MANAGEMENT APPROACH

Provide a narrative explaining your approach to successfully manage the design and construction of the Project. Include a description and examples of how you will manage cost, quality, schedule, and neighborhood/community issues. Community interaction will be a key element to the success of this project. Provide examples of community interaction strategies used on past projects. Provide a narrative regarding the Owner's proposed budget of $108 Million and the proposed Scope of Work.

The Gilbane | Stantec + QEA team offers a high-performance design-build team uniquely qualified to deliver an exceptional and cost-effective solution for the new George Mason High School. We will closely manage the design and construction process so that this project meets all of its intended goals, and is delivered to open for the 2021 school year, within the $108M budget, and to the highest quality standards.

We understand your goals, objectives, needs and project drivers. We recognize the need for the new George Mason High School to serve as the gateway to Falls Church as well as give back to the community in which it is located.

DESIGN MANAGEMENT

The Gilbane | Stantec + QEA team appreciates the tremendous community effort and the transparent processes that have characterized and ultimately defined this project for much of the last decade. We understand the specific context and challenges that influence the successful delivery of the new George Mason High School, and recognize that such conditions are as unique as they are inspiring. Accordingly, our proposed management approach is built upon a similar foundation of discipline, teamwork and expertise honed over many years.

APPROACH GOALS

The description of the essential components of our seamless and tailored approach to manage the design of your project include:

- Vision-Driven
- Team Collaboration
- Team Communication
- Design Excellence

VISION-DRIVEN

Each of these components on their own is valuable, but the combination is what elevates our approach to a holistic strategy to meet the needs of George Mason High School.

Our approach to design management is necessarily impelled by the concerns and opportunities that matter most to you. Our work is guided not just by meeting the "hard" requirements of scope, cost and schedule, but also honoring the promise of community aspiration, stewardship and future economic development.

It's essential that your goals and vision be understood by all team members. This is an often-overlooked area of focus, yet without confirming a shared understanding, we risk the possibility of misdirected effort and emphasis. Therefore, clarifying all requirements and every expectation with you and reinforcing the same to every member of our team is our top priority.

> "Throughout the visioning phase, Stantec's team not only incorporated a myriad of highly effective engagement strategies, they also skillfully modeled the importance of effective communication skills."
>
> *Dr. David Sovine, Superintendent, Frederick County Public schools*

TEAM COLLABORATION

We are Better Together (Collaboration)

We believe in the strength of collective wisdom and that good ideas come from many sources. Our approach ensures FCCPS and the Falls Church City School Board/Falls Church City Public Schools will benefit from the tremendous reserve of knowledge, skills and creativity represented by every member of the team.

Gilbane | Stantec + QEA is an incredibly formidable team who together, bring a vast array of relevant projects, experiences, relationships and insights that ensure the protection of your interests throughout the entire project duration. Each of us understands the others' concerns and has worked together on many past projects, such that our full attention is never distracted from serving you and the needs of this project.

The K-12 planning and design of your project will be led by Derk Jeffrey and Bill Bradley, longtime partners who have built their careers on serving public school divisions throughout Virginia. They are well-respected by leaders in both instruction and facility design, and are often called upon to speak at national and local conferences on a variety of topics addressing K-12 learning and educational space design. Together, Derk and Bill will translate your Educational Specifications and High School/Middle School Building Programs into future-ready places for contemporary learning that will be flexible, relevant and operationally sustainable.

Derk and Bill will be assisted by Jack Chin, Urban Design Architect at QEA, whose acumen in the design of urban projects will ensure thoughtful site planning, massing and building character concerns are well-integrated into the final design of the campus. Working closely with the Jack and the team will be our in-house Commercial Consultant, Larry Grossman. Larry built his career designing award-winning projects for private developers in urban areas. Together, Jack and Larry understand well the many opportunities to connect the new George Mason High School to future private development.

CASE STUDY

Previous Collaboration Experience Between Stantec and Quinn Evans

Montgomery College Math & Science Center - Rockville, MD

The Gilbane | Stantec + QEA team has proven success in past projects similar to George Mason high School. Stantec + QEA recently completed the Montgomery College Math & Science Center in Rockville, MD.

In this case, the $92 million, 270,000 SF renovation and addition project met all the project goals including design, cost and schedule

QEA led the exterior design and Stantec led the interiors, a model replicated for this pursuit based on it's successful outcomes for this client. With a truly collaborative approach, resources were pooled from both firms providing value to the client and leveraging the collective strengtHigh School of both firms.

Our team's proven track record of working closely together will provide the City of Falls of Church with the best service and product.

TEAM COMMUNICATION

"Clear, concise and complete" has long been the mantra for describing the importance of effective project communications. Simple misunderstandings often lead to significant wasted effort and unnecessary confusion resulting in lost time. Therefore, project communications must also be consistent to preclude any breaks in the chain of understanding. Keeping a large team working efficiently, ensuring that everyone is informed of decisions in a timely manner, and avoiding surprises are the key objectives of our approach to project communications.

To facilitate "The Three C's" of project communication, the key individuals of the project team will co-locate into a single office for the duration of the design phase. This is an extraordinary commitment we make to you – multiple offices working side-by-side to collaborate as a team – to promote highly effective team communication and decision-making.

In the context of a design-build project such as this, the importance of good communication is also critical to the success of the "trust-based relationship" between designer, builder and client. For this reason, our approach to the management of your project also includes the strategy that "THE P.A. IS THE C.A."; the Project Architect is the Construction Administrator. Start-to-finish continuity for the quality of technical detailing and execution of the project means the individual who is in the best position to ensure the project is built as designed, and to work closely with the builder to accomplish this, is the project architect.

CASE STUDY

Use of co-location for enhanced collaboration

DC Public Schools, Dunbar Senior High School - Washington, DC

Gilbane led the co-location effort in on-site trailers for GIlbane, the design team, and the owner to reside together through the duration of the project.

A daily task list and coordination meeting amongst the entire team provided a level of accountability for keeping the project on schedule. The project was largely paperless with the constant utilization of the Revit model, electronic submittals, permit submissions, bids, and web-based project management software that provided real-time access for all team members.

