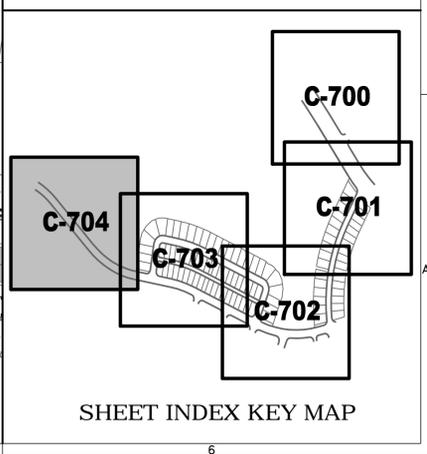
**C-703**

STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING/PAVING-C-703 2016/07/20 4:30 PM MARK JONES



- SIDEWALK LEGEND**
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NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL



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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 SIGNING, PAVEMENT MARKING &  
 SIDEWALK PLAN**

PREPARED FOR:  
**GENTRY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
 FILE: SPM  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER

**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
 REGISTRATION NO. 52717

**C-704**

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STARKEY PARCEL 2 - PHASE 1A SIGNS TABLE		
SIGN IDENTIFICATION	SIGN SIZE	SIGN QUANTITY
R1-1	30" x 30"	10
R2-1	24" x 30"	2
R5-1	30" x 30"	1
R5-1a	36" x 24"	1
R6-1L	36" x 12"	1
R6-1R	36" x 12"	1
W11-2	30" x 30"	1
W16-7P	24" x 12"	1

**SPECIFICATIONS FOR DESIGN AND INSTALLATION OF TRAFFIC CONTROL DEVICES ON NON-COUNTY ROADS**

- ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN CONFORMANCE WITH THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS.
- STREET NAME SIGNS SHALL BE 6" ON LOCAL ROADS AND 9" ON COLLECTOR AND ARTERIAL ROADS. SIX-INCH SIGNS SHALL HAVE 4" SERIES C LETTERS AND 9" SIGNS SHALL HAVE 6" SERIES B LETTERS. ALL STREET NAME SIGNS ON PRIVATE STREETS (NON-COUNTY MAINTAINED) SHALL BE STANDARD D3 STREET NAMES WITH THE COLORS REVERSED, WHITE BACKGROUND WITH GREEN LETTERS AND BORDER. AT INTERSECTIONS WITH COUNTY MAINTAINED ROADS, THE COUNTY MAINTAINED ROAD SHALL BE GREEN BACKGROUND WITH WHITE LETTERS.
- CONTRACTOR MUST CONTACT ENGINEER OF RECORD PRIOR TO ORDERING STREET NAME SIGNS. APPROVED STREET NAMES CAN NOT BE DETERMINED UNTIL RECORDING OF THE PLAT.
- EXISTING STRIPING AND OTHER PAVEMENT MARKINGS TO BE REMOVED SHALL BE DONE AS NECESSARY BY HYDROBLASTING. GRINDING IS NOT PERMITTED.

**SPECIFICATIONS FOR DESIGN AND INSTALLATION OF TRAFFIC CONTROL DEVICES ON COUNTY ROADS**

- PURPOSE:**

THESE SPECIFICATIONS HAVE BEEN DEVELOPED TO PROVIDE DEVELOPERS WITH A UNIFORM SYSTEM FOR INSTALLATION OF TRAFFIC CONTROL DEVICES ON THE COUNTY ROAD SYSTEM. A UNIFORM SYSTEM PROVIDES FOR REDUCED MAINTENANCE COSTS AND A HIGH STANDARD OF VISIBILITY FOR DRIVERS. ALL REQUIRED TRAFFIC CONTROL DEVICES SHALL BE INSTALLED BY THE DEVELOPER OF THE PROJECT.
- FLORIDA STATE STATUTE 316.0745:**
  - ANY AND ALL TRAFFIC CONTROL DEVICES INSTALLED ON THE COUNTY ROAD SYSTEM SHALL CONFORM TO FLORIDA STATE STATUTE 316.0745, UNIFORM SIGNALS AND DEVICES.
  - THIS STATUTE REQUIRES THAT ALL DEVICES CONFORM TO FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) SPECIFICATIONS. THE FDOT HAS ADOPTED THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AS THE STANDARDS TO BE USED IN THE STATE OF FLORIDA.
- PAVEMENT MARKINGS:**
  - ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC OR PREFORMED TAPES; RAISED PAVEMENT MARKERS SHALL BE CLASS "B".
  - PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS SHALL BE INSTALLED ON ALL ROADS CLASSIFIED OTHER THAN RESIDENTIAL WITH AN ADT GREATER THAN 500 VEHICLES, OR IF OTHER CONDITIONS EXIST THAT REQUIRE PAVEMENT MARKINGS, (SEE M.U.T.C.D. SECTION 3B-1).
- TRAFFIC CONTROL SIGNS:**
  - ALL SIGN BLANKS SHALL BE OF A TYPE CURRENTLY CERTIFIED BY THE FDOT FOR USE IN THE STATE OF FLORIDA.
  - ALL SIGN FACES SHALL BE HIGH INTENSITY GRADE AND OF A TYPE CURRENTLY CERTIFIED BY THE FDOT FOR USE IN THE STATE OF FLORIDA.
  - ALL SIGNS SHALL BE NO LESS THAN THE STANDARD SIZE AS SPECIFIED BY THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. NO MINIMUM SIZE SIGNING SHALL BE ACCEPTED. LARGER SIGNS SHALL BE USED WHEN REQUIRED BY DESIGN SPEED, ETC.
  - STREET NAME SIGNS SHALL BE 6" ON LOCAL ROADS, AND 9" ON COLLECTOR AND ARTERIAL ROADS. SIX INCH SIGNS SHALL HAVE 4" SERIES C LETTERS AND 9" SIGNS SHALL HAVE 6" SERIES B LETTERS. ALL STREET NAME SIGNS ON PRIVATE ROADS SHALL BE STANDARD D3 STREET NAME SIGNS WITH THE COLORS REVERSED. WHITE BACKGROUND WITH GREEN LETTERS AND BORDER. AT INTERSECTIONS WITH COUNTY MAINTAINED ROADS, THE COUNTY MAINTAINED ROAD SHALL BE GREEN BACKGROUND WITH WHITE LETTERS AND BORDER. STREET NAME SIGN BRACKETS FOR 6" SIGNS 30" LONG OR LESS, OR 9" SIGNS 24" LONG OR LESS, SHALL HAVE A 5 INCH BLADE OR CROSS. ALL OTHER STREET NAME SIGNS SHALL BE MOUNTED WITH BRACKETS WITH A 12 INCH BLADE OR 8 INCH CROSS. ALL STREET NAME SIGN BRACKETS SHALL BE SUPPLIED WITH BOLTS. SET SCREWS WILL NOT BE ACCEPTED.
  - ON ROADS TO BE MAINTAINED BY PASCO COUNTY, ALL SIGNS OTHER THAN STREET NAMES SHALL BE DATE CODED WITH A YELLOW REFLECTIVE LABEL AFFIXED TO THE BACK OF THE SIGN. IT WILL BE PUNCHED TO SHOW MONTH, DAY AND YEAR OF INSTALLATION (SEE SAMPLE LABEL). ALTERNATE LABEL DESIGNS PROVIDING THE DATE CODE INFORMATION MAY BE USED IF A SAMPLE IS SUBMITTED AND APPROVED BY PASCO COUNTY PRIOR TO INSTALLATION.

