

SITE PERMIT - CONSTRUCTION INSPECTIONS

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CONSTRUCTION INSPECTIONS

Once the approved plans have been stamped, a pre-construction meeting may be schedule by contacting the Field Operations Inspection Supervisor at 972-205-21183. Plan approval shall be null and void if a Site Permit is not obtained within 6 months from the date plans are stamped released for construction.

The Developer or general contractor must schedule and attend the mandatory pre-construction meeting prior to issuance of the Site Permit. The permit authorizes work located out of the building pad, including grading, drainage, paving, utilities, detention, landscaping, irrigation, screening, etcetera, located on public or private property, as reflected on the public works and site engineering construction plans.

Pre-construction meetings are held on Tuesday and Thursday mornings with representatives from the Engineering Department's Field Operations group, inspection and [final acceptance procedures](#) are discussed. A City Inspector will be assigned to the project, specific project requirements are reviewed and inspection checklists distributed.

In the event the developer or general contractor cannot attend, each is responsible for assigning an authorized representative to attend. Authorized representatives must have decision-making authority for the project. If any of the parties mentioned above are not present, the meeting will be cancelled. **No construction activity is allowed without a valid Site Permit.**

1.1 Plan Revisions

The City reserves the right to require corrections to plans that have been released for Site Permit with actual field conditions that are found to be contrary to the plan, and for omitted or conflicting instructions. The Engineer of Record shall, either upon his/her own initiative or upon the request from the Engineering Department, furnish revised drawings as may be necessary. When such a request is made, the changes must be reviewed and re-approved by the City before construction of the work covered by them is undertaken. The revised plan must be sealed with the Engineer of Record's wet signature and date. Cloud the information and area with the change and note the number of the revision within a triangle Δ. Provide a description of the change near the title block.

2 FINAL ACCEPTANCE

See the [Appendix](#) for residential and non-residential final acceptance checklist.

2.1 Oversize Reimbursement

The City will refund oversize water and sanitary sewer main cost within a subdivision larger than 8-inch diameter installed by the subdivision developer, unless the larger size line is required to service the subdivision. The oversize reimbursement is calculated by determining the difference between the cost of the oversized main and what it would have cost to install a 8-inch line using utility bid prices from the proposed development. The City provides reimbursement upon acceptance of the system.

For storm sewers the City will participate in the cost of storm sewer pipe or culverts exceeding the capacity of a seventy-two (72) inch diameter pipe, if funds are available. City participation is limited to twenty five (25) percent of the difference between the costs of a seventy-two (72) inch pipe installation and the designed facility. The City may also participate in the cost of culverts or bridges for proposed street crossings of an existing drainageway. City participation in these cases is limited to the excess cost over and above a seventy-two (72) inch pipe, but in no case exceeds fifty (50) percent of the excess.

A written agreement defining City participation cost is required prior to construction of the drainage facilities. City participation amounts in excess of \$25,000 must be approved by the City Council.

For all reimbursement requests provide the following documents for processing:

1. Development agreement, where applicable
2. Letter requesting reimbursement with eligible lines and lengths identified
3. An itemized breakdown showing the item(s), description, unit, quantity, unit cost, total cost and date installation completed. For water and sewer reimbursement request, provide the unit cost of 8-inch lines installed in the subdivision and for storm sewer the unit cost of 72-inch reinforced concrete pipe.
4. Complete vendor application and W-9 form in Appendix 11.
5. Provide a copy of the contract and any applicable invoices justifying the actual cost to construct the line. The City does not reimburse for overhead expenses, engineering, and testing services associated with design or construction.
6. Infrastructure acceptance letter
7. Submittals are processed within two weeks of receipt with a complete submittal of all applicable items referenced above. If the request is reduced an explanation will be provided along with the reimbursement check.

For more information consult the Code section 31.31, Storm Sewer, 31.59 Water / Sanitary Sewer Main.

2.2 RECORD DRAWINGS

Record drawings are a final record of what was actually installed, and include all deviations or changes from the approved plan. Record drawings are required to reflect the same

degree of precision and detail as the original plans. Record drawings are necessary as a basis to plan and design future projects in the same location and to make repairs to damaged components or other non-working facilities. They are required to show all changes that occurred during construction, including changes in materials, distances, lengths, locations, elevations, slopes, volumes, etc.

