Phased Third-Party Plan Review and Inspection Processes to Expedite Permitting of Major Commercial Design–Build Projects

Daniel L. Dornan, P.E.
Special Assistant to the Director
Prince George's County, Maryland
Department of Permitting, Inspections and Enforcement (DPIE)

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OVERVIEW

As the size and complexity of projects in Prince George's County, Maryland have grown in recent years, the County's Department of Permitting, Inspections and Enforcement (DPIE) has been challenged to meet its plan review and inspection obligations in a timely manner due to the scarcity of qualified staff to perform these functions, particularly for mega projects valued at over $100 million. To meet these obligations DPIE has adopted increasingly aggressive approaches to leverage limited internal staff with third-party plan reviewers and third-party inspectors. When applied to large-scale design–build projects where there are overlapping roles and responsibilities between design architects/engineers and construction contractors, the potential exists for applying these efficient approaches to satisfy partial permit status when applied to the incremental development components and construction stages of a mega project. The result is a cross-layering of project roles and responsibilities, development component steps and construction stages made possible by the issuance of partial permits which relate to specific component steps and stages of construction.

This paper compares the relative cost, schedule and quality of traditional approaches used to develop and deliver large-scale commercial projects, including design–bid–build project delivery, in-house plan review and in-house inspection, to alternative approaches including integrated design–build project delivery, third-party plan review, third-party inspection and partial permitting linked to each project development component and construction stage. These innovative approaches work synergistically to significantly reduce project duration and cost when tempered with an objective quality assurance/quality control program and continuous communication and coordination among project stakeholders.

This paper includes numerous exhibits which portray the many attributes of design–build mega project development and delivery approaches, including key stakeholders, project development steps, project design components, project delivery phases, construction stages and quality control/assurance program features. In addition the paper includes a summary description of DPIE's Third-Party Plan Review Program Manual.

Cover Picture: Model of $1.4 billion MGM Resorts Casino – Entertainment Center being built in Prince George's County, Maryland as a design-build project using third-party plan review, third-party inspection and expedited permitting services.

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I BACKGROUND

For much of the twentieth century the development and delivery of infrastructure followed a prescribed process in which there was a clear delineation of roles, responsibilities and risks between project owners and developers, design and construction firms and the public agencies empowered to ensure these projects complied with applicable design standards and building codes through plan review and construction inspection. Among the members of the project delivery team there was a clear distinction between architect and engineering firms performing project design and construction companies responsible for executing those design plans. In addition, the project sponsor or owner provided inspection/testing services either directly or through a third-party inspection/testing company to ensure that the materials being used on the project by the construction contractor met or exceeded prescribed standards. In some cases, the construction company was allowed to hire their own inspection/testing team when previously certified by the project sponsor or owner. This was called "certification acceptance" since the acceptance of materials used in the construction was based on the pre-certification of the third-party inspection/testing company by the project sponsor or owner.

The distinctions between design, construction and inspection associated with the design–bid–build process provided a basis for holding the parties accountable for their respective phases of the project development and delivery process. They also enabled project sponsors to apply different processes to retain and pay for these services. Bidding for design contracts was done on a best value basis while competing for construction contracts was done on a lowest-cost basis. The local public building code agencies structured their resources to reflect this distinction between design and construction and the notion that construction activities should be based on a comprehensive set of fully completed, reviewed and approved plans. Building permits were developed to ensure that the plans were complete and satisfied all applicable standards and codes established at the local, state and national levels. Use and Occupancy (U&O) permits were issued when completed structures were built according to the approved plans based on final inspection.

While the traditional approach to project development and delivery is highly accountable and transparent, it lacks the flexibility needed to take advantage of greater efficiencies and timeliness associated with more flexible processes such as design–build project development, peer plan review, third-party plan review and third-party inspection. Each of these processes is intended to reduce the cost and time to deliver a project without sacrificing quality. For design–build, this is accomplished by allowing some processes to run concurrently while eliminating the need for a separate procurement for the construction phase of the project.

The Prince George's County Department of Permitting, Inspections and Enforcement (DPIE) is responsible for administering the permit processing, plan review and inspection functions relating to all physical facilities proposed to be constructed in the County. The County Code and other industry standards form the basis for these regulatory duties which are intended to ensure that all structures constructed in the County meet minimum design requirements to ensure the health and safety of occupants.

For many years, DPIE and its predecessor agencies performed the traditional functions of permit application processing, site and building plan review, permit issuance, construction inspection and issuance of U&O certificates. However, DPIE's highly constrained budget has made it impossible to hire

adequate staff to address the workload demands of a growing economic development base. Consequently, the County has turned to several innovative outsourcing techniques noted above to address the increasing workload and the advent of several mega–projects in the County. Hence, DPIE is now outsourcing key portions of its plan review and building inspection workload on a selective basis to pre-certified plan reviewers and construction inspectors paid directly by the owners/developers.

This allows DPIE to leverage available staff, particularly for large-scale commercial projects ($100 million to $1.4 billion). These mega projects are ideal candidates for third-party plan review and inspection since they are the most time sensitive (where "time is money" to the owners), and their sponsors are the most able to afford these kinds of expedited services. Very large projects also benefit from design–build project delivery by shortening the overall project schedule. When these approaches are combined, the opportunity emerges to further accelerate the project permitting and development process through concurrent and progressive processing, provided the proper checks and balances are in place to ensure that subsequent project phases are consistent with established codes and standards and with previous project phases.

II INTRODUCTION

This paper discusses innovative concepts for expediting the development and delivery of infrastructure projects within the framework of a regulatory system designed to ensure that the plans and resulting project satisfy applicable standards and building codes. This paper begins with a brief description of traditional approaches to project regulation and delivery and then discusses several innovative approaches to regulating and delivering large-scale infrastructure projects. The traditional and innovative approaches are compared and contrasted to demonstrate the cost, schedule and quality implications of each. For the purpose of this paper, the traditional approach is considered the baseline in any comparative analysis.

III TRADITIONAL PROJECT PERMITTING AND DELIVERY APPROACHES

For over seventy years the development and delivery of fixed facilities followed prescribed processes that originated in the early twentieth century when good-government reforms were instituted in an attempt to correct widespread corruption and patronage in the awarding of engineering design and construction contracts for public works. The resulting traditional processes are discussed below.

Design–Bid–Build

Based on Federal procurement laws enacted around the first half of the twentieth century, public infrastructure projects were required to be procured and delivered using a contracting method known as Design–Bid–Build. Design–Bid–Build project delivery required the design and construction of a facility be awarded separately to private sector engineering and contracting firms. These laws and regulations called for architectural and engineering services relating to a project be procured on a negotiated basis, while construction services continued to be procured through a formal advertisement and low bid selection process by the project sponsor. This separation between architecture/engineering and construction phases of project development was intended to curtail collusion, favoritism, process manipulation and waste. This two-step procurement process eventually became institutionalized and

over time began to fall out of favor due to its inflexibility to accommodate more efficient procedures and technology.