SAMPLE LABEL: SIZE 2' X 4'

**WARNING**

REMOVAL OF, OR DEFACING ANY TRAFFIC CONTROL DEVICE IS PUNISHABLE BY FINE AND/OR IMPRISONMENT. REPORT DAMAGE BY CALLING (727) 847-2411

**INSTALLED**

J F M A M J J A S O N D  
10'S 20'S 30'S - 1 2 3 4 5 6 7 8 9  
01 02 03 04 05 06 07 08 09

- ALL POST SYSTEMS, MOUNTING BRACKETS AND HARDWARE SHALL BE OF A TYPE CURRENTLY IN USE BY THE PASCO COUNTY PUBLIC WORKS DEPARTMENT AND CURRENTLY CERTIFIED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION FOR USE IN THE STATE OF FLORIDA. ALTERNATIVE SYSTEMS, ETC., SHALL ONLY BE USED IF APPROVED BY THE COUNTY ENGINEER.

**CERTIFICATION OF MATERIALS:**

- ALL TRAFFIC CONTROL DEVICES AND MATERIALS SHALL BE ON THE CURRENT FDOT APPROVED PRODUCTS LIST. PROOF OF CERTIFICATION IS REQUIRED FOR ALL TRAFFIC CONTROL DEVICES.
- A TRAFFIC CONTROL DEVICES SUBMITTAL DATA FORM SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION OF ANY TRAFFIC CONTROL DEVICE. NO TRAFFIC CONTROL DEVICE SHALL BE INSTALLED UNTIL THE CERTIFICATION SUBMITTAL HAS BEEN APPROVED BY THE TRAFFIC OPERATIONS DIVISION. THESE FORMS ARE AVAILABLE FROM THE TRAFFIC OPERATIONS DIVISION. COPIES OF THE APPROVED TRAFFIC CONTROL DEVICES SUBMITTAL DATA FORM SHALL BE SENT TO THE CONTRACTOR AND THE ENGINEERING INSPECTIONS DIVISION.

**TRAFFIC CONTROL DEVICES PLAN:**

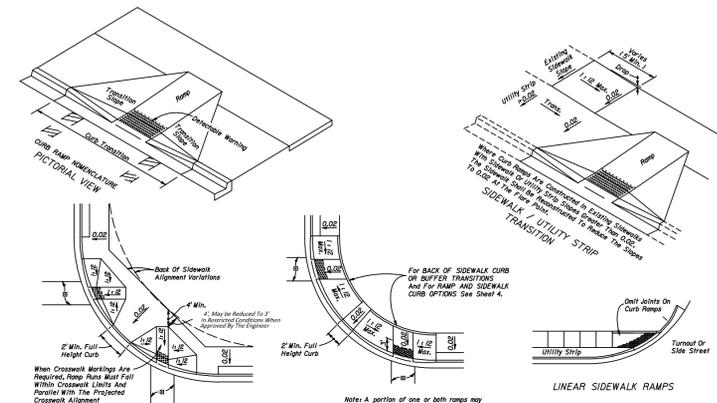
- A DETAILED SET OF PLANS FOR REQUIRED TRAFFIC CONTROL DEVICES SHALL BE SUBMITTED FOR ALL ROAD CONSTRUCTION, SITE DEVELOPMENT, SUBDIVISION, AND RIGHT-OF-WAY USE PERMITS. THESE PLANS SHALL BE IN CONFORMANCE WITH FDOT DESIGN STANDARDS. ALL PLANS SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF FLORIDA.
- WITH THE SUBMITTAL OF FINAL PLANS TO THE DEVELOPMENT REVIEW DIVISION, TWO ADDITIONAL SETS OF THE TRAFFIC CONTROL PLAN PORTION OF THE ENTIRE PLAN SHALL BE SUBMITTED. THESE TWO SETS WILL BE FORWARDED TO THE TRAFFIC OPERATIONS DIVISION.