During the construction phase of the project, the Contractor/Developer for the project shall maintain one set of full size plans for record drawings. The Contractor's superintendent or authorized representative, together with the City's construction inspector, shall update the plans with record information on an as needed basis. Record information includes the final locations of all new materials incorporated into the work and all existing improvements encountered during construction.

Upon completion of construction, the record information will be provided to the Engineer / Surveyor and together with the survey of the as-built conditions, shall be the basis for the record drawing submittal. As-built changes to text: invert elevations, dimensions, notes, etc. will be lined out with the record drawing text placed near it. Do not alter, modify or erase original approved construction drawing text.

Submit the record drawings with the as-built changes noted and PDF's of them to the City Inspector. The PDF file shall be scanned from the original final sealed Record Drawings. Mylars are accepted but not required. The page size shall be identical to the printed paper copy with a minimum resolution 300 dpi. The PDF's must be free from objectionable background, rotated properly and stored in a separate folder on the CD/DVD. Conversion of a CAD file to a PDF file is not acceptable.

2.2.1 Digital Data

The Engineering Department is charged with being the custodian of public works records. More and more users are requesting digital records. With ever increasing demands for service, we are using all available technology advances (GIS) to gain higher levels of efficiency. Submit digital files of the approved record drawings in either MicroStation (.dgn) or AutoCad (.dwg) format for input into the City's GIS database. All files must use Texas State Plane coordinates and elevations shall be based on NAVD 88 vertical datum. Assumed coordinate systems are not accepted. When setting up files please keep in mind the following general guidelines:

1. Files names should make sense to a viewer who may not be familiar with the consulting firms naming conventions and be indicative of the contents of the file.
2. All pertinent drawing elements will reside in the primary drawing file. There shall be no cells, nodes, blocks, or reference files attached to the drawing.
3. Separate layers for structures, pipes, annotation etc. with a logical description of each layer.
4. All easements within the property shall be represented and drawn as closed polylines representing aggregate areas.
5. Graphically represent all off-site easements, adjacent right of way, lot lines, etc encompassing or intersecting infrastructure improvements.
6. Infrastructure line work must be continuous polylines with a beginning and ending at a structure insertion point, connecting only two structures per line. Lines must be drawn with the direction of flow. Remove extraneous line work and annotation.

Files must be saved and submitted on a CD-ROM or DVD in a jewel case. Include the following information on the CD / DVD label:

1. Engineering Company Name and contact information
2. Record Drawings for: Project Name and Case Number
3. Date files burnt to CD/DVD.

3 Appendix - Final Acceptance Checklist

3.1 Non-Residential Development

The following outline section itemizes the principle requirements of the major work activities.

1. PAPERWORK IN PLACE (prior to start of any work)
 - a. All plans approved: Plat, paving, drainage, utilities, grading, trees, SW3P, screening, etc.
 - b. ROW permits and contractors registered.
 - c. TCEQ: NOI's and Contractor's certifications.
 - d. An Information Board must be posted with the Site Permit, TCEQ permit (NOI) and address of site. The address must be a minimum of 12" with minimum 4" wide high reflective letters & numbers on a white background.
 - e. Site batch plant permit.
 - f. Concrete batch designs approved.
 - g. Burn Permits, if applicable (TCEQ & Fire Marshal).
 - h. Special construction submittals approved, such as lift stations.
 - i. Letter Of Map Revision (LOMR) and/or Conditional Letter Of Map Revision (CLOMR) for developments adjacent to creeks.
 - j. Flood Plain Development Permit required for work in designated FEMA flood plains.
 - k. Corp of Engineers 404 Permit typically required for channel projects over 300 ft long.
2. PRE-CONSTRUCTION MEETING (prior to start of any work)
 - a. Establish contacts between City Engineering, contractors, design Engineer, Developer, and testing lab.
 - b. Review TCEQ requirements & SWP3.
 - c. Detention/Retention facility must be constructed during initial phase of construction including stabilized ground cover.
 - d. Review project. Note any special conditions or difficult areas.
 - e. Review construction sequencing, barricades and traffic control plans in public R.O.W.
 - f. Review project closeout and acceptance requirements.
3. EROSION CONTROL
 - a. Preliminary controls up before soil disturbance and start of construction.
 - b. Detention/Retention facility must be constructed during initial phase of construction and properly maintained throughout the construction process.
 - c. Maintain controls throughout construction period. Inspection reports as required by TCEQ.