In-House Building Plan Review, Inspection and Permitting

Since its inception, DPIE has performed technical reviews of the plans accompanying permit applications for proposed structures. DPIE has technical specialists in two broad areas: vertical construction (structural, electrical, mechanical, fire and life safety and health) and horizontal construction (stormwater, soils, grading and roads). These reviews are intended to confirm whether the plans are consistent with applicable standards and codes. If not, the plans are returned to the applicant for correction.

Following completion and approval of the plans, the applicant is issued a Building Permit by Permit Center staff enabling the applicant to proceed to the construction phase. Throughout construction, DPIE inspectors perform periodic inspections of key attributes to ensure that the structure is being built consistent with the approved plans. Discrepancies are noted by the inspectors and conveyed to the builder for correction. Once the structure passes all the inspections and the work is satisfactorily completed, the Permit Center mails the U&O Certificate to the applicant granting permission to occupy the structure and use it for the purpose specified in the certificate.

Flowchart of Traditional Project Development and Delivery Approaches

Exhibit 1 (see next page) provides a schematic representation of traditional approaches for development and delivery of major projects. The flowchart portrays primarily linear, sequential and non-overlapping process steps for plan review, inspection and permitting. This requires all aspects of a project step to be completed before proceeding to succeeding steps. Note the inclusion of the following project development dimensions:

- Preliminary Project Development Steps
- Project Design Components
- Project Delivery Phases

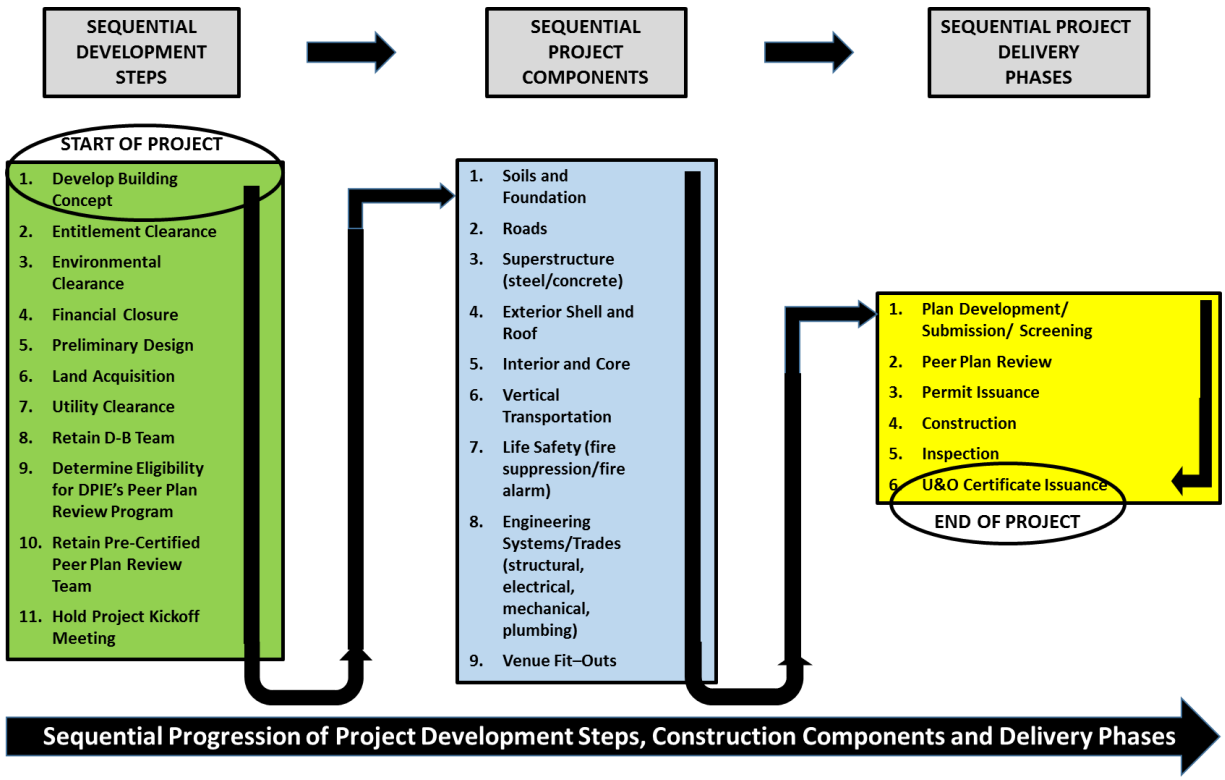
Cost, Schedule and Quality of Traditional Approaches

While traditional project development and delivery processes reduced the potential for collusion, bid-rigging and inferior product quality, the results became increasingly slow and costly as the linear sequence of project development activities became institutionalized, bureaucratized and rigid.

Advantages and Disadvantages of Traditional Approaches

The traditional approaches to project development and delivery helped reduce the collusion and bid-rigging that plagued the infrastructure and building industries at the start of the Twentieth Century. However, the processes used to accomplish this over time became inflexible and stifled innovation in procurement, contracting and financing. The Design–Bid–Build process became the model for procuring engineering and construction services by separating these functions and thereby preventing engineering designers and construction contractors from collaborating throughout the project development and delivery processes. This created rigid sequential processes which denied the opportunity for designers and contractors to share insights and make constructive suggestions on how to improve the cost-effectiveness of the ultimate project. This extended project development timeframes and added costs to project budgets.

EXHIBIT 1 - FLOWCHART OF TRADITIONAL PROJECT DEVELOPMENT AND DELIVERY APPROACHES



IV ALTERNATIVE PROJECT DELIVERY APPROACHES

For the past twenty-five years a number of innovative approaches have been introduced to make the development and delivery of fixed facilities more timely and cost-effective. Technology advances have included computer-aided drafting and design (CADD) and concurrent electronic plan review. Foremost among the innovative project delivery approaches is Design–Build, where the Design–Build (D–B) team works under a single contract to provide design and construction services for a project owner, thereby integrating the roles of designer and constructor.

Design–Build

A Design–Build contract combines the design and construction phases of a project into one fixed-fee contract involving one or more companies together. Under a design-build contract, the design-builder, not the project sponsor, assumes the risk that the drawings and specifications are free from error. Starting in the 1980s, the movement towards Design–Build project delivery has gained momentum as various agencies began to experiment with alternative forms of procurement and contracting, driven in part by the success of public agencies in other developed nations which used these approaches and the private sector which remained unfettered by Federal regulations for their own projects.