**COST ESTIMATE:**

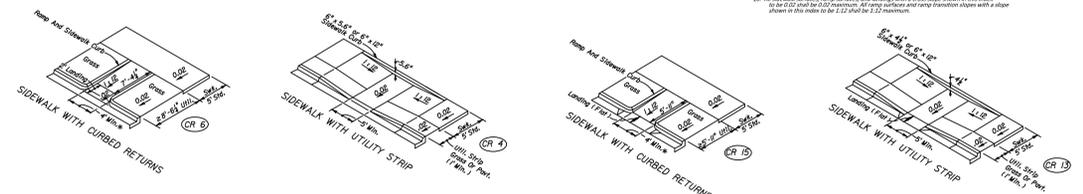
AN ENGINEER'S COST ESTIMATE SHALL BE REQUIRED FOR ALL PROPOSED TRAFFIC CONTROL DEVICES. THE ESTIMATE SHALL BE PROVIDED IN CONJUNCTION WITH THE TRAFFIC CONTROL DEVICES SUBMITTAL DATA FORM (SEE SECTION 5.2).

**INSPECTION AND ACCEPTANCE:**

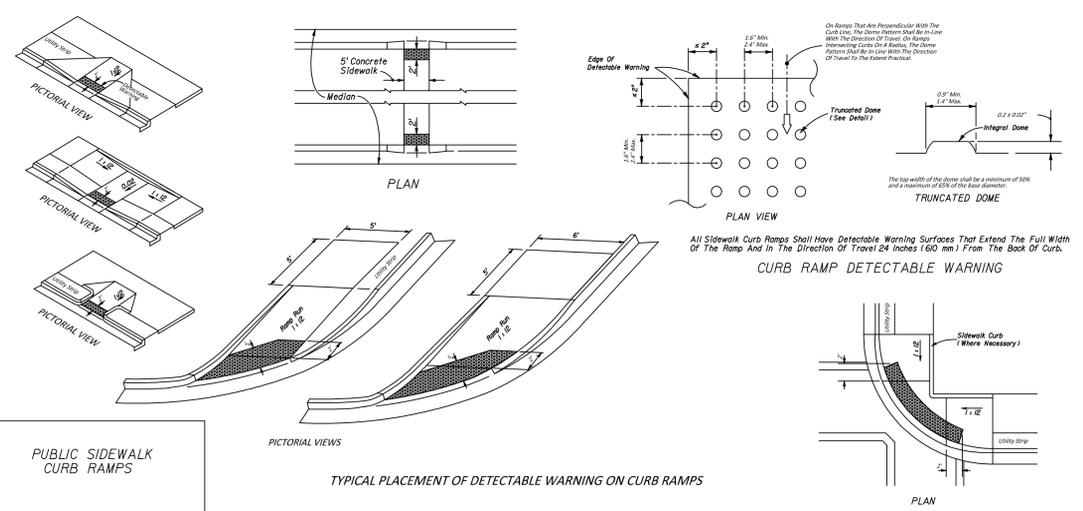
- UPON COMPLETION OF THE INSTALLATION OF THE TRAFFIC CONTROL DEVICES, THE CONTRACTOR SHALL CALL THE ENGINEERING INSPECTIONS DIVISION FOR AN INSPECTION AT (727) 847-8154.
- THE INSPECTION SHALL BE MADE BY THE ENGINEERING INSPECTION DIVISION WITHIN 48 HOURS (TWO WORKING DAYS) OF THE REQUEST.
- AN INSPECTION REPORT SHALL BE MADE BY THE ENGINEERING INSPECTIONS DIVISION. COPIES OF THE REPORT SHALL BE SENT TO THE ENGINEER AND THE DEVELOPER.
- NO ROADWAY SHALL BE OPEN TO THE PUBLIC UNTIL ALL TRAFFIC CONTROL DEVICES HAVE BEEN INSPECTED AND ACCEPTED BY PASCO COUNTY.



TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS



DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE RESTRICTED BY RIGHT OF WAY



TYPICAL PLACEMENT OF DETECTABLE WARNING ON CURB RAMPS

- GENERAL NOTES**
- Public sidewalk curb ramps shall be constructed in the public right of way of locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, streets and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed at all street intersections and at ramps that have cutback returns. Partial curb returns shall extend to the limit prescribed by index No. 505 to accommodate curb ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.
  - The location and orientation of curb ramps shall be as shown in the plans.
  - Curb ramp running slopes of unretained sites shall not be steeper than 1:12 and cross slopes shall be 0.02 or flatter. Transition slopes shall be steeper than 1:12.
  - When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1:12, a running slope between 1:12 and 1:8 is permitted for a rise of 5' maximum and a running slope of between 1:12 and 1:8 is permitted for a rise of 3' maximum, where compliance with the requirements for cross slopes cannot be fully met, the minimum feasible cross slope shall be provided. Running slopes is not required to exceed 6' in length, except at sites where the plans specify a greater length.
  - If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramps. The maximum slope of the transition shall be 1:12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk. Improvements for guidance are not required of curb ramps for linear pedestrian traffic.
  - Curb ramps detectable warning surfaces shall extend the full width of the ramp and in the direction of travel 24" from the back of curb. Detectable warning surfaces shall be constructed by featuring a truncated dome pattern in conformance with U.S. Department of Justice A.D.A. Standards for Accessible Design, A.D.A. Accessibility Guidelines, Section 4.05.2, (detail shown above left). Transition slopes are not to have detectable warnings.
  - Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transition slope to the extent that no remaining section of sidewalk is less than 2' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or work area to the extent that no remaining section of sidewalk is less than 2' long.
  - Alpha-numeric identifications are for reference (plans, permits, etc.).
  - Public sidewalk curb ramps are to be built for as follows:  
Ramps, reconstructed sidewalks, work around sidewalks, sidewalk landings and sidewalk curbs are to be built for the concrete and/or curb and gutter concrete, (Type 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 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**HEIDT DESIGN**  
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Transportation Engineering  
Ecological Services • Landscape Architecture