This collaborative approach streamlined the process for RFI responses and provided timely solutions for cost and schedule efficiencies.

DESIGN EXCELLENCE

Strict Project Controls (schedule, budget, labor)

Stantec + QEA will be working closely with Gilbane throughout the design process to meet all schedule and budget objectives of this project.

Schedule - We understand the scheduled milestones for this project and foresee few challenges in meeting the deadlines established. During design, we focus on critical design milestones, including delivery of interior design packages, support of long-lead items and finalizing documents for permit submission. Developing and monitoring the myriad activities and decisions that underlie a comprehensive project schedule is a complex task, and includes constant and rigorous attention to the status of critical path activities. By doing correctly and well-coordinated the first time, we ensure the work of the team continues uninterrupted and avoid downstream delays to job progress.

Budget. We understand the many opportunities to reduce the long-term cost of building ownership for George Mason High School through good design, and our approach will identify multiple options for your consideration. From early energy modeling to specifying readily available, environmentally responsible and durable products, our approach is focused on delivering a high-performing facility that reduces operational costs forever.

Excellence in Everything

Our approach to the design and construction of the new George Mason High School entails an uncompromising commitment to quality. We appreciate the enormous capital investment required to complete a new high school today, as well as the promise of a brighter future for all that it carries. In this way, the new George Mason High School shall serve as the flagship of the Falls Church City School Board/Falls Church City Public Schools for years to come and its design must reflect the profound significance of public education, both in terms of preparing an educated citizenry and promoting economic prosperity. Excellence in everything is our promise to FCCPS and the City of Falls Church.

You may be confident that our approach will result in project that is "future ready" in every regard: flexible and responsive to shifting educational priorities and pedagogies; environmentally sustainable and low-energy consuming forever; and a worthy, elegant neighbor to future private development. In all, the new academic campus of which it will help to define will contribute to the making of a prominent and vibrant urban place in the City of Falls Church.

Excellence in everything is **our promise** to FCCPS and the city of Falls Church.

We will deliver "future ready" in every regard:

- Flexible and responsive to shifting educational priorities and pedagogies
- Environmentally sustainable and low-energy consuming forever
- An elegant neighbor to future private development.

DESIGN IMPLEMENTATION

To apply our approach goals, we will implement to following methodology:

VERIFICATION REQUIREMENTS

- Review FCCPS strategic plan, facility design guidelines, educational specifications, and operational cost/energy targets.
- Visioning, planning, and programming as required/desired by FCCPS.
- Identify key personnel and approving agencies (County, Town, State, VDOT, etc.)
- Confirm project budget and schedule.

PROJECT PLANNING

- Develop overall project schedule, including critical milestones for submission of site plan, building permit, design approvals, commencement of construction, and substantial completion.
- Coordinate FCCPS consultants to establish protocols for communication, coordination, and decision making.
- Investigate site, including traffic, geotechnical, environmental, utility, and adjacent land use concerns.

DESIGN DEVELOPMENT

- Review drawings and specifications to gain understanding of potential compliance concerns.
- Calculate/confirm structural systems and HVAC loads to verify sizing.
- Study and incorporate relevant "lessons learned" from past construction experiences, with particular attention to RFI's, ASI's, PCO's, and Change Orders.
- Revise documents that may be warranted to improve energy performance, constructability, cost effectiveness or response to instructional imperatives.
- Develop a building data model.

CONSTRUCTION OBSERVATION

- Support construction team with field-related issues
- Coordinate testing and commissioning

BENEFIT TO FALLS CHURCH

Our collaborative approach to design will realize your vision for George Mason High School.

COST MANAGEMENT

As the design-build prime contractor, Gilbane will have full financial responsibility for this project. Our goals are to:

Maximize value *to Falls Church within the $108 million budget*

Establish initial target budget accurately *and manage scope to expected design*

Ensure the highest level of quality *is maintained throughout the project*

We will accomplish these goals through a structured process working closely with Stantec + QEA and our design partners, as well as the Falls Chuch City School Board/Falls Church City Public Schools, to provide accurate cost information at all stages of the project.

AT A GLANCE
COST MANAGEMENT

- SET INITIAL BUDGET
- MANAGE COST THROUGH DESIGN
- DELIVER AND EXECUTE GMP (Prior to start of construction)
- SUCCESSFULLY FINISH PROJECT

TARGET GMP

On design-build projects such as George Mason High School, we start with a baseline Target GMP that has been developed as part of the RFP process. We will then continuously update this initial cost model until we have a mutually agreed to Final GMP that has been soundly-tested in the current marketplace. Using this fully open-book approach to cost containment, Gilbane | Stantec + QEA's goal is to deliver your project on time and with no surprises.

ESTIMATING

Our collaborative design-build approach ensures that estimating and budget development will be based on a clear understanding of the intended scope, the desired schedule and the project team's expectations. The estimating team uses On-Screen Takeoff software to effectively quantify all materials on the project by creating color-coded drawings to identify conditions and their quantities. We will utilize this powerful software to increase accuracy and team efficiency with streamlined project setup, color-coded quantities on drawings, quickly manipulated takeoffs, and easily document RFIs. Pricing is determined based on Gilbane's current cost database, subcontractor/supplier input, as well as the following factors:

- Conditions and circumstances surrounding the subcomponent
- Material quantity
- Market conditions
- Escalation

We will provide an estimate trending log that clearly communicates pending and accepted changes from the previous estimate. As a team, we use the trending log to minimize cost surprises. Early warning of adverse trends is important to maintaining cost, schedule, and to avoid unnecessary design documents revisions.

Estimating and budget development will be based on a clear understanding of the intended scope, the desired schedule and the project team's expectations.

PROCUREMENT

Subcontractor pricing typically comprises 90 percent of any construction project. The ability to attract optimum numbers of qualified subcontractors is of utmost importance to achieve competitive pricing. Our reputation among subcontractors is "tough but fair", benefiting our clients with good competitive coverage by a cadre of qualified contractors.