The major advantages of Design–Build compared to Design–Bid–Build include:

- **Time Savings** resulting from concurrent processing of certain project development phases and elimination of a separate procurement phase to retain the construction contractor;
- **Cost Savings** resulting from communication efficiencies between engineering and construction team members, fewer change and extra work orders, fewer design errors or omissions, reduced potential for claims and litigation and shortened timeline to realize project benefits; and
- **Improved Quality** through greater focus on quality control/quality assurance and continuous improvement and innovations tailored by project needs and contractor capability.

In the past decade, the percentage of non-residential construction using the Design–Build approach has grown to over 40% and is expected to surpass the Design–Bid–Build method within a few years, according to the Design–Build Institute of America (DBIA).

Peer and Third-Party Plan Review and Inspection

In an effort to provide highly specialized plan review and inspection expertise on an as-needed basis within the context of public agency resource constraints, DPIE has turned to outside experts who are certified to perform these functions, particularly for large-scale commercial projects under tight deadlines, whereby the owner takes responsibility for the costs of these services. These processes include Peer Plan Review, Third-Party Plan Review and Third-Party Inspection.

DPIE's Homeowners and Mega Projects Suite administers the permitting of large commentarial projects and plans-on-file approvals for national home builders through two plan review programs, the Peer Plan Review and the Third-Party Plan Review Programs. These programs are tailored to assist customers (owners/developers/builders/design firms) secure required permits demonstrating compliance with applicable codes, while at the same time expediting such permits to meet construction target dates. Each of these programs is described below.

- **Peer Plan Review —** Applicants who elect to use Peer Plan Review for their projects may retain, at their own cost, DPIE-certified peer plan reviewers who are specialized in certain civil, architectural, and respective engineering disciplines to review building and site development design plans for code compliance. Upon conclusion of the peer review, design plans are approved by the certified peer plan reviewer and forwarded along with other required documentation to DPIE for final review and approval. DPIE then expedites the review and approval of the peer reviewed documents within three weeks, as mandated by the County Code. The quality of the process is closely monitored by DPIE to ensure commitments are met by all stakeholders and permits issued at the target date desired by the applicant.

  DPIE initiated its Peer Plan Review program in 2013. The recently updated (2015) Peer Plan Review Manual documents the program and describes the certification requirements for prospective candidates, peer reviewer responsibilities, steps in the peer review process, documentation requirements, performance criteria, disciplinary actions, and various forms. Compared to the conventional plan review process, peer plan review can reduce the timeframe for review and approval by up to 75 percent, from twelve weeks to three weeks. In Fiscal Year 2015, 85 projects were processed by DPIE through the Peer Plan Review program.

- **Third-Party Plan Review —** DPIE's Third-Party Plan Review (TPPR) program was initiated in 2013 (the same year when DPIE was launched) in response to demands by the commercial development industry to provide a speedier and more leveraged approach to permitting large commercial projects with pressing construction schedules. This option enables owners and developers of large-scale commercial projects to retain an outside third-party individual or team to review project plans at the DPIE offices at their own cost. Third-party plan reviews are currently limited to vertical construction only. Unlike peer plan reviews, County plan review staff are not utilized in TPPRs. It is estimated that TPPRs can save up to 85 percent of the typical plan review and approval time. The process ultimately concludes at the issuance of the final U&O certificate for the project. In Fiscal Year 2015, three projects were initiated by DPIE through the Third-Party Plan Review program.

  DPIE-certified TPPR entities are authorized to conduct complete plan reviews of all engineering disciplines related to vertical construction and assume all liability for approving building plans, while DPIE retains the authority for issuing all required permits. The process begins during the preliminary design/development phase of the project and extends through construction.

  The success of the TPPR process relies on effective collaboration and communication between the owner/developer, A/E firm(s), third-party plan reviewer(s), contractor, third-party inspectors and DPIE. To be effective, this process requires weekly technical, administrative and site-based meetings involving representatives of all key project development and delivery stakeholders, including representatives of the owner, design-build team, TPPR team, TPI team and permitting agency. These meetings should achieve the following results:

  - On-going monitoring of permit approvals for projects reviewed by third-party plan reviewers to ensure delivery of required permits for all stages of construction.
  - Continuous coordination of plan review between third-party plan reviewers, A/E design consultants and the permitting agency, to resolve any issues and facilitate permit approvals in a timely fashion.
  - Coordinated field visits between DPIE staff, third-party plan reviewer(s), construction contractor, and third-party inspector(s) to monitor adherence to design plans and resolve construction challenges or deficiencies encountered by the contractor and subcontractors.
  - Continuous and effective communications between all parties to facilitate all permitting deliverables.[1]

  DPIE's TPPR program manual is summarized in Appendix A.

- **Third-Party Inspection —** DPIE has a long history of using Third-Party Inspectors for larger and more complex projects where the Department lacks the resources to perform this function in a timely and competent manner. DPIE's Third-Party Inspection Program (TPIP) establishes a building inspections procedure that utilizes qualified, third-party professionals in addition to the

[1] Input on DPIE's Peer Plan Review and Third-Party Plan Review Programs provided by Bellur S. Ravishankar, Associate Director of DPIE's Building Plan Review Division, Nawaf E. Esayed, P.E., DPIE's Third-Party Program Coordinator, and Richard S. Ladson, Program Manager, Sheladia Associates, Inc.

County's Quality Assurance Inspectors. Owners of most large-scale and complex projects are mandated to use third-party inspectors by DPIE. In Fiscal Year 2015, 97 projects were processed by DPIE through the Third-Party Inspection program.

DPIE's TPIP manual describes the responsibilities of third-party inspectors by assignment phase (pre-permit, construction, and post construction) and required documentation (certifications, forms, reports and logs). As with the Department's TPPR program, the owner bears the full cost of Third-Party Inspectors who must be pre-certified by DPIE in the appropriate disciplines to be eligible for the program. The TPIP expedites the project delivery process by enabling construction activities of commercial projects to be promptly inspected by pre-qualified inspectors without delays caused by staffing constraints.

Integrated Design–Build Project Delivery with Third-Party Plan Review and Inspection

When the **Third-Party Plan Review Process** is applied to very large commercial projects delivered through **Design–Build** contracts, significant reductions can result in the timeframe and cost for delivering such projects. Design–Build projects encourage strong interaction between project designers and construction contractors since they are part of the same contractual team. This enables certain sequential stages of a project to overlap, resulting in accelerated processing of project delivery phases. Another term for this is **Fast-Track Construction** which allows construction to start before the design is complete to shorten the time to completion.

With the design and construction processes being carried out in a more fluid manner, permitting and inspection processes must keep pace to ensure there is proper adherence to established codes, standards, and regulations as the functions and phases of a project proceed. This requires close working relationships between representatives of the owner, Design–Build team, TPPR team, TPI team and permitting agency throughout the project development process, from concept planning to issuance of the U&O certificate to the owner.