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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
SIGNING, PAVEMENT MARKING &  
SIDEWALK PLAN**

PREPARED FOR:  
GENTRY LAND COMPANY

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
FILE: SPM  
DESIGN BY: STOLLINGS  
DRAWN BY: STOLLINGS

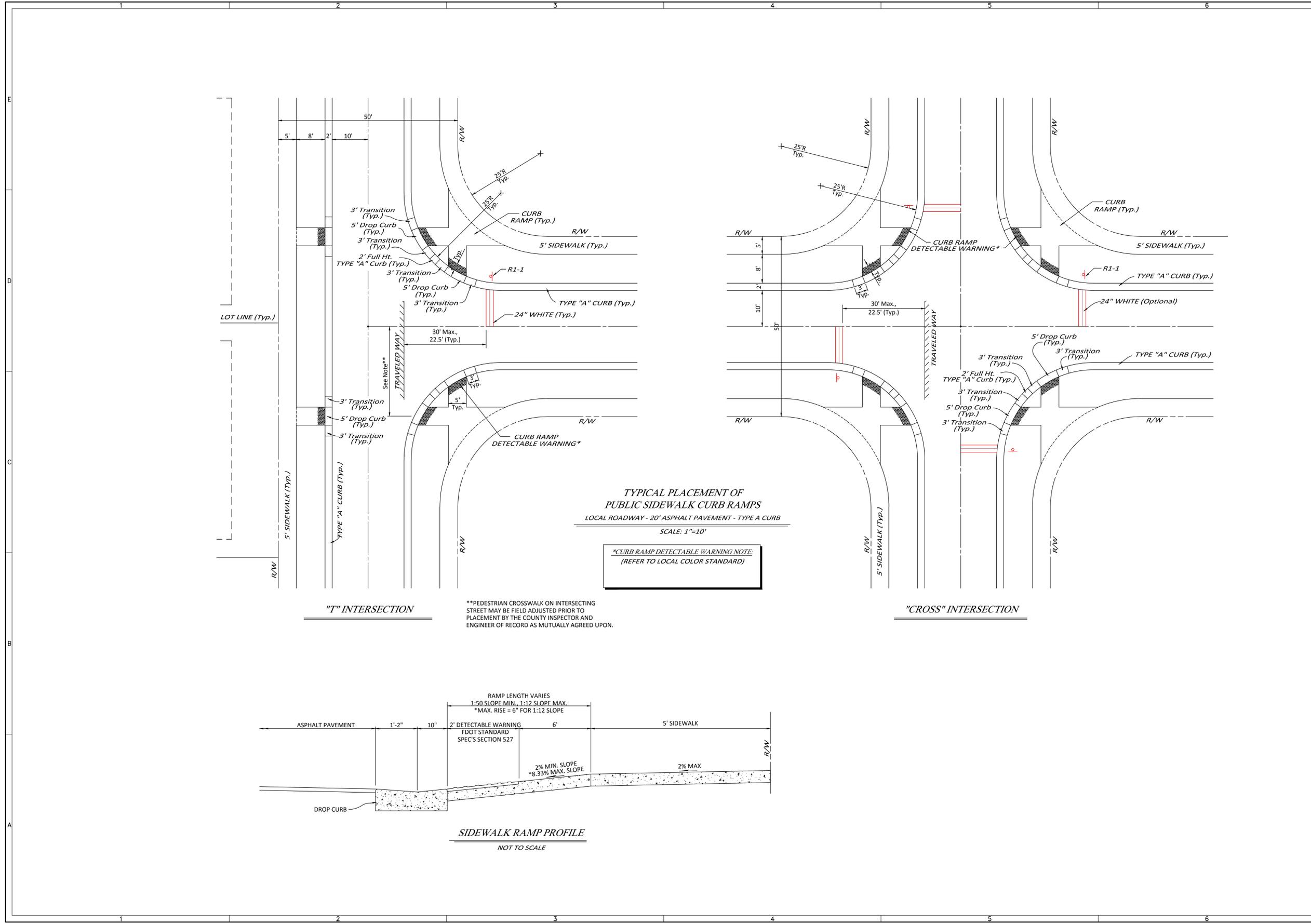
FLORIDA PROFESSIONAL ENGINEER

GARY D. MILLER  
DATE: \_\_\_\_\_  
REGISTRATION NO. 52717

**C-705**

STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING/SP/ADWG-C-705 2016/01/20 4:30 PM MARK JONES

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Engineering Business Certificate of Authorization No. 28782  
 Landscape Architecture Certificate of Authorization No. LC2600405

**STARKEY RANCH VILLAGE 2**  
**PHASE 1A**  
**SIGNING, PAVEMENT MARKING & SIDEWALK PLAN**

PREPARED FOR:  
**GENTRLY LAND COMPANY**

NO.	DATE	DESCRIPTION
1	01/21/2016	REVIEW SUBMITTAL

PROJECT NO: PHC-SR-1002  
 FILE: SPM  
 DESIGN BY: STOLLINGS  
 DRAWN BY: STOLLINGS

FLORIDA PROFESSIONAL ENGINEER  
**GARY D. MILLER**  
 DATE: \_\_\_\_\_  
 REGISTRATION NO. 52717

**C-706**

STARKEY RANCH VILLAGE 2 PHASE 1A ENGINEERING SPADWG-C-706 2016/01/20 4:30 PM MARK JONES  
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**STORM WATER POLLUTION PREVENTION PLAN**

Contained on these plans and within the following notes is a storm water pollution prevention plan (swppp) 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.