As our design progresses, we prepare a bid package strategy that maximizes purchasing power while balancing community needs and trade contractor capacity with separation of work activities by trade/schedule and market expertise. All bidders are pre-qualified by Gilbane to ensure they have the necessary expertise to work on George Mason High School. Gilbane will:

- Check references on past and current projects
- Check vendor credit history
- Qualification criteria checklist (including a financial check of balance sheet)
- Check insurance coverage limits and EMR
- Check their standing with the Falls Chuch City School Board/Falls Church City Public Schools

All bid packages are guided by a detailed scope of work specific to each package, structured to ensure that trades are bidding only the work that is consistent with their specific function and tailored exclusively for the George Mason High School. Detailed scope reviews ensure that all bid packages are coordinated, no interdependencies are overlooked and nothing is missed or duplicated. Each scope includes flow-down provisions of the general conditions, schedule requirements, and any authorized bid alternates. To manage the process efficiently, we will utilize Gilbane's proprietary web-based system, called i.BidPro, that allows for a fully electronic bid management process.

Gilbane | Stantec + QEA will perform a thorough and comprehensive analysis of each bid received for completion of scope, gaps between bidders and any clarifications or new information to ensure a comprehensive scope of work that is purchased at the appropriate price.

Developing Work Packages and Identifying Long Leads

Some equipment and materials, such as elevators, air handlers, and specialized electrical equipment, can have lead times of several montHigh School or more. Our team will identify long leads early in the design process, so that requirements and delivery times can be determined. As appropriate, materials will be expedited as soon as the GMP is executed to ensure they are on site to support the schedule.

CASE STUDY

Cost Control

DC Public Schools, Dunbar Senior High School - Washington, DC

Gilbane employed several techniques to facilitate cost control on the project. These techniques included:

- The removal of unsuitable soils and special compaction techniques in lieu of deep foundations
- Utilization of Victaulic fittings in lieu of welded steel pipe for HVAC mains
- A prefabricated skylight *in lieu of 'stick-built'*

Gilbane developed a comprehensive list of all such measures for the owner's consideration, including an analysis that allowed the team to make informed decisions on the acceptability of each item. This process took place with an unwavering approach that the design of the school was not to be compromised in any way.

As a result, the project was delivered on time, within budget, and with the highest standards of quality in design and construction.

COST CONTROL

Our team's cost control system allows us not only to track, but also to accurately forecast the cost throughout a project from its earliest stages through project close-out. Our cost control systems allow Falls Church and the project team to know exactly what expenses have been incurred to date, as well as forecasted costs to completion. This is a critical element of cost management that supports proactive and informed decision making that is based upon up-to-date information, rather than reactive decisions prompted by unanticipated changing conditions.

Cost control measures are continuous throughout construction with ongoing reviews that challenge the master budget to be sure it is accurate and current. The essential objectives of the cost control system ensure:

- The plans and specifications meet the program requirements at the lowest responsible cost and can be constructed as planned
- The schedule is realistic and complete
- Changes in scope and/or schedule are validated as necessary
- The project is being designed to budget through continuous feedback and input throughout the design process
- The project is within budget and the schedule is up to date before proceeding

Cost Control Tools

Through the CMiC Enterprise Resource Planning (ERP) system for cost control, our team is able to generate accurate cost reports in a timely manner to keep Falls Church up-to-date on the status of the project and make management decisions on an informed basis.

CHANGE MANAGEMENT

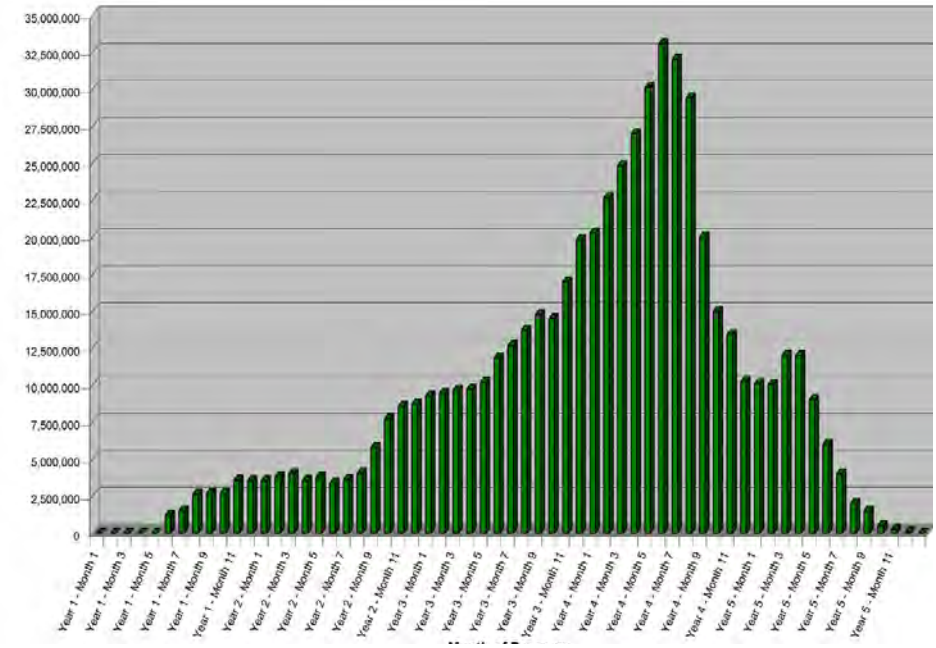
For items modified by Falls Church, Gilbane | Stantec + QEA field personnel will maintain tight project controls and define the impact that such owner/user group changes will have on the overall project objectives.

Our field engineering staff, under the direction of Tony Barton and Aaron Trout and with input from our estimators and scheduler, will evaluate and document the basis of the change for approval by confirming the change's:

- Validity
  - *The change has technical merit and will benefit Falls Church*
- Cost
  - *The change is cost effective and consistent with the current market*
  - *The scope is accurate and has been verified by Gilbane*
  - *Cost includes any schedule recovery*
- Schedule
  - *Delay mitigation and recovery is planned based on Gilbane's time impact analysis*

CASH FLOW PROJECTIONS

To support any financial reporting needed by The Falls Chuch City School Board/ Falls Church City Public Schools for bond draws, we will prepare detailed cash flow projections for the duration of the project, in conjunction with the Primavera scheduling system at the onset of the project. By loading the schedule with the cost of individual trade packages, we are able to project the cost of construction by month. As the project progresses, our financial management system tracks trade cost to-date against the projected cost. Monthly reports will be issued to the Falls Chuch City School Board/Falls Church City Public Schools.