Partial Permitting of Design–Build, Third-Party Plan Reviewed and Inspected Projects to Accelerate Project Schedules

Another feature of the process integration approach noted above is the ability to process and issue partial permits based on the ability to divide the project development process into its component parts, some of which can be advanced more quickly than others without jeopardizing the adequacy and safety of the resulting facilities. It is also possible to overlap or advance certain aspects of a project as it proceeds towards completion, which allows additional reduction in project duration and costs. The key to applying these innovative techniques in a highly productive manner is to understand each of the many dimensions which characterize a large-scale commercial project and how these dimensions relate to each other. These dimensions include the following:

- Design–Build Project Development Stakeholders — both private (Exhibit 3) and public (Exhibit 4)
- Design–Build Project Development Steps — preliminary steps for developing project plans (Exhibit 5)
- Design–Build Project Components, Phases and Stages — technical aspects of a project's physical features, development phases and stages of construction (Exhibit 6)

- Detailed Design–Build Project Components — sequential steps in going from permit application to Use/Occupancy issuance (Exhibit 7)
- Design–Build Project Quality Control and Quality Assurance — (Exhibit 8)

The dimensions to a mega project's development and delivery process can be more flexibly integrated when **Fast-Track Design–Build** project delivery is combined with **Third-Party Plan Review** and **Third-Party Inspection**. These three approaches allow for greater streamlining of project delivery by expediting plan review and inspection services through the use of highly responsive third-party staffs.

Further process streamlining can occur by employing a **Fast-Track Phased Permitting** process that allows for the issuance of partial permits for smaller chunks of the overall project scope without jeopardizing the integrity of the plan review and inspection processes for the whole project. This allows parts of the project to be advanced through plan review and inspection without holding up other parts that can occur later in the overall schedule. In this highly innovative project development and delivery approach, the Design–Build team submits construction plans for review on a project component and construction stage basis with the sequential project delivery phases performed for each portion of the project being advanced.

These construction plans are reviewed and approved by the third-party plan reviewer - as the project is being constructed. This allows parts of the project to proceed into construction even though other later components, phases or stages are yet to finish design. However, the phasing of permitted work should not allow any part of the construction process to proceed until the pertinent plans have been fully reviewed and approved by the TPPR team within a certain component, phase or construction stage.

The third-party plan review team coordinates progress of the project by holding weekly administrative and technical meetings with the Design–Build team and DPIE plan review staff, as well as weekly on-site meetings with the inspection staff throughout the project development process. In addition, the TPPR team maintains an on-site presence during project construction to ensure that the building plans are properly aligned with the construction activities. DPIE processes the applications through to permit issuance, once the third-party plan review team recommends approval of the submitted plans.

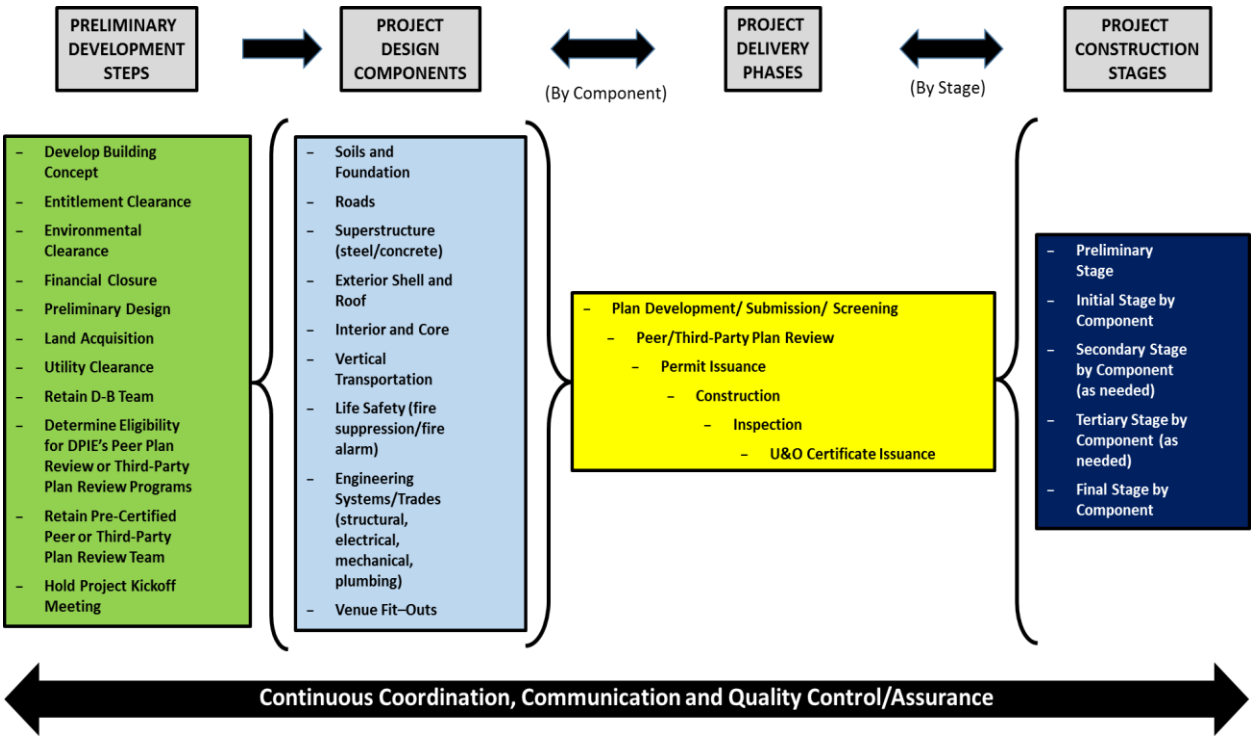
This program's success relies on continuous coordination and communication between all of the key project participants to ensure that all program contingencies and dependencies are accounted for. This can be accomplished through an aggressive quality assurance/quality control program, as described in Exhibit 8.

Flowchart of Integrated Project Development and Delivery Processes

Exhibit 2 provides a schematic representation of the partial permitting of design-build, third-party reviewed and inspected projects to accelerate project schedules. Note the inclusion of the following project development dimensions:

- Preliminary Project Development Steps
- Project Design Components
- Project Delivery Phases
- Project Construction Stage

EXHIBIT 2 - FLOWCHART OF INTEGRATED PROJECT DEVELOPMENT AND DELIVERY APPROACHES FOR MEGA DESIGN–BUILD PROJECTS



Cost, Schedule and Quality of Alternative Approaches

The cost and schedule of using alternative project delivery approaches can be reduced significantly, particularly when several of these approaches are combined. These results are listed below:

- The quality of projects delivered using alternative approaches is consistent with or better than those projects using more traditional approaches since both must comply with the same codes and standards. In addition, the quality of staffs responsible for design, construction, TPPR and TPI must be of the highest caliber, given the size and complexity of eligible design-build projects.
- The cost of projects using alternative approaches is reduced by 10 percent for projects involving third-party plan reviewers and inspectors to 15 percent for projects that permit more overlap and concurrent sequencing of project components and staging of project features.
- The timeframe for completing project development and delivery can be reduced even more when using these innovative approaches, ranging from 30 percent to 40 percent when able to employ a phased permitting process.