- d. All disturbed areas stabilized, either temporarily or permanently, in accordance with TCEQ and City requirements.
4. EARTHWORK – MASS EXCAVATION & TREE REMOVAL
- a. Construction staking in place and maintained.
 - b. Strip vegetation & topsoil; stockpile for later use if required in areas to be vegetated.
 - c. Remove trees in accordance with approved Tree Preservation Plan.
 - d. Removal of all unsuitable material: trash, buried trees, etc.
 - e. Proper compaction of fills: moisture control, 8” to 10” lifts maximum, equipment, adequate testing, and no undesirable material.
 - f. Soil density & moisture testing of final cut grades.
5. SANITARY SEWER
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; proper moisture control & lift depths. Lab tests passing.
 - c. Manholes lids @ grade, MH inverts clear, service cleanouts @ grade, etc.
 - d. Special Structures: Lift stations, siphons, and bores. Per approved plans.
 - e. All tests acceptable and documented:
 - i) Air Test
 - ii) Mandrel Test
 - iii) Video Line with pan & tilt camera
6. WATER
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; proper moisture control & lift depths. Lab tests passing.
 - c. Set services and meter cans to finish grade.
 - d. Adjust hydrants to grade, set valve stacks and verify valves operational.
 - e. All tests acceptable and documented:
 - i) Pressure Test
 - ii) Chlorinate Line
 - iii) Chlorine Samples
 - f. Comply with Heavily Chlorinated Water Discharge requirements.
7. STORM SEWER AND DRAINAGE
- a. Detention/Retention Facilities: Structures, grades, stormwater quality measures and vegetation per plan and NCTCOG – BMP specifications. Installed during initial phase of construction, including all vegetation, and properly maintained throughout the construction process.
 - b. Construction staking: horizontal & vertical control in place and maintained.
 - c. Proper embedment. Trench backfill; moisture control & lifts. Lab tests passing.
 - d. Inlets, flumes, headwalls and other structures per plans.
 - e. Concrete strength tests made & passing.
 - f. Open Channels and Drainage ways: all grades, headwalls, wing walls, riprap, and any required lining per plans. Permanent vegetation of channel bottom, bank slopes, and 15’ wide strip at top of banks is considered an integral structural part of the channel and must be fully established with 100% coverage and 100% vegetative density.

8. PAVING

- a. Construction staking: horizontal & vertical control in place and maintained.
- b. Subgrade: cut/fill to plan elevations and densities tested and corrected as necessary.
- c. Soil Tests: Lime series and Proctors on subgrade soils.
- d. Pre-place sleeves or conduits under paving for irrigation, franchise utilities, etc. Proper densities on trench backfill.
- e. Lime Subgrade
 - i) Correct Lime Quantity; lime delivery tickets
 - ii) Lime Mixing: pass gradation tests.
 - iii) Lime Subgrade Compaction; passing compaction tests w/ correct moisture & density.
 - iv) Lime depth checks passing.
 - v) Cure time: maintain moisture.
- f. Concrete Paving
 - i) Reinforcing: spacing, chairs, dowels.
 - ii) Proper Joints: location of full depth expansion joints & control joints sawed soon after pour. Sealing joints.
 - iii) Proper curing before open to traffic and construction loads.
 - iv) Concrete strength tests; taken for every pour and all passing.
 - v) Depth checks passing.
 - vi) Correct finish on paving slab.
 - vii) Alley inverts and street crowns correct; free draining without "birdbaths".
- g. Sidewalks and ADA ramps per approved plans and City details.

9. SCREEN WALLS

- a. Wall location and easement staked by surveyor before start of construction.
- b. Proper Material; mortar, accessories, brick.
- c. Proper Methods; uniform & consistent mixing of mortar, full head and bed joints, placement of joint reinforcing and rebar, tooled joints, placing of grout in columns, place shelf angle at bottom of wall panels.

10. OTHER SUBDIVISION IMPROVEMENTS (if applicable)

- a. Special Sidewalks per approved plans.
- b. Planting and landscape areas – To be completed to the extent required by SW3P requirements.
- c. Developer installed retaining walls shown on grading plan must be built before lots are put at finish grades.

11. WALK THROUGH INSPECTIONS AFTER SUBSTANTIAL COMPLETION

- a. Contractors notify Engineering Dept. Inspector when all work has been completed and is ready for inspection.
- b. All soil stabilization and BMP's in place.
- c. Utility inspection includes representative from Water Dept. Paving inspection includes Street Dept. representative. Detention/Retention Facility inspection includes representative from Stormwater Quality.
- d. Identify all deficiencies. Contractors correct deficiencies.
- e. Final inspection confirms all deficiencies corrected.