Sample cash flow progression chart

BENEFIT TO FALLS CHURCH

Through our structured budget management and cost control processes, we will deliver George Mason High School within budget.

QUALITY CONTROL

Quality control is critical to successful design-build project delivery. Planning for the highest quality starts in design, ensuring our team establishes appropriate expectations that are then woven into all design and construction documents. By establishing expectations at the onset, this will set the stage for delivery of the George Mason High School at the highest level.

A project-specific Quality Control Plan (QC Plan) will be developed to address both our design and construction processes and procedures.

QUALITY CONTROL DURING DESIGN

The complexity of design submittals today requires a robust design review process that spans all project phases. The Gilbane | Stantec + QEA team understands the importance of presenting deliverables that are clear and easy to follow for review by Falls Church staff and allows for your feedback to be incorporated into the design. Interim design submittals will be provided on a regular basis for Falls Church review and feedback.

We will dedicate project team members who, individually and collectively, possess the appropriate knowledge and skill to perform their work. They will be overseen by our key team members who will be involved throughout the life of the project. Bob Sherrill, AIA, Design Quality Control Manager, will provide oversight of the QC process during design.

Components of QC Program

During design, our team will utilize Revit for design drawings, in a model shared by all design consultants to facilitate interaction and coordination amongst different disciplines. For design reviews, we will utilize Navisworks to identify any gaps or conflicts in trade coordination.

Key components of our design quality control program include:

Design Quality Inspections	Description	Benefit
Project Pin-Ups	At specified intervals throughout design, the project is presented to a cross-section of individuals that are not assigned to the project team	A fresh set of eyes allows for different perspectives on design solutions and early identification of conflicts
Design Project Manager and Architect Reviews	Routine review of all work produced to ensure client comments, feedback and interests are incorporated	Our key design leads ensure that the design continues to reflect feedback received from user group meetings and planning discussions with George Mason
Project Team Reviews	At the completion of each phase of design, checklists are utilized as a guide for the team to "self-review" and sign-off on technical accuracy and completeness of work performed	Structured sign-offs ensure that each design discipline has received appropriate quality checks before proceeding to the next design phase
Independent Quality Team Review	Senior architects/engineers will perform an independent constructability review of the project at the completion of both Design Development and Construction Document phases.	Ensures that design concepts are maintained, crosschecks between disciplines have occurred, adequate and appropriate details are shown and specifications are correct and complete
Construction Team Constructability Reviews	Design-build construction team members review the design for appropriate construction phasing, overall constructability, and review of access points for future operations and maintenance of the building	Planning for construction and ultimate occupancy are considered throughout the design process

Utilization of Specialty Contractors During Design

Based on design-build experience on projects similar to George Mason High School, we have found that the use of specialty contractors for key aspects of the project design provides for improved efficiency and a better finished product.

We intend to utilize design-assist trade contractors such as structural steel, elevators, and MEP will be engaged. These firms are uniquely qualified to provide an optimized design, which speeds construction and minimizes jobsite installation risk. Our team will actively engage design-assist partners to discuss pros and cons of each building system, allowing the team to make conceptual changes in advance rather than require a re-design later.

COLLABORATIVE PRECONSTRUCTION REVIEW ADDS VALUE

Constructability Review Results

H.D. Cooke Elementary School, Washington, DC

On this $24 million, complete design-build renovation, Gilbane | QEA performed a standard review over seven weeks via four interim reports and one compliance check. Nearly 200 constructability issues were identified.

MAJOR ITEMS:

- Windows were identified on the floor plan but the elevation showed the same location as former windows being installed
- Duct sizes were inconsistent with regards to the horizontal and vertical connections
- The size and type of steel shown was inconsistent between the structural details and the column schedule

Constructability review resulted in a $270,000 net savings.

QUALITY CONTROL DURING CONSTRUCTION

Our team will establish a clearly defined and mutually agreed upon understanding of George Mason High School' objectives and requirements which will be documented in a project-specific quality plan (QC plan).

The QC plan developed during preconstruction is implemented to ensure that all work is done right, complete and free of defects the first time. The program establishes specific processes to prevent mistakes by inspecting work at the earliest possible opportunity throughout the building process. Quality is driven by conformance with the basis of design for the Target GMP that is passed down from the design-build lead to all members of the Gilbane | Stantec + QEA team.

John Baker, Construction Quality Control Manager, will provide oversight of the QC process during construction. The QC plan will include the following compliance and inspection checks:

Construction Quality Inspections	Description	Benefit
Benchmarks	An evaluation of the first installation of any new work that is a permanent part of construction.	Eliminates defective construction patterns by establishing a reference for all future work.
First Delivery of Material Inspection	Examination of the first delivery of materials and equipment.	Prevents non-compliant materials from being installed.
First Equipment-in-place Inspection	Examination of all equipment at the initial installation stage.	Eliminates repeated errors in subsequent installations by serving as a benchmark for all future installations.
First Construction Inspection	Benchmark for means, methods and conformance with a project's requirements.	Resolves conflicting interpretation of requirements and eliminates any defective construction pattern from the beginning.
Closure Inspection	All critical work is inspected, tested and videotaped before it is enclosed below grade, under concrete, in walls or above ceiling. Any deficiencies are corrected immediately.	Eliminates re-entry to closed spaces.
Final Inspection and Acceptance & Punch List	Inspection of the final status of construction of a system or area.	Confirms correction of all Rolling Completion List items, final conformance to the requirements, and creates the punch list.
Activation Inspection	Inspection of the installation of equipment/systems, the surroundings to ensure that the installation is safe and meets the requirements for operation.	Any deficiencies noted will be corrected by the responsible subcontractor prior to active operation.
Start Up Inspection	Inspection of the debugged equipment/system that is ready for demonstration that it functions as required.	All non-conforming work will be corrected by the subcontractor, paving the way for acceptance by Gilbane and Falls Church.