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 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:

**HEIDT DESIGN, LLC:**

- Develop SWPPP 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.
- 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.
- 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.
- Submit to SWFWMD and the operator of the municipal separate storm water system, if applicable, a letter of construction commencement.
- Complete and submit a notice of termination and certification for developer. The NOT's shall be submitted no more than 30 days after:
  - 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 sprig, gabions, or geotextiles) may be employed. The client shall notify Heidt Design, LLC when one of these criteria has been met.

**CONTRACTOR:**

- Sign and return to Heidt a contractor's 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.
- During construction, assure compliance with the designed Storm Water Pollution Prevention plans prepared by Heidt Design, LLC and the NPDES Generic Permit for storm water discharges from large and small construction activities.
- 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.
- Undertake all reasonable Best Management Practices (BMPs) to assure that silted or otherwise polluted storm water is not allowed to discharge from the site during all phases of construction. Stabilization BMPs that may be used include:
  - Temporary or permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees and preservation of mature vegetation. Structural erosion and sediment control BMPs 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 BMPs 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.
- 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.
- Develop a maintenance and inspection plan which includes, but is not limited to the following:
  - The specific areas to be inspected and maintained that includes all the disturbed areas and material storage areas of the site.
  - 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.

The following shall be inspected a minimum of once a week or within 24 hours after 0.50 inches of rainfall:

- Stabilization measures (once a month if fully stabilized).
- Structural controls.
- Discharge points.
- Construction entrances and exits.
- Areas used for storage of exposed materials.

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:

- 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.

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.

Releases in excess of reportable quantities:

- 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:
  - 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 recurrence 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.

**DEVELOPER:**

- 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.
- Notify Heidt when it is time to submit a Notice of Termination as defined under part E of the Heidt Design, LLC section of the SWPPP. Sign and return to Heidt Design, LLC for submittal to FDEP a Notice of Termination form and certification.

**PRE-DEVELOPED SITE INFORMATION:**

- Total Site Acreage: 62.04 AC.
- Land Use: UNDEVELOPED - AGRICULTURAL
- Vegetation: RANGE LAND, BAHIA GRASS PASTURE
- Receiving water or municipal separate storm water system: ANCLOTE RIVER
- 2 Year/24 Hour Rainfall Depth: 4.5"
- Soil Types: NARCOOSSEE, SELLERS, SMYRNA, SAMSULA, MIYAKKA

**PROJECT INFORMATION:**

- Project Type - RESIDENTIAL
- Anticipated Construction Sequence is as follows:
  - Complete Erosion Control Installation
  - Clearing and Grubbing
  - Earthwork Activities
  - Storm Water System Construction
  - Utility Construction
  - Base and Pavement Construction
  - Final Stabilization

The BMP's listed in part D of the Contractor Decision of the SWPPP shall be considered during all phases of construction.

- Anticipated Start Date: 04/2016
- Anticipated Completion Date: 12/2016
- Total Acres Disturbed: 62.0 AC.
- Pre-Developed "C" Factor: 0.20
- Post-Developed "C" Factor: 0.55
- The Storm Water Management System, upon completion of construction and appropriate certification and as-built submittals will be operated and maintained by GENTRY LAND COMPANY. Upon establishment of the TSR CDD, the CDD will become the operation and maintenance entity.
- The potential source of pollution from this project is on-site development and construction activity.

**OWNER'S INSTRUCTIONS FOR MAINTENANCE AND INSPECTION OF STORMWATER FILTER FACILITIES**

It is WS-TSR, LLC /TSR CDD responsibility to inspect and maintain the water drainage systems on a routine basis to ensure that they are functioning properly. Inspections can be on an annual or semi-annual basis, but should always be conducted following major storms. Systems that incorporate infiltration are most critical since poor maintenance practices can soon render them inefficient. Visual inspections of sand filters, control structures, and outfall pipes are highly recommended. It should be stressed that good records should be kept on all maintenance operations to help plan future work and identify facilities requiring attention.

Sand filter surfaces are sometimes scarified or break up silt deposits and restore porosity. This should be accomplished after all sediment has been removed from the surface. After removing large debris (cups, paper, wood, etc.) it is recommended that the top 3" will properly scarify the surface or it may be required to replace the sand. Another technique requires removing the sand for washing.

The filter system is designed to have a wet-dry cycle to inhibit algae or bacterial growth. Cleanout frequency of filter beds will depend on whether they are vegetated or non-vegetated and will be a function of their storage capacity, infiltration characteristics, volume of inflow, and sediment load. Filter beds should be inspected closely at least once a year.

Perforated underdrain pipes are located 2' below the sand and cleanouts are located at the end of the system. In the event of sediment build-up in the underdrain pipe, cleaning can be accomplished through the cleanout with several of the techniques outlined below.

Methods and equipment for cleanout of systems various types of equipment are available commercially for maintenance of drainage systems. The most frequently used equipment and techniques are listed below.