ACCEPTANCE REQUIREMENTS

The following outline section itemizes the requirements for City acceptance of a residential subdivision.

1. WALK THROUGH AND FINAL INSPECTIONS - As outlined above, are completed and all deficiencies corrected. It is recommended that one month before the C.O. is required that all finals and paperwork be completed.
1. RECORD DRAWINGS – Upon completion of construction, the record information will be provided to the Engineer / Surveyor and together with the survey of the as-built conditions, shall be the basis for the record drawing submittal. As-built changes to text: invert elevations, dimensions, notes, etc. will be lined out with the record drawing text placed near it. Do not alter, modify or erase original approved construction drawing text. Submit PDF's of the record drawings with the as-built changes noted. The page size shall be identical to the printed paper copy with a minimum resolution of 300 dpi. The PDF's must be free from objectionable background, rotated properly and stored in a separate folder on the CD/DVD.
2. MAINTENANCE BONDS AND UNIT PRICE SUMMARIES – Both paper and floppy disk copies submitted for Utility work, paving work, and for City owned Screening Wall.
3. ADDITIONAL INSPECTION FEE - Required to be paid by Developer if actual construction costs are significantly higher than estimated costs upon which initial fee was based.
4. SCREEN WALL MAINTENANCE FEE - Paid by Developer for City owned Screening Wall.
5. LOT GRADE CERTIFICATION LETTER – Required from design Engineer. Includes certification that lot grades, swales and drainage are in accordance with approved plans.
6. LETTER OF CONFORMANCE for DETENTION/RETENTION - Letter of Conformance, on City's form letter, received from design Engineer for the detention/retention facility. Certifies that the facility is constructed and is functioning in accordance with the approved plans.
7. LAB TESTS – All tests are acceptable and in Engineering Dept. file.
8. PRO-RATA FEES – Payment confirmed by Engineering Dept. Development Engineer.
9. MONUMENTATION - Two Standard City of Garland Subdivision Monuments installed, by surveyor, and documented on as-built plans at location specified by City Surveyor.
10. LETTER OF MAP REVISION (LOMR) - For development adjacent to creeks, prepared by design Engineer and copy submitted to Engineering Dept.
11. STORM SEWER AND DRAINAGE FACILITIES

- a. Detention/Retention Facilities: Structures, grades, stormwater quality measures per plan and NCTCOG – BMP specifications. All eroded gullies filled-in and uniformly graded out. All sediment and debris cleared from facility. Permanent sod vegetation of facility bottom, side slopes, and 15' wide strip at top of slope is considered an integral structural part of the Detention/Retention Facility and must be fully established with 100% coverage and 100% vegetative density.
- b. Open Channels, Drainage Ways and Out Fall Areas: all grades, headwalls, wing walls, riprap, and any required lining constructed per plans. All eroded gullies filled-in and uniformly graded out. All sediment and debris cleared from facility. Permanent sod vegetation of channel bottom, bank slopes, and 15' wide strip at top of banks is considered an integral structural part of the channel or other structure and must be fully established with 100% coverage and 100% vegetative density.

13. STORMWATER POLLUTION PREVENTION REQUIREMENTS

- a. It is acknowledged that after City acceptance subsequent construction operations by homebuilders and public utilities will disturb significant areas of the subdivision. However, in order to insure compliance with TPDES General Permit TXR 150000, the following conditions must be met, as an absolute minimum, before City acceptance of the subdivision.
- b. All BMPs shown on the SW3P are in place and in good condition. All storm sewer inlets protected. All soil disturbing activities, under the control of the Developer, must be complete. This includes activities such as: paving, water, sanitary sewer and storm sewer utilities and structures, retaining walls and screen walls (both private and public), etc.
- c. *Private Lots* – Must have temporary stabilization consisting of either soil tackifier, erosion mat, mulches or other protective cover that will eliminate or greatly reduce erosion.
- d. *Common Areas* – As a minimum, must have temporary stabilization consisting of erosion mat or mulches with temporary or permanent seeding which has germinated to a minimum height of 2" and has a uniform coverage (no large bare areas). Temporary or permanent irrigation in place to insure continued germination and development of full coverage and density.
- e. *Residential Street and Alley Right of Way* – As a minimum, must have temporary stabilization consisting of erosion mat ("curlex") and seed, extending from back of street curb to property line (usually 11.5' width) and from edge of alley paving to property line (usually 5' width).
- f. *Thoroughfare Right of Way* – Where development activity has caused disturbance to an existing thoroughfare or a new thoroughfare has been constructed, required stabilization is Bermuda grass sod in all median areas and from back of curb to property line or to outermost easement line if easements are adjacent to the right of way. The Bermuda grass must be fully established and viable with 100% area coverage and 100% vegetative density.
- g. *Detention/Retention Facilities, Channels, Drainage Ways and Out Falls* – These areas must have permanent vegetation with 100% coverage and 100% vegetative density.
- h. *Special Conditions* – Contained within the above areas there may be special conditions such as steep slopes or large swales that require special stabilization in excess of the minimums outlined above for that area. In general, slopes greater than 4:1 may require sod or erosion mat. The Engineering Department