LEAN APPROACH
Proactive and Preventative

The foundation of Gilbane's quality program is based on prevention rather than correction, through maximizing methodologies like mock-ups, pictured above.

BIM360 Field Software

Our team utilizes Autodesk's BIM360 Field software to streamline the quality assurance process in the field. This industry-leading software provides streamlined and user-friendly quality data collection and customized reporting capabilities. While in the field, team members collect and update detailed quality information using BIM360 Field on an iPad. This information then syncs within the master database via the web when connected.

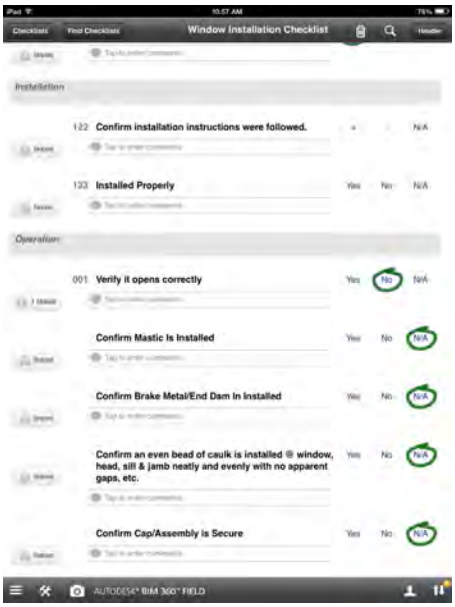
Gilbane's enterprise agreement for the use of BIM360 software means that all project team members, including owners and subcontractors, can utilize the BIM360 software, allowing a fully integrated approach to quality management. Permissions are set for each user to ensure that security is appropriately managed.

BIM360 | Checklists

Through checklists, efficiency is gained as any item identified as "not conforming" automatically generates an issue in the log, including the associated auto-fill information. This approach:

- assures that all essential items are reviewed
- records data identifying what is correct, as well as what needs work
- confirms that due diligence was given to each aspect of the quality inspection

Ultimately, this information informs our quality processes and procedures to ensure continuous improvement.



BENEFIT TO FALLS CHURCH

No warranty issues, systems working as intended – lasting 50+ years for next generation of students.

SCHEDULE

Gilbane | Stantec + QEA will work closely to ensure that all project activities support opening the George Mason High School on-time, including the preparation needed to activate the school before students can occupy the building.

As part of the RFP process, our team will develop a master schedule that integrates milestones for design, construction and occupancy. This master schedule will ensure that each member of the team, from Falls Church to our design-build team to trade subcontractors, are on the same page with the project approach and deadlines. This main roadmap will be big picture, and will be supported by a number of detailed schedules for specific items and trades.

ADVANCED PLANNING AND SCHEDULING

To develop this schedule and all future revisions, we utilize a process called **Advanced Planning and Scheduling (APS)** to create high performance, integrated teams where individual members bring distinct expertise to the scheduling process, thereby eliminating waste and producing a highly reliable schedule. Application of APS is particularly beneficial to projects like George Mason High School where there are many constituents involved in meeting the overall goal of students in the new school by Fall 2022.

LEAN APPROACH
Advanced Planning & Scheduling

The APS project planning methodology ensures accountability, reliability and collaboration among the project team. The techniques ultimately lead to improved jobsite productivity and time management for all team members through focused collaboration and proactive planning.

Master Planning and Project Milestone Schedule

The Gilbane | Stantec + QEA team leads the master planning during which high-level milestones are identified to define the "road map" from project commencement to completion. Upon completion of the master planning session, Gilbane's scheduler loads the milestone dates into Primavera Project Planner (P6) scheduling software. This master project schedule depicts the overall project strategy, objectives, and activities set to time scale. It is the framework from which all future phase pull planning information will be developed.

Distributed to all project stakeholders, it is refined throughout the project, depending on pace of work put in place. Our team will work closely to keep Falls Church and Stantec + QEA apprised of master schedule updates.

BENEFITS OF GILBANE'S APPROACH

Advanced Planning and Scheduling Sessions (APS)

- Minimize waste while maximizing value
- Team buy-in through inclusion of stakeholders in planning and decision-making
- Achieve reliable workflow with pro-active checks and balances throughout planning
- Benefit from continuous improvement through sharing of successes

AT A GLANCE

ADVANCED PLANNING & SCHEDULING

MASTER PLANNING
- Determine Milestones

PHASE PULL PLANNING
- Logistics Planning
- Safety Planning
- BIM Planning
- Procurement Planning

WEEKLY WORK/ LOOK-AHEAD PLANNING
- Production planning
- Constraint management

SHIFT MEETINGS
- Percent of plan complete/Variance tracking

PRODUCTIVITY AND EFFICIENCY ANALYSIS
- Percent of plan complete, Root Causes, and Constraint analysis

Our initial workshop will organize as many as 100-300 critical project activities into a schedule of clearly defined tasks - with assigned responsibilities that all team members have agreed upon and use as a path forward. Furthermore, the APS session will identify project design milestones, conflicts, reviews, permit requirements, and long-lead delivery items early in the design process.

As the project proceeds from the preconstruction phase - through the trade contractor bidding and award phase, the selected trade contractor's schedules will be validated by our project manager and superintendent during the bid scope and contract award process. This will ensure that Gilbane will receive a trade contractor's contractual commitment to provide the necessary manpower, materials and resources to achieve the baseline project schedule.

Shortly after the selection of major trade contractors, Gilbane will arrange for a second APS session that coordinates and sequences the entire construction process with the major trade contractors' buy-in. As a result of this exercise, our project manager, superintendent and scheduler will identify all of the project's work activities, assign durations, precedent and logic that results in the CPM schedule. Contractor input and team collaboration is the key to developing a realistic construction phase project schedule.

It is important to note that there are different types of schedules that all serve unique and important purposes. Some schedule deliverables for the George Mason High School project include milestone, three-week look-ahead, and commissioning. We also will present weekly updates by the superintendent, bi-weekly review by the project manager, and monthly review by our project executive and scheduler.