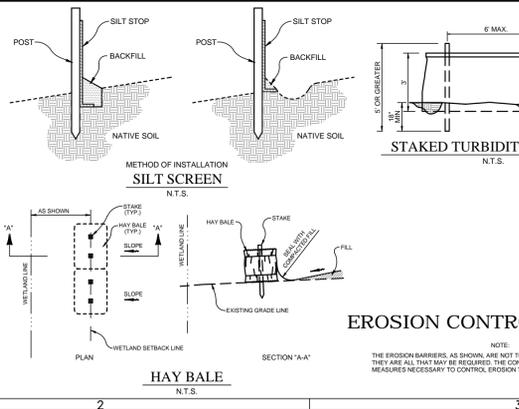
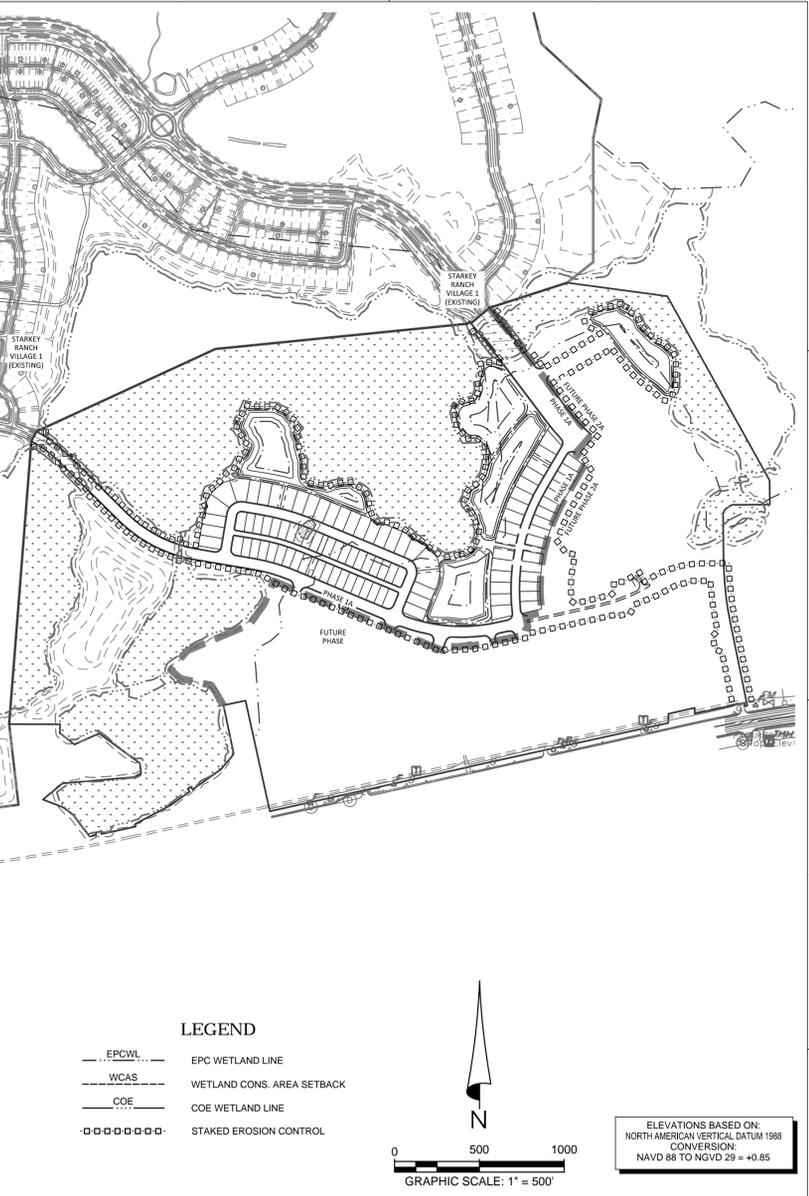
- Vacuum Pump**  
This device is normally used to remove sediment from sumps and pipes. The equipment for this system is generally mounted on a vehicle. It requires a 200 - 300 gallon (0.757 - 1.36m) holding tank and a vacuum pump that has a 10" (254mm) diameter flexible hose with a serrated metal end for breaking up cake sediment. A two-man crew can clean a catch basin in 5 to 10 minutes. This system can remove stones, bricks, leaves, litter and sediment deposits. Normal working depth is 0' - 20' (0 to 6m).
- Water Jet Spray**  
This equipment is generally mounted on a self-contained vehicle with a high pressure pump and a 200 - 300 gallons (0.760 to 1.140m) water supply. A 3" (76mm) flexible hose line with a metal nozzle that directs jets of water at a reverse angle, which propels the nozzle forward while blasting debris backwards toward the catch basin. As the hose line is reeled in, the jetting action forces all debris to the catch basin where it is removed by the vacuum pump equipment. Normal length of hose is approximately 200' (61m). Because of the energy supplied by the water jet, it should not be used to clean erodible trench walls.

**POND/LAKE EXCAVATION NOTE:**  
No excavation shall extend below the permitted design depths/elevations shown on the drawings, unless additional testing supports otherwise and the Engineer of Record has received verbal and/or written permission from the Water Management District. No lower semi-confining unit clayey soil material and/or no limestone materials shall be excavated, regardless if these materials are encountered within the permitted excavation depths/elevations. If any lower semi-confining unit clayey soil materials or limestone materials are encountered above the permitted depths/elevations, then excavation operations shall cease in the general area and the Engineer of Record shall be notified immediately.

**WETLANDS NOTE:**  
There are no wetland impacts proposed and therefore, no mitigation required. \*Conservation Area\* designation is given to all protected wetlands per Pasco County requirements. They are not designated as "Conservation Easements" for SWFWMD compensation.

**GENERAL EROSION AND TURBIDITY CONTROL NOTES**

- 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 erosion and sediment control methods 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 permeability rates
  - Depth of cut in ponds, trenches, or utility lines
  - Ambient ground water levels
  - Actual rainfall intensity 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 quality 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 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 sand 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. Silt 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 pipes are to be used to remove turbid waters from construction areas, the pipes 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, unprotected 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 much blankets, filter fabrics, etc., can be employed to provide vegetative cover.
- Energy dissipaters (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 soils 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 windborn 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 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.
- 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 Pasco 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.