will determine the type and extent of stabilization required at these special conditions.

ADDITIONAL NOTES and COMMENTS

1. The SW3P requirements noted in *13 b* above are minimum requirements for City acceptance of a subdivision. The Developer's or other subsequent operator's responsibility for maintaining controls and establishing permanent stabilization (vegetation) is not waived by the City's acceptance of the subdivision.
2. Periodic attention by the Developer is required in order to maintain the effectiveness of temporary stabilization and BMPs. Common areas may require re-seeding or over seeding to establish permanent vegetation.
3. It is specifically brought to the attention of the Developer that public utilities are exempt from TPDES compliance. The Developer or subsequent site operator is responsible for stabilizing areas disturbed by public utility companies during the installation of their facilities.
4. As used herein, the term *permanent grass, seed, or vegetation* means perennial grass, either St. Augustine, Bermuda or other perennial native grass. Fescues and ryes are not permanent grasses. They are considered seasonal grasses and can be used only for temporary stabilization during the cooler months when the permanent grasses cannot be established.
5. Experience has shown that establishing vegetation can be difficult, in part, due to earthwork operations placing soils at the surface that are devoid of nutrients. These "dead" soils will not support plant growth. In order to mitigate this problem, it is recommended that during the project's initial phase, the Developer consider stripping existing vegetation and topsoil and stockpiling it for later use in areas to be vegetated. It may be necessary for the Developer to import topsoil in order to establish the required vegetation.
6. During project planning, it is recommended that Developers consider the available growing season and the requirements for areas to be vegetated. Typically, vegetation activities are not begun until all paving and fine grading is complete. This approach may not be the most expeditious in regards to getting final stabilization established in the shortest time. Consideration should be given to completing common areas, detention/retention facilities, channels and drainage ways earlier in the project so that vegetation can be started in those areas before completion of other more complex activities in other areas.
7. The permanent vegetation required for acceptance, as outlined in *13 b* cannot be achieved during the cooler months (approx. Nov. 1st thru May 15th). Even though all

other acceptance requirements are met, the City will not accept a subdivision until the required permanent vegetation is established.

During this time period, the Engineering Department will release a limited number of lots for issuance of building permits if all acceptance requirements are met except for permanent grass. The lots released will not be more than 25% of the total number of lots in the subdivision, for large subdivisions. Smaller subdivisions will have a proportionate increase in the percentage that can be released.

3.2 Residential Development

The following outline section itemizes the principle requirements of the major work activities.

1. PAPERWORK IN PLACE (prior to start of any work)
 - a. All plans approved: Plat, paving, drainage, utilities, grading, trees, SW3P, screening, etc.
 - b. ROW permits and contractors registered.
 - c. TCEQ: NOI's and Contractor's certifications.
 - d. An Information Board must be posted with the Site Permit, TCEQ permit (NOI) and address of site. The address must be a minimum of 12" with minimum 4" wide high reflective letters & numbers on a white background.
 - e. Site batch plant permit.
 - f. Concrete batch designs approved.
 - g. Burn Permits, if applicable (TCEQ & Fire Marshal).
 - h. Special construction submittals approved, such as lift stations.
 - i. Letter Of Map Revision (LOMR) and/or Conditional Letter Of Map Revision (CLOMR) for developments adjacent to creeks.
 - j. Flood Plain Development Permit required for work in designated FEMA flood plains.
 - k. Corp of Engineers 404 Permit typically required for channel projects over 300' long.
2. PRE-CONSTRUCTION MEETING (prior to start of any work)
 - a. Establish contacts between City Engineering, contractors, design Engineer, Developer, and testing lab.
 - b. Review TCEQ requirements & SW3P.
 - c. Detention/Retention facility must be constructed during initial phase of construction including stabilized ground cover.
 - d. Review project. Note any special conditions or difficult areas.
 - e. Review construction sequencing, barricades and traffic control plans in public R.O.W.
 - f. Review project closeout and acceptance requirements.
3. EROSION CONTROL
 - a. Preliminary controls up before start of construction.
 - b. Detention/Retention facility must be constructed during initial phase of construction and properly maintained throughout the construction process.
 - c. Maintain controls throughout construction period. Monthly inspection reports.