Pull Planning

Just prior to work beginning and throughout the duration of construction, phase pull planning is conducted. Phase pull planning takes into account logistics planning; procurement lead times; production planning; safety; and BIM execution planning. A dedicated space on the construction site is utilized where the Gilbane | Stantec + QEA team displays project plans, results, and trends to encourage collaboration.

With the milestones confirmed during preconstruction, the pull planning process identifies work flow, starting at a milestone or target condition and pulling (backwards) to the beginning of the work flow. The construction phase team uses the pull plan information to create 6-week look-ahead schedules from which we derive our weekly work plans to determine a production plan, visualized below. From here, the team, including the owner, designer and trades will review the milestone schedule to make necessary adjustments based on the development of phase pull planning.

Advanced Planning and Scheduling - Round 2

Shortly after the selection of major trade contractors, Gilbane will arrange for a second AP&S session that coordinates and sequences the entire construction process with the major trade contractors' buy-in.

CASE STUDY

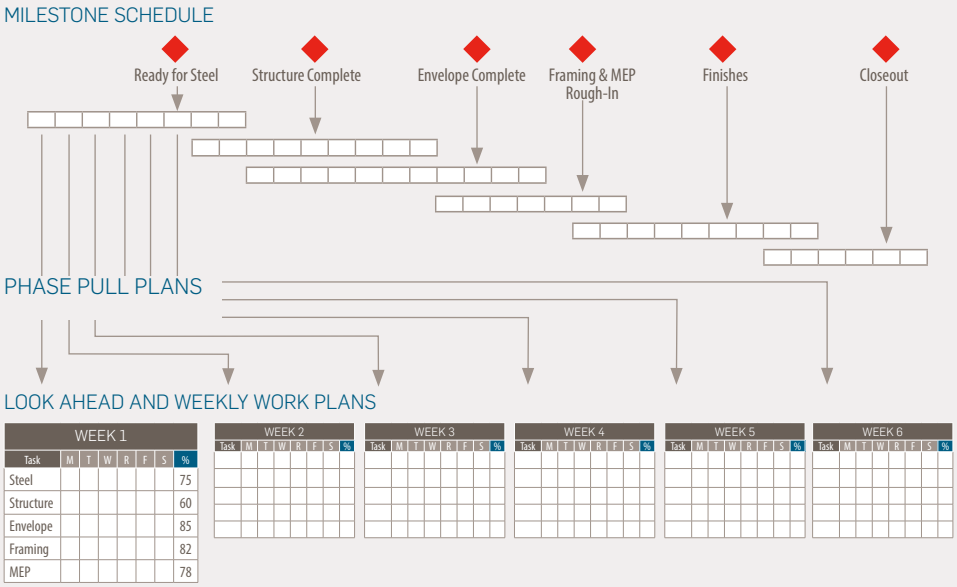
APS Session Proves Successful

Quincy High School and Vocational Center - Quincy, MA

For maximum collaboration and consensus in the sequencing of the project, Gilbane lead an advanced planning and scheduling session, where all major parties involved in the project participated. This team approach organized all the interrelated elements of a program/project into a logical sequence and gained the commitment of all involved parties to the successful execution of the group's strategy.

Team commitment to the schedule delivered an on-time completion of the project

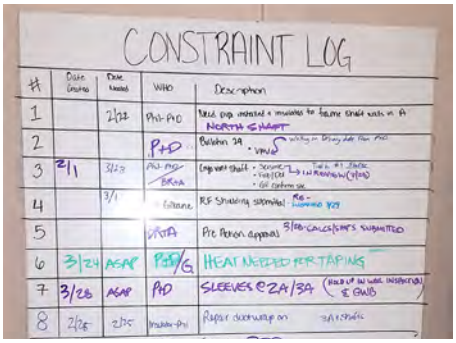
APS EXECUTION PROCESS



Collaborative team scheduling session

Work Planning

At each weekly work planning session, the Gilbane | Stantec + QEA team and trades work collaboratively to link the pull planning information into a detailed production plan. This visualizes the impact that pace of work has on the remaining sequence of work agreed to at the phase pull plan. Constraints are identified and any items requiring team coordination are added to the constraint log board for team resolution. By visualizing the constraints, the responsible parties are held accountable to expedite resolution of these issues.



An on-site constraint log allows the team to visualize potential risks to expedite issue resolution.

Meetings

This meeting is an on-site, stand-up meeting held daily with the trade contractors to utilize the weekly work plans and review planned work for the day. The meeting is held at the same time and place every day to communicate and collaborate on the day's challenges. Eric Fritz, Construction Superintendent, conducts the meeting, which includes:

- Each trade contractor communicates the work planned for the day and confirms adherence to Weekly Work Plan commitments
- Each trade contractor identifies any coordination required to complete tasks

LEAN APPROACH
Shift Meetings

Daily, the trades and Gilbane personnel meet to resolve concerns and discuss the day's activities to create buy-in and keep the project on track.

Efficiency Analysis

On a daily basis, productivity data is monitored to develop metrics, such as quantities installed, to track the percent planned complete while identifying constraints and root causes. As we gather this information, we validate the pull plan and make necessary adjustments to the phase pull plans.

By closely tracking the difference between actual versus planned, project team members can review and evaluate data and understand early indicators of when critical aspects of the project may be falling behind schedule due to lack of productivity and/or manpower in the field. This information is then used to develop specific action plans to effectively resolve issues.