**NOTE:**  
BMP LOCATIONS SHOWN ON THE PLAN DO NOT REFLECT THE SUB PHASING AND THE CONTRACTOR SHALL FOLLOW THE BMP'S IN ACCORDANCE WITH STARKEY VILLAGE 1 NPDES PERMIT FOR ALL PHASES OF CONSTRUCTION.

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Ecological Services • Landscape Architecture

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www.HeidtDesign.com

**STARKEY RANCH VILLAGE 2 PHASE 1A**  
**CONSTRUCTION SURFACE WATER MANAGEMENT PLAN**

PREPARED FOR: **GENTRY LAND COMPANY**

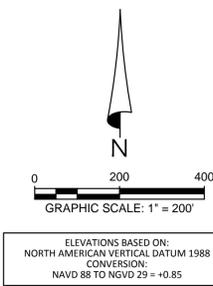
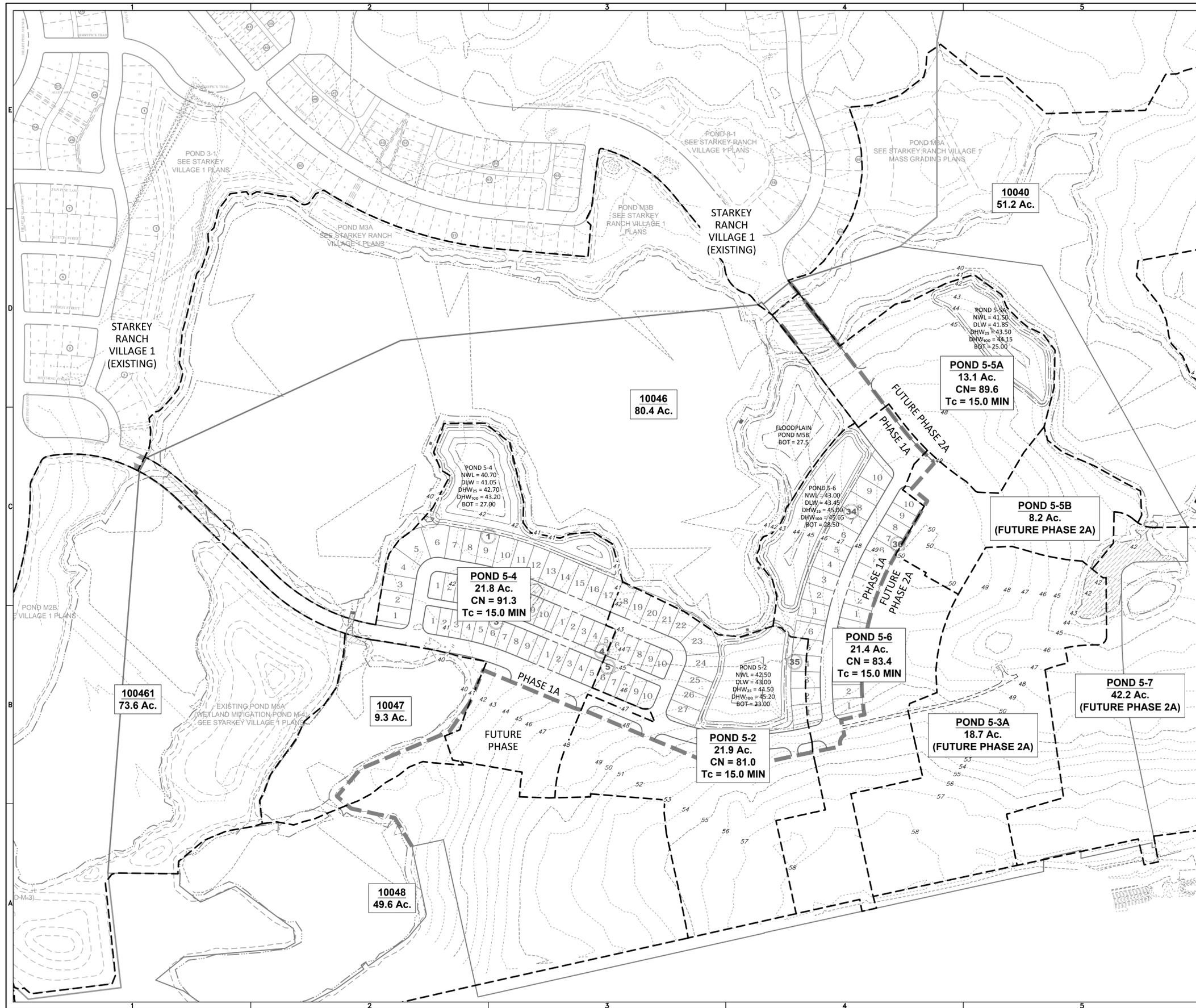
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PROJECT NO: **PHC-SR-1002**  
FILE: **CSWMP**  
DESIGN BY: **STOLLINGS**  
DRAWN BY: **STOLLINGS**

**FLORIDA PROFESSIONAL ENGINEER**  
**GARY D. MILLER**  
DATE: \_\_\_\_\_  
REGISTRATION NO. **52717**

**C-900**

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---	MAJOR DRAINAGE AREA

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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
OVERALL POST-DEVELOPMENT  
DRAINAGE AREA MAP**

PREPARED FOR:  
**GENTRLY LAND COMPANY**

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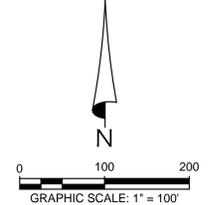
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FILE: DA-POST  
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**LEGEND**