With alternative approaches to project development, plan review, facility inspection and permit processing, there are numerous combinations of project development processes which can be arranged to provide an optimal sequence of activities in terms of schedule and cost. The sequential processes result from grouping activities making up the four project development dimensions noted above.

Advantages and Disadvantages of Alternative Approaches

The traditional approach to project development and delivery helped reduce the collusion and bid-rigging that plagued the infrastructure and building industries at the start of the Twentieth Century. However, the processes used to accomplish this over time became inflexible and stifled innovation in procurement, contracting and financing. The design–bid–build process became the model for procuring engineering and construction services by separating these functions and thereby preventing engineering designers and construction contractors from collaborating throughout the project development and delivery processes. This created a rigid sequential process which denied the opportunity for designers and contractors to share insights and make constructive suggestions for how to improve the cost-effectiveness of the ultimate project. This extended project development timeframes and added costs to project budgets.

The alternative project development and delivery processes described above offer the potential to significantly reduce project timeframes by up to 40 percent and costs by up to 15 percent by greatly accelerating the plan review and permitting processes through concurrent processing of project components, phases and stages.[2] For just one large commercial project, it is estimated that the accelerated timeframe resulting from using third-party plan review and third-party inspection will produce approximately $1 million per day in additional economic development activity from achieving on-time delivery. The key prerequisite for this approach to work effectively and maintain the quality and integrity of the process is for key stakeholders to be involved in the process regardless of the scope and size of the portion being pushed through the process. This requires periodic (at least weekly) team meetings involving all key stakeholders on administrative issues, technical issues and site issues. In addition, TPPR and TPI staffs require on-site presence at the construction site to properly monitor the interaction between plan development and execution.

There must also be on-going communication between all participants in the high caliber project team, with frequent checking and back checking to ensure consideration of all interrelated aspects of the project pieces being advanced. This includes all dependencies and concurrencies between project components, stages and phases. In addition, a comprehensive quality control/quality assurance program should be established to run from the start of the overall project to the final issuance of a U&O certificate.

V CONCLUSIONS

As projects in Prince George's County have become larger and more complex, with some exceeding a billion dollars, there has evolved a need for the County to offer integrated plan review, inspection and permitting processes that are more flexible, highly integrated, efficient and expeditious while preserving the integrity of the overall permitting process. While traditional plan review, inspection and permitting processes protected the safety of all stakeholders by ensuring adherence to established codes and

[2] Design–Build Effectiveness Study as Required by TEA-21 Section 1307(f). Final Report. Exhibit II.5: Performance Results from Studies of Alternative Project Delivery Approaches, D-B versus D-B-B. USDOT – Federal Highway Administration, January 2006.

standards, the resulting bureaucratic pace became ill-suited to complex mega-projects with pressing schedules.

The integrated fast-track development and flexible permitting approach being adopted by DPIE and the developers of commercial mega projects provide the opportunity to significantly reduce project timeframes and costs. However these advantages can only be realized if all parties involved in these projects adhere to an overall project delivery regimen of full coordination, cooperation and communication that achieves a high level of transparency and accountability between project stakeholders for the results of the project. This includes proper sequencing of development phases, even at the component level and construction stage

Construction plans can be reviewed and approved at a component, phase and/or stage basis as the project is being constructed. This allows parts of the project to proceed into construction even though other later unrelated components, phases or stages are yet to finish design. However no allowance should be made for work to proceed before final approval on a phased, component or construction stage basis, even for fast-track projects. The integrity of the process demands no less.

DPIE expects to make further adjustments to the integrated Design–Build, third-party plan review, third-party inspection and partial permitting approach it has implemented to date to accommodate more refined methods to achieve transparency and accountability throughout the project development life-cycle. These will be reflected in future updates to DPIE's Third-Party Plan Review Manual and Third-Party Inspections Manual.

EXHIBIT 3 — DESIGN–BUILD PROJECT PRIVATE STAKEHOLDERS

- Owner(s)
- Financial Entities/Bank(s)
- Architecture-Engineering Design Firm(s)
- Construction Company(s)
- Design–Build Team

EXHIBIT 4 — DESIGN–BUILD PROJECT PUBLIC STAKEHOLDERS/AGENCIES

- **Maryland–National Capital Park and Planning Commission (M-NCPPC)**
  - Entitlement Review — Key Consideration That Can Stall a Project
  - Zoning/Zoning Variances — Key Consideration
  - Tree Preservation
  - Chesapeake Bay Conservation
  - Transportation Facilities Access
- **Department of Permitting, Inspections and Enforcement (DPIE)**
  - Building and Site/Road Permits
  - Building and Site/Road Plan Review
  - Building and Site/Road Inspections
  - Peer and Third-Party Plan Review Program Administration
  - Third-Party Inspections Program Administration
- **County Office of Law (OOL)**
  - Legal Review of Contracts
  - Legal Review of Construction Bonds
- **Department of the Environment (DOE)**
  - Stormwater Management
  - Flood Control Management

EXHIBIT 4 — DESIGN–BUILD PROJECT PUBLIC STAKEHOLDERS/AGENCIES (Continued)

- **Fire Department/Fire Marshall's Office**
  - Building/Staircase Capacity
  - Emergency Access-Egress Adequacy
  - Fire Protection/Suppression/Alarm Systems
- **Department of Health**
  - Food and Beverage Facilities/Eateries/Restaurants
  - Pools and Spas
- **Department of Public Works and Transportation (DPW&T)**
  - Road Access-Egress Adequacy
- **Prince George's Soil Conservation District (PGSCD)**
  - Erosion Control
  - Flood Control
- **Maryland Department of Transportation — State Highway Administration (SHA)**
  - Traffic/Parking Impacts
  - Traffic Signals and Pavement Markings on State Roads
  - Roadway Access/Egress Geometrics on State Highways
- **Washington Suburban Sanitary Commission (WSSC)**
  - Water/Sewer Systems
  - Gas Fixtures
  - Plumbing Systems
- **Utility Companies**
  - Electric
  - Gas
  - Telephone
- **United States Army Corps of Engineers (U.S. Army COE)**
  - Navigable Waterways — Major Consideration That Can Impede Project Progress
  - Flood Control