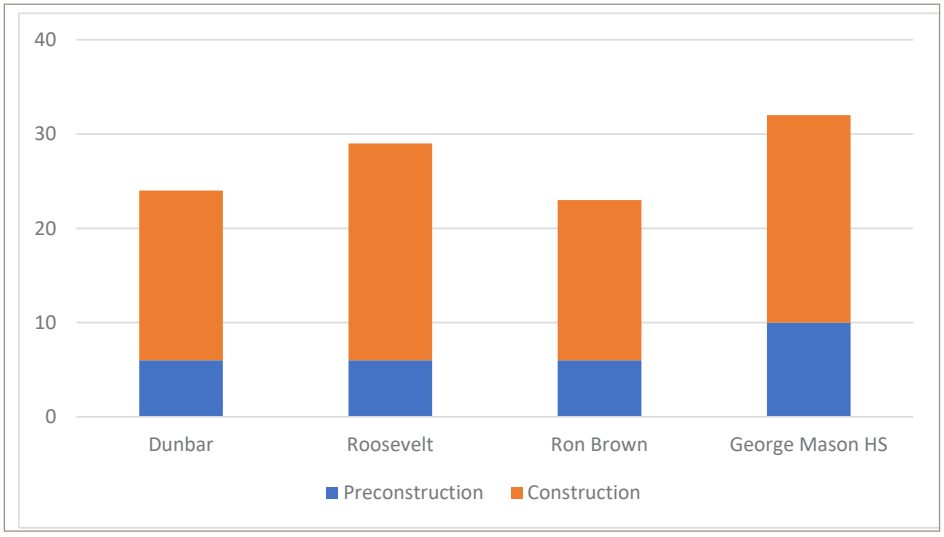
We feel confident we will deliver the George Mason High School on time. We compared the proposed design and construction durations to three of our recently completed local high schools. Each of these schools were completed faster than the proposed George Mason High school schedule.

SAMPLE PRODUCTIVITY AND EFFICIENCY ANALYSIS LOG

Weekly percent of plan complete (PPC):
82%

Constraints:
Trade contractor: 3 instances
Gilbane: 1 instance
Design team: 4 instances

Root causes:
3 Manpower
2 Design modifications
4 Weather
1 Waiting on other trades



BENEFIT TO FALLS CHURCH

Proper scheduling ensures the George Mason High School will be completed on time.

NEIGHBORHOOD/COMMUNITY PLANS

With the 10+ years of planning and community involvement that has been a part of the George Mason High School plan development, we understand the essential importance of continuing the dialogue and updates regarding this project so that when construction is done and students have moved in, the community believes that the project goals have been met.

Our team has extensive experience with community engagement for many of our K-12 projects. For both community and school audiences, we believe that fostering open conversations is essential to positive public engagement:.

- Utilize high touch and high-tech approaches that can effectively balance active listening and active participation from all sides.
- Utilize presentations, stakeholder meetings, digital engagement and conversation monitoring to determine how best to act on public sentiment and private stakeholder input.
- Assist the Falls Chuch City School Board/Falls Church City Public Schools and Falls Church City Schools decipher the complexities of expectations, community and neighborhood needs, federal regulations, and local politics

Our team fully believes that the community engagement process is integral to the design of successful schools.

COMMUNITY ENGAGEMENT EXAMPLES

In most cases, the school serves as the heart of a community, where learning is not the only function. A community often sees their neighborhood school as a place of safety, of congregation, and of recreation. Through a robust community outreach process, the public will be able to voice their opinions, suggestions and have a voice through the design process. This type of ownership in school design is crucial in developing a project that is supported by the citizens it will serve.

Our team has in depth and recent experience with the engagement of the community in the design of schools. The Wilson School project in Arlington, Virginia included a series of recurring meetings of all stakeholders from the neighbors, the School, County staff and numerous other members of the community. The purpose of these meetings was to provide an update on the design and to take into consideration everyone's comments and suggestions. At first, the meetings were more frequent but as the project progressed, the design team returned at certain milestones to provide updates to the community. This process has been hugely successful in Arlington and serves as a basis for all of their major projects.

The Stantec + QEA team is currently undergoing a similar process in Arlington as well. The Arlington Career Center project not only included a 6 month long process of school-specific engagement but is undergoing another series of community-wide meetings to offer the public an opportunity to voice their concerns and opinions as the design team begins the process of planning a more expanded school that includes more high school seats. As this process continues, the recurring meetings will mirror other similar Arlington projects.

CASE STUDY

Student Engagement

H.D. Cooke Elementary School, Washington, DC

During the project, our project manager joined the 4th grade class of H.D. Cooke Elementary School in a Student Inclusion Activity. The activity, What Do Builders Do, started off with an interactive presentation which consisted of reading a story on how to build skyscrapers, presenting a poster of construction activities in a neighborhood to identify construction, and was followed by a discussion about construction jobs.

Gilbane | QEA used the opportunity to display monthly progress photos of the current construction of H.D. Cooke to the students. During the project Gilbane | QEA also hosted a pep rally for the students where they were shown a 3D fly-through of their new school.

Students were included in the school community before the school even opened

Our team's community outreach experience is not limited to Virginia. We also bring experience working through the District of Columbia Public Schools design process. For the Marie H. Reed Elementary School & Community Learning Center, our team led the School Improvement Team (SIT) meetings that occur regularly at the beginning of the project and then on a more periodic basis later on. The SIT team includes members of the school, parents, community members and the neighbors. In addition, our team also conducted workshops with teachers, custodial staff and a smaller number of community members for a more in-depth approach to the design process.

When everyone is fully informed of the key decisions of the project and how those decisions were made, the overall process runs smoother and more efficiently. Our team will fully support this process from beginning to end.

The Gilbane | Stantec + QEA team will work with the Falls Chuch City School Board/Falls Church City Public Schools and Falls Church Public Schools to develop a communications plan for use on the project during both the design and construction phases that addresses:

- Type and frequency of both school-specific and general community meetings
- Authorized users and frequency of social media updates, including the use of project web cams, twitter, facebook, instagram, and the already established George Mason High School update website.
- Opportunities for student engagement from both a curiosity and learning standpoint

Furthermore, our approach to the development of the design submission will permit sufficient flexibility after the award of the project to allow for stakeholder engagement such as the examples mentioned previous. Our team's familiarity with this delivery method affords us this opportunity and it is something we strongly believe is necessary for success. We are in partnership with the City and its citizens and submitting this proposal is just the beginning of our long-term relationship.

BENEFIT TO FALLS CHURCH

A robust community engagement process ensures that everyone feels included and proud of the new school.