---	CATCH BASIN LIMITS
0.50 Ac.	CATCH BASIN ACERAGE
(1)	STORM STRUCTURE NUMBER
- - - - -	WETLAND LINE (EPCWL)
- - - - -	WETLAND CONS. AREA SETBACK (WCAS)
- - - - -	FEMA FLOOD LINE

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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 DRAINAGE SUB-BASIN AREA MAP**

PREPARED FOR:  
**GENTRY LAND COMPANY**

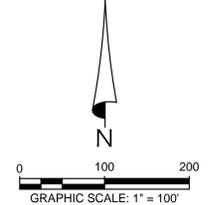
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**C-902**

STARKEY RANCH VILLAGE 2 PHASE 1A DRAINAGE SUB-BASIN AREA MAP - C-902 2016/07/20 4:32 PM MARK JONES



**LEGEND**

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

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**STARKEY RANCH VILLAGE 2  
 PHASE 1A  
 DRAINAGE SUB-BASIN AREA MAP**

PREPARED FOR:  
**GENTRY LAND COMPANY**

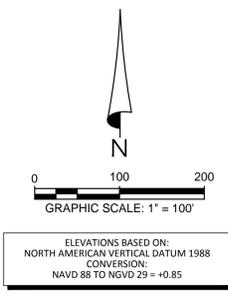
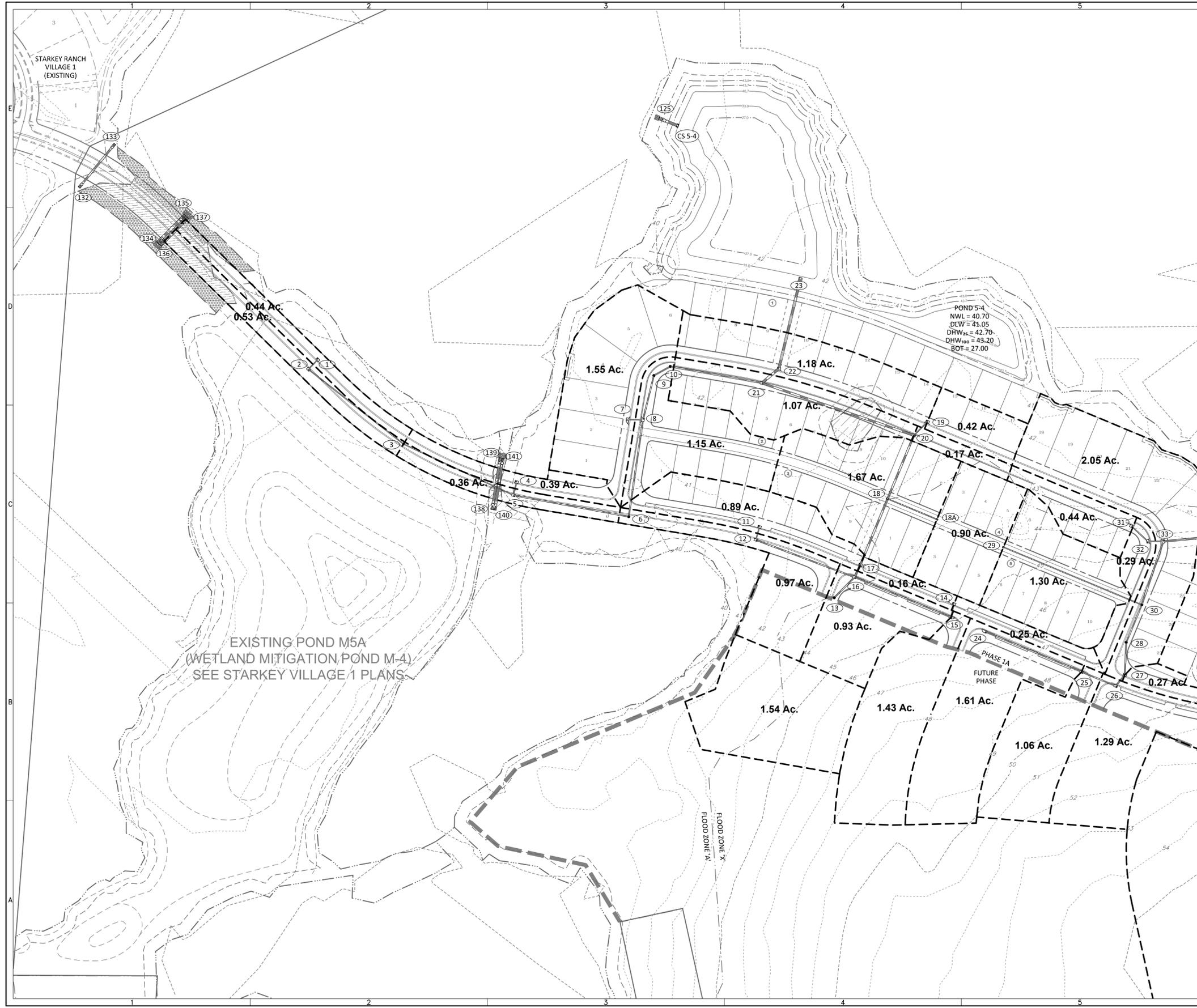
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**C-903**

STARKEY RANCH VILLAGE 2 PHASE 1A DRAINAGE SUB-BASIN AREA MAP - SUB-DWG - C-903 2016/07/20 4:32 PM MARK JONES



**LEGEND**

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

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**STARKEY RANCH VILLAGE 2  
PHASE 1A  
DRAINAGE SUB-BASIN AREA MAP**

PREPARED FOR:  
**GENTRY LAND COMPANY**

DATE	DESCRIPTION

DATE	DESCRIPTION
07/21/2016	REVIEW SUBMITTAL

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DRAWN BY: STOLLINGS

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**GARY D. MILLER**  
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C-904

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