4. EARTHWORK – MASS EXCAVATION & TREE REMOVAL

- a. Construction staking in place and maintained.
 - b. Strip vegetation & topsoil; stockpile for later use if required in areas to be vegetated.
 - c. Remove trees in accordance with approved Tree Preservation Plan.
 - d. Removal of all unsuitable material: trash, buried trees, etc.
 - e. Proper compaction of fills: moisture control, 8" to 10" lifts maximum, equipment, adequate testing, and no undesirable material.
 - f. Testing of final cut grades.
5. SANITARY SEWER
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; moisture control & lifts. Lab tests passing.
 - c. Manholes: Lids @ grade, inverts clear, etc.
 - d. Special Structures: Lift stations, siphons, and bores. Per approved plans.
 - e. All tests acceptable and documented:
 - i. Air Test.
 - ii. Mandrel Test.
 - iii. Video Line with pan & tilt camera.
6. WATER
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; moisture control & lifts. Lab tests passing.
 - c. Set services and meter cans to finish grade.
 - d. Adjust hydrants to grade, set valve stacks and verify valves operational.
 - e. All tests acceptable and documented:
 - i. Pressure Test.
 - ii. Chlorinate Line.
 - iii. Chlorine Samples.
 - iv. Establish contact with the Water Department on the requirements of the Backflow Assembly.
 - v. Backflow Assembly tested in accordance with Water Department criteria. (After acceptable pressure test and chlorine samples.)
7. FIRE YARD LINE
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; moisture control & lifts. Lab tests passing.
 - c. Establish contact with the Water Department on the requirements of the Backflow assembly and vault.
 - d. Set vault and FDC to proper grade on private property.
 - e. Set valve stacks plumb and to grade and verify valves operational. Adjust hydrants to grade.
 - f. All tests acceptable and documented:
 - i. Pressure Test.
 - ii. Chlorinate Line.
 - iii. Chlorine Samples.
 - iv. Backflow assembly tested to the requirements established by the Water Department. (After acceptable pressure test and chlorine samples.)
8. STORM SEWER AND DRAINAGE
- a. Construction staking: horizontal & vertical control in place and maintained.
 - b. Proper embedment. Trench backfill; moisture control & lifts. Lab tests passing.

- c. Inlets, flumes and other structures per plans.
- d. Concrete strength tests made & passing.
- e. Detention/Retention Facilities: Structures, grades, stormwater quality measures and vegetation per plan and NCTCOG – BMP specifications. Installed during initial phase of construction, including all vegetation, and properly maintained throughout the construction process.
- f. Channels: grades and erosion control per plans and vegetated per NCTCOG specs.

9. PAVING

- a. Construction staking: horizontal & vertical control in place and maintained.
- b. Subgrade cut/fill to plan grade.
- c. Soil Tests; Lime series and Proctors on subgrade soils.
- d. Pre-place sleeves or conduits under paving for irrigation, franchise utilities, etc. Proper densities on trench backfill.
- e. Lime Subgrade
 - i. Correct Lime Quantity; lime delivery tickets
 - ii. Lime Mixing; pass gradation tests.
 - iii. Lime Subgrade Compaction; passing compaction tests w/ correct moisture & density.
 - iv. Lime depth checks passing.
 - v. Cure time; maintain moisture.
- f. Concrete Paving
 - i. Reinforcing: spacing, chairs, dowels.
 - ii. Proper Joints; location of full depth expansion joints & control joints sawed soon after pour. Sealing joints.
 - iii. Proper curing before open to traffic and construction loads.
 - iv. Concrete flexural strength tests; taken for every pour and all passing.
 - v. Depth checks passing.
 - vi. Correct finish on paving slab.
 - vii. Alley inverts and street crowns correct; free draining without “birdbaths”.
- g. Turn Lanes, Deceleration Lanes, Median Cuts
 - i. Geometrics comply with City standards and approved plans.
 - ii. Work zone protected by proper Traffic control devices which are well maintained
 - iii. Prompt construction in ROW to minimize disruption to traffic
 - iv. All street lights relocated and operational within 10 days
- h. Sidewalks and ADA ramps per approved plans and City’s standard details.