EXHIBIT 5 — DESIGN–BUILD PROJECT DEVELOPMENT STEPS

1. **Building Concept Development**
    a. Preliminary Sketch Plan
    b. 10% Design
2. **Entitlement Clearance**
    a. Entitlement Review — A Major Step That Can Impede Project Progress
    b. Zoning
    c. Historic Preservation
3. **Environmental Clearance**
    a. Chesapeake Bay Conservation
    b. Tree Preservation
    c. Erosion/Flood Control
    d. Non-permeable Land Coverage
4. **Financial Closure**
    a. Bank Debt
    b. Partnership Financing
5. **Preliminary Design**
    a. Layout of Facility and Components
    b. Elevations and Profiles
    c. Floor Plans
    d. 25% Design
6. **Land Acquisition**
    a. Property
    b. Easements
    c. Air Rights
7. **Utility Clearance**
    a. Above Ground
        - Cable, Telephone
    b. Below Ground
        - Gas, Electric, Water, Sewer, Telephone

EXHIBIT 5 — DESIGN–BUILD PROJECT DEVELOPMENT STEPS (Continued)

8. Retain Design–Build Team

a. Create Project Prospectus

b. Solicit Expressions of Interest/Qualifications

c. Review Proposals and Begin Negotiations

d. Select D-B Team

e. Develop Preliminary Plan of Action and Schedule

9. Contact DPIE to Understand the Requirements of and Determine Eligibility for DPIE's Peer Plan Review or Third-Party Plan Review Programs

a. Meet with Senior Leadership of DPIE and Other Key Public Stakeholder Agencies to Discuss:

- Nature of the Project
- Timeframe for Project Initiation/Completion
- Implications of Fast-Track Projects on the Schedule and Sequence of Construction relative to Design Review and Approval
- Roles and Requirements of Project Stakeholders

b. Meet with Representatives of DPIE's Homeowners and Mega Projects Suite to Obtain:

- Rules and Submission Checklists
- Schedule of Review Periods/Processing Timeframes for DPIE and Non-DPIE Agencies (WSSC, M–NCPPC, PGSCD, Fire Marshall, State Highway Administration [SHA], and Office of Law [OOL])
- Site/Road Submission Requirements
- Building Submission Requirements
- QA/QC Manual

10. Retain Pre-Certified Peer or Third-Party Plan Review Team

a. Contact DPIE to Identify and Select Available Pre-Certified Peer Plan Review or Third-Party Plan Review Individual(s)/Team(s)

b. Contact DPIE to Identify and Select Available Pre-Certified Third-Party Inspection Individual(s)/Team(s)

EXHIBIT 5 — DESIGN–BUILD PROJECT DEVELOPMENT STEPS (Continued)

11. Hold Project Kickoff Meeting

a. Hold Senior-Level Meeting between the Owner or Owner's Representative, Design–Build Team, Project Scheduler, DPIE and other Key Public Agencies to Discuss How Preliminary and Frequent Subsequent Reviews can Ensure Final Designs Address all Relevant Code Issues

b. Discuss Permit Submission Requirements and Construction Schedule

c. Identify Typical Flaws that Trigger Rejection of Plans or Product

d. Review Schedule of Review Periods

12. Set up Preliminary/Interim/Follow-on Design Review/Code Compliance Meetings with Owner/Design Team, DPIE and other Key Public Agencies to Address Issues on a Periodic Basis, Especially for Fast-Track Projects

EXHIBIT 6 — DESIGN–BUILD PROJECT COMPONENTS, PHASES AND STAGES

- **Project Design Components**
  - Soils and Foundation
  - Superstructure (Steel/Concrete)
  - Engineering Systems/Trades (Structural, Electrical, Mechanical, Plumbing)
  - Life Safety (Fire Suppression/Fire Alarm)
  - Exterior Shell and Roof
  - Interior and Core
  - Vertical Transportation
  - Roads
  - Venue Fit-Outs
- **Delivery Phases**
  - Plan Development/Submission/Screening
  - Peer/Third-Party Plan Review
  - Permit Issuance
  - Construction
  - Inspection
  - Use & Occupancy Certification Issuance
- **Construction Stages**
  - Preliminary Stage
  - Initial Stage by Component
  - Secondary Stage by Component (As Needed)
  - Tertiary Stage By Component (As Needed)
  - Final Stage by Component

EXHIBIT 7 — DETAILED DESIGN–BUILD PROJECT DESIGN COMPONENTS

1. **Site/Road Permitting**
    a. Require Detailed Site Plan
    b. Stormwater Management/Flood Control/Soil Conservation
    c. Soil Remediation Required for Geo-piers
        - Geotechnical Review
        - Structural Review
    d. Require the Following Coordinating Approvals and Stipulations:
        - Rough and Fine Grading
        - Foundations
        - Superstructure
    e. Perform Testing and Alternate Strategies for Soil Variances
    f. Place Soil and Foundation Development in Site/Road Package
    g. Traffic and Parking Requirements
    h. Site Access/Egress
2. **Base Building — 75% Construction General Scope Document**
    a. Include Code Compliance Sheet in Each Design/Build Submission
    b. Core Permit Package
    c. Shell Exterior Permit Package
    d. Building Access/Egress
3. **Foundations**
    a. Deep Foundation System or Geo-pier Soil Remediation Package
    b. Coordinate Foundations Documents with Building Structure and Sub-foundation System
    c. Include Slab-on-Grade (SOG) Information
        - Impact Column Connection Detail
        - Foundations and Superstructure Information
        - Conduit Size, Number, and Spacing for Electrical, Fire Alarm, Communications

EXHIBIT 7 — DETAILED DESIGN–BUILD PROJECT DESIGN COMPONENTS (Continued)

4. **Structural**
    a. Superstructure
    b. Building Frame and Slabs Calculations
    c. Stamped and Hard Copy Plans and Calculations for Geo-Piers, Deep Foundation Package or Foundation Package in Coordination with the Foundation Structural Design
    d. Provide Edge-of-Slab (EOS) information in coordination with Exterior Closure System and all Vertical Penetrations through Slabs

5. **Pre-Cast Delegated Design (as appropriate)**
    a. In Delegated Designs, Have Precast Drawings Submitted Separately, Stamped and Sealed by the Structural Engineer of Record
    b. Detailed Connections and Profiles
    c. Engineer of Record Reviews and Approves Precast Submittal Related to the Structural Frame

6. **Utility Trades**
    a. <u>Electrical</u>
        i. Civil Engineering Drawings Showing Service Entrance and any Underground Distribution
        ii. Underground Distribution Elements Package
            1. Conduit and Duct Banks Required under SOG
            2. Panel Board Schedule
            3. Single Line Diagrams Required to be Provided and Flagged
    b. <u>Mechanical</u>
        i. Independent Subcontractors Right after Structural Elements
        ii. Early Package Ahead of Procurement May Create Revisions in Other Packages