Regular meetings with the community on the Marie H. Reed Elementary School & Community Learning Center kept all parties informed and engaged on project progress

OWNERS BUDGET/SCOPE OF WORK

We believe the proposed budget of $108 million is appropriate to meet the expectations and aspirations of the George Mason High School project. We have conducted a detailed review of the project scoping documents, as well as compared this project to recently completed high schools. The results of our analysis:

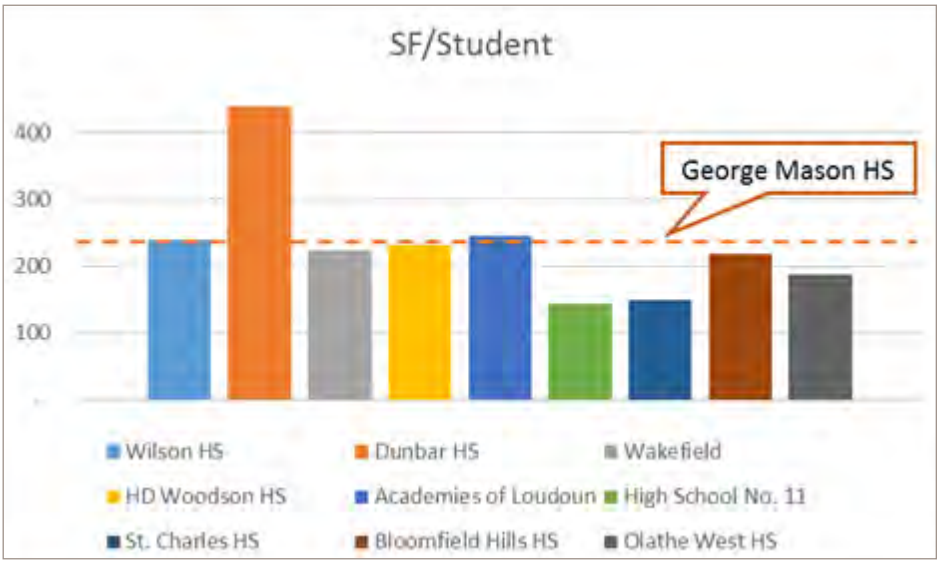
PROPOSED BUDGET

For the proposed program, the George Mason High School equates to:

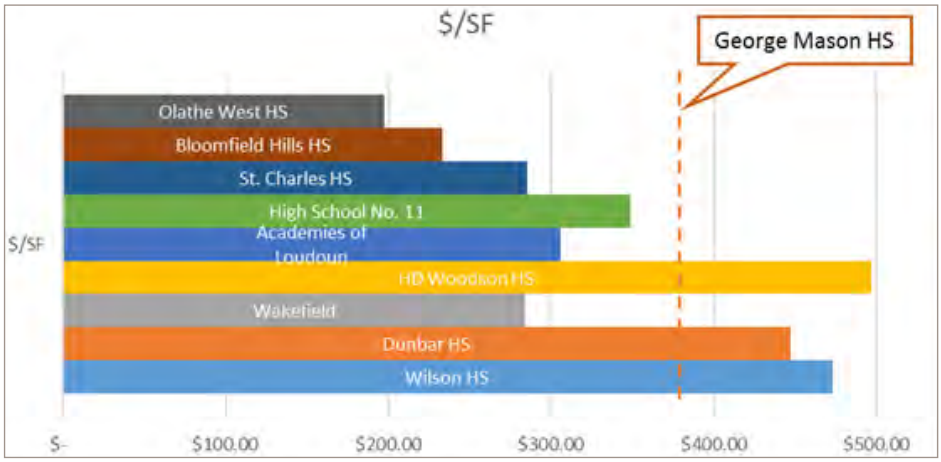
Number of Students	SF	$/SF	SF/Student
1500	285,502	378.28	190

We benchmarked this against similar completed high schools from both a square footage and $/SF basis, with each project adjusted for geographic location and updated to today's dollars. We utilize both criteria because the SF/student allows us to evaluate how efficient the use of the school footprint is, in addition to the more traditional cost per square foot.

The proposed George Mason High school is right in line with our benchmarked projects on a SF/student basis.



As illustrated in the charts, the George Mason project is right in line with these comparable projects on a $/SF basis as well. The average normalized costs above are $341.31/SF. Compared to the George Mason High School budget of $378.28, this will allow for escalation adjustments at approximately 3.5% per year.



PROPOSED SCOPE OF WORK

Several documents were provided to outline the anticipated scope of work for George Mason High School:

- Scope of Work
- George Mason High School Program
- Attachment G Educational Specification
- Attachment H Level of Quality and Guide Specifications
- Attachment I Mary Ellen Henderson Middle School Program
- Attachment J Sports Facilities Program

After review of these documents, we feel confident we can provide a high school that meets the requirements specified within. We believe there is an opportunity to enhance the base offering to reflect some of the innovative 21st century learning environments that our team is creating around the country to capture the design features we described in our design approach.

Material Recommendations for Review

We recommend review of some specific materials identified within the Level of Quality and Guide Specifications that could add cost and installation time to construction, and are not as frequently utilized on local schools:

MATERIAL	SUGGESTED ALTERNATE
› Masonry for interior walls	› Impact resistant drywall
› Terrazzo flooring in lobbies	› Vinyl plank

Additional Considerations

Storm Water Management - clarification of how the high school site will prepare for the future commercial development, and whether the high school project will incur the cost associated with the increased density and impervious area that the commercial property will bring.

DDC Systems - the narrative currently calls for the George Mason High School to integrate all schools together. Is the intent for this cost to be paid under the high school project?

Geotechnical Information - if some boring information is made available with the next phase, this could allow for better confirmation of the extent of deep foundations required, saving project cost.

Multiple Space Uses - leveraging the construction budget to provide more than one use for as many spaces as possible in the school creates opportunities to reduce cost. For example, cafeterias and auditoriums are often unused for much of the day. What other functions might such spaces accommodate, or where else in the school might such dining and performance needs be met? Focusing on the similarities among learning spaces often precludes the need to build-in duplicate infrastructure and equipment. We believe there are many options to adjust the scope of work while honoring the program and design capacity requirements.