10. SCREEN WALLS (City Owned)

- a. Wall location and easement staked by surveyor before start of construction.
- b. Proper Material; mortar, accessories, brick.
- c. Proper Methods; uniform & consistent mixing of mortar, full head and bed joints, placement of joint reinforcing and rebar, tooled joints, placing of grout in columns, place shelf angle at bottom of wall panels.

11. OTHER IMPROVEMENTS

- a. Special Sidewalks per approved plans.

- b. Planting and landscape areas – To be completed to the extent required by SW3P requirements.
12. WALK THROUGH INSPECTIONS AFTER SUBSTANTIAL COMPLETION
- a. Contractors notify Engineering Inspector when all work has been completed and is ready for inspection.
 - b. All soil stabilization and BMPs are in place.
 - c. Utility inspection includes representative from Water Dept. Paving inspection includes Street Dept. representative. Detention/Retention Facility inspection includes Stormwater Quality Inspector. Inspection includes a demonstration that all electrical & mechanical equipment is operational.
 - d. Identify all deficiencies. Contractors correct deficiencies.
 - e. Final inspection confirms all deficiencies corrected.

ACCEPTANCE REQUIREMENTS

The following outline section itemizes the requirements for City acceptance of the development.

- 2. WALK THROUGH AND FINAL INSPECTIONS - As outlined above, are completed and all deficiencies corrected. It is recommended that one month before the C.O. is required that all finals and paperwork be completed.
- 3. RECORD DRAWINGS – Upon completion of construction, the record information will be provided to the Engineer / Surveyor and together with the survey of the as-built conditions, shall be the basis for the record drawing submittal. As-built changes to text: invert elevations, dimensions, notes, etc. will be lined out with the record drawing text placed near it. Do not alter, modify or erase original approved construction drawing text. Submit PDF's of the record drawings with the as-built changes noted. The page size shall be identical to the printed paper copy with a minimum resolution of 300 dpi. The PDF's must be free from objectionable background, rotated properly and stored in a separate folder on the CD/DVD.
- 4. MAINTENANCE BONDS AND UNIT PRICE SUMMARIES – Both paper and floppy disk copies submitted for Utility work, Paving work, and for City owned Screening Wall.
- 5. ADDITIONAL INSPECTION FEE - Required to be paid by Developer if actual construction costs are significantly higher than estimated costs upon which initial fee was based.
- 6. SCREEN WALL MAINTENANCE FEE - Paid by Developer for City owned Screening Wall.
- 7. LETTER OF CONFORMANCE for DETENTION/RETENTION - Letter of Conformance, on City's form letter, received from design Engineer for the detention/retention facility. Certifies that the facility is constructed and is functioning in accordance with the approved plans.
- 8. LAB TESTS – All tests are acceptable and in Engineering Dept. file.