EXHIBIT 7 — DETAILED DESIGN–BUILD PROJECT DESIGN COMPONENTS (Continued)

c. Life Safety/Fire Suppression-Fire Alarm

i. Architect/Engineer of Record Submits Minimal Performance-Based Fire Protection Engineering Design Requirements for each Building Permit Package

ii. Sprinkler and Fire Alarm Contractor Performs Most of the Technical Work

iii. All Fire Protection System Performance Information to Be Displayed on All Drawings as well as Specifications

iv. Review by Architectural and Fire Protection Reviewers

1. Life Safety Drawings
2. Fire Protection Engineer Design Evaluation (FPEDE) Report
3. Level of Approvals
   - Partial "As Noted"
   - 100% Full Approval
4. Sprinkler and Fire Alarm Systems Must Be Stamped and Signed by the Design Engineer and Sent for Peer Review
5. Required for Certificate of Use and Occupancy

v. For Phased Completion/Partial Occupancy — Show on Phasing Drawings:

1. Demonstrate Code Compliant Fire Protection/Suppression System
2. Occupant Notification
3. Fire Resistance Separation
4. Egressing

7. Exterior Shell (if Separated from Core) Package Requirements

a. Structural Connections

b. Waterproofing Details

c. Systems Performance Data to Achieve Weather-Tight Enclosure

d. Exterior Door-Window Openings Schedule

e. Coordinate with Stormwater Management (SWM) System, Rainwater Reuse System and various LEEDs Requirements or Adopted Standards such as Site Energy Production and/or On-Site Re-Use of Water

EXHIBIT 7 — DETAILED DESIGN–BUILD PROJECT DESIGN COMPONENTS (Continued)

8. Interior Space

a. Architectural Layout

b. Walls and Connections

9. Fit-Out Packages

a. Food, Beverage, Retail, Health/Beauty Venues

b. Health Department Review Requirements

10. Owner Notification

a. Provide Checklist of Rules, Expectations for Three Areas:

i. Review Durations for Non-DPIE Agencies (WSSC, M–NCPPC, PGSCD, Fire Marshall, State Highway Administration [SHA], and Office of Law [OOL])

ii. Site/Road Submission Requirements

iii. Building Submission Requirements

b. Building Permit Application Submission to Include:

i. QA/QC Manual

ii. Schedule of Review Periods

c. List of Typical Flaws that Trigger Rejection

d. Have Owner, Design Team, Scheduler, Plan Review Team, Inspection Team and DPIE representatives attend a Kick-Off Meeting to Discuss Permit Submission and Construction Schedule

EXHIBIT 8 — DESIGN–BUILD PROJECT QUALITY CONTROL AND QUALITY ASSURANCE PROGRAM FEATURES

- Engage the Highest Caliber Personnel to Staff Design, Construction, Third-Party Plan Review and Third-Party Inspection Teams
- Complete all Critical Infrastructure and Life Safety Elements By Project Design Conclusion
- Ensure Ongoing Coordination and Communication between All Parties to the Project Delivery Process
  - Weekly technical meetings
  - Weekly logistical meetings
  - Weekly site meetings
- Perform Continuous Quality Control Plan Reviews by Private and Public Stakeholders
  - Cross-Discipline Plan Checking and Back Checking
  - Construction Inspection — Materials Testing
- Require Random Quality Assurance Reviews of Selected Features by Private and Public Stakeholders
  - Cross-Discipline Plan Checking and Back Checking
  - Construction Inspection — Materials Testing
- Coordinate Quality Assurance/Quality Control Activities throughout the Project Development and Delivery Process, Involving All Key Stakeholders, Project Components, Process Phases and Building Stages
- Require Owner/Developer to Assume All Liability for Coordination of Design Elements Working in Compliance with County/State Codes
- The Quality Control /Quality Assurance Program Should Clarify the Roles, Responsibilities, Accountability and Transparency between the Major Participants in the Third-Party, Design-Build, Expedited-Permitting Process for Fast-Track Projects:
  - The County Serves as the Governing Body and Interpreter of Code Compliance and Quality Assurance, Enabling Flexible Permitting to Speed Project Approval.
  - The Owner/Designer/Contractor Execute and Coordinate the Means, Schedule and Efficiency of Construction to Speed Project Delivery.

APPENDIX A

SUMMARY OF DPIE THIRD-PARTY PLAN REVIEW PROGRAM MANUAL

OVERVIEW

Prince George's County, Maryland through its Department of Permitting, Inspections and Enforcement (DPIE), is responsible for the review or examination of all permit documents in the County pertaining to the construction and reconstruction of commercial and residential buildings. Under certain conditions, non-governmental persons or entities are authorized, at the owner's expense, to perform Third-Party Plan Review (TPPR) of a project's documents required for issuance of a permit and to certify that such work complies with the applicable codes. A TPPR entity, once approved in accordance with DPIE's TPPR program manual, may review on behalf of DPIE shop drawings and other related building documents required for permit issuance.

DPIE's TPPR manual provides the following information pertaining to this program:

- Application process by which a TPPR entity is approved;
- Minimum qualifications for a TPPR entity and its PIC;
- Scope of TPPR, including documentation and reports required from each participant in the process, including the owner of the property, the TPPR entity, the PIC and the Department;
- Duties and responsibilities of the permit applicant and the code official in the TPPR process;
- Provision for a quality assurance process for verification and auditing of TPPR and related reports; and
- Process for removal or suspension of a TPPR entity or the PIC where it does not adhere to the Department's guidelines and procedures.
- The TPPR manual is being refined to further address fast-track projects and how permit approvals and ongoing work are coordinated to identify code compliance issues when final design remains in flux.

APPROVAL OF THIRD-PARTY PLAN REVIEW ENTITIES

To be approved to participate in the TPPR Program, each party seeking to qualify as a TPPR entity must submit an application to DPIE so its qualifications can be reviewed and evaluated. The application must include a list of the PICs and Plan Reviewers affiliated with the TPPR entity, who will certify, supervise and/or perform TPPR. To be certified as a plan reviewer, candidates must successfully complete training conducted by DPIE staff in applicable disciplines of:

- Up to 80 hours plan review training for licensed professional engineers or registered architects; or
- Up to 40 hours plan review training for a candidate who is also certified by the International Code Council (ICC) as a plan reviewer; and
- Up to eight hours of continuing training each year related to plan review.

By undertaking a Third-Party Plan Review, the TPPR entity acknowledges that it is in compliance with all of the conditions of the Program and attests that the personnel involved under the Program are

qualified in accordance with these requirements and meet the highest standards for conducting third-party plan reviews, especially for projects developed through the design-build project delivery approach.

The application submitted to the Third-Party Program Coordinator must include the following:

- Detailed statement of the TPPR entity's qualifications including the qualifications of all PICs and Plan Reviewers.
- A quality assurance plan, which includes details about the internal processes for ensuring that the TPPR entity will perform plan review as contracted, report non-conforming items to the attention of the owner/designer, provide timely reports for each review or re-review, and submit a final signed report.
- A completed Acknowledgement of Conflict of Interest Policy, attesting that the TPPR entity, its PICs and plan reviewers will remain independent of conflict of interest.
- Proof of insurance coverage.
- Proof of licensure from the Maryland Department of Labor, Licensing, and Regulations (DLLR) and professional degree from an accredited university or college.

INDEPENDENCE/CONFLICTS OF INTEREST

Each TPPR entity PIC cannot perform both Third-Party Plan Review services and Third-Party Inspection services for the same project in Prince George's County. In addition, the TPPR entity shall not be owned or controlled by the owner or permit applicant of the project, the general contractor, the subcontractors or any person or entity responsible for the construction or management of the project, the registered design professionals of the project or their firms, or any other party or entity associated with the owner's interest in the project.

The TPPR PIC shall not have served or serve on the same project as an advisor or consultant to the owner, the permit applicant or the design team in connection with code matters for which the TPPR PIC is providing Third-Party Plan Review services while at the same time providing those consulting services. A person or a firm with which that person is affiliated as an owner, employee, or contractor who has performed any work for a project for which the owner, permit applicant or the authorized agent has elected to use one or more TPPR entities shall not be eligible to serve as a Third-Party Plan Review entity, PIC for any component on the project.

A PIC or Plan Reviewer (PR) is considered to have a substantial business interest in a project if:

- PIC or PR owns one percent or more voting shares of the client.
- PIC or PR received more than ten percent of his/her gross income for the previous year from the client, except for income derived for services as a plan reviewer or similar consultations.
- PIC or PR is an elected officer or a member of the board of directors or governing board of the client.
- PIC or PR fails to maintain an independent contractor relationship or becomes employed by the client.

Furthermore, a third-party reviewer involved in the review process shall not engage in the design, construction, or sale of those same structures. A third-party reviewer involved in the review process, as well as his/her spouse, cannot own more than one percent of the stock or have any substantial business interest in any owner, builder, or trade regulated under the construction codes. In addition, a third-

party reviewer involved in the review process cannot participate in a review for a client for which they have had such substantial business interest within the prior 12 months.

DUTIES AND RESPONSIBILITIES OF THIRD-PARTY PLAN REVIEW ENTITY

The TPPR entity shall provide the following services for each assigned project:

- Examine and review for compliance with all applicable building codes and fire protection systems proposed to be installed in the project for which the TPPR entity was hired to review.
- Submit completed reports to DPIE for each project, including:
  - Plan Review Code Deficiency Report
  - Third-Party Plan Review Approval Certification Letter and Report
- Provide complete Third-Party Plan Review comments to the owner and/or the owner's representative and to DPIE.
- Exercise due diligence in the discharge of the duties assigned to the TPPR entity by law and regulation and refrain from any arbitrary or capricious action that would unduly penalize or benefit the owner or permit applicant whose project is under the TPPR.
- Abide by the highest ethical standards in the discharge of duties as a TPPR entity.

The Design Professional contracted by the owner to design the project is responsible for correcting any non-code compliant plans, whether previously or subsequently discovered. Third-party review entities lack the authority or power to waive any code requirements. If DPIE discovers non-code compliant plans or documents from the TPPR entity, it notifies the TPPR entity who then advises the permit applicant that corrections must be made in the submitted plans. Any monetary claims that may arise from incomplete, inaccurate or defective plan review services provided by the TPPR entity are to be remedied without cost to DPIE.

DUTIES AND RESPONSIBILITIES OF PERMIT APPLICANT

Permit applicants seeking to engage a TPPR entity for a project must:

- Submit a Notification of Intent to use a TPPR entity to DPIE for approval.
- Accept responsibility to pay the TPPR entity for any costs relating to Third-Party Plan Review without a refund of any portion of the permit fee paid to DPIE.
- Acknowledge that the compensation (fees and costs) paid to the TPPR entity for its plan review services with respect to a project are not contingent upon or affected in any way by the conclusions reached by the TPPR entity or the contents of any of the deliverables produced by the TPPR entity.

DUTIES AND RESPONSIBILITIES OF THE CODE OFFICIAL

The Building Code Official is responsible for the following:

- Approve qualified TPPR entities
- Review and approve TPPR entities on specific projects

- Assign and/or recall of a project due to lack of performance or significant material violation of the provisions of the TPPR program or applicable codes by the TPPR entity, quality control concerns or client complaints.
- Review of third-party reviewed plans and reports and approval certificates within one (1) business day.
- Monitor and evaluate TPPR entities based on the quality of submitted documents tracked, reviewed and audited on a random basis.
- Remove any TPPR entity from the TPPR Program for failure to perform necessary Third-Party Plan Review, engaging in a conflict of interest, failure to conform to the requirements of technical guidelines, or otherwise failure to meet requirements of the TPPR program or applicable building codes.

DEFINITIONS

- **Applicable Codes:** All applicable federal, state, and county codes and standards as adopted by Prince George's County, Maryland.
- **Building Code Official:** The Director of the Department of Permitting, Inspections and Enforcement or his/her designee.
- **Department:** Prince George's County Department of Permitting, Inspections and Enforcement (DPIE).
- **Design–Build:** Contract vehicle that combines the design and construction phases of a project into one fixed-fee contract involving one or more companies together. Under a design-build contract, the design-builder, not the project sponsor, assumes the risk that the drawings and specifications are free from error.
- **General Contractor:** Company hired by an owner to undertake a construction project under specific terms of mutual agreement or contract, and is responsible for executing the construction work in accordance with the Applicable Codes.
- **Owner:** Owner(s) of the free hold premises or lesser estate therein; a mortgagee or vendee in possession, assignee of rents, receiver, executor, trustee, or lessee in control of a building/structure to be constructed/altered or the owner's duly authorized representative.
- **Permit Applicant:** Person or entity, either an owner or owner's representative, who applies for and to whom construction permit(s) are issued.
- **Professional-in-Charge:** Authorized individual who meets qualifications set forth in this Manual, and who: (a) is a professional engineer licensed in the State of Maryland and (b) manages project plan review and certification as an affiliate of a TPPR entity.
- **Professional Engineer:** Individual who holds a valid and current license issued by the Maryland Department of Labor, Licensing, and Regulations.
- **Third-Party Plan Review:** Review performed by non-governmental persons to certify that submitted documents comply with the applicable codes.
- **Third-Party Plan Review Entity:** Non-governmental person or entity authorized to do business in Prince George's County, Maryland.

- **Third-Party Plan Review Approval Certification Letter:** Letter provided by the TPPR denoting final approval of shop drawing submittal documents.
- **Third-Party Plan Review Program:** Process by which an approved TPPR entity conducts a Third-Party Plan Review, on behalf of DPIE, for a project to determine compliance with the Applicable Codes.