9. PRO-RATA FEES – Payment confirmed by Engineering Dept. Development Engineer.
10. MONUMENTATION - Two Standard City of Garland Subdivision Monuments installed, by surveyor, and documented on as-built plans at location specified by City Surveyor.
11. LETTER OF MAP REVISION (LOMR) - For development adjacent to creeks, prepared by design Engineer and copy submitted to Engineering Dept.
12. STORM SEWER AND DRAINAGE FACILITIES
 - a. Detention/Retention Facilities: Structures, grades, stormwater quality measures per plan and NCTCOG – BMP specifications. All electrical and mechanical equipment demonstrated to be operating properly. All eroded gullies filled-in and uniformly graded out. All sediment and debris cleared from facility. Permanent vegetation of facility bottom, side slopes, and 15' wide strip at top of slope is considered an integral structural part of the Detention/Retention Facility and must be fully established with 100% coverage and 100% vegetative density.
 - b. Open Channels, Drainage Ways and Out Fall Areas: all grades, headwalls, wing walls, riprap, and any required lining constructed per plans. All eroded gullies filled-in and uniformly graded out. All sediment and debris cleared from facility. Permanent vegetation sodding of channel bottom, bank slopes, and 15' wide strip at top of banks is considered an integral structural part of the channel or other structure and must be fully established with 100% coverage and 100% vegetative density.
13. STORMWATER POLLUTION PREVENTION REQUIREMENTS
 - a. In order to insure compliance with TPDES General Permit TXR 150000, all disturbed areas must have *final stabilization* before the Engineering Department will recommend acceptance of the development.
 - b. Final Stabilization is achieved when all soil disturbing activities at the site have been completed and in areas not covered with paving or other permanent structures, a uniform (evenly distributed, without large bare areas) perennial vegetative cover at a 70% minimum vegetative density is established.
 - c. As used herein, the term perennial vegetation means permanent grass, either St. Augustine, Bermuda or other permanent native grass. Fescues and ryes are not permanent grasses. They are seasonal grasses and can be used only for temporary stabilization during the cooler months when the permanent grasses cannot be established.
 - d. The following two areas are special cases that require 100% coverage and 100% vegetative density of perennial vegetation:
 - i. *Thoroughfare, Street and Alley Right of Way* – Where development activity has caused disturbance to an existing thoroughfare, street or alley or a new facility has been constructed, stabilization shall be 100% coverage and 100% vegetative density of *Bermuda* grass sod. Coverage must be from back of curb to property line and all median areas.
 - ii. *Detention/Retention Facilities, Channels, Drainage Ways and Out Falls* – These areas must have permanent vegetation with 100% coverage and 100% vegetative density as described in paragraph 11 above.

ADDITIONAL NOTES and COMMENTS

1. The permanent vegetation required for acceptance, as outlined in *12 b* cannot be achieved during the cooler months (approx. Nov. 1st thru May 15th). Even though all other acceptance requirements are met, the City will not accept a development until the required permanent vegetation is established. The Engineering Department may recommend the issuance of a conditional or temporary Certificate of Occupancy if all conditions of acceptance have been met except for permanent vegetation. When permanent vegetation is established, as outlined in *12 b*, the Engineering Department will then recommend issuance of a C.O.
2. During project planning, it is recommended that Developers consider the available growing season and the requirements for areas to be vegetated. Typically, vegetation activities are not begun until all paving and fine grading is complete. This approach may not be the most expeditious in regards to getting final stabilization established in the shortest time. Consideration should be given to completing common areas, detention/retention facilities, channels and drainage ways earlier in the project so that vegetation can be started in those areas before completion of other more complex activities in other areas.
3. During the construction process, periodic attention by the Developer is required in order to maintain the effectiveness of temporary stabilization and BMPs. Areas may require re-seeding or over seeding to establish permanent vegetation. There may be special conditions such as steep slopes or large swales that require special stabilization in excess of the minimums outlined above for that area. In general, slopes greater than 4:1 may require sod or erosion mat. The Engineering Department will determine the type and extent of stabilization required at these special conditions.
4. It is specifically brought to the attention of the Developer that public utilities are exempt from TPDES compliance. The Developer or site operator is responsible for stabilizing areas disturbed by public utility companies during the installation of their facilities.
5. Experience has shown that establishing vegetation can be difficult, in part, due to earthwork operations placing soils at the surface that are devoid of nutrients. These "dead" soils will not support plant growth. In order to mitigate this problem, it is recommended that during the project's initial phase, the Developer consider stripping existing vegetation and topsoil and stockpiling it for later use in areas to be vegetated. It may be necessary for the Developer to import topsoil in order to establish the required vegetation.
6. During project planning, it is recommended that Developers consider the available growing season and the requirements for areas to be vegetated. Typically, vegetation activities are not begun until all paving and fine grading is complete. This approach may not be the most expeditious in regards to getting final stabilization established in the shortest time. Consideration should be given to completing common areas, detention/retention facilities, channels and drainage ways earlier in the project so that vegetation can be started in those areas before completion of other more complex activities in other areas.

7. The permanent vegetation required for acceptance, as outlined in 13 b, cannot be achieved during the cooler months (approx. Nov. 1st thru May 15th). Even though all other acceptance requirements are met, the City will not accept a subdivision until the required permanent vegetation is established.

During this time period, the Engineering Department will release a limited number of lots for issuance of building permits if all acceptance requirements are met except for permanent grass. The lots released will not be more than 25% of the total number of lots in the subdivision, for large subdivisions. Smaller subdivisions will have a proportionate increase in the percentage that can be released.